AT&T

4ESS™ **SWITCH**

Product Release Document
4E17 Release 3 Generic

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Document No.: AT&T 234-090-173AC   Issue Number: 1   Date: July 1993

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About This Document

1. Purpose

1.01 The purpose of the Product Release Document (PRD) is to provide customers with information pertaining to the new features that are introduced in the *4ESS*™ switch. A PRD is written to cover the features introduced in quarterly generic releases and full generic releases. This particular PRD provides information pertaining to the new features included in the 4E17 Release 3 generic.

2. Scope

2.01 The Product Release Document provides customers with information not covered in other *4ESS* switch documentation. It is not a replacement for other documentation such as Standard AT&T Practices, Task Oriented Practices (TOP), Maintenance Reference Handbooks, etc., that support the *4ESS* switch. The information in this document is intended only for the introduction of the new 4E17 Release 3 features, not the long-term maintenance. Since other documentation is used for the operation and maintenance of features after their introduction into the *4ESS* switch, this PRD will not be reissued.

3. Intended Audience

3.01 This document is intended for people involved in testing, provisioning, maintenance, administration, and technical support of the *4ESS* switch. Feature managers, Integrated Test Network (ITN) personnel, field support, Technical Control

Center (TCC), Product Engineering Control Center (PECC), and National Electronics Switching Assistance Center (NESAC) personnel are examples of some of the people who will use the PRD.

4. How to Use This Document

4.01 The 4E17 Release 3 generic contains 22 new features. Each chapter in this document provides information on one of these features. The chapters are arranged in numerical order according to feature number. The chapter titles are also the feature names.

4.02 The following is a list of the chapters contained in this document:

Chapter 1: Processor Outage (PRO) Phase 2 Feature (151d)

Chapter 2: Inter-LATA Switched Digital Service and Network Interconnect for Primary Rate Interfaces—Phase 1 Feature (373)

Chapter 3: Improved Service Announcement and Information Collection (ISAIC) Core Feature (3082)

Chapter 4: Expanded Final Handling Announcements Feature (3091)

Chapter 5: MAS Announcement System (Televote) Using ISAIC Feature (3187)

Chapter 6: SRVT Enchancements Feature (3285)

Chapter 7: Processor Outage (PRO) Phase 2 Feature (3286)

Chapter 8: International 800 Carrier Specific Routing/Country Direct Feature (3306)

Chapter 9: REmote Adjunct Call Handling Feature (3520)

Chapter 10: Software Defined Network Universal Global Title Translation Database Feature (3587)

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Chapter 13: Far-End Network Treatment for Service Categories Feature (3742)

Chapter 14: Inbound Internation 800 Call Prompter Feature (3777)

Chapter 15: PROM Kit for Link Interface Encryption Removal (LIER) Feature (3779)

Chapter 16: Global Title Translation (GTT) Provisioning Feature (3806)

Chapter 17: Software Defined Network (SDN) Digital Radio Avoidance Routing (DRAR) Feature (3840)

Chapter 18: Alternate Signaling Transport Network (ASTN) Gateway/Network Interconnect Backup Feature (3860)

Chapter 19: Telecommunications Relay Service Carrier of Choice Feature (3863)

Chapter 20: Remote Measurement System Interface to *4ESS*™ Switch Network Validation Test Automatic Message Accounting Collection and Reporting Feature (3892)

Chapter 21: Inbound 10-Digit Global Title Translation Table Expansion Feature (3899)

Chapter 22: *Easy Reach 700*ᴹ Call Forwarding Service—Launch Button 700 Number Passalong Feature (3968)

4.03 A list of abbreviations and acronyms, and their definitions, is included at the end of this document.

5. Product Safety Labels

5.01 There are three types of safety labels used in AT&T documentation: DANGER, WARNING, and CAUTION. This document contains a safety label in the form of a CAUTION. A CAUTION indicates the presence of a hazard that will or can cause minor personal injury or property damage if the hazard is not avoided.

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Processor Outage (PRO) Phase 2 Feature (151d)

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Processor Outage (PRO) Phase 2
Feature (151d)

1

1. Feature Description

1.01 The Processor Outage (PRO) feature is divided into two phases for implementation. Both Phases 1 and 2 are described in this chapter.

1.02 The PRO feature provides for the graceful recovery of Signaling System 7 (SS7) links following a processor outage condition. The procedure used before the PRO feature was to break the link on recovery from a PRO condition regardless of the outage duration. Breaking the link on recovering from a PRO required a substantial amount of recovery time to realign the link. The PRO feature uses a method that does not break the link and provides recovery from a PRO condition based on the duration of the actual processor outage.

1.03 The PRO durations are classified as either a short or a long PRO. A short PRO is a condition that exists for a time less than T1 seconds (before timer T1 expires). A long PRO is a condition that exists for a time greater than T1 seconds (after timer T1 expires). T1 is the level 3 T1 timer value, which is defined as the delay to avoid message mis-sequencing on changeover. T1 is variable via recent change.

1.04 Phase 1 development provides for a full PRO (long or short processor outage duration) without breaking the link for the Link Interface Digital Signal Zero (LID0) interface (TN1669). The Link Interface Non-Encrypted (LINE), TN916, and the Link Interface 4-Ports Digital Data System (LI4S), TN1316, do not break the link in recovering from a short PRO. Table 1-A lists the interface boards and status of the link for PRO durations.

Table 1-A. Processor Outage Phase 1

Link Interface Boards	Processor Outage Duration		Break Link
	Long PRO	Short PRO	
LID0	X		No
		X	No
LINE	X		Yes
		X	No
LI4S	X		Yes
		X	No

1.05 Phase 2 provides for a full PRO (a long PRO that does not break the link) for the LINE and LI4S interface boards. Table 1-B contains the interface board information for Phase 2. For interface board changes required for the PRO phases, refer to "Provisioning" in this chapter.

Table 1-B. Processor Outage Phase 2

Link Interface Boards	Processor Outage Duration		Break Link
	Long PRO	Short PRO	
LID0	X		No
		X	No
LINE	X		No
		X	No
LI4S	X		No
		X	No

1.06 Following are some instances where the link will still be broken:

■ During a Common Network Interface (CNI) level 4 initialization

■ During a link node restore

■ During Interprocess Message Switch (IMS) User Node (IUN) restarts.

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2. Call Flow

Call Flow Key Points

2.01 Processor outage procedures are initiated for the condition where signaling messages can no longer be transferred or received at a level higher than Message Transfer Part (MTP) level 2.

Call Flow Diagram

2.02 The signaling point in the processor outage condition is referred to as the Status Indication Processor Outage (SIPO) Transmitting End (STE). The signaling point receiving the SIPOs from the STE is referred to as the SIPO Receiving End (SRE). Figure 1-1 is a flow diagram of a processor outage initiation and recovery. When a processor outage condition occurs at the STE, level 2 begins sending SIPOs. As shown in Figure 1-1, a number of events takes place after the processor outage; however, the STE continues to send SIPOs until the processor outage condition ceases. The SRE responds to the SIPOs with Fill In Signaling Units (FISUs) until the processor outage condition ceases, and no more SIPOs are received.

SIPO TRANSMITTING END   SIPO RECEIVING END

PROCESSOR OUTAGE

1. Sequence numbers must be updated to reflect the last MSU accepted by level 2 and delivered to level 3

2. L3 initiates TCC, starts timer T1; L2 stops timers T5, 6, 7; discards incoming MSUs

3. L2 sends continuous SIPOs

RECOVERY PRIOR TO T1 EXPIRY

1. STE L3 stops TCC, timer T1

2. First FISU/MSU sent must ACK the last MSU accepted by level 2 and delivered to level 3 (BSNT=FSNX-1)

3. Resume normal operation (Sending MSU/FISU)

Expiry timer T1, Complete TCC if possible, LONG PRO

PROCESSOR RECOVERED

1. L3 commands L2 to flush the RTB, TB, RB, and all messages in any intermediate buffers for transmission or local delivery

2. From a check FISU, extract the BSNR and set, FSNL=FSNT=FSNF-1=BSNR, and start sending FISUs

3. L2 notifies L3 of the completion of the buffer clearing

4. L3 commands L2 to resume normal operation

5. L2 responds to L3 that normal operation has resumed

SIPO

FISU

SU #

SIPO

FISU

FISU

FISU/MSU

1. L2 informs L3 of SIPO condition

2. L3 initiates TCC, Starts timer T1

3. L2 stops timers T5, 6, 7

4. Start sending continuous FISUs

\# - If the SU is a FISU/MSU, then SHORT PRO

　　1. SRE L3 stops TCC, timer T1

　　2. Set pointer RTB to the last MSU ACK by the STE

　　3. L3 commands L2 to resume normal operation

Expiry timer T1, complete TCC if possible, LONG PRO

1. L2 informs L3 of PRO recovery

2. L3 commands L2 to flush RTB

3. From the first checked FISU, extract the BSNR and set, FSNL=FSNT=FSNF-1=BSNR

4. L2 notifies L3 of the completion on the buffer clearing

5. L3 commands L2 to resume normal operation

6. L2 responds to L3 that normal operation has resumed

Legend:

ACK	- Acknowledge	L1,2,3- Level 1, 2 ,3
BSNR	- Backward Sequence Number Received	MSU - Message Signaling Unit
BSNT	- BSN transmitted	PRO - Processor Outage
FISU	- (Fill In) Signaling Unit	RB - Receiving Buffer
FSNF	- Forward Sequence Number of the oldest MSU in the RTB	RTB - Retransmission Buffer
		SIPO - Status Indication "Processor Outage"
FSNL	- Forward Sequence Number of the last MSU entered into RTB	SRE - SIPO Receiving End
		STE - SIPO Transmitting End
FSNT	- Forward Sequence Number of the last MSU transmitted	SU - Signal Unit
		TB - Transmission Buffer
FSNX	- FSN expected	TCC - Time Controlled Changeover

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Figure 1-1. Processor Outage Flow Diagram

2.03 Figure 1-2 is a simplified state transition diagram for dual processor outages.
Dual processor outages occur when both ends of the concerned link enter the processor outage state and both sides are sending and receiving SIPOs. Figure 1-3 presents the dual processor outage stages or events. The length of time of the processor recovery in relation to the T1 timer determines whether the processor outage was of a short or long duration. If the processor recovered before the expiration of T1 timer, the processor outage was of a short duration. The expiration or unavailability of T1 timer makes the recovery procedure that of a long duration processor outage.
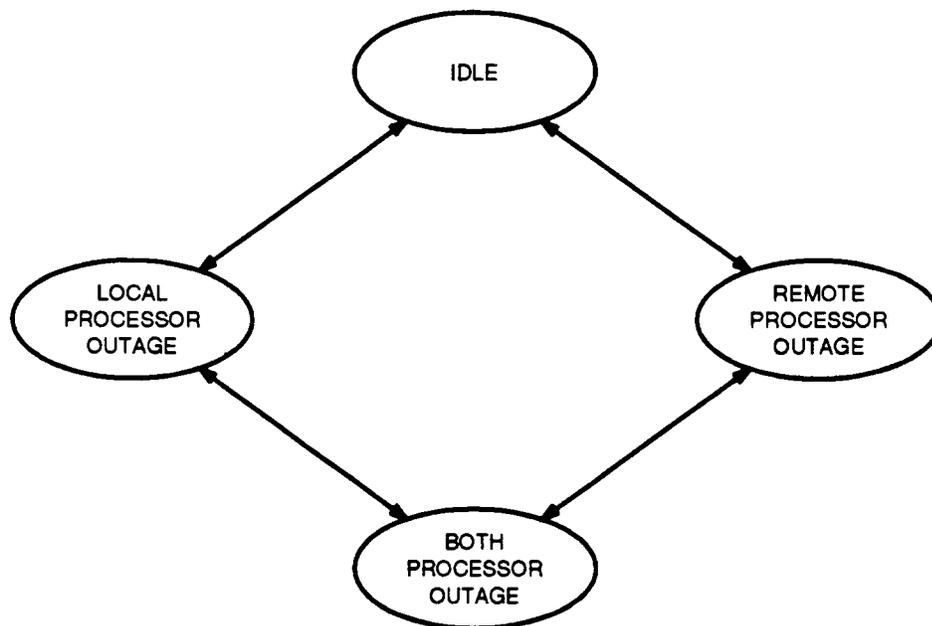
Figure 1-2. State Transition Diagram for Processor Outage
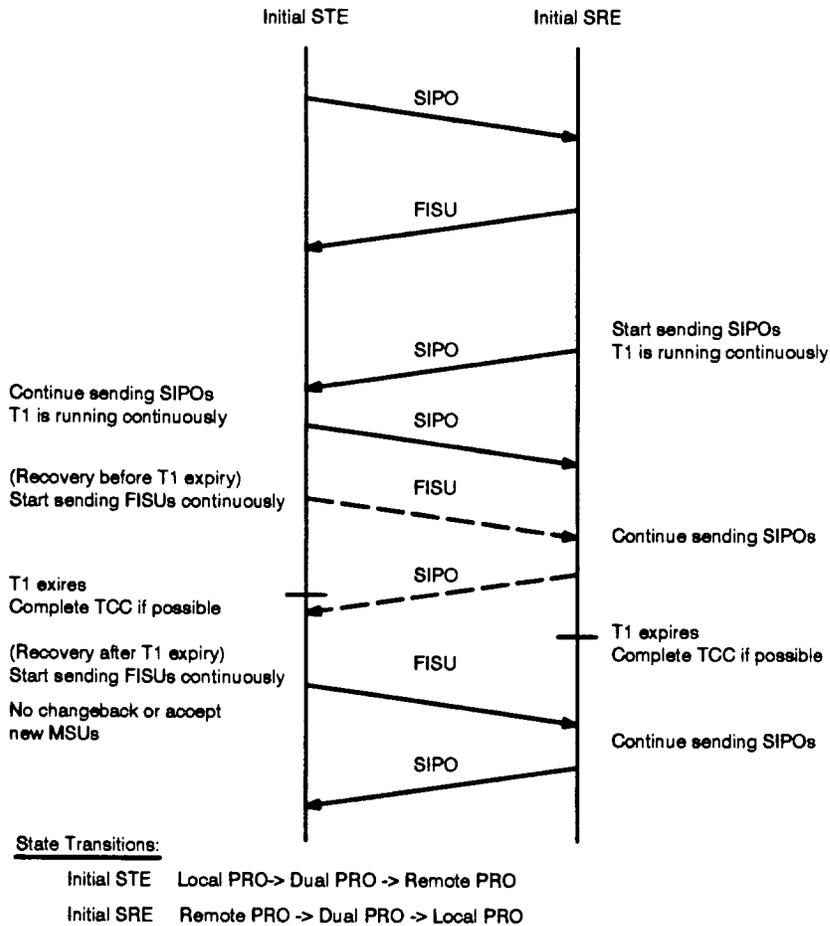
Initial STE   Initial SRE

SIPO

FISU

SIPO   Start sending SIPOs
                                            T1 is running continuously

Continue sending SIPOs
T1 is running continuously   SIPO

(Recovery before T1 expiry)   FISU
Start sending FISUs continuously

                                            Continue sending SIPOs

T1 exires   SIPO
Complete TCC if possible

                                            T1 expires
(Recovery after T1 expiry)   FISU   Complete TCC if possible
Start sending FISUs continuously

No changeback or accept
new MSUs   Continue sending SIPOs
                                   SIPO

State Transitions:

    Initial STE   Local PRO-> Dual PRO -> Remote PRO

    Initial SRE   Remote PRO -> Dual PRO -> Local PRO

Legend:
FISU   - (Fill In) Signaling Unit
MSU   - Message Signaling Unit
PRO   - Processor Outage
SIPO   - Status Indication "Processor Outage"
SRE   - SIPO Receiving End
STE   - SIPO Transmitting End
TCC   - Time Controlled Changeover

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Figure 1-3. Dual Processor Outage

3. Provisioning

Office Data Administration

3.01 The processor outage procedure is a self-contained, self-recovery procedure distributed among processors and processes in the AT&T 3B20D computer and CNI ring.

3.02 For Phase 1, the LID0 interface board has full PRO capabilities. In Phase 2, there are only enhancements for the LID0 interface. This means that the 3B20D computer disk files (LID0 code) are pumped to the LID0 to program flash memory in the LID0 for both Phase 1 and Phase 2.

3.03 The LINE board requires installing new firmware chips on the board, diagnosing the node [with an All Test Pass (ATP)], and repumping (remove/restore code from the 3B20D computer disk files). The LI4S requires software changes only.

3.04 Before the firmware is installed on the LINE board, the 4AP11R3 software must be present. The firmware must be removed if the 4AP11R3 software is backed out.

4. Recording (Not Affected)

5. Network Management (Not Affected)

6. Maintenance/Troubleshooting (Not Affected)

7. Transition Considerations

7.01 The following are transition considerations for the Processor Outage feature:

- Each link node in the Common Channel Signaling System 7 (CCS7)/ International Telegraph and Telephone Consultative Committee 7 (CCITT7) signaling networks can only use one SIPO procedure at a time (two procedures cannot be used on a link node at the same time).

- The new SIPO procedure can be deployed on a link-by-link basis (with firmware changes or upgraded by Phase 2) on a switching or signaling system. This will result in different SIPO procedures being used on link nodes within a signaling point and/or between adjacent signaling points.

- When the new SIPO procedure is introduced to a switching or signaling system, it must co-exist with the existing "break the link on recovery" procedure in the same system.

- If the STE has the "break the link" SIPO procedure and the SRE has the new SIPO procedure, the STE will "break the link on recovery", regardless of the duration of the outage. The SRE with the new procedure will stop its procedure as soon as the link is broken and wait for completion of the link prove-in procedure from the STE before service is resumed.

- If the STE has the new SIPO procedure and the SRE has the "break the link" procedure or the old procedure that did not "break the link", the link will not be broken by STE on recovery. However, when the traffic is resumed, the link may be broken where level 2 protocol dictates.

- The CNI application is responsible for keeping track of which link node has which SIPO procedure.

7.02 Without the PRO feature, a normal changeover [exchange Change Over Order (COO) and Change Over Acknowledgment (COA) messages] would occur for all SRE durations. With the PRO feature, the link conforms to the new protocol. For a short PRO, the SRE stops sending Message Signaling Units (MSUs) until the other side recovers; it then resumes and does not perform a changeover of any type [normal or Time-Controlled Changeover (TCC)]. For a long SRE, the link is not broken/restarted, but continues a TCC and Change Back (CB) when the remote PRO condition ceases.

Turn On/Turn Off Mechanism

7.03 This feature cannot be turned ON/OFF after firmware and software (4AP11R3) are installed. The 4AP11R3 must be installed before firmware is installed on LINE boards. Firmware must be removed if 4AP11R3 is backed out. The 3B20D computer needs the software before the firmware is installed. Refer to Task Oriented Practice (TOP) AT&T 234-153-055, *Common Network Interface, Growth/Degrowth, 4ESS*™ *Switch*, for procedures to update the interface boards.

8. Input/Output Manual Pages

8.01 The OP:LNSTAT output manual page is updated to show the new LI_FW_VER field. This field will contain the microcode value MC3F030A1 when the new firmware has been installed on the LINE.

Inter-LATA Switched Digital Service and Network Interconnect for Primary Rate Interfaces—Phase 1 Feature (373)

2

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Inter-LATA Switched Digital Service and Network Interconnect for Primary Rate Interfaces—Phase 1 Feature (373)

2

1. Feature Description

1.01 The *4ESS*™ switch Inter-Local Access and Transport Area (LATA) Switched Digital Service is a 2-phase Local Exchange Carrier (LEC) feature. This feature provides the LEC Primary Rate Interface (PRI) customers with data services at rates of 56 kbps, 64 kbps, 384 kbps, and 1536 kbps over dedicated domains. Phase 1, which is included in this generic (4E17 Release 3), enhances the PRI capability to support per-call carrier selection. It also enhances Network Interconnect (NI) by allowing NI to support data calls. Phase 2 is scheduled to be included in a later generic release.

1.02 Phase 1 of this feature supports a 3-digit (or 4-digit in 4E18 Release 1) carrier identification (ID) code. It allows LEC PRI customers to set up data calls "between" LATAs and to select the carrier, on a per-call basis, that will transport the call. Prior to generic 4E17, the PRI that was supplied to the LECs did not support carrier ID.

1.03 Inter-LATA Switched Digital Service requires that a Q.931 PRI be directly or nondirectly connected to a LEC *4ESS* switch. When the PRI is not directly connected, the Signaling System No. 7 (SS7) Integrated Services Digital Network User Part (ISUP) network transports the data call from the PRI to the switch. When the LEC switch has a direct route to the inter-LATA carrier, the Common Channel Signaling System 7 (CCS7) NI protocol is used. When a direct route is not available, a via switch is used. The signaling protocol used between the via switch and the LEC *4ESS* switch is SS7 ISUP. Phase 1 of this feature requires that a directly connected PRI interface be set up in a dedicated domain to support data calls. Refer to Figure 2-1 for the Inter-LATA Switched Digital Service architecture.
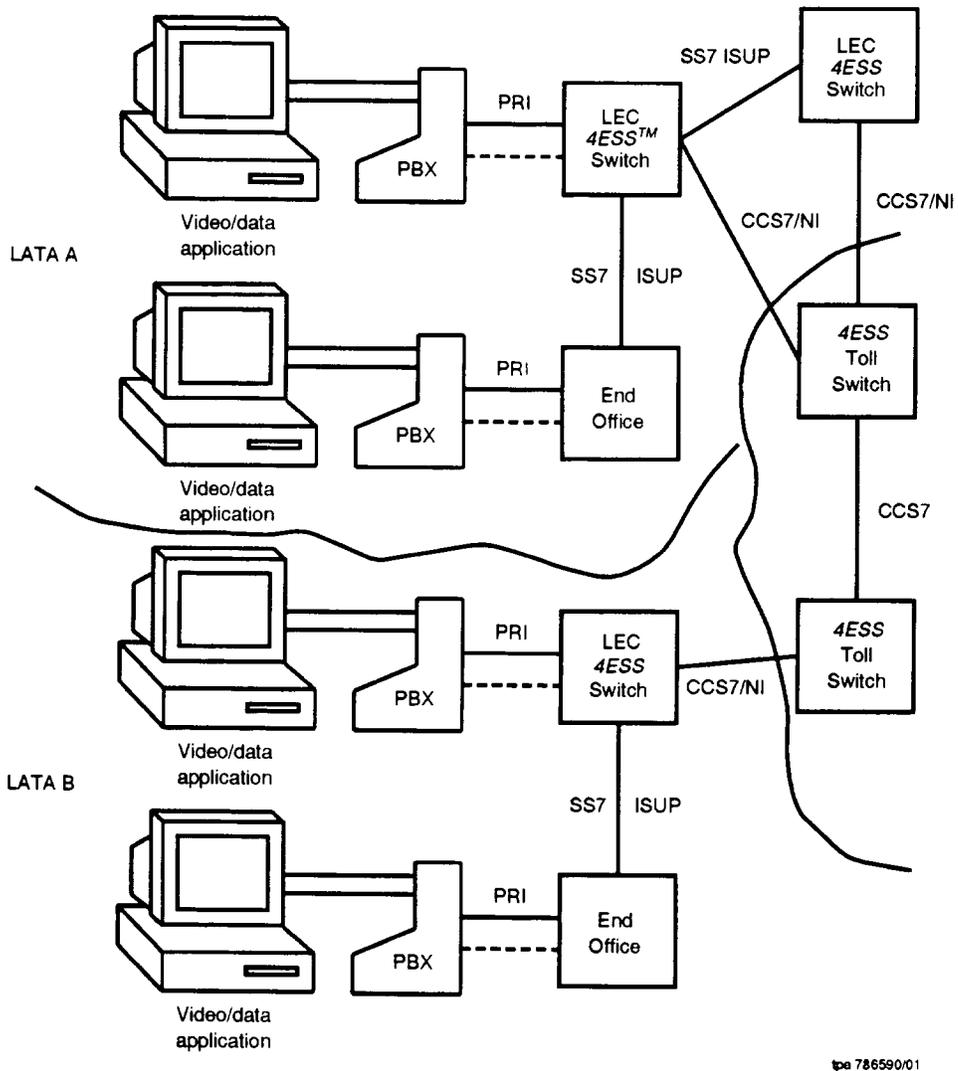
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Figure 2-1. Inter-LATA Switched Digital Service Architecture

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Background

1.04 The Intra-LATA H0/H11 feature that was introduced in generic 4E16 allows LEC Integrated Services Digital Network (ISDN) end users to transmit data at 384 kbps (H0) or 1536 kbps (H11) "within" LATAs. Access to the H0/H11 intra-LATA facilities on the LEC *4ESS* switch is via AT&T's Q.931 PRI that is dedicated to data services. The H0/H11 Customer Premises Equipment (CPE) is directly connected to the LEC *4ESS* switch. The intra-LATA switched service does not support carrier selection.

1.05 When an end user requests a H0/H11 call, the following occurs:

1. The CPE sends a 10-digit called party number and a 384-kbps or 1536-kbps data rate via a Q.931 SETUP message to the LEC *4ESS* switch.

2. The LEC *4ESS* switch recognizes the data rate and translates the 10-digit called party number.

3. If the called party number is not an intra-LATA H0/H11 number, the call is terminated and a DISCONNECT message is sent to the CPE.

4. If the called party number is an intra-LATA number, an Automatic Message Accounting (AMA) record is generated and the call is routed to the directly connected terminating CPE.

5. The terminating CPE is notified of the call by a Q.931 message with the Bearer Capability populated with a 384-kbps or 1536-kbps data rate.

1.06 When the originating and terminating customers are located on different LEC *4ESS* switches in the same LATA, CCS7 signaling is used between the two switches to complete the call. The originating switch makes an AMA record for the call. The call is recorded as Call Code 061, Structure Code 1081 or 1083.

2. Call Flow

2.01 The call flow for Inter-LATA Switched Digital Service during normal operation is as follows:

1. The end user dials a 3-digit inter-LATA carrier ID code and a 10-digit called party number.

2. The end user specifies that a data call is being made.

3. If a carrier ID code is present in the Transit Network Selection (TNS) or the first Network-Specific Facilities (NSF) information element in the Q.931 SETUP message, the call is routed as an "inter-LATA" data call. (The TNS information element is ignored for voice calls.)

4. If a carrier ID code is **not** present in the TNS or the NSF information element, the call is routed as an "intra-LATA" call.

5. If the requested facilities are available and the called party can receive a data call, the call is completed.

2.02 If the LEC *4ESS* switch receives a Q.931 SETUP message with a badly formatted TNS information element, the LEC *4ESS* switch will send a Release Complete (RLC) message to the originating CPE. The **Cause Value** field will be populated with **100**. The call will be final handled with Final Handling Code **599** (4FHQ9I_TNS_ERR). Final Handling Code **599** is used only for Q.931 incoming trunks to indicate that an invalid TNS parameter was received at an access tandem.

Call Flow Key Points

A. Originating CPE PRI—Direct-Connected

2.03 The LEC end-user customer dials an inter-LATA carrier ID code and the 10-digit called party number. The CPE, which is directly connected to the LEC *4ESS* switch, generates a Q.931 SETUP message and sends it to the LEC *4ESS* switch.

B. Originating CPE PRI—Nondirect-Connected

2.04 The LEC end-user customer dials an inter-LATA carrier ID code and the 10-digit called party number. The CPE generates a Q.931 SETUP message and sends it to the local end office. If the end office cannot complete the call, the local end office will map the Q.931 information elements to the SS7 ISUP parameters and route the call to the LEC *4ESS* switch.

C. Originating LEC *4ESS*™ Switch

2.05 The originating LEC *4ESS* switch receives either a Q.931 SETUP message or an SS7 ISUP Initial Address Message (IAM) for a data call. When the LEC *4ESS* switch receives a Q.931 SETUP message, the Bearer Capability parameter is checked to determine if the call is a data call. When the LEC *4ESS* switch receives an SS7 IAM, the data rate in the User Service Information (USI) parameter is checked to determine if the call is a data call. If the call is a data call and a carrier ID code is present in the TNS or NSF information element in the Q.931 SETUP message or the TNS parameter of the SS7 IAM, the call is completed as an inter-LATA call to the inter-LATA carrier.

D. Inter-LATA Carrier

2.06 The LEC *4ESS* switch routes originating inter-LATA data calls directly to the inter-LATA carrier via the CCS7 NI or via the SS7 ISUP to a via access tandem if a direct route is not available. In either case, when the inter-LATA carrier receives an inter-LATA call, the inter-LATA carrier does the following:

- Examines the data rate in the USI parameter

- Translates the 10-digit called party number

- Maps the signaling protocols

- Routes the call to the terminating LEC *4ESS* switch.

E. Terminating LEC *4ESS* Switch

2.07 The terminating LEC *4ESS* switch receives a call from the inter-LATA carrier via the CCS7 NI and checks the data rate in the USI parameter. If the call is a terminating data call, it is routed to a direct-connected PRI or to a local end office.

F. Terminating CPE PRI—Direct-Connected

2.08 When a data call is terminated and the PRI is directly connected to a LEC *4ESS* switch, the switch will map the CCS7 NI parameters to the Q.931 information elements and send a Q.931 SETUP message to the CPE.

G. Terminating CPE PRI—Nondirect-Connected

2.09 When a data call terminates at a PRI CPE via a local end office, the CCS7 NI parameters are mapped to the SS7 ISUP parameters. After mapping, an IAM is sent to the local end office. The local end office interfaces with the CPE via the PRI.

3. Provisioning

3.01 When the manual subsequent digit type **DRTC** is used to determine routing, a subsequent digit block must be manually created. Two new entries are added to allow for the 384- and 1536-kbps data rates.

4. Recording

Automatic Message Accounting (AMA) Records

4.01   The AMA billing records can accommodate both 3- and 4-digit carrier ID codes.

4.02   This feature affects the AMA recording of both inter-LATA and intra-LATA switched digital service calls. For originating inter-LATA data calls, a new AMA record (Call Code 117) and two new structure codes (645 and 647) have been generated. Structure Code 645 indicates an answered inter-LATA call. Structure Code 647 indicates a long-duration inter-LATA call. See Table 2-A for the data structures for Call Code 117.

4.03   For intra-LATA data calls that originate at the *4ESS* switch, a new AMA record (Call Code 072) and two existing structure codes (190 and 194) have been generated for this feature. Call Code 072 replaces Call Code 061 that was generated previously for intra-LATA data calls. Structure Code 190 indicates an answered intra-LATA call. Structure Code 194 indicates a long-duration intra-LATA call. See Table 2-B for the data structures for Call Code 072.

4.04   For data calls that terminate in the LATA, the *4ESS* switch will generate a terminating access charge record.

4.05   Billing provides for recording Bellcore-standard ISDN billing information in the AMA record. The Extended Bellcore AMA Format (EBAF) is used. The ISDN core module 071 (EBAF) has been appended to Call Code 117 and Call Code 072 structures as well as to the existing Call Code 121 record generated at the terminating access tandem. Module 071 contains the following AMA information:

- Network Interworking Usage (AMA Table 410)—Identifies the interworking arrangement used for a call originating from an ISDN line. The identity of the network interworking is recorded because it may affect the rate at which the user is charged for the call.

- Release Cause Indicator Usage (AMA Table 411)—Provides release cause information. When a call is terminated, the user will receive a release sequence message identifying the cause.

- Bearer Capability (AMA Table 412)—Identifies the bearer capability to the user (56-, 64-, 384-, or 1536-kbps data rate).

Table 2-A. Call Code 117 Structure—Inter-LATA Data Call

Information	Table * Number	Number of Characters
Call Type	1	4
Sensor Type	2	4
Sensor Identification	3	8
Recording Office Type	4	4
Recording Office Identification	5	8
Carrier Connect Date	6	6
Timing Indicator	7	6
Study Indicator	8	8
Answer Indicator	9	2
Service Observed, Traffic Sampled	10	2
Operator Action	11	2
Service Feature	12	4
Originating Number Plan Area (NPA)	13	4
Originating Number	14	8
Overseas Indicator	15	2
Terminating NPA	16	6
Terminating Number	17	8
Connect Time	18	8
Elapsed Time	19	10
Interexchange Carrier (IEC)/International Carrier (INC)	57	6
Carrier Connect Date	6	6
Carrier Connect Time	18	8
Elapsed Time from Carrier Connect	19	10
IEC/INC Call Event Status	58	4
Trunk Group Number	83	6
Routing Indicator	59	2
Dialing Indicator	85	2
Automatic Number Identification (ANI) Indicator	60	2
Service Indicator	41	4
Data Rate Indicator	42	4
Terminating Company	56	4
Present Data	6	6
Present Time	18	8

Structure Codes Recorded: 645 and 647

* Tables are from Standards for AMA data.

Table 2-B. Call Code 072 Structure—Intra-LATA Data Call

Information	Table * Number	Number of Characters
Call Type	1	4
Sensor Type	2	4
Sensor Identification	3	8
Recording Office Type	4	4
Recording Office Identification	5	8
Carrier Connect Date	6	6
Timing Indicator	7	6
Study Indicator	8	8
Answer Indicator	9	2
Service Observed, Traffic Sampled	10	2
Operator Action	11	2
Service Feature	12	4
Originating Number Plan Area (NPA)	13	4
Originating Number	14	8
Overseas Indicator	15	2
Terminating NPA	16	6
Terminating Number	17	8
Connect Time	18	8
Elapsed Time	19	10
Service Indicator	41	4
Data Rate Indicator	42	4
Terminating Company	56	4
Present Data	6	6
Present Time	18	8

Structure Codes Recorded: 190 and 194

* Tables are from Standards for AMA data.

5. Network Management (Not Affected)

6. Maintenance/Troubleshooting

Measurements

6.01 The AMA tracer counts for the four new AMA records are pegged as was previously done for Call Code 061 (data call). These are TOLL category and PBEAD service.

6.02 Four new traffic and plant counts (Table 2-C) for the 384-kbps and 1536-kbps data calls or call attempts have been added to the office totals peg count that is generated in the AT&T 1A Processor. The counts, which appear in the Measurement Subclass/Output Measurement Set (MSC/OMS) Report, indicate the total number of call attempts per category. These new counts do not have to be passed to any other reporting system. See Figure 2-2 for a sample MSC/OMS Report that highlights the four new counts.

Table 2-C. New Traffic and Plant Measurements

Count	Definition
BBC*-6	Originating inter-LATA 384-kbps data call attempt from a PRI
BBC-24	Originating inter-LATA 1536-kbps data call attempt from a PRI
BBC-6	Terminating inter-LATA 384-kbps data call received from an Interexchange Carrier terminating through an access tandem
BBC-24	Terminating inter-LATA 1536-kbps data call received from an Interexchange Carrier terminating through an access tandem

*BBC = broadband count

MSC 5 OFFICE TOTALS
OMS 0

INC CALL	OUTWATS ORIG	OG IT SZ	OG TC SZ	DNHR VTS	DNHR TTS	NCAT SUC
000000	000000	000000	000000	000000	000000	000000

OMS 1

MF INC SZRE	DP-DD INC SZRE	DP-IS INC SZRE	CCIS INC CALL	CCIS-2W INC SZRE	IDTS INC SZRE	IDTS-DP INC SZRE
0	0	0	0	0	0	0

IDTMFWK INC SZRE	ODTMFWK OUT SZRE	Q931 INC SZRE	Q931 OUT SZRE	Q931 CN SETUP	ISUP-2W INC SZRE	ISUP-4W INC SZRE
0	0	0	0	0	0	0

ISUP OUT SZRE	BBC-6 INC SZRE	BBC-24 INC SZRE	BBC-6 OUT SZRE	BBC-24 OUT SZRE	BSSP INC SZRE	BSSP OUT SZRE
0	0	0	0	0	0	0

NCAT ATTEMPTS	BBC-6 OPRI ATT	BBC-24 OPRI ATT	BBC-6 RCVD ATT	BBC-24 RCVD ATT
0	0	0	0	0

OMS 2

MF OPLS ATTEMPTS	DP OPLS ATTEMPTS	CCIS OG CALLS
0	0	0

Figure 2-2. Sample MSC/OMS Report—Output Measurement Sets for MSC 5

7. Transition Considerations

Network Dependencies/Interactions

7.01 This feature is dependent on the LEC Intra-LATA Switched H0/H11 feature for providing the data transport between the CPE and the LEC *4ESS* switch.

7.02 The connecting Interexchange Carriers must have the capability to support inter-LATA data calls at 56, 64, 384, and 1536 kbps before this feature can be offered to the LEC *4ESS* switches. The AT&T *4ESS* toll switch must support data calls at these rates via the CCS7 NI.

7.03 Translation and routing data must be present in the Access Tandem Transit Network Selection (ATNS) domain for the carrier ID codes that will be received. This includes the new entries of 384 kbps and 1536 kbps for the Data Rate Transfer Capability (DRTC).

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7.04 In generic 4E17, the LEC *4ESS* switch only handles a 3-digit carrier ID code. However, in generic 4E18, a 4-digit carrier ID code will be allowed.

Turn On/Turn Off Mechanism

7.05 This feature is turned on automatically by software deployment. However, translations and routing data must be present. Ubiquity of the generic across the network is not required before the feature can be fully operational.

8. Input/Output Manual Pages (Not Affected)

Improved Service Announcement and Information Collection (ISAIC) Core Feature (3082)

3

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Improved Service Announcement and Information Collection (ISAIC) Core Feature (3082)

3

1. Feature Description

1.01 Many advances have been made in the area of service announcements and information collection since the introduction of the *4ESS*™ switch. Initially, playing announcements to notify callers of incompleted calls was the only capability the *4ESS* switch had. The announcements were recorded on a rotating magnetic drum in the recorded announcement frame. With an auxiliary frame, the recorded announcement frame could store up to 20 recorded messages.

1.02 Today, service announcement and information collection functions are provided in a variety of ways. Some of the systems that provide these functions are the Network Services Complex (NSCX), the *Conversant*® Voice Information Systems (VIS), and the Digital Announcement System (DAS).

1.03 Even though these systems have undergone constant improvements, the architectures of these systems cannot easily support the expected demands for new services. There are a number of problems that are inherent in the existing systems:

■ The architecture becomes more and more cumbersome as new service offerings are implemented in the network.

■ It is expensive to add the new equipment required to provide the numbers of announcements necessary to support existing and new services.

- The cost to provision and administer the existing systems continues to escalate as the demand for new services grows.

- These systems have performance shortcomings such as post-dialing delay and call setup delay.

1.04 Since the existing systems do not have the desired flexibility to provide new services quickly and economically, a solution was needed. The Improved Service Announcement and Information Collection (ISAIC) feature is that solution.

1.05 The ISAIC feature provides the *4ESS* switch with a platform for adding new customized announcement features. With ISAIC, the following improvements in service announcements and information collection capabilities will be realized in the *4ESS* switch:

- The expense of providing announcement and input collection capabilities will be drastically reduced.

- Operation, administration, and maintenance costs will be reduced.

- Caller acceptance and sponsor satisfaction will be increased because call setup delay and service outage time will be decreased.

- The number of available generic and customized announcements will be increased.

1.06 The ISAIC feature consists of two subsystems: the Centralized Announcement Update (CAU) system and the Service Circuit System (SCS). The ISAIC CAU system provides the capability to update announcement messages on all the *4ESS* switches from one central location. It consists of the following components:

- Central Site (CS) Announcement Administration Processor (AAP)

- Field Site (FS) AAP

- Centralized Announcement Update Control System (CAUCS).

The CAUCS and the CS AAP provide central announcement control and operations. Remote operations are provided by the FS AAP under instructions from the Central Control (CC).

1.07 The SCS provides announcement playback, user input detection, and an interface to the CAU system to receive announcement updates. The SCS interface to the *4ESS* switch is via the Peripheral Unit Bus.

1.08 Two major components make up the SCS: the Service Circuit Controller (SCC)
and the Service Circuit Unit (SCU). The SCU provides announcement playback
from disk, Dual Tone Multifrequency (DTMF) detection, and the interface to the AAP to
receive announcement updates. The SCC provides the interface between the *4ESS*
switch central control and the SCU.

1.09 The ISAIC feature will be introduced in two phases. The SCS portion of the
feature is being introduced in the 4E17 Release 3 generic (phase 1), and the
CAU system will be introduced in the 4E18 Release 1 generic (phase 2).

1.10 As was mentioned earlier, the ISAIC feature provides a platform for application
features. The initial applications on ISAIC in 4E17 Release 3 will be the
Expanded Final Handling Announcements feature (3091) and the MAS Announcement
System (Televote) Using ISAIC feature (3187). These applications are covered in other
chapters in this Product Release Document (PRD). Another application, the NSCX
replacement, will be added with the CAU system in 4E19R1.

1.11 Additional information describing the ISAIC feature can be found in the following
documents:

- AT&T 201-525-010,*ISAIC System Description*

- AT&T 234-100-130,*Service Circuit System, Description*

- AT&T 234-100-210,*Service Circuit System, Application, 4ESS™ Switch*

- AT &T 201-525-014,*AAP Operations*

2. Call Flow (Not Affected)

3. Provisioning

Population and Retrieval

3.01 Office Data Administration (ODA), Recent Change (RC), and Verify forms were impacted by the ISAIC feature. Several new forms were created and a number of forms were modified.

A. New ODA Forms

3.02 Two new ODA forms (402G and 407P) were created to support the ISAIC core feature. ODA Form 402G (Service Circuit System Trunk Assignment) is used to make service circuit assignments for the SCS; ODA Form 407P (SCS Unit Type - SCU Subunit Data) is used to populate the SCU data in the SCS unit type. Figures 3-1 and 3-2 show layouts of these two new ODA forms.

```
                                   BTFN    MC      SC     FBS     NBS
        FORM CODE 2G          TSG  0000  SVC*_  _____  _***_  _____,
                  1  2              4  7  8  11  12 15  16 18  19 21

                             TAN
        QTRK    FTFN    TSI  SPC  LVL  FTS           AD

        024 ,   _____,  _____,  __,  __,  _____,      __
        46 48   49 52   53 54   55   56   57 59       80

        024 ,   _____,  _____,  __,  __,  _____,      __
        46 48   49 52   53 54   55   56   57 59       80

        024 ,   _____,  _____,  __,  __,  _____,      __
        46 48   49 52   53 54   55   56   57 59       80

        024 ,   _____,  _____,  __,  __,  _____,      __
        46 48   49 52   53 54   55   56   57 59       80

        024 ,   _____,  _____,  __,  __,  _____,      __
        46 48   49 52   53 54   55   56   57 59       80

        REMARKS _____  PAGE ____ OF ____
```

Figure 3-1. ODA Form 402G—Service Circuit System Trunk Assignment

ESS UNIT _____

FORM CODE 7P   SCS ___ DLAN __
    1 2 4   6 8   10

SCU MEMN	SVCT	SCU FV	MSBEQ						MSBFV						DSKEQ				DSKC				LANADDR	C A D	REMARKS
			0	1	2	3	4	5	0	1	2	3	4	5	0	1	2	3	0	1	2	3			
12 13	15	17	19	20	21	22	23	24	26	27	28	29	30	31	33	34	35	36	38	39	40	41	45 47	80	
00																									
02																									
03																									
04																									
05																									
06																									
07																									
08																									
09																									
10																									
11																									
12																									
13																									
14																									
15																									

Figure 3-2. ODA Form 407P—SCS Unit Type

B. Modified ODA Forms

3.03   Changes were made to the following ODA forms to support this feature:

        407C   408B
        407I   408C
        407L   408D
        407M

ODA Form 407C

3.04   ODA Form 407C is used as a source of Peripheral Unit Bus Branch assignments for the Peripheral Unit Type translations. SCS was added to the list of valid unit types.

ODA Form 407I

3.05 Form 407I is used as the hardware change level indicator source for select *4ESS* switch and Unit Type Peripheral equipment. SCS was added to the Unit Type fields on Tables A, B, and C on this form.

ODA Form 407L

3.06 This form is used as the hardware class AC change level indicator source for select *4ESS* switch and Unit Type Network—Peripheral equipment. SCS was added to the list of unit types on Table A on this form.

ODA Form 407M

3.07 Form 407M is used to record the states of the firmware status indicators. PUC (Peripheral Unit Controller) and MAS (Mass Announcement System) were removed as valid unit types on this form. MAU0 (Mass Announcement Unit 0) and MAU1 (Mass Announcement Unit 1) were also removed.

ODA Form 408B

3.08 Form 408B is a form that is used to provide MAS Barge-In Playback (BIPB) trunk information for input to the ODA system. The range for the Barge-In Trunk Traffic Number (BITFN) was changed from 0 through 511 to 1 through 511.

ODA Form 408C

3.09 Form 408C is used to define Non-Barge-In and/or Barge-In Public Announcement Service (PAS) recorded announcements. Four fields were removed from this form, and three new fields were added to support this feature.

3.10 The following fields were removed:

- **FRING** (Forced Ringing)
- **MEMN** (Member Number)
- **PCHAN** (Playback Channel Number)
- **PDN** (Direct Producer Directory Number).

3.11 The following new fields were added to ODA Form 408C:

- **SSI** (Service Circuit System TSG ID)

- **UFH** (Use Final Handling)

- **SAN** (Service Circuit System Announcement).

Fields were also added to establish a start and stop time.

3.12 Figure 3-3 shows where the new fields appear on ODA Form 408C.

```
                         ESS UNIT _____

   FORM CODE 8C                              VSSID 00000  SID _____
            1  2                                      4   8    10      16

   TYPE _____    ▆UFH▆   LENGTH _____  PLAYS _____
   18 21 23 25      27          33 35         37 38

   ANSWR __   ANNUM _____
          42        48 50

   CAREA __   CPOS __   ANSEP _____
          52        54         57 58

   ▆SSI▆       ▆SAN▆                                          CAD __
      60 63       65 68                                           80

   ▆START DATE▆

   ▆TRTM▆       ▆STRTD▆        ▆STRTY▆
   18 22 24 25        26 27          28 29

   ▆TRTT▆    :  _____  ▆STOPT▆       :                          AD __
          40 41 42 43          45 46 47 48                         80

                  SPECIAL HANDLING

   ADSI_ _____      ADFHT _____    ANNUM _____                  AD __
   18 21 23 24            26 28          34 36                     80

   REMARKS _____ PAGE ____ OF ____
```

Figure 3-3. ODA Form 408C—PAS Announcement

ODA Form 408D

3.13 This form is used to define Cut-Through Applications for PAS. SCS was added as a Service Identity (SID) entry on this form. Also, the Barge-In (BI) range was changed from 9999001 through 9999512 to 9999001 through 9999511, and the entry for Voice Storage System Identity (VSSID) was changed from 0 through 99999 to 0. The Cut-Through Number (CTN) field was added to this form. Figure 3-4 shows where this new field appears on the form.

Figure 3-4. ODA Form 408D—PAS with Cut-Through Definition

C. New RC Forms

3.14   A new RC Form (Form 703) was created to support the ISAIC Core feature. This form is used to assign or change the SCU data in the SCS unit type. Figure 3-5 shows the layout of RC Form 703.

```
RC:UTYPE;CHG;OPT(SCU),TST:              SCS _, SCU ____, DLAN _,

ORNU _____,

SVCT _,  SCUFV _,  LANADDR ____,

    MSBEQ           MSBFV        DSKEQ       DSKC
  0 1 2 3 4 5     0 1 2 3 4 5   0 1 2 3    0 1 2 3

  _'_'_'_'_'_'   _'_'_'_'_'_'   _'_'_'_'   _'_'_'_'


REMARKS _____,
```

Figure 3-5. Recent Change Form 703—Change SCU Data

D. Modified RC Forms

3.15   In addition to the new RC form, entries were added or changes made to fields on the following RC forms:

200	610	700
202	611	701
604	612	801
605		

RC Form 200

3.16   The capability to add new trunks to the SCS frame was added to RC Form 200.

RC Form 202

3.17   RC Form 202, which is used to delete message and Voice Frequency Link (VFL) trunks, was modified to include the removal of SCS trunks.

RC Forms 604 and 605

3.18 RC Forms 604 and 605 are used to add or change a Public Announcement Service (PAS) announcement. Three new fields were added to these forms to support this feature: **SSI** (Service Circuit System TSG ID), **UFH** (Use Final Handling), and **SAN** (Service Circuit System Announcement). (RC Form 604 is used to add a PAS announcement and RC Form 605 is used to change a PAS announcement.)

3.19 Four fields were removed from previous versions of these forms: **FRING** (Forced Ringing), **MEMN** (Member Number), **PCHAN** (Playback Channel Number), and **PDN** (Direct Producer Directory Number).

3.20 Figure 3-6 shows the layout of the modified RC Form 604. The new fields that were added to this form are highlighted. Since the layout of RC Form 605 is identical to RC Form 604, only RC Form 604 is shown.

```
RC:PAS;NEW;OPT(ANN);___: TYPE ___, [UFH  ], VSSID _____, SID _____,

ORNU _____,

START TIME
   STRTT ___:___,
STOP TIME
   STOPT ___:___,

LENGTH ____, PLAYS ___,

ANSWR _, ANNUM ____,

CAREA _, CPOS _, ANSEP ____,

[SSI     ], [SAN      ],

       SPECIAL HANDLING

ADSI ___, ADFHT ____, ANNUM ____,


REMARKS _____!
```

Figure 3-6. Recent Change Form 604—Add a PAS Announcement

RC Forms 610, 611, and 612

3.21 These forms are used to add, change, or delete the Cut-Through function to a PAS announcement. SCS was added as a Service Identity (SID) entry on these forms. Also, the Barge-In (BI) range was changed from 9999001 through 9999512 to 9999001 through 9999511, and the entry for Voice Storage System Identity (VSSID) was changed from 0 through 99999 to 0.

RC Forms 700, 701, and 801

3.22 Forms 700 and 701 are used to change the equipage state of *4ESS* switch
equipment for growth or degrowth. Form 801 is used to modify a word of data in
the Miscellaneous Scanner Number (MSN), Miscellaneous Distributor Number (MDN), or
Unit Type translator. SCS was added to the list of unit types (UTYNs) on these forms.
In addition, PUC and MAS were removed from the **ENTRY** field on Form 801.

E. Modified Verify Forms

3.23 Changes were made to the following Verify output forms or entries on these
forms to support this feature:

6e	7a
6f	7b
6g	7c

Verify Output Form 6e

3.24 This form verifies all PAS announcements currently defined in the office. SCS
was added as a Service Identity (SID) entry on this form. Also, the Barge-In (BI)
range was changed from 9999001 through 9999512 to 9999001 through 9999511, and
the entry for Voice Storage System Identity (VSSID) was changed from 0 through 99999
to 0.

Verify Output Form 6f

3.25 This Verify output displays detailed information about one PAS announcement.
Three new fields were added to this verify output message to support this feature:
SSI (Service Circuit System TSG ID), **UFH** (Use Final Handling), and **SAN** (Service
Circuit System Announcement).

3.26 The following fields were removed:

- **FRING** (Forced Ringing)

- **MEMN** (Member Number)

- **PCHAN** (Playback Channel Number)

- **PDN** (Direct Producer Directory Number).

In addition to fields being removed, numerous other changes were made to this form.

3.27 Figure 3-7 shows the modified Verify Form 6f. New fields that appear on this form are highlighted.

```
VER:PASANNN(OPT,ANN); ---:


  TYPE ---,  ▮▮▮▮ -,  VSSID ----,  SID ------,

  STRTT --:--,  STRTM --,  STRTD --,  STRTY --,
  STOPT --:--,

  LENGTH ---,   PLAYS ---,  ANSEP ---,

  ANSWR -,   ANNUM ---,

  CAREA -,  CPOS -,

  CAPPN --,

  ▮▮▮ ----,  ▮▮▮ ----,

        SPECIAL HANDLING

  ADSI --,   ADFHT ---,   ANNUM ---,
```

Figure 3-7. Verify Form 6f—Detailed Information About a PAS Announcement

Verify Output Form 6g

3.28 This message lists the data stored in translation that applies to a particular PAS with Cut-Through. SCS was added as a SID entry on these forms. Also, the Barge-In (BI) range was changed from 9999001 through 9999512 to 9999001 through 9999511, and the entry for VSSID was changed from 0 through 99999 to 0.

Verify Output Forms 7a, 7b, and 7c

3.29 Forms 7a and 7b are used to verify the member and submember equipage for a unit type translator. Form 7c verifies the ENTRY for a specified unit type and member number. PUC and MAS were removed from the list of valid unit types, and SCS was added to the list on these Verify forms.

4. Recording (Not Affected)

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5. Network Management

5.01 The ISAIC feature has impacted network management in the following ways:

■ Commands have been added to the Network Management Operations System (NEMOS) and the Regional Network Management System (RNMS) to support the increased number of network announcements.

■ The announcement identifier table was expanded to handle the increased number of network announcements.

■ Traffic measurement data relating to ISAIC service circuits was added to the data collected by NEMOS and RNMS.

6. Maintenance/Troubleshooting

Fault Recovery

6.01 Existing troubleshooting tools such as alarm indicators, interrupts, audits, routine diagnostic checks, etc., have been modified to support the ISAIC hardware and software. A Task Oriented Practice (TOP) document, AT&T 234-151-077, *Service Circuit System, Maintenance*, has been created to support the maintenance of the SCS. This document covers topics such as F-level interrupt analysis, running diagnostics, and replacing equipment and circuit packs. The procedures included in the TOP document should solve most SCS related problems; however, problems that are not fixed by circuit pack or equipment replacement need to be passed on to a support center.

6.02 Several utilities have been created specifically to assist support personnel in clearing SCS-related problems. These utilities, which are only intended to be used by support personnel, give support centers a means of gathering SCS information directly from an office.

6.03 The SCS utilities provide support personnel with the following capabilities:

■ The ability to establish breakpoints in the controller and in each SCU of an SCS frame so that information can be saved when the breakpoint is triggered

■ The ability to write data or instructions to the addressable memory of an SCS frame

■ The ability to read either data or instructions from the addressable memory of an SCS frame

■ The ability to fix SCS disk problems by reading and/or writing to SCS disks via the 1A Processor Maintenance Channel (MTC).

6.04 Information for using these utilities can be found in two places: the Input/Output manual pages and the *User's Guide for the SCS Breakpoints and Memory Utilities Capability.* The Input/Output manual pages are included with this PRD; the User's Guide will be made available to support centers.

Measurements

6.05 Changes were made to the following Message Subclasses (MSCs) to support the ISAIC feature:

- MSC 0

- MSC 3

- MSC 23

- MSC 24

6.06 The highlighted counts shown on Figure 3-8 are the new counts that were added to Output Measurement Set 2 (OMS 2) of Message Subclass 0 (MSC 0).

```
MSC 0   MF XMTR,   SCS CKTS,   IDTS RCVR,   ODTMFWK XMTR,   AND BLUE BOX FRAUD
OMS 0    MF XMTR,   IDTS RCVR,   AND ODTMFWK   XMTR QUEUE-DOMESTIC


                          .

                          .

                          .


OMS 2      MF,   DTMF XMTRS, MSCX AND MASFH   CKTS
                   MF    DTMF XMTR     MSCX          MSFHA          MSFHB
SEIZURE            0        0           0             0              0
SVC USAGE          0        0           0             0              0
OVERFLOW           0        0           0             0              0
MTC USAGE          0        0           0             0              -


OMS 3      BLUE BOX FRAUD
     OVERLOAD      ATTEMPTS    DETECTED     PERSIST     MFR SZ     MFR CCS
         0             0           0            0           0          0


                          .

                          .

                          .
```

Figure 3-8. New OMS 2 Counts on Message Subclass 0 (MSC 0)

6.07 Figure 3-9 shows the new Message Subclass 3 (MSC 3). The Output Measurement Sets that were added to this report are highlighted.

MSC 3 OMS	ANCMT TYPE	CKT SZRE	USAGE	OVFL
0	xxx	0	-	-
1	xxx	0	-	-
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
30	xxx	0	-	-
31	xxx	0	-	-
32	TSI 0	-	0	0
	TSI 1	-	0	0
	TSI 2	-	0	0
	TSI 3	-	0	0
	TSI 4	-	0	0
	TSI 5	-	0	0
	TSI 6	-	0	0
	TSI 7	-	0	0
	TSI 8	-	0	0
	TSI 9	-	0	0
	TSI 10	-	0	0
	TSI 11	-	0	0
	TSI 12	-	0	0
	TSI 13	-	0	0
	TSI 14	-	0	0
	TSI 15	-	0	0
33	***	0	-	-
34	AR	0	-	-
.	.	.	.	.
.	.	.	.	.
159	S17	0	-	-
160	S18	0	-	-

Figure 3-9. New MSC 3 Output Measurement Sets

6.08 Figure 3-10 shows the new counts that were added to OMS 3 on Message Subclass 23 (MSC 23).

```
MSC 23 PERFORMANCE MEASUREMENTS - EQUIPMENT TYPE - PROCESSOR
OMS 0  MAINTENANCE OCCUPANCIES
   PROCESSOR    NETWORK   SERV CIRC
        0          0          0


               .
               .
               .

OMS 2 PERIPHERAL UNIT MTCE USAGE AND OUTAGE
                 TSI     TMS     TGR     TER     NCLK     SCLK     NCSU
   MTCE USAGE     0       0       0       0       0        0        0
   OUTAGE         0       0       0       0       0        0        0

OMS 3    PER CALL SERVICE CIRCUITS ACCUM MAINT OCC
      MF RCVR   DTMF RCVR   MF XMTR   DTMF XMTR
         0          0          0          0
      █CX█     █MFHA█    CCIS XMTR
      █0█      █0█           0

OMS 4  VFL ACCUM MAINT OCC

      DOM       0
      INT       0


OMS 5  1B MTCE USAGE
      MUP      AUI      IFB      SSD      XPWR
       0        0        0        0        0
```

Figure 3-10. New Counts on Message Subclass 23 (MSC 23)

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6.09   Figure 3-11 shows the new terminal equipment types that were added to
Message Subclass 24 (MSC 24).

```
MSC 24 PERFORMANCE MEASUREMENTS - TERMINAL EQUIPMENT
OMS 0   TOTAL ACCUMULATED MAINTENANCE OCCUPANCY
   TERMINAL EQUIPMENT
            0

                        .
                        .
                        .

OMS 2   TERMINAL EQUIPMENT
           UNIT     LOC     NONLOC   ---DIAG REQ----   ---DIAG ATP----
           ERRORS   FAULTS  FAULTS   PROG    MANUAL    PROG    MANUAL
   SP        0        0       0       0        0        0        0
   VIC       0        0       0       0        0        0        0
   VIU       0        0       0       0        0        0        0
   DTC       0        0       0       0        0        0        0
   DTU       0        0       0       0        0        0        0
   DIF       0        0       0       0        0        0        0
   DIU       0        0       0       0        0        0        0
   ESC       0        0       0       0        0        0        0
   ESU       0        0       0       0        0        0        0
   CS        0        -       -       -        -        -        -
   CU        0        -       -       -        -        -        -
```

Figure 3-11. New Terminal Equipment Added to Message Subclass 24 (MSC 24)

Audits

6.10   The ISAIC feature also had an impact on the audit system. New Trunk Register
(TR) states and a new polling mask were created to support this feature. These
new additions impacted Audits 8, 32, and 33.

6.11   Audit 8 (Trunk Register Audit) was modified to include two new Trunk Register
(TR) state codes.

6.12   Audit 32 (the Polling Masks, Stack Checks, Entry Checks for SIMRMNTR Audit)
was modified to validate the polling mask defined to support this feature.

6.13   Audit 33 (Traffic Separations Counters) was modified so that a TR is checked for
association with Customer Calls to the Public Announcement System (CCPAS)
before trying to get the cell grouping number of the TR.

7. Transition Considerations

7.01 Changes/modifications were made to the following network elements to support ISAIC:

- Network Control Point (NCP)

- Advanced Feature Service Center (AFSC)

- Network Operations Center (NOC)

- Centralized Announcement Update Control System (CAUCS)

- No. 2 Switching Center Control System (SCCS)

- Integrated Routing Assignment System (IRAS)

- Network Management Operations System (NEMOS)

- Data Acquisition Reports and Integrated Communications System (DARICS)

- Trunk Operations Provisioning Administration System (TOPAS).

Turn On/Turn Off Mechanism

7.02 This feature is turned on automatically by software deployment. It is not necessary for all *4ESS* switches in the network to be running the 4E17 Release 3 generic for this feature to be fully operational.

8. Input/Output Manual Pages

8.01 Numerous input and output messages were created or modified to support the
ISAIC Core feature. Tables 3-A and 3-B identify the new and modified input
messages; Tables 3-C and 3-D identify the new and modified output messages.

Table 3-A. New Input Messages

Message	Type	Purpose
ANALY:SCS	Input	Requests demand analysis strategy of SCS frame or SCU
CLR:BP;SCS*	Input	Clears all breakpoints from either an SCS frame, from the frame controllers only, or from an SCU only
DGN:SCS	Input	Diagnoses a specified SCS
DUMP:DISK-SCS	Input	Provides the capability to dump (read) up to 64 words of hexadecimal data from a specified SCU disk location
DUMP:MEMORY-SCS*	Input	Provides the capability to read the specified number of words of memory from either the SCS controller or an SCU
DUMP:SCS	Input	Dumps SCS frame CREG or IREG registers or SCU IREG registers
EX:SCS	Input	Exercises the SCS in an interactive diagnostic mode
LOAD:DISK-SCS	Input	Enables field support personnel to write a 16-bit word of hexadecimal data onto a designated SCU disk location
LOAD:MEMORY-SCS*	Input	Enables field support personnel to write a specified word of memory into either the SCS controller or an SCU
LOAD:SCS	Input	Loads SCS registers or SCU registers with data specified through a mask
OP:BP-SCS*	Input	Lists the address and type of each breakpoint currently set in an SCS frame, in the frame controllers only, or in an SCU only.

See Footnote at end of table.

Table 3-A. New Input Messages (Contd)

Message	Type	Purpose
RMV:SCS	Input	Removes the specified SCS frame submember from service
RST:SCS	Input	Restores the specified SCS to service
SET:BP-SCS*	Input	Enables field support personnel to set a breakpoint in either the controller(s) or an SCU in an SCS frame.
STOP:ANALY	Input	Stops a demand analysis (DAT)/demand analysis state (DATS) of an SCS frame or an SCU
STOP:COPY	Input	Stops an intra-service SCU disk copy or an attached processor system (APS) to SCU file copy
STOP:INIT	Input	Stops the format (init) of an SCU disk
SW:SCS	Input	Switches the activity of controllers within the specified SCS
UPD:SCS*	Input	Replaces the software in one SCS controller with another software version and makes the controller active
VER:SCS-FHT	Input	Used to request information on a per-announcement basis for input final handling treatments

* This message is to be used only under the direction of technical support personnel.

Table 3-B. Modified Input Messages

Message	Type	Purpose
VER:UTYPE	Input	Verifies the unit type member equipage, submember equipage, or an octal dump of the specified unit type translator
VER:PASANN:	Input	Verifies the PAS announcement data associated with the VSSID/service identification, the barge-in or SCS announcements, or all announcements

Table 3-C. New Output Messages

Message	Type	Reason for Output
CLR:BP-SCS	Output	Prints in response to a message to clear all breakpoints. This output message can have three different forms depending on which breakpoints are being cleared.
COPY:SCS	Output	Prints in response to a request for SCU file or disk copies
DGN:SCS-ILL	Output	Idenifies illegal diagnostic phases that were requested on a SCS diagnostic request
DGN:SCS-MIS	Output	Prints diagnostic results for an SCS on a phase basis
DGN:SCS-NOT	Output	Reports that diagnostic request cannot be started
DGN:SCS-PUB	Output	Specifies the diagnostic results and the termination mode at the end of an SCS diagnostic
DGN:SCS-TERM	Output	Reports an early termination of an SCS diagnostic
DUMP:DISK-SCS	Output	Prints in response to a message to read data from a specified SCU disk location
DUMP:MEMORY-SCS	Output	Prints in response to a message to read from SCS controller or SCU memory
DUMP:SCS-IREG	Output	Dumps the SCS internal registers
EX:SCS	Output	Specifies the diagnostic results and the termination mode at the end of an SCS diagnostic
EX:SCS-ADDR	Output	Indicates that an illegal address was used for an interactive diagnostic function on an SCS
EX:SCS-ILL	Output	Reports that illegal diagnostic phases were requested on an SCS interactive diagnostic request
EX:SCS-LOOP	Output	Indicates that the interactive diagnostic on an SCS is repeatedly executing consecutive segments of code
EX:SCS-NOT	Output	Reports that the SCS diagnostic request cannot be started

Table 3-C. New Output Messages (Contd)

Message	Type	Reason for Output
EX:SCS-SUSP	Output	Reports that an SCS interactive diagnostic is suspended
EX:SCS-TERM	Output	Reports that an SCS interactive diagnostic terminated early
EX:SCS-TEST	Output	Reports that SCS diagnostic results are printed on a phase basis
INIT:SCS	Output	Response to an INIT:SCS input message requesting the format of an SCU disk
LOAD:DISK-SCS	Output	Prints in response to a request to write data to an SCU disk location
LOAD:MEMORY-SCS	Output	Prints in response to a message to write to SCS controller or SCU memory
OP:BP-SCS	Output	Prints in response to a message to list the breakpoints that are set
REPT:BP-SCS	Output	Indicates a breakpoint was triggered in an SCS frame
RMV:SCS	Output	Response to a request to remove an SCS frame from service
RST:SCS	Output	Reports results of a restoral request
SET:BP-SCS	Output	Prints in response to a message to set breakpoints
STOP:COPY	Output	Response to a STOP:COPY input message to stop the SCU disk copy
STOP:INIT	Output	Response to a STOP:INIT input message request to stop the SCU format process
SW:SCS	Output	Reports the disposition of the SCS switch message
UPD:SCS	Output	Response to UPD:SCS input message requesting that SCS controllers be updated to a new generic program

Table 3-D. Modified Output Messages

Message	Type	Reason for Output
VER:PASANN;OPT(ANN)	Output	Displays detailed information about a PAS announcement
VER:PASANN,OPT(LIST)	Output	Verifies all PAS announcements currently defined in an office
VER:PASCTHRU	Output	Lists the external announcement identification, start and stop dates and time, cut-through number, gap index, and announcement number

                              ID . . . . ANALY:SCS
                              WORK CENTER. . MOC
                              GENERIC. . . . . . . 4E17 Rel. 3 and later
                              CLASS . . . . PUMTC
                              APPLICATION . . 4E
                              TYPE . . . . Input

1. PURPOSE

Requests specific demand analysis strategy of service circuit system (SCS) frame or
service circuit unit (SCU).

2. FORMAT

ANALY:SCS a, {**CONTR** b|**SCU** c}:**DAT** d, **DATS** e!

3. EXPLANATION OF MESSAGE

a	SCS frame member number.
b	Controller (0-1).
c	SCU member number (0-15).
d	Demand analysis (DAT) number (0-7).
e	DAT state (DATS) number (0-7).

4. SYSTEM RESPONSE

None.

5. REFERENCES

PIDENTs
  SCSFERAP
  FERAMANC

<div align="center">

CAUTION

This message may be service-affecting.
See explanation at end of message.
</div>

ID .... CLR:BP-SCS
WORK CENTER.. MOC
GENERIC....... 4E17 Rel. 3 and later
CLASS .... PUMTC
APPLICATION .. 4E
TYPE .... Input

1. PURPOSE

This command clears all breakpoints from a service circuit system (SCS) frame, or from the frame controllers only, or from a service circuit unit (SCU) only.

2. FORMAT

To clear all breakpoints in a simplex SCS controller or duplex SCS controllers:

[1]   **CLR:BP;SCS** a!

To clear all breakpoints in a SCU:

[2]   **CLR:BP;SCS** a,**SCU** b!

To clear all breakpoints in an SCS frame (controllers and SCUs):

[3]   **CLR:BP;SCS** a:**ALL**!

3. EXPLANATION OF MESSAGE

a   SCS member number in decimal (0-7).

b   SCU number in decimal (0-15).

ALL   Clear all breakpoints of the specified frame.

4. SYSTEM RESPONSE

PF   The breakpoints will be cleared in the specified unit(s). A CLR:BP-
                SCS output message follows indicating the results of the request.

5. REFERENCES

PIDENT
  SCSBPMEM

Input Messages
  OP:BP-SCS
  SET:BP-SCS

Output Messages
  CLR:BP-SCS
  OP:BP-SCS

<div align="center">

SEE PROPRIETARY NOTICE ON COVER PAGE
</div>

CAUTION

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.

> ID . . . . DGN:SCS
> WORK CENTER . . MOC
> GENERIC . . . . 4E17 Rel. 3 and later
> CLASS . . . . PMTC
> APPLICATION . . 4E
> TYPE . . . . Input

1. PURPOSE

Diagnoses the specified service circuit system (SCS).

2. FORMAT

    DGN:SCS a,{IPUB b|CONTR c|SCU d}[;[RPT e][,RDT f][,RAW][,UCL]
      [:[PUB g][,PH h][,GROWTH][,TLP]]!

3. EXPLANATION OF MESSAGE

a	Member number of the SCS.
b	SCS bus circuitry to be diagnosed (0 or 1).
c	Controller to be diagnosed (0 or 1).
d	Service circuit unit (SCU) to be diagnosed (0-15).
e	The number of times the diagnostic is to be repeated. Default is one time. Maximum value is 255.
f	The channel to which the output messages are redirected. Default is output on the input channel. See Section 2 of the *Input Messages* manual for the list of channel names.
RAW	Print the diagnostic results of every phase. Default only prints the first five failures of any failing phase. This also applies to the firmware diagnostics.
UCL	Unconditionally execute the diagnostic with no early termination. This also applies to the firmware diagnostics.
Note:	The UCL and TLP parameters should not be used together.
g	The peripheral unit bus (PUB) to be used in executing the diagnostic (0 or 1). This input is valid only when CONTR is specified and the SCS is in growth or special growth.
h	The phase numbers to be executed (1,2,4-7,9,12-16 for CONTR); (1,3-17,90-97 for SCU); 99 for the interface peripheral unit bus (IPUB), which may be a single decimal number, a range or a list.
GROWTH	Diagnose the growth parts in addition to the operational parts.

TLP   Execute the trouble location raw data compression programs at the conclusion of the diagnostic in order 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   Diagnostics are not available from the disk system. (Clear the Duplex failure or use SYSRTPAD/TPAD.)

PF   Printout follows. Followed by DGN:SCS-[unit] output message.

5. REFERENCES

PIDENTs
 PUDGSS01 - PUDGSS02
 PUDGSS04 - PUDGSS07
 PUDGSS09
 PUDGSS12 - PUDGSS16
 PUDGSV01
 PUDGSV03 - PUDGSV17
 PUDGSV90 - PUDGSS97

Practice 234-180-020, *Diagnostic Language - DIAL*
Practice 234-180-260, *4ESS*^{TM} *Peripheral Diagnostic Programs*

Output Messages
 DGN:SCS-[unit]

ID .... DUMP:DISK-SCS
WORK CENTER.. MOC
GENERIC....... 4E17 Rel. 3 and later
CLASS .... PUMTC
APPLICATION .. 4E
TYPE .... Input

1. PURPOSE

Dumps up to 64 words (16 bits per word) of hexadecimal data starting at the designated location of the specified service circuit unit (SCU).

2. FORMAT

DUMP:DISK;SCS a,SCU b,DSK c[,BUS d]{,FILE e|,RAW},HADR (f1,f2)[,L g]!

3. EXPLANATION OF MESSAGE

a	Service circuit system (SCS) member number (0-7).
b	SCU member number (0-15).
c	SCU disk pair number (0-3). This specifies the SCU disk pair the data will be read from.
d	SCU disk bus number (0 or 1). This specifies from which disk of the disk pair the data will be read from. The default value is bus 0.
e	SCU file descriptor number (1-127).
f1,f2	Starting address on the disk. The address is either 24 bits (for file dump) or 32 bits (for raw dump). The address is in hexadecimal which should be broken into two 16 bit words (f1 is the high address and f2 is the low address).
Note:	The low byte of the low address (i.e., the least two significant hexadecimal characters) plus the length minus one should be less than or equal to 0xFF.
g	Number of 16 bit words to be read from the disk. The number of words is in decimal and its default value is 1 word (1-64).

4. SYSTEM RESPONSE

?D	The SCU disk dump request has been denied. An expected keyword argument is missing.
?I	The SCU disk dump request has been denied for one of the following reasons: An expected keyword is missing. A keyword argument is out-of-range. An invalid argument was used. Too many keywords or arguments.

PF	Printout follows. The SCU disk dump request is accepted. An output message will follow to indicate the status of SCU disk dump request.
RL	Retry later. The SCU disk dump request has been denied. Too many tasks in progress.

5. REFERENCES

PIDENT
    SCSFPUMP

CAUTION	ID . . . . DUMP:MEMORY-SCS
This message may be service-affecting.	WORK CENTER. . MOC
See explanation at end of message.	GENERIC . . . . 4E17 Rel. 3 and later
	CLASS . . . . PUMTC
	APPLICATION . . 4E
	TYPE . . . . Input

1. PURPOSE

This command dumps (reads) the specified number of words of memory from either the service circuit system (SCS) controller or a service circuit unit (SCU):

2. FORMAT

To read memory of SCS controllers:

[1]   DUMP:MEMORY;SCS a[,CONTR b],{MRAM c | GRAM d | LRAM e}[,L f]!

To read memory of an SCU:

[2]   DUMP:MEMORY;SCS a,SCU g,{MRAM h | TRAM i}[,L f]!

3. EXPLANATION OF MESSAGE

a	SCS member number in decimal (0-7).
b	Controller (0 or 1). Default is the active controller. Controller may not be specified if the frame is duplex or listen-only mode.
c	SCS controller micro-instruction random access memory (RAM) memory address in hexadecimal. Valid range is 0 through FFFF.
d	SCS controller global RAM memory address in hexadecimal. Valid range is 0 through 3FFFF. Any address greater than 16 bits of data is specified in two 16-bit increments. For example, (3,FFFF) represents an address of 3FFFF.
e	SCS controller local RAM memory address in hexadecimal. Valid range is 0 thru FFFF.
f	Number of words to read in decimal (1-128). Default is 1.
g	SCU number in decimal (0-15).
h	SCU micro-instruction read only memory (ROM) (0-3FFF)/RAM (4000-BFFF) memory address in hexadecimal. Valid range is 0 - BFFF.
i	SCU table RAM memory address in hexadecimal. Valid range is 0 thru FFFFF, where first hex digit is segment number. Any address greater than 16 bits of data (4 characters) is specified in two 16-bit increments. For example, (3,FFFF) represents an address of 3FFFF, location FFFF in segment 3. Default for the segment number is zero.

SEE PROPRIETARY NOTICE ON COVER PAGE

4. SYSTEM RESPONSE

PF   A request will be sent to the frame to read the specified memory. A
                       DUMP:MEMORY-SCS output message follows, indicating the results of
                       the request.

5. REFERENCES

PIDENTs
  SCSBPMEM

Input Message
  LOAD:MEMORY-SCS

Output Messages
  DUMP:MEMORY-SCS
  LOAD:MEMORY-SCS

CAUTION

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.

ID . . . . DUMP:SCS
WORK CENTER . . MOC, TEC
GENERIC . . . . 4E17 Rel. 3 and later
CLASS . . . . PMTC
APPLICATION . . 4E
TYPE . . . . Input

1. PURPOSE

Format 1 dumps the service circuit system (SCS) frame CREG or IREG registers.
Format 2 dumps the service circuit unit (SCU) IREG registers.

2. FORMAT

[1]   DUMP:SCS a, [CREG|IREG] !

[2]   DUMP:SCS a, [CONTR b,] SCU c, IREG] !

3. EXPLANATION OF MESSAGE

a   SCS member number.

b   Controller number (0 or 1).

c   SCU member number (0-15).

4. SYSTEM RESPONSE

PF,CODE 091   Printout will automatically follow.

5. REFERENCES

PIDENT
  PULPMAIN
  PULPDFSS

                                              ID . . . . EX:SCS
                                              WORK CENTER. . MOC
                                              GENERIC. . . . . . . 4E17 Rel. 3 and later
                                              CLASS . . . . PUMTC
                                              APPLICATION . . 4E
                                              TYPE . . . . Input

1. PURPOSE

Exercises in an interactive diagnostic mode the service circuit system (SCS). This message has five formats.

2. FORMAT

To start the interactive diagnostic:

[1]   **EX:SCS** a{,**CONTR** b|,**SCU** c};**START**[:[**PUB** d][,**GROWTH**]]!

To modify, that is, to add or delete, the options that apply during the diagnostic execution:

[2]   **EX:SCS** a[;[**RDT** e][,**DLT**]][:[**PAUSE** f][,**FFAIL**][,**SYNC** g]
        [,**ENABLE** h]]!

To step the diagnostic execution:

[3]   **EX:SCS** a;**STEP** [i][:**PH** j]!

To loop within the diagnostic, to advance to the specified address, or to execute the specified phase or phases:

[4]   **EX:SCS** a[;**RPT** k][:[**PH** i][,**ADR** l]]!

To stop an infinite loop or continue execution of a phase currently suspended by format (3) or (4):

[5]   **EX:SCS** a!

3. EXPLANATION OF MESSAGE

a	SCS member number to be exercised (0-7).
b	Controller to be exercised (0 or 1).
c	Service circuit unit (SCU) to be exercised (0-15).
START	Start the exercise of the specified unit. The exercise will be active until terminated by a STOP:MACLI input message.
d	Helper peripheral unit bus (PUB) member number. This input is valid only when CONTR is specified and the SCS is in GROWTH or

SPECIAL GROWTH.

GROWTH	Diagnose the growth parts in addition to the operational parts.
e	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** f, **SYNC** g, **ENABLE** h. The action to delete must be specified.
f	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 inputing the **EX:SCS** message with no optional parameters.
FFAIL	Suspend diagnostic execution after the first test failure has occurred. Execution is resumed by the **EX:SCS** command with no optional parameters specified. The diagnostic is suspended at the first legal segment point following the first test failure.
g	The address to be executed to generate a synchronous (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 PUB.
h	The test to be executed before enabling the function loop, sync, advance or step.
i	The number of segments the diagnostic execution are stepped. If no phase is currently active, a phase number must be specified. If defaulted, one segment is executed. If automatic segmenting is active, one segment equates to one DIAL statement.
j	The 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.
k	The number of times the diagnostic is repeated. Maximum value is 255. If the **ADR** parameter is specified with a range of addresses, the default value is infinity; otherwise, the default value is one.
l	Execute the specified address range. 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, then a phase number must be specified.

Note: In the exercise 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 DGN:SCS input message.

4. SYSTEM RESPONSE

?R, DPLX FAIL	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:SCS output message(s).
RL	Retry later. Indicates the diagnostic is not in the interactive mode or is not ready for input.

5. REFERENCES

PIDENT
   DCONMAIN
   MIRA
   PUDGCONT

Practice 234-180-020, *Diagnostic Language - DIAL*
Practice 234-180-260, *4ESS*[TM] *Peripheral Diagnostic Programs - Description*

PA-4A002-01, *4ESS*[TM] *User's Manual*

Input Messages
   DGN:SCS
   CLR:MACLI
   OP:MACLI
   STOP:MACLI

Output Message
   EX:SCS

>   ID . . . . LOAD:DISK-SCS
>   WORK CENTER. . MOC
>   GENERIC. . . . . . . 4E17 Rel. 3 and later
>   CLASS . . . . PUMTC
>   APPLICATION . . 4E
>   TYPE . . . . Input

1. PURPOSE

Writes one word (16 bits) of hexadecimal data onto the designated location of the specified service circuit unit (SCU) disk pair.

2. FORMAT

LOAD:DISK;SCS a,SCU b,DSK c{,FILE d|,RAW[,BUS e]},HADR (f^1,f^2) [:HDATA g] !

3. EXPLANATION OF MESSAGE

a	Service circuit system (SCS) member number (0-7).
b	SCU member number (0-15).
c	SCU disk pair number (0-3). This specifies the SCU disk pair the data will be written to.
d	SCU file descriptor number (1-127).
e	SCU disk bus number (0 or 1). For a load disk raw request, the SCU bus number specifies on which disk of the disk pair the data will be written. For a load disk file request, the data will be written to both disks of the specified SCU disk pair.
f^1,f^2	Address on the disk. The address is either 24 bits (for file load) or 32 bits (for raw load). The address is in hexadecimal which should be broken into two 16 bit words (f^1 is the high address and f^2 is the low address).
g	Data in hexadecimal consisting of 16 bits.

4. SYSTEM RESPONSE

?D	The SCU disk load request has been denied. An expected keyword argument is missing.
?I	The SCU disk load request has been denied for one of the following reasons:

    1. An expected keyword is missing.

    2. A keyword argument is out-of-range.

    3. There are too many keywords or keyword arguments.

PF	Printout follows. The SCU disk load request is accepted. An output message will follow to indicate the status of SCU disk load request.

RL | Retry later. The SCU disk load request has been denied. Too many tasks in progress.

5. REFERENCES

PIDENT
SCSFPUMP

CAUTION	ID . . . . LOAD:MEMORY-SCS

CAUTION
This message may be service-affecting.
See explanation at end of message.

ID . . . . LOAD:MEMORY-SCS
WORK CENTER . . MOC
GENERIC . . . . 4E17 Rel. 3 and later
CLASS . . . . PUMTC
APPLICATION . . 4E
TYPE . . . . Input

1. PURPOSE

This command loads (writes) the specified word of memory into either the service circuit system (SCS) controller or a service circuit unit (SCU).

2. FORMAT

To write memory of SCS controllers:

[1]   **LOAD:MEMORY;SCS** a[,**CONTR** b],{**MRAM** c | **GRAM** d | **LRAM** e}
        :**HDATA** f[,**HMSK** g]!

To write memory of an SCU:

[2]   **LOAD:MEMORY;SCS** a,**SCU** h,{**MRAM** i | **TRAM** j}:**HDATA** k[,**HMSK** l]!

3. EXPLANATION OF MESSAGE

a   SCS member number in decimal (0-7).

b   Controller (0 or 1). Default is the active controller. Controller may
             not be specified if the frame is duplex or listen-only mode.

c   SCS controller micro-instruction random access memory (RAM)
             memory address in hexadecimal. Valid range is 0 through FFFF.

    Note: The controller program memory audit must be turned off before the
             controller micro-instruction RAM memory is written to prevent
             interrupts. Contact the Technical Assistance Center for further
             information.

d   SCS controller global RAM memory address in hexadecimal. Valid
             range is 0 through 3FFFF. Any address greater than 16 bits of data is
             specified in two 16-bit increments. For example, (3,FFFF) represents
             an address of 3FFFF.

e   SCS controller local RAM memory address in hexadecimal. Valid
             range is 0 thru FFFF.

f   Controller data to write in hexadecimal. **LRAM** or **GRAM** 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.

g   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.

h   **SCU** number in decimal (0-15).

i   SCU micro-instruction RAM memory address in hexadecimal. Valid range is 4000 - BFFF.

j   SCU table RAM memory address in hexadecimal. Valid range is 0 thru FFFFF, where first hex digit is segment number. Any address greater than 16 bits of data (4 characters) is specified in two 16-bit increments. For example, (3,FFFF) represents an address of 3FFFF, location FFFF in segment 3. Default for the segment number is zero.

k   SCU data to load in hexadecimal. **TRAM** data is 16 bits and **MRAM** instruction is 48 bits. To represent more than 16 bits of data, the input data is specified in multiple 16-bit increments. For example, (2B2B,3C3C,4FFF) represents the hex number 2B2B3C3C4FFF.

l   16-bit Mask in hexadecimal. Default mask is FFFF. A mask can not be specified for **MRAM.**

4. SYSTEM RESPONSE

PF   A request will be sent to the frame to write the specified word of memory. A LOAD:MEMORY—SCS output message follows, indicating the results of the request.

5. REFERENCES

PIDENTs
  SCSBPMEM

Input Message
  DUMP:MEMORY—SCS

Output Messages
  DUMP:MEMORY—SCS
  LOAD:MEMORY—SCS

CAUTION
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.

ID . . . . LOAD:SCS
WORK CENTER. . MOC, TEC
GENERIC. . . . . . . 4E17 Rel. 3 and later
CLASS . . . . PMTC
APPLICATION . . 4E
TYPE . . . . Input

1. PURPOSE

Format 1 loads the service circuit system (SCS) CREG or IREG registers with the data specified through a mask.
Format 2 loads the service circuit unit (SCU) IREG registers with the data specified through a mask.

2. FORMAT

[1]   `LOAD:SCS a,{CREG|IREG} b:c[,MSK d]!`

[2]   `LOAD:SCS a, SCU e, IREG f:c[,MSK d]!`

3. EXPLANATION OF MESSAGE

a   SCS member number (0 - 7).

b   Register numbers.

0 — INVALID - Software status register.

1 — HWSTATUS - Hardware status register.

2 — INVALID - Maintenance response data.

3 — INVALID - Frame software status.

4 — INVALID - SCU out of service register.

5 — CESR   - Controller error source register.

6 — PEST   - Controller pest register.

7 — CONTROL - Controller control register.

10 — INVALID - Extended bus link status low.

11 — INVALID - Extended bus link status high.

12 — EBLKADR - Extended bus link address.

13 — GRESR   - Global ram error source register.

14 — INVALID - Global ram control memory.

15 — INVALID - Global address memory 0.

16 — INVALID - Global address memory 1.

17 — EXESR   - Exec error source register.

20 — INVALID   - Exec control/status memory low.

21 — INVALID   - Exec control/status memory high.

22 — INVALID   - Exec frame pointer.

23 — INVALID   - Exec program counter.

24 — INVALID   - Exec sanity timer.

25 — INVALID   - Exec stack boundary low.

26 — INVALID   - Exec stack boundary high.

27 — INVALID   - Exec stack pointer.

30 — INVALID   - Exec interrupt/mask register.

31 — RLPBPTR   - Read low priority buffer pointer.

32 — WLPBPTR   - Write low priority buffer pointer.

33 — RDBPTR   - Read digit buffer pointer.

34 — WDBPTR   - Write digit buffer pointer.

35 — MBPTRS   - Maintenance buffer pointer.

36 — SDOWMBPTR - Shadow maintenance buffer pointer.

37 — INVALID   - Maintenance buffer status.

40 — INVALID   - SCU error source register 00.

41 — INVALID   - SCU error source register 01.

42 — INVALID   - SCU error source register 02.

43 — INVALID   - SCU error source register 03.

44 — INVALID   - SCU error source register 04.

45 — INVALID   - SCU error source register 05.

46 — INVALID   - SCU error source register 06.

47 — INVALID   - SCU error source register 07.

50 — INVALID   - SCU error source register 08.

51 — INVALID   - SCU error source register 09.

52 — INVALID   - SCU error source register 10.

53 — INVALID   - SCU error source register 11.

54 — INVALID   - SCU error source register 12.

55 — INVALID   - SCU error source register 13.

56 — INVALID   - SCU error source register 14.

57 — INVALID   - SCU error source register 15.

60 — INVALID   - Firmware error buffer 0.

        61 — INVALID - Firmware error buffer 1.

        62 — INVALID - Firmware error buffer 2.

        63 — INVALID - Firmware error buffer 3.

        64 — INVALID - Firmware error buffer 4.

        65 — INVALID - Firmware error buffer 5.

        66 — INVALID - Firmware error buffer 6.

        67 — INVALID - Firmware error buffer 7.

        70 — INVALID - Firmware error buffer 8.

        71 — INVALID - Firmware error buffer 9.

        72 — INVALID - Extended bus memory reset.

        73 — INVALID - Extended bus link address.

        74 — INVALID - Extended bus link status low memory.

        75 — INVALID - Extended bus link status high memory.

c   Data.

d   Mask in octal. Default is 77777777.

e   SCU member number (0 - 15).

f   Register numbers.

        0 — INVALID - SCU unit status.

        1 — INVALID - SCU error source register.

        2 — HWSTATUS - SCU hardware status.

        3 — INVALID - SCU translation data0.

        4 — INVALID - SCU translation data1.

        5 — INVALID - SCU translation data2.

4. SYSTEM RESPONSE

PF,CODE 091   Printout will conditionally follow.

5. REFERENCES

PIDENT
   PULPMAIN
   PULPDFSS

CAUTION

This message may be service-affecting.
See explanation at end of message.

ID	OP:BP-SCS
WORK CENTER. .	MOC
GENERIC	4E17 Rel. 3 and later
CLASS	PUMTC
APPLICATION . .	4E
TYPE	Input

1. PURPOSE

This command lists the address and type of each breakpoint currently set in a service circuit system (SCS) frame; in the frame controllers only; or in a service circuit unit (SCU) only. This command also allows the user to request a summary list of which units in an SCS frame contains one or more breakpoints.

2. FORMAT

To list the breakpoints in a simplex SCS controller or duplex SCS controllers:

[1]   OP:BP;SCS a!

To list the breakpoints in a SCU:

[2]   OP:BP;SCS a,SCU b!

To list all breakpoints in a frame or a summary of breakpoints in a frame:

[3]   OP:BP;SCS a:{ALL | SUM}!

3. EXPLANATION OF MESSAGE

a	SCS member number in decimal (0-7).
b	SCU number in decimal (0-15).
ALL	Detailed report. Lists the address and type for each breakpoint in the controller and units for the given SCS member number.
SUM	Summary only. List any units in the frame (including the controller) that have one or more breakpoints for the specified SCS member number.

4. SYSTEM RESPONSE

PF	The breakpoint information will be listed for the requested unit(s). An OP:BP—SCS output message follows giving the results of the request.

5. REFERENCES

PIDENT
    SCSBPMEM

SEE PROPRIETARY NOTICE ON COVER PAGE

Input Messages
    CLR:BP-SCS
    SET:BP-SCS

Output Messages
    OP:BP-SCS
    REPT:BP-SCS

CAUTION
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.

ID .... RMV:SCS
WORK CENTER.. MAC, MOC, TEC, TOC
GENERIC....... 4E17 Rel. 3 and later
CLASS .... PUMTC
APPLICATION .. 4E
TYPE .... Input

1. PURPOSE

Removes the specified service circuit system (SCS) frame submember from service.

2. FORMAT

RMV:SCS a, {**CONTR** b|**SCU** c|**IPUB** d}!

3. EXPLANATION OF MESSAGE

a   SCS member number (0-7) to be removed.

b   Controller to be removed (0 or 1).

c   Service circuit unit (SCU) to be removed (0-15).

d   Interface to peripheral unit bus (IPUB) to be removed (0 or 1).

4. SYSTEM RESPONSE

PF   Printout follows. Followed by a RMV:SCS output message.

5. REFERENCES

PIDENT
    FRDI pidents
    MIRA
    SCSTOPEX
    SCSTOPOP
    TOPIC000

Practice 234-180-50, *Maintenance Control Program*

Output Message
    RMV:SCS

ID . . . . RST:SCS
WORK CENTER. . MOC, TEC
GENERIC. . . . . . . 4E17 Rel. 3 and later
CLASS . . . . PUMTC
APPLICATION . . 4E
TYPE . . . . Input

1. PURPOSE

Restores the specified service circuit system (SCS) to service. If unconditional (UCL) is specified, the unit is restored without diagnosis, independent of the state of the frame power control switch (PCS). If UCL is not specified, the subunit is diagnosed and is restored if all tests pass (ATP).

2. FORMAT

```
RST:SCS a,{CONTR b|SCU c|IPUB d} [{:TLP|;UCL}]!
```

3. EXPLANATION OF MESSAGE

a	SCS member number (0-7) to be restored.
b	Controller to be restored (0 or 1).
c	Service circuit unit (SCU) to be restored (0-15).
d	Peripheral unit bus interface to be restored (0 or 1).
TLP	The trouble location procedure (TLP) parameter gives the user capability of further aiding the location of possible trouble within the equipment. It is especially useful when the equipment appears to have passed diagnostics 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.

4. SYSTEM RESPONSE

?R, DPLX FAIL	Diagnostics are not available from the disk system. (Clear Duplex failure or use SYSRTPAD/TPAD.)
PF	Printout follows. Followed by a RST:SCS output message plus one or more DGN:SCS-PUB output messages unless UCL is specified.

5. REFERENCES

PIDENT
  FRDI
  MIRA
  SCSTOPOP
  SCSTOPEX
  TOPIC000

Output Message
  DGN:SCS-PUB
  RST:SCS

Practice 234-182-50, *Maintenance Control Program*

1. PURPOSE

This command sets a breakpoint in the controller(s) or a service circuit unit (SCU) of a service circuit system (SCS) frame.

2. FORMAT

To set a breakpoint in a simplex SCS controller or duplex SCS controllers:

[1]   `SET:BP;SCS a,MRAM b,{FAST | NORM}!`

[2]   `SET:BP;SCS a,MRAM b,CUST:{GRAM c | LRAM d | REG e}`
         `[,INDIR][,L f]!`

To set a breakpoint in an SCU:

[3]   `SET:BP;SCS a,SCU g,MRAM h,{FAST | NORM}!`

[4]   `SET:BP;SCS a,SCU g,MRAM h,CUST:{TRAM i | REG j}`
         `[,INDIR][,L f]!`

3. EXPLANATION OF MESSAGE

a	SCS member number in decimal (0-7).
b	SCS controller micro-store instruction random access memory (RAM) (MRAM) address in hexadecimal where the breakpoint will be placed. The valid range is 0 thru FFFF.
FAST	Set a fast breakpoint.
NORM	Set a normal breakpoint.
CUST	Set a custom breakpoint.
c	SCS controller global RAM (GRAM) data address in hexadecimal. The valid range is 0 through (3,FFFF). This address is the starting address of the GRAM memory region to copy to the custom breakpoint user-data save area. If **INDIR** is specified, the contents of the address specified is the starting address of the GRAM memory region to copy.

d	SCS controller local RAM (LRAM) data address in hexadecimal. The valid range is 0 through FFFF. This address is the starting address of the LRAM memory region to copy to the custom breakpoint user-data save area. If **INDIR** is specified, the contents of the address specified is the starting address of the LRAM memory region to copy.
e	SCS controller register number in hexadecimal. The valid range is 0 through F, 12 (stack pointer), 13 (frame pointer), 28 (global address register 0) and 29 (global address register 1). This register contains the starting address of the GRAM memory region to copy to the custom breakpoint user-data save area. A register assumes 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 assumed.
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 1-64. The default is 1.
g	**SCU** number in decimal (0-15).
h	SCU MRAM address in hexadecimal where the breakpoint will be placed. The valid range is 4000 - BFFF.
i	SCU table RAM (TRAM) data address in hexadecimal. The valid range is 0 through (F,FFFF) where the first hexadecimal digit of a 5-digit address is the segment number, otherwise segment zero is assumed. This address is the starting address of the TRAM memory region to copy to the custom breakpoint user-data save area. If **INDIR** is specified, the contents of the address specified is the starting address of the TRAM memory region to copy.
j	SCU register number in hexadecimal. The valid range is 0 through F. This register contains the starting address of the TRAM memory region to copy to the custom breakpoint user-data save area. A register assumes the **INDIR** option.

4. SYSTEM RESPONSE

PF	A breakpoint will be set in the frame controller(s) or a subunit as specified. A SET:BP—SCS output message follows, indicating the results of the request.

5. REFERENCES

PIDENT
    SCSBPMEM

SEE PROPRIETARY NOTICE ON COVER PAGE

Input Messages
    CLR:BP-SCS
    OP:BP-SCS

Output Messages
    OP:BP-SCS
    REPT:BP-SCS
    SET:BP-SCS

CAUTION
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.

ID . . . . STOP:ANALY-SCS
WORK CENTER . . MOC
GENERIC . . . . 4E17 Rel. 3 and later
CLASS . . . . PUMTC
APPLICATION . . 4E
TYPE . . . . Input

1. PURPOSE

Stops a demand analysis (DAT)/demand analysis state (DATS) of the service circuit system (SCS) frame or the service circuit unit (SCU).

2. FORMAT

    STOP:ANALY;SCS a, {CONTR|SCU} b:DAT c, DATS d!

3. EXPLANATION OF MESSAGE

a	**SCS** frame member number (0 - 7).
b	**SCU** number (0 - 15).
c	**DAT** number (0-7).
d	**DATS** number (0-7).

4. SYSTEM RESPONSE

None.

5. REFERENCES

PIDENT
  SCSFERAP

ID . . . . STOP:COPY
WORK CENTER . . MOC
GENERIC . . . . 4E17 Rel. 3 and later
CLASS . . . . PUMTC
APPLICATION . . 4E
TYPE . . . . Input

1. PURPOSE

To stop an intra service circuit unit (SCU) disk copy, or an attached processor system (APS) to SCU file copy.

2. FORMAT

[1]   **STOP:COPY;SCS** a!

3. EXPLANATION OF MESSAGE

a   Service circuit system (SCS) member number (0-7).

4. SYSTEM RESPONSE

?D   Request denied. An expected keyword argument is missing.

?I   Request denied. An expected keyword is missing, a keyword argument is out-of-range, too many keywords or too many keyword arguments.

OK   OK. The APS to SCU file copy is stopped.

PF   Printout follows. Stop intra SCU disk copy request accepted. An output message will follow to indicate the status of the stop copy request.

RL   Retry later. Stop intra SCU disk copy request denied. Too many tasks in-progress.

5. REFERENCES

PIDENT
   SCSCFSCU
   SCSFPUMP

ID . . . . STOP:INIT
WORK CENTER. . MOC
GENERIC. . . . . . . 4E17 Rel. 3 and later
CLASS . . . . PUMTC
APPLICATION . . 4E
TYPE . . . . Input

1. PURPOSE

To stop the format (Init) of a service circuit unit (SCU) disk.

2. FORMAT

[1] **STOP:INIT;SCS** a!

3. EXPLANATION OF MESSAGE

a   Service circuit system (**SCS**) member number (0-7).

4. SYSTEM RESPONSE

?D   Request denied. An expected keyword argument is missing.

?I   Request denied. An expected keyword is missing, a keyword argument is out-of-range, too many keywords or too many keyword arguments.

NA   Not available. A disk format task is not currently in-progress.

PF   Printout follows. An output message will follow to indicate the status of the stop disk format request.

RL   Retry later. Request denied. Too many tasks in-progress.

5. REFERENCES

PIDENT
   SCSFPUMP

> ID . . . . SW:SCS
> WORK CENTER . . MAC, MOC, TEC, TOC
> GENERIC . . . . 4E17 Rel. 3 and later
> CLASS . . . . PUMTC
> APPLICATION . . 4E
> TYPE . . . . Input

1. PURPOSE

Switches controllers activity within the specified service circuit system (SCS).

If the specified SCS frame is simplex, the out-of-service controller is restored to service (made active) and the previously in-service controller is removed from service.
If the specified SCS frame is duplex, the current active controller is made standby and the current standby controller is made active. The SCS remains duplex.

2. FORMAT

SW:SCS a!

3. EXPLANATION OF MESSAGE

a   SCS member number (0-7).

4. SYSTEM RESPONSE

NG   Invalid input combination or invalid member or submember number.

PF   Printout follows. Maintenance control program (MACP) job requested to perform switch. Disposition of the request will be given by an output message.

RL   Repeat later. MACP job queue full.

5. REFERENCES

PIDENTs
    FRDI
    MIRA
    SCSTOPOP
    SCSTOPEX
    TOPIC000

Output Message
SW:SCS

<table>
<tr><td>CAUTION</td><td>ID .... UPD:SCS</td></tr>
<tr><td>This message may be service-affecting.</td><td>WORK CENTER.. MOC</td></tr>
<tr><td>See explanation at end of message.</td><td>GENERIC....... 4E17 and later</td></tr>
<tr><td></td><td>CLASS .... PUMTC</td></tr>
<tr><td></td><td>APPLICATION .. 4E</td></tr>
<tr><td></td><td>TYPE .... Input</td></tr>
</table>

1. PURPOSE

The purpose of this update message is to replace the software in one service circuit system (SCS) controller with another software version and make the controller active. When the initial system configuration is duplex 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 SCS software upgrade.

2. FORMAT

To update an SCS controller from the disk of the first available in-service service circuit unit (SCU):

[1]   UPD:SCS a, CONTR b, SVN c!

To update an SCS controller from the disk of a specific SCU:

[2]   UPD:SCS a, CONTR b, SVN c, SCU d!

3. EXPLANATION OF MESSAGE

a	Is the SCS member number (0 - 7).
b	Is the controller to be loaded with the new software (0 - 1).
c	Is the source file version number on the SCU disk (0 - 3).
d	Is the SCU member number from which the new software is to be obtained (0 -15).

4. SYSTEM RESPONSE

?D	The update request has been denied because a required keyword argument is missing.
?E	The update request was rejected because the program was unable to parse the input message.
?I	The update request has been denied because of the following:

        1. A required keyword is missing.

        2. A keyword argument is out-of-range.

        3. Extra keywords or keyword arguments were specified.

PF   The update request has been accepted. Output messages will follow
              to indicate the status of the controller update.

RL   The update request has been denied because there are too many tasks
              in progress. Please retry later.

5. REFERENCES

PIDENT
    SCSCFSCU

CAUTION
Any calls connected to the SCS will be dropped during a
generic update.

ID . . . . VER:SCS-FHT
WORK CENTER. . MAC, MOC
GENERIC . . . . . . 4E17 and later
CLASS . . . . VER
APPLICATION . . 4E
TYPE . . . . Input

1. PURPOSE

Request output per-announcement data for input final handling treatments (FHT).

2. FORMAT

This message has the following format:

VER:SCS:FHT a !

3. EXPLANATION OF MESSAGE

a   Announcement designator. Designator may be any one of the following:

AR,BT,DNN,DOO,E01-E20,EAI-EA7,HW,I01-I30,IFF,INC,
INF,ISB,IVC,LDV,LOB,LSA,MCA,NCA,NCB,NCC,NCD,NWC,
NWN,OOA,OOB,OTS,R01-R10,ROA,SNA,S01-S19,SP1,SP2,
STO,T,TDN,UNN,VCA,VMA,WAT

4. SYSTEM RESPONSE

PF   Printout follows.

5. REFERENCES

PIDENTs
   IOCPIMC4
   VRFYCNTL
   VRFYINPT

Output Message
   VER:SCS-FHT

ID . . . . VER:UTYPE
WORK CENTER . . MAC, MOC
GENERIC . . . . . . 4E17 Rel. 2 and later
CLASS . . . . VER
APPLICATION . . 4E
TYPE . . . . Input

1. PURPOSE

Verifies the unit type member equipage, submember equipage, or an octal dump of the specified unit type translator.

2. FORMAT

VER:UTYPE:a [, {**ME**|**SME** b|**ENTRY**}] !

3. EXPLANATION OF MESSAGE

a	Unit type identification and member number, e.g., SP 0. See Table 1 for a list of valid unit types.
ME	Unit type member equipage bits.
b	Unit type submember equipage bits. A number from 0 to 216 in Table 2 represents the submember equipage to verify.
ENTRY	Unit type entry. This is the default.

4. SYSTEM RESPONSE

PF	Printout follows.
RL	Repeat later.

5. REFERENCES

PIDENTs
  VRFYCNTL
  VRFYINPT
  VRFYOUT
  VRFYUTYP

Translation Guide, 4ESS™, TG-4, Division 8

TABLE 1

VALID UNIT TYPES

Unit Type	Valid MEMN Range	Description
ABCNT	0-31	Area bus center
ATME2		Automatic transmission and signaling measurement equipment for international trunks
AUB	0-1	Auxiliary unit bus
BDFB	0-31	Battery distribution fuse board
CC	0-1	Common control
CCT		Common channel interoffice signaling (CCIS) continuity check transceiver mounting plate
CS	0-63	Call store
CSB	0-1	Call store bus
DIF	2-31	Digital interface frame
DLC		Data link controller
DT	0-127	Digroup terminal
DUS	0-3	Data unit selector
EST	0-31	Echo suppressor terminal
FS	0-3	File store
GRID	1-15	Grid
IOUS	0-15	Input/output unit selector
MA	0	Miscellaneous frame A
MB	0-6	Miscellaneous frame B
MCC	0-1	Maintenance control console
MCF		Miscellaneous frame C
MFS	0-31	Mulit-frequency (MF) signal frame
NCLK		Network clock
PP620	0-15	620 power plant
PP625	0-15	625 power plant
PP630	0-15	630 power plant
PS	0-31	Program store
PSB	0-1	Program store bus
PUB	0-1	Peripheral unit bus branching frame
PUBBR	0-3	Peripheral unit bus repeater
RA	0,2	Recorded announcement

TABLE 1 (continued)

VALID UNIT TYPES

Unit Type	Valid MEMN Range	Description
RMDC	0	Network management remote and distribution circuit
RT PLANT	0	Ringing and tone plant
SCLK	0	System clock
SCS	0-7	Service circuit system frame
SP	0-31	Signal processor
TGR	0-15	Terminal access circuit
TMS	0-3	Time multiplexed switch
TPOS	0-99	51A test position
TSI	0-63	Time slot interchange frame
TTF0-TTF7	0-127	Toll terminal frame 0-7
TUC	0-31	Tape unit controller
VIF	0-127	Voiceband interface frame
WBNET		Wideband network

TABLE 2

VALID UNIT TYPE SUBMEMBERS

SME Name	Index	Description
XL4USME0	01	Submember equipage
XL4USME1	02	Submember equipage
XL4USME2	03	Submember equipage
XL4USME3	04	Submember equipage
XL4USME4	05	Submember equipage
XL4USME5	06	Submember equipage
XL4USME6	07	Submember equipage
XL4USME7	08	Submember equipage
XL4UVIUEQ0	09	Voiceband interface unit (VIU) 0 equipage
XL4UVIUEQ1	10	VIU 1 equipage
XL4UVIUEQ2	11	VIU 2 equipage
XL4UVIUEQ3	12	VIU 3 equipage
XL4UVIUEQ4	13	VIU 4 equipage
XL4UVIUEQ5	14	VIU 5 equipage

TABLE 2 (continued)

VALID UNIT TYPE SUBMEMBERS

SME Name	Index	Description
XL4UVIUEQ6	15	VIU 6 equipage
XL4UTSNBLK0	16	Signal processor (SP) scan point equipage block 0
XL4UTSNBLK1	17	SP scan point equipage block 1
XL4UTSNBLK2	18	SP scan point equipage block 2
XL4UTSNBLK3	19	SP scan point equipage block 3
XL4UTDNBLK0	20	SP SD point equipage block 0
XL4UTDNBLK1	21	SP SD point equipage block 1
XL4UTDNBLK2	22	SP SD point equipage block 2
XL4UTDNBLK3	23	SP SD point equipage block 3
XL4UMSNBLK0	24	SP misc. scan point equipage block 0
XL4UMSNBLK1	25	SP misc. scan point equipage block 1
XL4UMDNBLK0	26	SP misc. SD point equipage block 0
XL4UMDNBLK1	27	SP misc. SD point equipage block 1
XL4UBFE	28	SP left frame equipage
XL4UCFE	29	SP right frame equipage
XL4UTMGRP0	32	Terminal grouping (TGR) terminal 0 equipage
XL4UTMGRP1	33	TGR terminal 1 equipage
XL4UTMGRP2	34	TGR terminal 2 equipage
XL4UTMGRP3	35	TGR terminal 3 equipage
XL4UTMGRP4	36	TGR terminal 4 equipage
XL4UTMGRP5	37	TGR terminal 5 equipage
XL4UTMGRP6	38	TGR terminal 6 equipage
XL4UTMGRP7	39	TGR terminal 7 equipage
XL4UTMGRP8	40	TGR terminal 8 equipage
XL4UTMGRP9	41	TGR terminal 9 equipage
XL4UTMGRP10	42	TGR terminal 10 equipage
XL4UTMGRP11	43	TGR terminal 11 equipage
XL4UTMGRP12	44	TGR terminal 12 equipage
XL4UTMGRP13	45	TGR terminal 13 equipage
XL4UTMGRP14	46	TGR terminal 14 equipage
XL4UTMGRP15	47	TGR terminal 15 equipage
XL4UC0MBLK0	48	Time multipexed switch (TMS) controller 0 memory block 0 equipage
XL4UC0MBLK1	49	TMS controller 0 memory block 1 equipage
XL4UC0MBLK2	50	TMS controller 0 memory block 2 equipage
XL4UC0MBLK3	51	TMS controller 0 memory block 3 equipage
XL4UC1MBLK0	52	TMS controller 1 memory block 0 equipage
XL4UC1MBLK1	53	TMS controller 1 memory block 1 equipage
XL4UC1MBLK2	54	TMS controller 1 memory block 2 equipage
XL4UC1MBLK3	55	TMS controller 1 memory block 3 equipage

TABLE 2 (continued)

VALID UNIT TYPE SUBMEMBERS

SME Name	Index	Description
XL4U0PRTEQ0	56	Time slot interchange (TSI) port 0 equipage SPC0
XL4U0PRTEQ1	57	TSI port 1 equipage SPC0
XL4U0PRTEQ2	58	TSI port 2 equipage SPC0
XL4U0PRTEQ3	59	TSI port 3 equipage SPC0
XL4U0PRTEQ4	60	TSI port 4 equipage SPC0
XL4U0PRTEQ5	61	TSI port 5 equipage SPC0
XL4U0PRTEQ6	62	TSI port 6 equipage SPC0
XL4U1PRTEQ0	63	TSI port 0 equipage SPC1
XL4U1PRTEQ1	64	TSI port 1 equipage SPC1
XL4U1PRTEQ2	65	TSI port 2 equipage SPC1
XL4U1PRTEQ3	66	TSI port 3 equipage SPC1
XL4U1PRTEQ4	67	TSI port 4 equipage SPC1
XL4U1PRTEQ5	68	TSI port 5 equipage SPC1
XL4U1PRTEQ6	69	TSI port 6 equipage SPC1
XL4UCKHEQ00	70	FOFI ckt half equipage 00
XL4UCKHEQ01	71	FOFI ckt half equipage 01
XL4UCKHEQ10	72	FOFI ckt half equipage 10
XL4UCKHEQ11	73	FOFI ckt half equipage 11
XL4UCKHEQ20	74	FOFI ckt half equipage 20
XL4UCKHEQ21	75	FOFI ckt half equipage 21
XL4UCKHEQ30	76	FOFI ckt half equipage 30
XL4UCKHEQ31	77	FOFI ckt half equipage 31
XL1IOEQPE0	78	Input/output unit controller (IOUC) 0 port equipage
XL1IOEQPE1	79	IOUC 0 port equipage
XL1IOEQPE2	80	IOUC 0 port equipage
XL1IOEQPE0	81	IOUC 1 port equipage
XL1IOEQPE1	82	IOUC 1 port equipage
XL1IOEQPE2	83	IOUC 1 port equipage
XL1IOEQPE0	84	IOUC 2 port equipage
XL1IOEQPE1	85	IUOC 2 port equipage
XL1IOEQPE2	86	IOUC 2 port equipage
XL1IOEQPE0	87	IOUC 3 port equipage
XL1IOEQPE1	88	IOUC 3 port equipage
XL1IOEQPE2	89	IOUC 3 port equipage
XL1IOEQPE0	90	IOUC 4 port equipage
XL1IOEQPE1	91	IOUC 4 port equipage
XL1IOEQPE2	92	IOUC 4 port equipage
XL1IOEQPE0	93	IOUC 5 port equipage
XL1IOEQPE1	94	IOUC 5 port equipage
XL1IOEQPE2	95	IOUC 5 port equipage

TABLE 2 (continued)

VALID UNIT TYPE SUBMEMBERS

SME Name	Index	Description
XL1IOEQPE0	96	IOUC 6 port equipage
XL1IOEQPE1	97	IOUC 6 port equipage
XL1IOEQPE2	98	IOUC 6 port equipage
XL1IOEQPE0	99	IOUC 7 port equipage
XL1IOEQPE1	100	IOUC 7 port equipage
XL1IOEQPE2	101	IOUC 7 port equipage
XL1IOEQSME0	102	IOUC channel 0
XL1IOEQSME1	103	IOUC channel 1
XL1IOEQSME2	104	IOUC channel 2
XL1IOEQSME3	105	IOUC channel 3
XL1IOEQSME4	106	IOUC channel 4
XL1IOEQSME5	107	IOUC channel 5
XL1IOEQSME6	108	IOUC channel 6
XL1IOEQSME7	109	IOUC channel 7
XL4UDTUEQ0	110	Digroup terminal unit 0
XL4UDTUEQ1	111	Digroup terminal unit 1
XL4UDTUEQ2	112	Digroup terminal unit 2
XL4UDTUEQ3	113	Digroup terminal unit 3
XL4UDTUEQ4	114	Digroup terminal unit 4
XL4UDTUEQ5	115	Digroup terminal unit 5
XL4UDTUEQ6	116	Digroup terminal unit 6
XL4UDTUEQ7	117	Digroup terminal unit 7
XL4UC0GRWTH	118	Controller growth status IND
XL4UC1GRWTH	119	Controller growth status IND
XL4USP2EQ0	120	SP2 subtype equipage
XL4USP2EQ1	121	SP2 subtype equipage
XL4USP2EQ2	122	SP2 subtype equipage
XL4USP2EQ3	123	SP2 subtype equipage
XL1FSEQSME0	124	Disk file 0
XL1FEWQSME1	125	Disk file 1
XL1FSEQSME2	126	Disk file 2
XL1FSEQSME3	127	Disk file 3
XL4UESEQ0	128	Echo suppressor unit (ESU) 0 equipage
XL4UESEQ1	129	ESU 1 equipage
XL4UESEQ2	130	ESU 2 equipage
XL4UESEQ3	131	ESU 3 equipage
XL4UESEQ4	132	ESU 4 equipage
XL4UESEQ5	133	ESU 5 equipage
XL4UESEQ6	134	ESU 6 equipage
XL4UESEQ7	135	ESU 7 equipage

TABLE 2 (continued)

VALID UNIT TYPE SUBMEMBERS

SME Name	Index	Description
XL4UESEQ8	136	ESU 8 equipage
XL4UESEQ9	137	ESU 9 equipage
XL4UESEQ10	138	ESU 10 equipage
XL4UESEQ11	139	ESU 11 equipage
XL4UESEQ12	140	ESU 12 equipage
XL4UESEQ13	141	ESU 13 equipage
XL4UESEQ14	142	ESU 14 equipage
XL4DIUEQ0	143	Digital interface unit (DIU) 0 equipage
XL4DIUEQ1	144	DIU 1 equipage
XL4DIUEQ2	145	DIU 2 equipage
XL4DIUEQ3	146	DIU 3 equipage
XL4DIUEQ4	147	DIU 4 equipage
XL4DIUEQ5	148	DIU 5 equipage
XL4DIUEQ6	149	DIU 6 equipage
XL4DIUEQ7	150	DIU 7 equipage
XL4DIUEQ8	151	DIU 8 equipage
XL4DIUEQ9	152	DIU 9 equipage
XL4DIUEQ10	153	DIU 10 equipage
XL4DIUEQ11	154	DIU 11 equipage
XL4DIUEQ12	155	DIU 12 equipage
XL4DIUEQ13	156	DIU 13 equipage
XL4DIUEQ14	157	DIU 14 equipage
XL4DIUEQ15	158	DIU 15 equipage
XL4DIUEQ16	159	DIU 16 equipage
XL4DIUEQ17	160	DIU 17 equipage
XL4DIUEQ18	161	DIU 18 equipage
XL4DIUEQ19	162	DIU 19 equipage
XL4DIUEQ20	163	DIU 20 equipage
XL4DIUEQ21	164	DIU 21 equipage
XL4DIUEQ22	165	DIU 22 equipage
XL4DIUEQ23	166	DIU 23 equipage
XL4DIUEQ24	167	DIU 24 equipage
XL4DIUEQ25	168	DIU 25 equipage
XL4DIUEQ26	169	DIU 26 equipage
XL4DIUEQ27	170	DIU 27 equipage
XL4DIUEQ28	171	DIU 28 equipage
XL4DIUEQ29	172	DIU 29 equipage
XL4DIUEQ30	173	DIU 30 equipage
XL4DIUEQ31	174	DIU 31 equipage
XL4DIUSPQA	175	DIU spare A (SPA) equipage

TABLE 2 (continued)

VALID UNIT TYPE SUBMEMBERS

SME Name	Index	Description
XL4DIUSPQB	176	DIU spare B (SPB) equipage
XL4USCUEQ0	177	Service circuit unit (SCU) 0 equipage
XL4USCUEQ1	178	SCU 1 equipage
XL4USCUEQ2	179	SCU 2 equipage
XL4USCUEQ3	180	SCU 3 equipage
XL4USCUEQ4	181	SCU 4 equipage
XL4USCUEQ5	182	SCU 5 equipage
XL4USCUEQ6	183	SCU 6 equipage
XL4USCUEQ7	184	SCU 7 equipage
XL4USCUEQ8	185	SCU 8 equipage
XL4USCUEQ9	186	SCU 9 equipage
XL4USCUEQ10	187	SCU 10 equipage
XL4USCUEQ11	188	SCU 11 equipage
XL4USCUEQ12	189	SCU 12 equipage
XL4USCUEQ13	190	SCU 13 equipage
XL4USCUEQ14	191	SCU 14 equipage
XL4USCUEQ15	192	SCU 15 equipage
XL1IOEQPE0	193	Input/output unit controller (IOUC) 8 port equipage
XL1IOEQPE1	194	IOUC 8 port equipage
XL1IOEQPE2	195	IOUC 8 port equipage
XL1IOEQPE0	196	IOUC 9 port equipage
XL1IOEQPE1	197	IOUC 9 port equipage
XL1IOEQPE2	198	IOUC 9 port equipage
XL1IOEQPE0	199	IOUC 10 port equipage
XL1IOEQPE1	200	IOUC 10 port equipage
XL1IOEQPE2	201	IOUC 10 port equipage
XL1IOEQPE0	202	IOUC 11 port equipage
XL1IOEQPE1	203	IOUC 11 port equipage
XL1IOEQPE2	204	IOUC 11 port equipage
XL1IOEQPE0	205	IOUC 12 port equipage
XL1IOEQPE1	206	IOUC 12 port equipage
XL1IOEQPE2	207	IOUC 12 port equipage
XL1IOEQPE0	208	IOUC 13 port equipage
XL1IOEQPE1	209	IOUC 13 port equipage
XL1IOEQPE2	210	IOUC 13 port equipage
XL1IOEQPE0	211	IOUC 14 port equipage
XL1IOEQPE1	212	IOUC 14 port equipage
XL1IOEQPE2	213	IOUC 14 port equipage
XL1IOEQPE0	214	IOUC 15 port equipage
XL1IOEQPE1	215	IOUC 15 port equipage
XL1IOEQPE2	216	IOUC 15 port equipage

ID . . . . VER:PASANN
WORK CENTER. . MAC, MOC
GENERIC . . . . . . 4E17 and later
CLASS . . . . VER
APPLICATION . . 4E
TYPE . . . . Input

1. PURPOSE

Verifies the public announcement service (PAS) announcement data associated with the voice storage identification (VSSID)/service identification (SID), the barge-in or service circuit system (SCS) announcement, or all announcements.

2. FORMAT

VER:PASANN [:{**VSSID** a,**SID** b|**ANNUM** c}] !

3. EXPLANATION OF MESSAGE

a   VSSID: 0 – 99999.

b   Service ID. For SCS announcements, the range is 000000 – 9990000, 9999901 or 9999902. For barge-in announcements, the range is 9999901 – 9999511, 9999901 or 9999902.

c   Announcement number (range 1 – 511).

4. SYSTEM RESPONSE

?E   Missing data.

?I   Invalid keyword or combination of keywords.

PF   Printout to follow.

5. REFERENCES

PIDENTs
    VRFYCNTL
    VRFYINPT
    VRFYMAS
    VRFYOUT

Translation Guide, 4ESS™, TG-4, Division 8, Section 16i

ID . . . . CLR:BP-SCS
WORK CENTER . . MOC
GENERIC . . . . 4E17 Rel. 3 and later
APPLICATION . . 4E
TYPE . . . . Output

1. FORMAT

[1]   `CLR:BP SCS a CONTR b`

[2]   `CLR:BP SCS a SCU c d`

[3]   `CLR:BP SCS a ALL!`
          `CONTR b`
          `[SCU c d]`

2. REASON FOR OUTPUT

This message prints in response to a `CLR:BP-SCS` input message. Format [1] is output
if the input request specified that all breakpoints of a service circuit system (SCS)
simplex controller or duplex controllers be cleared. Format [2] is output if the input
request specified that all breakpoints of a service circuit unit (SCU) be cleared. Format
[3] is output if the input request specified that all breakpoints of an SCS frame
(controllers and SCUs) be cleared.

3. VARIABLE FIELD DEFINITIONS

a   SCS member number in decimal (0-7).

b   Controller request fail code:

                `COMPLETED`   All breakpoints have been removed from the
                                controller.

                `DENIED - CONTR DUP FAILED`   Request denied because the
                                frame is duplex failed.

                `DENIED - SCC IN GROWTH`   Request denied because the frame is
                                in growth or special growth.

                `DENIED - SCC UNEQ`   Request denied because the frame is
                                unequipped.

                `RL - CONTR LOM`   Request denied because the frame controller is
                                in listen-only mode.

c   SCU number in decimal (0-15).

SEE PROPRIETARY NOTICE ON COVER PAGE

d   SCU request status code:

    ABORTED – MACRO REJECTED   Request for the given SCU was
          aborted because the SCS frame rejected the clear
          command.

    ABORTED – MACRO TIMEOUT   Request for the given SCU was
          aborted because the SCS frame did not reply to the
          clear command.

    COMPLETED   All breakpoints have been removed from the SCU.

    DENIED – CONTR DUP FAILED   Request denied because the
          frame is duplex failed.

    DENIED – SCU IS OOS   Request for the given SCU was denied
          because the SCU is out of service.

    DENIED – SCU IN GROWTH   Request for the given SCU was
          denied because the SCU is in growth or special
          growth.

    DENIED – SCU UNEQ   Request for the given SCU was denied
          because the SCU is unequipped.

    FAILED – INTERNAL ERROR   Request for the given SCU failed
          because of an unexpected software error when
          processing the clear command.

    RL – CONTR LOM   Request denied because the frame controller is
          in listen-only mode.

    STOPPED – MACRO FAILED   Request for the given SCU was
          stopped because the SCU failed in processing the
          clear command.

4. ACTION TO BE TAKEN

If variable b is:

    If RL – CONTR LOM   then retry later, as this condition should be
          cleared quickly.

If variable d is:

    If ABORTED – MACRO REJECTED   then contact the Technical
          Assistance Center for further information.

    If ABORTED – MACRO TIMEOUT   then contact the Technical
          Assistance Center for further information.

    If FAILED – INTERNAL ERROR   then contact the Technical
          Assistance Center for further information.

    If RL – CONTR LOM   then contact the Technical Assistance Center for
          further information.

If STOPPED – MACRO FAILED   then contact the Technical Assistance
Center for further information.

5. REFERENCES

PIDENT
   SCSBPMEM

Input Messages
   CLR:BP-SCS
   OP:BP-SCS
   SET:BP-SCS

Output Message
   OP:BP-SCS

ID . . . . COPY:SCS
WORK CENTER . . MOC
GENERIC . . . . 4E17 Rel. 3 and later
APPLICATION . . 4E,1A
TYPE . . . . Output

1. FORMAT

```
COPY:SCS a {b|c}
```

2. REASON FOR OUTPUT

These messages are printed in response to an input message requesting one of the following operations.
Copy a file from the attached processor system (APS) to a single service circuit unit (SCU).
Copy a file from all SCU's in a single service circuit system (SCS) frame.
Copy a file from all SCU's in all SCS frames.
Copy a file to another file in the same SCU (intra SCU file copy).
Copy a file from one SCU to a file in another SCU (inter SCU file copy).
Copy a disk to another disk in the same SCU (intra SCU disk copy).

3. VARIABLE FIELD DEFINITIONS

a   SCS member number (0-7) containing the SCU.

b   The following messages may be printed by an APS to SCU file copy.

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 on of the PMOS tasks.

COMPLETED — The file copy job has completed to all SCU's in one SCS frame. This message is printed if, and only if, the all option was specified in the input message. copying to other SCS frames could still be in progress (see TASK COMPLETED).

FAILED UNABLE TO OPEN FILE ON APS — The APS file manager was unable to open the file on the APS disk.

FAILED UNABLE TO READ FILE FROM APS — An excessive number of read failures occurred while reading the file form the APS disk.

FAILED UNABLE TO TRANSMIT FILE TO ANY SCU — Unable to copy the complete file to any SCU in the SCS frame.

FAILED WRONG FILE TYPE FOUND ON APS — The file type in the file header doesn't match the file type in the input message.

SCU x FILE COPY FAILED — The complete file could not be copied to one SCU. The file is still being copied to the other SCU's.

STOPPED ALL SCUS UNEQ OR OOS — All SCU's in the SCS frame are either unequipped or currently out of service (OOS).

STOPPED ANNOUNCEMENT UPDATE IN PROGRESS — An announcement update is in progress in one or more SCU's in the SCS. The APS to SCS file copy cannot run concurrently with an announcement update.

STOPPED GROWTH SCS — SCS frame is in the GROW/SGROW state.

STOPPED MANUAL REQUEST — The file copy to an SCS was terminated due to a manual TTY request. The file could still be copied to other SCS's if the ALL option was specified in the original input message.

STOPPED NO ACTIVE CONTROLLER — Both controllers in the SCS are currently marked OOS.

STOPPED SCU x IS UNEQ — The file was to be copied to an unequipped SCU.

STOPPED SCU DISK IN USE — An inter/intra SCU file copy, intra SCU raw disk copy, or an SCU disk format job is already in progress in the SCS frame. The APS to SCS file copy cannot run concurrently with these jobs.

STOPPED UNEQ SCS — The specified SCS frame is unequipped. Also printed for each unequipped SCS in the office when the ALL option is specified in the input message.

TASK COMPLETED — The file has been copied to all SCU's requested in the input message and the copy job has terminated.

UNKOWN SYSTEM ERROR — A data inconsistency or transient system error caused the file copy to terminate.

c   The following messages can be printed by an inter/intra SCU file/disk copy.

SCU x COMPLETE — The inter/intra SCU copy has completed.

SCU x FAILED — The inter/intra SCU copy has failed.

SCU x IN PROGRESS — The inter/intra SCU copy is in progress.

SCU x STARTED — The inter/intra SCU copy has started.

SCU x STOPPED — ANN UPD IP — An announcement update is in progress in one or more SCU's in the SCS. The inter/intra SCU copy cannot run concurrently with an announcement update.

SCU x STOPPED — CONTR DUP FAIL OR UNEQ — Both controllers in the SCS frame are either unequipped of OOS.

SCU x STOPPED — DEST DISK UNEQ — The destination SCU disk pair is unequipped.

SCU x STOPPED — DEST SCU IN SERVICE — The destination SCU is in service (The destination SCU must be taken OOS prior to copy).

SCU x STOPPED — DEST SCU UNEQ — The destination SCU is unequipped.

SCU x STOPPED — DISK CAPACITY LOW — The disk capacity of the destinations disk pair is less than the disk capacity of the source disk pair in an intra disk copy.

SCU x STOPPED - MACRO REJECTED — This SCS controller did not accept the inter/intra SCU copy macros.

SCU x STOPPED - MACRO TIMEOUT — This SCS controller did not reply the inter/intra SCU copy macros.

SCU x STOPPED - SCU DISK IN USE — An inter/intra SCU file copy, intra SCU raw disk copy, or an SCU disk format job is already in progress in the SCS frame. The inter/intra SCU file/disk copy cannot run concurrently with these jobs.

SCU x STOPPED - SRC DISK UNEQ — The source SCU disk pair is unequipped.

SCU x STOPPED - SRC SCU UNEQ — The source SCU is unequipped.

4. ACTION TO BE TAKEN

The following actions should be taken on messages printed by an APS to SCU file copy and if variable b is:

ABORTED UNABLE TO SCHEDULE PMOST TASK Re-enter the input message when there is less activity in the office.

COMPLETED No action required.

FAILED UNABLE TO OPEN FILE ON APS Correct the SVN argument and re-enter the input message, or install the necessary file(s) on the APS disk.

FAILED UNABLE TO READ FILE FROM APS — Check the APS for for excessive disk activity or recovery actions. If necessary replace the file on the APS disk.

FAILED UNABLE TO TRANSMIT FILE TO ANY SCU — Switch controllers in the SCS frame and re-enter the input message.

FAILED WRONG FILE TYPE FOUND ON APS — Replace the file on the APS disk.

SCU x FILE COPY FAILED — Re-enter the input message using the single SCU option after the current file copy job has completed.

STOPPED ALL SCUS UNEQ OR OOS — Re-enter the input message and include the UCL option to copy to the OOS SCU's.

STOPPED ANNOUNCEMENT UPDATE IN PROGRESS — Re-enter the input message after the announcement update has completed.

STOPPED GROWTH SCS — Re-enter the input message and include the UCL option.

STOPPED MANUAL REQUEST — No action required.

STOPPED NO ACTIVE CONTROLLER — Re-enter the input message and include the UCL option.

STOPPED SCU DISK IN USE — Re-enter the input message after the

interfering job in the SCS has completed.

STOPPED SCU x IS UNEQ — Correct the SCU and/or SCS number and re-enter the input message.

STOPPED UNEQ SCS — Ignore this message if it was due to the ALL option in the input message. Otherwise, correct the SCS number and re-enter the message.

TASK COMPLETED — No action required.

UNKNOWN SYSTEM ERROR — Re-enter the input message.

The following actions should be taken on messages printed by an inter/intra SCU copy and if variable b is:

SCU x COMPLETE — No action required.

SCU x IN PROGRESS — No action required.

SCU x FAILED — Diagnose the source and destination SCUs and re-enter the input message.

SCU x STARTED — No action required.

SCU x STOPPED — ANN UPD IP — Re-enter the input message after the announcement update has completed.

SCU x STOPPED — CONTR DUP FAIL OR UNEQ — Equip the SCS or restore at least one of the controllers and re-enter the input message.

SCU x STOPPED — DEST DISK UNEQ — Correct the destination SCU disk pair number or equip the disk pair and re-enter the input message.

SCU x STOPPED — DEST SCU IN SERVICE — Use the RMV:SCS input message to remove the destination SCU and re-enter the input message.

SCU x STOPPED — DEST SCU UNEQ — Correct the destination SCU number or equip the SCU and re-enter the input message.

SCU x STOPPED — DISK CAPACITY LOW — Correct the destination SCU disk pair number or use a different disk pair with higher disk capacity and re-enter the input message.

SCU x STOPPED — MACRO REJECTED — Diagnose the active controller and re-enter the input message.

SCU x STOPPED — MACRO TIMEOUT — Diagnose the active controller and re-enter the input message.

SCU x STOPPED — SCU DISK IN USE — Re-enter the input message after the interfering job in the SCS has completed or stop the interfering job.

      `SCU x STOPPED - SRC DISK UNEQ` — Correct the source SCU disk pair number or equip the disk pair and re-enter the input message.

      `SCU x STOPPED - SRC SCU UNEQ` — Correct the source SCU number or equip the SCU and re-enter the input message.

5. REFERENCES

PIDENTs
  SCSCFSCU
  SCSFPUMP

Input Messages
  `COPY:SCS`
  `RMV:SCS`
  `STOP:COPY`

ID . . . . DGN:SCS-ILL
WORK CENTER . . MOC
GENERIC . . . . 4E17 Rel. 3 and later
APPLICATION . . 4E
TYPE . . . . Output

1. FORMAT

    DGN:SCS a,b c:d e ILLEGAL PHASE

2. REASON FOR OUTPUT

To identify that one or more illegal diagnostic phases have been requested on a partial diagnostic request for a service circuit system (SCS). The illegal phase will not be executed; however, all valid phases will be run.

3. VARIABLE FIELD DEFINITIONS

a   Member of the SCS being diagnosed.

b   Subunit number of the subunit being diagnosed.

c   Submember number of the subunit being diagnosed.

d   Helper unit type.

e   Helper member number.

4. ACTION TO BE TAKEN

Check the DGN:SCS input message for the list of valid phase numbers.

5. REFERENCES

PIDENT
    DCONTOLL

Input Message
    DGN:SCS

```
                            ID . . . . . . . . . . . . . DGN:SCS-MIS
                            WORK CENTER . . MOC
                            GENERIC . . . . . . . 4E17 Rel. 3 and later
                            APPLICATION . . 4E
                            TYPE . . . . . . . . . . Output
```

1. FORMAT

```
[1] DGN:SCS a,b c:d e PH f g [h]
       [TEST   MISMATCH        SUPPLEMENTARY DATA
          i    jjjjjjjj        kkkkkkkk llllllll mmmmmmmm nnnnnnnn oooooooo
                               pppppppp qqqqqqqq rrrrrrrr]

[2] DGN:SCS a, CONTR s PH f g [h] MSG STARTED
       [TEST   MISMATCH        SUPPLEMENTARY DATA
          i    jjjjjjjj        00tttttt uuuuvvvv vvvvvvvv wwwwwwww xyzAAAAA
                               0BCCCCCC 00DDDDDD 00EEEEEE 00FFFFFF 00GGGGGG
                               00HHHHHH 00IIIIII]

[3] DGN:SCS a, SCU J PH f g [h] MSG STARTED
       [TEST   MISMATCH        SUPPLEMENTARY DATA
          i    00000001        00KKKKKK LLLLMMMM NNNNOOOO PPPPPPPP QQQQQQQQ
                               00RRRRRR 00SSSSSS 00TTTTTT 00UUUUUU 00VVVVVV
                               00WWWWWW 00XXXXXX
```

$$[4] \text{ DGN:SCS a, SCU J PH f g [h] MSG STARTED}$$

```
       [TEST   MISMATCH        SUPPLEMENTARY DATA
          i    00000002        00YYYYYY LLLLMMMM NNNNOOOO PPPPPPPP QQQQQQQQ
```
$$00ZZZZZZ\ 00a^1a^1a^1a^1a^1a^1\ 00b^1b^1b^1b^1b^1b^1\ 00c^1c^1c^1c^1c^1c^1\ 00d^1d^1d^1d^1d^1d^1$$
$$00e^1e^1e^1e^1e^1e^1\ 00f^1f^1f^1f^1f^1f^1$$

2. REASON FOR OUTPUT

To print out diagnostic results on a phase basis for a service circuit system (SCS). This occurs in the case of a partial diagnosis, a test failure, or whenever RAW was requested on the input message.

3. VARIABLE FIELD DEFINITIONS

a	Member number of the SCS 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 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 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.

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 of l and m 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. p is repeated x times, were x is bits 23-21 of o. This data supplies information about the test being executed. The last supplementary data word specified is printed first.

q	DOLOOP data words. q is repeated y times, where y is bits 20-18 of 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.
r	Subroutine data words. r is repeated z times, where z is bits 17-15 of 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	PU address bus bits of the bus order sent to the SCC (12 bits).
v	PU write bus bits of the order sent to the SCC (36 bits). The upper 7 bits are the opcode and the remaining 29 bits are the data for the order. For SCC 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 SCC code (used only by 1A).
z	Number of words of subroutine data. Not defined by SCC code (used only by 1A).
A	Trouble locating procedures (TLP) data. Not defined by SCC code (used only by 1A).
B	Indicates in which half word of the SCC 32 bit word the mismatched data occurred. (0 least significant, 1 most significant)
C	SCC microprogram address of the previous function called, i.e., the first function on the stack or the function that called DGFAIL.
D	SCC microprogram address of the second function on the stack , i.e., the address of a subroutine call which then called DGFAIL.
E	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.
F	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.

G	The 16 bit field of supplementary data written to the least significant half word of LR59.
H	The 16 bit field of supplementary data written to the most significant half word of LR60.
I	The 16 bit field of supplementary data written to the least significant half word of LR60.
J	Service circuit unit (SCU) number.
K	Register 0.
L	K-CODE (SCU number, etc.).
M	Opcode.
N	Sub-opcode.
O	Test group number.
P	The 1A table ram location.
Q	Miscellaneous 1A control bits.
R	First popped value from the stack (address).
S	Second popped value from the stack (address).
T	Register 1.
U	Register 2.
V	Register 3.
W	Register 4.
X	Register 5.
Y	Register 10.
Z	Second popped value from the stack (address).
a^1	SCU status register.
b^1	Register 11.
c^1	Register 12.
d^1	Register 13.
e^1	Register 14.
f^1	Register 15.

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
   PUDGSS - if subunit type is CONTR
   PUDGSV - if subunit type is SCU
   PUDGSS99 - if subunit type is IPUB

Practice 234-180-020, *Diagnostic Language - DIAL*
Practice 234-180-260, *4ESS™ Peripheral Diagnostic Programs*

TABLE 1. SCS DIAGNOSTIC CATP CODES

Memory Word: DG1CATP

BIT	SYMBOL	FUNCTION
0	DG4CATPPUB0	Peripheral unit bus (PUB) 0 out-of-service
1	DG4CATPPUB1	PUB 1 out-of-service
2	DG4CATPSP0	Base signaling processor (SP) frame out-of-service
3	DG4CATPSP1	Duplicated SP frame out-of-service
4	DG4CATPMATE	Mate out-of-service
5	DG4CATPROS	Power converter in request out-of-service (ROS) state
6	SSNCATPNOPMONTST	Power monitor tests skipped on manual ROS test
9	DG4CATPMI	Other frame responding to this frame's member interrogation
10	DG4CATPGI	Other frame responding to this frame's group interrogation
11	DG4CATPPUBD	PUB not duplex
12	SS4CATPAPUF	Other frame responding to autonomous peripheral unit failure (APUF) clock interrogation
13	SS4CATPAPUT	Other frame responding to autonomous peripheral unit trouble (APUT) clock interrogation
15	SS4CATPAPUB	Other frame responding to autonomous peripheral unit base (APUB) clock interrogation
16	SS4CATPPHP	Some other frame responding to PHP polling
17	SS4CATPPLP	Some other frame responding to PLP polling
18	SS4CATPHDUNEQ	HDU is not equipped
19	SS4CATPEBLNKNTST	Unused EBI link tests skipped
20	SS4CATPPDG	Some other frame responding to PDG polling
21	SS4CATPPSZ	Some other frame responding to PSZ polling
22	SS4CATPC0OS	Controller 0 out-of-service
23	SS4CATPC1OS	Controller 1 out-of-service

Memory Word: DG1CATP2

BIT	SYMBOL	FUNCTION
0	DG4CATPSPS	Signaling processor (SP) scan/distribute points out of service
1	DG4CATPSPB	SP bus out of service
2	SS4CATPSCUNOPWR	SCU powered down

ID . . . . DGN:SCS-NOT
WORK CENTER . . MOC
GENERIC . . . . 4E17 Rel. 3 and later
APPLICATION . . 4E
TYPE . . . . Output

1. FORMAT

```
DGN:SCS a,b c:d e NOT STARTED - f
```

2. REASON FOR OUTPUT

To report that the diagnostic request cannot be started. This is usually when the service circuit system (SCS) for which the diagnostic was requested cannot be removed from service.

3. VARIABLE FIELD DEFINITIONS

a	Member number of the SCS being diagnosed.
b	Subunit type being diagnosed.
c	Submember number of the subunit being diagnosed.
d	Helper unit type.
e	Helper member number.
f	Reason the diagnostic was not started.

4. ACTION TO BE TAKEN

If the specified SCS cannot be removed from service because there is no spare, restore a spare unit to service.

5. REFERENCES

PIDENT
    PUDGSS - if subunit type is CONTR
    PUDGSV - if subunit type is SCU
    PUDGSS99 - if subunit type is IPUB

Practice 234-180-020, *Diagnostic Language - DIAL*
Practice 234-180-260, *4ESS™ Peripheral Diagnostic Programs*

Input Messages
    DGN:SCS
    RST:SCS

ID .... DGN:SCS-PUB
WORK CENTER.. MOC
GENERIC....... 4E17 Rel. 3 and later
APPLICATION .. 4E
TYPE .... Output

1. FORMAT

```
DGN:SCS a b c:PUB d e f [g]
```

2. REASON FOR OUTPUT

To specify both the diagnostic results and the termination mode at the conclusion of the diagnostic execution on a service circuit system (SCS).

3. VARIABLE FIELD DEFINITIONS

a   Member number of the SCS under diagnosis.

b   Type of subunit for which the diagnostic was requested.

c   Number of the subunit under diagnosis.

d   Helper peripheral unit bus (PUB) that was requested.

e   Termination mode for the diagnostic:

           ABORTED   — Diagnostic abnormally stopped because of an interrupt, error in execution, or a STOP:MACLI input request.

           COMPLETED — Diagnostic completed normally.

           STOPPED   — Diagnostic 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 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   — 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.

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 (00000001 00001000), tests were skipped for reasons 9 and 24. A complete list of CATP bits and their description is contained in the DGN:SCS-MIS message.

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 0010545.

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.

If a diagnostic is requested from the main frame, no power monitor tests are performed. At the completion of the diagnostic, the system will report the results via a DGN:SCS output message for the appropriate unit. In addition to reporting any other STF conditions, the DGN:SCS message will contain a bit position 6 in the CATP field. This bit indicates that the power monitor tests were skipped.

When such a diagnostic is performed, the user should first clear any other problems indicated by CATP bits. The DGN:SCS input message must then be used to diagnose the power monitor unit.

5. REFERENCES

PIDENTs
   PUDGSS - if subunit type is CONTR
   PUDGSV - if subunit type is SCU
   PUDGSS99 - if subunit type is IPUB

Practice 234-180-020, *Diagnostic Language - DIAL*
Practice 234-180-260, *4ESS*™ *Peripheral Diagnostic Programs*

Input message
   STOP:MACLI

ID .... DGN:SCS-TERM
WORK CENTER.. MOC
GENERIC....... 4E17 Rel. 3 and later
APPLICATION .. 4E
TYPE .... Output

1. FORMAT

    DGN:SCS a,b c:d e TERMINATED AT PH f ADR g AFTER TEST h [i]

2. REASON FOR OUTPUT

To report that the diagnostic terminates early for the service circuit system (SCS). 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	Member number of the SCS 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 in which the termination occurred.
g	Address in the diagnostic phase (or subroutine) at which the termination occurred.
h	Last test executed before the termination occurred.
i	FORCED - This optional field will be printed only if the termination occurred and UCL (unconditional) was specified on the DGN input message. Termination in this way is restricted to cases where further diagnostic execution will cause system problems.

4. ACTION TO BE TAKEN

Repair faulty frame. If further diagnostic execution is desired, specify UCL on the DGN input message. This will inhibit all early terminations except those that are forced.

If a diagnostic is requested from the main frame, no power monitor tests are performed. At the completion of the diagnostic, the system will report the results via a DGN:SCS output message for the appropriate unit. In addition to reporting any other STF conditions, the DGN:SCS message will contain a bit position 6 in the CATP field. This bit indicates that the power monitor tests were skipped.

When such a diagnostic is performed, the user should first clear any other problems indicated by CATP bits. The DGN:SCS input message must then be used to diagnose the power monitor unit.

5. REFERENCES

PIDENTs
    PUDGSS - if subunit type is CONTR
    PUDGSV - if subunit type is SCU

Practice 234-180-020, *Diagnostic Language - DIAL*
Practice 234-180-260, *4ESS^TM Peripheral Diagnostic Programs*

ID . . . . DUMP:DISK-SCS
WORK CENTER. . MOC
GENERIC. . . . . . . 4E17 Rel. 3 and later
APPLICATION . . 4E
TYPE . . . . Output

1. FORMAT

DUMP:DISK;SCS a, SCU b c

2. REASON FOR OUTPUT

Response to a service circuit unit (SCU) disk dump request.

3. VARIABLE FIELD DEFINITIONS

a   Service circuit system (SCS) member number (0-7).

b   SCU member number (0-15). Software status controller.

c   Response to a SCU disk dump request.

    ABORTED MACRO REJECTED — The SCS controller did not accept the SCU disk dump macro.

    ABORTED MACRO TIMEOUT — The SCS controller did not reply to the SCU disk dump macro.

    COMPLETED — The SCU disk dump has completed.

    FAILED — The SCU disk dump has failed.

    STOPPED ANN UPD IP — An announcement update is in progress. The SCU disk dump cannot run concurrently with an announcement update.

    STOPPED CONFIG FAILED OR UNEQ — Both controllers in the SCS frame are either unequipped or cannot be configured.

    STOPPED DISK UNEQ — The SCU disk pair is unequipped.

    STOPPED SCU DISK IN USE — An inter/intra SCU file copy, inter/intra SCU raw disk copy, or an SCU disk dump job is already in progress. The SCU disk dump cannot run concurrently with these jobs.

    STOPPED SCU UNEQ — The SCU is unequipped.

4. ACTION TO BE TAKEN

If variable c is:

        ABORTED MACRO REJECTED — Diagnose the active controller and re-enter the input message.

        ABORTED MACRO TIMEOUT — Diagnose the active controller and re-enter the input message.

        COMPLETED — No action required.

FAILED — Diagnose the SCU and re-enter the input message.

STOPPED ANN UPD IP — Re-enter the input message after the announcement update has completed.

STOPPED CONFIG FAILED OR UNEQ — Equip the SCS or diagnose the controllers and re-enter the input message.

STOPPED DISK UNEQ — Correct the SCU disk pair number or equip the disk pair and re-enter the input message.

STOPPED SCU DISK IN USE — Re-enter the input message after the interfering job in the SCS has completed or stop the interfering job.

STOPPED SCU UNEQ — Correct the SCU number or equip the SCU and re-enter the input message.

5. REFERENCES

PIDENT
  SCSFPUMP

Input Message
  DUMP:DISK-SCS

ID .... DUMP:MEMORY-SCS
WORK CENTER.. MOC
GENERIC....... 4E17 Rel. 3 and later
APPLICATION .. 4E
TYPE .... Output

1. FORMAT

[1]   DUMP:MEMORY SCS a CONTR[b] COMPLETED
        ccccc dddddddddddddddddd [d..d] [d..d] [d..d]
            .   .   .   .   .
            .   .   .   .   .
            .   .   .   .   .

[2]   DUMP:MEMORY SCS a CONTR[b] COMPLETED
        eeeee ffffffff [f..f] [f..f] [f..f] [f..f] [f..f] [f..f] [f..f]
            .   .   .   .
            .   .   .   .
            .   .   .   .

[3]   DUMP:MEMORY SCS a CONTR[b] COMPLETED
        ggggg hhhhhhhh [h..h] [h..h] [h..h] [h..h] [h..h] [h..h] [h..h]
            .   .   .   .
            .   .   .   .
            .   .   .   .

[4]   DUMP:MEMORY SCS a CONTR[b] i

[5]   DUMP:MEMORY SCS a SCU j COMPLETED
        kkkk 111111111111 [1..1] [1..1] [1..1]
            .   .   .   .   .
            .   .   .   .   .   .
            .   .   .   .   .

[6]   DUMP:MEMORY SCS a SCU j COMPLETED
        m nnnn oooo [o..o] [o..o] [o..o] [o..o] [o..o] [o..o] [o..o]
            .   .   .   .
            .   .   .   .
            .   .   .   .

[7]   DUMP:MEMORY SCS a SCU j p

2. REASON FOR OUTPUT

This message prints in response to a DUMP:MEMORY-SCS input message. Format [1],
[2], [3] or [4] is output when the input request specified a read of service circuit system
(SCS) controller memory. Format [5], [6], or [7] is output if the input request specified a
read of service circuit unit (SCU) memory. More than one output message may be
printed depending on the number of words of memory read.

3. VARIABLE FIELD DEFINITIONS

a	SCS member number in decimal (0-7).
b	Controller (0 or 1). Default is the active controller.
c	SCS controller micro-instruction random access memory (RAM) memory address in hexadecimal. Valid range is 0 through FFFF.
d	Controller micro-instruction (64 bits) in hexadecimal. Repeated as necessary, 4 per line.
e	SCS controller global RAM memory address in hexadecimal. Valid range is 0 through 3FFFF.
f	Controller global RAM data (32 bits) in hexadecimal. Repeated as necessary, 8 per line.
g	SCS controller local RAM memory address in hexadecimal. Valid range is 0 thru FFFF.
h	Controller local RAM data (32 bits) in hexadecimal. Repeated as necessary, 8 per line.
i	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 - SCS UNEQ   Request denied because the frame is unequipped.

RL - CONTR LOM   Request denied because the a frame controller is in listen-only mode and a controller was specified.

j	SCU number in decimal (0-15).
k	SCU micro-instruction read only memory (ROM) (0-3FFF)/RAM (4000-BFFF) memory address in hexadecimal. Valid range is 0 - BFFF.
l	SCU micro-instruction (48 bits) in hexadecimal. Repeated as necessary, 4 per line.
m	SCU table RAM memory address segment number in hexadecimal. Valid range is 0 thru F.
m	SCU table RAM memory address in hexadecimal. Valid range is 0 thru FFFF.
o	SCU table RAM data (16 bits) in hexadecimal. Repeated as necessary, 8 per line.

p   SCU request fail code:

DENIED - SCU UNEQ   Request for the given SCU was denied
                      because the SCU is unequipped.

FAILED - INTERNAL ERROR   Request for the given SCU failed
                      because of an unexpected software error when
                      processing the read command.

4. ACTION TO BE TAKEN

If variable i is:

RL - CONTR LOM   then retry later, as this condition should be
                   cleared quickly.

If variable 1 has:

a ? printed as data then the read for the given SCU failed because

- the SCS frame rejected the read command, or
- the SCS frame did not reply to the read command, or
- the SCU failed in processing the read command, or
- another software error occurred.

Contact the Technical Assistance Center for further
information.

If variable o has:

a ? printed as data then the read for the given SCU failed because

- the SCS frame rejected the read command, or
- the SCS frame did not reply to the read command, or
- the SCU failed in processing the read command, or
- another software error occurred.

Contact the Technical Assistance Center for further
information.

If variable p is:

FAILED - INTERNAL ERROR   then contact the Technical Assistance
                   Center for further information.

5. REFERENCES

PIDENTs
  SCSBPMEM

Input Message
  DUMP:MEMORY-SCS

Output Messages
  DUMP:MEMORY-SCS
  LOAD:MEMORY-SCS

ID . . . . DUMP:SCS-IREG
WORK CENTER . . MOC, TEC
GENERIC . . . . 4E17 Rel. 3 and later
APPLICATION . . 4E
TYPE . . . . Output

1. FORMAT

```
DUMP:SCS a, IREG!
```

CSTATUS	HWSTATR	MADATA	FSTATUS	SCUOS	CESR	0...0
PEST	CONTROL	EBLKSTATL	EBLKSTATH	EBLKADR	GRESR	0...0
GRCNTRM	GADRM0	GADRM1	EXESR	EXCSTATML	EXCSTATMH	0...0
EXFPR	EXPC	EXSANTIM	EXSTKBL	EXSTKBH	EXSTRPTR	0...0
EXINTR	RLPBPTR	WLPBPTR	RDBPTR	WDBPTR	MBPTRS	0...0
SDOWMBPTR	MBSTAT	SCU0ESR	SCU1ESR	SCU2ESR	SCU3ESR	0...0
SCU4ESR	SCU5ESR	SCU6ESR	SCU7ESR	SCU8ESR	SCU9ESR	0...0
SCU10ESR	SCU11ESR	SCU12ESR	SCU13ESR	SCU14ESR	SCU15ESR	0...0
FWERRBUF0	FWERRBUF1	FWERRBUF2	FWERRBUF3	FWERRBUF4	FWERRBUF5	0...0
FWERRBUF6	FWERRBUF7	FWERRBUF8	FWERRBUF9	EBERRORM	EBLKADRM	0...0
EBLKSTATML	EBLKSTATMH	0...0	0...0	0...0	0...0	0...0
MEMN	XLATE	7...7	7...7	7...7	7...7	7...7
CSTATUS	HWSTATR	MADATA	FSTATUS	SCUOS	CESR	0...0
PEST	CONTROL	EBLKSTATL	EBLKSTATH	EBLKADR	GRESR	0...0
GRCNTRM	GADRM0	GADRM1	EXESR	EXCSTATML	EXCSTATMH	0...0
EXFPR	EXPC	EXSANTIM	EXSTKBL	EXSTKBH	EXSTRPTR	0...0
EXINTR	RLPBPTR	WLPBPTR	RDBPTR	WDBPTR	MBPTRS	0...0
SDOWMBPTR	MBSTAT	SCU0ESR	SCU1ESR	SCU2ESR	SCU3ESR	0...0
SCU4ESR	SCU5ESR	SCU6ESR	SCU7ESR	SCU8ESR	SCU9ESR	0...0
SCU10ESR	SCU11ESR	SCU12ESR	SCU13ESR	SCU14ESR	SCU15ESR	0...0
FWERRBUF0	FWERRBUF1	FWERRBUF2	FWERRBUF3	FWERRBUF4	FWERRBUF5	0...0
FWERRBUF6	FWERRBUF7	FWERRBUF8	FWERRBUF9	EBERRORM	EBLKADRM	0...0
EBLKSTATML	EBLKSTATMH	0...0	0...0	0...0	0...0	0...0

2. REASON FOR OUTPUT

To dump the service circuit system (SCS) internal registers. The first 11 lines are dumps from controller 0 registers; the last 11 lines are dumps from controller 1 registers.

3. VARIABLE FIELD DEFINITIONS

a	SCS member number.
CSTATUS	Software status controller.
HWSTATR	Hardware status controller.
MADATA	MA data response.
FSTATUS	Software frame status.
SCUOS	Software service circuit unit (SCU) out-of-service status.

SEE PROPRIETARY NOTICE ON COVER PAGE

CESR	Primary controller error source register (ESR).
PEST	Programable error source trigger (PEST) control register.
CONTROL	Controller control register.
EBLKSTATL	Extended bus link status low register.
EBLKSTATH	Extended bus link status high register.
EBLKADR	Extended bus link address register.
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.
EXFPR	EXEC frame pointer register.
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.
RLPBPTR	LP buffer read pointer.
WLPBPTR	LP buffer write pointer.
RDBPTR	Digit buffer read pointer.
WDBPTR	Digit buffer write pointer.
MBPTRS	Maintenance buffer pointers.
SDOWMBPTR	Shadow maintenance buffer pointers.
MBSTAT	Maintenance buffer status.
SCU0-15ESR	SCU 0-15 primary ESRs.
FWERRBUF0	Firmware error register and buffer word 0. Contains the F-level/interject level error code.
FWERRBUF1-9	Firmware error register and buffer words 1-9. Contains additional information based on the error code.
EBERRORM	Extended bus error code memory.

EBLKADRM	Extended bus link address memory.
EBLKSTATML	Extended bus link status memory low.
EBLKSTATMH	Extended bus link status memory high.
MEMN	SCS member number.
XLATE	Base translation address.

4. ACTION TO BE TAKEN

None.

5. REFERENCES

PIDENT
  PULPMAIN
  PULPDFSS

                                    ID . . . . EX:SCS
                                    WORK CENTER. . MOC
                                    GENERIC. . . . . . . 4E17 Rel. 3 and later
                                    APPLICATION . . 4E
                                    TYPE . . . . Output

1. FORMAT

        EX:SCS a b c:PUB d e f [g]

2. REASON FOR OUTPUT

To specify both the diagnostic results and the termination mode at the conclusion of the diagnostic execution on a service circuit system (SCS).

3. VARIABLE FIELD DEFINITIONS

a	Member number of the SCS under diagnosis.
b	Type of subunit for which the diagnostic was requested.
c	Number of the subunit under diagnosis.
d	Helper peripheral unit bus (PUB) that was requested.
e	Termination mode for the diagnostic:

    ABORTED   — Diagnostic abnormally stopped because of an
                    interrupt, error in execution, or a STOP:MACLI
                    input request.

    COMPLETED — Diagnostic completed normally.

    STOPPED   — Diagnostic 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 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   — 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.

g	An optional field that will appear only if he 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 (00000001

00001000), then tests were skipped for reasons 9 and 24. The reasons are contained in Table 1.

If STF, this field gives the number of failing phases, number of failing tests, trouble number. For example, (2,9, 00101545) indicates two phases failed, nine tests failed, and a trouble number of 0010545.

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
   PUDGSS   - if subunit type is CONTR
   PUDGSV   - if subunit type is SCU
   PUDGSS99 - if subunit type is IPUB

Practice 234-180-020, *Diagnostic Language - DIAL*
Practice 234-180-260, *4ESS™ Peripheral Diagnostic Programs*

Input Message
   STOP:MACLI

TABLE 1
SCS DIAGNOSTIC CATP CODES

Memory Word: DG1CATP

BIT	SYMBOL	FUNCTION
0	DG4CATPPUB0	Peripheral unit bus (PUB) 0 out-of-service
1	DG4CATPPUB1	PUB 1 out-of-service
2	DG4CATPSP0	Base signaling processor (SP) frame out-of-service
3	DG4CATPSP1	Duplicated SP frame out-of-service
4	DG4CATPMATE	Mate out-of-service
5	DG4CATPROS	Power converter in request out-of-service (ROS) state
6	SSNCATPNOPMONTST	Power monitor tests skipped on manual ROS test
9	DG4CATPMI	Other frame responding to this frame's member interrogation
10	DG4CATPGI	Other frame responding to this frame's group interrogation
11	DG4CATPPUBD	PUB not duplex
12	SS4CATPAPUF	Other frame responding to autonomous peripheral unit failure (APUF) clock interrogation
13	SS4CATPAPUT	Other frame responding to autonomous peripheral unit trouble (APUT) clock interrogation
15	SS4CATPAPUB	Other frame responding to autonomous peripheral unit base (APUB) clock interrogation
16	SS4CATPPHP	Some other frame responding to PHP polling
17	SS4CATPPLP	Some other frame responding to PLP polling
18	SS4CATPHDUNEQ	HDU is not equipped
19	SS4CATPEBLNKNTST	Unused EBI link tests skipped
20	SS4CATPPDG	Some other frame responding to PDG polling
21	SS4CATPPSZ	Some other frame responding to PSZ polling
22	SS4CATPC0OS	Controller 0 out-of-service
23	SS4CATPC1OS	Controller 1 out-of-service

Memory Word: DG1CATP2

BIT	SYMBOL	FUNCTION
0	DG4CATPSPS	Signaling processor (SP) scan/distribute points out of service
1	DG4CATPSPB	SP bus out of service
2	SS4CATPSCUNOPWR	SCU powered down

ID . . . . EX:SCS-ADDR
WORK CENTER . . MOC
GENERIC . . . . 4E17 Rel. 3 and later
APPLICATION . . 4E
TYPE . . . . Output

1. FORMAT

EX:SCS a ILLEGAL ADDRESS b

2. REASON FOR OUTPUT

To indicate that an illegal address was used for an interactive diagnostic function on a service circuit system (SCS).

3. VARIABLE FIELD DEFINITIONS

a   The member number of the SCS being diagnosed.

b   The type of illegal address:

ADVANCE   — The address advanced to contains an illegal address.

DOLOOPS   — 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 MUST COMPLETE PHASE IN PROGRESS , remove the pause from the first phase and retry the diagnostic. If all other cases, correct the address and retry the diagnostic.

5. REFERENCES

PIDENT
   DCONTABL

Practice 234-280-040, *Diagnostic Language - DL/1*
Practice 234-280-220, *1A Processor Diagnostic Programs Description*

PA-4A002-01, *4ESS*^{TM} *User's Manual*

Input Message
EX:SCS

ID . . . . EX:SCS-ILL
WORK CENTER. . MOC
GENERIC. . . . . . . 4E17 Rel. 3 and later
APPLICATION . . 4E
TYPE . . . . Output

1. FORMAT

    EX:SCS a,b c:d e ILLEGAL PHASE

2. REASON FOR OUTPUT

To report that one or more illegal interactive diagnostic phases have been requested on a partial interactive diagnostic request for the service circuit system (SCS). The illegal phase will not be executed; however, all valid phases will be run.

3. VARIABLE FIELD DEFINITIONS

a   Member of the SCS being diagnosed.

b   Subunit number of the subunit being diagnosed.

c   Submember number of the subunit being diagnosed.

d   Helper unit type.

e   Helper member number.

4. ACTION TO BE TAKEN

Check the *Input Messages* manual for the list of valid phase numbers.

5. REFERENCES

PIDENT
    DCONTOLL

SEE PROPRIETARY NOTICE ON COVER PAGE

                                        ID . . . . EX:SCS-LOOP
                                        WORK CENTER . . MOC
                                        GENERIC . . . . 4E17 Rel. 3 and later
                                        APPLICATION . . 4E
                                        TYPE . . . . Output

1. FORMAT

    EX:SCS a,b c:d e LOOPING f

2. REASON FOR OUTPUT

To indicate that the interactive diagnostic on the service circuit system (SCS) is repeatedly executing one or more consecutive segments of code.

3. VARIABLE FIELD DEFINITIONS

a	Member number of the SCS 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	COMPLETE — Looping has terminated.
	STARTED — Looping has begun.

4. ACTION TO BE TAKEN

None.

5. REFERENCES

PIDENTs
   PUDGSS   - if subunit type is CONTR.
   PUDGSV   - if subunit type is SCU.
   PUDGSS99 - if subunit type is IPUB.

Practice 234-180-020, *Diagnostic Language - DIAL*
Practice 234-180-260, *4ESS*TM *Peripheral Diagnostic Programs*

ID . . . . EX:SCS-NOT
WORK CENTER . . MOC
GENERIC . . . . 4E17 Rel. 3 and later
APPLICATION . . 4E
TYPE . . . . Output

1. FORMAT

    EX:SCS a,b c:d e NOT STARTED - f

2. REASON FOR OUTPUT

To report that the diagnostic request cannot be started for the service circuit system (SCS). This usually occurs when the unit for which the diagnostic was requested cannot be removed from service.

3. VARIABLE FIELD DEFINITIONS

a	Member number of the SCS being diagnosed.
b	Subunit type being diagnosed.
c	Submember number of the subunit being diagnosed.
d	Helper unit type.
e	Helper member number.
f	Reason the diagnostic was not started.

4. ACTION TO BE TAKEN

If the specified SCS cannot be removed from service because there is no spare, restore a spare unit to service.

5. REFERENCES

PIDENT
    MCFWPEMO

ID .... EX:SCS-SUSP
WORK CENTER. . MOC
GENERIC....... 4E17 Rel. 3 and later
APPLICATION . . 4E
TYPE .... Output

1. FORMAT

This message has four formats as shown below:

[1]   `EX:SCS a,b c:de SUSPENDED`

[2]   `EX:SCS a,b c:de SUSPENDED AT PH f ADR g (i)`

[3]   `EX:SCS a,b c:de SUSPENDED at PH f ADR g AFTER TEST h(i)`

[4]   `EX:SCS a,b c:de SUSPENDED ILLEGAL INPUT`

2. REASON FOR OUTPUT

In general, this message will be printed whenever an interactive diagnostic execution has been suspended for the service circuit system (SCS). Each of the four formats identifies a specific type of suspension.

Format [1] will be printed if there is no phase active.

Format [2] will be printed if the suspension occurred at an address specified by the input message.

Format [3] will be printed if the suspension occurred at a point immediately following a test.

Format [4] will be printed if the diagnostic was suspended because the input was illegal.

3. VARIABLE FIELD DEFINITIONS

a	Member number of the unit 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 in which the diagnostic suspended. If no phase was active, then this phase does not occur.
g	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.

FIRST FAILURE — The diagnostic has been suspended because the first failure was encountered.

PAUSE   — The diagnostic has been paused at the specified address.

STEP   — The requested number of steps have been completed.

4. ACTION TO BE TAKEN

Specify another EX:SCS input. If no further interactive diagnostic execution is desired, specify a STOP:MACLI input message.

5. REFERENCES

PIDENTs
   PUDGSS   - if subunit type is CONTR.
   PUDGSV   - if subunit type is SCU.
   PUDGSS99   - if subunit type is IPUB.

Practice 234-180-020, *Diagnostic Language - DIAL*
Practice 234-180-260, *4ESS™ Peripheral Diagnostic Programs*

Input Messages
   EX:SCS
   STOP:MACLI

> ID . . . . EX:SCS-TERM
> WORK CENTER . . MOC
> GENERIC . . . . 4E17 Rel. 3 and later
> APPLICATION . . 4E
> TYPE . . . . Output

1. FORMAT

```
EX:SCS a,b c:d e TERMINATED AT PH f ADR g AFTER TEST h
[FORCED]
```

2. REASON FOR OUTPUT

To report that the interactive diagnostic terminates early for a service circuit system (SCS). 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	Member number of the SCS 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 in which the termination occurred.
g	Address in the diagnostic phase (or subroutine) at which the termination occurred.
h	Last test executed before the termination occurred.
FORCED	This indicates that the termination was unconditional. The type of termination is restricted to cases where further diagnostic execution will cause system problems.

4. ACTION TO BE TAKEN

Repair the faulty frame.

5. REFERENCES

PIDENTs
   PUDGSS - if subunit type is CONTR
   PUDGSV - if subunit type is SCU

Practice 234-180-020, *Diagnostic Language - DIAL*
Practice 234-180-260, *4ESS™ Peripheral Diagnostic Programs*

ID .... EX:SCS-TEST
WORK CENTER.. MOC
GENERIC....... 4E17 Rel. 3 and later
APPLICATION .. 4E
TYPE .... Output

1. FORMAT

```
EX:SCS a,b c:d e PH f g [h]
   [TEST MISMATCH SUPPLEMENTARY DATA
   i jjjjjjjj kkkkkkkk llllllll mmmmmmmm nnnnnnnn oooooooo
          pppppppp qqqqqqqq rrrrrrrr]
```

2. REASON FOR OUTPUT

To report that the diagnostic results are printed on a phase basis for the service circuit system (SCS). This occurs in the case of a partial diagnosis, a test failure, or whenever RAW was requested on the input message.

3. VARIABLE FIELD DEFINITIONS

a	Member number of the SCS 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 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 for the reasons, see the EX:SCS output message.

If subunit type is BUS, see DGN:PUB-RPT message for CATP

SEE PROPRIETARY NOTICE ON COVER PAGE

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.

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 RAW response.
l,m	Information concerning the test being executed. Details for l and m 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. p is repeated x times, where x is bits 23-21 of o. This data supplies information about the test being executed. The last supplementary data word specified is printed first.
q	DOLOOP data words. q is repeated y times, where y is bits 20-18 of 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.
r	Subroutine data words. r is repeated z times, where z is bits 17-15 of 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.

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
PUDGSS   - if subunit type is CONTR
PUDGSV   - if subunit type is SCU
PUDGSS99   - if subunit type is IPUB

Practice 234-180-020, *Diagnostic Language - DIAL*
Practice 234-180-260, *4ESS™ Peripheral Diagnostic Programs*

Input Messages
DGN:PUB-RPT
EX:SCS

ID . . . . INIT:SCS
WORK CENTER. . MOC
GENERIC. . . . . . . 4E17 Rel. 3 and later
APPLICATION . . 4E
TYPE . . . . Output

1. FORMAT

INIT:SCS a b

2. REASON FOR OUTPUT

To respond to a INIT:SCS input message requesting the format (init) of one of the disks of a service circuit unit (SCU).

3. VARIABLE FIELD DEFINITIONS

a   Service circuit system (SCS) member number (0-7) containing the SCU.

b   Response to a format SCU disk request.

SCU x ABORTED - MACRO REJECTED — The SCS controller did not accept the SCU disk format macro.

SCU x ABORTED - MACRO TIMEOUT — The SCS controller did not reply to the SCU disk format macro.

SCU x COMPLETE — The SCU disk format has completed.

SCU x FAILED — The SCU disk format has failed.

SCU x IN PROGRESS — The SCU disk format is in-progress.

SCU x STARTED — The SCU disk format has started.

SCU x STOPPED - ANN UPD IP — An announcement update is in progress in one or mores SCUs in the SCS. The SCU disk format cannot be run concurrently with an announcement update.

SCU x STOPPED - CONTR DUP FAIL OR UNEQ — Both controllers in the SCS frame are either unequipped or out-of-service (OOS).

SCU x STOPPED - DISK UNEQ — The SCU disk pair is unequipped.

SCU x STOPPED - SCU DISK IN USE — An inter/intra SCU file copy, intra SCU raw disk copy, or an SCU disk format job is already in progress in the SCS frame. The SCU disk format cannot run concurrently with these jobs.

SCU x STOPPED - SCU IN-SERVICE — The SCU is in-service ,the SCU must be taken OOS prior to format.

SCU x STOPPED - SCU UNEQ — The SCU is unequipped.

4. ACTION TO BE TAKEN

If variable b is:

SCU x ABORTED - MACRO REJECTED — Diagnose the active controller and re-enter the input message.

SCU x ABORTED - MACRO TIMEOUT — Diagnose the active controller and re-enter the input message.

SCU x COMPLETE — No action required.

SCU x FAILED — Diagnose the SCU and re-enter the input message.

SCU x IN PROGRESS — No action required.

SCU x STARTED — No action required.

SCU x STOPPED - ANN UPD IP — Re-enter the input message after the announcement update has completed.

SCU x STOPPED - CONTR DUP FAIL OR UNEQ — Equip the SCS or restore at least one of the controllers and re-enter the input message.

SCU x STOPPED - DISK UNEQ — Correct the SCU disk pair number ore equip the disk pair and re-enter the input message.

SCU x STOPPED - SCU DISK IN USE — Re-enter the input message after the interfering job in the SCS has completed or stop the interfering job.

SCU x STOPPED - SCU IN-SERVICE — Use the RMV:SCS input message to remove the SCU and re-enter the input message.

SCU x STOPPED - SCU UNEQ — Correct the SCU number or equip the SCU and re-enter the input message.

5. REFERENCES

PIDENT
  SCSFPUMP

Input Messages
  INIT:SCS
  STOP:INIT

ID .... LOAD:DISK-SCS
WORK CENTER.. MOC
GENERIC....... 4E17 Rel. 3 and later
APPLICATION .. 4E
TYPE .... Output

1. FORMAT

    LOAD:DISK;SCS a, SCU b c

2. REASON FOR OUTPUT

Response to a service circuit unit (SCU) disk load request.

3. VARIABLE FIELD DEFINITIONS

a   Service circuit system (SCS) member number (0-7).

b   SCU member number (0-15). Software status controller.

c   Response to a SCU disk load request.

    ABORTED MACRO REJECTED — The SCS controller did not accept the SCU disk
        load macro.

    ABORTED MACRO TIMEOUT — The SCS controller did not reply to the SCU disk
        load macro.

    COMPLETED — The SCU disk load has completed.

    FAILED — The SCU disk load has failed.

    STOPPED ANN UPD IP — An announcement update is in progress. The SCU
        disk load cannot run concurrently with an announcement update.

    STOPPED CONFIG FAILED OR UNEQ — Both controllers in the SCS frame are
        either unequipped or cannot be configured.

    STOPPED DISK UNEQ — The SCU disk pair is unequipped.

    STOPPED SCU DISK IN USE — An inter/intra SCU file copy, inter/intra SCU
        raw disk copy, or an SCU disk load job is already in progress. The SCU
        disk load cannot run concurrently with these jobs.

    STOPPED SCU IN-SERVICE — The SCU is in-service, the SCU must be taken
        out-of-service (OOS) prior to load.

    STOPPED SCU UNEQ — The SCU is unequipped.

4. ACTION TO BE TAKEN

If variable c is:

    ABORTED MACRO REJECTED — Diagnose the active controller and re-enter the
        input message.

    ABORTED MACRO TIMEOUT — Diagnose the active controller and re-enter the
        input message.

SEE PROPRIETARY NOTICE ON COVER PAGE

COMPLETED — No action required.

FAILED — Diagnose the SCU and re-enter the input message.

STOPPED ANN UPD IP — Re-enter the input message after the announcement update has completed.

STOPPED CONFIG FAILED OR UNEQ — Equip the SCS or diagnose the controllers and re-enter the input message.

STOPPED DISK UNEQ — Correct the SCU disk pair number or equip the disk pair and re-enter the input message.

STOPPED SCU DISK IN USE — Re-enter the input message after the interfering job in the SCS has completed or stop the interfering job.

STOPPED SCU IN-SERVICE — Use the RMV:SCS input message to remove the SCU and re-enter the input message.

STOPPED SCU UNEQ — Correct the SCU number of equip the SCU and re-enter the input message.

5. REFERENCES

PIDENT
    SCSFPUMP

Input Messages
    LOAD:DISK-SCS
    RMV:SCS

ID . . . . LOAD:MEMORY-SCS
WORK CENTER. . MOC
GENERIC. . . . . . . 4E17 Rel. 3 and later
APPLICATION . . 4E
TYPE . . . . Output

1. FORMAT

[1]   `LOAD:MEMORY SCS a CONTR[ b] c`

[2]   `LOAD:MEMORY SCS a SCU d e`

2. REASON FOR OUTPUT

This message prints in response to a `LOAD:MEMORY-SCS` input message. Format [1] is output if the input request specified a write of a service circuit system (SCS) controller memory. Format [2] is output if the input request specified a write of a service circuit unit (SCU) memory.

3. VARIABLE FIELD DEFINITIONS

a   SCS member number in decimal (0-7).

b   Controller (0 or 1). Default is the active controller.

c   Controller request code:

             `COMPLETED`   The controller memory was written.

             `DENIED - CONTR DUP`   Request denied because the frame is duplex and a controller was specified. This would result in an interrupt from the frame.

             `DENIED - SCS UNEQ`   Request denied because the frame is unequipped.

             `RL - 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.

d   SCU number in decimal (0-15).

e   SCU request code:

             `ABORTED - MACRO REJECTED`   Request for the given SCU was aborted because the SCS frame rejected the write command. Contact the Technical Assistance Center for further information.

             `ABORTED - MACRO TIMEOUT`   Request for the given SCU was aborted because the SCS frame did not reply to the write command. Contact the Technical Assistance Center for further information.

COMPLETED   The SCU memory was written.

DENIED — SCU UNEQ   Request for the given SCU was denied
because the SCU is unequipped.

FAILED — INTERNAL ERROR   Request for the given SCU 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 SCU was
stopped because the SCU failed in processing the
write command. Contact the Technical Assistance
Center for further information.

4. ACTION TO BE TAKEN

Read the data stored in the controller or the SCU using the DUMP:MEMORY—SCS
command as directed by the Technical Assistance Center.

If variable c is:

RL — CONTR LOM   then retry later, as this condition should be
cleared quickly.

If variable e is:

ABORTED — MACRO REJECTED   then contact the Technical Assistance
Center for further information.

ABORTED — MACRO TIMEOUT   then contact the Technical Assistance
Center for further information.

FAILED — INTERNAL ERROR   then contact the Technical Assistance
Center for further information.

STOPPED — MACRO FAILED   then contact the Technical Assistance
Center for further information.

5. REFERENCES

PIDENTs
    SCSBPMEM

Input Messages
    DUMP:MEMORY—SCS
    LOAD:MEMORY—SCS

Output Message
    DUMP:MEMORY—SCS

ID . . . . OP:BP-SCS
WORK CENTER. . MOC
GENERIC . . . . 4E17 Rel. 3 and later
APPLICATION . . 4E
TYPE . . . . Output

1. FORMAT

```
[1]     OP:BP  SCS  a  CONTR  e
           [NONE]


[2]     OP:BP  SCS  a  CONTR  COMPLETED
           b  c
           [d]


[3]     OP:BP  SCS  a  SCU  f  g
           [NONE]


[4]     OP:BP  SCS  a  SCU  f  COMPLETED
           b  c


[5]     OP:BP  SCS  a  ALL  e
           [NONE]


[6]     OP:BP  SCS  a  ALL  COMPLETED
          [CONTR  b  c]
          [CONTR  d]
          [CONTR  e]
          [SCU  f  b  c]
          [SCU  f  d]
          [SCU  f  g]


[7]     OP:BP  SCS  a  SUM  e
           [NONE]


[8]     OP:BP  SCS  a  SUM  COMPLETED
          [CONTR]
          [SCU  f]
```

2. REASON FOR OUTPUT

This message prints in response to an OP:BP-SCS input message. Format [1], or [2] is output if the input request specified that all breakpoints of a service circuit system (SCS) simplex controller or duplex controllers be listed. Format [3], or [4] is output if the input request specified that all breakpoints of a service circuit unit (SCU) be listed. Format [5], or [6] is output if the input request specified that all breakpoints of an SCS frame (controllers and SCUs) be listed. Format [5], or [6] may result in more than one output message depending on the amount of data to be printed. Formats [1] through [6] give the micro-instruction random access memory (MRAM) address and type for each breakpoint listed. Format [7], or [8] is 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.

3. VARIABLE FIELD DEFINITIONS

a   SCS member number in decimal (0-7).

b   The address of the breakpoint in hexadecimal.

c   Breakpoint type:

— CUSTOM

— FAST

— NORMAL

d   Summary data fail code:

FAILED — INTERNAL ERROR   The controller summary data word is inconsistent with the breakpoint data from the hardware (controller or SCU). 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 status code:

COMPLETED   All breakpoints have been output. (Not valid for format 6.)

DENIED — CONTR DUP FAILED   Request denied because the frame is duplex failed.

DENIED — SCC IN GROWTH   Request denied because the frame is in growth or special growth.

DENIED — SCC UNEQ   Request denied because the frame is unequipped.

RL — CONTR LOM   Request denied because the a frame controller is in listen-only mode. Retry later, as this condition should be cleared quickly.

f   SCU number in decimal (0-15).

g   SCU request status code:

ABORTED — MACRO REJECTED   Request for the given SCU was aborted because the SCS frame rejected the list command. Contact the Technical Assistance Center for further information.

ABORTED — MACRO TIMEOUT   Request for the given SCU was aborted because the SCS frame did not reply to the list command. Contact the Technical Assistance Center for further information.

COMPLETED   All breakpoints have been output. (Not valid for format 6.)

DENIED - CONTR DUP FAILED   Request denied because the frame is duplex failed.

DENIED - SCU IN GROWTH   Request for the given SCU was denied because the SCU is in growth or special growth.

DENIED - SCU IS OOS   Request for the given SCU was denied because the SCU is out of service.

DENIED - SCU UNEQ   Request for the given SCU was denied because the SCU is unequipped.

FAILED - INTERNAL ERROR   Request for the given SCU failed because of an unexpected software error when processing the list command. Contact the Technical Assistance Center for further information.

STOPPED - MACRO FAILED   Request for the given SCU was stopped because the SCU failed in processing the list command. Contact the Technical Assistance Center for further information.

RL - CONTR LOM   Request denied because the a frame controller is in listen-only mode. Retry later, as this condition should be cleared quickly.

4. ACTION TO BE TAKEN

If variable d is:

FAILED - INTERNAL ERROR   then contact the Technical Assistance Center for further information.

If variable e is:

RL - CONTR LOM   then retry later, as this condition should be cleared quickly.

If variable g is:

ABORTED - MACRO REJECTED   then contact the Technical Assistance Center for further information.

ABORTED - MACRO TIMEOUT   then contact the Technical Assistance Center for further information.

FAILED - INTERNAL ERROR   then contact the Technical Assistance Center for further information.

STOPPED - MACRO FAILED   then contact the Technical Assistance Center for further information.

RL – CONTR LOM   then retry later, as this condition should be
cleared quickly.

5. REFERENCES

PIDENT
  SCSBPMEM

Input Messages
  CLR:BP-SCS
  OP:BP-SCS
  SET:BP-SCS

Output Message
  REPT:BP-SCS

ID . . . . REPT:BP-SCS
WORK CENTER. . MOC
GENERIC. . . . . . . 4E17 Rel. 3 and later
APPLICATION . . 4E,1A
TYPE . . . . Output

1. FORMAT

[1] `REPT:BP SCS a MRAM b {FAST|NORMAL|CUSTOM}`

[2] `REPT:BP SCS a SCU c MRAM d {FAST|NORMAL|CUSTOM}`

2. REASON FOR OUTPUT

This autonomous message prints whenever a breakpoint fires in a service circuit system (SCS) frame. Form [1] is used for a breakpoint report from the controller and form [2] is used for a breakpoint report from a service circuit unit (SCU).

3. VARIABLE FIELD DEFINITIONS

a	SCS member number in decimal (0-7).
b	SCS controller micro-store instruction random access memory (MRAM) address in hexadecimal where the breakpoint has fired. The valid range is 0 thru FFFF.
c	SCU number in decimal (0-15).
d	SCU MRAM address in hexadecimal where the breakpoint has fired. The valid range is 4000 - BFFF.

4. ACTION TO BE TAKEN

Read the breakpoint data stored from the controller or from the SCU using the `DUMP:MEMORY-SCS` command as directed by the Technical Assistance Center. Remove any unneeded breakpoints using the `CLR:BP-SCS` input command.

5. REFERENCES

PIDENT
  SCSBPMEM

Input Messages
  `CLR:BP-SCS`
  `DUMP:MEMORY-SCS`
  `OP:BP-SCS`

Output Messages
  `DUMP:MEMORY-SCS`
  `OP:BP-SCS`

ID . . . . RMV:SCS
WORK CENTER . . MOC
GENERIC . . . . 4E17 Rel. 3 and later
APPLICATION . . 4E
TYPE . . . . Output

1. FORMAT

RMV:SCS a b c

2. REASON FOR OUTPUT

To respond to a power control switch (PCS) request, a teletypewriter (TTY) remove message, or a TTY restore message for a service circuit system (SCS) frame that requests diagnostics be run.

3. VARIABLE FIELD DEFINITIONS

a   SCS member number (0-7).

b   Subunit type and submember number (controller (CONTR) 0 or 1, service circuit unit (SCU) 0 through 15, or interface to peripheral unit bus (IPUB) 0 or 1).

c   Disposition of request:

STOPPED 3B DUPLEX FAILED

COMPL — Action completed.

NOT STARTED FAC BUSY RETRY LATER

STOPPED ACT MAIN: MATE OOS — Controller subunits only.

STOPPED CONTR DUPLEX FAILED

STOPPED INVALID UNIT OR SUBUNIT

STOPPED IPUBS SIMPLEX — Interface peripheral bus units
(IPUB) subunits only.

STOPPED PUB SIMPLEX

STOPPED SCU DISK IN USE — SCU subunits only .

STOPPED SERVICE CIRCUIT THRESHOLD EXCEEDED — SCU
subunits only.

4. ACTION TO BE TAKEN

If variable c is:

NOT STARTED FAC BUSY RETRY LATER, the scan point acknowledgement
table was full. Try the request later.

STOPPED SCU DISK IN USE, a COPY: or INIT: operation is in progress.
Try the request when the operation has completed or STOP: the
operation and retry the request.

SEE PROPRIETARY NOTICE ON COVER PAGE

5. REFERENCES

PIDENTs
FRDIPRNT
MAINIPUB
SCSTOPEX
SCSTOPOP
SCUTOPEX
SCUTOPOP
TOPIC000

ID . . . . RST:SCS
WORK CENTER . . MOC
GENERIC . . . . 4E17 Rel. 3 and later
APPLICATION . . 4E
TYPE . . . . Output

1. FORMAT

RST:SCS a b c [FAILDATA=[dde0000f|04gggggg]]

2. REASON FOR OUTPUT

Reports results from a manual teletypewriter (TTY) or power control switch (PCS) restore (RST) or diagnose (DGN) request.

3. VARIABLE FIELD DEFINITIONS

a   Service circuit system (SCS) member number (0-7).

b   Subunit type and submember number (controller (CONTR) 0 or 1, service circuit unit (SCU) 0 through 15, or interface to peripheral unit bus (IPUB) 0 or 1).

c   Disposition of request:

ABORTED ANN UPD FAILED — Requested SCU was unable to perform announcement update.

ABORTED ANN UPD REQUEST FAILED — Announcement update request was not accepted.

ABORTED CONTROLLER UPDATE FAILED — Restore to duplex failed due to update failure.

ABORTED PUMP FAILED - DISK CHECKSUM ERROR — Checksum error occurred during controller pump.

ABORTED PUMP FAILED - INVALID MACRO RESPONSE — Controller pump request returned incorrect response.

ABORTED PUMP FAILED - MACRO CHECKS FAILED — Macro checks failed during controller pump.

ABORTED PUMP FAILED - MACRO REJECTED — Response to controller pump request not accepted.

ABORTED PUMP FAILED - MACRO TIMEOUT — Response to controller pump request not received in allotted time.

ABORTED PUMP FAILED - MICRORAM CHECKSUM ERROR — Microram checksum error occurred during controller pump.

ABORTED PUMP FAILED - SCU ERROR — Error reported by SCU during pump.

ABORTED PUMP FAILED - SCU UNAVAIL — Unable to obtain controller pump data from SCU.

SEE PROPRIETARY NOTICE ON COVER PAGE

ABORTED SCU PUMP FAILED — Unable to pump SCU from SCU
   disk.

ANN UPD IP — This periodic status report indicates that
   announcement updates are being received via the local area
   network (LAN). A COMPL message will be generated when a
   announcement updates complete successfully and the SCU is
   automatically restored.

ANN UPD STARTED — SCU requires announcement update before
   RST:. Announcement update started.

COMPL — Action completed.

IP ANN UPD STARTED — The SCU will be restored when required
   announcement updates via the LAN complete successful.
   Periodic status reports will be issued during announcement
   update until complete.

NOT STARTED FAC BUSY RETRY LATER — The frame request was
   not started because the scan point acknowledgement table
   was full.

STOPPED ANN UPD ALREADY IP — A restore of the specified SCU
   is already in progress and the SCU is receiving required
   announcement updated via the LAN. When announcement
   updates complete successfully, the SCU will be restored
   automatically.

STOPPED CONTR DUPLEX FAILURE — Restore of SCU is not
   allowed when frame is duplex failed.

STOPPED DUPLEX FAILED — Diagnostics are not available from the
   3B disk system. The unit has been removed.

STOPPED FW VER MISMATCH — Restore to duplex could not be
   performed due to mismatch between controller firmware
   versions in translations.

STOPPED INVALID UNIT OR SUBUNIT

STOPPED IPUBS OS — Restore denied, both IPUBs out-of-service.

STOPPED OS DGN

STOPPED OS FAULT — Diagnostic some tests failed (STF).

STOPPED OS RMVD — Power control switch (PCS) only, removed by
   TTY.

STOPPED OS TBL ANAL — Error analysis.

STOPPED SCU DISK IN USE — A copy or init (format) operation is
   in progress for the subject SCU.

STOPPED SCU NOT OPERATIONAL — Restore of SCU denied due to
   incorrect SCU equipage.

STOPPED TSI DUPLEX FAILED — Restore of SCU is not allowed when connecting TSI is duplex failed.

STOPPED UNAVAIL FORCED

STOPPED UNIT OR SUBUNIT IN GROWTH

dd   Failure code (octal):

       01 — Program update failed during controller restore

       02 — Random access memory (RAM) update failed during controller restore

       03 — Verify hashsum failed during controller restore

       05 — Controller hard init failed

       22 — SCU init failed

       23 — SCU equipment configuration data (ECD) failed

       24 — SCU multifaceted signal processor (MSP) failed

e   Unit/macro failure code (octal):

       0 — Macro failed. (f contains macro failure data)

       4 — Macro successful but unit reported failure. (f always 0)

f   Message dispenser (macro) failure data:

       0 — Invalid macro ID passed to message dispenser (1A 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 (1A program error)

04   — Errors occurred after RAM update

gggggg   — Global RAM error source register, GRESR (octal):

       BIT   0-3 — RAM bank A parity error bits (ERAP)

             4-7 — RAM bank B parity error bits (ERBP)

           8-11 — Destination bus data parity error bits (EDDP)

              13 — Source bus A Address parity error (ESAAP)

              14 — Source bus B Address parity error (ESBAP)

15 — Cross-connect update bus mismatch (EXUMM)

16 — Cross-connect SYNDROBUS mismatch (EXSMM)

17 — Always 1. Indicates macro success but unit reported failure

4. ACTION TO BE TAKEN

If variable c is:

ANN UPD IP, no action is required.

IP ANN UPD STARTED, no action is required.

NOT STARTED FAC BUSY RETRY LATER, retry the request later.

STOPPED ANN UPD ALREADY IP, no action is required.

STOPPED SCU DISK IN USE, retry the SCU restore request following completion of the copy or init operation.

5. REFERENCES

PIDENTs
FRDIPRNT
SCSFRDIO
SCSTOPEX
SCSTOPOP
SCUTOPEX
SCUTOPOP
TOPIC000

Input Messages
DGN:SCS
RST:SCS

ID . . . . SET:BP-SCS
WORK CENTER . . MOC
GENERIC . . . . 4E17 Rel. 3 and later
APPLICATION . . 4E
TYPE . . . . Output

1. FORMAT

[1]   SET:BP SCS a CONTR b

[2]   SET:BP SCS a SCU c d

2. REASON FOR OUTPUT

This message prints in response to a SET:BP-SCS input message. Format [1] is output
if the input request specified that a breakpoint be set in a service circuit system (SCS)
simplex controller or duplex controllers. Format [2] is output if the input request
specified a breakpoint be set in a service circuit unit (SCU).

3. VARIABLE FIELD DEFINITIONS

a   SCS member number in decimal (0-7).

b   Controller request code:

                COMPLETED   The breakpoint was set.

                DENIED – CONTR DUP FAILED   Request denied because the
                            frame is duplex failed.

                DENIED – SCC IN GROWTH   Request denied because the frame is
                            in growth or special growth.

                DENIED – SCC UNEQ   Request denied because the frame is
                            unequipped.

                RL – CONTR LOM   Request denied because the frame controller is
                            in listen-only mode.

                STOPPED – MACRO FAILED   Request for the controller was
                            stopped because the controller failed in processing
                            the set command. 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:BP-SCS command to list the
                            breakpoints in the controller. The breakpoint buffer
                            for storing breakpoint data may be full, use the
                            CLR:BP-SCS command to reset the buffer.

c   SCU number in decimal (0-15).

d
SCU request status code:

ABORTED - MACRO REJECTED   Request for the given SCU was
aborted because the SCS frame rejected the set
command.

ABORTED - MACRO TIMEOUT   Request for the given SCU was
aborted because the SCS frame did not reply to the
set command.

COMPLETED   The breakpoint was set.

DENIED - CONTR DUP FAILED   Request denied because the
frame is duplex failed.

DENIED - SCU IN GROWTH   Request for the given SCU was
denied because the SCU is in growth or special
growth.

DENIED - SCU IS OOS   Request for the given SCU was denied
because the SCU is out of service.

DENIED - SCU UNEQ   Request for the given SCU was denied
because the SCU is unequipped.

FAILED - INTERNAL ERROR   Request for the given SCU failed
because of an unexpected software error when
processing the set command.

RL - CONTR LOM   Request denied because the frame controller is
in listen-only mode.

STOPPED - MACRO FAILED   Request for the given SCU was
stopped because the SCU failed in processing the set
command. There may already be two breakpoints in
the SCU or there may already be a breakpoint at the
micro-instruction address specified. Use the
OP:BP-SCS command to list the breakpoints in the
SCU.

4. ACTION TO BE TAKEN

If variable b is:

RL - CONTR LOM   — then retry later, as this condition should be
cleared quickly.

STOPPED - MACRO FAILED   — then contact the Technical Assistance
Center for further information.

If variable d is:

ABORTED - MACRO REJECTED — then contact the Technical
Assistance Center for further information.

ABORTED - MACRO TIMEOUT — then contact the Technical
Assistance Center for further information.

FAILED - INTERNAL ERROR — then contact the Technical
Assistance Center for further information.

RL - CONTR LOM — then retry later, as this condition should be
cleared quickly.

STOPPED - MACRO FAILED — then contact the Technical Assistance
Center for further information.

5. REFERENCES

PIDENT
    SCSBPMEM

Input Messages
    CLR:BP-SCS
    OP:BP-SCS
    SET:BP-SCS

Output Messages
    OP:BP-SCS
    REPT:BP-SCS

ID . . . . STOP:COPY
WORK CENTER . . MOC
GENERIC . . . . 4E17 Rel. 3 and later
APPLICATION . . 4E,1A
TYPE . . . . Output

1. FORMAT

STOP:COPY;SCS a b

2. REASON FOR OUTPUT

This message prints in response to an STOP:COPY input message request to stop the service circuit unit (SCU) disk copy.

3. VARIABLE FIELD DEFINITIONS

a   Service circuit system (SCS) member number (0-7) containing the SCU.

b   COMPLETE - The SCU disk copy is stopped.

4. ACTION TO BE TAKEN

None.

5. REFERENCES

PIDENTs
  SCSFPUMP

Input Messages
  COPY:SCS
  STOP:COPY

ID . . . . STOP:INIT
WORK CENTER . . MOC
GENERIC . . . . 4E17 Rel. 3 and later
APPLICATION . . 4E,1A
TYPE . . . . Output

1. FORMAT

STOP:INIT;SCS a b

2. REASON FOR OUTPUT

This message prints in response to an STOP:INIT input message request to stop the service circuit unit (SCU) format (Init) process.

3. VARIABLE FIELD DEFINITIONS

a   Service circuit system (SCS) member number (0-7) containing the SCU.

b   COMPLETE - The SCU disk format is stopped.

4. ACTION TO BE TAKEN

None.

5. REFERENCES

PIDENTs
  SCSFPUMP

Input Messages
  INIT:SCS
  STOP:INIT

ID . . . . SW:SCS
WORK CENTER . . MOC
GENERIC . . . . 4E17 Rel. 3 and later
APPLICATION . . 4E
TYPE . . . . Output

1. FORMAT

```
SW:SCS a b c
```

2. REASON FOR OUTPUT

Reports the disposition of a service circuit system (SCS) teletypewriter (TTY) switch message.

3. VARIABLE FIELD DEFINITIONS

a   SCS member number (0-7).

b   Subunit type and submember number (controller (CONTR) 0 or 1).

c   Disposition of the request:

ABORTED ACCESS TEST FAIL— Access test of out-of-service controller failed.

ABORTED CONTROLLER UPDATE FAILED— Update of out-of-service controller failed.

COMPL — Action completed.

STOPPED CONTR DUPLEX FAILED— Both CONTRs are out-of-service.

STOPPED INVALID UNIT OR SUBUNIT

STOPPED UNIT OR SUBUNIT INGROWTH — Unit or subunit in growth state.

4. ACTION TO BE TAKEN

None.

5. REFERENCES

PIDENTs
    SCSTOPEX
    SCSTOPMS
    SCSTOPOP
    TOPIC000

ID . . . . UPD:SCS
WORK CENTER. . MOC
GENERIC . . . . 4E17 Rel. 3 and later
APPLICATION . . 4E
TYPE . . . . Output

1. FORMAT

```
UPD:SCS a b
          [CALCULATED cccc     dddd]
          [EXPECTED    eeee    ffff]
```

2. REASON FOR OUTPUT

To respond to a UPD:SCS input message requesting that the service circuit system (SCS) controllers be updated to a new generic program. This message identifies invalid configurations of the controllers and service circuit units (SCUs), identifies problems detected during the generic update, and provides benchmarks during the generic update procedure.

3. VARIABLE FIELD DEFINITIONS

a   SCS member number.

b   The following messages can be printed by an SCS controller generic update:

CONTR x COMPLETED— The generic update has completed. Only one of the SCS controllers is running on the new generic. Translations still point to the old generic.

CONTR x PUMP IN PROGRESS— This progress message indicates that the new generic is being pumped into the out-of-service (OOS) controller.

CONTR x RESTORE FAILED— The active controller is running on the new generic. The OOS controller, containing the old generic, could not be restored.

CONTR x SWITCH IN PROGRESS— This progress message indicates when the actual switch of the SCS controller is started.

CONTR UPDATE COMPLETED— The generic update has completed. Both of the SCS controllers are running on the new generic. Translations still point to the old generic.

CONTR UPDATE STARTED— This progress message indicates that the generic update procedure has been started in the specified SCS.

STOPPED ANNOUNCEMENT UPDATE IN PROGRESS— An announcement update is in progress in one or more SCUs in the SCS frame. A generic update will not be attempted while an announcement update is in progress.

STOPPED CONTR x HASH SUMS FAILED— The hash sums calculated over the new generic in the OOS controller do not agree with the expected hash sums. The calculated hash sums and the expected hash sums are printed as a part of this message.

STOPPED CONTR x PUMP FAILED— A failure was detected while attempting to pump the new generic into the OOS controller.

STOPPED CONTR x RMV FAILED— A problem was detected while attempting to remove the SCS controller that is going to be updated to the new generic.

STOPPED CONTR BREAK POINTS SET— Break points are currently set in one or both of the SCS controllers. A controller generic update will not be performed while there are break points set in either of the controllers.

STOPPED NO AVAILABLE SCU— The program could not find an in-service SCU to use to pump the new generic program into the OOS controller.

STOPPED SCS NOT OPERATIONAL— The SCS in which the generic update was to be performed is not marked operational in the translations.

STOPPED SCU x IS UNEQ OR OOS— The SCU that was specified to be used to pump the OOS controller is either unequipped or OOS. The SCU used to pump the OOS controller must be in-service.

STOPPED SCU DISK IN USE— An SCS controller generic update is not performed if any type of disk copy or a disk format is active in any SCU in the SCS to be updated.

STOPPED SIMPLEX WITH SUBJECT IN SERVICE OR DUPLEX FAILED— An entry requirement for a generic update is that both SCS controllers must be in service, or simplex with the subject OOS.

UNKNOWN SYSTEM ERROR— An output message was requested. The message index was outside the range of output messages defined for this procedure.

cccc   The upper 16 bits (in hexadecimal) of the 32 bit hash sum calculated by the OOS SCS controller.

dddd   The lower 16 bits (in hexadecimal) of the 32 bit hash sum calculated by the OOS SCS controller.

eeee   The upper 16 bits (in hexadecimal) of the 32 bit hash sum contained in the file header of the new generic.

ffff   The lower 16 bits (in hexadecimal) of the 32 bit hash sum contained in the file header of the new generic.

4. ACTION TO BE TAKEN

The following actions should be taken depending on the system response to the requested action in variable b. If variable b is:

CONTR x COMPLETED— Try to restore the OOS controller manually.

CONTR x PUMP IN PROGRESS— No action required.

CONTR x RESTORE FAILED— Try to restore the OOS controller manually after the generic update has completed.

CONTR x SWITCH IN PROGRESS— No action required.

CONTR UPDATE COMPLETED— No action required.

CONTR UPDATE STARTED— No action required.

STOPPED ANNOUNCEMENT UPDATE IN PROGRESS— Wait until the
announcement update has completed an re-enter the input message.

STOPPED CONTR x HASH SUMS FAILED— Re-copy the new generic file from
the APS to the SCUs, duplex the controllers, and re-enter the input
message.

STOPPED CONTR x PUMP FAILED— Restore the controllers to duplex and
re-enter the input message using a different SCU. If necessary re-copy
the new generic file from the APS to the SCU.

STOPPED CONTR x RMV FAILED— Diagnose both controllers, restore them to
service, and re-enter the input message.

STOPPED CONTR BREAK POINTS SET— Remove all break points from both
controllers and re-enter the input message.

STOPPED NO AVAILABLE SCU— Restore at least one SCU to service, duplex
the controllers, and re-enter the input message being sure to specify an
in-service SCU.

STOPPED SCS NOT OPERATIONAL— Check the SCS number in the input
message. If the input message is correct, check the translations for the
SCS frame. The SCS must be in the OPER state before attempting a
controller generic update.

STOPPED SCU x IS UNEQ OR OOS— Restore the specified SCU to service, or
specify a different SCU in the input message, or do not specify an SCU
in the input message and let the program find one.

STOPPED SCU DISK IN USE— Wait until all disk copy and/or disk format
jobs in the SCS frame have completed and re-enter the input message.

STOPPED SIMPLEX WITH SUBJECT IN SERVICE OR DUPLEX FAILED—
Restore to duplex configuration or if system must be simplex specify
the OOS controller in the UPD:SCS input message. Re-enter the
UPD:SCS input message. Both controllers should have passed
diagnostics before starting a controller update.

UNKNOWN SYSTEM ERROR— Ignore this message if the generic update
completes successfully. If the generic update fails, run the writable
store audit program (SAWS) audit, restore both controllers, and re-
enter the input message.

5. REFERENCES

PIDENT
    SCSCFSCU

Input Messages
    COPY:SCS
    UPD:SCS

ID . . . . VER:PASANN-ANN
WORK CENTER . . MAC, MOC
GENERIC . . . . . . 4E17 and later
APPLICATION . . 4E
TYPE . . . . Output

1. FORMAT

```
VER:PASANN;OPT(ANN)[;a] TYPE b, UFH [c], VSSID d, SID e,

STANDBY  TIMES AND DATES

   STRTT f:g, STRTM h, STRTD i, STRTY j,
   STOPT k:l,

   LENGTH m, PLAYS n, ANSEP o,

   ANSWR p,  ANNUM q,

CAREA r, CPOS s,

CAPPN t
SSI [u], SAN [v],
ADSI w, ADFHT x, ANNUM y
```

2. REASON FOR OUTPUT

To display detailed information about one public announcement service (PAS) announcement. If a range of announcements is specified, undefined announcements are not listed.

3. VARIABLE FIELD DEFINITIONS

a	CUR — Data currently residing in the translation area.
b	Announcement type:

BI   — Barge-in announcements.
SCS   — Service circuit system (SCS) announcements.

c	Use final handling (UFH):

blank   — indicates that a mass announcement system (MAS) announcement is used.
N   — indicates that a MAS announcement is used.
Y   — indicates that the service SCS is used.

d	Voice storage system (VSS) identification (VSSID) — the entry will be 0.

e	Service identity:

For SCS announcements	—	the range is 0000000 - 9990000, 9999901 or 9999902.
For barge-in announcements	—	the range is 9999001 - 9999511, 9999901, or 9999902.

f:g	Start time based on a 24-hour clock. Range 00-23 (hours) and 00-59 (minutes).
h	Start month (range from 1-12).
i	Start day (range from 0-31).
j	Start year (range from 0-99).
k:1	Stop time based on a 24-hour clock. Range 00-23 (hours) and 00-59 (minutes).
m	Length of announcement (5-300 sec.; in 30 sec. increments).
n	The number of playbacks of an announcement that a caller may listen to before being disconnected. Valid range is 1, 2, 3 or U for unlimited.
o	Announcement separation class (range from 0-31). Class 0 may have more than one announcement assigned.
p	Answer supervision:

	N —	indicates that answer supervision has not returned on the incoming trunk.
	Y —	indicates that answer supervision has returned on the incoming trunk.

q	Announcement number.
r	Control area for announcement trouble reports (range from 0-9).
s	Control position for announcement trouble reports (range from 0-9).
t	Cut-through application number (range from 0-63).

u	SCS service circuit ID:
	    blank
	        FHA
	        FHB

v	SCS announcement number:
	    range from 1-4095, or
	    blank.

w	Automatic number identification (ANI) delivery service index.
x	ANI delivery final handling treatment.
y	Announcement number.

4. ACTION TO BE TAKEN

None.

5. REFERENCES

PIDENTs
  VRFYCNTL
  VRFYINPT
  VRFYMAS
  VRFYOUT

Translation Guide, 4ESS^{TM}*, Division 8, Section 6q*

ID . . . . VER:PASANN
WORK CENTER . . MAC, MOC
GENERIC . . . . . . 4E17 and later
APPLICATION . . 4E
TYPE . . . . Output

1. FORMAT

```
VER:PASANN;OPT(LIST); [a:]

ANNUM VSSID SID ANSEP

   b,    c,   d,   e,
```

2. REASON FOR OUTPUT

To verify all public announcement system (PAS) announcements currently defined in the office.

3. VARIABLE FIELD DEFINITIONS

a	CUR — Current translations.
b	Announcement number.
c	Voice storage system (VSS) identification (VSSID)— will be 0.
d	Service identification number — For service circuit system (SCS) updated announcements, the range is 0000000 – 999000, 9999901 or 9999902. For barge-in, the range is 9999001 – 9999512 or 9999901 – 9999902.
e	The announcement separation class (0 – 31).

4. ACTION TO BE TAKEN

None.

5. REFERENCES

PIDENTs
  VRFYCNTL
  VRFYINPT
  VRFYMAS
  VRFYOUT

Translation Guide, 4ESS^{TM}, Division 8, Section 6p

                                    ID . . . . VER:PASCTHRU
                                    WORK CENTER. . MAC, MOC
                                    GENERIC . . . . . . 4E17 and later
                                    APPLICATION . . 4E
                                    TYPE . . . . Output

1. FORMAT

```
VER:PASCTHRU; a:   CAPPN b, CTTYPE c,

VSSID d, SID e,

START DATE
   STRTM f, STRTD g, STRTY h,

STOP DATE
   STOPM i, STOPD j, STOPY k,

STRTT l: m, STOPT n: o,

MAN p, CTN q, GAPI r,

ANNUM s,
```

2. REASON FOR OUTPUT

Lists the external announcement identification, start and stop dates and time, cut-through number, gap index, and announcement number.

3. VARIABLE FIELD DEFINITIONS

a	CUR — Current translations.
b	Cut through type (1 or 2).
c	Cut through application number (0-63).
d	Voice storage system (VSS) identification (VSSID) — only 0 is valid.
e	Service ID — For service circuit system (SCS), the range is 0000000 - 9990000, 9999901 or 9999902. For barge-in announcements, the range is 9999001 - 9999511, 9999901 or 9999902.
f	Cut through start month.
g	Cut through start date.
h	Cut through start year.
i	Cut through stop month.
j	Cut through stop date.
k	Cut through stop year.

l	Cut through start hours.
m	Cut through start minutes.
n	Cut through stop hours.
o	Cut through stop minutes.
p	Man direct distance dialing (DDD) number (10 digits).
q	Cut through DDD number (10 digits).
r	Gap index.
s	Announcement number.

4. ACTION TO BE TAKEN

None.

5. REFERENCES

PIDENTs
  IOCPPVR4
  VRFYCNTL
  VRFYINPT
  VRFYMAS
  VRFYOUT

Translation Guide, 4ESS^{TM}, Division 8, Section 16j

Expanded Final Handling Announcements Feature (3091)

4

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Expanded Final Handling Announcements Feature (3091)

4

1. Feature Description

1.01 Previously, due to the capacity limitations of the recorded announcement
machine frames, only a few network final handling announcements related to call
failure could be stored and accessed by a *4ESS*™ switch at any given time. Thus, the
information provided by these announcements was limited. The time involved in
changing/updating network announcements, to which network emergency
announcements are particularly sensitive, was not as quick as desired and took, at a
minimum, about 1.5 hours. Additionally, AT&T Switched Network (ASN) trunking
resources were used for many calls terminated abnormally; this termination led to a final
handling announcement that did not produce revenue for AT&T.

1.02 The capabilities now provided by Improved Service Announcement and
Information Collection (ISAIC) in 4E17 Release 3 help alleviate these problems.
With ISAIC, the following network announcement features are supported:

- More network announcements are available to be played by the ASN *4ESS*
  switch. This expansion applies to network emergency announcements, which are
  invoked via network management controls, and generic network announcements,
  that are triggered by routing-type call failures.

- Updates of network announcements and updates relevant to which ones are
  addressable in the *4ESS* switch (assuming the existence of an announcement in
  the *4ESS* switch) are performed in a relatively short time period. With the ISAIC
  architecture, the *4ESS* switch is able to address 127 network announcements in

real time. Additional announcements are stored on disk as stand-by (inactive) announcements. With the Centralized Announcement Update Control System (CAUCS), which will be available in 4E18, a stored announcement can be activated by associating such an announcement with a *4ESS* switch active address.

■ *4ESS* switch announcement resources are saved. This is due to more specific announcement text which provides callers with better guidance leading to fewer retries, and it also potentially decreases the average amount of text per announcement. In addition, access time to the beginning of an announcement decreases.

1.03 The overview for domestic and international services in Figure 4-1 shows the AT&T switch as the key element for the network announcement features. A subset of the *4ESS* switches deployed in the ASN provides the interfaces to the various Local Exchange Carrier (LEC) networks and foreign Post, Telephone and Telegraph (PTT) networks. The *4ESS* switches that interface with the PTT networks are referred to as Gateway *4ESS* switches, and they serve Canada and Mexico in the 4E17 time frame. The International Switching Center (ISC) *4ESS* switches serve the remaining international locations in the 4E17 time frame.

1.04 The ISAIC architecture for 4E17 uses the Service Circuit System (SCS) and supporting elements. Additionally, all *4ESS* switches contain a copy of all the network announcements. This is necessary to provide the capability for the Originating AT&T Switch (OAS) to play the announcement for every call. Note that only 127 of the network announcements that are stored in the Service Circuit Units (SCUs) are available to be played (they are active) by a *4ESS* switch at any given time. However, many more times the 127 active announcements can be stored in the SCUs.

The other key element of the network announcement feature architecture is the CAUCS. This system (available in 4E18) maintains all the announcements used in the ASN and performs such functions as recording announcements onto the SCU disks, deleting announcements from the SCU disks, verifying announcements on the SCU disks, and replacing one announcement with another. The CAUCS also assigns a network announcement that is not one of the active 127 *4ESS* switch network announcements to a *4ESS* switch address. These functions are performed for all *4ESS* switches.

CANADA AND MEXICO

ALL OTHER COUNTRIES

FOREIGN POST,
TELEPHONE, & TELEGRAPH
NETWORK

FOREIGN POST,
TELEPHONE, & TELEGRAPH
NETWORK

GATEWAY
4ESS
SWITCH

INTERNATIONAL
SWITCHING
CENTER

4ESS
SWITCH

LOCAL
EXCHANGE
CARRIER

4ESS ™
SWITCH

4ESS
SWITCH

LOCAL
EXCHANGE
CARRIER

CUSTOMER
PREMISES

CENTRALIZED ANNOUNCEMENT
UPDATE AND CONTROL SYSTEM

LEGEND

VOICE TRUNKS

ADMINISTRATIVE INTERFACE

Ip▪ 788C74/01

Figure 4-1. AT&T Switched Network for ISAIC Announcements

Domestic Calls

1.05 Previously, for a domestic call that required final handling treatment, the determination of final handling within the ASN was made at the OAS, the Via switch, or the Terminating AT&T Switch (TAS). The ASN Via switch and the TAS perform the same ISAIC functions for a failed call, whether it is a domestic or international call. Thus, for simplicity purposes, only the TAS is referred to. A new capability for the 4E17 generic is to transmit, under certain conditions, a unique value in the Common Channel Signaling System 7 (CCS7) Integrated Services Digital Network User Part (ISUP) RELEASE message new announcement ID field. The transmission is for announcements from the TAS to the OAS. Included in this set of announcements are all the network emergency announcements that are currently played at the TAS. Previously, the ASN supported the transmission of Cause values within the RELEASE message that got mapped to a smaller set of network routing failure announcements. At the OAS, final handling treatment now takes place based on the received value in the announcement ID field. In the case where the Cause value is provided from outside the ASN (for example, from an egress LEC switch), the announcement ID parameter is not sent, and final handling at the OAS takes place based on the received Cause value, which was supported previously. The treatment can vary based on whether the call is a voice or data call and is also dependent on the access signaling method.

Outbound International Calls

1.06 Previously, for an outbound international call that required final handling treatment, the determination of final handling within the ASN was made either at a non-Gateway/ISC *4ESS* switch (serving as an OAS) or a Gateway/ISC *4ESS* switch (serving as a TAS). In the case where the access to the ASN from the calling party terminates at the Gateway/ISC, the Gateway/ISC serves as both the TAS and OAS. In a similar fashion to the domestic case, a value (each of which corresponds to a unique announcement) in the new announcement ID field of the CCS7 ISUP RELEASE message is transmitted from the Gateway/ISC (TAS) to the OAS for all announcements. Included in this set of announcements are all the network emergency announcements that are currently played at the TAS. Previously, the ASN supported the transmission of a set of Cause values within the RELEASE message that got mapped to a smaller set of network routing failure announcements. As in the domestic case, final handling treatment takes place at the OAS. In the case where the Cause value is provided from outside the ASN (for example, from a foreign PTT network), the announcement ID parameter is not sent, and final handling at the OAS takes place based on the received Cause value which is what was previously supported. The treatment can vary based on whether the call is a voice or data call and is also dependent on the access signaling method.

Inbound International Calls

1.07 Previously, for an inbound international call that required final handling treatment, the determination of final handling within the ASN was made either at a Gateway/ISC (serving as the OAS) or at a non-Gateway/ISC *4ESS* switch (serving as the TAS). In the case where the egress from the ASN to the called party comes directly from the Gateway/ISC, the Gateway/ISC serves as both the OAS and TAS. In a similar fashion to the outbound case, a value (each of which corresponds to a unique announcement) in the new announcement ID field of the CCS7 ISUP RELEASE message is transmitted from the TAS to the Gateway/ISC (OAS) for all new announcements. Currently, the ASN supports the transmission of a set of Cause values within the RELEASE message that get mapped to a smaller set of network routing failure announcements. At the Gateway/ISC, final handling takes place based on the received value in the announcement ID field, whether the call is voice or data, and based on which International Telegraph and Telephone Consultative Committee (CCITT) protocol is used between the Gateway/ISC and the foreign PTT. In the case where the Cause value is provided from outside the ASN (for example, from an egress LEC switch), the new announcement ID parameter is not sent, and the final handling at the OAS takes place based on the received Cause value, which is what was previously supported.

International Transit Calls

1.08 The announcement architecture for international transit calls is the same as described for inbound international calls, except that both the OAS and the TAS are Gateway/ISC *4ESS* switches (a unique switch can serve both functions).

2. Call Flow (Not Affected)

3. Provisioning

3.01 This section shows the new Office Data Administration (ODA), Recent Change (RC), and Verify forms that have been added for this feature, and it also shows where information has been added to existing forms.

ODA Forms

A. New ODA Forms

3.02 This section indicates where new forms have been added and where information has been added to existing forms for this feature. A new ODA form (ODA Form 406W) has been created to support this feature. Figure 4-2 shows the layout of ODA Form 406W. The meaning of each entry is as follows:

AIR   AT&T ISUP releasability—Entries: Y or N
AN4R   AT&T Non-4ESS switch releasability—Entries: PA or REL
ANIR   AT&T Network Interconnect releasability—Entries: PA or REL
CAD   Change, add, or delete—Entries: C, A, or D
CAUSE Cause value—Entries: blank or 0 to 127
CIVO   Common channel signal (ISUP and INUP) voice calls and old announcements—Entries: PA or REL
LOC   Location—Entries: 0 to 15
MT   Main transition—Entries: OLD or NEW
NPLY   Number of plays—Entries: 1 to 4
OFHT   Old final handling treatment—Entries: AR, BT, EA1-EA7, HW, IFF, INC, IVC, MCA, NCA, NCC, NCD, NWC, OOB, ROA, SP1, SP2, T, VCA
SAN   Service Circuit System announcement number 4E17
SCSFHT Service Circuit System final handling treatment—Entries: (4E17) DNN, DOO E01-E20, I01-I30, INF, ISB, LDV, LOB, LSA, NCB, NWN, OOA, OTS, R01-R10, S01-S19, SNA, STO, TDN, UNN, VMA, WAT
SSI   Service Circuit System TSG ID—Entries: blank, FHA, or FHB
TUMB   TUP unsuccessful backwards release—Entries: blank, SEL, CGC, ADI, CFL, SSB, UNN, SP1, SP2

Figure 4-2. ODA Form 406W

B. Modified ODA Forms

3.03 In ODA Form 403P, a new field [Multiple Routing Treatment Final Handling Treatment (MRTFHT)] has been added to create a multiple routing list.

3.04 In ODA Form 403R, a new field [Signaling Service Type (SST)] has been added for this feature.

3.05 In ODA Forms 403D, 403E, 403F, 403Y, 403G, 403K, 403L, 403M, 405E, and 406P, this feature increased the number of FHT announcements. For a CALLTYPE of FHT, all the FHT Announcement Designators in Table 4-A are valid form entries except for TPT, MW, IDLE, IDNG, and MW10.

3.06 In ODA Form 406L, new entries are included for Denied Call Final Handling Treatment (DFHT). Entries include DNN, DOO, E01-E20, I01-I30, INF, ISB, LDV, LOB, LSA, NCB, NWN, OOA, OTS, R01-R10, S01-S19, SNA, STO, TDN, UNN, VMA, and WAT.

Recent Change Forms

A. New Recent Change Forms

3.07 A new RC form, RC Form 634 (Service Circuit System—Expanded Announcements), was created to support this feature.

Figure 4-3 shows the layout of RC Form 634. The meaning of each entry is as follows:

AIR	AT&T ISUP releasability—Entries: Y or N
AN4R	AT&T Non-*4ESS* switch releasability—Entries: PA or REL
ANIR	AT&T Network Interconnect releasability—Entries: PA or REL
CAUSE	Cause value—Entries: blank or 0 to 127
CIVO	Common channel signal (ISUP and INUP) voice calls and old announcements—Entries: PA or REL
LOC	Location—Entries: 0 to 15
MT	Main transition—Entries: OLD or NEW
NPLY	Number of plays—Entries: 1 to 4
OFHT	Old final handling treatment—Entries: AR, BT, EA1-EA7, HW, IFF, INC, IVC, MCA, NCA, NCC, NCD, NWC, OOB, ROA, SP1, SP2, T, VCA
SAN	Service Circuit System announcement number 4E17
SCSFHT	Service Circuit System final handling treatment—Entries: (4E17) DNN, DOO E01-E20, I01-I30, INF, ISB, LDV, LOB, LSA, NCB, NWN, OOA, OTS, R01-R10, S01-S19, SNA, STO, TDN, UNN, VMA, WAT
SSI	Service Circuit System TSG ID—Entries: blank, FHA, or FHB
TUMB	TUP unsuccessful backwards release—Entries: blank, SEL, CGC, ADI, CFL, SSB, UNN, SP1, SP2

```
RC:SCS;CHG;OPT(FHT);___:          SCSFHT ___,    MT ___,


"RNU _____,


AIR _,    ANIR ___,  AN4R ___,  CIVO ___,  CAUSE ___,


LOC ___,  NPLY _,    OFHT ___,  SAN ____,  SSI ___,  TUBM ___,


REMARKS _____
```

Figure 4-3. Recent Change Form 634—SCS Expanded Announcements

B. Modified Recent Change Forms

3.08   In RC Forms 300, 301, 302, 303, 304, 305, 313, 314, 315, 316, 517, and 624,
this feature increased the number of FHT announcements. For a CALLTYPE of
FHT, all the FHT Announcement Designators in Table 4-A are valid form entries except
for TPT, MW, IDLE, IDNG, and MW10.

3.09   In RC Forms 617 and 618, the DFHT field has been expanded to include several
additional Announcement Designators. For the related announcement description
of the Announcement Designators, see Table 4-A.

3.10   In RC Form 321, the MRTFHT field has been added. This field may be changed
if the ACTION field equals C (change). See Figure 4-4.

```
# FORM        321          CHANGE MULTIPLE ROUTING LIST
  4E17>


  RC:CODEEGRP;CHG;OPT(MRT),___:      MRTI___'        DOMCLASS___'  ▉MRTFHT▉

  ORNU _____'       ▉ACTION  ▉'

  PERCENT   ERC      CALLTYP   CALLDATA   AD1    AD2   CHI    DESEP     DNST


  _____'   __'     _____'    _____' __'    __'   __'    _____'    _____'


  _____'   __'     _____'    _____' __'    __'   __'    _____'    _____'
```

Figure 4-4. Recent Change Form 321

Verify Forms

A. New Verify Forms

3.11   Two new Verify forms (Input/Output messages), VER:SCS and VER:SCS:FHT,
display input and output final handling treatment for this feature.

B. Modified Verify Forms

3.12   In Verify Forms 5d, 13f, 13g, 13m, and 15a, this feature increased the number of
FHT announcements. For a CALLTYPE of FHT, all the FHT Announcement
Designators in Table 4-A are valid form entries except for TPT, MW, IDLE, IDNG, and
MW10.

4. Recording (Not Affected)

5. Network Management

4ESS™ Switch Requirements

5.01 Table 4-A presents the final handling announcements that reside in the common announcement set "N" on the SCS. The term "announcement designator" in the table heading specifies the string that populates 4ESS switch routing structures and the control disposition received by the 4ESS switch. Each designator corresponds to a unique announcement address.

5.02 Previously, the 4ESS switch supported a limited set of network announcements based on final handling treatment. With the implementation of SCS, the number of announcements that can be stored in the switch increased dramatically. Since the number of addressable (active) announcements in the 4ESS switch increased to 127, the switch now accepts any one of the announcement designators in Table 4-A as a network management control disposition and all office data structures that specify a final handling treatment. Exceptions exist for the following announcement designators that are reserved strictly for internal purposes:

- TPT (Test Progress Tone)

- MW (Milliwatt Tone)

- IDLE (Silence—Idle Guarding Time)

- HW (High and Wet)

- IDNG (Silence—Idle No Guarding Time)

- MW10 (-10dB 1004Hz Tone).

Table 4-A. Announcement Designators and Descriptions

Announcement ID Field Value (Decimal Equiv.)	Announcement Designator	Corresponding Cause Value or Equivalent* (Decimal Equiv.)	Announcement Description
0	-	-	Reserved (none)
1	AR	31	Audible Ringing
2	T	31	Reorder - 120 IPM
3	BT	17	Busy - 60 IPM
4	TPT	-	Test Progress Tone
5	MW	-	Milliwatt Tone
6	NCA	34	No Circuit Available
7	VCA	1	Vacant Code Announcement
8	ROA	47	Reorder Announcement
9	EA1	41	Emergency Ann. 1
10	EA2	41	Emergency Ann. 2
11	SP1	31	Special Ann. 1
12	SP2	31	Special Ann. 2
13	IDLE		Silence—Idle Guarding Time
14	HW	-	High and Wet
15	IDNG	-	Silence—Idle No Guarding Time
16	MW10	-	-10dB 1004Hz Tone
17	-	-	Unassigned
18	MCA	31	Mis-routed CAMA
19	NCC	42	SDN Egress Busy
20	NWC	41	PCP Call Failure
21	OOB	50	Out of Band
22	EA6	41	Emergency Ann. 6
23	EA3	41	Emergency Ann. 3
24	EA4	41	Emergency Ann. 4
25	NCD	31	Network Call Denial
26	EA7	41	Emergency Ann. 7
27	INC	34	Intl. No Circuit
28	IVC	1	Intl. Vacant Code

See notes/footnotes at end of table.

Table 4-A. Announcement Designators and Descriptions (Contd)

Announcement ID Field Value (Decimal Equiv.)	Announcement Designator	Corresponding Cause Value or Equivalent* (Decimal Equiv.)	Announcement Description
29	EA5	41	Emergency Ann. 5
30	IFF	27	Intl. Foreign Failure
31	-	-	Unassigned
32	SNA	31	Service Not Active
33	VMA	31	Vacant MAS Announcement
34	OTS	31	HICAP Out of Time Slot
35	STO	31	Sun Transit Outage
36	NWN	1	Vacant 800 Number
37	DNN	1	Disc. 800 Number
38	TDN	1	Temp. Disc. 800 Number
39	INF	41	Info 1 ANI Failure
40	NCB	34	LEC Egress Busy
41	WAT	31	Waiting for Answer Timeout
42	LSA	1	Intra-LATA Call Screening
43	OOA	1	Out of Area (LEC MAS Serv)
44	LDV	31	AT&T Dial 1 (700-555-4141)
45	LOB	17	Logging on Busy
46	UNN†	1	Unallocated Number (SS7)
47	S19	31	Spare
48	DOO†	27	Destination Out of Order (SS7)
49	ISB	17	International Subscriber Busy
50	E01	41	Emergency Situation
51	E02	41	Severe Weather
52	E03	41	Facility Trouble
53	E04	41	Local Company Trouble
54	E05	41	Airplane Crash
55	E06	41	Hurricane
56	E07	41	Flood
57	E08	41	Tornado

See notes/footnotes at end of table.

Table 4-A. Announcement Designators and Descriptions (Contd)

Announcement ID Field Value (Decimal Equiv.)	Announcement Designator	Corresponding Cause Value or Equivalent* (Decimal Equiv.)	Announcement Description
58	E09	41	Forest Fire
59	E10	41	Earthquake
60	E11	41	Mudslide
61	E12	41	Major Ntwk Outage
62	E13	41	Reserved Dom. NM
63	E14	41	Reserved Dom. NM
64	E15	41	Reserved Dom. NM
65	E16	41	Reserved Dom. NM
66	E17	41	Reserved Dom. NM
67	E18	41	Reserved Dom. NM
68	E19	41	Reserved Dom. NM
69	E20	41	Reserved Dom. NM
70	R01	22	Dialing Plan Change (DOM)
71	R02	22	Dialing Plan Change (DOM)
72	R03	22	Dialing Plan Change (DOM)
73	R04	22	Dialing Plan Change (DOM)
74	R05	22	Dialing Plan Change (DOM)
75	R06	22	Dialing Plan Change (DOM)
76	R07	22	Dialing Plan Change (DOM)
77	R08	22	Dialing Plan Change (DOM)
78	R09	22	Dialing Plan Change (DOM)
79	R10	22	Intrastate Dialing Plan Change
80	I01	41	Intl. Emergency Situation
81	I02	41	Intl. Severe Weather
82	I03	41	Intl. Telephone Company
83	I04	41	Intl. Airplane Crash
84	I05	41	Intl. Earthquake
85	I06	41	Intl. Mudslide
86	I07	41	Intl. Fire

See notes/footnotes at end of table.

Table 4-A. Announcement Designators and Descriptions (Contd)

Announcement ID Field Value (Decimal Equiv.)	Announcement Designator	Corresponding Cause Value or Equivalent* (Decimal Equiv.)	Announcement Description
87	I08	41	Reserved Intl NM
88	I09	31	Intl. Direct Dialing Susp.
89	I10	31	Intl. Direct Dialing Test
90	I11	22	Dialing Plan Changes (Intl.)
91	I12	22	Dialing Plan Changes (Intl.)
92	I13	22	Dialing Plan Changes (Intl.)
93	I14	22	Dialing Plan Changes (Intl.)
94	I15	22	Dialing Plan Changes (Intl.)
95	I16	22	Dialing Plan Changes (Intl.)
96	I17	22	Dialing Plan Changes (Intl.)
97	I18	22	Dialing Plan Changes (Intl.)
98	I19	22	Dialing Plan Changes (Intl.)
99	I20	22	Dialing Plan Changes (Intl.)
100	I21	22	Dialing Plan Changes (Intl.)
101	I22	22	Dialing Plan Changes (Intl.)
102	I23	22	Dialing Plan Changes (Intl.)
103	I24	41	Reserved Intl. NM
104	I25	41	Reserved Intl. NM
105	I26	41	Reserved Intl. NM
106	I27	41	Reserved Intl. NM
107	I28	41	Reserved Intl. NM
108	I29	41	Reserved Intl. NM
109	I30	41	Reserved Intl. NM
110	S01	31	Spare
111	S02	31	Spare
112	S03	31	Spare
113	S04	31	Spare
114	S05	31	Spare
115	S06	31	Spare

See notes/footnotes at end of table.

Table 4-A. Announcement Designators and Descriptions (Contd)

Announcement ID Field Value (Decimal Equiv.)	Announcement Designator	Corresponding Cause Value or Equivalent* (Decimal Equiv.)	Announcement Description
116	S07	31	Spare
117	S08	31	Spare
118	S09	31	Spare
119	S10	31	Spare
120	S11	31	Spare
121	S12	31	Spare
122	S13	31	Spare
123	S14	31	Spare
124	S15	31	Spare
125	S16	31	Spare
126	S17	31	Spare
127	S18	31	Spare

* The Cause values in this column apply to CCS7 ISUP (Intertoll and Network Interconnect), CCITT7 ISUP, and ISDN Q.931 signaling protocols. The Interworking between the CCS7 ISUP RELEASE message containing Cause and CCITT 6 / CCITT7 TUP signaling messages functions as previously supported.

† Announcements will be covered in a later time frame.

Legend:

ANI = Automatic Number Identification
DOM = Domain
HICAP = High Capacity
LATA = Local Access Transport Area
NM = Network Management
PCP = Positive Call Processing
SDN = Software defined network
TUP = Telephone User Part

6. Maintenance/Troubleshooting

Call Irregularities

6.01   New final handling codes created to support ISAIC are covered in AT&T 234-010-315, (*4ESS™ Switch, 4E17 Generic, Domestic Call-Irregularity Maintenance Reference Handbook*). The new ISIAC final handling codes are as follows:

1308 through 1349
1371 through 1389
1429 through 1496

7. Transition Considerations

Transition Planning

7.01   Transition considerations for domestic and international services are as follows:

■ Transition begins when ODA starts processing retrofit data for the 4E17 Release 3 generic.

■ SCSs cannot be grown in an ASN *4ESS* switch until the retrofit to the 4E17 generic for that switch is completed.

■ Transition is completed when a SCU with announcement set "N" is grown into the last ASN 4E17 switch, and the capability of transmitting failure information from the ASN TAS to the ASN OAS for the appropriate new announcements is activated in the switches. Activation takes place when the MT field on RC Form 634 is set to play on SCS. SCS Yes or No for Expanded Final Handling (EFH) feature (3956) in 4E18 Release 1 covers the condition where all *4ESS* switches do not have SCS frames for announcement releasability. An administrative change will take place to cover all change announcements that are to be backward releasable in a future generic.

■ As a warning for administrative personnel, the backward releasability parameter should not be changed to "Yes" for any announcement until transition is completed (Since the default = "No," a "Yes" value requires an administrative change.). Also, administrative personnel should not populate routing structures with the new announcement designator within a given *4ESS* switch until that switch has full SCU capabilities. In such a case, backward releasability must be set to "No."

- The transmission of failure information from the ASN TAS to the ASN OAS for the appropriate new announcements will not be activated until the following conditions are satisfied:

    — SCUs with announcement set "N" have been grown in all the ASN *4ESS* switches.

    — All new announcements both exist in every ASN *4ESS* switch and are addressable by each ASN *4ESS* switch.

- The Recorded Announcement Machine frame and its announcements will remain in the *4ESS* switch at least until transition is completed. The current plan is that the Recorded Announcement Machine frame will remain in the *4ESS* switch beyond 4E17. The present mode of operation applies to all announcements existing on the Recorded Announcement Machine frame during the transition period.

    After transition is completed, any Recorded Announcement Frame Emergency or Special announcement should not be administratively set to backward releasable, because there is no guarantee that all *4ESS* switches have the same text for that announcement.

8. Input/Output Manual Pages

8.01 Input and output messages **VER:SCS:FHT** have been created to support this feature. Both of these messages are attached.

ID . . . . VER:SCS-FHT
WORK CENTER . . MAC, MOC
GENERIC . . . . . . 4E17 and later
CLASS . . . . VER
APPLICATION . . 4E
TYPE . . . . Input

1. PURPOSE

Request output per-announcement data for input final handling treatments (FHT).

2. FORMAT

This message has the following format:

VER:SCS:FHT a !

3. EXPLANATION OF MESSAGE

a   Announcement designator. Designator may be any one of the
                         following:

```
AR,BT,DNN,DOO,E01-E20,EAI-EA7,HW,I01-I30,IFF,INC,
INF,ISB,IVC,LDV,LOB,LSA,MCA,NCA,NCB,NCC,NCD,NWC,
NWN,OOA,OOB,OTS,R01-R10,ROA,SNA,S01-S19,SP1,SP2,
STO,T,TDN,UNN,VCA,VMA,WAT
```

4. SYSTEM RESPONSE

PF   Printout follows.

5. REFERENCES

PIDENTs
    IOCPIMC4
    VRFYCNTL
    VRFYINPT

Output Message
    VER:SCS-FHT

ID . . . . VER:SCS-FHT
WORK CENTER. . MAC, MOC
GENERIC . . . . . . 4E17 and later
APPLICATION . . 4E
TYPE . . . . Output

1. FORMAT

```
VER:SCS:OPT(FHT)        SCSFHT aaa,   MT, bb,

AIR c,    ANIR ddd,   AN4R eee,   CIVO fff,   CAUSE ggg,

LOC hh,   NPLY i,   OFHT jjj,   SAN kkkk,   SSI lll,   TUBM mmm
```

2. REASON FOR OUTPUT

To display per-announcement data for final handling treatment (FHT) input.

3. VARIABLE FIELD DEFINITIONS

aaa	Service circuit system final handling treatment.
bb	Main transition.
c	AT&T intergrated services digital network (ISDN) user part (ISUP) releasability.
ddd	AT&T network interconnect releasability.
eee	AT&T non--4ESS releasability.
fff	Common channel signal (ISUP and international ISDN user part (INUP)) voice calls and old announcement.
ggg	Cause value.
hh	Location.
i	Number of plays.
jjj	Old final handling treatment.
kkkk	Service circuit system announcement number.
lll	Service circuit system (SCS) service circuit ID.
mmm	Telephone user part (TUP) unsuccessful backwards release.

4. ACTION TO BE TAKEN

None.

5. REFERENCES

PIDENT
    IOCPIMC4
    IOCPPVR4
    VFRYCNTL
    VFRYINPT
    VFRYMISC
    VRFYOUT

Input Message
    VER : SCS-FHT

MAS Announcement System (Televote) Using ISAIC Feature (3187)

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MAS Announcement System (Televote) Using ISAIC Feature (3187)

5

1. Feature Description

1.01 When a call is to be routed to an assigned and active Mass Announcement System (MAS) announcement (Barge-In or synchronous), the *4ESS*™ switch checks to determine whether the Improved Service Announcement and Information Collection (ISAIC) feature should be used to play the announcement. Details concerning ISAIC are covered in Improved Service Announcement and Information Collection (ISAIC) Core feature (3082) in this document.

1.02 When the MAS announcement associated with the dialed number is not assigned, the switch determines whether ISAIC should be used to final handle the call with the *new* final handling treatment Service Not Active (SNA), or if the MAS SNA announcement should be played as was done previously. The full set of new final handling announcements is covered in Expanded Final Handling Announcements feature (3091) in this document.

1.03 If the dialed number is vacant, but in a range of numbers designated for MAS use, the switch final handles the call with the new final handling treatment, Vacant MAS Announcement (VMA) or the switch plays the older MAS VMA announcement. The choice of final handling is arranged administratively.

1.04   The MAS is a combination of *4ESS* switch hardware and software used to provide a variety of announcement-related services. There are two types of MAS announcements: synchronous and non-synchronous. Each type is defined as follows:

■ Synchronous announcements are provided by the *4ESS* switch Service Circuit System (SCS); they are recorded on, stored on and played back from the MAS disks. Callers always hear these announcements from the beginning.

■ Non-synchronous announcements are provided from a source other than the MAS frame/MAS disks. The source of the audio may be any audio device that is compatible with, and connected to, a *4ESS* switch termination. These announcements are non-synchronous (also called Barge-In) because the switch has no way of knowing when the announcement "starts over" and so connects the caller to the announcement immediately.

1.05   The Peripheral Unit Controller (PUC)—Mass Announcement System (MAS) frames were removed from the *4ESS* switch during the generic 4E16 time frame and replaced by the SCS. The MAS now plays on the SCS frame. All *4ESS* switches have the MAS software; therefore, any switch can be provisioned to play MAS announcements to callers.

1.06   The ISAIC feature now provides all *4ESS* switches with new hardware for playing announcements and collecting digits. The MAS software is left intact and is still used to play announcements to callers on non-MAS hardware. Therefore, any service that is currently using the MAS capability may continue to do so after 4E16, but the synchronous announcements will no longer be available.

1.07   This feature is a general MAS capability; that is, the feature is available to any service that uses MAS but is being driven by *Multiquest*® Telecommunications Service Call Counter Service (formerly known as Televote 900). Call Counter provides a non-interactive mechanism for allowing the public to "vote" on a selection of choices. Callers are played a generic announcement that their vote has been recorded. Call Counter was previously provided using the MAS capability. This 4E17 feature now allows Call Counter, and other services using the MAS capability, to again provide synchronous announcements to callers.

2. Call Flow

2.01   Announcements played to callers are played from new hardware but call processing is not affected and call flow typically does not change. The Call Counter Service uses the MAS software, but the MAS capability often allows more flexibility than Call Counter service uses. In such cases, the general information is presented in brackets. All Call Counter calls receive two possible treatments. The normal treatment results in the caller being played a generic announcement at the

4ESS switch. A second treatment, if the customer has chosen cut-through, is that one call per unit time is forwarded to a customer-specified destination. The Call Counter Service call flow is presented as follows:

1. The caller dials 900-NXX-XXXX. [The MAS capability allows for any 7- or 10-digit number to be routed to an announcement, but Call Counter is currently provisioned as a 900 service.]

2. The Local Exchange Carrier (LEC) identifies the call as belonging to AT&T and passes the call to an AT&T switch. The AT&T switch may be either a *5ESS®* switch or a *4ESS* switch. In the case of a *5ESS* switch, the call proceeds from Step 3. In the case of a *4ESS* switch, the call proceeds from Step 4.

3. If the call is passed to a *5ESS* switch, the toll switch translates the 900-NXX digits, recognizes that the call must be passed to a *4ESS* switch, and onroutes the call.

4. If the call is passed to a *4ESS* switch, the switch is referred to as the Originating AT&T Switch (OAS). Based on 6-digit translation of the dialed number, the OAS routes the call to a *4ESS* Terminating AT&T Switch (TAS).

5. The TAS, based on analysis of the 900-NXX-XXX (first nine digits of the dialed number), determines the MAS announcement identity of the appropriate announcement to be played. [MAS software can determine the MAS announcement identity based on 7 to 10 digits.]

   If the 900 number is not assigned, the call is final handled (FH) with a new FH treatment of Vacant MAS Announcement (VMA). If the Office Data Administration (ODA) permits and the 900 number is assigned but not currently active, the call is final handled with a new FH treatment of Service Not Active (SNA).

   Otherwise (that is, if the 900 announcement is assigned and currently active), the appropriate announcement is one of two Call Counter courtesy response announcements, thanking the caller and announcing that his/her vote has been recorded. The appropriate announcement depends on whether or not answer supervision is to be returned. This is administered based on the dialed number.

6. At this point in the call flow, one of two things happen:

   ■ The large majority, if not all, of the calls are treated normally: the TAS connects the caller to the courtesy response announcement, increments a per-announcement counter, and returns answer supervision (resulting in the caller being billed for the call) if so indicated. If the caller is still connected after 2 seconds, the switch increments the Call Counter per-dialed number counter (resulting in the sponsor being billed for the call).

   ■ If the sponsor has chosen the cut-through option, one call per unit time is treated as follows: the TAS completes the call to the sponsor-designated number and increments the cut-through counter for that dialed number. The per-dialed number peg count is also pegged. Cut-through is specified on a dialed-number basis.

3. Provisioning

Data Administration

3.01 Although this is a general MAS capability, this feature is being driven by Call Counter, so assumptions pertinent to Call Counter are outlined below. This capability will change only the source of the announcements played to callers.

- One 900 number is used for each choice; callers dial the number corresponding to the choice for which they wish to vote. Callers will hear a generic announcement telling them their vote has been recorded.

- There are some subsets of *4ESS* switches administered as "counter" nodes; these are switches to which calls are routed, which peg counts, and which play the courtesy announcements to callers. There are "collector" nodes which receive data from the counters every 5 minutes (staggered) and deliver the accumulated counts to the Operations Dial-It Administration Center (ODAC) every minute. Call Counter Service currently provisions 8 counter nodes for most applications and 20 counter nodes for large applications. This is not expected to change with this feature, and the actual number of counter nodes does not affect these requirements. The peak Call Counter load per administered counter node is not expected to exceed 90 calls per second.

- The Caller-Free Billing Option allows customers to specify, on a dialed number basis, whether or not callers will be billed for the 900 call. This is accomplished by two Call Counter announcements provided on the new hardware. A per-announcement variable will determine whether answer supervision is returned or not.

- Sponsors may choose the cut-through option in which one call per unit time at a given switch (one call every 60, 120, 300 or 600 seconds) is forwarded to a sponsor-specified destination. This option is used, for example, to obtain further information from a random sample of callers.

- Call Counter Service is not integrated with the *MultiQuest* Telecommunications Service Phase 3 architecture. That is, there is no database dip, and 900-NXXs will continue to be dedicated to Call Counter Service.

- Call Counter sponsors are billed based on the count of the number of calls to their 900 number.

Operations, Administration, and Maintenance

3.02 New office data includes the following:

■ A per-MAS announcement indicator that determines whether the ISAIC feature should be used to play the announcement, with a default value of non-ISAIC.

■ For each MAS announcement identity that uses ISAIC, there is a mapping of that MAS announcement identity to a unique ISAIC announcement identity.

Mapping Requirements

3.03 The value of the per-MAS announcement indicators, and the MAS-to-ISAIC mapping, is changeable via Recent Change.

Interactions and Deployment Dependencies

3.04 This feature is dependent upon ISAIC Core feature (3082) and Expanded Final Handling Announcements feature (3091). Both 4E17 features are covered in this document.

Population and Retrieval

3.05 ODA, Recent Change (RC), and Verify forms have been impacted by the MAS ISAIC feature. Several forms have been modified.

ODA Forms

A. Modified ODA Forms

3.06 Changes have been made to the following ODA forms to support this feature:

        408C   408D
        408E   408E-1

ODA Form 408C

3.07 Form 408C defines Non-Barge-In and/or Barge-In Public Announcement Service (PAS) recorder announcements. Service Circuit System (SCS) was added as a Service Identity (SID) entry on these forms. Also, the Barge-In (BI) range was changed from 9999001 through 9999512 to 9999001 through 9999511, and the entry for Voice Storage System Identity (VSSID) was changed from 0 through 99999 to 0.

ODA Form 408D

3.08 Form 408D defines the cut-through application for PAS announcement with selective cut-through service in *4ESS* switch offices equipped with MAS announcement. The SCS, BI, and VSSID fields are affected as described for Form 408C.

ODA Forms 408E and 408E-1

3.09 Forms 408E and 408E-1 define PAS announcements with Televote in *4ESS* switch offices equipped with MAS. The SCS, BI, and VSSID fields are affected as described for Form 408C.

Recent Change Forms

A. Modified Recent Change Forms

3.10 Changes have been made to the following RC forms to support this feature:

604	605
607	608
610	

Recent Change Forms 604, 605, and 610

3.11 Forms 604, 605, and 610 add, change or delete the cut-through function to the PAS announcement. SCS was added as a SID entry on these forms. Also, the BI range was changed from 9999001 through 9999512 to 9999001 through 9999511, and the entry for VSSID was changed from 0 through 99999 to 0. The layout for Forms 604 and 605 is located in the ISAIC Core feature (3082) which is part of this document.

Recent Change Forms 607 and 608

3.12 Form 607 adds PAS announcement with Televote, and Form 608 adds an additional 60 Televote options to the initial four options assigned on RC Form 607. The SCS, BI, and VSSID fields are affected as described for Form 604.

Verify Forms

A. Modified Verify Forms

3.13 Changes have been made to the following Verify forms to support this feature:

16d	6e
6f	6g
6h	

Verify Input Form 16d

3.14 This message requests the verification of PAS announcements. SCS was added as a SID entry on these forms. Also, the BI range was changed from 9999001 through 9999512 to 9999001 through 9999511, and the entry for VSSID was changed from 0 through 99999 to 0.

Verify Output Form 6e

3.15 This message verifies all PAS announcements currently defined in the office. The SCS, BI, and VSSID fields are affected as described for Form 16d.

Verify Output Form 6f

3.16 This message displays detailed information about one PAS announcement. The SCS, BI, and VSSID fields are affected as described for Form 16d.

Verify Output Form 6g

3.17 This message lists the data stored in translation that applies to a particular PAS announcement with cut-through indexed by its cut-through application number. The SCS, BI, and VSSID fields are affected as described for Form 16d.

Verify Output Form 6h

3.18 This message lists the characteristics of a counter office with PAS announcements for Televote application. The SCS, BI, and VSSID fields are affected as described for Form 16d.

4. Recording (Not Affected)

5. Network Management (Not Affected)

6. Maintenance/Troubleshooting (Not Affected)

7. Transition Considerations

Transition Planning

7.01 The per-MAS announcement indicators have a default value of non-ISAIC. Before these indicators are changed, a check should be made to verify that the SCS frame is operational at that switch. The SCS status switch at the Master Control Console (MCC) displays the status of the frame.

Terminating Treatment

7.02 If the MAS announcement identity associated with the dialed number is assigned but not active, the TAS must:

■ Peg MAS announcement attempt counter associated with MAS SNA

■ Check per-MAS announcement indicator for ISAIC use as follows:

— If used, final handle (FH) the call with the new SNA FH treatment.

— If not used, use the MAS-provided SNA announcement at that switch.

7.03 If the MAS announcement identity associated with the dialed number is assigned and active, the TAS must check a per-MAS announcement indicator for ISAIC use as follows:

■ If used, route the call to the appropriate announcement in the MAS pool of ISAIC service circuits.

■ If not used, route the call to the appropriate MAS announcement.

7.04 There are no new requirements for pegging the per-dialed number counts. This function will still be performed by the MAS software. If the MAS announcement identity is not assigned, the TAS final handles the call with the new VMA FH treatment. Unlike the SNA case, no switch development is needed to determine whether to use the VMA or the VMA FH treatment with ISAIC. This is set administratively (by code grouping).

Limitations and Restrictions

7.05 Currently, counts of calls playing the VMA are available to Operations Dial-It
Administration Center (ODAC). This feature, as specified, will not make the
counts of calls receiving the VMA FH treatment available to ODAC. These requirements
allow a MAS announcement identity to be mapped to a single ISAIC announcement. A
MAS announcement has a maximum length of 5 minutes, while an ISAIC announcement
has a maximum length of 4.3 minutes. Currently, there is no service need to play MAS
announcements longer than 4.3 minutes. If that should change, these requirements
would have to be modified to allow a mapping of MAS announcement identity to a
sequence of ISAIC announcements.

8. Input/Output Manual Pages (Not Affected)

SRVT Enhancements Feature (3285)

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SRVT Enhancements Feature (3285)

6

1. Feature Description

1.01 This feature is an enhancement to the Signaling Connection Control Part (SCCP) Routing Verification Test (SRVT) feature which was introduced in the 4E15 generic. The SRVT verifies the accuracy, completeness, and consistency of the Global Title Translation (GTT) service of the SCCP. It does this by simulating the query/response transactions that take place between a 4ESS™ switch and a Network Control Point (NCP). Normally, the SRVT is used under the following circumstances:

■ After a recent change to translation data

■ When a translation problem is suspected

■ On a periodic basis to detect cases of mutilation of translation data.

The SRVT is also used to sectionalize errors which may result in the degradation and/or loss of service between a controlling switch and a database in the Common Channel Signaling network.

1.02 Since its introduction, the SRVT for Software Defined Network (SDN) services has used the Automatic Number Identification (ANI) to determine if the correct NCP was queried. The ANI was placed in an SRVT validation parameter called the "Global Title." Starting with this generic release, the SRVT for SDN services will use the Customer ID to determine if the correct NCP was queried. This change is being made because ANI to Customer ID mapping tables are being removed from NCPs. (ANI to Customer ID mapping will now be done at the 4ESS switch.)

1.03 This feature adds the SDN Customer ID to the SRVT message. To accommodate the Customer ID, a new SRVT validation parameter called the "Original Global Title" was created. For the specific application of SDN 10-digit routed global titles, the *4ESS* switch sends the SRVT message with the Customer ID in the existing Global Title parameter and the ANI in the new Original Global Title parameter.

2. Call Flow (Not Affected)

3. Provisioning (Not Affected)

4. Recording (Not Affected)

5. Network Management (Not Affected)

6. Maintenance/Troubleshooting (Not Affected)

7. Transition Considerations

Turn On/Turn Off Mechanism

7.01 This feature is turned on with a Broadcast Warning Message (BWM). It is not necessary for all *4ESS* switches in the network to be running the 4E17 Release 3 generic for this feature to be fully operational.

8. Input/Output Manual Pages (Not Affected)

Processor Outage (PRO) Phase 2 Feature (3286)

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Processor Outage (PRO) Phase 2 Feature (3286)

7

1. Feature Description

1.01 The Processor Outage (PRO) feature is divided into two phases for implementation. Both Phases 1 and 2 are described in this chapter.

1.02 The PRO feature provides for the graceful recovery of Signaling System 7 (SS7) links following a processor outage condition. The procedure used before the PRO feature was to break the link on recovery from a PRO condition regardless of the outage duration. Breaking the link on recovering from a PRO required a substantial amount of recovery time to realign the link. The PRO feature uses a method that does not break the link and provides recovery from a PRO condition based on the duration of the actual processor outage.

1.03 The PRO durations are classified as either a short or a long PRO. A short PRO is a condition that exists for a time less than T1 seconds (before timer T1 expires). A long PRO is a condition that exists for a time greater than T1 seconds (after timer T1 expires). T1 is the level 3 T1 timer value, which is defined as the delay to avoid message mis-sequencing on changeover. T1 is variable via recent change.

1.04 Phase 1 of the PRO feature provides for the occurrence of a short PRO. For Phase 1, the Link Interface Encrypted (LIE), TN917B, and the Link Interface 4-Ports Digital Signal (LI4D), TN1315, do not break the link for a short PRO (See Table 7-A.). As indicated in Table 7-A the link is still broken for a long PRO.

Table 7-A. Processor Outage Phase 1

Link Interface Boards	Processor Outage Duration		Break Link
	Long PRO	Short PRO	
LIE	X		Yes
		X	No
LI4D	X		Yes
		X	No

1.05 Phase 2 provides for a full PRO (a long PRO that does not break the link) for the LIE and LI4D interface boards. Table 7-B indicates that a long or short PRO does not break the link in Phase 2 of the PRO feature.

Table 7-B. Processor Outage Phase 2

Link Interface Boards	Processor Outage Duration		Break Link
	Long PRO	Short PRO	
LIE	X		No
		X	No
LI4D	X		No
		X	No

1.06 Following are some instances where the link will still be broken:

■ During a Common Network Interface (CNI) level 4 initialization

■ During a link node restore

■ During Interprocess Message Switch (IMS) User Node (IUN) restarts.

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2. Call Flow

Call Flow Key Points

2.01 Processor outage procedures are initiated for the condition where signaling messages can no longer be transferred or received at a level higher than Message Transfer Part (MTP) level 2.

Call Flow Diagram

2.02 The signaling point in the processor outage condition is referred to as the Status Indication Processor Outage (SIPO) Transmitting End (STE). The signaling point receiving the SIPOs from the STE is referred to as the SIPO Receiving End (SRE). Figure 7-1 is a flow diagram of a processor outage initiation and recovery. When a processor outage condition occurs at the STE, level 2 begins sending SIPOs. As shown in Figure 7-1, a number of events takes place after the processor outage; however, the STE continues to send SIPOs until the processor outage condition ceases. The SRE responds to the SIPOs with Fill In Signaling Units (FISUs) until the processor outage condition ceases, and no more SIPOs are received.

SIPO TRANSMITTING END   SIPO RECEIVING END

PROCESSOR OUTAGE

1. Sequence numbers must be updated to reflect the last MSU accepted by level 2 and delivered to level 3

2. L3 initiates TCC, starts timer T1; L2 stops timers T5, 6, 7; discards incoming MSUs

3. L2 sends continuous SIPOs

RECOVERY PRIOR TO T1 EXPIRY

1. STE L3 stops TCC, timer T1

2. First FISU/MSU sent must ACK the last MSU accepted by level 2 and delivered to level 3 (BSNT=FSNX-1)

3. Resume normal operation (Sending MSU/FISU)

Expiry timer T1, Complete TCC if possible, LONG PRO

PROCESSOR RECOVERED

1. L3 commands L2 to flush the RTB, TB, RB, and all messages in any intermediate buffers for transmission or local delivery

2. From a check FISU, extract the BSNR and set, FSNL=FSNT=FSNF-1=BSNR, and start sending FISUs

3. L2 notifies L3 of the completion of the buffer clearing

4. L3 commands L2 to resume normal operation

5. L2 responds to L3 that normal operation has resumed

Arrow labels: SIPO, FISU, SU #, SIPO, FISU, FISU, FISU/MSU

1. L2 informs L3 of SIPO condition

2. L3 initiates TCC, Starts timer T1

3. L2 stops timers T5, 6, 7

4. Start sending continuous FISUs

- If the SU is a FISU/MSU, then SHORT PRO

1. SRE L3 stops TCC, timer T1

2. Set pointer RTB to the last MSU ACK by the STE

3. L3 commands L2 to resume normal operation

Expiry timer T1, complete TCC if possible, LONG PRO

1. L2 informs L3 of PRO recovery

2. L3 commands L2 to flush RTB

3. From the first checked FISU, extract the BSNR and set, FSNL=FSNT=FSNF-1=BSNR

4. L2 notifies L3 of the completion on the buffer clearing

5. L3 commands L2 to resume normal operation

6. L2 responds to L3 that normal operation has resumed

Legend:
ACK   - Acknowledge
BSNR - Backward Sequence Number Received
BSNT - BSN transmitted
FISU - (Fill In) Signaling Unit
FSNF - Forward Sequence Number of the oldest MSU in the RTB
FSNL - Forward Sequence Number of the last MSU entered into RTB
FSNT - Forward Sequence Number of the last MSU transmitted
FSNX - FSN expected

L1,2,3- Level 1, 2 ,3
MSU - Message Signaling Unit
PRO - Processor Outage
RB   - Receiving Buffer
RTB - Retransmission Buffer
SIPO - Status Indication "Processor Outage"
SRE - SIPO Receiving End
STE - SIPO Transmitting End
SU   - Signal Unit
TB   - Transmission Buffer
TCC - Time Controlled Changeover

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Figure 7-1. Processor Outage Flow Diagram

2.03 Figure 7-2 is a simplified state transition diagram for dual processor outages.
Dual processor outages occur when both ends of the concerned link enter the
processor outage state and both sides are sending and receiving SIPOs. Figure 7-3
presents the dual processor outage stages or events. The length of time of the
processor recovery in relation to the T1 timer determines whether the processor outage
was of a short or long duration. If the processor recovered before the expiration of T1
timer, the processor outage was of a short duration. The expiration or unavailability of
T1 timer makes the recovery procedure that of a long duration processor outage.
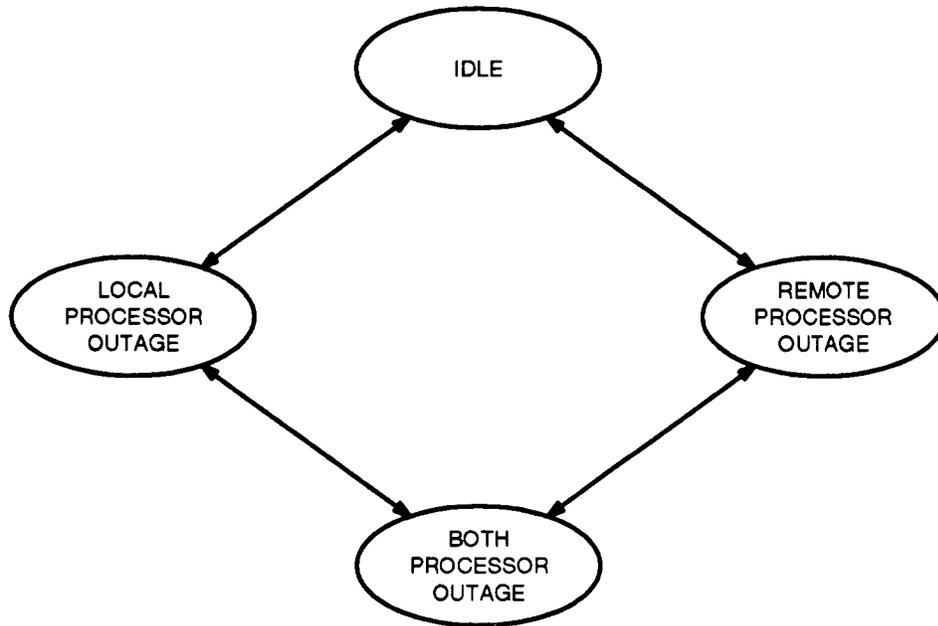
Figure 7-2. State Transition Diagram for Processor Outage

AT&T — PROPRIETARY
Use pursuant to Company instructions

Initial STE   Initial SRE

SIPO

FISU

SIPO   Start sending SIPOs
                        T1 is running continuously

Continue sending SIPOs
T1 is running continuously   SIPO

(Recovery before T1 expiry)   FISU
Start sending FISUs continuously
                                        Continue sending SIPOs

                                   SIPO
T1 exires
Complete TCC if possible
                                        T1 expires
(Recovery after T1 expiry)   FISU   Complete TCC if possible
Start sending FISUs continuously

No changeback or accept
new MSUs   Continue sending SIPOs
                                   SIPO

State Transitions:

    Initial STE   Local PRO-> Dual PRO -> Remote PRO

    Initial SRE   Remote PRO -> Dual PRO -> Local PRO

Legend:
FISU   - (Fill In) Signaling Unit
MSU   - Message Signaling Unit
PRO   - Processor Outage
SIPO   - Status Indication "Processor Outage"
SRE   - SIPO Receiving End
STE   - SIPO Transmitting End
TCC   - Time Controlled Changeover

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Figure 7-3. Dual Processor Outage

3. Provisioning

Office Data Administration

3.01 The processor outage procedure is a self-contained, self-recovery procedure distributed among processors and processes in the AT&T 3B20D computer and CNI ring.

3.02 For Phase 2, the LIE board requires installing new firmware chips on the board, diagnosing the node [with an All Test Pass (ATP)], and re-pumping (remove/restore code from the 3B20D computer disk files). The LI4D requires software changes only.

3.03 Before the firmware is installed on the LIE board, the 4AP11R3 software must be present. The firmware must be removed if the 4AP11R3 software is backed out.

4. Recording (Not Affected)

5. Network Management (Not Affected)

6. Maintenance/Troubleshooting (Not Affected)

7. Transition Considerations

7.01 The following are transition considerations for the Processor Outage feature:

■ Each link node in the Common Channel Signaling System 7 (CCS7) /International Telegraph and Telephone Consultative Committee 7 (CCITT7) signaling networks can only use one SIPO procedure at a time (two procedures cannot be used on a link node at the same time).

■ The new SIPO procedure can be deployed on a link-by-link basis (with firmware changes or upgraded by Phase 2) on the switching or signaling system. This will result in different SIPO procedures being used on link nodes within a signaling point and/or between adjacent signaling points.

■ When the new SIPO procedure is introduced to a switching or signaling system, it must co-exist with the existing "break the link on recovery" procedure in the same system.

■ If the STE has the "break the link" SIPO procedure and the SRE has the new SIPO procedure, the STE will "break the link on recovery", regardless of the duration of the outage. The SRE with the new procedure will stop its procedure as soon as the link is broken and wait for completion of the link prove-in procedure from the STE before service is resumed.

■ If the STE has the new SIPO procedure and the SRE has the "break the link" procedure or the old procedure that did not "break the link", the link will not be broken by STE on recovery. However, when the traffic is resumed, the link may be broken where level 2 protocol dictates.

■ The CNI application is responsible for keeping track of which link node has which SIPO procedure.

7.02 Without the PRO feature, a normal changeover [exchange Change Over Order (COO) and Change Over Acknowledgment (COA) messages] would occur for all SRE durations. With the PRO feature, the link conforms to the new protocol. For a short PRO, the SRE stops sending Message Signaling Units (MSUs) until the other side recovers; it then resumes and does not perform a changeover of any type [normal or Time-Controlled Changeover (TCC)]. For a long SRE, the link is not broken/restarted, but continues a TCC and Change Back (CB) when the remote PRO condition ceases.

Turn On/Turn Off Mechanism

7.03 This feature cannot be turned ON/OFF after firmware and software (4AP11R3) are installed. The 4AP11R3 must be installed before firmware is installed on LIE boards. Firmware must be removed if 4AP11R3 is backed out. The 3B20D computer needs the software before the firmware is installed. Refer to Task Oriented Practice (TOP) AT&T 234-153-055AC, *Common Network Interface, Growth/Degrowth, 4ESS™ Switch,* for procedures to update the interface boards.

8. Input/Output Manual Pages

8.01 The OP:LNSTAT output manual page is updated to show the new LI_FW_VER field. This field will contain the microcode value MC3F029A1 when the new firmware has been installed on the LIE.

International 800 Carrier Specific Routing/Country Direct Feature (3306)

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International 800 Carrier Specific Routing/Country Direct Feature (3306)

8

1. Feature Description

1.01 The International 800 (I800) Carrier Specific Routing (CSR)/Country Direct feature allows AT&T to support more than one I800 or Country Direct carrier in a foreign country. For example, AT&T and British Telecom currently offer I800 service between the United States and the United Kingdom. This feature will allow Mercury Communications, Ltd. (an alternative long distance carrier in the United Kingdom) to route I800 calls. Additionally, AT&T will be able to offer Country Direct services to (and hence, *USA Direct* Telecommunications Service from) multiple carriers in other countries.

1.02 Use of I800 CSR for a given country may be either mandatory or preferred. This information is included as part of call routing information (CSR Preference Indicator). If I800 CSR is mandatory, calls must be routed to a specific carrier in a foreign country.

1.03 If CSR is mandatory for a call, then AT&T must route the call to an International Switching Center (ISC) belonging to the specified destination (foreign country) carrier. If no facilities are available to one of the foreign carrier's ISCs, then the call will be given a Final Handling Treatment of No Circuits Available. If CSR is preferred and no facilities to the originally specified destination carrier's ISCs are available, the call may be routed to a different carrier in the foreign destination country.

2. Call Flow

Call Flow Key Points

2.01 Figure 8-1 illustrates the call flow in a single dip environment, while Figure 8-2 illustrates the double dip environment. In Figure 8-2, the call is not upchained to a *4ESS*™ switch before querying the Inward Wide Area Telephone Service DataBase (IDB) Network Control Point (NCP). This call flow assumes that Transaction Capabilities Application Part (TCAP) has been deployed for the interface between the *4ESS* switch, the IDB NCP and the 1 Direct Services Dialing (1DSD) NCP, and that Destination Common Channel Interoffice Signaling No. 6 (DCIS6) - Domestic is used for the interface between the *5ESS*® switch and the IDB NCP.

Call Flow Diagrams

Figure 8-1. I800 CSR Single Dip Architecture Call Flow
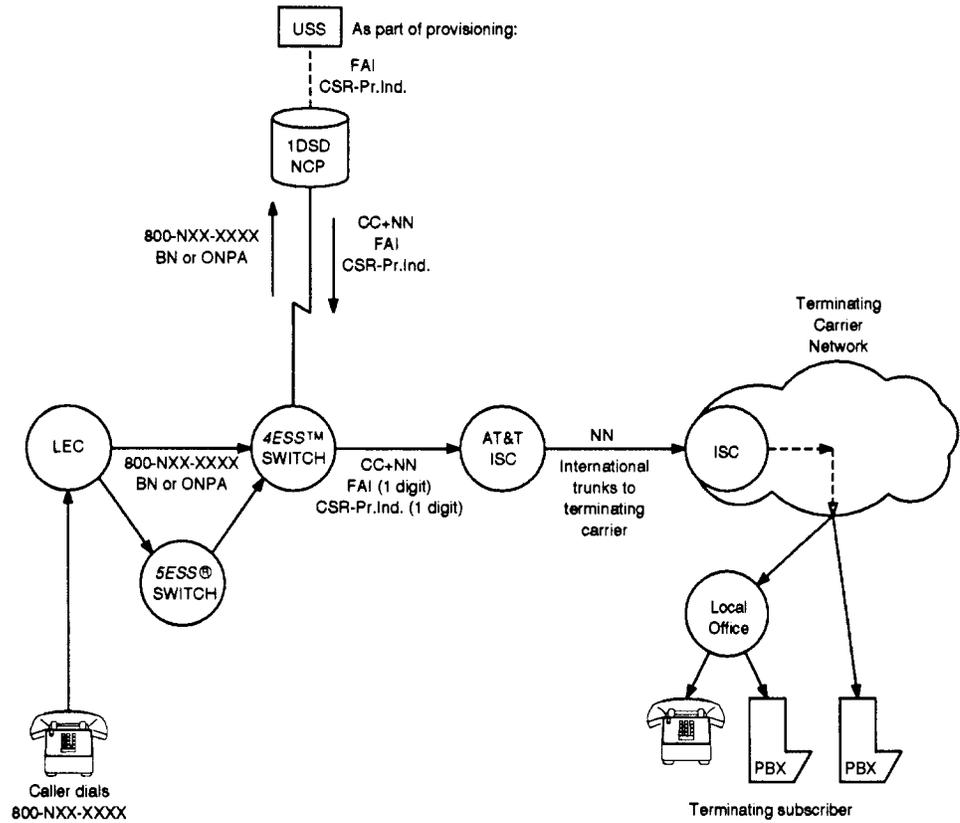
LEGEND:
BN	Billing Number
CC	Country Code
CSR	Carrier Specific Routing
DSD	Direct Services Dialing
FAI	Foreign Administration Identity
ISC	International Switching Center
LEC	Local Exchange Carrier
NCP	Network Control Point
NN	Network Number
NSS	Network Support System
ONPA	Originating Numbering Plan Area
PBX	Private Branch Exchange
USS	User Support System

tpa 788591/01
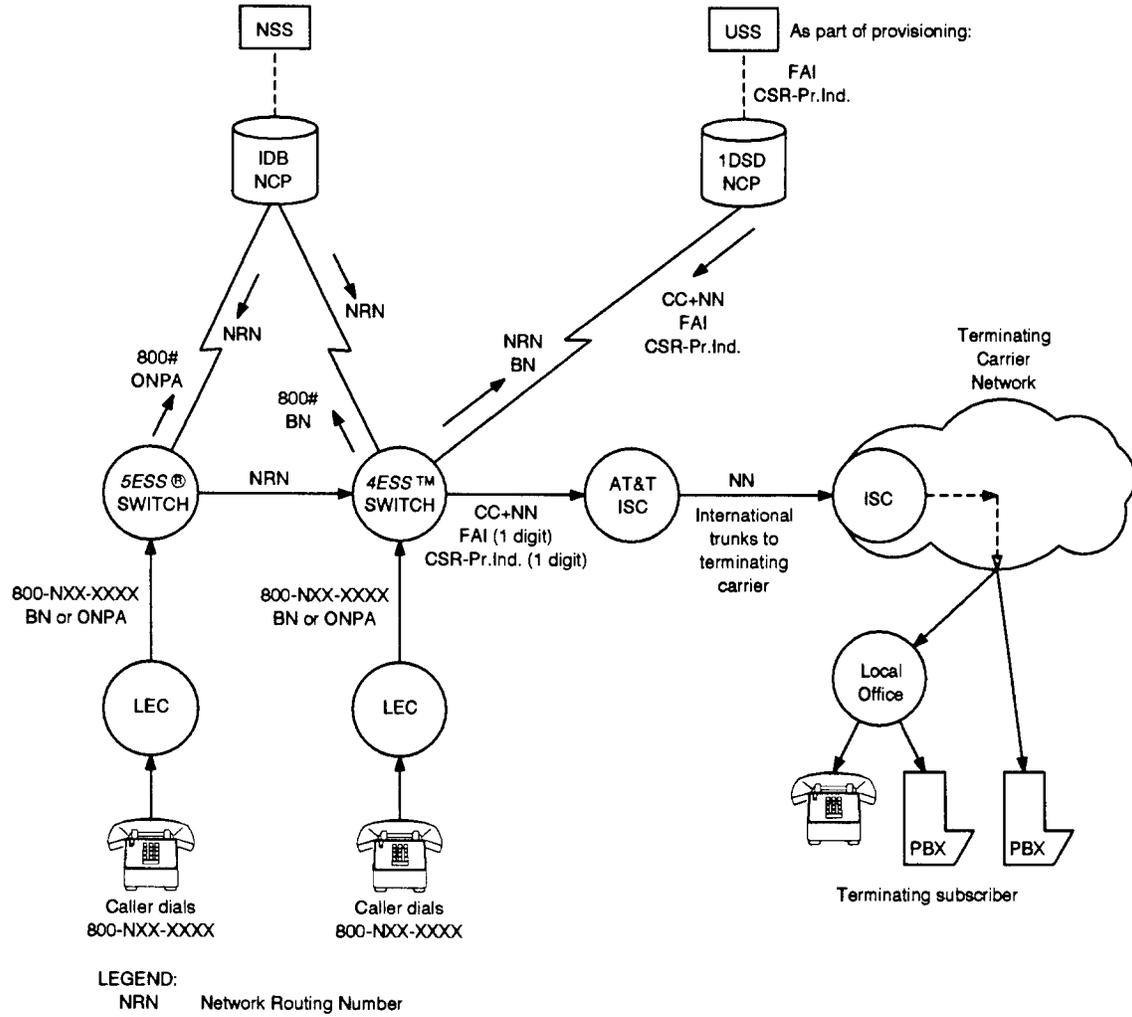
Figure 8-2. I800 CSR Double Dip Architecture Call Flow

Call Flow Narrative

2.02 The following call flow relates to the single dip architecture (Figure 8-1). In cases where it relates to the double dip architecture (Figure 8-2), it will be so noted.

1. The domestic caller dials a number using the following form:
    (1+) 800-NXX-XXXX.

2. The Local Exchange Carrier (LEC) recognizes the call as one destined for AT&T and forwards the number to an AT&T *4ESS* or *5ESS* toll switch. Also forwarded are the 10-digit Billing Number (BN) or 3-digit Originating Numbering Plan Area (ONPA).

➡ **NOTE 1:**
    If the LEC office is an Equal Access End Office (EAEO), it forwards the 10-digit BN or 3-digit ONPA using Equal Access Multifrequency (EAMF) or Common Channel Signaling System 7 (CCS7) Network Interconnect (NI) signaling. The NPA is sent if the LEC EAEO cannot determine the 10-digit BN (for example, in the case of a party line). If the LEC is not an EAEO, the ONPA can be derived from either incoming trunk subgroup information or an 00Y code transmitted by the LEC in place of the 800 digits.

➡ **NOTE 2:**
    If the 800 service double dip architecture has been eliminated, proceed to Step 4.

3. The originating toll switch (Figure 8-2) retains the 10-digit BN (if available) and sends a query to the IDB NCP over the signaling network (using the 800 number and the ONPA). The IDB NCP uses the 800 number and the OPNA to execute the customer record and to determine if the call should receive additional processing by a 1DSD NCP. After executing the customer record, the IDB returns a 19[4,5] Network Routing Number (NRN) to the switch.

➡ **NOTE:**
    In this NRN, the 19[4,5] digits are Special Service Codes (SSCs) indicating that the call uses the 1DSD NCP capabilities.

4. The Originating AT&T Switch (OAS) queries the 1DSD NCP using either the 800 number (single dip environment) or the NRN returned by the IDB NCP (double dip environment). When the 1DSD NCP receives the query, it executes the Call Processing Record (CPR) corresponding to the 800 number of the NRN to determine the destination number for the call.

5. When the call is to terminate to an outbound I800 termination, the CPR will determine the following:

- A terminating routing number (the 7- to 10-digit international number used to route the call)

- A 1-digit Foreign Administration Identifier (identifies the carrier in the destination country)

- A CSR Preference Indicator (mandatory or preferred).

6. The routing number, Foreign Administration Identifier (FAI), and CSR Preference Indicator are sent to the OAS in the TCAP END message. This message contains both a Charging—Bill_Call and a Connection Control-Connect operation.

7. When the OAS receives the TCAP END message, it will:

- Begin Automatic Message Accounting (AMA) recording based on the information received from the 1DSD NCP. (For Phase 1, the FAI value will *not* be recorded in the AMA record.)

- Determine the I800 Class of Service parameters

- Determine the NSN of the destination ISC switch

- Set the CSR Preference Indicator to the value received in the TCAP END message (mandatory or preferred)

- Prepare the CCS7 Integrated Services Digital Network User Part (ISUP) Initial Address Message (IAM) needed to route the call to the ISC switch identified by the NSN. This IAM includes the following key information:

  — Routing number

  — Service identity and transport capability

  — CSR Preference Indicator (mandatory or preferred) in the Forward Network Specific Information parameter

  — FAI value (included in the Transit Network Selection parameter).

8. The AT&T ISC *4ESS* switch uses the information in the IAM to select the trunk subgroup that is connected to the ISC switch of the carrier specified by the FAI. If no circuit is available to the specified overseas carrier, the call will be cranked back to the originating switch. The originating switch will attempt to reroute that call. If the call cannot be completed to the desired carrier, it will be routed to an overflow carrier (preferred) or will receive Final Handling Treatment (mandatory).

3. Provisioning

Terminations

3.01 When provisioning the customer record, each termination in a country for which AT&T supports multiple I800 carriers will be provisioned with the following:

- The terminating routing number (7- to 12-digit international number)

- An FAI (identifies the carriers in the destination country)

- A CSR Preference Indicator (mandatory or preferred).

Generic Routing Information

3.02 Whenever the *4ESS* switch receives a nonzero Digits(FAI) value in the TCAP END message for a dialed number-based service, the switch must set the CSR preference based on bit H in the Generic Routing Information (GRI) parameter. If bit H in the GRI is 0, CSR is mandatory. If bit H is 1, CSR is preferred.

Preference Indicator

3.03 For a dialed number-based service call, the *4ESS* switch must set the CSR Preference Indicator in the Forward Network Specific Information parameter of the CCS7 ISUP IAM based on the CSR Preference Indicator received in the TCAP END message (Table 8-A).

Table 8-A. CSR Preference Indicator Coding for CCS7

Code	Definition
00	No CSR (Default)
01	CSR Preferred
10	CSR Mandatory
11	Spare (Same as 00)

Recent Change and Verification

3.04 Craft personnel use the Maintenance Cathode Ray Tube (MCRT) terminal to invoke Recent Change and Verify. The following Recent Change command is used to add, change, or delete CSR/FAI data:

RC:MISC:FHT,FTA: ANTRECORD,a,b,c,ddefff,gggggggggg,hhhhhhh.....!

Up to 15 sets of dialed and routing digits may be input at one time.

Population Rules

3.05 Using the format of the preceding command, Table 8-B defines the population rules for CSR/FAI.

Table 8-B. CSR/FAI Population Rules

Item	Definition	Valid Entry
a	Recent Change Order Number	—
b	Function	A = Add C = Change D = Delete
c	Domain	P = POTS D = DEV I = International (81)
d	FAI	00 to 07
e	CSR	0 or 1
f	Service Identification Code (SIC)	001 to 127
g	10-Digit Dialed Number	—
h	7-, 10-, or 12-Digit Routing Number	—

If the ranges of the FAI or CSR are illegal, the Recent Change will be rejected.

4. Recording

4.01 A new Type of Digits (that is, FAI) coding is required in the CCS7 TCAP Digits parameter. The NCP populates the parameter as shown in Table 8-C.

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Table 8-C. Type of Digits Coding

Field	Setting
Type of Digits	FAI
Nature of Number	National
Numbering Plan	Not Applicable
Encoding	Binary Coded Digits (BCD)
Number of Digits	1
Digits	See below

The Digits field is structured as follows:

2nd Digit	1st Digit

These two digits are assigned as follows:

- Filler (1st)

- FAI (2nd).

4.02 Table 8-D contains the coding used to identify valid FAIs for each destination country.

Table 8-D. FAI Codes

Coding	Meaning
0000	Reserved*
0001	Foreign Administration 1
0010	Foreign Administration 2
0011	Foreign Administration 3
0100	Foreign Administration 4
0101	Foreign Administration 5
0110	Foreign Administration 6
0111	Foreign Administration 7
1000	Unassigned
1001	Unassigned
1010	Spare
1011 to 1111	Reserved

*This is a service specific value and is used differently by service. For example, the Global Software Defined Network (GSDN) uses code value 0000 to mean a call does not require Carrier Proportionate Routing (CPR). On the other hand, Switched Digital International (SDI) uses code value 0000 to mean the FAI is invalid, and the call should be killed.

5. Network Management (Not Affected)

6. Maintenance/Troubleshooting (Not Affected)

7. Transition Considerations

Deployment Dependencies

7.01 Before this feature can be activated for I800 calls, the *4ESS* switch release for the CSR platform must be deployed in *all 4ESS* switches (domestic, gateway, and ISCs) in the ASN.

7.02 This feature will be introduced in a 1DSD NCP software update. When the software update is deployed, the FAI and the CSR Preference Indicator will be initialized to 0.

Turn On/Turn Off Mechanism

7.03 This feature is turned on when the *4ESS* switch routing and the NCP records are updated.

8. Input/Output Manual Pages (Not Affected)

REmote Adjunct Call Handling Feature (3520)

9

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REmote Adjunct Call Handling Feature (3520)

9

1. Feature Description

1.01 The current Adjunct Based Capabilities (ABC) platform requires that adjuncts be directly connected to any switch that originates calls for a particular application. Because of this requirement, a large number of adjuncts are needed. This feature, REmote Adjunct Call Handling (REACH), provides a remote access capability, thereby expanding the scope of potential ABC applications.

1.02 REACH uses the AT&T Switched Network (ASN) to transfer calls via Common Channel Signaling System 7 (CCS7) to a Hand-off AT&T Switch (HAS) where an appropriate adjunct is located. REACH also provides an alternative path to a particular adjunct under busy or failure conditions and load shares traffic across multiple adjunct locations to improve overall availability and reliability of the ABC architecture. Additionally, REACH can route calls to a backup adjunct.

1.03 If REACH is invoked due to a Common Network Interface (CNI) failure at the Originating AT&T Switch (OAS), the call is transferred over the Alternate Signaling Transport Network (ASTN).

2. Call Flow

Call Flow Key Points

A. Remote Access

2.01   Figure 9-1 depicts an adjunct accessed remotely through a HAS (not local to the OAS). This architecture applies to ABC applications that require dedicated adjuncts but that do not require a large number of adjuncts or access facilities to support the anticipated traffic volume of the architecture. If the remote access capability did not exist, this type of application would result in a large number of access facilities being leased in order to interface with each *4ESS*™ switch in the ASN.

2.02   The REACH capability lowers the capital expense for these types of applications by enabling the number of access facilities and the adjunct hardware to be sized to the forecasted demand.

B. Signaling/Adjunct Backup

2.03   Figure 9-2 shows the architecture using the REACH capability for ABC applications that require high reliability. Access to the ABC application is normally through an adjunct directly connected to the switch. Under busy or failure conditions, the *4ESS* switch uses the REACH capability to transfer the call to a HAS. Using the Adjunct Logical Address (ALA), the HAS either accesses the primary adjunct using its own facilities or a backup adjunct that has the same capabilities and customer records as the primary adjunct.

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Call Flow Diagrams

Legend:
  ANI: Automatic Number Identification
  ALA: Adjunct Logical Address
  COS: Class of Service
  IAM: Initial Address Message
  NSN: Network Switch Number
  OSN: Originating Switch Number
  PRI: Primary Rate Interface
  RDB: Routing Data Block
  TAS: Terminating AT&T Switch
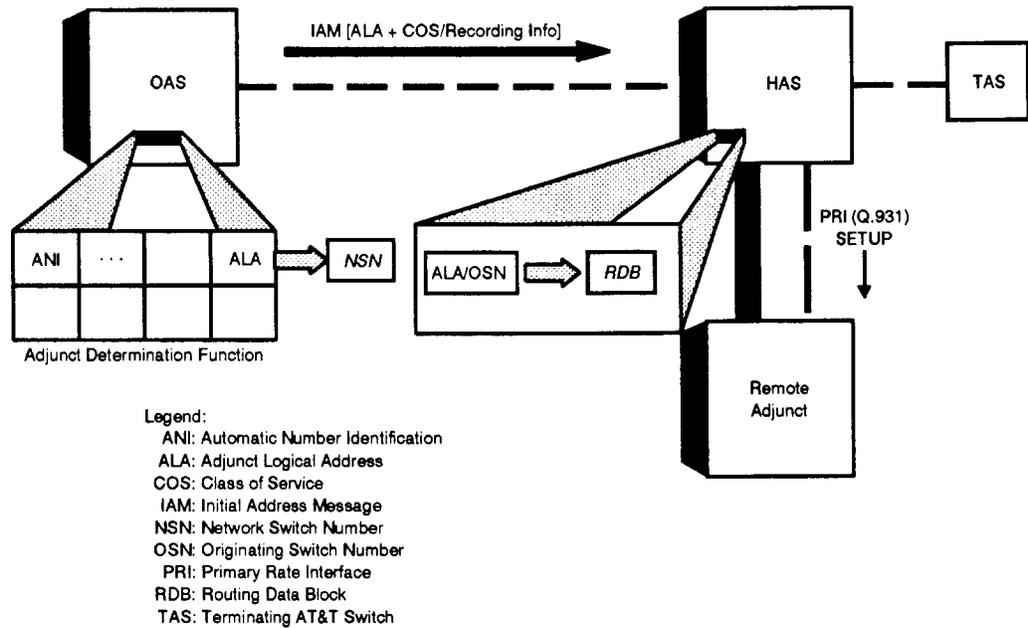
tpa 786587/01

Figure 9-1. Access to a Remote Adjunct Using REACH
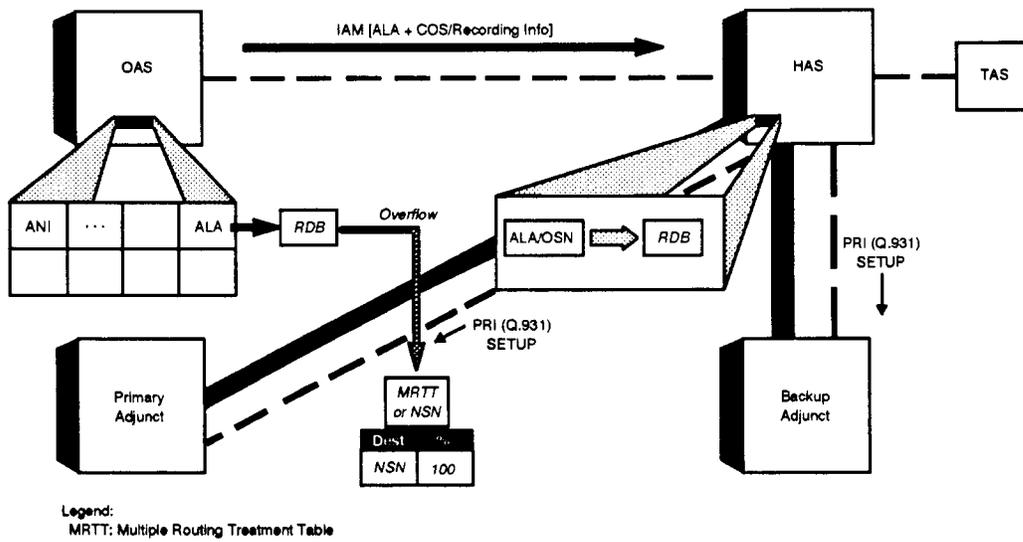
Figure 9-2. Signaling/Adjunct Backup Using REACH

Call Flow Narratives

2.04 The first call flow, as follows, applies to an application using the REACH capability to access a remote adjunct as part of normal call processing. The application does not require a remote adjunct backup (Figure 9-1).

1. The originating *4ESS* switch receives the incoming call.

2. The *4ESS* switch performs the adjunct use determination function. If an adjunct is required on the call, an ALA is supplied.

3. The *4ESS* switch performs applications screening as required for ALA.

4. The *4ESS* switch uses the ALA to index a destination Network Switch Number (NSN) where the appropriate adjunct is located.

5. The *4ESS* switch transfers control of the call to the destination switch as indicated by the NSN. This is accomplished by the *4ESS* switch constructing and sending a CCS7 Integrated Services Digital Network User Part (ISUP) Initial Address Message (IAM) to the destination HAS. In addition to the routine information that the IAM contains, the *4ESS* switch also:

    ■ Populates the Feature Indicator of the Routing Information Indicator Parameter (RIIP) with a value of "Hand-off"

    ■ Creates a new Service ID specifying REACH

    ■ Generates the Generic Operation Parameter (GOP) that will carry the ALA and certain recording and routing information.

    This information allows the destination HAS to create the appropriate Class of Service (COS) information and to perform some of the functions normally performed at an originating switch [for example, Automatic Message Accounting (AMA) recording].

6. After receiving the IAM, the destination HAS determines that the call requires special handling through the presence of REACH-specific information in the IAM. The destination *4ESS* switch uses the ALA and the Originating Switch Number (OSN) received in the GOP to index an Routing Data Block (RDB) to the adjunct.

■▷ **NOTE:**
The HAS does not repeat the adjunct use determination function.

7.   The HAS sends a Q.931 SETUP message over the Primary Rate
      Interface (PRI) to the adjunct. The SETUP message includes
      additional information [for example, Signaling Service Type (SST),
      Type of Origination, and Incoming Trunk Appearance Number] about
      the incoming trunk to the OAS (forwarded in the ISUP IAM by the
      OAS). The adjunct stores this information for later use.

8.   The HAS accepts the information in the SETUP message on
      sequence calls from the adjunct. This information is used to create
      the appropriate AMA record and Service ID/COS information on
      outgoing calls from the HAS. Otherwise, calls continue as normal.

2.05   The second call flow, as follows, applies to an application using the REACH
       capability to access a remote adjunct when it cannot access a local adjunct
because the interface is busy or has failed (Figure 9-2).

1.   The originating *4ESS* switch receives the incoming call.

2.   The *4ESS* switch performs the adjunct use determination function. If
      an adjunct is required on the call, an ALA is supplied.

3.   The *4ESS* switch performs applications screening as required for
      ALA.

4.   The *4ESS* switch uses the ALA to index an RDB. If the interface to
      the adjunct is down or busy, the *4ESS* switch uses the ALA to
      reference to either an NSN or a Multiple Routing Treatment Table
      (MRTT) for the next destination to try. The *4ESS* switch then
      attempts the call to the destination switch where the appropriate
      backup adjunct is located or to alternate facilities where the primary
      adjunct is found.

⇒   **NOTE:**
       Although discussed throughout this document, MRTT will not
       be activated until Generic Release 4E18.

5.   The *4ESS* switch transfers control of the call to the destination HAS
      as indicated by the NSN or MRTT. The destination HAS uses the
      ALA and OSN received in the IAM to index an RDB to the backup
      adjunct or the alternate facilities to the primary adjunct.

6.   From this point, the call flow continues the same as the first call flow
      (Step 7 and Step 8).

3. Provisioning

System Requirement

3.01 In order for REACH to function, it must be properly provisioned. The Far End
Network (FEN) Service Category must be set to **B** [query the Network Control
Point (NCP) database and make an AMA record] to process Positive Call Processing
(PCP) calls. This is accomplished by populating the **QTM** field on one of the following
forms:

- Office Data Administration (ODA) Form 406L

- Recent Change (RC) Form 617

- RC Form 618.

Structures Affected

A. HT4CPADATA

3.02 Two new items, NSN and Multiple Routing Treatment Index (MRTI), will be added
to the Common Platform Adjunct (CPA) data table. Either may be specified for
each ALA. At least one of the following three items must be present if data is entered
for the ALA:

- Routing Data Block Index (RDBI) (existing)

- NSN (new)

- MRTI (new).

3.03 A new item, **XL4CPARHFHT**, common to all ALAs will be used to enable the
switch to specify a default final handling treatment for REACH when the HAS
cannot complete a call to an adjunct. If no final handling treatment is specified in ODA
Form 406Z, the item will default to zero.

3.04 If an NSN is entered, a check is performed to ensure that an entry exists in the
NSN to Destination Point Code translator (**HT4NSN_DPC**) for the specified NSN.

3.05 If an MRTI is entered, a check is performed to ensure that an entry in the MRT
translator (**HT4MRTRTNG**) exists for the specified MRTI.

3.06 This table is populated using ODA Form 408M and RC Form 652.

B. HT4ALAOSN

3.07 A new 2-level structure is being defined to contain the ALA/OSN to RDBI data used at the HAS. For the Protected, Simplex, Disk-backed structure, ALA values range from 0 to 15 and OSN values range from 0 to 255. An OSN value of 0 will be used to store a wild card value if specified. The OSN values range from 0 to 167 for the ODA and RC forms. This structure will be populated by ODA Form 408N and RC Form 902.

C. HT4TSDT_SII

3.08 The SST values defined for Generic Release 4E17 are as follows:

- Spare value **4XLSSTSP7**—Used to designate REACH.

- Spare value **4XLSSTSP8**—Used to designate RECHK (REACH Key).

D. HT4SII

3.09 Item **XL4SII_SST** in the Service Identity Index (SII) translator is populated using the ODA 403R and RC 338 forms.

E. OD4TMSI

3.10 Item **OD4TMSI_SST** in the Market Segment Indicator to SST translator is populated using the ODA 4068 and RC 640 forms.

F. OD4RAO

3.11 A new RAO item, **OD4RAOTHOFF**, will be defined in the OD4RAO structure to designate the stream for the new Recording Hand-off Tracer Records. This item will be defined in bit 0 of decimal word 42.

3.12 ODA should set OD4RAOTHOFF equal to 4ODRAO_OC(=0) under the following conditions:

- The office entered OC in the RAOCONFIG field of Form 406M.

- The office entered DU in the RAOCONFIG field of Form 406M, and the THOFF field is populated with OC.

3.13 ODA should set OD4RAOTHOFF equal to 4ODRAO_IC(=1) under the following conditions:

- The office entered IC in the RAOCONFIG field of Form 406M.

- The office entered DU in the RAOCONFIG field of Form 406M, and the THOFF field is populated with IC.

3.14 OD4RAOTHOFF will default to IC if Form 406M is not submitted.

G. OD4OPT

3.15 A new item, **OD4OPTREACH**, is being defined for this feature. It will overlay the OD4OPTENH bit.

H. HT4ASCITA

3.16 Questions Q4 and Q5 in the **HT4ASCITA** translator have been defined as listed in Table 9-A.

Table 9-A. ASCITA Definitions

| Item Name | Form No. | | Field Entry | Description |
	ODA	RC		
XL4ASCIT4	4069	653	Q4	Is the PCC USEC feature active for this SII?
XL4ASCIT5	4069	653	Q5	Is this a REACH call for this SII?

Office Data Administration

A. Forms 403R, 4064, and 4068

3.17 For the 4E17 Release 3 Generic, the **SST** field on ODA Forms 403R, 4064, and 4068 will contain the entries of **SP7** and **SP8** (Spare 7 and Spare 8). These fields designate the new SII values of REACH and RECHK.

B. Form 4069

3.18 ODA Form 4069 is used to populate a service table to answer a specific question for SII service. This table is used to determine call handling.

C. Form 406M

3.19 The new field **THOFF** is being added to specify the stream for Recording Hand-off Tracer Records. The format of the new field is as follows:

```
THOFF _____ CAD__,
 3    7 14  15    80
```

3.20 The population rules are as follows:

- Valid entries for THOFF are **Blank, IC,** or **OC.**

- If RAOCONFIG is IC or OC, then THOFF must be **Blank.**

D. Form 406Z

3.21 The new field **RHFHT** is being added to specify the default final handling treatment for REACH calls that cannot be completed to an adjunct. The format of the new field is as follows:

```
RHFHT _____ CAD__,
 3    7 14  16    80
```

3.22 The population rules are as follows:

- Valid entries are **Blank, AR, BT, EA1** through **EA7, HW, IFF, INC, IVC, MCA, NCA, NCC, NCD, NWC, OOB, ROA, SP1, SP2, T, VCA, DNN, DOO, E01** through **E20, I01** through **I30, INF, ISB, LDV, LOB, LSA, NCB, NWN, OOA, OTS, R01** through **R10, S01** through **S19, SNA, STO, TDN, UNN, VMA** and **WAT.**

- If RHFHT contains an entry other than **Blank,** then ATT_ENH on T2 must be **Y.**

E. Form 408M

3.23 Two new fields, **MRTI** and **NSN,** will be added to ODA Form 408M. A check will be defined to ensure that the MRT block exists if an MRTI value is specified. Another check will be defined to ensure that an NSN entry exists if an NSN value is specified. The format of the two new fields is as follows:

```
MRTI _____, NSN _____,
     35  38      40  42
```

➡️ NOTE:
Although ODA Form 408M will be updated to show the MRTI field, no entries are allowed for Generic Release 4E17. The MRTT feature will not be activated until Generic Release 4E18.

3.24 The population rules are as follows:

- Valid entries for MRTI are **Blank** or **1** to **4095.**

- Valid entries for NSN are **Blank** or **1** to **167.**

- If MRTI contains a numeric value, then NSN must be **Blank**.

- Valid entries for RDBI are **Blank** or **1** to **8191.**

- At least one of the following fields must contain a numeric value:

  — RDBI

  — MRTI

  — NSN.

- If MRTI contains a numeric value, then there must be a 403P record with an equal MRTI value.

- If NSN contains a numeric value, then there must be a 4060 record with an equal NSN value.

F. Form 408N

3.25 ODA Form 408N (Figure 9-3) is used to populate the **HT4ALAOSN** structure.

```
ESS 408N TG-4              DEFINE ALA/OSN TO RBDI MAPPING
4E17>                                 4 ESS
                          4E17 AND LATER GENERIC PROGRAMS

                          ESS UNIT _____


FORM CODE    8N
                 _____
                  1   2

  ■1.A        ■·:N       ▮DR▮     CAD


  ____,       ____,      ____,      __
  4  5        8  10      12  15     80

  ____,       ____,      ____,      __

  ____,       ____,      ____,      __

  ____,       ____,      ____,      __

  ____,       ____,      ____,      __

  ____,       ____,      ____,      __

  ____,       ____,      ____,      __


REMARKS _____ PAGE _____ OF _____
```

Figure 9-3. ODA Form 408N

3.26 The population rules are as follows:

■ Valid entries for ALA are **0** to **15.**

■ Valid entries for OSN are **0** to **167.**

■ Valid entries for RDBI are **1** to **8191.**

■ There must be a 405B record with the same RDBI value. The **ADG** (Automatic Distribution Group on the 405B record) field must be blank.

■ ALA/OSN combinations must be unique.

Recent Changes

A. Form 322

3.27 A check must be added when deleting an MRT block. This check ensures that an MRTI value is not contained in the HT4CPADATA translator. If the MRTI value is in the CPA table, the MRT block cannot be deleted.

B. Forms 338 and 640

3.28 For the 4E17 Release 3 Generic, the **SST** field on RC Forms 338 and 640 will contain the entries of **SP7** and **SP8** (Spare 7 and Spare 8). These fields designate the new SII values of REACH and RECHK.

C. Form 510

3.29 A check must be added when deleting an RDB. This check ensures that an RDBI value is not contained in the HT4ALAOSN table. If the RDBI value is in the table, the RDB cannot be deleted.

D. Form 635

3.30 A check must be added when deleting an NSN. This check ensures that an NSN value is not contained in the HT4CPADATA translator. If the NSN value is in the CPA table, the NSN cannot be deleted.

E. Form 639

3.31 RC Form 639 (Figure 9-4) is used to add or change the following information for a given SII and Transport Capability (TCP):

- Routing Pattern Identity (RPI)
- Route Selection
- Local Access and Transport Area (LATA)/State screening.

3.32 Refer to the AT&T 190-401-001AC, *Network Routing Guide*, for the valid entries.

```
# FORM 639 SERVICE IDENTITY AND TRANSPORT CAPABILITY TO ROUTING PATTERN IDENTITY
  4E15>

RC:RTNR;CHG;OPT(SII),FTA:                    ▮SII      ,   ▮TPC       ,

ORNU _____, ACTION _,

▮RPI      ,

▮RSI     ,   RSIDF _,    RSFHT ___,

▮LSMIX  ,   LSFHT ___,

REMARKS _____!

              EQUIVALENT ODA INPUT FORM - ESS 4063

                  ASSOCIATED VERIFY MESSAGES

            INPUT-16ah-VER:RTNR:SII a,TPC b!(EOT)

                OUTPUT-6ao-VER:RTNR;OPT(SII)
```

Figure 9-4. Recent Change Form 639

F. Form 652

3.33 RC Form 652 (Figure 9-5) is used to populate the CPA common data. Field **AI** (Adjunct Indicator) is populated to activate the REACH feature.

```
# FORM 652    CHANGE ADJUNCT COMMON DATA
  4E17

RC:CPA;CHG;OPT(DATA), ____:              ALA ___,

ORNU _____,

ATYP _____,  ▮AI      ,  AFHT _____,  RDBI _____,  DSEP _____,

REMARKS _____!

              EQUIVALENT ODA INPUT FORM - ESS 408M

                  ASSOCIATED VERIFY MESSAGES

              INPUT-16as-VER:CPA:DATA!(EOT)

                  OUTPUT-6az-VER:CPA
```

Figure 9-5. Recent Change Form 652

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3.34   The population rules are as follows:

- Valid entries for AI are **ON** or **OFF**.

- Valid entries for RDBI are **Blank**, or **1** to **8191**.

3.35   In order to "blank" the RDBI field, the recent changes must take place in the
following order:

1. First, populate the CPA common data using RC Form 652. The RDBI must
   contain a numerical entry.

2. Then use RC Form 901 to populate the MRTI or NSN in HT4CPADATA.

3. Finally, change the numerical entry for RDBI to Blank using RC Form 652.

If not performed in this order, the recent change will fail.

G. Form 650

3.36   RC Form 650 is used to populate information for a customer whose data is
located on an adjunct. The population of the **ALA** field cannot contain any
leading zeros. Valid entries are **Blank, 0** to **9**, and **A** to **F**.

H. Form 901

3.37   RC Form 901 (Figure 9-6) is used to populate an MRTI or NSN in HT4CPADATA.
Two checks will be defined: one to ensure that the MRT block exists if an MRTI
value is specified and the other to ensure that an NSN entry exists if an NSN value is
specified. This form will be used for Generic Release 4E17 only.

```
#   FORM  901  CHANGE  ADJUNCT  COMMON  DATA
    4E17

RC:CPA;CHG;OPT(MRTI),  ____:                  ALA ____,

ORNU _____,

[MRTI        ,   [NSN      ,

REMARKS _____ !

              EQUIVALENT  ODA  INPUT  FORM  -  ESS  408M

                ASSOCIATED  VERIFY  MESSAGES

              INPUT-16a-VER:CPA:DATA!(EOT)

                  OUTPUT-6az-VER:CPA
```

Figure 9-6. Recent Change Form 901

3.38 The population rules are as follows:

■ Valid entries for MRTI are **Blank, ***, or **1** to **4095**.

■ Valid entries for NSN are **Blank, ***, or **1** to **167**.

■ If MRTI contains a numeric value, then NSN must be blank (and vice versa).

■ If MRTI contains a numeric value, then the MRT block in HT4RTRTNG for the MRTI value must contain an entry (cannot be all zeroes).

■ If NSN contains a numeric value, then there must be a nonzero entry in the HT4NSN_DPC translator for the NSN value entered on this form.

■ If OD4OPTREACH equals OD4OPT_NO(=1), then this recent change will be rejected.

⇒ **NOTE:**
Although discussed in this document, MRTT will not be activated until Generic Release 4E18.

I. Form 902

3.39 RC Form 902 (Figure 9-7) is used to change the RDBI for a given ALA and OSN. This translation is used at the HAS in order to reach an adjunct.

```
# FORM 902   CHANGE ALA/OSN TO RDBI DATA
  4E17>

RC:CPA;CHG;OPT(RDBI),_____:

ORNU  _____,

  ALA       OSN      RDBI
 __,      ___,     ____,
 __,      ___,     ____,
 __,      ___,     ____,
 __,      ___,     ____,
 __,      ___,     ____,
 __,      ___,     ____,
 __,      ___,     ____,
 __,      ___,     ____,
 __,      ___,     ____,
 __,      ___,     ____,
 __,      ___,     ____,
 __,      ___,     ____,
 __,      ___,     ____,
 __,      ___,     ____,


REMARKS _____,

              EQUIVALENT ODA INPUT FORM - ESS 408N

                 ASSOCIATED VERIFY MESSAGES

        INPUT-16aw-VER:CPA:La[,NSN b]!(EOT)

                 OUTPUT-6bc-VER:CPA
```

Figure 9-7. Recent Change Form 902

3.40 RC Form 902 is used to populate the **HT4ALAOSN** structure. An asterisk may be entered to remove an RDBI value from the database. Other population rules are as follows:

- Valid entries for ALA are **0** to **15**.

- Valid entries for OSN are **0** to **167**.

- Valid entries for RDBI are *, or **1** to **8191**.

■ The RDBI must exist and must be determinate (XL4RD_TYPE=4XLRD_DTRD).

■ ALA/OSN combinations must be unique.

■ If OD4OPTREACH EQUALS OD4OPT_NO(=1), then this recent change will be rejected.

J. Form 642

3.41 For the 4E17 Release 3 Generic, the **SST** field on RC Form 642 (Figure 9-8) will contain the entries of **SP7** and **SP8** (Spare 7 and Spare 8). These fields designate the new SII values of REACH and RECHK.

➡ **NOTE:**
The **SII** field entries as shown in Figure 9-8 and Figure 9-9 are used for illustrative purposes only. Refer to the AT&T 190-401-001AC, *Network Routing Guide*, for the valid entries.

```
#   FORM 642 - REACH
    4E17

RC:RTNR;CHG;OPT(TSTD),FTA:

ORNU 642---,   ACTION A,


TORIG     TDEST      ███     DNST      SII

LEC--,    LEC--,     SP7--,  UNAS--,   72-,
LEC--,    LEC--,     SP8--,  UNAS--,   73-,
LEC--,    NODAL,     SP7--,  UNAS--,   72-,
LEC--,    NODAL,     SP8--,  UNAS--,   73-,
NODAL,    LEC--,     SP7--,  UNAS--,   72-,
NODAL,    LEC--,     SP8--,  UNAS--,   73-,
NODAL,    LEC--,     SP7--,  UNAS--,   72-,
NODAL,    LEC--,     SP8--,  UNAS--,   73-,
-----,    -----      -----,  ------,   ---,


REMARKS  ----------------------------------------- |
```

Figure 9-8. Recent Change Form 642

K. Form 653

3.42 RC Form 653 (Figure 9-9) is used to define question **Q5** (Is this a REACH call for this SII?) in the **HT4ASCITA** translator.

```
#  FORM 653  AT&T SERVICE/CALL ID TYPE - REACH
   4E17>


RC:ASCIT;CHG;FTA:


ORNU 653---,


 ID        QUESTION     ANSWER



72-,      Q5-,         Y,
73-,      Q5-,         Y,
---,      ---,         -,
---,      ---,         -,
---,      ---,         -,
---,      ---,         -,
---,      ---,         -,
---,      ---,         -,
---,      ---,         -,


REMARKS _____!
```

Figure 9-9. Recent Change Form 653

Verify Forms

A. Forms 3ah, 6ap, 6ba, and 16ai

3.43 For the 4E17 Release 3 Generic, the **SST** field on Verify Forms 3ah, 6ap, 6ba, and 16ai will contain the entries of **SP7** and **SP8** (Spare 7 and Spare 8). These fields designate the new SII values of REACH and RECHK.

B. Form 6ah

3.44 The input message **VER:RTNR:SII a,TPC b!(EOT)** is used to request the RPI, LATA/State screening matrix, and Route Selection Index for the specified SII and Transport Capabilities (TPC) used for Real Time Network Routing (RTNR).

C. Form 6ao

3.45 The output message **VER:RTNR;OPT(SII)** is used to request the RPI and any LATA/State screening or Route Selection information for a specified SII and TPC.

D. Form 6az

3.46 The fields **MRTI** and **NSN** are being added to the **VER:CPA:** output message. This will dump any additional data stored in the CPA table (HT4CPADATA). If no data is contained in the translator for these fields, then the output will be blank.

E. Form 6bc

3.47 The output message **VER:CPA:**, used in conjunction with the 16aw and 16ax input messages, outputs the RDBI for an ALA and OSN.

F. Form 16aw

3.48 The input message **VER:CPA:L** a [,**NSN** b] is used to request verification of the HT4ALAOSN structure. Valid entries for L (ALA) are **0** to **15**. A single value, range, or list may be entered. NSN is an optional keyword for which no range or list may be entered. If L is entered with no keyword, then Verify will retrieve all RDBIs within the full NSN range for that ALA. NSN ranges from **0** to **167**.

G. Form 16ax

3.49 The input message **VER:CPA:RDBLIST** a is used to request a list of ALAs and OSNs that point to a requested RDBI value in the HT4ALAOSN structure. No range or list is permitted for this message. Valid entries for RDBI are **1** to **8191**.

PTG-4 Updates

3.50 The following table will be updated to reflect the current questions being asked of the ASCIT table.

Q1	Is this a Global SDN call?
Q2	Can this call be treated as an SDN call?
Q3	Is the UUD feature inactive for this SII?
Q4	Is the PCC USEC feature active for this SII?
Q5	Is this a REACH call for this SII?
Q6	Should the Billing Number be sent with this SII?
Q7..Q24	Currently unused.

3.51 The following descriptions will be added to Division 2, Section 6:

- For verify 16aw:
  NSN—See the description for OSN.

- OSN—Originating Switch Number. This field specifies the Network Switch Number of the originating switch in the network. Valid entries are 0 to 167. OSN value 0 may be used to define a "wild card" RDBI to the Adjunct Logical Address.

■ RHFHT—Remote Adjunct Call Handling Hand-off Switch Final Handling Treatment. This field is used to specify the default final handling treatment for REACH calls when the Hand-off switch cannot complete a call to the adjunct because no Generic Operation Parameter was received. This field may be left blank or see the RDBFHT description for the allowable entries. If left blank, this field will default to no announcement.

■ THOFF—This call category is associated with Recording Hand-off Tracer Records. If the "DUAL-RAO" office configuration has been selected and the RAO substitution field is left blank, it will default to IC. If the alternative RAO is required, input OC.

■ Add to the SST description:
  REACH (REmote Adjunct Call Handling)
  RECHK (REACH Key)
  SP7 - Will be used to designate REACH during 4E17
  SP8 - Will be used to designate RECHK during 4E17.

4. Recording

4.01 All AMA records generated at the HAS for calls using the REACH capability must record a new Recording Hand-off Module (Module 934). This indicates that the REACH capability was used on that call and identifies the OAS. The format of the Recording Hand-off Module is shown in Table 9-B. Table 9-C describes the type of hand-off.

Table 9-B. Recording Hand-off Module (Code 934)

Field Name	Table No.	No. of BCD Characters
Module Code	88	4
Type of Hand-off	893	2
OAS NSN	510	4

Table 9-C. Table 893—Type of Hand-off

BCD Chars.	Description
1	0 = Unused 1 = REACH 2 – 9 = Spare
2	Sign

4.02   The originating switch must create a new Recording Hand-off Tracer Record
(Structure Code 09923 with Call Code 90). The Recording Hand-off Tracer
Record is generated hourly and contains a count of the number of calls handed off due
to the REACH feature. The Count of Miscellaneous Records in the Call Assembly
Tracer Record (Structure Code 09048) is incremented when the Recording Hand-off
Tracer Record is generated. If the new tracer is discarded or lost, the miscellaneous
category in the Count of AMA Records Discarded or Lost is incremented. Table 9-D
contains the format of the Recording Hand-off Tracer Record. Call Code 90 is shown in
Table 9-E.

Table 9-D. Structure Code 09923—Recording Hand-off Tracer Record

Field Name	Table Number	No. of BCD Characters
Record Descriptor Word	—	8
Hexadecimal ID	—	2
Structure Code	—	6
Call Code	1	4
Sensor Type*	2	4
Sensor ID*	3	8
Recording Office Type*	4	4
Recording Office ID*	5	8
Date	6	6
Time	18	8
Type of Tracer	40	4
Reserved	804	8
Reserved	804	8
Reserved	804	8
Reserved	804	8
Count of Hand-off Calls Due to REACH	804	8

*Omitted if the records are teleprocessed to a Host Collector
(HOC). The HOC will add these fields.

Table 9-E. Call Code 90

Table 40—Type of Tracer	
BCD Chars.	Description
1 – 3	50=Recording Hand-off Tracer
4	Sign

Table 804—Count of Hand-off Calls	
BCD Chars.	Description
1 – 7	7-Digit Number
8	Sign

5. Network Management

5.01 Network Management must assess the impact of REACH traffic and how well this traffic is completing to HAS and remote adjuncts. For each ALA that indexes an NSN, the OAS pegs the following counts and sends them to the Network Management Operations System (NEMOS) every 5 minutes:

- Attempts Peg Count: The number of calls that are offered REACH.

- Overflow: The number of calls that are offered REACH, but did not complete to the HAS because no circuits were available.

⇒ **NOTE:**
For both Attempts and Overflow, the OAS should peg a separate count for each ALA-NSN combination that is populated for REACH.

5.02 Measurements must be generated and Traffic Data Administration System (TDAS) reports must be constructed to evaluate the REACH capability for engineering and maintenance purposes. The Attempt and Overflow counts are kept for a maximum of 16 ALAs and 8 NSNs for each ALA. The *4ESS* switch will make these counts available for TDAS file construction once every hour. The Data Acquisition Report Integrated Communications System (DARICS) will use existing interfaces to access the TDAS files.

5.03 Status information must be collected and passed to NEMOS. This information is passed in the form of messages and is used to alert network managers at an operations center [for example, the Network Operations Center (NOC)] of how traffic is routed from the OAS to the HAS. The descriptions of the messages are contained in Table 9-F.

Table 9-F. Status Information Message Descriptions

Message	Message No.	Description
Demand*	72	Returns the NSN or MRT mapping information at the OAS for all ALAs
	73	Returns the RDBI hand-off routing information for a given ALA/OSN combination
Data*	110	Transmits the 5-minute REACH traffic Attempt and Overflow counts on an ALA and NSN basis
Node-to-Node Cancel Control†	161	Activates or deactivates RTNR traffic selectivity on the ALA

* Messages 72 and 73 are new demand messages. Message 110 is a new 5-minute data message.

† Message 161 has been modified to include an additional parameter that specifies the ALA.

6. Maintenance/Troubleshooting

6.01 The ASTN will try to process an IAM that contains the GOP. However, if the ASTN IAM is longer than 70 octets, the IAM is not sent and the call is final handled. Table 9-G contains a list of the new Final Handling Codes (FHCs) introduced with the REACH feature.

Table 9-G. FHC Descriptions

FHC No.	FHC Name	Description
416	4FHXL_REACH_NO_RTNG_HAS	REACH did not find a valid routing treatment at the HAS. The call was destined for CPA and the ALA was found. It will be final handled.
417	4FHXL_REACH_NO_RTNG_OAS	REACH did not find a valid routing treatment at the OAS. The call was destined for CPA and the ALA was found. It will be final handled.
554	4FHXL_REACH_NO_RTNG_TAS	No valid routing treatment was found at the Terminating AT&T Switch (TAS). The call was destined for CPA and the ALA was found. It will be final handled.
555	4FHXL_ADJUNCT_OFF	The Adjunct Indicator is turned off. The call was destined for CPA and the ALA was found. It will be final handled.
556	4FHXL_CROOCCUPANCY_EXCEEDED	The Call Register Occupancy threshold was exceeded. The call was destined for CPA and the ALA was found. It will be final handled.
989	4FH7UI_REACH_NO_GOP_ROUTE	No GOP was received to convey the necessary information for a REACH call. The *4ESS*™ switch will continue to process the IAM without adjunct access. However, the call is not final handled.
990	4FH7UI_REACH_NO_GOP_KILL	No GOP was received in the IAM for a REACH hand-off call. All optional parameters have been processed. The *4ESS* switch will play an announcement or RELEASE BACKWARD message based on the override treatment specified in ODA.

7. Transition Considerations

Turn On/Turn Off Mechanism

7.01 This feature is turned on by a 1A Recent Change. Field **AI** is set to **ON** on RC Form 652.

8. Input/Output Manual Pages

8.01 The following Input/Output messages are affected:

- **VER:CPA:**
- **VER:CPA:L**
- **VER:CPA:RDBLIST**
- **VER:RTNR:SII**
- **VER:RTNR;OPT(SII).**

ID . . . . VER:CPA-DNUM
WORK CENTER . . MAC, MOC
GENERIC . . . . . . 4E17 and later
CLASS . . . . VER
APPLICATION . . 4E
TYPE . . . . Input

1. PURPOSE

Request information on the destination numbers (DNUMs) contained in the CPA database.

2. FORMAT

This message has two formats,

[1]   **VER:CPA:DNUM** a [**,NUMPL** b] [**,RDB**] !

[2]   **VER:CPA:DESTLIST** !

3. EXPLANATION OF MESSAGE

a   Destination number (3,6, or 9 digits).

b   Numbering plan:

                     APN   Action point numbering.

                     NUMPL   North American numbering plan.

RDB   Routing data block.

DESTLIST   For all DNUMs.

4. SYSTEM RESPONSE

NA   Not accepted.

PF   Printout follows.

5. REFERENCES

PIDENTs
  VRFYINPT
  VRFYCNTL
  VRFYPCP
  IOCPIMC4

Translation Guide, 4ESS^TM, TG-4 Division 8, Section 6ay

Output Message
  VER:CPA-DNUM

ID . . . . VER:CPA-ALA
WORK CENTER. . MAC, MOC
GENERIC . . . . . . 4E17 Rel. 3 and later
CLASS . . . . VER
APPLICATION . . 4E
TYPE . . . . Input

1. PURPOSE

To request the verification of a network switching number (NSN) and routing data block index (RDBI) for each adjunct logical address (ALA).

2. FORMAT

VER:CPA:L a [**,NSN** b] !

3. EXPLANATION OF MESSAGE

CPA	Common platform adjunct.
a	Adjunct logical address number (0 - 15). A single, comma separated list or a range of numbers is allowed.
b	Network switching number (0 - 255).

4. SYSTEM RESPONSE

PF	Printout follows.
NA	Not accepted.

5. REFERENCES

PIDENTs
    IOCPIMC4
    IOCPPVR4
    VRFYCNTL
    VRFYINPT
    VRFYOUT
    VRFYPCP

Translation Guide, 4ESS^{TM}, TG-4, Division 8, Section 16ax

Output Message
    VER:CPA-ALA

ID . . . . VER:CPA-RDBLIST
WORK CENTER . . MAC, MOC
GENERIC . . . . . . 4E17 Rel. 3 and later
CLASS . . . . VER
APPLICATION . . 4E
TYPE . . . . Input

1. PURPOSE

To request the verification of a network switching number (NSN) and adjunct logical address (ALA) for the routing data block index (RDBI).

2. FORMAT

VER:CPA:RDBLIST a !

3. EXPLANATION OF MESSAGE

CPA   Common platform adjunct.

a   Routing data block index number (1 - 8191).

4. SYSTEM RESPONSE

PF   Printout follows.

NA   Not accepted.

5. REFERENCES

PIDENTs
   IOCPIMC4
   IOCPPVR4
   VRFYCNTL
   VRFYINPT
   VRFYOUT
   VRFYPCP

Translation Guide, 4ESS™, TG-4, Division 8, Section 16aw

Output Message
   VER:CPA-ALA

                                        ID . . . . VER:RTNR-SII
                                        WORK CENTER. . MAC, MOC
                                        GENERIC . . . . . . 4E15 and later
                                        CLASS . . . . VER
                                        APPLICATION . . 4E
                                        TYPE . . . . Input

1. PURPOSE

Verification of service identity index (SII) and transport capability (TPC) used for real time
network routing (RTNR).

2. FORMAT

VER:RTNR:SII a**,TPC** b!

3. EXPLANATION OF MESSAGE

a   Service identity index.

b   Transport capability.

4. SYSTEM RESPONSE

NA   Not accepted.

PF   Printout follows.

5. REFERENCES

PIDENTs
  IOCPIMC4
  VRFYCNTL
  VRFYINPT
  VRFYRTNR

Translation Guide, 4ESS^{TM}, TG-4, Division 8

Output Message
  VER:RTNR-SII

ID . . . . VER:CPA-ALA
WORK CENTER . . MAC, MOC
GENERIC . . . . 4E17 Rel. 3 and later
APPLICATION . . 4E
TYPE . . . . Output

1. FORMAT

```
VER:CPA:

ALA     OSN     RDBI

 a,      b,      c,
 .       .       .
 .       .       .
 .       .       .
```

2. REASON FOR OUTPUT

To display all the adjunct logical address (ALAs), network switching numbers (NSNs) and routing data block index (RDBIs) in the HT4ALAOSN structure.

3. VARIABLE FIELD DEFINITIONS

a   Adjunct logical address (0 - 15).

b   Network switching number (0 -167).

c   Routing data block index (1 - 8191).

4. ACTION TO BE TAKEN

None.

5. REFERENCES

PIDENTs
   IOCPPVR4
   VRFYCNTL
   VRFYINPT
   VRFYOUT
   VRFYPCP

Translation Guide, 4ESS™, Division 8, section 6bc.

Input Messages
   VER:CPA-ALA
   VER:CPA-RDBLIST

ID . . . . VER:RTNR-SII
WORK CENTER . . MAC, MOC
GENERIC . . . . . . 4E15 and later
APPLICATION . . 4E
TYPE . . . . Output

1. FORMAT

```
VER:RTNR;OPT(SII):        SII a, TPC b,

RPI c,

RSI d, RSIDF e, RSHFT f,

LSMTX g, LSFHT h
```

2. REASON FOR OUTPUT

Verification of service identity index (SII) and transport capability (TPC) used for real time network routing (RTNR).

3. VARIABLE FIELD DEFINITIONS

a	Service identity index.
b	Transport capability.
c	Routing pattern identity.
d	Route selection index.
e	Route selection index default.
f	Route selection final handling treatment.
g	Local access and transport area (LATA)/state screening matrix.
h	LATA/state final handling treatment.

4. ACTION TO BE TAKEN

None.

5. REFERENCES

PIDENTs
    IOCPMCP4
    IOCPPVR4
    VRFYOUT
    VRFYRTNR

Translation Guide; 4ESS^{TM}, Division 8

Input Message
    `VER:RTNR-SII`

Software Defined Network Universal Global Title Translation Database Feature (3587)

10

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Software Defined Network Universal Global Title Translation Database Feature (3587)

10

1. Feature Description

1.01 The Software Defined Network (SDN) Universal Global Title Translation (UGTT) DataBase (DB) is needed so that outbound services can transition from the 3- to 6-digit Global Title Translation (GTT) performed in the Signal Transfer Point (STP) to the 10-digit GTT performed in the *4ESS*™ switch. Due to the large number Global Titles (GTs) needed to support outbound services, each *4ESS* switch cannot have all GTs populated in its Direct Link Node (DLN). Following are four situations where this would be a problem:

- Alternate Signaling Transfer Network (ASTN): The helper switch will not have its GTT database populated for customers homed on the victim switch. The exceptions to this are SDN Network Remote Access (NRA) calls and inbound dedicated Global Software Defined Network (GSDN) calls. These two types of calls will have GT records populated in every switch.

- SDN cellular roamers: An SDN cellular customer can originate a call from any switch. Only the home switch will have the GTT record.

- Test calls: The SDN Control Center (SDNCC) launches test calls from a limited number of switches, so most often it will be the case that the originating switch does not have the GTT information.

- Misprovisioned SDN customers: Provisioning errors could cause a GT record to be populated at the wrong switch.

1.02 This feature will provide the global title translations for the above four cases. The UGTT DB will contain translations for all SDN customers. If GTT fails at a switch, the UGTT DB will be queried for the Signaling Point Code (SPC) and the SubSystem Number (SSN) of the SDN Network Control Point (NCP) that contains the customer record. The UGTT DB will determine this information based on the Automatic Number Identification/Numbering Plan Type (ANI/NPT) received in the BEGIN message. The customer ID and status will also be returned. This information will then be used to query the proper SDN NCP.

2. Call Flow (Not Affected)

3. Provisioning

Population and Retrieval

3.01 This section shows the new Office Data Assembler (ODA), Recent Change (RC), and Verify forms that have been added for this feature. It also shows where information has been added or changed on the existing forms.

A. New ODA Forms

ODA Form 405W

3.02 New ODA Form 405W has been created to populate the HT4UGTT structure and to add, change, and delete entries in the UGTT DB. The form's layout is shown in Figure 10-1.

```
ESS 405W TG-4                        UCTT Data Base
4E17.                                    4ESS
                          4E17 AND LATER GENERIC PROGRAMS


                      ESS UNIT_____


FORM CODE  5W                                            NUMPI  _____,
            1  2                                              4    7

   NPA        PSPC      PSSN       SSPC       SSSN      CAD

  _____,   _____,  ___,   _____,   ____,     ___,
  13 15    20      28  33 35   40       48   53 55      80

  _____,   _____,  ___,   _____,   ____,     ___,

  _____,   _____,  ___,   _____,   ____,     ___,

  _____,   _____,  ___,   _____,   ____,     ___,

  _____,   _____,  ___,   _____,   ____,     ___,

  _____,   _____,  ___,   _____,   ____,     ___,

  _____,   _____,  ___,   _____,   ____,     ___,

  _____,   _____,  ___,   _____,   ____,     ___,

  _____,   _____,  ___,   _____,   ____,     ___,

  _____,   _____,  ___,   _____,   ____,     ___,


REMARKS_____PAGE____OF____
```

Figure 10-1. ODA Form 405W—Universal Global Title Translator Database

B. Modified ODA Forms

ODA Form D7

3.03 Changes have been made to ODA Form D7 to support this feature. This form will be used to preserve the new feature bits across a growth/retrofit.

C. Recent Change Forms

Recent Change Form 536

3.04 New RC Form 536 (Universal Global Title Translator Database) was created to populate the HT4UGTT structure. Figure 10-2 shows the layout of this form.

```
#  FORM 536        UNIVERSAL GLOBAL TITLE TRANSLATOR DATABASE
   4E17 .


RC:GT:CHG:OPT(UGTT),___:                              NUMPL_____,

ORNU _____,   ACTION___,


   NPA      PSPC       PSSN       SSPC       SSSN

   ___,   _____,   ___,    _____,   ___,

   ___,   _____,   ___,    _____,   ___,

   ___,   _____,   ___,    _____,   ___,

   ___,   _____,   ___,    _____,   ___,

   ___,   _____,   ___,    _____,   ___,

   ___,   _____,   ___,    _____,   ___,

   ___,   _____,   ___,    _____,   ___,

   ___,   _____,   ___,    _____,   ___,

   ___,   _____,   ___,    _____,   ___,

   ___,   _____,   ___,    _____,   ___,


REMARKS_____!
```

Figure 10-2. RC Form 536—Universal Global Title Translator Database

D. New Verify Forms

Verify Form 15k

3.05 New Verify Form 15k (Universal Global Title Translator Database) was created to request entries in the UGTT database. Both NUMPL and NPA must be entered in the input. Figure 10-3 shows the layout of this form.

Verify Form 5x

3.06 This is the output message for the entries requested in the UGTT DB table. See Figure 10-3 for the message layout.

```
INPUT:                      VERIFY 15k

                   VER:GT:NUMPL a, NPA b! (EOT)

OUTPUT:                     VERIFY 5x

VER:GT;OPT(UGTT):                                        NUMPL        ,


  NPA      PSPC      PSSN      SSPC       SSSN

  ___,   _____,   ___,   _____,   ___,
  ___,   _____,   ___,   _____,   ___,
  ___,   _____,   ___,   _____,   ___,
  ___,   _____,   ___,   _____,   ___,
  ___,   _____,   ___,   _____,   ___,
  ___,   _____,   ___,   _____,   ___,
  ___,   _____,   ___,   _____,   ___,
  ___,   _____,   ___,   _____,   ___,
  ___,   _____,   ___,   _____,   ___,
  ___,   _____,   ___,   _____,   ___,
  ___,   _____,   ___,   _____,   ___,
  ___,   _____,   ___,   _____,   ___,
  ___,   _____,   ___,   _____,   ___,
  ___,   _____,   ___,   _____,   ___,
  ___,   _____,   ___,   _____,   ___,
  ___,   _____,   ___,   _____,   ___,
  ___,   _____,   ___,   _____,   ___,
  ___,   _____,   ___,   _____,   ___,
  ___,   _____,   ___,   _____,   ___,
  ___,   _____,   ___,   _____,   ___,
```

Figure 10-3. Verify Form 15k—Request Verification of List of UGTT DB for a Given NPT/NPA

E. Modified Verify Forms

Verify Form 16aw

3.07 Changes have been made to Verify Form 16aw. The inputs to the "L" keyword of **VER:CPA:L** a [,**NSN** b] can be single, ranged or list. NSD is an option keyword. No range or list is permitted for NSN.

4. Recording

Measurements

4.01 The UGTT feature provides the following three new counts:

■ The total number of queries sent to the UGTT DB

■ The number of queries blocked due to overload Automatic Call Gap (ACG) controls

■ The number of queries destined for UGTT DB and blocked due to network failures (including UGTT failures) or network congestion.

4.02 Each of the new counts will require one call store word in the Data Acquisition Reports and Integrated Control System (DARICS) counter block. New symbols are also defined in the existing Holding Register Block (HRB)-equivalent TF4DARICS file (the 512-word block that is written to disk).

4.03 Table 10-A defines the call store symbol names associated with the new counts. These new counters are defined in the NO4MEM and TRAFPLE libraries.

Table 10-A. New Traffic/Plant Measurement Symbols

Measurement	Counter Block	HRB	Block Size
Queries	TF4TDUGTTQCB	TF4TDUGTTQHR	1
Blocked Overload	TF4TDUGTTBOCB	TF4TDUGTTBOHR	1
Blocked Network	TF4TDUGTTBNCB	TF4TDUGTTBNHR	1

5. Network Management

5.01 The three counts shown in Section 4, "Recording", will be available as 5-minute measurements to Network Management Operations System (NEMOS). There is also a 30-second discrete set when a UGTT query is blocked due to ACG controls or network failures.

6. Maintenance/Troubleshooting

6.01 Final Handling (FH) Codes 1697 through 1702 and 1728 apply to this feature.
    Table 10-B describes the restrictions that limit the FH Codes, the last good thing
that happened (Previous Action), what went wrong (Error), and what the *4ESS* switch
will do next (Action) for these seven codes.

Table 10-B. Final Handling Code Failures

FH Code	Failure and Handling Method
1697	**Restriction**: This is an SDN call that failed while querying the UGTT DB due to SPC or SSN prohibited or SPC congestion. **Previous Action**: An attempt to query the UGTT DB was made twice. **Error**: Neither of the BEGIN messages was able to make it to the UGTT DB. **Action**: Final handle the call and clean up resources.
1698	**Restriction**: This is an SDN call that attempted to query the SDN DB using information received from the UGTT DB. Both attempts to the SDN NCP failed. **Previous Action**: An attempt to query the SDN NCP was made using data received from the UGTT DB. **Error**: Both attempts to query the SDN NCP using UGTT data failed due to SPC or SSN prohibited or SPC congestion. **Action**: Final handle the call and clean up resources.
1699	**Restriction**: This is an SDN call that failed global title translations in the DLN. **Previous Action**: A BEGIN message to the UGTT DB was built. **Error**: The UGTT DB was overloaded, and this BEGIN message was controlled by an ACG control. **Action**: Final handle the call and clean up resources.
1700	**Restriction**: This is an SDN call that queried the UGTT DB, and no valid data was found. **Previous Action**: A BEGIN message was sent to the UGTT DB. **Error**: There was no valid data for this call. **Action**: Final handle the call and clean up resources.
1701	**Restriction**: This is an SDN call that queried the UGTT DB. **Previous Action**: A BEGIN message destined for the UGTT DB was built. **Error**: An ACG control on the UGTT point code was applied. **Action**: Attempt to query the mate UGTT DB.

Table 10-B. Final Handling Code Failures (Contd)

FH Code	Failure and Handling Method
1702	**Restriction:** This is an SDN call that failed GTT in the DLN.
	Previous Action: Built an SDN query and attempted to perform GTT in the DLN.
	Error: The GTT in the DLN failed, and no data was found in the cache table.
	Action: Query to UGTT NCP.
1728	**Restriction:** This is an SDN call that failed GTT in the DLN and found a bad state when attempting to query the UGTT DB.
	Previous Action: Built the original SDN BEGIN message.
	Error: A bad Call Register (CR) state for UGTT was encountered when attempting to query the UGTT DB.
	Action: Final handle the call and clean up resources.

7. Transition Considerations

Turn On/Turn Off Mechanism

7.01 This feature, as a whole, is turned on automatically by software deployment. However, there is an UGTT feature bit that can be used in the case of both the UGTT DB and the DLN DB having completely wrong GTT data. The UGTT DB can be reprovisioned quickly. Once it has been corrected, this UGTT bit will be set. When this bit is set, all SDN queries will go to the UGTT DB first for information on how to route the BEGIN message. Once the DLN DB has been corrected, the UGTT feature bit will be set to zero so that the DLN DB will be used to determine how to route the SDN BEGIN messages. This bit will be set via RC Form 800.

8. Input/Output Manual Pages

8.01 Several new messages and modified manual pages are used to support the UGTT DB feature.

Recent Change Messages

8.02 The following recent change format is used to activate or deactivate the NPA Split Table Service:

RC:MISC;FHT,FTA: a,b,C,D,e!

a = NPASPLACT

b = RC Order Number

C = mandatory

D = mandatory

e = 000000 deactivate
000001 activate

8.03 The following recent change format is used to add or delete an entry to the the NPA Split Table:

RC:MISC;FHT,FTA: a,b,c,d,eeefff!

a = NPASPLTBL

b = RC Order Number

c = function
A - add
B - delete

d = mandatory

eee = old NPA

fff = new NPA

Modified Input/Output Manual Pages

- Input: **OP:SDLST** and **TEST:TCAPDSD**

- Output: **OP:SDLST** and **TEST:TCAPDSD**

New Input/Output Manual Pages

- Input: **VER GT6TRAN**

- Output: **VER GT6TRAN** and **VER GTT**

ID . . . . OP:SDLST
WORK CENTER . . MAC, MOC, NMOC, TOC
GENERIC . . . . 4E17 Rel. 3 and later
CLASS . . . . ALL
APPLICATION . . 4E
TYPE . . . . Input

1. PURPOSE

Requests the printing of the contents of the Reduction of 800 Double Dip cache table or the Reduction of NCP Transfer cache table. For the Reduction of Double Dip, the printout shows the 800 numbers and their associated network routing numbers (195 numbers). The cache table can contain up to 511 entries. It should be noted that the contents of the cache table are constantly changing when it is active. If the cache table is printed when active, some of the numbers which are printed may be replaced with new 800 numbers by the time the printout is completed. When the RNCPX keyword is present, the contents of the Reduction of NCP Transfer cache will be printed instead of the default cache for Reduction of Double Dip. The printout will list all the automatic number identifications (ANIs) in the cache along with their associated network control point (NCP) addressing data. The cache table will also contain entries with universal global title translation (UGTT) database information. This information consists of primary software defined network (SDN) database (DB) point code and subsystem number, secondary SDN DB point code and subsystem number, and customer ID.

2. FORMAT

This message has two formats.

[1]   OP:SDLST!

[2]   OP:SDLST,RNCPX!

3. EXPLANATION OF MESSAGE

There are two possible formats: (1) Print the Reduction of Double Dip cache, and (2) Print the Reduction of NCP Transfer cache.

4. SYSTEM RESPONSE

PF   Printout follows. The printing has been initiated and the contents of the cache table will be printed.

5. REFERENCES

PIDENTs
  CCSDSDIW
  IOCPIMC4

Output Message
OP : SDLST

```
ID . . . . . . . . . . . . TEST:TCAPDSD
WORK CENTER . . MAC, MOC, NMOC, TOC
GENERIC . . . . . . . 4E17 Rel. 3 and later
CLASS . . . . . . . . ALL
APPLICATION . . 4E
TYPE . . . . . . . . . . Input
```

1. PURPOSE

Requests a test query to be sent to the network control point (NCP) from the 4ESS™ Switch serving as an action control point (ACP). This test query tests the integrity of the common channel signaling version 7 (CCS7) network between the two end points utilizing the Consultative Committee on International Telephone & Telegraph (CCITT) based transaction capability application part (TCAP) protocol. It also serves as a tool to test the data for a particular direct services dialing (DSD) customer. The types of queries sent to the NCP can be either for automatic number identification (ANI)-based services (switched digital network [SDN]) or dialed number-based services (A800 types).

2. FORMAT

This message has two formats.

To request an ANI-based test query (SDN services):

[1]   **TEST:TCAPDSD;QRYTYPE** a:**DIG** b,**ANI** c [,**APN**] [,**AUTHCODE** d]
        [,**RATE** e][,**SGD** f][,**LIST**]!

To request a dialed number-based test query (A800 type services):

[2]   **TEST:TCAPDSD;QRYTYPE** a:**DIG** b [,**RATE** e][,**LIST**][,**ANI** c|,**ANI** c,**APN**]!

To request a universal global title translation (UGTT) test query:

[3]   **TEST:TCAPDSD;QRYTYPE** a:{**ANI** c |**ANI** c, **APN**} [,**SD**]!

3. EXPLANATION OF MESSAGE

a   The type of query to be sent:

                                1 — ANI-based query
                                2 — Non-call associated temporary signaling connection
                                    (NCAT) ANI-based query
                                3 — Dialed number-based query
                                4 — NCAT dialed number-based query
                                5 — Not used
                                6 — UGTT query
                                7 — NCAT UGTT query

b   Customer specific digits that are required for the particular type of
                        DSD call. Digits for the ANI-based queries can be either 7 digits or
                        10 digits. For the dialed number-based query, 10 digits must be

specified.

c   A required variable for the ANI-based queries. Customer's 10-digit automatic number identification.

d   A customer's authorization code number. It is an optional variable. There can be a maximum of 12 digits.

e   An optional variable used to specify a data rate for a DSD call. The possible values are as follows:

> 0 = Non data (voice call)
> 1 = 1.536Mbps clear
> 2 = 1.536Mbps restricted
> 3 = 384Kbps clear
> 4 = 384Kbps restricted
> 5 = 64Kbps clear
> 6 = 56Kbps
> 7 = 64Kbps restricted

f   Station group designator number. An optional variable for ANI-based queries. The value specified as input depends on the individual customer.

LIST   If this keyword is present in the input message, then the dump of the message received from the NCP database is printed.

APN   If this keyword is used to define the ANI variable, then the ANI must be an action point numbering plan (APN) ANI.

If this keyword is not used to define the variable, then the ANI must be a North American numbering plan (NANP) ANI.

SD   Only valid with a UGTT query. If present then the secondary UGTT database will be queried. Default is to query the primary database.

4. SYSTEM RESPONSE

?D   Data field error. Invalid or out-of-range data was received in the input message.

?E   Syntax error. An invalid keyword combination was discovered.

PF   Printout follows. The test query has been initiated and the results will be printed.

RL   Repeat later. No teletypewriter (TTY) output buffer or trunk maintenance register available.

5. REFERENCES

PIDENTs
    IOCPIMC4
    DSDCMESS
    DSIGTEST (4E14 only)
    TCAPTEST (4E15 and later)
    TMAD0005

Output Message
TEST:TCAPDSD

ID VER:GT6TRAN
WORK CENTER . . MOC
GENERIC . . . . . . 4AP9 and later
APPLICATION . . 4E
TYPE . . . . Input

1. PURPOSE

This command performs various verifies of the 6-digit global title translations (GTT) database, stored in the 1Afile and at each of the direct link nodes (DLN). The verify can be performed on either the 1Afile or any DLN, with the default being the 1Afile. The purpose of the 6-digit **GTT** database is to determine the correct database in the network (network control point or NCP) that contains the information for the requested translation type (TT) and digits. The **GTT** database currently supports two TTs: 252 for SDN services and 253 for 800 services.

There are four formats to this input message, in order to view different relations of the 6-digit **GTT** database.

Format 1 gives the feature on/off status for both 6-digit and 10-digit **GTT**. Both the 6 and 10-digit **GTT** features default to being turned off. The 1A recent change RC:MISC;FHT,FTA:a, where a is
{GT6ACT252|GT6ACT253|GT10AC252|GT10AC253}, is used to turn on the features.

Format 2 gives the total number of customers in the 6-digit **GTT** database for the specified translation type.

Formats 3 and 4 give the network database (NCP) point code and subsystem information for the specified translation type, and 6 digits of the automatic number identification (ANI). The ANI will be the calling number for **TT** 252 (SDN services) and the called number for **TT** 253 (800 services). The **DEF** field (digits 4-6 of the ANI) is entered as a single **DEF**, a range of **DEF**s, or the keyword **ALL** (Format 4). The 6-digit **GTT** can have 3-digit translations; in this case use the **DEF ALL** option.

Format 5 gives a count of all the customers and the network database (NCP) information for all equipped database indexes (**DBI**). This is used to verify the load balancing of the ANIs on the network databases. The output given for each equipped **DBI** entry is the pointcode (PC) and subsystem number (SSN) of two mated network databases (NCPs), and the number of customers using this **DBI** as either a primary/secondary or secondary/primary combination for these PC/SSNs.

Format 6 gives a listing of all **TT**/6-DIGIT ANI combinations that use a specified DBI.

2. FORMAT

There are six formats for this message.

[1]   **VER:GT6TRAN[,RNA e]:STAT!**

[2]   **VER:GT6TRAN[,RNA e]:TT {252|253},SUM!**

SEE PROPRIETARY NOTICE ON COVER PAGE

[3]   **VER:GT6TRAN[,RNA e]:TT {252|253},ABC a,DEF b[-c]!**

[4]   **VER:GT6TRAN[,RNA e]:TT {252|253},ABC a,DEF ALL!**

[5]   **VER:GT6TRAN[,RNA e]:DBI ALL!**

[6]   **VER:GT6TRAN[,RNA e]:DBI d!**

3. EXPLANATION OF MESSAGE

TT 252   Translation type **252** is used for SDN type services. The **ABC** values for this **TT** are normally the home NPAs that are supported at this 4ESS™.

TT 253   Translation type **253** is used for 800 type services. The **ABC** values for this **TT** are normally 195 and 800.

a   This is the **ABC** value or first 3 digits of the requested global title number. For **TT** of **252**, this is the dialing number; for **TT** of **253**, this is the dialed number. The range of values for **ABC** is 0-999.

b   This is the **DEF** value of the second 3 digits of the requested global title number. The range of values for **DEF** is 0-999.

c   The **DEF** field allows an optional range. If this value is entered, the value of c must be greater than the value of b. The range of values for c is 1-999.

d   This is a specific database index (**DBI**). There can be up to 512 **DBI**s (values 0-511), which store database point code and subsystem number information.

e   This is the ring node address (**RNA**) of the direct link node (DLN) where the verify is to be done. If the '**RNA** e' entry is omitted, the default verify is to the 1Afile. The value of e can be entered in either hexadecimal (ex: X'205) or in decimal (ex: 517). The range of **RNA**s are decimal 0-1023 (hex 0x0-0x3ff).

4. SYSTEM RESPONSE

PF   VER-GT6TRAN output message will follow.

5. REFERENCES

Input Messages
 RC:MISC;FHT,FTA:GTTRAN252 on 1A
 RC:MISC;FHT,FTA:GTTRAN253 on 1A
 RC:MISC;FHT,FTA:GT6ACT252 on 1A
 RC:MISC;FHT,FTA:GT6ACT253 on 1A
 RC:MISC;FHT,FTA:GT10AC252 on 1A
 RC:MISC;FHT,FTA:GT10AC253 on 1A

Output Message
 VER-GT6TRAN

```
ID . . . . . . . . . . . . OP:SDLST
WORK CENTER. . MAC, MOC, NMOC, TOC
GENERIC. . . . . . . 4E17 Rel. 3 and later
APPLICATION . . 4E
TYPE . . . . . . . . . . Output
```

1. FORMAT

```
[1]     OP:SDLST [a] b
        800 No.    NRN          800 No.    NRN          800 No.    NRN
           c         d             c         d             c         d
           .         .             .         .             .         .
           .         .             .         .             .         .
           .         .             .         .             .         .


[2]     OP:SDLST [a] b
        ANI No.  Global Title    Translation Type
           e         f                  g
           .         .                  .
           .         .                  .
           .         .                  .


[3]     OP:SDLST [a] b
        ANI#      NPT       Primary SPC    Primary SSN
           e       h             i              j
           .       .             .              .
           .       .             .              .
           .       .             .              .
        Secondary SPC      Secondary SSN    Customer ID
             k                   l               m
             .                   .               .
             .                   .               .
             .                   .               .
```

2. REASON FOR OUTPUT

Response to an OP:SDLST input request. Format [1] prints a list of 800 numbers with their associated network routing numbers (NRNs) which are currently active in the cache table. Format [2] prints if the Reduction of NCP Transfer Cache was requested, then a list of automatic number identifications (ANIs) and network control point (NCP) addresses will appear. Format [3] prints if the Reduction of NCP Transfer cache table entry contains universal global title translation (UGTT) information, then a list of ANIs, software defined network (SDN) NCP point codes and subsystem numbers, and customer identifications (IDs) will appear.

3. VARIABLE FIELD DEFINITIONS

a	RNCPX	— If present, this indicates that the Reduction of NCP Transfer cache is being printed.
	blank	— Reduction of Double Dip cache is being printed.
b	IN PROGRESS	— This partition of the printout is not the final partition, more will follow.
	COMPLETED	— This partition of the output is the final partition to be printed.
c	800 number.	
d	Network routing number (NRN).	
e	Automatic number identification (ANI) number.	
f	Global title number.	
g	Translation type.	
h	Numbering plan type (NPT).	
i	Primary signaling point code (SPC) number.	
j	Primary subsystem number (SSN).	
k	Secondary SPC number.	
l	Secondary SSN.	
m	Customer identification number.	

4. ACTION TO BE TAKEN

None.

5. REFERENCES

PIDENT
    CCSDSDIW

Input Message
    OP:SDLST

ID . . . . TEST:TCAPDSD
WORK CENTER . . MAC, MOC, NMOC, TOC
GENERIC . . . . 4E17 Rel. 3 and later
APPLICATION . . 4E
TYPE . . . . Output

1. FORMAT

This message has two formats.

[1] `TEST:TCAPDSD:QRYTYPE a:DIG b,ANI c [,APN][,AUTHCODE d]...`
`[,RATE e][,SGD f][,LIST]`
`g`

[2] `TEST:TCAPDSD:QRYTYPE a:DIG b [,RATE e][,LIST][,ANI c|...`
`,ANI c, APN]`
`g`

[3] `TEST:TCAPDSD;QRYTYPE a:{ANI c |ANI c, APN} [,SD]`

2. REASON FOR OUTPUT

This output message is in response to the input message `TEST:TCAPDSD`, which requests either a dialed number-based query or automatic number identification (ANI)-based query.

The variable field g explains the results of the test query (whether successful or not). It also gives information to support the results.

3. VARIABLE FIELD DEFINITIONS

a   The type of query sent:

                    1 — ANI-based query
                    2 — Non-call associated temporary signaling connection
                        (NCAT) ANI-based query
                    3 — Dialed number-based query
                    4 — NCAT dialed number-based query
                    5 — Not used
                    6 — Universal global title translation (UGTT) query
                    7 — NCAT UGTT query

b   Customer specific digits that are required for the particular type of direct services dialing (DSD) call. These digits for the ANI-based queries can be either 7 digits or 10 digits. For the dialed number-based query, 10 digits would be specified.

c   A required parameter for the ANI-based queries. This should be the customer's 10-digit automatic number identification.

APN
If this keyword was used in the input message to define the ANI parameter, then the ANI must be an action point numbering plan (APN) ANI.

If this keyword was not used in the input message to define the ANI parameter, then the ANI must be a North American numbering plan (NANP) ANI.

d
A customer's authorization code number. An optional parameter with a maximum of 12 digits.

e
An optional parameter used to specify a data rate for a DSD call. The possible values are:

0 = Non data (voice call)
1 = 1.536Mbps clear
2 = 1.536Mbps restricted
3 = 384Kbps clear
4 = 384Kbps restricted
5 = 64Kbps clear
6 = 56Kbps
7 = 64Kbps restricted

f
An optional parameter for ANI-based queries. It is the station group designator number. The value specified as input depends on the individual customer.

LIST
If this keyword was used in the input message, the dump of the message received from the network control point (NCP) database is printed.

g
The output from this test query will indicate whether the query was successful or not. (See the example that follows.) If the query is successful, the output will show what operations were requested by the customer record at the NCP database along with the routing digits and domain value. If the query is not successful, the output will indicate the final handling code and reason for failure.

EXAMPLE: SUCCESS

The following text phrases may appear when the query succeeds:

ANI — ANI digits from NCP.

CUSTOMIZED ANNOUNCEMENT RECEIVED — One or more customized announcements have been received.

DOMAIN — The routing domain associated with the above digits.

FAI DIGIT — The digit returned form the NCP to determine the foreign administration identification for the carrier.

SEE PROPRIETARY NOTICE ON COVER PAGE

RATE — Data rate for this call.

RECEIVED ACG

RECEIVED CALL TAG

RECEIVED CHECK APPLICATION STATUS

RECEIVED REFRESH

RECEIVED REQUEST TO CANCEL ANNOUNCEMENT

RECEIVED REQUEST TO PERFORM AN ASSIST

RECEIVED REQUEST TO PERFORM NCP TRANSFER

RECEIVED REQUEST TO QUEUE CALL

RECEIVED SEND TERMINATION

ROUTING DIGITS — The digits returned from the NCP to route this call.

SGD — Semi global data area (SGD) digit for this call.

STANDARD ANNOUNCEMENT RECEIVED

SUPPLEMENTAL ROUTING INFO — The supplemental routing information specifies the service. (4E17 and later)

VALID CUSTOMER ID: 888-000-1234 — UGTT query.
    PRIMARY SPC: 254 31 6 3
    PRIMARY SSN: 252
    SECONDARY SPC: 254 31 6 3
    SECONDARY SSN: 252

The following text phrases may appear when the query fails.

EXCEPTION CODE — A number from 0-127 that defines the error.

FAILURE

FINAL HANDLING CODE — FHCODE.

PROTOCOL ERROR

RECEIVED P-ABORT

RECEIVED U-ABORT

TIMEOUT

SD   Only valid with a UGTT query. If present then the secondary UGTT database will be queried. Default is to query the primary database.

4. ACTION TO BE TAKEN

If the test query is successful, no action is required if the expected operations were received as a result of the query to the database.

If the test query is not successful, the failure results indicate the trouble.

5. REFERENCES

PIDENTs
  DSDCMESS
  DSIGTEST (4E14 only)
  TCAPTEST (4E15 and later)

Input Message
  TEST:TCAPDSD

ID VER-GT6TRAN
WORK CENTER. . MOC
GENERIC . . . . . . 4AP9 and later
APPLICATION . . 4E
TYPE . . . . Output

1. FORMAT

There are 13 formats in all; the first six correspond to the six input formats given in the VER:GT6TRAN input message. Formats 7-13 are error messages indicating corruption in the 6-digit GTT database.

```
[1]      VER GT6TRAN a STAT COMPLETED
         GT6TRAN252  b
         GT6TRAN253  b
         GT10TRAN252 b
         GT10TRAN253 b


         VER:COMPLETE MESSAGE:              CODE    5,
         1


[2]      VER GT6TRAN a TT ccc SUM  COMPLETED
         GTTRANccc  TOTAL # ENTRIES d


         VER:COMPLETE MESSAGE:              CODE    5,
         1
```

[3a] and [4a]
```
     VER GT6TRAN a TT ccc ABC eee DEF fff  i


                           PRIMARY          SECONDARY
         TT  DIGITS        SSN    PC        SSN    PC
         ccc eeefff        ggg    hhhhhhhh  ggg    hhhhhhhh
             or
         ccc eeefff-eeefff ggg    hhhhhhhh  ggg    hhhhhhhh


         1 to 18 lines of data per message

     VER:COMPLETE MESSAGE:                  CODE    5,
     j
```

[3b] and [4b]
```
     VER GT6TRAN a TT ccc ABC eee DEF fff  i
     NO TRANSLATIONS FOUND


     VER:COMPLETE MESSAGE:                  CODE    5,
     1
```

[5]   VER GT6TRAN a DBI ALL i

DBI   SSN   PC   SSN   PC   PRI/SEC SEC/PRI
kkk   ggg   hhhhhhhh   ggg   hhhhhhhh   llllll llllll

   1-20 lines of data per message

VER:COMPLETE MESSAGE: CODE   5,
j

[6a]   VER GT6TRAN a DBI kkk i

       DBI   SSN   PC   SSN   PC
       kkk   ggg   hhhhhhhh   ggg   hhhhhhhh
       TT DIGITS
       ccc eeefff   mmmmmm   mmmmmm
           or
       ccc eeefff-eeefff   mmmmmm   mmmmmm

       1-17 lines of data per message

VER:COMPLETE MESSAGE: CODE   5,
j

[6b]   VER GT6TRAN a DBI kkk COMPLETED
       DBI ENTRY UNEQUIPPED

VER:COMPLETE MESSAGE: CODE   5,
1

[7]   VER GT6TRAN a DBI kkk COMPLETED
       ACITRANS BAD ABC SAP, TT ccc
       ACI ADDR X'nnnnnnnn VALUE X'oooooooo

[8]   VER GT6TRAN a DBI kkk COMPLETED
       ACITRANS BAD DBI SAP, TT ccc
       ACI ADDR X'nnnnnnnn VALUE X'oooooooo

[9]   VER GT6TRAN a DBI kkk COMPLETED
       ABCHT BAD TYPE, TT ccc ABC eee
       ACI ADDR X'nnnnnnnn VALUE X'oooooooo

[10]   VER GT6TRAN a DBI kkk COMPLETED
       ABCHT BAD DBI, TT ccc ABC eee
       ACI ADDR X'nnnnnnnn VALUE X'oooooooo

[11]   VER GT6TRAN a DBI kkk COMPLETED
       ABCHT BAD DEF SAP, TT ccc ABC eee
       ACI ADDR X'nnnnnnnn VALUE X'oooooooo

```
[12]    VER GT6TRAN a DBI kkk COMPLETED
        DEFHT BAD TYPE, TT ccc ABC eee DEF fff
        ACI ADDR X'nnnnnnnn VALUE X'oooooooo

[13]    VER GT6TRAN a DBI kkk COMPLETED
        DEFHT BAD DBI, TT ccc ABC eee DEF fff
        ACI ADDR X'nnnnnnnn VALUE X'oooooooo
```

2. REASON FOR OUTPUT

Formats 1-6: these output messages are in response to a previously input VER:GT6TRAN message. Output Formats 1-6 correspond directly to input Formats 1-6 of VER:GT6TRAN.

Formats 7-13: these output messages give diagnostic information on internal problems found in the 6-Digit GTT data structures. The address given is relative to the ACI translation space in either the 1Afile or the DLN, based on the input request.

3. VARIABLE FIELD DEFINITIONS

a	RNA x where x is the Ring Node Address (RNA) of a Direct Link Node (DLN). This field is optional based on whether the input command specified an RNA x.
b	ACTIVATED — Feature is activated. DEACTIVATED — Feature is not active.
ccc	This is the translation type (TT), which should have a value of either 252 or 253. TT 252 is used for the SDN services and all digits listed are the dialing number. TT 253 is used for 800 services and all digits listed are the dialed number.
d	This gives the total number of entries in the 6-digit GTT database for the specified translation type. Note that a 3-digit translation in this database only counts as one entry, not 1000 entries.
eee	This represents the first 3 digits of the Automatic Number Identification (ANI), referred to as the ABC digits or the NPA.
fff	This represents the second 3 digits of the Automatic Number Identification (ANI), referred to as the DEF digits or the NXX. For Formats 4a and 4b, the value of fff can be ALL.
ggg	This represents the Subsystem Number (SSN) of a network database (Network Control Point or NCP). Routing to an NCP is based on a pointcode (hhhhhhhh) and the SSN.
hhhhhhhh	This represents the pointcode (PC) of a network database (NCP). Routing to an NCP is based on a PC and an SSN. In the AT&T network, the first 3 digits of the PC are the network id (254), the 4th and 5th digits are the region, the 6th digit is the cluster id, and digits 7 thru 9 are the member number.
i	STARTED — First message in a multiple segmented response. INPROG — Second message through second to last message in a multiple segmented response.

SEE PROPRIETARY NOTICE ON COVER PAGE

	COMPLETED — Last message in a response.
j	Number of message segments in a response.
kkk	This is the Database Index (DBI) number (range 0-511). Each DBI has two network database PC/SSN combinations (i.e., mated NCPs). The two PC/SSN databases do not imply primary/secondary routing. The primary NCP is determined by indications in the 6-digit GTT routing structures.
llllll	These are peg counts of the number of 3 or 6-digit entries that route to a DBI. Each DBI has two SSN/PC combinations that do not imply primary/secondary status (see item kkk above). The lllll counts under a "PRI/SEC" listing are for the first PC/SSN as the primary NCP and the second SSN/PC as the secondary NCP. Conversely, counts under the "SEC/PRI" listing are for the second PC/SSN as the primary NCP and the first SSN/PC as the secondary NCP.
mmmmmm	These are peg counts of the number of 3 or 6-digit entries that route to the specified DBI. The peg count is under the SSN/PC that is the primary NCP.
nnnnnnnn	ACI database byte offset.
oooooooo	32-bit image of database location.

4. ACTION TO BE TAKEN

Formats 1-6: These are normal output messages in response to the corresponding format in the VER:GT6TRAN input message.

Formats 7-13: There is potential corruption in the 6-digit GTT database.

— If the input message VER:GT6TRAN was verifying data in a DLN (using the RNA option), then run AUD:DLN 2, INS "LNxx-y" ! where xx is the group number of DLN and y is the member number of the DLN. If the audit finds and corrects errors, then rerun VER:GT6TRAN.

— If the input message VER:GT6TRAN was verifying the 1Afile, then run AUD:NUM 43! on the 1A. If the audit finds and corrects errors, then run AUD:DLN 2 (see the AUD:DLN input message) on all DLNs and then rerun VER:GT6TRAN.

— If these VER:GT6TRAN Format 7-13 errors persist, then seek technical assistance.

5. REFERENCES

Input Messages
    AUD:DLN
    VER:GT6TRAN

ID .... VER-GTT
WORK CENTER.. MOC
GENERIC....... 4AP11 Rel. 3 and later
APPLICATION .. 4E
TYPE .... Output

1. FORMAT

The following formats correspond to the input formats given in the VER:GTT input message. Formats 13-61 are error messages indicating possible corruption in the APPDB database.

```
[1]     VER GTT a STAT COMPLETED
        GT6TRAN252  b
        GT6TRAN253  b
        GT10TRAN252 b
        GT10TRAN253 b
        GTT10CNPA   b
        UGTTSNPA    b


        VER:COMPLETE MESSAGE:CODE 5,
        1


[2]     VER GTT a TT ccc SUM  COMPLETED
        GTTRANccc  TOTAL # ENTRIES d
        VER:COMPLETE MESSAGE:CODE 5,
        1


[3]     VER GTT a TT ccc mmm eee DEF fff GHIJ pppp i
```

				PRIMARY		SECONDARY		
DIGITS	NPT	TREE	CUST	SSN	PC	SSN	PC	DBI
eeefffpppp	zzzz	ZZ	yyyy	ggg	hhhhhhhh	ggg	hhhhhhhh	kkk
or								
eeefffpppp-eeefffpppp	zzzz	ZZ	yyyy	ggg	hhhhhhhh	ggg	hhhhhhhh	kkk

```
        1 to 18 lines of data per message

VER:COMPLETE MESSAGE:CODE 5,
        j

[4]     VER GTT a DBI ALL i
```

DBI	SSN	PC	SSN	PC	PRI/SEC
kkk	ggg	hhhhhhhh	ggg	hhhhhhhh	llllll

```
         1-20 lines of data per message

    VER:COMPLETE MESSAGE:CODE 5,
    j
[5] VER GTT a DBI kkk i


                            PRIMARY          SECONDARY
    DBI                  SSN     PC       SSN     PC
    kkk                  ggg   hhhhhhhh   ggg   hhhhhhhh
       DIGITS                  NPT  TREE
    eeefffpppp                 zzzz ZZ
           or
    eeefffpppp-eeefffpppp      zzzz ZZ


        1-17 lines of data per message

    VER:COMPLETE MESSAGE:CODE 5,
    j


[6] VER GTT a DBI kkk COMPLETED
    DBI ROOT NOT ASSIGNED

    VER:COMPLETE MESSAGE:CODE 5,
    1


[7] VER GTT a DBI kkk COMPLETED
    DBI NOT USED

    VER:COMPLETE MESSAGE:CODE 5,
    1


[8] VER GTT a CUSTID yyyy i


                            PRIMARY          SECONDARY
    DBI                  SSN     PC       SSN     PC
    kkk                  ggg   hhhhhhhh   ggg   hhhhhhhh
       DIGITS                  NPT  TREE
    eeefffpppp                 zzzz ZZ
           or
    eeefffpppp-eeefffpppp      zzzz ZZ


        1-17 lines of data per message

    VER:COMPLETE MESSAGE:CODE 5,
    j
```

```
[9]     VER GTT a CUSTID ALL i

          CUSTID DBI   SSN       PC       SSN       PC      PRI/SEC
           yyyy  kkk   ggg    hhhhhhhh    ggg    hhhhhhhh   llllll

              1-20 lines of data per message

        VER:COMPLETE MESSAGE:CODE 5,
        j

[10]    VER GTT a CUSTID yyyy COMPLETED

        CUSTID NOT ASSIGNED

        VER:COMPLETE MESSAGE:CODE 5,
        l

[11]    VER GTT a CUSTID yyyy COMPLETED

        CUSTID ROOT NOT ASSIGNED

        VER:COMPLETE MESSAGE:CODE 5,
        l

[12]    VER GTT MAP COMPLETED

        VER:COMPLETE MESSAGE:CODE 5,
        l

[13]    VER GTT a DBI kkk COMPLETED
        GT10TRAVERSE BAD TT ARG - ccc

[14]    VER GTT a DBI kkk COMPLETED
        GT10TRAVERSE BAD NCPI ARG - kkk

[15]    VER GTT a DBI kkk COMPLETED
        ABCHT ROOT PTR EMPTY

[16]    VER GTT a DBI kkk COMPLETED
        GT10RANGE BAD ARGS

[17]    VER GTT a DBI kkk COMPLETED
        ABCHT ENTRY UNEQUIPPED

[18]    VER GTT a DBI kkk COMPLETED
        APPDB BAD ABC SAP, TT ccc
        APPDB ADDR X'nnnnnnnn CONTENTS X'oooooooo
```

[19]   VER GTT a DBI kkk COMPLETED
         ABCHT BAD DEF SAP, TT ccc ABC eee
         APPDB ADDR X'nnnnnnnn CONTENTS X'oooooooo

[20]   VER GTT a DBI kkk COMPLETED
         DEFHT BAD INDEX, TT ccc ABC eee DEF fff
         APPDB ADDR X'nnnnnnnn CONTENTS X'oooooooo

[21]   VER GTT a DBI kkk COMPLETED
         DEF BAD SAPA, TT ccc ABC eee DEF fff
         APPDB ADDR X'nnnnnnnn CONTENTS X'oooooooo

[22]   VER GTT a DBI kkk COMPLETED
         DEF BAD SAPB, TT ccc ABC eee DEF fff
         APPDB ADDR X'nnnnnnnn CONTENTS X'oooooooo

[23]   VER GTT a DBI kkk COMPLETED
         BAD NUM ENTRIES TT ccc ABC eee DEF fff
         APPDB ADDR X'nnnnnnnn CONTENTS X'oooooooo

[24]   VER GTT a DBI kkk COMPLETED
         DEFHT BAD INDEX, TT ccc ABC eee DEF fff GHIJ pppp
         APPDB ADDR X'nnnnnnnn CONTENTS X'oooooooo

[25]   VER GTT a DBI kkk COMPLETED
         GH BAD INDEX, TT ccc ABC eee DEF fff GHIJ pppp
         APPDB ADDR X'nnnnnnnn CONTENTS X'oooooooo

[26]   VER GTT a DBI kkk COMPLETED
         GH UNK SAPC TT ccc ABC eee DEF fff GH pp
         APPDB ADDR X'nnnnnnnn CONTENTS X'oooooooo

[27]   VER GTT a DBI kkk COMPLETED
         GH BAD SAPD TT ccc ABC eee DEF fff GH pp
         APPDB ADDR X'nnnnnnnn CONTENTS X'oooooooo

[28]   VER GTT a DBI kkk COMPLETED
         GH BAD CUSTIDX, TT 252 ABC eee DEF fff GHIJ pppp
         APPDB ADDR X'nnnnnnnn CONTENTS X'oooooooo

[29]   VER GTT a DBI kkk COMPLETED
         APPDB TRANS BAD ABC SAP, TT ccc
         APPDB ADDR X'nnnnnnnn CONTENTS X'oooooooo

[30]   VER GTT a DBI kkk COMPLETED
         ABCHT BAD DEF SAP, TT ccc ABC eee
         APPDB ADDR X'nnnnnnnn CONTENTS X'oooooooo

[31]   VER GTT a DBI kkk COMPLETED
        DEF BAD SAPA, TT ccc ABC eee DEF fff
        APPDB ADDR X'nnnnnnnn CONTENTS X'oooooooo

[32]   VER GTT a DBI kkk COMPLETED
        BAD NUM ENTRIES TT ccc ABC eee DEF fff
        APPDB ADDR X'nnnnnnnn CONTENTS X'oooooooo

[33]   VER GTT a DBI kkk COMPLETED
        DEF BAD SAPB, TT ccc ABC eee DEF fff
        APPDB ADDR X'nnnnnnnn CONTENTS X'oooooooo

[34]   VER GTT a DBI kkk COMPLETED
        SAPB BAD SAPC, TT ccc ABC eee DEF fff GH pp
        APPDB ADDR X'nnnnnnnn CONTENTS X'oooooooo

[35]   VER GTT a DBI kkk COMPLETED
        SAPB BAD SAPD, TT ccc ABC eee DEF fff GH pp
        APPDB ADDR X'nnnnnnnn CONTENTS X'oooooooo

[36]   VER GTT a DBI kkk COMPLETED
        BAD CUSTIDX, TT ccc ABC eee DEF fff GHIJ pppp
        CUSTIDX r

[37]   VER GTT a DBI kkk COMPLETED
        APPDB BAD NCPI SAP - TT ccc
        SAP X'nnnnnnnn

[38]   VER GTT a DBI kkk COMPLETED
        TT ccc DBI kkk USED q TIMES HAS NO POINT CODE
        APPDB DBI ADDR X'nnnnnnnn

[39]   VER GTT a DBI kkk COMPLETED
        APPDB BAD NCPI SAP - TT ccc
        SAP X'nnnnnnnn

[40]   VER GTT a DBI kkk COMPLETED
        TT ccc ABC eee DEF fff GHIJ pppp REFERS TO DBI kkk
        DBI kkk IS NOT ASSIGNED

[41]   VER GTT a DBI kkk COMPLETED
        APPDB BAD SA SAP, BINK s
        APPDB ADDR X'nnnnnnnn CONTENTS X'oooooooo

[42]   VER GTT a DBI kkk COMPLETED
        APPDB BAD SA TYPE, BINK s
        APPDB ADDR X'nnnnnnnn CONTENTS X'oooooooo

[43]   VER GTT a DBI kkk COMPLETED
         ASSERTION FAILED FILE=t LINE=u
           v
         ERRNO=w(x)

[44]   VER GTT a DBI kkk COMPLETED
         CUSTID yyy DBI kkk USED q TIMES HAS NO POINT CODE
         APPDB DBI ADDR X'nnnnnnnn

[45]   VER GTT a DBI kkk COMPLETED
            TT ccc DBI kkk USED nn TIMES HAS NO POINT CODE
            APPDB DBI ADDR X'nnnnnnnn

[46]   VER GTT a DBI kkk COMPLETED
            CUSTID r DBI kkk USED nn TIMES HAS NO POINT CODE
            APPDB DBI ADDR X'nnnnnnnn

[47]   VER GTT a DBI kkk COMPLETED
            BAD CUSTIDX, TT ccc ABC eee DEF fff GHIJ pppp
            CUSTIDX r

[48]   VER GTT a DBI kkk COMPLETED
            TT ccc ABC eee DEF fff GHIJ pppp REFERS TO DBI kkk
            DBI kkk IS NOT ASSIGNED

[49]   VER GTT a DBI kkk COMPLETED
            BAD CUSTIDX, TT ccc ABC eee DEF fff GHIJ pppp
            CUSTIDX r

[50]   VER GTT a DBI kkk COMPLETED
            INV PREFIX xx IN CMPN RECORD AT nnnnnnnn

[51]   VER GTT a DBI kkk COMPLETED
            DUP CMPN TAGS eeefff and eeefff (nnnnnnnn)

[52]   VER GTT a DBI kkk COMPLETED
            EMPTY REC IN CHAIN xx AT nnnnnnnn

[53]   VER GTT a DBI kkk COMPLETED
            CHAIN TOO LONG xx AT nnnnnnnn

[54]   VER GTT a DBI kkk COMPLETED
            INV INDEX xx AT nnnnnnnn

[55]   VER GTT a DBI kkk COMPLETED
            REV-HASHED BAD CMPN INDEX xx AT nnnnnnnn

[56]   VER GTT a DBI kkk COMPLETED
            INV CMPN INDEX xx AT nnnnnnnn

[57]   VER GTT a DBI kkk COMPLETED
          CHAIN HAS EMPTY REC xx AT nnnnnnnn

[58]   VER GTT a DBI kkk COMPLETED
          CHAIN TOO LONG xx AT nnnnnnnn

[59]   VER GTT a DBI kkk COMPLETED
          INV INDEX xx AT nnnnnnnn

[60]   VER GTT a DBI kkk COMPLETED
          REV-HASHED BAD CMPN INDEX xx AT nnnnnnnn

[61]   VER GTT a DBI kkk COMPLETED
          UNEXPECTED RESP FROM DS FOR pppp - x

2. REASON FOR OUTPUT

Formats 1-12. These output messages are in response to a previously input VER:GTT message.

Formats 6, 9, and 13-44 DO NOT apply to the "new" format (retrofit in the 4E17 Rel. 3 time frame) of the APPDB database.

Formats 45-61 apply ONLY to the "new" format of the APPDB database.

Formats 13-61. These output messages give diagnostic information on internal problems found in the 10-Digit GTT data structures. The address given is relative to the APPDB translation space in any of the valid disk files ("/dev/appdb0", "/dev/appdb1" or "/dev/appdb2") or the DLN, based on the input request.

3. VARIABLE FIELD DEFINITIONS

a   RNA x where x is the ring node address (RNA) of a direct link node (DLN). This field is optional based on whether the input command specified an RNA x. The field could be a lone keyword equal to SHADOW or SCRATCH. For this case, the APPDB database used is /dev/appdb1 or /dev/appdb2, respectively. If the field a does not exist, the APPDB used is /dev/appdb0.

b   ACTIVATED   — Feature is active.
               DEACTIVATED — Feature is not active.

ccc   This is the translation type (TT), which should have a value of either 242, 252 or 253. TT 252 is used for the SDN services and all digits listed are the dialing number. TT 253 is used for 800 and 900 services and all digits listed are the dialed number. TT 242 is used for Positive Call Processing (PCP) GT Translations.

d   This gives the total number of entries in the 10-digit GTT database for the specified translation type.

eee	This represents the first 3 digits of the automatic Number identification (ANI), referred to as the ABC digits or the NPA.
fff	This represents the second 3 digits of the automatic number identification (ANI), referred to as the DEF digits or the NXX. For Format 3, the value of fff can be ALL.
ggg	This represents the subsystem number (SSN) of a network database (network control point [NCP]). Routing to an NCP is based on a point code (hhhhhhhh) and the SSN.
hhhhhhhh	This represents the point code (PC) of a network database (NCP). Routing to an NCP is based on a PC and an SSN. In the AT&T network, the first 3 digits of the PC are the network id (254), the 4th and 5th digits are the region, the 6th digit is the cluster id, and digits 7 through 9 are the member number.
i	STARTED — First message in a multiple segmented response. IN PROGRESS — Second message through second to last message in a multiple segmented response. COMPLETED — Last message in a response.
j	Number of message segments in a response.
kkk	This is the database index (DBI) number (range 0-255). Each DBI has two network database PC/SSN combinations (i.e., mated NCPs). This field is also called NCPI (NCP index).
111111	These are peg counts of the number of 3 or 6-digit entries that route to a DBI. Each DBI has two SSN/PC combinations that do not imply primary/secondary status (see item kkk above). The 111111 count under a PRI/SEC listing are for the first PC/SSN as the primary NCP and the second SSN/PC as the secondary NCP. Conversely, counts under the SEC/PRI listing are for the second PC/SSN as the primary NCP and the first SSN/PC as the secondary NCP.
mmm	APN — Action point numbering plan. NANP — North American numbering plan.
nn	Number which represents the number of records that the database currently says is using the DBI recorded in the output message.
pppp	This field is the GHIJ digits of the ANI (the last 4 digits) or the value ALL. The GHIJ range is from 0-9999. The field may be a range, as specified on the input message.
q	This is the number of times a DBI was referenced by ANI(s) in the GTT 10-digit database. The DBI being referenced has no point code assigned.
r	This field is the customer index. Customer indexes are associated with TT 252. The field ranges from 0 to 9999. Customer indexes point to a DBI.

s	A bink number in the APPDB. Bink numbers range from 0 to the database size (i.e., 511). The database size can be determined with the input command VER:MEMORY.
t	File name where a defensive check failure occurred.
u	Source line number within file t where a defensive check failure occurred.
v	The c program text at source line u in source file t that has the defensive check.
w	The system error number.
x	A short phrase telling what the system error number means.
xx	Number which represents the ANI TABLE record number or the ANI TABLE chain that is in error.
yyyy	A customer index. Valid customer indexes range from 1 to 9999.
zzzz	Indicates the database spectrum (or numbering plan type) the information came from. The possible values are:

APN	— Action point numbering plan, only valid with TTs 242 and 252.
NANP	— North American numbering plan, only valid with TTs 242 and 252.
NONE	— A numbering plan does not exist, only valid with TT 253.

zz	The database tree within the numbering plan type that the information originates from. The possible values are:

03	— Tree traversed with just 3 digits.
06	— Tree traversed with 6 digits.
10	— Tree traversed with 10 digits.

4. ACTION TO BE TAKEN

Formats 1-12. These are normal output messages in response to the corresponding format in the VER:GTT input message.

Formats 13-61. There is potential corruption in the APPDB (10-digit GTT database). Notify National Electronic Switching Assistance Center (NESAC).

5. REFERENCES

Input Messages
    DUMP:RNA
    VER:GTT

International 800 Carrier Specific Routing (CSR)—Phase 2 Feature (3597)

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International 800 Carrier Specific Routing (CSR)—Phase 2 Feature (3597)

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1. Feature Description

1.01 Phase 1 of International 800 (I800) Carrier Specific Routing (CSR) allows AT&T International Switching Centers (ISCs) to support multiple (up to seven) I800 Outbound or Country Direct Service telecommunications administrations in any particular country. Allowing for multiple telecommunications administrations provides the ability to route I800 calls to subscribers or operators via alternative long distance carriers.

1.02 Phase 2 of this feature is used to add a customer's Foreign Administration Identity (FAI) to the Automatic Message Accounting (AMA) record. Phase 2 of this feature also allows Alternate Number Translation (ANT) customers to use Phase 1 of this feature. An FAI digit, which indicates the desired carrier, and a CSR preference indicator can now be added to a customer's ANT record.

1.03 This feature is available to 1 Direct Services Dialing (1DSD) Network Control Point (NCP), 2DSD NCP, and INWATS DataBase (IDB) NCP-based subscribers.

1.04 Phase 1 of this feature will be required for traffic going to a particular foreign country if AT&T provides I800 service to more than one carrier in that country. Phase 1 provided the capability to select a CSR preference, mandatory or preferred. A CSR preference indicator is included as part of the routing information for the call. If CSR is mandatory for a given call, the call must be routed to an ISC that belongs to the destination carrier specified by FAI; if no facilities are available to one of that carrier's ISCs, the call is final handled. If CSR is preferred, an attempt will be made to route the call to the carrier specified by the FAI. If the preferred destination carrier does not have available facilities, another carrier is selected.

2. Call Flow

DSD NCP CALL Flow

2.01   The DSD NCP will now return the FAI as part of the Charging—Bill_Call operation in a Transaction Capabilities Application Part (TCAP) CONTINUE or END message.

IDB NCP CALL Flow

2.02   The IDB NCP will now return the FAI as part of the Charging—Bill_Call operation in a TCAP CONTINUE or END message.

3. Provisioning

3.01   When the ANT record is provisioned using **RC:MISC:FHT,FTA:ANTRECORD,** CSR preference and FAI indicators must be set. The CSR preference indicator specifies if CSR is mandatory or preferred. The FAI indicator specifies a particular carrier.

4. Recording

AMA Record Information

4.01   The AMA record has been modified to include the FAI of a selected carrier. This information is contained in Module Code 932. The TCAP Charging—Bill_ Call operation is also being modified to include the FAI value.

5. Network Management (Not Affected)

6. Maintenance/Troubleshooting (Not Affected)

7. Transition Considerations

Dependencies on Other Network Components

7.01   The AMA recording portion of this feature cannot be used until the 1DSD NCP, 2DSD NCP, and/or IDB NCP that is subscribed to has been modified to send the FAI digit as part of the Charging—Bill_Call operation in a TCAP CONTINUE or END message to the *4ESS*™ switch in response to a BEGIN message. The modifications to the ANT record can be used as soon as the software is deployed in the *4ESS* switch and the customer has been provisioned in the ANT table.

Turn On/Turn Off Mechanism

7.02   There is no activation/deactivation indicator for this feature. Once the software is deployed in the affected systems, this feature will be activated. For ANT subscribers to use CSR, only *4ESS* switch software needs to be deployed. For the FAI to be included in the AMA record, software needs to be deployed in the *4ESS* switch and DSD NCPs.

8. Input/Output Manual Pages

8.01   The **RC:MISC:FHT,FTA:ANTRECORD** input and output manual pages have been modified to include the FAI and CSR.

GSDN/SDN—International Digits Phase 2 Feature (3669)

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GSDN/SDN—International
Digits Phase 2 Feature (3669)

12

1. Feature Description

1.01   This feature is needed to route international calls to countries that exceed the
International Telegraph and Telephone Consultative Committee (CCITT)
recommendation for the length of a National Number (NN). Elements in the AT&T
network were designed to support the international numbering plan recommended by
CCITT. The CCITT recommends that a public numbering plan consist of a 2-digit
Country Code (CC) and NN that has a maximum of 10 digits. Therefore, international
calls that had an international numbering plan (destination code) that exceeded 12 digits
would fail to complete. With this feature, a Global Software Defined Network (GSDN) or
Software Defined Network—International (SDN-I) customer can dial and complete
international voice or data calls to Off-Net, Virtual On-net, On-Net, or Forced On-Net
locations in foreign countries that have international numbering plans that use up to 15
digits.

1.02   The international signaling protocols used between the AT&T International
Switching Center (ISC) and the foreign ISC switches must be able to handle 15-
digit destination codes (CC and NN). Signaling protocols that can handle 15 digits
include R1, CCITT5, CCITT6, CCITT7, Telephone User Part (TUP), and CCITT7
Integrated Services Digital Network User Part (ISUP).

1.03   To use this feature with Switched or Direct Access, the customer's Private Branch
Exchange (PBX) and the Local Exchange Carrier (LEC) switches must be able to
receive, process, and transmit numbers that contain up to 18 dialed digits (011+CC-NN).

2. Call Flow (Not Affected)

3. Provisioning (Not Affected)

4. Recording

4.01 Module 935 of the SDN structure codes has been modified. The destination number has been increased from 12 digits to 15 digits.

5. Network Management

Network Management Operations System (NEMOS)

5.01 The NEMOS message types 10, 55, and 151 have been modified. These messages have been modified to accommodate 15-digit destination codes.

Regional Network Management System (RNMS)

5.02 The RNMS data blocks 44 and 46, and reserve control message 21 have been modified. These message and data blocks have been modified to accommodate 15-digit destination codes.

Network Management Display System (NMDS)

5.03 The NMDS control page CN08, and display pages PA07 and PA08 have been modified. These pages have been modified to accommodate 15-digit destination codes.

6. Maintenance/Troubleshooting (Not Affected)

7. Transition Considerations

Dependencies on Other Network Components

7.01   The 1 Direct Services Dialing (1DSD) Network Control Point (NCP), Service
Management System (SMS), billing systems, and Operations Support Systems
(OSSs) must be modified to support 15-digit destination codes before this feature can be
turned on.

7.02   This feature must be loaded on all the switches in the network before it can be
turned on.

Turn On/Turn Off Mechanism

7.03   This feature is turned on manually by setting Office Data Assembler (ODA) bit
OD4GSDNSDI_ACT to 1. This feature is turned off by setting the bit to 0. This
bit is bit D9 of the OD4FCCOPY structure. Recent Change Form 800 is used to set this
bit.

8. Input/Output Manual Pages (Not Affected)

Far-End Network Treatment for Service Categories Feature (3742)

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Far-End Network Treatment for Service Categories Feature (3742)

13

1. Feature Description

1.01   The Far-End Network (FEN) Treatment for Service Categories feature allows misrouted Local Exchange Carrier (LEC) intra-LATA traffic to be identified via a Call Irregularity Report. Intra-LATA calls are routed to the AT&T Switched Network (ASN), but are not blocked. Without this feature, the ASN could carry misrouted LEC traffic, thus making AT&T an overflow carrier for the LEC. With this feature, Call Irregularity Reports can be generated to determine if this condition is occurring.

1.02   With the activation of this feature, the *4ESS*™ switch will provide a new FEN Block/FEN Service Category treatment that prints a Call Irregularity Report for allowed calls in the same manner that denied calls are currently reported.

1.03   The new treatments may be combined with the existing FEN Block/Service Category treatments. The combinations allowed are as follows:

1. Make an Automatic Message Accounting (AMA) record and print the Call Irregularity Report

2. Query the Network Call Denial (NCD) database and print the Call Irregularity Report

3. Make an AMA record, query the NCD database, and print the Call Irregularity Report

4. Print the Call Irregularity Report.

2. Call Flow (Not Affected)

3. Provisioning

3.01 A new FEN Block/Service Category treatment will be defined for the class ACCESO FEN Block and will be provided in combination with all existing call treatments except when the call is denied.

Affected Structure

3.02 The structure **XL4FENBLOCK** will be modified to assign 1 bit for each Service Category field in order to print a Call Irregularity Report.

Forms Affected

3.03 The following forms are affected:

■ Office Data Administration (ODA) Form 406L

■ Recent Change (RC) Forms 617 and 618

■ Verify Form 6s.

3.04 All Service Category fields will allow the new entries **I, M, C,** and **A** to provide treatment for call irregularity. This treatment will be valid only when the CLASS field has a value of ACCESO.

Population Rules

3.05 The ODA Form entries are listed in Table 13-A.

Table 13-A. ODA Form Entries

406L Form Entry*	Kill the Call Value	Query the NCD DataBase Value	Make AMA Record Value	Print Call Irregularity Value
N	NO	NO	NO	NO
I†	NO	NO	NO	YES
Q	NO	NO	YES	NO
M†	NO	YES	NO	YES
R	NO	YES	NO	NO
C†	NO	NO	YES	YES
B	NO	YES	YES	NO
A†	NO	YES	YES	YES
D	YES	NO	NO	NO

* All state names are prefixed with **4XLFB_**.
† New items.

TG-4 Inserts

A. Division 2, Section 6

3.06 The following description will be added to all Service Category fields:
A new FEN/Service Category treatment for Call Irregularity Reports will be applied only for class ACCESO and will be in combination with all existing call treatments, except when the call is denied. The following new entries will be allowed:

1. Form entry "C": Make an AMA record and print the allowed Call Irregularity Report.

2. Form entry "M": Query the NCD database and print the allowed Call Irregularity Report.

3. Form entry "A": Make an AMA record, query the NCD database, and print the allowed Call Irregularity Report.

4. Form entry "I": Print the allowed Call Irregularity Report.

B. Division 6, Section 6l; Division 7, Section 6r and 6s; Division 8, Section 6s

3.07 The Description of Service Category Fields will be changed. Valid entries are **N, B, D, Q, R, I, M, C,** or **A.**

4. Recording (Not Affected)

5. Network Management

5.01 Once this feature is activated, a Call Irregularity Report is output to the Network Management Operations Support and Regional Network Management Systems maintenance channels.

6. Maintenance/Troubleshooting

6.01 If one of the new combinations (I, C, M, or A) is chosen for the FEN Block, the *4ESS* switch will provide a Call Irregularity Report and increment a count. The count is the total office count and is generated and reset on an hourly basis in the 1A/1B Processor. If the appropriate Trunk Subgroup (TSG) counting trap is turned on, the count is incremented in the new MRI category on an hourly basis. However, the counter is not reset.

6.02 Because of output limitations (approximately 30 messages a minute), care must be taken in sampling a large number of calls. Selecting a busy report hour may result in the loss of other call irregularity data.

6.03 A new Final Handling Code (FHC) only occurs on ACCESO type FEN Blocks and is described in Table 13-B.

Table 13-B. FHC Description

FHC No.	FHC Name	Description
156	**4FHAC_CI_RPT_CN**	The Service Category is marked in the FEN Block to report a call irregularity. Call irregularity reported due to Incoming Trunk FEN-call type screening. Screening is performed using the Incoming Trunk FEN characteristics and call type data found from the original called number. The Call Irregularity Report is used to identify possible misrouted intra-LATA calls, but has no effect on call processing (continues as normal).

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7. Transition Considerations

Turn On/Turn Off Mechanism

7.01 This feature is turned on automatically by software deployment.

8. Input/Output Manual Pages

8.01 The following output messages are affected:

- **MON:IATSGCNT** (new count category of MRI)
- **VER:FEN** (new subtitle).

ID . . . . MON:IATSGCNT
WORK CENTER. . MOC, TOC
GENERIC. . . . . . . 4E17 Rel. 3 and later
APPLICATION . . 4E
TYPE . . . . Output

1. FORMAT

```
MON:IATSGCNT,  TRAPN a
  PST bbbbb      PDT ccccc     PER ddddd      FSA eeeee
  PDA fffff      MAB ggggg     AOF hhhhh      CST iiiii
  UXS jjjjj      IKF kkkkk     CPF 11111      NSD mmmmm
  XST nnnnn      ANF ooooo     AIF ppppp      CKF qqqqq
  GLR rrrrr      GLC sssss     USIS ttttt     FSIS uuuuu
  PTSO vvvvv     SPTO wwwww    IATO xxxxx     USRS yyyyy
  PSE5 zzzzz     DSCF $a^1...a^1$  USDS $b^1...b^1$  DSTO $c^1...c^1$
  PTST $d^1...d^1$  OSTE $e^1...e^1$  USOS $f^1...f^1$  BFOS $g^1...g^1$
  PPTS $h^1...h^1$  WATO $i^1...i^1$  USIG $j^1...j^1$  USOG $k^1...k^1$
  WABF $l^1...l^1$  ASTO $m^1...m^1$  PAOG $n^1...n^1$  URAI $o^1...o^1$
  URAO $p^1...p^1$  CBTO $q^1...q^1$  FRCF $r^1...r^1$  CBAT $s^1...s^1$
  CFTO $t^1...t^1$  RGTO $u^1...u^1$  PRGS $v^1...v^1$  ISA5 $w^1...w^1$
  IADA $x^1...x^1$  MAB5 $y^1...y^1$  MSAF $z^1...z^1$  IUR6 $a^2...a^2$
  ATVC $b^2...b^2$  ATIR $c^2...c^2$  GLR5 $d^2...d^2$  NSD5 $e^2...e^2$
  OPF5 $f^2...f^2$  ISI5 $g^2...g^2$  MRI $h^2...h^2$
```

2. REASON FOR OUTPUT

To dump the value of ineffective attempt (IA) occurrence counts when a trunk subgroup (TSG) counting trap is allowed, inhibited, stopped, or the scheduled time-off has occurred. The counts are set to zero only when trap data collection starts. Inhibit and allow do not affect the contents of the counters.

3. VARIABLE FIELD DEFINITIONS

a	Trap number (TRAPN) 1 to 15.
b	Permanent signal time-out.
c	Partial dial time-out.
d	Pulsing error.
e	False start abandon.
f	Partial dial abandon.
g	Miscellaneous abandon.
h	Automatic number identification (ANI) local office failure: information digit time-out.
i	Centralized automatic message accounting (CAMA).
j	Unexpected stop.

SEE PROPRIETARY NOTICE ON COVER PAGE

k	Integrity check failure.
l	Continuity polarity failure.
m	No start dial.
n	Expected stop time-out.
o	ANI failure indicated.
p	ANI office failure indicated by information digits.
q	Common channel interoffice signaling (CCIS) continuity check failure.
r	Glare condition, far-end office controls.
s	Glare condition, this office controls.
t	Unreasonable signal idle state.
u	False seizure time-out.
v	Incoming proceed to send time-out incoming trunk (ICT) (6 seconds to remove incoming seizing signal).
w	Incoming start of pulsing time-out (2 seconds).
x	Incoming incomplete address time-out (5 seconds).
y	Unreasonable signal received state.
z	Consultative Committee on International Telephone & Telegraph common channel signaling system number 5 (CCITT5) incoming state pulsing error.
a^1	Outgoing state double seizure clear forward.
b^1	Outgoing state unreasonable signal during double seizure timing (850 ms).
c^1	Double seizure time-out (glare) outgoing state (20 seconds).
d^1	Outgoing waiting for proceed to send time-out.
e^1	Outpulsing state transmitter error.
f^1	Unreasonable signal outpulsing state.
g^1	Outgoing trunk (OGT) busy flash during outpulsing state.
h^1	Persisting proceed to send after outpulsing (20-second time-out).
i^1	Waiting answer time-out (4 minutes).
j^1	Unreasonable ICT signal in waiting for answer state.
k^1	Unreasonable OGT signal in waiting for answer state.
l^1	Waiting answer - busy flash received (RCVD) on OGT awaiting answer.
m^1	Answer signal acknowledgement 15-second time-out ICT.

n^1	Waiting for answer persisting answer signal on OGT (6-second time-out).
o^1	Unreasonable signal on ICT after answer.
p^1	Unreasonable signal on OGT after answer.
q^1	Clear back and busy flash signal acknowledge (ACK) 15-second time-out on ICT (disconnect stage).
r^1	Without clear forward after ICT clear back or busy flash was sent (disconnect stage).
s^1	Persisting clear back signal on OGT (disconnect stage).
t^1	Disconnect stage failure to get a release guard on OGT.
u^1	6-second release guard time-out waiting for ICT clear forward removal (disconnect stage).
v^1	Disconnect stage OGT persisting release guard signal (15 seconds).
w^1	CCITT5 incoming seizure abandon (clear forward received).
x^1	Incomplete address abandon.
y^1	CCITT5 miscellaneous abandon.
z^1	Multiple scan points active-fault.
a^2	Unreasonable signal on idle CCITT6 trunk.
b^2	Invalid incoming automatic trunk maintenance equipment (ATME) test call.
c^2	ATME director/responder irregularities.
d^2	CCITT5 first trial glare fail.
e^2	CCITT5 first trial no start dial (NSD) fail.
f^2	CCITT5 first trial outpulsing fail.
g^2	CCITT5 incoming signaling irregularity before answer.
h^2	Misrouted intralata calls.

4. ACTION TO BE TAKEN

None.

5. REFERENCES

PIDENTs
  TMAD0002
  TMAD0005
  TMADTRAP

Practice 234-105-016, *Call Irregularity Raw Data Trap Maintenance Operations Center*

Input Messages
    ALW:IATSGCNT
    INH:IATSGCNT
    MON:IATSGCNT
    OP:IATSGCNT

1. FORMAT

```
VER:FEN            CLASS aaaaaa,      FID bbbbbb,

AFA cc,

SERVICE CATEGORY TREATMENT

UNSP d,  ATAP e,  CUSP f,  CARP g,  CANP h,  HAWP i,  NWZ1 j,  INW k,

DSD l,   DLT m,   TC n,    DA o,    IOP p,   TST q,   RSYS r,  MSC1 s,

MSC2 t,  MSC3 u,  MSC4 v,  INCN w,  ALAP x,  CUTP y,  INCO z,  EASC a¹,
```

$$\text{MSC2 } t, \quad \text{MSC3 } u, \quad \text{MSC4 } v, \quad \text{INCN } w, \quad \text{ALAP } x, \quad \text{CUTP } y, \quad \text{INCO } z, \quad \text{EASC } a^1,$$

$$\text{ICIN } b^1, \quad \text{SC1 } c^1, \quad \text{SC2 } d^1, \quad \text{SC3 } e^1, \quad \text{SC4 } f^1, \quad \text{SC5 } g^1, \quad \text{SC6 } h^1, \quad \text{SC7 } i^1,$$

$$\text{SC8 } j^1, \quad \text{SC9 } k^1, \quad \text{SC10 } l^1, \quad \text{SC11 } m^1, \quad \text{SC12 } n^1, \quad \text{SC13 } o^1, \quad \text{SC14 } p^1, \quad \text{SC15 } q^1,$$

$$\text{SC16 } r^1, \quad \text{SC17 } s^1, \quad \text{SC18 } t^1, \quad \text{SC19 } u^1, \quad \text{SC20 } v^1, \quad \text{SC21 } w^1, \quad \text{SC22 } x^1, \quad \text{SC23 } y^1,$$

$$\text{SC24 } z^1, \quad \text{SC25 } a^2, \quad \text{SC26 } b^2, \quad \text{SC27 } c^2, \quad \text{SC28 } d^2, \quad \text{SC29 } e^2, \quad \text{SC30 } f^2, \quad \text{SC31 } g^2,$$

$$\text{SC32 } h^2, \quad \text{SC33 } i^2, \quad \text{SC34 } j^2, \quad \text{SC35 } k^2, \quad \text{SC36 } l^2, \quad \text{SDN } m^2, \quad \text{LDA } n^2, \quad \text{SSP } o^2,$$

$$\text{SPDI } p^2, \quad \text{MULT } q^2, \quad \text{MCPP } r^2, \quad \text{INET } s^2, \quad \text{SDND } t^2, \quad \text{QTM } u^2,$$

```
SCREENING TREATMENT
```

$$\text{DEF1 } v^2, \quad \text{DEF2 } w^2, \quad \text{DEF3 } x^2, \quad \text{DEF4 } y^2, \qquad \qquad \text{DFHT } z^2, z^2, z^2,$$

2. REASON FOR OUTPUT

To display the characteristics of a far end network (FEN).

3. VARIABLE FIELD DEFINITIONS

a	Classification of the FEN.
b	The FEN within the particular class of FENs.
c	Action that must be taken for equal access signaling.
d	Unspecified service category.
e	Access tandem area plain old telephone service (POTS).

f	Continental United States POTS.
g	Caribbean, non-U.S. territories POTS.
h	Canadian POTS.
i	Hawaiian POTS.
j	Non-World Zone 1.
k	Inward wide area telephone service (WATS).
l	Direct services dialing.
m	Dial it.
n	Teleconferencing.
o	Directory assistance.
p	Inward operator.
q	Test line.
r	Restricted system codes.
s	Miscellaneous 1.
t	Miscellaneous 2.
u	Miscellaneous 3.
v	Miscellaneous 4.
w	International carrier (INC), not carrier interexchange (IC) switch owner's INC.
x	Alaskan POTS.
y	Caribbean - U.S. territories POTS.
z	International carrier.
a^1	Exchange access signaling code.
b^1	Inter-lata carrier switch's international carrier.
c^1	Spare category - 1.
d^1	Spare category - 2.
e^1	Spare category - 3.
f^1	Spare category - 4.
g^1	Spare category - 5.
h^1	Spare category - 6.
i^1	Spare category - 7.
j^1	Spare category - 8.

k^1	Spare category - 9.
l^1	Spare category - 10.
m^1	Spare category - 11.
n^1	Spare category - 12.
o^1	Spare category - 13.
p^1	Spare category - 14.
q^1	Spare category - 15.
r^1	Spare category - 16.
s^1	Spare category - 17.
t^1	Spare category - 18.
u^1	Spare category - 19.
v^1	Spare category - 20.
w^1	Spare category - 21.
x^1	Spare category - 22.
y^1	Spare category - 23.
z^1	Spare category - 24.
a^2	Spare category - 25.
b^2	Spare category - 26.
c^2	Spare category - 27.
d^2	Spare category - 28.
e^2	Spare category - 29.
f^2	Spare category - 30.
g^2	Spare category - 31.
h^2	Spare category - 32.
i^2	Spare category - 33.
j^2	Spare category - 34.
k^2	Spare category - 35.
l^2	Spare category - 36.
m^2	Call to a software defined network.
n^2	Call to a local directory assistance.
o^2	Call to a service switching point.
p^2	Sponsor paid dial it.

q^2	Multiquest.
r^2	Multiquest calling party paid.
s^2	Interim nationwide emergency telecommunication system.
t^2	Switched digital work (SDN) data.
u^2	Quantum.
v^2	Denied calls in category DEF1.
w^2	Denied calls in category DEF2.
x^2	Denied calls in category DEF3.
y^2	Denied calls in category DEF4.
z^2	Define final handling treatment of denied calls.

4. ACTION TO BE TAKEN

None.

5. REFERENCES

PIDENTs
  IOCPPVR4
  VRFYCNTL
  VRFYINPT
  VRFYMISC
  VRFYOUT

Input Message
  VER:FEN

Inbound International 800 Call Prompter Feature (3777)

14

Contents	Page

Inbound International 800 Call Prompter Feature (3777)

14

1. Feature Description

1.01 Call Prompter, which is a menu driven feature, provides a caller at a foreign location with the ability to use announcement and digit collection capabilities to select caller options. The Inbound International 800 Call Prompter feature is similar to the Domestic Call Prompter feature. After listening to an announcement, the caller is prompted to enter digits that correspond to an option. This will allow the caller to select various available options. A two-way path must be provided to support caller interaction. Therefore, a two-way voice path must be established between the networks. An early Address Complete Message (ACM) is sent to foreign networks to establish a backward path, which is used to play an announcement. An early Answer (ANS) message is used to establish a forward path, which is used to collect digits.

2. Call Flow (Not Affected)

3. Provisioning (Not Affected)

4. Recording

4.01 The early answer time is recorded in the International Call Detail Record (ICDR). The actual answer time is recorded in the Automatic Message Accounting (AMA) record.

5. Network Management (Not Affected)

6. Maintenance/Troubleshooting

New Final Handling Codes

6.01 There are 31 new Final Handling Codes associated with this feature. These codes are listed in Table 14-A.

Table 14-A. Final Handling Codes

Code	Description
340	An F1 signal was received during the talking stable state.
357	Timer expired before ANS_ACK/F1 signal was received.
638	Cause value was not "Normal".
639	Cause value was not "Normal".
640	Cause value was not "Normal".
705	Incoming Trunk (ICT) handler could not send ACM because Common Network Interface (CNI) ring was down.
706	ICT handler could not send ACM because CNI buffer was full.
707	ICT handler could not send ACM because CNI ring was down.
708	ICT handler could not send ACM because CNI buffer was full.
709	Received Caller Interaction request for inbound International 800 call on CCITT6 trunk.
710	BACKWARD RELEASE message was received; Cause value indicated that that Call Failure treatment is required.
711	BACKWARD RELEASE message was received; Cause value indicated that that Vacant Code Announcement (VCA) treatment is required.
712	BACKWARD RELEASE message was received; Cause value indicated that that Reorder Tone treatment is required.
713	BACKWARD RELEASE message was received; Cause value indicated that that Busy Tone treatment is required.
714	BACKWARD RELEASE message was received; Cause value indicated that that No Circuit Available treatment is required.
715	BACKWARD RELEASE message was received; Cause value indicated that that Reorder Announcement treatment is required.

Table 14-A. Final Handling Codes (Contd)

Code	Description
716	BACKWARD RELEASE message was received; Cause value indicated that that Network Management Reorder Announcement treatment is required.
717	BACKWARD RELEASE message with invalid coding standard was received; Reorder Tone treatment is required.
718	BACKWARD RELEASE message was received; Cause value indicated that Call Failure treatment is required.
719	BACKWARD RELEASE message was received; Cause value indicated that International Vacant Code treatment is required.
720	BACKWARD RELEASE message was received; Cause value indicated that Busy Tone treatment is required.
721	BACKWARD RELEASE message was received; Cause value indicated that International Network Congestion treatment is required.
722	BACKWARD RELEASE message was received; Cause value indicated that Failure in Foreign Country treatment is required.
723	BACKWARD RELEASE message was received; Cause value indicated that Failure in Foreign Country treatment is required.
724	BACKWARD RELEASE message was received; Cause value indicated that Reorder Announcement treatment is required.
725	BACKWARD RELEASE message was received; Cause value indicated that Reorder Announcement treatment is required.
726	BACKWARD RELEASE message was received; Cause value indicated that Reorder Announcement treatment is required.
1898	BACKWARD RELEASE message was received on outgoing trunk; Cause value indicated User Busy (Number 17).
1899	BACKWARD RELEASE message was received on outgoing trunk; Cause value indicated International Foreign Failure (Numbers 3, 18-21, 27, 29-31, 38, and 96-127).
1900	BACKWARD RELEASE message was received on outgoing trunk; Cause value indicated International Vacant Code (Numbers 1, 22, 28, and 48-95).
1901	BACKWARD RELEASE message was received on outgoing trunk; Cause value indicated No Channel Available (Numbers 32, 33, 35-37, 39, 40, and 43-47).

7. Transition Considerations

Dependencies on Other Network Components

7.01 International 800 customers should not be provisioned for Call Prompter until 4E17 Release 3 has been deployed in all International Switching Center (ISC) switches.

Turn On/Turn Off Mechanism

7.02 This feature is turned on automatically by software deployment.

Internal Transition Issues

7.03 The 3B Processor AMA formatter software should be loaded before the 1A Processor software.

8. Input/Output Manual Pages (Not Affected)

PROM Kit for Link Interface Encryption Removal (LIER) Feature (3779)

15

Contents	Page

PROM Kit for Link Interface
Encryption Removal (LIER)
Feature (3779)

15

1. Feature Description

1.01 This feature is used to modify the Common Channel Signaling System 7 (CCS7)
Link Interface Encrypted (LIE) boards (TN917B). New Phase 2 Processor
Outage (PRO) firmware is being installed, and the link encryption capability can be
removed. Phase 2 PRO firmware provides a graceful recovery for CCS7 links during
processor outage conditions. As a result, link availability is improved. The ability to
remove the link encryption capability is being added because the AT&T Switched
Network (ASN) is moving from link-based encryption to facility-based encryption. After
the link encryption capability is removed from an LIE board, it is referred to as a Link
Interface Encryption Removal (LIER) board. The three options for the TN917B board are
listed in Table 15-A.

Table 15-A. TN917B Board Options

TN917B	Link Encryption	Improved Processor Outage
Old LIE	Y	N
Modified LIE	Y	Y
LIER	N	Y

1.02 The LIER boards are compatible with other LIER and LIE boards. They can be
supported in the same link set at the same time. This allows for a gradual
phasing out of encrypted boards on a link-by-link basis.

2. Call Flow (Not Affected)

3. Provisioning

3.01 Using the Data Management Systenm (DMS), change the encryption field to NO, and the **LI_TYPE** field to LIER. Refer to Task Oriented Practice (TOP) AT&T 234-153-055AC, *Common Network Interface, Growth/Degrowth, 4ESS™ Switch,* for procedures to update interface boards.

4. Recording (Not Affected)

5. Network Management (Not Affected)

6. Maintenance/Troubleshooting (Not Affected)

7. Transition Considerations

Hardware Dependencies

7.01 The LIER firmware must be added to the CCS7 Link Interface boards. Both ends of the link must be converted at the same time. The procedure for this hardware installation is contained in TOP AT&T 234-153-055AC, and the Installation Engineering Handbook 262, Section 32.

Turn On/Turn Off Mechanism

7.02 This feature cannot be turned on/off after firmware and software (4AP11R3) are installed. The 4AP11R3 software must be installed before the firmware is installed on LIE boards. Firmware must be removed if the software is backed out. The AT&T 3B20D computer needs the software before the firmware is installed. Refer to TOP AT&T 234-153-055AC for procedures to update interface boards.

8. Input/Output Manual Pages

8.01 The **OP:LNSTAT** output manual page has been updated to include the **LI_FW_VER** field. This field will contain the microcode value MC3F032A1 after the new firmware has been installed. Also, the **LI_TYPE** field will list LIER-TN917B after the new firmware has been installed.

ID . . . . OP-LNSTAT
WORK CENTER . . MOC
GENERIC . . . . . . 4AP11 Rel. 3 and later
APPLICATION . . 4E, CNI
TYPE . . . . Output

1. FORMAT

This message has two formats.

```
[1]     OP LNSTAT a b   IN PROG

        SLK a b    NWT c

        MINOR      = d       LKTYPE      = e
        SPEED      = f       EC_MODE     = g
        FACILITY   = h       LI_TYPE     = i
        L2_STATE   = j       XLC_STATE   = k
        ROL_STATE  = l       DUR_SIB     = m
        SUERM      = n       L1_STATE    = p
        NP_LNC_ST  = q       LI_FW_VER   = r

        OP LNSTAT a b   COMPL

[2]     OP LNSTAT a b ABT
        s
```

2. REASON FOR OUTPUT

Prints in response to the OP : LNSTAT input message.

Format 1 prints the requested OP : LNSTAT data.

Format 2 reports that OP : LNSTAT command aborted prior to outputting the data.

3. VARIABLE FIELD DEFINITIONS

a   Group number (0-63)

b   Member number (0-15)

c   Network time. The format of this field is:

                h:m:s

                Where:

                    h = hour
                    m = minutes
                    s = seconds

d   Minor State:

   IS In Service

   MOOS Manual Out Of Service

   OOS Out Of Service

e   Link Type:
   A, B, C, D, E, G, W

f   Link Speed (kilobits per second):

   56. — 56kps
   56D — 56kps DS0 equipped link node
   64C — 64kps Clear

g   Error Correction Mode:

   BEC — Basic Error Correction
   PCR — Preventive Cyclic Retransmission

h   Facility Type:
   DSU, DS0, T1FA

i   Link Interface Board Type and Circuit Pack Number:

   LIE — TN917B
   LINE — TN916
   LI4D — TN1315
   LI4S — TN1316
   LID0 — TN1669

j   Level 2 State

  IS:
     In Service; capable of handling level 3 traffic.

  OOS:
     Out of Service (sending SIOS LSSU on link).

  OOS_LLT:
     Out of Service (performing local loop-back test).

  OOS_LLT_FAIL:
     Out of Service (local loop-back test failed).

  PWROFF:
     Level 2 is in a power off state due to initialization, hardware
     failure, or transition to another state.

  L_POUT:
     Local processor outage SIPOS being sent on link.

  R_POUT:
     Remote processor outage (SIPOS being received and FISU
     being sent.

LR_POUT:
> Both local and remote processor outage (SIPOS being sent and received).

WAIT_POUT:
> Recovering from processor outage, waiting for events.

INTNALGN_N:
> This is the first step, or non-aligned stage, of initial alignment (timer T2 is active). Normal proving time is used.

INTNALGN_E:
> This is the first step, or non-aligned stage, of initial alignment (timer T2 is active). Emergency proving time is used.

INTALGN_N:
> This is the initial alignment state 2 of being aligned, level 2 will be sending SIN or SIE and waiting for SIN or SIE (timer T3 is active). Normal proving time is used.

INTALGN_E:
> This is the initial alignment state 2 of being aligned, level 2 will be sending SIN or SIE and waiting for SIN or SIE (timer T3 is active). Emergency proving time is used.

INTPROVIN_E:
> This is the initial alignment state 3 with Emergency proving being done, and level 2 is sending and/or receiving SIE (timer T4e is active).

INTPROVIN_N:
> This is the initial alignment state 3 with Normal proving being done, and level 2 is sending SIN (timer T4n is active).

ALG_RDY:
> Local initial alignment complete (Ready) and we are waiting on FISU and/or MSU to go in service (level 2 state = IS and timer T1 is active).

ALG_NRDY:
> Alignment Not Ready due to processor outage interruption. Local and/or remote processor outage must cease before level 2 can go in service.

k   Transmit Link Buffer Congestion Level:

XDIS1:
> Transmit buffer level 1 discard state, level 0 priority MSUs are discarded.

XDIS2:

Transmit buffer level 2 discard state, level 0 and 1 priority MSUs are discarded.

XDIS3:

Transmit buffer level 3 discard state, level 0, 1, and 2 priority MSUs are discarded.

XONS1:

Transmit buffer level 1 onset state.

XONS2:

Transmit buffer level 2 onset state.

XONS3:

Transmit buffer level 3 onset state.

XFULL:

Transmit buffer is full.

XNORM:

Transmit buffer level is normal.

l   Receive Buffer Overload State:

RB_NORM:

Normal - there is no receive buffer congestion.

RB_OVFL:

Level 2 receive buffer overflow exists (no space in receive buffer, hence MSUs are discarded but are held in far-end retransmit buffer), far-end timer T6 is active as a result of below RB_OVLD.

RB_OVLD

Level 2 receive buffer overload exists when the number of bytes in receive buffer exceeds the onset congestion threshold and the abatement threshold has not occurred. SIBs are being transmitted, MSUs are being accepted into available receive buffer space, but are not being acknowledged. The far-end Timer T6 will be activated on the first SIB received and terminated on a valid acknowledged MSU.

m   Duration of Status Indication Busy (SIBs) received:

This is an indication of far-end receive buffer congestion and level 2 flow control. It will provide the duration of any current far-end congestion in milliseconds. A value of zero is given for no congestion.

n   Signaling Unit Error Rate Monitor count:

A count of the Signaling Unit Error Rate Monitor (SUERM). This count is set to zero when the link is brought into service. If the SUERM count exceeds the SUERM threshold value, the link is removed from service.

p

Level One State:

NA:

>Not Available. The level one state is not available to report a link node equipped with LIE MC3F022A1 TN917B or LINE MC3F003A1 TN916 hardware.

The following are only valid for link nodes that have a DSU facility type and are equipped with hardware other than that listed above for NA.

DSU_ON:

>DSU is receiving valid data. Due to design constraints, DSU_ON may also be obtained when the DSU is unplugged from its frame.

DSU_OFF:

>DSU not receiving valid data as indicated by the DSU RLSD, DSR, and CTS leads.

ALL_ONES:

>All ones are being received on the link.

The following are only valid for LID0 equipped link nodes that have a DS0 facility type.

NORM:

>Normal. There are no problems or other significant data to report.

DEAD_CLK:

>An absent or defective DS0 composite clock signal has been detected.

ALL_ONES:

>All ones are being received on the link.

NE_LB:

>The Network Element Loop-back code is received.

The following are control codes received on the DS0 data leads, and are only valid for LID0 equipped link nodes that have a DS0 facility type.

ASC:

>Abnormal Station Code

BLOCK:

>Block

CMI:

>Control Mode Idle

CSU_LB:

>CSU Loop-back

DSU_LB:
>
> DSU Loop-back

FEV:
>
> Far-end Voice

LBE:
>
> Loop-back Enable

MA:
>
> MJU Alert

MOS:
>
> T1 Multiplex-Out-Of Sync

NOT_RDY:
>
> Not Ready

NSC:
>
> Non-Secondary Channel mapping of TIP bytes

OCU_LB:
>
> OCU Loop-back

RLS:
>
> Release control

TA:
>
> Test Alert

TESTCODE:
>
> Test Code

TIP:
>
> Transition In Progress

UMC:
>
> Unassigned Mux Channel. This indicates some drop side, typically far-end local loop, is disconnected.

ZEROS:
>
> All Zeros. This is an open local loop control code that indicates disconnection from the DS0 DP in D4 channel bank.

If none of the above, then the unknown/unrecognized control code is output in hexadecimal value.

q   Node Processor Link and Node Control State:

IS_BUF:
>
> In Service, but messages are buffered.

IS_BUF_S:
>
> In Service, but messages are buffered, short processor outage.

IS_TXM:
>
> In Service and messages are transmitted.

IS_TXM_S:
> In Service and messages are transmitted, short processor outage.

OOS_LCHKP:
> Out of Service - preparation for link check test.

OOS_LCHKR:
> Out of Service - link check test is running.

OOS_L2ID:
> Out of Service and level 2 is idle.

OOS_L2RT:
> Out of Service and level 2 is restoring.

OOS_L2UP:
> Out of Service and level 2 is up.

OOS_SIPO:
> Out of Service - processor outage at either one or both ends of link.

RDY_CB:
> Out of Service - ready for changeback.

RDY_CB_S:
> Out of Service - ready for changeback, short processor outage.

r   LI firmware version:

MC3F029A1

MC3F030A1

MC3F032A1

NA   Not applicable or not available. The LI is not firmware based (for example, LI4S, LI4D, and LID0) or, if the LI is firmware based, the firmware version is an older version that is not detectable by the node software.

s   Text describing an error condition that has been encountered causing OP:LNSTAT to abort.

TIMED OUT WHILE WAITING FOR DATA FROM LINK NODE:
> This error condition may be caused by a defective link node, or, a lost message either from or to the 3B computer.

4. ACTION TO BE TAKEN

Format 1: None - This message is a response to the input message OP:LNSTAT. Use information provided for monitoring link node performance and trouble analysis.

Format 2: Message is self-explanatory. Seek technical assistance if unable to resolve.

5. REFERENCES

Input Message
OP : LNSTAT

Global Title Translation (GTT) Provisioning Feature (3806)

16

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Global Title Translation (GTT) Provisioning Feature (3806)

16

1. Feature Description

1.01 This feature adds two new tools for provisioning and maintaining the 10-digit Global Title Translation (GTT) tables in the *4ESS*™ switch. Restructuring of the Inbound GTT and the Outbound Software Defined Network (SDN) GTT tables was required to support this feature. Procedures for administering both Inbound GTT and Outbound GTT tables are impacted.

1.02 The two new tools, which will speed up the GTT provisioning process, are called Numbering Plan Area (NPA) Splits and Volume Provisioning. NPA splits adds the capability to replace the old NPA in the SDN Automatic Number Identification (ANI) table with a new NPA after an NPA split has occurred. Volume provisioning adds the capability for the Integrated Routing and Assignment System (IRAS) to send a large number of operations (such as adds, deletes, changes, etc.) to a *4ESS* switch in a single transaction. The adds, deletes, changes, etc. are made to the GTT tables in the *4ESS* switch.

2. Call Processing (Not Affected)

3. Provisioning

3.01 This section describes the new tools (NPA splits and volume provisioning) and how they are used to provision the GTT tables.

NPA Splits

3.02 NPA splits gives the *4ESS* switch the capability to update the ANIs in the SDN GTT database after an NPA split has occurred. It does this by replacing the old NPA with the new NPA for all ANIs affected by an NPA split. The *4ESS* switch receives the necessary information to perform this function from IRAS via the existing interfaces between IRAS and the *4ESS* switch.

Volume Provisioning

3.03 Volume provisioning makes it possible for IRAS to send a large number of operations to a *4ESS* switch in a single transaction. This can be done using either the file transfer method or the list transaction method.

A. File Transfer

3.04 If the file transfer method is used, IRAS can transfer a file containing up to 10,000 records to the AT&T 3B20D computer in the *4ESS* switch. This file contains the operations to be performed on the records, that is, adds, deletes, changes, etc. The 3B20D computer will store the transferred file for later processing.

3.05 The *4ESS* switch will start the update process when it receives a file transfer activation message from IRAS. Updating of the GTT tables will be based on the information contained in this file.

B. List Transaction

3.06 The list transaction method will be used when it is necessary to expedite changes. In a list transaction, up to 50 records can be packaged in a single IRAS to *4ESS* switch session. Different combinations of operations, that is, adds, deletes, and changes, can be performed on different records in the same transaction.

4. Recording (Not Affected)

5. Network Management (Not Affected)

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6. Maintenance/Troubleshooting

System Integrity

6.01 As a safeguard against the possibility of corruption in any of the active GTT databases, the following backup strategy is strongly recommended: frequent backups from the primary disk partition (active database) to a secondary disk partition (shadow database) and weekly backups to tape.

A. Frequent Backup Procedure

6.02 Backups to a secondary disk partition (shadow database) should be done whenever any recent changes are made to a GTT database. Use the following procedure to do a backup to a secondary disk partition:

1   Enter the command

     INH:DLNAUD,APP *aaa*!**;AUD ALL!**

         (where *aaa* is the application being backed up, that is, IBGTT, OBGTT, PCPGTT, or ALL)

     to inhibit Direct Link Node (DLN) audits of the database being backed up.

2   Enter the command

     INH:RCV:APPDB,APP *aaa*!

         (where *aaa* = IBGTT, OBGTT, PCPGTT, or ALL)

     to stop recent change activity on the database which is being backed up.

3   Ensure that a **RCV INHIBIT ACTIVE** output message is received before proceeding.

4   After ensuring that recent changes are inhibited, enter the command

     COPY:APPDB,APP *aaa*;**FROM ACT,TO SHADOW!**

         (Where *aaa* = IBGTT, OBGTT, or PCPGTT. To copy the entire database, that is, all customer units, omit the keyword **APP**.)

     to copy the database from the primary disk partition (appdb0) to the secondary disk partition (appdb1).

5   Enter the command

     ALW:DLNAUD,APP *aaa*;**AUD ALL!**

         (where *aaa* = IBGTT, OBGTT, PCPGTT, or ALL)

     to allow audits on the database that had audits inhibited.

6 Enter the command

    ALW:RCV:APPDB,APP_aaa_**!**

      (where _aaa_ = IBGTT, OBGTT, PCPGTT, or ALL)

    to allow recent changes on the database that had recent changes inhibited.

B. Weekly Backup Procedure

6.03 Once a week, all the application databases (APPDBs) should be copied to tape.
    To support these weekly backups, a pool of four tapes should be used.
Whenever an APPDB backup is done, use the oldest tape in the pool. After the backup
is completed, the tape should be clearly marked with the time and date when it was
written.

6.04 An APPDB tape log should be created that describes when a backup tape was
    created and the contents of each tape. Keeping a log makes it easier to select a
tape if a database has to be restored.

6.05 Use the following procedure to do a weekly backup:

1 Select the oldest tape from the APPDB backup tape pool.

2 Enter the command

    VER:MEMORY,SHADOW:APPDB!

    to get data for labeling the tape.

3 Mount the tape with a write ring included on a 3B20D computer tape drive.

4 Enter the command

    COPY:APPDB;FROM SHADOW, TO "/dev/mt_xx_**"!**

      (Where _xx_ = magnetic tape device name, for example, 08, 14, or 18.)

    to copy the shadow database to tape.

5 Remove the tape from the drive and label it with the information obtained
   from the VER:MEMORY command in Step 2.

6 Create a log entry.

Fault Recovery

6.06 In the event of data corruption in the primary APPDB partition (/dev/appdb0), the database can be restored from a secondary partition, a backup tape, or from a dead start. The restore procedure copies a good database into the primary APPDB partition, and then the good database is pumped into all DLNs.

6.07 It is not always necessary to restore the entire GTT database. If the corruption is in only one or two applications, that is, 800/900 services (IBGTT), SDN (OBGTT) or Positive Call Processing (PCPGTT), then only the applicable database(s) needs to be restored. If at least one application database is free of corruption, you should make every effort to preserve that database.

6.08 The following fault recovery scenarios are covered:

   (a) A backup is available, and one or more GTT applications need to be restored.

   (b) No backup is available, and one or more GTT applications need to be restored.

   (c) No backup is available, extreme corruption exists, and the entire database needs to be restored.

A. Restore One or More GTT Applications (Backup Available)

⚠ CAUTION:
Contact the Technical Control Center (TCC) before starting this procedure. A loss of service may result if this procedure is not executed properly.

6.09 Since all backups are left in a locked state, recent change activity is inhibited during the restore. Recent change must be stopped just before starting the restore.

6.10 This procedure should be used when a backup is available and one or more applications need to be restored. Repeat this procedure for EACH application being restored.

⇛ NOTE:
Do NOT inhibit recent changes and audits for applications that are not being restored. For instance, if the outbound GTT application is being restored, only inhibit recent changes and audits on the OBGTT database.

1   Enter the command

INH:DLNAUD,APP *aaa*;**AUD ALL!**

> (where *aaa* = IBGTT, OBGTT, PCPGTT, or ALL)

to inhibit DLN audits of the application being restored.

2   Enter the command

INH:RCV:APPDB,APP *aaa*!

> (*aaa* = IBGTT, OBGTT, PCPGTT, or ALL)

to inhibit recent change activity on the database which is being restored.

3   Wait for a message that indicates recent changes are inhibited before proceeding. The message could be OK, RCV INHIBIT ACTIVE, or INHIBIT ALREADY ACTIVE.

4   After ensuring that recent changes are inhibited, enter the command

COPY:APPDB, APP *aaa*; **FROM ACT,TO SCRATCH!**

> (Where *aaa* = IBGTT, OBGTT, or PCPGTT. To copy the entire database, that is, all customer units, omit the keyword **APP**.)

to store a copy of the database for later analysis.

5   If you are doing the restoral from the shadow database, skip to Step 7. If you are doing the restoral from tape, mount the tape to be used for the restoral.

6   After the tape is mounted, enter the command

COPY:APPDB,APP *aaa*; **FROM "/dev/mt***xx***",TO SHADOW!**

> (Where *aaa* = IBGTT, OBGTT, or PCPGTT and *xx* = magnetic tape device name, for example, 08, 14, or 18. To copy the entire database, that is, all customer units, omit the keyword **APP**.)

to copy the database from tape to a shadow disk partition.

7   Enter the command

COPY:APPDB,SID *i*, **APP** *aaa*; **FROM SHADOW,TO ACT!**

> (Where i = password and *aaa* = IBGTT, OBGTT, or PCPGTT. To copy the entire database, that is, all customer units, omit the keyword **APP**.)

to copy the database from the shadow disk partition to the active disk partition.

8   Enter the command

INIT:DLNCM:PUMP,ALL,GEN!

to repump the DLNs.

9   Enter the command

ALW:DLNAUD,APP *aaa*; **AUD ALL!**
          (*aaa* = IBGTT, OBGTT, PCPGTT, or ALL)

to allow audits on the database that had audits inhibited.

10   Enter the command

ALW:RCV:APPDB,APP *aaa*!
          (*aaa* = IBGTT, OBGTT, PCPGTT, or ALL)

to allow recent changes on the database that had recent changes inhibited.

11   Notify Operations Support System (OSS) personnel that the database was restored and may need updating.

12   Create a log entry for this activity.

B. Restore One or More GTT Applications (No Backup Available)

⚠ CAUTION:
Contact the TCC before starting this procedure. A loss of service may result if this procedure is not executed properly.

6.11   This procedure should be used when corruption is isolated to a particular application and no backup exists.

⇒ NOTE:
Do NOT inhibit recent changes and audits for applications that are not being restored. For instance, if the outbound GTT application is being restored, only inhibit recent changes and audits on the OBGTT database.

1   Enter the command

INH:DLNAUD, APP *aaa*; **AUD ALL!**
          (where *aaa* is the application being restored, that is, IBGTT, OBGTT, PCPGTT, or ALL)

to inhibit DLN audits of the database which is being restored.

2   Enter the command

INH:RCV:APPDB,APP *aaa*!

(*aaa* = IBGTT, OBGTT, or PCPGTT)

to inhibit recent change activity on the database which is being restored.

3   Wait for a message that indicates recent changes are inhibited before proceeding. The message could be OK, RCV INHIBIT ACTIVE, or INHIBIT ALREADY ACTIVE.

4   After ensuring that recent changes are inhibited, enter the command

INIT:APPDB;SCRATCH!

to initialize a new database in the scratch partition.

5   Enter the command

COPY:APPDB,SID *i,* **APP** *aaa;* **FROM SCRATCH,TO SHADOW!**

(Where i = password and *aaa* = IBGTT, OBGTT, or PCPGTT. To copy the entire database, that is, all customer units, omit the keyword **APP**.)

to copy the scratch database to the shadow database.

6   Identify the standby DLNs and the active inbound DLN (DLN that supports inbound signaling) and active outbound DLN (DLN that supports outbound signaling) from the 1107 display page.

7   Enter the command

INIT:DLNCM,PUMP,STBY,APPDB!

to repump the standby DLNs from the shadow database.

8   Enter the command

SW:DLN,LN*a b,* **LN***a b*!

(where *a* = DLN group number and *b* = DLN member number)

to switch the outbound DLN with one of the standby DLNs.

9   Enter the command

SW:DLN,LN*a b,* **LN***a b*!

to switch the inbound DLN with the other standby DLN.

10   Enter the command

INIT:DLNCM,PUMP,STBY,APPDB!

to pump the DLNs that are now in standby from the shadow database.

11   Enter the command

COPY:APPDB,SID *i,* **APP** *aaa;* **FROM SHADOW,TO ACT!**

(Where i = password and *aaa* = IBGTT, OBGTT, or PCPGTT. To copy
the entire database, that is, all customer units, omit the keyword **APP**.)

to copy the shadow database to the active database.

12   Enter the command

ALW:DLNAUD, APP *aaa;* **AUD ALL!**

(aaa = IBGTT, OBGTT, PCPGTT, or ALL)

to allow audits on the database that had audits inhibited.

13   Enter the command

ALW:RCV:APPDB,APP *aaa!*

(where *aaa* = IBGTT, OBGTT, or PCPGTT)

to allow recent changes on the database that had recent changes inhibited.

C. Restore Entire GTT Databases (No Backup Available)

⚠️ CAUTION:
Contact the TCC before starting this procedure. A loss of service may result if this procedure is not executed properly.

6.12   This procedure should only be used for first time database applications or when
there is extreme corruption and no database backup exists. This procedure sets
the GTT database back to an initial condition. The end result of this command is an
empty database. No call processing information is retained.

6.13   To restore all GTT databases perform the following procedure:

1   Enter the command

INH:DLNAUD, APP ALL; AUD ALL!

to inhibit DLN audits.

2   Enter the command

INH:RCV:APPDB, APP ALL!

to inhibit recent change activity.

3   Wait for a message that indicates recent changes are inhibited before proceeding. The message could be OK, RCV INHIBIT ACTIVE, or INHIBIT ALREADY ACTIVE.

4   After ensuring that recent changes are inhibited, enter the command

INIT:APPDB; SHADOW!

to initialize a new database in the shadow partition.

5   Identify the standby DLNs and the active inbound DLN (DLN that supports inbound signaling) and active outbound DLN (DLN that supports outbound signaling) from the 1107 display page.

6   Enter the command

INIT:DLNCM,PUMP,STBY,APPDB!

to repump the standby DLNs from the shadow database.

7   Enter the command

SW:DLN,LNa b, LNa b!

   (where a = DLN group number and b = DLN member number)

to switch the outbound DLN with one of the standby DLNs.

8   Enter the command

SW:DLN,LNa b, LNa b!

to switch the inbound DLN with the other standby DLN.

9   Enter the command

INIT:DLNCM,PUMP,STBY,APPDB!

to pump the DLNs that are now in standby from the shadow database.

10   Enter the command

COPY:APPDB,SID _a_; FROM SHADOW,TO ACT!

(where a = password)

to copy the shadow database to the active database.

11   Enter the command

ALW:DLNAUD,APP ALL;AUD ALL!

to allow audits.

12   Enter the command

ALW:RCV:APPDB,APP ALL!

to allow recent changes.

7. Transition Considerations

Turn On/Turn Off Mechanism

7.01   This feature is turned on by a memory overwrite. Conditioning of the 10-digit
GTT tables is included as part of the turn on procedure. After the feature is
turned on, perform the following steps to condition the 10-digit GTT tables:

1   Enter the command

EXC:ENVIR:UPROC,FN"/database/tools/newappdb",ARGS("START")!

to copy the current active database to the scratch partition.

⇒ **NOTE:**
If at any time during the turn on procedure it is necessary to restore the
system to a stable condition, perform the backout procedure. (See
paragraph 7.02.) The backout procedure will restore the switch to a
state that closely matches the state that existed before the start of the
turn on procedure. The backout procedure can be executed at any
point during the turn on procedure.

2   Enter the command

INIT:APPDB;SHADOW!

to initialize a new database in the shadow partition.

3   Enter the commands

VER:GTT:TT 252,SUM!

VER:GTT:TT 253,SUM!

to determine if any numbers exist in the GTT tables. If numbers are in the GTT tables, continue on with Step 4. If no numbers exist, skip to Step 6.

4   Enter the command

VER:GTT:MAP!

to run the mapping program to copy numbers from the old database to the new database.

5   Request support from the TCC or the Common Channel Signaling (CCS) Design and Implementation District (CDID) to ensure that the old and new database numbers match.

6   Enter the command

EXC:ENVIR:UPROC,FN"/database/tools/newappdb",ARGS("IR")!

to start interface relations (ir), the support process for the new database. [Interface relations include Equipment Configuration Data (ECD) changes.]

➡ **NOTE:**
At this point, you are ready to install a working database on the DLNs. This is done by first pumping the new database to the standby DLNs and then switching the standby DLNs with an active inbound DLN and an active outbound DLN.

7   Identify the standby DLNs and the active inbound DLN (DLN that supports inbound signaling) and the active outbound DLN (DLN that supports outbound signaling) from the 1107 display page.

8   Enter the command

INIT:DLNCM,PUMP,STBY,APPDB!

to pump the standby DLNs from the shadow database.

9   Enter the command

SW:DLN,LNa b,LNa b!

       (where *a* = DLN group number and *b* = DLN member number)

to switch the outbound DLN and one of the standby DLNs.

10   If Step 3 indicates that numbers exist in the GTT tables, allow the DLN to soak for at least 91 minutes to ensure that the load is stable. If no numbers exist, allow the DLN to soak for at least 13 minutes.

⇒ NOTE:
If any unusual error messages are received during the soak period, contact the TCC for assistance.

11   After the soak period is over, enter the command

SW:DLN,LNa b,LNa b!

to switch the inbound DLN and the other standby DLN.

12   Enter the command

INIT:DLNCM,PUMP,STBY,APPDB!

to pump the DLNs now in standby from the shadow database.

13   Enter the command

COPY:APPDB,SID a;FROM SHADOW,TO ACT!
        (Where a = password)

to copy the shadow database to the active database.

14   Enter the following command

EXC:ENVIR:UPROC,FN"/database/tools/newappdb",ARGS("FINISH")!

to allow audits and recent changes.

15   Copy the Equipment Configuration Data (ECD) to disk.
(See AT&T 234-153-055AC, *Common Network Interface, Growth/Degrowth, 4ESS™ Switch*.)

Backout Procedure

7.02 The backout procedure can be performed at any stage of the turn on procedure.

1 Enter the command

   EXC:ENVIR:UPROC,FN"/database/tools/newappdb",ARGS("BACKOUT")!

2 Identify the standby DLNs and the active outbound DLN and the active inbound DLN from the 1107 display page.

3 Enter the command

   INIT:DLNCM,PUMP,STBY,APPDB!

   to pump the standby DLNs from the shadow database.

4 Enter the command

   SW:DLN,LN*a b*, LN*a b*!

   (where *a* = DLN group number and *b* = DLN member number)

   to switch the outbound DLN and one of the standby DLNs.

5 Enter the command

   SW:DLN,LN*a b*, LN*a b*!

   to switch the inbound DLN with the other standby DLN.

6 Enter the command

   INIT:DLNCM,PUMP,STBY,APPDB!

   to pump the DLNs that are now in standby from the shadow database.

Ubiquity

7.03 It is not necessary for all *4ESS* switches in the network to be running the 4E17 Release 3 generic for this feature to be fully operational.

8. Input/Output Manual Pages

8.01 Numerous input and output messages have been created or modified to support
the GTT Provisioning feature. Tables 16-A and 16-B identify the new and
modified input messages; Tables 16-C and 16-D identify the new and modified output
messages.

Table 16-A. New Input Messages

Message	Type	Purpose
ALW:DLNAUD	Input	Allows application database audits
COPY:APPDB	Input	Copies the GTT databases for one location (or medium) to another
INH:DLNAUD	Input	Inhibits audits of the application databases
OP:DLNAUD	Input	Provides the status of GTT database audits
START:CRCUPD	Input	Updates the Cyclic Redundancy Check (CRC) data for the rehash audit of an application database

Table 16-B. Modified Input Messages

Message	Type	Purpose
ALW:RCV:APPDB	Input	Allows recent change activity on the GTT database
INH:RCV:APPDB	Input	Inhibits recent changes on the GTT databases
INIT:APPDB	Input	Initializes the application database
INIT:DLNCM	Input	Initializes and starts message transport for the API-DLN stream
OP:INH:APPDB	Input	Provides status of recent change inhibits
RC:MISC;FHT	Input	Starts a session to add, delete, or change data in GTT database in DLN
VER:GTT	Input	Performs various verifies of the GTT database
VER:MEMORY	Input	Analyzes space utilization of the GTT database

Table 16-C. New Output Messages

Message	Type	Reason for Output
ALW DLNAUD	Output	Prints the results of an allow of application database audits
COPY APPDB	Output	Prints the results of copying an application database
INH DLNAUD	Output	Prints the results of an inhibit of application database audits
INIT APPDB	Output	Indicates the progress of an initialization, the termination of an initialization, or error conditions that occurred when an initialization was attempted
OP DLNAUD	Output	Prints the status of application database audits
REPT APPDB DA	Output	Prints error information for the database administration activity associated with application databases
REPT APPDB FR	Output	Prints error information for the fault recovery activity associated with application databases
REPT APPDB IR	Output	Prints error information for the base 3B20D computer process associated with application databases
START CRCUPD	Output	Indicates that the CRC update has started or completed. There are also messages that indicate why the CRC update cannot be started.

Table 16-D. Modified Output Messages

Message	Type	Reason for Output
ALW RCV APPDB	Output	Prints the results of an allow of 10-digit GTT recent changes
INH RCV APPDB	Output	Prints the results of an inhibit of 10-digit GTT recent changes
OP INH APPDB	Output	Indicates whether the "DLN Inhibit" feature is active or not active
RC MISC-FHT-FTA	Output	Prints the results of APPDB database update
REPT DLNCM DBTYPE	Output	Reports DLN APPDB pump errors
REPT DLNCM PAPPCU	Output	Reports DLN APPDB pump errors
REPT DLNCM PAPPDB	Output	Reports DLN APPDB pump errors
REPT DLNCM PMPAPD	Output	Reports DLN APPDB pump errors
REPT DLNCM PMPAPP	Output	Reports DLN APPDB pump errors
REPT DLNCM PMPGTT	Output	To report DLN APPDB pump errors if the database is in the old format
VER GTT	Output	Provides information pertaining to 10-digit GTT data structures
VER MEMORY	Output	Provides space utilization of GTT database

ID . . . . ALW:DLNAUD
WORK CENTER . . MOC
GENERIC . . . . 4AP11 Rel. 3 and later
APPLICATION . . 4E
TYPE . . . . Input

1. PURPOSE

Allows application database audits.

2. FORMAT

ALW:DLNAUD, APP {IBGTT|OBGTT|PCPGTT|ALL};AUD {REHASH|ALL}!

3. EXPLANATION OF MESSAGE

ALL	All application database audits or all audit types
IBGTT	Inbound global title translation
OBGTT	Outbound global title translation
PCPGTT	Positive call processing global title translation
REHASH	Background hash of data

4. SYSTEM RESPONSE

PF	Message accepted and ALW-DLNAUD output message follows.
RL	Retry later.

5. REFERENCES

Input Messages
INH:DLNAUD
OP:DLNAUD

Output Messages
ALW-DLNAUD
INH-DLNAUD
OP-DLNAUD

1. PURPOSE

This input message copies the GTT10D application database from one 3B20D partition to another. Options include:

1. Copy the entire database (all customer units) from one 3B20D disk partition to another.

2. Copy individual database customer units from one 3B20D disk partition to another.

3. Copy the entire database from one 3B20D disk partition to tape.

4. Copy the entire database or single customer units from tape to either backup (SHADOW or SCRATCH) partition.

Note: This input message cannot be used to copy the database from tape to the ACT (/dev/appdb0) partition.

Since the APPDB database file being copied should be quiescent (not changing), the user should make sure that the proper inhibits are placed on the database if the database being copied (to or from) is the ACTIVE (/dev/appdb0) database.

2. FORMAT

COPY:APPDB,[SID a],[APP b];FROM c, TO d!

3. EXPLANATION OF MESSAGE

a   Password, based on the day of the month. See support personnel for the specific value.

b   One of the following:

                IBGTT   — Inbound global title translation
                OBGTT   — Outbound global title translation
                PCPGTT   — Positive call processing global title translation

c   String representing database partition to copy from. Possible values are:

                ACT   — Active partition, /dev/appdb0
                SCRATCH   — Scratch pad partition, /dev/appdb2
                SHADOW   — Backup partition, /dev/appdb1

                Or a valid 3B20D tape device name (e.g., /dev/mt08)

d   String representing database partition to copy to. Possible values are:

      ACT   — Active partition, /dev/appdb0
      SCRATCH   — Scratch pad partition, /dev/appdb2
      SHADOW   — Backup partition, /dev/appdb1

Or a valid 3B20D tape device name (e.g., /dev/mt08)

When the **APP** keyword and argument are used, only the specified customer unit is
copied. If the **APP** keyword is omitted, the entire database (all customer units) are
copied.

When the destination (**TO**) partition is the active database (/dev/appdb0) and the active
database has a valid format, the **SID** keyword and argument are required.

4. SYSTEM RESPONSE

NG − MISSING SID ARG

NG − FROM AND TO KEYWORDS REQUIRED

NG − FROM AND TO KEYWORDS ARE BOTH REQUIRED

NG − FROM AND TO KEYWORDS MUST BE DIFFERENT

NG − APP KW NOT VALID WHEN WRITING TO TAPE

NG − CANNOT UPDATE ACTIVE PARTITION FROM TAPE

PF   Message accepted and COPY-APPDB output message follows.

RL − APPDB DATABASE IS CURRENTLY LOCKED   Retry later.

5. REFERENCES

Input Messages
  INH:DLNAUD
  INH:RCV:APPDB
  VER:MEMORY

Output Message
  COPY-APPDB

WARNING
This message should be used with discretion. A loss of service
may result from improper use.

<table>
<tr><td>WARNING</td><td>ID . . . . INH:DLNAUD</td></tr>
</table>

<table>
<tr><td></td><td>ID . . . . INH:DLNAUD</td></tr>
<tr><td>WARNING</td><td>WORK CENTER . . MOC</td></tr>
<tr><td>This message may be service-affecting.</td><td>GENERIC . . . . 4AP11 Rel. 3 and later</td></tr>
<tr><td>See explanation at end of message.</td><td>APPLICATION . . 4E</td></tr>
<tr><td></td><td>TYPE . . . . Input</td></tr>
</table>

1. PURPOSE

Inhibits application database audits.

2. FORMAT

    ALW:DLNAUD, APP {IBGTT|OBGTT|PCPGTT|ALL};AUD {REHASH|ALL}!

3. EXPLANATION OF MESSAGE

ALL	All application database audits or all audit types
IBGTT	Inbound global title translation
OBGTT	Outbound global title translation
PCPGTT	Positive call processing global title translation
REHASH	Background hash of data

4. SYSTEM RESPONSE

PF	Message accepted and INH-DLNAUD output message follows.
RL	Retry later.

5. REFERENCES

Input Messages
   ALW:DLNAUD
   OP:DLNAUD

Output Messages
   ALW-DLNAUD
   INH-DLNAUD
   OP-DLNAUD

WARNING
Use of this command may jeopardize the database integrity
which could lead to lost calls.

ID . . . . OP:DLNAUD
WORK CENTER . . MOC
GENERIC . . . . 4AP11 Rel. 3 and later
APPLICATION . . 4E
TYPE . . . . Input

1. PURPOSE

Gives the status of inhibit of application database audits.

2. FORMAT

```
OP:DLNAUD, APP {IBGTT|OBGTT|PCPGTT|ALL}!
```

3. EXPLANATION OF MESSAGE

Requests the status of inhibit of application database audits.

ALL   All application database audits

IBGTT   Inbound global title translation

OBGTT   Outbound global title translation

PCPGTT   Positive call processing global title translation

4. SYSTEM RESPONSE

PF   Message accepted and OP-DLNAUD output message follows.

RL   Retry later.

5. REFERENCES

Input Messages
  ´ALW:DLNAUD
  INH:DLNAUD

Output Messages
  ALW-DLNAUD
  INH-DLNAUD
  OP-DLNAUD

<table>
<tr><td rowspan="5">WARNING
This message may be service-affecting.
See explanation at end of message.</td><td>ID . . . . START:CRCUPD</td></tr>
</table>

                        WARNING   ID . . . . START:CRCUPD
This message may be service-affecting.   WORK CENTER. . MOC
See explanation at end of message.   GENERIC. . . . . . . 4AP11 Rel. 3 and later
                                           APPLICATION . . 4E
                                           TYPE . . . . Input

1. PURPOSE

Updates the CRC data for the rehash audit. This command updates the CRC data for the requested application database. It should only be used when assured that the data is good, and the CRCs are out of date. CRCs can become out of date when the 3B20D initializes or the process /ring/ir leaves core after finishing recent changes but before the CRCs are updated.

Note: Do not run this command when call processing or recent change is complaining about the application database.

2. FORMAT

START:CRCUPD, APP {IBGTT|OBGTT|PCPGTT|ALL}!

3. EXPLANATION OF MESSAGE

ALL   All application databases

IBGTT   Inbound global title translation

OBGTT   Outbound global title translation

PCPGTT   Positive call processing global title translation

4. SYSTEM RESPONSE

PF   Message accepted and START-CRCUPD output message follows.

RL   Retry later.

Note: Depending on the size of the application database, this message may require up to 45 minutes to complete. This input causes two output messages to print, one indicating that the CRC update has begun and a second indicating that it has finished. The following message is printed when the update is complete:

START CRCUPD
COMPLETED CALCULATING CRCS FOR APP {IBGTT|OBGTT|PCPGTT}

5. REFERENCES

Output Message
    START-CRCUPD

WARNING
Use of this command may jeopardize the database integrity which could lead to lost calls.

ID .... ALW:RCV:APPDB
WORK CENTER.. MOC
GENERIC....... 4AP11 Rel. 3 and later
APPLICATION .. 4E
TYPE .... Input

1. PURPOSE

Deactivates the "DLN Inhibit" feature and the GTT10D Recent Change inhibits.

2. FORMAT

This message has two formats.

[1]   **ALW:RCV:APPDB!**

[2]   **ALW:RCV:APPDB,APP** a**!**

3. EXPLANATION OF MESSAGE

Format 1. Deactivates "DLN Inhibit" feature. This will allow the ability to perform recent changes to the GTT10D Database (for both 252 and 253 translations) until the inhibit is activated with the INH:RCV:APPDB command or via the "DLN Inhibit" trigger in the GTT10D Recent Change software.

Format 2. Deactivates the "non-DLN Inhibit" GTT10D RC inhibits which are used to inhibit specific customer recent changes (or ALL) to the GTT10D Database without invoking the emergency alarms associated with the "DLN Inhibit" feature. These inhibits are useful when making GTT10D Database backups, or when initializing the database, or any time the customer needs the database or a particular customer's database unit to be in a "quiescent state."

a   One of the following:

IBGTT — For allowing 800 and 900 service Recent Change
OBGTT — For allowing SDN service Recent Change
PCPGTT — For allowing PCP GTT service Recent Change
ALL — For allowing all of the above

Note: When one GTT10D RC customer is inhibited, this has no effect on other GTT10D RC customers, unless the "ALL" keyword argument is used.

4. SYSTEM RESPONSE

OK   Message accepted.

5. REFERENCES

Input Messages
COPY:APPDB
INH:RCV:APPDB
INIT:APPDB
OP:INH:APPDB

Output Messages
ALW-RCV-APPDB
INH-RCV-APPDB
OP-INH-APPDB
REPT-INH-RCV
RC:MISC-FHT-FTA

ID . . . . INH:RCV:APPDB
WORK CENTER. . MOC
GENERIC. . . . . . . 4AP11 Rel. 3 and later
APPLICATION . . 4E
TYPE . . . . Input

1. PURPOSE

Invokes the "DLN Inhibit" feature and the GTT10D Recent Change inhibits.

2. FORMAT

This message has two formats.

[1]   `INH:RCV:APPDB!`

[2]   `INH:RCV:APPDB,APP` a `!`

3. EXPLANATION OF MESSAGE

Format 1. Activates the "DLN Inhibit" feature. This will inhibit the ability to perform recent changes to the GTT10D Database (for both 252 and 253 translations) until the inhibit is turned "off" with the ALW:RCV:APPDB command or via the "DLN Inhibit" trigger in the GTT10D Recent Change software.

Format 2. Activates the "non-DLN Inhibit" GTT10D RC inhibits which are used to inhibit specific customer recent changes (or ALL) to the GTT10D Database without invoking the emergency alarms associated with the "DLN Inhibit" feature. These inhibits are useful when making GTT10D Database backups, when initializing the database, or any time the user needs the database or a particular customer's database unit to be in a "quiescent state."

a   One of the following:

      `IBGTT` — For allowing 800 and 900 service Recent Change
      `OBGTT` — For allowing SDN service Recent Change
   `PCPGTT` — For allowing PCP GTT service Recent Change
        `ALL` — For allowing all of the above

Note: When one GTT10D RC customer is inhibited, this has no effect on other GTT10D RC customers, unless the "ALL" keyword argument is used.

4. SYSTEM RESPONSE

`PF`   Message accepted and printout will follow.

5. REFERENCES

Input Messages
```
ALW:RCV:APPDB
COPY:APPDB
INIT:APPDB
OP:INH:APPDB
```

Output Messages
```
ALW-RCV-APPDB
INH-RCV-APPDB
OP-INH-APPDB
REPT-INH-RCV
RC:MISC-FHT-FTA
```

ID	INIT:APPDB
WORK CENTER . .	MOC
GENERIC	4AP11 Rel. 3 and later
APPLICATION . .	4E
TYPE	Input

1. PURPOSE

This input message initializes the application database. The application database resides in special device file "/dev/appdb0". The database is pumped to DLN nodes and is used for call processing services. This command resets the database to an initial state. The database will contain NO call processing (customer) information. This message should only be used for new start database applications or for extreme database corruption. If database reasonableness checks pass, then the SID keyword must be supplied.

Since the APPDB database file being initialized should be quiescent (not changing), the user should make sure that the proper inhibits are placed on the database if the database being initialized is the ACTIVE (/dev/appdb0) database.

2. FORMAT

```
INIT:APPDB [,SID a];[OLD | ACT | SHADOW | SCRATCH]!
```

3. EXPLANATION OF MESSAGE

a	Password, based on the day of the month. See support personnel for the specific value.
OLD	The ACTIVE ("/dev/appdb0") partition is initialized with the "old" (pre-4E17R3) format.
ACT	The ACTIVE ("/dev/appdb0") partition is initialized with the "new" (4E17R3) format.
SHADOW	The backup ("/dev/appdb1") partition is initialized with the "new" (4E17R3) format.
SCRATCH	The scratch pad ("/dev/appdb2") partition is initialized with the "new" (4E17R3) format.

The SID keyword and argument are only required if the partition to be initialized is the ACTIVE partition and the ACTIVE partition currently contains a valid database format (either "old" or "new" formats.)

4. SYSTEM RESPONSE

PF	INIT-APPDB output message will follow.

5. REFERENCES

Input Messages
INH:DLNAUD

```
INH:RCV:APPDB
VER:GTT
VER:MEMORY
```

Output Message
```
INIT-APPDB
```

WARNING
**This message should be used with discretion. A loss of service
may result from improper use.**

WARNING	ID .... INIT:DLNCM
This message may be service-affecting.	WORK CENTER.. MOC
See explanation at end of message.	GENERIC....... 4AP11 Rel. 3 and later
	APPLICATION .. 4E
	TYPE .... Input

1. PURPOSE

Initializes and starts message transport for the API-DLN stream, or completely repumps each equipped DLN.

WARNING

Use of this input message may result in loss
of service (calls).

* * * * *

2. FORMAT

This message has three formats.

[1]   **INIT:DLNCM, STREAM**; [a] !

[2]   **INIT:DLNCM, PUMP, ALL, GEN** [, WTIME b] !

[3]   **INIT:DLNCM, PUMP, STBY, APPDB** [, WTIME b] !

3. EXPLANATION OF MESSAGE

Format 1. Initializes the API-DLN data stream in a particular direction, either 1A outgoing, 1A incoming or both directions. If the direction is not specified, direction will be defaulted to BOTH.

Format 2. Completely repumps all DLN nodes in the CNI ring. This form of the command is intended to be used when applying a BWM that changes DLN operational software.

Format 3. The last form of the message pumps the application database to the standby DLN nodes. This form is meant to be used when converting the database from one form to another (e.g., from a GTT type to a GTT Restructure type).

a   Direction. Possible values:

ONEAIN   — 1A incoming.

ONEAOUT — 1A outgoing.

BOTH   — Both directions.

b   Decimal number of seconds to soak the configuration (default of 30
                               seconds).

4. SYSTEM RESPONSE

Entry of this message may produce one or more of the following system responses:

Response	Message	Meaning
PF		Followed by `INIT-DLNCM-STREAM` output message.
NG	`UNKNOWN RESPONSE FROM DLNCM`	**DLNCM** responded invalidly
NG	`OST CALL`	Operating system trap call to **DLNCM** failed.
NG	`DLNCM CANNOT PROCESS REQUEST`	Bad parameter passed to **DLNCM**.
RL	`DLNCM DOES NOT EXIST`	The **DLNCM** process does not exist.
RL	`CANNOT COMMUNICATE TO DLNCM`	Cannot send request to **DLNCM**.
RL	`RING INITIALIZATION IN PROGRESS`	Ring initialization has started.
RL	`CNI PHASE/INIT TRAFFIC SEQ IN PROGRESS`	CNI phase and/or start traffic sequence in progress.
RL	`LOST COMM TO 1A`	Lost 1A communication
RL	`NO TCBs AVAILABLE`	No task control blocks available to service request.
RL	`STREAM/DLN CONFIG IN PROGRESS`	API-DLN stream and/or DLNs are being configured.

5. REFERENCES

Output Message
   `INIT-DLNCM`

WARNING
Use of this input message may result in loss of service (calls).
READ PURPOSE CAREFULLY

ID . . . . OP:INH:APPDB
WORK CENTER . . MOC
GENERIC . . . . 4AP11 Rel. 3 and later
APPLICATION . . 4E
TYPE . . . . Input

1. PURPOSE

Outputs the status of all GTT10D RCV Inhibits (including the "DLN Inhibit" feature status).

2. FORMAT

OP:INH:APPDB!

3. EXPLANATION OF MESSAGE

None.

4. SYSTEM RESPONSE

PF   Message accepted and OP-RCV-APPDB output message follows.

5. REFERENCES

Input Messages
   ALW:RCV:APPDB
   INH:RCV:APPDB

Output Messages
   ALW-DLNAUD
   INH-DLNAUD
   OP-DLNAUD
   REPT-INH-RCV
   RC:MISC-FHT-FTA

ID . . . . RC:MISC;FHT,FTA
WORK CENTER . . MOC
GENERIC . . . . 4AP11 Rel. 3 and later
APPLICATION . . 4E
TYPE . . . . Input

1. PURPOSE

Starts a session to add, delete, or change data in the 10-Digit Global Title Translations database residing in the DLN with the data given in this input message. This message will not be accepted if another message affecting the contents of 10-Digit GTT is in progress.

2. FORMAT

This message has two formats.

[1] **RC:MISC;FHT,FTA:** a,b,c,d,**NUM** (e,f,SSNNNNMMMXXX, ssnnnnmmmxxx,{g})!

[2] **RC:MISC;FHT,FTA:** a,b,c,d,**NUM** (e,F,f,SSNNNNMMMXXX, ssnnnnmmmxxx,SSNGGGHHHXXX,ssnggghhhxxx,{g})!

Format 1 describes the way in which data can be represented in the input message for the add and delete options.

Format 2 describes the way in which data can be represented in the input message for the change option.

3. EXPLANATION OF MESSAGE

The parameters given in the above format are defined as follows with helpful rules as to how they are to be used:

a   Translation capability and type:

GTT10D253   — When inputting 800 or 900 Service NANP ANIs

GTT10D252   — When inputting SDN Service NANP ANIs

GTT10D252APN   — When inputting SDN Service APN ANIs

GTT10D242   — When inputting PCP Service NANP ANIs

GTT10D242APN   — When inputting PCP Service APN ANIs

b   Recent change order number:

**** RULES ****
This is used to distinguish between RC taking place in the span of one day. It would be wise to use unique numbers for each RC entry.

Restricted to nine characters. The first four characters must be alphanumeric, identifying the AT&T entity submitting the recent change. A list of mnemonics will be supplied for this four-character identifier later. The recent change convention for order number is given below:

submitting organization | order#

c   Database procedure:
A (ADD), D (DELETE), C(CHANGE)

**** RULES ****

The first format mentioned is for add and delete. The second format mentioned is for change only.

d   Recent change processing flag:

L   — List of reckeys.
R   — Range of reckeys.

**** RULES ****

This entry specifies how the recent change is to be processed for the input of reckeys. When using L, a maximum of 2 reckeys may be input. Numbers in the list may not be the same. The message will be accepted but the DB procedure will fail. When using R, two reckeys must be input, except when using relation 3, the one value expected is zero. The numbers in the range may not be equal and the low range (the first record key) must be less than the high range (the 2nd record key). Range is offered at the XXXX level, therefore, the first six digits of the record key must be the same.

e   Relation used for recent change:

1   — RC GT Record Key & NCP Subsystem.
2   — RC GT Record Key & Custid.
3   — RC Custid & NCP Subsystem.
4   — RC GT Record Key, Custid, & NCP Subsystem.

**** RULES ****

Relation #1 is independent of all others and must be used only with GTT10D242, GTT10D242APN, or GTT10D253. Relation #4 must be done before #2 or #3 for new customers and ncp data. After #4 is done, #2 or #3 can be used for existing customers and ncp data. Relations #2, #3, and #4 are only used for GTT10D252. Relation #4 cannot be used for the change or delete option.

f   Old SDN Customer Identification Number (add and delete only).

F   New SDN Customer Identification Number (change only).

**** RULES ****

This entry is allowed only for GTT10D252 and GTT10D252APN, otherwise the value should be zero. For relation #2 this value must

exist and must also point to a valid NCP subsystem. In other words, an RC for relation #4 must have been performed. For relations #3 and #4 this value must not exist. When the relation is #3 for a change, the old custid and the new custid must be the same. If they are different, then relation #2 must be used. The value must be in the range from 8880000001 to 8880009999.

ADD, DEL

SSN	Primary Subsystem Number.
NNNMMMXXX	Primary Point Code.
ssn	Secondary Subsystem Number.
nnnmmmxxx	Secondary Point Code.

CHANGE

SSN	New Primary/Secondary Subsystem Number.
NNNMMMXXX	New Primary Point Code.
ssn	Old Primary/Secondary Subsystem Number.
nnnmmmxxx	Old Primary Point Code.
GGGHHHXXX	New Secondary Point Code.
ggghhhxxx	Old Secondary Point Code.

**** RULES ****

For relation #2 this value must exist and have a custid which points to it. For relation #3 this value must exist and no custid should be pointing to it. For relation #4 this value must not exist. For relation #3 on a change, the old NCP data and the new NCP data must be different. This value must also be within the following specified ranges:

(Subsystem Number = 000-007,232-255)
(Point Code = 254000000 - 254317255)

g	GT Record Key (npanxxxxxx). Default GT Record Key (npa).

**** RULES ****

A maximum of 10 entries may be entered per message. For relation #3 this entry must be zero, and only one value is allowed for input (which is the zero). The Default GT Key entry is only used for GTT10D252 when one needs to create a translation for NPAs without actually storing line numbers.

APN ANIs will only be accepted for 10-digit SDN Services.

DEPENDENCIES AND RESTRICTIONS

The following reflects rules for 10D GTT recent change messages.

FOR TT = 253

* RCREL=1: Primary Key = GT Record Key
  Update GT Record Key and NCP info.

- Customer ID is not applicable.
- Old NCP info must exist on change.
- New NCP info may or may not exist on change and add.
- NCP info must exist on delete.
- Record Key must not exist on add.
- Record Key must exist on delete and change.
- Old and new NCP must be different on change.
- Cannot split ranges on a change.

FOR TT = 242

* RCREL=1: Primary Key = GT Record Key
  Update GT Record Key and NCP info.

- Customer ID is not applicable.
- Old NCP info must exist on change.
- New NCP info may or may not exist on change and add.
- NCP info must exist on delete.
- Record Key must not exist on add.
- Record Key must exist on delete and change.
- Old and new NCP must be different on change.
- GT Record Key must be a three digit number.
- No ranges are supported.

FOR TT = 252

* RCREL=2: Primary Key = GT Record Key
  Update GT Record Key and Customer ID.

- Cust ID must exist for Record Key on add and delete.
- Old and new Cust ID must exist on change.
- Cust ID must point to valid existing NCP info
  on add, change, and delete.
- Cannot have one custid pointing to two different
  NCP information sets.
- Record Key must exist for change and delete.
- Record Key must not exist for add.
- Cannot split ranges on a change.
- When adding less than 64 reckeys in either a range
  or a list, a subsequent range greater than 64 cannot
  be entered as a range in a recent change.

* RCREL=3: Primary Key = Cust ID
  Update Cust ID and NCP info.

  - GT Record Key is not applicable.
  - NCP info must exist for Cust ID on add and delete.
  - Old and new NCP info must exist on change.
  - Cust ID must exist for delete.
  - Old and New Cust ID must exist on change.

* RCREL=4: Primary Key = GT Record Key
  Update GT Record Key, Cust ID, and NCP info.
  (For previous RCs an add on screen #4 must be done first in
  order to access a completed record and not violate table
  accessing stipulations or cross checks)

  - No change is allowed.
  - No delete is allowed.
  - NCP info must not exist on add.
  - Cust ID must not exist for add.
  - Record Key must not exist for add.

4. SYSTEM RESPONSE

PF   Printout follows. See output message RC:MISC-FHT-FTA for details.

5. REFERENCES

Output Message
  RC:MISC-FHT-FTA

ID .... VER:GTT
WORK CENTER . . MOC
GENERIC....... 4AP11 Rel. 3 and later
APPLICATION . . 4E
TYPE .... Input

1. PURPOSE

This command performs various verifies of the global title translations (GTT) database. The database is contained in three disk files and in each direct link node (DLN). The verify can be performed on any of the three valid disk files or any DLN, with the default being the active disk file. The three disk files containing the database are located at:

1. /dev/appdb0 - the active disk file

2. /dev/appdb1 - the backup disk file

3. /dev/appdb2 - the "scratch pad" disk file

The purpose of the **GTT** database is to determine the correct network database (network control point or NCP) that contains the information for the requested translation type (TT) and digits. The **GTT** database currently supports three **TTs: 242** for PCP services, **252** for SDN services, and **253** for 800 and 900 services. Furthermore, TTs 242 and 252 are subdivided into numbering plan types (NPT) called action point numbering (APN) and North American numbering plan (NANP). This is done by using keyword **APN** or **NANP**. If the TT is specified as 253 then no NPT can exist on the command line.

The following formats provide various views of the **GTT** database.

Format 1 gives the feature on/off status for both 6-digit and 10-digit **GTT**. Both the 6 and 10-digit **GTT** features default to being turned off. The 1A recent change RC:MISC;FHT,FTA:a, where a is {GT6ACT252|GT6ACT253|GT10AC252|GT10AC253}, is used to turn on the features. This information comes from the ACI database, not the APPDB database. Thus, the **SHADOW** or **SCRATCH** keywords cannot be used in format 1. The ACI database is resident within the 1A file and in each DLN.

Format 2 gives the total number of customers (or entries) in the database for the specified translation type. If **TT** equals 242 or 252, then both **APN** and **NANP** spectrums are searched.

Formats 3 through 6 give the network database (NCP) point code and subsystem information for the specified translation type and 10 digits of the automatic number identification (ANI). The ANI will be the calling number for **TTs 242** (PCP services) and **252** (SDN services) and the called number for **TT 253** (800 and 900 services). The **DEF** field (digits 4-6 of the ANI) can be entered as a single **DEF**, a range of **DEFs**, or **ALL**. The **GHIJ** keyword (digits 7-10 of the ANI) can be entered as a single **GHIJ** value or a **GHIJ** range. If the **DEF** keyword is specified as a range or **ALL**, keyword **GHIJ** must be **ALL**.

Formats 3 through 6 rules for database searching are:

- If **TT** is 242 or 252 then APN or NANP may exist. If both are omitted, both NANP and APN spectrum data is output.

- If **TT** is 253 then NANP may or may not exist.

- If **ABC DEF** and **GHIJ** exist then only 10 digit DB trees are searched.

- If **ABC** and **DEF** exist and **GHIJ** does not exist then only 6 digit DB trees are searched.

- If **ABC** exists and **DEF** or **GHIJ** does not exist then only 3 digit DB trees are searched.

Format 7 gives a count of all the customers and the network database (NCP) information for equipped database indexes (**DBI**). This information can be used to verify load balancing of the ANI(s) on network databases. The output given for each equipped **DBI** entry is the pointcode (PC) and subsystem number (SSN) of two mated network databases (NCPs), and the number of ANI(s) using this **DBI**. For the case where **TT** is equal to **242** or **252** the counts include both APN and NANP number spectrums.

Format 8 gives a listing of all ANI DIGIT combinations that use a specific TT and DBI. If the TT is 242 or 252 then both APN and NANP spectrums will be searched.

Format 9 gives a count of all the customers and the network database (NCP) information for equipped customer indexes (CUSTID). The output given for each equipped customer index is the DBI, point code (PC) and subsystem number (SSN) of two mated network databases (NCPs), and the number of ANI(s) using this customer index.

Format 10 gives a listing of all 10-DIGIT ANI combinations that use a specific customer index.

Format 11 terminates all running verify processes. This is helpful when the verify command is outputting too much information.

Format 12 maps the old GTT databases (prior to 4E17 Rel. 3) into the larger, restructured GTT database (4E17 Rel. 3 and later).

2. FORMAT

[1]   `VER:GTT[,RNA x]:STAT!`

[2]   `VER:GTT[,RNA x|SHADOW]:TT {242|252|253},SUM!`

[3]   `VER:GTT[,RNA x|SHADOW]:TT {242|252|253}[,APN|NANP],ABC a,`
      `DEF b,GHIJ d[-e]!`

[4]   `VER:GTT[,RNA x|SHADOW]:TT {242|252|253}[,APN|NANP],ABC a,`
      `DEF b,GHIJ ALL!`

[5]   `VER:GTT[,RNA x|SHADOW]:TT {242|252|253}[,APN|NANP],ABC a,`
      `DEF b[-c],GHIJ ALL!`

[6]   `VER:GTT[,RNA x|SHADOW]:TT {242|252|253}[,APN|NANP],ABC a,`
                  `DEF ALL,GHIJ ALL!`

[7]   `VER:GTT[,RNA x|SHADOW]:TT {242|252|253}:DBI ALL!`

[8]   `VER:GTT[,RNA x|SHADOW]:TT {242|252|253}:DBI f!`

[9]   `VER:GTT[,RNA x|SHADOW]:CUSTID ALL!`

[10]   `VER:GTT[,RNA x|SHADOW]:CUSTID g!`

[11]   `VER:GTT[,RNA x|SHADOW]:STOP!`

[12]   `VER:GTT:MAP!`

3. EXPLANATION OF MESSAGE

TT 242	Translation type **242** is used for Positive Call Processing (PCP) type services. The **ABC** values for this **TT** are normally the home NPAs that are supported at this 4ESS™, unless the **APN** keyword is specified. If the **TT** is specified as **242**, then either the **APN** or **NANP** keyword must be supplied. Only three digit GT translations are supported for **TT 242**.
TT 252	Translation type **252** is used for SDN type services. The **ABC** values for this **TT** are normally the home NPAs that are supported at this 4ESS™, unless the **APN** keyword is specified. If the **TT** is specified as **252**, then either the **APN** or **NANP** keyword must be supplied.
APN	This keyword is only valid when **TT** is specified as **242** or **252**. Specification of **APN** restricts the verify search to the APN numbering plan.
NANP	Specification of **NANP** restricts the verify search to the NANP numbering spectrum. NANP stands for North American Numbering Plan.
TT 253	Translation type **253** is used for 800 and 900 type services. The **ABC** values for this **TT** are normally 195, 800, or 900. If **TT 253** is specified, then neither **APN** nor **NANP** must exist on the command line.
a	This is the **ABC** value or first 3 digits of the requested global title number. For **TT** of **242** or **252**, this is the dialing number; for **TT** of **253**, this is the dialed number. The range of values for **ABC** is 0-999.
b	This is the **DEF** value of the second 3 digits of the requested global title number. The range of values for **DEF** is 0-999. The **DEF** keyword is not supported for **TT**s of **242**.
c	The **DEF** field allows an optional range. If this value is entered, the value of c must be greater than the value of b. The range of values for c is 1-999.

d	This is the **GHIJ** value of the last 4 digits of the requested 10-digit global title number. The range of values for **GHIJ** is 0-9999. The **GHIJ** keyword is not supported for **TTs** of **242**.
e	The **GHIJ** field allows an optional range. If this value is entered, the value of d must be greater than the value of e. The range of values for e is 1-9999.
f	This is a specific database index (**DBI**). For the 242 and 252 translation types, there can be up to 256 **DBIs** (values 0-255), which store database point code and subsystem number information. For the 253 translation type, there can be up to 1024 **DBIs** (values 0-1023), which store database point code and subsystem number information.
g	This is a specific customer index (**CUSTID**). There are 9999 **CUSTIDs** (values 1-9999). Each **CUSTID** contains a TT 252 DBI index. **CUSTID** 0 is not used.
x	This is the ring node address (**RNA**) of the direct link node (DLN) where the verify is to be done. If the **RNA** x entry is omitted, the default is to verify the active database file (/dev/appdb0). The value of x can be entered in either hexadecimal (ex: X'205) or in decimal (ex: 517). The range of **RNAs** are decimal 0-1023 (hex 0x0-0x3ff). The keyword **SHADOW** is used to verify the shadow (or backup database) located at /dev/appdb1. The keyword **SCRATCH** is used to verify the "scratch pad" database located at /dev/appdb2.

4. SYSTEM RESPONSE

PF   VER-GTT output message will follow.

5. REFERENCES

Input Message
    RC:MISC;FHT,FTA

Output Message
    VER-GTT

ID . . . . VER:MEMORY
WORK CENTER. . MOC
GENERIC. . . . . . . 4AP11 Rel. 3 and later
APPLICATION . . 4E
TYPE . . . . Input

1. PURPOSE

This command analyzes space utilization of the database used for 10-digit global title translations (GTT). The database, called **APPDB**, resides in each direct link node (DLN) and at the following disk locations:

1. /dev/appdb0 - the active disk file

2. /dev/appdb1 - the backup disk file

3. /dev/appdb2 - the "scratch pad" disk file

The verify can be performed on any of the disk file copies or any DLN, with the default being /dev/appdb0. The purpose of the database is to determine the correct network database (network control point or NCP) which contains information for the requested translation type (TT) and digits. The GTT database currently supports two TTs: 252 for SDN services and 253 for 800 and 900 services.

There is one format for this input message. The message shows **APPDB** memory utilization for each application using the **APPDB** database. Optional keywords in the ID field allow the selection of a specific database location. The **RNA** keyword selects a specific DLN. The **SHADOW** keyword is used to select the shadow database (/dev/appdb1). The **SCRATCH** keyword is used to select the "scratch pad" database (/dev/appdb2). The default database location is /dev/appdb0.

The **VER:MEMORY** message will output a data table for each customer unit (i.e., application) in the database. If the **APP** keyword is used, only the data for a particular customer unit will be output.

2. FORMAT

VER:MEMORY[,RNA x|SHADOW|SCRATCH],[APP y]:APPDB!

3. EXPLANATION OF MESSAGE

x — This is the ring node addresses (RNA) of the direct link node (DLN) where the verify is to be done. If the **RNA** x and **SHADOW** entries are omitted, verify references the active database disk file located at /dev/appdb0. The value of x can be entered in either hexadecimal (ex: X'205) or in decimal (ex: 517). The range of **RNA**s are decimal 0-1023 (hex 0x0-0x3ff). The **SHADOW** keyword forces verify to access the backup database disk file located at /dev/appdb1.

y — This is the customer unit name of the specific customer unit for which the **VER:MEMORY** data is requested. Valid values for y are: **IBGTT** for the Inbound Services customer unit (800 and 900 services), **OBGTT** for the Outbound Services customer unit (SDN services), **PCPGTT** for the PCP GTT Services customer unit.

4. SYSTEM RESPONSE

PF   VER–MEMORY output message will follow.

5. REFERENCES

Input Message
   RC:MISC;FHT,FTA

Output Message
   VER–MEMORY

ID . . . . ALW-DLNAUD
WORK CENTER . . MOC
GENERIC . . . . 4AP11 Rel. 3 and later
APPLICATION . . 4E
TYPE . . . . Output

1. FORMAT

[1]   ALW DLNAUD
       REHCAL AUDIT IS ALLOWED FOR APP a

[2]   ALW DLNAUD
       CANNOT CHANGE INHIBIT STATUS OF INVALID APP b

[3]   ALW DLNAUD
       CANNOT CHANGE INHIBIT STATUS OF INVALID AUDIT TYPE c

2. REASON FOR OUTPUT

Print the results of an allow of application database audit.

3. VARIABLE FIELD DEFINITIONS

a   Application database that is affected. Valid values are:

                IBGTT   — Inbound global title translation
                OBGTT   — Outbound global title translation
                PCPGTT   — Positive call processing global title translation

b   Invalid application database. Valid values are 0, 1 or 2.

c   Audit type that the request was for. This message is printed
                whenever the value is not 128 or 129.

4. ACTION TO BE TAKEN

Allow or inhibit the audit when appropriate via the ALW:DLNAUD or INH:DLNAUD
command.

5. REFERENCES

Input Messages
   ALW:DLNAUD
   INH:DLNAUD
   OP:DLNAUD

Output Messages
   INH-DLNAUD
   OP-DLNAUD

ID . . . . COPY-APPDB
WORK CENTER . . MOC
GENERIC . . . . 4AP11 Rel. 3 and later
APPLICATION . . 4E
TYPE . . . . Output

1. FORMAT

```
[1]    COPY APPDB FROM a TO b IN PROGRESS
       COPY APPDB FROM c TO d

[2]    COPY APPDB FROM a TO b COMPLETED

[3]    COPY APPDB ACTIVE DATABASE HAS 4E16 FORMAT - VALID SID REQUIRED

[4]    COPY APPDB CANNOT OPEN c - e

[5]    COPY APPDB SOURCE DATABASE c FORMAT ERROR

[6]    COPY APPDB CANNOT CHECK MAGIC FOR c - e

[7]    COPY APPDB CANNOT CREATE SEGMENT - e

[8]    COPY APPDB CANNOT SETIO ON SOURCE DEV - e

[9]    COPY APPDB CANNOT SETIO ON DEST DEV - e

[10]   COPY APPDB CANNOT READ c - e

[11]   COPY APPDB CANNOT WRITE c - e

[12]   COPY APPDB DEST DATABASE HAS INV FORMAT, DON'T USE APP KW
```

2. REASON FOR OUTPUT

Print the results of copying an application database. Formats 1 and 2 indicate that the copy is in progress or has completed successfully. The other formats indicate that there was a problem with the copy and it has stopped.

3. VARIABLE FIELD DEFINITIONS

a   Application partition that is affected. Valid values are:

                    ACT   — Active partition, /dev/appdb0

                    SCRATCH — Scratchpad partition, /dev/appdb2

                    SHADOW   — Backup partition, /dev/appdb1

b   Application partition that is affected. Valid values are:

ACT   — Active partition, /dev/appdb0

SCRATCH — Scratchpad partition, /dev/appdb2

SHADOW   — Backup partition, /dev/appdb1

c   Filename of the partition that is affected. Valid values are:

/dev/appdb0 — Active partition
/dev/appdb1 — Backup partition
/dev/appdb2 — Scratchpad partition

d   Filename of the partition that is affected. Valid values are:

/dev/appdb0 — Active partition
/dev/appdb1 — Backup partition
/dev/appdb2 — Scratchpad partition

e   Error code indicating why the copy was not successful.

4. ACTION TO BE TAKEN

When the copy is complete, the copy can be verified with the VER:MEMORY and the VER:GTT commands. The most likely cause of an unsuccessful copy is that system conditions (insufficient resources) preclude the ability to copy at the current time. Retry the copy message later. If the copy cannot be successfully completed after a small number of attempts, NESAC should be notified.

5. REFERENCES

Input Messages
     COPY:APPDB
     VER:GTT
     VER:MEMORY

Output Message
     VER-MEMORY

WARNING
If a copy to the ACTIVE partition aborts prematurely, the ACTIVE database will most likely be left in a corrupt state. This requires immediate attention. Retry the copy message immediately. If the reattempt does not succeed, notify NESAC immediately.

The COPY:APPDB to ACT message should be used with extreme care.

ID . . . . INH-DLNAUD
WORK CENTER . . MOC
GENERIC . . . . 4AP11 Rel. 3 and later
APPLICATION . . 4E
TYPE . . . . Output

1. FORMAT

FORMAT

```
[1]    INH DLNAUD
       REHCAL AUDIT IS ALLOWED FOR APP a


[2]    INH DLNAUD
       CANNOT CHANGE INHIBIT STATUS OF INVALID APP b


[3]    INH DLNAUD
       CANNOT CHANGE INHIBIT STATUS OF INVALID AUDIT TYPE c
```

2. REASON FOR OUTPUT

Print the results of an inhibit of application database audit.

3. VARIABLE FIELD DEFINITIONS

a	Application database that is affected. Valid values are:

IBGTT	— Inbound global title translation
OBGTT	— Outbound global title translation
PCPGTT	— Positive call processing global title translation

b	Invalid application database. Valid values are 0, 1 or 2.
c	Audit type that the request was for. This message is printed whenever the value is not 128 or 129.

4. ACTION TO BE TAKEN

Allow or inhibit the audit when appropriate via the ALW:DLNAUD or INH:DLNAUD command.

5. REFERENCES

Input Messages
   ALW:DLNAUD
   INH:DLNAUD
   OP:DLNAUD

Output Messages
   ALW-DLNAUD
   OP-DLNAUD

ID . . . . INIT-APPDB
WORK CENTER. . MOC
GENERIC. . . . . . . 4AP11 Rel. 3 and later
APPLICATION . . 4E
TYPE . . . . Output

1. FORMAT

[1]   INIT APPDB a IN PROGRESS

[2]   INIT APPDB a COMPLETE
        customer unit b/c (byte offset in db file = d)
          .
          .
          .

[3]   INIT APPDB a COMPLETE
        ACTIVE DATABASE HAS APPDB FORMAT - VALID SID REQUIRED

[4]   INIT APPDB a COMPLETE
        ACTIVE DATABASE HAS 4E16 FORMAT - VALID SID REQUIRED

[5]   INIT APPDB a COMPLETE
        RETRY LATER - APPDB DATABASE IS CURRENTLY LOCKED

[6]   INIT APPDB a COMPLETE
        [e]

2. REASON FOR OUTPUT

Formats 1 through 6 are output as a result of the execution of the INIT:APPDB input
message.

Format 1 is output to indicate that the APPDB database format has begun (this process
may take a while.)

Format 2 is the normal response for the INIT:APPDB input message. It indicates that
the initialization has terminated with no errors.

Formats 3 through 6 are error indications.

3. VARIABLE FIELD DEFINITIONS

a   APPDB file name:

                /dev/appdb0 — For ACTIVE file.
                /dev/appdb1 — For SHADOW file.
                /dev/appdb2 — For SCRATCH file.

b   Customer unit code.

c	Position of CU in database file.
d	Byte offset in database for the specified CU.
e	Error message.

```
mkappdb: cannot create segment -- errno is f

mkappdb: cannot create segment -- errno is f

mkappdb: dbname a does not exist

mkappdb: cannot open db a -- errno is f

mkappdb: cannot setio for db a -- errno is f

mkappdb: cannot lseek through a -- errno is f

mkappdb: cannot write a -- errno is f
```

f	UNIX system error code (see output Appendix SYSERR-APP).

4. ACTION TO BE TAKEN

Formats 3 and 4 indicate that the database requested in the INIT:APPDB input message has a valid APPDB format and either an invalid SID parameter or no SID parameter was specified in the INIT:APPDB input message. The input message should be retried with a valid SID parameter.

Format 5 indicates that some other action is being performed on the specified database. Retry the command later.

Format 6 indicates that a system error is preventing the APPDB file from being initialized. Try again later. If the system condition persists, notify NESAC.

5. REFERENCES

Input Message
   INIT:APPDB

ID . . . . OP-DLNAUD
WORK CENTER. . MOC
GENERIC . . . . 4AP11 Rel. 3 and later
APPLICATION . . 4E
TYPE . . . . Output

1. FORMAT

```
[1]     OP DLNAUD
        REHASH AUDIT IS a FOR APP b

[2]     OP DLNAUD
        CANNOT GIVE INHIBIT STATUS OF INVALID APP c
```

2. REASON FOR OUTPUT

Print the status of application database audits.

3. VARIABLE FIELD DEFINITIONS

a   Status of audit:

                  ALLOWED

                  INHIBITED

b   Application database that is affected. Valid values are:

IBGTT	— Inbound global title translation
OBGTT	— Outbound global title translation
PCPGTT	— Positive call processing global title translation

c   Invalid application database. Valid values are 0, 1 or 2.

4. ACTION TO BE TAKEN

Inhibit or allow the audit if appropriate via the INH:DLNAUD or ALW:DLNAUD command.

5. REFERENCES

Input Messages
   ALW:DLNAUD
   INH:DLNAUD
   OP:DLNAUD

Output Messages
   ALW-DLNAUD
   INH-DLNAUD

ID . . . . REPT-APPDB-DA
WORK CENTER . . MOC
GENERIC . . . . 4AP11 Rel. 3 and later
APPLICATION . . 4E
TYPE . . . . Output

1. FORMAT

[1]   REPT APPDB DA a (3B) ERR
       RC DA PROBLEM CODE b

[2]   REPT APPDB DA a (3B) ERR
       RC DA PROBLEM CODE b SUPPL c

[3]   REPT APPDB DA a (3B) ERR
       RC DA CANNOT START TRANSACTION - DS OPEN FAILURE c

[4]   REPT APPDB DA a (3B) ERR
       CANNOT OPEN TMP FILE: d FOR DA TO RC:MISC - b(e)

[5]   REPT APPDB DA a (3B) ERR
       CANNOT WRITE FILE: d FOR DA TO RC:MISC - b(e)

[6]   REPT APPDB DA SKO (3B) ERR
       RC DA - CANNOT APPLY DLN INHIBIT (b)

2. REASON FOR OUTPUT

Prints errors in connection with the database administration for application databases.

3. VARIABLE FIELD DEFINITIONS

a   String representing the Data Administration object that encountered the error. These values are:

        MT   — Controls application of database changes to the 3B disk.
        SKO   — Single key operation.
        SLT   — Controls application of database changes to the DLNs.
        SPLT — Controls changing database after an NPA Split.
        TR   — Master controller for RC/V transactions.

b   Error code indicating what the error was. Possible values are:

        650 — TR object is stuck in loop constantly deleting the same instance.
        651 — Data from RC:MISC too large for buffer.
        652 — Did not read the expected amount of data from tmp file.
        653 — Database does not exist.
        654 — Could not create TR instance.

655 — Failure in populating MT and SKO instances.
656 — Failure to encode ASN message.
657 — No SLT instance exists.
658 — Customer Database out of range.
659 — DLNCM indicates an error trying to write to DLNs.
660 — Could not create SLT instance.
661 — Invalid File Descriptor for DS.
662 — Invalid Choice of SKO.
663 — An expected SKO does not exist.
664 — Could not create SKO instance.
665 — MT object is stuck in loop constantly deleting the same instance.
666 — SKO instance in incorrect state.
667 — DS File did not close.
668 — Could not create MT instance.
669 — An expected MT instance does not exist.
670 — Could not create LOG instance.
671 — Could not create SPLT instance.
672 — Failure in populating SPLT instance.

c   Supplementary error code. Possible values are:

1-99 — UNIX RTR System error, see output Appendix SYSERR-APP.
101 — General database failure, unsuccessful completion.
105 — Item to be modified was not located.
110 — Cannot add number, hash table full.
111 — Cannot add number, 10-digit compaction table full.
116 — Cannot add point code sub-system information, NCP table full.
120 — Cannot add record, it already exists.
123 — The dialed digit/ANI being searched for was not found.
124 — Specified NPA-NXX combination was not found.
127 — Associated point code sub-system information does not exist.
141 — File descriptor is out of range.
143 — Error on reading from the database.
144 — Error on writing to the database.
154 — Database inconsistencies have been detected.
155 — Cache inconsistencies have been detected.
156 — The ADMINTOC or DBTOC magic number is invalid.
157 — Invalid database type for this application.
160 — Clump number is out of range for application.
176 — All file descriptors are active, none available.
180 — The replacement NPA-NXX value already exists.
190 — The application database value is invalid.
191 — The specified user identification number is invalid.

192 — The specified access mode is invalid.
193 — The specified customer identification number is invalid.
194 — The compaction table search chain exceeded maximum length.
195 — The dialed digit/ANI table search chain exceeded maximum.
196 — The DLN user buffer address is invalid.
201 — The argument 'object' is invalid.
202 — The argument passed in is invalid.
203 — The instance does not exist.
204 — The instance cannot be created, it exists already.
205 — End of object array, no more instances.
206 — No free IR internal buffer.
207 — Request IMS buffer failed.
208 — Build IMS header failed.
209 — IMS write failed.
212 — Data size + number of key > 480 bytes.
213 — Domain exceeds its buffer quota.
215 — Argument 'domain' is invalid.
216 — Get _BAD_CHAN failure from IMS read.
217 — Get _RTNMSG failure from IMS read.
218 — Get _SRCMATCH failure from IMS read.
219 — Bad message type.
220 — IR event length > 508 bytes.
223 — Wrong queue type.

d   Name of temporary file that cannot be opened.

e   Unix error code as a string.

4. ACTION TO BE TAKEN

If repeated errors indicate problems, seek technical assistance. The utility command, irutil, may be useful in providing further information in tracking down a problem reported by the REPT-APPDB-DA output message. This command resides in /tools/irutil and has a usage statement that demonstrates how to use the command.

5. REFERENCES

Input Messages
    ALW:DLNAUD
    INH:DLNAUD
    OP:DLNAUD
    START:CRCUPD
    RC:MISC;FHT,FTA

Output Messages
   ALW–DLNAUD
   INH–DLNAUD
   OP–DLNAUD
   START–CRCUPD
   RC:MISC–FHT–FTA

ID . . . . REPT-APPDB-FR
WORK CENTER . . MOC
GENERIC . . . . 4AP11 Rel. 3 and later
APPLICATION . . 4E
TYPE . . . . Output

1. FORMAT

```
[1]    REPT APPDB FR REHCAL (3B) ERR
       APP a CLUMP b DATA/CRC MISMATCH ON MASTER DEVICE
       CALCULATED DATA: c EXPECTED CRC: d


[2]    REPT APPDB FR REHCAL (3B) ERR
       APP a CLUMP b DATA/CRC MISMATCH ON LNg m
       CALCULATED DATA: c EXPECTED CRC: d


[3]    REPT APPDB FR SYSERR (3B) ERR
       REHAUD APP a SUSPENDED DEVICE LIST ERR e
       SUPPL h FILE n LINE o


[4]    REPT APPDB FR SYSERR (3B) ERR
       REHAUD APP a SUSPENDED ALL DEVICES OOS


[5]    REPT APPDB FR SYSERR (3B) ERR
       REHAUD APP a SUSPENDED MASTER CRC DATA ERR f SUPPL h


[6]    REPT APPDB FR SYSERR (3B) ERR
       REHAUD APP a SUSPENDED INVALID INHIBIT STATUS


[7]    REPT APPDB FR SYSERR (3B) ERR
       REHAUD APP a MASTER DEVICE REHCAL SKIPPED CLUMP b REASON f SUPPL h


[8]    REPT APPDB FR SYSERR (3B) ERR
       REHAUD APP a LNg m REHCAL SKIPPED CLUMP b REASON f SUPPL h


[9]    REPT APPDB FR SYSERR (3B) ERR
       REHAUD APP a MASTER DEVICE CLUMP b REASON f SUPPL h
       SKIPPING REST OF THIS DEVICE


[10]   REPT APPDB FR SYSERR (3B) ERR
       REHAUD APP a LNg m CLUMP b REASON f SUPPL h
       SKIPPING REST OF THIS DEVICE


[11]   REPT APPDB FR SYSERR (3B) ERR
       REHAUD APP a CLUMP NUMBER ERR f SUPPL h


[12]   REPT APPDB FR SYSERR (3B) ERR
       REHAUD APP a MASTER CRC DATA ERR f SUPPL h
```

```
[13]    REPT APPDB FR SYSERR (3B) ERR
        REHAUD APP a UPDATE INFO ERR f SUPPL h


[14]    REPT APPDB FR SYSERR (3B) ERR
        REHAUD APP a WRITE CRC DATA ERR f SUPPL h


[15]    REPT APPDB FR   (3B) ERR
        FRINIT() ERR e APPLICATION DATABASE LIST


[16]    REPT APPDB FR   (3B) ERR
        FRINIT() DEVICE LIST ERR e
        SUPPL h FILE n LINE o


[17]    REPT APPDB FR   (3B) ERR
        FRINIT() ERR i CREATE AUDIT OBJECT EVENTHAN


[18]    REPT APPDB FR   (3B) ERR
        FRINIT() ERR i CREATE AUDIT OBJECT SYSERR


[19]    REPT APPDB FR   (3B) ERR
        FRINIT() ERR i CREATE AUDIT OBJECT REHAUD


[20]    REPT APPDB FR   (3B)
        REHASH AUDIT IS INHIBITED FOR APP a


[21]    REPT APPDB FR -- DATABASE IS CORRUPT
```

2. REASON FOR OUTPUT

Prints errors in connection with the fault recovery system for the application databases.

3. VARIABLE FIELD DEFINITIONS

a	Application database that is affected. Valid values are:

IBGTT	— Inbound global title translation
OBGTT	— Outbound global title translation
PCPGTT	— Positive call processing global title translation

b	The number of the clump of data that is affected. Valid values are 0 - 1280.
c	The calculated CRC value for a clump. This is a hexadecimal value.
d	The stored CRC value for a clump. This is a hexadecimal value.
e	Error code indicating why the audit could not get information about devices. Possible values are:

−1	— Unable to get the information requested.
1	— Retry later.

f	Error code indicating a problem interfacing to the application

database.

-601 — Unable to get a filename for the master database.
-602 — Unable to attach to the database.
-603 — File descriptor is bad.
-604 — Unable to get next clump number.
-605 — Unable to get a clump of data.
-606 — Unable to determine the size of a clump.
-607 — Unable to determine the number of clumps.
-608 — Unable to determine the total number of clumps.
-609 — Unable to get CRC data.
-610 — Unable to access the DLN from the 3B20D.
-611 — Unable to get the device name of a DLN.
-612 — Unable to get the update information after a Recent Change.
-613 — Unable to get the master database file name.
-614 — Unable to write the CRC data.
-615 — Application database number is invalid.

g   Group number of a Direct Link Node. Possible values are 00 or 32.

h   Error code indicating a problem with attaching or using the application database.

1-99 — UNIX RTR System error, see output Appendix SYSERR-APP.
101 — General database failure, unsuccessful completion.
105 — Item to be modified was not located.
110 — Cannot add number, hash table full.
111 — Cannot add number, 10-digit compaction table full.
116 — Cannot add point code sub-system information, NCP table full.
120 — Cannot add record, it already exists.
123 — The dialed digit/ANI being searched for was not found.
124 — Specified NPA-NXX combination was not found.
127 — Associated point code sub-system information does not exist.
141 — File descriptor is out of range.
143 — Error on reading from the database.
144 — Error on writing to the database.
154 — Database inconsistencies have been detected.
155 — Cache inconsistencies have been detected.
156 — The ADMINTOC or DBTOC magic number is invalid.
157 — Invalid database type for this application.
160 — Clump number is out of range for application.
176 — All file descriptors are active, none available.
180 — The replacement NPA-NXX value already exists.
190 — The application database value is invalid.
191 — The specified user identification number is invalid.

i — Error code indicating why an audit object was not able to be created.

<div style="text-align:center">

192 — The specified access mode is invalid.
193 — The specified customer identification number is invalid.
194 — The compaction table search chain exceeded maximum length.
195 — The dialed digit/ANI table search chain exceeded maximum.
196 — The DLN user buffer address is invalid.

</div>

i   Error code indicating why an audit object was not able to be created.

201 — The argument 'object' is invalid.
202 — A parameter is invalid.
203 — The instance does not exist.
204 — The instance cannot be created, it exists already.
205 — End of object array, no more instances.
206 — No free IR internal buffer.
207 — Request IMS buffer failed.
208 — Build IMS header failed.
209 — IMS write failed.
212 — Data size + number of key > 480 bytes.
213 — Domain exceeds its buffer quota.
215 — Argument 'domain' is invalid.
216 — Get _BAD_CHAN failure from IMS read.
217 — Get _RTNMSG failure from IMS read.
218 — Get _SRCMATCH failure from IMS read.
219 — Bad message type.
220 — IR event length > 508 bytes.
223 — Wrong queue type.

m   Member number of a Direct Link Node. Possible values are between 0 and 16.

n   Any valid filename.

o   Represents line number.

4. ACTION TO BE TAKEN

If repeated errors indicate problems, seek technical assistance. The utility command, irutil, may be useful in providing further information in tracking down a problem reported by the REPT-APPDB-FR output message. This command resides in /tools/irutil and has a usage statement that demonstrates how to use the command.

5. REFERENCES

Input Messages
    ALW:DLNAUD
    INH:DLNAUD
    OP:DLNAUD
    START:CRCUPD
    RC:MISC;FHT,FTA

Output Messages
    ALW-DLNAUD
    INH-DLNAUD
    OP-DLNAUD
    START-CRCUPD
    RC:MISC-FHT-FTA

ID . . . . REPT-APPDB-IR
WORK CENTER. . MOC
GENERIC. . . . . . . 4AP11 Rel. 3 and later
APPLICATION . . 4E
TYPE . . . . Output

1. FORMAT

[1]   REPT APPDB IR   (3B) ERR
       INIT_INST: OBJ a CAN'T BE CLEARED: IRERR b

[2]   REPT APPDB IR   (3B) ERR
       UNKN OBJ X'c IRERR b

[3]   REPT APPDB IR   (3B) ERR
       UNKN OBJ INST (d a) X'l IRERR b IDS (X')
           e e e e

[4]   REPT APPDB IR   (3B) ERR
       IR FLT EXIT (X') f AT g
       R8:h R7:h R0:h
           STKPA1: i
           STKPA2: i
           STKPA3: i

[5]   REPT APPDB IR   (3B) ERR
       HO EV NOT FOUND EV: X'l

[6]   REPT APPDB IR   (3B) ERR
       FIND_ODT: OBJECT X'c OOR

[7]   REPT APPDB IR   (3B) ERR
       FIND_INST: ODTPTR X'j OOR

[8]   REPT APPDB IR (3B) ERR
       ACT INTER (X') f AT g
       R8:h R7:h R0:h
           STKPA1: i
           STKPA2: i
           STKPA3: i

[9]   REPT APPDB IR (3B) ERR
       AUD_Q IS CALLED IN IRtimerq: INDX OOR

[10]   REPT APPDB IR (3B) ERR
       INIT_Q IS CALLED IN IRtimerq: INDX OOR AFTER AUD_Q

[11]   REPT APPDB IR (3B) ERR
       AUD_Q IS CALLED IN IRtimerq: WRONG Q TYPE

[12]   REPT APPDB IR (3B) ERR
        INIT_Q IS CALLED IN IRtimerq: WRONG Q TYPE AFTER AUD_Q

[13]   REPT APPDB IR (3B) ERR
        AUD_Q IS CALLED IN IRtimerq: WRONG POINTER

[14]   REPT APPDB IR (3B) ERR
        INIT_Q IS CALLED IN IRtimerq: WRONG POINTER

[15]   REPT APPDB IR (3B) ERR
        AUD_Q IS CALLED IN EMPTY_Q

[16]   REPT APPDB IR (3B) ERR
        INIT_Q IS CALLED IN EMPTY_Q

[17]   REPT APPDB IR (3B) ERR
        AUD_Q IS CALLED IN GET_Q: NO FREE BUFFER

[18]   REPT APPDB IR (3B) ERR
        AUD_Q IS CALLED IN GET_Q: INDX OOR

[19]   REPT APPDB IR (3B) ERR
        INIT_Q IS CALLED IN GET_Q: INDX OOR AFTER AUD_Q

[20]   REPT APPDB IR (3B) ERR
        AUD_Q IS CALLED IN GET_Q: BUF[X'm] POINT TO ITSELF

[21]   REPT APPDB IR (3B) ERR
        AUD_Q IS CALLED IN GET_Q: BUF[X'm] TYPE WRONG

[22]   REPT APPDB IR (3B) ERR
        AUD_Q IS CALLED IN RM_QITEM: BUF[X'm] POINT TO ITSELF

[23]   REPT APPDB IR (3B) ERR
        AUD_Q IS CALLED IN RM_QITEM: BUF[X'm] BACK POINT TO ITSELF

[24]   REPT APPDB IR (3B) ERR
        AUD_Q IS CALLED IN Q_FINDN: BUF[X'm] POINT TO ITSELF

[25]   REPT APPDB IR (3B) ERR
        AUD_Q IS CALLED IN PUT_Q: INDX OOR

[26]   REPT APPDB IR (3B) ERR
        INIT_Q IS CALLED IN PUT_Q: INDX OOR AFTER AUD_Q

[27]   REPT APPDB IR (3B) ERR
        AUD_Q IS CALLED IN EXP_Q: INDX OOR

[28]   REPT APPDB IR (3B) ERR
        INIT_Q IS CALLED IN EXP_Q: INDX OOR AFTER AUD_Q

```
[29]    REPT APPDB IR (3B) ERR
        FIX BACK POINTER FOR IR_Q[X'm]

[30]    REPT APPDB IR (3B) ERR
        REALLOCATE BUFFER IR_Q[X'm] TO FREE_Q

[31]    REPT APPDB IR (3B) ERR
        DOM_INIT INTER (X') f AT g
          R8:h R7:h  R0:h
              STKPA1: i
              STKPA2: i
              STKPA3: i
```

2. REASON FOR OUTPUT

Prints errors in connection with the base 3B20D process that provides data administration and fault recovery of the application databases.

3. VARIABLE FIELD DEFINITIONS

a	A character string representing the object name.
b	Error code indicating why an object instance cannot be cleared. Possible values include:

```
201  — The argument 'object' is invalid.
202  — The argument passed in is invalid.
203  — The instance does not exist.
204  — The instance cannot be created, it exists already.
205  — End of object array, no more instances.
206  — No free IR internal buffer.
207  — Request IMS buffer failed.
208  — Build IMS header failed.
209  — IMS write failed.
212  — Data size + number of key > 480 bytes.
213  — Domain exceeds its buffer quota.
215  — Argument 'domain' is invalid.
216  — Get _BAD_CHAN failure from IMS read.
217  — Get _RTNMSG failure from IMS read.
218  — Get _SRCMATCH failure from IMS read.
219  — Bad message type.
220  — IR event length > 508 bytes.
223  — Wrong queue type.
```

c	Invalid destination object number.
d	A string representing either the fault recovery or the data administration. Possible values are "FR" or "DA".
e	A number representing the identifier for an object instance.
f	The fault code for supervisor fault entry. Refer to output Appendix FAULT-CODE-APP.

g	The virtual memory address where the interrupt occurred.
h	Contents of a register when the interrupt occurred. R0 contains the return value of the fault subroutine.
i	Location of the stack when the interrupt occurred.
j	Value of object descriptor table pointer that is out of range.
l	Invalid event number.
m	IR internal buffer index

4. ACTION TO BE TAKEN

If repeated errors indicate problems, seek technical assistance. The utility command, irutil, may be useful in providing further information in tracking down a problem reported by the REPT-APPDB-IR output message. This command resides in /tools/irutil and has a usage statement that demonstrates how to use the command.

5. REFERENCES

Input Messages
    ALW:DLNAUD
    INH:DLNAUD
    OP:DLNAUD
    START:CRCUPD
    RC:MISC;FHT,FTA

Output Messages
    ALW-DLNAUD
    INH-DLNAUD
    OP-DLNAUD
    START-CRCUPD
    RC:MISC-FHT-FTA

ID . . . . START-CRCUPD
WORK CENTER . . MOC
GENERIC . . . . 4AP11 Rel. 3 and later
APPLICATION . . 4E
TYPE . . . . Output

1. FORMAT

[1]   START CRCUPD
        CALCULATING CRCS FOR APP a

[2]   START CRCUPD
        COMPLETED CALCULATING CRCS FOR APP a

[3]   START CRCUPD
        CANNOT CALCULATE CRCS FOR INVALID APP b

[4]   START CRCUPD
        CANNOT CALCULATE CRCS FOR APP a REASON c

2. REASON FOR OUTPUT

Prints in response to a START:CRCUPD command. Formats 1 and 2 indicate that the
CRC update has started or completed. In large application databases, it may take up to
45 minutes between the start and the completion of a CRC update. Formats 3 and 4
indicate why the CRC update cannot be started.

3. VARIABLE FIELD DEFINITIONS

a   Application database that is affected. Valid values are:

                IBGTT   — Inbound global title translation
                OBGTT   — Outbound global title translation
                PCPGTT   — Positive call processing global title translation

b   Invalid application database. Valid values are 0, 1 or 2.

c   Reason for failure to start calculating CRCs. Possible values:

                1-99 —   UNIX RTR System error, see output Appendix SYSERR-
                            APP

                101 —   General database failure, unsuccessful completion.

                105 —   Item to be modified was not located.

                110 —   Cannot add number, hash table full.

                111 —   Cannot add number, 10-digit compaction table full.

                116 —   Cannot add point code sub-system information, NCP
                            table full.

                120 —   Cannot add record, it already exists.

123 — The dialed digit/ANI being searched for was not found.

124 — Specified NPA-NXX combination was not found.

127 — Associated point code sub-system information does not exist.

141 — File descriptor is out of range.

143 — Error on reading from the database.

144 — Error on writing to the database.

154 — Database inconsistencies have been detected.

155 — Cached inconsistencies have been detected.

156 — The ADMINTOC or DBTOC magic number is invalid.

157 — Invalid database type for this application.

160 — Clump number is out of range for application.

176 — All file descriptors are active, none available.

180 — The replacement NPA-NXX value already exists.

190 — The application database value is invalid.

191 — The specified user identification number is invalid.

192 — The specified access mode is invalid.

193 — The specified customer identification number is invalid.

194 — The compaction table search chain exceeded maximum length.

195 — The dialed digit/ANI table search chain exceeded maximum.

196 — The DLN user buffer address is invalid.

201 — The argument 'object' is invalid.

202 — The argument passed in is invalid.

203 — The instance does not exist.

204 — The instance cannot be created, it exists already.

205 — End of object array, no more instances.

206 — No free IR internal buffer.

207 — Request IMS buffer failed.

208 — Build IMS header failed.

209 — IMS write failed.

212 — Data size + number of key > 480 bytes.

213 — Domain exceeds its buffer quota.

215 — Argument 'domain' is invalid.

216 — Get _BAD_CHAN failure from IMS read.

217 — Get _RTNMSG failure from IMS read.

218 — Get _SRCMATCH failure from IMS read.

219 — Bad message type.

220 — IR event length > 508 bytes.

223 — Wrong queue type.

4. ACTION TO BE TAKEN

None.

5. REFERENCES

Input Message
    START:CRCUPD

```
ID . . . . . . . . . . . . ALW-RCV-APPDB
WORK CENTER. . MOC
GENERIC. . . . . . . 4AP11 Rel. 3 and later
APPLICATION . . 4E
TYPE . . . . . . . . . . Output
```

1. FORMAT

This message has four formats.

[1]   `ALW RCV APPDB ACTIVE`

[2]   `ALW RCV APPDB CANNOT CLEAR LOCK - REASON a`

[3]   `ALW RCV APPDB RETRY LATER - CANNOT CONNECT TO DATABASE`

[4]   `ALW RCV APPDB CANNOT TALK TO DATABASE`

2. REASON FOR OUTPUT

These output messages are printed as a direct result of the `ALW:RCV:APPDB` input message. Format 1 prints if the "DLN Inhibit" feature has been deactivated with no problems. GTT10D RCV is now allowed.

Format 2 prints if a system error is encountered while trying to deactivate the inhibit. The "DLN Inhibit" is STILL in effect.

3. VARIABLE FIELD DEFINITIONS

a   System error code. See Output Appendix SYSERR-APP.

4. ACTION TO BE TAKEN

No action required for Format 1.

If Format 2 prints, determine if system conditions indicate that trouble with 3B disk access is expected. If such trouble is NOT expected, notify NESAC.

If Format 3 prints, the input message cannot establish a communication link with the RCV process. Probable cause: the RCV process does not exist or insufficient system resources are available for the operation. Wait and retry later.

If Format 4 prints, the input message has established a communication link with the RCV process, however, no data can be sent or received. Probable cause: the RCV process has a software problem or insufficient system resources are available for the operation. Wait and retry later. If the problem does not clear, notify NESAC.

5. REFERENCES

Input Messages
```
ALW:RCV:APPDB
INH:RCV:APPDB
OP:INH:APPDB
```

Output Messages
```
INH-RCV-APPDB
OP-INH-APPDB
```

ID . . . . INH-RCV-APPDB
WORK CENTER. . MOC
GENERIC. . . . . . . 4AP11 Rel. 3 and later
APPLICATION . . 4E
TYPE . . . . Output

1. FORMAT

This message has four formats.

[1]   `INH RCV APPDB ACTIVE`

[2]   `INH RCV APPDB CANNOT SET LOCK - REASON a`

[3]   `INH RCV APPDB RETRY LATER - CANNOT CONNECT TO DATABASE`

[4]   `INH RCV APPDB CANNOT TALK TO DATABASE`

2. REASON FOR OUTPUT

These output messages are printed as a direct result of the `INH:RCV:APPDB` input message. Format 1 prints if the "DLN Inhibit" feature has been activated with no problems. GTT10D RCV is inhibited.

Format 2 prints if a system error is encountered while trying to activate the inhibit. The "DLN Inhibit" feature is NOT activated.

3. VARIABLE FIELD DEFINITIONS

a   System error code. See Output Appendix SYSERR-APP.

4. ACTION TO BE TAKEN

No action required for Format 1.

If Format 2 prints, determine if system conditions indicate that trouble with 3B disk access is expected. NESAC should be notified if this trouble is not expected.

If Format 3 prints, the input message cannot establish a communication link with the RCV process. Probable cause: the RCV process does not exist or insufficient system resources are available for the operation. Wait and retry later.

If Format 4 prints, the input message has established a communication link with the RCV process, however, no data can be sent or received. Probable cause: the RCV process has a software problem or insufficient system resources are available for the operation. Wait and retry later. If the problem does not clear, notify NESAC.

5. REFERENCES

Input Messages
    `ALW:RCV:APPDB`

```
INH:RCV:APPDB
OP:INH:APPDB
```

Output Messages
```
ALW-RCV-APPDB
OP-INH-APPDB
```

ID . . . . OP-INH-APPDB
WORK CENTER. . MOC
GENERIC. . . . . . . 4AP11 Rel. 3 and later
APPLICATION . . 4E
TYPE . . . . Output

1. FORMAT

This message has eight formats.

[1]   OP INH APPDB ACTIVE

[2]   OP INH APPDB INACTIVE

[3]   OP INH APPDB RETRY LATER - CANNOT CONNECT TO DATABASE

[4]   OP INH APPDB CANNOT TALK TO DATABASE

[5]   OP INH APPDB NO RCV MANUAL INHIBITS ACTIVE

[6]   OP INH APPDB PCPGTT INHIBIT ACTIVE

[7]   OP INH APPDB IBGTT INHIBIT ACTIVE

[8]   OP INH APPDB OBGTT INHIBIT ACTIVE

2. REASON FOR OUTPUT

These output messages are printed in response to the OP:INH:APPDB input message.

Format 1 indicates that the "DLN Inhibit" feature is active. GTT10D RCV is NOT allowed.

Format 2 indicates that the "DLN Inhibit" feature is NOT active. GTT10D RCV is allowed.

3. VARIABLE FIELD DEFINITIONS

None.

4. ACTION TO BE TAKEN

If Format 3 prints, the input message cannot establish a communication link with the RCV process. Probable cause: the RCV process does not exist or insufficient system resources are available for the operation. Wait and retry later.

If Format 4 prints, the input message has established a communication link with the RCV process, however no data can be sent or received. Probable cause: the RCV process has a software problem or insufficient system resources are available for the operation. Wait and retry later. If the problem does not clear, notify NESAC.

If Format 5 prints, then there are no GTT10D RC manual inhibits currently active.

If Format 6 prints, then there is currently a GTT10D RC manual inhibit on the PCPGTT (PCP GTT) portion of the database.

If Format 7 prints, then there is currently a GTT10D RC manual inhibit on the IBGTT (800 and 900 services) portion of the database.

If Format 8 prints, then there is currently a GTT10D RC manual inhibit on the OBGTT (SDN services) portion of the database.

5. REFERENCES

Input Messages
```
ALW:RCV:APPDB
INH:RCV:APPDB
OP:INH:APPDB
```

Output Messages
```
ALW-RCV-APPDB
INH-RCV-APPDB
```

ID . . . . RC:MISC-FHT-FTA
WORK CENTER . . MOC
GENERIC . . . . . . 4AP11 Rel. 3 and later
APPLICATION . . 4E
TYPE . . . . Output

1. FORMAT

The following variations of the format given below describe the ways in which information can be represented in the output message.

For messages preceded by ?I (invalid) or RL (retry later) the output will be as follows:

Note: [ ]'s are not included in error message.

[1]   M S RC MISC FHT FTA GTT10Daaa bbbbbbbbb COMPLETE
        [ERROR MESSAGE]

where [ERROR MESSAGE] can be one of the following:

```
USER ERRORS:
(1)  ?I - MESSAGE FORMAT = RC:MISC;FHT,FTA
(2)  ?I - INVALID FUNCTION AND TT TYPE
(3)  RL - ANOTHER RC or VER IS ACTIVE
(4)  RL - INHIBIT ACTIVE

PROGRAM ERRORS:
(1)  RL - CAN'T ATTACH CNIPAS
```

For messages produced by invalid user syntax the output will be as follows:

[2]   M S RC MISC FHT FTA GTT10Daaa bbbbbbbbb IN PROGRESS
        [ERROR MESSAGE]

[11]   M S RC MISC FHT FTA GTT10Daaa bbbbbbbbb COMPLETE
        RC FOR ORDER bbbbbbbbb REJECTED

where [ERROR MESSAGE] can be one of the following:

```
(1)   NG - MUST SUPPLY AN ORDER NUMBER
(2)   NG - ORDER NUMBER LONGER THAN 9
(3)   NG - FIRST 4 CHARS OF ORDER# MUST BE ALPHABETIC
(4)   NG - MISSING DATA: COMMAND
(5)   NG - INVALID COMMAND
(6)   NG - ERROR ON COMMAND SPECIFICATION
(7)   NG - MISSING DATA: PROCESSING FLAG
(8)   NG - INVALID PROCESSING FLAG
(9)   NG - MISSING KEYWORD NUM
(10)  NG - MISSING DATA: RC RELATION
```

```
(11)  NG - RELATION 4 NOT USED FOR DELETE
(12)  NG - RELATION 4 NOT USED FOR CHANGE
(13)  NG - INVALID RC/VER RELATION
(14)  NG - MISSING DATA: CUSTID
(15)  NG - MISSING DATA: OLD CUSTID
(16)  NG - CUSTID OUT OF RANGE
(17)  NG - CUSTID IS NOT 10 BYTES
(18)  NG - CUSTID CONTAINS LETTERS
(19)  NG - CUSTID MUST BE ZERO
(20)  NG - OLD/NEW CUSTID CAN'T EQUAL
(21)  NG - MISSING DATA: PRIM SSN
(22)  NG - PRIM SSNPC CONTAINS LETTERS
(23)  NG - PRIM SSNPC NOT 12 BYTES
(24)  NG - PRIM SSN OUT OF RANGE
(25)  NG - PRIM PC OUT OF RANGE
(26)  NG - CNI UNROUTABLE FOR PRIM NCP INFO
(27)  NG - MISSING DATA: SEC SSNPC
(28)  NG - SEC SSNPC CONTAINS LETTERS
(29)  NG - SEC SSNPC NOT 12 BYTES
(30)  NG - SEC SSN OUT OF RANGE
(31)  NG - SEC PC OUT OF RANGE
(32)  NG - CNI UNROUTABLE FOR SEC NCP INFO
(33)  NG - RECKEY HAS INVALID LENGTH
(34)  NG - RECKEY MUST BE 10 OR 6 DIGITS FOR APN ANIs
(35)  NG - RECORD KEY CONTAINS LETTERS
(36)  NG - RECKEY MIXES LENGTH
(37)  NG - TOO MANY RECKEYS: MAX OF 10 ALLOWED
(38)  NG - INVALID RANGE SPECIFIED
(39)  NG - RECORD KEY MUST BE ZERO
(40)  NG - ONLY ONE RECORD KEY ALLOWED
(41)  NG - MUST USE RELATION 3 FOR THIS CHANGE
(42)  NG - OLD CUSTID MUST EQUAL NEW CUSTID FOR RELATION 3
(43)  NG - POINT CODE HAS INVALID NETWORK ID
(44)  NG - POINT CODE HAS INVALID CLUSTER ID
(45)  NG - POINT CODE HAS INVALID REGION
(46)  NG - POINT CODE HAS INVALID MEMBER
(47)  NG - NO ROUTING DATA EXISTS FOR POINT CODE
(48)  NG - CHANGE NOT ALLOWED WITH RELATION 4
(49)  NG - INVALID COMMAND
(50)  NG - INVALID DATA: CUSTID
(51)  NG - INVALID DATA: OLD CUSTID
(52)  NG - INVALID DATA: OLD PRIMARY NCP
(53)  NG - INVALID DATA: OLD SECONDARY NCP
(54)  NG - INVALID DATA: PRIMARY NCP
(55)  NG - INVALID DATA: SECONDARY NCP
(56)  NG - INVALID OR MISSING ORDER NUM
(57)  NG - INVALID PROCESSING FLAG
(58)  NG - INVALID RANGE SPECIFIED
(59)  NG - INVALID RC/VER RELATION
(60)  NG - INVALID RECKEY cccccccccc
```

```
(61) NG - INVALID RELATION
(62) NG - MISSING DATA: COMMAND
(63) NG - MISSING DATA: CUSTID
(64) NG - MISSING DATA: OLD PRIMARY NCP
(65) NG - MISSING DATA: OLD SECONDARY NCP
(66) NG - MISSING DATA: PRIMARY NCP
(67) NG - MISSING DATA: PROCESSING FLAG
(68) NG - MISSING DATA: RC RELATION
(69) NG - MISSING DATA: SECONDARY NCP
(70) NG - MISSING KEYWORD NUM
(71) NG - OLD CUSTID MUST EQUAL NEW CUSTID FOR RELATION 3
(72) NG - ONLY ONE RECKEY ALLOWED
(73) NG - RECKEY cccccccccc HAS INVALID LENGTH
(74) NG - RECKEY MUST BE ZERO
(75) NG - RELATION 4 NOT USED FOR DELETE
(76) NG - TOO MANY RECKEYS: MAX OF 2 ALLOWED
(77) NG - TOO MANY RECORD KEYS SPECIFIED
```

For messages produced by errors while performing database searching or database actions (add, delete, change) before any data has been written to the database, the output will be as follows:

[3]   M S RC MISC FHT FTA GTT10Daaa bbbbbbbbb IN PROGRESS
         [ERROR MESSAGE]

[4]   M S RC MISC FHT FTA GTT10Daaa bbbbbbbbb IN PROGRESS
         ERR xxx yyy RECKEY cccccccccc

[5]   M S RC MISC FHT FTA GTT10Daaa bbbbbbbbb COMPLETE
         RC FOR ORDER bbbbbbbbb COMPLETE - DLN UNCHANGED

where [ERROR MESSAGE] can be one of the following:

```
USER ERRORS:
(1)  NG - ANIs EXIST IN THIS RANGE
(2)  NG - RANGE INVALID WHEN STARTED WITH LIST
(3)  NG - USER DATA DOES NOT REFLECT CHANGE
(4)  NG - NO CUST DATA FOUND
(5)  NG - NO NCP DATA FOUND
(6)  NG - CANNOT SPLIT RANGE ON CHANGE
(7)  NG - ANI DATA PREVIOUSLY EXISTS
(8)  NG - NO ANI DATA FOUND
(9)  NG - TT 252 NOT VALID WITH 3 DIGIT ANIs
(10) NG - RECKEYS STILL POINT TO THIS CUSTID
(11) NG - NO AVAILABLE NCP ENTRIES
(12) NG - CUST DATA PREVIOUSLY EXISTS
(13) NG - CANNOT HAVE ONE CUSTID POINTING TO TWO NCPs
(14) NG - DATA PREVIOUSLY EXISTS
(15) NG - ERROR ALLOCATING RECORD ENTRY
(16) NG - NO ANI DATA FOUND
```

```
(17) NG - NO AVAILABLE NCP ENTRIES
(18) NG - NO NCP DATA FOUND
(19) NG - OLD DATA DOES NOT MATCH

PROGRAM ERRORS:
(1)  DB - ERROR ACCESSING DATA TABLE
(2)  DB - ERROR ALLOCATING HEAD TABLE
(3)  DB - ERROR POPULATING DLN UPD ARRAY
(4)  DB - ERROR LSEEKING TO BINK ZERO
(5)  DB - ERROR READING BINK ZERO
(6)  DB - ERROR LSEEKING TO DATA TABLE
(7)  DB - ERROR ALLOCATING HEAD TABLE
(8)  DB - ERROR DEALLOCATING DATA TABLE
(9)  DB - ERROR WRITING BINK ZERO
(10) DB - ERROR OPENING DATABASE
(11) DB - ERROR CLOSING DATABASE
(12) DB - ERROR WRITING DATA TABLE
(13) DB - ERROR SORTING DATA TABLE
(14) DB - INVALID ANI TABLE POINTER
(15) DB - ERROR SENDING RC MESSAGE TO ARTS
(16) DB - ERROR GETTING ARTS PORT
(17) DB - ERROR CREATING ROLLBACK FILE
(18) DB - ERROR ALLOCATING RC STRUCTURE
(19) DB - RC:MISC;FHT,FTA VERSION ERROR
(20) DB - ERROR FORMATTING INTERNAL CMD
(21) DB - ERROR CONNECTING TO RCV PROCESS
(22) DB - ERROR WRITING TO RCV PROCESS
(23) DB - ERROR READING RCV PROCESS
(24) DB - ERROR DECODING INTERNAL RESPONSE
```

For messages produced by errors while performing database adding, deleting, or changing after data has been written to the database, the output will be as follows:

```
[3]   M S RC MISC FHT FTA GTT10Daaa bbbbbbbbb IN PROGRESS
      [ERROR MESSAGE]


[6]   M S RC MISC FHT FTA GTT10Daaa bbbbbbbbb IN PROGRESS
      ROLLING BACK DATABASE


[7]   M S RC MISC FHT FTA GTT10Daaa bbbbbbbbb IN PROGRESS
      ORDER HAS BEEN ROLLED BACK


[4]   M S RC MISC FHT FTA GTT10Daaa bbbbbbbbb IN PROGRESS
      ERR xxx yyy RECKEY ccccccccc


[5]   M S RC MISC FHT FTA GTT10Daaa bbbbbbbbb COMPLETE
      DLN ERROR CODE = X'dddddddd
```

For messages produced by errors while performing database adding, deleting, or changing after data has been written to the database and the rollback function was not successful, the output will be as follows:

[3]   M S RC MISC FHT FTA GTT10Daaa bbbbbbbbb IN PROGRESS
        [ERROR MESSAGE]

[6]   M S RC MISC FHT FTA GTT10Daaa bbbbbbbbb IN PROGRESS
        ROLLING BACK DATABASE

[8]   M S RC MISC FHT FTA GTT10Daaa bbbbbbbbb IN PROGRESS
        [ERROR MESSAGE1]

[9]   M S RC MISC FHT FTA GTT10Daaa bbbbbbbbb IN PROGRESS
        DB-AUTOMATIC ROLLBACK FAILED

[4]   M S RC MISC FHT FTA GTT10Daaa bbbbbbbbb IN PROGRESS
        ERR xxx yyy RECKEY ccccccccc

[5]   M S RC MISC FHT FTA GTT10Daaa bbbbbbbbb COMPLETE
        DLN ERROR CODE = X'dddddddd

and where [ERROR MESSAGE1] can be one of the following:

```
PROGRAM ERRORS:
(1) DB - ERROR UNLOCKING DATABASE
(2) DB - ERROR OPENING ROLLBACK FILE
(3) DB - ERROR CLOSING ROLLBACK FILE
(4) DB - ROLLBACK FILE DOES NOT EXIST
(5) DB - ERROR READING DATABASE
(6) DB - ERROR WRITING DATABASE
(7) DB - ERROR LSEEKING DATABASE
```

On a successful recent change the following output will be produced:

[10]   M S RC MISC FHT FTA GTT10Daaa bbbbbbbbb COMPLETE
        RC FOR ORDER bbbbbbbbb COMPLETE UPD CODE = X'dddddddd

On a successful recent change, but the DLN is not updated, the following output will be produced:

[5]   M S RC MISC FHT FTA GTT10Daaa bbbbbbbbb IN PROGRESS
        DLN ERROR CODE = X'dddddddd

On a successful recent change, but catastrophic (i.e., a recent change causing all DLNs to be removed from service) errors resulted during DLN update, the following output will be produced for a four DLN office:

[12]   M S RC MISC FHT FTA GTT10Daaa bbbbbbbbb IN PROGRESS
        DLN ERROR CODE = X'44444444

SEE PROPRIETARY NOTICE ON COVER PAGE

or, for a two DLN office:

```
[12]    M S RC MISC FHT FTA GTT10Daaa bbbbbbbbb IN PROGRESS
        DLN ERROR CODE = X'44440707
```

In either case, the recent change causing this error message will be backed out (via rollback) and the "DLN Inhibit" trigger will be activated. This trigger will disallow any RCV activity (except VERIFYs) to the database until manual action (see ALW:RCV:APPDB) is taken to correct the trouble. The entire RC:MISC-FHT-FTA message will be echoed to the ROP.

For messages produced by errors while transferring RC requests from the switch I/O handlers to the RCV process handling RC requests, the output will be as follows:

```
[13]    M S RC MISC FHT FTA GTT10Daaa bbbbbbbbb COMPLETED
        RC FOR ORDER bbbbbbbbb ERROR sss (ttt)
```

2. REASON FOR OUTPUT

To request the user to add, delete, verify, or change all record keys that are specified in the input message.

To verify the correctness of a message, acknowledge receipt of a message, to communicate with the user technician, and to perform the database routine specified in the message.

3. VARIABLE FIELD DEFINITIONS

aaa	Translation type: may have a value of 252 for SDN services, or 253 for 800 and 900 services, or 242 for PCPGTT. (aaa may also have APN appended if this was specified on the input message.)
bbbbbbbbb	Order number: the first four characters signify where the RC originated; the last five characters signify a unique number for the recent change.
ccccccccc	Record key: indicates which record in the list or range was in error.
ddddddd	32-bit update code for DLNs which represents errors or success for 4 DLNs.

Each byte is a positive 7-bit update return code:

0 — SUCCESS.
1 — appdb pump in progress.
2 — aci pump in progress.
3 — aci update in progress.
4 — dln is OOS.
5 — no TCB resources for child task.
6 — appdb update timeout (> 15 seconds).
7 — dln is UNEQUIPPED.
10 — Udlnappdb() failed to open the database.

30 — _updappdb () # elements out of range.
31 — _updappdb () dlnid out of range.
32 — _updappdb () failed to send dln update start command.
33 — _updappdb () bad dln response to update start command.
34 — _updappdb () unable to Lseek () to appdb changed area.
35 — _updappdb () unable to Read () to appdb changed area.
36 — _updappdb () failed to send dln read start command.
37 — _updappdb () bad dln response to read start command.
38 — _updappdb () failed to send dln update complete command.
39 — _updappdb () bad dln response to update complete command.

sss   Error number. See Minor Error Codes at the end of this message.

s   Number of seconds in current minute.

ttt   Error number. See Major Error Codes at the end of this message.

xxx   Error number. See Error Codes at the end of this message.

yyy   ADDING

         CHANGING

         DELETING

4. ACTION TO BE TAKEN

Format 1:   These are responses that are out of the user's control. The user should retry the message.

Format 2:   These are normal responses to format errors of the RC:MISC;FHT,FTA input message. The user should check the message typed on the screen against rules given in the input manual page.

Formats 3, 6, 7, 8, and 9:   These are error responses encountered from programs that are initiated by the recent change message. The user should check the correctness of the data entered in the message and the error code returned.

Format 4:   Error message with a code indicating recent change error.

Format 5:   Complete message on a failure.

Format 10:   Represents success. No action taken.

Format 12:   There was a problem with the DLNs.

5. REFERENCES

Input Messages
```
ALW:RCV:APPDB
CLR:DLNESC
INH:RCV:APPDB
OP:DLNESC
OP:INH:APPDB
RC:MISC;FHT,FTA
```

Output Messages
```
ALW-RCV-APPDB
CLR-DLNESC
INH-RCV-APPDB
OP-DLNESC
OP-INH-APPDB
REPT:INH-RCV-APPD
```

Error Codes for GTT Data Applications

Error Codes for GTSEARCH (For 4AP11 Rel. 2 and earlier)

Errno	Definition
200	Invalid translation type on input
201	Invalid command specified from RC
202	Database is locked by another process
203	Invalid bink accessed by offset
204	Invalid popflag found in database
205	Invalid NCP index found in CUSTID table
206	Could not find a space to search
207	Translator has not been equipped
208	Data already exists for an add
209	Data not exist for del, chg, or ver
210	Search was successful for data
211	Invalid bytes specified for widget

Error Codes for GTADD (For 4AP11 Rel. 2 and earlier)

Errno	Definition
220	NCP data does not exist
221	No slot to add data in SAPA or SAPC
222	Accessed invalid defflag for add level
223	Level is not valid for adding
224	Level is out of range 1 to 7
225	Invalid RC update relation
226	Cust record does not point to correct NCP
227	NCP index exists at CUST table
228	NCP data exists at NCP table
229	Cust record does not point to an NCP
230	Error accessing head tables
231	Error performing OST to DLN for updates
232	Error in the length of record key
233	DLN update array exceeded its boundary
234	Split of ranges not allowed for change
235	Cannot have one custid pointing to two NCPs
236	Flag to tell level 3 of sapa range function
237	Flag to tell level 3 of sapb range function

Error Codes for GTROLLBK (For 4AP11 Rel. 2 and earlier)

Errno	Definition
240	Rollback file already created
241	Error accessing or writing rollback file
242	Rollback file is full of orders
243	No rollback file name supplied on input
244	Invalid number of orders on input
245	Not enough memory for rollback file

Error Codes for GTDEL (For 4AP11 Rel. 2 and earlier)

Errno	Definition
250	There was no DEF entry found for table
251	There was no populated entry in table

Error Codes for GTGETROLL (For 4AP11 Rel. 2 and earlier)

Errno	Definition
255	Order number not found in rollback file

Error Codes for GTT Data Applications (For 4AP11 Rel. 3 and later)

Major Error Codes

Errno	Definition
4	Input parameter error
8	Improper SKO action requested
10	Record found
11	Record not found
14	Internal error failure
17	Database locked -- by manual action
23	Database locked - "DLN Inhibit" lock is set
24	Database locked -- already in use
25	SKO backed out
26	Backout failed for SKO
27	Improper key
29	Data error
31	Improper database specified

Minor Error Codes

Errno	Definition
101	Database service did not complete successfully.
105	Item to be modified was not located.
110	The 10-digit dialed number/ANI could not be added to the database because the hash table was full.
111	A 10-digit dialed number/ANI could not be added to the database because the 10-digit compaction table was full.
112	The EPAV table is full.
116	The point code sub-system information associated with the dialed digit/ANI could not be added to the database because the NCP table was full.
120	An object could not be added to the database because it already existed.
123	The dialed digit/ANI being searched for was not found.
124	The specified NPA-NXX combination was not found.
127	The point code sub-system information associated with the dialed digit/ANI does not exist.
130	The customer's EPAV chain length has reached maximum length.

Error Codes for GTT Data Applications (continued) (For 4AP11 Rel. 3 and later)

Minor Error Codes

Errno	Definition
132	The EPAV customer's ANI record does not exist.
133	The EPAV customer has no EPAVs/subaccouts.
134	The EPAV-ANI exists, but the associated subaccount does not exist.
135	Neither the EPAV-ANI nor the associated subaccount exists. T] 141 File descriptor invalid. 143 An error occurred during an attempted database read. 144 An error occurred during an attempted database write. 189 The number of subaccount digits to match on in request does not match stored digit count value.

Error Codes for GTT Data Applications (continued) (For 4AP11 Rel. 3 and later)

Minor Error Codes

Errno	Definition
154	Database inconsistencies have been detected.
155	Cached inconsistencies have been detected.
156	The ADMINTOC or DBTOC magic number in the specified database is invalid.
157	Invalid database type for this customer.
160	Clump number is out of range for specified customer.
176	All file descriptors are active, none available for assignment.
180	The NPA-NXX value that is to replace an existing value already exists in the database.
190	The specified customer unit is invalid.
191	The specified user identification number is invalid.
192	The specified access mode was something other than read_only or read_write.
193	The specified customer identification number is invalid.
194	The compaction table search chain has exceeded maximum length.
195	The dialed digit/ANI table search chain has exceeded maximum length.
196	The DLN user buffer address is invalid.
201	The argument 'object' is invalid
202	The argument passed in is invalid
203	The instance does not exist
204	The instance cannot be created, since it existed already
205	End of object array, no more instance can be found or created
206	No free IR internal buffer
207	Request IMS buffer failed
208	Build IMS header failed
209	IMS write failed
212	Data size + number of key > 480 bytes
213	Domain exceeds its buffer quota
215	Argument 'domain' is invalid
216	Get _BAD_CHAN failure from IMS read
217	Get _RTNMSG failure from IMS read
218	Get _SRCMATCH failure from IMS read
219	Bad message type
220	IR event length > 508 bytes
223	Wrong queue type
600	Old data supplied does not match database values

Error Codes for GTT Data Applications (continued) (For 4AP11 Rel. 3 and later)

Minor Error Codes

Errno	Definition
601	Improper customer unit specified by DS
602	SLT object not found and cannot be created
603	Buffer for writing to DLN full
604	Numbering plan type not APN or NANP
605	Invalid number in key portion
606	Invalid customer ID
607	ANI, CID, and NCP existing on Delete or Modify
608	Data missing on add, modify, or modify_ucl
609	Cannot backout a range
610	NPA NXX already exists on a split
650	Stuck in loop constantly deleting the same TR instance
651	Data from RC:MISC;FHT,FTA too large for buffer, SUPPL is size of data
652	Did not read the expected amount of data from tmp file, SUPPL is the amount read
653	Data does not exist, SUPPL is the customer unit
654	Could not create TR instance, SUPPL is the IRerrno
655	Failure in populating MT and SKO instances
656	Failure to encode ASN message, SUPPL is the asn error string
657	No SLT instance exists
658	Customer database out of range
659	Error return from writing to DLNs
660	Could not create SLT instance, SUPPL is the IRerrno
661	Invalid file descriptor for DS
662	Invalid choice of SKO - internal data problems, SUPPL is the SKO type
663	An expected SKO does not exist
664	Could not create SKO instance, SUPPL is the IRerrno
665	Stuck in loop constantly deleting the same MT instance
666	SKO instance in incorrect state - internal data failure, SUPPL is the state returned
667	DS file did not close
668	Could not create MT instance, SUPPL is the IRerrno
669	An expected MT instance does not exist
670	Could not create LOG instance, SUPPL is the IRerrno
671	Could not create SPLT instance, SUPPL is the IRerrno
672	Failure in populating SPLT instance
673	An expected MT instance does not exist

ID . . . . REPT-DLNCM-DBTYPE
WORK CENTER . . MOC
GENERIC . . . . 4AP11 Rel. 3 and later
APPLICATION . . 4E
TYPE . . . . Output

1. FORMAT

[1]   REPT DLNCM PROC (Dbtype) LNx y DISK READ ERR f

[2]   REPT DLNCM PROC (Dbtype) APPDB a OPEN FAILED: f

2. REASON FOR OUTPUT

To report DLN APPDB pump errors.

3. VARIABLE FIELD DEFINITIONS

a   APPDB file name:

                         /dev/appdb0 — For ACTIVE file
                         /dev/appdb1 — For SHADOW file
                         /dev/appdb2 — For SCRATCH file

f   Disk read error (see output Appendix DLNCM-APP-6)

x   DLN group number

y   DLN member number

4. ACTION TO BE TAKEN

None.

5. REFERENCES

None.

ID . . . . REPT-DLNCM-PAPPCU
WORK CENTER . . MOC
GENERIC . . . . 4AP11 Rel. 3 and later
APPLICATION . . 4E
TYPE . . . . Output

1. FORMAT

[1]   REPT DLNCM PROC (Pappcu) LNx y DB a CU b DSCSADDR ERR c

[2]   REPT DLNCM PROC (Pappcu) LNx y D_PUMP D_COMP CMD ERR d

[3]   REPT DLNCM PROC (Pappcu) LNx y GETCLUMP ERR c

2. REASON FOR OUTPUT

To report DLN APPDB pump errors.

3. VARIABLE FIELD DEFINITIONS

a   APPDB file name:

                        /dev/appdb0 — For ACTIVE file
                        /dev/appdb1 — For SHADOW file
                        /dev/appdb2 — For SCRATCH file

b   Customer unit code

c   APPDB DS error code (see output Appendix DLNCM-APP-22)

d   Pump abort code (see output Appendix DLNCM-APP-11)

x   DLN group number

y   DLN member number

4. ACTION TO BE TAKEN

None.

5. REFERENCES

None.

ID . . . . REPT-DLNCM-PAPPDB
WORK CENTER . . MOC
GENERIC . . . . 4AP11 Rel. 3 and later
APPLICATION . . 4E
TYPE . . . . Output

1. FORMAT

[1]   REPT DLNCM PROC (Pappdb) LNx y DB a CU b ATT ERR c

[2]   REPT DLNCM PROC (Pappdb) LNx y DB a CU b TOTCLUMPS ERR c

[3]   REPT DLNCM PROC (Pappdb) LNx y DISK READ ERR f

[4]   REPT DLNCM PROC (Pappdb) LNx y D_PUMP D_COMP CMD ERR d

[5]   REPT DLNCM PROC (Pappdb) LNx y D_PUMP D_STRT CMD ERR d

[6]   REPT DLNCM PROC (Pappdb) LNx y D_READ D_STRT CMD ERR d

2. REASON FOR OUTPUT

To report DLN APPDB pump errors.

3. VARIABLE FIELD DEFINITIONS

a   APPDB file name:

                /dev/appdb0 — For ACTIVE file
                /dev/appdb1 — For SHADOW file
                /dev/appdb2 — For SCRATCH file

b   Customer unit code

c   APPDB DS error code (see output Appendix DLNCM-APP-22)

d   Pump abort code (see output Appendix DLNCM-APP-11)

f   Disk read error (see output Appendix DLNCM-APP-6)

x   DLN group number

y   DLN member number

4. ACTION TO BE TAKEN

None.

5. REFERENCES

None.

```
ID . . . . . . . . . . . . REPT-DLNCM-PMPAPD
WORK CENTER. . MOC
GENERIC. . . . . . . 4AP11 Rel. 3 and later
APPLICATION . . 4E
TYPE . . . . . . . . . . Output
```

1. FORMAT

    [1]   `REPT DLNCM PROC (Pumpappdb) LNx y UNKN DB TYPE xxxxxxxx`

    [2]   `REPT DLNCM PROC (Pumpappdb) INVALID DLN ID h`

2. REASON FOR OUTPUT

To report DLN APPDB pump errors.

3. VARIABLE FIELD DEFINITIONS

h	DLN ID (integer value)
xxxxxxxx	Invalid database type
x	DLN group number
y	DLN member number

4. ACTION TO BE TAKEN

None.

5. REFERENCES

None.

ID . . . . REPT-DLNCM-PMPAPP
WORK CENTER. . MOC
GENERIC. . . . . . . 4AP11 Rel. 3 and later
APPLICATION . . 4E
TYPE . . . . Output

1. FORMAT

[1]   REPT DLNCM PROC (Pumpapp) LNx y DBTOC PUMPED g BYTES MSEC e

[2]   REPT DLNCM PROC (Pumpapp) LNx y IBGTT PUMPED gK BYTES MSEC e

[3]   REPT DLNCM PROC (Pumpapp) LNx y OBGTT PUMPED gK BYTES MSEC e

[4]   REPT DLNCM PROC (Pumpapp) LNx y PCPGTT PUMPED gK BYTES MSEC e

[5]   REPT DLNCM PROC (Pumpapp) LNx y IBGTT PUMPED k ERR MSEC e

[6]   REPT DLNCM PROC (Pumpapp) LNx y OBGTT PUMPED k ERR MSEC e

[7]   REPT DLNCM PROC (Pumpapp) LNx y PCPGTT PUMPED k ERR MSEC e

[8]   REPT DLNCM PROC (Pumpapp) LNx y PUMP COMPL gK BYTES IN e MSEC

[9]   REPT DLNCM PROC (Pumpapp) LNx y PUMP FAILED l

[10]   REPT DLNCM PROC (Pumpapp) LNx y PUMP STARTED l

2. REASON FOR OUTPUT

To report DLN APPDB pump errors.

3. VARIABLE FIELD DEFINITIONS

e	Time in milliseconds
g	Number of "K bytes" pumped
k	DLNCM Pappcu error (see output Appendix DLNCM-APP-23)
l	DLNCM pump flags
x	DLN group number
y	DLN member number

4. ACTION TO BE TAKEN

None.

5. REFERENCES

None.

ID . . . . REPT-DLNCM-PMPGTT
WORK CENTER . . MOC
GENERIC . . . . 4AP11 Rel. 3 and later
APPLICATION . . 4E
TYPE . . . . Output

1. FORMAT

[1]   REPT DLNCM PROC (Pumpgtt) LNx y m (n) BINKS PUMPED IN e MSEC

[2]   REPT DLNCM PROC (Pumpgtt) LNx y APPDB a OPEN FAILED: f

[3]   REPT DLNCM PROC (Pumpgtt) LNx y PUMP ABORTED CODE i, RETRY j

[4]   REPT DLNCM PROC (Pumpgtt) LNx y PUMP FAILED

[5]   REPT DLNCM PROC (Pumpgtt) LNx y PUMP STARTED

2. REASON FOR OUTPUT

To report DLN APPDB pump errors.

3. VARIABLE FIELD DEFINITIONS

a	APPDB file name:
	/dev/appdb0 — For ACTIVE file
	/dev/appdb1 — For SHADOW file
	/dev/appdb2 — For SCRATCH file
e	Time in milliseconds
f	Disk read error (see output Appendix DLNCM-APP-6)
i	Pump abort code (see output Appendix DLNCM-APP-11)
j	Retry count (maximum of 3 retries)
m	Number of bytes pumped (old APPDB format only)
n	Number of binks (4096 bytes/bink) pumped (old APPDB format only)
x	DLN group number
y	DLN member number

4. ACTION TO BE TAKEN

None.

5. REFERENCES

None.

```
                        ID . . . . . . . . . . . . VER-GTT
                        WORK CENTER. . MOC
                        GENERIC. . . . . . . 4AP11 Rel. 3 and later
                        APPLICATION . . 4E
                        TYPE . . . . . . . . . . Output
```

1. FORMAT

The following formats correspond to the input formats given in the VER:GTT input message. Formats 13-61 are error messages indicating possible corruption in the APPDB database.

```
[1]     VER GTT a STAT COMPLETED
        GT6TRAN252  b
        GT6TRAN253  b
        GT10TRAN252 b
        GT10TRAN253 b
        GTT10CNPA   b
        UGTTSNPA    b


        VER:COMPLETE MESSAGE:CODE 5,
        1


[2]     VER GTT a TT ccc SUM  COMPLETED
        GTTRANccc   TOTAL # ENTRIES d
        VER:COMPLETE MESSAGE:CODE 5,
        1


[3]     VER GTT a TT ccc mmm eee DEF fff GHIJ pppp i
```

				PRIMARY		SECONDARY		
DIGITS	NPT	TREE	CUST	SSN	PC	SSN	PC	DBI
eeefffpppp	zzzz	ZZ	yyyy	ggg	hhhhhhhhh	ggg	hhhhhhhhh	kkk
or								
eeefffpppp-eeefffpppp	zzzz	ZZ	yyyy	ggg	hhhhhhhhh	ggg	hhhhhhhhh	kkk

```
        1 to 18 lines of data per message

VER:COMPLETE MESSAGE:CODE 5,
        j


[4]     VER GTT a DBI ALL i
```

DBI	SSN	PC	SSN	PC	PRI/SEC
kkk	ggg	hhhhhhhhh	ggg	hhhhhhhhh	1111111

    1-20 lines of data per message

VER:COMPLETE MESSAGE:CODE 5,
j

[5]   VER GTT a DBI kkk i

```
                              PRIMARY           SECONDARY
         DBI              SSN      PC        SSN      PC
         kkk              ggg    hhhhhhhh    ggg    hhhhhhhh
           DIGITS                NPT  TREE
         eeefffpppp              zzzz ZZ
               or
         eeefffpppp-eeefffpppp   zzzz ZZ
```

    1-17 lines of data per message

VER:COMPLETE MESSAGE:CODE 5,
j

[6]   VER GTT a DBI kkk COMPLETED
DBI ROOT NOT ASSIGNED

VER:COMPLETE MESSAGE:CODE 5,
1

[7]   VER GTT a DBI kkk COMPLETED
DBI NOT USED

VER:COMPLETE MESSAGE:CODE 5,
1

[8]   VER GTT a CUSTID yyyy i

```
                              PRIMARY           SECONDARY
         DBI              SSN      PC        SSN      PC
         kkk              ggg    hhhhhhhh    ggg    hhhhhhhh
           DIGITS                NPT  TREE
         eeefffpppp              zzzz ZZ
               or
         eeefffpppp-eeefffpppp   zzzz ZZ
```

    1-17 lines of data per message

VER:COMPLETE MESSAGE:CODE 5,
j

[9]   VER GTT a CUSTID ALL i

             CUSTID DBI   SSN   PC   SSN   PC   PRI/SEC
             yyyy   kkk   ggg   hhhhhhhh   ggg   hhhhhhhh   1111111

                 1-20 lines of data per message

         VER:COMPLETE MESSAGE:CODE 5,
         j

[10]   VER GTT a CUSTID yyyy COMPLETED

         CUSTID NOT ASSIGNED

         VER:COMPLETE MESSAGE:CODE 5,
         l

[11]   VER GTT a CUSTID yyyy COMPLETED

         CUSTID ROOT NOT ASSIGNED

         VER:COMPLETE MESSAGE:CODE 5,
         l

[12]   VER GTT MAP COMPLETED

         VER:COMPLETE MESSAGE:CODE 5,
         l

[13]   VER GTT a DBI kkk COMPLETED
         GT10TRAVERSE BAD TT ARG - ccc

[14]   VER GTT a DBI kkk COMPLETED
         GT10TRAVERSE BAD NCPI ARG - kkk

[15]   VER GTT a DBI kkk COMPLETED
         ABCHT ROOT PTR EMPTY

[16]   VER GTT a DBI kkk COMPLETED
         GT10RANGE BAD ARGS

[17]   VER GTT a DBI kkk COMPLETED
         ABCHT ENTRY UNEQUIPPED

[18]   VER GTT a DBI kkk COMPLETED
         APPDB BAD ABC SAP, TT ccc
         APPDB ADDR X'nnnnnnnn CONTENTS X'oooooooo

```
[19]    VER GTT a DBI kkk COMPLETED
        ABCHT BAD DEF SAP, TT ccc ABC eee
        APPDB ADDR X'nnnnnnnn CONTENTS X'oooooooo


[20]    VER GTT a DBI kkk COMPLETED
        DEFHT BAD INDEX, TT ccc ABC eee DEF fff
        APPDB ADDR X'nnnnnnnn CONTENTS X'oooooooo


[21]    VER GTT a DBI kkk COMPLETED
        DEF BAD SAPA, TT ccc ABC eee DEF fff
        APPDB ADDR X'nnnnnnnn CONTENTS X'oooooooo


[22]    VER GTT a DBI kkk COMPLETED
        DEF BAD SAPB, TT ccc ABC eee DEF fff
        APPDB ADDR X'nnnnnnnn CONTENTS X'oooooooo


[23]    VER GTT a DBI kkk COMPLETED
        BAD NUM ENTRIES TT ccc ABC eee DEF fff
        APPDB ADDR X'nnnnnnnn CONTENTS X'oooooooo


[24]    VER GTT a DBI kkk COMPLETED
        DEFHT BAD INDEX, TT ccc ABC eee DEF fff GHIJ pppp
        APPDB ADDR X'nnnnnnnn CONTENTS X'oooooooo


[25]    VER GTT a DBI kkk COMPLETED
        GH BAD INDEX, TT ccc ABC eee DEF fff GHIJ pppp
        APPDB ADDR X'nnnnnnnn CONTENTS X'oooooooo


[26]    VER GTT a DBI kkk COMPLETED
        GH UNK SAPC TT ccc ABC eee DEF fff GH pp
        APPDB ADDR X'nnnnnnnn CONTENTS X'oooooooo


[27]    VER GTT a DBI kkk COMPLETED
        GH BAD SAPD TT ccc ABC eee DEF fff GH pp
        APPDB ADDR X'nnnnnnnn CONTENTS X'oooooooo


[28]    VER GTT a DBI kkk COMPLETED
        GH BAD CUSTIDX, TT 252 ABC eee DEF fff GHIJ pppp
        APPDB ADDR X'nnnnnnnn CONTENTS X'oooooooo


[29]    VER GTT a DBI kkk COMPLETED
        APPDB TRANS BAD ABC SAP, TT ccc
        APPDB ADDR X'nnnnnnnn CONTENTS X'oooooooo


[30]    VER GTT a DBI kkk COMPLETED
        ABCHT BAD DEF SAP, TT ccc ABC eee
        APPDB ADDR X'nnnnnnnn CONTENTS X'oooooooo
```

[31]   VER GTT a DBI kkk COMPLETED
        DEF BAD SAPA, TT ccc ABC eee DEF fff
        APPDB ADDR X'nnnnnnnn CONTENTS X'oooooooo

[32]   VER GTT a DBI kkk COMPLETED
        BAD NUM ENTRIES TT ccc ABC eee DEF fff
        APPDB ADDR X'nnnnnnnn CONTENTS X'oooooooo

[33]   VER GTT a DBI kkk COMPLETED
        DEF BAD SAPB, TT ccc ABC eee DEF fff
        APPDB ADDR X'nnnnnnnn CONTENTS X'oooooooo

[34]   VER GTT a DBI kkk COMPLETED
        SAPB BAD SAPC, TT ccc ABC eee DEF fff GH pp
        APPDB ADDR X'nnnnnnnn CONTENTS X'oooooooo

[35]   VER GTT a DBI kkk COMPLETED
        SAPB BAD SAPD, TT ccc ABC eee DEF fff GH pp
        APPDB ADDR X'nnnnnnnn CONTENTS X'oooooooo

[36]   VER GTT a DBI kkk COMPLETED
        BAD CUSTIDX, TT ccc ABC eee DEF fff GHIJ pppp
        CUSTIDX r

[37]   VER GTT a DBI kkk COMPLETED
        APPDB BAD NCPI SAP - TT ccc
        SAP X'nnnnnnnn

[38]   VER GTT a DBI kkk COMPLETED
        TT ccc DBI kkk USED q TIMES HAS NO POINT CODE
        APPDB DBI ADDR X'nnnnnnnn

[39]   VER GTT a DBI kkk COMPLETED
        APPDB BAD NCPI SAP - TT ccc
        SAP X'nnnnnnnn

[40]   VER GTT a DBI kkk COMPLETED
        TT ccc ABC eee DEF fff GHIJ pppp REFERS TO DBI kkk
        DBI kkk IS NOT ASSIGNED

[41]   VER GTT a DBI kkk COMPLETED
        APPDB BAD SA SAP, BINK s
        APPDB ADDR X'nnnnnnnn CONTENTS X'oooooooo

[42]   VER GTT a DBI kkk COMPLETED
        APPDB BAD SA TYPE, BINK s
        APPDB ADDR X'nnnnnnnn CONTENTS X'oooooooo

[43] VER GTT a DBI kkk COMPLETED
    ASSERTION FAILED FILE=t LINE=u
     v
    ERRNO=w(x)

[44] VER GTT a DBI kkk COMPLETED
    CUSTID yyy DBI kkk USED q TIMES HAS NO POINT CODE
    APPDB DBI ADDR X'nnnnnnnn

[45] VER GTT a DBI kkk COMPLETED
    TT ccc DBI kkk USED nn TIMES HAS NO POINT CODE
    APPDB DBI ADDR X'nnnnnnnn

[46] VER GTT a DBI kkk COMPLETED
    CUSTID r DBI kkk USED nn TIMES HAS NO POINT CODE
    APPDB DBI ADDR X'nnnnnnnn

[47] VER GTT a DBI kkk COMPLETED
    BAD CUSTIDX, TT ccc ABC eee DEF fff GHIJ pppp
    CUSTIDX r

[48] VER GTT a DBI kkk COMPLETED
    TT ccc ABC eee DEF fff GHIJ pppp REFERS TO DBI kkk
    DBI kkk IS NOT ASSIGNED

[49] VER GTT a DBI kkk COMPLETED
    BAD CUSTIDX, TT ccc ABC eee DEF fff GHIJ pppp
    CUSTIDX r

[50] VER GTT a DBI kkk COMPLETED
    INV PREFIX xx IN CMPN RECORD AT nnnnnnnn

[51] VER GTT a DBI kkk COMPLETED
    DUP CMPN TAGS eeefff and eeefff (nnnnnnnn)

[52] VER GTT a DBI kkk COMPLETED
    EMPTY REC IN CHAIN xx AT nnnnnnnn

[53] VER GTT a DBI kkk COMPLETED
    CHAIN TOO LONG xx AT nnnnnnnn

[54] VER GTT a DBI kkk COMPLETED
    INV INDEX xx AT nnnnnnnn

[55] VER GTT a DBI kkk COMPLETED
    REV-HASHED BAD CMPN INDEX xx AT nnnnnnnn

[56] VER GTT a DBI kkk COMPLETED
    INV CMPN INDEX xx AT nnnnnnnn

```
[57]    VER GTT a DBI kkk COMPLETED
            CHAIN HAS EMPTY REC xx AT nnnnnnnn

[58]    VER GTT a DBI kkk COMPLETED
            CHAIN TOO LONG xx AT nnnnnnnn

[59]    VER GTT a DBI kkk COMPLETED
            INV INDEX xx AT nnnnnnnn

[60]    VER GTT a DBI kkk COMPLETED
            REV-HASHED BAD CMPN INDEX xx AT nnnnnnnn

[61]    VER GTT a DBI kkk COMPLETED
            UNEXPECTED RESP FROM DS FOR pppp - x
```

2. REASON FOR OUTPUT

Formats 1-12. These output messages are in response to a previously input VER:GTT message.

Formats 6, 9, and 13-44 DO NOT apply to the "new" format (retrofit in the 4E17 Rel. 3 time frame) of the APPDB database.

Formats 45-61 apply ONLY to the "new" format of the APPDB database.

Formats 13-61. These output messages give diagnostic information on internal problems found in the 10-Digit GTT data structures. The address given is relative to the APPDB translation space in any of the valid disk files ("/dev/appdb0", "/dev/appdb1" or "/dev/appdb2") or the DLN, based on the input request.

3. VARIABLE FIELD DEFINITIONS

a	RNA x where x is the ring node address (RNA) of a direct link node (DLN). This field is optional based on whether the input command specified an RNA x. The field could be a lone keyword equal to SHADOW or SCRATCH. For this case, the APPDB database used is /dev/appdb1 or /dev/appdb2, respectively. If the field a does not exist, the APPDB used is /dev/appdb0.
b	ACTIVATED — Feature is active. DEACTIVATED — Feature is not active.
ccc	This is the translation type (TT), which should have a value of either 242, 252 or 253. TT 252 is used for the SDN services and all digits listed are the dialing number. TT 253 is used for 800 and 900 services and all digits listed are the dialed number. TT 242 is used for Positive Call Processing (PCP) GT Translations.
d	This gives the total number of entries in the 10-digit GTT database for the specified translation type.

eee	This represents the first 3 digits of the automatic Number identification (ANI), referred to as the ABC digits or the NPA.
fff	This represents the second 3 digits of the automatic number identification (ANI), referred to as the DEF digits or the NXX. For Format 3, the value of fff can be ALL.
ggg	This represents the subsystem number (SSN) of a network database (network control point [NCP]). Routing to an NCP is based on a point code (hhhhhhhh) and the SSN.
hhhhhhhh	This represents the point code (PC) of a network database (NCP). Routing to an NCP is based on a PC and an SSN. In the AT&T network, the first 3 digits of the PC are the network id (254), the 4th and 5th digits are the region, the 6th digit is the cluster id, and digits 7 through 9 are the member number.

i	STARTED	— First message in a multiple segmented response.
	IN PROGRESS	— Second message through second to last message in a multiple segmented response.
	COMPLETED	— Last message in a response.

j	Number of message segments in a response.
kkk	This is the database index (DBI) number (range 0-255). Each DBI has two network database PC/SSN combinations (i.e., mated NCPs). This field is also called NCPI (NCP index).
111111	These are peg counts of the number of 3 or 6-digit entries that route to a DBI. Each DBI has two SSN/PC combinations that do not imply primary/secondary status (see item kkk above). The 111111 count under a PRI/SEC listing are for the first PC/SSN as the primary NCP and the second SSN/PC as the secondary NCP. Conversely, counts under the SEC/PRI listing are for the second PC/SSN as the primary NCP and the first SSN/PC as the secondary NCP.

mmm	APN	— Action point numbering plan.
	NANP	— North American numbering plan.

nn	Number which represents the number of records that the database currently says is using the DBI recorded in the output message.
pppp	This field is the GHIJ digits of the ANI (the last 4 digits) or the value ALL. The GHIJ range is from 0-9999. The field may be a range, as specified on the input message.
q	This is the number of times a DBI was referenced by ANI(s) in the GTT 10-digit database. The DBI being referenced has no point code assigned.
r	This field is the customer index. Customer indexes are associated with TT 252. The field ranges from 0 to 9999. Customer indexes point to a DBI.

s	A bink number in the APPDB. Bink numbers range from 0 to the database size (i.e., 511). The database size can be determined with the input command VER:MEMORY.
t	File name where a defensive check failure occurred.
u	Source line number within file t where a defensive check failure occurred.
v	The c program text at source line u in source file t that has the defensive check.
w	The system error number.
x	A short phrase telling what the system error number means.
xx	Number which represents the ANI TABLE record number or the ANI TABLE chain that is in error.
yyyy	A customer index. Valid customer indexes range from 1 to 9999.
zzzz	Indicates the database spectrum (or numbering plan type) the information came from. The possible values are:

APN	— Action point numbering plan, only valid with TTs 242 and 252.
NANP	— North American numbering plan, only valid with TTs 242 and 252.
NONE	— A numbering plan does not exist, only valid with TT 253.

zz	The database tree within the numbering plan type that the information originates from. The possible values are:

03	— Tree traversed with just 3 digits.
06	— Tree traversed with 6 digits.
10	— Tree traversed with 10 digits.

4. ACTION TO BE TAKEN

Formats 1-12. These are normal output messages in response to the corresponding format in the VER:GTT input message.

Formats 13-61. There is potential corruption in the APPDB (10-digit GTT database). Notify National Electronic Switching Assistance Center (NESAC).

5. REFERENCES

Input Messages
    DUMP:RNA
    VER:GTT

ID . . . . VER-MEMORY
WORK CENTER. . MOC
GENERIC. . . . . . . 4AP11 Rel. 3 and later
APPLICATION . . 4E
TYPE . . . . Output

1. FORMAT

There are three formats in all; the first one corresponds to the input format given in the VER:MEMORY input message. Formats 2 and 3 are error messages indicating database corruption.

If the APP keyword is specified on the VER:MEMORY input message, then only one format [1] is output. If the APP keyword is omitted, then a format [1] message is output for each application (customer unit) using the database.

This output message page only applies to the output of data that is associated with the "new" Application Database (APPDB) format. If the "old" APPDB format is in any of the APPDB disk partitions or DLNs during the 4E17R3 timeframe, see the VER:MEMORY output message page dated October 1992 for an explanation of that output.

```
[1]     VER MEMORY x APPDB COMPLETED

        APPLICATION q
        CREATED      r
        START ADDR   s
        UPD SEQ NUM t
        LOCKED       u

        iiii     aaaaaa bbbb cccccccc dddddddd eee
        iiii     aaaaaa bbbb cccccccc dddddddd eee
        .
        .
        .

        TOTAL CLUMPS ffff
        CLUMP SIZE   gggg

        VER:COMPLETE MESSAGE:                          CODE 5,
        m

[2]     VER MEMORY x APPDB COMPLETED
        NO VALID DBTOC

[3]     VER MEMORY x APPDB COMPLETED
        WARNING: DBTOC 0 IS CORRUPT
```

2. REASON FOR OUTPUT

Format 1: This output message is in response to a previously input `VER:MEMORY` message. Format 1 indicates the `VER:MEMORY` input message executed successfully.

Formats 2-3: These output messages give diagnostic information on internal problems found in the database structure. The address given is relative to the APPDB translation space in either the database disk file or the DLN, based on the input request. The disk file(s) are located at:

> /dev/appdb0
> /dev/appdb1
> /dev/appdb2

3. VARIABLE FIELD DEFINITIONS

x

RNA x where x is the Ring Node Address (RNA) of a Direct Link Node (DLN). This field is optional based on whether the input command specified an RNA x. If a DLN RNA is present, the source database is taken from within the DLN.

SHADOW specifies the source database as backup disk file /dev/appdb1. This field is optional based on the SHADOW keyword of the input command.

If neither RNA, SHADOW, nor SCRATCH appears in the output message, the database used is a disk file located at /dev/appdb0.

iiii

The name of the customer unit table that the data on this output line applies to. Each customer unit is broken into a number of data tables. The following is a list of the possible data tables that a customer unit can have. Not all customer units have the same number or combination of tables.

NPA NXX — Signifies the NPANXX "compression" table.
TEN DIGIT — Signifies the 10D translation data table.
SIX DIGIT — Signifies the 6D translation data table.
THREE DIGIT — Signifies the 3D translation data table.
CUSTID TBL — Signifies the Customer ID data table.
CRC TBL — Signifies the data table that holds the CRC audit data for the customer unit.
NCP TBL — Signifies the NCP routine data table.
PAV TBL — Signifies the Extended Preassigned Values (EPAV) data table.

A line of data per customer unit table is output.

aaaaaa

Is the starting address (in UNIX blocks) of this data table, relative to the start of the customer unit (i.e., START ADDR in header).

bbbb

Is the "version id" of this data table. When a reformatting of a data table is necessary, this number will change.

cccccccc	Is the total number of record "slots" allocated for this table.
dddddddd	Is the total number of record "slots" used by this table.
eee	Is the percentage of records used to records allocated (i.e., 100 * cccccccc / dddddddd).
ffff	The total number of "clumps" allocated for this customer unit.
gggg	The number of bytes in a "clump" for this customer unit. The total number of bytes allocated for a customer unit is the customer unit's "no. of clumps" multiplied by its "number of bytes per clump" values (i.e., ffff times gggg).
q	The customer unit name for which this table applies.
r	Time and date field.
s	The starting address (in UNIX blocks – i.e., 512 bytes) in the database partition for this customer unit.
t	Number of updates to this database.
u	Database lock flag (YES or NO).

4. ACTION TO BE TAKEN

Format 1:   This is a normal output message indicating VER:MEMORY executed successfully.

Formats 2-3:   There is potential corruption in the database. Notify NESAC.

5. REFERENCES

Input Message
    VER:MEMORY

Software Defined Network (SDN) Digital Radio Avoidance Routing (DRAR) Feature (3840)

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Software Defined Network (SDN) Digital Radio Avoidance Routing (DRAR) Feature (3840)

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1. Feature Description

1.01 This feature provides a Switched Digital Network (SDN) Digital Radio Avoidance Routing (DRAR) capability in a Real Time Network Routing (RTNR) environment. This capability is used for direct-connect to direct-connect voice calls. Prior to implementation of this feature, this capability was provided in a Dynamic Non-Hierarchical Routing (DNHR) environment. In order to reduce costs and other overhead associated with DNHR, DRAR is being moved to another environment. This will allow the DNHR environment to be removed from the AT&T Switched Network (ASN) without adversely affecting the SDN. This capability is the last DNHR application.

1.02 This feature does not change the basic functionality of DRAR. What changes is how the capability is triggered and the transport network that carries these calls. The SDN-DRAR Phase 2 capability is triggered by the customer Call Processing Record (CPR). Calls are transported via the Switched Digital Service (SDS) 64C Sub-network as a voice call. This sub-network uses buried facilities.

2. Call Flow (Not Affected)

3. Provisioning

3.01 The Signaling Service Type (SST) associated with this feature must be provisioned as SDN-DRAR-No Key (SST1) or SDN-DRAR-Key (SST2). The key and no-key service indicators are used when network congestion is encountered.

3.02 The SST is set via the following forms:

- Office Data Assembler (ODA) Forms 403R, 4064, and 4068.

- Recent Change (RC) Forms 300, 642, and 640.

- Verify Forms 3ah, 6ap, and 6ba.

The SP1 (spare 1) and SP2 (spare 2) fields on these forms are used for this feature. SP1 is used for SST1 (no-key), and SP2 is used for SST2 (key).

3.03 Recent Change Form 642 is also used to map an SST to a Service Index Indicator (SII). The SII associated with a SST is determined by the system administrator.

3.04 Question 7 (Q7) must be answered "yes" in ODA Form 4069 and RC Form 653. This specifies that calls are SDN-DRAR.

4. Recording (Not Affected)

5. Network Management (Not Affected)

6. Maintenance/Troubleshooting (Not Affected)

7. Transition Considerations

Dependencies on Other Network Components

7.01 The Network Control Point (NCP) must be updated.

7.02 This feature must be fully deployed in the network before it can be used.

Turn On/Turn Off Mechanism

7.03   This feature is turned on automatically by software deployment. However, the SIIs must be provisioned in the *4ESS*™ switch. Refer to "Provisioning" in this chapter for details.

8. Input/Output Manual Pages (Not Affected)

Alternate Signaling Transport Network (ASTN) Gateway/Network Interconnect Backup Feature (3860)

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Alternate Signaling Transport Network (ASTN) Gateway/Network Interconnect Backup Feature (3860)

18

1. Feature Description

1.01 The Alternate Signaling Transport Network (ASTN) Gateway/Network Interconnect (NI) Backup feature provides signaling backup for Common Channel Signaling System 7 (CCS7) NI Integrated Services Digital Network User Part (ISUP) messages when *4ESS*™ switch Common Network Interface (CNI) signaling failures occur in the AT&T Switched Network (ASN). This backup feature relies on an ASTN Gateway switch to route NI ISUP messages to a *4ESS* switch (victim) over ASTN 56-kbps F-links between a helper *4ESS* switch and the victim *4ESS* switch. The ASTN Gateway/NI Backup feature is an extension of the ASTN 56-Kbps Capacity Increase feature (306/3368) that is presented in AT&T 234-090-171AC, *4ESS*™ *SWITCH, Product Release Document 4E17 Release 1 Generic*.

2. Call Flow (Not Affected)

3. Provisioning

3.01 A new Office Data Assembler (ODA) bit provides an on/off switch for the ASTN-NI capability. This new bit resides within the OD4OFCCOPY word and, as such, is maintained across Generic and ODA retrofits. The new item is named OD4ASTN_NI and is populated using a Recent Change (RC) Form 800.

3.02 The feature is deployed in the "off" (0) state. Only the Gateway *4ESS* switch will utilize the ODA on/off bit. E-link provisioning is needed for the Combined Link Set 6 (CLS) at the Gateway switch to allow LEC-destined messages to be delivered.

4. Recording

4.01 The autonomous message, REPT:ASTN56LINK:5 MINUTE STATUS, will be issued at 5-minute intervals when any of the 56-kbps ASTN F-links have been used for ASTN processing or have exhibited congestion during the preceding 5-minute interval.

4.02 The seconds of ASTN activity and the seconds of F-link congestion will be output per link. This message also outputs the number of bytes sent and received.

5. Network Management

5.01 The ASTN-NI Network Management Operations System (NEMOS) interface provides the following new capabilities to support this feature:

New Discretes

5.02 The following five new discretes are required for this feature:

a. Gateway Activation Discrete: This discrete is set within the GATEWAY_ASTN_HANDLER Routine.

b. Inbound Helper Activation Discrete: This discrete is set with the TMADBUNS logic which will receive ASTN-Signaling Connection Control Part (SCCP) messages from the Gateway and attempt to locate a direct 56-kbps F-link path to the victim.

c. Victim Activation Discrete: This discrete is set within the TMADASTN logic which receives a 56-kbps F-link message from the Gateway or Inbound Helper switches for processing at the Victim switch. This discrete will also be sent when the victim is operating in the capacity of an Outbound victim (SEND_VICTIM_NI_VIA_ASTN).

d. Outbound Helper Activation Discrete: This discrete is set with the TMADASTN logic which receives a 56-kbps F-link message from the Outbound victim.

e. Manual NI-Inhibit Initiated Discrete: This discrete is set within the TMADBUNS logic which receives the manual (TTY) request to inhibit the ASTN-NI capability in the office.

NEMOS ASTN-NI Inhibit

5.03 The existing ESTN_FLINK_INH_ALW (TMADBUNS) routine has been modified to accept the task of inhibiting the office for the ASTN-NI capability. This routine is invoked by Network Management when a request is received to perform a NEMOS

ASTN-NI Inhibit or Allow. Also, TMADBUNS will invoke this routine from the manual TTY message version.

Five Minute Per Office Counts

5.04 The following list describes the location where the 5-minute per office counts will be pegged by the ASTN logic:

a. Gateway: Number of TFC2 (Transfer Controlled) messages sent to Local Exchange Carrier (LEC)

A new TMADBUNS routine, ASTN_NI_INFORM_DLN_TFC, has been created to inform the Direct Link Mode (DLN) that a TFC control is required against a given LEC point code. This routine will peg the NEMOS counter.

b. Gateway: Number of TFC messages sent to the LEC

A new TMADBUNS routine (ASTN_NI_INFORM_DLN_TFC) has been created to inform the DLN that a TFC control is required against a given LEC point code. This routine will peg the NEMOS counter.

c. Gateway: Number of Route Set Congestion Test (RCT) messages received from the LEC

A new TMADBUNS function (TMADNIRC) has been created to interface with the DLN when the DLN receives an RCT message. This routine will peg the NEMOS counter for RCTs received.

d. Gateway: Number of Subsystem Prohibit (SSP) messages sent from the Gateway

The Gateway logic which sends these messages to the DLN will peg this count.

e. Gateway: Number of Initial Address Messages (IAMs) incoming from a LEC

The TMADASTN routine (GATEWAY_ASTN_HANDLER) will peg this count.

f. Gateway: Number of IAMs sent to the victim via a direct 56-kbps F-link

The TMADASTN routine (GATEWAY_ASTN_HANDLER) will peg this count.

g. Gateway: Number of IAMs sent to the victim via an A-link, SCCP path

The TMADASTN routine (GATEWAY_ASTN_HANDLER) will peg this count.

h. Gateway: Number of messages received for a non-AT&T destination

The TMADASTN routine (GATEWAY_ASTN_HANDLER) will peg this count.

i. Number of messages killed due to an Inhibit Control in effect

- The GATEWAY_ASTN_HANDLER will peg this count for the Gateway Switch

- This count will be pegged by the TMADASTN routine (TMADNIVO) for the Outbound Helper.

j. Outbound Helper: Number of IAMs sent on an A-link

This count is pegged by the TMADASTN routine (TMADNIVO) which will handle the reception of F-link messages from the victim and the transport of these messages to the LEC via A-links.

k. Outbound Helper: Number of IAMs received on F-links

This count is pegged by the TMADASTN routine (TMADNIVO) which will handle the reception of F-link messages from the victim and the transport of these messages to the LEC via A-links.

l. Victim: Number of IAMs received

This count is pegged by the new TMADASTN routine (TMADNIVG) which will receive messages from the Gateway or the Inbound Helper via a 56-kbps F-link.

m. Victim: Number of Answer (ANS) messages received

This count is pegged by the new TMADASTN routine (TMADNIVG) which will receive messages from the Gateway or the Inbound Helper via a 56-kbps F-link.

n. Victim: Number of IAMs transmitted

This count is pegged by the new TMADASTN routine which handles ISUP-NI messages during CNI ring down or ISUP-NI returned message scenarios (SEND_VICTIM_NI_VIA_ASTN).

o. Victim: Number of ANS messages transmitted

This count is pegged by the new TMADASTN routine which handles ISUP-NI messages during CNI ring down or ISUP-NI returned message scenarios (SEND_VICTIM_NI_VIA_ASTN).

p. Inbound Helper, Victim: Number of IAMs not sent due to F-link congestion or unavailability

- Inbound Helper: The new TMADASTN routine (NI_SCCP_RCVD_HLP), which hunts for a 56-kbps link path to the victim will, peg this count.

- Victim: The TRANRTNR and TRANHUNT PIDENTS will also peg this count when the ASTN paths for ASTN-NI are not available. The TMADASTN routine (SEND_VICTIM_NI_VIA_ASTN) will also peg this counter when the path to the Outbound Helper is unavailable.

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Five Minute Per Layer Counts

5.05 The 5-minute per layer counts are as follows:

a. Number of F-link messages transmitted

- Gateway: The GATEWAY_ASTN_HANDLER routine will peg this count when a direct 56-kbps path is used to reach the victim

- Inbound Helper: The Inbound Helper Logic (NI_SCCP_RCVD_HLP) will peg this count when a direct 56-kbps path is found to reach the victim

- Victim: The Victim logic (SEND_VICTIM_NI_VIA_ASTN) will peg this count when a message is transmitted to the Outbound Helper.

b. Number of F-link messages received

- Victim: The Victim logic (TMADNIVG) will peg this count when a message is received from the Gateway or the Inbound Helper

- Outbound Helper: The Outbound Helper logic (TMADNIVO) will peg this count when a message is received from the victim.

c. Number of backward failure messages sent on the F-links

Outbound Helper: This count is pegged within the TMADASTN routine (SEND_BKWD_NI).

d. Number of backward messages sent on the F-links

Victim: This count is pegged by the new TMADASTN routine (TMADNIBO) which will receive the backward failure messages.

6. Maintenance/Troubleshooting

Audit 48

6.01 A new function has been added to Audit 48 to identify the 56-kbps F-links that are in the same region as the current switch.

Network Architecture Messages

6.02 Common Network Interface Tests are run to make sure the network is properly configured. The Message Transfer Part (MTP) Route Verification Test (MRVT) initiated at the Gateway Signal Transfer Point (STP) verifies the first-choice route over A-links to the Victim switch and third-choice routes over the E-links to the Gateway switch.

6.03 The E-links connect the ASTN Gateway *4ESS* switch with the STPs of the STP region it is serving as gateway. When an ASTN Gateway is active, all messages destined for the victim will be sent to the ASTN Gateway over the E-links. In the outgoing direction, the only messages expected to be sent on these E-links are Transfer Controlled (TFC) messages destined for LEC switches and MRVT responses.

6.04 Note that the MRVT does not test the second-choice route over C-links. Running the MRVT at both STPs (Gateway pair) will test the C-link pair.

6.05 An MRVT needs to be initiated at the Outbound Helper with the test destination at each end office that the Outbound Helper supports for the victim. This test follows normal MRVT procedures.

6.06 Figure 18-1 shows the message flow for calls originating from a LEC destined for an AT&T switch undergoing a CNI-related failure. Message routing will occur from the LEC STP to the AT&T Gateway STP. A typical network configuration message flow is summerized below:

1. A message comes in that there is a CNI-related failure at the victim. An ISUP IAM message is launched by an end office to the LEC STP.

2. The LEC STP sents the ISUP IAM message to the AT&T Gateway STP.

3. The AT&T Gateway STP determines that it cannot reach victim and sends the ISUP IAM message over E-link to the ASTN Gateway switch.

4. The ASTN Gateway switch picks an Inbound Helper *4ESS* switch and sends an ASTN-SCCP message with the ISUP information.

5. The helper then sends an ASTN message with ISUP information to the victim.

6. The victim selects trunks and does normal ASTN call processing.

7. The victim sends an ASTN with ISUP information (Address Complete for example) back to an Outbound Helper switch.

8. The Outbound Helper sends the ASTN-ISUP message with the victim information to the end office.

Figure 18-1. Typical Network Configuration Message Flow
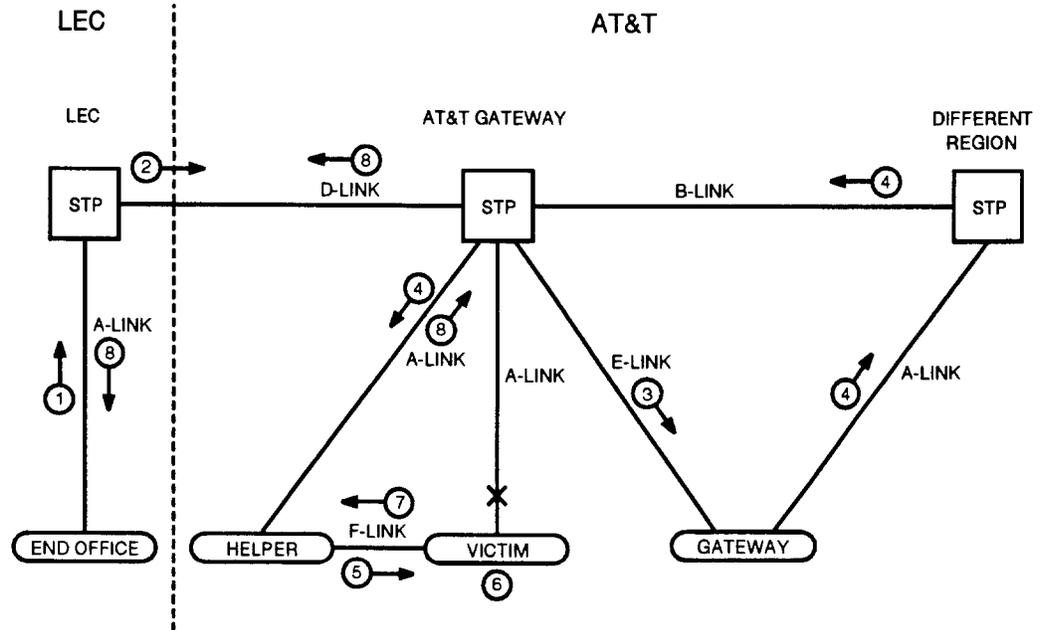
6.07 Figures 18-2 through 18-8 are network architecture diagrams showing network configuration failures that may be possible and can be detected by MRVTs.
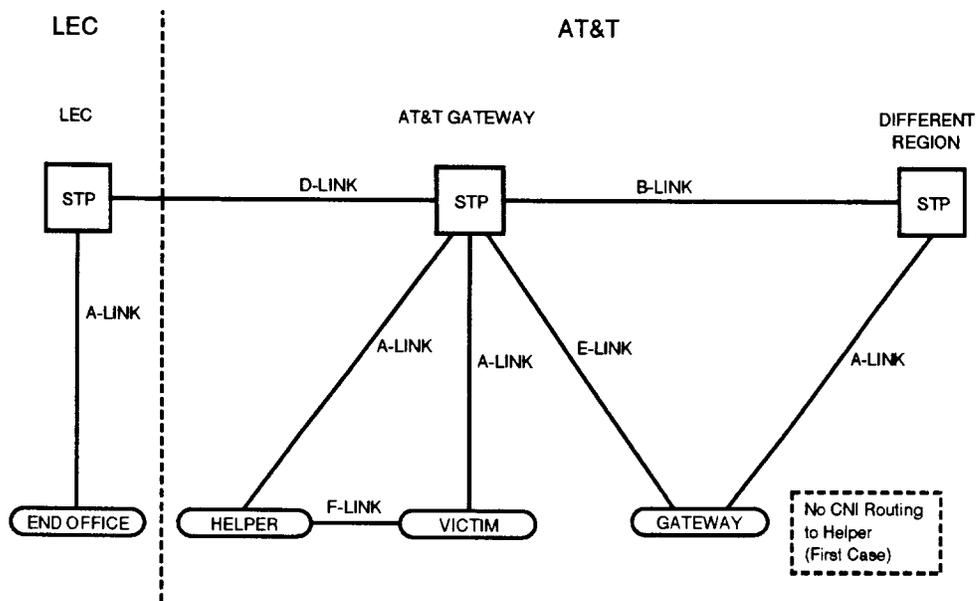
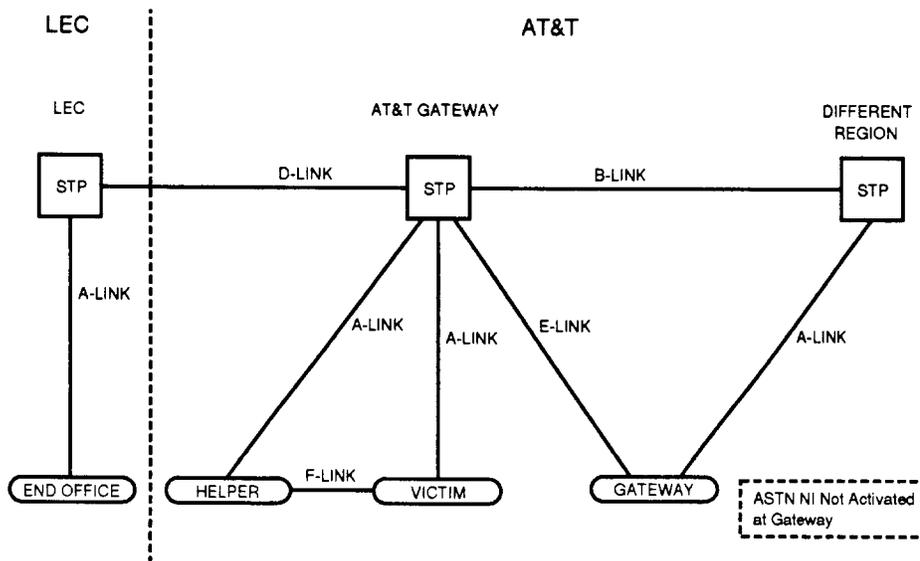Figure 18-2. No Routing in Gateway to Helpers

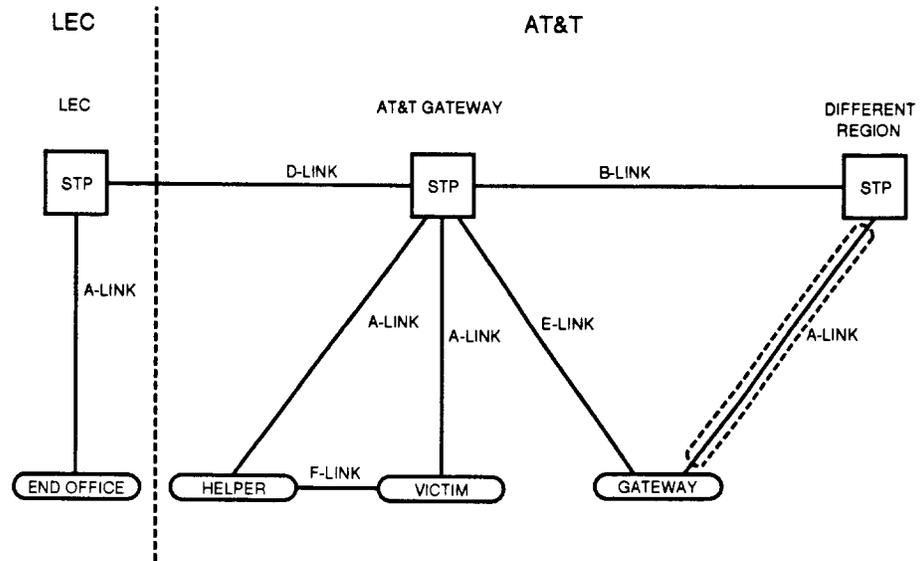Figure 18-3. ASTN NI Not Activated at Gateway

Figure 18-4. All A-Links Unavailable at Gateway
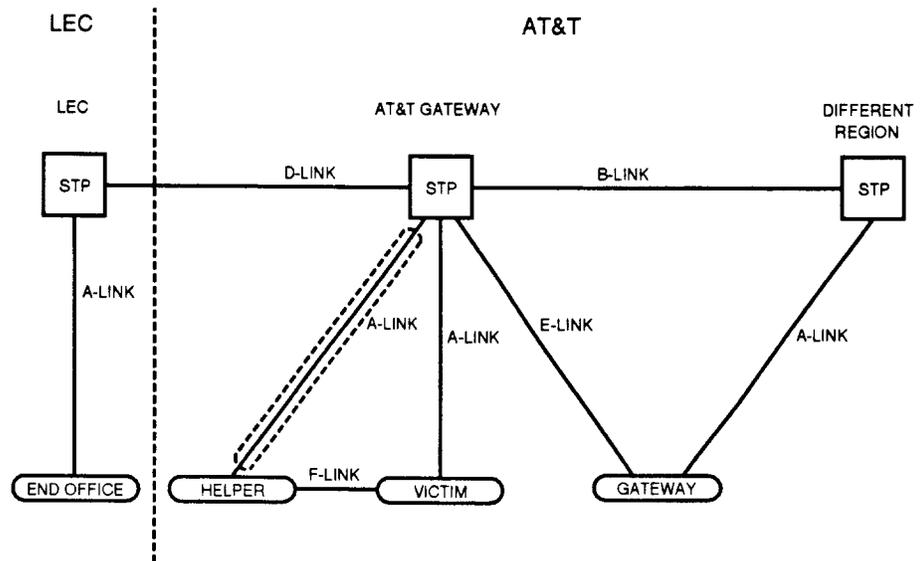
Figure 18-5. All A-Links Unavailable at All Helpers
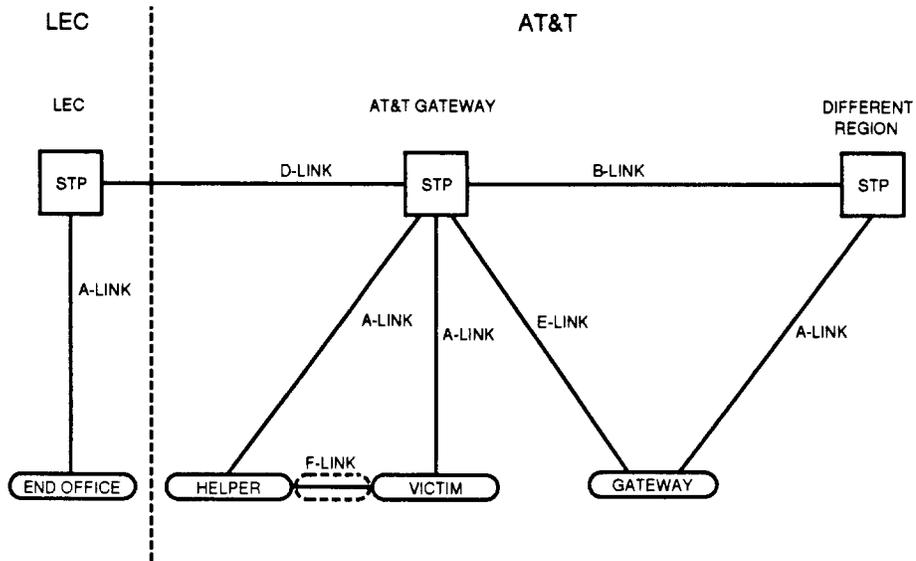
Figure 18-6. F-Links Not Available at All Helpers
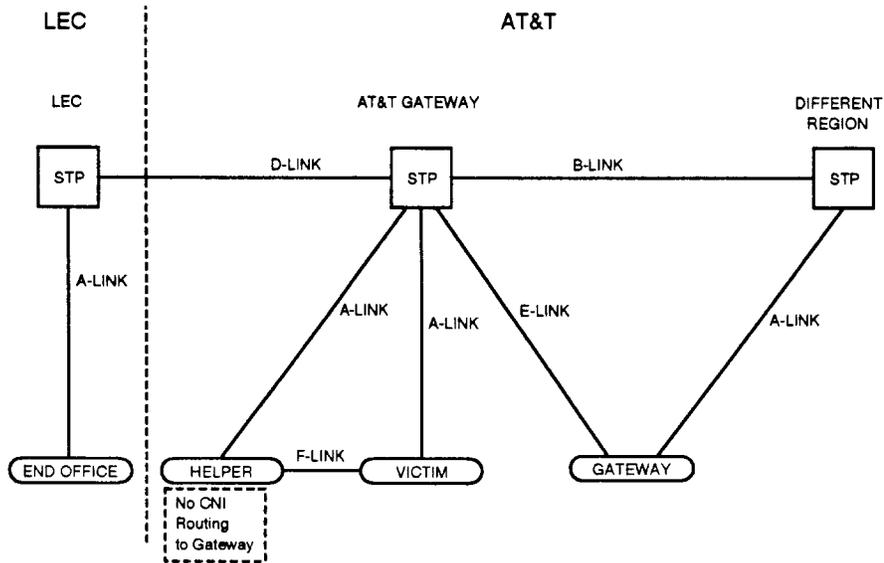
Figure 18-7. No Routing at Helpers to Gateway
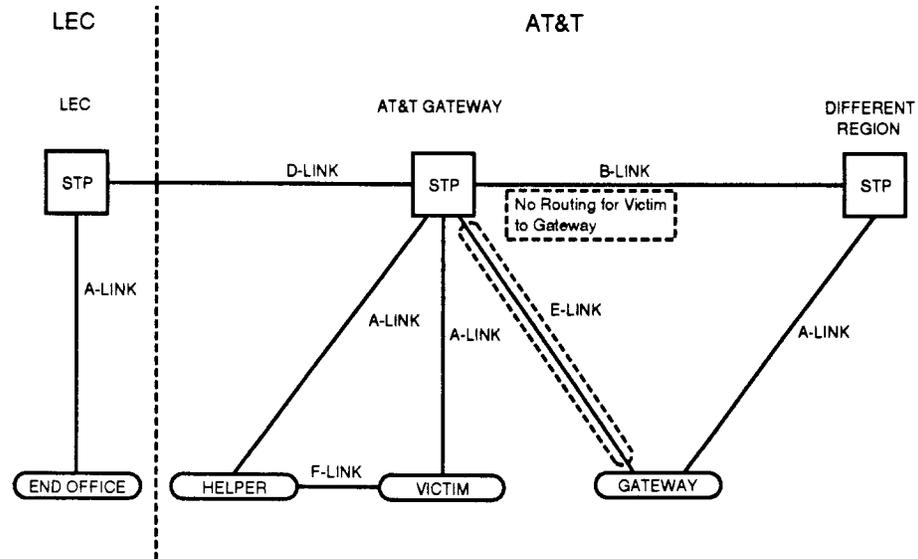
Figure 18-8. No Routing at STP to Gateway for Victim

7. Transition Considerations

Internal Transition Issues

7.01 Since this feature is deployed in 4E17 Release 3, there will be interactions with the earlier releases of 4E17 regarding the printing of the OP:BUNSTAT:NSN x and OP:BUNSTAT:ALL TTY as well as the creation of the word which specifies which helpers are available. As such, modifications are required to allow the earlier 4E17 release loads to accurately print these messages and create the Helper availability word when the switch providing the data to be output is in 4E17 Release 3. These modifications are required within TMADBUNS PIDENT and are included within 4E17 Release 1.

7.02 Modifications are not required for the 4E16 load, since all 4E16 offices will be retrofitted to 4E17 by the time the 4E17 Release 3 load is installed.

7.03 The Alternate Link Set Routing (ALSR) capability cannot be populated into the STPs until 4E17 Release 3.

Ellisville, Florida Situation

7.04 A unique situation exists in the Ellisville, Florida switch regarding the automatic choice of Outbound Helpers. Since Outbound Helpers must be in the same region as the victim switch, the current strategy will result in the Ellisville switch possessing no Outbound Helpers, since Ellisville is the only switch in the region. To rectify this situation and provide Ellisville with Outbound Helpers, a new strategy is included in the 4E17 Release 3 first issue of the ASTN-NI feature. An ODA word will be populated with the identities of the chosen Outbound Helpers for Ellisville. The ASTN-NI algorithm which compiles Outbound Helpers will be instructed in the ELLISVILLE switch to use the specified helpers rather than determine the Outbound Helpers via point codes.

7.05 This is accomplished via a request to perform Audit 48, following the population of the ODA word and also a request (UPD:BUNSTAT) to inform all other switches of the new Outbound Helper status at ELLISVILLE.

7.06 For Ellisville, it will be necessary for the specified Outbound Helper switches to possess the routing required to support ELLISVILLE.

⇒ **NOTE:**
The function of specifying Outbound Helpers should only be utilized in the Ellisville, Florida switch. The population of this ODA word in Ellisville is under National Electronic Switching Assistance Center (NESAC) control.

Turn On/Turn Off Mechanism

7.07 Recent Change (RC) Form 800 is used to activate this feature.

7.08 A new ODA bit provides the on/off switch for the ASTN-NI capability. This new bit resides in bit position D(22) in the OD4OFCCOPY word and, as such, will be maintained across Generic and ODA retrofits.

7.09 The feature is deployed in the "off" (0) state. Only the ASTN-NI Gateway *4ESS* switches will utilize this ODA on/off bit.

8. Input/Output Manual Pages

8.01 This feature requires that several Input/Output messages be modified. Table 18-A summarizes demand ASTN signaling messages that must be manually requested by TTY input.

Table 18-A. Demand ASTN Signaling Messages

Message	Purpose
OP:BUNSTAT	Modified to indicate which of the 56-kbps F-link far-end offices are in the same region as the given office. Currently, 56-kbps F-links are indicated by a terminating "*". Those 56-kbps F-links whose far-end office switch is in the same region as the switch where the message has been input, will be indicated by a "&". The OP:BUNSTAT output also reflects the ASTN-NI 56-kbps F-link Inhibit or Allow status. A new subcatalog is printed on the first line of the output when the ASTN-NI Inhibit is in effect.
OP:BUNSTAT:NSN and OP:BUNSTAT:ALL	The contents of these messages have been modified to include the identities of those helper F-links which are of the 56-kbps type and those F-links which are output helpers. This appears as an additional line of data in the message. The OP:BUNSTAT:NSN and ALL variations also print out the bitmap which represents the identities of those Network Switch Numbers (NSN) that are the Outbound Helpers (56-kbps helpers in the same region). This appears as an additional line of data in the message. Modifications have been made to avoid printing the last two words of the BU4NSNAXCON structure in these messages, since these words now contain the location of the 56-kbps helper bitmap and the Outbound Helper bitmap.
STOP:OP;BUNSTAT	This message terminates the printing of the OP:BUNSTAT:ALL message.

Table 18-A. Demand ASTN Signaling Messages (Contd)

Message	Purpose
UPD:BUNSTAT	This message allows a demand update to be performed to broadcast the current F-link Layer Connectivity of an office to every other AT&T *4ESS*™ switch.
SET:BUNSTAT	Allows the placement of an Inhibit or Allow on a single NSN or all NSNs in the office. This message is the manual equivalent of the NEMOS Inhibit or Allow command. The new variation of this message can inhibit ASTN-NI at the Gateway and the Outbound Helper Switches. This control does not affect non ASTN-NI traffic. The format of the message is: SET:BUNSTAT;INH or SET:BUNSTAT;ALW
OP:SDC	This message outputs any frames/units, rings, or related equipment which are currently service degraded. A service degrading report with a major alarm will be issued when the ANY or ALL of the F-links are inhibited. Also, for the ASTN-NI capability, an additional service degrading message will be issued when the ASTN-NI function has been inhibited. The OP:SDC report occurs either through a TTY request (OP:SDC), an autonomous report (54 minutes after the hour), or by depressing the SDC MCC key. The format for the ASTN-NI portion is: **OP:SDC:ASTN NI INHIBITED
OP:RINGMNTR	This message is used to obtain various information on the status of the CNI ring as well as ring traffic handing capabilities. Additionally, four of the associated counts specify ASTN related actions. These counts include the number of IAMs and ANS messages sent and received via ASTN. This message is also autonomously generated. The message may be alarmed depending upon the current conditions.

8.02 Table 18-B summarizes ASTN autonomous messages which are output to the
Maintenance (MTC) channel during an ASTN incident or as the result of
Inhibit/Allow action of the ASTN F-link layers.

Table 18-B. Autonomous ASTN Signaling Messages

Message	Purpose
REPT:BUNSMEAS:ACTIVATED	This message indicates that the ASTN function has been activated to the switch stated by the output Trunk Subgroup.
REPT:SDC:BUNSFLINK	This group of autonomous messages indicate that a given F-link layer specified by NSN has been inhibited or allowed.
REPT:SDC:ASTN NI	Occurs in conjunction with a NEMOS or a manual Inhibit or Allow command. Currently specifies the state into which all NSNs or a specific NSN is to be placed. The new format of the message is: REPT:SDC:ASTN NI a b where: a = M (manual request) 　　 N (NEMOS request) b = ALW (allow) 　　 INH (inhibit)
OP:SDC (ESTNFLINK INHIBITSTATUS)	This service degrading report can occur at the hourly autonomous printing of the Service Degrading message when any ASTN F-link layer has been inhibited. This message is alarmed with a major alarm.
OP:SDC ASTN NI INHIBITED	This message can be output autonomously at 54 minutes after the hour, by TTY request, or by MCC Key request, if the ASTN-NI capability has been inhibited. This message is alarmed with a major alarm.
REPT:ASTN56LINK:5 MINUTE STATUS	This message is issued at 5-minute intervals when any of the 56-kbps ASTN F-links have been used for ASTN processing or have exhibited congestion during the preceding 5-minute interval

Table 18-B. Autonomous ASTN Signaling Messages (Contd)

Message	Purpose
REPT:BUNSMEAS	Provides an automatic 15-minute report to the maintenance terminal when counts are present. Currently, this message consists of two parts: Part 1 reflects the ISUP related counts, while Part 2 reflects the Destination Common Channel Interoffice Signaling (DCIS) Transaction Capabilities Application Part (TCAP) message handling counts. This feature provides a third part of output containing the following counts. The counts are grouped by switch functionally. 1. GATEWAY: ■ IAMs received from the LEC ■ Answer messages received from the LEC ■ IAMs sent to the Inbound Helper via A-links (SCCP) ■ IAMs sent to the victim via a direct F-link ■ Total number of messages sent via F-links to the victim ■ Total number of backward SCCP messages sent from the Inbound Helper ■ Total number of messages not transported due to an ASTN Inhibit control in effect. 2. INBOUND HELPER: ■ Total number of SCCP messages received from the Gateway ■ Total number of messages sent via F-link to the victim ■ Total number of backward SCCP messages sent to the Gateway. 3. VICTIM: ■ IAMs received from the Gateway or the Inbound Helper ■ Answer messages received from the Gateway or the Inbound Helper ■ IAMs sent to the Outbound Helper ■ Answers sent to the Outbound Helper ■ Total number of messages received from the Gateway or the Inbound Helper ■ Total number of messages received/sent to the Outbound Helper ■ Total number of backward failure messages received from the Outbound Helper.

Table 18-B. Autonomous ASTN Signaling Messages (Contd)

Message	Purpose
REPT:BUNSMEAS (Contd)	4. OUTBOUND HELPER: ■ IAMs received from the victim ■ IAMs sent via A-links to the LEC ■ Total number of messages received at the Outbound Helper ■ Total number of backward failure messages sent to the victim ■ Total number of messages which were not sent due to the presence of an Inhibit control.

Telecommunications Relay Service Carrier of Choice Feature (3863)

19

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Telecommunications Relay Service Carrier of Choice Feature (3863)

19

1. Feature Description

1.01 Telecommunications Relay Service (TRS) allows a hard-of-hearing, deaf, or speech-impaired person to communicate with a hearing person. Using a keyboard device known as a Text Telephone (TT), the disabled person contacts a Communications Assistant (CA) at a relay center. The disabled person types his or her message on the TT device. The CA, in turn, reads the message to the hearing person. The hearing person's response is then typed by the CA and is displayed on the disabled person's TT device.

1.02 The Americans With Disabilities Act mandates that telephone service subscribers will be able to choose the Interexchange Carrier (IEC) of their choice, regardless of the IEC providing service in their area. Activation of this feature will allow the following:

- Acceptance (by the *4ESS*™ switch) of incoming TRS calls originated in a non-AT&T TRS area

- Identification of these calls using the Feature Group D (FGD) call indicator

- Advancement of these calls to the Local Exchange Carrier (LEC) terminating switch serving the called customer

- Generation of an Automatic Message Accounting (AMA) record, including the specific TRS call indicator.

1.03 Existing access to the TRS service is based on 800 number dialing. Calls offered to a TRS Center are accepted by a TRS switch that uses its Automatic Call Distribution (ACD) capabilities to select an available CA for the call. When the called

number is obtained from the caller, the CA completes the forward connection to establish the end-to-end connection. The CA manages the backward and forward connections and performs relay during the conversation. The CA also manages recording of call-related details using a terminal provided for billing purposes. Billing records temporarily stored in TRS Centers are later read by downstream billing equipment.

2. Call Flow

Call Flow Diagram

tpa 786606/01

Figure 19-1. End User Call Flow
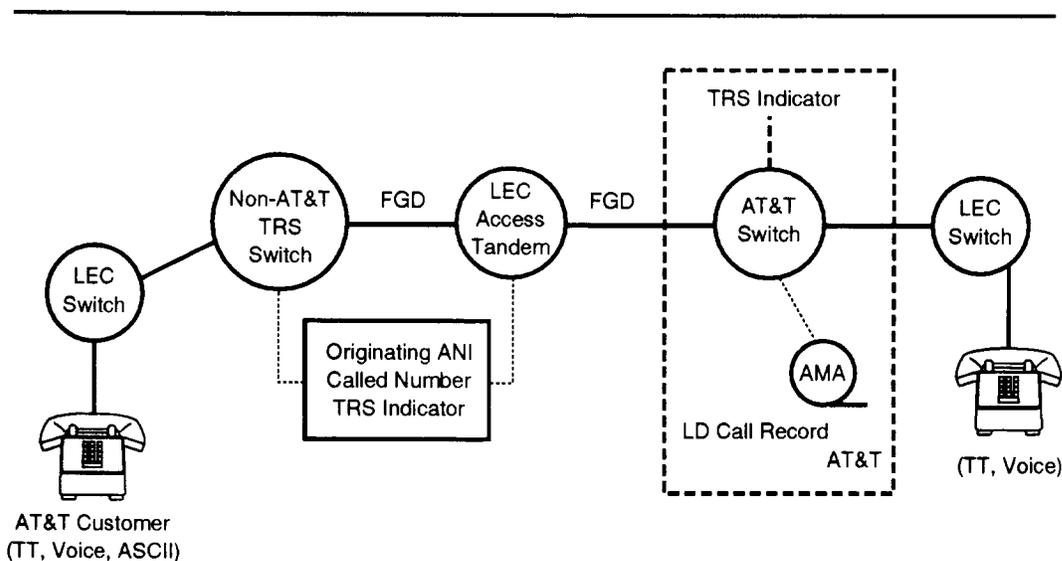
Legend:

AMA	Automatic Message Accounting
ANI	Automatic Number Identification
ASCII	American Standard Code for Information Interchange
FGD	Feature Group D
LD	Long Distance
TRS	Telecommunications Relay Service
TT	Text Telephone

July 1993

Call Flow Narrative

2.01   The call flow covers the following three generic call types:

- TT-to-voice

- Voice-to-TT

- American Standard Code for Information Interchange (ASCII)-to-voice.

The end-to-end connection is illustrated in Figure 19-1.

1.   The TT user dials the 800 number to gain access to the non-AT&T TRS Center.

2.   The CA at the originating TRS switching location determines if the call is local or long distance.

3.   If the call is long distance, the CA obtains the calling number, billing number, and the carrier of choice.

4.   If the long distance call is sent paid (a 1+ call) and the carrier of choice is AT&T, the call is routed through an Access Tandem Switch to an AT&T Toll Switch.

5.   The following information is received by the AT&T Toll Switch:

- Originating Automatic Number Identification (ANI) (calling number)

- Called number

- Information Indicator/Originating Line Identity (II/OLI) digits (identify a TRS call).

6.   The AT&T Toll Switch accepts the preceding information and advances the call to the terminating LEC switch serving the called customer.

7.   After receiving answer supervision, the AT&T Toll Switch generates an AMA record which includes the TRS indicator.

Call Processing

2.02   The *4ESS* switch will identify a TRS call based on receipt of the following:

- The II value of 60 (included in the FGD signaling information)

- The OLI value of 60 (included in the Network Interconnect signaling information).

3. Provisioning

Structures Affected

A. HT4II_OLI

3.01 A new service type, **4XLSTTRS**, is being defined for the II digits (**XL4IIST**) and the OLI value (**XL4OLIST**). The Service Type is populated in the **SRVCT** fields on Office Data Administration (ODA) Form 403S and Recent Change (RC) Forms 334 and 337. Table 19-A describes the service types.

Table 19-A. Service Type Descriptions

Form Input	IIST/OLIST Symbolic Value	Value	Description
—	—	0	Unassigned
EAPOTS	4XLSTEAPOTS	1	Equal Access (EA) Plain Old Telephone Service (POTS)
SDN	4XLSTSDN	2	Software Defined Network (SDN)
OWATS	4XLSTOWATS	3	Outward Wide Area Telephone Service (OUTWATS)
T800	4XLSTT800	4	Translated 800 Number
CMC	4XLSTCMS	5	Cellular Mobile Carrier
TRS	4XLSTTRS	6	Telecommunications Relay Service
—	—	7	Spare

B. HT4IIDIG

3.02 A new value of **XL4ANITYPE** is being defined for TRS and is used by call processing. Table 19-B contains the ANI type descriptions.

Table 19-B. ANI Type Descriptions

IIST/OLIST Symbolic Value	Value	Description
XL4ANINONE	0	No EA ANI
4XLANIEAPOTS	1	Complete ANI for EA POTS call, expect next stage
4XLANIEASDN	2	Complete ANI for EA SDN call, expect next stage
4XLANIEAOWATS	3	Complete ANI for EA OUTWATS call, expect next stage
4XLANIEA800	4	Complete ANI for EA Translated 800 Number, expect next stage
4XLANIEACMC	5	Complete ANI for EA Cellular Mobile Carrier, expect next stage
4XLANIEATRS	6	Complete ANI for EA TRS, expect next stage
—	7	Spare

Forms Affected

A. Office Data Administration

3.03   ODA Form 403S (Figure 19-2) is used to specify the Service Type of the II digits and/or the OLI values. The II digits are the information digits preceding the ANI (if an ANI option is chosen). The OLI parameter is part of the Integrated Services Digital Network (ISDN) signaling message.

```
ESS 403S TG-4    EQUAL ACCESS SIGNALING II DIGITS AND OLI VALUE SERVICE TYPE
<4E17                              4ESS
                   4E17 AND EARLIER GENERIC PROGRAMS


            ESS UNIT _____



FORM CODE 3S
             —
            1  2


     ■■         ■RVCT        ■LI         ■RVCT        CAD

     10  11     13    18     30 32       34    39     80
     ____       _____       ____        _____        __
     ____       _____       ____        _____        __
     ____       _____       ____        _____        __
     ____       _____       ____        _____        __
     ____       _____       ____        _____        __
     ____       _____       ____        _____        __
     ____       _____       ____        _____        __
     ____       _____       ____        _____        __
     ____       _____       ____        _____        __
     ____       _____       ____        _____        __
     ____       _____       ____        _____        __
     ____       _____       ____        _____        __
     ____       _____       ____        _____        __
     ____       _____       ____        _____        __
     ____       _____       ____        _____        __
     ____       _____       ____        _____        __


REMARKS _____  PAGE ___ OF ___
```

Figure 19-2. ODA Form 403S

3.04 The population rules are as follows:

- Valid entries for II are **Blank**, or **00** to **99**.

- Valid entries for OLI are **Blank**, or **0** to **255**.

- Valid entries for SRVCT are **CMC, EAPOTS, SDN, OWATS, T800,** or **TRS**.

B. Recent Change

3.05 RC Form 334 (Figure 19-3) is used to specify the actions to take for II digits and/or OLI values received via Equal Access signaling. If the ANI option is chosen, eight possible II + ANI sequences may be received (from II+3 digits to II+10 digits). Normally, II+10 or II+3 digits are received.

3.06 The 10-digit ANI corresponds to the originating party's Billing Number. The 3-digit ANI is received when the originating party cannot be identified (such as multiparty lines) and consists of the originating Numbering Plan Area.

```
# FORM 334   CHANGE EQUAL ACCESS SIGNALING II DIGITS AND/OR OLI VALUES


RC:EA;CHG;OPT(EAANI),FTA:

ORNU 334---,

 II      OLI      ANICOUNT        ANIACTN

60,     60-,       10,          CANI--,
60,     60-,       3-,          CANI--,
--,     ---,       --,          ------,
--,     ---,       --,          ------,
--,     ---,       --,          ------,
--,     ---,       --,          ------,
--,     ---,       --,          ------,
--,     ---,       --,          ------,
--,     ---,       --,          ------,
--,     ---,       --,          ------,


REMARKS  --------------------------------------------------!
```

Figure 19-3. Recent Change Form 334

3.07 The population rules are as follows:

- Valid entries for II are **Blank,** or **00** to **99.**

- Valid entries for OLI are **Blank,** or **0** to **255.**

- Valid entries for ANICOUNT are as follows:

   — For II, **3** or **10.**

   — For OLI, **0, 3, 10,** or **X.**

- Valid entries for ANIACTN are **CANI, IAROA, IAAFA,** or **NONEA.**

3.08 RC Form 337 (Figure 19-4) is also used to specify the Service Type of the II digits and/or the OLI values.

```
# FORM 337    CHANGE EQUAL ACCESS SIGNALING II DIGITS AND/OR OLI VALUE SERVICE TYPE
<4E17
RC:EA;CHG;OPT(EASVC), ___:

ORNU _____,


     II          RVCT          OLI          SRVCT


     _____,    _____,       _____,      _____,
     _____,    _____,       _____,      _____,
     _____,    _____,       _____,      _____,
     _____,    _____,       _____,      _____,
     _____,    _____,       _____,      _____,
     _____,    _____,       _____,      _____,
     _____,    _____,       _____,      _____,
     _____,    _____,       _____,      _____,
     _____,    _____,       _____,      _____,
     _____,    _____,       _____,      _____,
     _____,    _____,       _____,      _____,
     _____,    _____,       _____,      _____,
     _____,    _____,       _____,      _____,
     _____,    _____,       _____,      _____,
     _____,    _____,       _____,      _____,


REMARKS _____!

            EQUIVALENT ODA INPUT FORM - ESS 403S

            ASSOCIATED VERIFY MESSAGES

            INPUT-13n-VER:EA;FUNC:IIDIGITS
                      VER:EA;FUNC:OLI

        OUTPUT-3af-VER:EA;OPT(FUNC,IIDIGITS)
            3ag-VER:EA;OPT(FUNC,OLI)
```

Figure 19-4. Recent Change Form 337

3.09   The population rules are as follows:

■ Valid entries for II are **Blank**, or **00** to **99**.

■ Valid entries for OLI are **Blank**, or **0** to **255**.

■ Valid entries for SRVCT are **CMC, EAPOTS, SDN, OWATS, T800,** or **TRS**.

C. Verify

3.10   Verify Form 13n is used to request verification of the Equal Access II digits translator or the OLI translator. Form 3af displays the ANI digit count and action information for the II digits, while Form 3ag displays the same information for the OLI values.

TG-4 Updates

3.11 The following divisions of the TG-4 will be updated to include TRS as a valid input for the SRVCT entry:

- Division 2, Section 6d
- Division 6, Section 3s
- Division 7, Section 3al
- Division 8, Sections 3af and 3ag.

4. Recording

4.01 All non-ISDN long distance calls from interexchange carrier TRS Centers with Call Code 60 will be identified with specific II/OLI digits to mark the call as TRS. The II/OLI field will be set to 79 in AMA Table 12 (Service Features). If a Feature Indicator is present for Positive Call Processing (PCP) features, the II/OLI field will be set to 78 in AMA Table 12.

5. Network Management (Not Affected)

6. Maintenance/Troubleshooting (Not Affected)

7. Transition Considerations

Turn On/Turn Off Mechanism

7.01 This feature is turned on automatically by software deployment.

8. Input/Output Manual Pages

8.01 The following Input/Output messages are affected:

- **VER:EA;FUNC**
- **VER:EA;OPT(FUNC,IIDIGITS)**
- **VER:EA;OPT(FUNC,OLI)**.

ID . . . . VER:EA-FUNC
WORK CENTER. . MOC
GENERIC . . . . . . 4E14 and later
CLASS . . . . VER
APPLICATION . . 4E
TYPE . . . . Input

1. PURPOSE

To request verification of the information digits (II) digits translator or originating line identity (OLI) translator.

2. FORMAT

VER:EA;FUNC:IIDIGITS a!

VER:EA;FUNC:OLI b!

3. EXPLANATION OF MESSAGE

a   **II** digits, in range 00-99.

b   **OLI** value, in range 0-255.

4. SYSTEM RESPONSE

PF   Followed by an output message.

RL   Retry later.

5. REFERENCES

PIDENTs
  VRFYEA
  VRFYINPT
  VRFYOUT

Translation Guide, 4ESS[TM], TG-4, Division 8

Output Messages
  VER:EA-F-IIDIGIT
  VER:EA-FUNC-OLI

ID . . . . VER:EA-F-IIDIGIT
WORK CENTER. . MOC
GENERIC . . . . . . 4E14 and later
APPLICATION . . 4E
TYPE . . . . Output

1. FORMAT

```
VER:EA;OPT(FUNC,IIDIGITS):

                              ANIACTN
II   SRVCT   DC-3   DC-4   DC-5   DC-6   DC-7   DC-8   DC-9   DC-10
aa,  bbbbbb, ccccc, ddddd, eeeee, fffff, ggggg, hhhhh, iiiii, jjjjjj
 .      .       .      .      .      .      .      .      .      .
 .      .       .      .      .      .      .      .      .      .
 .      .       .      .      .      .      .      .      .      .
aa,  bbbbbb, ccccc, ddddd, eeeee, fffff, ggggg, hhhhh, iiiii, jjjjjj
```

2. REASON FOR OUTPUT

To verify information digits (II) digits translator.

3. VARIABLE FIELD DEFINITIONS

a	II digits.
b	Service type.
c	Digit count 3.
d	Digit count 4.
e	Digit count 5.
f	Digit count 6.
g	Digit count 7.
h	Digit count 8.
i	Digit count 9.
j	Digit count 10.

4. ACTION TO BE TAKEN

None.

5. REFERENCES

PIDENTs
IOCPIMC4
IOCPPVR4
VRFYEA
VRFYINPT
VRFYOUT

Translation Guide, 4ESS^{TM}, Division 8

Input Message
VER : EA-FUNC

> ID . . . . VER:EA-FUNC-OLI
> WORK CENTER . . MOC
> GENERIC . . . . . . 4E14 and later
> APPLICATION . . 4E
> TYPE . . . . Output

1. FORMAT

```
VER:EA;OPT(FUNC,OLI):

OLI    SRVCT    DC-0    DC-3    DC-10    DC-X
aaa,   bbbbbb,  ccccc,  ddddd,  eeeee,   fffff,
 .       .        .       .        .       .
 .       .        .       .        .       .
 .       .        .       .        .       .
aaa,   bbbbbb,  ccccc,  ddddd,  eeeee,   fffff,
```

2. REASON FOR OUTPUT

To verify originating line identity (OLI) translator.

3. VARIABLE FIELD DEFINITIONS

a	Originating line identifier.
b	Service type.
c	Digit count 0.
d	Digit count 3.
e	Digit count 10.
f	Other digit count.

4. ACTION TO BE TAKEN

None.

5. REFERENCES

PIDENTs
   IOCPIMC4
   IOCPPVR4
   VRFYEA
   VRFYINPT
   VRFYOUT

Translation Guide, 4ESS™, Division 8

Input Message
   VER:EA-FUNC

Remote Measurement System Interface to 4ESS™ Switch Network Validation Test Automatic Message Accounting Collection and Reporting Feature (3892)

20

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Remote Measurement System Interface to 4ESS™ Switch Network Validation Test Automatic Message Accounting Collection and Reporting Feature (3892)

20

1. Feature Description

1.01 This feature provides a test interface between the Remote Measurement System-Digital 2 (RMS-D2) and the 4ESS™ Switch Network Validation Test (NVT) Automatic Message Accounting (AMA) Data Collection and Reporting System. The interface is used by the Switched Message Automatic Remote Testing System (SMARTS)-based Recording Assurance Management System (RAMS) to verify call recording disposition and associated feature functionality on a real-time basis.

1.02 The test interface provided by this feature provides NVT AMA users with access to the Attached Processor System's (APS) I/O system via the 1A Processor I/O control link.

1.03 SMARTS currently supports the provisioning and maintaining of trunks that terminate on 4ESS switches. It is used as a trunk testing system to resolve customer trouble reports. By incorporating the recording verification function facilitated by this feature, the SMARTS-RAMS will serve as a separate application and will not affect the existing features of the SMARTS.

1.04 With this feature, the RMS-D2 can establish a NVT AMA record identification session with the 4ESS switch, using the 1A Processor I/O control link. When the testing is completed, the RMS-D2 will terminate the NVT session and retrieve the AMA records from the 4ESS switch APS. The test interface provided by this feature also allows the user to stop an NVT session in progress.

1.05 This feature uses existing capabilities to receive incoming NVT messages at the 1A Processor RMS-D2 channel and to pass the messages to the APS, accompanied by a tag consisting of the RMS-D2 channel number and a special handling flag. The special handling verb "APVER" is added to the incoming messages.

1.06 The APS looks for the tag, provides special handling, and returns outgoing message acknowledgements and responses with the tag to the 1A Processor, which, in turn, returns the output to the RMS-D2 input channel.

1.07 This feature facilitates real-time, service-specific testing and does not affect any operational functions of the *4ESS* switch.

2. Call Flow (Not Affected)

3. Provisioning (Not Affected)

4. Recording (Not Affected)

5. Network Management (Not Affected)

6. Maintenance/Troubleshooting (Not Affected)

7. Transition Considerations

Turn On/Turn Off Mechanism

7.01 This feature is turned on automatically by software deployment.

8. Input/Output Manual Pages (Not Affected)

Inbound 10-Digit Global Title Translation Table Expansion Feature (3899)

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Inbound 10-Digit Global Title Translation Table Expansion Feature (3899)

21

1. Feature Description

1.01 The Inbound 10-Digit Global Title Translation (GTT) Table Expansion feature is proprietary to AT&T. In 1993, the 800 and Business Application Services Business Units will activate the 10-digit GTT/Exchange Dependent Data (EDD) functionality on the *4ESS*™ switch. In compliance with the inbound near-term forecasts, an interim expansion of the 10-digit GTT table is required. As a result, the inbound 10-digit GTT table has been expanded in the AT&T 3B20D computer and Direct Link Node databases. This feature increases the number of record key entries, Point Code/Subsystem Numbers (PC/SSNs), and Numbering Plan Area number (NPA-NXX) combinations that the *4ESS* switch can support. Increasing the size of the 10-digit GTT table in the 4E17 Release 3 generic supports the near-term needs for inbound services. (Long-term needs for inbound services will be addressed in a later generic release.) To ensure that the near-term needs for inbound services are supported, the 10-digit GTT table in the *4ESS* switches has increased as summarized in Table 21-A. This feature has no impact on call processing.

Table 21-A. 10-Digit GTT Table Capacity Increase

From:	To:
170,000 record key entries	250,000 record key entries
1023 NPA-NXX combinations	3072 NPA-NXX combinations
256 PC/SSN pairs	1023 PC/SSN pairs

2. Call Flow (Not Affected)

3. Provisioning

3.01 Because of the GTT restructure, mapping of the old database with the new database is required. Refer to the Global Title Translation (GTT) Provisioning Feature (3806), included in this Product Release Document, for procedural information.

4. Recording (Not Affected)

5. Network Management (Not Affected)

6. Maintenance/Troubleshooting (Not Affected)

7. Transition Considerations

Turn On/Turn Off Mechanism

7.01 This feature is turned on automatically by software deployment. Ubiquity of the generic across the network is not required before the feature can be fully operational.

8. Input/Output Manual Pages (Not Affected)

Easy Reach 700℠ Call Forwarding Service—Launch Button 700 Number Passalong Feature (3968)

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Easy Reach 700℠ Call Forwarding Service—Launch Button 700 Number Passalong Feature (3968)

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1. Feature Description

1.01 *Easy Reach 700℠* Call Forwarding service allows customers to be reached at the same 0-700 number no matter where they are as long as they subscribe to this service. Subscribers can forward calls, call home, call the forwarding number, and pay for calls made using their personal 700 number. With *Easy Reach 700* service, customers are given their own 700 number that they can keep for a lifetime. They can be reached anywhere by just dialing their 700 number.

1.02 With the Launch Button 700 Number Passalong feature, the *5ESS* switch Operator Services Position System (OSPS) is able to pass the customer's 700 number to the *4ESS*™ switch. This 700 number can then be passed to the Enhanced Service Provider (ESP) Customer Premises Equipment (CPE) on Integrated Services Digital Network (ISDN) trunks. This allows ESPs to provide their services to these *Easy Reach 700* service customers.

1.03 This feature also gives *Easy Reach 700* service subscribers access to other services supplied by ESPs. This is done via the *Easy Reach 700* service menu. If ESPs want to have the 700 number delivered to their platform, they would choose the Launch Button 700 Number Passalong option. When they choose this option, the OSPS will launch an 800 number call to the *4ESS* switch with the 700 number included in the Dialed Number parameter. The 700 number is passed to the ESP with a Primary Rate Interface (PRI) subscribing to "Dialed Number Preferred." The call is then routed to the ESP using *Megacom*® 800 telecommunications service.

1.04   This feature, which is proprietary to AT&T, is controlled by the AT&T *5ESS* switch OSPS and the INWATS DataBase (IDB) Network Control Point (NCP). It is not offered to the Local Exchange Carriers (LECs).

2. Call Flow

2.01   The call flow for this feature is as follows:

1. The caller dials 0-700-NXX-XXXX, and the call is routed by the LEC to an AT&T *5ESS* switch OSPS. A 1-800 access is available for callers who are blocked from dialing the 0-700 number. This access reaches the AT&T *5ESS* switch OSPS via the *4ESS* switch.

2. The *5ESS* switch OSPS connects the caller to an *Easy Reach 700* service platform that is directly connected to the *5ESS* switch. The *Easy Reach 700* service platform provides the caller with menu choices which includes obtaining the ESP platform.

3. If the caller selects access to the ESP platform, the *5ESS* switch OSPS drops the platform off the call and launches an 800 call to the *4ESS* switch to route the call to the ESP. The dialed 700 number and the caller's Automatic Number Identification (ANI) are also routed to the ESP to assure the provider that the call is from the *Easy Reach 700* service platform. The 800 call enters the originating AT&T *4ESS* switch from the *5ESS* switch OSPS via a Common Channel Signaling System 7 (CCS7) trunk subgroup.

4. *Megacom* 800 telecommunications service processing applies to route the call to the AT&T switch network.

5. ESPs that subscribe to the Launch Button Service with 700 Number Passalong must have a PRI provisioned with ISDN "Dialed Number Preferred" (to get the caller's identity) and "Charge Number Preferred" (to get the caller's ANI).

6. The terminating AT&T *4ESS* switch sends the 700 number and the ANI to the ESP via the Q.931 SETUP message.

3. Provisioning

3.01   Trunk subgroups between the *5ESS* switch and the *4ESS* switch must have the Far-End Network (FEN) Block Service Category of **INW** set to "blank" for calls with a FEN class of POTS (for Plain Old Telephone Service).

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4. Recording

4.01   The *4ESS* switch ensures that the Dialed Number is always saved for 800/900
call processing and that the 800 Called Party Number is recorded in the 800
Automatic Message Accounting (AMA) record and not the 700 Dialed Number.

4.02   For 800 AMA recording, the number that is delivered to the originating AT&T
4ESS switch in the Called Party Number parameter of the ISDN User Part (ISUP)
Initial Address Message (IAM) is recorded in the Dialed Numbering Plan Area (NPA) and
Number fields. This allows calls from the OSPS to the ESP to be billed to the 800
number that was dialed by the OSPS.

5. Network Management (Not Affected)

6. Maintenance/Troubleshooting (Not Affected)

7. Transition Considerations

Turn On/Turn Off Mechanism

7.01   This feature is turned on automatically by software deployment. However, the
5ESS switch/OSPS trunk subgroups must have FEN Block Service Category set
as follows:

> INW = Blank
>
> FEN Class = POTS

7.02   Ubiquity of the generic across the network is not required before the feature can
be fully operational.

8. Input/Output Manual Pages (Not Affected)

Abbreviations and Acronyms

A

AAP
Announcement Administration Processor

ABC
Adjunct Based Capabilities

ACG
Automatic Call Gap

ACM
Address Complete Message

AFSC
Advanced Feature Service Center

ALA
Adjunct Logical Address

AMA
Automatic Message Accounting

ANI
Automatic Number Identification

ANS
Answer

ANT
Alternate Number Translation

APPDB
Application Database

APS
Attached Processor System

ASN
AT&T Switched Network

ASTN
Alternate Signaling Transfer Network

ATNS
Access Tandem Transit Network Selection

B

BBC
Broadband Count

BI
Barge-In

BIPB
MAS Barge-In Playback

BITFN
Barge-In Trunk Traffic Number

BU
Business Unit

C

CAU
Centralized Announcement Update

CAUCS
Centralized Announcement Update and Control System

CC
Country Code

CCITT
International Telegraph and Telephone Consultative Committee

CCS
Consumer Communications Services

CCS7
Common Channel Signaling System 7

CDID
Common Channel Signaling Design and Implementation District

ABB-1

CHI
Call Handling Instruction

CLS
Combined Link Set

CNI
Common Network Interface

CNRDB
Common Network Routing Database

COS
Class of Service

CPA
Common Platform Adjunct

CPE
Customer Premises Equipment

CPG
Call Progress

CPR
Call Processing Record

CS
Central Site

CSR
Carrier Specific Routing

CTN
Cut-Through Number

D

DARICS
Data Acquisition Reports and
Integrated Communications System

DAS
Digital Announcement System

DB
Database

DCIS
Destination Common Channel
Interoffice Signaling

DLN
Direct Link Node

DMS
Data Management System

DNHR
Dynamic Non-Hierarchical Routing

DOM
Domain

DRAR
Digital Radio Avoidance Routing

DRTC
Data Rate Transfer Capability

DSD
Direct Services Dialing

DTMF
Dual Tone Multifrequency

E

EA
Equal Access

EDD
Exchange Dependent Data

ESP
Enhanced Service Provider

ESS
Electronic Switching System

F

FAI
Foreign Administration Identity

FEN
Far-End Network

ABB-2

FGD
Feature Group D

FH
Final Handled

FHC
Final Handling Code

FISU
Fill -In Signaling Unit

FS
Field Site

G

GOP
Generic Operation Parameter

GSDN
Global Software Defined Network

GT
Global Titles

GTT
Global Title Translation

H

HAS
Hand-off AT&T Switch

I

IAM
Initial Address Message

ICS
International Communications Services

ICT
Incoming Truck

ID
Identification

IDB
INWATS DataBase

IEC
Interexchange Carrier

ILD
International Long Distance

IMS
Interprocess Message Switch

INC
International Carrier

INWATS
Inward Wide Area Telephone Service

IRAS
Integrated Routing Assignment System

ISAIC
Improved Service Announcement and
Information Collection

ISC
International Switching Center

ISDN
Integrated Services Digital Network

ISUP
Integrated Services Digital Network
User Part

ITN
Integrated Test Network

IUN
IMS User Node

L

LATA
Local Access Transport Area

LD
Long Distance

LEC
Local Exchange Carrier

LI4D
Link Interface 4-Ports DS1

LI4S
Link Interface 4-Ports DDS

LID0
Link Interface DSO

LIE
Link Interface Encrypted

LIER
Link Interface Encryption Removal

LINE
Link Interface Non-Encrypted

M

MAC-OSS
Machine Administration Center
Operations Support System

MAS
Mass Announcement System

MAU
Mass Announcement Unit

MRTI
Multiple Routing Treatment Index

MRTT
Multiple Routing Treatment Table

MRVT
Message Transfer Part Route
Verification Test

MSC
Message Subclass

MSC/OMS
Measurement Subclass/Output
Measurement Set

MTC
Maintenance Channel

MTP
Message Transfer Point

N

NCP
Network Control Point

NEMOS
Network Management Operations
System

NESAC
National Electronic Switching
Assistance Center

NI
Network Interconnect

NMDS
Network Management Display System

NN
National Number

NOC
Network Operations Center

NPA
Numbering Plan Area

NPT
Numbering Plan Type

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NRA
Network Remote Access

NSCX
Network Services Complex

NSF
Network Specific Facilities

NSN
Network Switch Number

NVT
Network Validation Test

NXX
Exchange Number

O

OAS
Originating AT&T Switch

ODA
Office Data Administration

ODA
Office Data Assembler

ODAC
Operations Dial-It Administration
Center

OLI
Originating Line Identity

OMS
Output Measurement Set

OSS
Operations Support System

OSN
Originating Switch Number

OSPS
Operator Services Position System

OUTWATS
Outward Wide Area Telephone Service

P

PAS
Public Announcement Service

PBX
Private Branch Exchange

PC/SSN
Point Code/Subsystem Number

PCP
Positive Call Processing

PECC
Product Engineering Control Center

POTS
Plain Old Telephone Service

PRI
Primary Rate Interface

PTT
Post, Telephone, and Telegraph

PUC
Peripheral Unit Controller

R

RAMS
Recording Assurance Management
System

RBOC
Regional Bell Operating Company

RC
Recent Change

RCT
Route Set Congestion Test

RDB
Routing Data Block

REACH
REmote Adjunct Call Handling

RIIP
Routing Information Indicator
Parameter

RLC
Release Complete

RMS-D2
Remote Measurement System-Digital 2

RN
Routing Number

RNMS
Regional Network Management
System

RTNR
Real Time Network Routing

S

SAFER
Split Access Flexible Egress Routing

SAN
Service Circuit System Announcement

SCC
Service Circuit Controller

SCCP
Signaling Connection Control Point

SCCS
Switching Center Control System

SCS
Service Circuit System

SCU
Service Circuit Unit

SDN
Software Defined Network

SDN
Switched Digital Network

SDN-I
Software Defined Network—
International

SDNA
Software Defined Network Access

SDNCC
Software Defined Network Control
Center

SDS
Switched Digital Service

SID
Service Identity

SII
Service Identity Index

SII
Service Index Indicator

SMARTS
Switched Message Automatic Remote
Testing System

SNA
Service Not Active

SPC
Signaling Point Code

SRE
SIPO Receiving End

SS7
Signaling System No. 7

SSI
Service Circuit System TSG ID

SSN
SubSystem Number

SSP
SubSystem Prohibit

SST
Signaling Service Type

ABB-6

STE
SIPO Transmitting End

STP
Signal Transfer Point

T

TAS
Terminating AT&T Switch

TCAP
Transaction Capabilities Application Part

TCC
Technical Control Center

TFC
Transfer Controlled

TNS
Transit Network Selection

TOP
Task Oriented Practice

TOPAS
Trunk Operations Provisioning Administration System

TRS
Telecommunications Relay Service

TT
Text Telephone

TUP
Telephone User Part

U

UFH
Use Final Handling

UGTT
Universal Global Title Translation Data Base

USI
User Service Information

V

VCA
Vacant Code Announcement

VFL
Voice Frequency Link

VIS
Voice Information Systems

VMA
Vacant MAS Announcement

VMS
Voice Messaging Service

VSSID
Voice Storage System Identity