Lucent Technologies
Bell Labs Innovations

4ESS™ Switch Product Release Document

4E25 Release 1 Generic

234-090-251AC
Issue 1, October 1999

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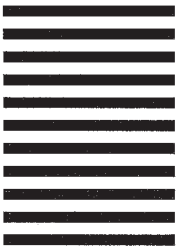

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Contents

Contents **Page**

Chapter 11 1-Digit Translation Table Expansion Feature (7344)

Chapter 12 Mandatory 10 Digits on LSP_LOCAL Trunks Feature (7429a)

Chapter 13 Expansion of LACIDS to Support 856 D-Channels Feature (7501)

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About this information product

Purpose

The purpose of the Product Release Document (PRD) is to provide customers with information pertaining to the new features that are introduced in the *4ESS* switch. A PRD is written to cover the features introduced in full generic releases and quarterly generic releases. This particular PRD provides information pertaining to the new features included in the 4E25 Release 1 Generic, plus features that are released as Software Change Packages (SCPs).

> **Important!** A new index (Appendix B) has been added to this PRD, listing all features documented in the AT&T version of the PRD since its inception with 4E15. The purpose of this index is to allow users to find the PRD issue or revision in which a feature is located. Please feel free to call 630-979-2897, or fill out a comment card if you have comments on this, or any other section, of PRD documents.

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Scope

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 Lucent Technologies 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 4E25 Release 1 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.

Intended Audience

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

How to Use This Document

The PRD for 4E25 Release 1 Generic and 4E24 SCPs contains 13 new features. Each chapter in this document provides information about these features. The chapters are in numerical order according to feature number. The chapter titles are also the feature names.

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

> **Important!** Because some features were added at a late date, not all features are in given in feature number order (Feature 568 is at the end).

Chapter 1: *Grow D-Channel Node Capability From 106 to 130 Feature (521)*

This feature describes the increase of the maximum number of D-Channel Nodes on the *4ESS*™ switch.

Chapter 2: *4ESS 3B APS Update to Real-Time Reliable (RTR) 21.30 Feature (552)*

This feature provides a software upgrade of the *4ESS* APS OS software from RTR 21.17 to RTR 21.30. This software upgrade is used as the base for the 4E25 Release 1 Generic and 4AP18 generic loads.

Chapter 3: *Modification Request (MR) to 4ESS Switch Local Service for Nodal Customers – Phase 1 Feature (5370i)*

This feature extends the support of the *4ESS*™ switch to generate and respond to Circuit Validation Test message parameters.

Chapter 4: *Capacity Relief on 1B Processor Memory Feature (6888)*

This feature provides capacity relief on the 1B memory by improving the data structure usage efficiency and by moving the static structures to the Windowed Call Store (WCS).

Chapter 5: *AT&T Digital Link Phase V Architecture Feature (6938)*

The AT&T Digital Link–Phase V (ADL–V) provides the Business Markets Division (BMD) customers the capability to send both their local and nodal traffic on one combined trunk group from their Private Branch Exchange (PBX) switched directly to an AT&T End Office (EO).

Chapter 6: *Further Expansion of the Operator Service Position System (OSPS) ID Table Feature (7064)*

This feature expands the 10-digit entries in the Operator Service Position System (OSPS) Access ID Table in the *4ESS*™ switch from 1024 to 6144 and increases the number of OSPS IDs from 256 to 1000.

Chapter 7: *Restructure and Grow the Call Register Feature (7254)*

This feature frees up Real-Time to support additional call capacity. It is estimated that this feature saves approximately 0.4 to 1.0 percent of 1B time.

Chapter 8: *Killing Fraudulent Software Defined Network/Network Remote Access Calls Feature (7312)*

This feature specifies the requirements to kill fraudulent Software Defined Network (SDN) Network Remote Access (NRA) calls. The Global Network Fraud Management Center (GNFMC) of AT&T monitors and controls fraud for various AT&T services.

Chapter 9: *ANC NANP CIC Routing Feature (7323)*

This feature allows AT&T Network Connection (ANC) subscribers to route their POTS traffic to a special (non-AT&T) network switch for call routing. Specific Carrier Identification Codes (CICs) are associated with this service, and a special routing number is built based on CIC and possibly Numbering Plan Area (NPA).

Chapter 10: *Transfer Connect on ATP – Out-of-Band Trigger and Data Enhancement Feature (7335)*

This feature increases the capabilities provided in Features 4875 and 5892. These enhancements provide the following:

- Out-of-Band (OOB) error messages
- Ability to pass User-to-User (UUI) OOB data in a FACility message and transferring it to the target party
- Three new generic actions—Enable User OOB, Send Facility Message, and Screen OOB data.

Chapter 11: *1-Digit Translation Table Expansion Feature (7344)*

This feature expands the capacity of the 1-Digit Translation Table from 4096 entries to 8192 entries.

Chapter 12: *Mandatory 10 Digits on LSP_LOCAL Trunks Feature (7429a)*

This feature requires that 10 digits be delivered on all calls to the *4ESS™* switch over Local Service Provider – Local Trunks (LSP_LOCAL) trunks. This is done by removing the prefixing of the far end Numbering Plan Area (NPA), performed as part of the processing of the served NPA.

Chapter 13: *Expansion of LACIDS to Support 856 D-Channels Feature (7501)*

This feature is a Modification Request (MR) to Feature 5361, *4ESS™ Interim D-Channel Expansion;* it increases the maximum number of Logical Access Identifiers (LACIDs) in the *4ESS* switch Direct Link Node (DLN), and in the Dynamic Engineering Mechanized System (DEMS)/Data Acquisition Report Integrated Communications System (DARICS) from 511 LACIDs to 856 LACIDs.

As a result of several features (5020/5361/521), the maximum number of D-Channels was increased to 856. To support the growth of the D-Channel (especially in the simplex mode), each D-Channel needs a separate and distinct LACID (856).

Chapter 14: *Procedure for Growing ATP TSGs feature (7701)*

This feature creates an Office Data Assembler (ODA) retrofit or stand-alone rule to add spare AT&T Trigger Platform (ATP) Trunk Subgroups (TSGs). When an office reaches less than 4 available spare in-service ATP TSGs, the new retrofit or stand-alone rule provides up to 4 spare ATP TSGs up to a maximum of 64.

Chapter 15: *3B20D and 3B21D Disk Replacement (9GB Disk) feature (568)*

This feature introduces a new 9GB Small Computer Systems Interface (SCSI) disk drive to replace the existing 4GB SCSI disk drive.

Chapter 16: *Release Summary – 4E25 Release 1 Generic.*

This chapter summarizes several aspects of the features in this document. This chapter identifies Growth and Retrofit documents (if any) affected by this release; new, changed, or deleted input and output messages; Operations Support Systems impacts of the release; and new or changed alarms and measurements. The final section of this chapter tells how each of the new features is turned on and off.

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1 Grow D-Channel Node Capability From 106 to 130 Feature (521)

Overview

Description This feature describes the increase of the maximum number of D-Channel Nodes on the *4ESS*™ switch.

Purpose This feature increases the D-Channel Nodes to a maximum of 130.

Contents This chapter contains the following topics:

Feature Description

Feature 5361, *Interim D-Channel Expansion*, increased the number of D-Channel Nodes on the Common Network Interface (CNI) ring from 60 to 130. However, the feature had to be deployed with a maximum of 106 D-Channel Nodes because of the 3B20D Processor virtual memory capability. This allowed the 4E23 Release 1 Generic to run on both the 3B20D and 3B21D Processor hardware platforms.

When this feature (521) is implemented, the total number of D-Channel Nodes will increase to 130. However, the software generic will not run on the 3B20D Processor.

□

Call Flow (Not Affected)

Provisioning (Not Affected)

Recording (Not Affected)

Network Management (Not Affected)

Maintenance/Troubleshooting (Not Affected)

Transition Considerations

Feature Dependencies This feature is dependent on Feature 5361, *Interim D-Channel Expansion* (4E23 Release 1 Generic).

Feature Deployment It is not necessary for the 4E25 Release 1 Generic to be deployed in all *4ESS*™ switches in the network for this feature to be fully operational.

Feature Activation This feature is activated by software deployment.

□

Input/Output Manual Pages (Not Affected)

2 *4ESS*™ 3B APS Update to Real-Time Reliable (RTR) 21.30 Feature (552)

Overview

Description This feature provides a software upgrade of the *4ESS* APS OS software from RTR 21.17 to RTR 21.30. This software upgrade is used as the base for the 4E25 Release 1 Generic and 4AP18 generic loads.

Purpose This feature provides the basic requirements for upgrading the Operating System (OS) software of the *4ESS™* Attached Processor System (APS) 3B21D to UNIX RTR Version 21.30 from RTR 21.17.

Contents This chapter contains the following topics:

Feature Description

Background

There is a need to upgrade the OS of the *4ESS* 3B21D APS to RTR 21.30 from RTR 21.17. There are two drivers for the software upgrade, as follows:

- The need to maintain the latest 4E APS software generic current with the latest RTR OS release and Software Development Environment (SDE)
- Sun Micro Systems, Inc. has announced that it does not plan to support *SOLARIS** Computer Operating Systems 2.3 beyond the year 2000.

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Description

This feature provides a software upgrade of the *4ESS* APS OS software from RTR 21.17 to RTR 21.30. This software upgrade is used as the base for the 4E25 Release 1 Generic and 4AP18 generic loads.

New Feature Requirements

Periodically, new versions of the UNIX RTR and application software are released for installation into the *4ESS* APS. For the 3B-processor complex, this process is the 4APS generic retrofit process. Since the 3B provides critical real time services for *4ESS* switch applications, the major goal of the retrofit process is to assure a smooth, reliable means for transitioning the office to the new generic load. A new 4APS load is retrofitted before a new 1B processor, and therefore, must be able to support both the new and current 1B generics.

During each stage of the retrofit process, the *4ESS* APS must pass tests to ensure the retrofit process is proceeding as expected. These include tests during the retrofit procedure followed by acceptance tests run after the cutover to the new APS generic. The *4ESS* APS retrofit is broken down into distinct steps. At each step prior to the commit checkpoint, the capability is provided to back out the retrofit. The back-out procedure is a procedure that will return the 3B processor to its original operating configuration before the retrofit was initiated. The retrofit steps for the 3B21 RTR upgrade to 21.30 follows the standard 4APS retrofit process.

The following requirements prepare the office for a 3B APS retrofit and makes sure that the office is in a suitable operating condition for the retrofit:

- The 4E APS, which is to be retrofitted, will be running on the 4AP17/4E24 generic loads.
- The existing Equipment Configuration Data (ECD) database shall be updated to the new RTR21.30 database.
- The existing Software Generation Data (SG) shall be updated to the new RTR21.30 database.
- All new, deleted, and updated ECD forms and fields that are office dependent shall be mapped by an application retrofit process.

Call Flow (Not Affected)

Provisioning (Not Affected)

Recording (Not Affected)

Network Management (Not Affected)

Maintenance/Troubleshooting (Not Affected)

Transition Considerations

Feature Deployment It is not necessary for all *4ESS* switches in the network to be running the 4E25 Release 1 Generic before the feature is activated.

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

Input/Output Manual Pages (Not Affected)

This page intentionally left blank

3 Modification Request (MR) to *4ESS*™ Switch for Local Nodal Customers – Phase 1 Feature (5370i)

Overview

Description This feature extends the support of the *4ESS*™ switch to generate and respond to Circuit Validation Test message parameters.

Purpose This feature is a Modification Request (MR) to Feature 5370, *Local Service for Nodals on the 4ESS Switch Phase 1*, located in the 4E22 Release 2 Generic.

Contents This chapter contains the following topics:

Feature Description

Introduction

This feature extends the *4ESS* switch support to generate and respond to Circuit Validation Test message parameters as if it were a local switch over Local Carrier Connecting (LCC) trunks when provisioned with a local Common Language Location Identifier (CLLI). It was decided that all local trunks were to be converted from LCC trunks to the new LSP_LOCAL trunks, but due to recording needs the LCC trunks provisioned with local CLLIs will continue to be used by the Digital Link toll-free platform.

This feature introduces a new trunk group parameter, Local Service Validation Test (LCVT), to support the circuit validation test indicator.

□

Call Flow (Not Affected)

Provisioning (Not Affected)

Recording (Not Affected)

Network Management (Not Affected)

Maintenance/Troubleshooting (Not Affected)

Transition Considerations

Feature Deployment It is not necessary for all 4ESS switches in the network to be running the 4E25 Release 1 Generic for this feature to be fully operational.

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

Input/Output Manual Pages

Output Manual Pages Modified The following Output Manual pages were modified for this feature to add the LCVT field:

- VER:TSG-IN1WAY
- VER:TSG-OUT1WAY
- VER:TSG-TWOWAY

4 Capacity Relief on 1B Processor Memory Feature (6888)

Overview

Description This feature provides capacity relief on the 1B memory by improving the data structure usage and by moving some static structures to the Windowed Call Store (WCS).

Purpose This chapter provides customers with information on Feature 6888.

□

Contents This chapter contains the following topics:

Feature Description

Description

This feature provides capacity relief for the 1B processor by improving the data structure usage and by moving some static structures to the WCS. In order to improve memory usage efficiency and free up space, the following six procedures were performed:

- Separate End-to-End Class-of-Service (ECOS) Routing Pattern Identity (ERPI) sets into the following three areas:
  - International ERPI set contains all ERPIs with ETYPE equal to international or both.
  - Domestic ERPI set contains all ERPIs with ETYPE equal to domestic or both.
  - Complete ERPI set contains all ERPIs.
- Eliminate outgoing counts for incoming ERPIs.
- Split the four ERPI area measurement counts across 1B words.
- Scale back the maximum number of sets for the 5-minute Service Identity (SI) data.
- Move programs from the Call Store (CS) to the Program Store Expansion (PSE).
- Move the Originating Carrier/Terminating Carrier Pair Foreign Administration Identification (OCTCPFAI) structure to the WCS.

□

Call Flow (Not Affected)

Provisioning

ODA Forms

ODA Form 406C

This form is updated by this feature with the addition of the following new fields:

- **MAXCAREA**
- **MAXDAREA**
- **MAXIAREA**
- **MAXICERPI**
- **MAXIDERPI**
- **MAXIIERPI**
- **MAXOCERPI**
- **MAXODERPI**
- **MAXOIERPI**
- **MAX5ECOS**
- **MAX5RTNR**
- **OCTP_IN_WCS**

The forms and population rules for these new fields are listed in Table 6-A.

Field **OCTP_IN_WCS** is added to this form to indicate whether the location of the HT40CTCPOFAI structure is either in Windowed Call Store (WCS) or Main Call Store (MCS). The population rules for this field are located in Table 6-B.

ODA Form 406Z

This form is updated by this feature with the addition of the following new fields:

- **DEF_ERPI_DOM_OUT**
- **DEF_ERPI_DOM_IN**
- **DEF_ERPI_INT_OUT**
- **DEF_ERPI_INT_IN.**

Recent Change Forms

Recent Change Forms 100, 102, 106, 107, and 109

The layouts of these forms are not changing. These forms are modified internally to perform the following:

- Determine the AREA as one of the following:
  - Complete
  - International
  - Domestic.
- Populate the new XL4ECS_AREA_ERPISET item and store the corresponding index of each ERPISET in the new item, XL4ECS_AREA_ESET_INDX.
- Check the XL4ECS_AREA_INCON bit for inconsistencies when adding/deleting TSGs of the same FEAREA.
- Avoid conflicts when a TSG of a given ERPISET is different from another TSG with the same AREA.
- Maintain the number of AREAs in a given ERPISET.

Recent Change Form 637

This form is updated by this feature with the addition of one new field, **ETYPE**. Refer to the *TG-4 Modifications manual* for forms and population rules.

Recent Change Form 638

The layout of this form is not changing. This form is modified internally to support the HT4ECS_ERPI structure and the increase of the entry size 4EXLECS_ERPI_ESZ.

Recent Change Form 662

The layout of this form is not changing. This form is modified internally to use the HT4WCS2ID structure to determine if the OCTCP structure is in MCS or WCS. Refer to Table 6-C.

Table 6-A – Forms and Population Rules for ODA Forms 406C and 406Z

406C Form Field	Form Input	Populates	With	Checks
MAXCAREA	blank, 1-1023	OD4ECS_MAX_CAREA	0 (blank), 1-1023	a, b
MAXDAREA	blank, 1-1023	OD4ECS_MAX_DAREA	0 (blank), 1-1023	a, b
MAXIAREA	blank, 1-1023	OD4ECS_MAX_IAREA	0 (blank), 1-1023	a, b
MAXICERPI	blank, 1-31	OD4ECS_MAX_ICERPI	0 (blank) 1-31	a, d
MAXIDERPI	blank, 1-31	OD4ECS_MAX_IDERPI	0 (blank) 1-31	a, c
MAXIIERPI	blank, 1-31	OD4ECS_MAX_IIERPI	0 (blank) 1-31	a, c
MAXOCERPI	blank, 1-31	OD4ECS_MAX_OCERPI	0 (blank) 1-31	a, d
MAXODERPI	blank, 1-31	OD4ECS_MAX_ODERPI	0 (blank) 1-31	a, c
MAXOIERPI	blank, 1-31	OD4ECS_MAX_OIERPI	0 (blank) 1-31	a, c
MAX5ECOS	blank, 0-3	OD4ECS_MAX_5ECOS	0 (blank) 1-3	NA
MAX5RTNR	blank, 0-3	OD4ECS_MAX_5RTNR	0 (blank) 1-3	NA
OCTCP_IN_WCS	N or Y	OD4ECS_OCTCP_IN_WCS	N OR Y	NA

Table 6-B – Population Rules for OCTP_IN_WCS

OCTP_IN_WCS Field	
IF…	**THEN…**
The field entry is Y.	The OCTCP table is in WCS memory.
The field entry is N.	The OCTCP table is in MCS memory.
The field entry is Y.	Field **NWCSMU** in ODA Form 460C cannot contain 0 because it contains the number of WCS memory modules in the office. **Important!** An office has to be equipped with WCS when selecting the OCTCP_IN_WCS option.

Table 6-C - Recent Change Form 662 Population Rules

HT4WCS2ID Structure	
If the entry is…	**Then the structure is in…**
1DKTRAN	MCS
1DKTRAN1	WCS

Recording (Not Affected)

Network Management

1B Processor Memory

This feature affects how measurements are stored in the 1B Processor. The following counts are stored:

- Usage Count
- Designated Carrier Usage Count
- Area Cancel Calls Canceled Count
- Area Cancel Calls Skipped Count
- Insert and Overflow Override Success Count.

There are no effects on NEMOS as the interface for sending the counts to NEMOS is unchanged.

□

Maintenance/Troubleshooting

Final Handling Codes

The following Final Handling Codes (FHC) were created for this feature:

- FHC 1812
- FHC 1813.

□

Transition Considerations

Feature Deployment It is not necessary for all *4ESS* switches in the network to be running the 4E25 Release 1 Generic for this feature to be fully operational.

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

□

Input/Output Manual Pages

Input Messages The following input messages are modified to support this feature:

- **VER:ECOS**
- **VER:RTNR-RPI**

Output Messages The following output messages are modified to support this feature:

- **VER:ECOS-AREALIS**
- **VER:RTNR-RPI**

□

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5 AT&T Digital Link Phase V Architecture Feature (6938)

Overview

Description The AT&T Digital Link–Phase V (ADL–V) provides the Business Markets Division (BMD) customers the capability to send both their local and nodal traffic on one combined trunk group from their Private Branch Exchange (PBX) switched directly to an AT&T End Office (EO).

Purpose This chapter contains the requirements for the network to support ADL-V and Long Distance Nodal Concentration (LDNC).

Contents This chapter contains the following topics:

Feature Description

Introduction

The ADL-V defines an architecture based on commercially available switching platforms that support the Advanced Intelligent Network (AIN). The basis of the ADL-V/LDNC architecture is the introduction of an AIN interface on the Segmentation Directory (SD) and the No. 2 Direct Services ANI/No. 2 Network Control Point (2DSA/2NCP). Using the industry standard AIN interface, this allows an AT&T EO to query existing 2DSA/2NCPs for service processing without first routing the call to the *4ESS*™ switch network as is done in ADL-IV/LDNC.

Every call from an ADL-V or LDNC customer [except calls that escape or are blocked (such as 8YY, 0+, or N11)] queries a 2DSA/2NCP via the SD. This query determines the call disposition (that is, whether or not the call is featured or non-featured, and local or toll). Based on the determination made by the service logic in the 2DSA/2NCP, instructions are returned to the AT&T EO for appropriate call processing. If the call does not require special processing available only at the *4ESS* switch (for example, playing customized announcements or digit collection), the EO records and routes the call. The EO routes the call to the *4ESS* switched network if the call is a data or certain type of international call, or requires the following processing:

- Customized announcements
- Digit collection.

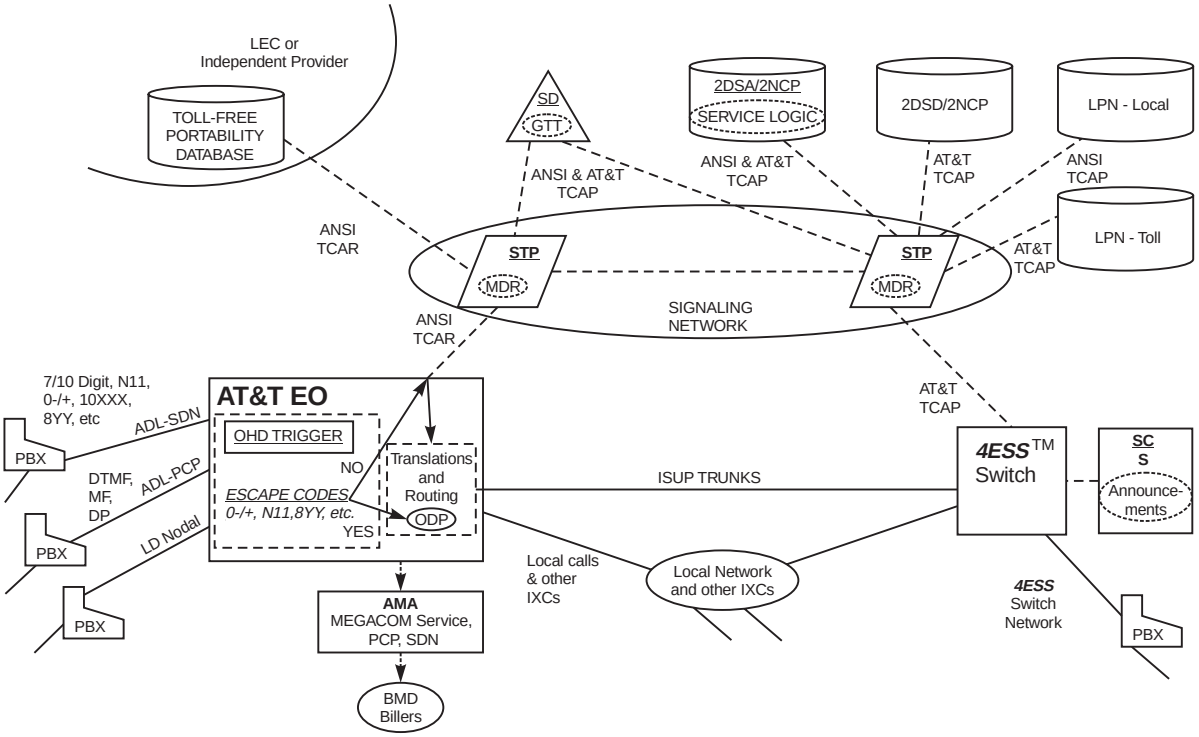
In these cases, the *4ESS* switch records and routes the call.

Network Architecture

The ADL-V and LDNC network architecture (illustrated in Figure 5-1) consists of the following:

- AT&T EOs and *4ESS* switches to switch and route calls
- Service Circuit Systems (SCSs) at the *4ESS* switch to play customized announcements and collect digits
- Capabilities within the AT&T EO (for example, 16A frames) to play standard announcements
- 2DSA/2NCP data bases that contain service logic and customer data
- Signaling Transfer Points (STPs) and SDs to route Transaction Capabilities Application Part (TCAP) queries between switches and data bases.

Figure 5-1 - Network Architecture with Signaling Network Unification



Legend:

2DSA - No. 2 direct Services Announcement
2NCP - No. 2 Network Control Point
ADL - AT&T Digital Link
AMA - Automatic Message Accounting
ANSI - American National Standards Institute
BMD - Business Markets Division
DP - Dial Pulse
DTMF - Dual Tone Multi-Frequency
EO - End Office
GTT - Global Title Translation
ISUP - ISDN User Part
IXC - Interexchange Carrier
LD - Long Distance
LEC - Local Exchange Carrier
LNP - Local Number Portability
MDR - Multiple Destination Routing
MF - Multi-Frequency
ODP - Office Dialing Plan
PBX - Private Branch Exchange
PCP - Positive Call Processing
SCS - Service Circuit System
SD - Segmentation Directory
SDN - Software Defined Network
STP - Signaling Transfer Point
TCAP - Transactions Capability Application Part

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The EO performs the call control and service switching function for the ADL-V/LDNC intelligent network. The switch defines the Intelligent Network (IN) calls and, based on an off-hook delay trigger subscribed at a trunk level, uses the American National Standards Institute (ANSI) AIN TCAP to query the appropriate 2DSA/2NCP via the SD. Calls received by the EO from an ADL or LDNC customer's PBX (that do not escape) query a 2DSA/2NCP via the SD for service processing and customer data. Calls that escape the query may either be blocked (that is, sent to vacant code or reorder per the ADL offer) or routed according to the ADL-V/LDNC Office Dialing Plan (ODP) provisioned in the EO.

For calls requiring a 2DSA/2NCP query, the EO originates an AIN TCAP message through the STP network to the SD. The STP performs Multiple Destination Routing (MDR) to identify to which SD to route the query. If the Signaling Network Unification (Feature 7077) is delayed and not deployed before ADL-V/LDNC, the EO may be connected to a STP pair with a Network ID (NID) of 215. The EO and STP with NID = 215 will MTP route the query to the STP pair with NID = 254, which performs MDR and routes the query to the SD. This happens for both Info_Collected and Local Number Portability (LNP) queries.

When the 2DSA/2NCP receives the Info_Collected message, it retrieves the customer account and executes service logic. Based on the service logic contained in the customer account, the 2DSA/2NCP sends instructions to the EO. The following instructions may be included:

- Play standard announcements when the call is to be final handled at the EO.
- Route and record the call.
- Up-chain the call to the AT&T *4ESS* switch network for call processing.

The 2DSA/2NCP also supports network management capabilities to protect the data base and the network from overload conditions. When the 2DSA/2NCP reaches an overload state, it broadcasts an Automatic Call/Code Gap (ACG) message to the SDs in an AT&T TCAP format.

For voice calls that do not require customized announcements or digit collection, the 2DSA/2NCP passes routing and recording instructions to the EO. After receiving the instructions for routing the call, the EO may query the LNP data base and then route the call to a *4ESS* switch to complete the call. If the EO has previously queried the 2DSA/2NCP and received instructions to handle the call, the EO instructs the *4ESS* switch to route the call without performing the following tasks:

- Querying to 2DSA/2NCP
- Querying the SD from either the 1B Processor or the Direct Link Node (DLN)
- Creating a customer Automatic Message Accounting (AMA) record.

This occurs when the 2DSA/2NCP returns a Charge Party Station parameter equal to 48 or 49 to the EO. The EO maps the Charge Party Station parameter to the Originating Line Information (OLI) in the ISDN User Part (ISUP) Initial Address Message (IAM) message. For these scenarios, the *4ESS* switch sets the proper domain for the call.

The 2DSA/2NCP may also instruct the EO to up-chain certain calls to the *4ESS* switched network for handling. These types of calls include the following:

- Data calls
- Calls requiring customized announcements or digit collection
- Global Software Defined Network (GSDN)-Rest of World calls.

When the service logic within the 2DSA/2NCP determines that a call must be up-chained to the *4ESS* switched network, it instructs the EO to route the call to a *4ESS* switch and passes call control to the switch. This happens when the 2DSA/2NCP returns a Carrier ID of 288 and the Charge Party Station Type (which is mapped to the OLI in the ISUP IAM) equal to 40 or 41. The use of OLI = 40 or 41 directs the *4ESS* switch to use ADL-V processing. For these calls, the switch uses originating call processing functionality to handle the call. The *4ESS* switch re-queries the 2DSA/2NCP via the SD and re-initiates service logic processing and then routes and records the call. The switch also performs an LNP data base query.

The *4ESS* switch can distinguish whether ADL and Local Nodal Concentration calls are from an AT&T EO or from other Network Interconnect calls by using the Far-End AT&T Local Network (FEALN) Trunk Subgroup (TSG) parameter in conjunction with the OLI values. If the FEALN parameter is set to Yes on trunks between the *4ESS* switch and an AT&T EO, it indicates that calls received at the *4ESS* switch are sent by an AT&T EO.

The ADL-V/LDNC changes the final-handling treatment in the *4ESS* switch. Currently, the *4ESS* switch final handles a call by playing a final-handling announcement for a call that originates on a Local Carrier Connecting (LCC) trunk. To support Software Defined Network (SDN) Off-Net Overflow in Busy for ADL-V/LDNC, the *4ESS* switch sends a release message from the switch to the EO. The switch supports a new FEALN release indicator in trunks that have FEALN = Y. This new release indicator [provisioned in the Final-Handling Treatment (FHT) Table] instructs the switch to either final handle the call or to return a release message to the EO. The *4ESS* switch will either send the received cause value or send the cause field in the FHT Table to the EO, overriding the received cause.

The handling of SDN Off-Net Overflow on Busy may require processing at both the EO and the *4ESS* switch acting as the Originating AT&T Switch (OAS). For SDN Off-Net Overflow on Busy calls sent to the *4ESS* switch with OLI of 49, the *4ESS* switch (acting as the OAS) attempts to route the call on the primary route (as done today). The OAS routes to the overflow route when a release message is received on the primary route. If a release message is received on the overflow route, then the OAS final handles the call by sending a release message back to the EO for the call. Prior to ADL-V/LDNC, the *4ESS* switch would final handle the call by playing a final announcement.

For calls sent to the *4ESS* switch with OLI = 49, the switch does not query the 2DSA/2NCP. Therefore, the switch does not have an overflow route. The *4ESS* switch final handles the call by sending a release message to the EO when it receives a release message.

The handling of Split Access Flexible Egress Routing (SAFER) and Interim SAFER continues to be handled as done today in the *4ESS* switch. For SAFER, the *4ESS* switch receives an AT&T Crankback (CRB) message and routes to an alternate switch based on information in the Multiple Routing Treatment (MRT) table. For Interim SAFER, the OAS receives a release message from the Terminating AT&T Switch (TAS) and substitutes the paired Interim SAFER code (for example, 221-001-XXXX) for the first code (for example, 220-001-XXXX) that was tried.

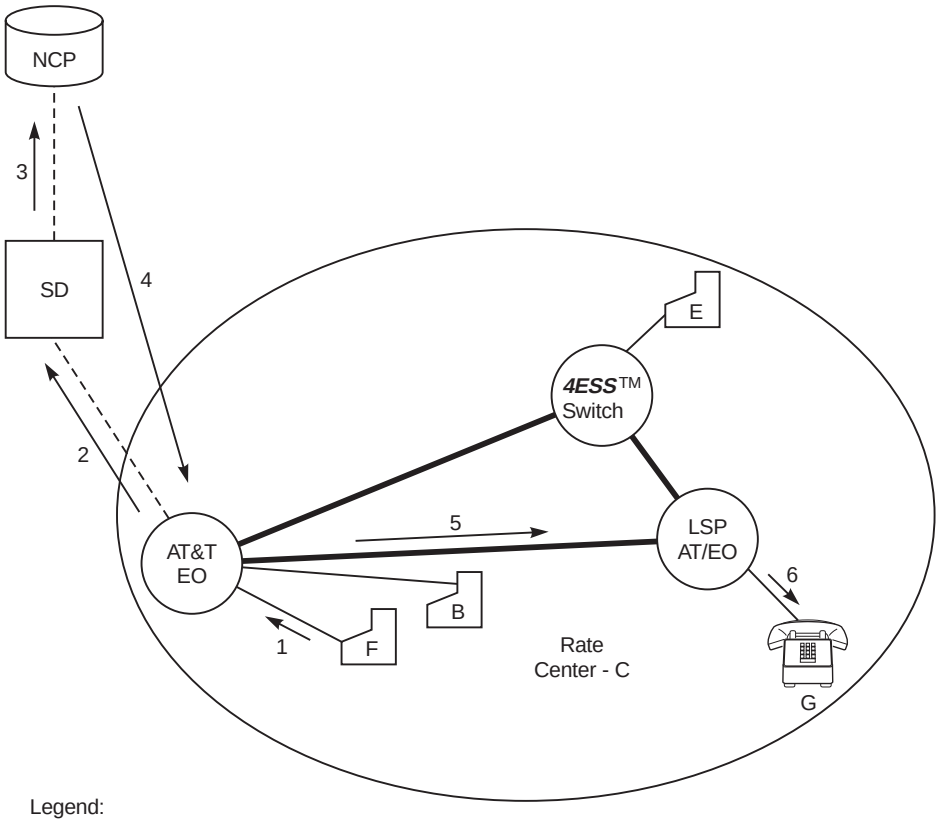
□

Call Flows

General

To simplify the call flow diagrams, all Signaling System 7 (SS7) signaling links are not explicitly shown. Switches communicate with SDs via STPs. The 2DSA/2NCPs communicate with SDs and switches via STPs. Additionally, the *4ESS* switches query the 2DSA/2NCPs via SDs.

Figure 5-2 - *MEGACOM Service/PCP and SDN Off-Net Local Calls Not Requiring Announcements**



Legend:
AT - Access Tandem
EO - End Office
LSP - Local Service Provider
NCP - Network Control Point
SD - Segmentation Directory

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*MEGACOM** Service/Positive Call Processing and SDN Off-Net Local Call (No Announcement)

The following call flow (illustrated in Figure 5-2) does not apply to LDNC:

1. The customer dials a local number and the Private Branch Exchange (PBX) routes the call to the AT&T EO.

2. The EO does the following:
   - Performs pre-query processing, including validating the dialed number and checking for escape codes. In this scenario, the call passes number validation and does not escape.
   - Prefixes the home Numbering Plan Area (NPA) associated with the PBX trunk of the customer via switch provisioning when the EO receives the seven dialed digits for a *MEGACOM** service/Positive Call Processing (PCP) call.

     *Registered trademark of AT&T.
   - Triggers, formats Info_Collected message, and sends a query to an SD.

3. The SD complex receives the Signaling Connection Control Part (SCCP) Global Title Translation (GTT) message. Hybrid GTT distinguishes that this is an AIN message and routes it to an SD application. Among other checks (that is, the Key Service Type), the SD application uses the Charge Number parameter in the AIN TCAP portion of the incoming message to determine if there is an ANI Key match.

If there is...	Then the SD…
A match	Looks in the Service Processor (SP) Table to identify the specific 2DSA/2NCP Point Code and Sub-System Number. The SD populates the Message Transfer Part (MTP) and SCCP fields with the routing information. Since the message received is an AIN Info_Collected message, the SD inserts the appropriate Customer ID in the Extension Parameter of the Info_Collected message. [The SD derived the Customer ID from the Automatic Number Identification (ANI) record.] The SD then routes the message to the appropriate 2DSA/2NCP.
No match	Does not send a message to either the EO or the 2DSA/2NCP. The EO times out and default routes the call.

4. Upon receipt of the Info_Collected message, the 2DSA/2NCP does the following:
   - Performs local/toll differentiation. In this case, the call is determined to be a local call.
   - Provides feature processing.
   - Returns the following information to the EO in an Analyze_Route message:
     –Local/Toll Differentiation Info:
     a. *Primary Carrier ID* = LEC (Local Exchange Carrier) or PSEUDO (signifying that this is a local call and should be routed as such)
     b. *Carrier Usage* = 0 (This identifies normal routing. Since the Primary Carrier ID is LEC or PSEUDO, this signifies that there should be local routing.)
     –*Charge Number* containing the ANI
     –*Calling Party ID* containing the LANI (Local ANI)
     –*Called Party ID* containing the Routing Number [North American Numbering Plan (NANP)]
     –*Charge Party Station Type* set to 48 or 49
     –AMA information:
     a. Overflow Billing Indicator: AMA Call Type = 309 (*MEGACOM* service/PCP) or 129 (SDN)
     b. Overflow Billing Indicator: Service Feature ID = 045 (*MEGACOM* service/PCP)
     c. AMAslpID = Customer ID (9 digits).
     –*Extension Parameter*: Bearer Capability – f3.1kHzaudio
   - Returns the following information to the EO in a Furnish_AMA_Information message:
     –Module 877 (Local/Toll Differentiation) with Local Call Indicator and LANI
     –For SDN calls only, Module 878 [Customer RCP/Revenue Accounting Office (RAO) and Call Progress Stopped], Module 827 [Digit Module B with Alternate Destination Number (SDN Billing Number)], and Module 876 [Transport Tariff/Usage Sensitive Features Indicator (TT/USFI)].

5. The EO receives the Analyze_Route response from the 2DSA/2NCP and performs the following tasks:
   - If the NPA-NXX of an NANP returned in the Called Party ID parameter is open to portability and the NANP number is not resident on the AT&T EO, the EO performs LNP processing to determine if the Routing Number has been ported and, if so, to identify the correct Location Routing Number (LRN).
   - Routes the call locally. This may mean that the call is routed within the EO to a Local Service Provider (LSP) Tandem or to an LSP EO. An LSP can be a LEC or Competitive Access Provider (CAP), including AT&T. If the EON_SupressCN flag is set for the egress trunk group, the OLI of the outpulsed IAM must be populated with the switch-provisioned default OLI and the Charge Number must be suppressed.
   - Creates an appropriate AMA record as follows:
     –*Basic MEGACOM service/PCP local call:* The EO switch generates AMA Structure Code 0220, and appends Module 877 (Local/Toll Differentiation) and Module 923 (Numbering Plan Type) if the originating number is Private. For long duration calls, the EO appends Module 022 to the continuation record. The EO also appends two Translation Settable Modules 030, one with AMA Call Type Code (309) and the other with Service Feature value (045) exactly as received in the Overflow Billing Indicator parameter. The EO also appends Module 720 if the NPA-NXX of the destination number is open to portability and the EO performs an LNP data base query. If the AMA record contains modules, Module 000 (Final Module) is appended to indicate the end of the AMA record.

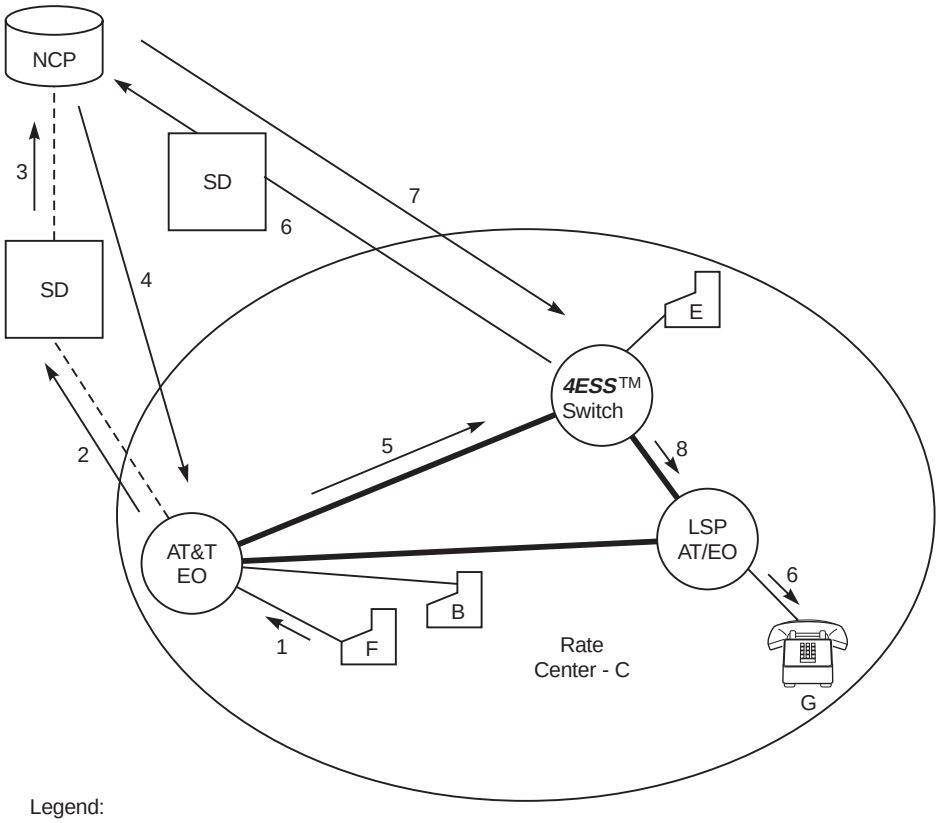
–*SDN Off-Net local call:* The EO switch generates AMA Structure Code 0220 and appends Module 877 (Local/Toll Differentiation), Module 923 (Numbering Plan Type) if the originating number is Private, Module 876 (TT/USFI), Module 878 (Customer RCP/RAO and Call Progress Stopped), Module 827 [Digit Module B with Alternate Destination Number (SDN Billing Number)], and Module 875 (Digit Module A). For long-duration calls, the EO appends Module 022 to the continuation record. The EO also appends the Translation Settable Module 030 with AMA Call Type Code (129) exactly as received in the Overflow Billing Indicator parameter. The EO appends Module 720 if the NPA-NXX of the destination number is open to portability and the EO performs an LNP data base query. If the AMA record contains modules, Module 000 (Final Module) is appended to indicate the end of the AMA record.

Important! The EO records the destination number in Digit Module A (Module Code 875) if the Called Party ID received from the 2DSA/2NCP is greater than 12 digits. The EO records the Dialed Number and the Dialed Overseas Indicator in Digit Module A (Module Code 875) if a Call Type Code of 129 is received from the 2DSA/2NCP.

The EO populates the Numbering Plan Type (when appropriate) for the originating and terminating numbers in the Numbering Plan Type Module (Module Code 923) according to the number plan type of the Charge Number and Called Party ID, respectively, as received in the TCAP message

6. The call is completed to the phone. **End of Call Flow.**

Figure 5-3 - ***MEGACOM*** **Service/PCP and SDN Off-Net Local Call (Customized Announcements)**



Legend:
AT - Access Tandem
EO - End Office
LSP - Local Service Provider
NCP - Network Control Point
SD - Segmentation Directory

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MEGACOM Service/PCP and Off-Net Local Call (Customized Announcements)

The following call flow (illustrated in Figure 5-3) does not apply to LDNC and requires customized announcements:

1. The customer dials a local number and the PBX routes the call to the AT&T EO.

2. The EO does the following:
   - Performs pre-query processing, including validating the dialed number and checking for escape codes. In this scenario, the call passes number validation and does not escape.
   - Prefixes the home NPA associated with the PBX trunk of the customer via switch provisioning when the EO receives the seven dialed digits for a *MEGACOM* service/ PCP call.
   - Triggers, formats Info_Collected message, and sends a query to an SD.

3. The SD complex receives the SCCP GTT message. Hybrid GTT distinguishes that this is an AIN message and routes it to an SD application. Among other checks (that is, the Key Service Type), the SD application uses the Charge Number parameter in the AIN TCAP portion of the incoming message to determine if there is an ANI Key match.

If there is...	Then the SD…
A match	Looks in the SP Table to identify the specific 2DSA/2NCP Point Code and Sub-System Number. The SD populates the MTP and SCCP fields with the routing information. Since the message received is an AIN Info_Collected message, the SD inserts the appropriate Customer ID in the Extension Parameter of the Info_Collected message. (The SD derived the Customer ID from the ANI record.) The SD then routes the message to the appropriate 2DSA/2NCP.
No match	Does not send a message to either the EO or the 2DSA/2NCP. The EO times out and default routes the call.

4. Upon receipt of the Info_Collected message, the 2DSA/2NCP does the following:
   - Performs local/toll differentiation. In this case, the call is determined to be a local call.
   - Provides feature processing and determines that Customized Announcements/Digit Collection are required. The OLI value must be set to 40 for PCP and 41 for SDN.
   - Returns the following information to the EO in an Analyze_Route message:
     –Local/Toll Differentiation Info:
     a. *Primary Carrier ID* = 0288.
     b. *Carrier Usage* = 0 (This identifies normal routing. Since the Primary Carrier ID is not LEC or PSEUDO, this signifies routing to the toll carrier specified by the Primary Carrier ID.)
     –*Charge Number* containing the ANI.
     –*Calling Party ID* containing the LANI
     –*Called Party ID* containing the Dialed Number (NANP)
     –*Charge Party Station Type* – OLI = 40 or 41
     –*Extension Parameter*: Bearer Capability – f3.1kHzaudio.

   Important! No AMA information is necessary. The *4ESS* switch is the recording switch for the call.

5. The EO receives the response from the 2DSA/2NCP and performs the following tasks:
   - Routes the call to a *4ESS* switch. Based on switch provisioning, the EO routes the call to an AT&T Switched Network (ASN) *4ESS* switch that has the appropriate announcement capabilities.
   - No service recording is performed at the EO. However, the EO switch generates an Originating Access Record with Structure Code 0625. For long duration calls, the EO appends Module 022 to the continuation record. If the AMA record contains modules, Module 000 is appended to indicate the end of the AMA record.

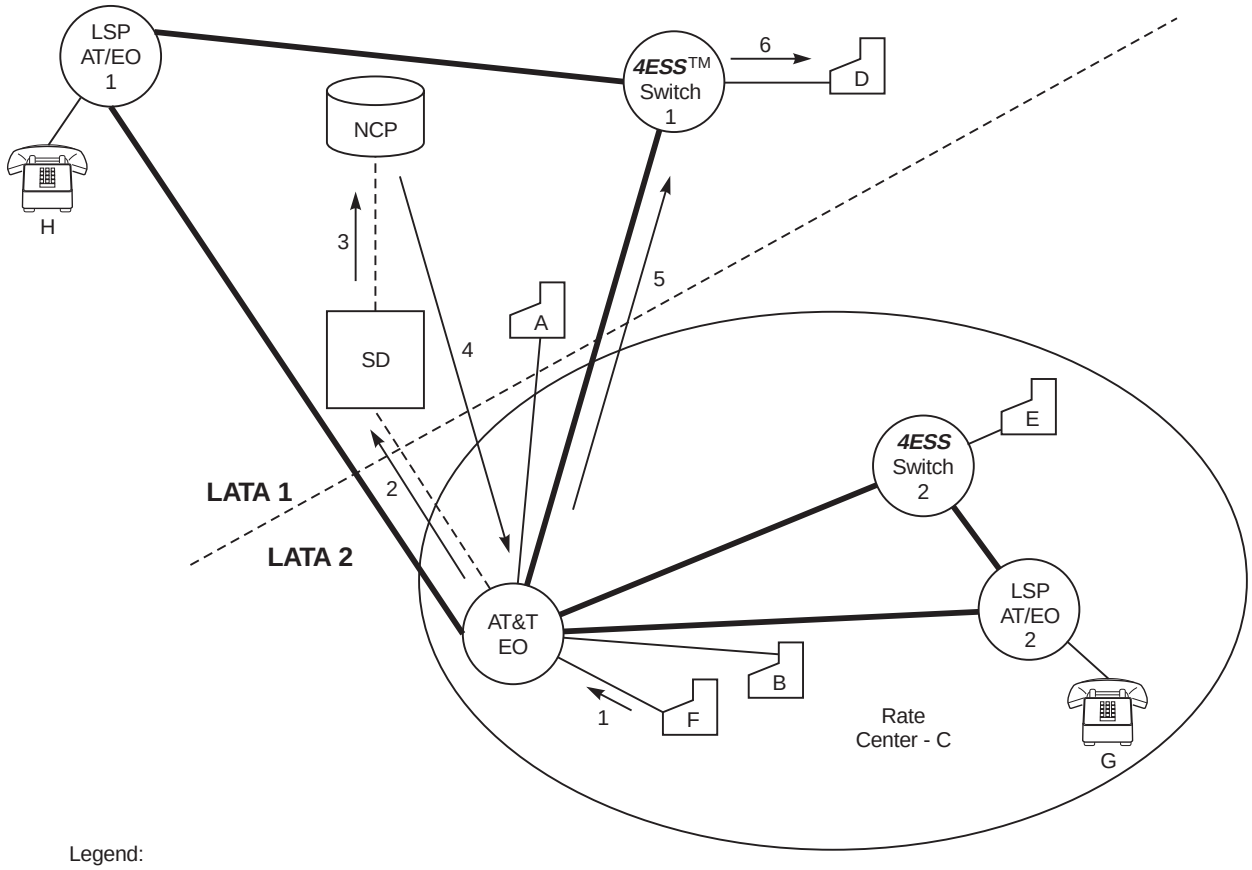
6. The *4ESS* switch receives the ISUP message from the EO and does the following:
   - Performs ADL-IV processing based on an OLI of 40 or 41 and a FEALN parameter set to Y on the incoming TSG
   - Queries the 2DSA/2NCP (via the SD) using AT&T TCAP [ANI=ANI, CgnDN=LANI, OST (Originating Station Type)=40 or 41].

7. The 2DSA/2NCP processes the query and returns a response to the *4ESS* switch.

8. The *4ESS* switch routes and records the call.

9. The call is completed to the phone. **End of Call Flow**.

Figure 5-4 - SDN On-Net Call (No Announcements Required)



Legend:
AT - Access Tandem
EO - End Office
LATA - Local Access and Transport Area
LSP - Local Service Provider
NCP - Network Control Point
SD - Segmentation Directory

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SDN On-Net Call (No Overflow on Busy)

The following call flow (illustrated in Figure 5-4) does not require announcements to be played:

1. The customer dials an SDN On-Net number. The PBX routes the call to the AT&T EO.

2. The EO does the following:
   - Performs pre-query processing, including validating the dialed number and checking for escape codes. In this scenario, the call passes number validation and does not escape.
   - Triggers, formats Info_Collected message, and sends a query to an SD.

3. The SD complex receives the SCCP GTT message. Hybrid GTT distinguishes that this is an AIN message and routes it to an SD application. Among other checks (that is, the Key Service Type), the SD application uses the Charge Number parameter in the AIN TCAP portion of the incoming message to determine if there is an ANI Key match.

If there is...	Then the SD…
A match	Looks in the SP Table to identify the specific 2DSA/2NCP Point Code and Sub-System Number. The SD populates the MTP and SCCP fields with the routing information. Since the message received is an AIN Info_Collected message, the SD inserts the appropriate Customer ID in the Extension Parameter of the Info_Collected message. (The SD derived the Customer ID from the ANI record.) The SD then routes the message to the appropriate 2DSA/2NCP.
No match	Does not send a message to either the EO or the 2DSA/2NCP. The EO times out and default routes the call.

4. Upon receipt of the Info_Collected message, the 2DSA/2NCP does the following:
   - Does not perform local/toll differentiation. The 2DSA/2NCP does not perform LTD for Action Point Number (APN) calls.
   - Provides feature processing.
   - Returns the following information to the EO in an Analyze_Route message:
     –*Charge Number* containing the ANI
     –*Calling Party ID* containing the LANI (Calling Party ID is not sent for LDNC customers)
     –*Called Party ID* containing the Routing Number (APN)
     –*Primary Carrier ID* = 0732
     –*Carrier Usage* = 1 (indicates that even though a Primary Carrier is specified, the EO should first check to see if the call can be routed over direct-connect facilities from the EO before sending the call to the specified carrier)
     –*Charge Party Station Type* – OLI = 49
     –AMA information:
     a. Overflow Billing Indicator: AMA Call Type = 129 (SDN)
     b. AMAslpID = Customer ID (9 digits).
     –*Extension Parameter*: Bearer Capability = f3.1kHzaudio.
   - Returns the following information to the EO in a Furnish_AMA_Information message:
     –Module 878 (Customer RCP/RAO Number and Call Progress Stopped)
     –Module 827 (Digit Module B with Alternate Destination Number (SDN Billing Number)
     –Module 876 (TT/USFI).

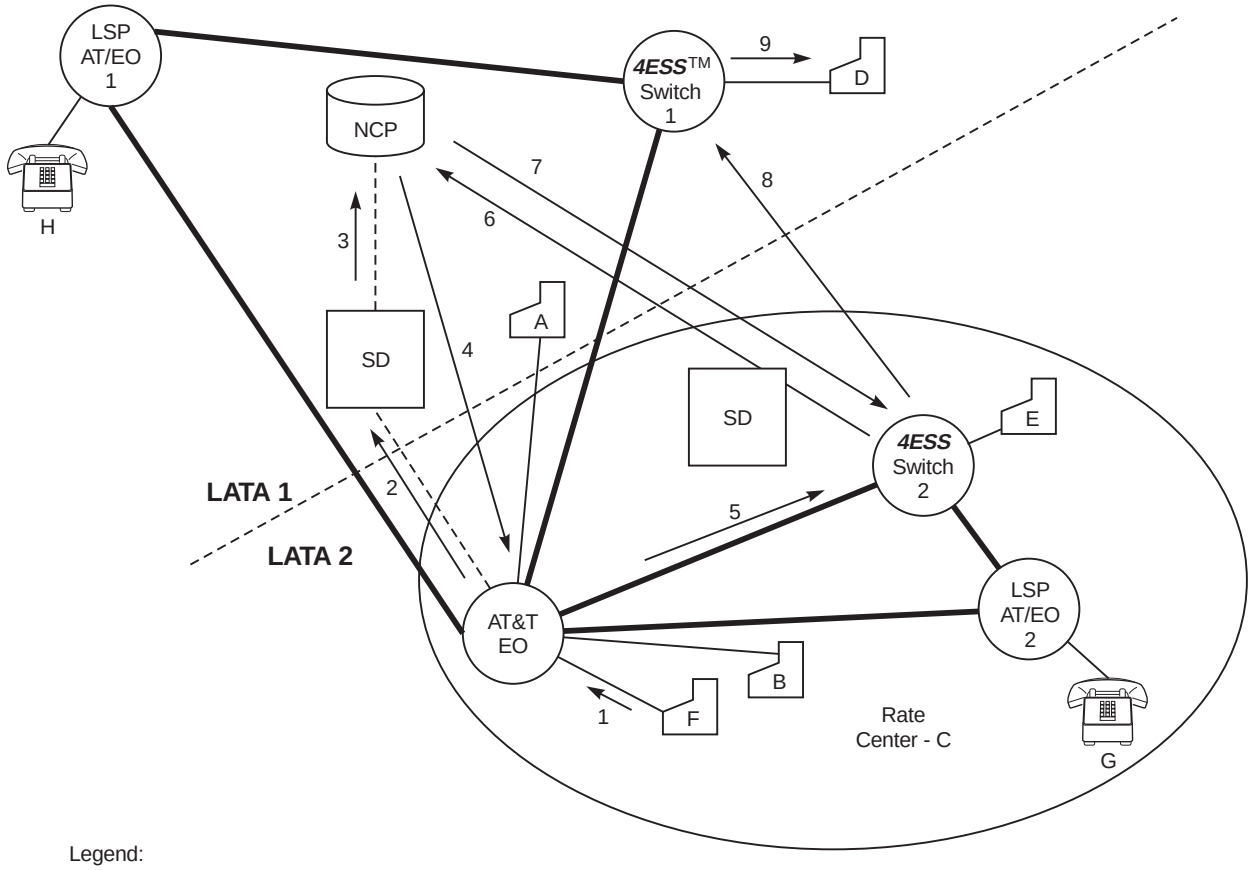
5. The EO receives the Analyze_Route response from the 2DSA/2NCP and performs the following tasks:
   - From the Nature of Number field of the Called Party ID received in the Analyze_Route message, the switch recognizes that it needs to route the call using internally provisioned APN translations. This means that the call may be routed within the EO, to another EO, or to an ASN *4ESS* switch.
   - Creates an appropriate AMA record as follows:
     The EO switch generates AMA Structure Code 0220, and appends Module 923 (Numbering Plan Type) if both originating number and terminating number are Private, Module 876 (TT/USFI), Module 878 (Customer RPC/RAO and Call Progress Stopped), Module 827 [Digit Module B with Alternate Destination Number (SDN Billing Number)], and Module 875 (Digit Module A). For long-duration calls, the EO appends Module 022 to the continuation record. The EO also appends the Translation Settable Module 030 with AMA Call-Type Code (129) exactly as received in the Overflow Billing Indicator parameter. The EO also appends a Carrier Access – Originating Module (Module 021) to capture the carrier access information if the call is routed over an Interexchange Carrier (IC) trunk. If the AMA record contains modules, Module 000 is appended to indicate the end of the AMA record.

Important! The EO records the destination number in Digit Module A (Module Code 875) if the Called Party ID received from the 2DSA/2NCP is greater than 12 digits. The EO records the Dialed Number and the Dialed Overseas Indicator in Digit Module A (Module Code 875) if a Call-Type Code of 129 is received from the 2DSA/2NCP.

The EO populates the Numbering Plan Type (when appropriate) for the originating and terminating numbers in the Numbering Plan Type Module (Module Code 923) according to the number plan type of the Charge Number and Called Party ID, respectively, as received in the TCAP message.

6. The call is completed to the phone. **End of Call Flow.**

Figure 5-5 - SDN On-Net Call (Customized Announcements)



Legend:
- AT - Access Tandem
- EO - End Office
- LATA - Local Access and Transport Area
- LSP - Local Service Provider
- NCP - Network Control Point
- SD - Segmentation Directory

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SDN On-Net Call (Customized Announcements Required)

The following call flow (illustrated in Figure 5-5) applies to an SDN On-Net call when customized announcements are required:

1. The customer dials an SDN On-Net number. The PBX routes the call to the EO.
2. The EO does the following:
   - Performs pre-query processing, including validating the dialed number and checking for escape codes. In this scenario, the call passes number validation and does not escape.
   - Triggers, formats the Info_Collected message, and sends a query to the SD. (Calling Party ID is not sent for LDNC customers.)
3. The SD complex receives the SCCP GTT message. Hybrid GTT distinguishes that this is an AIN message and routes it to an SD application. Among other checks (that is, the Key Service Type), the SD application uses the Charge Number parameter in the AIN TCAP portion of the incoming message to determine if there is an ANI Key match.

If there is...	Then the SD…
A match	Looks in the SP Table to identify the specific 2DSA/2NCP Point Code and Sub-System Number. The SD populates the MTP and SCCP fields with the routing information. Since the message received is an AIN Info_Collected message, the SD inserts the appropriate Customer ID in the Extension Parameter of the Info_Collected message. (The SD derived the Customer ID from the ANI record.) The SD then routes the message to the appropriate 2DSA/2NCP.
No match	Does not send a message to either the EO or the 2DSA/2NCP. The EO times out and default routes the call.

4. Upon receipt of the Info_Collected message, the 2DSA/2NCP does the following:
   - Does not perform local/toll differentiation. The LTD does not perform LTD for APN calls.
   - Provides feature processing and determines that the call requires Customized Announcement/Digit Collection. This means the OLI value must be set to 41.
   - Returns the following information to the EO in an Analyze_Route message:
     –*Called Party ID* (If the 2DSA/2NCP received a 7-digit SDN number, it prefixes 114 and returns a 10-digit Called Party ID.)
     –*Charge Number* containing the ANI
     –*Calling Party ID* containing the LANI (Calling Party ID is not sent for LDNC customers.)
     –*Primary Carrier ID* = 0732
     –*Carrier Usage* = 0
     –*Charge Party Station Type* – OLI = 41
     –*Extension Parameter*: Bearer Capability = f31kHzaudio.

   Important! The AMA information is not necessary. The *4ESS* switch is the recording switch for the call.

5. The EO receives the response from the 2DSA/2NCP and performs the following tasks:
   - Routes the call to a *4ESS* switch.
   - No service recording is performed at the EO. However, the EO switch generates an Originating Access Record with Structure Code 0625. For long-duration calls, the EO appends Module 022 to the continuation record. If the AMA record contains modules, Module 00 is appended to indicate the end of the AMA record.

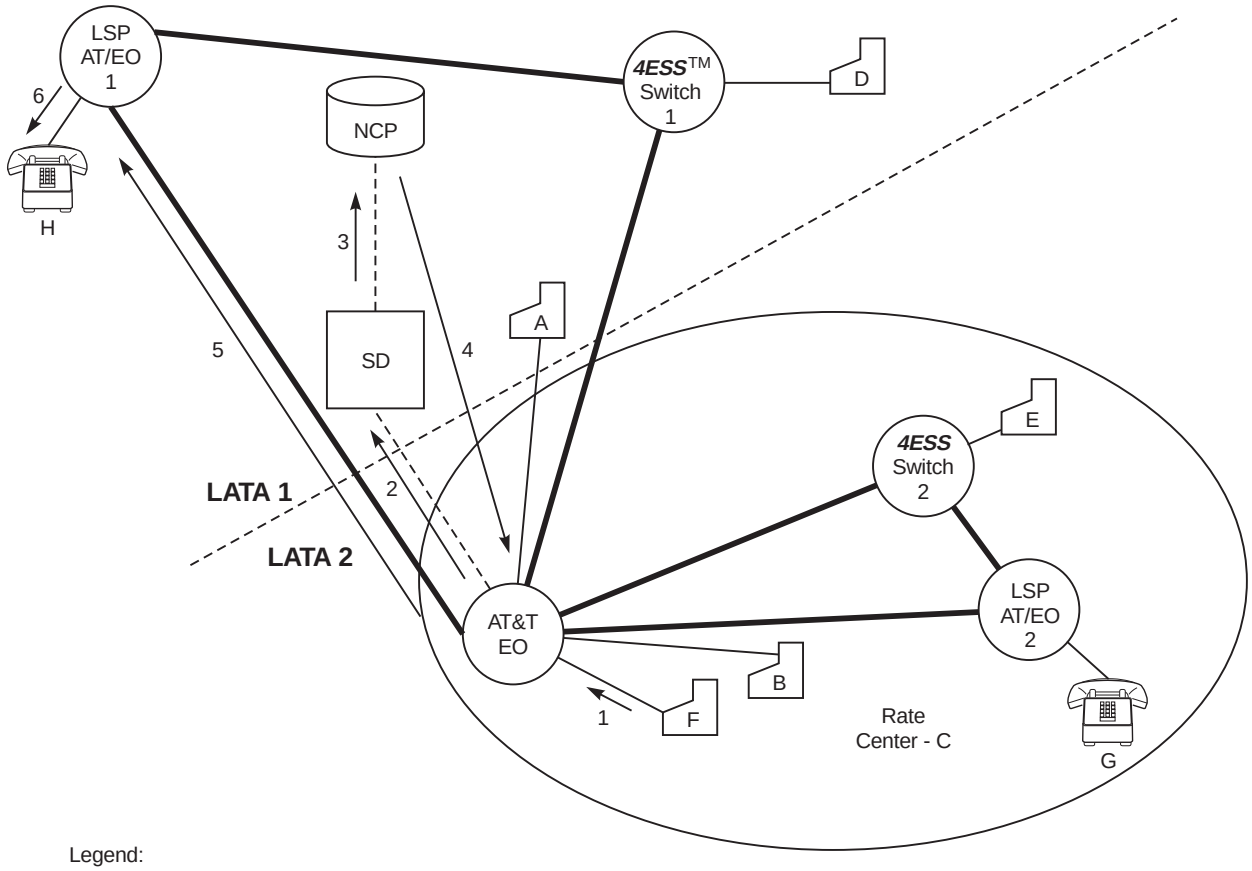
6. The *4ESS* switch receives the ISUP message from the EO and does the following:
   - Performs ADL-IV processing based on an OLI of 41 and a FEALN parameter set to Y on the incoming TSG
   - Queries the 2DSA/2NCP (via the SD) using AT&T TCAP (ANI=ANI, CgnDN=LANI, OST=40 or 41).

7. The 2DSA/2NCP processes the query and returns a response to the *4ESS* switch.

8. The *4ESS* switch routes and records the call.

9. The call is completed to the phone. **End of Call Flow**.

Figure 5-6 - *MEGACOM* Service/PCP and SDN Off-Net Toll Call (No Announcements)



Legend:
AT - Access Tandem
EO - End Office
LATA - Local Access and Transport Area
LSP - Local Service Provider
NCP - Network Control Point
SD - Segmentation Directory

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MEGACOM Service/PCP and SDN Off-Net Toll Call Not Requiring Announcements

The following call flow (illustrated in Figure 5-6) does not require announcements:

1. The customer dials a toll number. The PBX routes the call to the EO.

2. The EO does the following:
   - Performs pre-query processing, including validating the dialed number and checking for escape codes. In this scenario, the call passes number validation and does not escape.
   - Prefixes the home NPA when it receives seven dialed digits for a *MEGACOM* service/PCP call.
   - Triggers, formats the Info_Collected message, and sends a query to an SD. (Calling Party ID is not sent for LDNC customers.)

3. The SD complex receives the SCCP GTT message. Hybrid GTT distinguishes that this is an AIN message and routes it to an SD application. Among other checks (that is, the Key Service Type), the SD application uses the Charge Number parameter in the AIN TCAP portion of the incoming message to determine if there is an ANI Key match.

If there is...	Then the SD…
A match	Looks in the SP Table to identify the specific 2DSA/2NCP Point Code and Sub-System Number. The SD populates the MTP and SCCP fields with the routing information. Since the message received is an AIN Info_Collected message, the SD inserts the appropriate Customer ID in the Extension Parameter of the Info_Collected message. (The SD derived the Customer ID from the ANI record.) The SD then routes the message to the appropriate 2DSA/2NCP.
No match	Does not send a message to either the EO or the 2DSA/2NCP. The EO times out and default routes the call.

4. Upon receipt of the Info_Collected message, the 2DSA/2NCP does the following:
   - Performs local/toll differentiation. (The LTD is not performed for LDNC customers since the LANI is not received in the Calling Party ID field of the Info_Collected message. The call is assumed to be a toll call.)
   - Provides feature processing.
   - Returns the following information to the EO in an Analyze_Route message:
     –Local/Toll Differentiation Info:
     a. *Primary Carrier ID* = 0288
     b. *Carrier Usage* = 1 (This indicates that even though a Primary Carrier is specified, the EO should first check to see if the call can be routed direct-connect facilities from the EO before sending the call to the specified carrier.)
     –*Charge Number* containing the ANI
     –*Calling Party ID* containing the LANI (Calling Party ID is not sent for LDNC customers)
     –*Called Party ID* containing the Routing Number [a 10-digit NANP number or an International (011 prefixed) number]
     –*Charge Party Station Type* set to 48 or 49
     –AMA information:
     a. Overflow Billing Indicator: AMA Call Type = 309 (*MEGACOM* service/PCP) or 129 (SDN)
     b. Overflow Billing Indicator: Service Feature ID = 045 (*MEGACOM* service/PCP)
     –AMAslpID = Customer ID (9 digits).
     –*Extension Parameter*: Bearer Capability – f3.1kHzaudio.
   - Returns the following information to the EO in a Furnish_AMA_Information message for SDN calls only:
     –Module 878 (Customer RCP/RAO and Call Progress Stopped)
     –Module 827 [Digit Module B with Alternate Destination Number (SDN Billing Number)]
     –Module 876 (TT/USFI).

5. The EO receives the Analyze_Route response from the 2DSA/2NCP and does the following:
   - If the EO can route the call based on the NANP (determined from the Called Party ID), the NANP is not resident on the EO, and the NPX-NXX of the NANP is open to portability, performs LNP processing to determine if the Routing Number is ported and, if so to identify the correct LRN.
   - Routes the call on the most efficient route (from a trunking perspective). This means the EO may complete the call within the originating EO, to an LSP EO (could be another AT&T EO), to an LSP Access Tandem (AT), or to an ASN *4ESS* switch. [The Nature of Number from the Analyze_Route message is mapped to the Nature of Address field of the IAM. The switch receiving the call knows whether the Routing Number is a national (NANP) or International number.] If the EON_SuppressCN flag is set for the egress trunk group, the OLI of the outpulsed IAM is populated with the switch-provisioned default OLI (not the Charge Party Station Type of the Analyze_Route message) and the Charge Number is suppressed.
   - Creates an appropriate AMA record as follows:
     –*MEGACOM service/PCP Toll call*: The EO switch generates the AMA Structure Code 0220 and appends Module 923 (Numbering Plan Type) if the originating number is Private. For long-duration calls, the EO appends Module 022 to the continuation record. The EO also appends two Translation Settable Modules 030, one with AMA Call Type (309) and the other with Service Feature value (045) exactly as received in the Overflow Billing Indicator parameter. Additionally, the EO appends a Carrier Access-Originating Module (Module 021) to capture the carrier access information if the call is routed over an IC trunk.

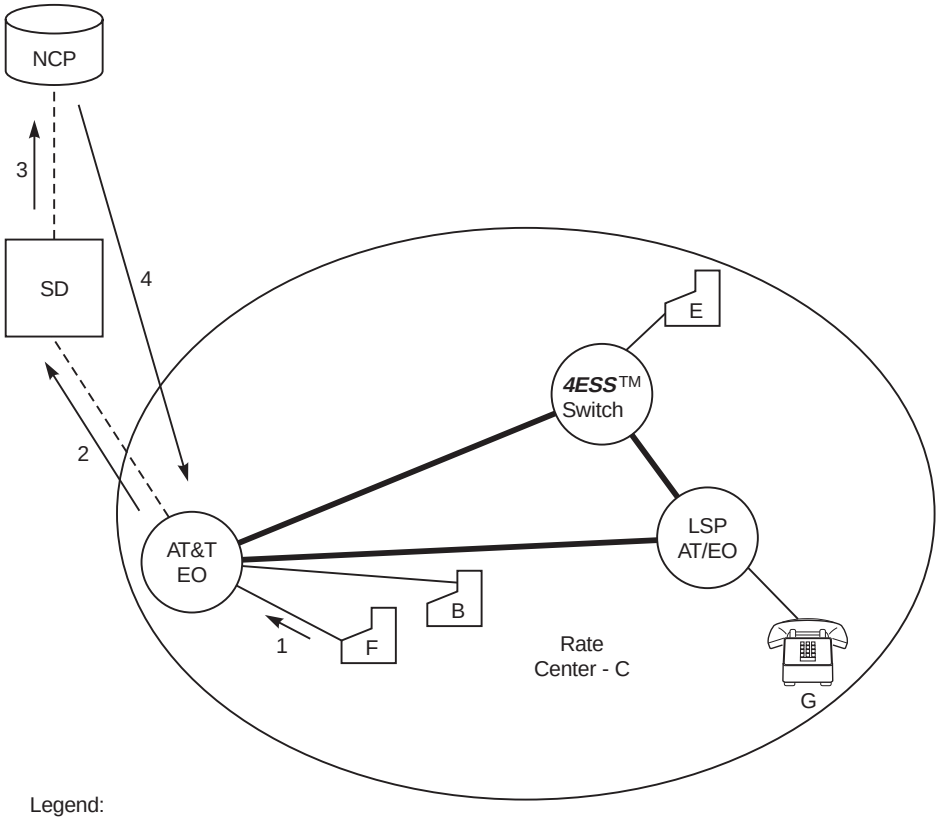
–*SDN Off-Net Toll call:* The EO switch generates AMA Structure Code 0220 and appends Module 923 (Numbering Plan Type) if the originating number is Private, Module 876 (TT/USFI), Module 878 (Customer RCP/RAO and Call Progress Stopped), Module 827 [Digit Module B with Alternate Destination Number (SDN Billing Number)], and Module 875 (Digit Module A). For long-duration calls, the EO appends Module 022 to the continuation record. The EO also appends the Translation Settable Module 030 with AMA Call-Type Code (129) exactly as received in the Overflow Billing Indicator parameter. The EO appends a Carrier Access-Originating Module (Module 021) to capture the carrier access information if the call is routed over an IC trunk. The EO appends Module 720 if the NPA-NXX of the destination number is open to portability and the EO performs an LNP data base query. If the AMA record contains modules, Module 000 is appended to indicate the end of the AMA record.

Important! The EO records the destination number in Digit Module A (Module Code 875) if the Called Party ID received from the 2DSA/2NCP is greater than 12 digits. The EO records the Dialed Number and the Dialed Overseas Indicator in Digit Module A (Module Code 875) if a Call-Type Code of 129 is received from the 2DSA/2NCP.

The EO populates the Numbering Plan Type (when appropriate) for the originating and terminating numbers in the Numbering Plan Type Module (Module Code 923) according to the number plan type of the Charge Number and Called Party ID, respectively, as received in the TCAP message.

6. The call is completed to the phone. **End of Call Flow.**

Figure 5-7 - ***MEGACOM*** **Service/PCP and SDN Off-Net Toll Call (Standard Announcement with AMA Information Required)**



Legend:
AT - Access Tandem
EO - End Office
LSP - Local Service Provider
NCP - Network Control Point
SD - Segmentation Directory

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MEGACOM Service/PCP and SDN Off-Net Toll Call Requiring Standard Announcements with AMA Information

The following call flow (illustrated in Figure 5-7) requires that standard announcements are played and AMA information is included. Although the call in this scenario is blocked and sent to a standard announcement, AMA information is sent from the 2DSA/2NCP to the EO for recording purposes. This can occur if the caller is blocked by Originating Screening or if a non-provisioned SDN number is dialed. The use of the Send_To_Resource message as illustrated in this call flow is also applicable to other situations where the 2DSA/2NCP needs to instruct the EO to play a standard announcement and disconnect the call.

1. The customer dials a toll number. The PBX routes the call to the EO.

2. The EO does the following:
   - Performs pre-query processing, including validating the dialed number and checking for escape codes. In this scenario, the call passes number validation and does not escape.
   - Prefixes the home NPA when it receives seven dialed digits for a *MEGACOM* service/PCP call.
   - Triggers, formats the Info_Collected message, and sends a query to an SD. (Calling Party ID is not sent for LDNC customers.)
3. The SD complex receives the SCCP GTT message. Hybrid GTT distinguishes that this is an AIN message and routes it to an SD application. Among other checks (that is, the Key Service Type), the SD application uses the Charge Number parameter in the AIN TCAP portion of the incoming message to determine if there is an ANI Key match.

If there is...	Then the SD...
A match	Looks in the SP Table to identify the specific 2DSA/2NCP Point Code and Sub-System Number. The SD populates the MTP and SCCP fields with the routing information. Since the message received is an AIN Info_Collected message, the SD inserts the appropriate Customer ID in the Extension Parameter of the Info_Collected message. (The SD derived the Customer ID from the ANI record.) The SD then routes the message to the appropriate 2DSA/2NCP.
No match	Does not send a message to either the EO or the 2DSA/2NCP. The EO times out and default routes the call.

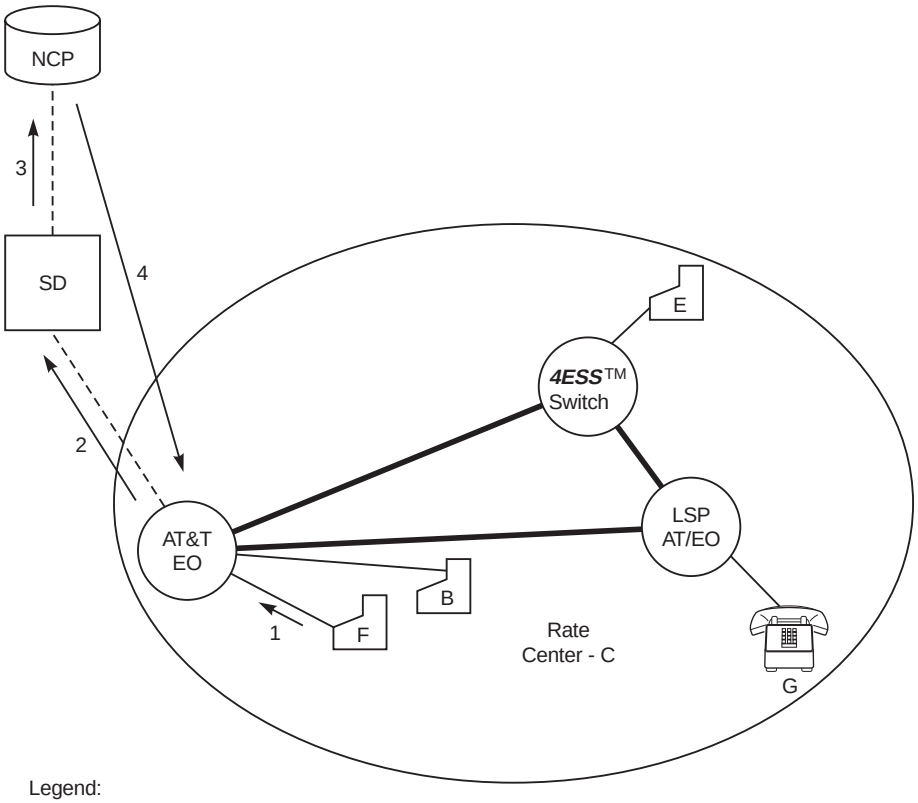
4. Upon receipt of the Info_Collected message, the 2DSA/2NCP does the following:
   - Performs local/toll differentiation. In this scenario, the call is determined to be a Toll call. (The LTD is not performed for LDNC customers since the LANI is not received in the Calling Party ID field of the Info_Collected message. The call is assumed to be a toll call.)
   - Provides feature processing. During originating call screening, it is determined that the caller does not have permission to make the call. A Standard Announcement is played and the call is disconnected.
   - Returns the following information to the EO in a Send_To_Resource message:
     –*Resource Type* = Play Announcements
     –*Str Parameter Block* = Announcement Number (for example, 4 for Fast Busy)
     –*Disconnect Flag* = Set to Disconnect leg
     –*Charge Number* containing the ANI
     –*AMASlpID* = Customer Account ID (9 digits)
     –*Primary Billing Indicator*:
     a. AMA Call Type = 409 (*MEGACOM* service/PCP)
     b. Service Feature ID = 045 (*MEGACOM* service/PCP).
   - Returns the following information to the EO in a Furnish_AMA_Information message for SDN calls only:
     –Module 878 (Customer RCP/RAO and Call Progress Stopped)
     –Module 827 [Digit Module B with Alternate Destination Number (SDN Billing Number)]
     –Module 876 (TT/USFI).

5. The EO receives the Send_To_Resource response from the 2DSA/2NCP, plays the announcement, and disconnects the call. The EO then performs the following tasks:
   - *MEGACOM service/PCP Toll call:* The EO switch generates AMA Structure Code 0220 and appends Module 923 (Numbering Plan Type) if the originating number is Private. The EO also appends two Translation Settable Modules 030, one with AMA Call Type Code (309) and the other with Service Feature value (045) exactly as received in the Primary Billing Indicator parameter. If the AMA record contains modules, Module 000 is appended to indicate the end of the AMA record.
   - *SDN Off-Net Toll call:* The EO switch generates AMA Structure Code 0220 and appends Module 923 (Numbering Plan Type) if the originating number is Private, Module 876 (TT/USFI), Module 878 (Customer RCP/RAO and Call Progress Stopped), Module 827 [Digit Module B with Alternate Destination Number (SDN Billing Number)], and Module 875 (Digit Module A). The EO also appends the Translation Settable Module 030 with AMA Call Type Code (129) exactly as received in the Primary Billing Indicator parameter. If the AMA record contains modules, Module 000 is appended to indicate the end of the AMA record.

   Important! The EO records the destination number in Digit Module A (Module Code 875) if the Called Party ID received from the 2DSA/2NCP is greater than 12 digits. The EO records the Dialed Number and the Dialed Overseas Indicator in Digit Module A (Module Code 875) if a Call Type Code of 129 is received from the 2DSA/2NCP.

   The EO populates the Numbering Plan Type (when appropriate) for the originating and terminating numbers in the Numbering Plan Type Module (Module Code 923) according to the number plan type of the Charge Number and Called Party ID, respectively, as received in the TCAP message. **End of Call Flow.**

Figure 5-8 - ***MEGACOM*** **Service/PCP and Off-Net Toll Call (Vacant Code)**



Legend:
AT - Access Tandem
EO - End Office
LSP - Local Service Provider
NCP - Network Control Point
SD - Segmentation Directory

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MEGACOM Service/PCP and SDN Off-Net Toll Call Requiring Standard Announcements Without AMA Information (Vacant Code)

The following call flow (illustrated in Figure 5-8) requires standard announcements without AMA information (vacant code). In vacant code situations (for example, when the 2DSA/2NCP cannot locate an account for a given Customer ID), no information is sent to the EO in the Send_To_Resource message. The use of the Send_To_Resource message as illustrated in this call flow is also applicable to other calls where the 2DSA/2NCP finds a vacant code condition.

1. The customer dials a toll number. The PBX routes the call to the EO.

2. The EO does the following:
   - Performs pre-query processing, including validating the dialed number and checking for escape codes. In this scenario, the call passes number validation and does not escape.
   - Prefixes the home NPA when it receives seven dialed digits for a *MEGACOM* service/PCP call.
   - Triggers, formats the Info_Collected message, and sends a query to an SD. (Calling Party ID is not sent for LDNC customers.)
3. The SD complex receives the SCCP GTT message. Hybrid GTT distinguishes that this is an AIN message and routes it to an SD application. Among other checks (that is, the Key Service Type), the SD application uses the Charge Number parameter in the AIN TCAP portion of the incoming message to determine if there is an ANI Key match.

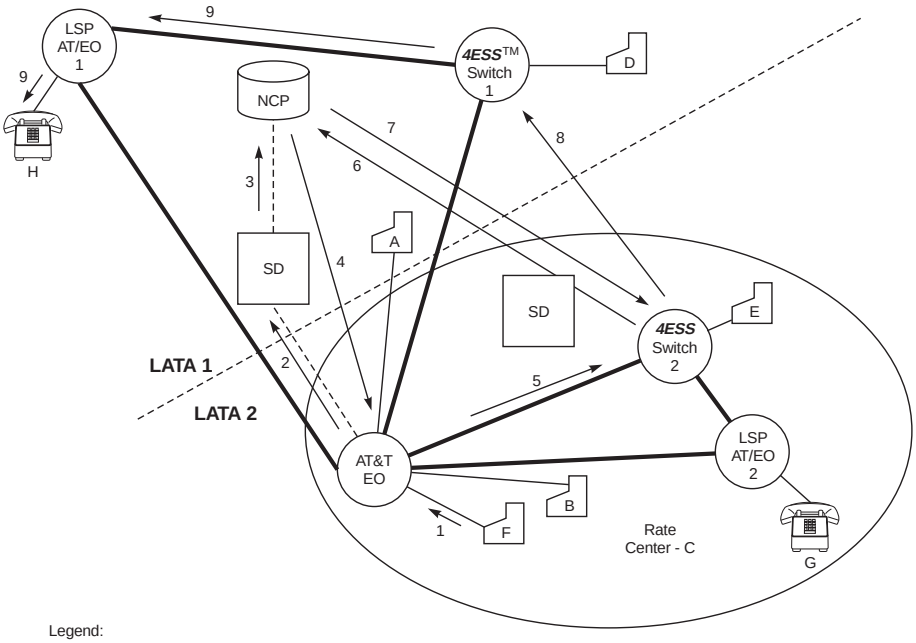
If there is...	Then the SD...
A match	Looks in the SP Table to identify the specific 2DSA/2NCP Point Code and Sub-System Number. The SD populates the MTP and SCCP fields with the routing information. Since the message received is an AIN Info_Collected message, the SD inserts the appropriate Customer ID in the Extension Parameter of the Info_Collected message. (The SD derived the Customer ID from the ANI record.) The SD then routes the message to the appropriate 2DSA/2NCP.
No match	Does not send a message to either the EO or the 2DSA/2NCP. The EO times out and default routes the call.

4. Upon receipt of the Info_Collected message, the 2DSA/2NCP performs the following tasks:
   - Searches the customer account associated with the Customer ID passed in the Info_Collected message. In this case, no account was found. A Vacant Code Announcement (VCA) is played and the call is disconnected.
   - Returns the following information to the EO in a Send_To_Resource message:
     –*Resource Type* = Play Announcements
     –*Str Parameter Block* = Announcement Number (for example, 4 for Fast Busy)
     –*AMASlpID* = 900000050
     –*Disconnect Flag* = Set to Disconnect leg.

5. The EO receives the Send_To_Resource message from the 2DSA/2NCP and performs the following tasks:
   - Plays the announcement
   - Disconnects the call.

   The EO generates Structure Code 220 using the AMASlpID value 900000050 received from the 2DSA/2NCP. All other fields in the record are populated with switch-derived default values. **End of Call Flow.**

Figure 5-9 - ***MEGACOM*** **Service/PCP and SDN Off-Net Toll Call (Customized Announcements)**



Legend:
AT - Access Tandem
EO - End Office
LATA - Local Access and Transport Area
LSP - Local Service Provider
NCP - Network Control Point
SD - Segmentation Directory

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MEGACOM Service/PCP and SDN Off-Net Toll Call Requiring Customized Announcements

The following call flow (illustrated in Figure 5-9) requires customized announcements:

1. The customer dials a toll number. The PBX routes the call to the EO.

2. The EO does the following:
   - Performs pre-query processing, including validating the dialed number and checking for escape codes. In this scenario, the call passes number validation and does not escape.
   - Prefixes the home NPA when it receives seven dialed digits for a *MEGACOM* service/PCP call.
   - Triggers, formats the Info_Collected message, and sends a query to an SD. (Calling Party ID is not sent for LDNC customers.)

3. The SD complex receives the SCCP GTT message. Hybrid GTT distinguishes that this is an AIN message and routes it to an SD application. Among other checks (that is, the Key Service Type), the SD application uses the Charge Number parameter in the AIN TCAP portion of the incoming message to determine if there is an ANI Key match.

If there is...	Then the SD…
A match	Looks in the SP Table to identify the specific 2DSA/2NCP Point Code and Sub-System Number. The SD populates the MTP and SCCP fields with the routing information. Since the message received is an AIN Info_Collected message, the SD inserts the appropriate Customer ID in the Extension Parameter of the Info_Collected message. (The SD derived the Customer ID from the ANI record.) The SD then routes the message to the appropriate 2DSA/2NCP.
No match	Does not send a message to either the EO or the 2DSA/2NCP. The EO times out and default routes the call.

4. Upon receipt of the Info_Collected message, the 2DSA/2NCP does the following:
   - Performs local/toll differentiation. In this scenario, the call is determined to be a Toll call. (The LTD is not performed for LDNC customers since the LANI is not received in the Calling Party ID field of the Info_Collected message. The call is assumed to be a toll call.)
   - Provides feature processing and determines that Customized Announcements/Digit Collection are required (the OLI = 40 for PCP and 41 for SDN).
   - Returns the following information to the EO in an Analyze_Route message:
     –Local/Toll Differentiation Info:
     a. Primary Carrier ID = 0288
     b. Carrier Usage = 0
     –*Charge Number* containing the ANI
     –*Calling Party ID* containing the LANI (Calling Party ID is not sent for LDNC customers)
     –*Called Party ID* containing the Dialed Number (NANP or International)
     –*Charge Party Station Type* – OLI = 40 or 41
     –*Extension Parameter*: Bearer Capability – f3.1kHzaudio.

Important! No AMA information is necessary. The *4ESS* switch is the recording switch for the call.

5. The EO receives the Analyze_Route response from the 2DSA/2NCP and performs the following tasks:
   - Routes the call to a *4ESS* switch. [The call is routed between an EO and a *4ESS* switch by an ISUP IAM message. The Nature of Number field from the Analyze_Route message is mapped to the Nature of Number field of the IAM. The *4ESS* switch receiving the call knows if the Called Party is a national (NANP) or International number.] The EO routes the call to an ASN *4ESS* switch that has the appropriate announcement capabilities.
   - No service recording is performed at the EO. However, the EO switch generates an Originating Access Record with Structure Code 0625. For long-duration calls, the EO appends Module 022 to the continuation record. If the AMA record contains modules, Module 000 is appended to indicate the end of the AMA record.

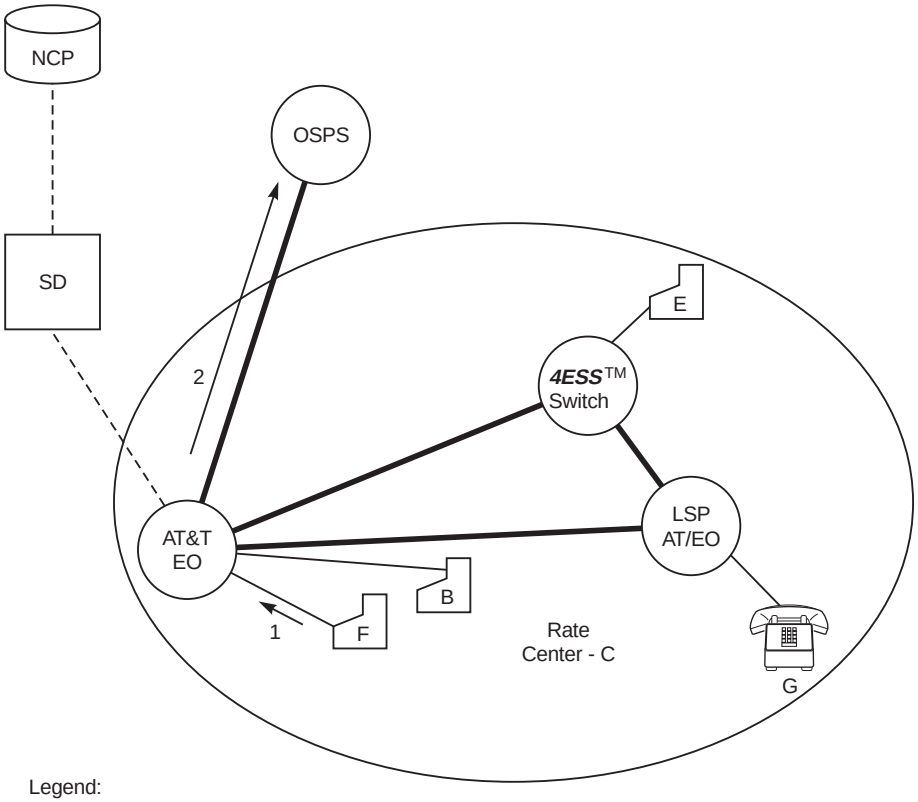
6. The *4ESS* switch receives the ISUP message from the EO and does the following:
   - Performs ADL-IV processing based on an OLI of 40 or 41 and a FEALN parameter set to Y on the incoming TSG.
   - Queries the 2DSA/2NCP (via the SD) using AT&T TCAP (ANI=ANI, CgnDN=LANI, OST=40 or 41). The Calling Party ID is not sent for LDNC customers.

7. The 2DSA/2NCP processes the query and returns a response to the *4ESS* switch.

8. The *4ESS* switch routes and records the call.

9. The call is completed to the phone. **End of Call Flow**.

Figure 5-10 - Operator Express



Legend:
AT - Access Tandem
EO - End Office
LSP - Local Service Provider
NCP - Network Control Point
OSPS - Operator Service Position System
SD - Segmentation Directory

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Operator Express (0-, 0+, 01+, 00-) Calls

The following call flow (illustrated in Figure 5-10) applies to operator express calls:

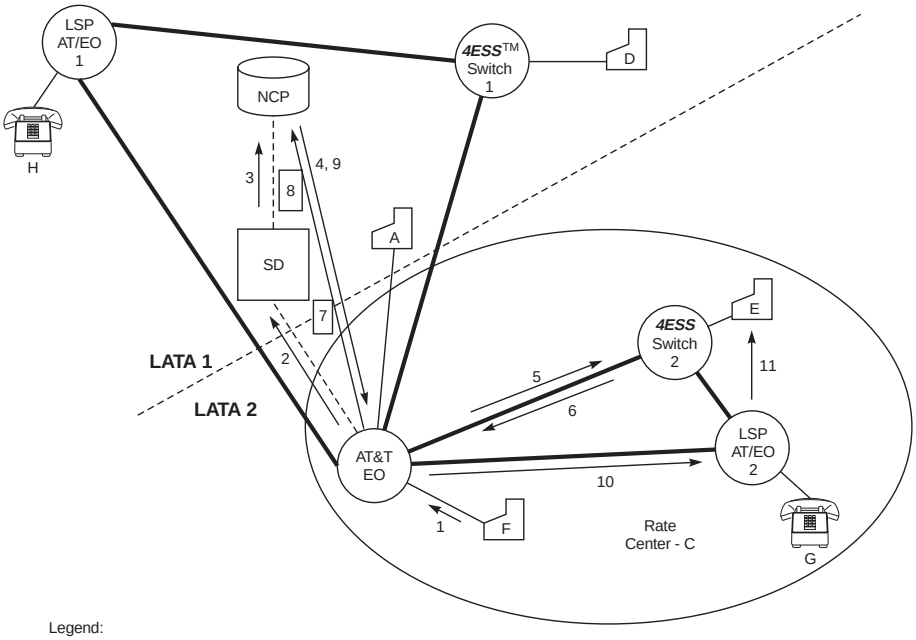
1. The customer dials 0+10 digits, 01+ international number, 0- or 00. The PBX routes the call to the EO.

2. The EO does the following:
   - Performs pre-query processing, including validating the dialed number and checking for escape codes. The 0+, 01+, 0-, and 00- numbers escape the OHD trigger.
   - The EO treatment of operator calls is consistent with the *4ESS* switch treatment of such calls. Only customers that subscribe to Operator Express (OE) services are allowed to place operator calls over DL trunks. If a 0+, 01+, or 00- call is received from a customer who is not an OE subscriber, the call is blocked and reorder treatment is applied. However, the EO routes the 0-, 0+, 01+, and 00- calls from OE subscribers to an Operator Services Position System (OSPS). The LANI is mapped to the Charge Number parameter of the signaling message sent between the EO and the OSPS. Each OE customer has a profile built in a particular OSPS. The EO sends the OE calls to a designated OSPS switch that handles all calls using the OSPS Automatic Inward Line Screening (AILS) feature to retrieve the customer record from the OSPS where the customer resides. (ADL-IV is only routing to such a designated OSPS.)
3. The OSPS applies OE treatment to the operator calls it receives and performs any needed AMA recording for those calls.

Important! Operator Express is not allowed for LDNC customers.

End of Call Flow.

Figure 5-11 - SDN Off-Net Overflow on Busy



Legend:
AT - Access Tandem
EO - End Office
LATA - Local Access and Transport Area
LSP - Local Service Provider
NCP - Network Control Point
SD - Segmentation Directory

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SDN Off-Net Overflow on Busy

The following call flow (illustrated in Figure 5-11) applies to SDN Off-Net overflow on busy:

1. The customer dials the SDN On-Net number. The PBX routes the call to the EO.

2. The EO does the following:
   - Performs pre-query processing, including validating the dialed number and checking for escape codes. In this scenario, the call passes number validation and does not escape.
   - Triggers, formats the Info_Collected message, and sends a query to an SD. (Calling Party ID is not sent for LDNC customers.)
3. The SD complex receives the SCCP GTT message. Hybrid GTT distinguishes that this is an AIN message and routes it to an SD application. Among other checks (that is, the Key Service Type), the SD application uses the Charge Number parameter in the AIN TCAP portion of the incoming message to determine if there is an ANI Key match.

If there is...	Then the SD…
A match	Looks in the SP Table to identify the specific 2DSA/2NCP Point Code and Sub-System Number. The SD populates the MTP and SCCP fields with the routing information. Since the message received is an AIN Info_Collected message, the SD inserts the appropriate Customer ID in the Extension Parameter of the Info_Collected message. (The SD derived the Customer ID from the ANI record.) The SD then routes the message to the appropriate 2DSA/2NCP.
No match	Does not send a message to either the EO or the 2DSA/2NCP. The EO times out and default routes the call.

4. Upon receipt of the Info_Collected message, the 2DSA/2NCP does the following:
   - Performs feature processing. Both the APN and POTS translations for the SDN number are determined because the customer is subscribed to the Off-Net Overflow on Busy feature. The APN identifies the primary destination and the POTS number identifies the secondary destination (only attempted if the primary destination or route to it is busy). Local/Toll Differentiation is determined for the POTS (not necessary for APN) and AMA billing information is determined for both normal routing and overflow routing. (The LTD is not performed for LDNC customers since the LANI is not received in the Calling Party ID field of the Info_Collected message. The call is assumed to be a toll call.)
   - The information regarding the POTS routing of the call is stored in case the terminating private facility trunk is busy or there is network congestion. This information is retained for 4 seconds.
   - Information relevant to the APN routing of the call is sent first. Therefore, the following information is returned to the EO in an Analyze_Route message:
     –*Charge Number* containing the ANI
     –*Calling Party ID* containing the LANI (Calling Party ID is not sent for LDNC customers)
     –*Called Party ID* containing the Routing Number (APN)
     –*Primary Carrier ID* = 0732
     –*Carrier Usage* = 1
     –*Charge Party Station Type* – OLI = Set to 49
     –AMA information:
     a. Overflow Billing Indicator: AMA Call Type = 129 (SDN)
     b. AMASlpID = Customer Account (9 digits)
     –*Extension Parameter*: Bearer Capability = f3.1kHzaudio.

- Returns the following information to the EO in a Furnish_AMA_Information message:
  – Module 878 (Customer RCP/RAO and Call Progress Stopped)
  – Module 827 [Digit Module B with Alternate Destination Number (SDN Billing Number)]
  – Module 876 (TT/USFI).
- A Request_Report_BCM_Event operation is included in the Analyze_Route message to indicate that the 2DSA/2NCP should be notified in the event that the private facility trunk to which the call is routed is busy, or that there is congestion in the network before the point that is preventing the call from being routed (that is, the switch is instructed to report to the 2DSA/2NCP in case either a Network Busy condition or User Busy is encountered).

5. The EO receives the Analyze_Route response from the 2DSA/2NCP and performs the following tasks:
   - From the Nature of Number field of the Called Party ID received in the Analyze_Route message, the switch recognizes that it needs to route the call using internally provisioned APN translations. This means the call may be routed within the EO, to another EO, or to an ASN *4ESS* switch.
   - Unless there is previous network congestion, the call is ultimately routed to the direct connect trunk between the terminating PBX of the customer and the AT&T network. However, the private facility trunk is busy in this scenario.

6. The *4ESS* switch (OAS) receives the release message. Since the call is received in a TSG with FEALN=Y, the new Releasability indicator in the FHT table is used to determine how to final handle the call (for example, to play an announcement or to return a release message). The FHT table is provisioned to return a release message to the EO. If specified in the FHT table, the *4ESS* switch returns a release message with the received cause value.

   As the TAS illustrated in Figure 5-11 is a *4ESS* switch, an ISUP Release (REL) message with an indication of User Busy (Cause Indicator 17) is returned to the originating EO. [If the TAS were an AT&T EO, a REL message with an indication of No Circuit Available (Cause Indicator 34) would be returned instead. However, if the originating AT&T EO is also the TAS, a User Busy condition would be detected.] The EO generates an SC 220 for the first routing attempt. In the AIN Structure (SC 0220), the Completion Indicator value is set to 010 to indicate ***AIN pre-final route record–final call disposition not completed***.

   The EO appends Module 923 (Numbering Plan Type) if one or both the originating and terminating numbers are Private, Module 876 (TT/USFI), Module 878 (Customer RCP/RAO and Call Progress Stopped), Module 827 [Digit Module B with Alternate Destination Number (SDN Billing Number)], and Module 875 (Digit Module A). The EO also appends the Translation Settable Module 030 with AMA Call Type Code (129) exactly as received in the Primary Billing Indicator parameter. If the AMA record contains modules, Module 000 is appended to indicate the end of the AMA record. (Carrier Access–Originating Module 021 and LNP Module 720 do not apply in this case.)

Important! The EO records the destination number in Digit Module A (Module Code 875) if the Called Party ID received from the 2DSA/2NCP is greater than 12 digits. The EO records the Dialed Number and the Dialed Overseas Indicator in Digit Module A (Module Code 875) if a Call Type Code of 129 is received from the 2DSA/2NCP.

The EO populates the Numbering Plan Type (when appropriate) for the originating and terminating numbers in the Numbering Plan Type Module (Module Code 923) according to the number plan type of the Charge Number and Called Party ID, respectively, as received in the TCAP message.

7. Since the received REL message had a Cause Indicator of 17, the EO sends an O_Called_Party_Busy message directly to the 2DSA/2NCP (not via the SD). (If a REL message with a Cause Indicator of 34 had been received, a Network_Busy message would have been sent instead. Alternatively, if the customer PBX were directly connected to the originating EO, no REL message would be generated. The originating EO would detect a User Busy condition and send an O_Called_Party_Busy message to the 2DSA/2NCP.)

8. The STP routes the TCAP message.

9. Upon receipt of an O_Called_Party_Busy message (or a Network_Busy message), the 2DSA/2NCP does the following:
   - Retrieves the POTS translation for the SDN number, the Local/Toll Differentiation information, and the AMA information retained in Step 4.
   - Returns the following information to the EO in an Analyze_Route message:
     –Local/Toll Differentiation (LTD is not performed for LDNC customers since the LANI is not received in the Calling Party ID field of the Info_Collected message. The call is assumed to be a toll call.)
     a. *Primary Carrier ID* = 0288 (if toll), or LEC or PSEUDO (if local)
     b. *Carrier Usage* = 1 (if toll) or 0 (if local)

–*Charge Number* containing the ANI
–*Calling Party ID* containing the LANI (Calling Party ID is not sent for LDNC customers)
–*Called Party ID* (NANP or International)
–*Charge Party Station Type* – OLI = 49 (if toll); not included if local
–AMA information:
a. Overflow Billing Indicator: AMA Call Type = 129 (SDN)
b. AMASlpID = Customer Account ID (9 digits)
–*Extension Parameter* – Bearer Capability = 3.1kHzaudio.

- Returns the following information to the EO in a Furnish_AMA_Information message:
  –Module 878 (Customer RCP/RAO and Call Progress Stopped)
  –Module 827 [Digit Module B with Alternate Destination Number (SDN Billing Number)]
  –Module 876 (TT/USFI)
  –If the call is local, Module 877 (Local/Toll Differentiation) with Local Call Indicator and LANI.

10. The EO receives the second Analyze_Route message from the 2DSA/2NCP and performs the following tasks:
    - If the EO can route the call based on the NANP (determined from the Called Party ID), and the NPA-NXX of an NANP is open to portability and the NANP number is not resident on the AT&T EO, the EO performs LNP processing to determine if the Routing Number has been ported and, if so, to identify the correct LRN.
    - Routes the call. If local, this may mean that the call is routed within the EO to an LSP EO. An LSP can be a LEC or CAP, including AT&T. If toll, this may mean that the EO completes the call within the originating EO, to an LSP EO (which could be another AT&T EO), to an LSP AT, or to an ASN *4ESS* switch. If the EON_SupressCN flag is set for the egress trunk group, the OLI of the outpulsed IAM must be populated with the switch-provisioned default OLI (not the Charge Party Station Type of the Analyze_Route message) and the Charge Number must be suppressed.

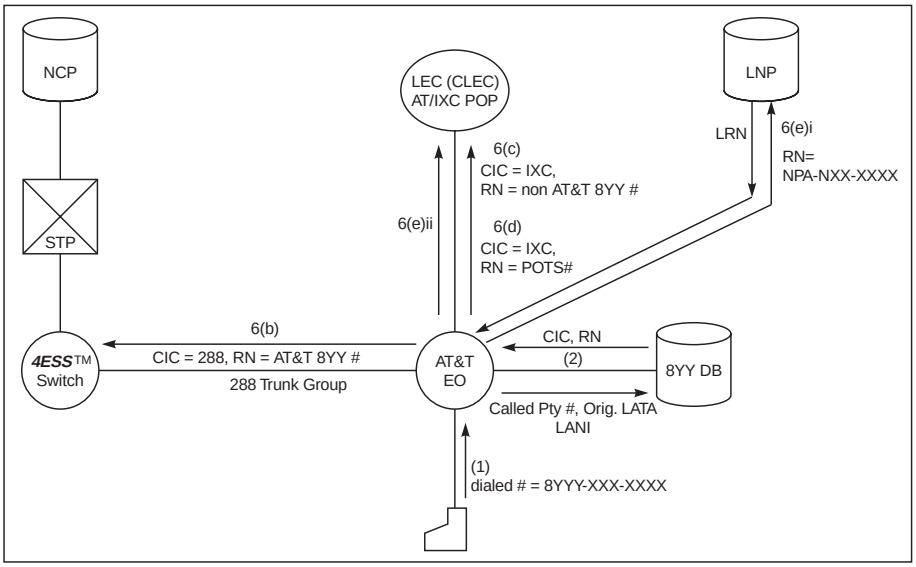
- The EO switch generates AMA Structure Code 0220, and appends Module 877 (Local/Toll Differentiation) if the call is local, Module 923 (Numbering Plan Type) if the originating number is Private, Module 876 (TT/USFI), Module 878 (Customer RCP/RAO and Call Progress Stopped), Module 827 [Digit Module B with Alternate Destination Number (SDN Billing)], and Module 875 (Digit Module A). For long-duration calls, the EO appends Module 022 to the continuation record. The EO also appends the Translation Settable Module 030 with AMA Call-Type Code (309) exactly as received in the Overflow Billing Indicator parameter. The EO appends a Carrier Access-Originating Module (Module 021) to capture the carrier access information if the call is routed over an IC trunk. The EO also appends Module 720 if the NPA-NXX of the destination number is open to portability and the EO performs an LNP data base query. If the AMA record contains modules, Module 000 is appended to indicate the end of the AMA record.

Important! The EO records the destination number in Digit Module A (Module Code 875) if the Called Party ID received from the 2DSA/2NCP is greater than 12 digits.

The EO populates the Numbering Plan Type (when appropriate) for the originating and terminating numbers in the Numbering Plan Type Module (Module Code 923) according to the number plan type of the Charge Number and Called Party ID, respectively, as received in the TCAP message.

11. The call is completed to the phone. **End of Call Flow.**

Figure 5-12 - Originating 8YY Calls from an ADL-V Location



Legend:

AT - Access Tandem
CIC - Carrier Indentification Code
CLEC - Certified Local Exchange Carrier
EO - End Office
DB - Data Base
IXC - Interexchange Carrier
LANI - Local Automatic Number Identification
LATA - Local Access and Transport Area
LEC - Local Exchange Carrier
LNP - Local Number Portability
LRN - Local Routing Number
LSP - Local Service Provider
NCP - Network Control Point
NPA - Numbering Plan Area
POP - Point of Presence
RN - Routing Number
SD - Segmentation Directory
STP - Signaling Transfer Point

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Domestic 8YY Call Originating From an ADL-V Nodal Location

The following call flow (illustrated in Figure 5-12) only includes calls dialed as 1+8YY+7 digits. This call flow does not apply to LDNC.

1. The ADL customer dials 1+8YY+7 digits.

2. The EO identifies the call as a non-nodal escape call, based on the escape codes assigned to the OHD trigger (uniquely assigned to the PBX trunk group of the customer). Therefore, the EO does not query the 2DSA/2NCP.

3. The EO handles the call by the standard Office Dialing Plan (ODP). The switch applies digit analysis and routing logic, and associates the call with an 8YY application.

4. The EO sends an ANSI TCAP message to query the Industry Toll-Free Data Base (ITFDB) to determine how to route the 8YY number. In the query message, the EO sends the dialed 8YY number, LANI, and originating LATA among other parameters.

5. The ITFDB may return one of the following:
   - A normal routing message
   - An announcement code
   - An error code
   - A reject message.

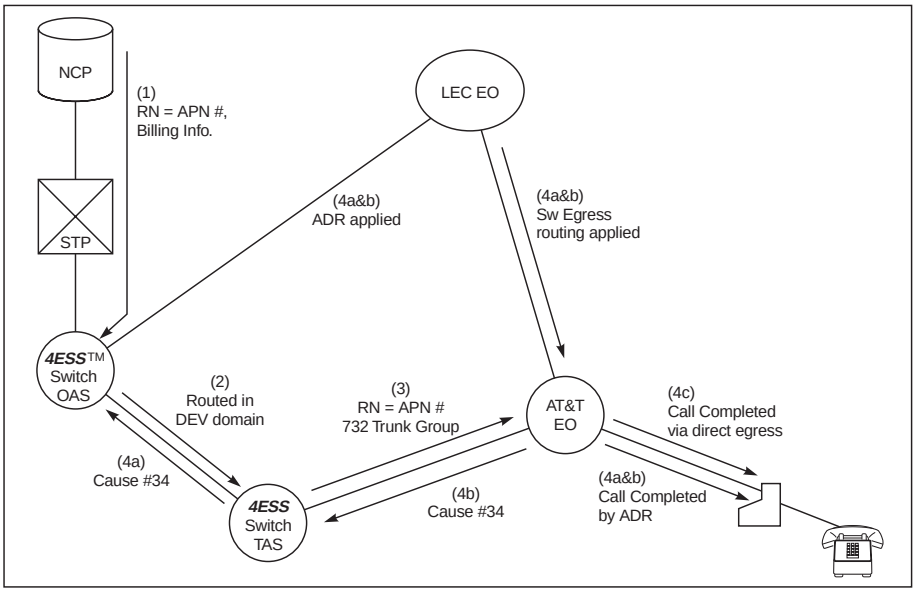
6. In a normal response, the ITFDB returns a Carrier ID (CIC), a Routing Number (RN), and a billing structure code associated with the call to the EO. The RN returned by the ITFDB can be either an 8YY number (in most cases, the dialed 8YY number) or a POTS number described as follows.

If the RN equals…	And…	Then the…
An 8YY number	No Carrier ID or a PSEUDO Carrier ID is returned	Call is routed to reorder.
	The CIC returned is 0288	EO routes the call over the 299 trunks to a *4ESS* switch that processes the 8YY call per existing switched access 8YY call processing. The EO creates an IC Number Service record (Originating Access Record) with SC 360 for this call. For long-duration calls, Module 022 is appended to the continuation record. If the AMA record contains modules, Module 000 is appended to indicate the end of the AMA record.
	The CIC returned belongs to an IXC (means that a non-AT&T 8YY number is returned in the RN)	EO switch routes the call to the specified carrier. The EO sends the call to either an AT using the LATA-specific Interexchange Carrier (IXC) meet-point trunk group or to an IXC Point of Presence (POP) using direct trunk groups to the IXC in the LATA where the call originated. The EO creates an IC Number Service record [Originating Access Record (OAR)] with SC 360 for this call. For long-duration calls, Module 022 is appended to the continuation record. If the AMA record contains modules, Module 000 is appended to indicate the end of the AMA record.

If the RN equals…	And…	Then the…
A POTS number	The CIC returned belongs to an IXC and a POTS number is returned in the RN [could be either an intra-LATA or inter-LATA Dialed Number (DN)]	EO routes the call to the appropriate IXC.
	The CIC returned is LEC or PSEUDO, and the RN is a POTS number	EO performs post-query digit analysis to identify the proper route for the call and routes the call to the appropriate carrier. The EO sends the call to the LEC AT in the LATA where the call originated. Alternatively, in some regions, interconnection agreements with the LEC/Certified Local Exchange Carrier (CLEC) may require that AT&T send CLEC-owned 8YY numbers over separate trunk groups to the CLEC. The EO creates a TELCO Number Service record (Originating Access Record) with SC 364 for this intra-LATA 8YY call. For long duration calls, Module 022 is appended to the continuation record. If an LNP data base dip is made from the EO, then Module 720 (LNP module) is appended. If the AMA record contains modules, Module 000 is appended to indicate the end of the AMA record. If post-query digit analysis fails, the call is routed to reorder.

End of Call Flow.

Figure 5-13 - Calls Terminating to a *MEGACOM* Service 8YY Location



Legend:

ADR -Alternate Destination Routing
APN - Action Point Number
AT - Access Tandem
EO - End Office
LEC - Local Exchange Carrier
NCP - Network Control Point
NPA - Numbering Plan Area
OAS - Originating AT&T Switch
RN - Routing Number
STP - Signaling Transfer Point
TAS - Terminating AT&T Switch

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Terminating to an ADL-V *MEGACOM* Service 8YY Location

MEGACOM service 8YY customers have APN routing numbers used within the AT&T network. IN ADL-IV, the TAS uses modified 732 trunks to send APN calls to the EO switch. The EO is able to process these calls because it has a special Digit Analysis Selector (DAS) assigned to the incoming trunk. This DAS and its associated tables are provisioned to provide the appropriate translations.

In ADL-V, the EO *MEGACOM* service 8YY location continues to be identified by the APN. When an EO *MEGACOM* service 8YY call comes to the ASN, it is always routed to the *4ESS* switch.

The following call flow (illustrated in Figure 5-13) up to the point at which the 2DSA/2NCP sends the routing and billing information to the *4ESS* switch is unchanged from existing service call flows:

1. The 2DSA/2NCP sends a TCAP message containing a Charging-Bill Call operation and a Connection Control-Connect operation to the originating *4ESS* switch. The Connect operation minimally contains a Digits parameter with an APN (Routing Number) and a Generic Routing Information parameter indicating Dedicated Egress. The Charging-Bill Call operation is per existing requirements. This could be an assisting or hand-off switch or a terminating switch connected to a Small-Scale Adjunct/Network Adjunct Platform providing the equivalent of originating switch functions.

2. The originating *4ESS* switch routes the call to the terminating *4ESS* switch. The call is routed in the DEV domain. Note that no LNP NCP query is done based on the call being routed in the DEV domain. Class of Service (COS) information is derived per existing requirements. Existing COS derivation results in the appropriate *MEGACOM* service 8YY Service Index (SI).

3. The call is routed through the ASN, as is currently done using the APN. The terminating *4ESS* switch is connected to the PBX through an AT&T EO.

4. The terminating *4ESS* switch routes the call (based on the APN) over a 732 Trunk Subgroup (TSG) to the EO. This trunk group is a dedicated 732 trunk group that carries only APNs.

5. The EO creates a Terminating Access Record with SC 0625 if the call is answered. For long-duration calls, the EO attaches Module 022 to the continuation record. If the AMA record contains modules, Module 000 is appended to indicate the end of the AMA record.

6. If the trunks from the terminating *4ESS* switch to the EO are busy, the TAS returns a Release message to the OAS with a Cause Value of 34 (No Circuit Available). If the customer is provisioned in the 2DSA/2NCP for Alternate Destination Routing (ADR), the originating *4ESS* switch uses Centralized Alternate Direct Call Routing (CADCR) to provide ADR for the call. Note that the alternate number provisioned for ADR must be different from the POTS number assigned to the *MEGACOM* service location to receive full benefit from ADR.

7. If the trunks from the terminating *4ESS* switch to the EO are not busy, the terminating *4ESS* switch sends an IAM to the EO with the following information:
   - Called Party Number = digits of incoming Called Party Number parameter coded as National/Integrated Services Digital Network (ISDN) per existing Interchangeable NPA (INPA) requirements. This field is populated with the APN by the *4ESS* switch. The EO extracts the APN from this field.

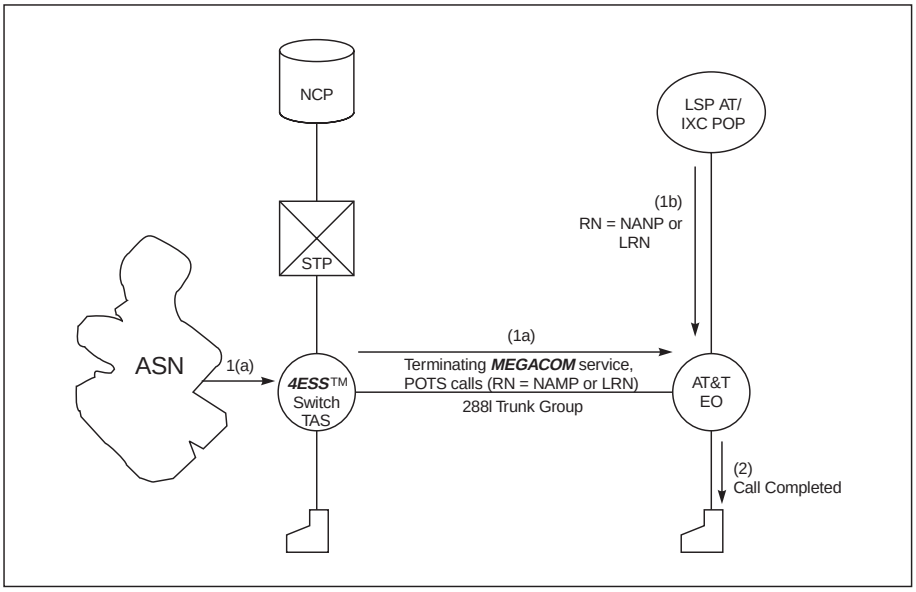
- Calling Party Number = incoming Calling Party Number parameter if received. (Calling Party ID is not received for terminating calls that originated from LDNC customers.)
- Generic Address Parameter (Type of Digits = Dialed Number) = mapped from incoming AT&T Specific Dialed Number parameter (based on a TSG FEALN characteristic = Yes). This mapping is performed by the terminating *4ESS* switch.
- Generic Address Parameter (Ported Number) = not sent (due to DEV domain resulting in no LPN query).
- OLI = not sent (per existing provisioning).
- Charge Number (CHG) = not sent (per existing provisioning).

8. The terminating EO receives the ISUP IAM and routes the call based on the APN contained in the Called Party Number field, using a DAS provisioned with APNs. The DAS points to a Route Index that directs the call to a specific PBX trunk and provides delete/prefix capability.

9. If the trunks from the EO to the PBX are busy, the EO returns a Release message to the OAS with a Cause Value = 34 (No Circuits Available). If Dialed Number Identification Service (DNIS) is provisioned, the EO (*5ESS*® electronic switch) returns a Cause Value = 17. If the customer is provisioned in the 2DSA/2NCP for ADR, the OAS (*4ESS* switch) uses CADCR to provide ADR for the call. The alternate number provisioned for ADR must be different from the POTS number assigned to the *MEGACOM* service 8YY location to receive full benefit from ADR. The DNIS is available to *MEGACOM* service customers subscribed to Inband ANI delivery.

10. If the trunks from the EO to the PBX are not busy, the terminating AT&T Local Network (ALN) EO delivers the call to the customer PBX. **End of Call Flow**.

Figure 5-14 - Terminating Inter-LATA Calls



Legend:

ASN - AT&T Switched Network
AT - Access Tandem
EO - End Office
IXC - Interexchange Carrier
LRN - Local Routing Number
LSP - Local Service Provider
NANP - North American Numbering Plan
NCP - Network Control Point
POP - Point of Presence
RN - Routing Number
STP - Signaling Transfer Point
TAS - Terminating AT&T Switch

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Calls Terminating to an ADL-V Nodal Location

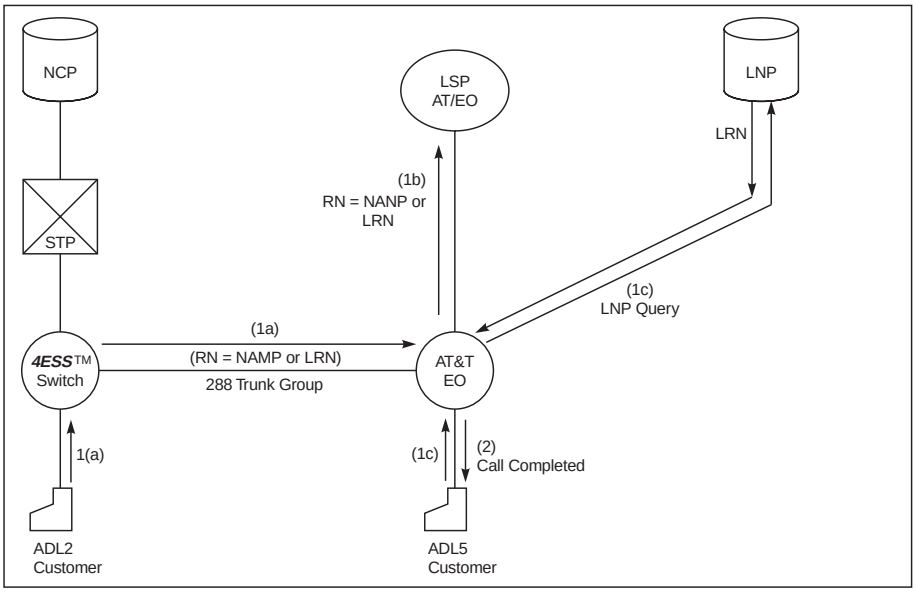
A. Inter-LATA Toll Calls

The EO switch receives terminating inter-LATA toll calls (for example, *MEGACOM* service or POTS) from an LSP AT, an IXC, or a *4ESS* switch. When these calls (illustrated in Figure 5-14) are received by the EO, they follow the standard EO call processing steps for terminating calls, and use standard digit analysis and routing tables (that is, these call processing steps are not specific to ADL-V). The terminating *MEGACOM* service calls from the *4ESS* switch come over the 288 trunks.

If the number is…	And…	Then the EO switch…
Ported to the EO	An LRN is received	Routes the call per existing requirements for LRN and creates a Terminating Access Record with SC 0625. For long-duration calls, Module 022 is appended to the continuation record. If the AMA record contains modules, Module 000 is appended to indicate the end of the AMA record.
Not ported	No LRN is received	Routes the call per existing requirements for LRN and creates a Terminating Access Record with SC 0625. For long-duration calls, Module 022 is appended to the continuation record. If the AMA record contains modules, Module 000 is appended to indicate the end of the AMA record.

Important! Calling Party ID is not received for terminating calls that originated from LDNC customers.

Figure 5-15 - Terminating Local Calls



Legend:

ADL - AT&T Digital Link
AT - Access Tandem
EO - End Office
LNP - Local Number Portability
LRN - Local Routing Number
LSP - Local Service Provider
NANP - North American Numbering Plan
NCP - Network Control Point
RN - Routing Number
STP - Signaling Transfer Point

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B. Local Calls

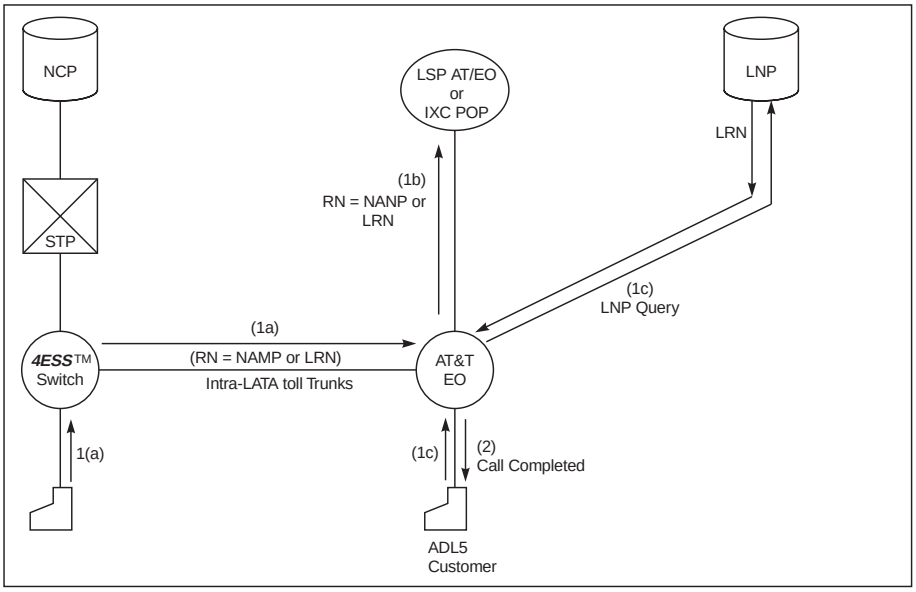
The EO receives local calls from an LSP AT/EO, an AT&T *4ESS* switch serving a nodal customer, or itself. When these calls (illustrated in Figure 5-15) are received by the EO, they follow the standard EO call processing steps, and use standard digit analysis and touting tables.

If the number is…	And…	Then the EO switch…
Ported to the EO	An LRN is received	Routes the call per existing requirements for LRN and creates a Terminating Access Record with SC 0625. For long-duration calls, Module 022 is appended to the continuation record. If the AMA record contains modules, Module 000 is appended to indicate the end of the AMA record.
Not ported	No LRN is received	Routes the call per existing requirements for LRN and creates a Terminating Access Record with SC 0625. For long-duration calls, Module 022 is appended to the continuation record. If the AMA record contains modules, Module 000 is appended to indicate the end of the AMA record.

If calls originated behind the same EO and the switch recognizes that the NPA-NXX of the destination number is open to portability, it queries the LNP-NCP data base. If the number is ported, the LNP-NCP returns a 10-digit LRN. The EO switch routes per existing requirements for LRN.

Important! Calling Party ID is not received for terminating calls that originated from LDNC customers.

Figure 5-16 - Terminating Intra-LATA Calls



Legend:

ADL - AT&T Digital Link
AT - Access Tandem
EO - End Office
IXC - Interexchange Carrier
LATA - Local Access and Transport Area
LNP - Local Number Portability
LRN - Local Routing Number
LSP - Local Service Provider
NANP - North American Numbering Plan
NCP - Network Control Point
POP - Point of Presence
RN - Routing Number
STP - Signaling Transfer Point

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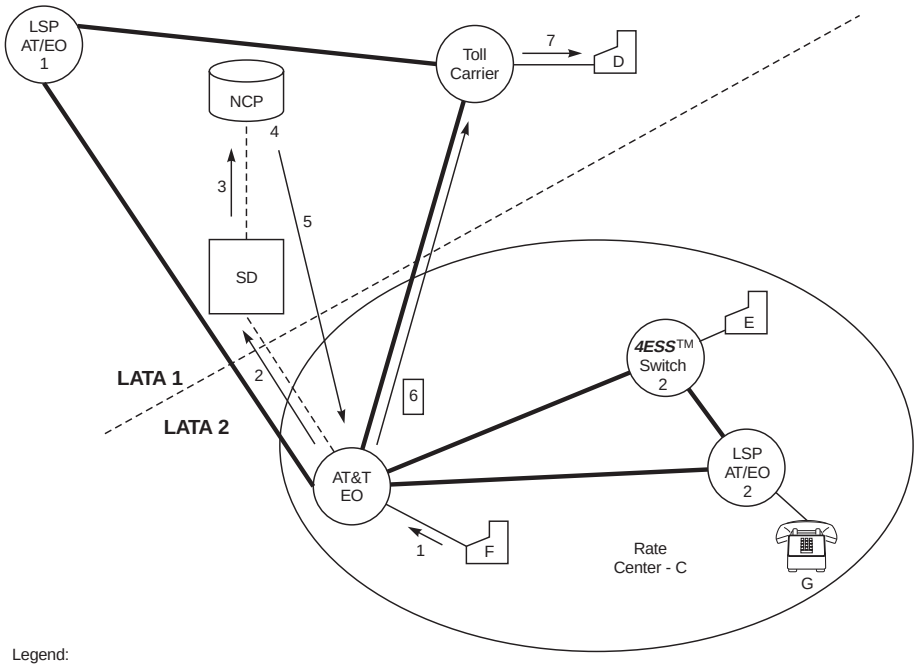
C. Intra-LATA Toll Calls

The EO receives intra-LATA toll calls from an LSP AT/EO, an AT&T *4ESS* switch serving a nodal customer or itself (since the AT&T EO can serve multiple LATAs). When these calls (illustrated in Figure 5-16) are received by the EO, they follow the standard EO call processing steps, and use standard digit analysis and touting tables. The terminating intra-LATA calls come over the intra-LATA toll trunks or over trunks that can carry intra-LATA toll traffic due to a shared access arrangement.

If the number is…	And…	Then the EO switch…
Ported to the EO	An LRN is received	Routes the call per existing requirements for LRN and creates a Terminating Access Record with SC 0625. For long-duration calls, Module 022 is appended to the continuation record. If the AMA record contains modules, Module 000 is appended to indicate the end of the AMA record.
Not ported	No LRN is received	Routes the call per existing requirements for LRN and creates a Terminating Access Record with SC 0625. For long-duration calls, Module 022 is appended to the continuation record. If the AMA record contains modules, Module 000 is appended to indicate the end of the AMA record.

Important! Calling Party ID is not received for terminating calls that originated from LDNC customers**.**

Figure 5-17 - Presubscription Calls



Legend:
AT - Access Tandem
EO - End Office
LATA - Local Access and Transport Area
LSP - Local Service Provider
NCP - Network Control Point
SD - Segmentation Directory

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Presubscription Calls

Based on the technical plan for ADL-III, presubscription for both intra- and inter-LATA toll carriers must be supported (presubscription is not supported for data calls). The following call flow (illustrated in Figure 5-17) pertains to a customer who is presubscribed to an intra-LATA toll carrier other than AT&T. Information about the presubscription of the customer is contained in the customer account at the 2DSA/2NCP. This call flow does not apply to LDNC calls.

1. The customer who is presubscribed to a toll carrier other than AT&T for intra-LATA toll service makes an originating direct dial toll call by dialing 10 digits (for example, NPA=NXX-XXXX). This could be 1+ 10 digits if this were an SDN customer with a 1+ dial plan.

2. The originating EO recognizes that this is an ADL customer and does the following:
   - Performs pre-query processing, including validating the dialed number and checking for escape codes. In this scenario, the call passes number validation and does not escape.
   - Prefixes the home NPA when it receives seven dialed digits for a *MEGACOM* service/PCP call.
   - Triggers, formats the Info_Collected message, and sends a query to an SD. (Calling Party ID is not sent for LDNC customers.)

3. The SD complex receives the SCCP GTT message. Hybrid GTT distinguishes that this is an AIN message and routes it to an SD application. Among other checks (that is, the Key Service Type), the SD application uses the Charge Number parameter in the AIN TCAP portion of the incoming message to determine if there is an ANI Key match.

If there is...	Then the SD…
A match	Looks in the SP Table to identify the specific 2DSA/2NCP Point Code and Sub-System Number. The SD populates the MTP and SCCP fields with the routing information. Since the message received is an AIN Info_Collected message, the SD inserts the appropriate Customer ID in the Extension Parameter of the Info_Collected message. (The SD derived the Customer ID from the ANI record.) The SD then routes the message to the appropriate 2DSA/2NCP.
No match	Does not send a message to either the EO or the 2DSA/2NCP. The EO times out and default routes the call.

4. Upon receipt of the Info_Collected message, the 2DSA/2NCP performs the following tasks:

   - Checks for presubscription. The customer account within the 2DSA/2NCP determines if presubscription applies to the call. In this scenario, the caller is presubscribed to an intra-LATA carrier (not AT&T).
   - Performs LTD logic and identifies that this is an intra-LATA toll call (this would also apply to an inter-LATA call).

5. The 2DSA/2NCP returns the following information to the EO in an Analyze_Route message:
   - *Routing Number* as the Called Party ID
   - *Carrier Usage* = 0 (indicates that the call must be routed based on the Primary Carrier value)
   - *Primary Carrier* (including Carrier Selection Indicator) set to PTC and Presubscribed (derived from the presubscription information and LTD result)
   - *Charge Party Station* type set to 48 (*MEGACOM* service/PCP) or 49 (SDN)
   - *Charge Number* = LANI.

Important! No AMA information is returned by the 2DSA/2NCP because the AT&T EO does not create a billing record for the call.

6. The EO receives the Analyze_Route response from the 2DSA/2NCP and uses the toll DAS for digit analysis. The EO then performs the following tasks:
   - Uses carrier routing and identifies the route to the carrier based on the Carrier Usage ID of 0 and the PTC value in the Primary Carrier parameter
   - Suppresses the LRN data base query
   - Routes the call to the carrier with the following in the IAM:

   —If the EON_SuppressCN flag is set for the egress trunk group, the OLI of the outpulsed IAM is populated with the switch-provisioned default OLI and the Charge Number is suppressed.

   —The Charge Number is mapped from the Analyze_Route message only if the EON_SuppressCN flag is not set (in this case, OLI not sent).

   —The CPN is populated per current ADL requirements (with LANI).

   —TNS is populated with the PTC value from the Primary Carrier (from the 2DSA/2NCP response).

   —CSI is populated with the CSI value from the Primary Carrier (from the 2DSA/2NPC response).

   —Called Party Number populated with the original dialed number.

   - Creates an Originating Access Record with SC 0625. For long-duration calls, Module 22 is appended to the continuation record. If the AMA record contains modules, Module 000 is appended to indicate the end of the AMA record.

7. The carrier receives the call. **End of Call Flow.**

Dial-Around Call

The following call flow does not apply to LDNC:

1. The customer makes a dial-around call to any toll carrier (including AT&T) by dialing 101XXXX and 10 digits (NPA-NXX-XXXX). This could be 1+ 10 digits if this were an SDN customer with a 1+ dial plan.
2. The originating EO recognizes that this is an ADL customer and does the following:
   - Performs pre-query processing, including validating the dialed number and checking for escape codes. In this scenario, the call passes number validation and does not escape.
   - Prefixes the home NPA when it receives seven dialed digits for a *MEGACOM* service/PCP call.
   - Triggers, formats the Info_Collected message, and sends a query to an SD. (Calling Party ID is not sent for LDNC customers.)

3. The SD complex receives the SCCP GTT message. Hybrid GTT distinguishes that this is an AIN message and routes it to an SD application. Among other checks (that is, the Key Service Type), the SD application uses the Charge Number parameter in the AIN TCAP portion of the incoming message to determine if there is an ANI Key match.

If there is...	Then the SD…
A match	Looks in the SP Table to identify the specific 2DSA/2NCP Point Code and Sub-System Number. The SD populates the MTP and SCCP fields with the routing information. Since the message received is an AIN Info_Collected message, the SD inserts the appropriate Customer ID in the Extension Parameter of the Info_Collected message. (The SD derived the Customer ID from the ANI record.) The SD then routes the message to the appropriate 2DSA/2NCP.
No match	Does not send a message to either the EO or the 2DSA/2NCP. The EO times out and default routes the call.

4. Upon receipt of the Info_Collected message, the 2DSA/2NCP performs the following tasks:
   - Checks for the Carrier parameter and CSI, and identifies the call as dial-around.
   - The Customer Account Logic (CAL) prefixes 114 to the dialed number if an SDN 7-digit dialed number is received.
   - Performs LTD logic and identifies that this is an intra-LATA toll call (this would also apply to an inter-LATA call).
   - Screens to ensure that the CIC is valid for an intra-LATA toll call. The call may not be allowed to dial-around because of the following reasons.

When the…	The CAL logic 2DSA returns a CIC equal to…	To trigger the announcement…
LANI is not in the Exchange table	9077	Your service is not configured to allow dial-around. Please call your sales office to activate this capability.
Call is a data call	9079	A carrier access code is not necessary for this call. Please dial your call again without the carrier access code.
Call is a local call	9079	A carrier access code is not necessary for this call. Please dial your call again without the carrier access code.
CIC is invalid	9080	The carrier access code you dialed is not valid for this call.

5. The 2DSA/2NCP returns the following information to the EO in an Analyze_Route message depending on whether the call is a valid or invalid dial-around call.

If the call is...	Then the following is returned...
A valid dial-around call	• Routing Number (NANP) as the Called Party • Carrier Usage = 0 (indicates the Carrier value must be used in determining the route to the proper carrier) • Carrier (including CSI) set to CIC and Selected CIC Not Presubscribed and Inputted by Calling Party • Charge Party Station type set to 48 (*MEGACOM* service/PCP) or 49 (SDN) • Charge Number = LANI.
An invalid dial-around call	• Routing Number (NANP) as the Called Party • Carrier Usage = 0 (indicates the Carrier value must be used in determining the route to the proper carrier) • Carrier (including CSI) set to CIC determined by CAL logic based on error and Selected CIC Not Presubscribed and Inputted by Calling Party • Charge Party Station type set to 48 or 49 • Charge Number = LANI.

Important! No AMA information is returned by the 2DSA/2NCP because the EO does not create a billing record for the call.

6. The EO receives the Analyze_Route response from the 2DSA/2NCP and performs the following tasks:
   - Uses carrier routing and identifies the route to the carrier based on the Carrier Usage ID of 0 and the CIC value in the Primary Carrier parameter
   - Suppresses the LRN data base query.

- Routes the call to the carrier with the following in the IAM:

—If the EON_SuppressCN flag is set for the egress trunk group, the OLI of the outpulsed IAM is populated with the switch-provisioned default OLI and the Charge Number is suppressed

—The Charge Number is mapped from the Analyze_Route message only if the EON_SuppressCN flag is not set (in this case, OLI not sent)

—The CPN is populated per current ADL requirements (with LANI)

—TNS is populated with the PTC value from the Primary Carrier (from the 2DSA/2NCP response)

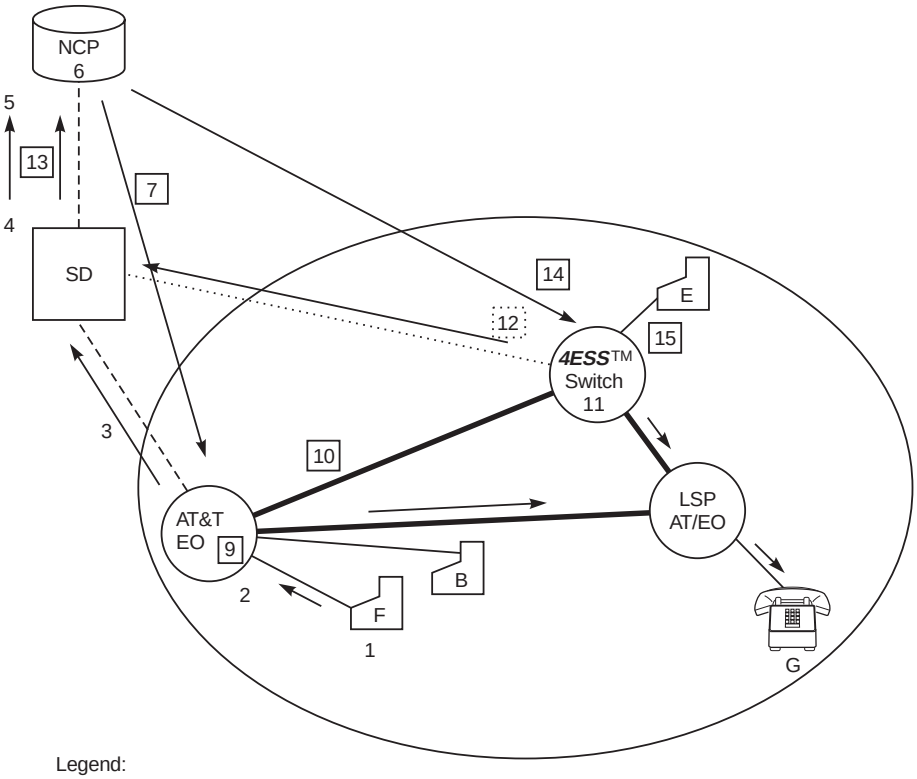
—CSI populated with the CSI value from the Primary Carrier (from the 2DSA/2NPC response)

—Called Party Number populated with the original dialed number.

- Creates an Originating Access Record with SC 0625. For long-duration calls, Module 22 is appended to the continuation record. If the AMA record contains modules, Module 000 is appended to indicate the end of the AMA record.

7. The carrier receives the call. **End of Call Flow.**

Figure 5-18 - SDDN Data Calls



Legend:
AT - Access Tandem
EO - End Office
LSP - Local Service Provider
NCP - Network Control Point
SD - Segmentation Directory

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SDDN Data Calls

Based on the OHD trigger, the Software Defined Data Network (SDDN) calls (illustrated in Figure 5-18) query the 2DSA/2NCP data base. The service logic in the 2DSA/2NCP identifies the call as a data call based on the dialed number. Instructions are returned to the EO to route the call to the *4ESS* switched network for feature processing.

1. The PBX sends a dialed digit string of 115 + seven digits.

2. At the EO, the digits received are validated and checked to see that the digits do not respond to an escape code. The OHD trigger is encountered.

3. The EO launches a query to the 2DSA/2NCP via SD with an Info_Collected operation containing the following information:

   - *Collected Address Info* = 115 + 7 digits
   - *Calling Party Number* = Trunk Group Billing Number (Calling Party ID is not sent for LDNC customers)
   - *Charge Number* = LANI
   - *Bearer Capability* = 3.1kHz.

4. The SD routes the message to the 2DSA/2NCP containing the customer account.

5. The 2DSA/2NCP receives the message and accesses the customer account.

6. The customer logic determines the protocol is AIN TCAP and analyzes the dialed digits to determine that the call is a data call. The dialed digit string of 115 + 7 digits indicates that it is a data call. The SMS logic exits without further feature processing and returns the query to the EO to be routed to the *4ESS* switched network.

7. The 2DSA/2NCP returns a message with an Analyze_Route operation including the following:

   - Charge Number
   - Called Party ID (Nature of Number, Numbering Plan) = 115 + 7 digits
   - Charge Party Station Type = 41
   - Carrier = 0732
   - Carrier Usage = 0
   - Extension Parameter: Bearer Capability = 56-kbp data.

   Important! No AMA recording information is sent to the EO for these calls. These calls are routed to the *4ESS* switch that queries the 2DSA/2NCP for feature processing.

8. The EO receives the message from the 2DSA/2NCP. Upon receiving a Bearer Capability of 56 kbps in the Extension Parameter, the EO sets the USI (User Service Information) in the ISUP message to the value received from the 2DSA/2NCP. The EO creates an Originating Access Record with SC 0645. For long-duration calls, it appends Module 022 to the continuation record. If the AMA record contains modules, Module 000 is appended to indicate the end of the AMA record.

9. The EO routes the call based on the Primary Carrier = 0732 and Carrier Usage = 0, and routes the call to the *4ESS* switch on the 732 data trunk. The EO formats an ISUP message containing the following:
   - Called Party Number = Called Party ID (115 + 7 digits)
   - Calling Party Number = Trunk Group Billing Number (Calling Party ID is not sent for LDNC customers)
   - Originating Line Information = Charge Party Station Type (41)
   - Carrier Identification Code = 0732
   - User Service Information = 56-kbp data.

10. The EO routes the call on the 732 data trunks to the *4ESS* switch.

11. The *4ESS* switch receives the IAM from the EO and identifies the call as a data call based on the fact that the call is received in a trunk group built in the SDN-A domain.

12. Based on the OLI value, the *4ESS* switch formats an AT&T TCAP query to the SD.

13. The SD queries the 2DSA/2NCP with the customer record.

14. The 2DSA/2NCP processes the query. Based on an NPA of 115, a data rate of 56 kbps, and an OLI of 41, the CAL logic knows that this is a data call. Only the SDN number translation table of the customer is used to translate the remaining 7 digits. (Routing information for 700 numbers with the same last 7 digits is ***not*** referenced.) An AT&T TCAP response is returned to the *4ESS* switch.

15. The *4ESS* switch routes the call to the customer location. **End of Call Flow.**

International Calls

When an ADL-V customer dials 011+CC=NN (International Long-Distance call), the EO queries the 2DSA/2NCP via the SD. The Info_Collected message contains the original dialed number (without the 011 prefix) with the Nature of Number set to International. (Calling Party ID is not sent for LDNC customers.)

A. Calls Not Requiring Customized Announcements

1. The 2DSA/2NCP determines that this is an international call and returns the following in the Analyze_Route message:
   - Primary Carrier ID = 0288
   - Carrier Usage = 0 (indicates normal routing to the toll carrier as specified in the Primary Carrier ID)
   - Called Party ID = Original dialed number (011 prefix not included) with Nature of Number = international
   - Charge Party Station Type–OLI = 48 or 49
   - Charge Number containing the LANI

- Calling Party ID containing the LANI
- AMA Information:

–Overflow Billing Indicator: AMA Call Type = 309 (*MEGACOM* service/PCP) or 129 (SDN)

–AMASlp ID = Customer Account (9 digits)

- Extension Parameter: Bearer Capability= f3.1kHzaudio.

2. For SDN calls only, the 2DSA/2NCP also returns the following information to the EO in a Furnish_AMA_Information message:
   - Module 878 (Customer RPC/RAO Number and Call Progress Stopped)
   - Module 827 [Digit Module B with Alternate Destination Number (SDN Billing Number)]
   - Module 876 (TT/USFI).

3. The EO routes the call to the *4ESS* switch which applies the appropriate call processing treatment (derivation of SI value, routing, etc.) and routes the call to an International Switching Center (ISC) where existing call processing applies.

4. The EO generates an AMA record as follows:

   - *MEGACOM service/PCP International call:* The EO switch generates AMA Structure Code 0220 and appends Module 923 (Numbering Plan Type) if the originating number is Private and Module 875 (digits Module A) if the Called Party ID is more than 12 digits. For long duration calls, the EO appends Module 022 to the continuation record. The EO also appends two Translation Settable Modules 030, one with AMA Call Type Code (309) and the other with Service Feature value (045) exactly as received in the Overflow Billing Indicator parameter. The EO appends a Carrier Access-Originating Module (Module 021) to capture the carrier access information if the call is routed over an Interexchange Carrier (IC) trunk. If the AMA record contains modules, Module 000 is appended to indicate the end of the AMA record.

- *SDN Off-Net International call:* The EO switch generates AMA Structure Code 0220 and appends Module 923 (Numbering Plan Type) if the originating number is Private, Module 876 (TT/USFI), Module 878 (Customer RCP/RAO and Call Progress Stopped), Module 827 [Digit Module B with Alternate Destination Number (SDN Billing Number)], and Module 875 (Digit Module A).

Important! Two Digit Modules may be needed: one for the dialed number and the other for a Called Party ID greater than 12 digits. See **Universal International Freephone** in this chapter.

For long-duration calls, the EO appends Module 022 to the continuation record. The EO also appends the Translation Settable Module 030 with AMA Call-Type Code (129) exactly as received in the Overflow Billing Indicator parameter. The EO appends a Carrier Access-Originating Module (Module 021) to capture the carrier access information if the call is routed over an IC trunk. If the AMA record contains modules, Module 000 is appended to indicate the end of the AMA record.

Important! The EO records the destination number in Digit Module A (Module Code 875) if the Called Party ID received from the 2DSA/2NCP is greater than 12 digits. The EO records the Dialed Number and the Dialed Overseas Indicator in Digit Module A (Module Code 875) if a Call-Type Code of 129 is received from the 2DSA/2NCP.

B. Calls Requiring Customized Announcements

5. The following information is returned in the Analyze_Route message:
   - Local/Toll Differentiation Info:
     a. *Primary Carrier ID* = 0288
     b. *Carrier Usage* = 0.
   - *Charge Number* containing the ANI
   - *Calling Party ID* containing the LANI
   - *Called Party ID* containing the Dialed Number (NANP)
   - *Charge Party Station Type* – OLI = 40 or 41
   - *Extension Parameter*: Bearer Capability – f3.1kHzaudio.

Important! No AMA information is necessary. The *4ESS* switch is the recording switch for the call.

The EO receives the Analyze_Route response from the 2DSA/2NCP and performs the following tasks:

- Routes the call to a *4ESS* switch. (The call is routed between an EO and the *4ESS* switch by an ISUP IAM. The Nature of Number from the Analyze_Route message is mapped to the Nature of Number field of the IAM. The *4ESS* switch receiving the call knows that the Called Party is an international number. Calling Party ID is not sent for LDNC customers.)
- No service recording is performed at the EO. However, the EO switch generates an Originating Access Record with Structure Code 0625. For long duration calls, the EO appends Module 022 to the continuation record. If the AMA record contains modules, Module 000 is appended to indicate the end of the AMA record.

6. The *4ESS* switch receives the ISUP message from the EO and does the following:
   - Performs ADL-IV processing based on an OLI of 40 or 41 and a FEALN parameter set to Y on the incoming TSG
   - Queries the 2DSA/2NCP (via the SD) using AT&T TCAP (ANI=ANI, CgnDN=LANI, OST=40 or 41).

7. The 2DSA/2NCP processes the query and returns a response to the *4ESS* switch.

8. The *4ESS* switch routes and records the call. **End of Call Flow.**

Global SDN Calls–Outbound

A. Calls to Canada

The EO routes these calls (including LDNC calls) the same way as it routes the SDN On-Net calls. The Global SDN (GSDN) calls to Canada that do not require customized announcements are routed using an APN routing number (SSS-TTT-XXXX). The call flow is the same as the SDN On-Net call flow with one exception: The TAS (in the ASN) translates the APN number to a CID (Customer ID) + TNRN (Terminating Network Routing Number) and sends it to the appropriate Canadian carrier.

When the call arrives at the TAS (Gateway), the TAS uses location-specific RDB (SSS is Canada-specific) and performs delete/prefix capability, replacing SSS-TTT with CID-TNRN). The call is routed over a dedicated trunk group to Canada.

The EO generates an SC 220 and appends Module 923 (Numbering Plan Type) if one or both the originating and terminating numbers are Private, Module 876 (TT/USFI), Module 878 (Customer RCP/RAO and Call Progress Stopped), Module 827 [Digit Module B with Alternate Destination Number (SDN Billing Number)], and Module 875 (Digit Module A). For long-duration calls, the EO appends Module 022 to the continuation record. The EO also appends the Translation Settable Module 030 with AMA Call-Type Code (129) exactly as received in the Overflow Billing Indicator parameter. Additionally, the EO appends a Carrier Access-Originating Module (Module 021) to capture the carrier access information if the call is routed over an IC trunk. If the AMA record contains modules, Module 000 is appended to indicate the end of the AMA record.

Important! The EO records the destination number in Digit Module A (Module Code 875) if the Called Party ID received from the 2DSA/2NCP is greater than 12 digits. The EO populates the Numbering Plan Type (when appropriate) for the Originating and Terminating Numbers in the Numbering Plan Type Module (Module 923) according to the Number Plan Type of the Charge Number and Called Party ID, respectively, as received in the TCAP message.

The GSDN calls requiring announcements are up-chained to the *4ESS* switch the same way as the SDN On-Net calls that require customized announcements.

B. Calls to Other Countries

The GSDN calls to all other countries (excluding Canada) are up-chained to the *4ESS* switch network to handle the carrier-specific routing capabilities associated with GSDN. This includes calls from LDNC customers. The call flow is similar to an SDN On-Net call requiring announcements. For these calls, the EO sends a query to the 2DSA/2NCP via the SD. The dialed number included in the Info_Collected message can be 7 digits, 10 digits, or CC+NN. The 2DSA/2NCP identifies the call as a GSDN call associated with a GSDN-specific routing number. The following information is returned in the Analyze_Route message:

- *Primary Carrier*=0288
- *Carrier Usage*=0
- *CST*=41.

The EO routes these calls to a *4ESS* switch with the OLI parameter set to 41 in the SS7 IAM.

The *4ESS* switch performs originating call processing (querying the 2DSA/2NCP, routing, and recording) for the calls. No billing records are created at the AT&T EO. However, an Originating Access Record is created with SC 625. For long-duration calls, the EO appends Module 022 to the continuation record. If the AMA record contains modules, Module 000 is appended to indicate the end of the AMA record. **End of Call Flow**.

Universal International Freephone

Important! This call flow does not apply to LDNC.

From the AT&T EO perspective, a Universal International Freephone (UIFN) call with a dialed number in the form 011-800+8 digits escapes the 2DSA/2NCP data base query and is routed to an originating *4ESS* switch. The EO routes the call over 288 trunks to a *4ESS* switch and sends the 800+8-digit number (without the 011 prefix) as the Called Party Number with Nature of Address as International.

The *4ESS* switch receives the call from the EO in the IVT (International Voice Transit) domain and gives the UIFN dialed number International Inward Wide Area Telephone Service (INWATS) call-type treatment. The *4ESS* switch must receive the LANI from the EO before launching a query to the INWATS data base. The OAS queries the INWATS data base, applies the appropriate UIFN call processing, and routes the call. The EO creates an Originating Access Record with SC 625. For long-duration calls, the EO appends Module 022 to the continuation record. If the AMA record contains modules, Module 000 is appended to indicate the end of the AMA record. **End of Call Flow**.

710 Calls

The following call flow applies to 710 calls:

1. The customer dials 710+7 digits or 1+710+7 digits. The PBX routes the call to the AT&T EO.

2. The EO does the following:
   - Performs pre-query processing, including validating the dialed number and checking for escape codes. The 710 and 1+710 numbers escape the OHD trigger.
   - Routes nondial-around calls to a *4ESS* switch where they are treated as switched access 710 calls. For dial-around calls to 710, the EO delivers the call based on the CIC dialed.
   - Generates an Originating Access Record with Call Code 110 and SC 625.

3. The appropriate carrier receives the call. **End of Call Flow**.

5ESS ® Electronic Switch Call Processing

The *5ESS* electronic switch executes digit analysis of incoming digits dialed by PBX users in the following two phases:

1. Pre-Query (before sending the Info_Collected message to the 2DSA/2NCP)
2. Post-Query (after the response is received form the 2DSA/2NCP).

Some calls (for example, 8YY calls and operator calls) do not receive 2DSA/2NCP processing and escape the OHD trigger.

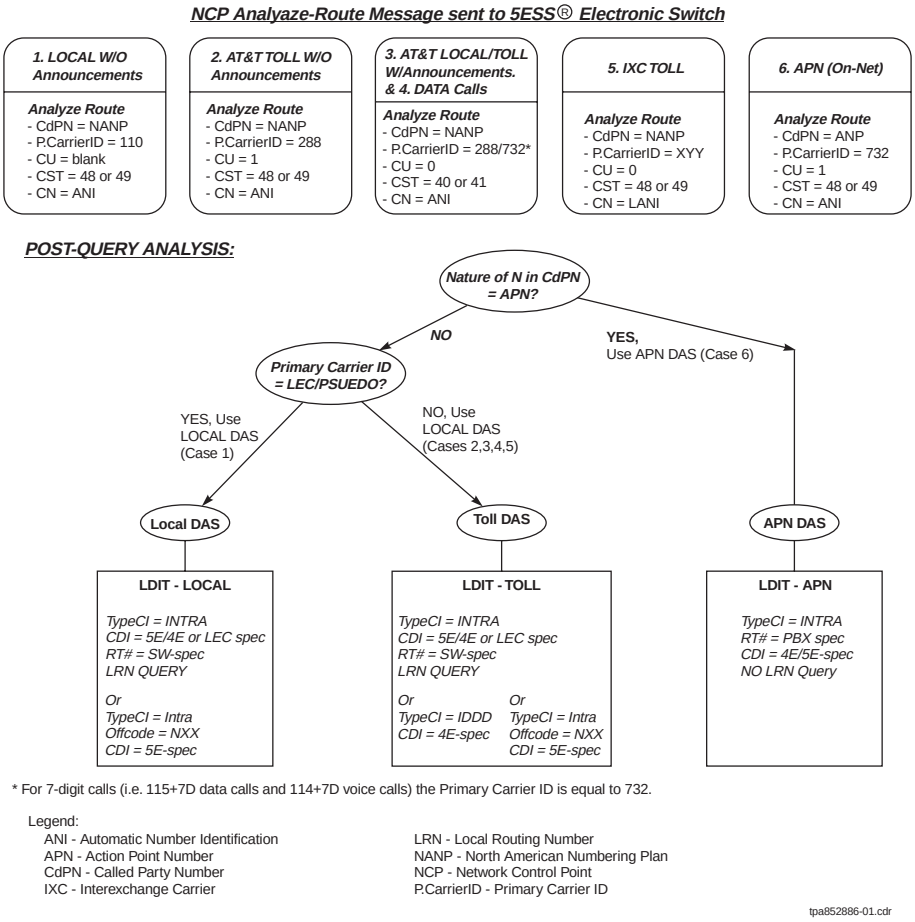
A. Pre-Query Digit Analysis

Dialed digits are analyzed by the Prefix/Feature Digit Interpreter Table (PDIT) and Local Digit Interpreter Table (LDIT) associated with the trunk group DSA of the ADL customer. The *5ESS* switch prefixes the Home NPA from the Far End NPA field to a 7-digit dialed number if a provisionable indicator on the trunk group indicates to do so. All *MEGACOM* service/PCP trunk groups are provisioned to prefix the Home NPA.

B. Post-Query Digit Analysis

After a query is sent to the 2DSA/2NCP, the call is validated by the SD. If a match is found, the SD identifies the 2DSA/2NCP Point Code and Sub-System Number, appends the Customer ID, and passes the query to the 2DSA/2NCP. If the SD finds that the called number is classified as Deny, it replies to the *5ESS* switch with a Send_To_Resource message, requesting that a disconnect announcement be played. Figure 5-19 illustrates the LDIT key fields.

Figure 5-19 - Post-Query Digit Analysis



* For 7-digit calls (i.e. 115+7D data calls and 114+7D voice calls) the Primary Carrier ID is equal to 732.

Legend:

ANI - Automatic Number Identification
APN - Action Point Number
CdPN - Called Party Number
IXC - Interexchange Carrier
LRN - Local Routing Number
NANP - North American Numbering Plan
NCP - Network Control Point
P.CarrierID - Primary Carrier ID

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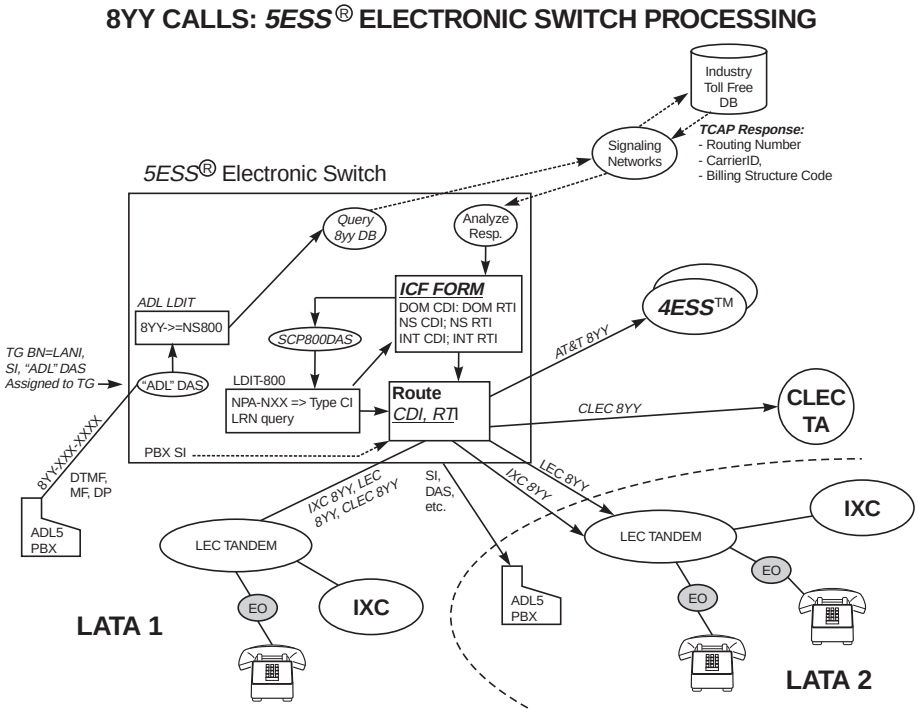
C. 8YY Calls

When a toll-free 8YY number is dialed, it escapes a query to the 2DSA/2NCP. Digit analysis in the LDIT associates the 8YY number with a Network Services (NS) 800 application and the query is sent to the ITFDB. This processing applies for calls to 800, 888, and 877. See Figure 5-20.

Figure 5-20 - 8YY Call Processing



Legend:

ADL - AT&T Digital Link
CdPN - Called Party Number
CLEC - Certified Local Exchange Carrier
CN - Calling Number
DAS - Digit Analysis Selector
DB - Data Base
DP - Dial Pulse
DTMF - Dual Tone Multi-Frequency
IXC - Interexchange Carrier
LANI - Local Automatic Number Identification
LATA - Local Access and Transport Area
LDIC - Local Digit Interpreter Table
LEC - Local Exchange Carrier
LRN - Local Routing Number
MF - Multi-Frequency
PBX - Private Branch Exchange
SI - Service Index
TCAP - Transactions Capability Application Part
TG - Trunk Group

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Provisioning

Structures Affected

A. OD4OFCCOPY2

Item OD4PF73 is assigned as the office parameter to indicated if the ADL-V feature is available in the switch. Table 5-A describes the state of PF73 and Table 5-B lists the population rules.

Table 5-A - ALD-V On/Off Indicator

Item/State	Word	Disp.	Size	Description
OD4PF73 4ODFB_OFF(=0) 4ODFB_ON(=1)	7	0	1	AT&T Digital Link Phase V feature is available Feature is not available (default) Feature is available

Table 5-B- OD4PF73 Population Rules

Recent Change Form 809 Entry		Populates Item	With	Checks
Feature Item	**ON or OFF**			
PF73	ON	OD4PF73	4ODFB_ON	A, B
	OFF		4ODFB_OFF	None
A. The End Office Local-Nodal (EOLN) feature (5538) must be activated (OD4PF37 = 4ODFB_ON). B. The Local-Nodal feature (5371) must be activated (OD4PF34 = 4ODFB_ON).				

The operation of this On/Off bit depends on the operation of the ADL-IV and ADL-2 feature indicators. If Items OD4PF34 and OD4PF73 are turned off, Item OD4PF73 must be turned off as well.

B. Local Nodal Processing

Item OD4PF34 is assigned as an office parameter to indicate if the Local-Nodal processing feature (5371) is active in the switch. The default is off. Table G-C defines the state of this item.

Table 5-C - Local Nodal On/Off Indicator

Item/State	Word	Disp.	Size	Description
OD4PF34 4ODFB_OFF(=0) 4ODFB_ON(=1)	5	9	1	Local-Nodal Phase 2 Processing Off (default) On

The automatic off provisioning action for the PF34 parameter is being modified to ensure the following are set to OFF when Feature 5371 is turned off:

- ADL-V (4E25 Release 1 Generic)
- ADL Phase 3–EA Dial-Around Capability (4E24 Release 3 Generic)
- ADL Phase 3–EA Presubscription Capability (4E24 Release 2 Generic)
- Local Nodal Phase 2.1 8YY Screening (4E22 Release 4 Generic)
- End Office Local Nodal Phase 1 (4E23 Release 1 Generic).

The population rules are defined in Table 5-D.

Table 5-D - Item PF34 Population Rules

Recent Change Form 809 Entry		Populates Item (See Note)	With	Checks
Feature Item	**ON or OFF**			
PF34	ON	OD4PF34	4ODFB_ON	None
	OFF	OD4PF34 OD4PF37 OD4PF48 OD4PF63 OD4PF69 OD4PF73	4ODFB_OFF 4ODFB_OFF 4ODFB_OFF 4ODFB_OFF 4ODFB_OFF 4ODFB_OFF	None
Note: The OFF auto-provisioning action applies to PF37, PF48, PF63, PF69, and PF73 (new).				

C. End Office Local Nodal

Item OD4PF37 is assigned as the office parameter to indicate if the End Office Local-Nodal Phase 1 feature (5538) is active in the switch. On means the feature is active. The default is Off. The state of PF37 is defined in Table 5-E.

Table 5-E - End Office Local Nodal Phase 1 On/Off Indicator

Item/State	Word	Disp.	Size	Description
OD4PF37 4ODFB_OFF(=0) 4ODFB_ON(=1)	5	12	1	End Office Local-Nodal Phase 1 Feature Active Off (default) On

The automatic Off provisioning action is modified to ensure that the ADL-V On/Off Item PF73 is set to OFF when End Office Local Nodal Phase 1 feature indicator (Item PF37) is turned off.

Important! Feature Bit PF63 should no longer be set to OFF in conjunction with PF37.

Table 5-F defines the population rules for Item PF37.

Table 5-F - Item PF37 Population Rules

Recent Change Form 809 Entry		Populates Item (See Note)	With	Checks
Feature Item	**ON or OFF**			
PF37	ON	OD4PF37	4ODFB_ON	A
	OFF	OD4PF37 OD4PF73	4ODFB_OFF 4ODFB_OFF	None
Note: The OFF auto-provisioning action applies to PF73 (new). A. The Local-Nodal Phase 2 NODAL processing feature (5371) must be set to ON (OD4PF34 set to 4ODFB_ON).				

D. HT4HANNXL

This structure is a 1-level structure that contains the Final-Handling Announcement data. The new final handling announcement indicator XL4FHA_FALN identifies the announcement treatment used for a Far-End AT&T Local Network. This indicator defines whether to send a release message (with cause) or to play an announcement. Table 5-G defines the state of this indicator.

Table 5-G - Item XL4FHA_FALN Indicator

Item/State	Word	Disp.	Size	Description
XL4FHA_FALN 4XLFALN_REL(=0) 4XLFALN_PA(=1)	1	18	1	Final-handling treatment for a Far-End AT&T Local Network REL = Send release with cause message (default) PA = Play Announcement

The HT4FHANNXL structure is provisioned using Recent Change (RC) Form 634 (verified by Input Form 16ac and Output Form 6aj). A new field, **FEALN**, is being added to this form to provision Item XL4FHA_FALN. Table 5-H defines RC 634 population rules.

If calls are received on a Local Carrier Connecting (LCC) trunk subgroup with a TSG characteristic of Far End AT&T Local Network set to Yes and an OLI of either 48 or 49, the *4ESS* switch exempts the call from the following tables:

- SD processing (no data base query is launched)
- Billing record generation
- ANI Trigger Table look-up
- NAI query
- FEN Block Call Denial Screening
- ANI/NPA screening.

OLI translators exist that are used to suppress SD queries on these calls at both the 1B Processor and the DLN. For this exemption to occur, the OLI value of 48 or 49 must be provisioned in these tables.

Table 5-H - Item XL4FHA_FALN Population Rules

RC Form 634 Entry FEALN	Populates Item	With	Checks
Blank	*		
REL	XL4FHA_FALN	4XLFALN_REL	None
PA	XL4FHA_FALN	4XLFALN_PA	None
*No changes are being made to the current translation value.			

E. HT4II_OLI

Two new II/OLI Service Type assigned states are defined for XL4IIST, XL4OLIST, and XL4ANITYPE. Table 5-I defines the state of these items.

Table 5-I - HT4II_OLI Indicators

Item/State	Word	Disp.	Size	Description
XL4OLIST	0	20	4	Originating Line Identity (OLI) Service
	0	16	4	Type
XL4IIST				II Digit Service Type
(=0)				Unassigned
4XLSTEAPOTS(=1)				Equal Access POTS
4XLSTSDN(=2)				SDN (Software Defined Network)
4XLSTOWATS(=3)				OUTWATS (Outward Wide Area
4XLSTT800(=4)				Telephone Service) Translated 800 Number
4XLSTCMC(=5)				Cellular Mobile Carrier
4XLSTTRS(=6)				Telecommunications Relay Service
4XLSTH_M(=7)				(TRS) Hotel/Motel
4XLSTLNSDN(=8)				Local Nodal SDN
4XLSTLNMGC(=9)				Local Nodal *MEGACOM* Service
*4XLSTP5SDN(=10)				Digital Link Phase 5 SDN
*4XLSTP5MGC(=11)				Digital Link Phase 5 *MEGACOM* Service
(12–15)				Unassigned
XL4ANITYPE	0	0	4	ANI Type based on II Digit action
XL4ANINONE(=0)				No EA ANI–Can never be used
XL4ANIEAPOTS(=1)				Complete ANI for EA POTS call
XL4ANIEASDN(=2)				Complete ANI for EA SDN call
XL4ANIEAOWATS(=3)				Complete ANI for EA OUTWATS call
XL4ANIEA800(=4)				Complete ANI for EA Translated 800 Number
XL4ANIEACMC(=5)				Complete ANI for EA Cellular Mobile Carrier
*Indicates new assigned states.				

Table 5-I - HT4II_OLI Indicators (Cont'd)

Item/State	Word	Disp.	Size	Description
XL4ANITYPE (Cont'd)	0	0	4	
XL4ANIEATRS(=6)				Complete ANI for EA TRS
XL4ANIEAH_M(=7)				Complete ANI for EA Hotel/Motel
XL4ANIEALNSDN(=8)				Complete ANI for EA Local Nodal SDN
XL4ANIEALNMGC(=9)				Complete ANI for EA Local Nodal *MEGACOM* Service
*XL4ANIEAP5SDN(=10)				Complete ANI for EA Digital Link Phase 5 SDN
*XL4ANIEAP5MGC(=11)				Complete ANI for EA Digital Link Phase 5 *MEGACOM* Service
(12–15)				Unassigned
*Indicates new assigned states.				

The II/OLI Service Type fields (XL4IIST and XL4OLIST) are updated and populated using RC Form 337 (verified using Input Form 13n and Output Forms 3af and 3ag). The assigned states are provisioned using two new SRVCT fields as listed in Table 5-J.

Table 5-J - II/OLI Service-Type Population Rules

RC Form 337 Entry	Populates Item		With	Checks
SRVCT	**For II**	**For OLI**		
P5SDN	XL4IIST	XL4OLIST	4XLSTP5SDN	None
P5MGC	XL4IIST	XL4OLIST	4XLSTP5MGC	None

ODA Forms Affected

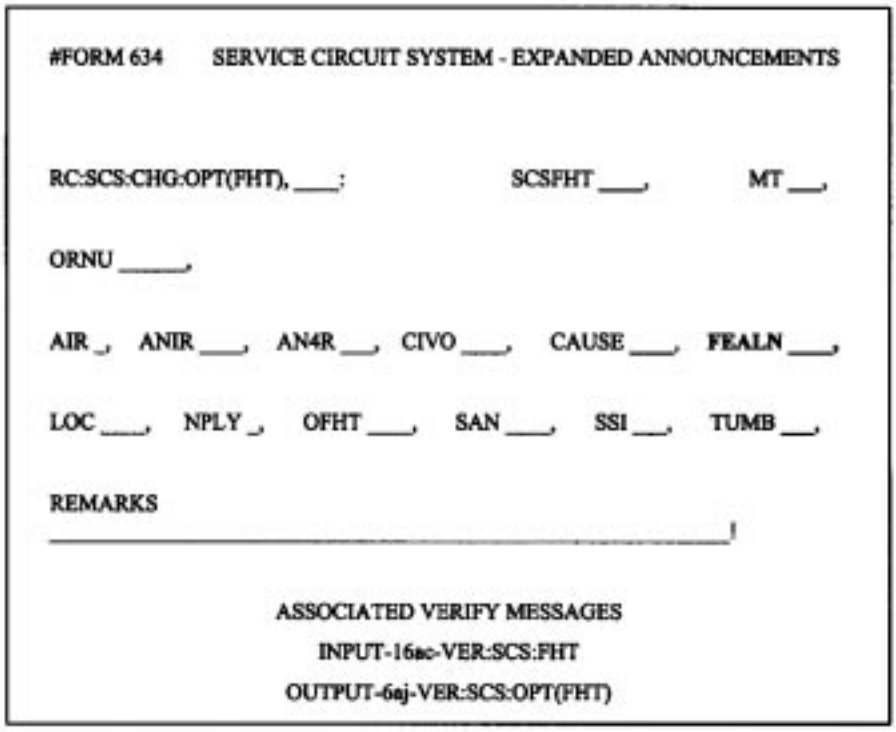
A. RC Form 809

This form is used to enable and disable various feature bits. The layout of this form is not changing. However, new population rules are defined for Feature Bits PF34, PF37, and PF73.

B. RC Form 634

This form (illustrated in Figure 5-21) is used to provision the HT4FHANNXL structure. The new field **FEALN** is added to provision the new item **XL4FHA_FALN**.

Figure 5-21 – RC Form 634



C. RC Form 337

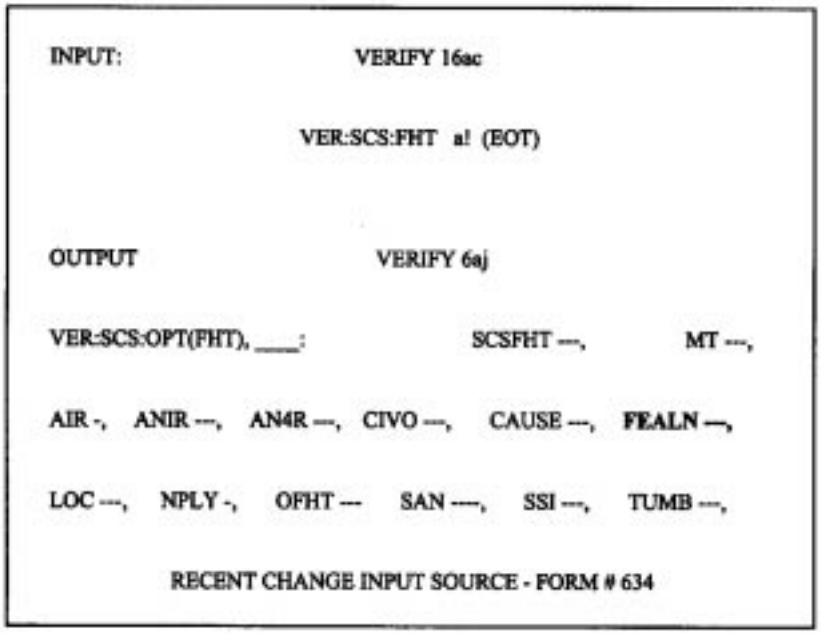
This form is used to provision the II/OLI Service Types. The layout of this form is not changing. However, the SRVCT field is modified to support the two new entries (**P5SDN** and **P5MGC**) used to provision two new Service Types.

Verify Forms Affected

A. Output Form 6aj

This form (illustrated in Figure 5-22) is used to verify the HT4FHANNXL structure. The new field **FEALN** is added to verify the new item **XL4FHA_FALNA**.

Figure 5-22 - Verify Form 6aj



B. Output Form 3af

This form is used to verify the II digit(s) assigned Service Type. The layout of this form is not changing. However, the form is modified to allow two new SRVCT entries **P5SDN** and **P5MGC**.

C. Output Form 3ag

This form is used to verify the OLI value(s) assigned Service Type. The layout of this form is not changing. However, the form is modified to allow two new SRVCT entries **P5SDN** and **P5MGC**.

□

Recording (Not Affected)

Network Management (Not Affected)

Maintenance/Troubleshooting

A new Final-Handling Code (FHC) as described in Table 5-K has been developed to support this feature.

Table 5-K - New Final-Handling Code

FHC	Description
1814	**Last Normal Condition:** A call arrived on an Local Carrier Connecting (LCC) ISUP trunk for which the FEALN field is set and the feature bit is set. A Called Party Number with the Network Access Interrupt (NAI) set to Action Point Number (APN) is received in the IAM. **Irregular Condition:** Equal Access ANI type is not SDN. **Handling:** The IC trunk is connected to the Vacant Code Announcement (VAC) or an ISUP Release message with cause for the VCA is sent. The call is not allowed to route.

□

Transition Considerations

Related Features

This feature is related to or depends on the following features:

- Feature 5371—*End Office Local Nodal Phase 1* (4E23 Release 1 Generic)
- Feature 5538—*Local Nodal Phase 2.1 8YY Screening* (4E22 Release 4 Generic)
- Feature 6685—*ADL Phase 3–EA Presubscription Capabil*ity (4E24 Release 2 Generic)
- Feature 6990—*ADL Phase 3–EA Dial-Around Capability* (4E24 Release 3 Generic).

Feature Deployment

It is not necessary for the 4E25 Release 1 Generic to be deployed in all *4ESS* switches in the network for this feature to be fully operational.

Feature Activation

This feature is activated by a 1B Processor Recent Change using RC Form 809. In order to turn this feature on, existing Feature 5538 (Item PF37) and Feature 5371 (Item PF34) must be turned on. If these features are active in the switch, the FEATURE ITEM field for Feature 6938 is set to **PF73** and the ON OR OFF field is set to **ON**.

The following 3B Recent Change must be performed to turn off the DLN IAM Intercept feature:

1. At the 3B RC/V Channel, build a new file in the *UNIX*® directory using the following command:
   /database/gttx/app_C
2. In the new file, enter the following recent change message:
   RC:SD;SD 000001;F;1(O,A,48,49)!
3. Activate the file by entering the following message in the 3B aplication:
   start:fta,app core,file [Your File Name]
4. Verify activation by entering the following command:
   ver:sd;oli

OLI 48 and OLI 49 must be provisioned on RC Form 333 and RC Form 337 per Network Methods and Procedures for the feature to be operational.

The CIVO field on RC Form 634 for the NCA (Cause Value 34) and BT (Cause Value 17) announcements must be set to REL in order to comply with FHT specifications.

The 4ESS feature depends on the activation of the feature in the following network elements:

- The *5ESS*® electronic switch
- 2DSA/2NCP
- SD
- 2STP.

Absolute Word Change

This feature may also be turned on (activated) or turned off (deactivated) by an Absolute Word Change. Item **OD4PF73** in the ODA structure OD4OFCCOPY2 is the office parameter that controls the state of this feature.

CAUTION

The OD4OFCCOPY2 structure also contains the On/Off bits for many other features. The Core Address listed below is valid for the 4E25 Generic Release, but may not be valid for any subsequent generics. Be certain that any changes made only affect this feature.

The following information is needed to turn ODA bit OD4PF73 on or off using the Absolute Word Change:

- Structure: OD4OFCCOPY2
- Core Address (4E25 Generic): 7121621
- Size: 1
- Displacement: 0
- On: 1
- Off: 0.

□

Input/Output Manual Pages (Not Affected)

6 Further Expansion of the Operator Service Position System (OSPS) ID Table Feature (7064)

Overview

Description This feature expands the 10-digit entries in the Operator Service Position System (OSPS) Access ID Table in the *4ESS*™ switch from 1024 to 6144 and increases the number of OSPS IDs from 256 to 1000.

Purpose The purpose of this feature is to document and provision the expansion of the OSPS ID Table in the *4ESS* switch.

Contents This chapter contains the following topics:

Feature Description

Introduction

This feature expands the 10-digit entries in the OSPS Access ID Table in the *4ESS* switch from 1024 to 6144 and increases the number of OSPS IDs from 256 to 1000.

Feature Interactions

This feature is dependent on the following features:

- *Universal T1.5 Access feature* (4570), located in the 4E20 Generic Release 4.
- *Consolidated Access Traffic feature (5308*), located in the 4E22 Generic Release 4.
- *Expansion of the 4ESS OSPS ID Table feature* (5917), located in the 4E23 Generic Release 1.
- *AT&T Digital Link Phase 3 – Equal Access feature (6685)*, located in the 4E24 Generic Release 2.
- *AT&T Digital Link Phase 3 – Equal Access Dial Around Capability Feature (6990)*, located in the 4E24 Generic Release 3.

□

Call Flow (Not Affected)

Provisioning

Recent Change Forms Affected

Recent Change (RC) form 6de is modified to handle a 10-bit OSPSID value with a maximum value of 999.

Verify Forms Affected

Verify Input Form 16de-2 is modified to handle a 10-bit OSPSID value as shown in Figure 6-1.

Verify Output Form 6de-2 is modified for this feature as shown in Figure 6-2.

Figure 6-1 Verify Input Form 16de-2

INPUT: VERIFY 16de-2

ex.1 Verify all TBN/TRN/ANI entries.
VER:MISC:FHT OSPSTBNID! (EOT)

ex. 2 Verify all entries (3-, 6-, and 10-digit) that begin with 312
VER: MISC:FHT OSPSTBNID, DIG 312! (EOT)

ex. 3 Verify the 3-digit level 312 entry.
VER:MISC:FHT OSPSTBNID, DIG 312000! (EOT)

ex. 4 Verify the 6-digit level 312653 entry.
VER:MISC:FHT OSPSBNID, DIG 312653! (EOT)

ex. 5 Verify the 10-digit level 3126531234 entry.
VER:MISC:FHT OSPSBNID, DIG 3126531234! (EOT)

ex. 6 Verify all entries (3-, 6-, & 10-digit) that possess a specific OSPS ID.
VER: MISC:FHT OSPSTBNID, ID 26! (EOT)

OUTPUT: VERIFY 6de-2

VER:MISC:FHT OSPSTBNID

Figure 6-2 Verify Output Form 6de-2

```
INPUT:                                          VERIFY #16de-2

VER:MISC:FHT OSPSBNTBN [,DIG a | ,ID b] ! (EOT)


              OUTPUT:   VERIFY 6de-2

VER:MISC:FHT OSPSTBNID:

                    TBN    OSPSID

                ----------  ---
                ----------  ---
                ----------  ---
```

Recording (Not Affected)

Network Management (Not Affected)

Maintenance/Troubleshooting (Not Affected)

Transition Considerations

Feature Deployment

It is not necessary for all *4ESS* switches in the network to be running the 4E25 Release 1 Generic for this feature to be fully operational.

Important! However, to use expanded UT1.5 A GOP, all switches should be running the 4E25 Release 1 Generic. Until this happens, the largest OSPSID value that should be used is 255

Feature Activation

This feature is turned on automatically by software deployment.

Input/Output Manual Pages

Modified Input/Output Messages

The following two messages are modified for this feature:

- Input message **VER:MISC: FHT OSPSTBNID** is modified to output the True Billing Number (TBN) to Operator Service Position System Identification (OSPSID) number.
- Output message **VER:MISC: FHT OSPSTBNID** is modified to respond to an input request for TBN/OSPSID number data for the universal T1.5 access capability.

7 Restructure and Grow the Call Register Feature (7254)

Overview

Description This feature frees up Real-Time to support additional call capacity. It is estimated that this feature saves approximately 0.4 to 1.0 percent of 1B time.

Purpose This feature has been identified by the 1B Real-Time Mining team in response to the need for additional overall call capacity in the *4ESS™* switch.

Contents This feature contains the following:

Feature Description

Description

This feature removes the Integrated Services Digital Network (ISDN) Register (IR) and Intelligent Network Register (INR) and moves the information into the Call Register (CR). The size of the CR is doubled from 256 words to 512 words. As a result of this feature, the following registers are also doubled in size:

- Non-Call Register
- Test Query Register
- Trunk Maintenance Register.

Requirements

There are four *4ESS*™ switch requirements for this feature, as follows:

- The *4ESS* switch must store in the Call Register, the information currently stored in the ISDN Register and the INR.
- The ISDN Register and the Intelligent Network Register must be removed.
- The size of the CR must be increased from 256 words to 512 words. The NR, TMR, and TQR will also increase to 512 words.
- The switch must provide the ability to dump the entire 512 words of the expanded CR when printing an audit report.

Call Flow (Not Affected)

Provisioning

ODA Forms Affected

The **INR** field was removed from the ODA Form 406C.

Recording (Not Affected)

Network Management

Measurements

Data Acquisition and Reports Integrated Communications System (DARICS)

There are two DARICS requirements for this feature as follows:

- Measurements related to the seize, release, and occupancy counts of the NR are removed.
- The CR structure sizes are recalculated based on the design of the feature.

The INR is removed from the OSOR and Measurement 17 reports.

Audits

Audits 76 and 83 are removed.

Maintenance/Troubleshooting (Not Affected)

Transition Considerations

Feature Deployment

Full deployment of the 4E25 Release 1 Generic is not required before turning this feature on.

Feature Activation

This feature is automatically turned on by software deployment.

Input/Output Manual Pages (Not Affected)

8 Killing Fraudulent Software Defined Network/Network Remote Access Calls Feature (7312)

Overview

Description This feature specifies the requirements to kill fraudulent Software Defined Network (SDN) Network Remote Access (NRA) calls. The Global Network Fraud Management Center (GNFMC) of AT&T monitors and controls fraud for various AT&T services.

For SDN calls made via NRA, fraud control is performed via the Network Remote Access Monitoring System (NRAMS). In combination with the SDN Service Management System (SMS), the NRAMS currently provides the Fraud Control Center personnel with the tools to identify fraudulent calls and to prevent additional fraudulent calls from being made. Once a fraudulent call has been established, however, the Fraud Control Center cannot disconnect it. This feature enhances SDN NRA fraud control by disconnecting fraudulent calls while they are still in progress.

Purpose The purpose of this feature is twofold:

1. To reduce expenses incurred by AT&T and the SDN NRA customer base for fraudulent calls
2. To discourage the fraud community from targeting the customer base of AT&T.

Contents This chapter contains the following topics:

Feature Description

SDN NRA Options 1 and 2

The SDN NRA fraudulent calls feature entails the following two options:

1. ***Option 1*** allows callers to dial a toll-free (8YY) number from a remote location to access their SDN network. Once the 8YY number is dialed, customers enter an authorization code and then a destination number. Sequence dialing permits callers to enter up to 10 destination numbers without redialing the 8YY number or authorization code. Option 1 customers are liable for all fraud that occurs within their account.
2. ***Option 2*** is technically and functionally identical to Option 1. However, AT&T absorbs the cost of fraudulent calls. Therefore, AT&T manages the card distribution and authorization code assignments associated with Option 2 customer accounts.

Important! The SDN NRA has four options. Options 3 and 4 are not monitored by the GNFMC and are not included as part of this feature.

The fraud controls currently in place do not disconnect fraudulent calls when they are identified. The fraud community has learned to exploit this via creative tactics that allow a single fraudulent call to stay up for hours, even days at a time. This fact, combined with the fact that most fraudulent calls are international calls, is very costly to AT&T and to Option 1 customers.

Through NRAMS, the GNFMC is able to identify fraudulent SDN NRA calls. Via SDN SMS, Fraud Control Center personnel can disable or restrict the privileges associated with a compromised authorization code, thereby blocking additional fraudulent calls from occurring. Once the code is disabled, Fraud Control Center personnel contact the customer to verify that the code was compromised. Upon verification, the Fraud Control Center deletes the authorization code from the SDN SMS.

With the implementation of this feature, the Fraud Control Center will be able to selectively kill in-progress SDN NRA calls that were initiated within the previous 24 hours.

Non-Simultaneous Authorization Code Option

The SDN NRA Non-Simultaneous Authorization Code (NSAC) option allows customers to limit the number of calls that can occur simultaneously for a given toll-free number/authorization code combination. This option requires the originating switch to send a **TERM** (Terminating) message to the data base at the time of call completion.

The NSAC customers determine their own threshold values for the number of simultaneous SDN NRA calls allowed. The most common threshold value is 2. This feature allows all calls established (that is, set up) within a specified time frame to be killed for a particular customer account/account code combination. The specific time frame is determined by the Fraud Control Center, with a maximum time frame of 24 hours.

Because SDN NRA calls originate via an 8YY number, neither the No. 2 Network Control Point (2NCP) nor NRAMS knows where the call originated (that is, the originating switch) after the initial call setup processing is completed. In order to kill the call at a later time, it is necessary to retain call identification information. The originating switch Point Code (PC) and Sub-System Number (SSN) must be retained, along with a call identifier to identify the particular call to be killed.

At the time of call setup, the No. 2 Direct Services ANI (DSA)/2NCP performs the following actions:

1. Requests the Originating AT&T Switch (OAS) to send a TERM message at the time of call completion
2. Generates, populates, and sends an Automatic Number Identification Call Attempt Record (ANICAR) to NRAMS.

In order to retain the call identifying information, this feature will modify the ANICAR format to include the following information:

- OAS PC
- OAS SSN

- The *4ESS*™ switch-generated OAS originating transaction ID
- The time of the call setup.

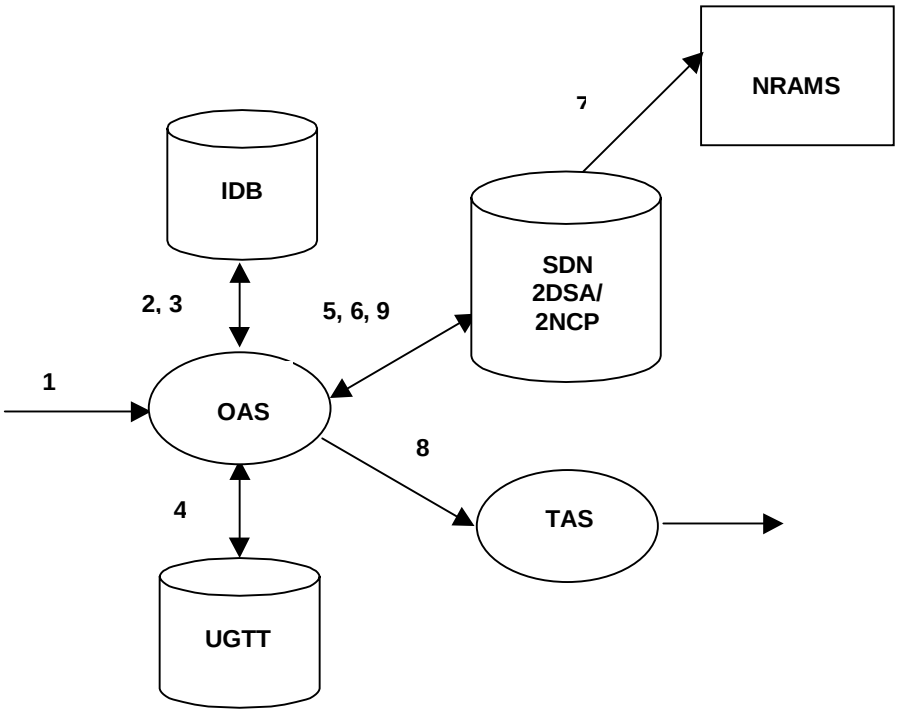
These fields are stored in NRAMS. The switch also stores the OAS originating transaction ID at the time the TERM request is received and the AT&T Trigger Platform (ATP) is invoked.

Important! For this feature, OAS refers to the controlling AT&T switch. If a switch hand-off occurs (due to unavailable ATP resources), the hand-off switch is considered the OAS.

□

Call Flow

Figure 8-1 —SDN NRA Call Setup Call Flow Diagram



Legend:

2DSA	No. 2 Direct Services ANI
IDB	Inward Wide Area Telephone Service Database
NRAMS	Network Remote Access Monitoring System
2NCP	No. Network Control Point
OAS	Originating AT&T Switch
SDN	Software Defined Network
TAS	Terminating AT&T Switch
UGTT	Universal Global Title Translation

SDN NRA Call Setup

The following call flow is illustrated in Figure 8-1 (the numbers shown in the illustration correlate to the call flow steps):

1. The caller dials the SDN NRA 1+8YY+NXX-XXXX number. The Local Service Provider (LSP) routes the call to an OAS.

2. The OAS receives the call and, based on 6-digit translation (8YY-NXX), queries the INWATS Data Base (IDB) with the 1-8YY dialed number to obtain a Network Routing Number (NRN) in the form SSC-WXY-NPAZ.

   Important! The Special Service Code (SSC) indicates SDN NRA Option 1 or Option 2. The WXY is the customer identifier. NPA is the Numbering Plan Area (NPA) of the calling party. The Z is set to zero for SDN NRA Option 1 or Option 2.

3. The OAS receives the NRN from the IDB and translates the NRN in the Plain Old Telephone Service (POTS) domain. Assuming that the OAS is an ATP switch, the switch searches the Global Title Translation (GTT) table for the NRN. If the search is successful, the SDN 2DSA/2NCP address and the SMS customer ID is obtained, and call processing continues. *Proceed to Step 5.*

   Important! The ATP has been deployed at all switches in the AT&T Switched Network (ASN). In the event that ATP is not available at the OAS, the 2DSA requests a hand-off. This results in Real-Time Network Routing (RTNR) to route the call to an alternate ATP switch.

4. If the search is not successful, the OAS queries the Universal Global Title Translation (UGTT) data base for the NRN. The UGTT responds to the query with the SDN 2DSA/2NCP address, the SMS customer ID, and an update to the GTT table that is resident in the switch.

5. The OAS then sends a Transaction Capabilities Application Part (TCAP) **BEGIN** message to the SDN 2DSA/2NCP. The following are included in this message:
   - The NRN
   - The SMS customer ID
   - The Customized Announcement Capabilities (CAC) parameter
   - The Node Capabilities parameter.

   Important! If the appropriate capabilities are not available at the OAS, the 2NCP instructs the switch to perform a hand-off for the remainder of call processing.

   The TCAP message also contains the OAS originating transaction ID. Based on the SMS customer ID, the Customer Application Language (CAL) retrieves and executes the customer record. Per the SDN NRA option and feature subscription, the authorization code is collected and validated as appropriate.

6. The 2DSA/2NCP validates the destination number and instructs the OAS to invoke ATP, and to bill and route the call. Additionally, the 2DSA/2NCP requests the OAS to send a **TERM** message at the time the call completes. In response to this TERM request, the *4ESS* switch saves the OAS originating transaction ID for later use.

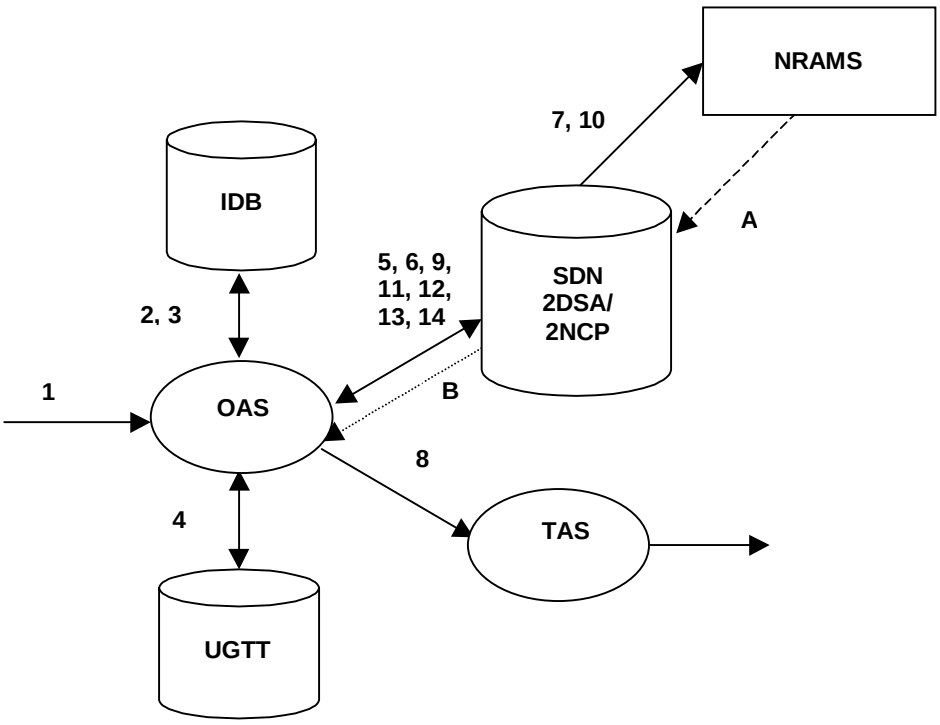
7. The 2DSA/2NCP generates an ANICAR, populates it, and sends it to NRAMS. The following information is included in the ANICAR:
   - The OAS PC/SSN
   - The OAS originating transaction ID
   - The time of call setup
   - An on-net indicator.

   The NRAMS receives the message and updates the NRAMS data base accordingly.

8. The OAS receives the routing information, invokes ATP, stores call information (including the OAS originating transaction ID and echo data information), and routes the call to the Terminating AT&T Switch (TAS).

9. If the caller hangs up, the OAS sends a unidirectional **TERM** message to the 2NCP, including the echo data parameter. **End of Call Flow.**

Figure 8-2 —Call Kill Call Flow Diagram



Legend:

2DSA	No. 2 Direct Services ANI
IDB	Inward Wide Area Telephone Service Database
NRAMS	Network Remote Access Monitoring System
2NCP	No. Network Control Point
OAS	Originating AT&T Switch
SDN	Software Defined Network
TAS	Terminating AT&T Switch
UGTT	Universal Global Title Translation

Call Kill

The following call kill call flow is illustrated in Figure 8-2 (the numbers shown in the illustration correlate to the call kill call flow steps):

1. The caller dials the SDN NRA 1+8YY+NXX-XXXX number. The LSP routes the call to an OAS.

2. The OAS receives the call and, based on 6-digit translation (8YY-NXX), queries the IDB with the 1-8YY dialed number to obtain an NRN in the form SSC-WXY-NPAZ.

3. The OAS receives the NRN from the IDB and translates the NRN in the POTS domain. Assuming that the OAS is an ATP switch, the switch searches the GTT table for the NRN. If the search is successful, the SDN 2NDSA/2NCP address and the SMS customer ID is obtained, and call processing continues. *Proceed to Step 5.*

4. If the search is not successful, the OAS queries the UGTT data base for the NRN. The UGTT responds to the query with the SDN 2DSA/2NCP address, the SMS customer ID, and an update to the GTT table that resides in the switch.

5. The OAS then sends a TCAP **BEGIN** message to the SDN 2DSA/2NCP. The following are included in this message:

   - The NRN
   - The SMS customer ID
   - The Customized Announcement Capabilities (CAC) parameter
   - The Node Capabilities parameter.

   The TCAP message also contains the OAS originating transaction ID. Based on the SMS customer ID, the CAL retrieves and executes the customer record. Per the SDN NRA option and feature subscription, the authorization code is collected and validated as appropriate.

6. The 2DSA/2NCP validates the destination number and instructs the OAS to invoke ATP and to bill and route the call. Additionally, the 2DSA/2NCP requests the OAS to send a **TERM** message at the time the call completes. In response to this TERM request, the *4ESS* switch saves the OAS originating transaction ID for later use.

7. The 2DSA/2NCP generates an ANICAR, populates it, and sends to NRAMS. The NRAMS receives the message and updates the NRAMS data base accordingly.

8. The Fraud Control Center identifies a compromised toll-free number/authorization code combination (A in Figure 8-2) via NRAMS. Work Center personnel (via SDN SMS) place the authorization code in a restricted group that limits and/or prohibits additional calls from being made. The customer is contacted and fraud is confirmed. Via SDN SMS, Work Center personnel delete the authorization code from the subscriber's account.

9. The Fraud Control Center goes to the NRAMS "call kill" screen to kill active calls in the network (B in Figure 8-2). The user provides the customer ID, authorization code, and time window. If the customer level feature indicator is set to **OFF** and the customer declines to override the indicator, no calls are allowed. **End of Call Flow.**

10. If the customer level feature indicator is set to **ON**, the NRAMS queries its data base for call information associated with the customer ID, authorization code, and begin time. The NRAMS sends the following information to the SDN SMS:
    - The OAS PC
    - The OAS SSN
    - The OAS originating transaction ID for all associated calls set up within the time window [extends from the begin kill time (within the last 24 hours) to the present].

11. In the data it returns to the SDN SMS, the NRAMS omits the following information:
    - Call attempts that have the on-net indicator set to **ON**
    - Call attempts that represent sequence calls
    - Call attempts that have the customer level feature indicator set to **OFF** (unless the customer has agreed to override the indicator).

12. The SDN SMS generates and sends a new huMan Machine Language (MML) kill command for each call to the 2DSA/2NCP.

13. Upon receiving the kill instruction, the 2DSA/2NCP generates and sends a unidirectional message to the OAS to kill the call. Included in this message is the OAS originating transaction ID parameter that contains the *4ESS* switch transaction ID of the call to be killed.

14. The OAS receives the kill instruction and locates the call via the transaction ID. If the OAS cannot locate the call, the call has already disconnected and the kill command is ignored. The OAS pegs a new counter (SDN_NRA_KFC_NOT_APPLIED). **End of Call Flow.**

15. Once the OAS locates the call to be killed, it disconnects the call, discontinues the associated ATP processing, and closes the Automatic Message Accounting (AMA) record. Per existing SDN NRA requirements, a **TERM** message is sent to the 2DSA/2NCP.

16. Upon receiving the **TERM** message, the 2DSA/2NCP decrements the Calls in Progress (CIP) counter per existing procedures.

□

Provisioning (Not Affected)

Recording

Recording Impacts

This feature uses the following existing codes:

- Structure Codes 00870 through 00877
- Call Code 129 (SDN).

To indicate SDN NRA Fraud Control Accounting, the new value of 039 will appear in the Regional Processing Center/Revenue Accounting Office (RPC/RAO) field of Table 46.

Important! Currently, the Recording Information Collection System (RICS) identifies Virtual Telecommunications Network Service (VTNS) SDN usage records by the value 252 in the RAO field. The SDN NRA Fraud Accounting indicator will override the RAO value for VTNS, and RICS will no longer be able to differentiate between VTNS SDN and SDN usage for killed calls. Therefore, RICS will send all usage records for SDN NRA killed calls to the SDN Message Processing System (MPS).

Billing Impacts

In order to identify killed calls to SDN MPS, RICS passes the SDN Fraud Control Accounting value (039 in AMA Table 46) to SDN MPS in the Standard Usage Record (SUR). The high-level billing call flow is as follows:

1. The *4ESS* switch kills the call upon receipt of a unidirectional TCAP message from the 2DSA/2NCP.

2. The Call Detail Recording Platform (CDRP) sends the AMA record to RICS with a new SDN NRA Fraud Control Accounting value of 039 in Table 46.

3. The RICS passes the SDN NRA Fraud Control Accounting value to SDN MPS in the SUR. Upon receipt of the SUR, SDN NRA looks at the SDN NRA Fraud Control Accounting value. If this value is set to indicate a killed call, then SDN MPS sends this usage record to the Unidentified Message Investigation Unit (UMIU).

4. The UMIU makes the killed call records available for investigation.

□

Network Management (Not Affected)

Maintenance/Troubleshooting

Final Handling Codes

The following new Final-Handling Code (FHC), used for fraudulent calls, has been developed for this feature.

Table 8-A - New Final-Handling Code

FHC	Description
2194	**Last Normal Condition:** The call was answered. **Irregular Condition:** The caller is thought to be fraudulent. **Handling:** The caller is disconnected without any notification (no announcement played).

□

Transition Considerations

Related Feature This feature is related to Feature 4312, *Software Defined Network/Network Remote Access Sequence Dialing Using the AT&T Trigger Platform.*

Feature Deployment It is not necessary for the 4E25 Release 1 Generic to be deployed in all *4ESS* switches in the network for this feature to be fully operational.

Feature Activation This feature is activated by software deployment.

□

Input/Output Manual Pages (Not Affected)

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9 ANC NANP CIC Routing Feature (7323)

Overview

Description This feature allows AT&T Network Connection (ANC) subscribers to route their POTS traffic to a special (non-AT&T) network switch for call routing. Specific Carrier Identification Codes (CICs) are associated with this service, and a special routing number is built based on CIC and possibly Numbering Plan Area (NPA).

Purpose The purpose is to deploy the ANC North American Numbering Plan (NANP) CIC Routing feature.

Contents

Feature Description

Description

This feature provides an alternative routing strategy for ANC domestic calls relative to the default-handling treatment provided to typical 1+POTS calls by the AT&T Network. Instead of delivering such calls to a Local Exchange Carrier (LEC) for call completion, they are delivered to an external customer platform.

In addition to what is considered to be the typical set of NPAs, this feature also supports the 700 NPA since 700 services are considered CIC-based from an industry perspective (that is, a given 700 number is not dedicated to a single carrier). Thus, this feature also applies to 700 NPAs when associated with a Resell/Carrier Solutions Nodal (CSN)-Identified CIC. The major difference between 700 and typical NPAs is that if special routing is not provisioned in the network for the 700 and CIC combination via this feature, default routing does not apply, and thus the call is final-handled.

Call Flow

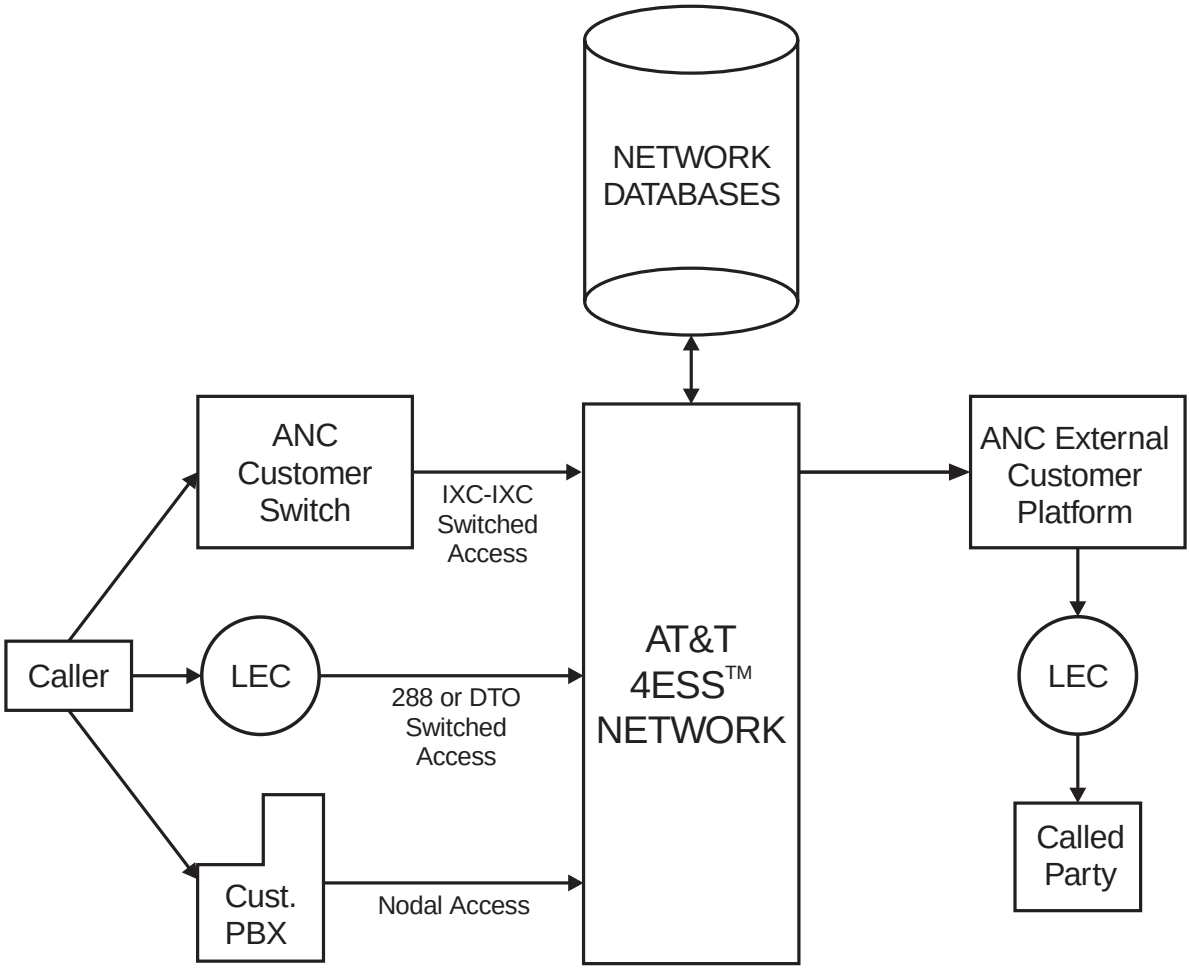

Figure 9-1. ANC Call Flow Architecture for NANP CIC Routing

Call Flow

Refer to Figure 9-1 for the ANC Call Flow Architecture for NANP CIC Routing.

The following call flow provides a representation of how the capabilities apply to Resell/Carrier Solutions Nodal (CSN) calls in the *4ESS* switch:

1. The calling party dials a NANP number. For switched access, the calling party is either presubscribed to an ANC carrier or dials the ANC carrier as part of a dialing prefix. If presubscribed, the caller dials 1+7 digit NANP/10-digit NANP. Otherwise, the caller prefixes the above with the code "101+CIC", where the CIC is a 4-digit code identifying the caller's carrier of choice, including a prefixed 0 if the carrier's code is 3 digits. For Nodal access, the calling party dials a 1+7 digit NANP/10-digit NANP.

2. For switched access, the local carrier uses the received CIC, if supplied; otherwise it uses the CIC to which the caller is presubscribed, to route the call on to a trunk group for which the carrier's 1+NANP calls are designated. For an ANC customer, this is either a switched access Dedicated Sub-group Option (DTO) or a switched access 288 trunk group to the AT&T *4ESS* network. If the ANC customer's switch has received the call, it is sent to AT&T via IXC-IXC switched access trunks. For Nodal access, the calls arrive directly from the Nodal access trunk.

3. The call arrives at an AT&T *4ESS* switch on either a switched access trunk group or Nodal access trunk group, per the previous step. The *4ESS* switch derives the CIC associated with the call. For switched access calls, the *4ESS* switch determines whether the derived CIC is a Resell CIC or not.

   For switched access trunks, the *4ESS* switch uses existing functionality to determine the CIC of the call, which can be either via signaling or via Trunk Group characteristics. For switched access, the *4ESS* switch uses the derived CIC to determine whether or not the call is a Resell call via existing functionality.

For Nodal access trunk groups, the *4ESS* switch identifies the call as a CSN call if the CSN parameter of the trunk group has been set to a value of "Resell" or "AIWS". If the call has been determined not to be a Resell or CSN call, then the call processing continues per existing requirements. If the call is a Resell or CSN call. *Proceed to Step 4.*

4. Dialed numbers with the NPAs of 8YY, 5YY, 9YY, and 710 are excluded from NANP CIC Routing eligibility. Such numbers are not within the domain of an ANC customer, so these numbers are eventually translated to a 1+POTS NANP routing number. They should not be routed to an external ANC customer platform via NANP CIC Routing. The exclusion of these NPAs is accomplished in requirements by excluding their associated Call Type/Call Data values that are provisioned in *4ESS* switch digit translation data structures. **End of Call Flow.**

5. Subsequent processing continues for these calls per existing functionality as defined in other Resell/CSN platform requirements. Routing decisions are not made until after Step 6. The Call Flow continues as follows:
   - The support for NAI queries.
   - The support for Resell platform feature processing
   - The support for Directory Assistance routing features..
   - The support for PIC Verification.
   - The support for Nodal access functionality. This includes the screening, digit analysis, and query actions applicable to the underlying base service of *MEGACOM** Services or SDN (whichever applies to the Nodal access TG).

6. The *4ESS* switch determines eligibility for the new capabilities based on the routing number determined in Step 5. This includes the analysis of the routing number as well as the new CIC-based value to determine if NANP CIC Routing may apply. Specifically, the following eligibility applies:
   - Operator Assistance Required Resell/CSN calls are excluded.
   - Directory Assistance Required Resell/CSN calls are excluded.

- Non-NANP formatted routing numbers are excluded. Thus, numbers of the format CC+NN (Country Code+National Number) are excluded, as are special numbering plans. The *4ESS* switch uses the existing signaling information to determine the format. For example, Nature of Address information in SS7 signaling, and other formats for other signaling methods. Existing functionality is applied for non-NANP formatted numbers from this point on. **End of Call Flow.**
- 700 PIC Verification calls are excluded.

7. If the call has reached this point, the *4ESS* switch has determined that NANP CIC Routing is possible and must now perform a table lookup to determine if a "non-standard" route is to be used to route the call out of the *4ESS* network. To accomplish this, the *4ESS* switch constructs a 10-digit number of the format ABC-DEF-GHIJ; where ABC = 400, DEF = the NPA of the current routing number, and GHIJ = the CIC that the *4ESS* switch has derived for the call, padded with a leading zero if the CIC is three digits. The *4ESS* switch then accesses the OSPS Access ID Table and performs the following:
   - The *4ESS* switch looks for a match of this constructed 10-digit number in the 10-digit field of the OSPS Access ID table. If a match is found in the 10-digit field, then the corresponding Operator Services Position System (OSPS) ID and routing data should be used as the basis for routing the call.
   - If no 10-digit match is found in the OSPS Access ID Table for the constructed 10-digit number, the *4ESS* switch ends further NANP CIC call processing and routes the call per existing Resell/CSN requirements, with the exception of 700 NPA calls. 700 NPA calls receive final-handling at this point.
   - If a match is found in the 10-digit field, but invalid or no routing has been provisioned into the switch for the corresponding OSPS ID, then the *4ESS* switch final-handles the call and applies vacant code treatment.

8. Assuming that valid routing is determined, the *4ESS* switch applies the routing to determine the terminating *4ESS* switch. If the result is that the terminating switch is not the same as the originating switch, then the originating switch sends an Initial Address Message (IAM) to the terminating *4ESS* switch, which includes the following information:
   - The Called Party Number, which is the number used in Step 6

to construct the 10-digit number for OSPS Access ID table lookup.

- The Calling Party Number, which is the number originally received in the incoming IAM by the Originating AT&T Switch (OAS), if an IAM was received and contained this parameter.
- The Charge Number parameter, which is the Charge Number or Automatic Number ID (ANI) received in the incoming signaling by the OAS for switched access calls (if present) or the True Billing Number (TBN) of the incoming Trunk Group for Nodal Access calls.
- The Originating Line Information parameter, as received in the same field of the incoming IAM (SS7 signaling) or as received in the incoming II digits Equal Access Multi-Frequency (EAMF) signaling. If the OLI/II was not received in incoming signaling, then the OLI parameter is not included in this IAM.
- The Jurisdiction Information Parameter (JIP), if received in the incoming IAM.
- The Carrier Selection Indicator, as received in the incoming IAM, if applicable.
- The Carrier Identification Parameter, which includes the CIC that was derived for the call via Step 3.
- The Operator Systems Indicator (OSI) parameter, if applicable.
- OSPS Identifier Generic Operations Parameter (GOP), populated with the OSPS ID determined via the previous step.

9. At the terminating switch (via IAM routing of Step 8, or if the originating and terminating switches are the same), the OSPS ID is used for routing determination (as opposed to the Called Party Number). The routing treatment must be NDB and identifies a terminating trunk group.

10. The characteristics of the terminating trunk group determine the signaling information to be delivered to the external customer platform; the Trunk Group is built as an OCC TOT.
    - If the trunk group is provisioned as an SS7 trunk group, the IAM message from the terminating switch to the external customer platform includes the following parameters:

    a) The Called Party Number, which is either the number that was used in Step 7 to construct the 10-digit number for OSPS Access ID table lookup (if OAS = TAS), or the Called Party Number received from the OAS in the IAM (if OAS <> TAS).

    b) The Calling Party Number, which is either the number originally received in the incoming IAM by the OAS, if an IAM was received and contained this parameter (if OAS =

TAS), or the Calling Party Number received from the OAS in the IAM (if OAS <> TAS and this parameter was received).

c) The Charge Number parameter, which is the Charge Number or ANI received in the incoming signaling by the OAS for switched access calls (if present) or the True Billing Number (TBN) of the incoming Trunk Group for Nodal Access calls.
d) The OLI parameter, as received in the same field of the incoming IAM (SS7 signaling) or as received in the II digits (EAMF signaling). If not received, then the value 00 is used.
e) The JIP, if received in the incoming IAM.
f) The Carrier Selection Indicator, as received in the incoming IAM, if applicable.
g) The Carrier Identification Parameter, which includes the CIC that was derived for the call via Step 3.
h) The OSI parameter, if available.

- If the trunk group is provisioned as an EAMF trunk group, the following call setup parameters are sent by the *4ESS* switch to the external customer platform:

a) The Called Party Number, which is either the number that was used in Step 7 to construct the 10-digit number for OSPS Access ID table lookup (if originating switch = terminating switch), or the Called Party Number received from the originating switch in the IAM (if originating switch <> terminating switch).
b) The ANI, which is the Charge Number or ANI received in the incoming signaling by the originating switch for switched access calls (if present) or the TBN of the incoming Trunk Group for Nodal access calls.
c) The II digits, which is either the OLI parameter value of the incoming IAM (SS7) signaling or the II digits (EAMF signaling). If not received, then the value 00 is used,

11. If the terminating *4ESS* switch is not the originating *4ESS* switch, the terminating *4ESS* switch generates an EXIT message toward the originating *4ESS* switch upon initiating outgoing signaling. If the outgoing trunk type is OCC and the Trunk Sub-group (TSG) parameter CARSON is set to "Y", as follows:
    - If the egress trunk signaling is ISUP, then upon sending an IAM to the external platform, and ISUP Exit message is sent in the backward direction toward the originating *4ESS* switch.
    - If the egress trunk signaling is EAMF, then upon seizure of a trunk and receipt of a Wink from the external platform, an ISUP EXIT message is sent in the backward direction towards the originating *4ESS* switch.

12. At the originating *4ESS* switch, elapsed time recording begins, as follows:
    - If the terminating *4ESS* switch is the originating *4ESS* switch, the egress trunk type is OCC, the TSG parameter CARSON is set to "Y", and the egress signaling is ISUP; then upon sending an IAM to the external platform, the recording of elapsed time begins.
    - If the terminating *4ESS* switch is the originating *4ESS* switch, the egress trunk type is OCC, the TSG parameter CARSON is set to "Y", and the egress signaling is EAMF, then after seizing a trunk and upon receipt of a Wink, the recording of elapsed time begins.
    - If the terminating *4ESS* switch is not the originating *4ESS* switch, then upon receiving an ISUP EXIT message from the terminating *4ESS* switch for this call, the originating *4ESS* switch begins recording of the elapsed time.

13. Upon completion of the call, the circuit is disconnected and released in accordance with existing procedures.

14. The OAS then stops the elapsed time. The Automatic Message Accounting (AMA) record cut for this call is defined for switched access Resell calls and Nodal Access CSN calls. In addition, the *4ESS* switch appends Module 941 to the AMA record for Nodal Access calls that are NANP CIC routed to an external platform. Module 941 continues to be used to identify switched access Resell calls. Module 908 continues to be used for dedicated switched and Nodal access calls when an Access ID is provisioned on the associated incoming Trunk Group. Module 132 is used to support of Answer at Exit functionality, consistent with the Enhanced CIC Routing (ECR) features. Existing structure codes are used for these records. **End of Call Flow.**

Provisioning

Provisioning

The following items have been created and administered through provisioning to ensure successful implementation of this feature:

- The *4ESS* switch supports a new office On/Off parameter, "ANCR".

- At any time, if any of the Features 5198 (PF30), 5791 (PF49), 5840(PF50), or 5918 (PF52) is set to "OFF", then the *4ESS* switch sets the ANCR office parameter to "OFF" automatically.
- An SII ASCIT Question Number 22 has been assigned. Population rules for two (**CARSON** & **SOIP**) TSG indicators/items have been modified.

Recent Change Forms

RC Form 809

Item PF74 is assigned as the office parameter for RC Form 809 to indicate whether or not the ANC NANP CIC Routing feature is on or off for the switch. "On" indicates the feature is enabled or activated; the default is "Off".

PF74 cannot be set to "On" unless all of the office On/Off parameters for features 5198 (PF30), 5791 (PF49), 5840 (PF50), and 5918 (PF52) are also set to "On".

RC Forms 100, 101, 102, 107, 108, and 109

The population rules for the two fields – **CARSON** & **SOIP** TSG fields are modified to allow for this feature. At least one of the following four feature bits must be turned on:

- PF54 – Wholesale Operator Services (Feature 5822)
- PF55 – Wholesale Directory Assistance (Feature 6143)
- PF56 – Wholesale International Phase 1 (Feature 6266)
- PF74 – ANC NANP CIC Routing (Feature 7323).

RC Form 653

The ASCIT Question Number 22 on RC Form 653 was changed to support this feature. Question 22 asks the question: Should the *4ESS* switch preserve and deliver the CIC-derived at the Access Switch, but continue to use the AD2 value for SSP Call Type re-translation for this SII?

Question Number 22 is set to **Y** for wholesale SII values.

RC Form 653 is verified on Verify Form 16au.

10-Digit Constructed Number to OSPSID

This feature requires mapping of the 10-digit constructed number to the OSPSID, which is performed using the following RC command:

RC:MISC;FHT,FTA:OSPSTBNID,a,b,c,d,e!

An explanation of the variables is as follows:

a = The order number

b = The required action (A for Add, C for Change, and D for Delete)

c = The digit translator level (10-digit)

d = The 10-digit constructed number – 400+NPA+4 digit CIC

e = The OSPSID.

An example of the completed RC command for this feature is:

RC:MISC;FHT;FTA:OSPSTBNID,a,b,c,d,e!

BN or WATSBN to TBN Mapping

This feature requires mapping of the BN (for SDN) or the WATSBN (for *MEGACOM* to the TBN, which is performed using the following RC command:

RC:MISC;FHT,FTA:OSPSBNTBN,a,b,c,d,e!

An explanation of the variables is as follows:

a = The order number

b = The required action (A for Add, C for Change, and D for Delete)

c = The numbering plan (P for NANP)

d = The 10-digit BN or WATSBN

e = The TBN value.

An example of the completed RC command for this feature is:

RC:MISC;FHT,FTA;OSPSBNTBN,099,C,P,3123674321,1234567890!

Assigning an SSP Call Type

This feature requires that an SSP Call Type be assigned to provide the translation of the OSPSID to an SSP Call Type with a Call Data of NDB. The assignment of an SSP Call Type is accomplished using Recent Change Forms 302 and 311.

Recording

Structure Codes

Existing structure codes and call codes are used, as follows:

- For switched access Resell calls, the *4ESS* switch/CDRP continues to use the existing POTS structure codes SC001, SC0101, SC1078, SC1080, SC1500, or SC1501. The associated call code is 60 (Station Paid) or 306 (Cellular Mobile Carrier)
- SDN structure codes SC1063, SC1065, SC1067, SC1069, SC1430, SC1431, SC1432, and SC1433 is used to generate the AMA records for featured switched access wholesale calls.
- For Carrier Solutions Nodal calls arriving on a Trunk Group with SDN as the underlying service, the SDN structure codes SC1067 or SC1068 for long duration (Call Code 129) calls are generated. Carrier Solutions Nodal calls with *MEGACOM* Services as the underlying service generates *MEGACOM* Services structure codes with a Call Code 309.

Network Management (Not Affected)

Maintenance/Troubleshooting (Not Affected)

Transition Considerations

Feature Deployment

It is not necessary for all *4ESS* switches in the network to be running the 4E25 Generic, Release 1 before the feature is activated.

Feature Activation

This feature is activated by setting the ODA bit, OD4PF74, to **ON**. To deactivate this feature, set OD4PF74 to **OFF**.

Absolute Word Change

This feature may also be turned on (activated) or turned off (deactivated) by an Absolute Word Change. Item OD4PF74 in the ODA structure is the parameter that controls the state of the feature.

CAUTION

The OD4OFCCOPY2 structure also contains the On/Off bits for many other features. The core address listed is valid for the 4E25 Generic Release, but may not be valid for any subsequent generic release. Be certain that any changes made affect only this feature.

- Core address: 7121621
- Word: 7
- Size: 1
- Displacement: 1
- On: 1
- Off: 0.

CAUTION

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

- Core address: 7123621
- Word: 7
- Size: 1
- Displacement: 1
- On: 1
- Off: 0.

Input/Output Manual Pages (Not Affected)

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10 Transfer Connect on ATP - Out-of-Band Trigger and Data Enhancement Feature (7335)

Overview

Description This feature increases the capabilities provided in Features 4875 and 5892. These enhancements provide the following:

- Out-of-Band (OOB) error messages
- Ability to pass User-to-User (UUI) OOB data in a FACility message and transferring it to the target party
- Three new generic actions—Enable User OOB, Send Facility Message, and Screen OOB data.

Purpose These enhancements provide services required for many high-volume Transfer Connect subscribers which will allow them to transfer to the AT&T Trigger Platform (ATP).

□

Contents This chapter contains the following topics:

Feature Description

General

This feature provides Out-of-Band (OOB) trigger and data enhancements to the Transfer Connect Blind Transfer for Voice Response Unit features (4719, 4875 and 5892), which are used by the Transfer Connect Service (TCS) service.

The enhancements introduced by this feature provide the following new capabilities:

- Out-of Band Error messages
- Passing data in the same Facility Message as the trigger, and transferring it to the Target Party.
- Generic actions to prevent talk-off [by ignoring (Dual Tone Multi-Frequency) DTMF tone].

Transfer Connect Service (TCS)

The TCS allows inbound subscribers to transfer (or redirect) a call in progress to another destination. The originally called party (the subscriber) that wishes to redirect the call is referred to as the Redirecting Party (RP), and the party that is the recipient of the transferred call is the Target Party (TP).

An RP requests redirection of a call by entering a sequence of DTMF tones and the TP number. The OOB triggers allow the RP to request a redirection by sending an OOB Facility Message with specific parameters including the number of the TP. The OOB data transfer allows the RP to transfer data in an OOB message to the TP.

Blind Transfer for VRUs with OOB Triggers

In blind transfer for Voice Response Units (VRUs) with OOB triggers, a call is first routed to the VRU, which acts as the RP. If the RP determines that the call needs to be redirected, it sends an OOB Facility Message containing a request for redirection and the 10-digit toll-free (800, 888, or 887) number. When the digits are validated, an OOB message is sent to the TP. The DTMF entries are ignored; the call is treated in the same way as if DTMF tones were entered.

Out-of Band Data

If OOB data is also subscribed, in addition to OOB triggers, the OOB trigger and OOB data is sent in the same Facility Message. If the DTMF entry ***T** is entered, the OOB data is sent in the Disconnect Message. No additional charge is planned for the OOB data transfer.

This feature provides only OOB triggers and OOB triggers with data enhancements. Existing capabilities for OOB data transfer in the Disconnect Message are not changed with inband triggers.

This feature is based on the AT&T Trigger Platform (ATP), which recognizes OOB triggers in the Facility Message.

Generic actions are a set of non-feature specific actions performed by the 4ESS switch as part of ATP. Lists of these actions (from 1 to 8) are executed when a specific trigger is received. The AT&T Trigger Validation (ATV) is a recent changeable data structure with the switch that is used by the ATP logic to determine what generic actions to perform. Inputs to the ATV are a Feature ID (FI), call state, direction and Trigger Index.

New Generic Actions

This feature introduces the following new generic actions:

- **Enable User OOB Trigger** – The capability for the Collect Trigger generic action to receive a User Entered OOB trigger in a Facility message.

  Important! If the output of the ATV contains an Enable user OOB Trigger generic action and no Enable Inband generic action, only the OOB digits are recognized (DTMF digits are not recognized).

- **Send Facility Message** – Parameters are Component Type – Return Result or Return Error and Cause Code – Values in the range of 0 to 127.

- **Screen Out-of Band Data** – This generic action determines if out-of band data sent by the RP can be forwarded to the TP, based on subscription information and TP termination type. If data sent by the RP fails validation or the Drop Data parameter is set to yes, the data is not forwarded. However, if the Cause Code parameter contains a non-zero value, a Facility message is sent to the RP, indicating that data is not being forwarded. This is in addition and

prior to the message that indicates whether or not the call will be transferred. The parameters are Drop Data—Yes/No and Cause Code – Values in the range 0 to 127. As a result of Screen OOB Data generic action being output from the ATV, the ATP performs the following actions in the listed order:

1. If the Drop Data parameter is set to yes, the ATP checks if the OOB redirect Facility message contains UUI data; if it does, the ATP does not forward the UUI and sets the Data Dropped indicator.

2. The ATP checks if the Cause Code parameter value specified is non-zero and the Data Dropped indicator is set. If so, the ATP sends an ISDN Q.931 Facility message to the RP (called party). This message contains a Return Error component type with a Cause Code equal to the value specified in the Cause Code parameter.

□

Call Flow

Transfer Connect ATP Service Platform

The Transfer Connect ATP service platform includes an ATP switch, which is a *4ESS* switch that has ATP Service Circuit Units (SCUs), ATP nodes on the Common Network Interface (CNI) ring and ATP software. The service platform also includes the 2 Direct Services Dialing (DSD) Network Control Point (NCP). See Figure 10-1.

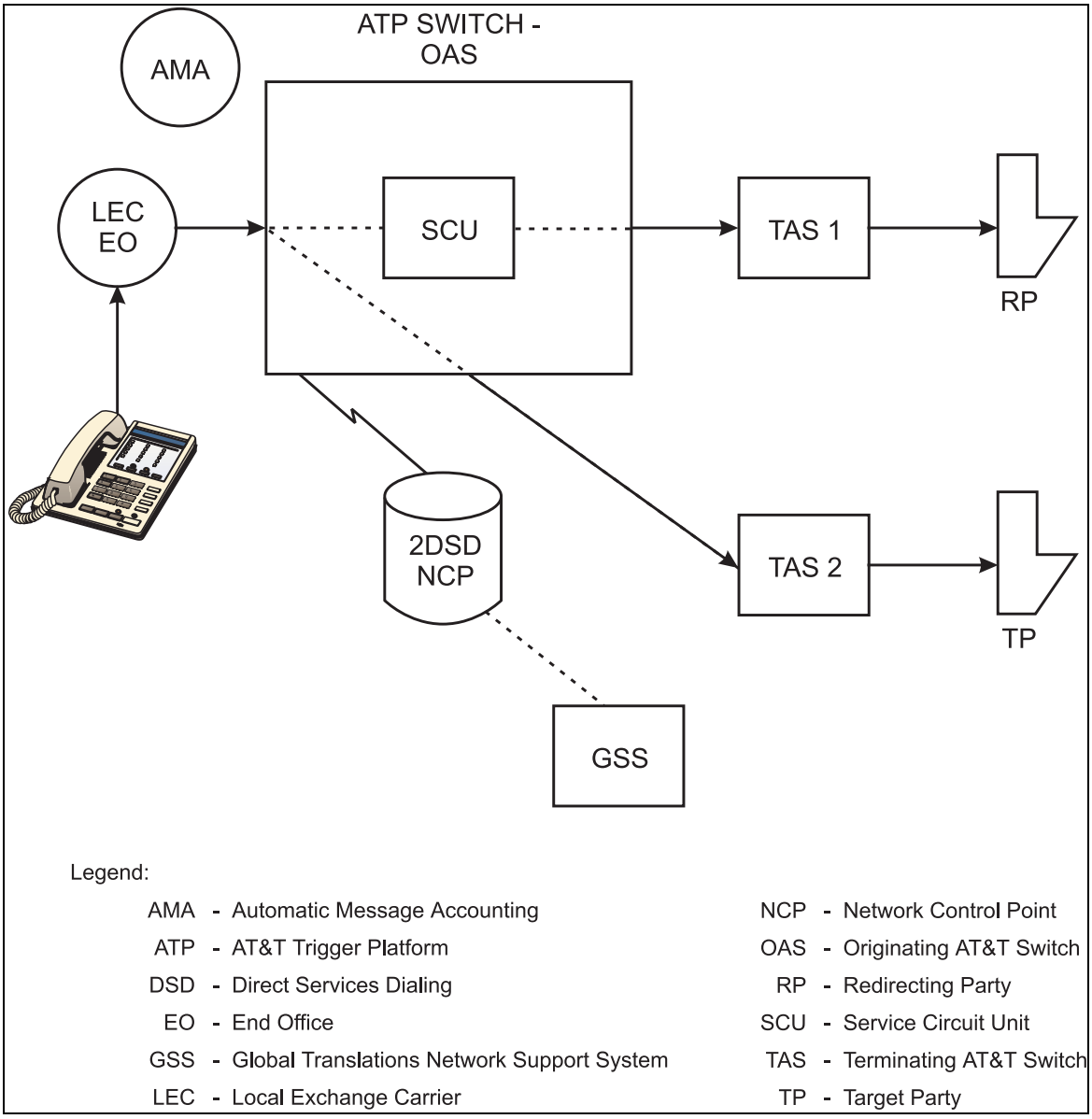

Figure 10-1 – Transfer Connect Service—Switch Equipped for ATP

Out-of-Band Redirect Trigger Detected

If the Originating AT&T switch does not have ATP capability available, the call is handed off to a switch that has the capability, and which is referred to as the Handoff AT&T Handoff Switch (HAS).

The ATP SCUs monitor for DTMF tones, while the ATP node monitors for Out-of-Band (OOB) messages. The ATP node is provisioned with service-specific logic that defines how the call is handled when specific triggers are detected. The ATP SCUs also play announcements and collect digits. The 2DSD invokes ATP based on feature subscription information.

When a transfer is requested by the Redirecting Party (RP), the SCUs detect the entry of *T and collect the Target Party (TP) number. After collecting the appropriate number of digits, ATP screening determines if a valid toll-free or POTS number has been entered. The ATP plays an error announcement and allows the RP another opportunity to enter a correct number, or disconnects the RP and routes the call to the TP.

ATP OOB Triggers in Facility Message Enhancements

The Transfer Connect -ATP OOB triggers in Facility Message enhancements are described in the following call flow information:

1. The caller dials a toll-free number (800, 877 or 888, or 866 or 855 when available), which is routed to the Originating AT&T Switch (OAS) via the Local Exchange Carrier (LEC).

2. The OAS formulates and sends a Transaction Capabilities Application Part (TCAP) Begin message to the 2DSD/2NCP. The Begin Message includes the dialed number and the calling party's 10-digit Billing Number (BN), if available, or the 3-digit NPA with 7 zeros if the BN is not available. If the OAS has monitor-capable SCUs with ports available, the message also contains Bit A in the Node Capabilities parameter set to 1.

3. The NCP receives the TCAP Begin message and executes the CAL logic that is associated with the dialed number. The termination indicates a subscription to Blind Transfer for Voice Response Unit (VRU) with OOB triggers.

4. The NCP checks the Node Capabilities for monitor-capable SCUs with ports available.

5. If the OAS has monitor-capable SCUs with ports available, proceed to Step 7. If the OAS does not have monitor-capable SCUs with ports available, the NCP instructs the OAS to perform a CADCR handoff to an AT&T Handoff Switch (HAS) with this capability.

   Important! The CADCR handoff capability is provided by Feature 4477.

6. The HAS queries the NCP with the TCAP Begin message with Operation Provide Instruction-Assist. This message also includes the transaction ID and Bit A in the Node Capabilities parameter set to 1 if the ATP SCU ports are available.

   Important! References to The OAS after this point in the call flow mean either the OAS or the HAS.

7. The NCP sends a TCAP CONTINUE message (sent only for ATS feature interaction) or a TCAP END message to the OAS, including a provide instruction-operation of Invoke ATP with the Redirection Feature parameter, and Feature Option parameter. The Redirection Feature Identifier (RFI) value is set to indicate BT VRU with out of band trigger ((RFI=6). The normal routing number, dialed number, ANI, and AMA recording instructions are also included in the message.

8. The OAS receives the TCAP CONTINUE/END message, begins AMA recording, and routes the call to the RP, using normal call processing and signaling.

9. ATP is invoked, based on the TCAP Operation - Invoke ATP, and causes the following information from the TCAP CONTINUE/END message to be saved in per-call data:

   - Feature Options (FO)
   - 2DSD Point Code (PC)
   - 2DSD Sub-system Number (SSN)
   - Service Indicator Code (SIC)

- Call Code (CC)
- Billing Number (BN) saved as NCP ACCT ID
- Regional Processing Center (RPC)
- Market Segmentation Indicator (MSI)
- Destination Number
- Destination Number Numbering Plan.

The dialed number and the ANI (Calling Party Number) are saved in per-call data. The Destination Numbering Plan Type is derived from TCAP data and sent to the ATP for saving in per-call data.

The OAS invokes ATP with the received RFI mapped to an internal Feature ID (FI). This, in turn, causes per-call data to be saved, and the generic actions specified in the ATV for this FI and invoke trigger to be executed.

10. When ATP is invoked, the increment and test counter is initialized to zero, and the following actions are performed:

    - Enable User OOB—This enables the switch to recognize a User Entered OOB Trigger, which is a Redirect Call operation in a Facility message or an Access Transport Parameter operation value within a FAR message sent from the called party. The DTMF entries are not recognized.
    - Collect trigger from the called party.
    - Check the per-call-billing bit of the Feature Options field of per-call data.
    - If the per-call billing option is Off, update the bill with the Service Feature value equal to 814 for the per-call charging option. If the per-call billing option is On, update the bill with the Service Feature value equal to 845 for the per-call charging option. This causes the Service Feature indicator to be over-written on the AMA record for the call. The Feature Indicator is recorded whether or not the call is redirected.

11. The AMA record is updated if the RP subscribes to INFO2 and a SID/ANI increment message is received. The AMA record is also updated if Egress DATA (TAN) and/or Egress digits and/or the Network Switch Number and /or Project L Generic Operation Access ID are received.

12. The RP answers the call, the calling party and the RP converse.

13. If an OOB Redirect trigger is detected, proceed to the next step.

Out-of-Band Redirect Trigger Detected

14. User Entered OOB Trigger with the Operation Value equal to Redirect Call is detected. This is the only OOB trigger that is valid for Blind Transfer, and it is mapped to Trigger Index (TI) equal to 50, and sent to the ATP. This causes the TI, call state, and direction of trigger to be mapped to an action list, and the following actions to be performed:

    - Play the Please Wait announcement to the calling party. This announcement is played even though the digits were sent OOB.

    - The customer is subscribed to Direct Dial and not to Speed Dial. Set up a Collect Digits and collect 10 digits from the called party. Because the redirect request was collected OOB, the value in the User Entered Code IE equals the TP dialed number, or SDC, with the Type of Redirection Number which was sent in the same Facility IE, and is used to collect digits.

    - Screen 800, which causes the ATP to validate that 10 digits were entered and that the first 3 digits are valid 8YY numbers (800, 877 or 888). The Screen POTS and Restrict Canada are set to Yes. Dial tone is not played to the Voice Response Unit (VRU).

The following rules apply to the process described above:

- If the entry contains a *****, any subsequent ***** and the next numeric digit are ignored, and a Digit Not In Range trigger is returned. This allows a ***D** entry to delete previously entered digits, and an announcement to be played that instructs the

user to re-enter the digits.

- If the collected digits are not in range, a Digits Not In Range trigger is returned.
- The Screen 800 deletes a leading 1 or 0 and compares the next 3 digits collected to 800, 877, 888. If there is a match, a Collect Digits/Screen 800 Success trigger is returned.
- If there is no match for a valid 8YY because the Screen POTS is set to Yes, the POTS criteria is checked. This check compares the first 3 digits with a list of restricted NPAs, a list of Canadian NPAs (if the parameter is set to Yes), and the next 3 digits with a list of restricted NXXs. If there is a match to any list, a Digits Not In Range trigger is returned.
- If there is no match to the lists, a Screen Pots Success trigger is returned.

Digits Not in Range

15. During digit collection, the RP has entered a command that contains a *****, an invalid number of digits or digits that do not meet 8YY or POTS screening. The RP has 4 chances to enter a correct number. The ATP performs the following actions:

    - Increments the predefined counter by 1, and tests it against the threshold of 3. If the counter is greater than 3, proceed to Threshold Exceeded, Step 17. Continue if the counter is less than or equal to 3.

      Sets up a Collect Digits and Screen 800 as in Step 14.

      Important! A Digit Not In Range trigger is generated if an OOB redirect is not received within 12 seconds (before the pre-digit timer expires).

    - Sends a Facility message with Return Error to RP (Cause Value of 28).

Collect Digits/Screen 8YY Success

16. If the ATP has collected a valid toll-free number and the call state is answered, the following action list is executed:

    - Checks Feature Option for Direct Dial 8YY. Continue if subscribed; go to Step 15 if not.

    Important! The same generic actions are executed for Digits Not In Range and 8YY Not Subscribed triggers.

    - If the per-call billing option is Off, updates bill with Service Feature Value of 826 for per-call charging option. If the per-call billing option is On, updates the bill with Service Feature value of 846 for per-call charging option. This overwrites the Service Feature Indicator on the AMA record for the call. The Service Feature Indicator is recorded whether or not the call is redirected.

    - Sends a Facility message with Return Result to the called party. This indicates to the VRU that a valid number was received. To match the NAP implementation, this message is sent before any other Return Error message is generated by subsequent generic actions.

    - Checks Feature Option for OOB data. If it is not subscribed, the Screen OOB Data generic action (with Drop equal to Yes and a Cause Code of 43) is executed. If it is subscribed, the Screen OOB Data generic action (with Drop equal to No and a Cause Code of 43) is executed.

    Important! The 3-second timer for OOB trigger with OOB data is not set. This timer applies only to inband triggers with OOB data.

    - Removes the outgoing trunk (OGT). This drops the RP and closes the RP AMA record, sending a Term message (if needed) to the NCP for the RP termination.

    - Routes the call with the collected digits as the DN and the CPN, BN (ANI) and COS information from the per-call information. If UUI was contained in the Facility message, it is

passed in the Initial Address Message (IAM), delivered in the TP Setup, provided it meets length constraints, and was not dropped by the Screen OOB Data. This opens an AMA record as in existing procedures for processing a toll-free call.

- Disable the ATP.

17. If the Threshold Exceeded trigger is received (threshold counter greater than 3), the ATP performs the following actions:

    - Stops playing the Hold announcement to the CP.
    - Plays this announcement to the CP: Your call was unable to be completed. Please hang up and dial the toll-free number again.
    - Sends a Facility message with Component Type of Return Error and Cause Code of 42.
    - Gives the call final handling treatment and closes the AMA record.

18. If a Screen POTS Success trigger is received, a valid POTS number has been entered, and the following actions are performed:

    - Checks the Feature Option for subscription to POTS. Continue if subscribed. If not, go to Step 15 and generate the same Trigger Index as for 8YY not subscribed.
    - Updates the bill with a Service Feature value equal to 826 per-call charging option if the per-call billing option is Off.
    - Updates the bill with a Service Feature value equal to 846 for per-call charging option if the per-call billing option is On. This causes the Service Feature indicator to be overwritten in the AMA record for the call.

    Important! The Service Feature indicator is recorded whether or not the call is redirected.

    - Sends the Facility message with Return Result to the RP.
    - Screen OOB data with Drop Data equal to yes and Cause Code of 43.
    - Removes the OGT, which disconnects the RP. This closes the AMA record.

- Routes the call as described in Step 19.
- Disables the ATP.

19. If the ATP receives the Facility message with an Operation other than Redirect, a Trigger No Match (TI = 0) is generated and the ATP sends a Facility message with Return Error and Cause Code of 63 to the RP.

Route the Call

20. Routing and recording depend on the Routing Number Type, as follows:

    - If the Routing Number Type is set to POTS, the Service Feature field of the RP AMA record is updated with the Service Feature value that is stored in per-call data. A new AMA record is created for a call to the POTS Target Party and contains the same BN, DN, ANI, SIC, CC, RPC and MSI as the initial AMA record that is obtained from per-call data. It also contains the Service Feature value of 881. The call then is routed in the POTS domain to the number stored in collected digits. No OOB data transfer occurs.

    - If UUI OOB data was passed in the Facility message, the Facility message is not forwarded and an error message is sent.

    - If the Routing Number Type is set to 8YY, the RP AMA record is updated with the Service Feature stored in per-call data The call is routed in the POTS domain as if it were a newly originated call. Any MAUUI sent in the DISC message is transferred to the Initial Address Message (IAM) or SETUP, and sent to the Target Party when the call is routed. A BEGIN message is sent to the NCP, and AMA recording proceeds as normal for a toll-free call. A new AMA record is opened to record the call to the Target Party).

    - If the Target Party is also subscribed to Transfer Connect on ATP, the original invoke is disabled before the new invoke is executed. Call flow repeats from Step 4.

    - Proceed to the next step if the Target Party is not subscribed to Transfer Connect on ATP.

21. The called party and the target party talk. The AMA record is closed when either disconnects.

□

Provisioning (Not Affected)

Recording (Not Affected)

Network Management (Not Affected)

Maintenance/Troubleshooting (Not Affected)

Transition Considerations

Feature Dependencies

This feature is dependent on the following features. All of the following features are already deployed, but each one must be active in the network in order for this feature to work properly:

- Feature 4306—*AT&T Trigger Platform Jr.* (4E20 Release 1 Generic)
- Feature 4867—*Transfer Connect Service 3.0* (4E21 Release 3 Generic)
- Feature 4875—*PACR-ATP Out-of-Band Enhancements for VRU-BT* (4E21 Release 3 Generic)
- Feature 5892—*Transfer Connect Capacity 97* (4E23 Release 4 Generic).

Feature Deployment

It is not necessary for all switches in the network to be running the 4E25 Release 1 Generic in order for this feature to be fully operational.

Feature Activation

This feature is turned on automatically by software deployment; however it is not operational unless the features it depends on (mentioned previously) have been turned on also.

Input/Output Manual Pages

Modified Output Message

Output Message **VER:ATP-ATV** is modified for this feature.

11 1-Digit Translation Table Expansion Feature (7344)

Overview

Description This feature expands the capacity of the 1-Digit Translation Table from 4096 entries to 8192 entries.

Purpose This expansion in translation capacity retains current levels of revenue and potentially, increases new sources of revenue.

Contents This chapter contains the following topics:

Feature Description

General

Prior to this feature, the International Gateway switches used 3200 entries of the possible 4096 entries (each one uses 16 words). Thus, there was a need to expand the International 1-Digit Translation Table (HT41DIG) size to accommodate 8192 entries to promote future revenue growth.

Without this expansion, the International Translation Table capacity would have been exhausted. That means, no new entries that are part of country codes, language digits, or national numbers for routing an international outbound or transit call could have been provisioned; and revenue growth would have been jeopardized.

□

Call Flow (Not Affected)

Provisioning

Structures Affected

The only Office Data Assembler (ODA) structure affected is HT41DIG. The size of the HT41DIG International 1-Digit Translator Table has been increased from 64 to 128 words and to accomplish this, the Call –type layout for Next Digit (NDIG) has been modified. In order to index into the expanded structure, the number of NDIG indexes increased to 8192.

□

Forms/Messages Affected

The following forms/ messages are affected by and support this expansion :

- Recent Change (RC) Forms – 304, 305, 313, 314, 315, 316, 322, 333, 340, and 510
- Verify Forms – 3I, 3j, 3k, 3l, 3n, and 6c.

Recording (Not Affected)

Network Management (Not Affected)

Maintenance/Troubleshooting (Not Affected)

Transition Considerations

Feature Deployment

It is not necessary for all 4ESS switches in the network to be running the 4E25 Release 1 Generic for this feature to be fully operational.

Feature Activation

This feature is automatically turned on by software deployment.

Input/Output Manual Pages (Not Affected)

12 Mandatory 10 Digits on LSP_LOCAL Trunks Feature (7429a)

Overview

Description This feature requires that 10 digits be delivered on all calls to the *4ESS™* switch over Local Service Provider – Local Trunks (LSP_LOCAL) trunks. This is done by removing the prefixing of the far end Numbering Plan Area (NPA), performed as part of the processing of the served NPA.

Purpose This chapter provides customers with information pertaining to Part 2 of the Mandatory 10 Digits on LSP_LOCAL Trunks feature.

Contents This chapter contains the following topics:

Feature Description

Background

Part 1 of the *Mandatory 10 Digits on LSP_LOCAL Trunks* feature, released in 4E24R3, allowed the *4ESS* switch to accept either a 7 or 10 digit Called Party Number (CdPN) on LSP_LOCAL trunks if the trunk subgroup spare bit defined by this feature is set. However in Part 2 of the feature, 7-digit calls are no longer allowed; only 10-digit and test calls will be accepted on LSP_LOCAL trunks.

Description

Feature 7429a requires that 10 digits be delivered on all calls to the *4ESS™* switch over LSP_LOCAL trunks. Calls delivered with only 7 digits will receive final-handling treatment (the call will be terminated and the caller will receive an announcement).

Feature 7429a forces LSP_LOCAL trunks to be built into the POTS intertoll domain, which requires 10-digit delivery. Also, 25R1 retrofit rules place all existing LSP_LOCAL trunk groups into the POTS intertoll domain.

Benefits

When fully deployed (Parts 1 and 2), this feature forces LECs to provide a full 10 digits on number delivery.

Call Flow (Not Affected)

Provisioning

Recent Change Forms

This feature affects Recent Change Forms 100, 101, 102, 107, 108, and 109. Population rules have changed for these forms, requiring the DOM field entry to be POTS when the TOT field entry is LSP.

Recording (Not Affected)

Network Management (Not Affected)

Maintenance and Troubleshooting (Not Affected)

Transition Considerations

Feature Deployment It is not necessary for all *4ESS* switches to be running the 4E25 Release 1 Generic for this feature to be fully operational.

Feature Activation This feature is turned on by software deployment.

Input/Output Manual Pages (Not Affected)

13 Expansion of LACIDs to Support 856 D-Channels Feature (7501)

Overview

Description

This feature is a Modification Request (MR) to Feature 5361, *4ESS*™ *Interim D-Channel Expansion;* it increases the maximum number of Logical Access Identifiers (LACIDs) in the *4ESS* switch Direct Link Node (DLN), and in the Dynamic Engineering Mechanized System (DEMS)/Data Acquisition Report Integrated Communications System (DARICS) from 511 LACIDs to 856 LACIDs.

As a result of several features (5020/5361/521), the maximum number of D-Channels was increased to 856. To support the growth of the D-Channel (especially in the simplex mode), each D-Channel needs a separate and distinct LACID (856).

Purpose

The purpose of this feature is to provide the increased number of D-Channels (856) with an increased number of LACIDs in the *4ESS* switch and in the DEMS/DARICS. In the future, the DCHs and LACIDs will be increased side by side.

Contents This chapter contains the following topics:

Feature Description

Background Prior to this feature, there was a maximum limit of 511 LACIDs in the *4ESS* switch and a corresponding maximum limit of 457 LACIDs in the DEMS/DARICS. While Backed-up D-Channels could share a LACID, the field experts reported that most customers do not purchase the Backed-up D-Channels. In the simplex mode, each D-Channel needs a separate LACID. Therefore, every D-Channel now has a corresponding LACID for a total of 856 and the LACID inputs range from 001-255 and 1024-1625.

Call Flow (Not Affected)

Provisioning

General The *4ESS* switch has the capability to support up to 856 LACIDs (LACID inputs changed from 001-255 and 1024-*1279* to 001-255 and 1024-*1625*). The following information describes the provisioning of this feature:

- Processors affected: 3B21D, Direct Link Node (DLN), and D-Channel Nodes (DCN)
- Data Component: LACID tables included in the affected processors grow to support 856 different LACIDs. Data Items that comprise each specific LACID are the primary and secondary links. Each component (each LACID) is populated by way of the Database Management System (DMS) on the 3B21D processor.
- Constraints: Only constraints are those of the DMS. The new range for LACID values is 1-255 and 1024-1625.
- Data Structures: LACID table indirectly through the LACID fields

on the *lkadmn,* and *lkdata* and *lkinfo* functions under DMS.

- Recent Change layouts: DMS functions *lkadm, lkdata,* and *lkinfo*.

Recording (Not Affected)

Network Management (Not Affected)

Maintenance Troubleshooting (Not Affected)

Transition Considerations

Feature Deployment It is not necessary for all 4ESS switches in the network to be running the 4E25 Release1 Generic for this feature to be fully operational.

Feature Activation This feature is turned on by software deployment.

Input/Output Manual Pages (Not Affected)

14 AT&T Trigger Platform Trunk Subgroup Growth Feature (7701)

Overview

Description This feature creates an Office Data Assembler (ODA) or stand-alone ODA retrofit rule to add spare AT&T Trigger Platform (ATP) Trunk Subgroups (TSGs). When an office reaches less than 4 available spare in-service ATP TSGs, the new retrofit or stand-alone rule provides up to 4 spare ATP TSGs up to a maximum of 64.

Purpose This chapter describes the growth of ATP TSGs.

Contents This chapter contains the following topics:

Feature Description

The ATP is a switched-based platform that provides in-band and out-of-band monitoring for feature-specific triggers. Once a feature is detected and validated, a feature-specific set of generic actions is performed. The trigger and the list of generic actions are in provisioning tables that can be modified by Recent Change (RC). The platform consists of ATP logic and an AT&T Trigger Validation (ATV) table. Integrated Service Announcement and Information Collection (ISAIC) provides the monitoring capability.

All offices are equipped with a minimum of 12 ATP TSGs, numbered from 0 to 11. When an office reaches less than 4 spare ATP TSGs, more are added for a total 4 spare on the next retrofit or stand-alone ODA.

The number of ATP TSGs added depends on the number of spare ATP TSGs at the end of the previous generic cycle. For example, three ATP TSGs are automatically added if only one spare ATP TSG is available at the end of the 4E24 Generic life cycle. None are added if there are four or more spare ATP TSGs existing at the end of the previous life cycle or before a growth ODA. A spare ATP TSG is determined by verification of no trunks assigned in the ATP TSG.

The maximum number of ATP TSGs is 64 with the activation of this feature.

□

Call Flow (Not Affected)

Provisioning (Not Affected)

Recording (Not Affected)

Network Management (Not Affected)

Maintenance/Troubleshooting (Not Affected)

Transition Considerations

Feature Deployment It is not necessary for the 4E25 Release 1 Generic to be deployed in all switches for this feature to be fully operational.

Feature Activation This feature is turned on by software deployment.

□

Input/Output Manual Pages (Not Affected)

15 3B20D and 3B21D Disk Replacement Feature (568)

Overview

Description This feature introduces a new 9GB Small Computer Systems Interface (SCSI) disk drive to replace the existing 4GB SCSI disk drive.

Purpose This chapter provides customers with information on the new 9GB disk. The 4GB disk has been Manufacture Discontinued, and when a disk must be replaced, the new 9GB disk is the approved replacement.

Contents This chapter contains the following topics:

Feature Description

Introduction Currently, the ***4ESS***™ and ***5ESS***™ switches are running the 4GB SCSI disk drive in the 3B20D system disk unit packages (DUPs) and in the 3B21D UN375F packs. Due to the discontinuation of the 4GB SCSI disk drive, the new 9GB disk is replacing the 4GB disk drive.

Benefits The new 9GB disk provides greater capacity, with the same functionality as the current unit. The new disk drive does not require new Equipment Configuration Database (ECD) or Recent Change/Verify (RC/V) changes.

Ordering The Lucent Technologies product specification/list number for the 9GB disk drive is KS23908,L50 with a comcode number of 408079952.

Call Flow (Not Affected)

Provisioning (Not Affected)

Recording (Not Affected)

Network Management (Not Affected)

Maintenance/Troubleshooting (Not Affected)

Transition Considerations

Feature Deployment It is not necessary for all *4ESS* switches in the network to be running the 4E25 Release 2 Generic for this feature to be fully operational.

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

□

Input/Output Manual Pages (Not Affected)

16 Release Summary - 4E25 Release 1 Generic

Overview

Purpose This chapter summarizes the Input/Output messages, the OS interfaces, new or changed alarms, measurements, and the feature activation summary for the 4E25 Release 1 Generic Product Release Document.

Contents This chapter contains the following topics:

Growth and Retrofit Documents

Growth and Retrofit Documents

The Growth and Retrofit Planning Group reports the following documentation impacts resulting from the 4E25 Release 1 Generic:

- 234-160-025 – 4ESS Switch – 1B Processor 4E24 to 4E25 Generic and 4E25 ODA Update
- 234-185-025 – 4ESS Switch - Generic Retrofit and ODA Update and Planning Scheduling Guide
- 234-160-418 – 4ESS Switch – 4AP17 to 4AP18 Retrofit (3B21D APS Only).

Input/Output Messages

Purpose

The following lists include the input and output messages for the 4E25 Release 1 Generic that are feature-related. A notation is included indicating whether each message is new, revised, or deleted. The feature numbers are included in parentheses ( ).

4ESS Input Messages

The following are 4ESS input messages for 4E25R1. They are included in input manual IM-4B-000-01.

VER:ECOS	REV (6888)
VER:RTNR-RPI	REV (6888)

4ESS Output Messages

The following are 4ESS output messages for 4E25R1. They are included in output manual OM-4B-000-01.

VER:ECOS-AREALIS	REV (6888)
VER:RTNR-RPI	REV (6888)
VER:TSG-IN1WAY	REV (5370I, 6685, 7028, 7038)
VER:TSG-OUT1WAY	REV (5370I, 6685, 7028, 7038)

VER:TSG-TWOWAY	REV (5370I, 6685, 7028, 7038)

4ESS Proprietary Input Messages

The following are 4ESS proprietary input messages for 4E25R1. These messages will be included in proprietary input/output manual 4B-000-01AC.

VER:CODEGRP-PORT	NEW (7070)
VER:CODEGRP-RSVD	NEW (7070)
VER:MISC-ADABLK	NEW (7520)
VER:MISC-FHTOSID	REV (7064)

4ESS Proprietary Output Messages

The following are 4ESS proprietary output messages for Generic 4E25R1. These messages are included in proprietary input/output manual 4B-000-01AC.

VER:CODEGRP-PORT	NEW (7070)
VER:CODEGRP-RSVD	NEW (7070)
VER:MISC-ADABLK	NEW (7520)
VER:MISC-FHTOSID	REV (7064)

OS Interfaces

OS Interfaces

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

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

Feature	OSS
6888	NEMOS
6938	AMA
7254	DARICS
7312	AMA, CDRP
7323	AMA, CDRP
7335	AMA
7501	DEMS/DARICS

□

New or Changed Alarms

New or Changed Alarms

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

There are no new alarms related to the features documented in the Product Release Document for the 4E25 Release 1 Generic.

Measurements/OSOR

Measurements/On-Site Operations Report (OSOR)

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

Feature 7254 Measurements

Feature 7254 has changes to measurements as follows:

There are two Data Acquisition and Reports Integrated Communications System (DARICS) changes to this feature as follows:

- Measurements related to the seize, release, and occupancy counts of the NR are removed.
- The CR structure sizes are recalculated based on the design of the feature.

The INR is removed from the OSOR and Measurement 17 reports.

Feature Activation Summary

Feature Activation Summary

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

Feature 521 **Grow D-Channel Node Capability From 106 to 130**

This feature is activated by software deployment

This feature is dependent on Feature 5361, *Interim D-Channel Expansion* (4E23 Release 1 Generic).

Feature 552 **4ESS™ 3B APS Update to RTR 21.30**

This feature is activated by software deployment

Feature 5370i **MR to 4ESS™ Switch Local Nodal Customers – Phase 1**

This feature is activated by software deployment

Feature 6888 **Capacity Relief on 1B Processor Memory**

This feature is activated by software deployment

Feature 6938 AT&T Digital Link Phase V Architecture

This feature is activated by a 1B Processor Recent Change using RC Form 809. In order to turn this feature on, existing Feature 5538 (Item PF37) and Feature 5371 (Item PF34) must be turned on. If these features are active in the switch, the FEATURE ITEM field for Feature 6938 is set to **PF73** and the ON OR OFF field is set to **ON**.

The following 3B Recent Change must be performed to turn off the DLN IAM Intercept feature:

1. At the 3B RC/V Channel, build a new file in the *UNIX*® directory using the following command:
   /database/gttx/app_C
2. In the new file, enter the following recent change message:
   RC:SD;SD 000001;F;1(O,A,48,49)!
3. Activate the file by entering the following message in the 3B application:
   start:fta,app core,file [Your File Name]
4. Verify activation by entering the following command:
   ver:sd;oli

OLI 48 and OLI 49 must be provisioned on RC Form 333 and RC Form 337 per Network Methods and Procedures for the feature to be operational.

The CIVO field on RC Form 634 for the NCA (Cause Value 34) and BT (Cause Value 17) announcements must be set to REL in order to comply with FHT specifications.

The 4ESS feature depends on the activation of the feature in the following network elements:

- The *5ESS*® electronic switch
- 2DSA/2NCP
- SD
- 2STP.

This feature is related to or depends on the following features:

- Feature 5371—*End Office Local Nodal Phase 1* (4E23 Release 1 Generic)

- Feature 5538—*Local Nodal Phase 2.1 8YY Screening* (4E22 Release 4 Generic)
- Feature 6685—*ADL Phase 3–EA Presubscription Capabil*ity (4E24 Release 2 Generic)
- Feature 6990—*ADL Phase 3–EA Dial-Around Capability* (4E24 Release 3 Generic).

This feature may also be turned on (activated) or turned off (deactivated) by an Absolute Word Change. Item **OD4PF73** in the ODA structure OD4OFCCOPY2+7 is the office parameter that controls the state of this feature.

CAUTION

The OD4OFCCOPY2 structure also contains the On/Off bits for many other features. The core address listed is valid for the 4E25 Generic Release, but may not be valid for any subsequent generic release. Be certain that any changes made affect only this feature.

REL	*ON/OFF*	*ODA Word*	*Field Name*	*Address*	*Disp&Size*
4E25R1	RC 809	*OD4OFCCOPY2+7*	*OD4PF73*	7121621	*H=0 (octal),S=1*

Feature 7064 **Further Expansion of the OSPS ID Table**

This feature is activated by software deployment.

This feature is dependent on the following features:

- *Universal T1.5 Access feature* (4570), located in the 4E20 Generic Release 4.
- *Consolidated Access Traffic feature (5308*), located in the 4E22 Generic Release 4.
- *Expansion of the 4ESS OSPS ID Table feature* (5917), located in the 4E23 Generic Release 1.
- *AT&T Digital Link Phase 3 – Equal Access feature (6685),* located in the 4E24 Generic Release 2.
- *AT&T Digital Link Phase 3 – Equal Access Dial Around Capability Feature (6990),* located in the 4E24 Generic Release 3.

Feature 7254 **Restructure and Grow the Call Register**

This feature is activated by software deployment.

Feature 7312 **Killing Fraudulent SDN/NRA Calls**

This feature is activated by software deployment.

This feature is related to Feature 4312, *Software Defined Network/Network Remote Access Sequence Dialing Using the AT&T Trigger Platform.*

Feature 7323 ANC NANP CIC Routing

This feature provides a new office On/Off parameter, “ANCR”. Its values are “ON” and “OFF” and is administered via Recent Change Form 809. The default value is “OFF”.

The ANCR office parameter must not be set to “ON” unless all of the office On/Off parameters for Features 5198, 5791, 5840, and 5918 are also set to “ON.”. At any time, if any of the Features 5198 (PF30), 5791 (PF49), 5840(PF50), or 5918 (PF52) is set to “OFF”, then the *4ESS* switch sets the ANCR office parameter to “OFF” automatically.

This feature is activated using RC Form 809 by setting the ODA bit, OD4PF74, to **ON**. To deactivate this feature, set OD4PF74 to **OFF**.

This feature may also be turned on (activated) or turned off (deactivated) by an Absolute Word Change. Item OD4PF74 in the ODA structure is the parameter that controls the state of the feature.

CAUTION

The OD4OFCCOPY2 structure also contains the On/Off bits for many other features. The core address listed is valid for the 4E25 Generic Release, but may not be valid for any subsequent generic release. Be certain that any changes made affect only this feature.

REL	*ON/OFF*	*ODA Word*	*Field Name*	*Address*	*Disp&Size*
4E25R1	RC 809	*OD4OFCCOPY2+7*	*OD4PF74*	7121621	*H=1 (octal),S=1*

CAUTION

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

REL	*ON/OFF*	*ODA Word*	*Field Name*	*Address*	*Disp&Size*
4E24 (SCP)	RC 809	*OD4OFCCOPY2+7*	*OD4PF74*	7123621	*H=1 (octal),S=1*

Feature 7335 **Transfer Connect on ATP-Out-of-Band Trigger and Data Enhancement**

This feature is turned on automatically by software deployment; however it is not operational unless the features on which it depends (listed below) have been turned on also.

This feature is dependent on the following features. All of the following features are already deployed. but each one must be active in the network in order for this feature to work properly:

- Feature 4306—*AT&T Trigger Platform Jr.* (4E20 Release 1 Generic)
- Feature 4867—*Transfer Connect Service 3.0* (4E21 Release 3 Generic)
- Feature 4875—*PACR-ATP Out-of-Band Enhancements for VRU-BT* (4E21 Release 3 Generic)
- Feature 5892—*Transfer Connect Capacity 97* (4E23 Release 4 Generic).

Feature 7344 **1-Digit Translation Table Expansion**

This feature is activated by software deployment.

Feature 7429a **Mandatory 10 Digits on LSP_LOCAL Trunks**

This feature is activated by software deployment.

Feature 7501 **Expansion of LACIDs to Support 856 D-Channels**

This feature is activated by software deployment.

Feature 7701 **Procedure for Growing ATP TSGs**

This feature is activated by software deployment.

Feature 568 **3B20D and 3D21D Disk Replacement**

This feature is activated by hardware deployment.

A Acronyms and Abbreviations

Overview

Purpose This appendix lists acronyms and abbreviations are used throughout this document.

Acronym/Abbreviation	Definition
2DSA	No. 2 Direct Services – ANI Based
2NCP	No. 2 Network Control Point
2NCPAS	2 Network Control Point Administration System
AAP	Announcement Administrative Process
AATOS	Alternate Access to Operator Services Signaling
ACD	Automatic Call Distributor
ACG	Automatic Call Gapping
ACG	Automatic Code Gap
ACK	Acknowledge
ACM	Address Complete Message
ACP	Action Control Point
ACV	Access Charge Verification
ADA	ANC Dial-Around
AD3	Additional Data 3
ADL	AT&T Digital Link
ADL2	AT&T Digital Link 2
ADL4	AT&T Digital Link 4
ADL5	AT&T Digital Link 5

ADL-V	AT&T Digital Link-Phase V
ADR	Alternate Destination Routing
AILS	Automatic Inward Line Screening
AINS	Advanced Intelligent Network
AIWS	AT&T International Wholesale Service
ALA	Adjunct Logical Address
ALAMO	AT&T Local Access Management Option
ALI	Automatic Line Identification
ALN	AT&T Local Network
AMA	Automatic Message Accounting
ANC	AT&T Network Connections
ANI	Automatic Number Identification
ANICAR	Automatic Number Identification Call Attempt Record
ANI-TT	ANI Trigger Table
ANSI	American National Standards Institute
ANT	Alternate Number Transition
APN	Action Point Number
APS	Attached Processor System
ARS	Automatic Route Selection
ASN	AT&T Switched Network
AT	Access Tandem
ATP	AT&T Trigger Platform
ATV	AT&T Trigger Validation
BCD	Binary Coded Decimal
BCSN	Billing Call Sequence Number
BILLDATS	Billing Data Acquisition and Transfer System
BLDS	Business Long Distance Service
BMD	Business Markets Division
BN	Billing Number
BWM	Broadcast Warning Message
CAC	Carrier Access Code
CAC	Customized Announcement Capabilities
CADCR	Centralized Alternate Direct Call Routing
CADCS	Call Attempt Data Collection Service
CAL	Customer Application Logic
CAL	Customer Application Language
CAMA	Centralized Automatic Message Accounting
CAS	Competitive Access Provider
CAUCS	Centralized Announcement Update Control System
CC	Country Code
CBIS	Cincinnati Billing Information System

CCIS	Common Channel Interoffice Signaling
CCS	Hundred-Call Seconds
CCT	Continuity Check Transceiver
CDDS II	Call Detail Data System II
CDN	Calling Directory Number
CdPN	Called Party Number
CdPN	Called Party Number Parameter
CDRP	Call Detail Recording Platform
CIC	Carrier Identification Code
CID	Carrier Identification
CIM	Call Irregularity Message
CIP	Calls in Progress
CIP	Carrier Identification Parameter
CLD	Consumer Long Distance
CLEC	Certified Local Exchange Carrier
CLF	Clear Forward
CLLI	Common Language Location Identifier
CMC	Cellular Mobile Carrier
CMD	Consumer Market Division
CN	Calling Number
CN	Charge Number
CNI	Common Network Interface
CNRDB	Common Network Routing Database
COS	Class of Service
CPA	Common Platform Adjunct
CPC	Calling Party Category
CPE	Customer Premises Equipment
CPED	Call Processing Execution District
CPN	Calling Party Number
CPPA	Calling Party Pays Airtime
CPPS	Call Processing Process Support
CPR	Call Processing Number
C-PRI	Commercial PRI
CPUP	Call Processing Upchained
CR	Call Register
CRB	Crankback
CRI	Carrier Routing Index
CS	Carrier Solutions
CSC	Circuit Selection Capability
CSCI	Circuit Selection Capability Indicator
CSCR	Circuit Selection Capabilities Routing
CSI	Carrier Selection Information
CSMC	Consumer Services Management Center

CSMS	CMD Service Management Center
CSN	Carrier Solutions Nodal
CSRO	Customer Specific Routing Option
DARICS	Data Acquisition Recording, Integrated Communications System
DAS	Digit Analysis Selector
DB	Data Base
DCI	Dual-serial Channel Interface
DCN	D-Channel Nodes
DDD	Direct Distance Dialing
DECOS	Domestic End-to-End Class of Service
DEMS	Dynamic Engineering Mechanized System
DFS	Directory Function Server
DHNR	Dynamic Non-Hierarchical Routing
DID	Direct Inward Dialing
DIF	Digital Interface Frame
DL	Digital Link
DLN	Direct Link Node
DMS	Database Management System
DN	Destination Number
DN	Dialed Number
DNIS	Dialed Number Identification Service
DNST	Dialed Number Services Type
DNTT	Dialed Number Trigger Table
DOD	Direct Outward Dialing
DP	Dial Pulse
DS1	Digital Signal 1
DSA	Direct Services ANI
DSA	Direct Services Application
DSAS	Direct Signaling Assignment System
DSCH	Dual Serial Channel
DSD	Direct Services Dialing
DSN	Destination Switch Number
DTMF	Dual Tone Multi-Frequency
DTO	Dedicated Trunk Sub-group Option
DWAN	Dedicated Wide Area Network
EA	Equal Access
EACC	Equal Access Circuit Code
EBAF	Extended Bellcore AMA Format
ECD	Equipment Configuration Database
ECOS	End-to-End Class of Service
ECR	Enhanced CIC Routing
EO	End Office

ERPI	Routing Pattern Identity
ESB	Emergency Services Board
ESS	Electric Switching System
EUSEC	Enhanced USEC
EV	Edge Vehicle
FEALN	Far-End AT&T Local Network
FEAREA	Far End AREA
FEN	Far End Network
FENPA	Far End Numbering Plan Area
FEOFC	Far End Office Code
FG-C	Feature Group C
FG-D	Feature Group D
FHC	Final-Handling Code
FHT	Final Handling Treatment
FI	Feature ID
FO	Feature Options
FRF	Feature Request Form
FRS	Feature Requirement Specifications
FSD	Feature Specification Document
FVSR	Force Via Switch Routing
FVSRTT	FVSR Trigger Table
GETS	Government Emergency Telephone Service
GETS	Government Emergency Telecommunications Service
GNFMC	Global Network Fraud Management Center
GOP	Generic Operations Parameter
GSDN	Global Software Defined Network
GSDS	Global Switched Digital Service
GSS	GTN Support System
GTT	Global Title Translation
HAS	Hand-off AT&T Switch
HICAP	High Capacity
HOT	HICAP Originating Treatment
HU	High Usage
I/O	Input/Output
I800	International 800
IAM	Initial Address Message
IBSS	In-Band Supervisory Signaling
IBU	In-Band Unit
ICDR	International Call Detail Recording
ICLD	International Consumer Long Distance
ICTRC	International Call Trouble Receipt
IDB	INWATS Database

IDDD	International Direct Distance Dialing
IE	Information Element
II	Inter-exchange Identifier
ILD	International Long Distance
ILEC	Incumbent Local Exchange Company
INPA	Interchangeable NPA
INR	Intelligent Network Register
INWATS	Inward Wide Area Telephone Service
IP	Internet Protocol
IPGW	IP Gateway
IRAS	Integrated Routing Assignment System
ISAIC	Improved Service Announcement & Information Collection
ISAIC SCS	Improved Service Announcement and Information Collection Service Circuit System
ISC	Incoming Signaling Characteristic
ISC	International Switching Center
ISDN	Integrated Services Digital Network
ISET	Inbound Services Emergency Translation
ISUP	ISDN User Part
IT	Internet Telephony
ITAMAC	International Transit, Accounting, Maintenance and Analysis of Calls
ITE	Installation Test Equipment
ITFDB	Industry Toll-Free Data Base
ITFS	International Toll Free Service (formerly I800)
ITN	Integrated Test Network
IT-T	International Telecommunications Union-Telecommunications
IVT	International Voice Transit
IWZ1	International World Zone 1
IXC	Interexchange Carrier
JIP	Jurisdiction Information Parameter
LACIDs	Logical Access Identifiers
LANI	Local Automatic Number Identification
LATA	Local Access and Transport Area
LATT	Loop Around Transceiver Test
LCC	Local Carrier Connecting
LCC	Local Exchange Carrier Connecting
LCVT	Local Service Validation Test
LD	Long Distance
LDIT	Local Digit Interpreter Table
LDNC	Long Distance Nodal Concentration

LDS	Long Distance Service
LEC	Local Exchange Carrier
LERG	Local Exchange Routing Guide
LNP	Local Number Portability
LRN	Location Routing Number
LSP	Local Service Provider
LTD	Local/Toll Differentiation
LVL	Level
MAP	Mass Announcement Platform
MCS	Micro Control Store
MDN	Miscellaneous Distribution Number
MDR	Multiple Destination Routing
MF	Multi-Frequency
MML	huMan Machine Language
MOC	Maintenance Operations Center
MOSS	Modified Operator Services Signaling
MPS	Message Processing System
MR	Modification Request
MRT	Multiple Routing Treatment
MSI	Market Segmentation Indicator
MSN	Miscellaneous Scanner Number
MTP	Message Transfer Part
MTP	Message Transfer Protocol
NAI	Network Access Interrupt
NAMACC	National AMA Control Center
NANP	North American Numbering Plan
NAP	Network Adjunct Platform
NCA	No Circuits Available
NCC	National Control Center
NCP	Network Control Point
NCP&D	Network Capacity Planning & Delivery
NCS	Network Control Point
NDIG	Next Digit
NEMOS	Network Management Operations System
NESAC	Network Electronic Systems Assistance Center
NFM	Network Fault Management (formerly TNM)
NI-2	National ISDN-2
NID	Network ID
NIS	Network Implementation Services
NOC	Network Operations Center
NOC-INM	Network Operations Center-International Network Management
NOE	Network Operations Enterprise

NPA	Numbering Plan Area
NPP	Network Provisioning Platform
NRA	Network Remote Access
NRAMS	Network Remote Access Monitoring System
NRM	Network Recording Management
NRN	Network Routing Number
NS	Network Services
NSA	Network Service Automator
NSAC	Non-Simultaneous Authorization Code
NSD&M	Network Service Delivery & Maintenance
NSM	Network Services Maintenance
NSN	Network Switch Number
NSP	Network Services Provisioning
NVT	Network Verification Testing
NWM	Network Management
OAID	OSPS Access ID
OAR	Originating Access Record
OAS	Originating AT&T Switch
OCC	Other Common Carrier
OCDD/RT	On-line Call Detail Data/Real Time
OCTCPFAI	Originating Carrier/Terminating Carrier Pair Foreign Administration Identification
ODA	Office Data Assembler
ODAD	ODA Data
ODP	Office Dialing Plan
OE	Operator Express
OGT	Outgoing Trunk
OHD	Off-Hook Delay
OLI	Originating Line Information
OLI	Originating Line Identifier
OLP	Off-Line Processor
OOB	Out of Band
OSC	Outgoing Signaling Characteristic
OSPS	Operator Services Position System
OSPSID	Operator Service Position System Identification
OSSs	Operation Support Systems
OST	Originating Station Type
OTP	Operations Technical Plan
PABO	Protected, Disk-backed, API-Accessible, ODA-Generated
PAS	Public Announcement System
PASP	Public Safety Answering Point
PBX	Private Branch Exchange

PC	Point Code
P.CarrierID	Primary Carrier ID
PCP	Positive Call Processing
PDIT	Prefix/Feature Digit Interpreter Table
PDN	Pseudo-Destination Number
PECC	Product Engineering Control Center
PI	Precedence Index
PIC	Presubscribed Inter-exchange Carrier
PLU	Positive Lookup Table
PMO	Present Mode of Operation
POP	Point of Presence
POTS	Plain Old Telephone Service
PRD	Product Release Document
PRI	Primary Rate Interface
PRIT	Primary Rate Interface Type
PS-ALI	Public Safety-Automatic Location Identification
PSE	Program Store Expansion
PSTN	Public Switched Telephone Network
PTC	Primary Toll Carrier
PUC	Public Utilities Commission
PTT	Post Telephone and Telegraph
PV	Performance Verification
PVC	Permanent Virtual Circuits
QDRS	Quantum Data and Routing System
QH	Quiet Hear
RAM	Random Access Memory
RAO	Revenue Accounting Office
RBC	Rate Based Control
RC	Recent Change
RC/V	Recent Change/Verify
RCAS	Recent Change Administration System
RCC	Radio Common Carrier
RDB	Routing Data Block
RICS	Recorded Information Collection System
RLC	Release Complete Message
RN	Routing Number
RP	Redirecting Party
RPC	Regional Processing Center
RPI	Route Pattern Index
RSI	Route Selection Index
RTNR	Real-Time Network Routing
RUAS	Remote Utility Access System
SAFER	Split Access Flexible Egress Routing

SAN	Service Circuit System Announcement
SC	Structure Code
SCCP	Signaling Connection Control Protocol
SCP	Software Change Package
SCS	Service Circuit System
SCSI	Small Computer Systems Interface
SCU	Service Circuit Unit
SD	Segmentation Directory
SDDN	Software Defined Data Network
SDE	Software Development Environment
SDI	Switched Digital International
SDN	Switched Digital Network
SDN	Software Defined Network
SDN NRA	Software Defined Network-Network Remote Access
SDQ	SD Query
SDR	SD Response
SDS	Switched Digital Service
SDTT	Segmentation Directory Transition Type
SDX	Subsequent Digit Index
SG	Software Generation Data
SI	Service Identity
SI	Service Index
SIC	Service Indicator Code
SID	Station Identification (CPN)
SII	Service Identity Index
SMO	SD Mode of Operation
SMO	Segmentation Mode of Operation
SMS	Service Management System
SNAS	Signaling Network Administration System
SNET	Southern New England Telephone
SNOW-R	Service NOW-Routing
SNOW-T	Service NOW-Trunking
SOP-P	Signaling Operations Platform-Provisioning
SP	Service Processor
SPC	Switching and Permuting Circuit
SPU	Signal Processing Unit
SS7	Signaling System 7
SSC	Special Service Code
SSN	Subsystem Number
SSO	Sub-System Overload
STP	Signaling Transfer Point
STP	Trunk Sub-group

SUR	Standard Usage Record
TAN	Trunk Appearance Number
TAS	Terminating AT&T Switch
TBN	True Billing Number
TCAP	Transaction Capabilities Application Part
TCC	Technology Control Center
TCS	Transfer Connect Service
TEC	Terminal Equipment Center
TG	Trunk Group
TG-4	Translation Guide *4ESS*
TNM	Total Network Management
TNS	Transit Network Selection
TOP	Task Oriented Practice
TOT	Type of Trunk
TP	Target Party
TPC	Transport Capability
TS	Time Slot
TSG	Trunk Subgroup
TSI	Time Slot Interchange
TSN	Trunk Scanner Number
TT	Transition Type
TT	Transport Tariff
TTA	Terminating Traffic Architecture
TTUSFI	Transport Tariff Usage Sensitive Feature Indicator
TV	True Voice
UGTT	Universal Global Title Translation
UIFN	Universal International Freephone Number (Format = 800+8-digits)
UMIU	Unidentified Message Investigation Unit
US	Utility System
USDS	Universal Subscriber Data Structure
USDS	Universal Subscriber Data Service
USEC	Universal Services Echo Canceler
USI	User Service Information
UTA	Universal T1.5 Access
UUI	User to User
VCA	Vacant Code Announcement
VoIP	Voice Over Internet Protocol
VPA	Voice Path Assurance
VRUs	Voice Response Units
VSSID	Voice Storage System Identity
VTNS	Virtual Telecommunications Network Service

VTOC	Volume Table of Contents
WATS	Wide Area Telephone Service
WATSBN	WATS Billing Number
WCS	Windowed Call Store
WEFOS	WATS Eight Hundred Family of Services
XTSI	Expanded Time Slot Interchange
Y2K	Year 2000

B Master Index of Product Release Documents (PRDs)

Overview

Purpose This appendix contains a complete list of all features documented in Product Release Documents (PRDs). Features are listed by number, name, and PRD number. Revisions to a PRD are shown as, “Rev1, Rev2,” etc. New issues of a PRD are shown as, “Iss 2,” etc.

Master Index

Feature Number	Feature Name	PRD Release
56	MultiQuest OSPS Traffic Identification	234-090-153AC
59	Software Reengineering	234-090-171AC
60	Disciplined Rubidium Oscillator	234-090-161AC
61c	Selective Key Service Protection-Ph 3	234-090-152AC
61d	Selective Key Service Protection-Ph 4	234-090-161AC
65	Enhanced Service Provider Credit Checking Application	234-090-162AC
66	International FAX Preferred Routing	234-090-161AC
67	Sub-Account Billing	234-090-161AC
68	FAX Store and Forward	234-090-161AC
71	Billing Based on Variable Queuing	234-090-161AC
72	TEST:DSIG for INWATS	234-090-152AC
73	Flexible Attached Processor System I/O Ports	234-090-152AC
74	Brokers Hotline Call Setup Improvements	234-090-153AC
75	Conversant Voice Information System Call Setup Improvements	234-090-153AC
75	Transaction Request Parameter	234-090-153AC
80	3B20D Computer UNIX RTR Improvements	234-090-161AC
81	Digital Signal Zero-A Link Interface	234-090-171AC
82	Performance Measurements	234-090-171AC
83	Preventive Cyclic Retransmission for CCS7 Links	234-090-171AC
84	Fast Connect	234-090-161AC
85	Generic Address Parameter	234-090-161AC
86	OA&M Measurements	234-090-161AC
87	Discontinue Short Supervisory Transition AMA Records	234-090-161AC
89	Multiple Trunk Group Assignment-LEC	234-090-172AC
90	Forced Link Node Remove-LEC	234-090-162AC
91	PCP Code Transport	234-090-161AC
92	PCP Service Type Indicator & Access Type Indicator Transport	234-090-161AC
94	Recent Change of Protocol Timers and Parameters	234-090-171AC
97	SDN Modular Call Detail Recording for 4ESS/BILLDATS	234-090-154AC
101b	Inbound Services Emergency Translation Ph 2	234-090-152AC
102	Alternate Number Translations-Ph 2	234-090-152AC
103a	200 Direct Services Dialing Numbering	234-090-161AC
104	6-Digit GTT	234-090-153AC
105	Signaling End Point Rehoming	234-090-154AC
106	Message Transfer Part LATA Routing	234-090-171AC
108	Reduction of NCP Transfer	234-090-152AC

110	Inbound HICAP Network Control Point Bypass	234-090-161AC
111	Carrier Proportioned Routing	234-090-161AC
112	Feature Group D to Feature Group C Reversions-Pt 2	234-090-153AC
113	Screening/Recording of Cellular Mobile Calls	234-090-152AC
114	Multiple Progress Messages	234-090-154AC
115	ASN Switched Digital Service Network Interconnect for 384	234-090-152AC
117a	Emergency Signaling Transport Network-OA&M Requirements-Ph 2 Pt 1	234-090-154AC
117b	Emergency Signaling Transport Network-Ph 1: Pt 2	234-090-161AC
120	Inbound Action Point Numbering-GSDN Ph 3	234-090-154AC
121	Handling Additional TR-394 Exceptions	234-090-161AC
122	Coding Standard Field of the Cause Parameter	234-090-161AC
125	Expand Network Switch Number Limit	234-090-161AC
126	Intranet Signaling Connection Control Part Routing Verification Test	234-090-153AC
127a	SAFER Final Handling Announcements-Part 1	234-090-153AC
127b	SAFER Final Handling Announcements-Part 2	234-090-171AC
128	Switched Digital Service Between Direct-Connect and Switched Access Customers	234-090-154AC
129	Remote Measurement System-Gateway 2 Release 2	234-090-161AC
131	Network Management International Switching Center Transit Traffic	234-090-161AC
132	ANI Forwarding	234-090-154AC
134c	Selective Key Service Protection TSG Preference Indicator	234-090-161AC
135	Ph 0-Direct Connect ISUP	234-090-154AC
136	Command-Initiated Link Fault Sectionalization	234-090-171AC
137	Switched Digital International Premature ACM	234-090-152AC
140	Temporary Signaling Connection Teardown Command	234-090-154AC
141	4ESS Notification to CPE of Temporary Signal Connection Internal Tear-down	234-090-153AC
142	OP:TSC Command	234-090-154AC
144	CCITT7 Overlap Signaling	234-090-162AC
145	Multiquest Sponsor Flexible Rating	234-090-163AC
147	Additional Buffer for Customer Account Service Card	234-090-161AC
148	INFO II Plus	234-090-161AC
149	Centralized Alternate Destination Call Redirection	234-090-154AC
150	International Hard to Reach improvements	234-090-172AC
151a	Processor Outage-Ph 1	234-090-171AC
151d	Processor Outage-Ph 2	234-090-173AC
152	Multiple Trunk Group Assignment	234-090-172AC
156	Completion of Transmission Path	234-090-171AC
157	Handling Confusion Messages	234-090-171AC
158	Routing Based on Speech and 3.1 kHz Bearer Capability	234-090-171AC

159	Rlse Trmnt w/TNS in IAM	234-090-181AC
160	OA&M Enhancements	234-090-171AC
161	FG-D CIC Expansion (LEC)	234-090-181AC
165	Emergency Alternate Routing	234-090-171AC
166	Advanced Off-Net Overflow	234-090-154AC
167	SDDN Yellow Alarm	234-090-152AC
174	Multiquest AMA Recording for Call Counter	234-090-172AC
176	Interchangeable NPA Codes	234-090-171AC
184	CCITT Message Transfer Part Emergency Alignment	234-090-161AC
186	Egress Data Recording	234-090-164AC
189	D-Channel Node Capacity Increase	234-090-171AC
190	Extended Call Store	234-090-162AC
191	Presubscription Indicator Recording	234-090-161AC
193a	PCP Release 3 - Basic	234-090-172AC
194	Recording Capacity Improvement	234-090-171AC
195	MTP User Flow Control Via Processor Outage	234-090-154AC
198	Forced Link Node Restart-LEC	234-090-162AC
204a	800 Class Of Service-Ph 1	234-090-154AC
204b	800 Class Of Service-Ph 2	234-090-162AC
207	4ESS Access to Common Platform Adjunct	234-090-172AC
207a	Network Management for Enhanced Adjunct-Based Capability	234-090-172AC
208	Intelligent Call Processing - Caller Information Forwarding	234-090-171AC
208a	Intelligent Call Processing - Interim Caller Info Forwarding	234-090-162AC
211	Modified Trunk Sub-Group Data	234-090-171AC
212	Provide Timeout Counts and Discretes for TNM Operations Systems	234-090-161AC
213	Trunk Sub-Group Interest List for RNMS	234-090-172AC
217a	D-Channel Node Layer 2 Error Handling Enhancement	234-090-171AC
217b	ISDN HO Channel Encoding Enhancements	234-090-171AC
219a	3B Processor SCSI Disk - Hardware	234-090-162AC
219b	3B Processor SCSI Disk - Software	234-090-171AC
220	Quantum	234-090-153AC
221	Small Scale Adjunct	234-090-164AC
222	Sftwe ReEngg - Using ECS	234-090-171AC
224	Removal of Digital Preference	234-090-161AC
226	SDI Transit Fiber Request	234-090-162AC
227	Carrier Group Alarm Activate/Deactivate Message Enhancement	234-090-154AC
229	Alternate Signaling Transport Network Enhancements	234-090-162AC
230	Call Merge for Adjunct	234-090-172AC
239	DLNE Memory Increase	234-090-181AC
240	Passing Original Called Number	234-090-154AC
242	ISUP Suspend/Resume to Q.931 for SDN Improved Sequence Dialing	234-090-161AC

243	3.1 KHz Audio Mapping Between Q.931 and CCITT7 ISUP	234-090-161AC
244	SDN-Cellular Access to SDN	234-090-162AC
246	SET:TRKSTAT SUM Option on Test Control Area Channel	234-090-162AC
247	Full Pt Code Routing (FPCR)	234-090-182AC
250	Trunk Appearance Number (TAN)-to-TAN with Supervision Enhancement	234-090-162AC
251	Ring No Answer	234-090-161AC
252	Conversant Voice Information System Presentation Override	234-090-161AC
256	Glare Minimization Under an RTNR Environment	234-090-161AC
257	RTNR Reroute Control Enhancement	234-090-154AC
261	Long-Term Backout Capability for RTNR	234-090-162AC
262	108 Test Line Termination Duration	234-090-162AC
263	Wait for Answer Timing Announcement Capability	234-090-161AC
265	Service Identity Mapping to International Call Detail Recording	234-090-163AC
266	SMARTS2 Digital Data Associated Circuit Mode Connection	234-090-162AC
267	Software/Hardware Inhibits	234-090-171AC
269	Regional Network Management System-4ESS Interface Improvements	234-090-154AC
274	TCAP Terminating Announcement Feature	234-090-162AC
279	Forced Link Node Remove - NSD	234-090-164AC
280	SDN-Centrex Station Identification	234-090-162AC
282	Removal of Routing According to Bearer Capability	234-090-162AC
284	TCAP Parameter Tag Code Expansion	234-090-171AC
285	Honoring the CPN Address Presentation Restriction Indicator	234-090-162AC
289	3-Digit Billing Number Delivery	234-090-163AC
292	Announcement Restructure-Time Sensitive Pricing	234-090-163AC
294	I800 Network Routing Number Exhaust	234-090-163AC
294a	I800 Network Routing Number Exhaust-RC	234-090-171AC
295	Routing Control Service Programmability	234-090-162AC
297b	Cause Value Problem #19 (323)	234-090-163AC
297g	Backward Call Indicator in ACM (323)	234-090-163AC
303	Network Switch Number Expansion for RTNR	234-090-171AC
305	Automatic Removal of Adjunct TSG Head Cells	234-090-163AC
306	ASTN 56Kbps Capacity Increase	234-090-171AC
315	Ring No Answer Billing Enhancement	234-090-162AC
320	Improved Automatic D-Channel Recovery	234-090-163AC
323a	ICS Task Force Ph2 Enhancement	234-090-163AC
323b	Continuity Check Call With An Unsuccessful COT C	234-090-163AC
323c	Automatic Repeat Attempt on Receipt of Unreasonable Signaling Informational	234-090-163AC
323d	Automatic Repeat Attempt on Receipt of Blocking Signaling	234-090-163AC
323e	TUP Unsuccessful COT Check-CCR Received	234-090-163AC
323j	Additional Requirement for Interworking Between DSS1 and	234-090-163AC

	International CCITT7 ISUP	
323k	Rejection of Implicit Request for User-to-User Service 1	234-090-163AC
324a	ISUP Continuity Check-CCR Received Unsuccessful: Verify T27 Timer	234-090-163AC
324b	Check of Timers T14 and T15	234-090-163AC
324c	ISUP Continuity Check Test Call-COT Unsuccessful	234-090-163AC
324e	ISUP Continuity Check Test Call - CCR Received Unsuccessful	234-090-163AC
324f	Check of Timers T1 and T5: Failure to Receive RCM	234-090-163AC
324g	Check of Timers T16 and T17	234-090-163AC
333	LEC Switched Digital Service-Ph 2	234-090-183AC
341	700/800/900/Service 4E Announcement Delay	234-090-163AC
344	E-Link	234-090-182AC
349	PCP-Preassigned Value/ANI Expansion	234-090-171AC
354	Input Message TEST:DSIG Parameter Addition	234-090-172AC
356c	Service Translator	234-090-181AC
356d	Removal of Hardware Doc	234-090-181AC
356e	TTSI Decrease	234-090-181AC
356i	Code Group Form AD3	234-090-181AC
356j	Remove DNHR Controls	234-090-181AC
356k	New TDAS MC	234-090-181AC
356l	D-Channel Node Audits	234-090-211AC
372	Generic Update Capability	234-090-172AC
373	Inter-LATA Switched Digital Service and Network Interconnect for PRI	234-090-173AC
374	SCSI Firmware Download	234-090-172AC
375	AIN Dialed Number Triggers	234-090-182AC
375a	AIN-Operator Routing	234-090-201AC
376	Address Complete Message Timeout for Study Classes	234-090-172AC
378	Threshold Alerting/MSR2	234-090-181AC
381	Teleconferencing NSCX Trunk Maintenance Enhancement	234-090-172AC
383	Expanded ETC Type of Trunk Capability for GTE	234-090-172AC
384a	Miscellaneous RC Form Values	234-090-201AC
384b	Combine ANI Tables	234-090-201AC
384c	Combine AMA RCVR/Formatter	234-090-201AC
384d	AMA Functional Program Replacement	234-090-182AC
384e	D-Channel Backup Flow Control	234-090-211AC
384f	Removal of OPAV	234-090-201AC
384h	Increase Number of FHCs	234-090-201AC
385	3B20 Conversion to 3 1/2" Disks	234-090-182AC
386	SCS-Announcement System Manager Plus	234-090-182AC
387	Software Update Merge	234-090-201AC
390	3B Initialization Time Improvement	234-090-174AC
391	CNI Routing Restructure	234-090-181AC

393	3B Upgrade from 6.4 to 21	234-090-201AC
394	Software Update Automation	234-090-201AC
395	Ring Node Version Available	234-090-182AC
400	Message Transfer Part Restart	234-090-211AC
401	SS7 Trunk Signaling Interface for Cellular Type 2A	234-090-183AC
402	15-Digit International Numbering Plan	234-090-211AC
403	CCIS2WRE Field Enhancement in Recent Change	234-090-182AC
404	SCS-4 Gigabyte Disk Drive	234-090-183AC
405	Feature Group-D CIC Exp Cause Transparency	234-090-182AC
406	Carrier Identification Parameter-CIP	234-090-184AC
408	3.1 kHz Enhancement: Switch Options Feature	234-090-183AC
410	AIN Trunk Group Routing	234-090-184AC
411	AIN Default Routing - Phase 1	234-090-201AC
414	Increase in GULP Buffer Size	234-090-201AC
414a	Increase in GULP Buffer Size	234-090-211AC
415	AIN Selective Default Routing Dialed Number Trigger Calls-Ph 2	234-090-202AC
416	NSR Domain Data Enhancements	234-090-213AC
417	Explicit 4-Digit CIC Indicator to NetMinder	234-090-202AC
419	AIN Data Calls	234-090-214AC
421	AIN-Operator Routing for AIN Calls	234-090-203AC
422	CAMA for the LECs	234-090-203AC
430	Trunk Group Control of Signaling Bits	234-090-211AC
432	LEC Toll-Free Treatment for NPA 888	234-090-211AC
433	AIN Dialed Number Trigger Table Expansion	234-090-231AC
435	NetMinder Support of Alternate Overflow Reroute	234-090-211AC
437	Buffered Recent Change Transition	234-090-204AC
440	1B ORD:MCCKEY	234-090-204AC
442	AIN Dialed Number Trigger Expansion-Ph 0	234-090-211AC
443	AIN 800 Toll-Free Capability	234-090-213AC
448	4ESS Ring and Tone Plant Replacement	234-090-213AC
449	DMS D-Channel CINs	234-090-213AC
450	Number Portability-LEC	234-090-222AC
450a	Number Portability Modification Request-LEC	234-090-224AC
451	CVU/4E Echo-Back Interface for R2.2	234-090-214AC
452	XTSI Release 2 (LEC)	234-090-222AC
455	LEC AT Toll Resale	234-090-214AC
456	SCS UN351 Board Redesign	234-090-213AC
457	3B20D 2-Gigabyte Disk Certification	234-090-214AC
461	Extend ACM Timer for CCS7	234-090-221AC
467	AIN Call Code Provisioning	234-090-214AC
468	AIN Carrier Access Module Setting	234-090-214AC
469	MUP Firmware Upgrade	234-090-222AC

470	DLN-AP30 Circuit Pack Update	234-090-223AC
471	SCS TN4000B and TN1972C Replacement	234-090-221AC
472	Redesign of SCU EPIC	234-090-221AC
473	Checksum Macro	234-090-221AC
474	MCC Alarm Enhancement	234-090-222AC
475	ASM Plus Enhancements	234-090-221AC
476	2000 A.D. Transition	234-090-233AC
477	Test Query Enhancement-MR to CALIPER(4923)	234-090-224AC
478	4ESS APS RTR 21.17 Upgrade	234-090-231AC
480	CIP Number Expansion	234-090-223AC
482	LEC ODAMANanger	234-090-222AC
487	XTSI Static A/B Bit Option(2-Wire)	234-090-222AC
488	AT Routing Enhancement	234-090-224AC
488i	AT Routing Enhancement	234-090-231AC
496	Enhance TM Messages	234-090-231AC
497	Code Group Restructure	234-090-231AC
502	Cellular Mobile Carrier SSP/800 & AIN AMA Enhancement	234-090-224AC
505	4ESS Switch Header Validation	234-090-231AC
515	Analyze Ported Number GAP for AIN CNT LNP	234-090-233AC
516	AIN 6-Digit	234-090-233AC
517	LEC LNP OA&M Enhancements	234-090-233AC
517a	LEC LNP OA&M Enhancements MR 2	234-090-233AC
517r	LEC LNP OA&M Enhancements MR 2	234-090-233AC
521	Grow D-Chan Node Cap. From 106	234-090-251AC
523	RC Form Metrics Reports	234-090-241AC
534	LEC LNP/AIN Domain Option	234-090-233AC
536/I	3B20 to 3B21 Conversion from 4E24 (LEC & AT&T)	234-090-241AC
5361i	Interim D-Channel Expansion--SW	234-090-231AC
537	LEC Originating LNP Module AMA Enhancements	234-090-234AC
538	LEC LNP Additional OA&M Enhancement	234-090-234AC
538a	LEC LNP Additional OA&M Enhancement	234-090-234AC
540	DSC SCP Interface Modification for LNP	234-090-234AC
543	New XTSI Fan Unit SW Changes	234-090-241AC
545	US/RUAS Y2K Compliance	234-090-242AC
545a	RUAS Y2K Standalone Config	234-090-242AC
552	4ESS 3B APS Upgrade to RTR 21.31	234-090-251AC
554	DECOS Changes to RC639	234-090-242AC
568	3B20D and 3B21D Disk Replacement (9GB Disk)	234-090-251AC
572	Y2K Century Bit on IBM Tape Header	234-090-243AC, Iss 2
901	Performance and Capacity Improvements	234-090-161AC
902	Modular Recording of Data	234-090-161AC
903	Customer-Specific Recording	234-090-161AC
904	Recording of Additional Usage Data	234-090-161AC

905	10-Digit Global Title Translation	234-090-161AC
906	Common Network Interface Integration	234-090-161AC
907	Combined Link Set Routing	234-090-161AC
908	Intranet Signaling Connection Control Part Routing Verification Test	234-090-161AC
909	Interim Dynamic-Automatic Congestion Control	234-090-161AC
910	Class of Service Parameter for Some Network Management Controls	234-090-161AC
911	Expanded ISDN Message Associated User-to-User Information Length	234-090-161AC
912	Elimination of Double Dip and SDN NCP	234-090-161AC
913	CCITT7 ISUP-Ph 3	234-090-161AC
914	Carrier Specific Routing for International Card and Global SDN Calls	234-090-161AC
915	Facsimile Identification and AMA	234-090-161AC
916	1+Spontaneous Access to Call Delivery Service	234-090-161AC
917	Intra-LATA Switched 384	234-090-161AC
918	Intra-LATA 7-Digit Free Calling	234-090-161AC
919	Unsuccessful Call Setup	234-090-161AC
920	Passing Unrecognized Parameters	234-090-161AC
921	Q.931 Information Elements Transport	234-090-161AC
1001	CCITT7 ISUP-Ph 4	234-090-172AC
3037	Signaling Connection Control Part Routing Verification Test	234-090-163AC
3066	Switched Digital International 384-Kbps Service	234-090-172AC
3068	1B24 Processor	234-090-181AC
3071	Feature Group-D Carrier Identification Code Handling	234-090-181AC
3082	ISAIC-AUI-AAP	234-090-181AC
3082	ISAIC-CORE	234-090-173AC
3082	ISAIC_CORE(109a)-Brkpt MR	234-090-173AC
3082	ISAIC_CORE(109a)- SCU	234-090-173AC
3091	ISAIC-Expanded Final Handling Announcements	234-090-173AC
3091	Expanded Final Handling Announcements (109c)	234-090-173AC
3133	15-Digit Intl Numbering Plan	234-090-211AC
3142	End-to-End Class of Service	234-090-201AC
3172	ISAIC-NSCX	234-090-181AC
3187	ISAIC-MAS Announcement System (Televote)	234-090-173AC
3195	Generation of CCS7 Discretes	234-090-174AC
3213	Resize Number of Switches Count	234-090-171AC
3214	Use and Handling of Unequipped Circuit Identification Code	234-090-172AC
3215	Provide Cause Information with Tones and Announcements	234-090-172AC
3285	SRVT Enhancements	234-090-173AC
3286	Processor Outage-Ph 2	234-090-173AC
3299	Call Detail Recording Platform	234-090-181AC

3300	0+/0- Access to AT&T Message Service	234-090-172AC
3306	I800/Country Direct Carrier Specific Routing-Ph 1	234-090-173AC
3318	MRVT Enhancements	234-090-174AC
3333	Program Store Expansion – 1B Processor	234-090-221AC
3333a	Program Store Expansion	234-090-211AC
3334	Flexible SDN Manual Control	234-090-174AC
3349	Dynamic Automatic Congestion Control, The Final Phase	234-090-172AC
3355	Extended Stores (XS) – 1B	234-090-211AC
3355a	Extended Stores (XS) – 1B	234-090-201AC
3356	1B File Expanded Program Store Disk/XS	234-090-201AC
3356a	1B File Restructuring	234-090-201AC
3410	Hard-To-Reach for SAFER Modification	234-090-174AC
3420	ISDN Extended D-Channel	234-090-201AC
3433	Increased Number of Links in Link Set	234-090-172AC
3446	Alternate Destination Routing-Ph 2	234-090-171AC
3448	Change Under Minimum Billable Call Duration Threshold	234-090-171AC
3460	PCP ANI Table Expansion	234-090-171AC
3472	Non-ISUP Public Switched Telephone Network Architecture	234-090-164AC
3472a	Non-ISUP PSTN GSDN Arch (RC)	234-090-181AC
3474	GSDN International Private Numbering Plan Option	234-090-164AC
3500	User-Entered Code Information Element Protocol Upgrade	234-090-164AC
3503	SDS Early Address Complete Message Elimination	234-090-164AC
3512	TOPAS Summary Trunk Turndown Improved Interface	234-090-163AC
3519	Transport Tariff/Usage Sensitive Feature Indicator Field Expansion	234-090-164AC
3520	Remote Adjunct Call Handling (REACH)	234-090-174AC
3520b	Remote Adjunct Call Handling (REACH)	234-090-181AC
3532	SDN-NPA Split Announcement	234-090-164AC
3534	Expand Class Of Service Parameters	234-090-171AC
3534a	Expand Class Of Service Parameters-RC	234-090-181AC
3541	RTNR Support for SSN/SRAS (Govt RTNR CAP)	234-090-181AC
3559	Carrier Routing Platform Network Management Enhancement	234-090-164AC
3564	Interchangeable NPA Additions	234-090-171AC
3566	Express Connect ANI Query	234-090-164AC
3567	Dynamic Load Control Trunk Assignment Expansion	234-090-164AC
3572	PBX High and Wet Wink Release	234-090-163AC
3587	SDN-Universal GTT Database	234-090-173AC
3590	GSDN CCS7 ISUP Network Interconnect Interface	234-090-172AC
3595	Positive Call Processing Release 3 List Transaction	234-090-172AC
3595a	Positive Call Processing Release 3 Provisioning	234-090-174AC
3597	I800 Carrier Specific Routing-Ph 2	234-090-173AC
3599	High Speed A/E Links	234-090-211AC
3604	International Calling for WATS over Network Interconnect	234-090-162AC

3606	Carrier Screening for 800 Number Portability	234-090-172AC
3607	Domestic Hard-To-Reach Data Modification for USADirect	234-090-172AC
3609	1+Directory Link	234-090-201AC
3618	Direct Connect Trunk Sub-Group Lockout	234-090-163AC
3630	Switch Based Network Call Denial	234-090-174AC
3636	Post Dialing Delay Reduction	234-090-201AC
3637	TCAP End Message Fix for NRA Improved Sequence	234-090-163AC
3640	FHC on the AMA Record	234-090-163AC
3649	Improved Recent Change for GTT	234-090-164AC
3650	Improved Recent Change for GTT	234-090-174AC
3662	Total Office Blocking Status Exchange	234-090-172AC
3664	Call Disposition Module on the Inbound AMA Record	234-090-164AC
3669	GSDN/SDN International Digits-Ph 2	234-090-173AC
3670	Remote Utility Access System (RUAS)	234-090-181AC
3671	GSDN/SDN International Digits-Ph 1	234-090-164AC
3680	ISDN 56 Kbps Routing	234-090-164AC
3741	SDN-NRA New Billing Structure Codes	234-090-164AC
3742	Far-End Network Service Category Treatment	234-090-173AC
3753	1B Processor Contingency (Undiagnosed 1A)	234-090-181AC
3776	CCITT5 Proceed To Send Signal	234-090-172AC
3777	Inbound I800 Call Prompter	234-090-173AC
3779	PROM Kit for Link Interface Encryption Removal	234-090-173AC
3795	iPCC-USEC Individual Per-Call Control	234-090-183AC
3800	GSDN Ph 2 International World Zone 1 Dedicated Access	234-090-172AC
3801	4E18 INPA Enhancements	234-090-181AC
3806	GTT Provisioning	234-090-173AC
3819	Carrier Specific Routing for ISTS	234-090-203AC
3840	SDN Digital Radio Avoidance Routing	234-090-173AC
3843	SDN NRA-Inclusion of ANI in AMA Record ANI	234-090-172AC
3844	PCP-ANI Table Limit Expansion	234-090-181AC
3847	Temporary Signaling Connection Controls	234-090-181AC
3852	AAP Maintenance Enhancements and AAP/SCANS	234-090-181AC
3857	SDN-10288 Access to SDN	234-090-202AC
3860	Alternate Signaling Transport Network NI Backup	234-090-173AC
3863	Telecommunications Relay Service Carrier of Choice	234-090-173AC
3867	Force Time-Critical Calls for AT&T NetProtect Service	234-090-172AC
3868	Prefix NPA Digits for Reroute Control	234-090-172AC
3876	ABC Architecture APN Dialing Requirements	234-090-173AC
3880	GETS-Government Emergency Telecommunications Service	234-090-184AC
3883	SDDN 700 Number Outward Dialing	234-090-172AC
3887	Integrated Access Terminating Switch Access Arrangement	234-090-184AC
3891	ANI/DN Per Call Control of Voice Enhancement	234-090-183AC
3892	RMS Interface to Network Validation Test AMA Collecting and	234-090-173AC

	Reporting	
3898	3B/DLN Recent Change Inhibit Enhancements	234-090-172AC
3899	10-Digit GTT Expansion-Inbound	234-090-173AC
3904	Call Complete With DTMF Congestion	234-090-172AC
3917a	10-Digit GTT Support – Ph 1	234-090-174AC
3917b	10-Digit GTT Support – Ph 2	234-090-182AC
3931	A-Law/U-Law Modification Requirement/CCITT7	234-090-172AC
3932	ABC ANI Trigger Table Field Redefinition	234-090-173AC
3935	PCP Using 2NCP/NSCX	234-090-173AC
3943	PCP R2.0 Enhanced PAV	234-090-173AC
3944	ANI Table Change for SB NCP MR	234-090-174AC
3949	10-Digit GTT Table Expansion-Long Term	234-090-182AC
3956	SCS Yes or No for EFH	234-090-181AC
3957	Inbound I800 Separation of Country Code	234-090-183AC
3963	Network Access Interruption	234-090-184AC
3964	Universal Subscriber Data Structure—USDS	234-090-211AC
3967	Balancing Load Sharing	234-090-211AC
3968	Easy Reach 700 Call Forwarding Service	234-090-173AC
3978	RETract Reach to Access Toll-RETREAT	234-090-184AC
3991	BLDS Services – Call Disposition Recording	234-090-182AC
4012	Inbound Automated GTT	234-090-174AC
4013	II Digit Information Delivery	234-090-174AC
4018	End-to-End Class Of Service/AP	234-090-201AC
4018a	End-to-End Class Of Service/AP	234-090-202AC
4019	5-Digit Dialing on SDN-Ph 1	234-090-174AC
4020	Authorization Code Digits Encoding	234-090-174AC
4026	Network Call Denial for International	234-090-174AC
4029	Multiple Trunk Group Assignment	234-090-174AC
4032	Self-Provisioning GTT	234-090-182AC
4032a	Self-Provisioning GTT Deferred Requirement	234-090-183AC
4033	Alternate Signaling Transport Network Gateway/NI Backup	234-090-183AC
4043	XTSI—Release 2	234-090-221AC
4050	ASTN Forced Intertoll Routing	234-090-174AC
4053	ODA Datalinking (ODAD)-Ph 1	234-090-201AC
4057	1A/1B Processor RC Throughput Improvement	234-090-182AC
4058	Collision of REL Messages	234-090-174AC
4099	Type Digital Interface Unit(TDIU) Redefinition	234-090-211AC
4107	Calling Party Number/Billing Number Delivery Enhancement	234-090-181AC
4117	Domestic PSTN Routing CAP-GSDN	234-090-181AC
4129	Alternate Signaling Transport Network Enhanced ISUP	234-090-184AC
4133	Direct Link Node Throughput Increase-Ph 1	234-090-201AC
4136	Never Miss a Call/ADR on Busy	234-090-182AC
4168	Alternate Signaling Transport Network 56 Kbps for UNITEL	234-090-183AC

4170	Inbound I800 Service Overseas Access	234-090-183AC
4180	INUP Echo Control-Ph 1	234-090-181AC
4180a	INUP Echo Control-Ph 2	234-090-182AC
4183	Automatic Speech Recognition-Ph1	234-090-203AC
4183a	Automatic Speech Recognition—AAP Software Update	234-090-203AC
4186	Universal Global Translator Fall-out Report	234-090-183AC
4189	Enhanced I800 Service Using USADirect	234-090-183AC
4201	1+Directory Link for BLDS PCP	234-090-201AC
4203	ANI Trigger Table Capacity Enhancement-Ph 1	234-090-201AC
4206	ANI Trigger Table Capacity Enhancement-Ph 2	234-090-211AC
4213	Increase International Point Codes	234-090-182AC
4215	UNITEL Network Identification Code	234-090-183AC
4216	Number Portability-AT&T	234-090-223AC
4218	ABC Terminating Switch	234-090-182AC
4219	SOP to 4ESS Interface Changes	234-090-223AC
4232	Multiple 4ESS Switch Network Announcements	234-090-183AC
4232a	Multiple 4ESS Switch Network Announcements-Ph 2	234-090-202AC
4243	Nonobtrusive D-Channel Node Pump	234-090-201AC
4268	ISAIC Usage for the GETS	234-090-184AC
4271	Network Queuing Courtesy Response	234-090-184AC
4273	Verify Messages for Routing Table	234-090-184AC
4275	SDDN-I for UNITEL	234-090-202AC
4290	Inbound Services 10-Digit GTT Recent Change Packing	234-090-184AC
4291	Inbound Services 10-Digit GTT Data Consistency Check	234-090-184AC
4292	Inbound Services 10-Digit GTT File Transfer	234-090-184AC
4306	AT&T Trigger Platform Jr.	234-090-201AC
4310	4E20 ODA Requirements for CDR	234-090-201AC
4312	SDN-NRA Sequential Dialing using ATP	234-090-201AC
4314	Generic Indicators in Tracer Records	234-090-202AC
4317	Service Count Tracer Records Unanswered/Mutilated	234-090-202AC
4322	Foreign-Billed 800 Service	234-090-183AC
4323	AT&T Circuit Switched Data	234-090-203AC
4324	Easy Reach 1+500 Dialing Plan	234-090-202AC
4344	Backward Release After ACM-INUP Trunks	234-090-184AC
4355	SDN ANI Trigger Table Indicator	234-090-201AC
4364	Switched Digital Screening	234-090-213AC
4366	Recent Change Administration System-Ph 2	234-090-202AC
4366a	Recent Change Administration System-MR to Add CLLI	234-090-184AC
4367	SRVT Compatibility With Feature 3957	234-090-184AC
4369	Cellular Mobil II Sets 62/63 ID	234-090-204AC
4372	ANI Trigger Data Proc Data Expn	234-090-203AC
4376	ISDN Operational Improvements	234-090-203AC
4388	IXC-Megacom 800 Service to an IXC With ANI	234-090-184AC

4401	IXC-Megacom 800 Service to an IXC with ANI Ph 2 Inband	234-090-184AC
4404	International Call Detail Record for SDN-Canada Cross-Border	234-090-184AC
4430	International Billing Number Screening-Ph 2	234-090-202AC
4438	Elimination of Via Routed Calls	234-090-221AC
4448	Clearback Suppression/Brazil	234-090-201AC
4449	Tones Announcement on TUP & ISUP	234-090-202AC
4464	CDRP & Multiple 4ESS Streams	234-090-221AC
4472	New Generation-ODA Provisioning Tools	234-090-201AC
4474	SDN 1+10D Dialing on Dedicated Access	234-090-202AC
4477	2NCP/CADCR Svc Assists/Handoff	234-090-212AC
4482	Foreign-Billed 800 Service-Ph 2	234-090-184AC
4506	IXC With ANI Billing Improvements	234-090-203AC
4507	Clearback Suppression Ph 2 Brazil	234-090-203AC
4508	SDN and GETS Service Mixing	234-090-184AC
4529	800 Services Account Codes	234-090-214AC
4530	I800 Billing for Mexico	234-090-202AC
4538	4ESS SPGTT Table Expansion	234-090-202AC
4539	SDI 1536 Kb/s Service	234-090-204AC
4540	SDN Access to SDN-MR to Feature 3857	234-090-202AC
4555	AT&T Trigger Platform Jr – Busy/Ring No Answer MR	234-090-202AC
4557	SDN NRA Using ASR	234-090-211AC
4559	Handling 4ESS SPI ASTN NI Backup	234-090-204AC
4564	Segmentation Directory	234-090-222AC
4569	PCP 10-Digit Delivery to PCP 2NCP	234-090-201AC
4570	Universal 1.5 Access	234-090-204AC
4575	Interim 1+500 Via the 4ESS	234-090-202AC
4579	PZM Triggered iPCC Gateway	234-090-202AC
4590	Call Forwarding for SDN/800	234-090-214AC
4591	SS7 Access to Nodal Services	234-090-203AC
4601	NAI ACG Type of Digit Coding	234-090-184AC
4603	Continuity Check on INUP Circuits 1877	234-090-203AC
4632	CDR Data Tracer Count MR	234-090-203AC
4642	GSDDN International On-Net Data Service	234-090-203AC
4650	10-Digit Trunk Group Rating Number	234-090-204AC
4655	SDN – ASTN/SGGTT Interworking	234-090-203AC
4656	800 Growth to Include 888	234-090-204AC
4658	PCP for Equal Access Cellular	234-090-204AC
4659	Calling Party Number Delivery	234-090-203AC
4673	SDN Customer Outage Protection	234-090-213AC
4677	iPCC Gateway Maintenance Enhancement	234-090-203AC
4677a	iPCC Gateway Maintenance Enhancement	234-090-203AC
4686	Carrier Identification Code Delivery	234-090-212AC
4692	Automatic Call Distributor in the Network-Ph 2	234-090-203AC

4694	Direct Link Node Capacity Upgrade-Ph 2	234-090-221AC
4696	RMS/4ESS Switch Testing Enhancement	234-090-212AC
4706	DTMF Inband ANI Delivery	234-090-204AC
4719	PACR on AT&T Trigger Platform Jr. Rls 1.0	234-090-204AC
4721	PACR to POTS Billing Fix	234-090-211AC
4739	Project Zebra (National Directory Assistance)	234-090-211AC
4741	AT&T Advanced 800 Automatic Speech Recognition Using Call Store	234-090-212AC
4744	PCP for CMC Service Type	234-090-203AC
4751	Improve NEMOS to 4ESS Interface	234-090-212AC
4751a	Merging RNMS and 4ESS/NEMOS-Ph 2	234-090-214AC
4753	MEGACOM 800 IXC With ANI-MR 02	234-090-203AC
4754	XTSI (Was 4043)	234-090-213AC
4760	ISC Composite Circuit Enhancement	234-090-212AC
4760a	ISC Composite Circuit Enhancement	234-090-221AC
4768	4ESS Signaling Management Enhancement	234-090-223AC
4769	Announcement Set B on SCS	234-090-214AC
4769a	Announcement Set B on SCS	234-090-221AC
4776	End-to-End Class Of Service Areas Increase	234-090-221AC
4776a	End-to-End Class Of Service MR 94-02 and 95-01	234-090-212AC
4779	Check Application Status	234-090-211AC
4785	Inbound I800 CSR & Enhanced Call Origination	234-090-214AC
4789	XTSI Rls 3 In-band Supv Signaling	234-090-242AC
4789L	XTSI Rls 3 In-band Supv Signaling	234-090-242AC
4790	CDRP Tracer Count Consistency	234-090-214AC
4795	USDS Phase 1.1 Support for TNR Triggers	234-090-212AC
4800	CDRI Communications Web	234-090-221AC
4800i	CDRI Communications Web-Ph 2 Tracking Encryption	234-090-214AC
4801	SCS Automatic Speech Recognition-Ph 2	234-090-214AC
4815	Disaster Recovery Enhancement-Rls 1	234-090-223AC
4815a	Disaster Recovery Enhancement-Rls 1	234-090-222AC
4815i	SDRP 1B Code	234-090-222AC
4815j	SDRP 3B Code	234-090-222AC
4839	SNPA Expansion and Handling NPA Improvement	234-090-221AC
4839	SNPA Expansion/Handling NPA Improvement LEC	234-090-221AC
4850	Foreign-Billed 800-Ph 3	234-090-212AC
4866	Routing Data Block List Verify Tool	234-090-213AC
4867	Transfer Connect Service 3.0	234-090-213AC
4870	CDRP Software Release Synchronization	234-090-204AC
4875	PACR-ATP OutofBand Enhancements for VRU-BT	234-090-213AC
4880	Segmentation Directory-Ph 2 Pkg1	234-090-231AC, Ad1
4880a	Segmentation Directory-Ph 2 Pkg2	234-090-232AC
4880b	Segmentation Directory-Ph 2 Pkg3	234-090-233AC

4880c	Segmentation Directory-Ph 2 Pkg4	234-090-234AC
4893	Universal T1.5 Access-MR to Feature 4570	234-090-204AC
4898	Service Identity Traffic Data Collection	234-090-224AC
4898b	Service Identity Traffic Data Collection	234-090-223AC
4899	High Speed Links T1 Maintenance Enhancement	234-090-222AC
4903	CCS7 Signaling Transport Footprint	234-090-213AC
4903a	CCS7 Signaling Transport Footprint-Encryption Unit	234-090-213AC
4904	Domestic ECOS Class of Service	234-090-231AC
4920	Dual Sessions for Network Elements-NEMOS	234-090-223AC
4923	Calling Party Pays Airtime-CALIPER	234-090-213AC
4924	Foreign-Billed 800-Ph 4	234-090-213AC
4928	TCAP Parameter for Transmission Enhancement Control	234-090-222AC
4940	GETS Initial Operational Capacity	234-090-213AC
4941	ADR Recording Changes for Interaction with TCS-NAP	234-090-224AC
4957	Per Announcement Information Data (PAID)	234-090-212AC
4958	Global Carrier Selection	234-090-212AC
4965	Billing Fix-Cellular Access/SDN-Ph 2	234-090-212AC
4967	Automatic Routing	234-090-241AC
4967a	Automatic Routing Ph 1 (Pre-ACM)	234-090-233AC
4967b	Automatic Routing Ph 2 (Post-ACM)	234-090-233AC
4967i	Automatic Routing-Pre-AR Structure Work	234-090-231AC
4990	Associate Announcement Number with FHC 1592	234-090-212AC
4991	Removal of Routing Prefix Codes Network Security	234-090-212AC
4995	Recent Change Administration System-MR to Feature 4366	234-090-211AC
4997	Enhanced DIF-E1 Internal Bus Mismatch Diagnostics	234-090-222AC
5000	Single Entry MRTT Counts for SAFER	234-090-211AC
5003	API Capacity Improvements	234-090-221AC
5004	ANI Data Service Vu	234-090-214AC
5005	Assignment I/O for 4ESS Switch	234-090-233AC
5013	1B Processor Tape Unit Elimination	234-090-221AC
5013i	Cable Design for TUC Elimination	234-090-222AC
5020	Short Term D-Channel Expansion	234-090-214AC
5020a	Short Term D-Channel Expansion	234-090-231AC
5024	SUME for 800/900 Number Translations	234-090-224AC
5041	XTSI TM Gen DS3 Alarms Maintenance Channel	234-090-214AC
5051	LYNX Software Upgrade	234-090-213AC
5060	Positive Lookup Table in WCS	234-090-231AC
5064	Idle Link Bandwidth Adjustment NM Controls	234-090-212AC
5072	MR to Univ T1.5 Access	234-090-212AC
5111	XTSI in I/O Msg—5111a,b,c for LEC	234-090-221AC
5111a	XTSI I/O Message Specification	234-090-214AC
5111b	XTSI in I/O Messages	234-090-221AC
5111c	XTSI in I/O Messages	234-090-222AC

5113a	XTSI Software Update Tool – Ph 1	234-090-221AC
5113b	XTSI Software Update Tool – Ph 2	234-090-223AC
5123	Network Support for 8YY	234-090-231AC
5129	Inspection II Digits/Dialed Number	234-090-231AC
5131	Service Control After 2 D3Sus Fail	234-090-221AC
5153	Consolidated 0+/- & 1+ Hotel Traffic	234-090-222AC
5158	Carrier Completion Rate Feature	234-090-241AC
5161	Switch Disaster Recovery Enhancements	234-090-234AC
5163	Positive Lookup Tools (PLUTO)	234-090-231AC
5198	CIC Based Resale	234-090-221AC
5198a	CIC Based Resale	234-090-231AC
5222	3B21D APS Upgrade—Hardware	234-090-231AC
5222i	3B21D APS Upgrade—Software	234-090-231AC
5241	Segmentation Directory Black Hole Detection & Recovery	234-090-224AC
5247	Call Turn Around	234-090-214AC
5252	800 Service DSD Fix	234-090-221AC
5308	Consolidated Access Traffic-Ph 1	234-090-224AC
5341	QuietHear MR for 109 Test Lines	234-090-221AC
5349	Correction of Collusion INUP Release Messages	234-090-222AC
5352	Modify Connected Number Screening	234-090-222AC
5353	Universal International Free Phone	234-090-223AC
5361	Interim D-Channel Expansion—HW	234-090-231AC
5370	Local Service for Nodals on 4ESS-Ph 1	234-090-222AC
5370i	Local Svc for Nodals on 4ESS-Ph 1	234-090-251AC
5371	Local Service for Nodals on 4ESS-Ph 2	234-090-223AC
5371a	Local Service for Nodals on 4ESS-Ph 2	234-090-224AC
5376	SS7 Node Buffer Size Modification	234-090-214AC
5399	Foreign-Billed 800 Service Enhancement-Ph 5	234-090-223AC
5399r	Foreign-Billed 800 Service Enhancement-Ph 5	234-090-223AC
5460	NAI-Ph 3A 4ESS & CDRP	234-090-222AC
5460a	NAI-Ph 3A MR to 5460	234-090-233AC
5505	XTSI Rapid Restore	234-090-223AC
5506	Selective Blocking of Codesets	234-090-224AC
5528	Early Answer for GETS Inbound International Calling Opt 2	234-090-223AC
5529	Interim Speech Recognition ISIAC Call Prompt	234-090-214AC
5531	MR to SI Data Collection-5-minute NEMOS Data	234-090-223AC
5531i	MR to SI Data Collection-TDAS Data	234-090-224AC
5532	Project Radar – Ph 2	234-090-231AC
5538	End Office Local Nodal (AT&T)	234-090-232AC
5563	SCS Software Update Tool	234-090-224AC
5568	9 Gigabyte Disk Units for SCS	234-090-224AC
5578	Transfer Connect Service-MR to Feature 4867	234-090-221AC
5579	SDN Access Via Network Access Platform	234-090-221AC

5589	Modification to 4557	234-090-221AC
5591	Set S DTMF to ASR Switching	234-090-221AC
5594	CPN Anomaly Report	234-090-221AC
5600	XTSI Rls 3—Digital Svc Circuits	234-090-242AC
5600L	XTSI Rls 3—Digital Svc Circuits	234-090-242AC
5613	ISDN Called Party Number Protocol Upgrade	234-090-221AC
5636	SNPA Expansion-MRs to Feature 4839	234-090-221AC
5641	Segmentation Directory Ph 3, Rel 1	234-090-242AC
5641a	Segmentation Directory Ph 3, Rel 2	234-090-243AC, Iss 2
5641b	Segmentation Directory Ph 3, Rel 3	234-090-243AC, Iss 2
5645	Local Service for Nodals Ph 2.1	234-090-224AC
5668	HSL Status Indication Busy Enhancement	234-090-223AC
5670	NAI for Direct Connect Calls	234-090-222AC
5681	Number Portability Open Portability Verify	234-090-223AC
5700	CAT FSD MRs (to Feature 5308)	234-090-224AC
5701	AAP ISDN Loopback Capability	234-090-222AC
5704	ODA Datalinking Software Tool Enhancement	234-090-221AC
5711	API Message Header Reduction-Ph 2	234-090-231AC
5724	Extend ACM Timer for CCS7	234-090-221AC
5742	Improved Codelist Verify	234-090-224AC
5754	Network Access Interruption and Directory Assistance Resell	234-090-221AC
5766	Advantis Default OLI	234-090-222AC
5773	SDN NRA Tollfree Dialed Number for CSCR	234-090-222AC
5791	Long-Term “CIC-Based NAI”	234-090-223AC
5794	SCS Announcement Seconds Expansion	234-090-224AC
5794j	SCS Announcement Seconds Expansion	234-090-224AC
5802	CIC Code Exp for 5198 & 5754	234-090-221AC
5805	Inbound Services 10-Digit GTT Table Expansion	234-090-224AC
5816	CSCI Recording	234-090-231AC
5817	International Originating Satellite Rules Modification	234-090-222AC
5822	Enhanced CIC Routing for Operator Services	234-090-233AC
5835	AAP Disk Copy Enhancement	234-090-224AC
5840	1+CIC Wholesale Features-Ph 1	234-090-224AC
5843	ISDN Operational Enhancements	234-090-242AC
5844	Announcement Set D on ISAIC	234-090-224AC
5844a	Announcement Set D on ISAIC	234-090-231AC
5874	B/RNA Cellular Monitor	234-090-224AC
5876	Segmentation Directory Recovery	234-090-243AC, Iss 2
5887	GCS Capability Near-Term Modification	234-090-222AC
5892	Transfer Connect Capacity 97	234-090-234AC
5898	Code Group Restructure	234-090-231AC
5899	MR on Feature 4323	234-090-224AC
5906	Improved Calling Party # Anomaly Report	234-090-241AC

5907	Cellular B/RNA for TC/ER Service	234-090-224AC
5915	Nodal Egress Sequential Trunk Hunt	234-090-231AC
5917	Expansion of 4ESS OSPS Table	234-090-231AC
5918	Inband Q.931 Signaling for Carrier Solutions Nodal Customers	234-090-232AC
5922	Foreign Admin Identifier Expansion	234-090-241AC
6072	OCTCP & CIC Table Expansion	234-090-231AC
6130	2000 A.D. (AT&T)	234-090-233AC
6137	Domestic ECOS: New RLI & Route Control-MR to Feature 4904	234-090-232AC
6142	Additional Support for 4ESS Local for Nodal	234-090-233AC
6142i	Additional Support for Local Nodal—OSOR	234-090-231AC
6143	Enhanced CIC Routing for Directory Assistance	234-090-233AC
6156	4ESS CMS/ESS Audit Enhancement	234-090-231AC
6164	Payphone Compensation—Ph 2	234-090-224AC
6190	AMA Recording Fix for GETS	234-090-231AC
6231	No-Loopback Continuity Check	234-090-234AC
6266	Enhanced CIC Routing for International Calls	234-090-233AC
6272	Performance Enhancements for Segmentation Directory	234-090-233AC
6273	Tones & Announcements on Unsuccessful Calls After Call Prompting	234-090-242AC
6296	Open Segment 2 of 1B File Store-3BPAS	234-090-241AC
6328	Carrier Completion Rate (5158) MR	234-090-241AC
6330	4E AT&T Digital Link LRN Capabilities	234-090-232AC
6363	Increase Number of MCT Tables	234-090-231AC
6375	Number Portability Ph 1 Architecture Extension	234-090-234AC
6413	OAS Call Processing on Inter-Toll Trunks	234-090-242AC
6426	SD CIC Based Proc & SDN Default Handling	234-090-233AC
6428	Automatic Routing (4967) MR	234-090-241AC
6468	Early Disconnect Project Radar	234-090-231AC
6483	ECOS Support of GNS Call Type (MR-3142)	234-090-231AC
6487	Int'l Toll Free Service TEST:TCAPDSD Support FSID Routing	234-090-233AC
6492	TCAP Parameter for Trans Enhancement Control	234-090-242AC
6494	Digital Link Local Service Measurement Capabilities	234-090-234AC
6500	Carrier Solutions Enhanced CIC-Based Maintenance	234-090-234AC
6512	Domestic End-to-End Class of Service	234-090-234AC
6516	4ESS Switch Routing RC/V Improvements	234-090-241AC
6516a	4ESS Routing RC/V Improvements	234-090-234AC
6516b	4ESS Routing RC/V Improvements	234-090-234AC
6516c	4ESS Routing RC/V Improvements	234-090-234AC
6516i	4ESS Routing RC/V Improvements	234-090-234AC
6563	Universal Int'l Free Phone Numb Enhancement	234-090-234AC
6605	TSAA/AVA with DL Phase 4	234-090-234AC
6617	SDN and 1+DL Feature Interaction MR	234-090-231AC
6620	MR to 5840—1+CIC Wholesale	234-090-234AC

6624	ANI Replacement on Cellular Roamer 8YY Calls	234-090-234AC
6625	Digital Link "0ZZ" on Backhauled 8YY Calls	234-090-234AC
6629	EOLN-PMO Processing of EOLN PCP Calls	234-090-234AC
6638	Ignore Calling Party # on ITFS Calls	234-090-231AC
6643	4E—NEMOS Link Upgrade	234-090-242AC
6657	MR to ADR Recording Change (4941)	234-090-234AC
6665	MR to Payphone Compensation, Phase 2	234-090-231AC
6685	Digital Link Phase 3 Equal Access Capability	234-090-242AC
6745	Terminating Traffic Architecture	234-090-233AC
6750	Dial 1 Service Integration	234-090-242AC
6757	NAI Call Redirection & ATP	234-090-233AC
6759	MR to SI Traffic Data FSD (4898, 5531)	234-090-234AC
6762	MR to 5371 FSD	234-090-242AC
6763	Impaired Via Avoidance	234-090-243AC, Iss 2
6777	DSA Based Architecture for TSAA/AVA	234-090-234AC
6881	4ESS SCS Cache Change to 256 Milliseconds	234-090-242AC, Rev1
6888	Capacity Relief on 1B Processor Memory	234-090-251AC
6896	700 PIC Verification Announcement for CSP	234-090-242AC
6938	AT&T Digital Link Phase V Architecture	234-090-251AC
6947	Segmentation Directory ND/CDN Digits Length	234-090-234AC
6955	MR to Digital Link Phase 2.1	234-090-234AC
6982	Expand ANI Trigger Table Structure Size	234-090-241AC
6990	AT&T Digital Link Ph 3 Equal Access Dial Around Capability	234-090-243AC, Iss 2
7028	Voice Over IP (VoiP) Mexico)	234-090-242AC
7038	AT&T Digital Link Ph 3 911 Capabilities	234-090-243AC, Iss 2
7063	MR to SDN Overflow Routing on Busy with ADL4	234-090-242AC, Rev1
7064	Further Expansion of OSPS Access ID Table	234-090-251AC
7067	RTNR-Type of Origination for WZ1	234-090-243AC, Iss 2
7102	Removal of Forced Overflow on User Busy for Trunks with Access IDs	234-090-241AC
7148	AT&T Digital Link Announcements – Part 1	234-090-243AC, Iss 2
7157	International Point Code Expansion	234-090-241AC
7181	Removal of NSN for ADL LNP Processing	234-090-241AC
7221	Expanding Route Skip/Cancel-(To,From) Controls	234-090-243AC, Iss 2
7222	4ESS Domain Value Output Enhancement	234-090-242AC
7236	DECOS Incoming Circuit Immediate Release	234-090-243AC, Iss 2
7240	Modified FG-D Support for ANC	234-090-242AC
7240a	Modified FG-D Support for ANC	234-090-243AC, Iss 2
7254	Restructure and Grow the Call Register	234-090-251AC
7285	ANC II/OLI Screening – Phase 1	234-090-243AC, Iss 2
7294	DCI at OLP	234-090-242AC
7312	Killing Fraudulent SDN NRA Calls	234-090-251AC
7323	ANC NANP CIC Routing	234-090-251AC

7335	Transfer Connect on ATP-Out of Band Enhancement	234-090-251AC
7344	1-Digit Translation Table Expansion	234-090-251AC
7429	Mandatory 10-Digits on LSP_LOCAL Trunks – Part 1	234-090-243AC, Iss 2
7429a	Mandatory 10-Digits on LSP_LOCAL Trunks – Part 2	234-090-251AC
7477	ALAMO (AT&T Local Access Management Option)	234-090-243AC, Iss 2
7501	Expand LACIDs to Support 856 D-channels	234-090-251AC
7506	NAI Call Redirection and LNP Interaction	234-090-243AC, Iss 2
7520	ANC Dial-Around (ADA) Blocking	234-090-243AC, Iss 2
7619	MR to 5645 – Digital Link Ph 2.1 – 8YY Screen	234-090-243AC, Iss 2
7633	MR to 7038 – Support for Deletion of CPN over AATOS Trunks	234-090-243AC, Iss 2
7673	ANC ECR for Operator Services UTA Update	234-090-243AC, Iss 2
7701	Procedure for Growing ATP TSGs	234-090-251AC

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C Input/Output Manual Pages

Purpose

This appendix lists the input and output messages for the 4E25 Release 1 Generic. A notation is included indicating whether each message is new, revised, or deleted. If the change is related to a specific feature, the feature number is included in parentheses ( ).

4ESS Input Messages

The following are 4ESS input messages for 4E25R1. They are included in input manual IM-4B-000-01.

APP:CALLTYPE	NEW
LOAD:SCS	REV
LOAD:TMSP-CREG	REV
LOAD:TMSP-MEM	REV
LOAD:TSI-CREG	REV
LOAD:TSI-MEM	REV
SET:CS	REV
SET:PS	REV
STOP:VERMSG	REV
VER:CODEGRP	REV
VER:CODEGRP-MRTI	REV
VER:CODEGRP-SDX	REV

VER:CODEGRP-SDXM	REV
VER:CODEGRP-SDXU	REV
VER:CODELIST	REV
VER:CPA-DNUM	REV
VER:EA-CID	REV
VER:EA-CONV-IIDI	REV
VER:EA-CONV-OLI	REV
VER:EA-NX	REV
VER:ECOS	REV (6888)
VER:FEN	REV
VER:LATASTAT-ARE	REV
VER:LATASTAT-MAT	REV
VER:NPADPC	REV
VER:PCP	REV
VER:RDBLIST	REV
VER:RTGLIST	REV
VER:RTNR-CIN	REV
VER:RTNR-ISW	REV
VER:RTNR-NSN	REV
VER:RTNR-RNSN	REV
VER:RTNR-RPI	REV (6888)
VER:RTNR-SII	REV
VER:SERVICE	REV
VER:TRK-COOB	REV
VER:TRK-LACID	REV
VER:TRK-LACID-SR	REV
VER:TRK-PTAN	REV

4ESS Output Messages

The following are 4ESS output messages for 4E25R1. They are included in output manual OM-4B-000-01.

DUMP:TSIMEM	REV
REPT:UTILITY	REV
RMV:XTSI	REV
VER:ADSLINK	REV
VER:CAMASCRN	REV
VER:CAMASCRN-A	REV
VER:CAMASCRN-C	REV
VER:CAMASCRN-F	REV
VER:CAMASCRN-G	REV
VER:CDB	REV
VER:CDB-UNA	REV
VER:CDGRP-CCDCON	REV

VER:CODEGRP-03	REV
VER:CODEGRP-06	REV
VER:CODEGRP-09	REV
VER:CODEGRP-12	REV
VER:CODEGRP-ALL	REV
VER:CODEGRP-CC	REV
VER:CODEGRP-CCD	REV
VER:CODEGRP-CCDA	REV
VER:CODEGRP-D03	NEW
VER:CODEGRP-D06	NEW
VER:CODEGRP-D09	NEW
VER:CODEGRP-D12	REV
VER:CODEGRP-EAR	REV
VER:CODEGRP-INTL	REV
VER:CODEGRP-LD	REV
VER:CODEGRP-LPLU	REV
VER:CODEGRP-LSDX	REV
VER:CODEGRP-MCT	REV
VER:CODEGRP-MRT	REV
VER:CODEGRP-N1	REV
VER:CODEGRP-N2	REV
VER:CODEGRP-PLU	REV
VER:CODEGRP-PRTI	REV
VER:CODEGRP-SDX	REV
VER:CODEGRP-SDXU	REV
VER:CODEGRP-TYPE	REV
VER:CRB	REV
VER:CRB-CDBI	REV
VER:CRB-UNA	REV
VER:CRBLIST-TAN	REV
VER:DIALUP	REV
VER:DPC	REV
VER:EA-CID	REV
VER:EA-CONV	REV
VER:EA-F-IIDIGIT	REV
VER:EA-FUNC-OLI	REV
VER:EA-NX	REV
VER:EA-SII	REV
VER:EA-ZZ	REV
VER:ECOS-AREALIS	REV (6888)
VER:FEN	REV
VER:GETS-ANN	REV
VER:LATASTAT-ARE	REV
VER:LATASTAT-MAT	REV
VER:MISC-AINITM	REV

VER:MISC-AMA	REV
VER:MISC-ANN	REV
VER:MISC-FHT-USD	REV
VER:MISC-FHTEASY	REV
VER:MISC-TOS	REV
VER:MSN	REV
VER:NAILUP	REV
VER:NDB-NDBI	REV
VER:NDB-NDBLIST	REV
VER:NPADPC	REV
VER:PASANN	REV
VER:PASANN-ANN	REV
VER:PASCTHRU	REV
VER:PASTVOTE-M	REV
VER:PASTVOTE-S	REV
VER:PCP-NPASPLIT	REV
VER:PCP-SCT	REV
VER:RDB-INCHAIN	REV
VER:RDB-INTL	REV
VER:RDB-LISTTH	REV
VER:RDB-LISTTW	REV
VER:RDB-RDBIGR	REV
VER:RDB-UNA	REV
VER:RDBLIST-ABC	REV
VER:RDBLIST-FHT	REV
VER:RTNR-ISW	REV
VER:RTNR-NSN	REV
VER:RTNR-RN	REV
VER:RTNR-RPI	REV (6888)
VER:RTNR-SII	REV
VER:RTNR-TSDT	REV
VER:RTNR-TSGUSE	REV
VER:SCS-FHT	REV
VER:SD	REV
VER:SERVICE	REV
VER:TRK	REV
VER:TRK-C5MISC	REV
VER:TRK-CCITT5	REV
VER:TRK-CCMISC	REV
VER:TRK-CCS	REV
VER:TRK-CCS7	REV
VER:TRK-COOB	REV
VER:TRK-D1D2	REV
VER:TRK-DCHAN	REV
VER:TRK-INTTSN	REV

VER:TRK-ISDN	REV
VER:TRK-MISC	REV
VER:TRK-MISCES	REV
VER:TRK-SCGA	REV
VER:TRK-TSN	REV
VER:TSG-IN1WAY	REV (5370I, 6685, 7028, 7038)
VER:TSG-LIST	REV
VER:TSG-NONMSG	REV
VER:TSG-OUT1WAY	REV (5370I, 6685, 7028, 7038)
VER:TSG-TRUNKS	REV
VER:TSG-TWOWAY	REV (5370I, 6685, 7028, 7038)
VER:TSG-VFL	REV

4ESS Proprietary Input Messages

The following are 4ESS proprietary input messages for 4E25R1. These messages will be included in proprietary input/output manual 4B-000-01AC.

VER:CODEGRP-PORT	NEW (7070)
VER:CODEGRP-RSVD	NEW (7070)
VER:MISC-ADABLK	NEW (7520)
VER:MISC-FHTOSID	REV (7064)
VER:RTGLIST	NEW
VER:SERVICE	NEW

4ESS Proprietary Output Messages

The following are 4ESS proprietary output messages for Generic 4E25R1. These messages are included in proprietary input/output manual 4B-000-01AC.

VER:CODEGRP-PORT	NEW (7070)
VER:CODEGRP-RSVD	NEW (7070)
VER:MISC-ADABLK	NEW (7520)
VER:MISC-FHTOSID	REV (7064)
VER:SERVICE	NEW

APS Input Messages

The following are APS input messages for 4AP18. These messages are included in input manual IM-4A-000-01.

COPY:T-TOP
LOAD:TLP
LOAD:UPDATE
LOAD:UPDATE-SR

APS Output Messages

The following are APS output messages for 4AP18. These messages are included in output manual OM-4A-000-01.

ANALY:TLPFILE-B
APP:DCI-A
APP:DFC-A
OP:G-READLOG
REPT:ECD
REPT:PCPAUD
COPY:T-TOP
REPT:CU
REPT:RTS
LOAD:TLP
LOAD:UPDATE
LOAD:UPDATE-SR
VER:ATP-ATV