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Bell Labs Innovations

4ESS™ Switch Product Release Document

4E24 Release 3 Generic

234-090-243AC
Issue 2, October 1999

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About This Document

Purpose

The purpose of the Product Release Document (PRD) is to provide customers with information pertaining to the new features that are introduced in the *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 4E24 Release 3 Generic, plus features that are released as Software Change Packages (SCPs) in Generic 4E24.

Reason for Reissue

This document is reissued to add two chapters on SCP features that have subsequently been added to Generic 4E24 (Features 7633 and 7673).

This document also consolidates three PRD chapters (Features 7477, 7520, and 7619) that were issued as Revision 1 to 234-090-243AC.

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 4E24 Release 3 features, not the long-term maintenance. Since other documentation is used for the operation and maintenance of features after their introduction into the *4ESS* switch, this PRD will not be reissued (except to add new features).

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 4E24 Release 3 Generic and 4E24 SCPs contains 20 new features. Each chapter in this document provides information about these features. The chapters are in numerical order according to feature number. The chapter titles are also the feature names.

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

Chapter 1: *Y2K Century Bit on IBM Tape Header (572).*

The IBM Automatic Message Accounting (AMA) tape header includes a century bit. This bit is populated for the year 2000 (Y2K).

Chapter 2: *Segmentation Directory Phase 3 – Release 2 (5641a).*

The primary objective of this feature is to migrate Carrier Solutions to the Segmentation Directory (SD) architecture.

Chapter 3: *Segmentation Directory Phase 3 – Release 3 (5641b).*

The primary objective of this feature is to migrate Global Software Defined Network-Inbound (GSDN-I) and Switched Digital International-Inbound (SDI-I) capabilities to the Segmentation Directory (SD) architecture.

Chapter 4: *Segmentation Directory Disaster Recovery (5876).*

This feature specifies the network, operational, and service operation requirements needed to support the Segmentation Directory (SD) Service Disaster Recovery feature.

Chapter 5: *Impaired Via Avoidance Feature (6763).*

This feature reduces the incidents of the *4ESS*™ switch malfunctioning (impaired or congested state).

Chapter 6: *AT&T Digital Link Phase 3 – Equal Access Dial-Around Capability (6990).*

This feature describes the requirements to support the AT&T Digital Link (ADL) Phase 3—Equal Access (EA) Dial Around Capability for Business Markets Division (BMD) customers who have direct T1.5 connections from a Private Branch Exchange (PBX) to the AT&T Switched Network (ASN).

Chapter 7: *AT&T Digital Link Phase 3 – 911 Capabilities (7038).*

This feature supports the AT&T Digital Link (ADL) Phase 3 – 911 (Emergency) capabilities for Business Markets Division (BMD) customers with direct T1.5 connections from a Private Branch Exchange (PBX) to the AT&T Switched Network (ASN).

Chapter 8: *Real-Time Networking Routing–Type of Organization for World Zone 1 (7067).*

This feature defines how Type of Origination (TORIG) is derived on the international Trunk Sub-Groups (TSGs) and implements International Switched Transit Service – Carrier Specific Routing (ISTS-CSR) feature (3819) for calls originating from International World Zone 1 (IWZ1) countries.

Chapter 9: *AT&T Digital Link Announcement Platform – Phase 1 (7148).*

This feature allows announcements to be played based on specific 10-digit line numbers. This means that the *4ESS™* switch can play Public Announcement System (PAS) announcements from 10-digit Positive Look Up [PLU (table)] routing entries.

Chapter 10: *Expanding Route Skip, Cancel – To and Cancel – From Controls (7221).*

This feature expands the Route Skip, Cancel – to and Cancel – From controls to better manage the traffic at the Network Operations Center (NOC). The new capabilities described by this feature are derived from the NOC via the Network Management Operations System (NEMOS).

Chapter 11: *Domestic End-to-End Class of Service Incoming Circuit Immediate Release (7236).*

This feature extends Class of Service (COS) and bandwidth management call processing found in Real-Time Network Routing (RTNR) to the access and egress networks.

Chapter 12: *Feature Group D Support for AT&T Network Connecting Enhancement (7240a).*

This feature is an enhancement to Feature 7240. With this feature, Feature Group D AT&T Network Connection (ANC) Multi-Frequency (MF) calls without Automatic Number Identification (ANI) and Information Indicator (II) digits are recorded by the *4ESS*™ switch as non-equal access calls. This allows the Call Detail Reporting Platform (CDRP) to populate the appropriate Automatic Message Accounting (AMA) tables with hexadecimal Fs, including the sign character, and results in the generation of AA records.

Chapter 13: *AT&T Network Connections Interexchange Identification/Originating Line Information Screening Phase 1 (7285).*

This feature provides better management for ANC Resale calls with respect to II/OLI screening functions in the *4ESS*™ Switch.

Chapter 14: *Mandatory 10 Digits on LSP_LOCAL Trunks (7429).*

The *Mandatory 10 Digits on the Local Service Provider – Local Trunks (LSP_LOCAL)* feature 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).

In Release 4E24 (Part 1 of the feature), the *4ESS* switch accepts either a 7-digit or 10-digit Called Party Number (CdPN) on LSP_LOCAL trunks depending on the setting of the trunk subgroup spare bit defined by this feature.

Chapter 15: *Network Access Interrupt Call Redirection and Local Number Portability Interaction (7506).*

This feature allows NAI Call Redirection to occur, as specified in Feature 5460, when the LNP is active.

Chapter 16: *AT&T Local Access Management Option Expansion Feature (7477).*

The *AT&T Local Access Management Option (ALAMO) Expansion* Feature allows AT&T circuit-switched long distance (1+) terminating traffic to be routed to an overlay network. Calls are rerouted at the Originating AT&T *4ESS*™ Switch (OAS) to this overlay network, whereby the calls are completed.

This feature also builds on the Terminating Traffic Architecture (TTA) to extend the route advance capability to Q.931 trunks regardless of the Primary Rate Interface (PRI) provisioned on outgoing trunks.

Chapter 17: *AT&T Network Connection Dial-Around Blocking Feature (7520).*

This feature is developed to block all ANC calls that are originated as dial-around calls.

Chapter 18: *MR to Digital Link Phase 2.1 Feature (7619).*

This feature ensures a 10-digit Charge Number (CN) delivery on the backhauled call by causing the *4ESS*™ switch to always set the outgoing CN equal to the Local Automatic Number Identification (LANI).

Chapter 19: *Support for Called Party Number Over AATOS Trunks Feature (7633).*

The AT&T Direct Link (ADL) Phase 3 – 911 Capabilities Feature allows the *4ESS* switch to accept and route calls from ADL subscribers. This feature allows the *4ESS* switch to route these calls to a live operator if the 911 tandem is unavailable.

Chapter 20: *ANC ECR for Operator Services UTA Update Feature (7673)*

This feature removes an existing interaction between ANC Enhanced Operator Services and the UT1.5 Access Operator feature.

Chapter 21: *Release Summary – 4E24 Release 3 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 Y2K Century Bit on IBM Tape Header Feature (572)

Overview

Description The IBM Automatic Message Accounting (AMA) tape header includes a century bit. This bit is populated for the year 2000 (Y2K).

Purpose This feature applies to *4ESS*™ switch offices using the AMA tape.

The purpose of this chapter is to provide information on how the tape header is populated for Y2K. There is no action required of the user. The tape will have the appropriate header information when you receive it.

Feature 572 is a Modification Request (MR) to Feature 6130. Feature 6130 was documented in the Product Release Document (PRD) for 4E23 Release 3 (234-090-233AC).

□

Contents This chapter contains the following topics:

Feature Description

Description

This feature applies to 4ESS switch offices using the AMA tape. The HDR1/EOF1 date label is populated to comply with the IBM Y2K standard.

If the century bit is left blank, it indicates the years 1900 to 1999. If the century bit is populated with "0" (zero), it indicates the years 2000 to 2099.

Date Label Changes

The HDR1/EOF1 date label is populated to comply with the IBM Y2K standard as follows:

cyyddd

Where:

- c= century indicator (blank = 1900 – 1999, 0 = 2000 – 2099)
- yy = year (00 – 99)
- ddd = day of year (001 – 366)

□

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 on Generics 4E23 or 4E24 for this feature to be fully operational.

Feature Activation This feature is activated by a Broadcast Warning Message (BWM).

□

Input/Output Manual Pages (Not Affected)

2 Segmentation Directory Phase 3 – Release 2 Feature (5641a)

Overview

Objectives The primary objective of this feature is to migrate Carrier Solutions to the Segmentation Directory (SD) architecture.

Purpose The purpose is to deploy this service in Phase 3 – Release 2 of the SD.

Contents This chapter contains the following topics:

Feature Description

Background

Carrier Solutions is a new Business Market Division (BMD) service that allows AT&T to sell transport capability and featured calls to new long distance market entrants, existing Inter-Exchange Carriers (IXCs), wireless carriers, and switchless resellers. The access options for Carrier Solutions service include both switched access and direct connect. For switched access, the Local Exchange Carrier (LEC) routes Carrier Solutions calls either on a trunk group dedicated to a specific reseller or on a Carrier Identification Code (CIC) based integrated trunk group option. The BMD also offers a direct connect option to Carrier Solutions customers; each nodal trunk is dedicated to one reseller.

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

In SD Phase 3, the CIC is an additional piece of information that, when received by the SD, is used as part of the Automatic Number Identification (ANI) key in the SD when determining an ANI match. Therefore, the same ANI can actually point to two different Service Processors (SPs) depending upon whether the CIC is an AT&T CIC or a Carrier Solutions CIC.

Feature Dependencies

Feature 6426 (4E23 Release 3 Generic, 234-090-233AC) must be turned on prior to setting Carrier Solutions Transition Status to SD Mode of Operation (SMO) at any *4ESS* switch. If Carrier Solutions calls are transitioned to SMO and Feature 6426 is "OFF", improper processing of Carrier Solutions calls will occur because SD does not use the CIC to influence call processing.

For Carrier Solutions to be in SMO mode, either Feature 6143 or 6266 (4E23 Release 3 Generic, 234-090-233AC) must be turned on; otherwise the calls are treated in PMO and no SDQuery is sent for them.

Prior to deploying SD Phase 3 capabilities, the following Carrier Solutions features must be turned on in the network:

- 5198 – CIC Based Determination, 4E22 Release 1 Generic (234-090-221AC)
- 5791 – CIC Based NAI, 4E22 Release 3 Generic (234-090-223AC)
- 5840 – 1+CIC Wholesale, 4E22 Release 4 Generic (234-090-224AC)
- 5918 – Inband/Q.931 Signaling for Carrier Solutions, 4E23 Release 2 Generic (234-090-232AC)

Segmentation Directory Features

Table 2-A lists the SD features to date, along with their respective releases.

Table 2-A. Segmentation Directory Features

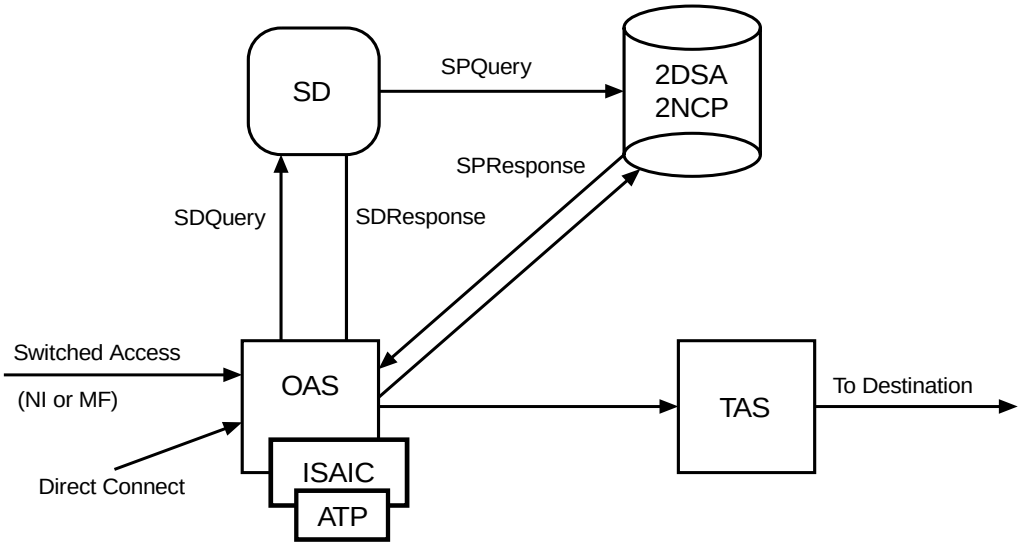
Feature	Feature Number	Release
SD Phase 1	4564	22R2
SD Black Hole Detection	5241	22R4
SD Phase 2 – Release 1	4880	23R1
SD Phase 2 – Release 2	4880a	23R2
SD Phase 2 – Release 3	4880b	23R3
SD Performance Enhanced	6272	23R3
SD CIC Based	6426	23R3
SD Phase 2 – Release 4	4880c	23R4
SD Phase 3 – Release 1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

Call Flow

The following call flows apply to Carrier Solutions Service. Figure 2-1 illustrates the network architecture for Carrier Solutions call flows:

Carrier Solutions 10-Digit ANI Match Only

1. The SD receives the SDQuery message from the *4ESS* switch and searches Directory Function Server (DFS) Directory Tables using ANI key, Dialed Number (DN), Service-Type Key, and Carrier Selection Key.
2. The SD finds a match on 10-Digit ANI. The SD checks the SD Transition Status of the Precedence Index (PI) associated with the ANI record and the *4ESS* switch Point Code Subsystem Number (PC/SSN). The SD Transition Status is set to SMO in this case.
   - The SD sends an SPQuery message to the appropriate 2DSA/2NCP. The ANI Feature Indicators with non-default values are included in SPQuery.
   - The SD also sends an SDResponse message to the *4ESS* switch with operation "Wait".
3. The SP receives SPQuery. Based on the Customer ID, 2DSA/2NCP retrieves the customer record and executes the customer logic. The SP returns an SPResponse message back to the *4ESS* switch. The Service Processor Service Identification (SPSI) value "Carrier Solutions" and ANI Feature Indicators with non-default values are included in switch capability parameters of the SPResponse message.
4. The *4ESS* switch acts on the information provided by the SPResponse message.
   - The *4ESS* switch appends the appropriate modules, based on the receipt of an SPSI="Carrier Solutions".
   - If the call is allowed, and the routing number is NPA-555-1212, the *4ESS* switch constructs a 10-Digit index number and searches the Operator Service Position System (OSPS) Access ID (OAID) table, routes the call accordingly and appends module 941 for Carrier Solutions Nodals.
   - If the call is allowed, and the routing number is an international call in the form CC+NN, the *4ESS* switch constructs a 10-Digit index number and searches the OAID table, and routes the call accordingly.
   - If the call is to be terminated, the *4ESS* switch final-handles the call. **End of Call Flow.**



Legend:

ATP - AT&T Trigger Platform
DSA - Direct Services Application
ISAIC - Improved Service Announcement and Information Collection
NCP - Network Control Point
OAS - Originating AT&T Switch
SD - Segmentation Directory
TAS - Terminating AT&T Switch

tpa 852550-01

Figure 2-1. Carrier Solutions Call Flow

Carrier Solutions CIC Match Only

1. The SD receives the SDQuery message from the *4ESS* switch and searches Directory Function Server (DFS) directory tables using ANI key, Dialed Number (DN), Service Type Key, and Carrier Selection Key.
2. The SD does not find a match on 10 Digit ANI.
3. The SD searches the CIC value in the CIC Directory Table. The SD finds a CIC match. The SP index associated with this CIC record is "0", causing SD to send an SDResponse message back to the *4ESS* switch with operation "Proceed-Normal". The CIC Feature Indicators are included in the ANI Feature Indicators parameter if non-default values as provisioned.
4. The *4ESS* switch processes the call as a Carrier Solutions call.
   - Prior to entering default treatment for Carrier Solutions Service, the *4ESS* switch queries Network Access Interruption (NAI).
   - The *4ESS* switch appends Module 941 to the AMA record.
   - If the Called Party is NPA-555-1212, the *4ESS* switch constructs a 10-Digit index number and searches the OAID table, routes the call accordingly and appends Module 941 for Carrier Solutions Nodals.
   - If the Called Party is an international call in the form CC+NN, the *4ESS* switch constructs a 10 Digit index number and searches the OAID table, and routes the call accordingly.

End of Call Flow.

Carrier Solutions 10-Digit ANI Match or CIC and GSDN-I DN Match

The situation where both Carrier Solutions 10-Digits match/CIC match and GSDN-I DN match are found in SD, should not happen. In the event that this situation occurs, the call should be treated as a GSDN-I call, and SD gives the GSDN-I DN match precedence over the Carrier Solutions 10-digit ANI match/CIC match.

Carrier Solutions 10-Digit ANI Match or CIC Match and 8YY 10-Digit DN Match or 3-Digit 8YY Match

If both a CIC match/10-digit ANI match and a 10-digit 8YY DN or 3-digit DN are found, 8YY 10 digit/3-digit DN match should have a higher precedence. In SD Phase 3 time-frame, the SD sends "Revert to PMO" to the *4ESS* switch. This is because the 8YY service would not have transitioned into SMO. The *4ESS* switch processes the SDResponse message and routes the call in PMO (8YY routing with SST set to RSLDS and Reseller Indicator set to "1" in Module 941.

Carrier Solutions 10-digit ANI Match or CIC Match and UIFN Match

If both a CIC match/10-digit ANI match and a UIFN (800 + 8D) match are found, UIFN match should have a higher precedence. In SD Phase 3 time-frame, the SD sends "Revert to PMO" to the *4ESS* switch. This is because the UIFN service would not transition to SMO. The *4ESS* switch processes the SDResponse message and routes the call in PMO (UIFN routing with SST set to INWATS and Reseller Indicator set to "1" in Module 941).

Carrier Solutions CIC Match or 10 Digit ANI Match and 900 Match

If both CIC match or 10-digit ANI match and a 900 match are found in the SD for a call, then 10-digit ANI/CIC match should have a higher precedence over 900 DN match. This call flow is possible for DLN intercept cases only. Based upon current PMO provisioning, the *4ESS* switch block carrier solution calls that arrive at the *4ESS* switch with 900 as DN. The SMO provides the same result per the following processing:

1. The SD receives the SDQuery message from the *4ESS* switch and searches DFS directory tables using ANI Key, DN Key, Service Type Key, and Carrier Selection Key.
2. The SD finds a match on 10-digit ANI or CIC Directory Table and 900 DN match.
3. The SD sends either "Proceed – Normal" (for CIC match) or "Wait" (for 10-digit ANI match) to the *4ESS* switch.
4. The *4ESS* switch ignores the SDResponse because the 1B will have already blocked the call due to provisioned data that final-handles Carrier Solution calls that arrive at the *4ESS* switch with NPA 900.

Carrier Solutions CIC Match or 10-Digit ANI Match and 3-Digit 710 DN Match

If both CIC match or 10-digit ANI match and a 3-digit 710 DN match are found in SD, CIC match/10 digit ANI match should have a higher precedence over 3-digit 710 match. This call flow is possible for DLN intercept cases only. Based on current PMO provisioning, the *4ESS* switch block carrier solution calls that arrive at the *4ESS* switch with 710 as DN. The SMO provides the same result per the following processing:

1. The SD receives the SDQuery Message from the *4ESS* switch and searches DFS directory tables using ANI Key, DN Key, Service Type Key, and Carrier Selection Key.
2. The SD finds a match on 10-digit ANI or CIC in the CIC Directory Table and 3-digit 710 DN match.
3. The SD sends either ”Proceed – Normal” (for CIC match) or “Wait (for 10-digit ANI match) to the *4ESS* switch.
4. The *4ESS* switch ignores the SDResponse because the 1B will already have blocked the call due to provisioned data that final-handles Carrier Solution calls that arrive at the *4ESS* switch with NPA 710.

Carrier Solutions CIC Match or 10-Digit ANI Match and 500 Match

If both CIC match or 10-digit ANI match and a 500 DN match are found in SD, CIC match/10-digit ANI match should have a higher precedence over 500 match. This call flow is possible for DLN intercept cases only. Based on current PMO provisioning, the *4ESS* switch block carrier solution calls that arrive at the *4ESS* switch with 500 as DN. The SMO provides the same result per the following processing:

1. The SD receives the SDQuery message from the *4ESS* switch and searches DFS directory tables using ANI Key, DN Key, Service Type Key, and Carrier Selection Key.
2. The SD finds a match on 10-digit ANI or CIC in the CIC Directory Table and 500 DN match.
3. The SD sends either ”Proceed – Normal” (for CIC match) or “Wait (for 10 digit ANI match) to the *4ESS* switch.
4. The *4ESS* switch ignores the SDResponse because the 1B will already have blocked the call due to provisioned data that final-handles Carrier Solution calls that arrive at the *4ESS* switch with NPA 500.

Provisioning

SD-Type Indicator

A new SD-Transition Type Indicator (10) in structure **OD4SDTRSTAT** is assigned for the Carrier Solutions feature.

Table 2-B lists the new and existing status indicators.

Table 2-B. Transition-Type Status Indicators

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

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Recording (Not Affected)

Network Management

Measurements New measurements were added for SD Phase 3. Refer to Feature 5641, *SD Phase 3 - Release 1* (4E24 Release 2 Generic, 234-090-242AC) for these measurements.

Default-Handling If the *4ESS* switch determines that it must default-handle a call, and if the call is a Carrier Solutions call, the *4ESS* switch appends module 941 to the AMA record indicating it is a Carrier Solutions call.

Maintenance/Troubleshooting (Not Affected)

Transition Considerations

Feature Deployment All SD sites in the network must be upgraded to Phase 3 capabilities before any *4ESS* switch has its Carrier Solutions Transition Type set to SMO.

Feature Activation This feature is turned on automatically with software deployment; however, all *4ESS* switches must be running the 4E24 Generic, Release 3 Generic before transitioning to the Carrier Solutions service.

Input/Output Manual Pages (Not Affected)

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3 Segmentation Directory Phase 3 – Release 3 Feature (5641b)

Overview

Objectives The primary objective of this feature is to migrate Global Software Defined Network-Inbound (GSDN-I) and Switched Digital International-Inbound (SDI-I) capabilities to the Segmentation Directory (SD) architecture.

Purpose The purpose is to deploy these services in Phase 3 – Release 3 of the SD.

Contents This chapter contains the following topics:

Feature Description

Background

The primary objective of SD Phase 1 was to deploy the basic SD architecture capabilities in the network and test them with a service, Positive Call Processing (PCP).

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

- Software Defined Network (SDN)
- Universal Subscriber Data Structure (USDS)
- Plain Old Telephone Services (POTS)/BLDS
- PCPCellular
- Switched Digital Service (SDS).

The primary objective of Phase 3 is to continue migrating services to the SD architecture. Those services are as follows:

- Switched Digital International – Inbound (SDI-I)
- Global SDN (GSDN)
- Government Emergency Telecommunications Service (GETS)
- Carrier Solutions.

Segmentation Directory Features

Table 3-A lists the current SD features, along with their respective releases.

Table 3-A. Segmentation Directory Features

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

SD Test Query Access-Type Parameters

For incoming international calls, new values in the "Access Type" parameter in the SDQuery message have been added as follows:

- **IWZ1** – if IWZ1 Trunk Subgroup (TSG) parameter is set to **YES**
- **TUP-Data** – if ISC=TUP and the TUP IAM have J-bit=**1**
- **TUP-Data** – if ISC=TUP and the TUP IAM has J-bit=**1** and arrived from an IWZ1 location.

Call Flow

SDS/SDI 700 DN Match Only

The following call flow starts at the point where SD receives an SDQuery message from the *4ESS* switch:

1. The SD receives SDQuery message (includes new Access Type values) and searches the DFS directory tables using ANI, DN, Service Type, and Carrier Selection Keys. The SD finds a DN match only. The SD checks the SD Transaction Status of the Precedence Index (PI) associated with the DN record and the *4ESS* switch Point Code/Subsystem Number (PC/SSN). The Transaction Status is set to SD Mode of Operation (SMO).
2. The SD sends an SPQuery (TCAP BEGIN with a prearranged END) message which contains the PI associated with the Dialed Number (DN) record, to the 2DSA/2NCP and an SDResponse message to the switch with operation of "Wait"
3. The switch receives the SDResponse message with operation of "Wait", and waits for instructions from the 2DSA/2NCP.
4. The 2DSA/2NCP receives the SPQuery. The SPQuery (TCAP BEGIN with prearranged END) message contains the "Access Type" parameter and the "Precedence Index" parameter.

   Data derivation for a 700-73X dialed number is required when a TUP call receives a 56kbps data rate derived by the switch. For a 700-56X dialed number this is appropriate, but for 700-73X dialed numbers the valid rate is 64kbps. Data-rate derivation is therefore required for 700-73X dialed numbers. Based on the customer ID, 2DSA/2NCP retrieves the customer record; based on the 700 number received, determines if data rate derivation is required, and continues call processing as prescribed in the customer record, as follows;

   - If the PI parameter is not received or the PI values do not correspond to a valid PI combination in SDS MR, and SPResponse (TCAP BEGIN with a prearranged END) message is sent to the switch to terminate the call. *Proceed to Step 6.*

- If the Access Type is not International, IWZI, or TUP-Data and the higher "PI=18" (SDS/SDI DN) and lower "PI=0" (no lower PI Value) this is a domestic call without an ANI match. An SPResponse (TCAP BEGIN with a prearranged END) is sent to the switch to terminate the call. *Proceed to Step 6.*

The following three scenarios are for international calls without an ANI match, higher PI=**18**, and lower PI=**0**.

- If the Access type = TUP-Data and the dialed number is 700-73X format, SDS CAL logic ignores the existing data rate, derives a data rate of 64kbps unrestricted, and suppresses billing. Call continues per existing requirements. An SPResponse (TCAP BEGIN with pre-arranged END) message is sent to the switch. *Proceed to Step 5.*
- If the Access Type = TUP-Data and the dialed number is not 700-73X format (that is, it is 700-56X or 700-X56 format), data rate derivation is not required and SDS CAL uses the existing data-rate received in the TCAP message and suppresses billing. Call continues as per existing requirements. An SPResponse (TCAP BEGIN with pre-arranged END) message is sent to the switch. *Proceed to Step 5.*
- If the Access Type = International or IWZI, data rate derivation is not required and SDS CAL Logic uses the data rate received in the TCAP message and suppresses billing. An SPResponse (TCAP BEGIN with a prearranged END) is sent to the switch. *Proceed to Step 5.*

5. The switch receives the SPResponse message with SP Service Identification of "SDS" included in the SD-Correlate operation, and based on the information received from the 2DSA/2NCP, routes the call based on existing instructions. **End of Call Flow.**
6. The *4ESS* switch receives the SPResponse message with SP Service Identification of "SDS" included in the SD-Correlate operation. The 2DSA/2NCP instructs the *4ESS* switch to play an announcement and terminate the call. **End of Call Flow.**

GSDN 198 DN Match Only

The following call flow covers the scenario where SD finds a match on DN only and the Transition Status of the matched DN record is **SMO**.

1. The SD receives SDQuery from the switch. The SD searches the DFS directory table using ANI, DN, Service Type, and Carrier Selection Keys. The SD constructs the DN key using the called party number (for example, 198 + CID + TNRN). The DN key is used to search a new non 10-digit range table that can handle 13-digit dialed numbers.
2. The SD finds a DN match only. The SD checks the SD Transition Status of the Precedence Index (PI) associated with the DN record and the *4ESS* switch PC/SSN. The SD Transition Status is set to **SMO**.
3. The SD sends an SDQuery (TCAP BEGIN with a prearranged END message) to the 2DSA/2NCP.
4. The SD sends an SDResponse message to the switch with operation of "Wait".
5. The switch receives the SDResponse message with operation of "Wait" and waits for instructions from 2DSA/2NCP.
6. The 2DSA/2NCP receives the SPQuery message. Based on the customer ID, 2DSA/2NCP retrieves the customer record.
7. Call processing is done as prescribed in the 2DSA/2NCP customer record, as follows:
   - The service logic must recognize the call as GSDN-I call based on the "198" prefix in the dialed number. Call processing proceeds as though the SOI was sent to inbound and already screened.
   - If a terminating announcement is required to be played, the 2DSA/2NCP sends a TCAP BEGIN with a prearranged END message (SPResponse) to the switch. An SPSI of SDN is included in the SD Correlate operation which indicates to the *4ESS* switch that further processing should be per existing procedures for the SDN service.
   - If the call is allowed, then 2DSA/2NCP sends the routing instructions in a TCAP BEGIN message with a prearranged END message (SPResponse) to the switch. An SPSI of SDN is included in the SD Correlate operation which indicates to the *4ESS* switch that further processing should be done per existing procedures for the SDN service.

8. Based on instructions for 2DSA/2NCP, one of the following occurs:
   - If the call is allowed (that is, 2DSA/2NCP instructing the switch to route the call), the switch routes the call to the NANP or APN routing number returned from 2DSA/2NCP. No AMA record is generated but the switch generates an ICDR record as in all incoming international calls for traffic settlement purposes.
   - If the call is denied (that is, the 2DSA/2NCP instructs the switch to play terminating announcement and terminate the call), the switch plays announcement and terminates the call.

   End of Call Flow.

GSDN 198 Dialed Number Match and SDN ANI Match

A GSDN 198 Dialed Number match and SDN ANI match should not normally occur. However, such a match is possible in the case of some network interconnect calls from Canada. In these instances, the GSDN DN match has a higher precedence, and the call is processed as previously described for GSDN 198 DN match only.

GSDN-I DN Match and all other Non-SDN ANI, Non-Carrier Solution ANI Match

A GSDN 198 DN match and a non-SDN, non-Carrier Solutions ANI matches (that is PCP, PCP Cellular, SDS, USDS, and EOLN *MEGACOM** ANIs) should not occur. If for some reason it does occur, the match results in a N.A. indication in SD. This results in the SD sending a proceed response to the *4ESS* switch. Per new SD default-handling logic, the *4ESS* switch kills the call.

GSDN-I DN Match and a Carrier Solutions ANI or CIC Match

A GSDN-I 198 DN match and a Carrier Solutions ANI or CIC match should not occur. If for some reason this occurs, then GSDI-I takes precedence over Carrier Solutions and the call is treated as a GSDN-I call.

* Registered service mark of AT&T

Provisioning

SD Transition Type Indicator

Two new SD Transition-Type Indicators (8 for SDI-I and 9 for GSDN) in structure **OD4SDTRSTAT** is assigned for the Carrier Solutions feature.

Table 3-B lists the new and existing status indicators.

Table 3-B. Transition-Type Status Indicators

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

* Registered service mark of AT&T

Recording (Not Affected)

Network Management

Measurements

New measurements were added for SD Phase 3. Refer to Feature 5641, *SD Phase 3 – Release 2* (4E24 Release 2 Generic, 234-090-242AC) for these measurements.

Default-Handling

If the *4ESS* switch default-handles a call with a 13-digit DN and the first three digits are "198", the switch default-handles the call using the same treatment as the invalid treatment in the GSDN-I Pre-Translator logic.

Maintenance/Troubleshooting (Not Affected)

Transition Considerations

Feature Deployment

All SD sites in the network must be upgraded to Phase 3 capabilities before any *4ESS* switches have its GSDN-I or SDI-I Transition Type set to SMO.

Feature Activation

This feature is turned on automatically with hardware and software deployment; however, all *4ESS* switches must be running the 4E24, Release 3 Generic before transitioning to the SDI-I and GSDS services.

Input/Output Manual Pages (Not Affected)

4 Segmentation Directory Disaster Recovery Feature (5876)

Overview

Objectives This feature specifies the network, operational, and service operation requirements needed to support the Segmentation Directory (SD) Service Disaster Recovery feature.

Purpose This feature provides a disaster recovery capability that permits the *4ESS*™ switch to use a backup SD site in the event of an outage affecting the primary SD sites.

Contents

This chapter contains the following topics:

Feature Description

Background

Segmentation Directory (SD) is considered a critical network element in the AT&T Switched Network (ASN), since it provides a centralized directory server function for all featured calls requiring a Service Processor (SP). Due to its key role, it was agreed that the SD must be supported by a service disaster recovery plan. As services migrate to the SD architecture, the current SD service disaster recovery plan must be updated to meet the needs of those services as well as align them with the network goal of removing service dependency on the *4ESS* switch. The existing plan of record for SD service disaster recovery for SD Phase 1 and Phase 2 relies on the manual ability to roll-back to the Present Mode of Operation (PMO) supported by the *4ESS* switch and requires provisioning of the *4ESS* switch tables (ANI Trigger Table, Self-Provisioning Global Title Table via Universal Global Title Table) and other network elements. This dual provisioning strategy was never intended as a long-term solution for SD service disaster recovery and it is the goal of this feature to supply a more robust SD service disaster recovery plan.

Description

The SD service disaster recovery architecture preserves the SD function for all present and future services in the event of a correlated SD failure, where the SD function is defined as routing to the correct SP based on defined rules. The overall goal of the service disaster recovery plan is to protect call completion first, SP routed featured calls second, and non-SP routed featured calls (that is, those with ANI Feature Indicators) third.

Failure Types

A correlated feature can be triggered by a common stimulus received by all SDs, or any other events that cause the availability of the Directory Function Server (DFS) in the network to fall below a certain threshold within a short period of time. The following common stimuli are identified as potential triggers of a correlated failure:

- The stimulus broadcast of a Business Unit (BU) provisioning update
- The stimulus broadcast of application level Network Management (NM)/signaling messages (for example, from an SP to all the SDs)

- A common procedure error
- A common software design flaw
- A common hardware design flaw
- Extreme traffic loads or call volume bursts.

Feature Dependencies

The SD Phase 1, SD Phase 2, and SD Black Hole Detection and Removal must be deployed prior the deployment of this feature.

The migration of SD Phase 3 services is dependent on the Service Disaster Recovery feature being deployed in the network prior to SD Phase 3 Service Transition.

Segmentation Directory Features

Table 4-A lists the current SD features, along with their respective releases.

Table 4-A. Segmentation Directory Features

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

Service Disaster Recovery Operational States

From the network service disaster recovery perspective, the operational states of the SD network can be divided into network states and *4ESS* switch local states.

The network states are critical, near-critical, sub-critical, and normal states as listed in the following:

- Critical State – A critical state is when and if there are substantial amount of failures in SDs, resulting in a state where the remaining SD capacity in the primary network is less than the backup SD capacity in handling the offered load of the network.
- Near-Critical State – A near-critical state occurs when the amount of failures in the SD network is of concern and the need for taking some actions is perceived automatically.
- Sub-Critical State – A sub-critical state is defined as a state where the amount of failure in the SD network is of concern; however, the SD capacity in application processing is still above the busy-hour engineered capacity.
- Normal State – A normal state is defined as a state which is neither a sub-critical, a near-critical, nor a critical state.

The *4ESS* switch local states are local critical and normal states as follows:

- Local Critical State – A local critical state occurs when, from the perspective of at least one *4ESS* switch, no SD is available.
- Local Normal – A *4ESS* switch local normal state is any state other than a local critical state.

Call Flow (Not Affected)

Provisioning

Recent Change Forms Affected

Recent Change (RC) Message 6dn

The RC message has been updated to permit the addition, change, or deletion of SD point codes for the backup SD site.

RC Form 809

This form is used to enable and disable various feature bits. The layout of this form is not changing. A PF61 entry has been assigned for this feature as follows:

- Item PF61 must be **ON** for the SD service disaster recovery feature to be active.
- If this feature is not available, PF61 must be set to **OFF**.
- The default is **OFF**.

Verify Forms /Messages Affected

Verify Output Form 6dn

This form provides the output of the SD point code records for the SD service disaster recovery structure.

Verify Input Message VER:MISC – 16dn

This message requests verification of the SD point code records for the SD service disaster recovery structure.

Recording (Not Affected)

Network Management

Measurements

For those measurements which contain per-SD data (for example, **SDn_SDQ_Timeout** and **SDn_SPR_Timeout**, the number of possible entries is expanded to allow up to three backup SDs.

New Commands

The following new commands have been added for this feature:

- The *4ESS* switch accepts a command from NEMOS to switch to the Backup Round Robin Table (BURRT). The *4ESS* switch sends a confirmation to NEMOS when the switch-over to BURRT has taken place.

- The *4ESS* switch accepts a new command from NEMOS to override the setting of the Congestion_Alg office parameter, that is applied only to the active Round Robin Table. The command instructs the *4ESS* switch to do one of the following:

  — Override the value of the Congested Algorithm to “expansive”

  — Override the value of the Congested Algorithm to “protective”

  — Revert to the provisioned value.

- The *4ESS* switch accepts a command from NEMOS to switch from the backup Round Robin Table to the Primary Round Robin Table (PRRT). The *4ESS* switch sends a confirmation to NEMOS when the switch-over to PRRT is made.

- The *4ESS* switch accepts the command to switch to the BURRT or revert to PRRT via the maintenance channel. The confirmation of the switch-over that has taken place is also sent through the maintenance channel.

- The *4ESS* switch supports a new office parameter, **SDReq_timeout_threshold**.The threshold for the number of SD requeries that timed out is defined as follows:

  — Minimum: 0

  — Maximum: 1000

  — Default: 2

  — Increment: 1.

This parameter is administered by NEMOS.

- The *4ESS* switch supports a new office parameter, **SDQ_SD_timeout_threshold**. The threshold for the number of SDQueries per SD that timed out is as defined below:

  — Minimum: 0

  — Maximum: 1000

  — Default: 5

  — Increment: 1.

The *4ESS* switch accepts and processes a control command from NEMOS to apply/remove an SD Skip control. The *4ESS* switch shall accept only one SD Skip Control on the active Primary Round Robin Table in use and only one SD Skip Control on the inactive Round Robin Table. Thus, if one SD Skip Control is active and the switch receives a control message to skip one more SD on the same table, it should deny the request.

When NEMOS sends a command to the *4ESS* switch to switch between the primary and the backup SD site, a message is also printed on the maintenance channel.

New Discretes

Three new discretes have been added for this feature. They are as follows:

- The *4ESS* switch sends a discrete to NEMOS when it has switched to the backup Round Robin Table. This discrete remains set until the *4ESS* switch is instructed to revert to PRRT.

- The *4ESS* switch sends a discrete to NEMOS when the SQRequery timeout has exceeded its threshold.

- The *4ESS* switch sends over a per-SD discrete to NEMOS when any of the measurements, SDn_SDQ_Timeout, has exceeded its threshold where n = 1 up to 12 for the primary SDs; and 13 to 15 for the backup SDs. This discrete is reset every 30 seconds.

- The *4ESS* switch sends a discrete to NEMOS when Recent Change has modified the primary and/or backup SD Routing Table.

New Audit

New audits have been added for this feature, as follows:

The *4ESS* switch provides the SD routing status of SDs on both Round Robin Tables in response to a NEMOS audit. The response lists the following:

- the SD PC/SSN
- the routing status [IS/TFC/SSP/MTP Inaccessible (TEP)].
- The *4ESS* switch provides the current value used in **SDReq_Timeout_threshold** in response to a NEMOS audit.
- The *4ESS* switch provides the current value used in **SDQ_SD_Timeout_threshold** in response to a NEMOS audit.

New Measurements

Three new measurements have been added for this feature, as follows:

- The *4ESS* switch sends NEMOS the "per SD measurements" for SDs on PRRT and BURRT in an order consistent with the order of SD PCs presented in the SD Routing Status message (Message 95). That is, the first 12 measurements are for the primary SDs, and followed by the ones for the backup SDs, up to three of them.

Maintenance/Troubleshooting (Not Affected)

Transition Considerations

Feature Deployment

It is not necessary for all *4ESS* switches in the network to be running the 4E24, Release 3 Generic before the feature is activated.

Feature Activation

This feature can also be turned ON or OFF by an Absolute Word Change. Item **OD4PF61**in the OD4OFCCOPY2 structure is the office parameter that controls the ON/OFF state of this feature.

CAUTION

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

The following information can be used to turn this feature On or Off using the Absolute Word Change:

- Structure: OD4OFCCOPY2+6
- Core address in 4E24 Generic: 7123617
- Size of OD4PF61: 1
- Displacement: 12
- On: 1
- Off: 0.

Input/Output Manual Pages

Messages

Three new Input Messages were added for this feature, as follows:

- **SW:SD**
- **SW:SDP**
- **VER:MISC-FHT-SDD**.

One Input Message was modified for this feature – **TEST:SD.**

Two new Output messages were added for this feature, as follows:

- **REPT:SD**
- **VER:MISC-FHT-SDD**.

Two Output Messages were modified for this feature, as follows:

- **TEST:SD**
- **TEST:TCAPDSD**.

Refer to Appendix B for details.

5 Impaired Via Avoidance Feature (6763)

Overview

Description This feature reduces the incidents of the *4ESS*™ switch malfunctioning (impaired or congested state).

Purpose This feature allows Network Management Operations Systems (NEMOS) network managers to remove an impaired Via switch network-wide.

Contents This chapter contains the following topics:

Feature Description

Background

Prior to this feature, when a *4ESS* switch was in a congested or impaired state, the Network Management Via Screen (NMVS) provided a manual capability to remove/activate a Via switch. Then, NMVS mandated that the Originating AT&T Switch (OAS), the Terminating AT&T switch (TAS), and the Route Pattern Identity (RPI) be specified with a maximum of eight combinations per switch. Therefore, an impaired switch could not be removed as a Via switch network wide.

With the introduction of this feature, a network manager can enter a NEMOS command message identifying the impaired Via switch for selected RPIs. The NEMOS then generates one message [Message 159 – Impaired Via Avoidance (IVA) Control Request] with the impaired switch Network Switch Number (NSN) to each *4ESS* switch. This process disallows the impaired switch on the Allowed Via Switch List/Intermediate Switch List (ISL) for all selected RPIs. The NEMOS will allow the user to select non-data service RPIs (that is, 1,2, 6, 8, 9, and 10) and will not allow selection of RPIs 3, 4, 5, or 7.

Benefits

Recently, a number of FCC network incidents have occurred involving impaired switches. With this feature in place, lost calls and lost revenue will be minimized.

Call Flow

Description

An example of a call flow for this feature follows. When the *4ESS* switch receives a new Network Management (NM) Impaired Via Avoidance (IVA) Control Message 159 from NEMOS containing the Network Switch Number (NSN) of the impaired switch and selected RPIs, it adds the impaired switch to the Via exclusion list. As a result, the switch does not send Via traffic to the impaired switch for the selected RPIs. Direct traffic is not affected by this control and NEMOS will not permit selection of data services RPIs.

Provisioning (Not Affected)

Recording (Not Affected)

Network Management

Network Management Messages

This feature introduces two new NEMOS-*4ESS* switch messages and modifies one existing message as follows:

1. New Message – NM IVA Control Request Message 159. This message issues the control for the impaired Via switch; it adds or removes the control.

2. New Message – NM IVA Demand Data Message 64. This message provides data on request; it tells which switches and RPIs are controlled.

3. Modified Message – Message 1 was modified to include NM IVA 30-Second Discrete Data. The switch provides NEMOS with the discrete when the switch receives and successfully applies the NM IVA control. Furthermore, the switch clears the discrete after it receives a demand request from NEMOS for the NM IVA control.

Maintenance/Troubleshooting (Not Affected)

Transition Considerations

Feature Deployment

It is not necessary for all *4ESS* switches in the network to be running the 4E24 Release 3 Generic for this feature to be fully operational. However, NEMOS 3NE5 is needed before this feature is available for Network Operations Center (NOC) use.

Feature Activation

This feature is turned on automatically by software deployment.

Input/Output Manual Pages (Not Affected)

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6 AT&T Digital Link Phase 3 - Equal Access Dial-Around Capability Feature (6990)

Overview

Description This feature describes the requirements to support the AT&T Digital Link (ADL) Phase 3—Equal Access (EA) Dial Around Capability for Business Markets Division (BMD) customers who have direct T1.5 connections from a Private Branch Exchange (PBX) to the AT&T Switched Network (ASN).

Purpose This feature builds upon the capabilities introduced by the *ADL Phase 3 Equal Access Presubscription Feature (6685).*

Contents This chapter contains the following topics:

Feature Description

Background

The ADL Phase 3 EA Dial-Around feature allows ADL Phase 2 (also known as *4ESS*™ switch Local Nodal Phase 2) customers to access other toll carriers for their intra-Local Access and Transport Area (LATA) and inter-LATA toll services on a call-by-call basis. With the introduction of dial-around capabilities, the ADL Phase 2 customer can dial the 7-digit Carrier Access Code (CAC) 101XXXX [where XXXX is the Carrier Identification Code (CIC)] before dialing the Called Party Number (CdPN) (1+10 digits, 10 digits, 7 digits, or 011+CC+NN). By doing so, the customer can choose to complete a particular call via a toll carrier other than AT&T.

When a dial-around call is made, the *4ESS*™ switch validates the digit string and sets the Carrier Selection Information (CSI) to indicate a dial-around call. Then the switch launches a query to the Segmentation Directory (SD) or the appropriate No. 2 Direct Services ANI/No. 2 Network Control Point (2DSA/2NCP) based upon the following two new Transition Types (TTs):

- SDN_DARND
- PCP_DARND.

Based on the receipt of the CSI, CIC, and Local Automatic Number Identification (LANI) in the query message, the 2DSA/2NCP locates the customer record and determines if the customer is allowed to place a dial-around call. If the customer has dial-around capability, the 2DSA/2NCP accesses the carrier validation table (new for this feature and provisioned in each of the 2DSA/2NCPs) to determine if the call is valid based on the call type, the CIC, and the LATA of the originating ADL location.

If the dial-around call is valid, call processing proceeds as defined in Feature 6685. The 2DSA/2NCP passes the CIC and CSI to the *4ESS* switch, along with the LATA of the originating ADL location. The *4ESS* switch determines routing based on the CIC and originating LATA.

All ADL EA calls destined for other toll carriers are sent to a Local Service Provider (LSP) over existing "meet-point" trunk groups [currently, they carry toll traffic from other toll carriers to Digital Link (DL) customers]. The LSP provides a tandem function and hands the calls off to the appropriate toll carrier.

Limitations

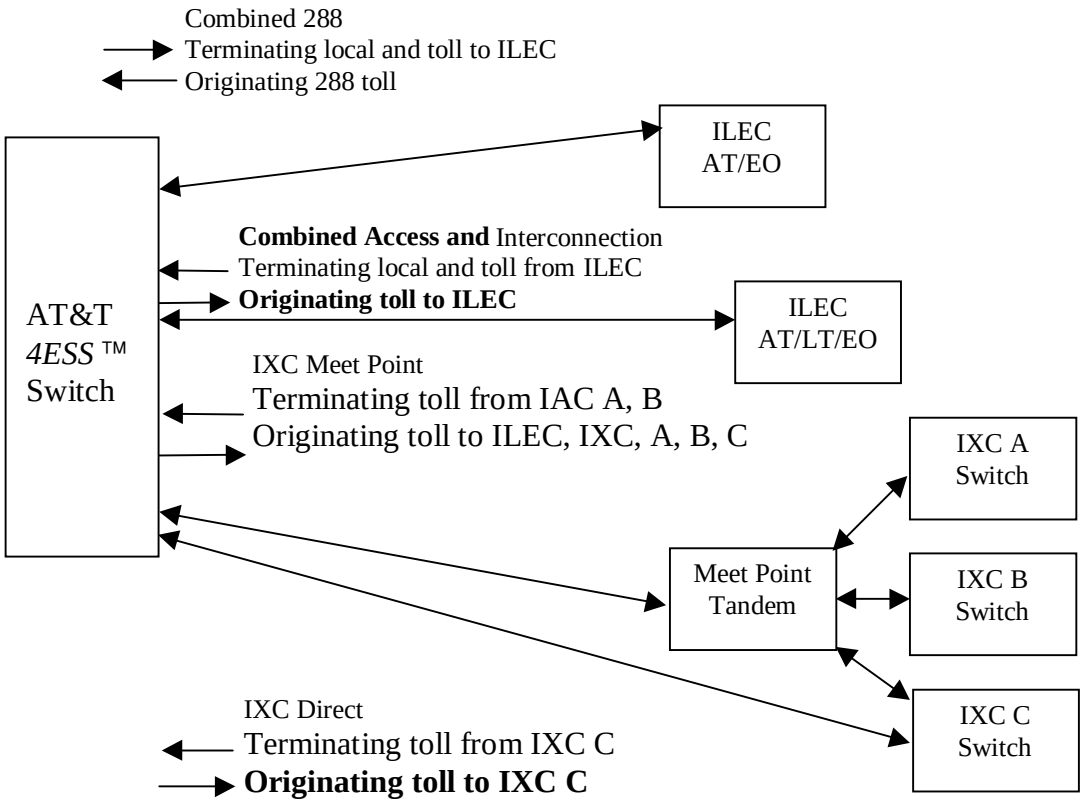
This feature only supports ADL EA calling egress from the ASN on Integrated Services Digital Network (ISDN) User Part (UP) trunks. Multi-Frequency (MF) egress calls are not supported.

Dependencies

This feature depends on the following:

- Feature 5371: *4ESS Switch Local for Nodal Customers–Phase II* (4E22 Release 4 Generic)
- Feature 5641: *Segmentation Directory (SD) Phase 3* (4E24 Release 2 Generic)
- Feature 6426: *Segmentation Directory Carrier Identification Code-Based Processing and Software-Defined Network Default Handling* (4E24 Release 3 Generic)
- Feature 6685: *AT&T Digital Link Phase 3–Equal Access Presubscription* (4E24 Release 2 Generic)
- Feature 7038: *Digital Link Phase 3–911 Capabilities* (4E24 Release 3 Generic)
- The ANI Trigger Table [must be maintained until the PCP_DARND TT is in SD Mode of Operation (SMO)]
- Universal Global Title (UGT) provisioning (must be maintained until the SDN_DARND TT is in SMO).

Figure 6-1 - Carrier Trunking (ILEC Allows Combined 288 Trunking)



Legend:
ADL – AT&T Digital Link
AT – Access Tandem
ALN – AT&T Local Network
EO – End Office
ILEC – Independent Local Exchange Carrier
IXC – Interexchange Carrier
LT – Line Termination

Notes:
1. Figure does not show originating 8YY traffic, or traffic from ADL customers homed on a *5ESS* ® electronic switch ALN EO.
2. **Bold type** indicates EA traffic.

Network Architecture

In the beginning, ADL EA calls will egress the ASN on the existing meet-point trunk groups to the LSP to be handed off to the appropriate toll carrier. However, if direct trunking to toll carriers becomes available, ADL EA calls may be routed directly to the toll carriers over those trunk groups.

Various scenarios exist for the kinds of trunks that exist between AT&T and other carriers that support ADL, and various scenarios exist for the types of calls that may be delivered over which trunk. The first scenario is described in detail and is used as a basis to describe the additional scenarios.

A. Combined Trunking

The following apply to this scenario (illustrated in Figure 6-1):

- The Incumbent Local Exchange Company (ILEC) permits AT&T to use Combined 288 trunk groups to deliver terminating local calls to ILEC-served members to the ILEC for completion.

- AT&T supports CIC-specific routing for originating ADL EA traffic from the *4ESS* switch.

The kinds of trunk groups that exist, the traffic they carry before ADL3, and the additional traffic they may carry with ADL 3 are as follows:

- ***Combined 288*** trunk groups are AT&T purchased and engineered 2-way trunk groups built to a combination of ILEC End Offices (EOs) and Access Tandems (ATs). They carry traditional access traffic [originating 288 switched access traffic from the Local Exchange Carrier (LEC) and terminating AT&T toll calls delivered to the LEC for completion]. In addition, these trunks also carry terminating local traffic from AT&T to the ILEC (ADL customer places a local call to ILEC-served number).

- The ***Interconnection*** trunk group is used to deliver 1-way terminating local and toll calls from the ILEC to AT&T (ILEC customer places local or ILEC-carried toll call to ADL-served member). With ADL3 at the ILEC option, these trunk groups may

either remain unchanged by this feature or may be converted into ***Combined Access and Interconnection*** trunk groups. A Combined Access and Interconnection trunk group is used 2-way, carrying terminating local and toll calls from the ILEC to AT&T, and carrying originating EA traffic from ADL3 customers to ILEC toll services.

- ***IXC Meet-Point*** trunk groups are built by AT&T between the *4ESS* switch and at least one meet-point tandem per LATA. Prior to ADL3, these trunk groups are used 1-way for Interexchange Carriers (IXCs) to deliver terminating toll traffic to AT&T through a meet-point arrangement. The meet-point tandem provides a tandem switching function and is listed in the Local Exchange Routing Guide (LERG) as the AT for NPA-NXXs served by the AT&T *4ESS* switch. With ADL3, the trunk group will be used 2-way and will also carry originating EA from ADL3 customers to toll services provided by IXCs.

- The ***IXC Direct*** trunk group may be ordered by an IXC having a sufficient volume of terminating toll traffic that a direct connection is preferred to the meet-point arrangement through the ILEC tandem. Prior to ADL3, this trunk group is used 1-way for IXCs. With ADL3, the trunk group is used 2-way and will also carry originating EA from ADL3 customers to toll services provided by the IXC.

B. Other Trunking Options

Figure 6-1 also illustrates the following options that various toll carriers have for receiving EA traffic from ADL3 customers:

- Originating ADL EA to ILEC toll services can be delivered over the following three different routes (or a combination of these routes) as specified by the ILEC:

  —IXC meet-point trunk groups

  —Combined Access and Interconnection trunk groups (at present, may be limited to intra-LATA toll)

  —IXC direct trunk groups ordered by the ILEC acting as a toll carrier (not illustrated).

- Originating ADL EA to toll services of IXCs with direct trunking to the *4ESS* switch:

  —IXC meet-point trunk group

  —IXC direct trunk group.

- Originating ADL EA to toll services of IXCs without direct trunking to a *4ESS* switch.

C. Combined Trunking Not Supported by the ILEC

The following two additional situations exist where the ILEC does not permit AT&T to use Combined 288 trunks. These situations differ from the two scenarios previously described only in the methods available for delivery of ADL EA toll traffic from AT&T to the ILEC.

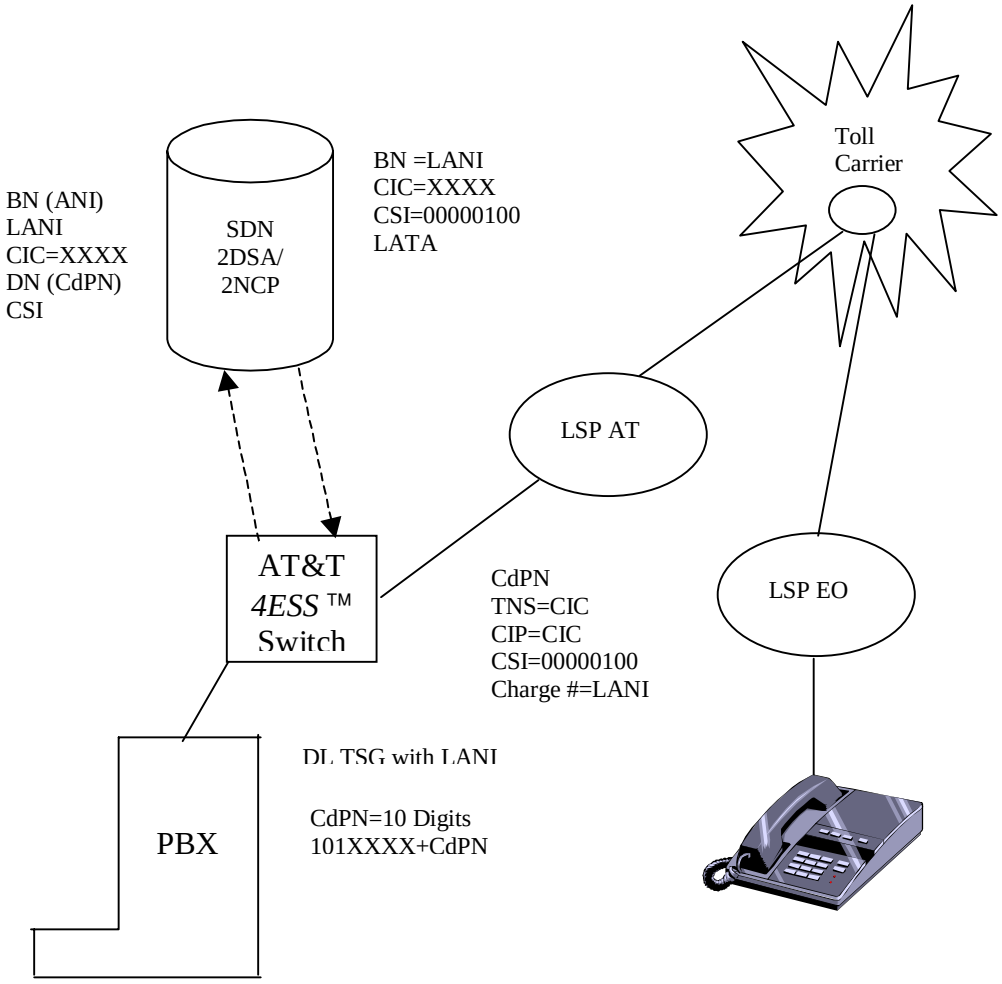
- *One-way Interconnection Trunking*: AT&T delivers terminating local calls to the ILEC over 1-way interconnection trunk groups (separate from 288 switched access trunks) in order to meet ILEC requirements to complete local calls.

- *Two-way Interconnection Trunking:* AT&T delivers local calls to the ILEC over interconnection trunk groups (separate from 288 switched access trunks) in order to meet ILEC requirements to complete local calls.

Call Flow

General The call flows for ADL EA Dial-Around are based on the capabilities developed for ADL EA Presubscription.

Figure 6-2 - EA Dial-Around Call From a *4ESS*™ Switch (SDN/ADL in PMO)



Phase 2

Legend:

BN – Billing Number	LANI – local Automatic Number Identification
CdPN – Called Party Number Parameter	LATA – Local Access Transport Area
CIC – Carrier Identification Code	LSP – Local Service Provider
CIP – Carrier Identification Parameter	NCP – Network Control Point
CSI – Carrier Selection Information	PBX – Private Branch Exchange
DL – Data Link	SDN – Software Defined Network
DN – Dialed Number	TNS – Transit Network Connection
DSA – Digital Serving Area	TSG – Trunk Subgroup
EO – End Office	

Dial-Around Call in PMO

The following call flow (illustrated in Figure 6-2) applies to a dial-around call from an SDN/ADL customer in the Present Mode of Operation (PMO).

1. A *4ESS* switch-served DL customer makes an originating dial-around call by dialing 101XXXX+NPA-NXXX-XXXX or 101XXXX+011+CC+NN (international call).

2. The originating *4ESS* switch recognizes this as a DL call based on the presence of LANI.

3. The originating *4ESS* switch recognizes 101 in the dial string or Transit Network Selection (TNS) in the Q.931 SETUP message on a DL trunk and initiates dial-around processing. The switch sets XXXX or TNS as CIC. If 101 or a TNS is received on a Private Branch Exchange (PBX) trunk group not provisioned with LANI, the TNS parameter is ignored and the call is processed as a direct dialed toll call.

4. The *4ESS* switch analyzes the DN to determine if the digit string is valid. If the DN is not valid, the call is terminated to VCA per existing procedures.

5. The *4ESS* switch determines the TT to be SDN_DARND based on the reception of 101 or TNS on a PBX trunk group provisioned with LANI and in the SDNA domain. Based on the TT, the switch obtains the transition status (PMO for this call). The *4ESS* switch sends a query to SD, but ignores any response.

6. The *4ESS* switch sends a query to the SDN 2DSA/2NCP (including the LANI) to indicate the following:

   - A DL call
   - The XXXX or TNS as the CIC
   - The CSI set to **00000100** to indicate selected CIC not presubscribed and inputted by the calling party
   - The DN as NPA-NXX-XXXX or Country Code+National Number (CC+NN).

7. Based on the presence of a LANI, a CIS = 00000100, and a CIC, the 2DSA/2NCP performs the following tasks:
   - Determines if the customer is allowed to place dial-around calls
   - Terminates dial-around data call if bearer = data is received
   - Determines the call type (local, intra-LATA, inter-LATA/international)
   - Determines the LATA of the ADL customer location
   - Determines if dial-around is valid for the combination of call type, LATA, and CIC as follows:

   a. If dial-around is valid, the 2DSA/2NCP sends the following to the *4ESS* switch:

   —The CIC in the Transaction Capabilities Application Part (TCAP) digits (CIC) parameter
   —The CSI in the TCAP CSI parameter indicating a dial-around call (selected CIC not presubscribed and inputted by the calling party)
   —The LATA in the TCAP digits (LATA) parameter
   —The LANI in the TCAP digits [Billing Number (BN)] parameter. Proceed to Step 8.

   b. If dial-around is not valid, the 2DSA/2NCP instructs the *4ESS* switch to final handle the call with the appropriate dial-around announcement.

8. Based on the receipt of the CIC, the CSI, and the LATA, the *4ESS* switch performs the following functions:
   - Constructs a 10-digit number using the CIC and the LATA values returned from the 2DSA/2NCP in the format 0LL-LLL-CCCC (where LLLLL is the LATA and CCCC is the CIC)
   - Accesses the Operator Services Position System (OSPS) ID access table and uses the constructed 10-digit number to determine the Carrier Routing Index (CRI
   - Translates the CRI number to determine routing
   - Suppresses the Location Routing Number (LRN) Local Number Portability (LNP) query
   - Sends the call to the LSP AT with the following in the ISUP Initial Address Message (IAM):

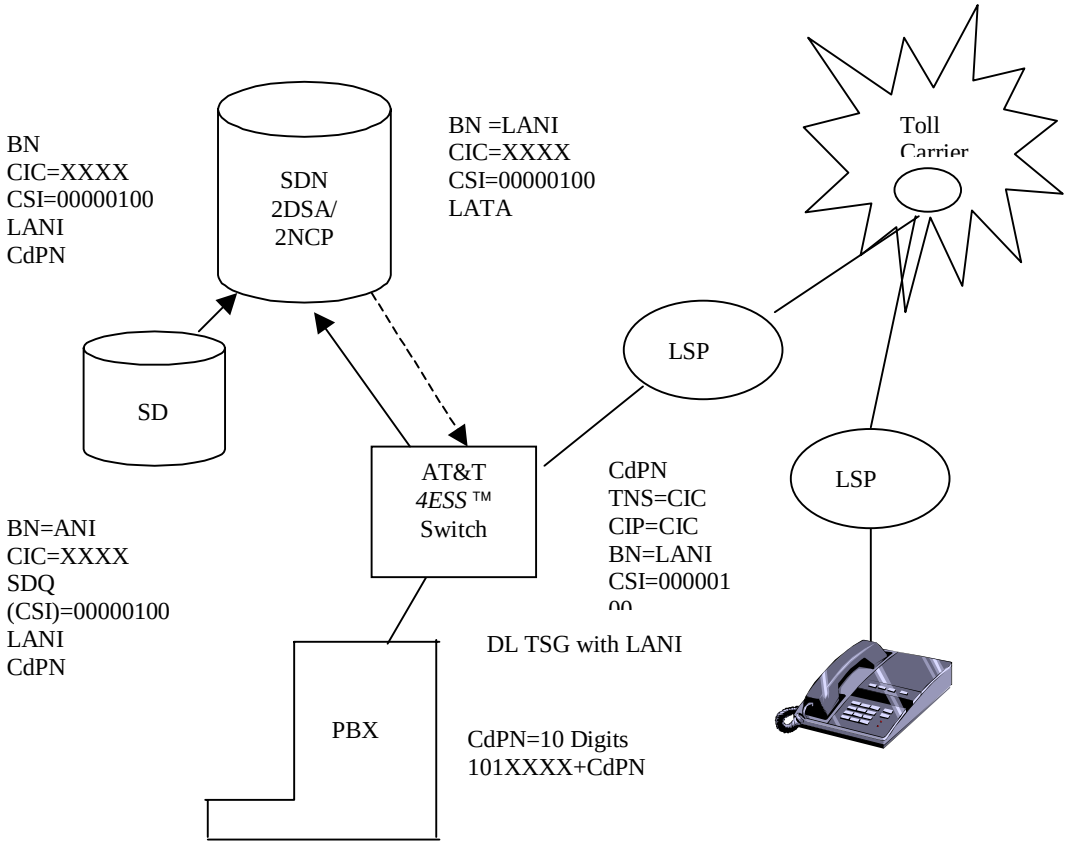
   —The TCAP digits (Routing Number) in the CdPN parameter
   —The Charge Number populated with the LANI
   —The CdPN populated per current ADL requirements (LANI unless a Q.931 station number is available)
   —The CIC populated in the TNS and Carrier Identification Parameter (CIP)
   —The CSI populated in the CSI parameter = 00000100
   —The Jurisdiction Information Parameter (JIP) of the Originating AT&T Switch (OAS)
   —The Originating Line Information (OLI) = 00 (when ADL customer does not provide OLI).

9. The *4ESS* switch creates an SDN Automatic Message Accounting (AMA) record reflecting the Billing Number received in the TCAP (LANI for Phase 2 customers) in the Originating Number fields. Module 941 is appended to record the CIC, Module 920 to record the CSI, and Module 947 to indicate an ADL call. This record is uniquely identified because of Modules 920 and 947 so that it is suppressed in the Recorded Information Collection System (RICS).

10. Based on egressing the ASN on an LSP_LOCAL type of trunk, the *4ESS* switch creates a True Access Record (625 or 627) with a Call Code of 110 to designate an originating access record and to reflect the LANI as the Originating Number. Module 908 is appended to identify the access ID of the LSP_LOCAL Trunk Subgroup (TSG).

11. The LSP receives the call and, based on the CIC value received in the TNS or CIP, it sends the call to the appropriate toll carrier. **End of Call Flow.**

Figure 6-3 – EA Dial-Around Call from a *4ESS*™ Switch (ADL Customer in SMO)



Phase 2

Legend:

BN – Billing Number	LANI – local Automatic Number Identification
CdPN – Called Party Number Parameter	LATA – Local Access Transport Area
CIC – Carrier Identification Code	LSP – Local Service Provider
CIP – Carrier Identification Parameter	NCP – Network Control Point
CSI – Carrier Selection Information	PBX – Private Branch Exchange

Dial-Around Call in SMO

The following call flow (illustrated in Figure 6-3) applies to a dial-around call from an SDN/ADL customer in the SMO:

1. A *4ESS* switch-served DL customer makes an originating dial-around call by dialing 101XXXX-NPA-NXXX-XXXX or 101XXX+011+CC+NN (international call).

2. The originating *4ESS* switch recognizes this as a DL call based on the presence of LANI.

3. The originating *4ESS* switch recognizes 101 in the dial string or TNS in the Q.931 SETUP message on a DL trunk and initiates dial-around processing. The switch sets XXXX or TNS as CIC. If 101 or a TNS is received on a PBX trunk group not provisioned with LANI, the TNS parameter is ignored and the call is processed as a direct dialed toll call.

4. The *4ESS* switch analyzes the DN to determine if the digit string is valid. If the DN is not valid, the call is terminated to VCA per existing procedures.

5. The *4ESS* switch determines the TT to be SDN_DARND based on the reception of 101 or TNS on a PBX trunk group provisioned with LANI and in the SDNA domain. Based on the TT, the switch obtains the transition status (SMO for this call).

6. The *4ESS* switch sends a query to the SD (including the LANI) to indicate the following:

   - DL call
   - The ANI as the Billing Number
   - The CdPN
   - The CSI (in the SDQ Information) set to **00000100** to indicate the carrier selected by dial-around
   - The XXXX or TNS as the CIC.

7. The SD determines the Key Service Type based on the provisioned combination of Service Type (SDN), Voice/Data (Voice), and CIC (XXXX). Since no specific Key Service Type is provisioned for SDN+Voice+XXX, a Key Service Type of SDN is derived.

8. The SD then looks to match the ANI (SDN BN) and the Key Service Type of SDN. A match directs the SD to send the call to the 2DSA/2NCP.

9. The SD sends the LANI, BN, CdPN, CSI, and CIC to the 2DSA/2NCP.

10. Based on the presence of a LANI, a CIS = 00000100 and a CIC, the 2DSA/2NCP performs the following tasks:
    - Determines if the customer is allowed to place dial-around calls.
    - Terminates dial-around data call if bearer = data is received
    - Determines the call type (local, intra-LATA, or inter-LATA/international)
    - Determines the LATA of the ADL customer location
    - Determines if dial-around is valid for the combination of call type, LATA, and CIC as follows:

    a. If dial-around is valid, the 2DSA/2NCP sends the following to the *4ESS* switch:

    —The CIC in the TCAP digits (CIC) parameter
    —The CSI in the TCAP CSI parameter indicating a dial-around call (selected CIC not presubscribed and inputted by the calling party)
    —The LATA in the TCAP digits (LATA) parameter
    —The LANI in the TCAP digits (Billing Number) parameter. Proceed to Step 11.

    b. If dial-around is not valid, the 2DSA/2NCP instructs the *4ESS* switch to final handle the call with the appropriate dial-around announcement.

11. Based on the receipt of the CIC, the CSI, and the LATA, the *4ESS* switch performs the following functions:
    - Constructs a 10-digit number using the CIC and the LATA values returned from the 2DSA/2NCP in the format 0LL-LLL-CCCC (where LLLLL is the LATA and CCCC is the CIC)
    - Accesses the OSPS ID access table and uses the constructed 10-digit number to determine the CRI (provisioned in the OSPS ID field)

- Translates the CRI number to determine routing
- Suppresses the LRN LNP query
- Sends the call to the LSP AT with the following in the ISUP IAM:

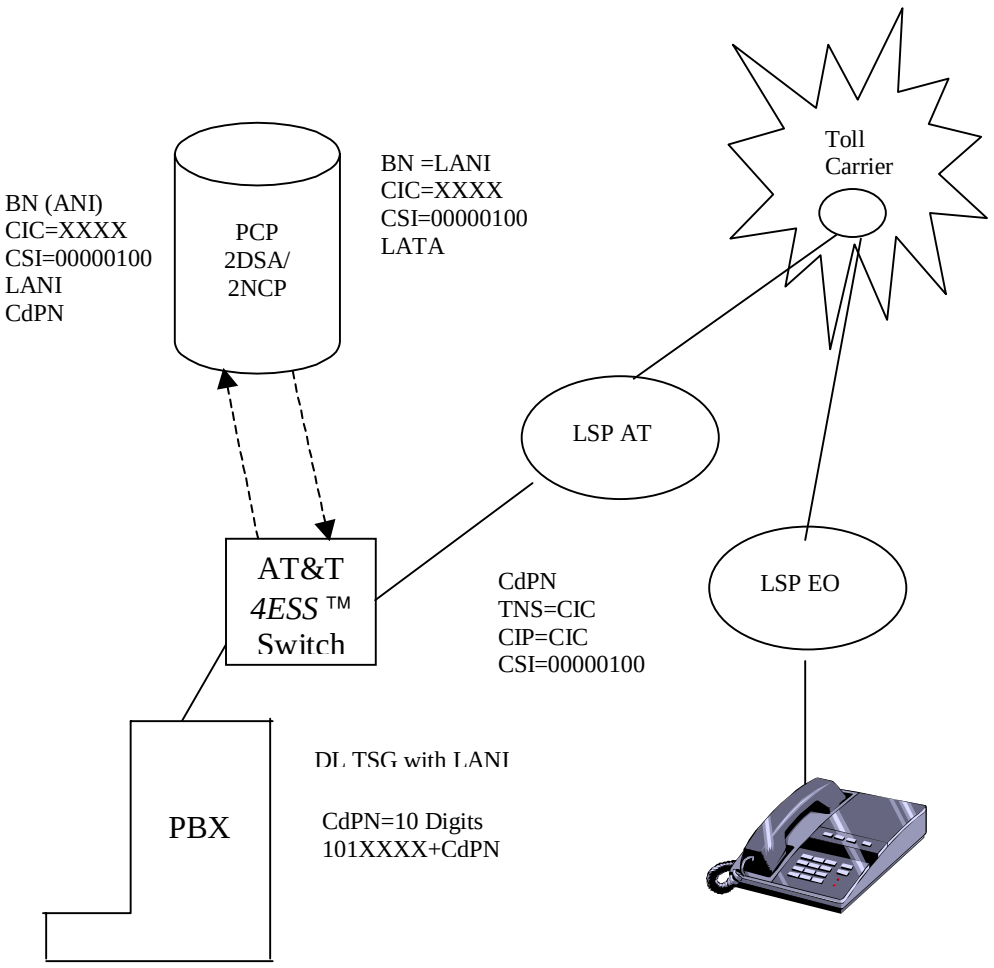
—The TCAP digits (Routing Number) in the CdPN parameter
—The Charge Number populated with the LANI
—The CdPN populated per current ADL requirements (LANI unless a Q.931 station number is available)
—The CIC populated in the TNS and CIP parameter
—The CSI populated in the CSI parameter = 00000100
—The JIP of the OAS
—The Originating Line Information (OLI) = 00 (when ADL customer does not provide OLI).

12. The *4ES*S switch creates an SDN AMA record reflecting the Billing Number received in the TCAP (LANI for Phase 2 customers) in the Originating Number fields. Module 941 is appended to record the CIC, Module 920 to record the CSI, and Module 947 to indicate an ADL call. This record is uniquely identified because of Modules 920 and 947 so that it is suppressed in the RICS.

13. Based on egressing the ASN on an LSP_LOCAL type of trunk, the *4ESS* switch creates a True Access Record (625 or 627) with a Call Code of 110 to designate an originating access record and to reflect the LANI as the Originating Number. Module 908 is appended to identify the access ID of the LSP_LOCAL TSG.

14. The LSP receives the call and, based on the CIC value received in the TNS or CIP, it sends the call to the appropriate toll carrier. **End of Call Flow.**

Figure 6-4 – Dial-Around PCP/ADL Call Flow (PMO)



Phase 2

Legend:

BN – Billing Number	LANI – local Automatic Number Identification
CdPN – Called Party Number Parameter	LATA – Local Access Transport Area
CIC – Carrier Identification Code	LSP – Local Service Provider
CIP – Carrier Identification Parameter	NCP – Network Control Point
CSI – Carrier Selection Information	PBX – Private Branch Exchange
DL – Data Link	PCP – Positive Call Processing
DN – Dialed Number	TNS – Transit Network Connection
DSA – Digital Serving Area	TSG – Trunk Subgroup
EO – end Office	

Dial-Around PCP/ADL Call in PMO

The following call flow (illustrated in Figure 6-4) applies to a dial-around Positive Call Processing (PCP)/ADL call in PMO:

1. A *4ESS* switch-served DL customer makes an originating dial-around call by dialing 101XXXX-NPA-NXXX-XXXX or 101XXXX+011+CC+NN (international call).

2. The originating *4ESS* switch recognizes this as a DL call based on the presence of LANI.

3. The originating *4ESS* switch recognizes 101 in the dial string or TNS in the Q.931 SETUP message on a DL trunk and initiates dial-around processing. The switch sets XXXX or TNS as CIC. If 101 or a TNS is received on a PBX trunk group not provisioned with LANI, the TNS parameter is ignored and the call is processed as a direct dialed toll call.

4. The *4ESS* switch analyzes the DN to determine if the digit string is valid. If the DN is not valid, the call is terminated to VCA per existing procedures.

5. The *4ESS* switch determines the TT to be PCP_DARND based on the reception of 101 or TNS on a PBX trunk group provisioned with LANI and in the Plain Old Telephone Service (POTS) domain. Based on the TT, the switch obtains the transition status (PMO for this call). The switch sends a query to SD, but ignores any response.

6. The *4ESS* switch sends a query to the 2DSA/2NCP (including the LANI) to indicate the following:

   - A DL call
   - The Wide Area Telephone Service Billing Number (WATSBN) as the Billing Number
   - The CdPN
   - The CSI set to **00000100** (indicates the selected CIC not presubscribed and inputted by the calling party)
   - The XXXX or TNS as the CIC.

7. Based on the presence of a LANI, a CIS = 00000100 and a CIC, the 2DSA/2NCP performs the following tasks:
   - Determines if the customer is allowed to place dial-around calls
   - Determines the call type (local, intra-LATA, inter-LATA/international).
   - Determines the LATA of the ADL customer location.
   - Determines if dial around is valid for the combination of call type, LATA, and CIC as follows:

   a. If dial-around is valid, the 2DSA/2NCP sends the following to the *4ESS* switch:

   —The CIC in the TCAP digits (CIC) parameter

   —The CSI in the TCAP CSI parameter indicating a dial-around call (selected CIC not presubscribed and inputted by the calling party)

   —The LATA in the TCAP digits (LATA) parameter

   —The LANI in the TCAP digits (Billing Number) parameter. Proceed to Step 8.

   b. If dial-around is not valid, the 2DSA/2NCP instructs the *4ESS* switch to final handle the call with the appropriate dial-around announcement.

8. Based on the receipt of the CIC, the CSI, and the LATA, the *4ESS* switch performs the following functions:
   - Constructs a 10-digit number using the CIC and the LATA values returned from the 2DSA/2NCP in the format 0LL-LLL-CCCC (where LLLLL is the LATA and CCCC is the CIC)
   - Accesses the OSPS ID access table and uses the constructed 10-digit number to determine the CRI (provisioned in the OSPS ID field)
   - Translates the CRI number to determine routing
   - Suppresses the LRN LNP query
   - Sends the call to the LSP AT with the following in the ISUP IAM:

   —The TCAP digits (Routing Number) in the CdPN parameter
   —The Charge Number populated with the LANI

—The CdPN populated per current ADL requirements (LANI unless a Q.931 station number is available)
—The CIC populated in the TNS and CIP parameter
—The CSI populated in the CSI parameter = 00000100
—The JIP of the OAS
—The OLI = 00 (when ADL customer does not provide OLI).

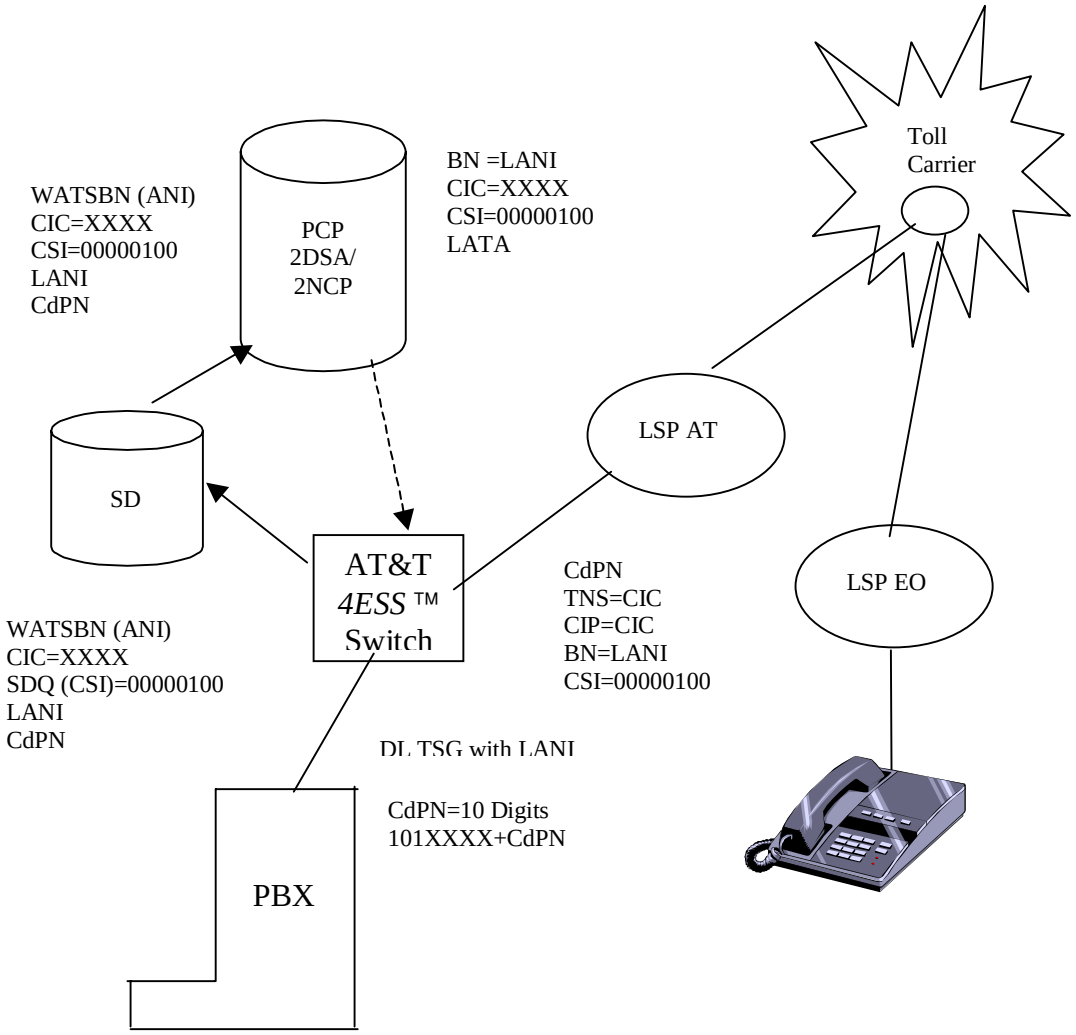
9. The *4ES*S switch creates a *MEGACOM** telecommunications services AMA record reflecting the Billing Number received in the TCAP (LANI for Phase 2 customers) in the Originating Number fields. Module 941 is appended to record the CIC, Module 920 to record the CSI, and Module 947 to indicate an ADL call. This record is uniquely identified because of Modules 920 and 947 so that it is suppressed in the RICS.

10. Based on egressing the ASN on an LSP_LOCAL type of trunk, the *4ESS* switch creates a True Access Record (625 or 627) with a Call Code of 110 to designate an originating access record and to reflect the LANI as the Originating Number. Module 908 is appended to identify the access ID of the LSP_LOCAL TSG.

11. The LSP receives the call and, based on the CIC value received in the TNS or CIP, it sends the call to the appropriate toll carrier. **End of Call Flow.**

*Registered service mark of AT&T.

Figure 6-5 – Dial-Around *MEGACOM PCP/ADL Call Flow (SMO)**



Phase 2

Legend:

BN – Billing Number	LANI – local Automatic Number Identification
CdPN – Called Party Number Parameter	LATA – Local Access Transport Area
CIC – Carrier Identification Code	LSP – Local Service Provider
CIP – Carrier Identification Parameter	NCP – Network Control Point
CSI – Carrier Selection Information	PBX – Private Branch Exchange
DL – Data Link	PCP – Positive Call Processing
DN – Dialed Number	TNS – Transit Network Connection
DSA – Digital Serving Area	TSG – Trunk subgroup
EO – End Office	WATSBN – Wide Area Telephone Service Billing Number

Dial-Around ***MEGACOM**** PCP/ADL Call in SMO

The following call flow (illustrated in Figure 6-5) applies to a dial-around call from a *MEGACOM*/ADL customer in the SMO:

1. A *4ESS* switch-served DL customer makes an originating dial-around toll call by dialing 101XXXX+NPA-NXXX-XXXX, 101XXXX+NXX+XXXX, or 101XXXX+011+CC+NN (international call).

2. The originating *4ESS* switch recognizes this as a DL call based on the presence of LANI.

3. The originating *4ESS* switch recognizes 101 in the dial string or TNS in the Q.931 SETUP message on a DL trunk and initiates dial-around processing. The switch sets XXXX or TNS as CIC. If 101 or a TNS is received on a PBX trunk group not provisioned with LANI, the TNS parameter is ignored and the call is processed as a direct dialed toll call.

4. The *4ESS* switch analyzes the DN to determine if the digit string is valid. If the DN is not valid, the call is terminated to VCA per existing procedures.

5. The *4ESS* switch determines the TT to be PCP_DARND based on the reception of 101 or TNS on a PBX trunk group provisioned with LANI and in the POTS domain. Based on the TT, the switch obtains the transition status (SMO for this call).

6. The *4ESS* switch sends a query to the SD (including the LANI) to indicate the following:

   - DL call
   - The WATSBN as the Billing Number
   - The CdPN
   - The CSI (in the SDQ Information) set to **00000100** (indicates the selected CIC not presubscribed and inputted by the calling party)
   - The XXXX or TNS as the CIC.

7. The SD determines the Key Service Type based on the provisioned combination of Service Type (MEG), Voice/Data (Voice), and CIC (XXXX). Since no specific Key Service Type is provisioned for MEG+Voice+XXX, a Key Service Type of MEG is derived.

8. The SD then looks to match the ANI (WATSBN) and the Key Service Type of MEG. A match directs the SD to send the call to the 2DSA/2NCP.

9. The SD sends the LANI, WATSBN, CdPN, CSI, and CIC to the PCP 2DSA/2NCP.

10. Based on the presence of a LANI, a CIS = 00000100 and a CIC, the 2DSA/2NCP performs the following tasks:

    - Determines if the customer is allowed to place dial-around calls
    - Determines the call type (local, intra-LATA, inter-LATA/international)
    - Determines the LATA of the ADL customer location

    - Determines if dial-around is valid for the combination of call type, LATA, and CIC as follows:

    a. If dial-around is valid, the 2DSA/2NCP sends the following to the *4ESS* switch:

    —The CIC in the TCAP digits (CIC) parameter
    —The CSI in the TCAP CSI parameter indicating a dial-around call (selected CIC not presubscribed and inputted by the calling party)
    —The LATA in the TCAP digits (LATA) parameter
    —The LANI in the TCAP digits (Billing Number) parameter. Proceed to Step 11.

    b. If dial-around is not valid, the 2DSA/2NCP instructs the *4ESS* switch to final handle the call with the appropriate dial-around announcement.

11. Based on the receipt of the CIC, the CSI, and the LATA, the *4ESS* switch performs the following functions:
    - Constructs a 10-digit number using the CIC and the LATA values returned from the 2DSA/2NCP in the format 0LL-LLL- CCCC (where LLLLL is the LATA and CCCC is the CIC)
    - Accesses the OSPS ID access table and uses the constructed 10-digit number to determine the CRI (provisioned in the OSPS ID field)
    - Translates the CRI number to determine routing
    - Suppresses the LRN LNP query
    - Sends the call to the LSP AT with the following in the ISUP IAM:

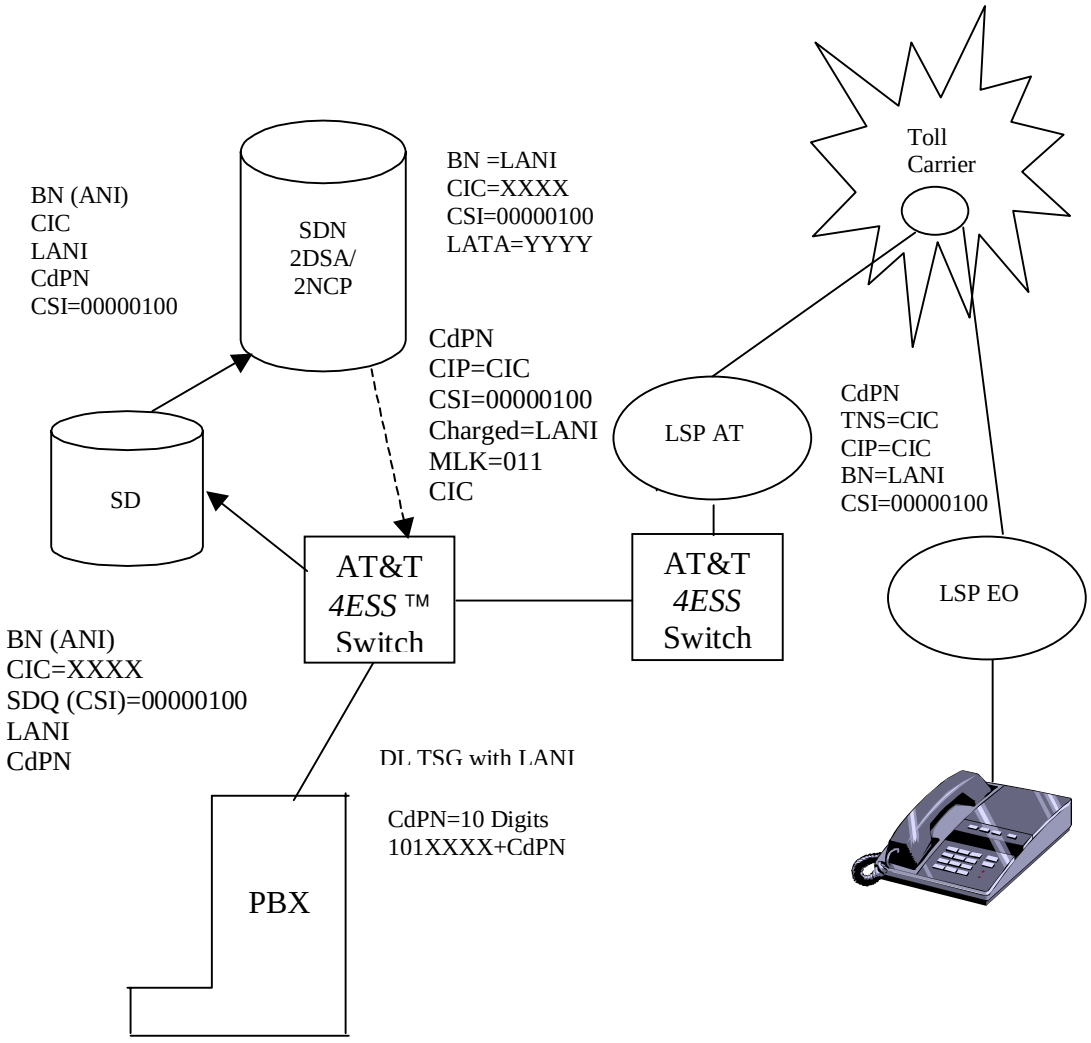
    —The TCAP digits (Routing Number) in the CdPN parameter
    —The Charge Number populated with the LANI
    —The CdPN populated per current ADL requirements (LANI unless a Q.931 station number is available)
    —The CIC populated in the TNS and CIP parameter
    —The CSI populated in the CSI parameter = 00000100
    —The JIP of the OAS
    —The OLI = 00 (when ADL customer does not provide OLI).

12. The *4ESS* switch creates a *MEGACOM* telecommunications services AMA record reflecting the Billing Number received in the TCAP (LANI for Phase 2 customers) in the Originating Number fields. Module 941 is appended to record the CIC, Module 920 to record the CSI, and Module 947 to indicate an ADL call. This record is uniquely identified because of Modules 920 and 947 so that it is suppressed in the RICS.

13. Based on egressing the ASN on an LSP_LOCAL type of trunk, the *4ESS* switch creates a True Access Record (625 or 627) with a Call Code of 110 to designate an originating access record and to reflect the LANI as the Originating Number. Module 908 is appended to identify the access ID of the LSP_LOCAL TSG.

14. The LSP receives the call and, based on the CIC value received in the TNS or CIP, it sends the call to the appropriate toll carrier. **End of Call Flow.**

Figure 6-6 – Dial-Around Inter-*4ESS* ™ Switch SDN/ADL Call Flow (SMO)



Phase 2

Legend:

BN – Billing Number
CdPN – Called Party Number Parameter
CIC – Carrier Identification Code
CIP – Carrier Identification Parameter
CSI – Carrier Selection Information
DL – Data Link
DN – Dialed Number
DSA – Digital Serving Area
EO – End Office
LANI – local Automatic Number Identification
LATA – Local Access Transport Area
LSP – Local Service Provider
NCP – Network Control Point
PBX – Private Branch Exchange
SDN – Software Defined Network
TNS – Transit Network Connection
TSG – Trunk subgroup

Dial-Around Inter-*4ESS*™ Switch SDN/ADL Call in SMO

The following call flow (illustrated in Figure 6-6) applies to a dial-around inter-*4ESS* switch call from an SDN/ADL customer in the SMO:

1. A *4ESS* switch-served DL customer makes an originating dial-around call by dialing 101XXXX+NPA-NXXX-XXXX or 101XXXX-011+CC+NN (international call).

2. The originating *4ESS* switch recognizes this as a DL call based on the presence of LANI.

3. The originating *4ESS* switch recognizes 101 in the dial string or TNS in the Q.931 SETUP message on a DL trunk and initiates dial-around processing. The switch sets XXXX or TNS as CIC. If 101 or a TNS is received on a PBX trunk group not provisioned with LANI, the TNS parameter is ignored and the call is processed as a direct dialed toll call.

4. The *4ESS* switch analyzes the DN to determine if the digit string is valid. If the DN is not valid, the call is terminated to VCA per existing procedures.
5. The *4ESS* switch determines the TT to be SDN_DARND based on the reception of 101 or TNS on a PBX trunk group provisioned with LANI and in the SDNA domain. Based on the TT, the switch obtains the transition status (SMO for this call).

6. The *4ESS* switch sends a query to the SD (including the LANI) to indicate the following:

   - A DL call
   - The ANI as the Billing Number
   - The CdPN
   - The CSI (in the SDQ Information) set to **00000100** to indicate the selected CIC not presubscribed and inputted by the calling party
   - The XXXX or TNS as the CIC.

7. The SD determines the Key Service Type based on the provisioned combination of Service Type (SDN), Voice/Data (Voice), and CIC (XXXX). Since no specific Key Service Type is provisioned for SDN+Voice+XXX, a Key Service Type of SDN is derived.

8. The SD then looks to match the ANI (SDN BN) and the Key Service Type of SDN. A match directs the SD to send the call to the 2DSA/2NCP.

9. The SD sends the LANI, BN, CdPN, CSI, and CIC to the 2DSA/2NCP.

10. Based on the presence of a LANI, a CIS = 00000100 and a CIC, the 2DSA/2NCP performs the following tasks:
    - Determines if the customer is allowed to place dial-around calls
    - Terminates dial-around data call if bearer = data is received
    - Determines the call type (local, intra-LATA, or inter-LATA/international)
    - Determines the LATA of the ADL customer location
    - Determines if dial-around is valid for the combination of call type, LATA, and CIC as follows:

    a. If dial-around is valid, the 2DSA/2NCP sends the following to the *4ESS* switch:

    —The CIC in the TCAP digits (CIC) parameter
    —The CSI in the TCAP CSI parameter indicating a dial-around call (selected CIC not presubscribed and inputted by the calling party)
    —The LATA in the TCAP digits (LATA) parameter
    —The LANI in the TCAP digits (Billing Number) parameter. Proceed to Step 11.

    b. If dial-around is not valid, the 2DSA/2NCP instructs the *4ESS* switch to final handle the call with the appropriate dial-around announcement.

11. Based on the receipt of the CIC, the CSI, and the LATA, the *4ESS* switch performs the following functions:
    - Constructs a 10-digit number using the CIC and the LATA values returned from the 2DSA/2NCP in the format 0LL-LLL-CCCC (where LLLLL is the LATA and CCCC is the CIC)
    - Accesses the OSPS ID access table and uses the constructed 10-digit number to determine the CRI (provisioned in the OSPS ID field)

- Translates the CRI number to determine routing
- Suppresses the LRN LNP query
- Identifies routing to another *4ESS* switch and sends the call to the Terminating AT&T Switch (TAS) with the following in the ISUP IAM:

—The dialed number in the CdPN
—The Charge Number populated with the LANI
—The CdPN populated per current ADL requirements
—The CIC populated in the CIP parameter
—The CSI populated in the CSI parameter = 00000100
—The JIP of the OAS
—The OLI= 00 (when ADL customer does not provide OLI)
—The MLK bits of the Dynamic Non-Hierarchical Routing (DHNR) parameter set to 011 to indicate an ADL EA call
—The CRI in the UTA Generic Operations Parameter (GOP).

12. The *4ESS* switch creates an SDN AMA record reflecting the Billing Number received in the TCAP (LANI for Phase 2 customers) in the Originating Number fields. Module 941 is appended to record the CIC, Module 920 to record the CSI, and Module 947 to indicate an ADL call. This record is uniquely identified because of Modules 920 and 947 so that it is suppressed in the RICS.

13. The TAS recognizes the call as an ADL EA call based on the DNHR MLK = 011 and translated the CRI digits received in the UTA GOP of the IAM to determine routing.

14. The TAS sends the call to the LSP AT with the following in the ISUP IAM:

—The dialed number in the CdPN parameter
—The Charge Number populated with the LANI
—The CdPN populated per current ADL requirements
—The CIC populated in the CIP parameter
—The CSI populated in the CSI parameter = 00000100
—The JIP of the OAS
—The OLI = 00 (when ADL customer does not provide OLI).

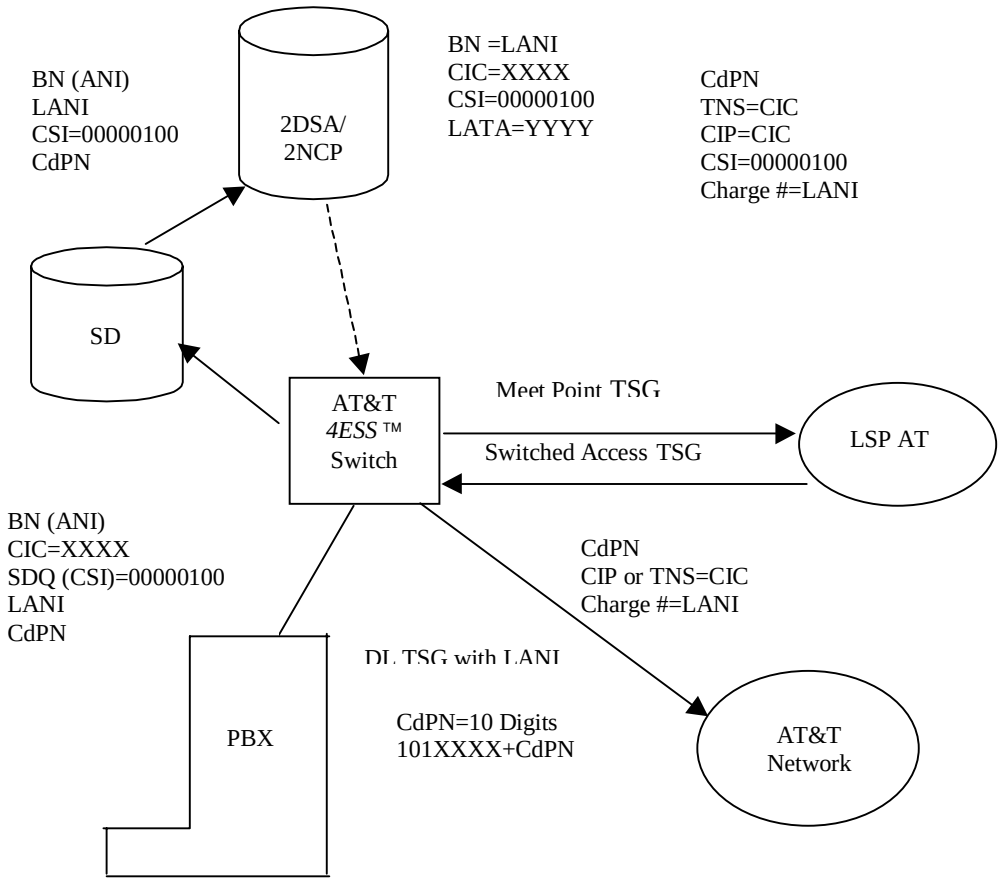
15. Based on egressing the ASN on an LSP_LOCAL type of trunk, the *4ESS* switch creates a True Access Record (625 or 627) with a Call Code of 110 to designate an originating access record and to reflect the LANI as the Originating Number. Module 908 is appended to identify the access ID of the LSP_LOCAL TSG.

16. The LSP receives the call and, based on the CIC value received in the TNS or CIP, it sends the call to the appropriate toll carrier.

Important! A similar call flow would apply for an ADL inter- *4ESS* switch call originated by an SDN customer in PMO, or a *MEGACOM* telecommunications services PCP customer in PMO/SMO.

End of Call Flow.

**Figure 6-7 – Dial-Around SDN/ADL Call Flow (SMO)
to a Carrier Solutions CIC**



Phase 2

Legend:
AT = Access Tandem
CdPN – Called Party Number Parameter
CIC – Carrier Identification Code
CSI – Carrier Selection Information
DL – Data Link
DN – Dialed Number
DSA – Digital Serving Area
EO – End Office
LANI – Local Automatic Number Identification
LATA – Local Access Transport Area
LSP – Local Service Provider
NCP – Network Control Point
PBX – Private Branch Exchange
SDN – Software Defined Network
TNS – Transit Network Connection

Dial-Around SDN/ADL Call (SMO) to a Carrier Solutions CIC

This call flow could be applied to any dial-around call where the ASN is used for toll transport. This includes reseller CICs that use the ASN as well as AT&T-owned CICs such as 686 (Connect N' Save), 288, and 732. The following call flow (illustrated in Figure 6-7) applies to a dial-around call to a Carrier Solutions CIC in the SMO:

1. A *4ESS* switch-served DL customer makes an originating dial-around call by dialing 101XXXX+NPA-NXXX-XXXX or 101XXXX+011+CC+NN (international call).

   Important! This could be a 1+ call if this were an SDN customer with a 1+ dial plan or 101XXXX+7 digits if this were a MEGACOM telecommunications services PCP customer.

2. The originating *4ESS* switch recognizes this as a DL call based on the presence of LANI.

3. The originating *4ESS* switch recognizes 101 in the dial string or TNS in the Q.931 SETUP message on a DL trunk and initiates dial-around processing. The switch sets XXXX or TNS as CIC. If 101 or a TNS is received on a PBX trunk group not provisioned with LANI, the TNS parameter is ignored and the call is processed as a direct dialed toll call.

4. The *4ESS* switch analyzes the DN to determine if the digit string is valid. If the DN is not valid, the call is terminated to VCA per existing procedures.

5. The *4ESS* switch determines the TT to be SDN_DARND based on the reception of 101 or TNS on a PBX trunk group provisioned with LANI and in the SDNA domain. Based on the TT, the switch obtains the transition status (SMO for this call).

6. The *4ESS* switch sends a query to the SD (including the LANI) to indicate the following:
   - DL call
   - The ANI as the Billing Number
   - The CdPN
   - The CSI (in the SDQ Information) set to **00000100** to indicate the selected CIC is not presubscribed and is inputted by the calling party, and the XXXX or TNS as the CIC.

7. The SD determines the Key Service Type based on the provisioned combination of Service Type (SDN), Voice/Data (Voice), and CIC (XXXX). Since no specific Key Service Type is provisioned for SDN+Voice+XXX, a Key Service Type of SDN is derived.

8. The SD then looks to match the ANI (SDN BN) and the Key Service Type of SDN. A match directs the SD to send the call to the 2DSA/2NCP.

9. The SD sends the LANI, BN, CdPN, CSI, and CIC to the 2DSA/2NCP.

10. Based on the presence of a LANI, CSI=00000100, and a CIC, the 2DSA/2NCP performs the following functions:
    - Determines if the customer is allowed to place dial-around calls
    - Terminates the dial-around data call if bearer = data is received
    - Determines the call type (local, intra-LATA, or inter-LATA/international)
    - Determines the LATA of the ADL customer location
    - Determines if dial-around is valid for the combination of call type, LATA, and CIC as follows:

    a. If dial-around is valid, the 2DSA/2NCP sends the following to the *4ESS* switch:

    —The CIC in the TCAP digits (CIC) parameter
    —The CSI in the TCAP CSI parameter indicating a dial-around call (selected CIC not presubscribed and inputted by the calling party)
    —The LATA in the TCAP digits (LATA) parameter
    —The LANI in the TCAP digits (Billing Number) parameter. Proceed to Step 11.

    b. If dial-around is not valid, the 2DSA/2NCP instructs the *4ESS* switch to final handle the call with the appropriate dial-around announcement.

11. Based on the receipt of the CIC, the CSI, and the LATA, the *4ESS* switch performs the following functions:
    - Constructs a 10-digit number using the CIC and the LATA values returned from the 2DSA/2NCP in the format 0LL-LLL-CCCC (where LLLLL is the LATA and CCCC is the CIC)
    - Accesses the OSPS ID access table and uses the constructed 10-digit number to determine the CRI (provisioned in the OSPS ID field)
    - Translates the CRI number to determine routing
    - Suppresses the LRN LNP query
    - Sends the call to the LSP AT with the following in the ISUP IAM:

    —The TCAP digits (Routing Number) in the CdPN parameter
    —The Charge Number populated with the LANI
    —The CdPN populated per current ADL requirements (LANI unless a Q.931 station number is available)
    —The CIC populated in the TNS and CIP parameter (only sent in the CIP if there is a direct trunk group to the carrier)
    —The CSI populated in the CSI parameter = 00000100
    —The JIP of the OAS
    —The OLI = 00 (when ADL customer does not provide OLI).

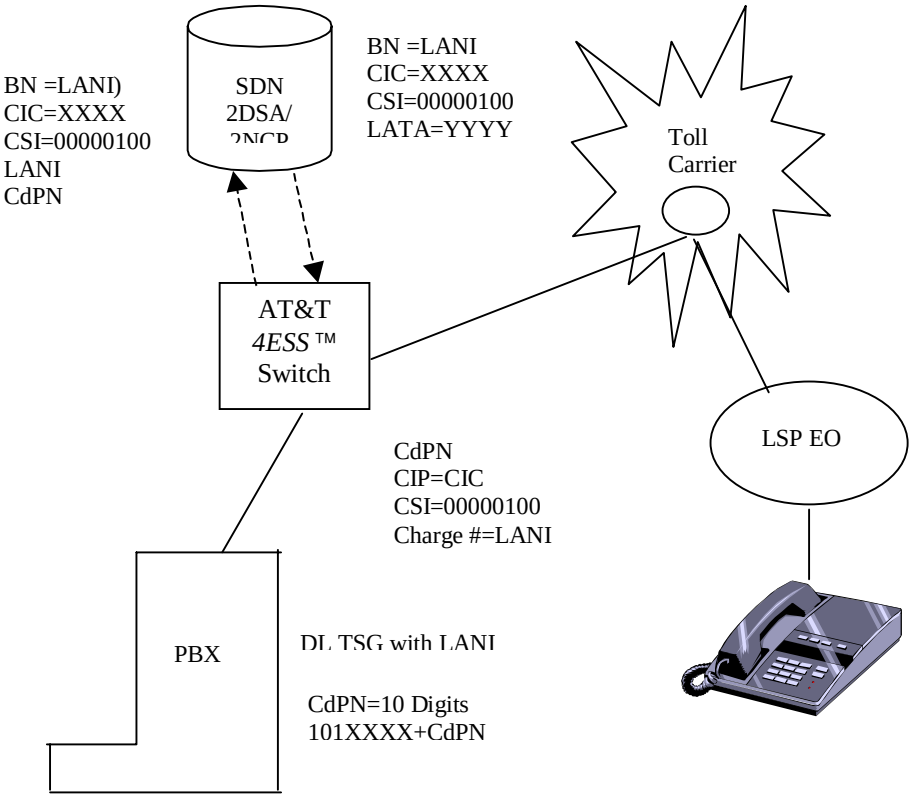
12. The *4ESS* switch creates an SDN AMA record reflecting the Billing Number received in the TCAP (LANI for Phase 2 customers) in the Originating Number fields. Module 941 is appended to record the CIC, Module 920 to record the CSI, and Module 947 to indicate an ADL call. This record is uniquely identified because of Modules 920 and 947 so that it is suppressed in the RICS.

13. Based on egressing the ASN on an LSP_LOCAL type of trunk, the *4ESS* switch creates True Access Record (625 or 627) with a Call Code of 110 to designate an originating access record and to reflect the LANI as the Originating Number. Module 908 is appended to identify the access ID of the LSP_LOCAL TSG.

14. The LEC receives the call and, based on the Carrier Solutions value received in the TNS parameter, performs appropriate call processing; and sends the call to AT&T on a switched access trunk group provisioned for Carrier Solutions with the CIC value in the CIP or TNS parameter.

15. The AT&T *4ESS* switch receives the call on the switched access trunk group. Based on the Carrier Solutions CIC in the CIP or TNS parameter, the switch performs Carrier Solutions call processing. To the *4ESS* switch, this looks like a new call. **End of Call Flow.**

Figure 6-8 – Dial-Around SDN/ADL Call Flow in PMO (Direct Connection to a Toll Carrier)



Phase 2

Legend:
BN – Billing Number
CdPN – Called Party Number Parameter
CIC – Carrier Identification Code
CIP – Carrier Identification Parameter
CSI – Carrier Selection Information
DL – Data Link
DN – Dialed Number
DSA – Digital Serving Area
EO – End Office
LANI – Local Automatic Number Identification
LATA – Local Access Transport Area
LSP – Local Service Provider
NCP – Network Control Point
PBX – Private Branch Exchange
TNS – Transit Network Connection
TSG – Trunk Subgroup

Dial-Around SDN/ADL Call in PMO (Direct Connection)

The following call flow (illustrated in Figure 6-8) applies to a dial-around call from an SDN/ADL customer in the PMO where direct-connect trunks to the toll carrier are present:

1. A *4ESS* switch-served DL customer makes an originating dial-around call by dialing 101XXXX+NPA-NXXX-XXXX or 101XXXX-011+CC+NN (international call).

2. The originating *4ESS* switch recognizes this as a DL call based on the presence of LANI.

3. The originating *4ESS* switch recognizes 101 in the dial string or Transit Network Selection (TNS) in the Q.931 SETUP message on a DL trunk and initiates dial-around processing. The switch sets XXXX or TNS as CIC. If 101 or a TNS is received on a PBX trunk group not provisioned with LANI, the TNS parameter is ignored and the call is processed as a direct dialed toll call.

4. The *4ESS* switch analyzes the DN to determine if the digit string is valid. If the DN is not valid, the call is terminated to VCA per existing procedures.

5. The *4ESS* switch determines the TT to be SDN_DARND based on the reception of 101 or TNS on a PBX trunk group provisioned with LANI and in the SDNA domain. Based on the TT, the switch obtains the transition status (PMO for this call). The *4ESS* switch sends a query to SD, but ignores any response.

6. The *4ESS* switch sends a query to the SDN 2DSA/2NCP (including the LANI) to indicate THE FOLLOWING:

   - DL call
   - The XXXX or TNS as the CIC
   - The CSI set to **00000100** to indicate selected CIC not presubscribed and inputted by the calling party
   - The DN as NPA-NXX-XXXX or CC+NN.

7. Based on the presence of a LANI, a CIS = 00000100 and a CIC, the 2DSA/2NCP performs the following tasks:
   - Determines if the customer is allowed to place dial-around calls
   - Terminates dial-around data call if bearer = data is received

- Determines the call type (local, intra-LATA, inter-LATA/international).
- Determines the LATA of the ADL customer location
- Determines if dial-around is valid for the combination of call type, LATA, and CIC as follows:

a. If dial-around is valid, the 2DSA/2NCP sends the following to the *4ESS* switch:

—The CIC in the Transaction Capabilities Application Part (TCAP) digits (CIC) parameter
—The CSI in the TCAP CSI parameter indicating a dial-around call (selected CIC not presubscribed and inputted by the calling party)
—The LATA in the TCAP digits (LATA) parameter
—The LANI in the TCAP digits (Billing Number) parameter. Proceed to Step 8.

b. If dial-around is not valid, the 2DSA/2NCP instructs the *4ESS* switch to final handle the call with the appropriate dial-around announcement.

8. Based on the receipt of the CIC, the CSI, and the LATA, the *4ESS* switch performs the following functions:
   - Constructs a 10-digit number using the CIC and the LATA values returned from the 2DSA/2NCP in the format 0LL-LLL-CCCC (where LLLLL is the LATA and CCCC is the CIC).
   - Accesses the OSPS ID access table and uses the constructed 10-digit number to determine the CRI provisioned in the OSPS ID field. A match is found at the 10-digit level indicating a direct trunk group for this toll carrier in this LATA.
   - Translates the CRI number to determine routing.
   - Suppresses the LRN LNP query.

- Sends the call over the direct connect trunks to the toll carrier with the following in the ISUP IAM:
  —The TCAP digits (Routing Number) in the CdPN parameter
  —The Charge Number populated with the LANI
  —The CdPN populated per current ADL requirements (LANI unless a Q.931 station number is available)
  —The CIC populated in the CIP parameter.

  Important! If this were an international call, the CIC would also be sent in the TNS parameter.

  —The CSI populated in the CSI parameter = 00000100
  —The JIP of the OAS
  —The OLI = 00 (when ADL customer does not provide OLI).

9. The *4ES*S switch creates an SDA AMA record reflecting the Billing Number received in the TCAP (LANI for Phase 2 customers) in the Originating Number fields. Module 941 is appended to record the CIC, Module 920 to record the CSI, and Module 947 to indicate an ADL call. This record is uniquely identified because of Modules 920 and 947 so that it is suppressed in the RICS.

10. Based on egressing the ASN on an LSP_LOCAL type of trunk, the *4ESS* switch creates a True Access Record (625 or 627) with a Call Code of 110 to designate an originating access record and to reflect the LANI as the Originating Number. Module 908 is appended to identify the access ID of the LSP_LOCAL Trunk Subgroup (TSG).

11. The toll carrier receives and completes the call.

    Important! A similar call flow applies for an ADL inter-*4ESS* switch call originated by an SDN customer in SMO or a *MEGACOM* telecommunications services PCP customer in PMO/SMO.

    End of Call Flow.

Provisioning

Structures Affected

A. OD4OFCCOPY2

Several On/Off indicators in the OD4OFCCOPY2 structure are affected by this feature. Table 6-A lists each of the indicators.

Table 6-A. OD4OFCCOPY2 Structures Affected

Item/State	Word	Disp.	Size	Description
OD4PF69 4ODFB_OFF(=0) 4ODFB_ON(=1)	6	20	1	AT&T Digital Link Phase 3 EA Dial-Around Capability Feature Off (default) Feature On
OD4PF34 4ODFB_OFF(=0) 4ODFB_ON(=1)	5	9	1	LOCAL_NODAL Release 3 Processing Off (default) On
OD4PF63 4ODFB_OFF(=0) 4ODFB_ON(=1)	6	14	1	AT&T Digital Link Phase 3 –Presubscription Capability Feature Off (default) Feature On

B. HT43DGTYP

A 3-digit type spare indicator is assigned to distinguish a Digital Link EA Dial-Around call. This indicator is defined in Table 6-B.

Table 6-B. 3-Digit Type Spare Indicator

Item/State	Word	Disp.	Size	Description
XL43DT12 4XL3DTTRUE(=1) 4XL3DTFALSE(=0)	1	11	1	AT&A Digital Link EA Dial Around Call AN ADL EA Dial-Around Call Not and ADL EA Dial-Around Call

Recent Change (RC) Forms 319 and 320 are used to populate the XL43DT12 indicator. **DT12** in entered in the DIGTYP field.

C. OD4DARNBLK

This new office-wide Digital Link EA Dial-Around Blocking Announcement IS structure is defined in the NO4MEM library as a single word block of memory within Protected, Disk-backed, API-Accessible, ODA-Generated (PABO). The Dial-Around Blocking Announcement ID data is updated and populated using RC Form 810, and is verified using the new input message 16ds and output message 6ds.

D. OD4SDSTRUCT

The OD4SDTRUCT structure is a 1-level, 80-word structure defined in PBOA memory. Two status indicators, **SDTRS11** and **SDTRS12**, are assigned for SD transitions for this feature. Table 6-C lists the updated assignments.

Table 6-C. SD Transition-Type Status Indicators

Indicator	Description	Generic Release
00	PCP Transition-Type Status Indicator	4E22+
01	POTS Transition-Type Status Indicator	4E23R1+
02	SDN Transition-Type Status Indicator	4E23R2+
03	SDS Transition-Type Status Indicator	4E23R2+
04	USDS Transition-Type Status Indicator	4E23R3+
05	PCP Cellular Transition-Type Status Indicator	4E23R4+
06	PCP Transition-Type Status Indicator	4E24R4+
07	*QuietHear** Transition-Type Status Indicator	4E24R2+
08	GETS Transition Type-Status Indicator	4E24R3+
09	SDI-I Transition Type-Status Indicator	4E24R3+
10	Carrier Solutions Transition-Type Status Indicator	4E24R3+
11	SDN Dial-Around Transition -Type Status Indicator	4E24R3+
12	PCP Dial-Around Transition -Type Status Indicator	4E24R3+
13-63	Unassigned	

*Registered service mark of AT&T.

Recent Change Forms

A. Form 809

The On/Off indicators for this feature are populated using RC Form 809. The layout of this form is not changing. However, new population rules are required. The EA_DARND On/Off indicator, **OD4PF69**, indicates the status of the AT&T Digital Link Phase 3 EA Dial-Around Capability. The Local Nodal On/Off indicator, **OD4PF34**, indicates the status of Local Nodal processing. Also affected are the following indicators:

- **OD4PF37**: End Office Local Nodal Phase 1
- **OD4PF48**: Local Nodal Phase 2.1 8YY Screening
- **OD4PF63**: Digital Link Phase 3−Presubscription Capability.

Table 6-D lists the population rules for these items.

Table 6-D. RC Form 809 Population Rules

Item	ON or OFF	Populates Item	With	Checks
PF69	ON	OD4PF69	4ODFB_ON	a, b, c
	OFF			None
PF34	ON	OD4PF34	4ODFB_ON	None
	OFF		4ODFB_OFF	None
		OD4PF37	4ODFB_OFF	None
		OD4PF48	4ODFB_OFF	None
		OD4PF63	4ODFB_OFF	b, c
		OD4PF69	4ODFB_OFF	None

a. The Digital Link Phase 3−Presubscription Capability (Feature 6685) must be **ON** (**OD4PF63** set to 4ODFB_ON).

b. The End Office Local Nodal Phase 1 (Feature 5538) must be **ON** (**OD4PF37** set to 4ODFB_ON).

c. The Local Nodal Phase 2 NODAL Processing (Feature 5371) must be **ON** (**OD4PF34** set to 4ODFB_ON).

B. Forms 100, 101, 107, and 108

New population rules limit a PBX TSG to either none or one (***not both***) of the following TSG characteristics:

- A Carrier Solution Nodal state (RS or AW) using the **CSN** field
- A LANI (10 digits) using the **CBN_DIGS** field.

The CBN_DIGS field does not appear in 1-way outgoing forms. Therefore, the new population rules are only needed on the 2-way and 1-way incoming TSG forms, in addition to the new cross check population rules. These rules are described in Table 6-E.

Table 6-E. Trunk Subgroup Form Entries

Field	Value	Populates Item	With	Checks
CSN	Blank	XL4TS_CSN	XL4TS_CSN_NONE	None
	RS	XL4TS_CSN	XL4TS_CSN_RSEL	a, b, c
	AW	XL4TS_CSN	XL4TS_CSN_AIWS	a, b, c

a. The Trunk Block Type of Trunk field TOT is equal to the entry PBX.

b. The CBN DIGS field must be blank.

c. The signaling characteristics must be either DP, MF, DTMF, or Q.931 (see Note).

- For 1-way incoming and 2-way TSG forms, the ISC field must either be **DPDDSD, DPIMMED, DTMFWK, DTS, MFDDSD, MFWINK,** or **Q.931**.
- For 1-way outgoing and 2-way TSG forms, the OSC field must either be **DPDDSD, DPIMMED, DPWINK, DTMFWK, ICOPNOP, MFDDSD, MFWINK MIOPNOP,** or **Q.931**.

Important! For CNS provisioning, the Q.931 characteristic is only allowed if PRIT=TSGPBX.

C. Form 810

The layout of this form is not changing. However, Table 6-F lists the new provisioning actions required for Transition Type Status indicators **OD4SDTRSTAT_11** and **OD4SDTRSTAT_12**.

Table 6-F. SD Transition Type Status Indicators Population Rules

RC Form 810 Entries				
Feature Info	**Data**	**Populates Item**	**With**	**Checks**
SDTRS11	PMO	OD4SDTRSTAT_11	4ODSDTRSTAT_PMO (Default)	None
SDTRS11	SMO	OD4SDTRSTAT_11	4ODSDTRSTAT_SMO	a, b
SDTRS12	PMO	OD4SDTRSTAT_12	4ODSDTRSTAT_PMO (Default)	None
SDTRS12	SMO	OD4SDTRSTAT_12	4ODSDTRSTAT_SMO	a, c

a. The AT&T Digital Link Phase 3-EA Dial-Around Capability must be ON (OD4PF69 set to 4ODFB_ON).

b. The SDN Transition Type Status indicator OD4SDTRSTAT_02 must be equal to 4ODSDTRSTAT_SMO).

c. The PCP Transition Type Status indicator OD4SDTRSTAT_00 must be equal to 4ODSDTRSTAT_SMO).

Verify Forms 16ds and 6ds

The new Input Form 16ds and Output Form 6ds are used to verify the Dial-Around Blocking Announcement ID structure data. These forms are illustrated in Figure 6-9 and Figure 6-10.

INPUT: VERIFY 16ds

ex. 1 VER:MISC DARN! (EOT)

OUTPUT: VERIFY 6ds

VER:MISC DARN

RECENT CHANGE INPUT SOURCE – FORM #810 – CHANGE MISCELLANEOUS FEATURE INFORMATION

Figure 6-9 – Verify Form 16ds (Input)

VERIFY DIAL AROUND BLOCKING ANNOUNCEMENT ID DATA

INPUT: VERIFY #16ds

VER:MISC DARN! (EOT)

OUTPUT: VERIFY 6ds

VER:MISC DARN:

BLOCKING ANNOUNCEMENT ID: ---

RECENT CHANGE INPUT SOURCE – FORM #810 – CHANGE MISCELLANEOUS FEATURE INFORMATION

Figure 6-10 – Verify Form 6ds (Output)

Recording (Not Affected)

Network Management (Not Affected)

Maintenance/Troubleshooting

Table 6-G lists the Final-Handling Codes (FHCs) that support this feature.

Table 6-G. Final-Handling Code Descriptions

FHC	Description
1806	**Last Normal Condition**: A Dial-Around code was received. **Irregular Condition**: A Dial-Around (Carrier ID) was received followed by 0+/0-/01+ (for 0+, 911 was not received) or the Dial-Around Carrier ID was received and a North American INWATS (8YY) number was detected. **Handling**: The *4ESS*™ switch connects the caller with the standard vacant code treatment and kills the call.
1807	**Last Normal Condition**: A Dial-Around code was received and the *4ESS* switch determined that a query was needed. **Irregular Condition**: The SD or 2DSA query failed. **Handling**: The call is killed with reorder.
1808	**Last Normal Condition**: A Dial-Around code is received and the *4ESS* switch sent a query to the SD or 2DSA. **Irregular Condition**: No response was received from the SD or 2DSA. **Handling**: The call is killed with reorder.
1809	**Last Normal Condition**: The *4ESS* switch attempted to send a query to the 2DSA/2NCP or the SD. **Irregular Condition**: An error occurred when communicating with the data base. **Handling**: The call is final handled with reorder.

Transition Considerations

Interaction With Other Features

This feature either depends on or affects the following features:

- Feature 5371: *4ESS Switch Local for Nodal Customers–Phase II* (4E22 Release 4 Generic)
- Feature 5641: *Segmentation Directory (SD) Phase 3* (4E24 Release 2 Generic)
- Feature 6426: *Segmentation Directory Carrier Identification Code-Based Processing and Software Defined Network Default Handling* (4E24 Release 3 Generic)
- Feature 6685: *AT&T Digital Link Phase 3–Equal Access Presubscription* (4E24 Release 2 Generic)
- Feature 7038: *Digital Link Phase 3–911 Capabilities* (4E24 Release 3 Generic).

Feature Deployment

The 4E24 Release 3 Generic must be deployed in all 4ESS switches for this feature to be fully operational.

Feature Activation

This feature is activated by a 1B Recent Change. The feature bit **PF69** is set using RC Form 809.

Absolute Word Change

This feature may also be turned on by an Absolute Word Change. Item **OD4PF69** in the Office Data Assembler (ODA) OFCCOPY2 structure is the parameter that controls the state of this feature.

CAUTION

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

The required information is as follows:

- Core address: 7123617
- Word: 6
- Size: 1
- Displacement: 20
- On: 1
- Off: 0.

.

Input/Output Manual Pages

Table 6-H describes the Input/Output (I/O) Manual Pages associated with this feature.

Table 6-H. I/O Manual Pages

I/O Message	Type	Description
TEST:TCAPDSD	Input	Used to request that a test query be sent to the NCP from the *4ESS*™ switch serving as an Action Control Point (ACP). The types of queries sent to the NCP may apply to the following: • Automatic Number Identification (ANI)-based services [Switched Digital Network (SDN)] • Dial number-based services (A800 types) • Universal Subscriber Data Structure (USDS).
TEST:TCAPDSD	Output	Indicates whether or not the query was successful. If successful, the output shows what operations were requested along with the routing digits and domain value. If not successful, the Final-Handling Code and reason for failure are indicated.

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7 AT&T Digital Link Phase 3 - 911 Capabilities Feature (7038)

Overview

Description This feature supports the AT&T Digital Link (ADL) Phase 3 – 911 (Emergency) capabilities for Business Markets Division (BMD) customers with direct T1.5 connections from a Private Branch Exchange (PBX) to the AT&T Switched Network (ASN).

Purpose The ADL 911 offer provides customers the ability to complete emergency and non-emergency calls using the AT&T network.

Contents This chapter contains the following topics

Feature Description

Background

The ADL Phase 3 – 911 feature allows ADL Phase 2 (also known as *4ESS*™ switch Local Nodal Phase 2) customers to complete emergency calls. This feature also supports 911 services for non-Digital Link customers with PBX direct connect connections to the *4ESS* switch. Support for non-Digital Link customers ensures that a customer who believes that the PBX is subscribed to ADL service can complete a 911 call. Public Safety Answering Points (PSAPs) or Emergency Services Boards (ESBs) handle 911 calls.

The *4ESS* switch recognizes 911 when received on a PBX trunk. The switch constructs a 10-digit routing number using data provisioned on the PBX trunk. The translation of the 10-digit routing number directs the *4ESS* switch to complete the call to the appropriate Local Exchange Carrier (LEC) 911 tandem with overflow routes as appropriate. Signaling between the *4ESS* switch and the LEC 911 tandem can be either Multifrequency Wink Start (MFWINK) Centralized Automatic Message Accounting/Automatic Number Identification (CAMA/ANI) or Integrated Digital Services Network User Part (ISUP). The *4ESS* switch provides peg count measurements on 911 calls and reports a call irregularity when a non-ADL customer places a 911 call. The 911 calls are free; however, Plain Old Telephone Service (POTS) Automatic Message Accounting (AMA) records are generated and stored in a study file.

ADL Service Description

The ADL offer adds local calling capabilities to existing nodal services that use the Software Defined Network (SDN) and *MEGACOM** telecommunications services network platforms. ADL is available to customer locations subscribed to the intrastate nodal services listed in Table 7-A.

*Registered service mark of AT&T.

Table 7-A - Intrastate Nodal Services

Nodal Service	Network Platform
AT&T Software Defined Network (SDN)	SDN
AT&T *UniPlan** Telecommunications Service Dedicated Service	*MEGACOM* Telecommunications Service
AT&T *UniPlan* Telecommunications Service Basic Service Option	*MEGACOM* Telecommunications Service
AT&T *UniPlan* Telecommunications Service OneRate Service	*MEGACOM* Telecommunications Service
AT&T *UniPlan* Telecommunications Service FlatRate Pricing Option	*MEGACOM* Telecommunications Service
AT&T State Calling Service	*MEGACOM* Telecommunications Service
AT&T Virtual Telecommunications Network Service (VTNS)	Both SDN and *MEGACOM* Telecommunications Service
AT&T CustomNet using Special Access	*MEGACOM* Telecommunications Service
AT&T College Connect Calling Service	*MEGACOM* Telecommunications Service

*Registered trademark of AT&T

The ADL calling capabilities include the following:

- Outbound (originated by the customer) local POTS calls.
- Outbound toll-free calls to 8YY numbers.
- Inbound (received by the customer) voice calls to POTS numbers assigned to the customer with Direct Inward Dialing (DID) capabilities. The POTS numbers assigned to the customer may be either new numbers assigned by AT&T or ported numbers.
- Equal access calls using presubscription or dial-around to select a carrier to complete intra-Local Access and Transport Area (LATA) or inter-LATA toll calls.

The ADL customers are presently expected to maintain an appropriate number of lines or trunks to another local service platform, and to use PBX Automatic Route Selection (ARS) capabilities to direct the following types of calls to the other platform:

- N11calls including 211, 311, 411, and 611.
- Calls to 500 and 900 service codes.
- Calls to 976-XXXX and other regional equivalent numbers that involve an information surcharge.
- Operator-assisted calls. However, ADL customers may subscribe to Universal T1.5 Operator Express to obtain AT&T 0+ and 00- capabilities.

Other significant attributes of ADL are as follows:

- Local calling areas that may differ from the LEC calling area. In general, ADL offers end user customers a larger local calling area than the Incumbent Local Exchange Carrier (ILEC). However, situations also exist where a call classified as local by the LEC is classified as toll in the ADL offer.
- Both inband [Dual-Tone Multifrequency (DTMF), MF, and Dial Pulse (DP)] and Integrated Services Digital Network (ISDN) Primary Rate Interface (PRI) supported for PBX customers. While service operations issues presently limit the sale of ADL to ISDN PRI customers, the interface is fully supported from a network call processing perspective.
- Uniformity across platforms. The ADL is presently supplied from a *4ESS* switch platform. In Phase 4, it will also be supplied from an AT&T-owned *5ESS*® electronic switch or other non-*4ESS* switch. All network platforms provide the same functionality to end-user customers. Certain end-user functionality (for example, ISDN PRI) is not available on the Phase 4 platform. However, a service filter process ensures that any customer requiring such functionality is served from the *4ESS* switch platform.

Customer Configurations

This ADL feature provides customers the ability to complete a 911 call to a PSAP operator using the AT&T network. To ensure the highest quality 911 service possible, the following are recommended for all ADL nodal customers choosing AT&T to complete their 911 service:

- Implement a dedicated 911 trunk group (used for only 911 calls) as the primary route for 911 calls out of the PBX. This trunk group should have a minimum of two channels with additional capacity if needed to provide 0.01 or better grade of service.
- Use normal ADL Direct Outward Dialing (DOD) routes as backup routes out of the PBX in the event that the dedicated 911 route fails. Whether the normal DOD route should also be used as an overflow 911 route (in the event the dedicated 911 trunk group is fully occupied) is to be determined and may vary by 911 jurisdiction.
- Send the originating station number for all 911 calls sent on the primary 911 route out of the PBX. This can be supported over either an ISDN PRI interface (supports either a dedicated 911 trunk group or 911 over a normal DOD trunk group) or a

dedicated analog 911 trunk group. In some cases, the PBX will need add-on hardware [Public Safety-Automatic Location Identification (PS-ALI)] to support this. In all cases, extensions are required to have dialable DID numbers rather than non-dialable extensions with Multi-Line Number (MLN) type service.

- Purchase sufficient incoming (DID and/or MLN) service so that an ADL-served callback number can be administered as the ANI for calls where the station ID is not provided.

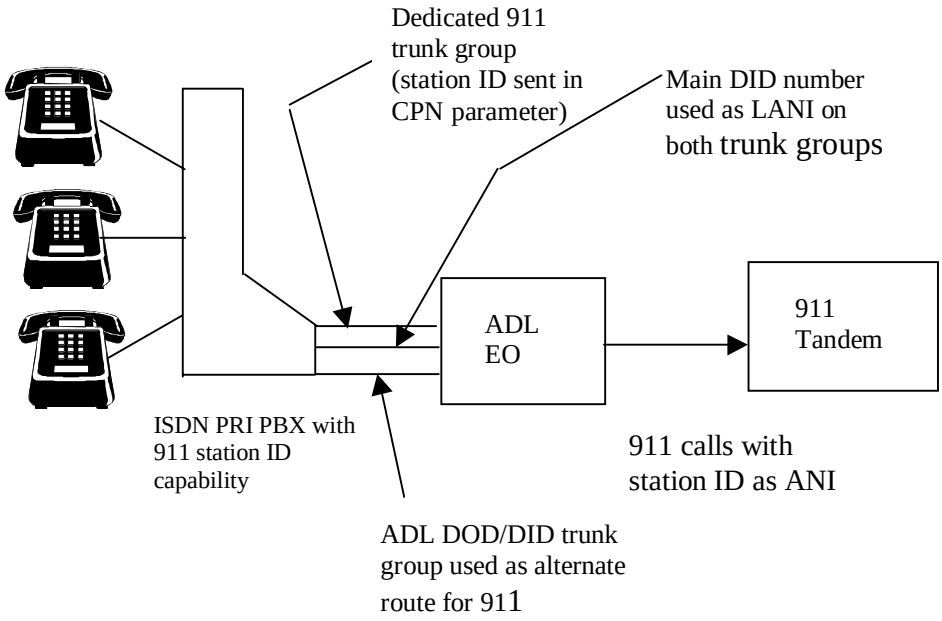
One or more of these recommendations may also be a regulatory requirement for the customer. This will vary by state or 911 jurisdiction, and may also vary with the nature of the customer. For example, some regulatory requirements apply only to PBXs installed after a certain date or to PBXs serving certain types of users such as schools or hospitals.

Where a recommendation is not also a regulatory requirement, some customers will follow the recommendations and others will not. The following scenarios describe how 911 service is provided in various situations for both types of customers (where some follow the recommendations and others do not). Six scenarios are listed in Table 7-B, followed by detailed information and other variants.

Table 7-B - 911 Configuration Scenarios

Scenario	Dedicated 911 Trunk Group	ADL DOD Trunk Group Used as Backup 911	Station Number Sent	ADL DID Service Purchased
A	Yes	Yes	Yes (PRI)	Yes
B	Yes	Yes	Yes (Inband)	Yes
C	No	No (Used as primary route)	Yes (PRI)	Yes
D	Yes	Yes	No	Yes
E	No	No (Used as primary route)	No	Yes
F	No	Yes (Other carrier 911 service is primary route)	No	No

Figure 7-1 - Configuration A



Legend:

ADL – AT&T Digital Link
ANI – Automatic Number Identification
CPN – Calling Party Number
DID – Direct Inward Dialing
DOD – Direct Outward Dialing
EO – End Office
ID – Identification
ISDN – Integrated Services Digital Network
LANI – Local Automatic Number Identification
PBX – Private Branch Exchange
PRI – Primary Rate Interface

Scenario A (Illustrated in Figure 7-1)

A customer follows all the AT&T recommendations and uses an ISDN PRI to send the station number with 911 calls. The customer's ISDN PRI to the AT&T *4ESS* switch is divided into two trunk groups: (1) a dedicated 911 trunk group and (2) an ADL DOD/DID trunk group. Although not shown, the ISDN PRI could also be divided into more than two trunk groups (that is, if the customer chose to partition the ADL DOD/DID service into multiple trunk groups, or chose to have a trunk group for a non-ADL service such as *MEGACOM* 800 telecommunications service).

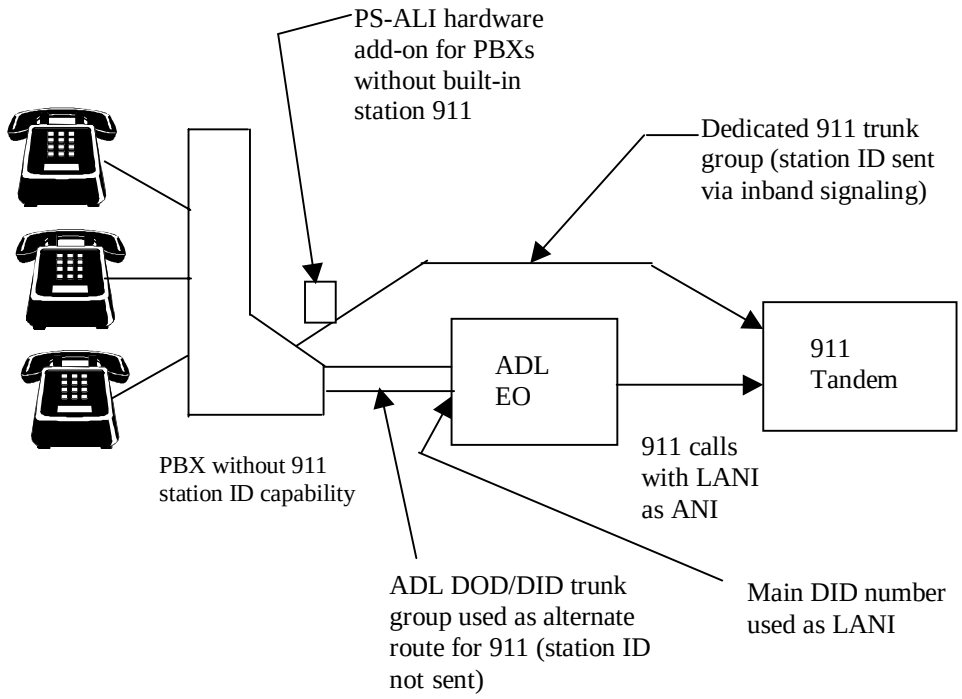
The dedicated 911 trunk group is intended to be used only for 911 calls from the PBX to AT&T. AT&T provisions this trunk as a normal ADL DOD trunk group. This prevents AT&T from routing traffic to the PBX over the trunk group. The customer is responsible for administering the PBX to route only 911 calls over this trunk group. If the PBX is administered inappropriately such that it routes outgoing ADL calls over the trunk group, AT&T will process them. *(The SOTP determines whether this trunk needs to be identified as dedicated 911 for billing or maintenance purposes.)*

The *4ESS* switch is administered to use (when available) the PBX-provided Calling Party Number (CPN) as 911 ANI in the dedicated 911 trunk group. This setting is referred to as the 911 ANI trunk group indicator with a value of **Y,** indicating ***use PBX-provided CPN when available***. On a normal 911 call, the PBX sends the calling station number as CPN in the ISDN PRI Call SETUP message. AT&T uses this station number as the 911 ANI.

The *4ESS* switch is administered with the customer's main (AT&T-controlled) DID number as the Local Automatic Number Identification (LANI) on the dedicated 911 trunk group. If a 911 call is received from the PBX without a CPN parameter, AT&T uses the trunk group LANI as the 911 ANI.

The ADL DOD/DID trunk group is used for normal ADL (non-911) traffic, and is available for backup and overflow 911 traffic (if appropriate). The 911 ANI trunk group indicator setting depends on the PBX configuration. The LANI is the main (AT&T-controlled) DID number.

Figure 7-2 – Configuration B



Legend:

ADL – AT&T Digital Link	EO – End Office
ALI – Automatic Line Identification	ID - Identification
ANI – Automatic Number Identification	LANI – Local Automatic Number Identification
DID – Direct Inward Dialing	PBX – Private Branch Exchange
DOD – Direct Outward Dialing	PS – Public Safety

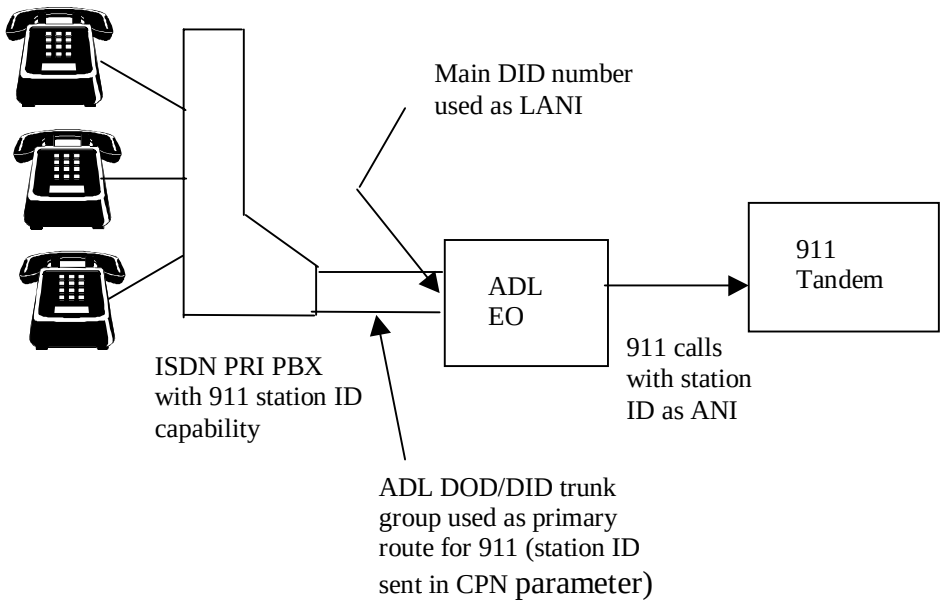
Scenario B (Illustrated in Figure 7-2)

A customer follows all the AT&T recommendations and uses an analog interface to send the station number with 911 calls on the dedicated 911 trunk group. In this scenario, the dedicated analog trunk group is not switched through the *4ESS* switch. It is a direct facility path from the PBX to the ILEC 911 tandem and is available to customers only as analog private line channels. It is to be determined whether AT&T will support a second facility option where channels on an AT&T nodal T1 provide the private line circuit to the ILEC 911 tandem.

In order to provide this configuration, it is essential that AT&T obtain the right to purchase ports on the ILEC 911 tandem to support direct PBX connections for 911 calls with station number.

The ADL DOD/DID trunk group is used for normal ADL (non-911) traffic, and is available for backup and overflow 911 traffic (if appropriate). Since the customer does not use ISDN PRI, the PBX cannot send the station number to the *4ESS* switch with 911 calls. The LANI is the main (AT&T-controlled) DID number and this number is used as the 911 ANI for all 911 calls received over the ADL DOD/DID trunk group.

Figure 7-3–Configuration C



Legend:

ADL – AT&T Digital Link
ANI – Automatic Number Identification
CPN – Calling Party Number
DID – Direct Inward Dialing
DOD – Direct Outward Dialing
EO – End Office
ID – Identification
ISDN – Integrated Services Digital Network
LANI – Local Automatic Number Identification
PBX – Private Branch Exchange
PRI – Primary Rate Interface

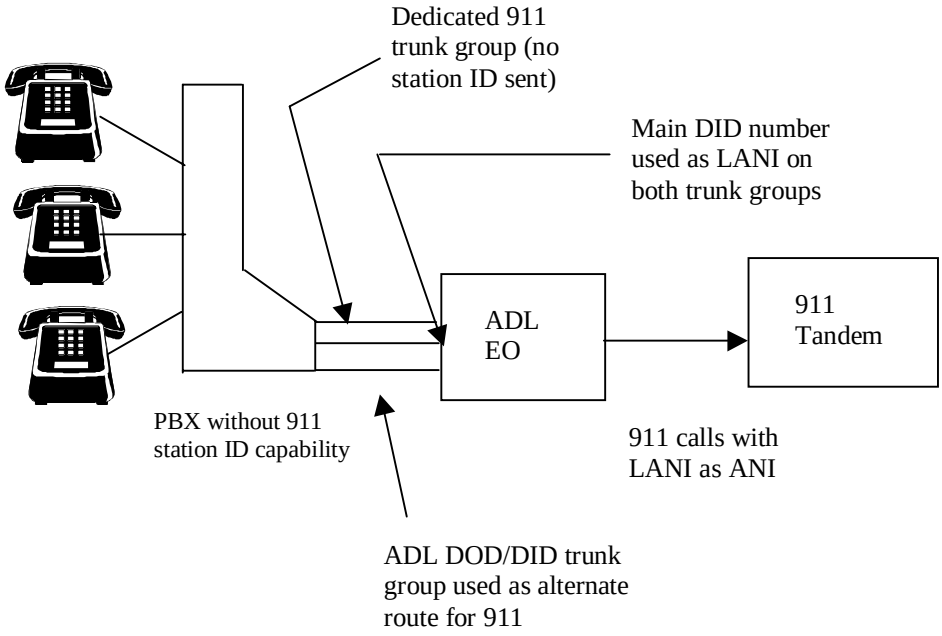
Scenario C (Illustrated in Figure 7-3)

A customer follows most but not all of the AT&T recommendations. The station number is sent using an ISDN PRI. However, the customer does not devote a dedicated trunk group for 911 traffic and instead uses the ADL DOD/DID trunk group as the primary route for 911 calls. As a result, the customer assumes the risk that a 911 call may be blocked because other routine ADL and nodal traffic has fully occupied the trunk group.

> **Important! The SOTP identifies if there are PBX capabilities to drop another call in progress to free up a channel for a 911 call.**

The 911 ANI trunk group indicator is set to **Y**. The LANI is the main (AT&T-controlled) DID number. On a normal 911 call, the PBX sends the calling station number as the CPN in the ISDN PRI Call SETUP message. AT&T uses this station number as the 911 ANI. If a 911 call is received from the PBX without a CPN parameter, AT&T uses the trunk group LANI as the 911 ANI.

Figure 7-4 – Configuration D



Legend:

ADL – AT&T Digital Link
ANI – Automatic Number Identification
CPN – Calling Party Number
DID – Direct Inward Dialing
DOD – Direct Outward Dialing
EO – End Office
ID – Identification
LANI – Local Automatic Number Identification
PBX – Private Branch Exchange

Scenario D (Illustrated in Figure 7-4)

A customer follows most but not all of the AT&T recommendations. A dedicated 911 trunk group is used, but the PBX does not send the station number with 911 calls. As a result, the 911 PSAP operator cannot automatically identify the calling station and the customer assumes the associated risks. If the caller is not able to tell the PSAP operator the exact calling location, assistance may be delayed because the emergency service response can be directed only to a general location such as a building. The 911 response may also be impaired if the caller hangs up prematurely. The PSAP operator will be unable to call back unless the caller has verbally provided the calling station number. The PSAP operator can identify the main DID number for callback and reach an attendant or security desk (if manned). The value of this situation varies with the nature of the emergency.

In situations where a PBX serves multiple buildings, the lack of automatic calling station identification can be even more serious because it may not be known to which building the emergency response should be directed. In these situations, a partial work-around may be to create a dedicated 911 trunk group for each location (building) served by the PBX and use a different LANI for each dedicated 911 trunk group.

The customer's nodal connection to the AT&T *4ESS* switch is divided into two trunk groups: (1) a dedicated 911 trunk group and (2) an ADL DOD/DID trunk group. Although not shown, the nodal connection could also be divided into more than two trunk groups (that is, if the customer chooses to partition the ADL DOD/DID service into multiple trunk groups or chooses to have a trunk group for a non-ADL service such as *MEGACOM* 800 telecommunications service).

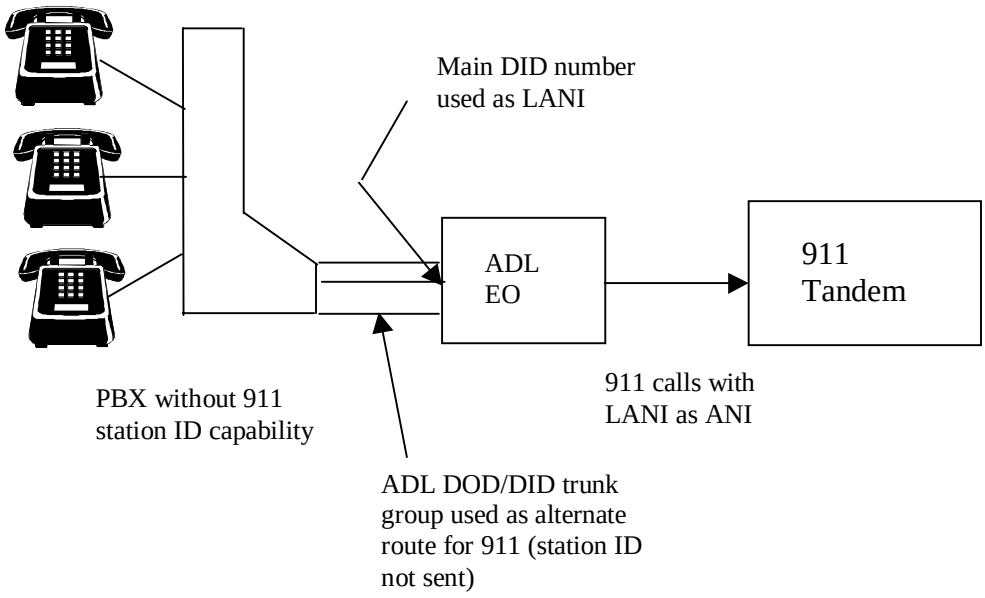
As in Scenario A, the dedicated 911 trunk group is intended to be used for only 911 calls from the PBX to AT&T. AT&T provisions this trunk group as a normal ADL DOD trunk group.

If the trunk group is ISDN PRI, the *4ESS* switch is administered with the 911 ANI trunk group indicator set to **N** (that is, use LANI). This means that if the PBX sends a CPN with a 911 call, the *4ESS* switch ignores the PBX-provided CPN and uses the trunk group LANI as the

911 ANI. The LANI is the main (AT&T-controlled) DID number. If the trunk group uses inband signaling, the 911 ANI trunk group indicator is not relevant. The LANI is the main (AT&T-controlled) DID number and is used as the 911 ANI.

The ADL DOD/DID trunk group is used for normal ADL (non-911) traffic and is available for backup and overflow traffic (if appropriate). If it is ISDN PRI, the 911 ANI trunk group indicator is set to **N** (that is, use LANI). The LANI is the main (AT&T-controlled) DID number.

Figure 7-5 – Configuration E



Legend:

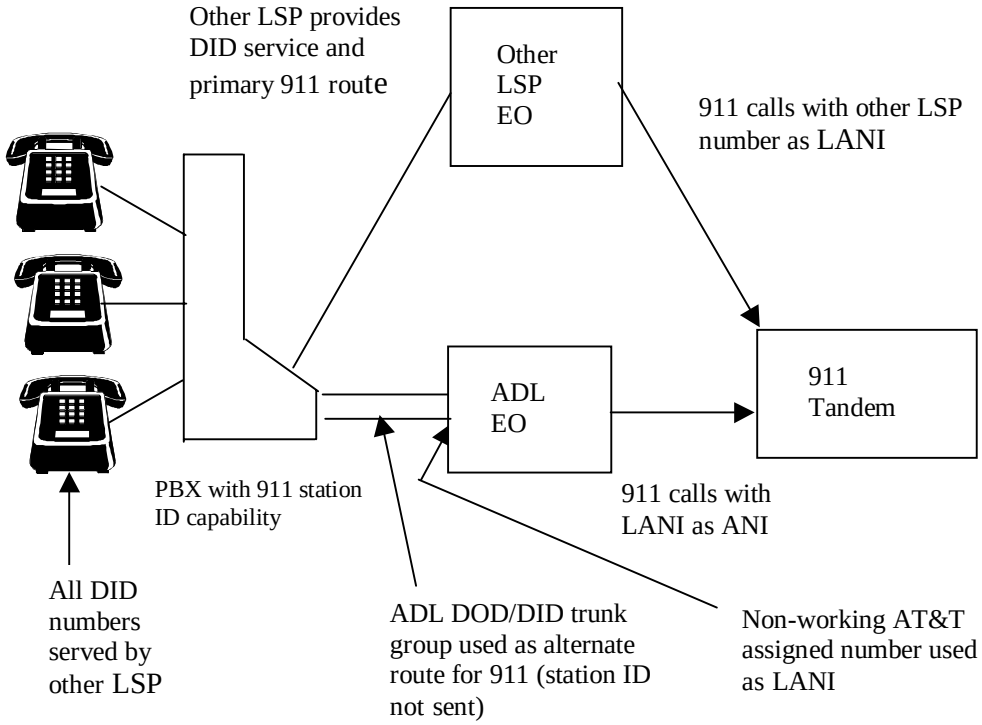
ADL – AT&T Digital Link	EO – End Office
ANI – Automatic Number Identification	ID - Identification
DID – Direct Inward Dialing	LANI – Local Automatic Number Identification
DOD – Direct Outward Dialing	PBX – Private Branch Exchange

Scenario E (Illustrated in Figure 7-5)

A customer location does not support a dedicated 911 trunk group and also does not send the station number with 911 calls. The customer assumes the risk that a 911 call may be blocked because of other routine ADL and nodal traffic (as in Scenario C). The customer also assumes the risks associated with the inability of the 911 PSAP operator to automatically identify the calling station (as in Scenario D).

The ADL DOD/DID trunk will have the LANI provisioned as the main (AT&T-controlled) DID number. If the trunk group is ISDN PRI, the 911 ANI trunk group indicator is set to **N** (that is, use LANI). The LANI is used by AT&T as the 911 ANI.

Figure 7-6 – Configuration F



Legend:

ADL – AT&T Digital Link
ANI – Automatic Number Identification
DID – Direct Inward Dialing
DOD – Direct Outward Dialing
EO – End Office PS – Public Safety
ID - Identification
LANI – Local Automatic Number Identification
LSP – Local Service Provider
PBX – Private Branch Exchange

Scenario F (Illustrated in Figure 7-6)

This scenario is similar to Scenario E (no support for station ID and no dedicated 911 trunk group), but has the additional shortcoming that the customer does not have any incoming ADL service (DID or MLN). This scenario has the risk that a 911 call may be blocked because of other routine ADL and nodal traffic (as in Scenario C) and the risks associated with the inability of the 911 PSAP operator to automatically identify the calling station (as in Scenario D). In addition, there is the added complication that the PSAP operator may not be able to automatically identify the main DID number, and reach an attendant or security desk if callback is required.

This situation exists because the LANI must be an AT&T-controlled number to enable AT&T to control the corresponding Automatic Line Identification (ALI) data base entry. Since the location has no incoming ADL service, an AT&T-controlled number must by definition be one that does not have active routing to the PBX. The ability to cross-reference a (non-AT&T controlled) callback number in the ALI data base varies by 911 jurisdiction, and is also subject to the possibility that the customer will disconnect the callback number without notifying AT&T.

In this situation, the customer must have incoming POTS service from another Local Service Provider (LSP) or another AT&T local service platform. AT&T recommends that customers use an LSP as their primary 911 provider, since the LSP will have a dialable number available to use as the 911 ANI. AT&T will provide 911 service configured as well as the situation permits on the ADL DOD trunk group with the expectation that it will be used only as an alternate route if the 911 service from the other LSP fails. If customers choose to use the ADL DOD as their primary 911 route, they must assume the inherent risks.

The ADL DOD trunk group will have the LANI provisioned as an AT&T-controlled non-working number. If the trunk group is ISDN PRI, the 911 ANI trunk group indicator is set to **N** (that is, use LANI).

Network Architecture

Carrier Trunking

Local Carrier Connecting (LCC) trunks provisioned with the local *4ESS* switch *CLLI** code are used to deliver calls between the *4ESS* switch and LEC 911 tandem when using ISUP signaling. A new CAMA/ANI Type of Trunk (TOT) with Outgoing MFWINK Start signaling may also be used to deliver 911 calls from the *4ESS* switch to the LEC 911 tandem. These trunks are provisioned with the *4ESS* switch local *CLLI* code.

The POTS AMA Structure Code 0001 with a Free Call Code (074) is generated for all nodal-originated 911 calls. The new CAMA/ANI TOT will have the SINDEX field provisioned with a zero to indicate that Access Charge Verification (ACV) records should not be generated. If there is a need for ACV records in the future, this field can be provisioned with a new value. The ACV records generated for 911 calls can be identified by the first three called party digits (equal to 911).

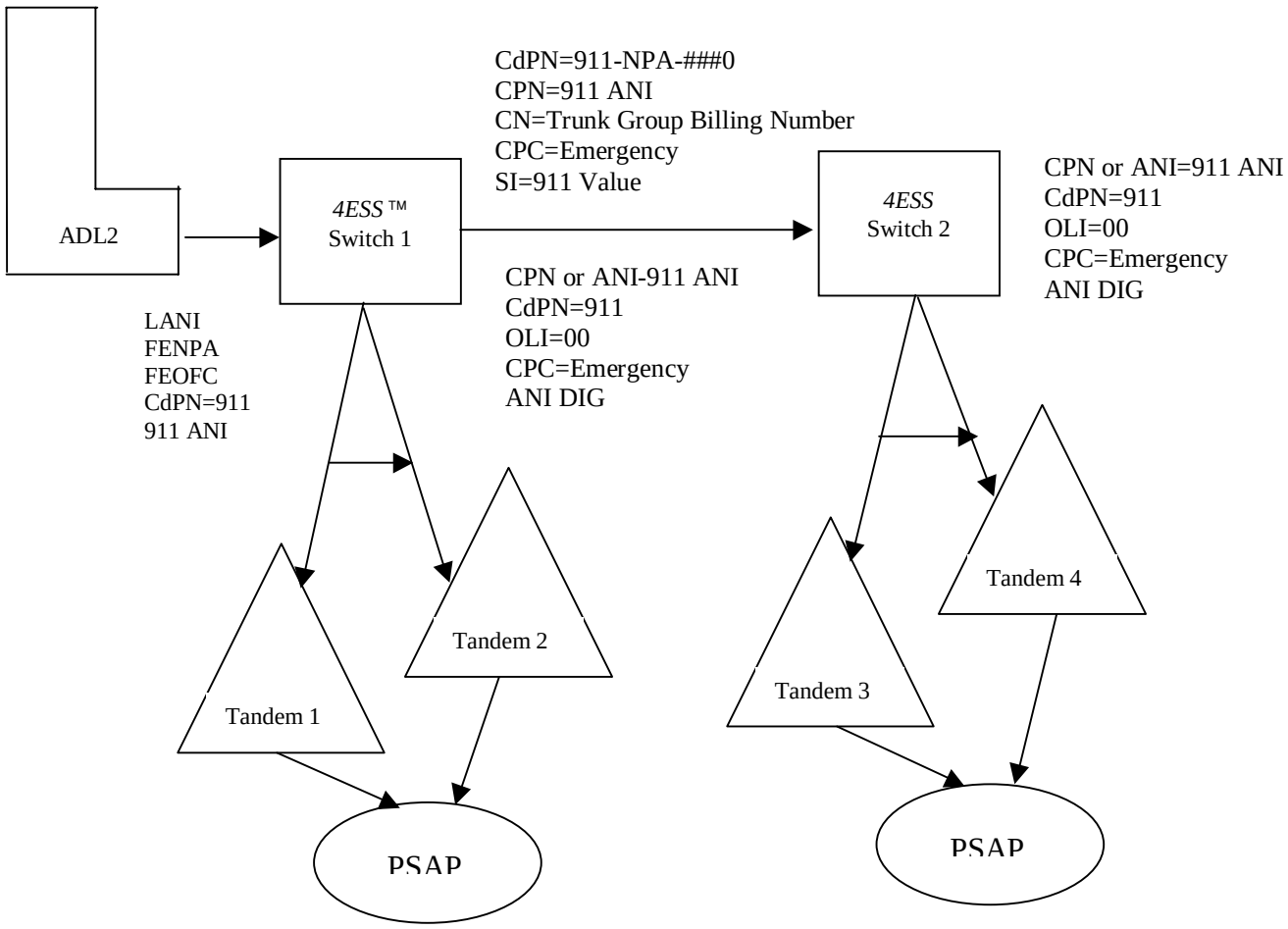
Limitations

A direct interface between the *4ESS* switch and a PSAP is not supported for 911 call completion.

□

Call Flows

Figure 7-7 – ADL2 Customer Call Flow Example



Legend:

ADL – AT&T Digital Link
ANI – Automatic Number Identification
CdPN – Called Party Number
CN – Charge Number
CPC – Calling Party Category
CPN – Calling Party Number
DIG - Digits
FENPA – Far End Numbering Plan Area
FEOFC – Far End Office
LANI – Local Automatic Number Identification
NPA – Numbering Plan Area
OLI – Originating Line Information
SI - Service Identity

911 Call for an ADL2 Customer

The following call flow (illustrated in Figure 7-7) applies to a 911 call for an ADL2 customer:

1. An ADL2 customer on the *4ESS* switch places a 911, 1+911, 0+911, 101XXXX+911, 101XXXX+1+911, or 101XXXX+0+911 call over a PBX trunk group using DTMF, MF, DP, or Q.931 signaling.

2. The *4ESS* switch recognizes 911 on a PBX trunk and initiates 911 call processing.

3. The *4ESS* switch inhibits the Segmentation Directory (SD) query.

4. The *4ESS* switch bypasses the ANI Trigger Table and inhibits the No. 2 Dialed Services ANI/No. 2 Network Control Point (2DSA/2NCP) query.

5. The *4ESS* switch constructs a 10-digit number as follows:
   - NPA = 911
   - NXX = 3-digit value populated in the FENPA (Far End Numbering Plan Area) field on the PBX trunk group
   - ###0 = 3-digit value populated in the FEOFC (Far End Office) field on the PBX trunk group plus a trailing 0.

6. The *4ESS* switch [Originating AT&T Switch (OAS)] performs 6-digit translations on 911-NXX for default routing to a LEC 911 tandem, and performs 10-digit translations if the Positive Lookup Table (PLU) provisioned on line = ###0 when a specific LEC 911 tandem is required.

7. The *4ESS* switch identifies a new Service Identity Index (SII) value of 117 for 911 calls based on the provisioning of a new spare Dialed Number Services Type (DNST21). This value should be in OTP in the codegroup translations.

8. If FEOFC and/or LANI = Blank, then the *4ESS* switch sets the 911 ANI = **Blank** (not applicable for this call flow); otherwise, for:
   - PRI type of PBX trunks, the *4ESS* switch determines (based on the 911 ANI trunk group indicator; 24R3= S7, 25R1 And later=QPE) if the LANI or the CPN (when provided) is used as the 911 ANI.

- DP, DTMF, and MF PBX trunks, the LANI is always used as the 911 ANI.

End Of Call Flow.

9. The *4ESS* switch sets the Calling Party Category (CPC) = **Emergency**.

10. If the 911 call routes inter-*4ESS* switch over ISUP trunks, the following information is sent:
    - 911-NXX-###0 as the Called Party Number (CdPN) parameter
    - 911 ANI in the Calling Party Number (CPN) parameter
    - CPC = **Emergency** and message priority = **2**
    - Charge Number (CN) = PBX trunk group billing number or Wide Area Telephone Service Billing Number (WATSBN) per existing procedures.

11. The *4ESS* switch [Terminating AT&T Switch (TAS)] routes the call as follows:

    a. When egressing to a LEC 911 tandem over the new CAMA/ANI TOT using outgoing MFWINK Start:
    - Outpulses CdPN=911 [the terminating Routing Data Block (RDB) indicates Del 10 and prefix 911]
    - Checks a new trunk group indicator (ANI DIG; 24R3=S8, 25R1 and later=ADS) on the new CAMA/ANI TOTs to determine if only a 7-digit ANI should be sent (default is a 10-digit ANI)
    - Outpulses 7- or 10-digits of the 911 ANI or CPN (if routed inter-*4ESS* switch) as ANI
    - KP-CdPN-ST KP-0NPA-NXX-XXXX-ST or KP-CdPN-ST KP-0-NXX-XXXX-ST.

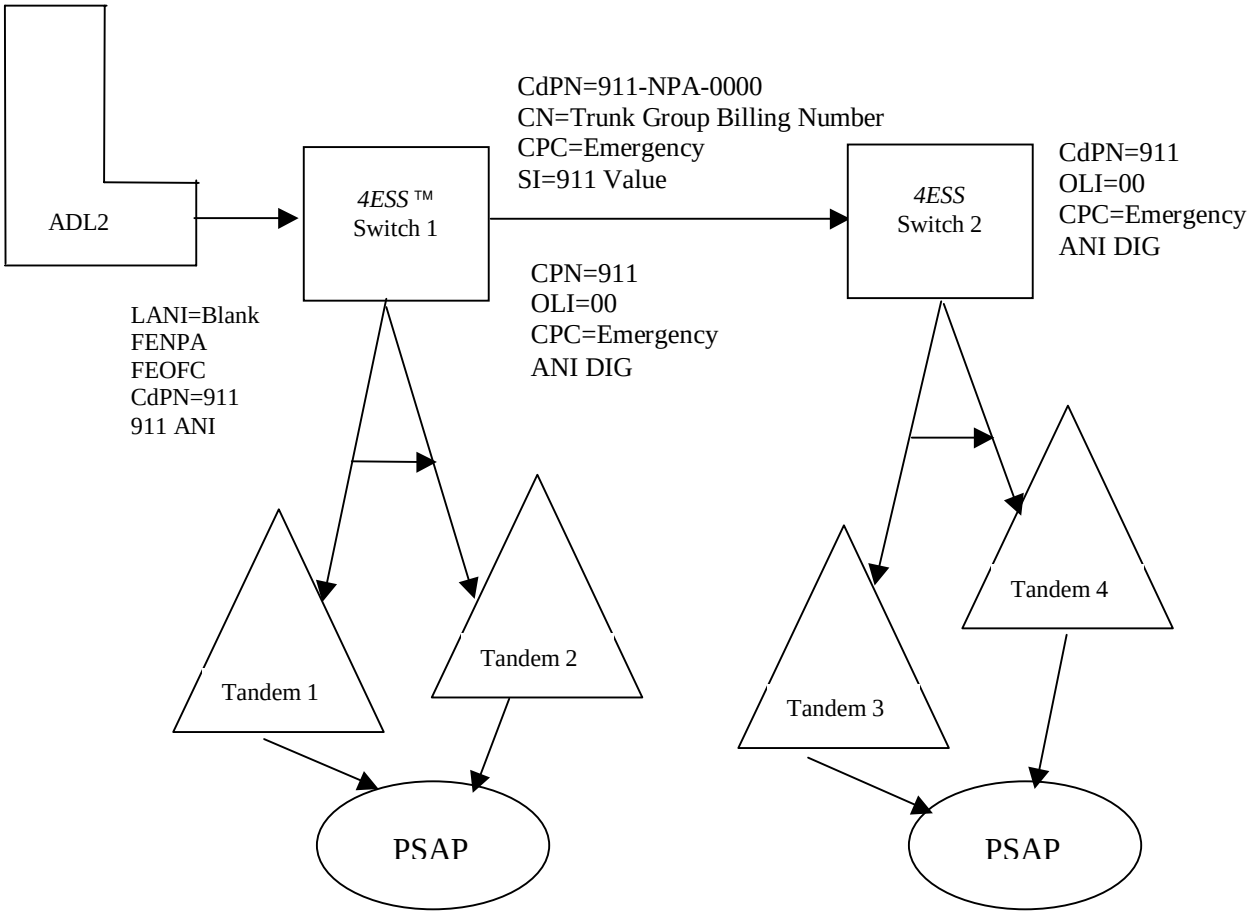
    b. When egressing to a LEC 911 tandem over ISUP trunks:
    - Sends CdPN=911 (the terminating RDB is provisioned to Del 10 and prefix 911).
    - Sends CPN if call routed inter-*4ESS* switch. Otherwise, it sends 911 ANI as CPN if call routed intra-*4ESS* switch.
    - Based on provisioning, the SII value of 117 for 911 in the Originating Line Information (OLI) Translator Table indicates sending OLI = **00**.
    - Based on the SII value of 117 for 911, the *4ESS* switch:
      1. Sends CPC = **Emergency** and message priority = **1**

2. Does not send CN
3. Ignores PSOLI, PSBN, and PSCPN values provisioned on the trunk group.

12. The following customer records are generated:
    - For an SDN ADL customer, a POTS AMA record with Call Code 074, appends the Local Nodal Module 947; and per existing procedures, appends 923 (Numbering Plan Type) and 949 [Circuit Selection Capabilities Routing (CSCR)] as applicable.
    - For a *MEGACOM* telecommunications services ADL customer, generate a POTS AMA record with Call Code 074, appends the Local Nodal Module 947; and per existing procedures, appends 949 (CSCR) as applicable.

13. The configured 911 peg count measurement is incremented.
    End of Call Flow.

Figure 7-8–Non-Configured Nodal Customer Call Flow Example



Legend:

ANI – Automatic Number Identification
CdPN – Called Party Number
CN – Charge Number
CPC – Calling Party Number
DIG – Digits
FENPA – Far End Numbering Plan Area
FEOFC – Far End Office
LANI – Local Automatic Number Identification
OLI – Originating Line Information
SI - Service Identity

911 Call for a Non-Configured Nodal Customer

The following call flow (illustrated in Figure 7-8) applies to a 911 call for a non-configured Nodal customer connected to the *4ESS* switch:

1. A Nodal customer on the *4ESS* switch places a 911, 1+911, 0+911, 101XXXX+911, 101XXXX+1+911, or 101XXXX+0+911 call over a PBX trunk group using DTMF, MF, DP, or Q.931 signaling.

2. The *4ESS* switch recognizes 911 on a PBX trunk and initiates 911 call processing.

3. The *4ESS* switch inhibits the SD query.

4. The *4ESS* switch bypasses the ANI Trigger Table and inhibits the 2DSA/2NCP query.

5. The *4ESS* switch constructs a 10-digit number as follows:
   - NPA = 911
   - NXX = 3-digit value populated in the FENPA field on the PBX trunk group
   - ###0 = 3-digit value populated in the FEOFC field on the PBX trunk group plus a trailing 0.

   Important! In this case, the FEOFC field is blank. Therefore, ### = 000.

6. The *4ESS* switch (OAS) performs 6-digit translations on 911-NXX for default routing to a LEC 911 tandem and performs 10-digit translations if the PLU provisioned on line = ###0 when a specific LEC 911 tandem is required.
   Important! For this case, no line number is provisioned for 0000.

7. The *4ESS* switch identifies a new SII of 117 value for 911 calls based on the provisioning of a new DNST =EMERG (DNST21) in the codegroup translations.

8. If FEOFC and/or LANI = Blank, then the *4ESS* switch sets the 911 ANI = **Blank** (applicable for this call flow). Otherwise, for:
   - The non-configured 911 peg count measurement is incremented.
   - A 30-second discrete is generated indicating that a non-configured customer initiated a 911 call.
   - Based on the FEOFC and /or LANI field = Blank, the 4ESS switch generates a non-blocking call irregularity message

that identifies the CIN of the trunk that initiated the 911 call.

End of Call Flow.

9. The *4ESS* switch sets the CPC = **Emergency**.

10. If the 911 call routes inter-*4ESS* switch over ISUP trunks, the following information is sent:
    - 911-NXX-0000 as the CdPN parameter
    - CPC = **Emergency** and message priority = **2**
    - CN = PBX trunk group billing number or WATSBN per existing procedures.

    Important! Per existing procedures, the CPN is not sent when 911 ANI = Blank.

11. The *4ESS* switch (TAS) routes the call as follows:
    a. When egressing to a LEC 911 tandem over the new CAMA/ANI TOT using Outgoing MFWINK Start:
    - Outpulses CdPN=911 (the terminating RDB indicates Del 10 and prefix 911).
    - If the call is routed inter-*4ESS* switch, there is no CPN. If the call is routed intra-*4ESS* switch, the switch outpulses an indication of ANI unavailable, based on 911 ANI = **Blank**.
    - KP-CdPN-ST KP-2-ST.

    b. When egressing to a LEC 911 tandem over ISUP trunks:
    - Sends CdPN=911 (the terminating RDB is provisioned to Del 10 and prefix 911).

    Important! Based on the SII value of 117 for 911 and no receipt of the CPN (if routed inter-*4ESS* switch) or 911 ANI = Blank (if routed intra-*4ESS* switch), no CPN is sent.

    - Based on provisioning, the SII value of 117 for 911 in the OLI Translator Table indicates sending OLI = **00**.

    - Based on the SII value for 911, the *4ESS* switch:

    —Sends CPC = **Emergency** and message priority = **1**.
    —Does not send CN.
    —Ignores PSOLI, PSBN, and PSCPN values provisioned on the trunk group.

12. The following customer records are generated:
    - For an SDN customer, a POTS AMA record with Call Code 074, and per existing procedures, appends 923 (Numbering Plan Type) and 949 (CSCR) as applicable.
    - For a MEGACOM telecommunications services customer, a POTS AMA record with Call Code 074, and per existing procedures, appends 949 (CSCR) as applicable.

End of Call Flow.

Provisioning

Structures Affected

A. OD4OFCCOPY2

Item **OD4PF70** is assigned as the office parameter to indicate if this feature is on or off in the switch. Table 7-C lists the state of Item **OD4PF70**.

Table 7-C – OD4OFCCOPY2 Item Assignments

Item/State	Word	Disp.	Size	Description
OD4PF70 4ODFB_OFF(=0) 4ODFB_ON(=1)	1	21	1	ADL Phase 3 – 911 Capabilities Feature Off (default) Feature On

B. HT43DIGTYP

For the 4E24 and later generic releases, a spare 3-digit type indicator, **DT13**, is assigned to identify emergency numbers for the ADL Phase 3 – 911 Capabilities. The assignment is listed in Table 7-D.

Table 7-D – HT43DIGTYP Structure Assignments

Item/State	Word	Disp.	Size	Description
XL43DT13 4XL3DTFALSE (=0) 4XL3DTTRUE (=1)	1	12	1	Identifies emergency numbers for ADL Phase 3-911 Capabilities 3-digits are ***not*** an emergency number (default) Identifies an emergency number

This indicator is populated using Recent Change (RC) Forms 319 and 320. The DIGTYP entry is **DT13**. The associated Verify Forms are 13d and 3h. No form changes or population rules are required for this assignment.

C. HT4ASCITA

For the 4E24 and later generic releases, ASCIT question Number 23 (**XL4ASCIT23**) is assigned to this feature. The description for this question is changed from *unused* to the following:

> ***Is this an emergency call per the AT&T Digital Link Phase 3 – 911 Capabilities?***

The SII ASCIT Questions (Q1 through Q48) are provisioned using RC Form 653 and verified using Verify Form 16au. No form changes or population rules are required for this type SII ASCIT question assignment.

D. HT4TBNCORE

For the 4E24 generic release only, two existing spare Trunk Subgroup (TSG) items and fields are used for this feature: (a) the existing HT4TBNCORE spare (single bit) Items **XL4TB_S7** and **XL4TB_S8**, and (b) their corresponding TSG fields **S7** and **S8**. These spare 1-bit items are located in Word 5 (displacement 12 for **XL4TB_S7** and displacement 13 for **XL4TB_S8**) of the trunk block and are copied into the Call Register. The meaning/use of the S7 field is the same as the QPE field and the meaning/use of the S8 field is the same as the ADS field (defined later in this chapter) for the 4E25 Generic Release. The existing 4E24 forms are not changing. The existing states/values for XL4TB_S7* and XL4TB_S8* are defined in Table 7-E. The new temporary (Spare field) population rules are defined in Table 7-F.

*Blank is only allowed if the corresponding spare memory item is equal to zero.

Table 7E – S7 and S8 States

Form Entry	Symbol	Value
Blank, N	X4XLTB_SPARN	0
Y	X4XLTB_SPARY	1

Table 7F – S7 and S8 TSG Form Population Rules

TSG Form Entry		Populates Item	With	Additional Rules
Field	**Value**			
S7	Blank	XL4TB_S7	4XLTB_SPARN	None
	N		4XLTB_SPARN	None
	Y		4XLTB_SPARY	a, b, c, d, e
S8	Blank	XL4TB_S8	4XLTB_SPARN	None
	N		4XLTB_SPARN	None
	Y		4XLTB_SPARY	f

a. The office must be an AT&T switch (OD4OPTENH must equal 4ODOPT_YES).

b. The Trunk Block (TB) Incoming Signaling Characteristic (**ISC**) field must be **Q.931** [that is, the XL4TB_ISC memory item must be equal to the 4XLIQ931 assigned state. The TSG may be either a 2-way (RC Form 100 or 107) or a 1-way incoming (RC Form 101 or 108) Q.931 TSG]. This assigned state also implies that the Trunk Block Type of Trunk (XL4TB_TOT) must be equal to 4XLTOTPBX.

c. The TB Primary Rate Interface Type (**PRIT**) field must be **TSGPBX** [that is, the XL4TB_PRIT memory item must be equal to the 4XLTB_TSPBX (normal PBX TSG) assigned state].

d. The **FEOFC** field must be provisioned non-Blank [that is, the XL4TS_FEOFC memory item must be provisioned with 3 telephone company Binary Coded Digits (BCDs) that are not equal to a binary zero].

e. The LANI **CBN DIG** field must be provisioned non-Blank (that is, the XL4TS_LNI memory item must be equal to the 4XLTS_LNI_Y assigned state).

f. The TB **TOT** field must be **CMA**, the new CAMA/ANI TOT

(that is, the XL4TB_TOT memory item must be equal to the 4XLTOTCMA assigned state). This assigned state also implies the following conditions:

- The office is an AT&T switch (OD4OPTENH must equal 4ODOPT_YES).
- The TB Outgoing Signaling Characteristic (**OSC**) XL4TB_OSC must be equal to 4XLOMFWINK.
- The TB is 1-way outgoing. Therefore, XL4TB_ISC must be equal to 4XLI1WAYOUT.

Important! In the 4E25 Generic Release, the S7 and S8 fields will become spare fields again and initialized. The associated population rules are NOT forwarded.

E. HT4TSG

In the 4E24 and later generic releases, a new TSG TOT entry (**CMA**) is used to identify CAMA/ANI 1-way outgoing MFWINK type of trunks. The CMA entry is only allowed on the 1-way outgoing TGS forms. The population rules are defined in Table 7-G.

Table 7-G – CMA Population Rules

TSG Form Entry		Populates Item	With	Checks
Field	**Value**			
TOT	CMA	XL4TB_TOT	4XLTOTCMA	a, b

a. The office must be an AT&T switch (OD4OPTENH must equal 4ODOPT_YES).

b. The TB 1-way OSC field must be **MFWINK** (that is, the XL4TB_OSC memory item must be equal to the 4XLOMFWINK assigned state and the XL4TB_ISC memory item must be equal to the 4XLI1WAYOUT assigned state).

Important! The FAR4E TSG parameter must not be blank.

Growth and Retrofit

For the 4E24 to 4E25 retrofits, the Spare Trunk Block items are mapped into the associated TSG items as outlined in Table 7-H.

Table 7-H – Mapping Spare TB Item to New TSG Item

Trunk Block		Trunk Subgroup		
TB Item	**Value**	**TSG Item**	**Value**	**Population Rules**
XL4TB_S7	4XLTB_SPARN	XL4TS_QPE	4XLTS_QPE_N	None
	4XLTB_SPARY		4XLTS_QPE_Y	a, b, c, d, e
XL4TB_S8	4XLTB_SPARN	XL4TS_ADS	4XLTS_ADS_N	None
	4XLTB_SPARY		4XLTS_ADS_Y	f

a. The office must be an AT&T switch (OD4OPTENH must equal 4ODOPT_YES).

b. The TB **ISC** field must be **Q.931** [that is, the XL4TB_ISC memory item must be equal to the 4XLIQ931 assigned state. The TSG may be either a 2-way (RC Form 100 or 107) or a 1-way incoming (RC Form 101 or 108) Q.931 TSG]. This assigned state also implies that the Trunk Block Type of Trunk (XL4TB_TOT) must be equal to 4XLTOTPBX.

c. The TB **PRIT** field must be **TSGPBX** [that is, the XL4TB_PRIT memory item must be equal to the 4XLTB_TSPBX (normal PBX TSG) assigned state].

d. The **FEOFC** field must be provisioned non-Blank [that is, the XL4TS_FEOFC memory item must be provisioned with three telephone company BCDs that are not equal to a binary zero].

e. The LANI **CBN DIG** field must be provisioned non-Blank (that is, the XL4TS_LNI memory item must be equal to the 4XLTS_LNI_Y assigned state).

f. The TB **TOT** field must be **CMA**, the new CAMA/ANI TOT (that is, the XL4TB_TOT memory item must be equal to the 4XLTOTCMA assigned state). This assigned state also implies the following conditions:

- The office is an AT&T switch (OD4OPTENH must equal 4ODOPT_YES).
- The TB **OSC** XL4TB_OSC must be equal to 4XLOMFWINK.

- The TB is 1-way outgoing. Therefore, XL4TB_ISC must be

equal to 4XLI1WAYOUT.

After the spare TB items are mapped into the appropriate TSG items, the spare TB items are initialized to zero.

Recent Change Forms Affected

A. Forms 100, 101, 102, 107, 108, and 109

For the 4E24 Generic Release, there are no changes to these forms. Only new temporary (Spare field) population rules are needed. Two existing spare TSG fields are used for this feature—spare items XL4TB_S7 and XL4TB_S8 and the associated TSG fields S7 and S8. The meaning/use of field S7 is the same as QPE and field S8 is the same as ADS (see **Growth and Retrofit**). For the 4E25 Generic Release, both S7 and S8 will again become spare fields. Neither will the temporary population rules be forwarded into the 4E25 Generic Release.

B. Form 809

This form is used to enable and disable the feature bit for this feature. Valid entries are as follows:

- FEATURE ITEM field = **PF70**
- ON OR OFF field = **ON** or **OFF** (the default).

Verify Forms Affected

A. Forms 1e and 11d

For the 4E24 and later generic releases, a new TSG data search CMA item is implemented for the TOT entry. This search is supported by the **VER:TSGLIST** input message.

B. Forms 1a, 1b, and 11c

For the 4E24 and later generic releases, a new TOT entry is defined and supported by **VER:TSG** output message.

□

Call Detail Recording

The OAS generates a Long Distance Service (LDS)-type AMA record (AMA Structure 0001) for all 911 calls originated by a Nodal or ADL customer. This record contains the Call Code value 074 (Free Call).

If the call originated from an ADL location, the Local Nodal Module (Module 947) is appended to the record. An Access ID Module (AMA Module 908) is appended to the record if an Access ID is populated on the incoming nodal and/or outgoing *4ESS* switch intertoll/LSP TSG. The Numbering Plan Module (AMA Module 923) is appended if the originating number and/or terminating number is an APN number.

For Nodal SDN customers, the originating number (equal to the TSG Billing Number) may be an APN number. The CSCR Module (AMA Module 949) is also appended to the record. The SII in the CSCR Module identifies the service as 911 (not *MEGACOM* telecommunications service or SDN).

AMA Structure Population

The population rules for AMA Structure 0001 are listed in Table 7-I.

Table 7-I – AMA Structure 0001 Population

Table	Field	Population Rule
00	Hexadecimal Identifier	According to existing requirements
0	Structure Code	
1	Call Type	**074**
2	Sensor Type	According to existing requirements
3	Sensor Identification	
4	Recording Office Type	
5	Recording Office Identification	
6	Connect Date	
7	Timing Indicator	
8	Study Indicator	
9	Answer Indicator	
10	Service Observed/Traffic Sampled	
11	Operator Action	
12	Service Feature	**045** (Direct Access, Switched Egress, OffNet

Table 7-I – AMA Structure 0001 Population (Cont'd)

13, 14	Originating NPA & Number	Populated as follows: • If the 911 ANI indicator on the nodal TSG is set to **Y**, the switch populates these fields with the CPN received in the Q.931 SETUP message (if the CPN is 10 digits). If a CPN is not received or the CPN received is not 10 digits, this field is populated with the LANI provisioned on the nodal TSG. • If the 911 ANI indicator on the nodal TSG is set to **N**, the switch populates this field with the LANI. If the LANI is not populated on the nodal TSG, then this field is populated with the TSG Billing Number (WATSBN-*MEGACOM* telecommunications service or Billing Number-SDN).
15	Terminating Overseas Indicator	**0** (Not an Overseas Call-NPA Dialed)
16, 17	Terminating NPA & Number	The 10-digit routing number (911-NXX-###0)
18	Connect Time	According to existing requirements
19	Elapsed Time	

AMA Module 947 The population rules for AMA Module 947 are listed in Table 7-J.

Table 7-J – Module 947 Population

Table	Field	Population Rule
88	Module Code	According to existing requirements
925	Local Call Indicator	**5** (Digital Link Equal Access)
13, 14	Local ANI NPA & Number	The number contained in the CBN_DIGS (LANI) field on the nodal TSG
R00	Reserved 1	According to existing requirements

□

Network Management

Message Type 1 This modified message (30-Second Discrete Data) contains the new discrete that indicates that a non-configured direct connect customer has placed a 911 call. The new discrete resides in Word 6, **b**it 31 of

Message Type 1.

Message Type 8 This modified message (5-Minute Machine Performance Counts) reports the following three new counts:

- Total 911 call attempts originated by configured DL customers
- Total blocked 911 call attempts
- Total non-configured 911 call attempts.

These counts are copied from Word 1 of the NM4_911_ATT, NM4_911_BLK, AND NM4_911_ATT_NC blocks of memory, respectively.

□

Maintenance/Troubleshooting

The nine new Final-Handling Codes (FHCs) described in Table 7-K were created to support this feature.

Table 7-K – New Final-Handling Codes

FHC	Description
1797	**Last Normal Condition:** An MFWINK Start CAMA/ANI outgoing trunk was selected and called digits were signaled. **Irregular Condition:** After signaling the called digits, the timer for the off-hook (ANI request) expired from an MFWINK Start CAMA/ANI type of trunk. **Handling:** The Outgoing Trunk (OGT) is reported for error analysis, the OGT and MF transmitter are idled, and rehunt is invoked to attempt to complete the call one more time on another OGT.
1798	**Last Normal Condition:** The trunk was seized and the called digits were signaled. **Irregular Condition:** The *4ESS*™ switch received an MF transmitter error report while trying to transmit the ANI on an MFWINK Start CAMA/ANI type of trunk. **Handling:** The switch reports the MF transmitter for error analysis, idles the OGT, and invokes rehunt to attempt to complete the call to another OGT one more time.
1799	**Last Normal Condition**: A trunk was seized, the called digits were signaled, the off-hook (ANI request) was received, and the switch started to send the ANI digits on an MFWINK Start CAMA/ANI OGT. **Irregular Condition**: The switch received an unexpected on-hook on the CAMA/ANI OGT. **Handling**: The OGT and transmitter are idled, and rehunt is invoked to attempt to complete the call to another OGT.

Table 7-K – New Final-Handling Codes (Cont'd)

1800	**Last Normal Condition**: The call is determined to be a 911 emergency call. **Irregular Condition**: The incoming TSG is determined to be non-configured for ADL Phase 3- 911 Capabilities (LANI, FEOFC, or both not populated on the PBX ICT). **Handling**: Call processing continues and the call is routed to the 911 destination.
1801	**Last Normal Condition**: The switch detected a 3-digit type and constructed the 10-digit 911 emergency routing number. **Irregular Condition**: While attempting to translate the 10-digit constructed 911 emergency number, an invalid call type is found. **Handling**: The call is final handled and all associated resources are idled.
1802	**Last Normal Condition**: The 911 3-digit type is detected and the 911 feature is active. **Irregular Condition**: The call is determined to be a data call. **Handling**: The call is final handled and all associated resources are idled.
1803	**Last Normal Condition**: The switch seized a CAMA/ANI OGT, signaled called digits, and started to wait for the ANI request. **Irregular Condition**: An off-hook (ANI request) was not received from the far end for the second attempt on this call. **Handling**: The call is final handled, all associated resources are idled, and the CAMA/ANI OGT is reported for error analysis.
1804	**Last Normal Condition**: The switch selected a retry trunk, received off-hook (ANI request), and attempted to outpulse the ANI ON A CAMA/ANI OGT. **Irregular Condition**: An MF transmitter error report is received. **Handling**: The call is final handled, the associated resources idled, and the transmitter is reported for error analysis.
1805	**Last Normal Condition**: The switch received the off-hook ANI request and started sending the digits on a CAMA/ANI type of trunk. **Irregular Condition**: During a second trial failure, an unexpected on-hook OGT is detected while outpulsing the digits. **Handling**: The call is final handled and all associated resources are idled.

□

Transition Considerations

Interaction With Other Features

This feature interacts with the following features:

- Feature 5371: *4ESS™ Switch Local for Nodal Customers–Phase II* (4E22 Release 4 Generic)
- Feature 6685: *AT&T Digital Link Phase 3–Equal Access Presubscription* (4E24 Release 2 Generic)
- Feature 6990: *AT&T Digital Link Phase 3–Equal Access Dial-Around Capabilities* (4E24 Release 3 Generic).

Feature Deployment

It is not necessary for the 4E24 Release 3 Generic to be deployed in all switches for this feature to be fully operational. Before turning this feature on, however, the 4E24 Release 3 Generic must be deployed in the ***switches that will be acting as either an OAS or a TAS for the 911 emergency calls***.

Feature Activation

Before activating this feature, the following information should be administered to ensure proper functionality:

- The WATS band screening tables should be modified in all potential originating switches such that 911 calls originating from any WATS area will complete.
- The new 911 3-digit type should be populated in all OASs to indicate that 911 is an emergency call per this feature.
- The 911 codegrouping should be populated per the rules for 911 called number construction (10-digit number in the form of 911+ICT FENPA+ICT FEOFC+0). This new codegrouping uses a new spare DNST value (DNST21) for 911 calls.
- The new Class of Service (COS) parameter mappings should be added using the new DNST to map to a new spare SII of 117 indicating 911 Emergency call.
- The SII should be mapped to an RPI and ERPI per existing COS and RTNR rules.
- The ASCIT Question Q23 (Is this an emergency call per the AT&T Digital Link Phase 3–911 Capabilities) must indicate **Y** for the new spare SII of 117 indicating 911 Emergency call. This should be done in all switches that may act as an OAS or a TAS for a 911 call.

This feature is activated (turned on) by a 1B Recent Change. The Feature Bit PF70 is set using RC Form 809. The population rules are as follows:

- FEATURE ITEM = **PF70**
- ON OR OFF = **ON** (the default is OFF).

Feature Deactivation

This feature is deactivated (turned off) by a 1B Recent Change. The feature bit is set populating RC Form 809 as follows:

- FEATURE ITEM = **PF70**
- ON OR OFF = **OFF** (the default).

Absolute Word Change

This feature may also be turned on by an Absolute Word Change. Item **OD4PF70** in the Office Data Assembler (ODA) OFCCOPY2 structure is the parameter that controls the state of this feature.

CAUTION

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

The required information is as follows:

- Core Address: 7123617
- Word: 6
- Size: 1
- Displacement: 21
- On: 1
- Off: 0

□

Input/Output Manual Pages

Although no new or changed Input/Output (I/O) Manual Pages are affected by this feature, the following messages are used for verification:

- The input message **VER:TSGLIST** (used as a new TSG data search CMA item for the TOT entry)
- The output message **VER:TSG** (prints the TOT entry data).

□

8 Real-Time Network Routing (RTNR) - Type of Origination (TORIG) for World Zone 1 (IWZ1) Feature (7067)

Overview

Description This feature defines how Type of Origination (TORIG) is derived on the international Trunk Sub-Groups (TSGs) and implements *International Switched Transit Service – Carrier Specific Routing (ISTS-CSR) Feature* (3819) for calls originating from International World Zone 1 (IWZ1) countries.

Purpose This chapter provides customers with information on Feature 7067, including description and transition considerations.

Contents This chapter contains the following topics:

Feature Description

Background

Currently, when the *4ESS* switch derives the TORIG of a call, the wrong TORIG is obtained because the *4ESS* switch does not check the IWZ1 field for the TSGs using the following Incoming Signaling Characteristics (ISC):

- CCITT5
- CCITT6
- INUP
- TUP.

As a result, the ISTS-CSR Feature 3819 is unable to function correctly. In order for ISTS-CSR to function properly, the following parameters must be set correctly:

- TORIG
- Type of Destination (TDEST)
- Signaling Service Type (SST)
- Dialed Number Service Type (DNST).

With the implementation of this feature, TORIG will be derived correctly and ISTS-CSR will function properly.

Call Flow (Not Affected)

Provisioning (Not Affected)

Recording (Not Affected)

Network Management (Not Affected)

Maintenance/Troubleshooting (Not Affected)

Transition Considerations

Feature Deployment

Before the deployment of this feature, AT&T must perform the following actions:

- Provision the TSGs with IWZ1=Y
- Set Type of Trunk (TOT) = International Overflow (INTO).

The previous actions are performed when the Incoming Signaling Characteristics are one of the following:

- Common Channel Signaling Number 5 (CCITT5)
- Common Channel Signaling Number 6 (CCITT6)
- International CCITT7 (INUP)
- Telephone User Part CCITT7 (TUP).

It is not necessary for all *4ESS* switches in the network to be running the 4E24 Release 3 Generic for this feature to be fully operational.

Feature Activation

This feature is turned on automatically by software deployment.

Input/Output Manual Pages (Not Affected)

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9 AT&T Digital Link Announcement Platform - Phase 1 Feature (7148)

Overview

Description This feature allows announcements to be played based on specific 10-digit line numbers. This means that the *4ESS™* switch can play Public Announcement System (PAS) announcements from 10-digit Positive Look Up [PLU (table)] routing entries.

Purpose This feature allows AT&T to provision 10-digit numbers to point to an announcement provisioned on the Improved Service Announcement and Information Collection /Service Circuit System (ISAIC/SCS) or to a test tone.

Contents

This chapter cotains the following topics:

Feature Description

Background

Previously, AT&T was not able to play announcements on the *4ESS* switch based on a 10-digit routing number from an edge switch. Until now, Recent Change/Verify (RC/V) would not allow a call type of PAS or Test Tone (TST) to be provisioned in the PLU.

User Benefits

This feature allows AT&T to provision 10-digit numbers to point to an announcement provisioned on the ISAIC/SCS or to a test tone. It also supports a variety of announcements and test tones for AT&T Digital Link customers (formerly known as 4E LOCAL_NODAL) who subscribe to local capability and are provisioned on the *4ESS* switch.

Call Flow (Not Affected)

Provisioning

Recent Change Form 346

The population rules for Recent Change (RC) Form 346 were modified to support this feature; however, the appearance of the RC and Verify forms did not change. Specifically, the PAS and TST call- type entries were added as follows:

- PAS – 12-digit value
- TST – 100, 101, 102, 103, 104, 105, 108, 109, SYN.

This modification allows a 10-digit number to be assigned to a call type of PAS or TST in the PLU. In addition, PAS and TST call types can be the default for call-type treatment at the ABC-DEF level.

Verify Form 3ak

Verify Form 3ak was also modified to support the PAS and TST call types.

Recording (Not Affected)

Network Management (Not Affected)

Maintenance/Troubleshooting (Not Affected)

Transition Considerations

Feature Deployment It is not necessary for all *4ESS* switches in the network to be running the 4E24 Release 3 Generic for this feature to be fully operational.

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

Input/Output Manual Pages (Not Affected)

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10 Expanding Route Skip, Cancel - To and Cancel - From Controls Feature (7221)

Overview

Description This feature expands the Route Skip, Cancel – to and Cancel – From controls to better manage the traffic at the Network Operations Center (NOC). The new capabilities described by this feature are derived from the NOC via the Network Management Operations System (NEMOS).

Purpose This feature helps to better manage the traffic at the NOC.

Contents This chapter contains the following topics:

Feature Description

Background

Prior to this feature, the NOC network traffic managers were only able to select and control one destination area, all destination areas, or all but one destination area. The network managers could also include or exclude a destination area.

Benefits

The enhancements provided by this feature allow network managers to control from 1 to 15 different destination areas and to select one of the ten percentages of the route to be skipped /cancelled for each area. The traffic managers have the option of selecting any number of the areas with one fixed rate that applies to all selected areas.

Specifically, the Percent field of the *4ESS™*-NEMOS switch Messages 79 and 169 (now 84 and 172, respectively) has been expanded from 1 field to 15 fields, and the "area " field in these messages was expanded from 1 area to 15 areas. Also, six NEMOS control displays were modified; they are listed in the "Network Management" section.

This feature supports Route Skip, Cancel-To and Cancel-From controls for both International End-to-end Class of Service (IECOS) and Domestic End-to-end Class of Service (DECOS).

Call Flow (Not Affected)

Provisioning (Not Affected)

Recording (Not Affected)

Network Management

New Network Management Messages

The following new Network Management messages were created to support this feature; they replace two *4ESS*-NEMOS switch Messages, 79 and 169, that have the same names:

- New – ECOS Route Base Cancel/Skip Demand Data Message 84; it replaces Message 79.
- New – ECOS Route Cancel Skip/Control Message 172; it replaces Message 169.

Specific Capabilities

As previously described, the following capabilities are included in this feature:

- In Route Skip, Cancel-To and Cancel-From controls, the *4ESS* switch allows NEMOS to select any number up to 15 destination areas. Each selected destination area identifies a percentage of the route to be skipped/cancelled.
- In *4ESS*-NEMOS switch interface Messages 84 and 172 (old Messages 79 and 169, respectively), the *4ESS* switch supported the expansion of areas in the Route Skip, Cancel-To and Cancel-From controls by expanding the "area" field in the messages to "area1" through "area15". Also, the "PCNT" field in these messages was expanded to "PCNT1" through "PCNT15".

- In the “percentage”-based case, where the “inclusion” option for the destination area is selected, the network manager chooses a “percentage” associated with each of the areas (called “area “percentage”). When the “exclusion” option is selected, the network manager chooses a “percentage” that is associated with the route (called “route percentage”); thus, all areas under the specified control will have the same “route percentage”. In the “rate”-based case, only one rate is associated with the area regardless of the inclusion/exclusion option.

Important! If different percentages for different areas are necessary, the “inclusion” option must be selected.

- Associated with each area, the following data is entered in the “percent” and “rate” fields:

  —“Percent” fields are set to “rate option” and the “rate” field is assigned a value based on the following “Rate” table. This ”rate” value applies to all destination areas.

  —The “rate” field is set to “No Rate” and “percent” fields are assigned values based on the following “PCNT” table.

- The following entries in the “rate” and “PCNT” fields will result in an error message:

  —In the rate-based control, the rate value “No Rate” is selected.

  —A rate is specified but the “PCNT” field is not “Rate Option”.

  —A percentage is specified but the “rate” field is not “No Rate”.

- The "PCNT' field in *4ESS*-NEMOS switch Messages 84 and 172 represent the numbers between 0 and 9 according to the following percentages. The number of bits in the "PCNT" field remain the same (4 bits) but there are 15 fields, each representing 15 areas as follows:

Value	Percentage
0	12.5
1	25
2	37.5
3	50
4	62.5
5	75
6	87.5
7	100
8	Off
9	Rate Option

- The "rate" field in the *4ESS*-NEMOS switch Messages 84 and 172 represent the numbers between 0 and 15 according to the following table that is listed in *4ESS*-NEMOS switch Message 80:

Value	Maximum Calls Allowed per Hour
1	7200
2	3600
3	2400
4	1800
5	1440
6	1200
7	900
8	720
9	600
10	450
11	360
12	240
13	120
14	80
15	60

NEMOS Modifications To support this feature, NEMOS increased the number of areas to 15

(including collector/simulator, control implementers/simulator and auditor support for *4ESS* switch Messages 79 and 169.

In addition, NEMOS modified the following displays to support this feature:

- ECOS Route Cancel To Control
- ECOS Route Cancel From Control
- ECOS Route Skip Control
- Control Log
- Control Plans
- International Controls Active.

Maintenance/Troubleshooting (Not Affected)

Transition Considerations

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Feature Deployment It is not necessary for all switches in the network to be running the 4E24 Release 3 Generic in order for this feature to be fully operational.

Feature Activation This feature is activated automatically with software deployment.

Input/Output Manual Pages (Not Affected)

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11 Domestic End-to-End Class of Service Incoming Circuit Immediate Release Feature (7236)

Overview

Description This feature extends Class of Service (COS) and bandwidth management call processing found in Real-Time Network Routing (RTNR) to the access and egress networks.

Purpose The incoming Key and Super Key service performance is enhanced with the release of this feature.

Contents This chapter contains the following topics:

Feature Description

General

The Domestic End-to-End Class of Service (DECOS) provides Super Key, Key, and Normal routing treatments for various traffic streams. During times of network congestion, the Super Key and Key services experience blocking performance much greater than normal services. However, when an incoming call is rejected and the *4ESS*™ switch plays an announcement, the incoming Super Key and Key service performances are compromised. To bring the Super Key and Key service performances to desired levels, the playing of an announcement by the *4ESS* Originating AT&T Switch (OAS) upon release of the incoming circuit must be eliminated.

With the release of this feature, the *4ESS* switch will not play an announcement after the incoming circuit is released because of DECOS bandwidth management. If an incoming call is blocked because of DECOS incoming bandwidth management, the *4ESS* switch immediately releases the incoming circuit and sends Cause Code 34, No Circuits Available (NCA), to the originating Local Exchange Carrier (LEC) network switch. Releasing the circuit reduces the holding time on trunks associated with the DECOS traffic streams (by not playing the announcement) and enhances the call completion efforts during network congestion.

Limitations

This feature only applies to the following types of calls:

- Those that encounter DECOS incoming call processing.
- Those that are blocked due to DECOS incoming bandwidth management.

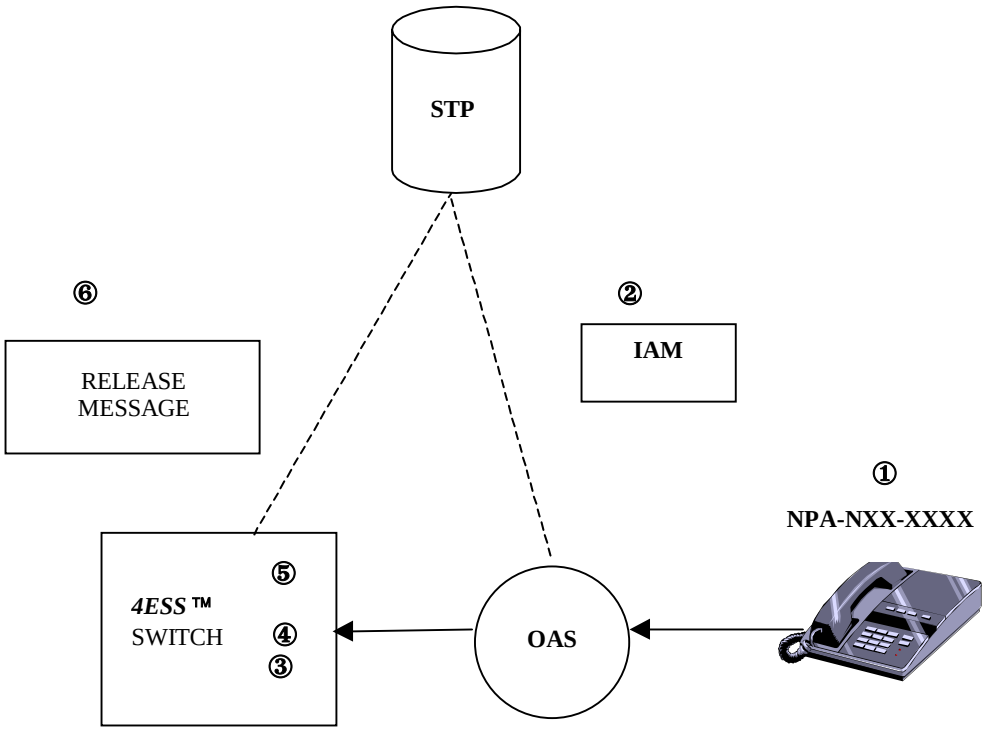
Incoming calls that are blocked for other reasons still receive normal final-handling treatment.

Call Flow

Call Flow Diagram

Figure 11-1 illustrates the call flow for this feature.

Figure 11-1 - DECOS Incoming Circuit Immediate Release Architecture



Call Flow Narrative

The following call flow is illustrated in Figure 11-1. The circled numbers in the illustration correlate to the call flow steps.

1. The customer dials a destination number (NPA-NXX-XXXX).

2. The LEC switch routes the call to the AT&T OAS over Trunk Subgroups (TSGs) that have DECOS routing logic applied to them. The LEC sends an Initial Address Message (IAM) to the AT&T OAS.

3. The OAS performs COS logic and assigns a Service Identity (SI) to the call. For this example, the call is a non-Key service and is mapped to a non-Key ECOS Routing Pattern Index (ERPI).

4. The OAS performs the following functions:

   - Checks for DECOS Far-End AREA (FEAREA) on the TSG and finds one.

   - Applies DECOS bandwidth management to the FEAREA [the LEC End Office (EO)] for the non-Key ERPI determined in Step 3.

5. Bandwidth is not available for this non-Key call since the FEAREA is in a congested state and bandwidth reservation is in place for the Key and Super Key services.

6. Because no bandwidth is available for this call, it is immediately released by sending a Release message with Cause Code 34 (NCA) to the LEC switch. The Release message does not trigger an announcement to be played.
   End of Call Flow.

□

Provisioning (Not Affected)

Recording (Not Affected)

Network Management (Not Affected)

Maintenance/Troubleshooting (Not Affected)

Transition Considerations

Feature Deployment It is not necessary for all *4ESS* switches in the network to be running the 4E24 Release 3 Generic for this feature to be fully operational.

Feature Activation This feature is automatically activated by software deployment.

Input/Output Manual Pages (Not Affected)

12 Feature Group D Support for AT&T Network Connecting Enhancement Feature (7240a)

Overview

Description This feature is an enhancement to Feature 7240. With this feature, Feature Group D AT&T Network Connection (ANC) Multi-Frequency (MF) calls without Automatic Number Identification (ANI) and Information Indicator (II) digits are recorded by the *4ESS*™ switch as non-equal access calls. This allows the Call Detail Reporting Platform (CDRP) to populate the appropriate Automatic Message Accounting (AMA) tables with hexadecimal Fs, including the sign character, and results in the generation of AA records.

Purpose This chapter provides customers with information on Feature 7240a, which is implemented as a Modification Request (MR) 1 to Feature 7240.

Contents

This chapter contains the following topics:

Feature Description

Description

This feature is implemented as an MR, and provides an enhancement to the Modified Feature Group D Support for AT&T Network Connecting Feature (7240). Feature 7240 was introduced as a Software Change Package (SCP) in 4E23 and built into 4E24.

Feature 7240 provides support for ANC calls over both modified Feature Group D and Feature Group C Local Exchange Carrier Connecting (LCC) types of trunks.

With the enhancement to Feature 7240 provided by this feature, Feature Group D ANC MF calls without ANI and II digits are recorded by the *4ESS*™ switch as non-equal access calls. This allows the CDRP to populate the appropriate AMA tables with hexadecimal Fs, including the sign character, and results in the generation of AA records. Refer to the *Recording* section in this chapter for additional information.

Call Flow (Not Affected)

Provisioning (Not Affected)

Recording

Description

Prior to this feature the CDRP generated AMA records SC 1500 and SC 1501 (long duration) when the *4ESS* switch received a call without ANI and the Calling Party Number (CPN). With ANI failures, the CDRP generated AA records, provided that non-equal access signaling was used. When equal access signaling was used, the CDRP expected a 10-digit ANI and a valid II; otherwise, AB records were generated. When that occurred, the CDRP populated a hexadecimal D in the Sign

Character of the Originating NPA (Table 13), and the Originating Number (Table 14) fields in SC 1500 and SC 1501. In addition, the CDRP populated a hexadecimal D in the Sign Character of the II/OLI field (Table 421) in SC 1500, SC 1501 and Module 941. The hexadecimal Ds in the Sign Character cause the AMA records to error-out.

To prevent the CDRP from generating AB records for MF equal access calls with ANI failures, this feature causes the 1B Processor to treat Feature Group D signaled ANC MF calls without ANI and II as Feature Group C calls. As a result, the 1B Processor records [in the Extended Out Complete (EOC) event] the equal access MF call without ANI and II digits as a non-equal access call. This causes the CDRP to populate Tables 13, 14, and 421 with hexadecimal Fs, to indicate "data not available", and prevents the AMA records from erroring-out.

This capability applies only to MF accessed calls without ANI and II digits; it does not apply to a partial ANI scenario.

Network Management (Not Affected)

Maintenance/Troubleshooting (Not Affected)

Transition Considerations

Feature Deployment This feature was deployed as a Software Change Package (SCP) over the 4E23 and 4E24 Generics.

Deployment Requirement It is not necessary for all *4ESS* switches in the network to be running the 4E23 or 4E24 Generics for this feature to be fully operational.

Feature Activation This feature is activated with software deployment.

Input/Output Manual Pages (Not Affected)

13 AT&T Network Connections (ANC) Interexchange Identification (II)/Originating Line Information (OLI) Screening Phase 1 Feature (7285)

Overview

Description This feature provides better management for AT&T Network Connections (ANC) Resell calls with respect to Interexchange Identification (II)/ Originating Line Information (OLI) screening functions in the *4ESS*™ switch.

Purpose This chapter provides customers with information on Feature 7285, including description, call flow, provisioning, and transition considerations.

Contents This chapter contains the following topics:

Feature Description

Background

With the introduction of the Enhanced Carrier Identification Code (CIC) Routing [ECR] to Operator and ECR to Directory Assistance features, the need to lift specific blocks to II/OLI Resell calls across the network is necessary. Prior to this feature, the AT&T *4ESS* switch only blocks specific Resell calls entering the network. Thus lifting the II/OLI Resell block would affect all Resell calls entering the *4ESS* switch.

The implementation of this feature allows Resell calls to have Resell-specific II/OLI screening functionality; this enables the *4ESS* switch to block Resell calls selectively.

Benefits

This feature enhances ANC Resell calls in the following three ways:

- The II/OLI Screening table as described in Feature 5198 is bypassed for Operator-Assistance Required Resell calls.
- The II/OLI Service Category Screening Table as described in Feature 5129 is bypassed for all Resell calls.
- Two new values are created in the CIC code table to block all calls unless the II/OLI is 0.

Call Flow

Introduction

The following call flows represent how the capabilities of this feature apply to Resell calls in the 4ESS switch:

Operator Assistance Required Resell Call Flow

1. The calling party is either of the following:
   - Presubscribed to an ANC. *Proceed to Step 3*
   - Non-subscribed to an ANC. *Proceed to Step 2.*
2. The calling party dials the ANC carrier as part of the dialing prefix. *Proceed to Step 4.*
3. The calling party dials one of the following numbers:
   - 0+7-digit North American Numbering Plan (NANP)
   - 10-digit NANP
   - 00
   - 01+ Country Code (CC)+ National Number (NN)
   - 101+Carrier Identification Code (CIC).

   Important! The CIC is a 4-digit code identifying the caller's carrier of choice. A "0" is prefixed when the carrier's code is 3 digits.
4. The local carrier routes the call to a designated trunk group using the received CIC or the presubscribed CIC. The trunk group is determined by the carrier's specifications on Operator-Assistance Required calls. The ANC customer calls are routed to one of the following trunk groups:
   - Switched access Decentralized Toll Office (DTO) trunk group
   - Switched access 10288 trunk group.

5. The call arrives at an AT&T *4ESS* switch and the following process occurs:

   - The *4ESS* switch derives the CIC.
   - The *4ESS* switch determines whether the CIC is a Resell CIC or not.
   - The *4ESS* switch determines if the call is Operator-Assistance Required.

6. The *4ESS* switch determines if ANI/CN and II/OLI have been received with the call and either of the following occurs:

   - The ANI/CN and II/OLI are not received with the call. *Proceed to Step 8.*
   - The ANI/CN and II/OLI are received with the call. *Proceed to Step 7.*

7. The Resell II/OLI screening process associated with Recent Change (RC) Form 334 is bypassed and the requirement for feature 5198 no longer applies to this call.

   Important! The capability to block Resell calls with II/OLI values not equal to 00, when provisioned for the derived CIC, does not apply to Operator-Assistance Required Resell calls.

   Important! For Domestic MF Operator Assistance Required Resell calls (RSOS and FROS reseller types only), the Resell II/OLI screening process associated with RC form 334 is bypassed and the requirement for feature 5198 no longer applies regardless of the setting of PF31.

8. The call proceeds as stated in Feature 5822 with the following actions:

   - A Nature of Address Indicator (NAI) query is not performed.
   - A 10-digit index number based on the derived CIC is constructed.

- The call is final handled when the Operator Service Position System (OSPS) routing number is not valid.
- The call is routed to the final destination and an Initial Address Message (IAM) message is sent to terminating *4ESS* switch.
- Appropriate Automatic Message Accounting (AMA) recording for the call is provided. **End of Call Flow.**

Non-Operator Assistance Required Resell Call Flow

1. The calling party is either of the following:
   - Presubscribed to an ANC. *Proceed to Step 3*
   - Non-subscribed to an ANC. *Proceed to Step 2.*
2. The calling party dials the ANC carrier as part of the dialing prefix. *Proceed to Step 4.*
3. The calling party dials one of the following numbers:
   - 0+7-digit North American Numbering Plan (NANP)
   - 10-digit NANP
   - 00
   - 011+ Country Code (CC)+ National Number (NN)
   - 101+Carrier Identification Code (CIC).

   Important! ***The CIC is a 4-digit code identifying the caller's carrier of choice. A "0" is prefixed when the carrier's code is 3 digits.***
4. The local carrier routes the call to a designated trunk group using the received CIC or the presubscribed CIC. The trunk group is determined by the carrier's specifications on Operator-Assistance Required calls. The ANC customer calls are routed to one of the following trunk groups:

- Switched access Decentralized Toll Office (DTO) trunk group
- Switched access 10288 trunk group.

5. The call arrives at an AT&T *4ESS* switch and the following process occurs:
   - The *4ESS* switch derives the CIC.
   - The *4ESS* switch determines whether the CIC is a Resell CIC or not.
   - The *4ESS* switch determines if the call is Operator-Assistance Required.
6. The *4ESS* switch determines if ANI/CN and II/OLI have been received with the call and either of the following occurs:
   - The ANI/CN and II/OLI are not received with the call. *Proceed to Step 8.*
   - The ANI/CN and II/OLI are received with the call. *Proceed to Step 7.*
7. The CIC table is referenced to determine the new OLI screening functionality as described in Table 13-A.

   Important! The ANI/CN Digit Count screening associated with RC Form 334 is still performed for TNS values that are not equal to the new values of "Resell – OLI Screened" and "Featured Resell – OLI Screened". This feature has no new requirements in this area of call processing.

8. The call proceeds as defined in other Resell platform requirements documents and includes the following:
   - NAI queries are supported as defined in Features 5198, 5754, and 5822.
   - Resell platform features processing is supported as defined in Feature 5840.

Important! Segmentation Directory (SD) Phase 3 changes the querying architecture associated with determining the ANI feature applicability. The 4ESS switch functions are dependent on its interaction with the SD database as well as its SD mode setting for Resell calls.

- Directory Assistance routing features are supported when the call is dialed with a directory assistance number, as defined in Features 5754 and 6413.
- International Routing functionality is supported as defined in Feature 5198 and then enhanced in Feature 6266. **End of Call Flow.**

Table 13-A. CIC Code Table Requirements

If…	And…	Then…
The TNS-type value associated with the derived CIC is "Resell – OLI Screened" or "Featured Resell – OLI Screened".	The call has an II/OLI value not equal to 00.	The call is final handled, as specified by this feature.
The TNS-type value associated with the derived CIC is "Resell – OLI Screened" or "Featured Resell – OLI Screened".	The call has an II/OLI value equal to 00.	The Resell II/OLI screening associated with RC 334 is bypassed, and the requirements associated with Feature 5198 no longer apply to the call.
The TNS-type value associated with the derived CIC is not "Resell – OLI Screened" or not "Featured Resell – OLI Screened".		The II/OLI Service Category screening associated with RC 348 is bypassed.

Provisioning

Structures Affected **OD4OFCCOPY2**

Item OD4PF31 is assigned as an office parameter to indicate whether or not the ANC II/OLI Screening Phase 1 feature is On or Off. Table 13-B lists the On/Off requirements.

HT4CCTTNS

This structure has two new values (**RSOS, FROS**) assigned to the Transit Network Selection Type (TNSTYP) to block all calls that do not have II/OLI=0.

Table 13-B. OD4OFCCOPY2 Assigned Status

Item/State	Word	Displacement	Size	Description
OD4PF31 4ODFB_OFF (=0) 4ODFB_ON (=1)	5	6	1	ANC II/OLI Screening Phase 1 feature feature Off (default) feature On

Forms and Population Rules

OD4OFCCOPY2

This structure is populated as specified in Table 13-C using Recent Change (RC) Form 809 and is verified using Verify Forms 16az and 8j.

HT4CCTTNS

Recent Change Form 633 is used to provision this structure and is verified by Verify Input Message 16b and Verify Output Form 6ai. Table 13-D specifies the population rules for RC Form 633 and Table 13-E lists the population rules for the HT4CCTTNS structure.

Table 13-C. Recent Change Form 809 Population Rules

Feature Item	On or Off	Populates Item	With	Checks
PF31	On	OD4PF31	4ODFB_ON	None
	Off		4ODFB_OFF	None

Table 13-D. RC Form 633 Population Rules

TNSTYP Form Entry	Populates Item	With	Population Rules	Comment
RSOS	XL4CCTTNSO-15	4XLCCTRSOS(6)	None	Resell II/OLI Screened
FROS	XL4CCTTNSO-15	4XLCCTRSOS(7)	None	Featured Resell II/OLI Screened

Table 13-E. HT4CCTTNS Structure Population Rules

Form Input	State	Value	Description
INV	4XLCCTINV	0	Invalid
IOT	4XLCCTIOT	1	International Outbound Transport
GSDN	4XLCCTGSDN	2	International SDN/Global SDN
RSEL	4XLCCTRSEL	3	Carrier Solutions CIC Based Determination
FRSL	4XLCCTFRSL	4	FEATURED RESELL – 1+CIC Wholesale Features
BLK	4XLCCTBLK	5	Block the Specific CIC
RSOS*	4XLCCTRSOS	6	Resell II/OLI Screened
FROS*	4XLCCTFROS	7	Featured Resell II/OLI Screened
		8-15	Unused
* New entries			

Recording (Not Affected)

Network Management (Not Affected)

Maintenance and Troubleshooting (Not Affected)

Transition Considerations

Feature Dependencies and Interactions

Table 13-F lists the dependencies and interactions of this feature.

Feature Deployment

It is not necessary for all *4ESS* switches in the network to be running the 4E24 Release 3 Generic for this feature to be fully operational.

Feature Activation

This feature is turned On by Recent Change Form 809 as described in the "Provisioning" section in this chapter.

Table 13-F. Feature Dependencies and Interactions

Feature Number	Feature Title	Feature Location
5129	*Inspection II Digits/Dialed Number*	234-090-231AC
5198	*CIC Based Resell*	234-090-231AC
5822	*Enhanced CIC Routing for Operator Services*	234-090-233AC
7240	*Modified Feature Group D Support for ANC*	234-090-234AC
5641	*Segmentation Directory Phase 3*	234-090-242AC
7121	*Lucky Dog Dial-Around Service*	

Absolute Word Change

This feature may also be activated by an Absolute Word Change. Item **OD4PF31** 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 is valid for the 4E24 Generic Release, but may **not** be valid for any other subsequent generics. Be certain that any changes made only affect this feature.

The following information is needed to turn ODA bit OD4PF31 On or Off using the same Absolute Word Change:

- Structure: OD4OFCCOPY2
- Core Address (4E Generic): 7123617
- Size: 1
- Displacement: 6
- On: 1
- Off: 0.

Input/Output Manual Pages (Not Affected)

14 Mandatory 10 Digits on LSP_LOCAL Trunks Feature (7429)

Overview

Description

The *Mandatory 10 Digits on the Local Service Provider – Local Trunks (LSP_LOCAL)* feature requires that 10 digits be delivered on all calls to the *4ESS™* switch over LSP_LOCAL trunks. Calls delivered with only 7 digits receive final-handling treatment (the call is terminated and the caller receives an announcement).

In Release 4E24 (Part 1 of the feature), the *4ESS* switch accepts either a 7-digit or 10-digit Called Party Number (CdPN) on LSP_LOCAL trunks depending on the setting of the trunk subgroup spare bit defined by this feature.

Purpose

This chapter provides customers with information pertaining to Part 1 of the *Mandatory 10 Digits on LSP_LOCAL Trunks* feature. Part 2 is expected to be deployed as Feature 7429a in Release 4E25 Release 1 Generic.

Contents This chapter contains the following topics:

Feature Description

Description

This feature ensures that during test and turn-up of new LSP_LOCAL trunks, the operations workcenters can identify if Local Exchange Carriers/Interexchange Carriers (LECs/IXCs) are inaccurately sending 7 digits. This feature also provides a trunk group On/Off indicator to be used for transition of the embedded base of LSP_LOCAL trunks.

Feature 7429 supports this trunk group indicator which will default to not force 10 digits, but will be transitioned on all existing, and required on all new LSP_LOCAL trunks to require 10 digits.

Feature 7429a will force LSP_LOCAL trunks to be built into the Plain Old Telephone Service (POTS) intertoll domain, which requires 10-digit delivery.

Benefits

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

Call Flow (Not Affected)

Provisioning

Setting Spare Bit S4

Spare bit 4 of the trunk block (XL4TB_S4) will be used to control one of the following:

- The *4ESS* switch final handles calls over LSP_LOCAL trunks when 10 digits are not received in the CdPN.
- The *4ESS* switch will use the existing processing to prepend the Far-End Numbering Plan Area (NPA) when 7 digits arrive at the *4ESS* switch.

The spare bit (S4) is set as follows:

- If S4 is set (Y) then the *4ESS* switch will not complete 7-digit calls.
- If S4 is not set (default, blank, or N), the *4ESS* switch will complete 7-digit calls.

With the 4E25 Generic, this spare bit will no longer be used, and the *4ESS* switch will always require that 10 digits be received in the CdPN on LSP_LOCAL trunks by the use of intertoll rules assigned to these trunk groups. The use of the POTS intertoll domain will assure this.

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 4E24 Generic for this feature to be fully operational.

Feature Activation A trunk group spare is used to indicate On/Off for 4E24 only.

Input/Output Manual Pages (Not Affected)

15 Network Access Interrupt (NAI) Call Redirection and Local Number Portability (LNP) Interaction Feature (7506)

Overview

Description This feature allows Network Access Interrupt (NAI) Call Redirection to occur, as specified in Feature 5460, when the LNP is active.

Purpose This chapter provides customers with information on Feature 7506, which is a Modification Request (MR) to Feature 5460, which is located in the 4E22 Generic Release 2.

Contents This chapter contains the following topics:

Feature Description

Purpose and Benefits

Currently, when both NAI and Local Number Portability (LNP) queries are sent on a call and the *4ESS*™ switch receives the NAI Redirect Call response before the LNP response, the NAI response is ignored. As a result, call redirection does not take place.

This feature provides the *4ESS* switch with the capability to process the NAI Redirect Call response when the LNP has not been received.

Call Flow (Not Affected)

Provisioning (Not Affected)

Recording (Not Affected)

Network Management (Not Affected)

Maintenance/Troubleshooting (Not Affected)

Transition Considerations

Feature Deployment It is not necessary for all *4ESS* switches in the network to be running the 4E24 Release 3 Generic for this feature to be fully operational.

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

Input/Output Manual Pages (Not Affected)

16 AT&T Local Access Management Option Expansion Feature (7477)

Overview

Description

The *AT&T Local Access Management Option (ALAMO) Expansion* Feature allows AT&T circuit-switched long distance (1+) terminating traffic to be routed to an overlay network. Calls are rerouted at the Originating AT&T *4ESS*™ Switch (OAS) to this overlay network, whereby the calls are completed.

This feature also builds on the Terminating Traffic Architecture (TTA) to extend the route advance capability to Q.931 trunks regardless of the Primary Rate Interface (PRI) provisioned on outgoing trunks.

Purpose

This chapter provides the AT&T customer with information on the ALAMO Expansion Feature.

Contents This chapter contains the following topics:

Feature Description

Description

This feature is architecturally similar to the TTA capability as defined in Feature 6745, documented in *4ESS Switch Product Release Document* 234-090-233AC. The primary differences, and the purpose for this new development, are that this feature uses Q.931 signaling where TTA uses Signaling System No. 7 (SS7) signaling, as well as the differences in the route-advance logic used. Under ALAMO, terminating switched-egress traffic is eligible for being routed to the ALAMO network which will deliver the call directly to the terminating Local Exchange Carrier (LEC), bypassing the Terminating AT&T Switch (TAS). Calls routed in the Plain Old Telephone Service (POTS) domain are eligible for carriage by the ALAMO network. If the ALAMO network is not able to complete the call to a particular LEC, the call is released back to the OAS for call completion.

This route-advance capability is initiated when the ALAMO network clears a call with a specific Cause Value (34 or 41) in the clearing Q.931 message. The Multiple Routing Treatment (MRT) table is used to direct the OAS to route advance calls to the next available route(s). This new feature operates on all Q.931 signaling trunks regardless of the PRI type and for any non-broadband routing domains using Q.931 signaling trunks.

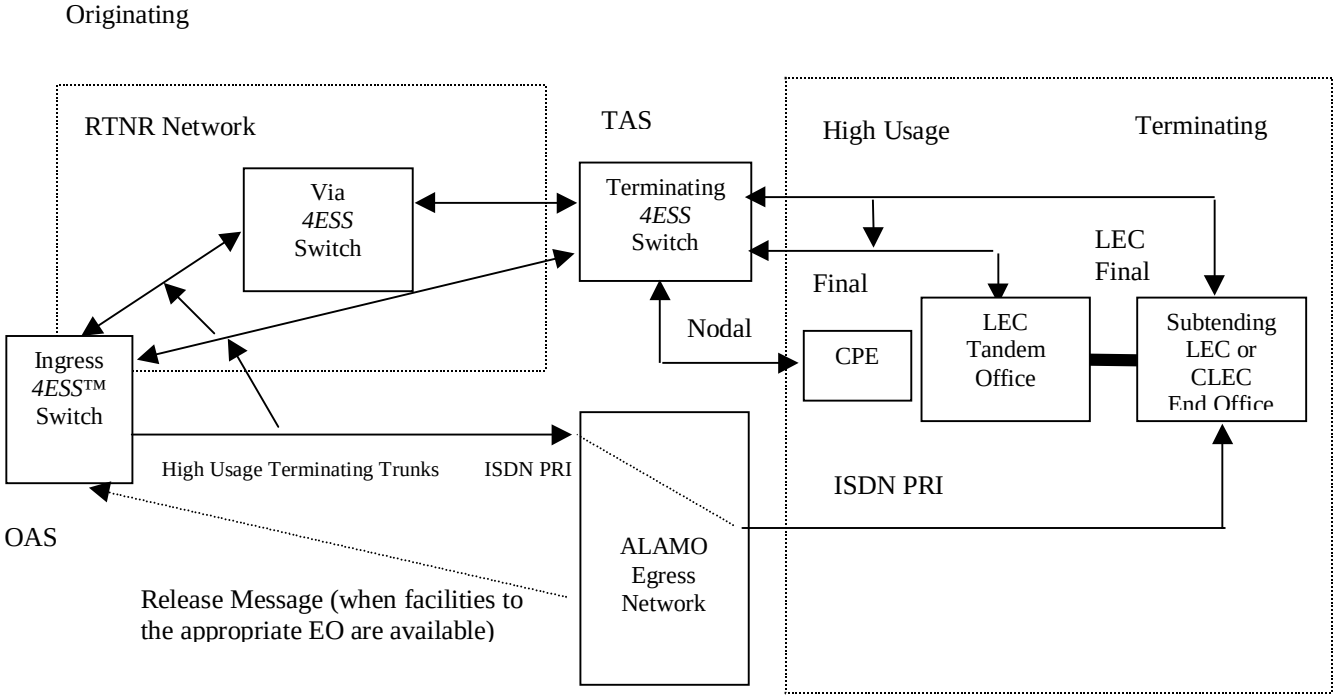
Benefits

This feature supports an alternate routing scheme to an overlay network.

Network Architecture

The ALAMO network architecture provides an alternate way to route calls from an OAS to the serving End Office (EO) region, bypassing the TAS. High Usage (HU) trunk connections are established between the AT&T Switched Network (ASN) OASs and an ALAMO network (non-*4ESS* switch) in the served region. Under this architecture, calls that are typically routed from an OAS to a TAS (through a via switch) based on the Real-Time Network Routing (RTNR) scheme now traverse only one *4ESS* switch (OAS) and avoid the TAS.

Figure 16-1 - ALAMO Alternate Egress Network Routing Architecture



Legend:
ALAMO – AT&T Local Access Management Option
CLEC – Certified Local Exchange Carrier
CPE – Customer Premises Equipment
EO – End Office
ISDN – Integrated Services Digital Network
LEC – Local Exchange Carrier
OAS – Originating AT&T Switch
PRI – Primary Rate Interface
TAS – Terminating AT&T Switch

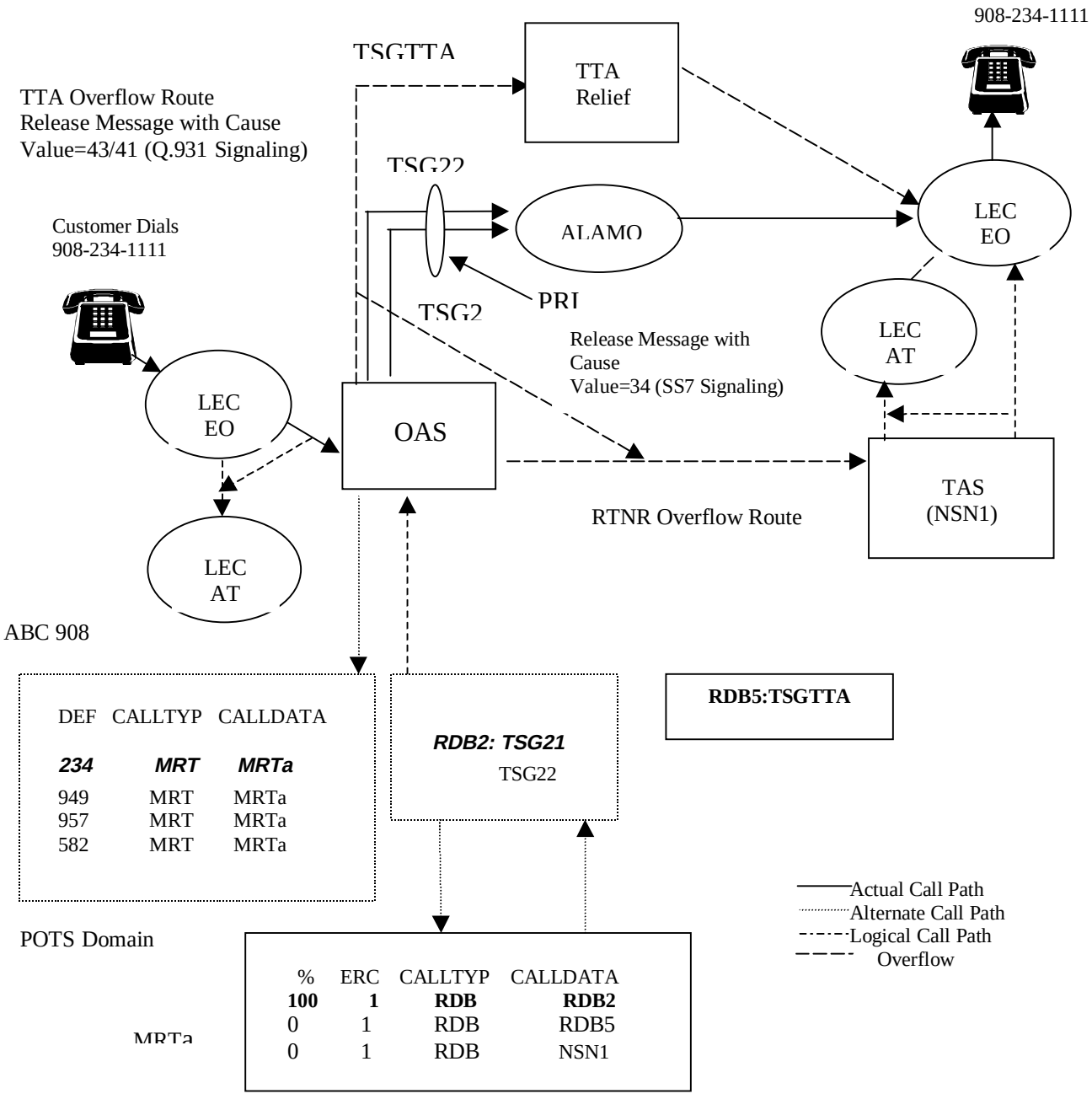
The MRT tables are used for calls routed in the POTS domain that terminate to specific NPA-NXXs. When a call received at the OAS is routed to an NPA-NXX as part of its Destination Number (DN), the MRT table directs the HU trunk route to the ALAMO network as the first choice route, with the RTNR Intertoll route as the overflow route (illustrated in Figure 16-1). In cases where the normal terminating route includes a TTA relief switch, this route (the TTA relief switch) is provisioned as the second choice followed by the RTNR Intertoll route.

Certain service/feature calls in the ASN are routed on a North American Numbering Plan (NANP) number and can become eligible for the ALAMO HU trunk route. To maintain the existing service benefits, ALAMO uses Route Selection Index (RSI) and Location Routing Number (LRN) screening at the OAS to prevent these calls from traversing the ALAMO trunk route.

The HU trunks from the OAS to the ALAMO network are provisioned as Common Platform Adjunct (CPA) trunks using proprietary PRI with the PRIT=TSGCPA. If the ALAMO network clears a call with specific Cause Values (**34**=no circuit or channel available or **41**=temporary failure), the OAS routes the call per information contained in subsequent entries of the MRT table. This MRT route advance operation only occurs on trunks using Q.931 signaling if the TTA Trunk Subgroup (TSG) indicator is set to **YES**.

Call Flow

Figure 16-2 - Call Routed Via the ALAMO Network



The following call flow is illustrated in Figure 16-2:

1. The caller dials 908-234-1111.

2. The call arrives at the OAS via a LEC EO/Access Tandem (AT) or via a direct-connect facility (not illustrated).

3. The OAS completes all the service processing on the call and then begins to determine call routing based on the DN/Routing Number (RN).

4. The OAS performs 6-digit translation on the DN/RN. The 6-digit translator indicates that RSI screening needs to be performed. The RSI screening is required to exclude calls from selected AT&T services from traversing the ALAMO network.
   - If the Service Identification Indicator (SII) of the incoming call matches an SII that is provisioned to be excluded from the ALAMO network, RSI screening directs the call to use the non-ALAMO route (TTA with overflow to the RTNR).
   - If RSI screening does not cause the call to be excluded from the ALAMO network route, LRN screening is performed. The LRN screening is required to exclude calls to ported DNs from being carried by the ALAMO network [the ALAMO network does not have Local Number Portability (LNP) functionality].
     a. If the DN of the call is a ported number, LRN screening directs the call to use the non-ALAMO route (TTA with overflow to the RTNR).
     b. Routing continues if LRN screening does not exclude the call from the ALAMO network route.

5. At this point, an MRT table that includes the ALAMO network route is selected because of the following:
   - POTS traffic destined for this NPA-NXX is targeted for the ALAMO network.
   - RSI and LRN screening did not exclude the call from the ALAMO route.

6. The MRT table points to a Routing Data Block (RDB) indicating that the call should be routed on the HU trunk route that connects to an ALAMO network.

7. The OAS attempts to route the call on the HU trunk route. A trunk from the first RDB entry (TSG21) is used first if available. If TSG21 has all trunks busy or out of service, a trunk from TSG22 is used if available.

If...	Then the...
All the ALAMO RDB (RDB2) routes (that is, TSG21 and TSG22) are in use or out of service	MRT table indicates the overflow should use the TTA route (RDB5) followed by the normal RTNR to the TAS. The OAS routes the call to the TTA switch or to the TAS (if the TTA route is busy or unavailable) and the call completes as today. **End of Call Flow**.
A trunk on one of the ALAMO TSGs is available and the TTA indicator provisioned on the trunk connecting the ALAMO network is set to **YES**	OAS selects a trunk from the RDB specified in the first entry of the MRT table and sets up the call. The OAS waits to determine if the ALAMO network is able to route the call to the appropriate LEC EO. • If the ALAMO network cannot complete the call and it returns either a Q.931 Disconnect or Release Complete message with a Cause Value of 34 (no circuit or channel available) or 42 (temporary failure), the OAS looks to the next MRT table entry and routes the call accordingly. In most cases, the normal Destination Switch Number (DSN)/Network Switch Number (NSN) route is the second MRT table entry. In regions supporting TTA relief switches, the TTA route is the second MRT table entry and the DSN/NSN route is the third MRT table entry (as illustrated in Figure 16-2). **End of Call Flow**. **Important!** The overflow moves to the next MRT table entry. It does not consider subsequent TSGs in the initial RDB that may be available. Therefore, if the TTA routes are included in the RDB (as opposed to an MRT table entry), they are not used in the event a call is cleared by the ALAMO network.

If...	Then the...
A trunk on one of the ALAMO TSGs is available and the TTA indicator provisioned on the trunk connecting the ALAMO network is set to **YES** (cont'd)	• If the ALAMO network cannot complete the call and it returns either a Q.931 Disconnect or Release Complete message with a Cause Value other than 34 or 41, the OAS provides the Final-Handling Treatment for the specified Cause Value. **End of Call Flow**. • If the ALAMO network is able to complete the call, the OAS successfully routes the call on the HU trunk route to the ALAMO network. An Automatic Message Accounting (AMA) record is created at the OAS since the AMA Suppression Override indicator on the trunk is set to **YES**. The ALAMO network then completes the call to the called party. **End of Call Flow**.
A trunk on one of the ALAMO TSGs is available and the TTA indicator provisioned on the trunk connecting the ALAMO network is set to **NO**	OAS selects a trunk from the RDB specified in the first entry of the MRT table and sets up the call. The OAS waits to determine if the ALAMO network is able to route the call to the appropriate LEC EO. • If the ALAMO network is not able to complete the call, the OAS provides the Final-Handling Treatment for the specified Cause Value. **End of Call Flow**. **Important!** This action is applicable to calls cleared with Cause Value 34 or 41. • If the ALAMO network is able to complete the call, the OAS successfully routes the call on the HU trunk route to the ALAMO network. An AMA record is created at the OAS since the AMA Suppression Override indicator on the trunk is set to **YES**. The ALAMO network then completes the call to the called party. **End of Call Flow**.

8. If the call cannot be routed by the ALAMO network due to an all circuits busy/unavailable condition or an ALAMO network route advance event, routing logic uses the next MRT table entry that points to an RDB containing TSGs to the TTA Relief switch (RDB5). Because the TTA TSG uses SS7 signaling, the route advance logic specified in Feature 6745 (4E23 Release 3 Generic) applies. Route advance occurs on the reception of an SS7 Clearing message with Cause Value = 34 (not 41) and uses subsequent RDB entries (if they exist) rather than the next MRT table entry.

9. If the call cannot be routed by the TTA Relief switch because of an all circuits busy/unavailable condition or a TTA network route advance event, the normal DSN/NSN route is used. The RTNR overflow mechanisms (using a via switch) still apply.

Provisioning (Not Affected)

Recording (Not Affected)

Network Management (Not Affected)

Maintenance and Troubleshooting (Not Affected)

Transition Considerations

Feature Dependency This feature depends on Feature 6745 (*Product Release Document* 234-090-233AC) which defined the TSG indicator (TTA).

Feature Deployment All *4ESS* switches in the network should be in at least the 4E24, Release 2 Generic for this feature to function properly.

Feature Activation This feature is turned on by software deployment, but depends on the setting of TTA on the ALAMO trunks.

Input/Output Manual Pages (Not Affected)

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17 AT&T Network Connection Dial-Around Blocking Feature (7520)

Overview

Description This feature blocks all ANC calls that are originated as dial-around calls.

Purpose This chapter provides customers with information on Feature 7520, including description, call flow, provisioning, transition considerations, and input and output page references..

Contents This chapter contains the following topics:

Feature Description

Introduction

There is a concern among ANC customers about the potential of fraudulent calls associated with long distance calls AT&T carries that are originated as dial-around calls. Dial-around calls are calls made by the caller by dialing a Carrier Identification Code (CIC) to select a carrier that is different from the caller's Preferred Interexchange Carrier (PIC). In addition, there are ANC customers who are not allowed to bill for dial-around calls due to regulatory issues.

As a result, these ANC customers have requested the capability to block dial-around calls. Local Exchange Carriers (LECs) have the ability to block these calls but have been uncooperative thus far. Also, ANC customers who subscribe to the Network Access Interrupt (NAI) functionality face the potential of irreversible damages if this problem is not solved.

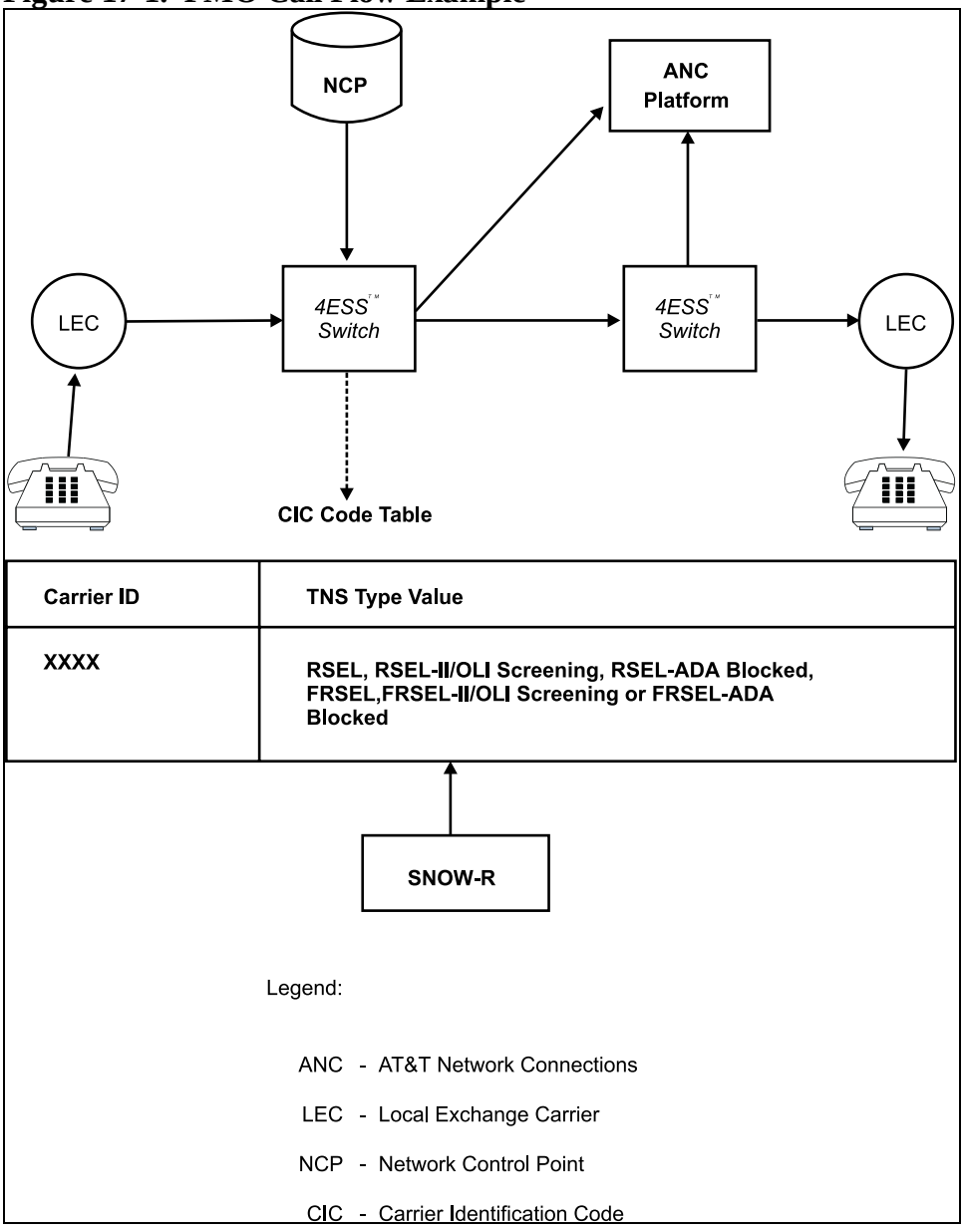
Benefits

This feature is developed to block all ANC calls that are originated as dial-around calls. This capability is only applied on a per-CIC basis for Resell and Featured Resell CICs.

□

Call Flow

Figure 17-1. PMO Call Flow Example



Introduction

The following call flow (see Figure 17-1) is an example that describes a Present Mode of Operation (PMO) process. However, in the Segmentation Directory (SD) Mode of Operation (SMO), the *4ESS*™ switch will still invoke the PMO process described in *Step 5* to block the call.

Present Mode of Operation Call Flow

1. The calling party is one of the following with its appropriate actions:

   - Presubscribed to an ANC carrier and dials one of the following:
     - 1 + 7-digit North American Numbering Plan (NANP)
     - 10-digit NANP
     - 011+Country Code (CC)+NN.
   - Dial-around user and prefixes the dialed number with 101+CIC.

   Important! The CIC is a 4-digit code identifying the caller's carrier of choice, which includes a 0 if the carrier's code is 3-digits.

2. The local carrier routes the call onto a trunk group by using either the dialed CIC, or the CIC to which the caller is presubscribed. The ANC customers' calls are routed on one of the following trunk groups:

   - Dedicated Trunk Option (DTO) trunk group
   - Switched access 10288 trunk group.

   The *4ESS* switch uses the existing functions (Feature 5198 and 5840) to determine the CIC of the call and whether or not the CIC is a Resell or Featured Resell call. The *4ESS* switch obtains the CIC from the incoming signaling or from the Trunk Group characteristics.

Important! New Requirements are specified for this feature that add two new values to the TNS-type parameter of the CIC-Code table. These values are **Resell – ADA Blocked** and **Featured Resell – ADA Blocked** and they have the same properties as the following:

- Resell – ADA Blocked is equal to Resell.
- Featured Resell – ADA Blocked is equal to Featured Resell.

3. The call is determined to be one of the following with the appropriate actions:

   - Non-Resell call – Call processing continues for this feature. *Proceed to Step 6.*
   - Resell call – Call Processing continues per existing requirements. *Proceed to Step 4.*

4. The *4ESS* switch determines if the Integrated Services Digital Network (ISDN) User Part (ISUP) Carrier Selection Indicator (CSI) is received with the call and follows the appropriate actions listed in the following table:

If...	Then...
The ISUP CSI was not received.	Call processing continues per existing requirements and Feature 7520 does not apply. *Proceed to Step 6.*
The ISUP CSI was received.	Call processing continues for this feature. *Proceed to Step 5.*

5. The CIC Code table is referenced to determine new ADA screening functionality for the call and follows the appropriate actions based on the following requirements:

   - The TNS-type value associated with the derived CIC **is Resell – ADA Blocked** or **Featured Resell – ADA Blocked**, and the received ISUP CSI is populated with the value of 4. The call is final handled. **End of Call Flow.**

- The TNS type value associated with the derived CIC **is Resell – ADA Blocked** or **Featured Resell – ADA Blocked**, and the received ISUP CSI is populated with a value other than 4. Call processing continues per existing requirements and Feature 7520 does not apply. *Proceed to Step 6.*

6. Subsequent call processing continues for these calls per existing functionality as defined in the following documents:

   - The support for Network Access Interrupt (NAI) queries – Features 5198, 5754, and 5822.

   - The support for Resell platform features processing – Feature 5840.

   - The support for Directory Assistance routing features – Features 5754 and 6143 (when the call is dialed with a directory assistance number).

   - The support for Resell PIC Verification –Feature 6896.

   - The support for International Routing functionality – Features 5198 and 6266.

   - The support for internal enhancements to the NANP CIC – Feature 7323.

   - The support for Enhanced CIC Routing for International Services – Features 6266 and 7497.

Provisioning

Recent Change Forms Affected

Recent Change Form 633

In the 4E24 and later generics, two new values, **RSAB** and **FRAB**, are assigned to the Transit Network Selection Type (TNSTYP) field on this form with its population rules described in Table 17-A.

Recent Change Form 810

Recent Change Form 810 is used to provision various feature items for this feature. The layout of this form is not changing, but new entry items and population rules are required as described in Table 17-B and 17-C.

Structures Affected

HT4CCTTNS Structure

The HT4CCTNS structure is being modified for this feature by the addition of the following new values to the TNSTYP field:

- RSAB
- FRAB.

These changes are described in Table 17-D.

OD4ABLK Structure

A new office-wide ADA blocking announcement number structure is defined in the NO4MEM library as a single word block of memory within protected, simplex, disk-backed, API accessible and ODA memory as described in Tables 17-E and 17-F.

Verify Forms/Messages Affected

A new Verify Input Message, **16dt** (see Figure 17-2), and Output Form, **6dt** (see Figure 17-3), are created in the 4E24 Generic 3 Release to output the ANC Dial-Around (ADA) blocking announcement number structure data.

Table 17-A. Recent Change Form 633 Population Rules

RC FORM 633				
TNSTYP Form entry	**Populates Item**	**With**	**Population Rules**	**Comment**
RSAB	XLT4CCTTNSO-15	4XLCCTRSAB(8)	none	Resell – ADA Blocked
FRAB	XLT4CCTTNSO-15	4XLCCTRSAB(9)	none	Featured Resell – ADA Blocked

Table 17-B. Recent Change Form 810 Population Rules

810 Form Entry for FEATURE INFO = ADABLK				
DATA	**Populates OD4ADABLK_BAN with**	**Value**	**Description**	**Checks**
T	4XLFHI_	2	120 IPM TONE	a
TDN	4XLFHI_	38	TEMP. DISC. 800 NUMBER	a
UNN	4XLFHI_	46	UNALLOCATED NUMBER – SS7	a
VCA	4XLFHI_	7	UNABLE TO COMPLETE	a
VMA	4XLFHI_	33	VACANT MAS ANNONCEMENT	a
WAT	4XLFHI_	41	WAITING FOR ANSWER TIMEOUT	a
*		17	UNKNOWN	*
*		31	UNKNOWN	*
*	4XLFHI_IDLE	13	TRNK TO BE IDLD WTH GRD TIMNG	*
*	4XLFHI_IDING	15	TRNK TO BE IDLD WTH NO GRD TIMING	*
*	4XLFHI_MW 10	16	DOWN 10 DB 1004 HZ TONE	*
*	4XLFHI_MW	5	MILLIWATT TONE	*
*	4XLFHI_TPT	4	TEST PROGRESS TONE	*
* Non-provisional assigned state				

Table 17-C. Recent Change Form 810 Provisioning Rules

810 Form Entry for FEATURE INFO = ADABLK				
DATA	**Populates OD4ADABLK_BAN with**	**Value**	**Description**	**Checks**
Blank	4XLFHI_NONE	0	NONE	none
AR	4XLFHI_AR	1	AUDIBLE RING	a
BT	4XLFHI_BT	3	60 IPM TONE	a
DNN	4XLFHI_DNN	37	DISC .800 NUMBER	a
DOO	4XLFHI_DOO	48	DESTINATION OUT OF ORDER – SS7	a
E01	4XLFHI_E01	50	EMERGENCY SITUATION	a
E02	4XLFHI_E02	51	SEVERE WEATHER	a
E03	4XLFHI_E03	52	FACILITY TROUBLE	a
E04	4XLFHI_E04	53	LOCAL COMPANY TROUBLE	a
E05	4XLFHI_E05	54	AIRPLANE CRASH	a
E06	4XLFHI_E06	55	HURRICANE	a
E07	4XLFHI_E07	56	FLOOD	a
E08	4XLFHI_E08	57	TORNADO	a
E09	4XLFHI_E09	58	FOREST FIRE	a
E10	4XLFHI_E10	59	EARTHQUAKE	a
E11	4XLFHI_E11	60	MUD-SLIDE	a
E12	4XLFHI_E12	61	MAJOR NETWORK OUTAGE	a
E13	4XLFHI_E13	62	RESERVED DOM. NM	a
E14	4XLFHI_E14	63	RESERVED DOM. NM	a
E15	4XLFHI_E15	64	RESERVED DOM. NM	a
E16	4XLFHI_E16	65	RESERVED DOM. NM	a
E17	4XLFHI_E17	66	RESERVED DOM. NM	a
E18	4XLFHI_E18	67	RESERVED DOM. NM	a
E19	4XLFHI_E19	68	RESERVED DOM. NM	a
E20	4XLFHI_E20	69	RESERVED DOM. NM	a
EA1	4XLFHI_EA1	9	EMERGENCY ANNOUNCEMENT 1	a
EA2	4XLFHI_EA2	10	EMERGENCY ANNOUNCEMENT 2	a
EA3	4XLFHI_EA3	23	EMERGENCY ANNOUNCEMENT 3	a
EA4	4XLFHI_EA4	24	EMERGENCY ANNOUNCEMENT 4	a
EA5	4XLFHI_EA5	29	EMERGENCY ANNOUNCEMENT 5	a
EA6	4XLFHI_EA6	22	EMERGENCY ANNOUNCEMENT 6	a
EA7	4XLFHI_EA7	26	EMERGENCY ANNOUNCEMENT 7	a
HW	4XLFHI_HW	14	TRUNK TO BE PUT HIGH AND WET	a
I01	4XLFHI_I01	80	INTL. EMERGENCY SITUATION	a
I02	4XLFHI_I02	81	INTL. SEVERE WEATHER	a
I03	4XLFHI_I03	82	INTL. TELEPHONE COMPANY	a
I04	4XLFHI_I04	83	INTL. AIRPLANE CRASH	a
I05	4XLFHI_I05	84	INTL. EARTHQUAKE	a
810 Form Entry for FEATURE INFO = ADABLK				

DATA	Populates OD4ADABLK_BAN with	Value	Description	Checks
I06	4XLFHI_I06	85	INTL. MUD-SLIDE	a
I07	4XLFHI_I07	86	INTL. FIRE	a
I08	4XLFHI_I08	87	RESERVED INTL.NM	a
I09	4XLFHI_I09	88	INTL. DIRECT DIALING SUSP.	a
I10	4XLFHI_I10	89	INTL. DIRECT DIALING TEST	a
I11	4XLFHI_I11	90	DIALING PLAN CHANGES - INTL	a
I12	4XLFHI_I12	91	DIALING PLAN CHANGES – INTL	a
I13	4XLFHI_I13	92	DIALING PLAN CHANGES – INTL	a
I14	4XLFHI_I14	93	DIALING PLAN CHANGES – INTL	a
I15	4XLFHI_I15	94	DIALING PLAN CHANGES – INTL	a
I16	4XLFHI_I16	95	DIALING PLAN CHANGES – INTL	a
I17	4XLFHI_I17	96	DIALING PLAN CHANGES – INTL	a
I18	4XLFHI_I18	97	DIALING PLAN CHANGES – INTL	a
I19	4XLFHI_I19	98	DIALING PLAN CHANGES – INTL	a
I20	4XLFHI_I20	99	DIALING PLAN CHANGES – INTL	a
I21	4XLFHI_I21	100	DIALING PLAN CHANGES – INTL	a
I22	4XLFHI_I22	101	DIALING PLAN CHANGES – INTL	a
I23	4XLFHI_I23	102	DIALING PLAN CHANGES – INTL	a
I24	4XLFHI_I24	103	RESERVED INTL.NM	a
I25	4XLFHI_I25	104	RESERVED INTL.NM	a
I26	4XLFHI_I26	105	RESERVED INTL.NM	a
I27	4XLFHI_I27	106	RESERVED INTL.NM	a
I28	4XLFHI_I28	107	RESERVED INTL.NM	a
I29	4XLFHI_I29	108	RESERVED INTL.NM	a
I30	4XLFHI_I30	109	RESERVED INTL.NM	a
IFF	4XLFHI_IFF	30	INTL CALL FAILED IN FOREIGN OFF	a
INC	4XLFHI_INC	27	ALL CIRCUITS BUSY TO FOREIGN CN	a
INF	4XLFHI_INF	39	INFO 1 ANI	a
ISB	4XLFHI_ISB	49	INTL. SUBSCRIBER BUSY	a
IVC	4XLFHI_IVC	28	VACANT CODE ON INTL. CALL	a
LDV	4XLFHI_LDV	44	AT&T DIAL 1 700-555-4141	a
LOB	4XLFHI_LOB	45	LOGGING ON BUSY	a
LSA	4XLFHI_LSA	42	INTRALATA CALL SCREENING	a
MCA	4XLFHI_MCA	18	MISROUTED NON-CAMA	a
NCA	4XLFHI_NCA	6	ALL CIRCUITS BUSY	a
NCB	4XLFHI_NCB	40	LEC EGRESS BUSY	a
NCC	4XLFHI_NCC	19	NO CIRCUIT TO DESGNTD CARRIER	a
NCD	4XLFHI_NCD	25	NTWRK CALL DENIAL SCREENING	a
NWC	4XLFHI_NWC	20	NO WINK FROM CARRIER	a

810 Form Entry for FEATURE INFO = ADABLK				
DATA	**Populates OD4ADABLK_BAN with**	**Value**	**Description**	**Checks**
NWN	4XLFHI_NWN	36	VACANT 800 NUMBER	a
OOA	4XLFHI_OOA	43	OUT OF AREA – LEC MAS SERV	a
OOB	4XLFHI_OOB	21	INWATS OUT-OF-BAND	a
OTS	4XLFHI_OTS	34	HICAP OUT OF TIME SLOT	a
R01	4XLFHI_R01	70	DIALING PLAN CHANGE - DOM	a
R02	4XLFHI_R02	71	DIALING PLAN CHANGE – DOM	a
R03	4XLFHI_R03	72	DIALING PLAN CHANGE – DOM	a
R04	4XLFHI_R04	73	DIALING PLAN CHANGE – DOM	a
R05	4XLFHI_R05	74	DIALING PLAN CHANGE – DOM	a
R06	4XLFHI_R06	75	DIALING PLAN CHANGE – DOM	a
R07	4XLFHI_R07	76	DIALING PLAN CHANGE – DOM	a
R08	4XLFHI_R08	77	DIALING PLAN CHANGE – DOM	a
R09	4XLFHI_R09	78	DIALING PLAN CHANGE – DOM	a
R10	4XLFHI_R10	79	INTRASTATE DIALING PLAN CHNGE	a
ROA	4XLFHI_ROA	8	CALL DID NOT GO THROUGH	a
S01	4XLFHI_S01	110	SPARE	a
S02	4XLFHI_S02	111	SPARE	a
S03	4XLFHI_S03	112	SPARE	a
S04	4XLFHI_S04	113	SPARE	a
S05	4XLFHI_S05	114	SPARE	a
S06	4XLFHI_S06	115	SPARE	a
S07	4XLFHI_S07	116	SPARE	a
S08	4XLFHI_S08	117	SPARE	a
S09	4XLFHI_S09	118	SPARE	a
S10	4XLFHI_S10	119	SPARE	a
S11	4XLFHI_S11	120	SPARE	a
S12	4XLFHI_S12	121	SPARE	a
S13	4XLFHI_S13	122	SPARE	a
S14	4XLFHI_S14	123	SPARE	a
S15	4XLFHI_S15	124	SPARE	a
S16	4XLFHI_S16	125	SPARE	a
S17	4XLFHI_S17	126	SPARE	a
S18	4XLFHI_S18	127	SPARE	a
S19	4XLFHI_S19	47	SPARE	a
SNA	4XLFHI_SNS	32	SERVICE NOT ACTIVE	a
SP1	4XLFHI_SP1	11	SPARE ANCMNT CHANNEL 1	a
SP2	4XLFHI_SP2	12	SPARE ANCMNT CHANNEL 2	a
STO	4XLFHI_STO	35	SUN TRANSIT OUTAGE	a

Table 17-D. HT4CCTNS Structure Population Rules

HT4CCTNS Structure Population Rules			
Form Input	**State**	**Value**	**Description**
INV	4XLCCT	0	Invalid
IOT	4XLCCT	1	International outbound transport
GSDN	4XLCCT	2	International SDN/Global SDN
RSEL	4XLCCT	3	Carrier Solutions CIC Based Determination
FRSL	4XLCCT	4	FEATURED RESELL – 1+CIC Wholesale Features
BLK	4XLCCT	5	Block the specific CIC
RSOS	4XLCCT	6	Resell II/OLI Screened
FROS	4XLCCT	7	Featured Resell II/OLI Screened
RSAB	*4XLCCT*	*8*	*Resell – ADA Blocked*
FRAB	*4XLCCT*	*9*	*Featured Resell – ADA Blocked*
		10-15	Unused

Table 17-E. OD4ADABLK Core Address for 4E24 Release

OD4ADBLK Structure for 4E24 – 5R Load				
Structure Name	**Block Size**	**Core Addr Octal**	**Disk Addr Octal**	**Description**
OD4ADABLK	1	7144522	751062	ANC Dial-Around (ADA) Blocking

Table 17-F. OD4ADABLK Core Address for 4E25 Release

OD4ADBLK Structure for 4E25 – 5R Load				
Structure Name	**Block Size**	**Core Addr Octal**	**Disk Addr Octal**	**Description**
OD4ADABLK	1	7143164	747524	ANC Dial-Around (ADA) Blocking

Figure 17-2. Verify Input Message 16dt Layout

```
INPUT:                  VERIFY 16dt

        Ex. 1   VER:MISC ADABLK! (EOT)



OUTPUT:                 VERIFY 6dt

                VER:MISC ADABLK
```

Figure 17-3. Verify Output Form 6dt Layout

```
INPUT:                  VERIFY #16dt

VER:MISC ADABLK! (EOT)



OUTPUT:                 VERIFY 6dt

VER:MISC ADABLK:

BLOCKING ANNOUNCEMENT NUMBER: _ _ _
```

Recording (Not Affected)

Network Management (Not Affected)

Maintenance/Troubleshooting (Not Affected)

Transition Considerations

Feature Dependencies

The following features must be fully deployed before activating this feature:

- Feature 5198, *CIC Based Resale*, located in the 4E22 Release 1 Generic
- Feature 5840, *1+CIC Wholesale Feature Phase 1*, located in the 4E22 Release 4 Generic.

Feature Deployment

It is not necessary for all *4ESS* switches in the network to be running the 4E24 Release 3 Generic for this feature to be fully operational.

Feature Activation

This feature is turned on automatically by software deployment.

□

Input/Output Manual Pages

Input/Output Manual Pages

There are two new input/output pages created for this feature as follows:

- Verify Input Message - VER:MISC ADABLK!(EOT)
- Verify Output Form – VER:MISC ADABLK

18 Modification Request (MR) to Digital Link Phase 2.1 Feature (7619)

Overview

Description This feature ensures a 10-digit Charge Number (CN) delivery on the backhauled call by causing the *4ESS*™ switch to always set the outgoing CN equal to the Local Automatic Number Identification (LANI).

Purpose This chapter provides customers with information on Feature 7619, including description and transition considerations. This feature is a Modification Request (MR) to Feature 5645, located in the 4E22 Release 4 Generic.

Contents This chapter contains the following topics:

Feature Description

Introduction

Feature 5645, *Digital Link Phase 2.1 – 8YY Screening*, located in the 4E22 Release 4 Generic, enables the *4ESS*™ switch to screen 8YY calls against the AT&T 8YY data base, the 2DSD/2NCP, to determine the responsible organization that owns the call.

As a follow-up to Feature 5645, Feature 6955, *MR to Digital Link Phase 2.1*, located in the 4E23 Release 4 Generic, was created to add revisions to Feature 5645. Feature 6955 provides the *4ESS* switch with an additional capability to set the call's CN equal to the Local Automatic Number Identification (LANI) or the Calling Party Number (CPN) when signaled by the customer.

However, the CN is always set to equal the received CPN when the CPN is less than 10-digits. Thus, preventing the option of setting the CN equal to the LANI. The receipt of a CN with less than 10-digits occasionally causes the Local Service Provider (LSP) or AT&T local switch to fail.

Benefits

This feature causes the *4ESS* switch to always set the outgoing CN equal to the LANI, which ensures a 10-digit CN delivery on the backhauled call.

□

Call Flow (Not Affected)

Provisioning (Not Affected)

Recording (Not Affected)

Network Management (Not Affected)

Maintenance/Troubleshooting (Not Affected)

Transition Considerations

Feature Deployment It is not necessary for all *4ESS* switches in the network to be running the 4E24 Release 3 Generic for this feature to be fully operational.

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

□

Input/Output Manual Pages (Not Affected)

19 Support for Called Party Number Over Alternate Access to Operator Services Signaling Trunks Feature (7633)

Overview

Description The AT&T Digital Link (ADL) Phase 3—911 Capabilities feature allows the *4ESS*™ switch to accept and route calls from ADL subscribers. This feature allows the *4ESS* switch to route these calls to a live operator if the 911 tandem is unavailable.

Purpose This chapter provides AT&T customers with information on the Alternate Access to Operator Services Signaling (AATOS) feature and is a Modification Request to Feature 7038, *ADL Phase 3—911 Capabilities.*

Contents This chapter contains the following topics

Feature Description

Background

The ADL Phase 3 – 911 feature allows the *4ESS* switch to accept 911 calls from ADL and other Nodal customers connected to the switch. The *4ESS* switch delivers the call to the appropriate LEC 911 tandem.

In some states, the Public Utilities Commission (PUC) requires that if a route to a LEC 911 tandem is not available, the 911 call should be routed to a live operator. Additionally, in some states, the Regional Bell Company will not accept 911 calls without the delivery of a geographically significant Automatic Number Identification (ANI). In this situation, AT&T plans to deliver the call to a live operator at an AT&T Operator Services Position System (OSPS). This occurs when a Nodal customer is not properly configured for 911 service [the Private Branch Exchange (PBX) is missing a Local ANI (LANI) and/or Far End Office Code (FEOFC)].

In order for the OSPS to deliver a call with and without the ANI, the call must be delivered using Modified Operator Services Signaling (MOSS). The MOSS was developed for Alternate Access to Operator Services (AATOS) trunks. The MOSS requires that a 7-digit ANI be delivered on a specific trunk group reflecting the Numbering Plan Area (NPA) of the originating caller.

Currently, the *4ESS* switch delivers the Charge Number (that is, the AT&T Billing Number provisioned on the PBX trunk group) as the ANI when signaling on AATOS trunks. This feature requires that the *4ESS* switch set the Charge Number equal to 911 ANI on 911 calls. The 911 ANI ensures the following:

- A geographically significant number is sent to the OSPS as the ANI for configured customers
- An indication that the ANI is not available is sent to the OSPS for non-configured customers.

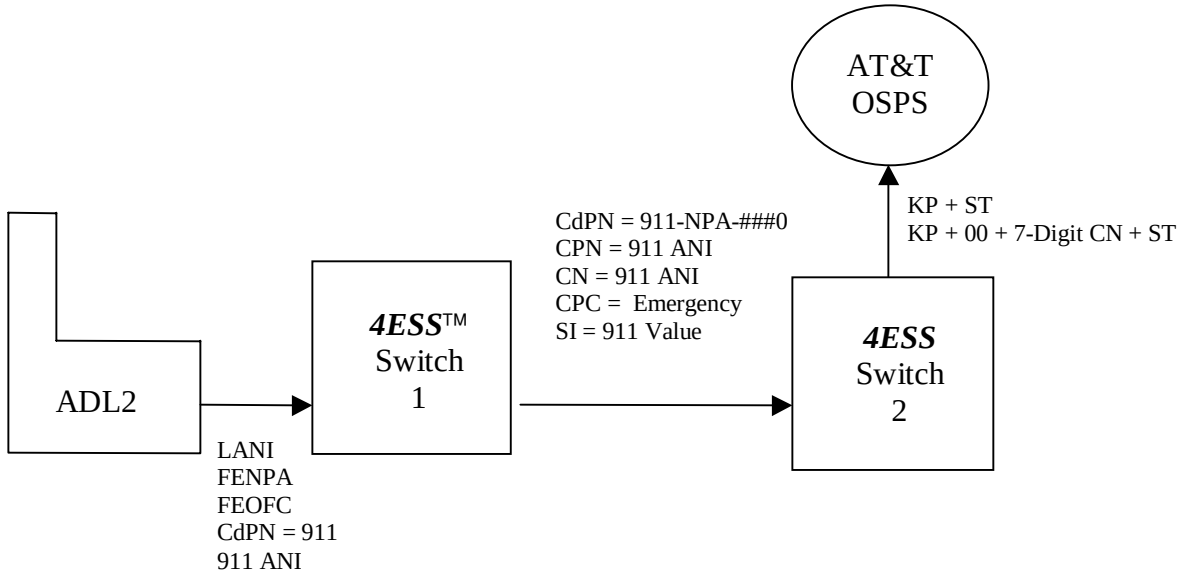
Network Architecture

The *4ESS* switch delivers 911 calls to an OSPS over dedicated AATOS trunks using MFWINK signaling. An AATOS trunk dedicated to 911 is required for each NPA in which ADL customers reside. The AATOS trunks are provisioned between *4ESS* switches and several OSPSs. The OSPS network is used to forward route 911 calls to a location where a live operator can be reached. The *4ESS* switch sends a 7-digit ANI when available or delivers KP+01+ST when an ANI is not available. The OSPS can reconstruct a 10-digit ANI using the NPA on the trunk group. The dedicated AATOS trunks are provisioned at the OSPS to deliver a message to the operator indicating a 911 call.

□

Call Flows

Figure 19-1 - Call to an OSPS for a Configured ADL2 Customer



911 Call for a Configured ADL2 Customer

The following call flow (illustrated in Figure19-1) applies to a 911 call to an OSPS for a configured ADL2 customer:

1. An ADL2 customer on the *4ESS* switch places a 911, 1+911, 0+911, or 101XXXX+911 call over a PBX trunk group using Dual-Tone Multifrequency (DTMF), Multifrequency (MF), Dial Pulse (DP), or Q.931 signaling.

2. The *4ESS* switch recognizes 911 on a PBX trunk and initiates 911 call processing.

3. The *4ESS* switch inhibits the Segmentation Directory (SD) query.

4. The *4ESS* switch bypasses the ANI Trigger Table and inhibits the No. 2 Dialed Services ANI/No. 2 Network Control Point (2DSA/2NCP) query.

5. The *4ESS* switch constructs a 10-digit number as follows:
   - NPA = 911
   - NXX = 3-digit value populated in the FENPA (Far End Numbering Plan Area) field on the PBX trunk group
   - ###0 = 3-digit value populated in the FEOFC field on the PBX trunk group plus a trailing 0.

6. The *4ESS* switch [Originating AT&T Switch (OAS)] performs the following tasks:
   - 6-digit translations on 911-NXX for default routing to a LEC 911 tandem with overflow to an OSPS
   - 10-digit translations if the Positive Lookup Table (PLU) provisioned on line = ###0 when a specific LEC 911 tandem with overflow to an OSPS is required.

7. The *4ESS* switch identifies a new Service Identity Index (SII) value for 911 calls based on the provisioning of a new spare Dialed Number Services Type (DNST) = EMERG (Emergency) in the codegroup translations.

8. If FEOFC and/or LANI = Blank, then the *4ESS* switch sets the 911 ANI = **Blank** (not applicable for this call flow). Otherwise, for:
   - PRI type of PBX trunks, the *4ESS* switch determines (based on the 911 ANI trunk group indicator; 25R1 and later=QPE) if the LANI or the Calling Party Number (CPN), when provided, is used as the 911 ANI.
   - DP, DTMF, and MF PBX trunks, the LANI is always used as the 911 ANI.

9. The *4ESS* switch sets the Calling Party Category (CPC) = **Emergency**. Hence, the message priority is set to **1**.

10. If the 911 call routes inter-*4ESS* switch over ISDN User Part (ISUP) trunks, the following information is sent:
    - 911-NXX-###0 as the Called Party Number (CdPN) parameter
    - 911 ANI in the CPN parameter
    - CPC = **Emergency** and message priority = **2**
    - Charge Number (CN) = **911 ANI**.

11. The *4ESS* switch [Terminating AT&T Switch (TAS)] routes the call as follows:
    a. When egressing to a LEC 911 tandem over the new Centralized Automatic Message Accounting (CAMA)/ANI TOT using outgoing MFWINK Start:
    - Outpulses CdPN=911 [the terminating Routing Data Block (RDB) indicates Del 10 and prefix 911]
    - Checks a new trunk group indicator (ANI DIG; 25R1 and later=ADS) on the new CAMA/ANI TOTs to determine if only a 7-digit ANI should be sent (default is a 10-digit ANI)
    - Outpulses 7- or 10-digits of the 911 ANI or CPN (if routed inter-*4ESS* switch) as ANI
    - KP-CdPN-ST KP-0-NPA-NXX-XXXX-ST or KP-CdPN-ST KP-0-NXX-XXXX-ST.

b. When egressing to a LEC 911 tandem over ISUP trunks:
   - Sends CdPN=911 (the terminating RDB is provisioned to Del 10 and prefix 911).
   - Sends CPN if call routed inter-*4ESS* switch. Otherwise, it sends 911 ANI as CPN if call routed intra-*4ESS* switch.
   - Based on provisioning, the SII value for 911 in the Originating Line Information (OLI) Translator Table indicates sending OLI = **00**.
   - Based on the SII value for 911, the *4ESS* switch:
     1. Sends CPC = **Emergency** and message priority = **1**
     2. Does not send CN
     3. Ignores PSOLI, PSBN, and PSCPN values provisioned on the trunk group.

c. When egressing to an OSPS:
   - Outpulses an indication of no CdPN
   - Outpulses the 7 digits of the 911 ANI or CN (if routed inter-*4ESS* switch)
   - KP+ST KP+00+NXX-XXXX+ST.

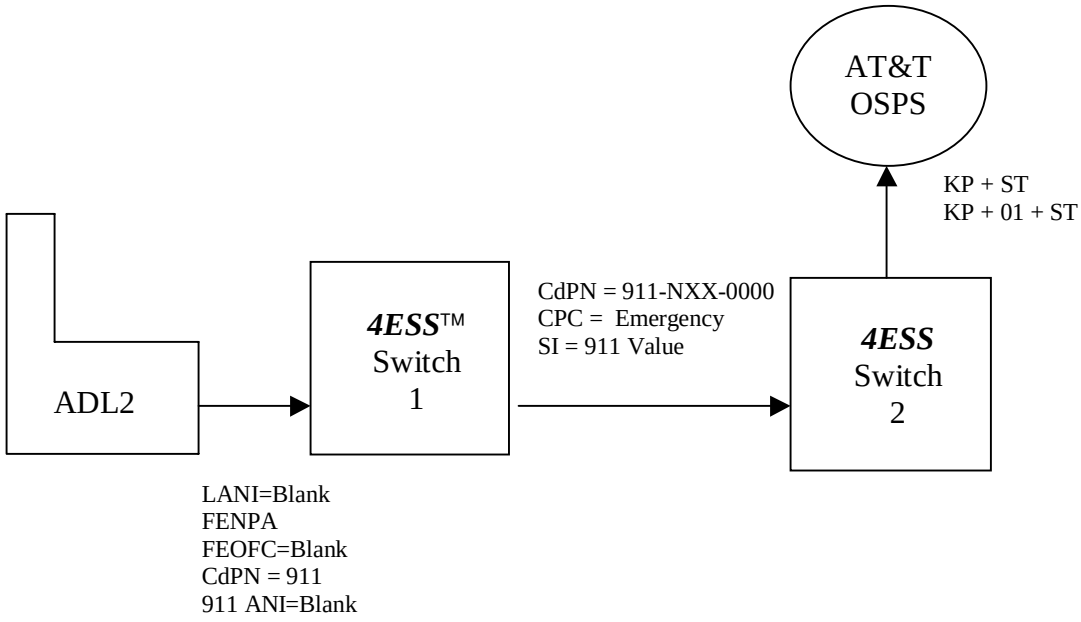
12. The following AMA records are generated:
   - For an SDN ADL customer, a POTS AMA record with Call Code 074, appends the Local Nodal Module 947; and per existing procedures, appends 923 (Numbering Plan Type) and 949 [Circuit Selection Capabilities Routing (CSCR)] as applicable.

   - For a *MEGACOM** telecommunications services ADL customer, generate a POTS AMA record with Call Code 074, appends the Local Nodal Module 947; and per existing procedures, appends 949 (CSCR) as applicable.

*Registered service mark of AT&T.

13. The configured 911 peg count measurement is incremented. **End of Call Flow**.

Figure 19-2 - Call to an OSPS for a Non-Configured Customer Connected to a *4ESS*™ Switch



911 Call to an OSPS for a Non-Configured Customer Connected to a *4ESS™* Switch

The following call flow (illustrated in Figure 19-2) applies to a 911 call to an OSPS for a non-configured customer connected to the *4ESS* switch.

1. A Nodal customer on the *4ESS* switch places a 911, 1+911, 0+911, or 101XXXX+911 call over a PBX trunk group using DTMF, MF, DP, or Q.931 signaling.

2. The *4ESS* switch recognizes 911 on a PBX trunk and initiates 911 call processing.

3. The *4ESS* switch inhibits the SD query.

4. The *4ESS* switch bypasses the ANI Trigger Table and inhibits the 2DSA/2NCP query.

5. The *4ESS* switch constructs a 10-digit number as follows:

   - NPA = 911
   - NXX = 3-digit value populated in the FENPA field on the PBX trunk group
   - ###0 = 3-digit value populated in the FEOFC field on the PBX trunk group plus a trailing 0.

   Important! In this case, the FEOFC field is blank. Therefore, ### = 000.

6. The *4ESS* switch (OAS) performs 6-digit translations on 911-NXX for default routing to an OSPS.

7. The *4ESS* switch identifies a new SII value for 911 calls based on the provisioning of a new DNST =EMERG in the codegroup translations.

8. If FEOFC and/or LANI = Blank, then the *4ESS* switch sets the 911 ANI = **Blank** (applicable for this call flow). Otherwise, for:
   - PRI type of PBX trunks, based on the 911 ANI trunk group indicator, the *4ESS* switch determines if the LANI or the CPN (when provided) is used as the 911 ANI.
   - DP, DTMF, and MF PBX trunks, the LANI is always used as the 911 ANI.
9. The *4ESS* switch sets the CPC = **Emergency**. Hence, the message

priority = **1**.

10. If the 911 call routes inter-*4ESS* switch over ISUP trunks, the following information is sent:
    - 911-NXX-0000 as the CdPN parameter
    - CPC = **Emergency** and message priority = **2**
    - CN = 911 is ***not*** sent when 911 ANI = Blank.

    Important! Per existing procedures, the CPN is not sent when 911 ANI = Blank.

11. The *4ESS* switch (TAS) routes the call as follows:
    a. When egressing to an OSPS:
    - Outpulses an indication of no CdPN.
    - If the call is routed inter-*4ESS* switch, there is no CPN. If the call is routed intra-*4ESS* switch, the switch outpulses an indication of ANI unavailable, based on 911 ANI = **Blank**.
    - KP+ST KP-01+ST.

12. The following customer records are generated:
    - For an SDN customer, a POTS AMA record with Call Code 074, and per existing procedures, appends 923 (Numbering Plan Type) and 949 (CSCR) as applicable.
    - For a MEGACOM telecommunications services customer, a POTS AMA record with Call Code 074, and per existing procedures, appends 949 (CSCR) as applicable.

13. The non-configured 911 peg count measurement is incremented.

14. A 30-second discrete is generated indicating a non-configured customer initiated a 911 call.

15. Based on the FEOFC and/or LANI field = Blank, the *4ESS* switch generates a non-blocking call irregularity message that identifies the trunk group Billing Number of the Nodal customer that initiated the 911 call. **End of Call Flow**.

□

Provisioning

Recent Change Form 301 is used to change the treatment of 4-, 5-, or 6-digit codes. Although the layout of this form is not changing, a new field, ATOS, is being added.

Recording

The *4ESS* switch captures the AT&T Billing Number as the Originating NPA and Number in SC 0001 per current procedures when 911 ANI = N and LANI is not provisioned on the PBX trunk group (occurs when a non-configured customer initiates a 911 call).

Network Management (Not Affected)

Maintenance/Troubleshooting (Not Affected)

Transition Considerations

Feature Deployment It is not necessary for the 4E25 Release 2 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)

20 AT&T Network Connection Enhanced CIC Routing for Operator Services Universal T1.5 Access Update Feature (7673)

Overview

Description This feature removes an existing interaction between ANC Enhanced Operator Services and the UT1.5 Access Operator feature.

Purpose This chapter provides customers with information on Feature 7673, including description and transition considerations.

Contents This chapter contains the following topics:

Feature Description

Description

This feature alters the *4ESS*™ switch call processing logic to prevent Universal T1.5 Access (UTA) routing to take place for ANC Nodal access Operator Assistance Required Calls. This change takes place only when the feature bit for Feature 5822 is ON and the *4ESS* switch has determined that the 10-digit constructed number for ECR Operator does not match a True Billing Number (TBN) value in the OSPS Access ID (OAID) table.

Background

Present conditions on the *4ESS* switch do not support the routing of ANC Nodal access Operator Assistance Required calls for UTA treatment. Routing to an AT&T OSPS is only possible when the following standards are met:

- The CIC associated with the impacted Nodal access trunk group is not provisioned for Enhanced CIC Routing (ECR) Operator Service, Feature 5822, through the *4ESS* switch OAID table.
- The CIC associated with the impacted Nodal access trunk is provisioned for ECR Directory Assistance service, ECR International service, or NANP CIC Routing service. These services require the *4ESS* switch TBN table to be populated with a Billing Number to TBN entry for the impacted trunk group.
- A UTA customer is provisioned to have the UTA customer's TBN overlapping with the TBN of the ANC Nodal customer in the TBN table in the *4ESS* switch.

  Important! This is based on the assumption that Service NOR – Routing (SNOW-R) provisioning defaults UTA customer TBN entries to a 6-digit TBN entry in the OAID table. Thus, making it possible for a UTA customer and ANC Nodal customer to have the same NPA-NXX as part of their TBNs.

- An Operator Assistance Required call is received at the *4ESS* switch on the ANC Nodal trunk group.

Call Flow (Not Affected)

Provisioning (Not Affected)

Recording (Not Affected)

Network Management (Not Affected)

Maintenance/Troubleshooting (Not Affected)

Transition Considerations

Feature Deployment It is not necessary for all *4ESS* switches in the network to be running the 4E24 Release 3 Generic for this feature to be fully operational.

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

□

Input/Output Manual Pages (Not Affected)

21 Release Summary - 4E24 Release 3 Generic

Overview

Description This chapter summarizes the Input/Output messages, the OS interfaces, new or changed alarms, measurements, and the feature activation summary for the 4E24 Release 3 Generic Product Release Document.

Contents This chapter contains the following topics:

Input/Output Messages

Proprietary Input Messages

The following lists the input messages for the 4E24 Release 3 Generic, and SCPs. A notation is included indicating whether each message is new, revised, or deleted. If the change is related to a specific feature, the feature number is indicated:

Message ID	New/Mod/Del	Feature
sw:sd	New	5876
sw:sdp	New	5876
test:sd	Modified	5876
test:tcapdsd	Modified	6990
ver:misc	Modified	6990
ver:misc-fht-sdd	New	5876
ver:misc adablk!(eot)	New	7520

Proprietary Output Messages

The following lists the output messages for the 4E24 Release 3 Generic, and SCPs. A notation is included indicating whether each message is new, revised, or deleted. If the change is related to a specific feature, the feature number is indicated:

Message ID	New/Mod/Del	Feature
rept:sd	New	5876
test:sd	Modified	5876
test:tcapdsd	Modified	6990
test:tcapdsd	Modified	5876
ver:misc-darn	New	6990
ver:misc-fht-sdd	New	5876
ver:misc adablk	New	7520

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.

- 572 AMA
- 5641a AMA
- 6990 AMA, RICS
- 7038 AMA
- 7240a AMA
- 7285 AMA
- 7673 SNOW-R

□

New or Changed Alarms

New or Changed Alarms

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

There are no new alarms related to the features documented in the Product Release Document for the 4E24 Release 3 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 5876 includes two new measurements as follows:

- SDReq_Timeout_threshold – provides the current value used in response to a NEMOS audit.
- SDQ_SD_Timeout_threshold – provides the current value used in response to a NEMOS audit.

□

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.

1. **Feature 572 – Y2K Century Bit on IBM Tape Header.**

   This feature is activated by a Broadcast Warning Message (BWM).

2. **Feature 5641a – Segmentation Directory Phase 3 – Release 2.**

   This feature is turned on automatically by software deployment; however all *4ESS*™ switches must be running the 4E24, Release 3 Generic before transitioning to the Carrier Solutions service.

3. **Feature 5641b – Segmentation Directory Phase 3 – Release 3.**

   This feature is turned on automatically by software deployment; however all *4ESS* switches must be running the 4E24, Release 3 Generic before transitioning to the SDI-I and GSDS services.

4. Feature 5876 – Segmentation Directory Disaster Recovery.

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

REL	*ON/OFF*	*ODA Word*	*Field Name*	*Address*	*Disp&Size*
4E24R3	RC 809	*OD4OFCCOPY2*	*OD4PF61*	7123617	*H=12 (octal),S=1*

5. Feature 6763 – Impaired Via Avoidance.

This feature is turned on automatically with software deployment.

6. Feature 6990 – AT&T Digital Link Phase 3 – Equal Access Dial-Around Capability.

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

REL	*ON/OFF*	*ODA Word*	*Field Name*	*Address*	*Disp&Size*
4E24R3	RC 809	*OD4OFCCOPY2*	*OD4PF69*	7123617	*H=20 (octal),S=1*

7. Feature 7038 – AT&T Digital Link Phase 3 – 911 Capabilities.

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

REL	*ON/OFF*	*ODA Word*	*Field Name*	*Address*	*Disp&Size*
4E24R3	RC 809	*OD4OFCCOPY2*	*OD4PF70*	7123617	*H=21 (octal),S=1*

8. Feature 7067 – Real-Time Network Routing – Type of Organization for World Zone 1.

This feature is turned on automatically with software deployment.

9. Feature 7148 – AT&T Digital Link Announcement Platform – Phase 1.

This feature is activated automatically with software deployment.

10. Feature 7221 – Expanding Route Skip, Cancel – To and Cancel – From Controls.

This feature is activated automatically with software deployment.

11. Feature 7236 - Domestic End-to-End Class of Service Incoming Circuit Immediate Release.

This feature is turned on automatically with software deployment.

12. Feature 7240a – Feature Group D Support for AT&T Network Connecting Enhancement.

This feature is activated automatically with software deployment.

13. Feature 7285 – AT&T Network Connections Interexchange Identification/Originating Line Information.

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

REL	*ON/OFF*	*ODA Word*	*Field Name*	*Address*	*Disp&Size*
4E24R3	RC 809	*OD4OFCCOPY2*	*OD4PF31*	7123617	*H=6 (octal),S=1*

14. Feature 7429 – Mandatory 10 Digits on LSP_Local Trunks.

A trunk group spare will be used to indicate ON/OFF for 4E24 only.

15. Feature 7506 – Network Access Interrupt Call Redirection and Local Number Portability Interaction.

This feature is turned on automatically with software deployment.

16. Feature 7477 – ALAMO Expansion.

This feature is turned on automatically with software deployment.

17. Feature 7520 – ADA Blocking.

This feature is turned on automatically with software deployment.

18. Feature 7619 – MR to Digital Link Phase 2.1.

This feature is turned on automatically with software deployment.

□

19. Feature 7633 – Support for Called Party Number Over AATOS Trunks.

This feature is turned on automatically with software deployment.

20. Feature 7673 – ANC ECR for Operator Services UTA Update.

This feature is turned on automatically with software deployment.

A Appendix A - Acronyms and Abbreviations

Acronyms and Abbreviations

This chapter lists definitions for acronyms and abbreviations 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 Appendix B - Input/Output Manual Pages

Input/Output Manual Pages

The following lists include the input and output messages for the 4E24 Release 3 Generic and SCPs. A notation is included indicating whether each message is new, revised, or deleted. If the change is related to a specific feature, the feature number is indicated.

Proprietary Input Messages

NOTE: The Proprietary Input Messages are not included in this document. See Proprietary Input/Output Manual 4B000-01AC.

Message ID	New/Mod/Del	Feature
sw:sd	New	5876
sw:sdp	New	5876
test:sd	Modified	5876
test:tcapdsd	Modified	6990
ver:misc	Modified	6990
ver:misc-fht-sdd	New	5876
ver:misc adablk!(eot)	New	7520

Proprietary Output Messages

NOTE: The Proprietary Output Messages are not included in this document. See Proprietary Input/Output Manual 4B000-01AC.

Message ID	New/Mod/Del	Feature
rept:sd	New	5876
test:sd	Modified	5876
test:tcapdsd	Modified	6990
test:tcapdsd	Modified	5876
ver:misc-darn	New	6990
ver:misc-fht-sdd	New	5876
ver:misc adablk	New	7520