Lucent Technologies
Bell Labs Innovations

4ESS™ Switch
Product Release Document

4E22 Release 4 Generic

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Issue 1
September 1997

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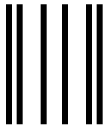

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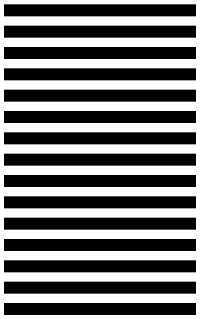

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Contents Page

About This Document xix
1. Purpose xix
2. Scope xix
3. Intended Audience xix
4. How to Use This Document xx
5. Product Safety Labels xxi
6. How to Comment on This Document xxi
7. How to Order Documentation xxi

1 Test Query Enhancements Feature (477) 1-1
1. Feature Description 1-1
2. Call Flow (Not Affected) 1-1
3. Provisioning (Not Affected) 1-1
4. Recording (Not Affected) 1-2
5. Network Management (Not Affected) 1-2
6. Maintenance/Troubleshooting (Not Affected) 1-2
7. Transition Considerations 1-2
8. Input/Output Manual Pages 1-2

Contents **Page**

2 Service Identity Traffic Data Collection Feature (4898/5531i) 2-1

1. Feature Description 2-1
2. Call Flow (Not Affected) 2-2
3. Provisioning 2-2
4. Recording (Not Affected) 2-3
5. Network Management (Not Affected) 2-3
6. Maintenance/Troubleshooting (Not Affected) 2-3
7. Transition Considerations 2-3
8. Input/Output Manual Pages (Not Affected) 2-3

3 ADR Recording Changes for Interaction with TCS-NAP Feature (4941) 3-1

1. Feature Description 3-1
2. Call Flow 3-1
3. Provisioning 3-4
4. Recording 3-5
5. Network Management (Not Affected) 3-5
6. Maintenance/Troubleshooting (Not Affected) 3-5
7. Transition Considerations 3-5
8. Input/Output Manual Pages (Not Affected) 3-6

Contents **Page**

4 Enhancements to Switch User Messages for Tollfree/900 Number Translations Feature (5024) 4-1

1. Feature Description 4-1
2. Call Flow (Not Affected) 4-2
3. Provisioning (Not Affected) 4-2
4. Recording (Not Affected) 4-2
5. Network Management (Not Affected) 4-2
6. Maintenance/Troubleshooting (Not Affected) 4-2
7. Transition Considerations 4-2
8. Input/Output Manual Pages 4-2

5 Segmentation Directory Black Hole Detection and Removal Feature (5241) 5-1

1. Feature Description 5-1
2. Call Flow (Not Affected) 5-2
3. Provisioning 5-2
4. Recording (Not Affected) 5-2
5. Network Management (Not Affected) 5-2
6. Maintenance/Troubleshooting (Not Affected) 5-2
7. Transition Considerations 5-3
8. Input/Output Manual Pages (Not Affected) 5-3

Contents **Page**

6 Consolidated Access Traffic (CAT) Feature (5308/5700) 6-1

1. Feature Description 6-1
2. Call Flow 6-5
3. Provisioning 6-14
4. Recording 6-17
5. Network Management 6-21
6. Maintenance/Troubleshooting 6-24
7. Transition Considerations 6-25
8. Input/Output Manual Pages (Not Affected) 6-30

7 4E Local for Nodal Customers — Phase II Feature (5371a) 7-1

1. Feature Description 7-1
2. Call Flow 7-2
3. Provisioning 7-6
4. Recording 7-7
5. Network Management 7-8
6. Maintenance/Troubleshooting 7-8
7. Transition Considerations 7-9
8. Input/Output Manual Pages 7-10

Contents **Page**

8 Selective Blocking of Codesets Feature (5506) 8-1

1. Feature Description 8-1
2. Call Flow 8-3
3. Provisioning (Not Affected) 8-5
4. Recording (Not Affected) 8-5
5. Network Management 8-5
6. Maintenance/Troubleshooting 8-6
7. Transition considerations 8-20
8. Input/Output Manual Pages (Not Affected) 8-20

9 Service Circuit System (SCS) Software Update Tool Feature (5563) 9-1

1. Feature Description 9-1
2. Call Flow (Not Affected) 9-3
3. Provisioning 9-3
4. Recording (Not Affected) 9-4
5. Network Management (Not Affected) 9-4
6. Maintenance/Troubleshooting (Not Affected) 9-4
7. Transition Considerations 9-4
8. Input/Output Manual Pages 9-5

Contents **Page**

10 9-Gigabyte Disk Units for Service Circuit System (SCS) Feature (5568) 10-1

1. Feature Description 10-1
2. Call Flow (Not Affected) 10-2
3. Provisioning 10-2
4. Recording (Not Affected) 10-2
5. Network Management (Not Affected) 10-2
6. Maintenance/Troubleshooting (Not Affected) 10-3
7. Transition Considerations 10-3
8. Input/Output Manual Pages 10-3

11 4E Local for Nodal Customers—Phase 2.1 8YY Screening Feature (5645) 11-1

1. Feature Description 11-1
2. Call Flow 11-1
3. Provisioning 11-3
4. Recording (Not Affected) 11-3
5. Network Management (Not Affected) 11-3
6. Maintenance/Troubleshooting (Not Affected) 11-4
7. Transition Considerations 11-4
8. Input/Output Manual Pages (Not Affected) 11-5

Contents **Page**

12 Improved Codelist Verify Feature (5742) 12-1

1. Feature Description 12-1
2. Call Flow (Not Affected) 12-1
3. Provisioning (Not Affected) 12-1
4. Recording (Not Affected) 12-2
5. Network Management (Not Affected) 12-2
6. Maintenance/Troubleshooting (Not Affected) 12-2
7. Transition Considerations 12-2
8. Input/Output Manual Pages 12-3

13 *4ESS*™ Switch Service Circuit System Announcement Seconds Expansion Feature (5794) 13-1

1. Feature Description 13-1
2. Call Flow (Not Affected) 13-2
3. Provisioning 13-2
4. Recording (Not Affected) 13-9
5. Network Management (Not Affected) 13-9
6. Maintenance/Troubleshooting (Not Affected) 13-9
7. Transition Considerations 13-9
8. Input/Output Manual Pages (Not Affected) 13-11

Contents **Page**

14 Inbound Services 10-Digit Global Title Translation Table Expansion Feature (5805) 14-1

1. Feature Description 14-1
2. Call Flow (Not Affected) 14-1
3. Provisioning 14-2
4. Recording (Not Affected) 14-13
5. Network Management (Not Affected) 14-13
6. Maintenance/Troubleshooting (Not Affected) 14-13
7. Transition Considerations 14-13
8. Input/Output Manual Pages (Not Affected) 14-13

15 Announcement Administration Processor (AAP) Disk Copy Enhancement Feature (5835) 15-1

1. Feature Description 15-1
2. Call Flow (Not Affected) 15-2
3. Provisioning (Not Affected 15-2
4. Recording (Not Affected) 15-2
5. Network Management (Not Affected) 15-2
6. Maintenance/Troubleshooting 15-2
7. Transition Considerations 15-3
8. Input/Output Manual Pages 15-3

Contents **Page**

16 1 + Carrier Identification Code Wholesale Features Feature (5840) 16-1

1. Feature Description 16-1
2. Call Flow 16-2
3. Provisioning 16-6
4. Recording 16-7
5. Network Management 16-8
6. Maintenance/Troubleshooting 16-8
7. Transition Considerations 16-9
8. Input/Output Manual Pages 16-10

17 Announcement Set D on the Integrated Services Announcement and Information Collection Feature (5844) 17-1

1. Feature Description 17-1
2. Call Flow 17-1
3. Provisioning 17-2
4. Recording 17-3
5. Network Management 17-3
6. Maintenance/Troubleshooting 17-5
7. Transition Considerations 17-6
8. Input/Output Manual Pages (Not Affected) 17-7

Contents **Page**

18 Modification Request to AT&T Circuit Switched Data Feature (5899) 18-1

1. Feature Description 18-1
2. Call Flow (Not Affected) 18-1
3. Provisioning (Not Affected) 18-1
4. Recording (Not Affected) 18-1
5. Network Management (Not Affected) 18-1
6. Maintenance/Troubleshooting 18-1
7. Transition Considerations 18-2
8. Input/Output Manual Pages (Not Affected) 18-2

19 Cellular Busy/Ring No Answer for True Connections/Easy Reach Service Feature (5907) 19-1

1. Feature Description 19-1
2. Call Flow (Not Affected) 19-1
3. Provisioning (Not Affected) 19-1
4. Recording (Not Affected) 19-2
5. Network Management (Not Affected) 19-2
6. Maintenance/Troubleshooting (Not Affected) 19-2
7. Transition Considerations 19-2
8. Input/Output Manual Pages (Not Affected) 19-2

Contents **Page**

20 Payphone Compensation—Phase 2 Feature (6164) 20-1

1. Feature Description 20-1
2. Call Flow 20-2
3. Provisioning 20-6
4. Recording 20-7
5. Network Management (Not Affected) 20-7
6. Maintenance/Troubleshooting 20-7
7. Transition Considerations 20-8
8. Input/Output Manual Pages (Not Affected) 20-8

21 Automatic Message Accounting for Government Emergency Telecommunications Service Pseudo—Destination Number Feature (6190) 21-1

1. Feature Description 21-1
2. Call Flow 21-2
3. Provisioning (Not Affected) 21-7
4. Recording 21-7
5. Network Management (Not Affected) 21-7
6. Maintenance/Troubleshooting (Not Affected) 21-7
7. Transition Considerations 21-7
8. Input/Output Manual Pages (Not Affected) 21-8

Contents **Page**

22 Release Summary—4E22 Release 4 Generic 22-1

1. Growth and Retrofit Documents 22-1
2. Input/Output Messages 22-2
3. OS Interfaces 22-3
4. New or Changed Alarms 22-4
5. Measurements/OSOR 22-5
6. Feature Activation Summary 22-6

Abbreviations and Acronyms ABB-1

Figures

6 Consolidated Access Traffic (CAT) Feature (5308/5700)

6-1. Consolidated Access Traffic Architecture 6-2

7 4E Local for Nodal Customers — Phase II Feature (5371a)

7-1. Outbound Local LRN Call from a LOCAL_NODAL Customer 7-3

7-2. Terminating Local LRN Call to a LOCAL_NODAL Customer 7-5

Contents **Page**

8 Selective Blocking of Codesets Feature (5506)

8-1. International Calls Using PRI Interfaces 8-2
8-2. ITN Testing Configuration 8-6
8-3. Expected Message Sequence for Test Number 1. 8-9
8-4. Expected Message Sequence for Test Number 2. 8-11
8-5. Expected Message Sequence for Test Number 3. 8-13
8-6. Expected Message Sequence for Test Number 4. 8-15
8-7. Expected Message Sequence for Test Number 5. 8-17
8-8. Expected Message Sequence for Test Number 6. 8-19

13 *4ESS*™ Switch Service Circuit System Announcement Seconds Expansion Feature (5794)

13-1. Verify Form 7k Layout 13-4

20 Payphone Compensation—Phase 2 Feature (6164)

20-1. Toll Free Call Flow 20-2

Tables

3 ADR Recording Changes for Interaction with TCS-NAP Feature (4941)

3-A. On/Off Flags For ADR Recording 3-4
3-B. Module 948 3-5

Contents **Page**

6 Consolidated Access Traffic (CAT) Feature (5308/5700)

6-A. Module Code 941 - Expanded Switched Access Module 6-18
6-B. AMA Table 923 - IC/INC Indicator 6-19
6-C. Structure Code 09923 - Recording Handoff Tracer Record 6-19
6-D. Service Identity Index For 0+ Calls 6-29
6-E. Service Identity Index For 0- and 01+ Calls 6-29

7 4E Local for Nodal Customers — Phase II Feature (5371a)

7-A. Module 947 7-7
7-B. New Finaling Handling Code Failures 7-9

8 Selective Blocking of Codesets Feature (5506)

8-A. Feature Test Summary 8-7
8-B. Call Processing Test Number 1 8-8
8-C. Call Processing Test Number 2 8-10
8-D. Call Processing Test Number 3 8-12
8-E. Call Processing Test Number 4 8-14
8-F. Call Processing Test Number 5 8-16
8-G. Call Processing Test Number 6 8-18

13 *4ESS*™ Switch Service Circuit System Announcement Seconds Expansion Feature (5794)

13-A. OD4OFCCOPY2 Entries 13-2
13-B. Verify Form 7k Entries 13-5

Contents **Page**

13-C. TG-4 Modifications 13-6

16 1 + Carrier Identification Code Wholesale Features Feature (5840)

16-A. New Finaling Handling Code Failures 16-9

20 Payphone Compensation—Phase 2 Feature (6164)

20-A. New Finaling Handling Code Failures 20-7

About This Document

1. Purpose

1.01 The purpose of the Product Release Document (PRD) is to provide customers with information pertaining to the new features that are introduced in the *4ESS*™ switch. A PRD is written to cover the features introduced in full generic releases and quarterly generic releases. This particular PRD provides information pertaining to the new features included in the 4E22 Release 4 Generic.

2. Scope

2.01 The Product Release Document provides customers with information not covered in other *4ESS* switch documentation. It is not a replacement for other documentation such as Standard 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 4E22 Release 4 features, not the long-term maintenance. Since other documentation is used for the operation and maintenance of features after their introduction into the *4ESS* switch, this PRD will not be reissued.

3. Intended Audience

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

4. How to Use This Document

4.01 The PRD for 4E22 Release 4 Generic contains 22 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.

4.02 The following is a list of the chapters contained in this document with a brief description of the feature covered in that chapter:

Chapter 1: *Test Query Enhancements Feature (477)*

This feature provides enhancements to the TEST:TCAP command to properly handle responses to Network Control Point (NCP) / Quantum Data and Routing System (QDRS) prompt queries. The test query capability provides a vehicle to interact with the customer record at the NCP databases.

Chapter 2: *Service Identity Traffic Data Collection Feature (4898/5531i)*

The Service Identity (SI) Traffic Data Collection feature describes the collection of hourly *4ESS*™ switch to *4ESS* switch [Real Time Network Routing (RTNR)] and *4ESS* switch to AREA [End-to-end Class of Service (ECOS)] traffic data.

Chapter 3: *ADR Recording Changes for Interaction with TCS-NAP Feature (4941)*

This feature creates a new Redirection Data Billing Module that will record the Alternate Destination Routing (ADR) information and also provide more information to the downstream systems about the re-route.

Chapter 4: *Enhancements to Switch User Messages for Tollfree/900 Number Translations Feature (5024)*

This feature provides enhancements to *4ESS*™ switch user messages for Tollfree/900 Number Translations involving ISET. This enhancement reduces long delays in trouble shooting user complaints. Routing information is now contained in the output content of the verify message that work center personnel get when using "TEST:TCAPDSD". The ANT Record is also printed that contains the emergency routing information of the toll free customers who have subscribed for the ISET/ANT feature.

Chapter 5: *Segmentation Directory Black Hole Detection and Removal Feature (5241)*

This feature has two levels of action that are taken to address the problem of black holed SD queries.

- The *4ESS*™ switch can prevent SDRequeries from being sent to a potential black holing SD.
- Network Management Operations System (NEMOS) can prevent SDQueries from being sent to a black holing SD by applying a skip control on the *4ESS* switch SD Point Code (PC) round robin table.

Chapter 6: *Consolidated Access Traffic (CAT) Feature (5308/5700)*

The architecture of this feature consolidates 0+/0- and 1+ Hotel/Motel (1+H/M) traffic with 1+ direct dialed traffic from the access provider networks into the AT&T Switched Network (ASN) from both wire line and wireless providers. This consolidation results in common trunking from the access provider network to the ASN for all switched access 1+ direct dialed, 0+/0-, and 1+H/M calls.

Chapter 7: *4E Local for Nodal Customers - Phase II Feature (5371a)*

This feature allows nodal customers to originate and terminate local calls from their Private Branch Exchange (PBX) to the AT&T network.

Chapter 8: *Selective Blocking of Codesets Feature (5506)*

This feature causes the *4ESS*™ switch to check for the presence of codeset 6 and 7 Information Elements (IEs) in the forward direction of outbound international call messages, and it checks for codeset 6 and 7 IEs in the backward direction of incoming international call messages. If codeset 6 and 7 IEs are present, the *4ESS* switch does not map them to the Access Transport Parameter (ATP) of outgoing Common Channel Signaling System Seven (CCS7) or International Consultative Committee on Telephone and Telegraph (CCITT7) ISDN User Part (ISUP) messages. By not mapping these IEs at the call originating and/or terminating *4ESS* switches, AT&T decreases the number of call failures.

Chapter 9: *Service Circuit System (SCS) Software Update Tool Feature (5563)*

This feature provides a tool that automates the update process for the Service Circuit System (SCS). The tool reduces the risk of errors and requires significant intervention by maintenance personnel only when failures occur. The previous SCS update method required a complex manual procedure that could result in errors.

Chapter 10: *9-Gigabyte Disk Units for Service Circuit System (SCS) Feature (5568*)

This feature provides a new 9 Gigabyte (GB) disk drive circuit pack for use in Service Circuit Systems (SCS). The new unit replaces the 4 GB disk drive circuit pack. The increased disk drive capacity, together with the SCS Announcement Seconds Expansion Feature (5794), provides an announcement storage capacity of 2 million announcement seconds, which is required to support the increasing demand for customized service announcements.

Chapter 11: *4E Local for Nodal Customer - Phase 2.1 8YY Screening Feature (5645)*

4E Local for Nodal Customers allows AT&T direct connect customers to designate AT&T as their local service provider. This feature expands on that capability that allows these subscribers to dial toll free numbers.

Chapter 12: *Improved Codelist Verify Feature (5742)*

The Improved Codelist Verify feature enhances the code list verify command so it returns all codes pointing to a specified Routing Data Block (RDB), regardless of the call type.

Chapter 13: *4ESS*™ Switch Service Circuit System Announcement Seconds Expansion Feature (5794)

The *4ESS*™ switch Service Circuit System (SCS) Service Circuit Units (SCUs) feature increases the announcement storage from 1.5 million seconds to approximately 2 million seconds of announcements.

Chapter 14: *Inbound Services 10-Digit Global Title Translation Table Expansion Feature (5805)*

This feature expands the Inbound 10-Digit GTT table [located in the Direct Link Node (DLN)] to support 1 million records.

Chapter 15: *Announcement Administration Processor (AAP) Disk Copy Enhancement Feature (5835)*

This feature allows the Announcement Administration Processor (AAP) to copy all announcements from one Service Circuit System (SCS) to another. The copying is done without having to reload all of the announcements at the Central Site, which significantly reduces copying time.

Chapter 16: *1 + Carrier Identification Code Wholesale Features Feature (5840)*

This feature provides the additional capability in the network to offer optional Account Code and Geographic Restriction with Authorization Codes to existing wholesale customers.

Chapter 17: *Announcement Set D on the Integrated Services Announcement and Information Collection Feature (5844)*

This feature defines a new announcement set, Set D, on the Integrated Services Announcement and Information Collection (ISAIC) platform and increases the amount of announcement seconds capacity available on the Service Circuit System (SCS) from one to two sets.

Chapter 18: *Modification Request to AT&T Circuit Switched Data Feature (5899)*

This feature is a Modification Request to the AT&T Circuit Switched Data feature (4323) in the 4E20 Release 3 Generic. With this feature, 64R international calls in the Software Defined Network Access (SDNA) domain are handled in the same way as 64R international calls in Domain 82.

Chapter 19: *Cellular Busy/Ring No Answer for True Connections/Easy Reach Service Feature (5907)*

This feature eliminates reorder for AT&T 500 numbers when the call sequencing option Busy/Ring No Answer B/RNA is activated. With this feature, the *4ESS*™ switch is modified to monitor for release from the far-end, while the B/RNA timer is running.

Chapter 20: *Payphone Compensation—Phase 2 Feature (6164)*

This feature allows AT&T to compensate the owners of payphones on a per-call basis. This method is based on the recording of the Originating Line Identification/Interexchange Identification (OLI/II) information in the Automatic Message Accounting (AMA) record. The OLI/II information is currently captured in the AMA records for 8YY and Software Defined Network-Network Remote Access (SDN NRA) services.

Chapter 21: *Automatic Message Accounting for Government Emergency Telecommunications Service Pseudo—Destination Number Feature (6190)*

This feature, Automatic Message Accounting (AMA) for GETS PDN, Phase 2, suppresses the destination number from appearing on the Call Detail Record (CDR) provided to the GETS Integration Contractor (IC), GTE.

Chapter 22: *Release Summary—4E22 Release 4 Generic*

This chapter summarizes several aspects of the features in this document. The chapter identifies Growth and Retrofit documents resulting from features in the current release; new, changed, or deleted input and output messages; Operation Support Systems impacts of the release; and new or changed alarms. The final section tells how each feature is turned on and off.

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

5. Product Safety Labels

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Test Query Enhancements Feature (477)

1

Contents **Page**

1. Feature Description 1-1
Description 1-1
2. Call Flow (Not Affected) 1-1
3. Provisioning (Not Affected) 1-1
4. Recording (Not Affected) 1-2
5. Network Management (Not Affected) 1-2
6. Maintenance/Troubleshooting (Not Affected) 1-2
7. Transition Considerations 1-2
Ubiquity 1-2
Turn On/Turn Off Mechanism 1-2
8. Input/Output Manual Pages 1-2

Test Query Enhancements Feature (477)

1

1. Feature Description

Description

1.01 This feature provides enhancements to the TEST:TCAP command to properly handle responses to Network Control Point (NCP) / Quantum Data and Routing System (QDRS) prompt queries. The test query capability provides a vehicle to interact with the customer record at the NCP databases. It is used to test the capability of sending a query to an NCP and accepting a response from the database and printing it on the requesting TTY channel. Previously, the test query capability did not process responses from the NCP with a request for caller interaction capabilities. These types of responses require sending additional data after the initial test query is sent.

1.02 The test query capability has been enhanced to process responses with requests for caller interaction capabilities. This enhancement requires additional input from the user, specifically the digits the NCP expects. Based on this information, the test query logic will process the response.

2. Call Flow (Not Affected)

3. Provisioning (Not Affected)

4. Recording (Not Affected)

5. Network Management (Not Affected)

6. Maintenance/Troubleshooting (Not Affected)

7. Transition Considerations

Ubiquity

7.01 It is not necessary for all *4ESS*™ switches in the network to be running the 4E22 Release 4 Generic for this feature to be fully operational.

Turn On/Turn Off Mechanism

7.02 This feature is automatically turned on by software deployment.

8. Input/Output Manual Pages

8.01 The attached TEST:TCAPDSD Input/Output manual pages were modified to support this feature.

MESSAGE ID	TEST:TCAPDSD
WORK CENTER	MAC, MOC, NMOC, TOC
GENERIC	4E22 Rel. 4 and later
CLASS	ALL MESSAGE
APPLICATION	4E - Proprietary
TYPE	Input

1. **PURPOSE**

Requests a test query to be sent to the Network Control Point (NCP) from the 4ESS™ Switch serving as an Action Control Point (ACP). This test query tests the integrity of the Common Channel Signaling Version 7 (CCS7) network between the two end points utilizing the Consultative Committee on International Telephone & Telegraph (CCITT) based Transaction Capability Application Part (TCAP) protocol. It also serves as a tool to test the data for a particular Direct Services Dialing (DSD) customer. The types of queries sent to the NCP can be for Automatic Number Identification (ANI) - based services (Switched Digital Network [SDN]), dialed number-based services (A800 types) or Universal Subscriber Data Structure (USDS).

Format [1] is used to request an ANI-based test query (SDN services).
Format [2] is used to request a dialed number-based test query (A800 type services).
Format [3] is used to request a Universal Global Title Translation (UGTT) test query.
Format [4] is used to request a Network Access Interruption (NAI) test query.
Format [5] is used to request a Universal Subscriber Data Structure (USDS) test query.
Format [6] is used to request a destination-only query.
Format [7] is used to request a ANI-only query.
Format [8] is used to request both a destination and ANI query.
Format [9] is used to request the Local ANI digits in an SDN query.
Format [10] is used to request the Local ANI digits in a Positive Call Processing (PCP) query.
Format [11] is used to request the Carrier Identification Code in the NAI query.
Format [12] is used to request Local Nodal 8YY screening test query.

2. **FORMAT**

[1] **TEST:TCAPDSD;QRYTYPE** *a*:**DIG** *b*,**ANI** *c* [,**APN**] [,**AUTHCODE** *d*] [,**RATE** *e*] [,**SGD** *f*] [,**RID** *g* [,**RID1** *h* [,**RID2** *i*]]] [,**LIST**] [,**CD**]**!**

[2] **TEST:TCAPDSD;QRYTYPE** *a*:**DIG** *b*,**ANI** *c* [,**RATE** *e*] [,**APN**] [,**RID** *g* [,**RID1** *h* [,**RID2** *i*]]] [,**LIST**] [,**CD**]**!**

[3] **TEST:TCAPDSD;QRYTYPE** *a*:*{*,**ANI** *c*/,**ANI** *c*,**APN***}* [,**SD**]**!**

[2] **TEST:TCAPDSD;QRYTYPE 3:DIG** *b*,**ANI** *c* [,**RATE** *e*] [,**IIDIGITS** *j*/,**OLI** *k*/,**CID** */*/,**OLI** *k*,**CID** */*]**!**

[3] **TEST:TCAPDSD;QRYTYPE 8:DIG** *b*,**ANI** *c* [,**IIDIGITS** *j*/,**OLI** *k*] [,**RATE** *e*] [,**TYP** *m*] [,**LIST**] [**INSEPR** *n*]**!**

[6] **TEST:TCAPDSD;QRYTYPE 11:DIG** *b*,**RATE 1!**

[7] **TEST:TCAPDSD;QRYTYPE 11:DIG** *b*,**ANI** *c*,**RATE 2!**

[8] **TEST:TCAPDSD;QRYTYPE 11:DIG** *b*,**ANI** *c*,**RATE 3!**

[9] **TEST:TCAPDSD;QRYTYPE 1:DIG** *b*,**ANI** *c* [,**APN**] [,**AUTHCODE** *d*] [,**RATE** *e*] [,**SGD** *f*] [,**LANI** *o*] [,**RID** *g* [,**RID1** *h* [,**RID2** *i*]]] [,**LIST**] [,**CD**]**!**

[10] **TEST:TCAPDSD;QRYTYPE 10:DIG** *b*,**ANI** *c* [,**APN**] [,**AUTHCODE** *d*] [,**RATE** *e*] [,**SGD** *f*] [,**LANI** *o*] [,**RID** *g* [,**RID1** *h* [,**RID2** *i*]]] [,**LIST**] [,**CD**]**!**

[11] **TEST:TCAPDSD;QRYTYPE 3:DIG** *b*,**ANI** *c* [,**RATE** *e*] [,**IIDIGITS** *j*/,**OLI** *k*/,**CID** */*/,**OLI** *k*,**CID** */*] [,**CAR** *p*]**!**

[12] **TEST:TCAPDSD;QRYTYPE 13:DIG** *b*,**LANI** *o* [,**RATE** *e*]**!**

3. **EXPLANATION OF MESSAGE**

a The type of query to be sent:

- *1*— ANI-based query
- *2*— Non-Call Associated Temporary Signaling Connection (NCAT) ANI-based query
- *3*— Dialed number-based query
- *2*— NCAT dialed number-based query
- *5*— NAI query
- *6*— UGTT query
- *7*— NCAT UGTT query
- *8*— USDS query.
- *9*— EasyReach® query.
- *10*— PCP query.
- *11*— Local Number Portability (LNP).
- *12*— Universal International Freephone Number (UIFN) query.

13— Local Nodal 8YY screening query.

b Customer specific digits that are required for the particular type of DSD call. Digits for the ^ANI-based queries can be either 7 digits or 10 digits. For the dialed ^number-based query, 10 digits must be specified. For international SDN and USDS queries, a "**011**" must prefix the dialed number, this is only valid for Format [1], Format [4], and Format [5]. 11 digits may be specified for Universal International Freephone Number (UIFN) calls.

c A required variable for the ^ANI-based and USDS test queries. Customer's ^10-digit automatic number identification. For USDS, a 3 digit ANI is permitted.

d A customer's authorization code number. It is an optional variable. There can be a maximum of 12 digits. For EasyReach® query type this is the echo data that should be sent in the requery to the Quantum Routing Data System (QRDS). This can be a maximum of 10 bytes (20 digits).

e An optional variable used to specify a data rate for a DSD call. Not valid for LNP queries.

0— Non data (voice call) For USDS, this is the only valid value of data rate.

1— 1.536 Megabits Per Second (MBPS) clear

2— 1.536 MBPS restricted

3— 384 Kilobits Per Second (KBPS) clear

2— 384 KBPS restricted

5— 64 KBPS clear

6— 56 KBPS

7— 64 KBPS restricted

f Station group designator number. An optional variable for ^ANI-based queries. The value specified as input depends on the individual customer.

g First set of Caller Interaction (CI) digits. Maximum number of digits is 15.

h Second set of CI digits. The second set is not accepted unless the first set of CI digits have been entered. Maximum number of digits is 15.

i	Third set of CI digits. The third set is not accepted unless the first and second set of CI digits have been entered. Maximum number of digits is 15.
LIST	If this keyword is present in the input message, then the dump of the message received from the NCP database is printed.
CD	Continuation Data (**CD**) indicates that this is one of two input messages. This is only valid if the **RID** keyword is used with the **CD** keyword on the first of two input messages. The **QRYTYPE** and **DIG** parameters are required in the second message.
APN	If this keyword is used to define the ANI variable, then the ANI must be an Action Point Numbering Plan (APN) ANI. If this keyword is not used to define the variable, then the ANI must be a North American Numbering Plan (NANP) ANI.
SD	Only valid with a UGTT query. If present then the secondary UGTT database will be queried. Default is to query the primary database.
j	Information digits, also called the originating station type. Identifies characteristics of the calling station (0-99).
k	Originating line identity, also called the originating station type (0-99).
l	Carrier selection information: *1*— Presubscribed, no input. *2*— Presubscribed, input. *3*— Presubscribed, input or not. *2*— Not presubscribed, input.
m	Access type: *1*— Switched access.
n	Input Service Provider (INSEPR) message Identification (ID) (*1-9*).
o	Local ANI digits. This should be 10 digits. These digits identify a Local Nodal customer.
p	Carrier Identification Code. This must be a 4-digit number. These digits are used by the Number 2 Line Number Application For Consumers (2LAC)/ Network Control Point (NCP) databases for fraud detection.

4. **SYSTEM RESPONSE**

?D	Data field contains an error. Invalid or ^out-of-range data was received in the input message.
?E	Syntax Error exists in the message but cannot be resolved to the proper field. An invalid keyword combination was discovered.
PF	Printout Follows. The test query has been initiated and the results will be printed.
RL	Retry Later. No Teletypewriter (TTY) output buffer or trunk maintenance register available.

5. **REFERENCES**

PIDENTs
- DSDCMESS
- IOCPIMC4
- TCAPTEST
- TMAD0005

Output Message
- *TEST:TCAPDSD*

MESSAGE ID ..... TEST:TCAPDSD
WORK CENTER ..... MAC, MOC, NMOC, TOC
GENERIC ..... 4E22 Rel. 4 and later
APPLICATION ..... 4E - Proprietary
TYPE ..... Output

1. **FORMAT**

[1] *TEST:TCAPDSD:QRYTYPE a:DIG b,ANI c* [,APN] [,AUTHCODE d]...
... [,RATE e] [,SGD f] [,LIST] [,CD]
{g|h}

[2] *TEST:TCAPDSD:QRYTYPE a:DIG b ,ANI c* [,APN] [,RATE e]...
... [,LIST] [,CD]
{g|h}

[3] *TEST:TCAPDSD;QRYTYPE a:{ANI c |ANI c, APN}* [,SD]
{g|h}

[2] *TEST:TCAPDSD;QRYTYPE 5:DIG b,ANI c* [,RATE e] ...
... [,IIDIGITS i|,OLI j|,CID k|,OLI j,CID k]
I

[5] *TEST:TCAPDSD;QRYTYPE 8:DIG b,ANI c* [,IIDIGITS i|,OLI j]...
... [,TYP m,] [,RATE e] [,LIST] [INSEPR n]
o: [p]
USDS SPC: q USDS SSN: r
[DENY REASON: {INVALID |2CCP DENY CALL - SDF}]
[ACG REQUEST]
[USDS TEST QUERY CONTINUING]
[SWITCH CAPABILITY:
PROCEED [APPLY TRUE VOICE PCC]
[APPLY 1+DL]
[QUERY NAI]
[ROUTE TO ALA]
[ALA: VALUE]

[6] *TEST:TCAPDSD;QRYTYPE 11:DIG b,RATE 1!*

[7] *TEST:TCAPDSD;QRYTYPE 11:DIG b,ANI c,RATE 2!*

[8] *TEST:TCAPDSD;QRYTYPE 11:DIG b,ANI c,RATE 3!*

[9] *TEST:TCAPDSD;QRYTYPE 1:DIG b,ANI c* [,APN] [,AUTHCODE d]...
... [,RATE e] [,SGD f] [,LANI s] [,LIST]!

[10] *TEST:TCAPDSD;QRYTYPE 10:DIG b,ANI c* [,APN] [,AUTHCODE d]...
... [,RATE e] [,SGD f] [,LANI s] [,LIST]!

[11] *TEST:TCAPDSD;QRYTYPE 5:DIG b,ANI c* [,RATE e]...
... [,IIDIGITS i|,OLI j|,CID k|,OLI j,CID k] [,CAR t]!

[12] *TEST:TCAPDSD;QRYTYPE 13:DIG b,LANI s* [,RATE e]!

[13] *TEST:TCAPDSD;QRYTYPE a:DIG b,ANI c* [,APN] [,AUTHCODE d]...
... [,RATE e] [,SGD f] [,LANI s] [,LIST] [,CD]

{g|h}
[RID: u]
[RID1: u]
[RID2: u]

[12] *TEST:TCAPDSD;QRYTYPE 3:DIG b,ANI c* [,APN] [,RATE e] [,LIST]

{g|h}

ANT INFORMATION
RTG DIGITS: v
DOMAIN: w
SIC: x
FAI: y
CSR: z

2. **REASON FOR OUTPUT**

This output message is in response to the *TEST:TCAPDSD* input message.

Format 1-3 is in response to either a dialed ^number-based query or an Automatic Number Identification (ANI) - based test query request. The output from this test query will indicate whether the query was successful or not. If the query is successful, the output will show what operations were requested by the customer record at the NCP database along with the routing digits and domain value. If the query is not successful, the output will indicate the final handling code and reason for failure.

Format [4] is in response to a Network Access Interruption (NAI) test query request.

Format [5] is in response to a Universal Subscriber Data Structure (USDS) test query request.

Format [6] is in response to a destination-only query to the Local Number Portability (LNP) database.

Format [7] is in response to a an ANI-only query to the LNP database.

Format [8] is in response to both a destination and ANI query to the LNP database.

Format [9] is in response to an ANI based query.

Format [10] is in response to an ANI based query.

Format [11] is in response to an NAI based query.

Format [12] is in response to a Local Nodal 8YY screening test query.

Format [13] is in response to a test query containing the *RID*, *RID1*, and/or *RID2* keywords.

Format [14] is in response to the presence of an Alternate Number Translations (*ANT*) record for a specific test query.

3. **VARIABLE FIELD DEFINITIONS**

a The type of query sent:

- *1*— ANI-based query
- *2*— Non-Call Associated Temporary Signaling Connection (NCAT) ANI-based query
- *3*— Dialed number-based query
- *2*— NCAT dialed number-based query
- *5*— NAI query
- *6*— Universal Global Title Translation (UGTT) query
- *7*— NCAT UGTT query
- *8*— Universal Subscriber Data Structure (USDS) query
- *9*— EasyReach® query
- *10*— Positive Call Processing (PCP) query.
- *11*— Local Number Portability (LNP).
- *12*— Universal International Freephone Number (UIFN) query.
- *13*— Local Nodal 8YY screening query.

b Customer specific digits that are required for the particular type of Direct Services Dialing (DSD) call. This is a 10 digit number for dialed number based services. For ANI-based

services, this may be a 7 or 10 digit number or an international number with *011* as the leading 3 digits. An international number may also be specified for USDS. 11 digits may be specified for Universal International Freephone Number (UIFN) calls.

c — A required parameter for the ^ANI-based queries. This should be the customer's ^10-digit automatic number identification.

APN — If this keyword was used in the input message to define the ANI parameter, then the ANI must be an Action Point Numbering Plan (APN) ANI.

If this keyword was not used in the input message to define the ANI parameter, then the ANI must be a North American Numbering Plan (NANP) ANI.

d — A customer's authorization code number. An optional parameter with a maximum of 12digits. For EasyReach® query type this is the echo data that should be sent in the requery to the Quantum Routing Data System (QRDS). This can be a maximum of 10 bytes (20 digits).

e — An optional parameter used to specify a data rate for a DSD call. Not valid for LNP queries.

- *0*— Non data (voice call)
- *1*— 1.536 Megabits Per Second (MBPS) clear
- *2*— 1.536 MBPS restricted
- *3*— 384 Kilobits Per Second (KBPS) clear
- *2*— 384 KBPS restricted
- *5*— 64 KBPS clear
- *6*— 56 KBPS
- *7*— 64 KBPS restricted

f — An optional parameter for ^ANI-based queries. It is the station group designator number. The value specified as input depends on the individual customer.

LIST — If this keyword was used in the input message, the dump of the message received from the Network Control Point (NCP) database is printed.

g — The following text phrases may appear when the query succeeds:

A800SUPPLEMENTALORIGINFO—
Number of transactions.

ANI— ANI digits from NCP.

CUSTOMIZEDANNOUNCEMENTRECEIVED—
One or more customized announcements have been received.

DOMAIN—
The routing domain associated with the digits.

FAIDIGIT—
The digit returned form the NCP to determine the foreign administration identification for the carrier.

RATE—
Data rate for this call.

RECEIVEDACG

RECEIVEDCALLTAG

RECEIVEDCHECKAPPLICATIONSTATUS

RECEIVEDREFRESH

RECEIVEDREQUESTTOCANCELANNOUNCEMENT

RECEIVEDREQUESTTOPERFORMANASSIST

RECEIVEDREQUESTTOPERFORMNCPTRANSFER

RECEIVEDREQUESTTOQUEUECALL

RECEIVEDSENDTERMINATION

ROUTINGDIGITS—
The digits returned from the NCP to route this call.

SGD— Semi Global Data (SGD) digit for this call.

STANDARDANNOUNCEMENTRECEIVED

SUPPLEMENTALROUTINGINFO—
The supplemental routing information specifies the service.

VALIDCUSTOMERID:888-000-1232—
UGTT query.
PRIMARYSPC:2523163
PRIMARYSSN:252
SECONDARYSPC:2523163
SECONDARYSSN:252

h The following text phrases may appear when the query fails.

EXCEPTIONCODE—
A number from *0-255* that defines the error.

FAILURE

FINALHANDLINGCODE

PROTOCOLERROR

RECEIVED^P-ABORT

RECEIVED^U-ABORT

TIMEOUT

SD Only valid with a UGTT query. If present then the secondary UGTT database will be queried. Default is to query the primary database.

i Information digits, also called the originating station type. Identifies characteristics of the calling station (*0-99*).

j Originating line identity, also called the originating station type (0-99).

k Carrier selection information:

1— Presubscribed, no input.

2— Presubscribed, input.

3— Presubscribed, input or not.

2— Not presubscribed, input.

l The output from the test query when successful:

ALLOWCALL

COMPLETED-SUCCESS

ELAPSEDTIME#.#SECONDS

m Access type:

1— Switched access

n Input Service Provider (INSEPR) message Identification (ID) (*1-9*).

o Result of the query:

USDSDENYRESPONSE

USDSPROCEEDRESPONSE

USDSWAITFORINSTRUCTIONSRESPONSE

USDSINSTRUCTIONS

USDSEXCEPTION

p Exception which was encountered while processing the USDS test query:

1— 4ESS™ switch in overload no USDS query possible.

2— Not possible to send USDS query due to stream down.

3— Not possible to send USDS query due to CNI buffer overflow.

2— NOC initiated control on USDS point code caused query to USDS to not be sent, both point codes attempted.

5— Database initiated control on USDS point code caused USDS query to not be sent.

6— Query not sent to USDS due to point code or SSN out of service.

7— Query not sent to USDS due to fact that both point codes/SSNS not populated in ODA.

8— First query was sent to the USDS and a DF1 timeout occurred, other PC attempted but OOS.

9— First query was sent to the USDS and DF1 timeout occurred, other PC attempted but not present in ODA.

10— Timed out while waiting for a response from the first USDS, second query will be attempted.

11— Timed out while waiting for a response from the second USDS query.

12— Timed out waiting for SP response after USDS instructed 4ESS™ to wait for instructions.

13— Caller abandoned while waiting for a response from the first USDS query.

12— Caller abandoned while waiting for a response from the second USDS query.

15— Caller abandoned while waiting for instructions from the SP after being instructed to wait.

16— Received a request to disconnect call but the reply code parameter was not present, call allowed to proceed.

17— Received a request to disconnect call but the reply code parameter did not indicate 2ccp request, call allowed to proceed.

18— SWCAP parameter indicated route to ALA but ALA parameter was not present, call proceeds.

19— SWCAP parameter not present in invoke switch capabilities operation.

20— Unrecognized indicators set in switch capability parameter for an invoke SWCAP operation.

21— Invalid parameter received in PI SWCAP operation, call allowed to proceed.

22— The message type received was invalid for the USDS operation received.

23— Return error message received with error code of unrecognized error code.

22— Return error message received with error code of unused error code.

25— Return error message received with error code of unrecognized component sequence.

26— Return error message received with error code of erroneous contents.

27— Return error message received with error code of unavailable resource.

28— Return error message received with error code of missing customer record.

29— Return error message received with error code of spare.

30— Return error message received with error code of data unavailable.

31— Return error message received with error code of task refused.

32— Return error message received with error code of queue full.

33— Return error message received with error code of no queue.

32— Return error message received with error code of reply overdue.

35— Return error message received with error code of data already exists.

36— Return error message received with error code of unauthorized request.

37— Return error message received with error code of not queued.

38— Return error message received with error code of invalid.

39— Return error message received with error code of IDB miscellaneous problems.

20— Return error message received with error code of IDB vacant line.

21— Return error message received with error code of IDB vacant NXX.

22— Return error message received with error code of IDB processor overload.

23— Return error message received with error code of IDB non purchased NPA.

22— Return error message received with error code of capabilities mismatch.

25— Return error message received with error code of improper caller response.

26— Return error message received with error code of unexpected parameter.

27— Return error message received with error code of missing parameter.

50— DLN indicates unrecognized package type.

51— Incorrect transaction portion indicated by DLN.

52— Incorrect transaction portion indicated by DLN.

53— DLN indicates badly structured component portion.

52— DLN indicates unrecognized component portion.

55— General unrecognized component.

56— General badly structured.

57— DLN indicates incorrect component portion.

58— Incorrect component portion due to invalid number of components.

59— Incorrect component portion, invoke component.

60— Incorrect component portion, return error component.

61— Unrecognized error value in return error component.

62— Unrecognized operation code value in *aninvoke* component.

63— Invalid message length.

79— Incorrect component portion, return result component.

83— P-abort cause indicates unrecognized message type.

82— P-abort cause indicates unrecognized transaction ID.

85— P-abort cause indicates badly formatted transaction portion.

86— P-abort cause indicates invalid transaction.

87— P-abort cause indicates resource limit exceeded.

88— U-abort cause indicates application protocol violation.

89— U-abort cause indicates unknown user problem.

90— U-abort cause indicates caller abandon.

91— U-abort cause indicates return error message received.

92— U-abort cause indicates reject message received.

93— U-abort cause indicates timeout.

100— Reject message has invalid type.

101— Reject component - general, invalid.

102— Reject component - general, unrecognized component.

103— Reject component - general, incorrect component portion.

102— Reject component - general, badly structured component portion.

105— Reject component - invoke, invalid.

106— Reject component - invoke, duplicate invoke ID.

107— Reject component - invoke, unrecognized parameter.

108— Reject component - invoke, unrecognized operation.

109— Reject component - invoke, resource limitation.

110— Reject component - invoke, initiating release.

111— Reject component - invoke, unrecognized linked ID.

112— Reject component - invoke, unexpected linked response.

113— Reject component - invoke, unexpected linked operation.

112— Reject component - return result, invalid.

115— Reject component - return result, unrecognized invoke ID.

116— Reject component - return result, unexpected return result.

117— Reject component - return result, unrecognized parameter.

118— Reject component - return error, invalid.

119— Reject component - return error, unrecognized invoke ID.

120— Reject component - return error, unexpected return error.

121— Reject component - return error, unrecognized error.

122— Reject component - return error, unexpected error.

123— Reject component - return error, unrecognized parameter.

122— Received a message for which the CCID in the message did not correlate to an active USDS call.

125— Received USDS response or instruction message without CCID parameter.

126— Received USDS message for which CCID matched a TSN but TSN was not in busy to CR state.

127— Received USDS message for which the CCID did not correlate to a valid TSN.

128— Received a USDS message which did not contain a valid operation.

129— Received UNITDATA service message indicating general error.

130— Received a UNITDATA service message indicating signaling point code prohibited.

131— Received a UNITDATA service message indicating subsystem prohibited.

132— Received a UNITDATA service message indicating signaling point code congestion.

133— Received a UNITDATA service message indicating subsystem congestion.

132— Message returned by CNI, cause value invalid.

135— Message returned by CNI, message returned during data retrieval.

136— Message returned by CNI, blocked.

137— Message returned by CNI, overload congestion.

138— Message returned by CNI, unknown reason.

139— Message returned by CNI, ambiguous message.

120— Message returned by CNI, message not transmitted user part prohibited.

121— Message returned by CNI, MTP restricted route.

122— Message returned by DLN, unrecognized reason.

123— Message returned by DLN, no TSN translations present should not happen for USDS.

122— Message returned by DLN, invalid format from 1B.

125— Message returned by DLN, invalid CNI message type.

q Point code of the USDS to which the message was sent, or from which the response was received. The point code appears in the AT&T point code format, Network Region Cluster Member.

r Subsystem number of USDS to which the message was sent or from which the response was received.

s	Local ANI digits. This should be 10 digits. These digits identify a Local Nodal customer.
t	Carrier Identification Code. This must be a 4-digit number. These digits are used by the Number 2 Line Number Application For Consumers (2LAC)/ Network Control Point (NCP) databases for fraud detection.
u	CI digits.
v	Routing digits listed in the Alternate Number Translations (*ANT*) record.
w	Domain listed in the *ANT* record.
x	Service Indicator Code (*SIC*). listed in the *ANT* record.
y	Foreign Administration Identity (*FAI*). code listed in the *ANT* record.
z	Carrier Specific Routing (*CSR*). preference listed in the *ANT* record.

4. **ACTION TO BE TAKEN**

   If the test query is successful, no action is required if the expected operations were received as a result of the query to the database.

   If the test query is not successful, the failure results indicate the trouble.

5. **REFERENCES**

   PIDENTs
   DSDCMESS
   TCAPTEST

   Input Message
   TEST:TCAPDSD

Service Identity Traffic Data Collection Feature (4898/5531i)

2

Contents **Page**

1. Feature Description 2-1
2. Call Flow (Not Affected) 2-2
3. Provisioning 2-2
Recent Change Form 811 2-2
Verify Forms 2-2
A. 16az 2-2
B. 6bp 2-3
C. 6bq 2-3
4. Recording (Not Affected) 2-3
5. Network Management (Not Affected) 2-3
6. Maintenance/Troubleshooting (Not Affected) 2-3
7. Transition Considerations 2-3
Ubiquity 2-3
Turn On/Turn Off Mechanism 2-3
8. Input/Output Manual Pages (Not Affected) 2-3

Service Identity Traffic Data Collection Feature (4898/5531i)

2

1. Feature Description

1.01 This feature, Service Identity (SI) Traffic Data Collection, describes the collection of hourly *4ESS*™ switch to *4ESS* switch [Real Time Network Routing (RTNR)] and *4ESS* switch to AREA [End-to-end Class of Service (ECOS)] traffic data. These data are collected for a specific SI level or for up to 255 SI sets.

1.02 An SI set consists of a collection of one or more SIs. A maximum of 524 SI sets exist, divided into 255 sets each (a total of 510 SI sets) for both intertoll and ECOS traffic data. The remaining 14 sets are associated with 5-minute data collection (4E 22 Release 3 Generic).

1.03 The maximum number of SI sets for hourly data collection is engineerable from 0 to 255 at the *4ESS* switch retrofit. If the engineerable number is set to zero, the collection capability is disabled.

NOTE:
For *4ESS* switches that do not have ECOS traffic, the engineerable number is set to zero.

1.04 For intertoll traffic, an Originating AT&T Switch (OAS) collects hourly total usage, total peg count, and final overflow count traffic data for all destination switches. If the destination switch is the OAS, only total peg count is collected.

1.05 For ECOS, the *4ESS* switch collects hourly total usage of incoming traffic, incoming seizure count, incoming blocked call count, total usage of outgoing traffic, terminating first egress count, and terminating last overflow count.

NOTE:
The ECOS data is collected only at International Switching Center (ISC) and Gateway switches.

1.06 The SI sets for hourly data collection are recent changeable and are made available to the Data Acquisition, Report and Integrated Control System (DARICS). The DARICS then provides the data to the AT&T Network Servicing System (ANSER).

2. Call Flow (Not Affected)

3. Provisioning

Recent Change Form 811

3.01 Recent Change (RC) Form 811 is used to map an SI to an SI set for RTNR or ECOS traffic data. The population rules are as follows:

- FEATURE INFO = **SISETHRR** (RTNR) or **SISETHER** (ECOS)
- INDX = **1** to **255**
- DATA = **0** to **255**. A value of zero deletes the SI from the SI set.

Verify Forms

A. 16az

3.02 Verify Form 16az is used to retrieve data from the OD4SISETHRR and OD4SISETHER structures. Valid inputs are as follows:

- **VER:MISC SISHRR** retrieves data from the OD4SISETHRR and outputs the data using the verify output message 6bp.
- **VER:MISC SISHER** retrieves data from the OD4SISETHER and outputs the data using the verify output message 6bq.

B. 6bp

3.03 Verify Form 6bp verifies the output for all OD4SISETHRR assigned entries, including the SIs and the SI sets to which they are assigned.

C. 6bq

3.04 Verify Form 6bq verifies the output for all OD4SISETHER assigned entries, including the SIs and the SI sets to which they are assigned.

4. Recording (Not Affected)

5. Network Management (Not Affected)

6. Maintenance/Troubleshooting (Not Affected)

7. Transition Considerations

Ubiquity

7.01 It is not necessary for all *4ESS* switches in the network to be running the 4E22 Release 4 Generic for this feature to be fully operational.

Turn On/Turn Off Mechanism

7.02 This feature is turned on automatically by software deployment.

8. Input/Output Manual Pages (Not Affected)

ADR Recording Changes for Interaction with TCS-NAP Feature (4941)

3

Contents **Page**

1. Feature Description 3-1
2. Call Flow 3-1
3. Provisioning 3-4
Structures Affected 3-4
A. RC Form 809 3-4
4. Recording 3-5
5. Network Management (Not Affected) 3-5
6. Maintenance/Troubleshooting (Not Affected) 3-5
7. Transition Considerations 3-5
Ubiquity 3-5
Turn On/Turn Off Mechanism 3-6
8. Input/Output Manual Pages (Not Affected) 3-6

ADR Recording Changes for Interaction with TCS-NAP Feature (4941)

3

1. Feature Description

1.01 Alternate Destination Routing (ADR) and Transfer Connect Service (TCS) use the same Automated Message Accounting (AMA) fields (Service Feature) to record that the features were used on the call. Since the same field is used, it is not possible for both to be used on the same call. This feature creates a new Redirection Data Billing Module that will record the ADR information and also provide more information to the downstream systems about the re-route (reason for failure of primary, and primary tried). This module is also large enough for future redirection feature billing.

2. Call Flow

2.01 This call flow applies to a domestically originated call (not in Canada).

1. The caller dials an 8YY number which is routed to the Originating AT&T Switch (OAS) via the Local Exchange Carrier (LEC).
2. The OAS checks the 10-digit Global Title Translation table and determines that this is a No. 2 Direct Services Dialing (2DSD) based call. The OAS formulates and sends a Transaction Capabilities Action Protocol (TCAP) Begin message to the 2DSD Network Control Point (NCP) including the dialed number and the calling party's 10-digit Billing Number (BN/ANI) if available or 3-digit Numbering Plan Area (NPA) with seven zeros if BN is not available.
3. The NCP receives the TCAP Begin message and executes the Customer Application Language (CAL) logic associated with the dialed number received. The logic terminates at an ADR node.

4. If the 2DSD NCP Focused Destination Overload Control (FDOC) determines that call attempts to both the primary and the secondary destinations are not excessive, then the 2DSD NCP sends back to the OAS two sets of routing and billing information, one corresponding to the primary route and the other corresponding to the secondary route. Each set of information includes the routing number, routing domain, Service Indicator Code (SIC) and Call Code for the respective route.

   Both the 10-digit primary and secondary routing number can be either a dialable NANP number in the POTS domain, and Action Point Numbering (APN) number (SSS-TTT-XXXX) in the Direct Egress Voice (DEV) domain, or an ARN (SSC-AAA-XXXX) in the POTS domain. They cannot be 700, 8YY or 900 numbers.

5. If the 2DSD NCP FDOC determines that one or both of the destinations have excessive call attempts, proceed to Step 13.

6. The 2DSD instructs the OAS to set up an AMA record for billing with the appropriate SIC and Call Code. Initially, the AMA record will contain the billing information for the primary routing number.

7. The OAS creates the AMA record and attempts to route the call using the primary routing number.

8. The call will proceed as normal and a normal AMA record will be made. If the primary destination routing number was an ARN, the call will be routed to the NAP for Transfer Connect functionality.

   The NAP passes call set up signaling, including any ADR triggers back to the OAS. After sending a SETUP toward the Redirecting Party, the NAP sends an Update Bill message to the OAS. This causes the availability of Transfer Connect to be recorded as today, in the SF field of the AMA record.

9. CALL COMPLETES TO PRIMARY

   If the call completes to the primary destination, that is, none of the ADR triggers are detected at the OAS, no ADR redirection will take place. No Redirection Data Billing Module will be appended. There is no ADR feature charge.

   If the call was routed through the NAP, and sometime after answer, the Redirecting Party decides to transfer the call, the NAP sends another Update Bill message to the OAS. This causes the Service Feature field to be overwritten with a value that indicates the type of Transfer Connect that was used and whether this was the first, second or third attempt to transfer.

10. CALL DOES NOT COMPLETE TO PRIMARY

    If the call cannot be routed to the primary due to one of the ADR triggers, the OAS will invoke ADR to attempt to redirect the call using the secondary routing number and secondary routing domain. If the primary was an ARN, the trunks to the NAP will be dropped.

When the Initial Address Message (IAM) is launched for the secondary attempt, the OAS will update the AMA record with the secondary destination number, SIC and Call Code. Instead of marking the AMA record Service Feature to indicate that the secondary has been attempted due to busy or ring-no-answer, the OAS/CDRP will fill the Service Feature field with zeros, removing the Transfer Connect indication, if any; generate the Redirection Data Billing Module and append it to the AMA record. The module will contain the routing number of the primary destination and the reason the call was redirected: Network Busy, Egress Busy, or RNA.

The OAS will also send a TCAP UNI-directional message back to the 2DSD for network management and data collection purposes, indicating that a redirection attempt has occurred.

11. CALL COMPLETES TO SECONDARY

    The call will proceed as normal. The AMA record contains the transport billing information for the secondary destination. If the secondary destination routing number is an ARN, the call is routed to the NAP for Transfer Connect functionality and the NAP sets up the call to the billed party. After sending a SETUP toward the Redirecting Party, the Network Adjunct Platform (NAP) sends an Update Bill message to the OAS. This causes the availability of Transfer Connect to be recorded as today, in the SD field of the AMA. If the call is transferred after it is answered, the SF field is updated accordingly.

12. CALL DOES NOT COMPLETE TO SECONDARY

    If the secondary destination cannot be reached, the return error TCAP message to the NCP causes execution of the customer record default logic. The AMA record will appear as an unanswered call to the secondary location, and will have the new redirection module appended for the call attempt to the primary location.

13. EXCESSIVE CALL ATTEMPTS

    If the 2DSD NCP FDOC determines that there are excessive call attempts to the primary destination, but not to the secondary, only the secondary routing and billing information will be sent. The call will be routed to the secondary. This case is considered to be an ADR redirection performed at the NCP. The new redirection module will be appended with the primary location set to "FFFFFF" (fill characters). If the CADCR type is missing, it will be set to Egress BUSY. If the secondary subscribes to Transfer Connect, the call will be routed to the NAP. The NAP will send an Update Bill message to the OAS to update the Service Feature field to indicate that the call is eligible to be transferred. If, after the call is answered, the Redirecting party transfers the call, the Service Feature field will again be updated accordingly.

    If the 2DSD NCP FDOC determines that there are no excessive call attempts to the primary destination, but there are excessive attempts to the secondary, then

only the primary routing and billing information is sent to the OAS. No ADR redirection will occur.

If 2DSD NCP FDOC determines that there are excessive call attempts to both destinations, then no routing numbers will be sent and the call will be terminated.

3. Provisioning

Structures Affected

A. RC Form 809

3.01 The ON/OFF flag will be populated from RC form 809. The Verify forms associated with the ON/OFF flag are 16az and 8j. The following table gives the information needed to populate form 809 with the ON/OFF flags.

Table 3-A. On/Off Flags For ADR Recording

809 Form Entry				
FEATURE ITEM	**ON/OFF**	**Populates ITEM**	**With**	**Checks**
PF42	ON	OD4PF42	4ODFB_ON	none
	OFF		4ODFB_OFF	none

4. Recording

4.01 A new Redirection Data Module (AMA Module 948) has been developed to support ADR. When ADR is invoked, the *4ESS*™ switch must generate Module 948 as shown below:

Table 3-B. Module 948

Information	Table Number	Number of Characters
Module Code	88	4
Call Attempt Data	926	8
Call Code	1	4
Service Indicator Code	133	4
Numbering Plan Type	869	2
Expanded Overseas Indicator	897	4
Redirection Number	898	16
Reserved	806	12

5. Network Management (Not Affected)

6. Maintenance/Troubleshooting (Not Affected)

7. Transition Considerations

Ubiquity

7.01 It is necessary for all *4ESS* switches in the network to be running the 4E22 Release 4 Generic for this feature to be fully operational.

Turn On/Turn Off Mechanism

7.02 This feature is turned on by RC Form 809. Please refer to "Provisioning" in this chapter.

7.03 This feature can also be turned ON or OFF by an absolute word change. However, it is highly recommended that RC Form 809 be used to turn on this feature where possible.

7.04 Item OD4PF42 in Office Data Assembly (ODA) structure OD4OFCCOPY2 is used to turn this feature ON or OFF. The following is the information needed to turn ODA bit OD4PF42 ON or OFF using absolute word change. The default in both cases is "OFF".

CAUTION:
The OD4OFCCOPY2 structure also contains the ON/OFF bits for many other features. Be certain that any changes you make only affect this feature.

- Structure: OD4OFCCOPY2
- Core address in 4E22 Generic: 7145445
- Size of OD4PF42: 1
- Displacement: 17
- On: 1
- Off: 0.

8. Input/Output Manual Pages (Not Affected)

Enhancements to Switch User Messages for Tollfree/900 Number Translations Feature (5024)

4

Contents **Page**

1. Feature Description 4-1
Background 4-1
Description 4-1
2. Call Flow (Not Affected) 4-2
3. Provisioning (Not Affected) 4-2
4. Recording (Not Affected) 4-2
5. Network Management (Not Affected) 4-2
6. Maintenance/Troubleshooting (Not Affected) 4-2
7. Transition Considerations 4-2
Ubiquity 4-2
Turn On/Turn Off Mechanism 4-2
8. Input/Output Manual Pages 4-2

Enhancements to Switch User Messages for Tollfree/900 Number Translations Feature (5024)

4

1. Feature Description

Background

1.01 This enhancement was requested by the Network Services Division (NSD) New Services and Network Provisioning Organization. There are 15-20 customer trouble records per-year involving toll free numbers with Inbound Services Emergency Translations (ISET) /Alternate Number Translations (ANT). A few of these troubles were escalated to National Electronic Systems Assistance Center (NESAC), because the other work centers were unsuccessful in trouble shooting.

Description

1.02 This feature provides enhancements to *4ESS*™ switch user messages for Tollfree/900 Number Translations involving ISET. This enhancement reduces long delays in trouble shooting user complaints. Routing information is now contained in the output content of the verify message that work center personnel get when using "TEST:TCAPDSD". The ANT Record is also printed that contains the emergency routing information of the toll free customers who have subscribed for the ISET/ANT feature.

2. Call Flow (Not Affected)

3. Provisioning (Not Affected)

4. Recording (Not Affected)

5. Network Management (Not Affected)

6. Maintenance/Troubleshooting (Not Affected)

7. Transition Considerations

Ubiquity

7.01 It is not necessary for all *4ESS* switches in the network to be running the 4E22 Release 4 Generic for this feature to be fully operational.

Turn On/Turn Off Mechanism

7.02 This feature is turned on automatically by software deployment.

8. Input/Output Manual Pages

8.01 The "TEST:TCAPDSD" output message now contains the ANT routing information in the output content of the verify message. That message is included in Chapter 1 of this document.

Segmentation Directory Black Hole Detection and Removal Feature (5241)

5

Contents **Page**

1. Feature Description 5-1
Background 5-1
Description 5-1
Benefits 5-2
2. Call Flow (Not Affected) 5-2
3. Provisioning 5-2
Recent Change Form 809 5-2
4. Recording (Not Affected) 5-2
5. Network Management (Not Affected) 5-2
6. Maintenance/Troubleshooting (Not Affected) 5-2
7. Transition Considerations 5-3
Ubiquity 5-3
Turn On/Turn Off Mechanism 5-3
8. Input/Output Manual Pages (Not Affected) 5-3

Segmentation Directory Black Hole Detection and Removal Feature (5241)

5

1. Feature Description

Background

1.01 A black hole situation is detected when a certain number of *4ESS*™ switch Segmentation Directory (SD) queries sent to a particular SD, within a pre-specified interval of time, results in either an SD query timeout or a Service Processor (SP) response timeout. This situation, from a *4ESS* switch perspective, results in sending queries into a "black hole."

Description

1.02 This feature has two levels of action that are taken to address the problem of black holed SD queries.

- The *4ESS* switch can prevent SDRequeries from being sent to a potential black holing SD.
- Network Management Operations System (NEMOS) can prevent SDQueries from being sent to a black holing SD by applying a skip control on the *4ESS* switch SD Point Code (PC) round robin table.

1.03 The first level of action is taken by the *4ESS* switch on its own on a per call basis by avoiding requery to an SD that has timed out on the initial SD query. This applies only to Direct Link Node (DLN) intercepted calls. If only one SD is black holing, this level of action makes sure that the requeries do not get black holed.

1.04 The second level of action is Operations Systems based and occurs every five minutes. NEMOS receives *4ESS* switch 5-minute data. If timeout measurements are sufficient in quantity to suspect a black hole, NEMOS attempts to identify a pattern of timeouts in the network which will identify a black hole. If a black hole is identified, NEMOS makes a first step recommendation to the network manager to alleviate the problem as quickly as possible. If a black hole pattern is not identified, the network manager will be alerted because there are excessive timeouts. NEMOS also presents the network manager with a network wide view of timeout data for further human analysis.

Benefits

1.05 This feature provides the following benefits:

- Minimizes the number of calls being routed without features.
- Helps avoid the 90K lost calls report.
- Helps avoid the 2K lost calls morning report.

2. Call Flow (Not Affected)

3. Provisioning

Recent Change Form 809

3.01 The ON/OFF flag is populated using Recent Change Form 809. The feature is turned on by setting PF39 to ON. The default setting for feature item PF39 is OFF.

4. Recording (Not Affected)

5. Network Management (Not Affected)

6. Maintenance/Troubleshooting (Not Affected)

7. Transition Considerations

Ubiquity

7.01 It is not necessary for all *4ESS* switches in the network to be running the 4E22 Release 4 Generic for this feature to be fully operational.

Turn On/Turn Off Mechanism

7.02 The ON/OFF flag is populated using Recent Change Form 809. The feature is turned on by setting PF39 to ON. The default setting for feature item PF39 is OFF.

8. Input/Output Manual Pages (Not Affected)

Consolidated Access Traffic (CAT) Feature (5308/5700)

6

Contents

		Page
1.	**Feature Description**	6-1
	Technical Summary	6-3
2.	**Call Flow**	6-5
	0+/0- Calls	6-5
	1+ H/M Calls and 1+ TRS	6-10
3.	**Provisioning**	6-14
	General	6-14
	Structures Affected in Library TRANSPRM	6-14
	A. OD4OFCOPY Structure	6-14
	B. ACI Translation Structure	6-15
	C. HT411_OLI Structure	6-15
	D. HT4IIDIG Structure	6-15
	E. HT4ANI_IJKLP Structure	6-15
	F. HT4DIHSUPP Structure	6-15
	Recent Change Forms Affected	6-15
	A. RC Form 809	6-16
	B. RC Form 337	6-16
	C. RC Forms 300, 301, 302, 303 & 304	6-16

Contents **Page**

Verify Forms Affected 6-16

A. Verify Output Forms 3af and 3ag 6-16

B. Verify Input Forms 13f, 13m & 13w 6-16

C. Verify Output Forms 3a, 3b, 3c, 3d, 3e, 3f, 3g, 3v, 3w, 3z, 3ab, and 3an 6-16

4. Recording 6-17

Call Recording and Billing 6-17

A. Call Recording and Event Determinants 6-17

B. Call Detail Recording Formatting 6-18

Call Detail Recording Platform 6-20

A. AMA Recording 6-20

B. AMA Table Layout 6-20

C. Service Measurements 6-20

Call Detail Recording Monitor New Count 6-20

AMA Records With RICS Processing 6-21

5. Network Management 6-21

Access Management For Wireless Traffic 6-21

External Interface New Impacts 6-21

A. Access Management System 6-21

B. Machine Design Layout Record System 6-22

C. Network Core Data 6-22

D. Service Now - Routing 6-22

E. Service Now - Trunking 6-22

F. Network Management Operations Systems 6-22

G. Consumer Long Distance Service Management System 6-23

H. Integrated Support Environment 6-23

Post Dial Delay Performance Improvements 6-23

Contents **Page**

6. Maintenance/Troubleshooting 6-24
Service Measurements 6-24
Recorded Information and Collection System Processing 6-24
7. Transition Considerations 6-25
Transition Planning 6-25
Ubiquity 6-25
Turn On/Turn Off Mechanism 6-25
A. Turn On/Turn Off Using RC form 809 6-25
B. Turn On/Turn Off Using Absolute Word Change 6-25
Verify Forms Affected 6-26
Interactions With Other Features 6-26
A. Interactions with AT&T Local Number Portability 6-26
B. Interactions with Positive Call Processing 6-27
C. Interactions with ATP, ABC/REACH, and CLD 6-27
D. Interactions with EasyReach Quantum Data and Routing System 6-27
Interactions With the ***5ESS***®-2000 Switch OSPS 6-27
Wireless Numbering Plan 6-27
Wire Line Numbering Plan 6-28
Call Routing 6-28
A. OSPS ID Support of Routing Data Blocks 6-28
Feature Dependencies 6-30
8. Input/Output Manual Pages (Not Affected) 6-30

Consolidated Access Traffic (CAT) Feature (5308/5700)

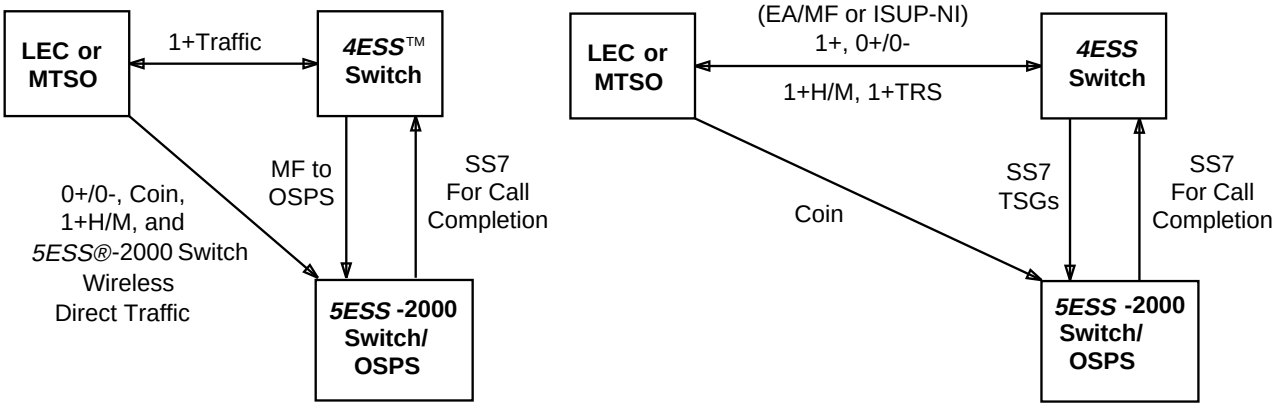
6

1. Feature Description

1.01 Prior to this new Consolidated Access Traffic (CAT) Feature, the previous access architecture was characterized by a two Trunk Sub-Group (TSG) access to the AT&T Switched Network (ASN). One trunk was from the access provider end offices to the *4ESS*™ switch for 1+ direct dialed services, the other from the access provider end office to the *5ESS*®-2000 switch or Operator Services Position System (OSPS) for coin and operator handled services. See Figure 6-1. There was also a small number of direct access customers for Operator Express service to the OSPS system. This architecture, a fundamental characteristic of the ASN network for many years, allowed callers diverse access routes into the network for 1+ direct dialed and alternate billing calls. In the case of a network outage due to a node failure, a customer could still access the ASN using alternate dialing methods.

1.02 However, the architecture created a significant dependency on the local access provider to sort out the 1+ and 0+/0- traffic for AT&T. Other interexchange carriers, such as MCI and Sprint, had the capability to receive all their long distance calls over consolidated access trunks. AT&T was the only Interexchange Carrier that required this split access from network access providers. This dependency on local access providers could have provided a significant competitive disadvantage in the future, because the number and type of local access providers is expected to increase significantly.

1.03 In addition, the FCC has issued a ruling that led to a re-definition of the tariff structure for access charge calculation. In effect, the changes now eliminate the Minutes of Use (MOU) component on the calculation of transport charges. Thus, transport charges are now determined by the number of trunks that make up the access (ingress and egress) to the ASN.



Legend:

CAT -	Consolidated Access Traffic
EA -	Equal Access
H/M -	Hotel/Motel
ISDN -	Integrated Services Digital Network
ISUP -	ISDN User Part
LEC -	Local Exchange Carrier
MF -	Multi-Frequency
MTSO -	Mobile Telephone Switching Office
NI -	Network Interconnect
OSPS -	Operator Services Position System
SS7 -	Signaling System 7
TRS -	Telecommunications Relay Service
TSG -	Trunk Sub-Group
UTA -	Universal T1.5 Access

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Figure 6-1. Consolidated Access Traffic Architecture

1.04 With this new architecture, the CAT Feature consolidates 0+/0- and 1+ Hotel/Motel (1+H/M) traffic with 1+ direct dialed traffic from the access provider networks into the ASN from both wire line and wireless providers. This consolidation results in common trunking from the access provider network to the ASN for all switched access 1+ direct dialed, 0+/0- and 1+H/M calls. Coin calls, those calls using coin signaling over MF-signaled trunks, are not part of the CAT feature. Also, calls that arrive at the *5ESS*-2000 switch OSPS over Direct Connect trunks are not covered by this feature.

1.05 This feature is a result of a task force study that identified significant savings that could be realized, and continue to increase over time, by consolidating access of calls to the ASN.

1.06 The CAT architecture for this feature does the following:

- Drives the costs out of the network near-term by consolidating operator and 1+ traffic on the same trunks.
- Provides 0+/0-, 1+ and 01+ access over one Trunk Group. Integrating these trunks provides opportunities to reduce costs and offer improved services.
- Reduces the cost and time to market new features which can now be developed on one platform.
- Supports both wireline and wireless implementations
- Provides opportunities to not only reduce our cost but provide improved and competitive services. Many wireless carriers do not allow direct inter-connection with their Mobile Telephone Switching Offices (MTSOs) unless requirements provided by this feature are met.

Technical Summary

1.07 The CAT network architecture for this feature supports both wireless and wireline access. The architecture combines 0+/0-, 01+, and 1+ (including 1+hotel/motel) originating traffic on a switched access trunk group to a *4ESS* switch. The signaling from the End Office (EO) switch to the *4ESS* switch is either Equal Access Multi-frequency (MF) or Common Channel Signaling 7 (CCS7) Integrated Software User Part Network-Interconnect (ISUP-NI). The trunk groups from the *4ESS* switch to the *5ESS*-2000 switch OSPS use Signaling System 7 (SS7) signaling.

1.08 The CAT architecture builds on the Universal T1.5 Access (UTA) Feature, a service offering that provides customers with a nodal arrangement, the capability to have many types of access and egress traffic on the same T1.5 trunk including operator requested calls on access. The *4ESS* switch routes 1+ traffic as usual, but directs operator requested traffic to a *5ESS*-2000 switch OSPS. The architecture also builds on Project L capabilities to enable the *4ESS* switch to use this parameter to determine the correct OSPS for call routing. For switched access wireline originations,

the *4ESS* switch uses Automatic Number Identification (ANI) to determine the OSPS to which the call should be forwarded. The OSPS identifies the call as wireless based upon the receipt of a Trunk Group Rating Number (TRN) from the *4ESS* switch.

1.09 The *4ESS* switch sends all call related data to the *5ESS*-2000 switch OSPS in the ISUP IAM so that no originating call data or functionality is lost relative to direct interconnection. The *5ESS*-2000 switch OSPS uses the received ANI or TRN as a surrogate for a Trunk Billing Directory Number (TBDN). If the signaling between a EO and a *4ESS* switch is CCS7 ISUP-NI, then the MTSO/EO may send an optional ISUP Jurisdiction Information Parameter (JIP) in the Initial Address Message (IAM). In this case, the *4ESS* switch forwards the JIP digits in the IAM to the OSPS for the operator requested calls.

2. Call Flow

2.01 The following sections describe the new call flow for the *4ESS* switch to identify and forward additional operator requested call types to the Operator Services Position System (OSPS). The new call flow is presented first for 0+/0- Calls and then for 1+ Hotel/Motel (H/M) Calls and 1+ Telecommunications Relay Service (TRS).

0+/0- Calls

1. The *4ESS* switch Originating AT&T Switch (OAS) receives a call origination on a 2-way switched access trunk group that uses Common Channel Signaling System 7 (CCS7) Integrated Services Digital Network (ISDN) User Part (ISUP) Network Interconnect (NI), or Equal Access (EA) Multifrequency signaling. If CCS7 ISUP-NI signaling is used, then the Initial Address Message (IAM) contains the following key information:
   - Called Party Number with Nature of Address Indicator containing one of the following:
     - — Subscriber number, operator requested
     - — National number, operator requested
     - — International number, operator requested
     - — No number, operator requested.
   - Charge Number parameter containing the Automatic Number Identification (ANI)
   - Originating Line Information (OLI)
   - Jurisdiction Information Parameter (JIP), if available.

   If the signaling from the LEC or Mobile Telephone Switching Office (MTSO) switch is Equal Access Multi-frequency (MF), then the Information Indicator (II) digits, ANI, and dialed digits are received by the Originating AT&T Switch (OAS).
2. Based on the Called Party Number parameter, if CCS7 ISUP-NI signaling is used, or MF digits if Equal Access MF signaling is used, the OAS determines whether the call requires operator services (0+/0- or 01+). For ISUP signaling, the OAS checks the Nature of Address Indicator of the called party number parameter as shown in Step 1. For MF access, the OAS performs a 3-digit translation for the dialed number.
3. The Originating AT&T Switch (OAS) performs access charge verification.
4. The OAS checks the setting of the office parameter ON/OFF switch for the CAT feature.

- If the parameter is set to OFF, then the OAS does not apply operator services call handling for the call. *The call is final handled, and the call flow ends.*
- If the parameter is set to ON, then the OAS applies operator services call handling for the call.

5. The OAS suppresses AMA recording and does not perform a Network Access Interrupt (NAI) query. However, a count of the 0+/0- and 01+ calls is recorded in a tracer record. The OAS also bypasses the results of ANI Trigger Table and Destination Number Table screening.
6. The OAS uses the Trunk Group Rating Number (TRN) from the trunk group characteristics, if available, or it uses the received ANI to determine the OSPS to which the call is to be routed. All wireless Trunk Sub-Groups (TSGs) should be provisioned with a Trunk Group Rating Number (TRN). Translation is based upon either the NPA, NPA-NXX, or NPA-NXX-XXXX of the TRN or ANI [Far End NPA (FENPA) if no ANI] to determine the OSPS to which the *4ESS* switch should route the call. The 10-digit (NPA-XXX-XXXX) takes precedence over 6-digit (NPA-XXX) or 3-digit (NPA), and 6-digit (NPA-XXX) takes precedence over 3-digit (NPA). The UTA feature provides the OSPS Access ID Table to be used in determining the OSPS destination.
   - If no match is found in the OSPS ID Access Table, the OAS final handles the call and plays a vacant code announcement.
   - If a match is found in the OSPS ID Access Table, the OAS obtains the identification of the OSPS to which the call is to be routed.
7. Based on the identified destination OSPS, a routing treatment is determined. There are three routing treatments:
   - Routing Data Block (RDB) - Provides the actual path (trunk group) that the call will traverse from the OAS to the destination OSPS.
   - Multiple Routing Treatment (MRT) - Provides various routing strategies or RDBs at the OAS.
   - Destination Switch Number (DSN) - Indicates which *4ESS* switch the call should be routed to from the OAS to access the destination OSPS.

8. Based on the routing treatment of Step 7, if the OAS is directly connected to the *5ESS*-2000 switch OSPS, then an IAM is sent to the *5ESS*-2000 switch OSPS. The IAM contains the following key information:
   - Called Party Number with a Nature of Address Indicator field containing one of the following:
     - — Subscriber number, operator requested
     - — National number, operator requested
     - — International number, operator requested
     - — No number present, operator requested.
   - Charge Number parameter containing the ANI of the caller (FENPA if no ANI) or the True Billing Number (TBN) of the aggregator.
   - OLI digits received
   - Jurisdiction Parameter (JIP), if available
   - Routing Information Indicator parameter with the Access Indicator (Bit N) set to Switched Access for CAT, or Direct Access [Universal T1.5 Access (UTA)].
   - TRN Generic Operations Parameter (GOP). For *4ESS* switch Wireless Direct calls only. The TRN is a 10-digit North American Numbering Plan (NANP) number retrieved from the trunk group data.
   - Project L Generic Operation Parameter (GOP) - Access ID. If Access ID is not available, this GOP is not forwarded to the OSPS.
   - Original Local Rating Number (LRN) GOP.
9. If the *4ESS* switch OAS does not have direct connectivity to the *5ESS*-2000 switch OSPS, then the *4ESS* switch sends an IAM to a *4ESS* switch Last Access Switch (LAS). The IAM contains the same parameters listed in Step 8. In addition, the IAM contains the destination OSPS Identifier GOP to allow the *4ESS* switch LAS to identify the OSPS. The LAS bypasses translations and checks the OSPS ID to determine the routing treatment. The routing treatment must be NDB or MRT. The LAS sends an IAM to the *5ESS*-2000 switch OSPS containing the same parameters except for the OSPS_ID GOP. If there are no idle trunks directly connected to the destination OSPS from the LAS, and, network Split Access/Flexible Egress Routing (SAFER) routing is used, the call cranks back to the OAS and an alternate route to the OSPS is used.
10. The *5ESS*-2000 switch OSPS identifies the call as an CCS7 ISUP signaled switched access 0+/0- or 01+ call based on the Nature of Address Indicator coding and dialed digits, and based on the Access Indicator value being set to switched.

11. The *5ESS*-2000 switch OSPS returns an immediate Address Complete Message (ACM) (encoded for user network interaction).
12. The *5ESS*-2000 switch OSPS performs Originating Line Screening (OLS) with Automatic Inward Line Screening (AILS), if necessary, using the information received in the charge number parameter.
13. The *5ESS*-2000 switch OSPS searches for any Customer Information Display (CID) text associated with the TBN. If there is one, it is displayed to the operator. The CID is typically associated with 1+hotel/motel type calls where a customer branding may be required.
14. Current call logic is used by the *5ESS*-2000 switch OSPS when processing the 0+, 0- and 01+ calls.
15. As was done previously for 0+/0- calls, the *5ESS*-2000 switch OSPS performs the necessary database checks using the received charge number parameter information.
16. The *5ESS*-2000 switch OSPS completes service handling, chooses an outgoing route, and selects an idle outgoing trunk. The *5ESS*-2000 switch OSPS formulates an IAM which includes the following key information:
    - Called party number with Nature of Address Indicator field set to one of the following:
        - — Subscriber number
        - — National number
        - — International number.
    - Charge number parameter - encoded as received
    - Originating Line Information (OLI) - encoded as received
    - RII parameter
    - JIP, if available
    - TRN GOP (for *4ESS* switch Wireless Direct calls only)
    - Project L GOP - encoded as received
    - Original LRN GOP - encoded as received.
17. The *5ESS*-2000 switch OSPS receives ACM and Answer Message (ANM) from the succeeding switch.
18. The *5ESS*-2000 switch OSPS returns an ANM when the call enters a chargeable state (true answer supervision).
19. As was done previously for 0+/0- calls, the *5ESS*-2000 switch OSPS creates an AMA record. An existing AMA record is used to record the Access ID and the mode access (switched access CCS7 ISUP).

20. The call continues until either the calling party or called party hangs up.

    - **Calling Party Hangs up**: If the calling party hangs up first, the *5ESS*-2000 switch OSPS receives a Release (REL) message from the preceding switch (*4ESS* switch OAS), disconnects the switched path and returns a Release Complete (RLC) message to the preceding switch. The OSPS service processing logic identifies that the terminating connection can be released and the *5ESS*-2000 switch transmits a REL message to the succeeding switch to initiate a disconnect of the outgoing trunk.
    - **Called Party Hangs Up**: If the called party hangs up first, the *5ESS*-2000 switch OSPS follows current procedures to provide time release disconnect procedures. If a Suspend (SUS) message or Resume (RES) message is received by the *5ESS*-2000 switch OSPS, the *5ESS*-2000 switch OSPS switch follows current procedures and does not transmit a SUS message or RES message to the preceding switch. *The call flow ends.*

21. Based on the information in the AMA record, the downstream billing systems determine commissions and discounts in accordance with current procedures.

1+ H/M Calls and 1+ TRS

1. The *4ESS* switch OAS receives a call origination on a 2-way switch access trunk group that uses CCS7 ISUP - Network Interconnect (NI) or Equal Access MF signaling. If CCS7 ISUP-NI signaling is used, then the Initial Address Message (IAM) contains the following key information:
   - Called Party Number with Nature of Address Indicator = 0000011 or 0000100 containing one of the following:
     - — National number
     - — International number.
   - Charge Number parameter containing the ANI
   - ANI for MF signaling calls
   - OLI.
2. If OLI/II digits of 06 are received, then the OAS is to consider the call a 1+H/M call and forward the call to the OSPS. If the OLI/II digits are not 06 then, the OAS determines whether the call is a 1+ Hotel/Motel call via an ANI Trigger Table (ANITT) look-up based on the ANI. If the ANI is found in the ANITT with the "Rte to OSPS" bit ON, then the OAS forwards the call to the OSPS with the OLI/II digits as received.
3. The *4ESS* switch determines if a 1+ call is a TRS call based on current procedures.
4. The OAS performs access charge verification.
5. The OAS checks the setting of the office parameter ON/OFF switch for the CAT feature and then does the following:
   - If the parameter is set to OFF, then the OAS does not apply operator service call handling on the call. If the call is a 1+TRS call, it continues per current call processing. If the call is 1+H/M, the OAS final handles the call *and the call flow ends*.
   - If the parameter is set to ON, then the OAS applies operator services call handling for the call.

6. The OAS suppresses AMA recording and does not perform a Network Access Interrupt query. However, a count of the 1+H/M or 1+TRM calls is recorded in a tracer record.

7. The OAS switch uses the TRN from the trunk group characteristics, if available, or the received ANI if available, or FENPA to determine the OSPS to which the call is to be routed. All wireless TSGs should be provisioned with a TRN. Translation is based upon either the NAA, NPA-NXX, or NPS-NXX-XXXX of the TRN or ANI or FENPA to determine the OSPS to which the *4ESS* switch should route the call. The 10-digit (NPA-NXX-XXXX) takes precedence over 6-digit (NPA-NXX) or 3-digit (NPA), and 6-digit (NPA-NXX) takes precedence over 3-digit (NPA). The UTA feature provides the OSPS Access ID Table to be used in determining the OSPS destination.

    - If no match is found in the OSPS ID Access Table, the OAS final handles the call and plays a vacant code announcement.
    - If a match is found in the OSPS ID Access Table, the OAS obtains the identification of the OSPS to which the call is to be routed.

8. Based on the identified destination OSPS, a routing treatment is determined. There are three routing treatments as follows:

    - **RDB** - Provides the actual path (trunk group) that the call will traverse from the OAS to the destination OSPS. This routing treatment is built for Equal Access Interconnection with Wireless Carriers feature and not the Enhanced Universal T1.5 Access feature.
    - **MRT** - Provides various routing strategies or RDBs at the OAS.
    - **DSN** - Indicates which *4ESS* switch the call should be routed to from the OAS switch to access the destination OSPS.

9. Based on the routing treatment of Step 8, if the OAS is directly connected to the *5ESS*-2000 switch OSPS, then an IAM is sent to the *5ESS*-2000 switch OSPS. The IAM contains the following key information:

    - Called Party Number with a Nature of Address Indicator field containing one of the following:
        - — National number, operator requested
        - — International number, operator requested.
    - Charge Number parameter containing the ANI (TBN) of the Hotel/Motel (H/M).
    - Routing Information Indicator (RII) parameter with the Access Indicator (Bit N) set to Switched Access for CAT or Direct Access for UTA calls.

- JIP, if available
- Project L GOP - Access ID. (If no Access ID is provided, do not forward the Project L GOP.)
- Original LRN GOP
- Operator Systems Indicator (OSI)
- The call proceeds to Step 11.

10. If the *4ESS* switch OAS does not have direct connectivity to the *5ESS*-2000 switch OSPS, then the *4ESS* switch OAS sends an IAM to a *4ESS* switch LAS. The IAM contains the parameters listed in Step 9. In addition, it contains the destination OSPS Identifier GOP to allow the *4ESS* switch LAS to identify the OSPS. The LAS bypasses translations and checks its OSPS Access Table to determine the routing treatment. The routing treatment must be Number Services Routing Data Block (NDB). The LAS sends an IAM to the *5ESS*-2000 switch OSPS containing the same parameters except for the OSPS_ID GOP. If there are no idle trunks directly connected to the destination OSPS from the LAS and network SAFER routing is used, the call cranks back to the OAS and an alternate route to the OSPS is used. Proceed with Step 11.
11. The *5ESS*-2000 switch OSPS identifies the call as a CCS7 ISUP signaled switched access 1+Hotel/Motel call based on the Nature of Address Indicator, the ANI and the OSI.
12. The *5ESS*-2000 switch OSPS identifies the call as an CCS7 ISUP signaled switched access 1+TRS call based on the received OLI.
13. The *5ESS*-2000 switch OSPS returns an immediate ACM encoded for user network interaction.
14. The *5ESS*-2000 switch OSPS performs OLS with Automated Inward Line Screening (AILS), if necessary, using the information received in the charge number parameter. The ANI is checked against the Originating Line Screening (OLS) and Automated Charge Quotation Service (ACQS) tables.
15. The *5ESS*-2000 switch OSPS searches for any Customer Information Display (CID) text associated with the TBN. If there is one, it is displayed to the operator. The OSPS should not receive CID for any wireless originated calls.
16. Once the operator obtains the guest's room number from the calling party, the call is allowed to be real-time rated.
17. The *5ESS*-2000 switch OSPS completes service handling, chooses an outgoing route, and selects an idle outgoing trunk.

The *5ESS*-2000 switch OSPS formulates an IAM which includes the following key information:

- Called party number with Nature of Address Indicator field set to one of the following:
  - — National number
  - — International number.
- Charge number parameter - encoded as received
- OLI - encoded as received
- RII parameter
- JIP, if available
- Project L GOP - encoded as received
- Original LRN GOP - encoded as received.

18. The *5ESS*-2000 switch OSPS receives ACM and ANM from the succeeding switch.
19. The *5ESS*-2000 switch OSPS returns an ANM when the call enters a chargeable state (true answer supervision).
20. The *5ESS*-2000 switch OSPS creates an AMA record. AN existing AMA record is used to record the Access ID and the mode access (switched CCS7 ISUP).
21. The call continues until either the calling party or called party hangs up and the following occurs:
    - **Calling party hangs up:** If the calling party hangs up first, the *5ESS*-2000 switch OSPS receives a REL message from the preceding switch (*4ESS* OAS), disconnects the switched path and returns a Release Complete (RLC) message to the preceding switch. The OSPS service processing logic identifies that the terminating connection can be released and, the *5ESS*-2000 switch transmits a REL message to the succeeding switch to initiate a disconnect of the outgoing trunk.
    - **Called party hangs up:** If the called party hangs up first, the *5ESS*-2000 switch OSPS follows current procedures to provide time release disconnect procedures. If a SUS message or RES message is received by the *5ESS*-2000 switch OSPS, the *5ESS*-2000 switch OSPS switch follows current procedures and does not transmit a SUS message or RES message to the preceding switch. *The call flow ends*.
22. The downstream billing systems, based on the information in the AMA record, determine commissions and discounts as per current procedures.

23. If Automated Charge Quotation Service (ACQS) is required, proper billing is directed to the Hotel/Motel establishment.

3. Provisioning

General

3.01 The *4ESS* switch provides provisioning related information for this feature as follows:

- Supports a new CAT office parameter. Its values are ON or OFF, and it is administered with Recent Change (RC). The default value is OFF.
- Provisions 1+Hotel/Motel (H/M) calls based on the Originating Line Information (OLI) or Information Indicator (II) digit values. The II/OLI = 06 for a 1+ H/M call.
- Provides an RC and Verify capability for 1+H/M calls in the ANI Trigger Table (Route to OSPS bit).
- Provisions 1+ TRS calls based on the Originating Line Information (OLI) or Information Indicator (II) digit values. The II/OLI = 60, 66, 67 for a 1+ TRS call.
- Provisions International Equal Access MF operator calls by way of digit translation and RC.
- Causes 0+/0- call originating from International World Zone 1 (IWZ1) to generate International Call Detailed Recording (ICDR) record. Two fields in the TSG of the incoming trunk (EAMF or ISUP) to the *4ESS* switch need to be set as follows: FENCLASS = INTL and IWZ1 = Y.
- Provides translation from OSPSID to CALLTYP and CALLDATA. Refer to 4E20 Release 4 Generic *Nodal Access to AT&T Network Universal T1.5 Access Feature (4570)* Product Release Document for translation data.
- Provides Recent Change Form 642 to populate SII value.

Structures Affected in Library TRANSPRM

3.02 For this feature, the following Structures are affected:

A. OD4OFCOPY Structure

3.03 Item OD4PF23 has been assigned as an office parameter to indicate whether or not the CAT Feature is ON in the switch. ON means that the feature is enabled; the default is OFF. The feature ON/OFF flag is populated or updated using RC Form 809. The population or update information is verified using Verify Forms 16az and 8j.

B. ACI Translation Structure

3.04 One new 1-bit item, XL4CAT_ACT, is defined in word d (5115) (=4XL_ACT) of ACI Translations for access by the DLN. The XL4CAT_ACT specifies that the CAT feature is activated and that the DLN is to check the incoming II/OLI to determine if an SD query should be launched. The XL4CAT_ACT item is populated using RC Form 809 when the feature bit OD4PF23 is turned ON/OFF for CAT.

C. HT411_OLI Structure

3.05 A new service type, Hotel Motel 4XLSTH_M is defined for II Digits XL4IIST and OLI values XL4OLIST. The II/OLI service type is populated by way of the SRVCT field on RC Form 337 and is verified by using verify forms 13n, 3af and 3ag.

D. HT4IIDIG Structure

3.06 A new ANI type XL4ANITYPE assigned state 4XLANIEAH_M is defined for CAT. An existing ANI type XL4ANITYPE assigned state 4XLANIEATRS is also used for CAT. These assigned states are not referenced by ODA or RC/V. They are used, however, by call processing.

E. HT4ANI_IJKLP Structure

3.07 The ANI Trigger item XL4ANI_FI6 is assigned to CAT as a Route to OSPS indicator in the ANI Trigger Table records. ON means that the indicator is set which indicates that calls are allowed to route to OSPS for this ANI. The default is OFF which means that calls are blocked from routing to OSPS for this ANI.

F. HT4DIHSUPP Structure

3.08 A new state is assigned to the International Routing Actions (IRA) Call Type item XL4CTIRACT within the IRA call type structure.

This item is defined as follows:

4XLIRAEAORI=d(10) = Equal Access Operator Requested International Call.

3.09 The IRA, call type, call data item is populated by way of the RC forms 300-304 and verified by using Verify Input Forms 13f, 13m, 13w and Verify Output Forms 3a, 3b, 3c, 3d, 3e, 3f, 3g, 3v, 3w, 3z, 3ab, and 3an.

Recent Change Forms Affected

3.10 For this feature, the following RC forms have been affected:

A. RC Form 809

3.11 This RC form is used to enable and disable various feature bits. The layout of this form has not changed. The PF23 entry has been assigned for this feature and indicates whether or not the CAT Feature is active in this switch. ON means that the feature is enabled; the default is OFF.

B. RC Form 337

3.12 The RC Form 337 has been updated to allow the new Hotel/Motel designation HM as a valid SRVCT field entry.

C. RC Forms 300, 301, 302, 303 & 304

3.13 The 300 through 304 RC Forms have been updated to allow a new EAORI call data value. These fields should be populated as follows:
ABC=1N'X DEF=CIC CALLTYP=IRA CALLDATA=EAORI

Verify Forms Affected

3.14 For this feature, the following Verify forms have been affected.

A. Verify Output Forms 3af and 3ag

3.15 Verify Output Forms 3af and 3ag have been updated to output HM in the SRVCT field when the appropriate XL4IIST or XL4OLIST item is set to 4XLSTH_M.

B. Verify Input Forms 13f, 13m & 13w

3.16 Verify Input Forms 13f, 13m, and 13w have been updated to allow the CALLDATA field to be the new EAORI value if the CALLTYP field = IRA and the International Routing Action item XL4CTIRACT is set to 4XLIRAEAORI.

C. Verify Output Forms 3a, 3b, 3c, 3d, 3e, 3f, 3g, 3v, 3w, 3z, 3ab, and 3an

3.17 Verify Output Forms 3a, 3b, 3c, 3d, 3e, 3f, 3g, 3v, 3w, 3z, 3ab, and 3an have been updated to allow the CALLDATA field to be the new EAORI value if the CALLTYPE field = IRA, and the International Routing Action item XL4CTIRACT is set to 4XLIRAEAORI.

4. Recording

Call Recording and Billing

4.01 The *4ESS* switch continues to record 1+ traffic as was previously done for switched-access calls. A summary of recording changes are described in the following sections.

4.02 The Jurisdiction Information Parameter (JIP), if received in the Initial Address Message (IAM), is recorded in a module. Originating cellular switched-access Integrated Services Digital Network (ISDN) calls are recorded in the same structures that are used to record switched-access Long Distance Service (LDS) calls. The 0+/0- and 1+ H/M and 1+TRS calls that are routed to the OSPS are counted in the Recording Hand-Off Tracer.

A. Call Recording and Event Determinants

4.03 The recording *4ESS* switch captures the JIP if it is populated in the following:

- The originating switched-access signaling message.
- The JIP in the IAM if the recording switch is in the HAS, ATP switch, or the NCP-instructed handoff switch.
- The Jurisdiction Information Element (IE) in the Q.931 SETUP message if the call is originating to the *4ESS* switch on a network adjunct or Small Scale Adjunct (SSA) Primary Rate Interface (PRI) trunk type.
- The saved per-call information if the recording switch is an ATP switch.

4.04 The recording *4ESS* switch appends the Expanded Switched Access Module if the JIP is received and a service record is created for the call. (Refer to Table 6-A.)

4.05 The recording *4ESS* switch creates Structure Codes 01078/01080 for switched-access cellular ISDN calls. The Call Code for cellular calls (306) is recorded in these Structures if the Station ID (SID)/ Calling Party Number (CPN) is received or User-to-User Information (UUI) is provided for the call.

4.06 The *4ESS* switch does not create a service record for 0+/0-, 1+TRS, and 1+H/M traffic that is routed to the OSPS. The 0+/0-, 1+TRS, and 1+H/M calls that are successfully routed to the OSPS are counted. This count is populated in the Recording Hand-Off Tracer record. This applies only if the call processing requirement is active. The term "successfully routed" means the call is in the "waiting for answer" state.

4.07 When the call processing requirement is active, the *4ESS* switch does not create a service record for 0+/0-,1+TRS and 1+H/M traffic that is routed to the OSPS.

- If Access Charge Verification (ACV) recording is activated, an ACV record is created for 0+/0-, 1+TRS, and 1+H/M calls routed to the OSPS.
- If the 0+/0- call is originating by way of an international switched access trunk, a International Call Detail Recording (ICDR) record is created.

4.08 The *4ESS* switch sends the TRNUM event to the Call Detail Recording Platform (CDRP) performing the recording function if the JIP is received for an originating switched access call. The TRNUM event has been expanded by two words to include the JIP. The TRNUM event is sent to the CDRP if the Trunk Group Rating Number (TRN) or JIP, or both, are available.

Table 6-A. Module Code 941 - Expanded Switched Access Module

Information	AMA Table Number	Number of Characters
Module Code	88	4
Incoming Trunk Group Number	83	6
OLI Value/II Digits	421	4
Rating Point Billing Number	25	12
IC/INC Indicator	923	2
IC/INC Code	57	6
JIP Number	25	12

B. Call Detail Recording Formatting

4.09 If Module 941 is appended to the AMA record, the recording *4ESS* switch records the existing fields. Refer to Table 6-A. Two additional fields are also recorded, the IC/INC indicator (AMA Table 923), and the JIP Number field (AMA Table 25). The JIP, if it is received, is recorded right justified in the JIP Number field (AMA Table 25). If the JIP is not available, the JIP Number field is populated with Hexadecimal Fs including the Sign. The Switched Access Module (Module 938) will be retired when the 4E22 Release 2 Generic is no longer deployed in the network.

Table 6-B. AMA Table 923 - IC/INC Indicator

BCD Characters	Meaning
1	0 = No Indication 1 = Reseller
2	Sign (Hexadecimal C)

4.10 The *4ESS* switch records the count of 0+/0-, 1+TRS, and 1+H/M calls that are successfully routed to OSPS. The count is recorded right justified and padded with zeroes in the Count of 0+/0-, 1+TRS, and 1+HM calls handed-off to the OSPS AMA field in the Recording Hand-off Tracer Record. Refer to Table 6-C. This count is used by the Call Detail Recording Monitor (CDRM) system, which currently receives all tracer records, to identify the volume of calls recorded at another switch.

Table 6-C. Structure Code 09923 - Recording Handoff Tracer Record

Field Name	AMA Table Number	No. of BCD Characters
Record Descriptor Word	000	8
Hexadecimal ID	00	2
Structure Code	0	6
Call Code	1	4
*Sensor Type	2	4
*Sensor ID	3	8
*Recording Office Type	4	4
*Recording Office ID	5	8
Date	6	6
Time	18	8
Type of Tracer	40	4
Reserved	804	8
Reserved	804	8
Count of Hand-off Calls Due to 2NCP/CADCR SA/HO	804	8
Count of 0+/0-, 1+TRS, and 1+H/M calls handed-off to OSPS	804	8
Count of hand-off calls due to REACH	804	8

***** These fields are omitted if the records are teleprocessed to a Host Collector (HOC). The HOC will add these fields. (Call Code: 90)

Call Detail Recording Platform

4.11 The CDRP receives the expanded TRNUM event which contains the JIP Number. The JIP is recorded in the Expanded Switched Access Module. The Expanded Switched Access Module is the Switched Access Module plus an additional field to record the JIP. All existing triggers for the Switched Access Module are applicable to the expanded module.

A. AMA Recording

4.12 The CDRP is capable of processing the expanded TRNUM event with the 1B Processor operating on 4E22 Release 3 Generic or later.

B. AMA Table Layout

4.13 The JIP digits are recorded in (AMA Table 25). The CDRP continues to fill an AMA Table, including the Sign field, with hexadecimal Fs if there is no data available to populate that field.

4.14 The IC/INC Indicator (AMA Table 923) is a newly defined table. This table is always populated with HEX Fs, including the Sign.

C. Service Measurements

4.15 When the CDRP detects the 1B Processor for the 4E22 Release 3 Generic or later , the CDRP counts the number of Module 941s formatted in the service measurement reports that are sent to the Total Network Management (TNM) system. When the CDRP detects all the 1B Processors that it serves (connected to), the CDRP counts the number of Module 938s formatted and removes the count in the service measurement reports that are sent to the Total Network Management (TNM) system.

Call Detail Recording Monitor New Count

4.16 The CDRM uses the new count in the Recording Hand-Off Tracer (Structure Code 09923) to identify the number of 0+/0-, 1+H/M, and 1+TRS calls that were routed to the *5ESS*-2000 switch OSPS by the *4ESS* switch.

AMA Records With RICS Processing

4.17 The Recorded Information and Collection System (RICS) processes the new Expanded Switched Access Module 941 and the AMA records produced by ISDN cellular calls. These calls are represented by call code 306 in Structure Codes 1078 and 1080.

4.18 During transition, RICS receives both modules. Records collected from *4ESS* switches/CDRPs that have been upgraded to the 4E22 Release 3 Generic or later, will have the Expanded Switched Access Module appended. Records collected from *4ESS* switches/CDRPs that have not been upgraded to 4E22 Release 3 Generic will have Module 938 appended.

5. Network Management

Access Management For Wireless Traffic

5.01 One of the difficult aspects of working with wireless carriers is being able to identify wireless calls. There are three sets of OLI/II digits (61, 62, and 63) which have been defined in Bellcore standards for use with cellular calls. Unfortunately, not all cellular carriers adhere to the standards and many use 00 for default roamers. Therefore, receipt of the combination of Access ID, which identifies the carrier, and TRN, which identifies the switched access TSG, are used to identify a call as cellular. Additionally, features can be provided for cellular customers only when OLI/II digit 62 (customer MIN provided) are allowed for the carrier (PCP Cellular indicator is enabled).

5.02 It is important to note that prior to migrating from an existing AT&T wireless architecture (that is, 5EWD or Access Tandem solutions) to the CAT architecture, AT&T needs to renegotiate with the cellular carriers regarding translation information and testing procedures.

External Interface New Impacts

5.03 This section gives an overview of the *4ESS* switch OSS interfaces that are impacted by this feature.

A. Access Management System

5.04 Provisioning of new access trunks in the Access Management System (ACMS) is supported.

B. Machine Design Layout Record System

5.05 Provisioning of the new access trunks in the Machine Design Layout Record System (MDLRS) is supported.

C. Network Core Data

5.06 The Network Core Data (NCD) provides storage for the circuit/trunk Sub-Group data for newly converted trunks/trunk groups. Word documents have been created for provisioning the access trunks.

D. Service Now - Routing

5.07 The Service Now - Routing (SNOW-R) is the OS responsible for provisioning routing information into the *4ESS* switches. The "Route to OSPS" bit in the ANI Trigger Table (ANITT) has been provisioned.

E. Service Now - Trunking

5.08 The Service Now - Trunking (SNOW-T) is an OS platform that encompasses the following OSSs:

- Network Services Automator (NSA)
- Testing Operations Provisioning Administration System (TOPAS)
- TOPAS-Administrator Processor (TOPAS-AP)
- NET (acts as the user interface to all SNOW-T components).

The SNOW-T platform required developments supporting the *4ESS* switch NSP in implementing the trunking recent changes in the *4ESS* switch for access trunks. The SNOW-T platform supports the *5ESS-2000* switch NSP in de-provisioning the access trunks.

F. Network Management Operations Systems

5.09 The Network Management Operation Systems (NEMOS) is the traffic management support system for monitoring the CCS network. It collects, in real time, CCS network traffic and status information. Thus, it provides information to detect network congestion and failure conditions. In the context of this service, the Network Operations Center (NOC) personnel are the main users of NEMOS. For this feature, NEMOS has been developed to support association of the new service types with various traffic reports.

G. Consumer Long Distance Service Management System

5.10 The Consumer Long Distance (CLD) Service Management System (CSMS) receives the subscriber records from NPP and uses this information for the customer ANIs to the *4ESS* switch with SNOW-R. For this feature, CSMS receives H/M records from the provisioning organization and uses this information to send the H/M ANIs to the *4ESS* switch by way of SNOW-R. The CSMS receives a tape of the *5ESS*-2000 switch embedded H/M ANIs and uses this information for the initial loading of the H/M ANIs going to the *4ESS* switch by way of SNOW-R.

H. Integrated Support Environment

5.11 The Integrated Support Environment (ISE) provides a unified platform for provisioning, maintenance, and engineering of the *5ESS*-2000 switch OSPS network through the consolidation of CEA, RC-OSPS, *5ESS*-2000 switch Dynamic Engineering Mechanized System DEMS/ Data Acquisition Reports and Integrated Control System (DARICS), and SCDB Operation Support Systems (OSSs).

5.12 With this feature, the ISE platform supports the Trunk Sub-Group Access (TSA)/Network Services Provisioning (NSP) activities in order to de-provision the *5ESS* switch OSPS access trunks. New development in the ISE platform has created customized reports in order to support the management of the various services involving 0+ non-coin calls.

Post Dial Delay Performance Improvements

5.13 The Post Dial Delay (PDD) has been improved due to implementation of Signaling System 7 (SS7) and Integrated Services Digital Network User Part (ISUP) for the inter-switch trunks. These services have been incorporated into this feature by absorbing Feature 4796.

6. Maintenance/Troubleshooting

6.01 The maintenance work centers that support the *4ESS* switch processes impacted by this feature are as follows:

- National Electronic System Assistance Center (NESAC)
- Network Operations Center (NOC)
- Network Management Center (NMC)
- *4ESS* Switch Network Service Provisioning (NSP)
- *4ESS* switch System Technology Control Center (TCC)
- Technical Service Administration (TSA).

Service Measurements

6.02 When the Call Detail Recording Platform (CDRP) detects the 1B Processor in the 4E22 Release 3 Generic or later, the CDRP counts the number of Module 941s formatted in the service measurement reports that are sent to the Total Network Management (TNM) system.

6.03 When the CDRP detects all the 1B Processors that it serves (connected to) for the 4E22 Release 3 Generic or later, the CDRP:

- Does not count the number of Module 938s formatted
- Removes the count in the service measurement reports that are sent to the TNM system.

6.04 The Call Detail Recording Monitor (CDRM) uses the new count in the Recording Hand-off Tracer to identify the number of 0+/0-, 1+H/M and 1+ Telecommunications Relay service (TRS) calls that were routed to the *5ESS*-2000 switch Operator Services Position System (OSPS) by the *4ESS* switch.

Recorded Information and Collection System Processing

6.05 The Recorded Information and Collection System (RICS) processing system processes the following:

- Expanded Switch Access Module 941
- AMA records produced by Integrated Services Digital Network (ISDN) cellular calls. These calls are represented by Call Code 306 in Structure Codes 1078 and 1080.

7. Transition Considerations

Transition Planning

7.01 Transition planning identifies how to consolidate the 0+/0- and 1+ operator requested traffic with the 1+ traffic from the access provider to the ASN. Without careful planning there could be a service affecting condition with the deployment of this feature. It is important that trunk and switch activities be properly sequenced. For example:

- The feature must be active at the *5ESS*-2000 switch OSPS before upgrading the Universal T1.5 Access (UTA) trunks to Signaling System 7 (SS7).
- The UTA trunks must be upgraded prior to activating the features at the *4ESS* switch.
- The feature must be active at the *4ESS* switch prior to consolidating the operator requested and 1+ traffic from the Local Exchange Carrier (LEC) End Office (EO).
- The disconnects for existing 0+TSGs must be done last.

Ubiquity

7.02 It is not necessary for all *4ESS* switches in the network to be running the 4E22 Release 4 Generic for this feature to be operational.

Turn On/Turn Off Mechanism

A. Turn On/Turn Off Using RC form 809

7.03 Recent Change (RC) Form 809 is used to enable or disable this feature. The CAT feature is enabled or disabled by populating the FEATURE ITEM field with PF23 and setting the ON OR OFF field to either ON or OFF. To enable this feature, set the ON OR OFF field to ON. To disable the feature, set the ON OR OFF field to OFF. The default is OFF.

B. Turn On/Turn Off Using Absolute Word Change

7.04 This feature can also be turned on or off by an absolute word change. Item OD4PF23 in ODA structure OD4OFCCOPY is the office parameter that controls the state of the feature.

CAUTION:
The OD4OFCCOPY structure also contains the on/off bits for many other features. Be certain that any changes you make affect this feature only.

7.05 The following is the information needed to turn ODA bit OD4PF23 on or off using the absolute word change:

- Structure: OD4OFCCOPY
- Core address in 4E22 Generic: 6732167
- Size of OD4PF23: 1
- Displacement: 22
- On: 1
- Off: 0.

Verify Forms Affected

7.06 Verify Form 16az and 8j indicate when this feature has been enabled.

Interactions With Other Features

A. Interactions with AT&T Local Number Portability

7.07 Phase 1 of the Local Number Portability (LNP) feature provides a database lookup after the call processing at the *4ESS* switch is completed. The LNP Target Architecture team has accessed alternatives in which the LNP application is on the Switched Digital (SD) Local Area Network (LAN), and LNP processing would be applied prior to certain service processing. However, in both cases, CAT processing is applied before LNP processing. As per the CAT call flow, the *4ESS* switch first recognizes the call as operator requested and subsequently forwards it to the Operator Services Position System (OSPS). Therefore, LNP processing is not applied at the *4ESS* switch for these calls.

7.08 However, since the CAT Feature is the first feature to provide ISDN User Part (ISUP) signaling from the *4ESS* switch to the *5ESS*-2000 switch OSPS over trunks other than Alternate Access to Operator Service (AATOS), the *4ESS* switch has to forward the JIP. If no JIP is available, and an originating LRN exists in the incoming TSG, the *4ESS* switch also has to forward the LRN in the Originating LRN GOP to the OSPS.

B. Interactions with Positive Call Processing

7.09 New requirements are not necessary to offer Positive Call Processing (PCP) for wireless customers. The PCP service can be offered on 1+ calls originating over switched access trunk groups by setting the PCPEACELL indicator in the trunk group characteristic to YES during provisioning.

C. Interactions with ATP, ABC/REACH, and CLD

7.10 The Access Transport Parameter (ATP), Adjunct Based Capabilities (ABC) /REmote Adjunct Call Handling (REACH), and Consumer Long Distance (CLD) features have incorporated the necessary interactions with the *4ESS* switch.

D. Interactions with EasyReach Quantum Data and Routing System

7.11 Calls for the Quantum Data and Routing System (QDRS) now route through the *4ESS* switch prior to reaching the OSPS.

Interactions With the *5ESS*®-2000 Switch OSPS

7.12 Operator calls (0+/0-,01+,1+H/M, and 1+TRS) are forwarded from the *4ESS* switch OAS to the OSPS.

Wireless Numbering Plan

7.13 The blocks of numbers served by a given Mobile Telephone Switching Office (MTSO) may be complete NPA-NXXs or contiguous numbers. A given MTSO can have unique NPA-NXX groups and/or share NPA-NXX with the LEC. For NPA-NXXs that are shared with the LEC, the numbers are generally obtained from the LEC in increments of at least 100. These numbers are taken from Local Access Transport Areas (LATAs) in which the LEC can complete local calls to the MTSO. The MTSO may be connected to LEC switching offices in every LATA from which it has obtained numbers. The MTSO may also be connected to an Equal Access End Office (EO) or Access Tandem (AT).

7.14 The Trunk Group Rating Numbers (TRNs) are 10-digit POTS numbers defined for rating purposes. The OSPS that serves a TRN is usually the same OSPS that would serve any LEC telephone with the same NPA-NXX as the TRN. Ideally, the TRN of a *4ESS* switch Wireless Direct trunk group is that of a telephone co-located with the interconnected MTSO, but it frequently may not be the same.

Wire Line Numbering Plan

7.15 This feature does not have an impact on the current numbering methods used. The CAT supports the North American Numbering Plan (NANP) format.

Call Routing

7.16 The feature does not impact the current call routing for calls other than passing the operator requested calls to the OSPS. The *4ESS* switch identifies the appropriate OSPS to forward the call by mapping either the TRN, if available, or Automatic Number Identification (ANI) to an OSPS ID in the OSPS Access ID Table. The values of the OSPS IDs are the same as the values currently used by the Universal T1.5 Access (UTA) Feature. Those values are currently 00-63. The routing strategies supported by this Feature are Routing Data Block (RDB), Multiple Routing Treatment (MRT), and Destination Switch Number (DSN). In addition, Positive Look-up (PLU) tables are used at the terminating *4ESS* switch if a MTSO and LEC share an NPA-NXX.

A. OSPS ID Support of Routing Data Blocks

7.17 In wireless scenarios, a given MTSO is most likely interconnected with its closest *4ESS* switch. The AT&T Switched Number (ASN) routing between access and egress switches is unchanged.

7.18 For all the 0+/0-, 01+, 1+TRS,1 and 1+H/M calls, the OSPS that serves a given End Office (EO) is the OSPS that would serve any LEC telephone with the same NPA-NXX or MTSO TRN. It is expected that this is the OSPS that is both closest to the EO and closest to the *4ESS* switch that serves the EO. The OSPS routing does not have to change. The *4ESS* switches may send the OSPS 0+/0-, 01+, 1+TRS and 1+H/M calls on these facilities.

7.19 The Service Identity Indicator (SII) value for this feature is the same as the SII value for Universal T1.5. However, the Type of Origination (TORIG) is expanded to include LEC. The components of the SII value for 0+ Calls are shown in Table 6-D, and components of the SII value for 0- and 01 Calls are shown in Table 6-E.

Table 6-D. Service Identity Index For 0+ Calls

Field	Universal T1.5 Access	4EWD	From Canada
TORIG	NODAL	LEC	IWZ1
TDEST	OPR	OPR	OPR
SST	SDN, OMEG, LDS	SDN, OMEG, LDS	SDN, OMEG, LDS
DNST	UNAS, DNST10, NETS, MQ	UNAS, DNS10, NETS, MQ	UNAS, DNS10, NETS MQ

Table 6-E. Service Identity Index For 0- and 01+ Calls

Field	Universal T1.5 Access	4EWD	From Canada
TORIG	NODAL	LEC	IWZ1
TDEST	OPR	OPR	OPR
SST	SDN, OMEG, LDS	SDN, OMEG, LDS	SDN, OMEG, LDS
DNST	DNST15	DNST15	DNST15

Feature Dependencies

7.20 This feature is dependent on the following features being deployed in the network:

- Feature 4216, *Local Number Portability (LNP) with Location Routing Number (LRN)*
- Feature 4403, *4ESS™ Recording Enhancements for Project L*
- Feature 4570, *Noddal Access to AT&T Network Universal T1.5 Access*
- Feature 4650, *10-Digit Trunk Group Rating Number*
- Feature 4648, *SS7 for 5ESS®-2000 switch OSPS: 4ESS™ Switch to 5ESS-2000 switch Calls*
- Feature 4658, *Positive Call Processing for Equal Access Cellular Subscribers*
- Feature 4686, *Carrier Identification Code Delivery feature*
- Feature 4893, *MR mnid950028 to Universal T1 Access*
- Feature 5198, *Carrier Solutions CIC Based Determination Feature*.

8. Input/Output Manual Pages (Not Affected)

4E Local for Nodal Customers — Phase II Feature (5371a)

7

Contents **Page**

1. Feature Description 7-1
2. Call Flow 7-2
Outbound Local LRN Call from a LOCAL_NODAL Customer 7-2
A. Call Flow Narrative 7-2
Terminating Local LRN Call to a LOCAL_NODAL Customer 7-4
A. Call Flow Narrative 7-4
3. Provisioning 7-6
Recent Change (RC) Forms Affected 7-6
A. Structures Affected 7-6
New OD4NLOCID Structure (TRANPRM) 7-6
New OD4MSTLRN Structure (TRANPRM) 7-6
B. RC Forms 100, 101, 102, 107, 108 & 109 7-6
New Type Of Trunk 7-6
Update FENCLASS Population Rules 7-6
Redefine TSG CID field 7-6
C. Recent Change Forms 617 and 618 7-6
Update the FENCLASS Population Rules 7-6
D. Feature Bit 7-7

Contents **Page**

Verify Forms Affected 7-7

A. Verify Output Forms 1a, 1b and 1c 7-7

B. Verify Output Forms 1a and 1c 7-7

C. Verify Output Form 1b 7-7

4. Recording 7-7

AMA Record Information 7-7

5. Network Management 7-8

NEMOS 7-8

6. Maintenance/Troubleshooting 7-8

New Final Handling Codes 7-8

7. Transition Considerations 7-9

Interactions and Deployment Dependencies 7-9

Ubiquity 7-10

Turn On/Turn Off Mechanism 7-10

8. Input/Output Manual Pages 7-10

4E Local for Nodal Customers — Phase II Feature (5371a)

7

1. Feature Description

1.01 This feature allows nodal customers to originate and terminate local calls from their Private Branch Exchange (PBX) to the AT&T network. When a call is originated, the Positive Call Processing (PCP) or Software Defined Network (SDN) database will be queried to determine if the call is a toll call, or a local call (or an SDN on-net call). This indication will be returned from the Network Control Point (NCP) to the switch. The switch will then use this indication to do subsequent digit routing on the local calls.

2. Call Flow

Outbound Local LRN Call from a LOCAL_NODAL Customer

2.01 Refer to Figure 7-1 for Call Flow Diagram.

A. Call Flow Narrative

1. A LOCAL_NODAL customer dials a Local Service Provider (LSP) customer at 908-747-1234 (Note: The LSP customer has ported its number from LSP1 End Office (EO) to LSP2 EO).
2. All service processing in the Number 2 Network Control Point/Number 2 Direct Services ANI (2NCP/2DSA) is provided on the call and via Local Toll Differentiation (LTD), the call is determined to be a local call and hence, the LTD parameter is set to route and/or record local.
3. The *4ESS*™ switch receives the LTD parameter of local and sends the Local Screening Index to LOCAL_ORIG. The *4ESS* switch then checks its portability table and recognizes that the NPA-NXX of the destination number (908-747) is opened to portability and launches a query to the AT&T Toll Local Number Portability (LNP) database.
4. The Location Routing Number (LRN) of the LSP2 EO (908-949-0000) serving the destination number is sent in the response from the database.
5. The Automatic Message Accounting (AMA) record in the *4ESS* switch captures the LRN Module.
6. The *4ESS* switch formulates an Initial Address Message (IAM) which includes its Jurisdiction Information Parameter (JIP) as well as the Called Party Number (CdPN) populated with the LRN of 908-949-0000, the ported number Generic Address Parameter (GAP) with the destination number of 908-747-1234, and sets bit M of the Forward Call Indicator (FCI) to 1.
7. The *4ESS* switch performs digit translations on 908-949-0000. The *4ESS* switch Subsequent Digit Translation is required and points to the Local Screening Index (LSI), (LSI=LOCAL_ORIG). The *4ESS* switch determines the routing treatment based on the LSI and the call is routed to the LSP over a local trunk group. If the local route is identified as non-LNP capable, then before delivering the call, the *4ESS* switch must remove the LRN from the CdPN and move the destination number from the ported number GAP into the CdPN; otherwise, the *4ESS* switch delivers the call with the IAM indicated in Step 6.

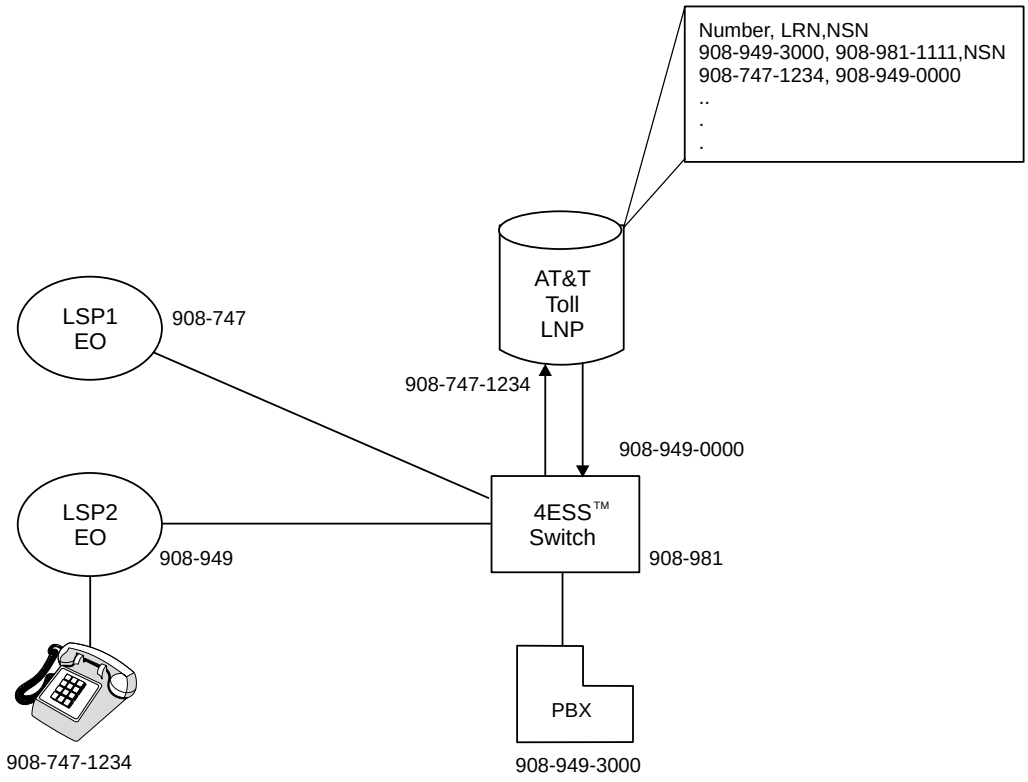


Figure 7-1. Outbound Local LRN Call from a LOCAL_NODAL Customer

Terminating Local LRN Call to a LOCAL_NODAL Customer

2.02 Refer to Figure 7-2 for Call Flow diagram.

A. Call Flow Narrative

1. A LSP customer dials a LOCAL_NODAL customer at 908-949-3000.
2. The LSP End Office (EO) serving that customer recognizes that 908-949 is opened to portability and launches a query to the LSP Local Number Portability (LNP) database.
3. The LRN of the *4ESS* switch (908-981-1111) is sent in the response from the database.
4. The LSP populates the CdPN with the LRN, the ported number GAP with the destination number, and sets bit M of the FCI to 1 and routes the call to the *4ESS* switch over local trunks.
5. The *4ESS* switch receives the call over the local trunks and determines that the LOCAL_NODAL feature bit at the *4ESS* switch is ON. No originating service processing should be applied to this call, including no querying of Segmentation Directory (SD). If an SDQuery is launched from the Data Link Node (DLN), the *4ESS* switch should ignore any SDResponse or subsequent SPResponse.
6. Since a ported number GAP is received, the *4ESS* switch retrieves the number from the CdPN parameter, discards the LRN, sets the M bit of the FCI to 0. The *4ESS* switch then checks its portability table and recognizes that the NPA-NXX of the destination number (908-949) is opened to portability and launches a query to the AT&T Toll LNP database.
7. The LOCAL_NODAL customer is provisioned in the AT&T Toll LNP database as a Terminating Switched Access Arrangement (TSAA) provider. The AT&T Toll LNP database returns the Network Switch Number (NSN) of the *4ESS* switch serving the LOCAL_NODAL customer and the LRN of the *4ESS* switch. Like in TSAA processing, the Originating AT&T Switch (OAS) will route on the NSN and forward a crank back and the OAS will attempt to route on LRN. In this case, the OAS is also the Terminating AT&T Switch (TAS). Therefore, the OAS will recognize its own NSN and perform digit translations on the dialed number 908-949-3000 (the Default LSI - Toll is used). In the unlikely event that the direct trunk is busy, the *4ESS* switch will attempt to route on the LRN which will result in a reorder announcement. All LRNs assigned to *4ESS* switches will be provisioned to a final handling treatment of reorder.
8. An originating and terminating LRN module will be appended as required to the Automatic Message Accounting (AMA) Terminating Access Records.

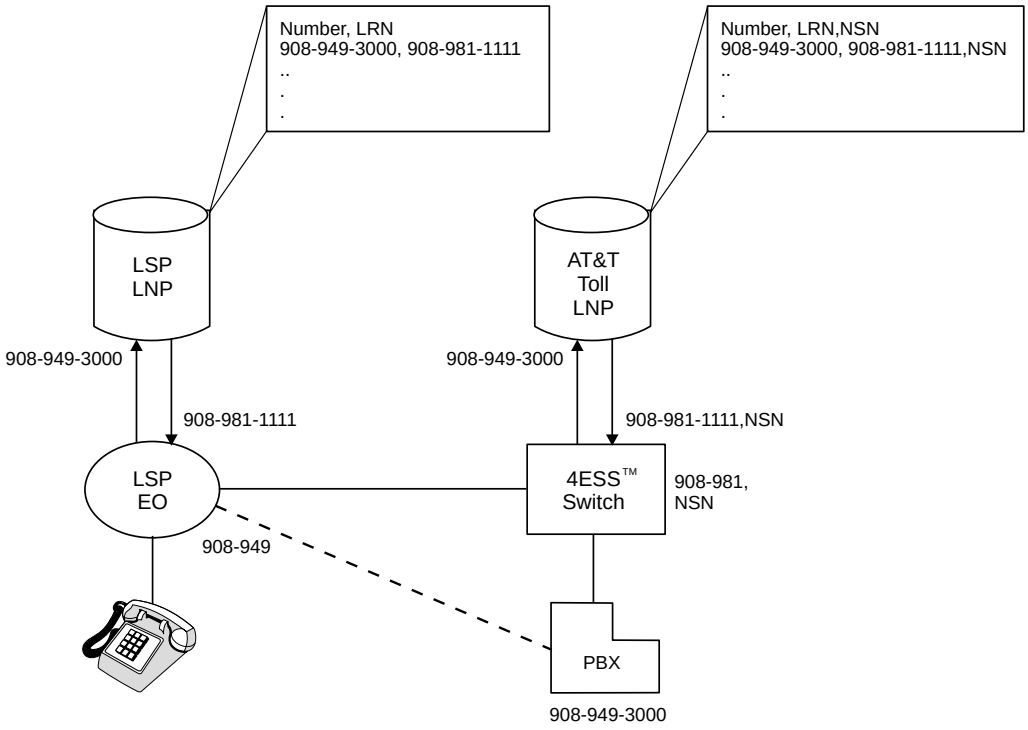


Figure 7-2. Terminating Local LRN Call to a LOCAL_NODAL Customer

3. Provisioning

Recent Change (RC) Forms Affected

A. Structures Affected

New OD4NLOCID Structure (TRANPRM)

3.01 A new 1-level structure is defined in Protected, Simplex, Disk-backed, and Office Data Assembly (ODA) populated memory to contain a new Near end Local Common Language Location Identifier (CLII) table OD4NLOCID, which contains a unique local CLII. This new structure consists of eleven 7-bit character items in four words.

New OD4MSTLRN Structure (TRANPRM)

3.02 A new 1-level structure is defined in Protected, Simplex, Disk-backed, and ODA populated memory to contain a ten digit NPA-NXX-XXXX number which is used as a Master Location Routing Number MSTLRN. This structure consists of two words.

B. RC Forms 100, 101, 102, 107, 108 & 109

New Type Of Trunk

3.03 RC forms 100, 101, 102, 107, 108, and 109 population rules have been modified to allow a new "LSP" Local Service Provider Type Of Trunk. The layout of these forms is not changing.

Update FENCLASS Population Rules

3.04 RC forms 100, 101, 102, 107, 108, and 109 have been modified to allow the existing "OEO" FENCLASS for AT&T switches. The layout of these forms is not changing.

Redefine TSG CID field

3.05 RC forms 100, 102, 107, and 109 population rules have been modified to allow AT&T switches to use the 4-digit Carrier ID "CID" field. The layout of these forms is not changing.

C. Recent Change Forms 617 and 618

Update the FENCLASS Population Rules

3.06 RC forms 617 and 618 have been modified to allow "OEO" as a valid CLASS for AT&T switches. The layout of these forms is not changing.

D. Feature Bit

3.07 The feature bit PF34 must be turned on before this feature can be activated. If PF34 is not turned on, the new LSP trunks will not be provisioned.

Verify Forms Affected

A. Verify Output Forms 1a, 1b and 1c

3.08 The population rules for these forms have been modified to allow a new "LSP" Type of Trunk.

B. Verify Output Forms 1a and 1c

3.09 The population rules for these forms have been modified to allow AT&T switches to use 4 digit Carrier ID, "CID" field.

C. Verify Output Form 1b

3.10 The population rules for this form has been modified to add the 4 digit Carrier ID, "CID" field.

4. Recording

AMA Record Information

4.01 There is a new "Local Nodal Module" (Module 947), which is generated for local calls. The layout of Module Code 947 is shown in the Table below:

Table 7-A. Module 947

Information	Table Number	Number of Characters
Module Code	88	4
Local Call Indicator	925	4
Local ANI NPA	13	4
Local ANI Number	14	8
Reserved #1	R00	6

The Local Call Indicator (table 925) can now be populated with "01" to indicate "NCP (Record only)". Previously, only the values of "02" and "03" were allowed.

4.02 Structure codes 00625 and 00627 (for call codes 119 and 720) will include a routing indicator (table 59) and an ANI/CPN indicator (table 60).

4.03 The routing indicator will always be set to "0" for this feature.

4.04 ANI/CPN indicators are as follows:

- An indicator of "0" means that no ANI or CPN was provided.
- An indicator of "1" means that ANI provided, no CPD provided.
- An indicator of "2" means that CPN provided, no ANI provided.
- An indicator of "3" means that ANI and CPN were provided.

5. Network Management

NEMOS

5.01 NEMOS will receive a "Local CLLI" in the Switch Identification data message (41).

5.02 NEMOS will see a FENID 6 character ASCII description in the demand data message type 33.

6. Maintenance/Troubleshooting

New Final Handling Codes

6.01 There are four new Final Handling Codes as shown in the FHC Table.

Table 7-B. New Finaling Handling Code Failures

FHC	Failure and Handling Method
650	**Last Normal Condition–**Successfully translated CdPN. **Irregular Condition–**Calls requesting operator assistance is not valid. **Handling–**The call is connected to a vacant code announcement.
651	**Last Normal Condition–**Successfully translated the CdPN. **Irregular Condition–**Calls determined to be a data call is not valid. **Handling–**The call is determined and connected to a vacant code announcement (MF) or send a release message with a cause value. of 63 (ISUP service or option not available).
652	**Last Normal Condition–**IAM contained a TNS parameter. **Irregular Condition–**TNS received from LSP trunk for a Local Nodal call that is terminating to a Local Nodal customer. **Handling–**Send a release message with a cause value of protocol error - unspecified (111) and a location of local interface controlling this signaling link (6).
655	**Last Normal Condition–**IAM was received and a call is being routed towards the destination. **Irregular Condition–**The Master LRN, which is used to populate the JIP, is not provisioned in the switch. **Handling–**The JIP will not be built (and passed in an IAM) and ISUP processing will continue.

7. Transition Considerations

Interactions and Deployment Dependencies

7.01 The *4ESS* switch LOCAL_NODAL feature is dependent on the deployment of the Number Portability with LRN feature 4216, either prior to, or in conjunction with, the deployment of this feature.

7.02 As soon as a *4ESS* switch has the 4E22R4 Generic deployed, all new network trunking orders to support *4ESS* LOCAL_NODAL service will be built as LSP_LOCAL.

Ubiquity

7.03 It is necessary for all *4ESS* switches in the network to be running the 4E22 Release 4 Generic for this feature to be fully operational.

Turn On/Turn Off Mechanism

7.04 This feature is turned on by RC Form 809. Please refer to "Provisioning" in this chapter.

7.05 This feature can also be turned ON or OFF by an absolute word change. However, it is highly recommended that RC Form 809 be used to turn on this feature when possible.

7.06 Item OD4PF34 in ODA structure OD4OFCCOPY2 is used to turn this feature On or OFF. The following information is needed to turn ODA bit OD4PF34 On or OFF using absolute word change. The default is "OFF".

CAUTION:
The OD4OFCCOPY2 structure also contains the ON/OFF bits for many other features. Be certain that any changes you make only affect this feature.

- Structure: OD4OFCCOPY2
- Core address in 4E22 Generic: 7145445
- Size of OD4PF34: 1
- Displacement: 9
- ON: 1
- OFF: 0.

8. Input/Output Manual Pages

8.01 One new Input Message and one new Output Message was added, as described below:

- Input Message: TEST:TCAPDSD. This requests a test query to be sent to the NCP from the *4ESS* switch serving as an Action Control Point (ACP).
- Output Message: TEST:TCAPDSD. This output message is in response to the Input Message TEST:TCAPDSD.

8.02 The TEST:TCAPDSD input and output messages are included in Chapter 1 of this document.

Selective Blocking of Codesets Feature (5506)

8

Contents **Page**

1. Feature Description 8-1
2. Call Flow 8-3
Outbound Call Flow Without Database Dip 8-3
Outbound Call Flow With Database Dip 8-3
Inbound Call Flow Without Database Dip 8-4
Inbound Call Flow with Database Dip 8-4
3. Provisioning (Not Affected) 8-5
4. Recording (Not Affected) 8-5
5. Network Management 8-5
Risk Assessment and Management 8-5
6. Maintenance/Troubleshooting 8-6
Feature Testing 8-6
7. Transition considerations 8-20
Ubiquity 8-20
Turn On/Turn Off Mechanism 8-20
Risk Assessment and Management 8-20
8. Input/Output Manual Pages (Not Affected) 8-20

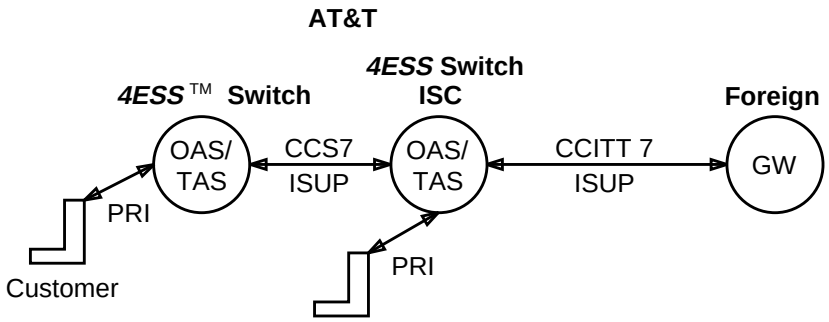
Selective Blocking of Codesets Feature (5506)

8

1. Feature Description

1.01 In the past, when AT&T received signaling from direct connect customers for international calls, the messages were not screened for the presence of codeset 6 and 7 Information Elements (IEs). This resulted in codeset 6 and 7 IEs being mapped into the Access Transport Parameter (ATP) of outgoing CCITT7 ISUP messages by the *4ESS*™ switch. The Foreign network switches and/or Integrated Services Digital Network (ISDN) terminals in customer networks, however, did not recognize codeset 6 and 7 IEs and this caused call failures.

1.02 With this feature, the *4ESS* switch checks for the presence of codeset 6 and 7 IEs in the forward direction of outbound international call messages, and it checks for codeset 6 and 7 IEs in the backward direction of incoming international call messages. Figure 8-1 shows the architecture for international calls to and from direct connect customers. If codeset 6 and 7 IEs are present, the *4ESS* switch does not map them to the ATP of outgoing Common Channel Signaling System Seven (CCS7) or International Consultative Committee on Telephone and Telegraph (CCITT7) ISDN User Part (ISUP) messages. By not mapping these IEs at the call originating and/or terminating *4ESS* switches, AT&T decreases the number of call failures. Also, it aligns the *4ESS* switch implementation with the American National Standards Institute (ANSI) and CCITT7 recommendations which require the blocking of codeset 6 and 7 IEs at the Originating AT&T Switch (OAS)/Terminating AT&T Switch (TAS) for all international calls at the Primary Rate Interface (PRI).



Legend:

CCITT7 - International Consultative Committee on Telephone and Telegraph 7
CCS7 - Common Channel Signaling System 7
GW - Gateway
ISDN - Integrated Services Digital Network
ISUP - ISDN User Part
ISC - International Switching Center
OAS - Originating AT&T Switch
PRI - Primary Rate Interface
TAS - Terminating AT&T Switch

tpa 716817-01

Figure 8-1. International Calls Using PRI Interfaces

2. Call Flow

Outbound Call Flow Without Database Dip

2.01 The following is a high-level call flow of outbound international calls originated from a direct connect customer. In this call flow, the forward direction messages are those sent by the Private Branch Exchange (PBX) to the Originating AT&T Switch (OAS) in the direction of the SETUP message. The service logic processing and routing analysis is performed by the OAS.

1. A customer makes an international call. The customer's PBX sends a SETUP message to an OAS.
2. The OAS performs necessary service logic processing and routing analysis according to the service and features subscribed to by the customer. The OAS determines that it is an international call.
3. For all forward direction Primary Rate Interface (PRI) messages, such as SETUP, DISCONNECT, RELEASE, and RELEASE COMPLETE, the OAS does the following:
   - Performs codeset 6 and 7 Information Element (IE) screening. If these IEs are present in these messages, the OAS does not map them to the Access Transport Parameter (ATP).
   - If it is a *4ESS* switch, the OAS creates outgoing Common Channel Signaling System 7 (CCS7) ISDN User Part (ISUP) messages. Otherwise, the OAS [*4ESS* switch International Switching Center (ISC)] routes International Consultative Committee on Telephone and Telegraph 7 (CCITT7) ISUP messages to the gateway of the destination or via network.

Outbound Call Flow With Database Dip

2.02 The following is a high-level call flow of outbound international calls originated from a direct connect customer. In this call flow, the forward direction messages are those sent by the Private Branch Exchange (PBX) to the OAS in the direction of the SETUP message. The service logic processing is performed by the database.

1. A customer makes an international call. The customer's PBX sends a SETUP message to an OAS.
2. The OAS sends a query to a database. The database does service logic processing according to the service and features subscribed to by the customer. The database sends routing information to the OAS in a response message. Based on the routing information received from the database, the OAS determines that it is an international call.

3. For all forward direction PRI messages, such as SETUP, DISCONNECT, RELEASE, and RELEASE COMPLETE, the OAS does the following:
   - Performs codeset 6 and 7 IE screening. If these IEs are present in these messages, the OAS does not map them to the ATP.
   - If it is a *4ESS* switch, the OAS creates outgoing CCS7 ISUP messages. Otherwise, the OAS (*4ESS* switch ISC) routes CCITT7 ISUP messages to the gateway of the destination or via network.

Inbound Call Flow Without Database Dip

2.03 The following is a high-level call flow of inbound international calls terminating to a direct connect AT&T customer. In this call flow, the backward direction messages are sent by the PBX to the Terminating AT&T Switch (TAS) in the opposite direction of the SETUP message. The receiving switch performs the service logic processing.

1. An inbound international call arrives at the *4ESS* switch gateway/International Switching Center (ISC) when it receives an Initial Address Message (IAM) message.
2. The receiving switch performs necessary service logic processing and routing analysis according to the service and features subscribed to by the customer.
3. The IAM message arrives at a TAS. The TAS sends a SETUP message to the customer PBX.
4. For all backward direction PRI messages (such as ALERTING, CONNECT, DISCONNECT, PROGRESS, RELEASE, and RELEASE COMPLETE) associated with this call, the TAS does the following:
   - Performs codeset 6 and 7 IEs screening. If these IEs are present in these messages, the TAS does not map them to the ATP.
   - Creates outgoing CCS7 ISUP messages, if it is a *4ESS* switch. Otherwise, the TAS (*4ESS* switch ISC) routes a CCITT7 ISUP messages to the gateway of the destination or via network.

Inbound Call Flow with Database Dip

2.04 The following is a high-level call flow of inbound international calls terminating with a direct connect AT&T customer. In this call flow, the backward direction messages are those sent by the PBX to the TAS in the opposite direction of the SETUP message. The service logic processing is performed by the database.

1. An inbound international call arrives at the *4ESS* switch gateway/ISC when it receives an IAM message.

2. The receiving switch sends a query to a database. The database does service logic processing according to the service and features subscribed to by the customer. The database sends routing information to the switch in a response message. Based on the routing information received from the database, the switch sends a CCS7 ISUP IAM message to a TAS.
3. The IAM message arrives at the TAS. The TAS sends a SETUP message to the customer PBX.
4. For all backward direction PRI messages (such as ALERTING, CONNECT, DISCONNECT, PROGRESS, RELEASE, and RELEASE COMPLETE) associated with this call the TAS does the following:
   - Performs codeset 6 and 7 IEs screening. If such IEs are present in these messages, the TAS does not map them to the ATP.
   - Creates outgoing CCS7 ISUP messages, if it is a *4ESS* switch. Otherwise, the TAS (*4ESS* switch ISC) routes CCITT7 ISUP messages to the gateway of the destination or via network.

3. Provisioning (Not Affected)

4. Recording (Not Affected)

5. Network Management

Risk Assessment and Management

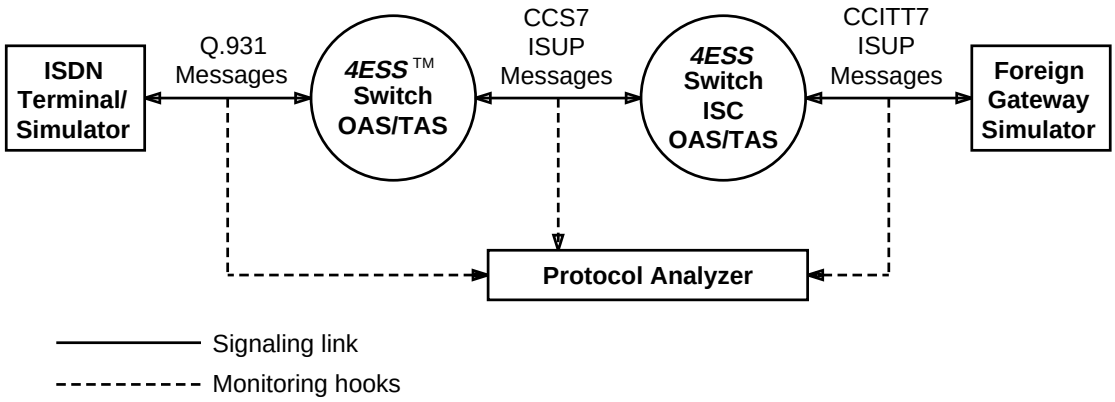
5.01 Prior to this feature, the potential existed for many customers to have experienced international call failures due to the transmission of codeset 6 and 7 Information Elements (IEs) in the Access Transport Parameter as ISDN User Part (ISUP) deployment became more widespread. Therefore, the blocking of codesets 6 and 7 in this feature was necessary for AT&T. Once the feature has been deployed in the AT&T network there is the potential that customers who may be using codeset 6 and 7 IEs for international calls, will not be able to use these IEs.

5.02 It should be explained to these customers that AT&T is complying with existing American National Standards Institute (ANSI) and the International Telecommunications Union (ITU) standards, and that they should consider using the User-to-User Service to fulfill their needs.

6. Maintenance/Troubleshooting

Feature Testing

The basic test configuration required for testing at the *4ESS* switch, Originating AT&T Switch (OAS)/ Terminating AT&T Switch (TAS) is shown in Figure 8-2. Table 8-A provides a summary of test scenarios needed to verify that requirements for this feature are met.



Legend:

CCITT7 - International Consultative Committee on Telephone and Telegraph 7
CCS7 - Common Channel Signaling System 7
ISDN - Integrated Services Digital Network
ISUP - ISDN User Part
ISC - International Switching Center
OAS - Originating AT&T Switch
TAS - Terminating AT&T Switch

tpa 716818-01

Figure 8-2. ITN Testing Configuration

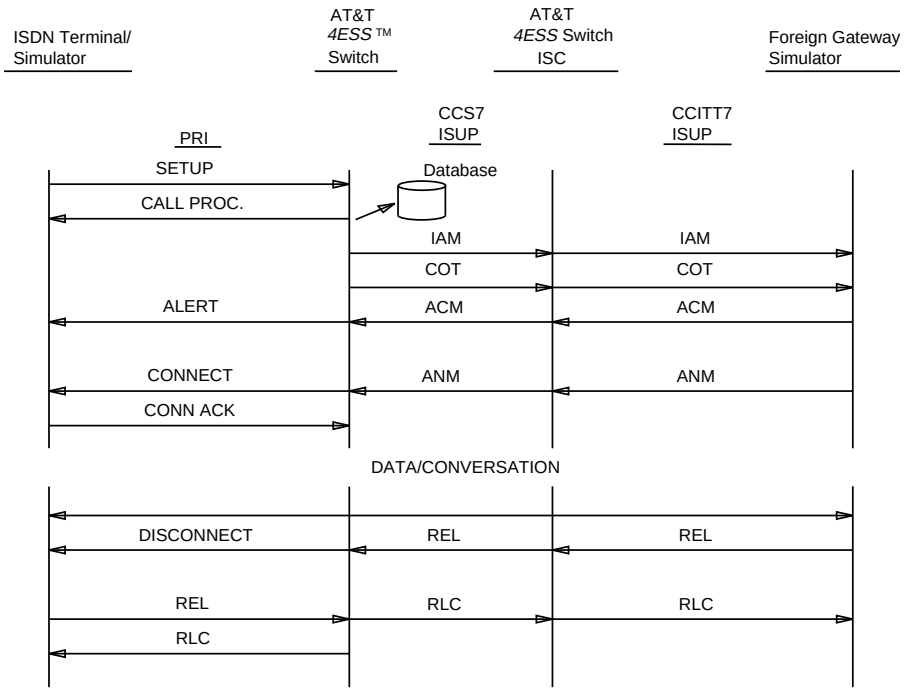
Table 8-A. Feature Test Summary

Test Number	Test Scenario	Expected Result	Test and Message Sequence
1	ISDN Terminal/Simulator dials an international call. Q.931 messages are sent to *4ESS* switch with codeset 6 and 7 Information elements (IEs).	*4ESS* switch forwards CCS7 ISUP messages to *4ESS* switch ISC. The ATP in CCS7 ISUP messages should not have codeset 6 and 7 IEs present.	For Test 1, see Table 8-B. For expected Test 1 messages, see Figure 8-3.
2	ISDN Terminal/Simulator dials an international call. Q.931 messages are sent to *4ESS* switch with codeset 6 and 7 IEs. The Terminal/Simulator does abnormal call clearing.	*4ESS* switch forwards CCS7 ISUP messages to the *4ESS* switch ISC. The ATP in the CCS7 ISUP messages should not have codeset 6 and 7 IEs.	For Test 2, see Table 8-C. For expected Test 2 messages, see Figure 8-4.
3	ISDN Terminal/Simulator receives an international call. Q.931 messages are sent to *4ESS* switch with codeset 6 and 7 IEs.	*4ESS* switch forwards CCS7 ISUP messages to the *4ESS* switch ISC. The ATP in CCS7 ISUP messages should not have codeset 6 and 7 IEs.	For Test 3, see Table 8-D. For expected Test 3 messages, see Figure 8-5.
4	ISDN Terminal/Simulator receives an international call. Q.931 messages are sent to *4ESS* switch with codeset 6 and 7 IEs. The Terminal/Simulator refuses the call.	*4ESS* switch forwards CCS7 ISUP messages to the *4ESS switch* ISC. The ATP in CCS7 ISUP messages should not have codeset 6 and 7 IEs.	For Test 4, see Table 8-E. For expected Test 4 messages, see Figure 8-6.
5	ISDN Terminal/Simulator dials an international call. Q.931 messages are sent to *4ESS switch ISC with codeset 6 and 7 IEs.*	*4ESS switch ISC forwards CCITT7 ISUP messages to the Foreign Gateway Simulator. The ATP in CCITT7 ISUP messages should not have codeset 6 and 7 IEs.*	For Test 5, see Table 8-F. For expected Test 5 messages, see Figure 8-7.
6	*ISDN Terminal/Simulator receives an international call. Q.931 messages are sent to 4ESS* switch ISC with codeset 6 and 7 IEs.	*4ESS* switch ISC forwards CCITT7 ISUP messages to the Foreign Gateway Simulator. The ATP in CCITT7 ISUP messages should not have codeset 6 and 7 IEs.	For Test 6, see Table 8-G. For expected Test 6 messages, see Figure 8-8.

Table 8-B. Call Processing Test Number 1

Test Description:	Call Processing Testing at Primary Rate Interface (PRI) by the *4ESS* switch
Test Configuration:	ISDN Terminal/Simulator - PRI, AT&T PRI, and CCS7
Test Direction:	From ISDN Terminal/Simulator to Foreign Gateway Simulator via AT&T
Test Purpose:	Verify That No Mapping Exists For Codeset 6 and 7 Information Elements (IEs)
Pre-test conditions:	ISDN Terminal is Able to Generate Necessary PRI Messages with Codeset 6 and 7 IEs.

Step Number	Description
1	The ISDN Terminal/Simulator makes an outbound international Software Defined Network (SDN) call. See Figure 8-3.
2	The Integrated Services Digital Network (ISDN) Terminal/Simulator sends Primary Rate Interface (PRI) signaling messages containing codeset 6 and 7 IEs to the AT&T *4ESS* switch.
3	The *4ESS* switch prepares outgoing CCS7 ISUP messages and forwards them to the foreign Gateway Simulator.
4	The Access Transport Parameter of the CCS7 ISUP messages does not contain codeset 6 and 7 IEs.



Legend:

ACM - Access Complete Message
ACK - Acknowledge
ANM - Answer Message
CCITT7 - International Consultative Committee on Telephone and Telegraph 7
CCS7 - Common Channel Signaling System 7
COT - Continuity
IAM - Initial Address Message
ISC - International Switching Center
ISDN - Integrated Services Digital Network
ISUP - ISDN User Part
PRI - Primary Rate Interface
REL - Release
RLC - Release Complete

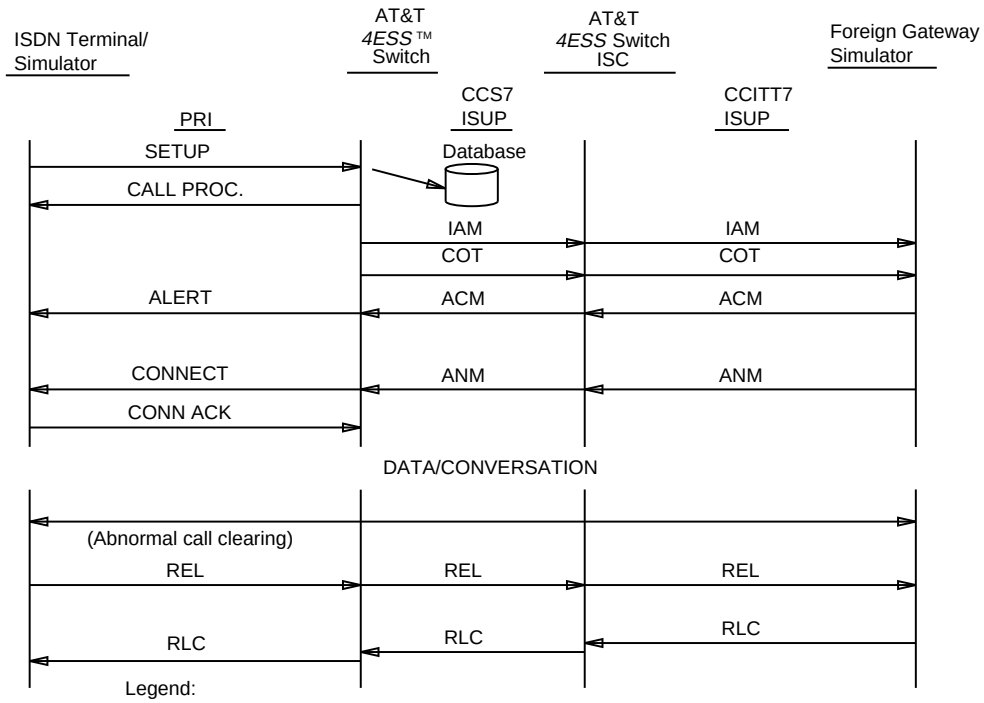
tpa 716819-01

Figure 8-3. Expected Message Sequence for Test Number 1.

Table 8-C. Call Processing Test Number 2

Test Description:	Call Processing Testing at PRI by the *4ESS* Switch
Test Configuration:	ISDN Terminal/Simulator - PRI, AT&T PRI, and CCS7
Test Direction:	From ISDN Terminal/Simulator to Foreign Gateway simulator via AT&T
Test Purpose:	Verify That No Mapping Exists For Codeset 6 and 7 Information Elements (IEs)
Pre-test conditions:	ISDN Terminal is Able to Generate Necessary PRI Messages with Codeset 6 and 7 IEs and to do abnormal call clearing.

Step Number	Description
1	The ISDN Terminal/Simulator makes an outbound international call. See Figure 8-4.
2	The Integrated Services Digital Network (ISDN) Terminal/Simulator sends Primary Rate Interface (PRI) signaling messages containing codeset 6 and 7 IEs to the AT&T *4ESS* switch.
3	The *4ESS* switch prepares outgoing CCS7 ISUP messages and forwards them to the foreign Gateway Simulator.
4	The Access Transport Parameter of the CCS7 ISUP messages does not contain codeset 6 and 7 IEs.



Legend:

ACM - Access Complete Message
ACK - Acknowledge
ANM - Answer Message
CCITT7 - International Consultative Committee on Telephone and Telegraph 7
CCS7 - Common Channel Signaling System 7
COT - Continuity
IAM - Initial Address Message
ISC - International Switching Center
ISDN - Integrated Services Digital Network
ISUP - ISDN User Part
PRI - Primary Rate Interface
REL - Release
RLC - Release Complete

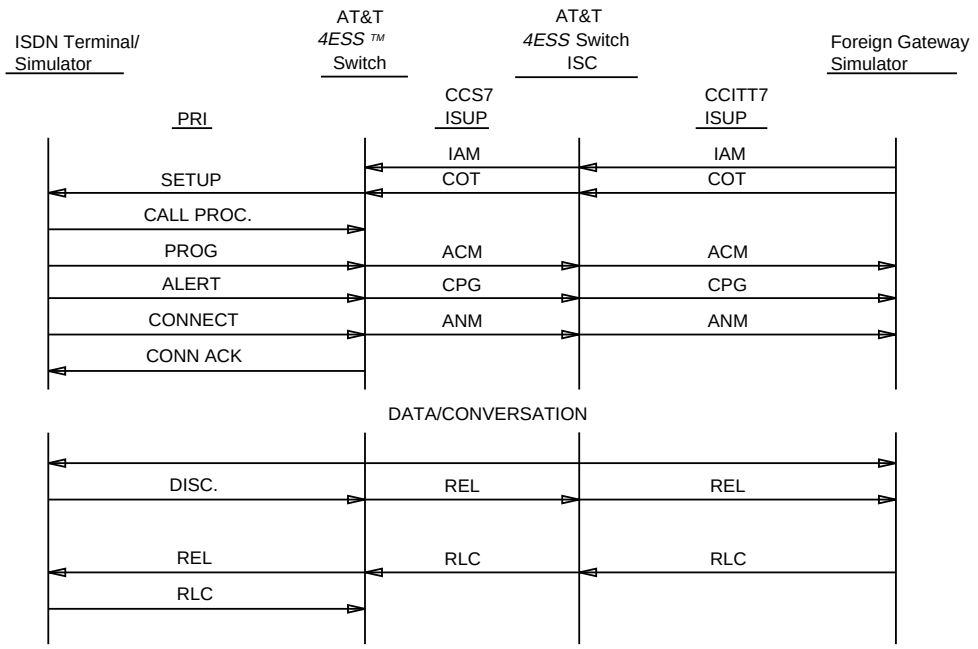
tpa 716820-01

Figure 8-4. Expected Message Sequence for Test Number 2.

Table 8-D. Call Processing Test Number 3

Test Description:	Call Processing Testing at PRI by *4ESS* Switch
Test Configuration:	PRI, AT&T PRI, and CCS7
Test Direction:	From Foreign Gateway Simulator to ISDN Terminal/Simulator via AT&T
Test Purpose:	Verify That No Mapping Exists For Codeset 6 and 7 Information Elements (IEs)
Pre-test conditions:	ISDN Terminal is Able to Generate Necessary PRI Messages with Codeset 6 and 7 IEs.

Step Number	Description
1	The ISDN Terminal/Simulator receives an inbound international call. See figure 8-5.
2	The ISDN Terminal/Simulator sends Primary Rate Interface (PRI) signaling messages containing codeset 6 and 7 IEs to the AT&T *4ESS* switch.
3	The *4ESS* switch prepares outgoing CCS7 ISUP messages and forwards them to the foreign Gateway Simulator.
4	The Access Transport Parameter of the CCS7 ISUP messages does not contain codeset 6 and 7 Information Elements.



Legend:

ACM - Access Complete Message
ACK - Acknowledge
ANM - Answer Message
CCITT7 - International Consultative Committee on Telephone and Telegraph 7
CCS7 - Common Channel Signaling System 7
COT - Continuity
IAM - Initial Address Message
ISC - International Switching Center
ISDN - Integrated Services Digital Network
ISUP - ISDN User Part
PRI - Primary Rate Interface
REL - Release
RLC - Release Complete

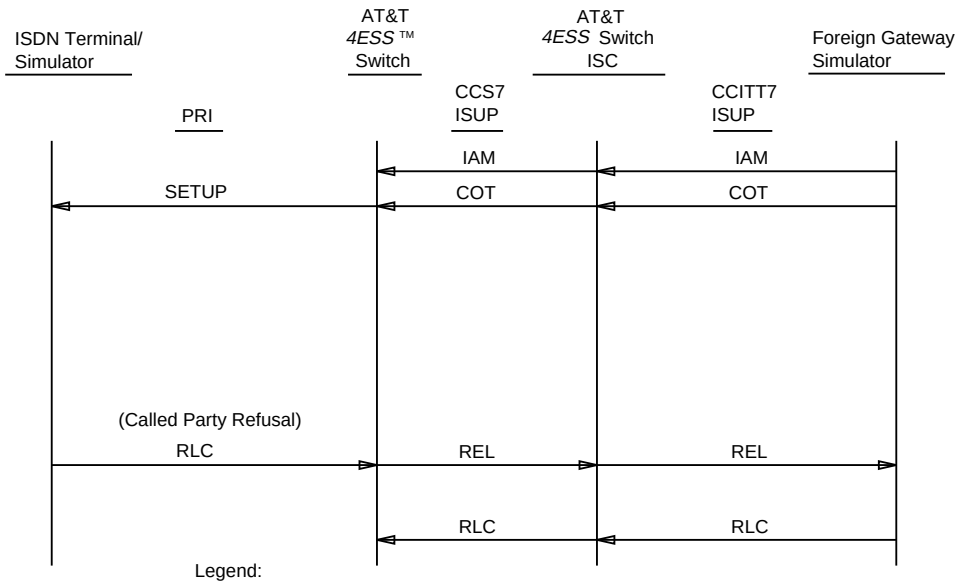
tpa 716821-01

Figure 8-5. Expected Message Sequence for Test Number 3.

Table 8-E. Call Processing Test Number 4

Test Description:	Call Processing Testing at PRI by *4ESS* Switch
Test Configuration:	ISDN Terminal/Simulator - PRI, AT&T PRI, and CCS7
Test Direction:	From Foreign Gateway Simulator to ISDN Terminal/Simulator via AT&T
Test Purpose:	Verify That No Mapping Exists For Codeset 6 and 7 Information Elements (IEs)
Pre-test conditions:	ISDN Terminal is Able to Generate Necessary PRI Messages with Codeset 6 and 7 IEs and is able to refuse a call.

Step Number	Description
1	The ISDN Terminal/Simulator receives an inbound international call. See figure 8-6.
2	The ISDN Terminal/Simulator sends Primary Rate Interface (PRI) signaling messages containing codeset 6 and 7 IEs to the *4ESS* switch.
3	The *4ESS* switch prepares outgoing CCS7 ISUP messages and forwards them to the foreign Gateway Simulator.
4	The Access Transport Parameter of the CCS7 ISUP messages does not contain codeset 6 and 7 Information Elements.



Legend:

CCITT7 - International Consultative Committee on Telephone and Telegraph 7
CCS7 - Common Channel Signaling System 7
COT - Continuity
IAM - Initial Address Message
ISC - International Switching Center
ISDN - Integrated Services Digital Network
ISUP - ISDN User Part
PRI - Primary Rate Interface
REL - Release
RLC - Release Complete

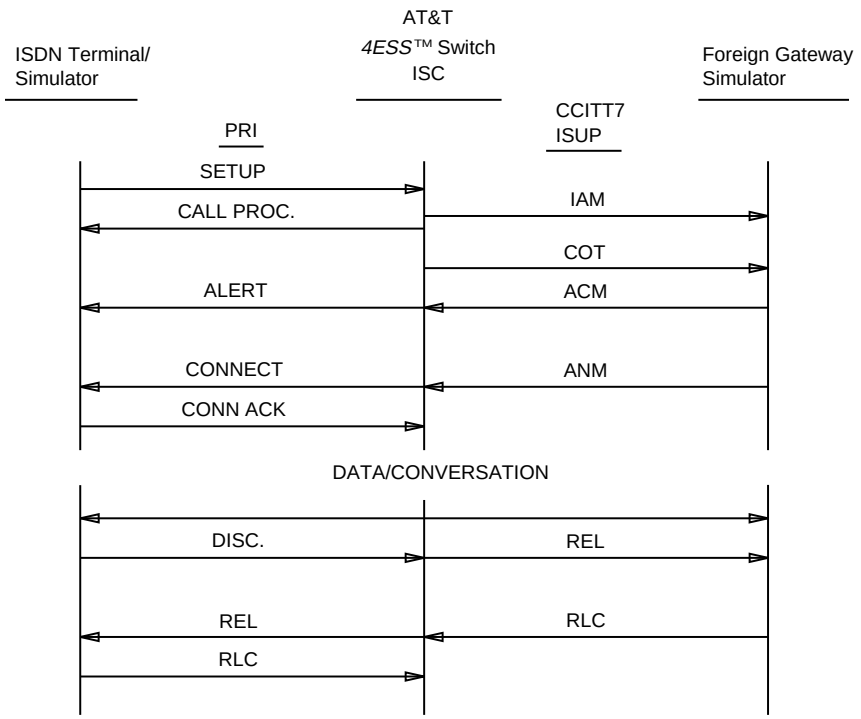
tpa 716822-01

Figure 8-6. Expected Message Sequence for Test Number 4.

Table 8-F. Call Processing Test Number 5

Test Description:	Call Processing Testing at PRI by the *4ESS* Switch ISC
Test Configuration:	ISDN Terminal/Simulator - PRI, AT&T PRI, and CCITT7
Test Direction:	From ISDN Terminal/Simulator to Foreign Gateway Simulator via AT&T
Test Purpose:	Verify That No Mapping Exists For Codeset 6 and 7 Information Elements (IEs)
Pre-test conditions:	ISDN Terminal is Able to Generate Necessary PRI Messages with Codeset 6 and 7 IEs.

Step Number	Description
1	The ISDN Terminal/Simulator makes an outbound international call. See figure 8-7.
2	The Integrated Services Digital Network (ISDN) Terminal/Simulator sends Primary Rate Interface (PRI) signaling messages containing codeset 6 and 7 IEs and forwards them to the *4ESS* switch ISC.
3	The *4ESS* switch ISC prepares outgoing CCITT7 ISUP messages and forwards them to the foreign Gateway Simulator.
4	The Access Transport Parameter of CCITT7 ISUP messages does not contain codeset 6 and 7 IEs.



Legend:

ACM -	Access Complete Message
ACK -	Acknowledge
ANM -	Answer Message
CCITT7 -	International Consultative Committee on Telephone and Telegraph 7
CCS7 -	Common Channel Signaling System 7
COT -	Continuity
IAM -	Initial Address Message
ISC -	International Switching Center
ISDN -	Integrated Services Digital Network
ISUP -	ISDN User Part
PRI -	Primary Rate Interface
REL -	Release
RLC -	Release Complete

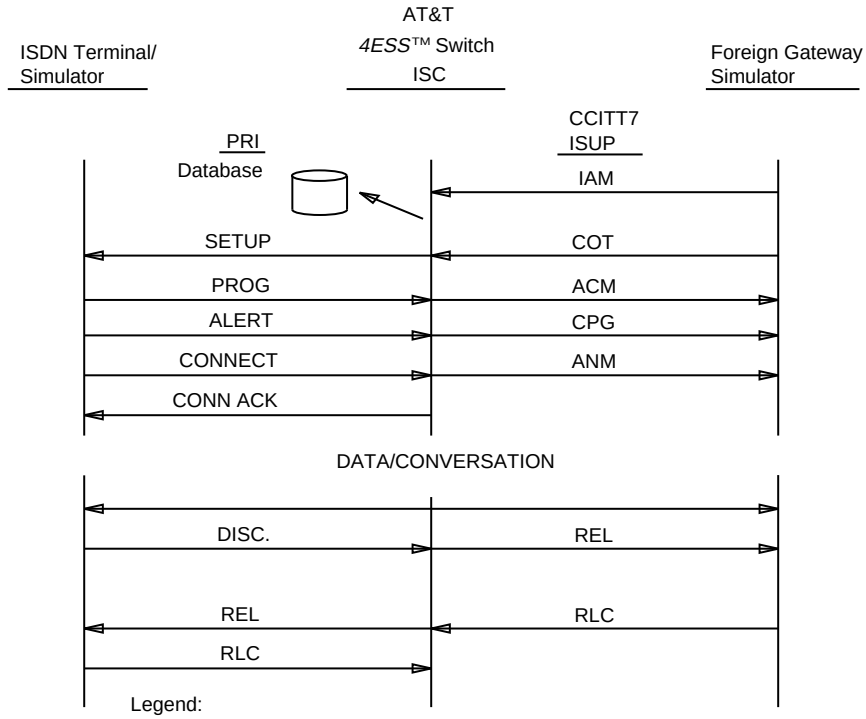
tpa 716823-01

Figure 8-7. Expected Message Sequence for Test Number 5.

Table 8-G. Call Processing Test Number 6

Test Description:	Call Processing Testing at PRI by *4ESS* Switch ISC
Test Configuration:	ISDN Terminal/Simulator - PRI, AT&T CCITT7 and PRI
Test Direction:	From Foreign Gateway Simulator to ISDN Terminal/Simulator via AT&T
Test Purpose:	Verify That No Mapping Exists For Codeset 6 and 7 Information Elements (IEs)
Pre-test conditions:	ISDN Terminal is Able to Generate Necessary PRI Messages with Codeset 6 and 7 IEs.

Step Number	Description
1	The ISDN Terminal/Simulator receives an inbound international call. See Figure 8-8.
2	The Integrated Services Digital Network (ISDN) Terminal/Simulator sends Primary Rate Interface (PRI) signaling messages containing codeset 6 and 7 IEs to the AT&T *4ESS* switch ISC.
3	The *4ESS* switch ISC prepares outgoing CCITT7 ISUP messages and forwards them to the foreign Gateway Simulator.
4	The Access Transport Parameter of CCITT7 ISUP messages does not contain codeset 6 and 7 Information Elements.



Legend:

ACM - Access Complete Message
ANM - Answer Message
CCITT7 - International Consultative Committee on Telephone and Telegraph 7
CCS7 - Common Channel Signaling System 7
COT - Continuity
CPG - Call progress
IAM - Initial Address Message
ISC - International Switching Center
ISDN - Integrated Services Digital Network
ISUP - ISDN User Part
PRI - Primary Rate Interface
REL - Release
RLC - Release Complete

tpa 716824-01

Figure 8-8. Expected Message Sequence for Test Number 6.

7. Transition considerations

Ubiquity

7.01 It is not necessary for all *4ESS* switches in the network to be running the 4E22 Release 4 Generic for this feature to be fully operational.

Turn On/Turn Off Mechanism

7.02 This feature is turned on automatically by software deployment.

Risk Assessment and Management

7.03 Once the feature has been deployed in the AT&T network, there is the potential that customers, who may be using codeset 6 and 7 IEs for international calls, will not be able to use these IEs. It should be explained to these customers that AT&T is complying with existing ANSI and ITU-T standards, and that they should consider using the User-to-User Service to fulfill their needs.

8. Input/Output Manual Pages (Not Affected)

Service Circuit System (SCS) Software Update Tool Feature (5563)

9

Contents **Page**

1. Feature Description 9-1
SCS Update Procedure 9-2
Related Documents 9-3
2. Call Flow (Not Affected) 9-3
3. Provisioning 9-3
Activation 9-3
Verify Message 9-4
4. Recording (Not Affected) 9-4
5. Network Management (Not Affected) 9-4
6. Maintenance/Troubleshooting (Not Affected) 9-4
7. Transition Considerations 9-4
Ubiquity 9-4
Turn On/Turn Off Mechanism 9-4
8. Input/Output Manual Pages 9-5

Service Circuit System (SCS) Software Update Tool Feature (5563)

9

1. Feature Description

1.01 This feature provides a tool that automates the update process for the Service Circuit System (SCS). The tool, which is executed from a 3B Processor work center, reduces the risk of errors and requires significant intervention by maintenance personnel only when failures occur. The previous SCS update method required a complex manual procedure that could result in errors.

1.02 The tool contains all of the commands necessary to update one SCS. It is menu-driven and lists all steps at start-up. If steps 1 and 2 were completed in a prior execution, but step 3 resulted in an error, the tool will be re-executed and step 3 will be automatically chosen for execution after maintenance personnel resolve the cause of the failed condition.

1.03 The tool is similar to the 3B Processor Broadcast Warning Message/Software Update (BWM/SU), and includes a number of features such as automatic verification and dump analysis, back-outs, and perms (make permanent). If a timeout occurs during tool execution, the tool will stop and can be restarted where it left off. It also has a stop button which can be used to stop the tool during the automatic execution mode. Both maintenance channels must be active throughout the tool execution so that all messages, successes, and failures can be viewed.

SCS Update Procedure

1.04 The steps of the SCS software update procedure provided by this feature are as follows:

NOTE:
The current software must be loaded in the 3B Processor prior to performing this procedure. This requires loading a 3B BWM.

(1) Verification of the Destination Version Number to which the files will be copied.

(2) Copying the new files from the 3B Processor to the SCS Destination Version Number obtained in Step 1.

(3) Removing a Service Circuit Unit (SCU) and changing the version number, using RC Form 703.

(4) Restoring the SCU (pump sequence).

(5) Completing Steps 3 and 4 for all SCUs in the frame.

(6) Updating the Controllers by changing version numbers, using RC Form 801, and diagnosing and restoring each Controller (pump sequence).

NOTE:
The new SCS update process uses file locations 0 and 1 only, not locations 0, 1, 2 and 3, which are used in the older manual procedure.

1.05 Maintenance personnel have a choice of either manually intervening before proceeding to the next step, or automatically executing all steps to completion, intervening only if there are errors. The tool reports the status (no errors encountered, for example) with either method.

1.06 The tool will stop if an error is reported from the *4ESS*™ switch because of a tool input message, and report the error encountered, including an audible minor alarm. Maintenance personnel intervention is required to restart the tool after the last successful step.

1.07 Software update events are logged using standard *4ESS* switch procedures: 3B Processor successes, completions and errors go on the 3B Processor maintenance channel; 1B Processor successes, completions and errors go on the 1B Processor maintenance channel.

Related Documents

1.08 The following documents include information about this feature:

- 234-153-060, Growth/Degrowth, Task Oriented Procedure (TOP), Service Circuit System (SCS).
- 234-151-077, Maintenance, Task Oriented Procedure, Service Circuit System (SCS).

2. Call Flow (Not Affected)

3. Provisioning

3.01 This feature does not impact any RC or Office Data Assembler (ODA) forms.

Activation

3.02 The process of activating a file is as follows:

NOTE:
The SCS can be activated only while out-of-service (through protection-switching). Either the operational file or the diagnostic file can be executed, but not both.

(1) Update the Service Group using the menu-driven display page.

(2) Remove the Service Group.

(3) Copy the Service Group's operational file from the indicated location (for example, location 0) into the Service Group's random access memory. (This occurs automatically when the Service Group is restored to service.) For the SCS Controller, the File Data Transfer (FDT) file must be copied separately.

(4) ODA data pointing to either location 0 or 1 will change depending on the previous state. For example, if location 0 was standby, it would now be pointed to as active.

(5) Maintenance personnel can allow a soak time to pass before proceeding to ensure trouble-free operation.

Verify Message

3.03 The following 1B Processor Verify Message is used to output status/version data to the Receive Only Printer (ROP):

VER:VFUNC SCSDATA:FD1 SCSMEMN,DT! a

(a = SCS member number)

The verify data includes the following information:

- Signal Conversion Circuit (SCC) number
- Service Circuit Unit (SCU) equipage status
- SCS/SCU hardware version
- Current active location of all SCS/SCU files.

4. Recording (Not Affected)

5. Network Management (Not Affected)

6. Maintenance/Troubleshooting (Not Affected)

7. Transition Considerations

Ubiquity

7.01 It is not necessary for all *4ESS* switches in the network to be running the 4E22 Release 4 Generic for this feature to be fully operational.

Turn On/Turn Off Mechanism

7.02 This feature is turned on automatically with software deployment. Files are activated as described in Activation, above.

8. Input/Output Manual Pages

8.01 A new output manual page, REPT:SCS-SU, was created to support this feature.

MESSAGE ID	REPT:SCS-SU
WORK CENTER	MOC
GENERIC	4AP15 Rel. 4 and later
APPLICATION	4E,3B
TYPE	Output

1. **FORMAT**

[1] *REPT SCS-SU UPDATE COMMAND IS NOT INSTALLED CORRECTLY*

[2] *REPT SCS-SU MEM NUMBER REQUIRED*

[3] *REPT SCS-SU STEP NUMBER REQUIRED*

[2] *REPT SCS-SU MEMBER NUMBER MUST BE EVEN AND BETWEEN 0 AND 7*

[5] *REPT SCS-SU a FILE HAS BEEN CORRUPTED*

[6] *REPT SCS-SU UPDATE PROCESS ALREADY RUNNING*

[7] *REPT SCS-SU ERROR GETTING PORT*

[8] *REPT SCS-SU CANNOT OPEN CHANNEL TO 1B PROCESSOR*

[9] *REPT SCS-SU CANNOT CONNECT TO 1B PROCESSOR*

[10] *REPT SCS-SU ERROR - INCOMPATIBLE WITH 1B GENERIC*

[11] *REPT SCS-SU ERROR SENDING MESSAGE TO THE 1B*

[12] *REPT SCS-SU STEP FAILED BEFORE COMPLETING*

[13] *REPT SCS-SU ENCOUNTERED 1B A-LEVEL INTERRUPT*

[12] *REPT SCS-SU ENCOUNTERED 1B B-LEVEL INTERRUPT*

[15] *REPT SCS-SU ENCOUNTERED 1B C-LEVEL INTERRUPT*

[16] *REPT SCS-SU ENCOUNTERED 1B D-LEVEL INTERRUPT*

[17] *REPT SCS-SU ENCOUNTERED 1B E-LEVEL INTERRUPT*

[18] *REPT SCS-SU ENCOUNTERED 1B F-LEVEL INTERRUPT*

[19] *REPT SCS-SU LAST STEP COMPLETED b*

[20] *REPT SCS-SU BAD CREATE ON RESPONSE FILE FOR MESSAGE: c*

[21] *REPT SCS-SU CANNOT SEND MESSAGE: c*

[22] *REPT SCS-SU BAD 1B CONNECTION ON MESSAGE: c*

[23] *REPT SCS-SU 1B RESPONSE TIMEOUT ON MESSAGE: c*

[22] *REPT SCS-SU BAD 1B RESPONSE ON MESSAGE: c*

[25] *REPT SCS-SU ERROR - 1B NOT IN UPDATE MODE ON MSG: c*

[26] *REPT SCS-SU MEMBER NUMBER d CONTAINS OUT OF SERVICE EQUIP.*

[27] *REPT SCS-SU INVALID MEMBER NUMBER d ENTERED*

[28] *REPT SCS-SU ECHO 1B OUTPUT MESSAGE*

[29] *REPT SCS-SU RETRIED MESSAGE: BUT FAILED ON: c*

[30] *REPT SCS-SU ERROR OPENING e FILE*

[31] *REPT SCS-SU ERROR f READING e FILE*

[32] *REPT SCS-SU ERROR READING e FILE, INVALID STEP*

[33] *REPT SCS-SU ERROR CREATING e FILE*

[32] *REPT SCS-SU ERROR - PREVIOUS STEPS MUST BE EXECUTED FIRST*

[35] *REPT SCS-SU ERROR - STEP ALREADY STARTED, g IS NEXT STEP TO EXECUTE*

[36] *REPT SCS-SU ERROR - PREVIOUS STEP NOT COMPLETE, SEE USERS GUIDE*

[37] *REPT SCS-SU OPENED h AS NORMAL AND h AS UPDATE*

[38] *REPT SCS-SU: i ERROR IN j ERRNO: k*

[39] *REPT SCS-SU: ILLEGAL CSFS CONVERSION ATTEMPT*

[20] *REPT SCS-SU: CSFS ARGS: GEN = l Addr = m*

2. **REASON FOR OUTPUT**

Prints in response to a menu driven display page. (MCC Display Page #1200, SCS SOFTWARE UPDATE)

Formats 19 and 37 are normal operational output messages.

The remaining formats indicate that an error has occurred and an explanation of the error.

3. **VARIABLE FIELD DEFINITIONS**

a	The */etc/log/1bperfsu/Ustep.data* or */etc/log/1bperfsu/Cstep.data* file.
b	The number of the last step to be completed. A list of steps and a short description can be found in the *SCS Software Update User's Guide*.
c	The first 15 characters of the message to be sent to the 1B.
d	The member number of the Service Circuit System (*SCS*) frame to use the tool on.
e	The name of the file on which an error occurred either on opening, reading or creating.
f	Error number. In the source code, search for *ERROR g* (i.e. *ERROR 01*) to find the exact location of this error.
g	The number of the step that is to be executed next, but only if all previous steps have completed successfully.
h	The number of the 1A file.
i	The type of error which occurred.
j	The name of the file which caused the error.
k	The number of the error.
l	Number of the generic.
m	Address in octal.

4. **ACTION TO BE TAKEN**

For formats 2-4, 6, 12, 23, 27, 32, 34-36, and 38, fix the error and reenter the command.

For all other formats except 19, 28, 37, and 40, seek technical assistance.

5. **REFERENCES**

MCC Display Page
1200 (SCS SOFTWARE UPDATE)

234-100-211, BEGINNING OF PRACTICES *SCS Software Update User's Guide*

9-Gigabyte Disk Units for Service Circuit System (SCS) Feature (5568)

10

Contents **Page**

1. Feature Description 10-1
2. Call Flow (Not Affected) 10-2
3. Provisioning 10-2
4. Recording (Not Affected) 10-2
5. Network Management (Not Affected) 10-2
6. Maintenance/Troubleshooting (Not Affected) 10-3
7. Transition Considerations 10-3
Ubiquity 10-3
Turn On/Turn Off Mechanism 10-3
8. Input/Output Manual Pages 10-3

9-Gigabyte Disk Units for Service Circuit System (SCS) Feature (5568)

10

1. Feature Description

1.01 This feature provides a new 9 Gigabyte (GB) disk drive circuit pack (TN9000) for use in Service Circuit Systems (SCS). The new unit replaces the 4 GB disk drive circuit pack. The increased disk drive capacity, together with the SCS Announcement Seconds Expansion Feature 5794 (4E23 Release 4), provides an announcement storage capacity of 2 million announcement seconds, which is required to support the increasing demand for customized service announcements.

1.02 The new disk drive circuit pack contains one 9 GB drive unit that is mounted on the same size pack that was used for previous SCS disk drive units. If the new circuit packs are used in SCU 0, they must be installed in slot 0 of the shelf that contains the disk units.

NOTE:
As with the units they replace, the new disk drive circuit packs are installed in pairs. Although 2 disk pairs can be installed in an SCU in 4E22 Release 4, this feature supports the installation of only 1 pair.

The number of disk pairs useable by an SCU is determined by physical considerations (only SCU 0 is capable of supporting 2 disk pairs) and by storage capacity limitations. SCUs without announcement expansion were only capable of accessing approximately 6 GB of announcements; SCUs with announcement expansion can utilize 9 GB of announcement storage. Therefore, there is no need for more than 2 disk pairs.

1.03 The Recent Change process will no longer allow a user to equip pairs 2 and 3. If direct means (IN:OWBUF, for example) is used to equip these pairs, the data will be ignored.

NOTE:
The lack of disk pairs 2 and 3 will have no affect, since they are not currently used in any field sites.

1.04 This feature introduces a new unit type translator value to designate the 9 GB circuit pack. A value of 3 is used to indicate the presence of a 9 GB disk drive.

1.05 The new disks are sent to the field without announcements recorded, and are loaded by field personnel using the disk-to-disk copy capability provided by the Announcement Administration Processor (AAP) Disk Copy Enhancement feature (5835).

1.06 Refer to the *4ESS™ Switch Task Oriented Practice (TOP) Service Circuit System Growth/Degrowth*, 234-100-060AC and to the *4ESS™ Switch TOP Service Circuit System Maintenance*, 234-151-077AC, for additional information.

2. Call Flow (Not Affected)

3. Provisioning

3.01 As previously noted, this feature introduces the new unit type translator value of 3 to indicate the presence of a 9 GB disk drive.

3.02 When 9 GB disk drive circuit packs are equipped on a particular SCU, the circuit packs must be equipped as pair 0. No other pairs may be equipped on that SCU. This data is modified using Recent Change Form 703.

3.03 Refer to 234-100-060AC for additional information.

4. Recording (Not Affected)

5. Network Management (Not Affected)

6. Maintenance/Troubleshooting (Not Affected)

7. Transition Considerations

Ubiquity

7.01 It is not necessary for all *4ESS*™ switches in the network to be running the 4E22 Release 4 Generic for this feature to be fully operational.

Turn On/Turn Off Mechanism

7.02 There is no turn on or off mechanism for this feature. The 9 GB disk drive is made available for use by identifying 3 as a disk capacity for the applicable disk pair/SCU member. This is done as part of a larger growth procedure that includes installing the 9 GB disk packs. Refer to 234-100-060AC for detailed information on the growth procedure.

8. Input/Output Manual Pages

The following Input Manual Pages have been modified to support this feature:

- DGN:SCS
- COPY:SCS
- DUMP:DISK-SCS
- INIT:SCS
- LOAD:DISK-SCS.

MESSAGE ID	DGN:SCS
WORK CENTER	MOC
GENERIC	4E22 Rel. 4 and later
CLASS	PMTC MESSAGE
APPLICATION	4E
TYPE	Input

1. **PURPOSE**

   Diagnoses the specified Service Circuit System (SCS).

2. **FORMAT**

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

3. **EXPLANATION OF MESSAGE**

a	Member number of the **SCS**.
b	SCS bus circuitry to be diagnosed (0 or 1).
c	Controller to be diagnosed (0 or 1).
d	Service Circuit Unit (**SCU**) to be diagnosed (0-15).
e	The number of times the diagnostic is to be repeated. Default is one time. Maximum value is 255.
f	The channel to which the output messages are redirected. Default is output on the input channel. See the User Guidelines of the *Input Message Document* for a list of channel names.
RAW	Print the diagnostic results of every phase. Default only prints the first five failures of any failing phase. This also applies to the firmware diagnostics.
UCL	Unconditionally execute the diagnostic with no early termination. This also applies to the firmware diagnostics. **NOTE:** The **UCL** and **TLP** parameters should not be used together.
g	The Peripheral Unit Bus (**PUB**) to be used in executing the diagnostic (0 or 1). This input is valid only when **CONTR** is specified and the **SCS** is in growth or special growth.
h	The phase numbers to be executed (1,2,4-7,9,12-16 for CONTR); (1,3-17,90-93 for SCU); 99 for the Interface Peripheral Unit Bus (IPUB), which may be a single decimal number, a range

or a list.

GROWTH Diagnose the growth parts in addition to the operational parts.

TLP Execute the trouble location raw data compression programs at the conclusion of the diagnostic in order to print the summary data message and to schedule the trouble location data base search programs to generate the faulty equipment message.

4. **SYSTEM RESPONSE**

?R,DPLXFAIL Insufficient system Resources are available to determine the validity of the message. Diagnostics are not available from the disk system. (Clear the Duplex failure or use *SYSRTPAD/TPAD*.)

PF Printout Follows. Followed by the *DGN:SCS*- [unit] output message.

5. **REFERENCES**

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

234-180-020, *Diagnostic Language - DIAL*
234-180-260, *4ESS™ Peripheral Diagnostic Program - Description*

Output Message
DGN:SCS- [unit]

MESSAGE ID	COPY:SCS
WORK CENTER	MOC
GENERIC	4E22 Rel. 4 and later
CLASS	PUMTC MESSAGE
APPLICATION	4E
TYPE	Input

When an Announcement Administration Processor (AAP) is present and active in the office, it is capable of changing the SCU disk contents for the purpose of providing updates to stored announcements. To prevent possible corruption of announcements on the destination disk, it is necessary to suspend AAP updates during the copy. DLP-500 in the *Service Circuit Maintenance* **document (234-151-077) describes the procedures that must be followed when the** *COPY:SCS* **input message is to be used.**

1. **PURPOSE**

The purpose of this message is to perform any of the following:

(1) an inter- Service Circuit Unit (SCU) file copy:

Format [1] is used to copy a specific file from disk pair 0 on one SCU to a different file number on disk pair 0 in another SCU.
Format [2] is used to copy a specific file from disk pair 0 on one SCU to the same file number on disk pair 0 in another SCU.

(2) an intra-SCU file copy:

NOTE: For intra-SCU file copy, the file is only copied to the disk that is connected to the opposite of the specified bus number. (e.g., copy input message specifying BUS 0 copies specified file to disk connected to BUS 1.) Since the two disks of any disk pair should always be matched, the same input message but with the opposite bus number, should be used to copy the same file to the other disk of the disk pair.

Format [3] is used to copy a specific file on disk pair 0 to a different file number on the mirrored disk of disk pair 0.
Format [4] is used to copy a specific file on disk pair 0 to the same file number on the mirrored disk of disk pair 0.

(3) an intra-SCU raw disk copy:

NOTE: For intra-SCU raw disk copy, the bus parameter specifies the bus to which the disk to be copied from is connected.

Format [5] is used to copy an entire disk to the mirrored disk of another disk pair in the same SCU.

Format [6] is used to copy an entire disk to the mirrored disk of the same disk pair in the same SCU.

(4) an inter-SCU raw disk copy:

NOTE: For inter-SCU raw disk copy, the bus parameter specifies the bus to which the disk to be copied from is connected.

Format [7] is used to copy an entire disk from one SCU to another disk pair in another SCU.
Format [8] is used to copy an entire disk from one SCU to the same disk pair in another SCU.

(5) an Attached Processor System (APS) to SCU file copy:

Format [9] is used to copy a specific file from the APS to all in-service SCUs in one Service Circuit System (SCS).
Format [10] is used to copy a specific file from the APS to all in-service SCUs in all SCSs.
Format [11] is used to copy a specific file from the APS to all SCUs in one SCS, or to the SCUs in a growth SCS.
Format [12] is used to copy a specific file from the APS to all in-service and Out-Of-Service (OOS) SCUs in all SCSs.
Format [13] is used to copy a specific file from the APS to a single in-service SCU.
Format [14] is used to copy a specific file from the APS to a single out-of-service SCU.

2. **FORMAT**

[1] **COPY:SCS** *a*,**SCU** *b*,**SFN** *c*,**BUS** *d*,**DSCU** *e*,**DFN** *f*!

[2] **COPY:SCS** *a*,**SCU** *b*,**SFN** *c*,**BUS** *d*,**DSCU** *e*!

[3] **COPY:SCS** *a*,**SCU** *b*,**SFN** *c*,**BUS** *d*,**DFN** *f*!

[2] **COPY:SCS** *a*,**SCU** *b*,**SFN** *c*,**BUS** *d*!

[3] **COPY:SCS** *a*,**SCU** *b*,**SDP** *g*,**BUS** *d*,**DDP** *h*!

[6] **COPY:SCS** *a*,**SCU** *b*,**SDP** *g*,**BUS** *d*!

[7] **COPY:SCS** *a*,**SCU** *b*,**SDP** *g*,**BUS** *d*,**DSCU** *e*,**DDP** *h*!

[8] **COPY:SCS** *a*,**SCU** *b*,**SDP** *g*,**BUS** *d*,**DSCU** *e*!

[9] **COPY:SCS** *a*,{**TONES**/**SCCSFT**/**SCUOPR**/**SCUDGN**/**MSPROV**/**MSPFIX**/**MSP1**/**MIP0FIL**/**MIP1FIL**},**SVN** *i*,**DVN** *j*!

[10] **COPY:SCS** *a*,*{***TONES**/**SCCSFT**/**SCUOPR**/**SCUDGN**/**MSPROV**/**MSPFIX**/**MSP1**/**MIP0FIL**/**MIP1FIL***}*,**SVN** *i*,**DVN** *j*,**ALL!**

[11] **COPY:SCS** *a*,*{***TONES**/**SCCSFT**/**SCUOPR**/**SCUDGN**/**MSPROV**/**MSPFIX**/**MSP1**/**MIP0FIL**/**MIP1FIL***}*,**SVN** *i*,**DVN** *j*;**UCL!**

[12] **COPY:SCS** *a*,*{***TONES**/**SCCSFT**/**SCUOPR**/**SCUDGN**/**MSPROV**/**MSPFIX**/**MSP1**/**MIP0FIL**/**MIP1FIL***}*,**SVN** *i*,**DVN** *j*,**ALL;UCL!**

[13] **COPY:SCS** *a*,**SCU** *b*,*{***TONES**/**SCCSFT**/**SCUOPR**/**SCUDGN**/**MSPROV**/**MSPFIX**/**MSP1**/**MIP0FIL**/**MIP1FIL***}*,**SVN** *i*,**DVN** *j***!**

[12] **COPY:SCS** *a*,**SCU** *b*,*{***TONES**/**SCCSFT**/**SCUOPR**/**SCUDGN**/**MSPROV**/**MSPFIX**/**MSP1**/**MIP0FIL**/**MIP1FIL***}*,**SVN** *i*,**DVN** *j*;**UCL!**

3. **EXPLANATION OF MESSAGE**

a	**SCS** member number (*0-7*).
b	Source **SCU** member number (*0-13*) for Inter-SCU or Intra-SCU file copy or raw disk copy. It is the destination SCU number for an APS to SCU file copy when copying to a single SCU.
c	Source file number (*1-22*).
d	Source SCU disk bus number (*0-1*). This selects one disk of the pair.
e	Destination SCU member number (*0-15*).
f	Destination file number (*1-22*).
g	Source SCU disk pair number (*0-1*).
h	Destination SCU disk pair number (*0-1*).
i	Source file version number of the APS file (*0-3*).
j	Destination file version number on the SCU disk (*0-3*).
TONES	Class of files containing test tone data.
SCCSFT	Class of files containing software for the SCS controller.
SCUOPR	Class of files containing operational software for the SCU.
SCUDGN	Class of files containing diagnostic software for the SCU.
MSPROV	Class of files containing software for the rover Multifaceted Signal Processor (MSP).
MSPFIX	Class of files containing software for the fixed MSP.

MSP1	Class of files containing software for the AT&T Trigger Platform (ATP) - AT&T Network Call Redirection (ANCR) MSP.
MIP0FIL	Class of files containing software for Multifunctional Interface Processor (MIP) 0.
MIP1FIL	Class of files containing software for Multifunctional Interface Processor (MIP) 1.
ALL	Indicates that the specified file is to be copied to all SCSs. Cannot be used with the SCU option.
UCL	Forces files to be copied to OOS SCUs and to SCSs in the GROW state.

4. **SYSTEM RESPONSE**

?D	Data field contains an error. The copy request has been denied. A required keyword argument is missing.
?E	Syntax Error exists in the message but cannot be resolved to the proper field. The file copy request was rejected. The program was unable to parse the input message.
?I	Identification field contains an error. The copy request has been denied. A required keyword is missing, a keyword argument is out-of-range, extra keywords or keyword arguments were specified, or the destination SCU member number is same as the source SCU member number.
PF	Printout Follows. The copy request has been accepted. An output message will follow to indicate the status of the copy request.
RL	Retry Later. The copy request has been denied. There are too many tasks in progress.

5. **REFERENCES**

PIDENTs
SCSCFSCU
SCSFPUMP

234-151-077, *Service Circuit Maintenance*

MESSAGE ID	DUMP:DISK-SCS
WORK CENTER	MOC
GENERIC	4E22 Rel. 4 and later
CLASS	PUMTC MESSAGE
APPLICATION	4E
TYPE	Input

1. **PURPOSE**

   Dumps up to 64 words (16 bits per word) of hexadecimal data starting at the designated location of the specified Service Circuit Unit (SCU).

2. **FORMAT**

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

3. **EXPLANATION OF MESSAGE**

a	Service Circuit System (**SCS**) member number (*0-7*).
b	**SCU** member number (*0-13*).
c	SCU disk pair number (*0-1*). This specifies the SCU disk pair the data will be read from.
d	SCU disk bus number (*0-1*). This specifies from which disk of the disk pair the data will be read from. The default value is bus *0*.
e	SCU file descriptor number (*1-22*).
f1,f2	Starting address on the disk. The address is either 24 bits (for file dump) or 32 bits (for raw dump). The address is in hexadecimal which should be broken into two 16 bit words (*f1* is the high address and *f2* is the low address). **NOTE:** The low byte of the low address (i.e., the least two significant hexadecimal characters) plus the length minus one should be less than or equal to *0xFF*.
g	Number of 16 bit words to be read from the disk. The number of words is in decimal and its default value is 1 word (*1-62*).

4. **SYSTEM RESPONSE**

?D	Data field contains an error. The SCU disk dump request has been denied. An expected keyword argument is missing.
?I	Identification field contains an error. The SCU disk dump request has been denied for one of the following reasons: An expected keyword is missing. A keyword argument is out-of-range.

An invalid argument was used.
Too many keywords or arguments.

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

RL Retry Later. The SCU disk dump request has been denied. Too many tasks in progress.

5. **REFERENCES**
PIDENT
SCSFPUMP

MESSAGE ID	INIT:SCS
WORK CENTER	MOC
GENERIC	4E22 Rel. 4 and later
CLASS	PUMTC MESSAGE
APPLICATION	4E
TYPE	Input

Both TYP 0 and TYP 1 affect the contents of the disk. Both erase all announcements on the disk, TYP 0 also affects system files.

1. **PURPOSE**

   The service circuit system (SCS) disk format utility commands is used to:

   (1) Format the specified service circuit unit (SCU) disk.

   (2) Set some static flags on the disk to indicate whether the disk has been formatted.

   (3) Form the file descriptor table if the disk pair zero is being formatted and save that on the disk.

   (4) Initialize the data structure that are used for announcement tables.

   (5) Set the Final Handling announcement table in disk pair 0 to the default state.

   NOTE: Two disk packs are required to implement a disk pair. Where a disk pack (such as the TN4000) contains more than one disk drive, each drive forms part of a mirrored pair with a disk on the adjacent pack. When an INIT operation is specified by a trouble clearing procedure, growth procedure, or support organization, it may be appropriate to repeat the INIT operation for the second disk in the pair. If the need to perform the INIT operation for each pair is unclear, consult with your designated support organization.

2. **FORMAT**

   INIT:SCS *a*,**SCU** *b*,**DSK** *c*,**BUS** *d* [,**TYP** *e*]**!**

3. **EXPLANATION OF MESSAGE**

a	Is the **SCS** member number (*0-7*).
b	Is the **SCU** member number (*0-13*).
c	Is the **SCU** disk pair number that needs to be formatted (*0-1*).
d	Is the **SCU** disk bus number (*0-1*). This specifies which disk of the disk pair will be formatted.

e Indicates the type of disk formatting to be performed:

0— Indicates both a hardware and software format should be performed.

1— Indicates only a software format should be performed.

The hardware format affects the physical disk.

The software format initializes the data structures and the tables.

The default is a software format.

4. **SYSTEM RESPONSE**

?D Data field contains an error. The SCU disk format request has been denied because an expected keyword argument is missing.

?I Identification field contains an error. The SCU disk format request has been denied for one of the following reasons:

(1) An expected keyword is missing.

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

(3) There are too many keywords or keyword arguments.

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

RL Retry Later. The SCU disk format request has been denied because too many tasks are in-progress. Please retry later.

5. **REFERENCES**

PIDENT
SCSFPUMP

MESSAGE ID	LOAD:DISK-SCS
WORK CENTER	MOC
GENERIC	4E22 Rel. 4 and later
CLASS	PUMTC MESSAGE
APPLICATION	4E
TYPE	Input

1. **PURPOSE**

   Writes one word (16 bits) of hexadecimal data onto the designated location of the specified Service Circuit Unit (SCU) disk pair.

2. **FORMAT**

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

3. **EXPLANATION OF MESSAGE**

a	Service Circuit System (**SCS**) member number (*0-7*).
b	**SCU** member number (*0-13*).
c	SCU disk pair number (*0-1*). This specifies the SCU disk pair the data will be written to.
d	SCU file descriptor number (*1-22*).
e	SCU disk bus number (*0-1*). For a load disk raw request, the SCU bus number specifies on which disk of the disk pair the data will be written. For a load disk file request, the data will be written to both disks of the specified SCU disk pair.
f1,f2	Address on the disk. The address is either 24 bits (for file load) or 32 bits (for raw load). The address is in hexadecimal which should be broken into two 16 bit words (*f1* is the high address and *f2* is the low address).
g	Data in hexadecimal consisting of 16 bits.

4. **SYSTEM RESPONSE**

?D	Data field contains an error. The SCU disk load request has been denied. An expected keyword argument is missing.
?I	Identification field contains an error. The SCU disk load request has been denied for one of the following reasons: (1) An expected keyword is missing. (2) A keyword argument is out-of-range. (3) There are too many keywords or keyword arguments.

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

5. **REFERENCES**
PIDENT
SCSFPUMP

4E Local for Nodal Customers—Phase 2.1 8YY Screening Feature (5645)

11

Contents **Page**

1. Feature Description 11-1
2. Call Flow 11-1
3. Provisioning 11-3
Recent Change Form 809 11-3
4. Recording (Not Affected) 11-3
5. Network Management (Not Affected) 11-3
6. Maintenance/Troubleshooting (Not Affected) 11-4
7. Transition Considerations 11-4
Interactions and Deployment Dependencies 11-4
Ubiquity 11-4
Turn On/Turn Off Mechanism 11-4
8. Input/Output Manual Pages (Not Affected) 11-5

4E Local for Nodal Customers—Phase 2.1 8YY Screening Feature (5645)

11

1. Feature Description

1.01 4E Local for Nodal Customers allows AT&T direct connect customers to designate AT&T as their local service provider. This feature expands on that capability that allows these subscribers to dial toll free numbers. These call will first query the appropriate AT&T database and if the customer record is found, the call will be processed. If the customer record is not found, or if the Network Control Point (NCP) backhaul table has this toll free number loaded into it, indicating that this subscriber has a multicarrier number, then the *4ESS*™ switch will receive an error message and will backhaul the call using the existing backhaul capabilities to a Local Exchange Carrier (LEC).

1.02 The benefits of this feature are that it decreases the post dial delay for toll free calls that are to be carried by AT&T for local nodal subscribers and it eliminates access charges for AT&T toll free calls from local nodal subscribers.

2. Call Flow

1. Local Nodal customer dials a toll free number, and the Private Branch Exchange (PBX) routes the call to the AT&T *4ESS* switch.
2. The *4ESS* switch receives the 8YY call and based on the Local Automatic Number Identification (LANI) populated in the CBN_DIGS field on the Trunk Sub-Group (TSG) and LOCAL_NODAL Feature bit=ON and the new Local Nodal 8YY Screening Feature bit=ON, the *4ESS* switch will process the call by querying either the INWATS Database (IDB) or the Number 2 Direct Service Dialing

(2DSD) database.

3. The existing "Backhaul Screening Indicator" in the Transaction Capabilities Application Part (TCAP) Begin message will be set to "1". This signifies that the call is a possible candidate to be backhauled. This will be set for either a query to the IDB or 2DSD database.
4. If the call originates from a regular switched access arrangement, the "Backhaul Screening Indicator" in the TCAP Begin message will be set to "0".
5. If a match is found in the HICAP Originating Treatment Table on the 8YY number, then the NCP is not queried and the call proceeds as an AT&T 8YY call.
6. The query goes to the NCP.
7. The 2DSD/2NCP receives the Begin message.
8. The 2DSD/2NCP must check the Backhaul Screening Indicating Parameter in the Begin message.
   - If the Backhaul Screening Indicator is set, then the 2DSD/2NCP must access the Backhaul Table. Proceed to Step 9.
   - If the Backhaul Screening Indicator is not set, then the 2DSD/2NCP must begin normal call processing by accessing the Dialed Number Translation Table. Proceed to Step 10.
9. The 2DSD/2NCP accesses the Backhaul Table. Using the 10 digits of the Dialed Number passed in the Digits Parameter of the Begin message as the key, the 2DSD/2NCP looks for a match in the table.
   - If the Dialed Number matches an entry in the Backhaul Table, then the 2DSD/2NCP must respond to the *4ESS* switch with an End message with a "Return Error Component" and an Error Code of "8YY Number Not in Database, Error in Customer Record, Other Miscellaneous Problems (0xF6)". End of NCP flow.
   - If the Dialed Number does not match an entry in the Backhaul Table, then the 2DSD/2NCP must begin normal call processing by accessing the Dialed Number Translation Table. Proceed to Step 10.
10. The 2DSD/2NCP accesses the Dialed Number Translation Table. Using 10 digits of the Dialed Number passed in the Digits Parameter of the Begin message as the key, the 2DSD/2NCP looks for a match in the table.
    - If the Dialed Number matches an entry in the Dialed Number Translation Table, then the 2DSD/2NCP uses the Account ID associated with Dialed Number and accesses the Customer Account. Proceed to Step 11.
    - If the Dialed Number does not match an entry in the Dialed Number Translation Table, then the 2DSD/2NCP accesses the Vacant Code account and returns a "Missing Customer Record" response. Proceed to Step 12.

11. The Customer Account logic is executed as normal. End of NCP flow.
12. The Vacant Code account is executed as normal, with the exception that the DSDVACS measurement will not be incremented for queries with the Backhaul Screening Indicator set. End of NCP flow.
13. The *4ESS* switch receives the response from the IDB or 2NCP.
    - If the *4ESS* switch receives a TCAP END message "Missing Customer Record", then the *4ESS* switch will check the Inbound Services Emergency Translations (ISET) (also called the Alternate Number Translation (ANT) table).
    - If the *4ESS* switch receives a TCAP END message "8YY number Not in Database, Error in Customer Record, Other Miscellaneous Problems", then the *4ESS* switch will ignore any ISET (also called ANT) table.
14. If a match is found in the ANT/ISET table, then the call proceeds as an AT&T 8YY call.
15. If no match is found in the ANT/ISET table and if the "Backhaul Screening Indicator" was set to "1" in the Begin Message, then the *4ESS* switch will backhaul the call.
16. If no match is found in the ANT/ISET table and if the "Backhaul Screening Indicator" was set to "0" in the Begin Message, then the *4ESS* switch will final handle the call.
17. If the *4ESS* switch receives a normal response, then the *4ESS* switch will process that response (this is an AT&T carried call).

3. Provisioning

Recent Change Form 809

3.01 This feature is activated or deactivated by populating the FEATURE ITEM field on Recent Change (RC) Form 809 with PF48. ON populates office parameter ITEM OD4PF48 and indicates that the 4E Local For Nodal Customers - Phase 2.1 8YY Screening feature is active in this switch. The default is OFF.

4. Recording (Not Affected)

5. Network Management (Not Affected)

6. Maintenance/Troubleshooting (Not Affected)

7. Transition Considerations

Interactions and Deployment Dependencies

7.01 This feature depends on both the Carrier Screening Feature and the 4E For Nodal Customers, Phase 2.0 (Feature 5371).

Ubiquity

7.02 It is necessary for all *4ESS* switches in the network to be running the 4E22 Release 4 Generic for this feature to be fully operational.

Turn On/Turn Off Mechanism

7.03 This feature is turned on by RC Form 809. Please refer to "Provisioning" in this chapter.

7.04 This feature can also be turned ON or OFF by an absolute word change. However, it is highly recommended that RC Form 809 be used to turn on this feature where possible.

7.05 Item OD4PF48 in ODA structure OD4OFCCOPY2 is used to turn this feature ON or OFF. The following is the information needed to turn ODA bit OD4PF48 ON or OFF using absolute word change. The default in both cases is "OFF".

CAUTION:
The OD4OFCCOPY2 structure also contains the ON/OFF bits for many other features. Be certain that any changes you make only affect this feature.

- Structure: OD4OFCCOPY2
- Core address in 4E22 Generic: 7145445
- Size of OD4PF48: 1
- Displacement: 23
- On: 1
- Off: 0.

8. Input/Output Manual Pages (Not Affected)

Improved Codelist Verify Feature (5742)

12

Contents **Page**

1. Feature Description 12-1
2. Call Flow (Not Affected) 12-1
3. Provisioning (Not Affected) 12-1
Verify Forms Affected 12-1
A. Verify Input Form 13f 12-2
B. Verify Output Form 3am 12-2
4. Recording (Not Affected) 12-2
5. Network Management (Not Affected) 12-2
6. Maintenance/Troubleshooting (Not Affected) 12-2
7. Transition Considerations 12-2
Ubiquity 12-2
Turn On/Turn Off Mechanism 12-3
8. Input/Output Manual Pages 12-3

Improved Codelist Verify Feature (5742)

12

1. Feature Description

1.01 The Improved Codelist Verify feature enhances the code list verify command so it returns all codes pointing to a specified Routing Data Block (RDB), regardless of the call type.

1.02 Prior to this feature, when the *4ESS*™ switch received a verify codelist message, and the call data was Routing Data Block Index (RDBI), only the codes which had the call type as RDB were returned. Codes that did not have the call type as RDB were not returned. For example, for a particular code, the call type might be Go/No Go Screening (GNS), with a call type of RDBI. This means the call has to go through a screening table GNS besides being routed to the RDB. There are several such instances when the call type is not RDB, but the call data is RDBI. In those cases, a separate verify message had to be sent to get codes for which the call data was RDBI but the call type was not RDB.

2. Call Flow (Not Affected)

3. Provisioning (Not Affected)

Verify Forms Affected

3.01 Two verify forms are affected by this feature.

A. Verify Input Form 13f

3.02 A new input message, ALLRDB, is defined for the OPT keyword. When OPT ALLRDB is specified in the input message, the following keywords must be entered. All other keywords are invalid.

- STDP
- CALLTYP
- CALLDATA.

This message is entered as follows:

VER:CODELIST;STDP,OPT ALLRDB, CALLTYP RDB, CALLDATA x**!**

RDB is the only valid input to the CALLTYP keyword when OPT ALLRDB is specified. CALLDATA is an RDBI.

B. Verify Output Form 3am

3.03 This output form returns the requested information for the message specified in Verify Input Form 13f.

4. Recording (Not Affected)

5. Network Management (Not Affected)

6. Maintenance/Troubleshooting (Not Affected)

7. Transition Considerations

Ubiquity

7.01 It is not necessary for all *4ESS*™ switches in the network to be running the 4E22 Release 4 Generic for this feature to be fully operational.

Turn On/Turn Off Mechanism

7.02 This feature is automatically turned on by software deployment.

8. Input/Output Manual Pages

8.01 The following two messages were modified to support this feature:

- VER:CODELIST (input)
- VER:ALLRDB (output).

Those messages are included in this chapter.

MESSAGE ID	VER:CODELIST
WORK CENTER	MAC, MOC
GENERIC	4E22 Rel. 4 and later
CLASS	VER MESSAGE
APPLICATION	4E
TYPE	Input

1. **PURPOSE**

   Requests the verification of the list of codes or Positive Look Up (PLU) numbers that point to a particular call type. The input defines the Call Type (CALLTYP) as well as combinations of keywords to obtain if specific information is desired. Output information lists the digit combinations whose translations point to the specified **CALLTYP** index.

2. **FORMAT**

   VER:CODELIST [**;**{**STD**/**STDP**/**ALL**}] [**,OPT** *a*]**:** [**DOM** *b*,]**CALLTYP** *c* [**,CALLDATA** *d*] [**,SC** *e*] [**,CHI** *f*] [**,DESEP** *g*] [**,AD1** *h*] [**,AD2** *i*] [**,AD3** *j*] [**,DNST** *k*]**!**

3. **EXPLANATION OF MESSAGE**

   STD — Standard (**STD**), list all codes that point directly to the specified call type word. (**STD** is default value.)

   STDP — Standard Plus (**STDP**), list all codes that yield the treatment. This includes call types within Proportional Routing (PRT) blocks, Multiple Routing (MRT) blocks, Multiple Carrier Treatment (MCT) blocks, and Subsequent Digit Index (SDX) blocks.

   ALL — Alternative output, list all indexes to the treatment. This includes call types within Proportional Routing (PRT) blocks, Multiple Routing (MRT) blocks, Multiple Carrier (MCT) blocks, and Subsequent Digit Index (SDX) blocks.

   a — Used to specify optional code grouping data:

   ALLRDB—
   Used to search for all data using input Routing Data Block Index (RDBI). When *ALLRDB* is specified, the **STDP**, **CALLTYP** and **CALLDATA** keywords must be set. *RDB* is the only valid input for **CALLTYP** with this keyword and **CALLDATA** cannot be a range.

   PLU— Positive Look Up (*PLU*) numbers.

   PLU can be used with the **STD**, **STDP**, and **ALL** keywords in the following ways:

- *PLU* with **STD**— Request only PLU data. (No regular code group data.)
- *PLU* with **STDP**— Request PLU and regular code group data. Also search PRTs, MRTs, etc..
- *PLU* with **ALL**— Request only PLU data. Also search PRTs, MRTs, etc..

If *PLU* is input without **STD**, **STDP**, or **ALL** keyword, then the program defaults to the **STD** option.

b Domain to which the search should be restricted.

c Call type item (See *Translation Guide* for valid **CALLTYP**).

d Call Data (**CALLDATA**), which is directly related to the particular **CALLTYP** option. (See *Translation Guide* for valid **CALLDATA**). This field is required when the domain is *LSI* or *DAVT*.

e Service categories - (See *Translation Guide* for valid **SC**s).

f Call handling instruction (See *Translation Guide* for valid **CHI**).

g Destination Separation Class (**DESEP**) range (*1-255*).

h Additional Data Field 1 (**AD1**). This field is required when the input domain is *LSI*.

i Additional Data Field 2 (**AD2**). This field is required when the input domain is *LSI*.

j Additional Data Field 3 (**AD3**). (Valid entries are *A-H* in unique combinations, e.g. **AD3 ABH**.) (See *Translation Guide* for valid **AD3**.)

k Dialed Number Service Type (**DNST**).

4. **SYSTEM RESPONSE**

PF Printout Follows.

RL Retry Later.

5. **REFERENCES**

PIDENTs
IOCPPVR4
VRFYCNTL
VRFYINPT
VRFYIRTG
VRFYOUT
VRFYRTNG

Translation Guide, 4ESS™, TG-4, Division 8, Section 13f

Output Messages
VER:CODEGRP-ALL
VER:CODEGRP-D12

MESSAGE ID	VER:ALLRDB
WORK CENTER	MAC, MOC
GENERIC	4E22 Rel. 4 and later
APPLICATION	4E
TYPE	Output

1. **FORMAT**

[1] *VER:ALLRDB;OPT(DIG3): RDBI a, DOM b, NTD 3, AC* [c],

ABC ABC ABC ABC ABC ABC ABC ABC
d, d, d, d, d, d, d, d,
•
•
•

[2] *VER:ALLRDB;OPT(DIG6): RDBI a, DOM b, NTD e, AC* [c], ABC d,

DEF DEF DEF DEF DEF DEF DEF DEF
f, f, f, f, f, f, f, f,
•
•
•

[3] *VER:ALLRDB;OPT(DIG9): RDBI a, DOM b, NTD e, AC* [c], ABC d, DEF f,

GHI GHI GHI GHI GHI GHI GHI GHI
g, g, g, g, g, g, g, g,
•
•
•

[2] *VER:ALLRDB;OPT(DIG12): RDBI a, DOM b, NTD e, AC* [c], ABC d, DEF f, GHI g,

JKL JKL JKL JKL JKL JKL JKL JKL
h, h, h, h, h, h, h, h,
•
•
•

[5] *VER:ALLRDB;OPT(PLU): RDBI a,*
DOM b, ABC d, DEF f,

GHIJ GHIJ GHIJ GHIJ GHIJ GHIJ GHIJ GHIJ
MIN MAX MIN MAX MIN MAX MIN MAX
i, i, i, i, i, i, i, i,
•
•
•

[6] *VER:ALLRDB;OPT(CPA): RDBI a,*

ALA ALA ALA ALA ALA ALA ALA ALA
j, j, j, j, j, j, j, j,
•
•
•

[7] *VER:ALLRDB;OPT(ALAOSN): RDBI a,*

ALA OSN ALA OSN ALA OSN ALA OSN
j, k, j, k, j, k, j, k,
•
•
•

[8] *VER:ALLRDB;OPT(ADG): RDBI a,*

ADG l,

RECENT CHANGE SOURCE - VARIOUS RC:CODEGRP
RECENT CHANGE SOURCE - FORM # 521/522/523
RECENT CHANGE SOURCE - FORM # 524/525
RECENT CHANGE SOURCE - FORM # 652
RECENT CHANGE SOURCE - FORM # 656
RECENT CHANGE SOURCE - FORM # 500

2. **REASON FOR OUTPUT**

Verifies all data structures which reference the input Routing Data Block Index (*RDBI*).

3. **VARIABLE FIELD DEFINITIONS**

a Routing Data Block Index (*RDBI*) number (*1-8191*).

b Domain.

c Area Code (*AC*):

N— No

Y— Yes

d *ABC* digits (*000-999*).

e Number of Translatable Digits (*NTD*) (*2-12*).

f *DEF* digits (*0-999*).

g *GHI* digits (*0-999*).

h *JKL* digits (*0-999*).

i Minimum or maximum line number (*0000-9999*).

j Adjunct Logical Address (*ALA*) (*0-15*).

k Originating Switch Number (*OSN*) (*0-167*).

l Automatic Distribution Group (*ADG*) (*0-3*).

4. **ACTION TO BE TAKEN**

None.

5. **REFERENCES**

PIDENTs
IOCPPVR4
VRFYCNTL
VRFYRTNG
VRFYOUT

Input Message
VER:CODELIST

4ESS™ Switch Service Circuit System Announcement Seconds Expansion Feature (5794)

13

Contents **Page**

1. Feature Description 13-1
2. Call Flow (Not Affected) 13-2
3. Provisioning 13-2
Structures Affected 13-2
A. HT4UT, HT4UTEN, XL4USSCS, and XL4UTSVC0 through XL4UTSVC15 13-2
B. OD4RESRASR 13-2
C. OD4OFCCOPY2 13-2
Recent Change Forms 13-3
A. Form 200 13-3
B. Form 202 13-3
C. Form 703 13-3
Verify Forms Affected 13-4
A. Form 7k 13-4
B. Form 16ba 13-5
Translations Guide-4 Modifications 13-6
Growth and Retrofit 13-9

Lucent Technologies — Proprietary
Use pursuant to Company instructions

Contents **Page**

4. Recording (Not Affected) 13-9
5. Network Management (Not Affected) 13-9
6. Maintenance/Troubleshooting (Not Affected) 13-9
7. Transition Considerations 13-9
Announcement Sets 13-9
Limitations 13-10
Hardware or Software Dependencies 13-10
Ubiquity 13-10
Turn On/Turn Off Mechanism 13-11
A. Recent Change Form 809 13-11
B. Absolute Word Change 13-11
8. Input/Output Manual Pages (Not Affected) 13-11

4ESS™ Switch Service Circuit System Announcement Seconds Expansion Feature (5794)

13

1. Feature Description

1.01 The *4ESS*™ switch Service Circuit System (SCS) Service Circuit Units (SCUs) currently support 1.5 million seconds of announcement storage. This feature, SCS Announcement Seconds Expansion, will provide approximately 2 million seconds of announcements.

1.02 To increase the announcement seconds, the following changes are being made to the SCS/SCU:

- New SCU announcement data structures are being added
- Two SCU circuit packs are being replaced
- A "white wire" is being changed on the SCU backplane
- A 9 GB disk is being installed on the SCS.

1.03 This feature will be "backward compatible" with all existing SCUs and disk sizes. Although the new data structures are being loaded only on the SCUs with announcement expansion, they will work the following:

- All disk drives (422 MB, 2 GB, 4 GB, and 9 GB)
- The old or new SCU circuit packs.

2. Call Flow (Not Affected)

3. Provisioning

Structures Affected

A. HT4UT, HT4UTEN, XL4USSCS, and XL4UTSVC0 through XL4UTSVC15

3.01 A new type of service circuit is being defined [**4XLUSCUSETD(=5)**] for the XL4UTSCVi (where i = **0** to **15**) items. A new item, **XL4USCUiiHV** (where ii = **01** to **15**) is being defined for the SCU hardware.

B. OD4RESRASR

3.02 This 8 word, one level structure holds the reservations for Automatic Speech Recognition (ASR) SCS applications for the AT&T Trigger Platform (ATP) Network Services Complex (NSCX) replacement (Announcement Set S) and Announcement Set D. The initial value for all items is **0** and the valid Recent Change (RC) values are **1** through **30**. This translator is populated using RC Form 811.

C. OD4OFCCOPY2

3.03 Office parameter **OD4PF43** indicates if the office is using new interpretations for the Node Capabilities and REQ_CAP parameters for SCS capabilities. The ON/OFF flag is populated using RC Form 809. Valid entries are defined in Table 13-A.

Table 13-A. OD4OFCCOPY2 Entries

Item/State	Word	Displace-ment	Size	Description
OD4PF43	5	18	1	REQ_CAP parameter for SCS capabilities
4ODFB_OFF (=0)				Feature OFF (default)
4ODFB_ON (=1)				Feature ON

Recent Change Forms

A. Form 200

3.04 The layout of Recent Change (RC) Form 200 is not changing. However, this form must support the following new Trunk-Subgroup (TSG) names:

- SVC*SCNA****
- SVC*SCNC****
- SVC*SCND****
- SVC*SCNE****
- SVC*SCNF****
- SVC*SCNG****.

The following population rules also apply:

- When adding Announcement Set D SCS trunks to the SVC*SCNDi*** (where i is **0** through **7**) TSGs, the XL4UTSVC of the SCU must be equal to 4XLUSCUSETD.
- When adding Announcement Set S SCS trunks to a TSG with trunks already assigned, any existing trunk must be checked to make sure the ASRAPP of the existing trunk is the same as the ASRAPP of the trunks being added.
- When adding Announcement Set D SCS trunks to a TSG with no trunks assigned, the corresponding ASRAPP field in HT4SETDTSGN must be set to the ASRAPP from the SCS translations.
- When adding Announcement Set D SCS trunks to a TSG, the **F** character of the FBS for the CLLI* code must correspond to the ASR application number.

B. Form 202

3.05 This form must zero out the ASAP item for a TSG Number (TSGN) in HT4TBNCORE and HT4SETDTSGN translators when the last trunk of the TSG is removed.

C. Form 703

3.06 The layout of this form is not changing. However, the following additional population rules apply:

---

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- DKSC0-1 (Disk Capacity)—Valid entries are **Blank** or **0** to **3**
- DSKEQ0-1 (Disk Pair Equippage)—Valid entries are **Blank**, **P**, **S**, **G**, or **F**
- SCUHV (SCU Hardware Version)—Valid entries are **Blank** or **0** to **7**
- When SVCT is 5, a non-zero ASRAPP and NCDSU are valid.

Verify Forms Affected

A. Form 7k

3.07 This new form, illustrated in Figure 13-1, is used to output some of the SCU data for all SCUs in an SCS complex.

```
# FORM    CHANGE SCU ME AND SME DATA
  4E22 Release 4>


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

ORNU _____,

SVCT _,  SCUFV _,  LANADDR ____,  MON _,  ASRAPP _,  NCDSU _,
         SCUHV _,

MAS FH AIN _,  CDSU HV _,  CDSC UL _,  CDSC NUM __,

CDSC GRID __,  CDSC FLOOR __,  CDSC LINE NUM ___,  CDSC FRAME NUM __,
CDSC GLF _________,



 MSBEQ    MIPEQ    MSBFV    MIPFV    DSKEQ   DSKC
0 1 2 3    0 1    0 1 2 3    0 1      0 1    0 1
_,_,_,_,   _,_,   _,_,_,_,   _,_,     _,_,   _,_,


REMARKS _____________________________________________!

                EQUIVALENT ODA INPUT FORM - ESS 407P

                    ASSOCIATED VERIFY MESSAGES

                      INPUT-17aVER:UTYPE:SCS

                  OUTPUT-7a-VER:UTMN;OPT(ME)
                  OUTPUT-7b-VER:UTMN;OPT(SME)
```

Figure 13-1. Verify Form 7k Layout

Table 13-B describes the legal inputs.

Table 13-B. Verify Form 7k Entries

Field	Definition	Valid Entry
ASRAPP	Automatic Speech Recognition Application	**0** to **7**
SCS MEMN	Service Circuit System Member Number	**0** to **7**
SCSCN	Service Circuit System Controller Number	Pre-populated with **0** and **1**
SCSFV	Service Circuit System Controller Firmware Version	**0** to **7**
SCSHV	Service Circuit System Controller Hardware Version	**0** to **7**
SCUEQ	Service Circuit Unit Equippage	**U** (Unequipped) **G** (Grow) **S** (Special Grow) **O** (Operational)
SCUFV	Service Circuit Unit Firmware Version	**0** to **3**
SCUHV	Service Circuit Unit Hardware Version	**0** to **7**
SCUN	Service Circuit Unit Number	Pre-populated with **0** through **15**
SVCT	Service Type	**0** to **7**

B. Form 16ba

3.08 This form is used to request verification of miscellaneous data based on the input given.

Translations Guide-4 Modifications

3.09 Table 13-C describes the changes being made to the Translations Guide (TG)-4 Glossary.

Table 13-C. TG-4 Modifications

Division	Heading	Description
Glossary	DSK0-3	SCUHV Service Circuit Unit Hardware Version. This field is used to specify which version of the hardware the SCU is equipped with. Valid entries are blank or 0 to 7. The initial hardware version for the SCU is 0. A value of 1 specifies an SCU with the TN9001 pack. A value of 2 specifies an SCU with the TN9002 pack. A value of 3 specifies and SCU with the TN9001 and TN9002 packs.
	DSK0-3	SVCT Service Type. This field is used to specify the function for which the SCS subunit is being used; Valid entries are 0 to 7. An entry of zero designates and SCU with the MAS/final handling announcement set. An entry of one designates an SCU with NSCX announcement set S. An entry of three designates an SCU with AIN announcement set. An entry of four designates an SCU with announcement set B (music on hold). An entry of five designates an SCU with announcement set D. Entries 2, 6, & 7 are currently unused.

Table 13-C. TG-4 Modifications (Contd.)

Division	Heading	Description
Glossary (contd)	DSKEQ0-3	DSKCEQ0-3 (<4E22 Release 3) DSKCEQ0-1 (4E22 Release 4>) Disk Pair Equippage. For 4E22 Release 3 and earlier, there is a maximum of four disk pairs per Service Circuit Unit which are used to store the announcements. For 4E22 Release 3 and later, there is a maximum of two disk pairs per Service Circuit Unit which are used to store the announcements. Each disk is mirrored for reliability. This field specifies the equippage status for each of the disk pairs. Valid entries are blank, P (present/operational), S (special growth), G (growth), or F (future/unequipped). Disk pairs should be populated in order: 0, 1, 2, 3 (i.e., You should not populate 1 with "P,S,G,F" if 0 is not populated with "P,S,G,F", etc.).
	DSK0-3	DSKC0-3 (<4E22 Release 3) DSKC0-1 (4E22 Release 4>) Disk Capacity. This field is used to specify the capacity for each of the disk pairs. Valid entries are blank or 0 to 3. A value of 0 specifies a 5 Gigabyte capacity. A value of 1 specifies a 2 Gigabyte capacity. A value of 2 specifies a 4 Gigabyte capacity. A value of 3 specifies a 9 Gigabyte capacity. For 4E22 Release and earlier, up to 4 Disk Pairs could be specified. For 4E22 Release 4 and later, up to 2 Disk Pairs could be specified. All four Disk Pairs should not be specified with a capacity of 1. At least one pair should be specified with a 0 or left blank (unequipped).

Table 13-C. TG-4 Modifications (Contd.)

Division	Heading	Description
Glossary (contd)	DSK-03 (contd)	A disk capacity of "2" is only allowed in the 0 and 2 slot. If a "2" is specified in the "0" or "2" slot, then the DSKC(i+1) slot in translations will automatically be populated with a "2". Therefore, the following checks are applied when DSKC(0)=2 or DSKC(2)=2. 1. If DSKC(0) is set to 2, then DSKC(1) and DSKEQ(1) must be blank. If DSKC(2) is set to 2, then DSKC(3) and DSKEQ(3) must be blank. 2. If DSKC(0) is set to 2, then DSKEQ(0) must be non-blank. If DSKC(2) is set to 2, DSKEQ(2) must be non-blank. 3. If DSKC(0) is being changed from a "2" to another value, then both the DSKC(0) and DSKC(1) must be non-blank. If DSKC(2) is being changed from a "2" to another value, then both the DSKC(2) and DSKC(3) must be non-blank. 4. If translations was populated without a "partnering 2" (<4E18R3), then Recent Change Form 703 will fail until the user fixes the inconsistency.

Growth and Retrofit

3.10 Two new Office Data Assembler (ODA) bits are used to determine which SCU circuit packs are present (TN1977/TN1983 or TN9001/TN9002) and which diagnostics to run. RC Form 801 is used to set these bits. Valid entries are as follows:

- TN1977/TN1983 = **0**
- TN9001/TN1983 = **1**
- TN1977/TN9002 = **2**
- TN9001/TN9002 = **3**.

NOTE:
This bit only determines which diagnostics to run. It does not identify that an SCU has the expanded announcement capability.

4. Recording (Not Affected)

5. Network Management (Not Affected)

6. Maintenance/Troubleshooting (Not Affected)

7. Transition Considerations

Announcement Sets

7.01 With the new SCU data structures, SCU0 will no longer support more than two pairs of disks. The Centralized Announcement Update Control System (CAUCS) will add a bit that denotes that an SCS location 4 GB or 9 GB disks for the S and D announcement sets.

Limitations

7.02 The new 9 GB disk will consist of a single disk (0). Once transition is implemented, all updates to either the 4 GB or 9 GB disks must be to disk 0. If an announcement update is attempted to disk 1, it will fail at all locations that have been upgraded.

Hardware or Software Dependencies

7.03 To support the expanded announcement capacity, an SCU must have the following:

- Circuit packs TN9001 and TN9002
- An SCU white wire modification
- New SCU data structures
- Two TN9000 or larger disk drives.

Refer to the following documents for detailed growth/degrowth procedures:

- *4ESS*™ Switch Task Oriented Practice (TOP) 234-100-060AC, *Service Circuit System Growth/Degrowth*.
- *4ESS*™ Switch Task Oriented Practice (TOP) 234-151-077AC, *Service Circuit System Maintenance*.

Also refer to Feature 5835, *Announcement Administration Processor Disk Copy Enhancement* (4E22 Release 4 Generic), for additional information.

Ubiquity

7.04 It is not necessary for all *4ESS* switches in the network to be running the 4E22 Release 4 Generic for this feature to be fully operational.

Turn On/Turn Off Mechanism

A. Recent Change Form 809

7.05 This feature can be activated or deactivated (the default) by recent change. RC Form 809 is used as follows to turn this feature on:

- Enter **PF43** in the FEATURE ITEM field
- Enter **ON** in the ON OR OFF field.

B. Absolute Word Change

7.06 An absolute word change can also be used to turn this feature on or off. The ODA structure OD4OFCCOPY2, office parameter item **PF43**, determines if an office is using new interpretations for the Node Capabilities and REQ_CAP parameters.

CAUTION:
Be sure that any changes made only affect this feature, since the OD4OFCCOPY2 structure contains on/off bits for many other features.

7.07 The following information must be entered to turn ODA bit OD4PF43 on or off using an absolute word change:

- Structure: OD4OFCCOPY2
- Core address in 4E22 Generic: 7145445
- Size of OD4PF43: 1
- Displacement: 18
- On: 1
- Off: 0.

8. Input/Output Manual Pages (Not Affected)

Inbound Services 10-Digit Global Title Translation Table Expansion Feature (5805)

14

Contents **Page**

1. Feature Description 14-1
2. Call Flow (Not Affected) 14-1
3. Provisioning 14-2
AT&T 3B20D Computer Disk Partitioning 14-2
File Structure Expansion 14-2
Entry Criteria 14-3
Expansion Procedure 14-3
A. Startup 14-3
B. File Structure Expansion 14-5
C. General Data File Deployment Procedure 14-6
Backout Procedures 14-9
A. Part 1 14-10
B. Part 2 14-10
4. Recording (Not Affected) 14-12
5. Network Management (Not Affected) 14-12
6. Maintenance/Troubleshooting (Not Affected) 14-12
7. Transition Considerations 14-13
Ubiquity 14-13

Contents **Page**

Turn On/Turn Off Mechanism 14-13

8. Input/Output Manual Pages (Not Affected) 14-13

Inbound Services 10-Digit Global Title Translation Table Expansion Feature (5805)

14

1. Feature Description

1.01 The current Inbound 10-Digit Global Title Translation (GTT) table supports 500,000 record keys for Translation Type 253 (Inbound) numbers including a maximum of 7,000 unique Numbering Plan Area (NPA)-NXX combinations. The associated Point Code/Sub-System Number (PC/SSN) routing information table supports 1023 PC/SSN pairs.

1.02 With the expansion of toll-free NPAs (888 to 822), the 500,000 record list may soon become exhausted. This feature expands the Inbound 10-Digit GTT table [located in the Direct Link Node (DLN)] to support 1 million records.

2. Call Flow (Not Affected)

3. Provisioning

AT&T 3B20D Computer Disk Partitioning

3.01 Copies of the GTT files are divided into three equal sized partitions called ACTIVE, SHADOW, and SCRATCH. The ACTIVE partition contains the most current records. This is where all recent changes and data audits take place. The SHADOW partition contains a backup of the ACTIVE partition. The SCRATCH partition is used as a general purpose scratch area. Both the ACTIVE and the SHADOW partitions are divided into three segments, referred to as customer units. The three customer units are Inbound Global Title Translation (IBGTT), Outbound Global Title Translation (OBGTT), and Positive Call Processing Global Title Translation (PCPGTT). Activities on these customer units can take place concurrently and independently. This means that recent changes may be made concurrently to the IBGTT, OBGTT, and PCPGTT, or audits or recent changes may be inhibited for the IBGTT without impacting the OBGTT or the PCPGTT.

3.02 The same data is contained in each IBGTT database in every *4ESS*™ switch within the network. The off-line processor maintains this data to provide additional reliability in case of emergency. If a mishap occurs, the off-line processor can directly connect and download to all but four offices. Offices that can communicate directly to the off-line processor are referred to as "direct-connected" offices. When there is no direct communication between the office and the off-line processor, the office is called "non-connected."

File Structure Expansion

3.03 The file structure expansion is composed of the following procedures:

- Expansion Procedure
- File Verification
- General Expanded File Deployment Procedure.

3.04 Expansion of the IBGTT file structure occurs at each of the central offices where the current IBGTT data file is expanded to meet the new IBGTT requirements. This expanded file structure is then validated and tested to ensure the integrity of the file. Once the file is validated, it will be deployed. Backout procedures are used when a mishap occurs while performing the file structure expansion procedures.

3.05 This feature provides a shell tool for the file structure expansion. The shell tool is executed via the following command:

EXC:ENVIR:UPROC,FN "/bin/sh",ARGS("-c","/database/tools/retro.appdb")

This tool creates an expanded version of the IBGTT data file on the SCRATCH partition,

copies the data from the SHADOW partition to the SCRATCH partition, recomputes the Cyclic Redundancy Check (CRC) code values associated with the file, and compares these values with the stored CRC code values.

Entry Criteria

3.06 Application of the Feature BWM (contact Technical Support for the BWM number) is the entry criteria for the file structure expansion procedure. This software accesses, audits, and performs recent changes on the small IBGTT data file in the 4E22 Release 3 and the large (expanded) IBGTT data file in the 4E22 Release 4 Generic. A version number that is embedded in the data structure indicates the size of the files. The different file types (small IBGTT and large IBGTT) may be resident at different times on the same disk or DLN memory, yet both files can be used after the installation of the Feature 5805 BWM. A valid small IBGTT data file is also required.

Expansion Procedure

3.07 The procedures in Step A1 through Step A12 and Step B1 through Step B3 are performed to expand the IBGTT file structure. Notify Integrated Routing Assignment System (IRAS) Production Support and the appropriate Technology Control Centers (TCCs) to restrict Inbound 10-Digit GTT recent changes before beginning the startup portion of the expansion procedure.

A. Startup

3.08 To prepare for file expansion, ensure that all recent changes, audits, and automatic backup capabilities on the APPDB are inhibited. Also, make a backup copy of the ACTIVE file and validate the data on the backup copy (SHADOW partition) for use in case of a mishap. Perform the following steps for the "startup" procedure:

A1 Enter the following command to inhibit recent changes on the data file that is to be expanded:

INH:RCV:APPDB,APP ALL!
INH:DCC;APP ALL!

A2 Wait to receive a message that indicates recent changes are inhibited before proceeding. The message could be OK, INHIBIT ALREADY ACTIVE, or RCV INHIBIT ACTIVE.

A3 After ensuring that recent changes are inhibited, enter the following command to inhibit DLN audits on the APPDB data file:

INH:DLNAUD,APP ALL;AUD ALL!

A4 After ensuring that audits are inhibited, enter the following command to inhibit the automatic backup capability:

INH:ADB,APP IBGTT!

A5 Enter the following command to determine what data is stored in the APPDB ACTIVE partition:

VER:MEMORY!

Save output for use in Steps A12 and B3.

A6 Verify the validity of the ACTIVE file. (The file is valid if no errors or warnings are issued.) If the file is valid, proceed to Step A7. If the file is invalid, follow the standard procedure for restoring a valid copy to the ACTIVE partition. (That is, copy the SHADOW file to the ACTIVE partition.) After restoring a valid copy to the ACTIVE partition, follow the Backout Procedures, Part 1, and notify the IRAS Production Support to apply all recent changes performed after the date and time the SHADOW copy was made.

A7 Enter the following command to copy the APPDB data file from the ACTIVE disk partition to the SHADOW disk partition:

COPY:APPDB,APP ALL; FROM ACT,TO SHADOW!

A8 Mount the tape with a write-enable ring included on a 3B20D computer tape drive.

A9 Enter the following command to copy the SHADOW partition file to tape:

COPY:APPDB,FROM "SHADOW", TO "/dev/mt*x*8"!

(where *x* = 0 or 1)

NOTE:
When quote marks (" ") are used in commands, ensure that the commands are typed in the proper case. For example, "/dev/mtx8" must be lowercase, whereas "SHADOW", "SCRATCH", and "ACT" must be uppercase.

A10 Remove the tape and write-enable ring from the drive and label it with the information obtained from the **VER:MEMORY** command in Step A5 as well as the time and date the tape was created. Proceed to Step A11.

NOTE:
A copy of the original APPDB data file is retained for additional security, in the event a mishap occurs after the completion of file expansion.

A11 Enter the following command to determine what data is stored in the APPDB SHADOW partition:

VER:MEMORY,SHADOW!

Save the output for use in Steps A12 and C26.

A12 Compare the outputs received in Step A5 and Step A11. If they agree, proceed to Step B1. If they do not agree, repeat Step A5 through Step A11. If after a second time they still do not agree, seek technical assistance.

NOTE:
The IBGTT outbound database only exists on the active partition, so it does not need to be compared.

B. File Structure Expansion

3.09 The file structure expansion procedure has the following requirements:

- Create an empty skeleton data file.
- Expand the current file.
- Validate the newly expanded file.

3.10 Perform Step B1 through Step B3 for the file structure expansion procedure.

B1 Enter the following command to expand the ACTIVE APPDB file:

EXC:ENVIR:UPROC,FN "/bin/sh",ARGS("-c","/database/tools/retro.appdb")!

NOTE:
If unusual error messages are received during the expansion period, seek technical assistance. File expansion time is expected to take at least 2-1/2 hours but could take longer, depending on the amount of office activity.

B2 After being notified that the expansion procedure has been completed, enter the following command to determine what data is stored in the APPDB SCRATCH partition:

VER:MEMORY,SCRATCH!

Save the output for use in Step B3.

B3 Compare the outputs received in Step A5 and Step B2. If they agree, file structure expansion has been successfully completed. If they do not agree, repeat Step B1 and Step B2. If after a second time they still do not agree, seek technical assistance.

C. General Data File Deployment Procedure

3.11 The procedures for general data file deployment are contained in Step C1 through Step C30.

3.12 After verification, the expanded data file is classified as the master copy, placed on the ACTIVE partition, and downloaded to the standby DLNs. The standby DLNs with the new expanded data file are made ACTIVE. The integrity of the expanded file is then tested. If the test is successful, the deployment is considered complete, and the original APPDB file is permanently replaced with the expanded file. If the test is not successful, refer to the Backout Procedures, Part 2 to restore the system to a stable condition. Perform Step C1 through Step C30 for general data file deployment.

C1 Obtain the new password (SID) from the National Electronic Switching Assistance Center (NESAC) in order to copy into the ACTIVE partition.

C2 Enter the following command to inhibit recent changes on all customer units:

INH:RCV:APPDB,APP ALL!
INH:DCC,APP ALL!

C3 Wait to receive a message indicating that recent changes are inhibited before proceeding. The message could be OK, INHIBIT ALREADY ACTIVE, or RCV INHIBIT ACTIVE.

C4 After ensuring that recent changes are inhibited, enter the following command to inhibit DLN audits for all customer units:

INH:DLNAUD,APP ALL;AUD ALL!

C5 Enter the following command to copy the expanded data file on the SCRATCH partition to the ACTIVE partition:

COPY:APPDB,SID *i*,**APP ALL; FROM SCRATCH,TO ACT!**

(where *i* = password)

C6 Identify the standby DLNs, the active inbound DLN, and the active outbound DLN from the 1107 display page on the 3B20D computer terminal.

C7 Enter the following command to remove the first standby DLN from service:

RMV:LN*a b***!**

(where *a* = DLN group number and *b* = DLN member number)

C8 Enter the following command to restore the first standby DLN to service:

RST:LN*a b***!**

(where *a* = DLN group number and *b* = DLN member number)

NOTE:
This command forces a pump of the data from the ACTIVE partition.

C9 Enter the following command to remove the second standby DLN from service:

RMV:LN*c d***!**

(where *c* = DLN group number and *d* = DLN member number)

C10 Enter the following command to restore the second standby DLN to service:

RST:LN*c d***!**

(where *c* = DLN group number and *d* = DLN member number)

NOTE:
This command forces a pump of the data from the ACTIVE partition.

C11 Wait for the DLNs to be restored.

C12 Enter the following command to switch the outbound DLN and one of the standby DLNs:

SW:DLN,LN*a b***,LN***e f***!**

(where *a*, *e* = DLN group number and *b*, *f* = DLN member number)

C13 Enter the following command to switch the inbound DLN with the other standby DLN:

SW:DLN,LN*c d***,LN***g h***!**

(where *c*, *g* = DLN group number and *d*, *h* = DLN member number)

C14 Allow the DLN to soak to ensure that the load is stable. At the start of the soak period, notify the Network Operations Center (NOC) and the *4ESS* switch National Electronic Switching Assistance Center (NESAC) that the soak has just begun so that they can set appropriate traps. If unusual error messages are received during the soak period, contact the TCC for assistance. Obtain confirmation from the NOC and 4E NESAC that the soak period is successful. If the soak period is successful, proceed with Step C15. If the soak period is not successful, refer to the Backout Procedures, Part 2.

NOTE:
If a DLN that contains the newly expanded file is switched with a nonexpanded DLN during the soak period, follow the Backout Procedures, Part 2 and repeat Step C2 through Step C14.

C15 Enter the following command to inhibit recent changes on all customer units:

INH:RCV:APPDB,APP ALL!

C16 Wait to receive a message that indicates recent changes are inhibited before proceeding. The message could be OK, INHIBIT ALREADY ACTIVE, or RCV INHIBIT ACTIVE.

C17 After ensuring that recent changes are inhibited, enter the following command to inhibit DLN audits on all customer units:

INH:DLNAUD,APP ALL;AUD ALL!

C18 Identify the standby DLNs, the active inbound DLN, and the active outbound DLN from the 1107 display page on the 3B20D computer terminal.

C19 Enter the following command to remove the first standby DLN from service:

RMV:LN*e f* **!**

(where *e* = DLN group number and *f* = DLN member number)

C20 Enter the following command to restore the first standby DLN to service:

RST:LN*e f* **!**

(where *e* = DLN group number and *f* = DLN member number)

NOTE:
This command forces a pump of the data from the ACTIVE partition.

C21 Enter the following command to remove the second standby DLN from service:

RMV:LN*g h* **!**

(where *g* = DLN group number and *h* = DLN member number)

C22 Enter the following command to restore the second standby DLN to service:

RST:LN*g h* **!**

(where *g* = DLN group number and *h* = DLN member number)

NOTE:
This command forces a pump of the data from the ACTIVE partition. All DLNs now contain copies of the new expanded file.

C23 The first two or three offices that test the expanded APPDB file will remain in the second soak mode for a full day at peak load to ensure system stability. The Inbound 10-Digit GTT recent changes and audits will remain inhibited during that time. Obtain confirmation from the NOC and 4E NESAC that the load test period is successful. If the load test period is successful, proceed with Step

C24. If the load test period is not successful, refer to the Backout Procedures, Part 2.

C24 Enter the following command to copy the converted APPDB data file from the ACT disk partition to the SHADOW disk partition:

COPY:APPDB,APP ALL; FROM ACT,TO SHADOW!

C25 Enter the following command to determine what data is stored in the APPDB SHADOW partition:

VER:MEMORY,SHADOW!

NOTE:
A copy of the original APPDB data file is retained for additional security, in the event a mishap occurs after the completion of file expansion.

C26 Compare the outputs received in Step C25 and Step B2. If they agree, proceed to Step C27. If they do not agree, repeat Step C24 and Step C25. If after a second time they still do not agree, seek technical assistance.

C27 Enter the following command to reactivate recent changes on the APPDB file that had its recent changes inhibited:

ALW:RCV:APPDB,APP ALL!
ALW:DCC;APP ALL!

C28 Enter the following command to reactivate DLN audits on the APPDB file that had its audits inhibited:

ALW:DLNAUD,APP ALL;AUD ALL!

C29 Enter the following command to reactivate automatic backup:

ALW:ADB,APP IBGTT!

C30 Notify IRAS Production Support, pager #816-995-3529, to unrestrict Inbound 10-Digit GTT recent changes in this office.

Backout Procedures

3.13 The backout procedures are divided into two parts: Part 1 and Part 2. If at any time during the IBGTT file expansion deployment it is necessary to restore the system to a stable condition, perform the appropriate backout procedure. The backout procedures restore the office to a state that closely matches the state that existed before the start of the file expansion deployment.

A. Part 1

3.14 Part 1 of the backout procedures involves reactivating recent changes, DLN audits, and automatic backup capabilities on the APPDB file. Perform the following steps for backout:

D1 Enter the following command to reactivate recent changes on the APPDB file:

ALW:RCV:APPDB,APP ALL!
ALW:DCC;APP ALL!

D2 Enter the following command to reactivate DLN audits on the APPDB file:

ALW:DLNAUD,APP ALL;AUD ALL!

D3 Enter the following command to reactivate automatic backup:

ALW:ADB,APP IBGTT!

B. Part 2

3.15 Part 2 of the backout procedures involves inhibiting and reactivating recent changes, DLN audits, and automatic backup capabilities on the customer units. Part 2 also involves removing and restoring DLNs from and to service. Perform the following steps for backout:

E1 If the soak period was not successful, enter the following command to inhibit recent changes on all customer units:

INH:RCV:APPDB,APP ALL!

E2 Wait to receive a message that indicates recent changes are inhibited before proceeding. The message could be OK, INHIBIT ALREADY ACTIVE, or RCV INHIBIT ACTIVE.

E3 After ensuring that recent changes are inhibited, enter the following command to inhibit DLN audits for all customer units:

INH:DLNAUD,APP ALL;AUD ALL!
INH:DCC,APP ALL!

E4 Obtain the new password (SID) from NESAC in order to copy into the ACTIVE partition.

E5 Mount the backup tape made in Step A10 on MT 0. Enter the following command to copy the backup original APPDB data file on tape to the ACTIVE partition:

COPY:APPDB,SID *i*,APP ALL; FROM "/dev/mt08",TO ACT!

(where *i* = password)

E6 Identify the standby DLNs, the active inbound DLN, and the active outbound DLN from the 1107 display page on the 3B20D computer terminal.

E7 Enter the following command to remove the first standby DLN from service:

RMV:LN*e f* **!**

(where *e* = DLN group number and *f* = DLN member number)

E8 Enter the following command to restore the first standby DLN to service:

RST:LN*e f* **!**

(where *e* = DLN group number and *f* = DLN member number)

NOTE:
This command forces a pump of the data from the ACTIVE partition.

E9 Enter the following command to remove the second standby DLN from service:

RMV:LN*g h* **!**

(where *g* = DLN group number and *h* = DLN member number)

E10 Enter the following command to restore the second standby DLN to service:

RST:LN*g h* **!**

(where *g* = DLN group number and *h* = DLN member number)

NOTE:
This command forces a pump of the data from the ACTIVE partition.

E11 Enter the following command to switch the outbound DLN and one of the standby DLNs that contains the original APPDB data file:

SW:DLN,LN*a b* **,LN***e f* **!**

(where *a, e* = DLN group number and *b, f* = DLN member number)

E12 Enter the following command to switch the inbound DLN with the other standby DLN that contains the original APPDB data file:

SW:DLN,LN*c d* **,LN***g h* **!**

(where *c, g* = DLN group number and *d, h* = DLN member number)

E13 Enter the following command to remove the first standby DLN from service:

RMV:LN*a b* **!**

(where *a* = DLN group number and *b* = DLN member number)

E14 Enter the following command to restore the first standby DLN to service:

RST:LN*a b***!**

(where *a* = DLN group number and *b* = DLN member number)

NOTE:
This command forces a pump of the data from the ACTIVE partition.

E15 Enter the following command to remove the second standby DLN from service:

RMV:LN*c d***!**

(where *c* = DLN group number and *d* = DLN member number)

E16 Enter the following command to restore the second standby DLN to service:

RST:LN*c d***!**

(where *c* = DLN group number and *d* = DLN member number)

NOTE:
This command forces a pump of the data from the ACTIVE partition and leaves the system in its original state.

E17 Enter the following command to reactivate recent changes on all customer units:

ALW:RCV:APPDB,APP ALL!
ALW:DCC,APP ALL!

E18 Enter the following command to reactivate DLN audits on all customer units:

ALW:DLNAUD,APP ALL;AUD ALL!

E19 Enter the following command to reactivate automatic backup:

ALW:ADB,APP IBGTT!

4. Recording (Not Affected)

5. Network Management (Not Affected)

6. Maintenance/Troubleshooting (Not Affected)

7. Transition Considerations

Ubiquity

7.01 It is not necessary for all *4ESS* switches in the network to be running the 4E22 Release 4 Generic for this feature to be fully operational.

Turn On/Turn Off Mechanism

7.02 This feature is turned on automatically by software deployment.

8. Input/Output Manual Pages (Not Affected)

Announcement Administration Processor (AAP) Disk Copy Enhancement Feature (5835)

15

Contents **Page**

1. Feature Description 15-1
2. Call Flow (Not Affected) 15-2
3. Provisioning (Not Affected 15-2
4. Recording (Not Affected) 15-2
5. Network Management (Not Affected) 15-2
6. Maintenance/Troubleshooting 15-2
Status Reports, New Message and Audit 15-2
7. Transition Considerations 15-3
Ubiquity 15-3
Turn On/Turn Off Mechanism 15-3
8. Input/Output Manual Pages 15-3

Announcement Administration Processor (AAP) Disk Copy Enhancement Feature (5835)

15

1. Feature Description

1.01 This feature allows the Announcement Administration Processor (AAP) to copy all announcements from one Service Circuit System (SCS) to another. The copying is done without having to reload all of the announcements at the Central Site, which significantly reduces copying time. The command for initiating the copying procedure is SCUCOPY:COPY.

1.02 This feature is required for the installation of the new 9 Gigabyte (GB) disk drive units (Feature 5568) for the SCS. The 9 GB disk drive units replace 4 GB disk drive units, and it is necessary to copy all current announcements from the 4 GB units (disk 0 and disk 1) to the new, single 9 GB disk drive (disk 0). When the disk copy process is completed, disk 0 of the 9 GB disk drive will contain all of the announcements from disk 0 and disk 1 of the 4 GB disk drives.

NOTE:
The announcements copied from disk 1 of the 4 GB disk drive to disk 0 of the 9 GB disk drive will not interfere with the announcements copied from disk 0 of the 4 GB disk drive to disk 0 of the 9 GB disk drive.

1.03 To perform this copy function, a *4ESS*™ switch must have at least 2 Service Circuit Units (SCU) with the same announcement set at its location. One SCU must have the 4 GB disk drives and the second SCU must have the upgraded 9 GB disk drives. Feature 5794 (Announcement Seconds Expansion) must also be active.

1.04 The AAP performs the disk copy procedure by retrieving announcements from the 4 GB disk drives on the source SCU and copying them to the 9 GB disk drives on the target SCU.

NOTE:
The Centralized Announcement Update Control System (CAUCS) will not allow updates to disk 1 of the impacted announcement set prior to the start of the disk copy procedure at any *4ESS switch SCS location.*

The CAUCS will be able to do Delete, Verify, Replace, and Playback operations on or from disk 1. However, CAUCS will not allow Records and Broadcasts to disk 1 of Announcement Set S and/or D once an SCS location has been upgraded to the 9 GB disk drives and Feature 5794 is active.

1.05 The AAP disk copy process copies announcements only (no operational code). The disk copy process can also compare and update the target disks to look like the source disks. This mode corrects any differences between the source and target disks. The command that initiates the update mode is SCUCOPY:UPDATE.

2. Call Flow (Not Affected)

3. Provisioning (Not Affected

4. Recording (Not Affected)

5. Network Management (Not Affected)

6. Maintenance/Troubleshooting

Status Reports, New Message and Audit

6.01 The AAP reports the current status of the disk copy procedure every 15 minutes to the AAP maintenance channel. Progress reports show the percentage of copy completed.

6.02 A new maintenance message, SCUCOPY:ABORT, is used to manually abort the copy process. A new audit message, SCUCOPY:COMPARE, is used to compare the source disk with the target disk without noting the disk number.

NOTE:
An existing AAP audit compares announcements across all SCUs within an announcement set. However, this audit contains Disk 0 and Disk 1 data and cannot be used with the new 9 GB disk drives which use Disk 0 only.

6.03 If the copy process fails (not manually stopped or aborted), the AAP reports a major alarm to the Total Network Manager (TNM) via the existing TNM interface.

7. Transition Considerations

Ubiquity

7.01 It is not necessary for all *4ESS* switches in the network to be running the 4E22 Release 4 Generic for this feature to be fully operational.

Turn On/Turn Off Mechanism

7.02 This feature is turned on automatically with software deployment.

8. Input/Output Manual Pages

8.01 The following new manual pages were created to support this feature and are included in the *4ESS™ Switch Announcement Administration System Input/Output Manual*, 201-525-012AC:

- SCUCOPY:ABORT
- SCUCOPY:COMPARE
- SCUCOPY:COPY
- SCUCOPY:UPDATE.

1 + Carrier Identification Code Wholesale Features Feature (5840)

16

Contents

		Page
1.	**Feature Description**	16-1
	Background	16-1
	Description	16-1
2.	**Call Flow**	16-2
	Call Dialed To Domestic Termination	16-2
	Call Dialed To International Termination	16-6
3.	**Provisioning**	16-6
	OD4OFCCOPY2 Structure	16-6
	Recent Change Forms Affected	16-7
	A. RC Form 809	16-7
	B. RC Forms 300-304	16-7
	C. RC Form 633	16-7
	Verify Forms Affected	16-7
	A. Verify Form 6ai	16-7
	B. Verify Forms 8j and 16az	16-7
4.	**Recording**	16-7
5.	**Network Management**	16-8

Contents **Page**

6. Maintenance/Troubleshooting 16-8
New Final Handling Codes 16-8
7. Transition Considerations 16-9
Ubiquity 16-9
Turn On/Turn Off Mechanism 16-9
A. Turn On/Turn Off Using Absolute Word Change 16-9
8. Input/Output Manual Pages 16-10

1 + Carrier Identification Code Wholesale Features Feature (5840)

16

1. Feature Description

Background

1.01 Currently AT&T offers basic long distance transport services to resellers on the AT&T "1 + Carrier Identification Code (CIC) Wholesale Platform." This feature is an enhancement to the existing AT&T "1 + CIC Wholesale based platform." Features 5198 (CIC Based Determination) and 5351 (Carrier Solutions Dedicated Trunk Group Option) provide the requirements to support basic long distance transport services to resellers. Features 5754 (Network Access Interruption (NAI)) and 5791 (Long Term CIC Based NAI) are enhancements to the platform. These features make up the "1 + CIC Wholesale Platform."

Description

1.02 This feature provides the additional capability in the network to offer optional Account Code and Geographic Restriction with Authorization Codes to existing wholesale customers.

(1) Account Code - An existing AT&T feature that provides the capability to the wholesale customers to generate bills that have been segmented according to the end customers specifications. Wholesale customers are required to pre-subscribe to Account Code. Once subscribed, for each call placed by the end customer, the calling party submits an account code; bills rendered after are segmented according to the code entered.

(2) Geographic Restrictions with Authorization - An existing AT&T feature that enables the end user to have greater control of telecommunications expense. This feature enables an end customer to specify outgoing calls that are permissible or are not permissible from a specific Automatic Number Identification (ANI) or Calling Party Number (CPN). The end customer is given an option that will permit them to override the geographic restrictions. If the end customer is interested in the override option, the wholesale customer has to pre-subscribe to "Authorization Code" from AT&T. Once subscribed, the call is allowed to complete even though it violates the dialing instructions. The authorization codes are available in lengths of 2 to 12 digits. When combined with Account Codes, the total length of both codes may not exceed 15 digits. The following restrictions are available:

- Block all calls
- Domestic calling restricted by NPA
- Domestic dialing only.

2. Call Flow

There are 2 types of call flow considered, calls dialed to domestic termination and calls dialed to international termination.

Call Dialed To Domestic Termination

(1) The calling party is either pre-subscribed to an AT&T resell CIC or prefixes the dialed number with "1+0+CIC." The "1+0+CIC" dialed by the calling party causes the local exchange office to route the call over a switched access Dedicated Trunk Sub-group Option (DTO) Trunk Sub Group (TSG) or a switched access 10288 trunk group using CCS7 ISUP-NI signaling.

(2) The call arrives at the *4ESS*™ switch OAS via the switched access DTO TSG or a 10288 trunk group. EA MF or CCS7 ISUP-NI can be used on the DTO TSGs. Common Channel Signaling Version 7 (CCS7) ISDN User Part-Network Interconnect (ISUP-NI) signaling must be used on the 10288 trunk group.

(3) The Originating Access Switch (OAS) derives CIC in one of the following ways:

- For the resell calls that access AT&T Switched Network (ASN) via ISUP-NI signaling on a switched access trunk group the OAS must:
  - — Derive CIC from Transit Network Selection (TNS) signaling parameter.
  - — Derive CIC from Carrier Identification Parameter (CIP) signaling parameter.

— Derive CIC from Customer ID (CID) Trunk Sub Group (TSG) parameter.

— Continue as per existing call processing, if the CIC value could not be derived.

- For the resell calls that access ASN via Multi-Frequency (MF) on switched access trunk group the *4ESS* switch must:

  — Derive CIC from inband signaling.

  — Derive CIC from CID Trunk Sub Group (TSG) parameter, if accessed via DTO trunk and CIC was not inband signaled.

  — Continue with existing call processing, if the CIC value could not be derived.

(4) The OAS uses the CIC as derived in step 3 to query the CIC Code Table in the *4ESS* switch. If the result of the query is:

- "Resell and Non-Featured", then the switch identifies the call as Non-Featured resell call. End of call flow.
- "Resell and Featured", then the switch identifies the CIC as Resell Featured. Go to step 5.

(5) The OAS does the following steps:

- Sets the Signaling Service Type (SST),
- Sets the Class Of Service (COS),
- Does II/OLI value screening,
- Does not query Segmentation Directory (SD) from the 1B,
- Ignores SDResponse,
- Bypasses Adjunct Based Capability (ABC) ANI-TT,
- Bypasses Destination Number Trigger Table (DN-TT),
- Does not query USDS,
- Applies vacant code for data, toll-free, and 900 calls,
- Avoids *TrueVoice*™ enhancements, and
- Does not invoke Forced Intertoll Routing (FIR).

(6) For Directory Assistance (DA), the OAS routes the call with a unique routing number to AT&T's DA Platform that provides unbranded domestic DA service.

(7) The OAS creates a pseudo ANI of the form "165 (a unique 3-digit Switching Support Center (SSC) for Carrier Solutions) + 4-digit CIC + NPA and Numbering Plan Type of NANP". The NPA portion of pseudo ANI is used to specify the NPA

ranges of 000 through 999.

(8) The OAS uses a pseudo ANI in place of the ANI to query the SP-GTT in the *4ESS* switch.

- If a match is found, then the OAS retrieves the customer ID and Point Code/Subsystem Number matching the pseudo ANI.
- If no match is found, then the OAS sends a begin message to query the UGT with the pseudo ANI in place of the ANI.

(9) The UGT receives the begin message from the OAS and uses the pseudo ANI to search the database for a GTT record.

- If a match is found the following information is returned:
  - — Filler customer ID of the format 888-000-8888.
  - — Customer ID status value equal to 2.
  - — Primary point code/subsystem number.
  - — Secondary point code/subsystem number.
- If no match is found the UGT returns the following information based on the last valid query but sets the customer ID status value to 0:
  - — Filler customer ID of the format 888-000-8888.
  - — Customer ID status value equal to 0.
  - — Primary point code/subsystem number.
  - — Secondary point code/subsystem number.

(10) The OAS receives a response from the UGT, based on the response the following occurs:

- If a valid GTT record returns, then the OAS provisions the record in the SPGTT. Go to step 11.
- If an invalid GTT record returns, then the OAS conducts a CIC based NAI query, append module 941 and route the call as a non-featured resell call. End of call flow.
- If the UGT returns a corrupted message the OAS final handles the call as per existing requirements. End of call flow.

(11) The OAS queries the appropriate SDN 2DSD/2NCP with the original ANI, CIC, and existing parameters.

(12) The SDN 2DSD/2NCP receives the begin message from the OAS. The optional digits parameter is under the "Invoke Component, Provide Instructions - Start Operation". This parameter shows to the autonomous logic that the call is RESELL.

- If the CIC parameter is present, then the call is a resell call. The switch queries a new CIC/ANI translation table. Go to step 13.
- If the CIC parameter is not present, the call is for the existing call type. The switch continues with existing query processing. End of call flow.

(13) The SDN 2DSA/2NCP autonomous logic accesses the CIC/ANI translation table using the CIC and ANI contained in the begin message as keys.

- If there is a range in the table corresponding to the received CIC and ANI, the query is for a featured resell call. The SDN 2DSA/2NCP retrieves the customer ID and overwrites the filler customer ID contained in the begin message.
- If there is no range in the table corresponding to the received CIC and ANI, the query is for a non-featured resell call. The SDN 2DSA/2NCP sends a TCAP end message with a new optional "Reseller Indicator Parameter = Non-Featured" in the "Connection Control- Connect" operation to the OAS. Go to step 15.

(14) The SDN 2DSA/2NCP uses the customer ID from CIC/ANI translation table and accesses the customer account.

- If the customer account exists, then the CAL logic to handle account codes/or geographic restrictions with authorization codes is executed. Existing call processing steps between the CAL, SDN 2DSA/2NCP, and the *4ESS* switch are followed. Go to step 15.
- If the customer account is not present, then the SDN 2DSA/2NCP accesses the vacant code account regardless of the customer ID status. The SDN 2DSA/2NCP passes the CIC to the vacant code account.
  - — If the vacant code account is present, then the CAL logic in vacant code account checks to see if CIC is present. If the CIC is not present, then existing vacant code handling will apply. End of call flow. If the CIC is present, then the CAL logic instructs the SDN 2DSA/2NCP to disconnect the call and play an announcement specific to featured CIC calls. Then the SDN 2DSA/2NCP returns an end message to the OAS with the following: "Return Error" Component with Error Code equal to Missing Customer Record, Invoke with Caller Interaction Play Announcement, and Connection Control-Disconnect Operation. The announcement ID is specific for carrier solutions. Go to step 17.
  - — If the vacant code is not present, then the SDN 2DSA/2NCP autonomous logic will execute the vacant code routine. This routine instructs the SDN 2DSA/2NCP to send an end message to the OAS with the following: "Return Error" Component with Error Code equal to Missing Customer Record, Invoke with Caller Interaction Play Announcement with a Standardized Announcement ID and

Connection Control-Disconnect Operation. End of call flow.

(15) The *4ESS* switch and SDN 2DSA/2NCP continue to do call processing as per today for SDN featured calls. In addition the *4ESS* switch must append Module 941. End of call flow.

(16) When the *4ESS* switch receives a TCAP end message with an optional "Reseller Indicator Parameter equals Non-feature" in the operation of connection control-connect from the SDN 2DSA/2NCP, then the call is a non-featured resell call. The *4ESS* switch must do a CIC based NAI query, append Module 941, and route the call.

(17) When the *4ESS* switch receives a TCAP end message with the "Return Error with Error Code" equal to the missing customer record, invoke with caller interaction play announcement that is unique to the carrier solutions and final handle the call. End of call flow.

Call Dialed To International Termination

(1) The calling party is either pre-subscribed to an AT&T resell CIC or prefixes the dialed number with "1+0+CIC". The caller dials 011+CC+NN or 1+NPA+NXX-XXXX where the NPA or NPA-NXX could be for an IWZ1 destination (calls to Canada and nations in the Caribbean are international calls that fall within the NANP). Either the PIC of the calling party or the "1+0+CIC" dialed by the calling party cause the local exchange office to route the call over a switched access DTO TSG or a switched access 10288 trunk group using CCS7 ISUP-NI signaling.

(2) Steps 2 through 17 are the same as detailed above for Calls Dialed to Domestic Destination's except that the calls dialed to international termination get the SII value of "ILDS OUTBOUND RESELL".

3. Provisioning

OD4OFCCOPY2 Structure

3.01 Item OD4PF50 is assigned as the office parameter to show whether Feature Resell processing is active. On means the parameter is active for processing, the default is Off.

3.02 Items OD4PF30 and OD4PF49 must also be active for this feature to work. Turning one of these off will automatically turn feature 5840 off.

Recent Change Forms Affected

A. RC Form 809

3.03 The RC Form 809 is used to enable or disable this feature. This feature is activated or deactivated by populating the FEATURE ITEM field with PF50 and setting the ON or OFF field to either ON or OFF. To activate this feature, set the ON or OFF field to ON. To deactivate the feature, set the ON or OFF field to OFF. The default is OFF.

3.04 Items OD4PF30 and OD4PF49 must also be active for this feature to work. Turning one of these off will automatically turn feature 5840 off.

B. RC Forms 300-304

3.05 The DSD calltype calldata entry DSD12 must not be allowed to be provisioned for the DSD call type.

C. RC Form 633

3.06 The RC Form 633 is used to provision *4ESS* switches network wide with resell CICs. The transit network selection type TNSTYP field on this form has a new assigned form input entry for this feature. The new entry is FRSL. For domestic featured resell calls, the TNSTYP field must be populated with FRSL for TNSI = 0.

Verify Forms Affected

A. Verify Form 6ai

3.07 If items XL4CCTTNSO through XL4CCTTNS15 in the HT4CCTTNS structure contains the value 4XLCCTFRSELL, output FRSL for the TNSTYP field.

B. Verify Forms 8j and 16az

3.08 Verify Forms 8j and 16az indicate when this feature has been enabled. Item PF50 identifies carrier solutions CIC based determination. The ON OR OFF field indicates the status of this feature.

4. Recording

4.01 The recording *4ESS* switch appends Module 941 for switched access RESELL calls and records the CIC code of the RESELL call if it is available. It then sets the IC/INC indicator to RESELLER so that downstream recording and billing systems can identify the call and apply appropriate billing and discount rates. The existing SDN

structure code triggers are sent by the *4ESS* switch to trigger CDRP to generate the existing SDN structure codes, 1063, 1065, 1067, 1069, 1430, 1431, 1432 and 1433. Module 941 is appended to these structure codes.

5. Network Management

5.01 The *4ESS* switch sends the following 5 minute counts to Network Management Operations System (NEMOS).

(1) "Resell_Feature_CIC_Cnt" (Maximum value is 1024), whenever the switch determines that the incoming resell call belongs to a "Feature CIC."

(2) "Resell_UGT_Query_Cnt" (Maximum value is 1024), whenever the switch sends a Begin Message to query the UGT for the resell calls with "Feature CIC."

(3) "Resell_NCP_Query_Cnt" (Maximum value is 1024), whenever the switch sends a Begin Message to query the 2DSA/2NCP for the resell calls with "Feature CIC."

(4) "Resell_UGT_Err_Cnt" (Maximum value is 1024), whenever the UGT returns "No record found" (Customer Status ID = 0) to indicate a missing pseudo ANI for the customer.

(5) "Resell_NCP_Err_Cnt" (Maximum value is 128), whenever the 2DSA/2NCP returns an "Error Code = Missing Customer Record" in the TCAP End Message to indicate that there is a missing Resell Featured customer account.

5.02 The *4ESS* switch sets the following 30 second discretes.

(1) "Resell_UGT_Err_Dsc", when the UGT returns "No record found" (Customer Status ID = 0) to indicate a missing pseudo ANI for the customer.

(2) "Resell_NCP_Missing_Record_Err_Dsc", when the NCP returns "Return Error = Missing Customer Record" component for resell calls with a "Feature CIC."

6. Maintenance/Troubleshooting

New Final Handling Codes

6.01 There is 1 new Final Handling Code (FHC) associated with this feature. The handling of failures is covered in Lucent 234-010-315, *Domestic Call-Irregularity Maintenance Reference Handbook*, *4ESS*™ Switch.

Table 16-A. New Finaling Handling Code Failures

FHC	Failure and Handling Method
1165	**Last Normal Condition–**Switch received a response from the UGT database. **Irregular Condition–**No customer record found in UGT database. **Handling–**Print the call irregularity report and attempt to route the call.

7. Transition Considerations

Ubiquity

7.01 It is not necessary for all *4ESS* switches in the network to be running the 4E22 Release 4 Generic for this feature to be fully operational.

Turn On/Turn Off Mechanism

7.02 The RC Form 809 is used to enable or disable this feature. This feature is activated or deactivated by populating the FEATURE ITEM field with PF50 and setting the ON or OFF field to either ON or OFF. To activate this feature, set the ON or OFF field to ON. To deactivate the feature, set the ON or OFF field to OFF. The default is OFF.

7.03 Items OD4PF30 and OD4PF49 must also be active for this feature to work. Turning one of these off will automatically turn feature 5840 off.

A. Turn On/Turn Off Using Absolute Word Change

7.04 This feature can also be turned on or off by an absolute word change. Item OD4PF50 in ODA structure OD4OFCCOPY2 is the office parameter that controls the state of the feature.

CAUTION:
The OD4OFCCOPY2 structure also contains the on/off bits for many other features. Be certain that any changes you make affect this feature only.

7.05 The following is the information needed to turn ODA bit OD4PF50 on or off using the absolute word change:

- Structure: OD4OFCCOPY2
- Core address in 4E22 Generic: 7145446
- Size of OD4PF50: 1
- Displacement: 1
- On: 1
- Off: 0.

8. Input/Output Manual Pages

8.01 The TEST:TCAPDSD message has added an optional parameter. The TEST:TCAPDSD input and output messages are included in Chapter 1 of this document.

Announcement Set D on the Integrated Services Announcement and Information Collection Feature (5844)

17

Contents **Page**

1. Feature Description 17-1
2. Call Flow 17-1
Call Flow Key Points 17-1
Call Processing 17-2
3. Provisioning 17-2
4. Recording 17-3
5. Network Management 17-3
Operations Support Systems 17-3
A. 2 Network Control Point Administrative System 17-3
B. Call Attempt Data Collection System 17-3
C. Dynamic Engineering Mechanized System/Data Acquisition Reports and Integrated Communications System 17-3
D. Direct Services Dialing Assignment System 17-3
E. Network Engineering and Analysis Tool 17-4
F. Network Management Operations System 17-4
Administration Centers 17-4
A. Engineering Network Administration Center 17-4
B. CCS Network Administration Center 17-5
C. Operations Network Administration Center 17-5

Contents **Page**

Work Centers 17-5

A. Announcement Production Center 17-5

B. Advanced Feature Service Center 17-5

6. Maintenance/Troubleshooting 17-5

National Electronic Systems Assistance Center 17-5

Final Handling Code 1592 17-6

Measurements 17-6

7. Transition Considerations 17-6

Interaction with Other Features 17-6

Ubiquity 17-7

Turn On/Turn Off Mechanism 17-7

8. Input/Output Manual Pages (Not Affected) 17-7

Announcement Set D on the Integrated Services Announcement and Information Collection Feature (5844)

17

1. Feature Description

1.01 This feature defines a new announcement set, Set D, on the Integrated Services Announcement and Information Collection (ISAIC) platform. The capabilities of Set D are identical to the announcement and digit collection capabilities of Set S. This feature increases the amount of announcement seconds capacity available on the Service Circuit System (SCS) from one to two sets.

1.02 The network architecture is the same as for Set S, except the different Service Circuit Units (SCUs) on the SCS are designated as Set D SCUs. These SCUs are also configured with Custom Data Service Units (CDSUs) to provide speech recognition resources.

2. Call Flow

Call Flow Key Points

2.01 Call flows for the 2 Direct Services Dialing (2DSD)/2 Network Control Point (2NCP) are the same, except that announcement requests for Set D customers will request Set D instead of Set S. Only advanced 800 call flows will be applicable on Set D. Transaction Capabilities Application Part (TCAP) signaling is being modified to identify Set D Dual Tone Multifrequency (DTMF)-only and Automatic Speech Recognition (ASR)/DTMF resources.

Call Processing

2.02 When the *4ESS*™ switch receives a request for Set D announcements in the Customized Announcement Capabilities (CAC) parameter, the *4ESS* switch uses Set D. If a Set D call is not connected to the SCS, the *4ESS* switch hunts for Set D.

2.03 The 2DSD/2NCP accepts up to four announcement set IDs in the CAC paramenter and maintains the information about the switch capabilities for later use in call processing.

2.04 The following Primary Network Interfaces (PNIs) must be able to allow the announcements to be played from Set D on the ISAIC SCS platform:

- The CustomAnnounce()
- CustomCollect()
- DigitAnnounce()
- QueueCall().

2.05 A race condition occurs when the *4ESS* switch thinks there are enough available channels to the announcement and digit collection unit, but by the time it receives instructions from the 2DSD/2NCP to play announcements and/or collect digits, all the channels are unavailable.

2.06 If the number of available Set D DTMF-only ports is greater than the number of SCS race condition channels, then the *4ESS* switch includes Announcement Set D in the list of announcement sets in the CAC paramenter it sends to the 2NCP.

- If Bit C is set to 1 in the **data1** field of the Required Capabilities parameter, Set D ASR/DTMF capabilities are needed for a service assist or hand off.
- If Bit D is set to 1 in the **data2** field of the Required Capabilities parameter, Set D DTMF-only capabilities are needed for a service assist or hand off.

3. Provisioning

3.01 The Network Service Provisioning (NSP) group assigns the Trunk Appearance Numbers (TANs) to TSGs associated with the new Set D service circuits.

3.02 The provisioning requirements are defined in Feature 5794 included in this release (4E22 Release 4 Generic).

4. Recording

4.01 Announcement Set D is only recorded on the billing records generated by the Per Announcement Information Data (PAID) feature for enhanced announcements. Otherwise, the usage of Set D is recorded identically to Set S.

5. Network Management

Operations Support Systems

A. 2 Network Control Point Administrative System

5.01 The 2 Network Control Point Administrative System (2NCPAS) provides call summary data received from the 2DSD/2NCP to the Network Engineering and Analysis Tool (NEAT). The 2NCPAS accepts the changes to the Call Summary report, including a new value in the Required Capabilities field in the call summary data to identify Set D use on the call.

B. Call Attempt Data Collection System

5.02 The Call Attempt Data Collection System (CADCS) collects call attempt data and calls in queue data from the 2DSD/2NCP.

C. Dynamic Engineering Mechanized System/Data Acquisition Reports and Integrated Communications System

5.03 The DEMS provides the capability to monitor the use of various switching equipment for memory use, terminations, and real-time availability. The DARICS collects measurements for the *4ESS* switch and creates reports. DARICS also identifies the TSGs associated with Announcement Set D and identifies and processes data related to the new SCU service circuit types.

D. Direct Services Dialing Assignment System

5.04 The Direct Services Dialing Assignment System (DSDAS) provides the ability to provision (using recent change) the default announcement set to be used when assigning announcement ID numbers to new customers. For new customers without existing announcements who request speech announcements, DSDAS assigns announcements (control set) for that customer in the provisioned default announcement set. For existing customers who request speech announcements, DSDAS assigns announcements (control set) for that customer.

5.05 DSDAS processes the Success List from the Global Support System (GSS). For each account, the announcements are modified to show they are working on Set D. If any offset is involved, DSDAS applies the offset rules.

E. Network Engineering and Analysis Tool

5.06 NEAT recognizes Set D as a customized announcement on the ISAIC/SCS platform. It generates a set of on-line reports on Set D use that are used by the Engineering Network Administration Center (ENAC) in balancing the traffic load. These reports record the daily use by hour, daily busy hour use of originating and terminating switches, daily use by service, and monthly use by service. NEAT recognizes the new values for Set D DTMF-only and ASR/DTMS SCUs in the Required Capabilities parameter on a service assist/hand off. The new value for Set D appears on the Call Summary Report, fields Set 1 through 4.

F. Network Management Operations System

5.07 The NEMOS collects and displays the following 5-minute TSG data to the Network Operations Center (NOC):

- Set D DTMF-only TSG (**SVC*SCND0****)
- Set D ASR/DTMF TSG (**SVC*SCND1****).

The Set D service circuit TSG status totals are collected from the *4ESS* switch.

Administration Centers

A. Engineering Network Administration Center

5.08 The ENAC is responsible for the use of the ISAIC SCUs and assignment of Set D announcement numbers. It monitors the use of SCS SCUs related to Set D, using trunk data from DEMS/DARICS and Call Summary data from 2NCPAS/NEAT. ENAC balances traffic across Set D SCUs in order to maintain call completion. Other responsibilities include the following:

- Requesting trunk orders for installation of new Set D SCUs.
- Receiving announcement assignment information for Set D from the Announcement Provisioning Group (APG) and loading the information into DSAS.
- Providing new Action Point Number (APN) routing numbers for Set D with DTMF-only, Set D with ASR/DTMF, and Set S with ASR/DTMF service assists.

NOTE:
The Service Assist/Hand Off table is administered by ENAC so that if a hand off is required because of a lack of queue slots, the switch to which the request is handed off must have both Set S and Set D capabilities. This avoids multiple hand offs due to a lack of queue slots and a lack of capability to play the terminating announcements.

- Ensuring that if announcement Set B (for queuing) is resident, announcement Sets D and S are resident as well.

B. CCS Network Administration Center

5.09 The CCS Network Administration Center (CNAC) is responsible for provisioning the announcement Set D and special service trunks between the *4ESS* switch and the ISAIC SCS.

C. Operations Network Administration Center

5.10 The Operations Network Administration Center (ONAC) provides out-of-hours support to update the 2NCP routing tables. The center is also responsible for alerting the Advanced Features Service Center (AFSC) in case of application alarms.

Work Centers

A. Announcement Production Center

5.11 The APG (a group within the AFSC) is responsible for recording and maintaining announcements in the AT&T Switched Network.

B. Advanced Feature Service Center

5.12 The AFSC is the primary provisioning center for customer data provisioning.

6. Maintenance/Troubleshooting

National Electronic Systems Assistance Center

6.01 The National Electronic Systems Assistance Center (NESAC) supports the maintenance, performance and quality process. NESAC is the Tier 3 support for the Network Control Center (NCC) and the NOC. NESAC also acts as the NCC escalation center to handle *4ESS* switch and ISAIC hardware/software problems.

Final Handling Code 1592

6.02 An NCP-provided announcement ID not defined in the SCS frame for a particular announcement set results in a Direct Signaling Failure (DSF). The call is final handled (reorder) and an end return error is sent to the NCP.

Measurements

6.03 The *4ESS* switch provides the Service Circuit status data totals for Set D DTMF-only and ASR/DTMF channels as demand data for the Network Management Operations System (NEMOS). These totals include the maintenance busy threshold, maintenance busy count, and equipment active count.

6.04 The *4ESS* switch maintains hourly counts for each office for the number of times the switch receives a 2NCP request to play an announcement for Set D and the Set D ports are not available. This count is stored in the Traffic Data Administrative System (TDAS) file for access by the Dynamic Engineering Mechanized System (DEMS)/ Data Acquisition Report and Integrated Control System (DARICS).

6.05 Measurements are also collected for the new Set D Trunk Sub-Groups (TSGs) for SCS Service Circuits. The measurement counts include Seizure, Service Usage, Overflow, and Maintenance Usage. These measurements are reported in the existing MSC 55, OMS 2 Traffic and Plant Measurement Reports.

7. Transition Considerations

Interaction with Other Features

7.01 This feature depends on the deployment of the following:

- Feature 5568—*9-Gigabyte Disk Units for Service Circuit System*
- Feature 5794—*4ESS™ Switch Service Circuit System Announcement Seconds Expansion*
- Feature 5835—*Announcement Administration Processor Disk Copy Enhancement*.

All of these features are included in this release (4E 22 Release 4 Generic).

Ubiquity

7.02 All *4ESS* switches in the network must be running the 4E22 Release 4 Generic for this feature to be fully operational.

Turn On/Turn Off Mechanism

7.03 This feature can be activated or deactivated (the default) by recent change. RC Form 809 is used as follows to turn this feature on:

- Enter **PF43** in the FEATURE ITEM field
- Enter **ON** in the ON OR OFF field.

8. Input/Output Manual Pages (Not Affected)

Modification Request to AT&T Circuit Switched Data Feature (5899)

18

Contents **Page**

1. Feature Description 18-1
2. Call Flow (Not Affected) 18-1
3. Provisioning (Not Affected) 18-1
4. Recording (Not Affected) 18-1
5. Network Management (Not Affected) 18-1
6. Maintenance/Troubleshooting 18-1
7. Transition Considerations 18-2
Ubiquity 18-2
Turn On/Turn Off Mechanism 18-2
8. Input/Output Manual Pages (Not Affected) 18-2

Modification Request to AT&T Circuit Switched Data Feature (5899)

18

1. Feature Description

1.01 This feature is a Modification Request to the AT&T Circuit Switched Data feature (4323) in the 4E20 Release 3 Generic. With this feature, 64R international calls in the Software Defined Network Access (SDNA) domain are handled in the same way as 64R international calls in Domain 82. In both cases, the calls will receive final handling treatment with Final Handling Code 1706.

2. Call Flow (Not Affected)

3. Provisioning (Not Affected)

4. Recording (Not Affected)

5. Network Management (Not Affected)

6. Maintenance/Troubleshooting

6.01 An existing Final Handling Code, 1706, is used for this feature. Because the call is sent at a data rate of 64R, which is invalid for international calls, a release is sent with a cause of "bearer capability not implemented."

7. Transition Considerations

Ubiquity

7.01 It is not necessary for all *4ESS*™ switches in the network to be running the 4E22 Release 4 Generic for this feature to be fully operational.

Turn On/Turn Off Mechanism

7.02 This feature is automatically turned on by software deployment.

8. Input/Output Manual Pages (Not Affected)

Cellular Busy/Ring No Answer for True Connections/Easy Reach Service Feature (5907)

19

Contents **Page**

1. Feature Description 19-1
2. Call Flow (Not Affected) 19-1
3. Provisioning (Not Affected) 19-1
4. Recording (Not Affected) 19-2
5. Network Management (Not Affected) 19-2
6. Maintenance/Troubleshooting (Not Affected) 19-2
7. Transition Considerations 19-2
Ubiquity 19-2
Turn On/Turn Off Mechanism 19-2
8. Input/Output Manual Pages (Not Affected) 19-2

Cellular Busy/Ring No Answer for True Connections/Easy Reach Service Feature (5907)

19

1. Feature Description

1.01 Recently AT&T has received complaints that calls made to AT&T 500 numbers that are equipped with the call sequencing option sporadically receive reorder tones (played by the *4ESS*™ switch) if the routing numbers are cellular numbers. This problem occurs when the *4ESS* switch is requested by Quantum Data Routing System (QDRS) to monitor for Busy/Ring No Answer (B/RNA). The problem appears to be due to some cellular switches disconnecting the call before the expiration of the B/RNA timer.

1.02 The Cellular Busy/Ring No Answer For *True Connections*®/*Easy Reach*® Service is an AT&T Proprietary feature that eliminates reorder for AT&T 500 numbers when the call sequencing option B/RNA is activated. With this feature, the *4ESS* switch is modified to monitor for release from the far-end, while the B/RNA timer is running. If the switch receives a disconnect or a release (with any cause value) from the far-end before the timer expires, it immediately clears the timer and returns the call to QDRS to initiate another call attempt.

2. Call Flow (Not Affected)

3. Provisioning (Not Affected)

4. Recording (Not Affected)

5. Network Management (Not Affected)

6. Maintenance/Troubleshooting (Not Affected)

7. Transition Considerations

Ubiquity

7.01 It is not necessary for all *4ESS* switches in the network to be running the 4E22 Release 4 Generic for this feature to be fully operational in any individual switch.

Turn On/Turn Off Mechanism

7.02 This feature is turned on automatically by software deployment.

8. Input/Output Manual Pages (Not Affected)

Payphone Compensation—Phase 2 Feature (6164)

20

Contents

		Page
1.	**Feature Description**	20-1
	Background	20-1
	Description	20-1
2.	**Call Flow**	20-2
	Payphone Blocking Call Flow	20-3
3.	**Provisioning**	20-6
	OD4OFCCOPY2 Structure	20-6
	Recent Change Impacts	20-6
	A. RC Form 809	20-6
	B. RC Impacts	20-6
	Verify Messages Impacts	20-6
	A. Verify Forms Affected	20-7
4.	**Recording**	20-7
5.	**Network Management (Not Affected)**	20-7
6.	**Maintenance/Troubleshooting**	20-7
	New Final Handling Codes	20-7
7.	**Transition Considerations**	20-8
	Ubiquity	20-8

Contents **Page**

Turn On/Turn Off Mechanism 20-8

A. Turn On/Turn Off Using Absolute Word Change 20-8

8. Input/Output Manual Pages (Not Affected) 20-8

Payphone Compensation—Phase 2 Feature (6164)

20

1. Feature Description

Background

1.01 In Phase 1 of Payphone Compensation, owners of payphones are compensated a monthly flat fee of $26.21 regardless of 8YY usage from these payphones. The FCC mandated that beginning October 1, 1997 the owners of payphones must be compensated on a per-call basis at the rate of $0.35 per completed 8YY call.

Description

1.02 This feature allows AT&T to compensate the owners of payphones on a per-call basis. This method is based on the recording of the Originating Line Identification/Interexchange Identification (OLI/II) information in the Automatic Message Accounting (AMA) record. The OLI/II information is currently captured in the AMA records for 8YY and Software Defined Network-Network Remote Access (SDN NRA) services.

NOTE:
Records produced for some 8YY numbers, such as numbers used to access Call Store Bus (CSB) platforms, are not used for compensation since they do not contain call completion information. Records produced by the CSB platforms are used since they contain call completion information.

1.03 This feature also allows AT&T to block calls only on an 8YY number basis. The customer is given the option to block all payphone originated calls to an 8YY number.

2. Call Flow

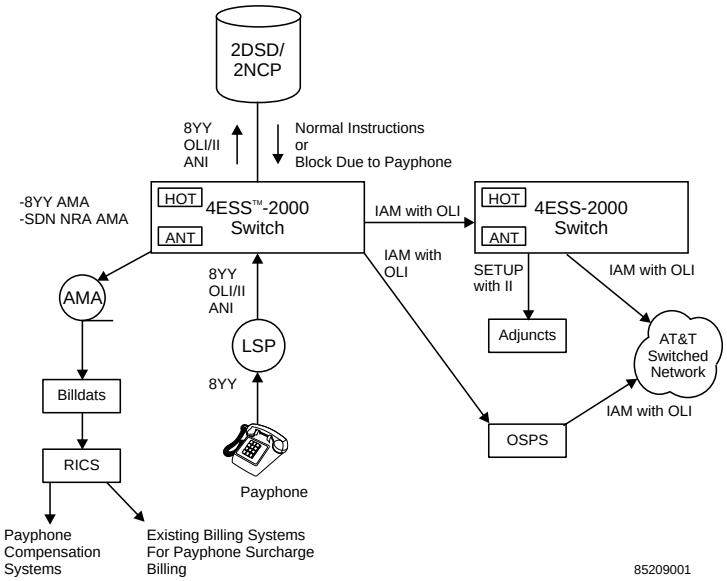

Figure 20-1. Toll Free Call Flow

Payphone Blocking Call Flow

1. A caller dials an 8YY toll free number from a payphone and the Local Exchange Carrier (LEC) routes the call with OLI/II to the AT&T *4ESS*™ switch.
2. The *4ESS* switch does 10-digit Global Title Translation (GTT) on the 8YY number. If no match is found in the 10-digit GTT table, then the Signaling Transfer Point (STP) will do a 6-digit translation on the 8YY number. A Transaction Capabilities Application Part (TCAP) query is then sent to the 2 Direct Services Dialing (DSD)/2 Network Control Point (NCP) with the OLI/II data included in the TCAP Begin Message.
3. The query to the NCP is intercepted by the *4ESS* switch HICAP Originating Treatment (HOT) table. The *4ESS* switch checks for a match in the HOT table.
   - If the 8YY number is found in the HOT table, go to step 4.
   - If the 8YY number is not found in the HOT table, then the query is forwarded to NCP. Go to step 5.
4. The *4ESS* switch checks the "Payphone Blocking Indicator."
   - If the "Payphone Blocking Indicator" for the 8YY number is set and the OLI/II = 27, 29 or 70, then the *4ESS* switch plays a new "Payphone Blocking" announcement using the Improved Service Announcement and Information Collection (ISAIC) Service Circuit System (SCS) platform. It then kills the call and generates a new Final Handling Code (FHC).
   - If the "Payphone Blocking Indicator" for the 8YY number is set and the OLI/II does not = 27, 29 or 70, then the *4ESS* switch routes the call based on the routing number retrieved from the HOT table. For this case a normal 8YY record is created containing the OLI/II.
   - If the "Payphone Blocking Indicator" for the 8YY number is not set, then the *4ESS* switch routes the call based on the routing number retrieved from the HOT table. For this case a normal 8YY record is created containing the OLI/II.
5. If the *4ESS* switch detects signaling or NCP failures, then the *4ESS* switch checks for a match in the Alternate Number Translation (ANT) table. If not, go to step 7.
   - If the 8YY number is found in the ANT table, go to step 6.
   - If the 8YY number is found in the ANT table, then the switch will final handle the call according to existing requirements. End of call flow.

6. The *4ESS* switch checks the "Payphone Blocking Indicator."
    - If the "Payphone Blocking Indicator" for the 8YY number is set and the OLI/II = 27, 29 or 70, then the switch will play a new "Payphone Blocking" announcement using the ISAIC SCS platform. It then kills the call and generates a new Final Handling Code (FHC).
    - If the "Payphone Blocking Indicator" for the 8YY number is set and the OLI/II does not = 27, 29 or 70, then the *4ESS* switch routes the call based on the routing number retrieved from the ANT table. For this case a normal 8YY record is created containing the OLI/II.
    - If the "Payphone Blocking Indicator" for the 8YY number is not set, then the *4ESS* switch routes the call based on the routing number retrieved from the ANT table. For this case a normal 8YY record is created containing the OLI/II.
7. The NCP receives the TCAP Begin Message.
8. If a Backhaul Screening Indicator (BSI) is included in the TCAP Begin Message and the indicator is set, then go to step 9. If the indicator is not set or not included, then go to step 10.
9. The NCP accesses the Backhaul table. Using the 10-digits of the dialed number passed in the digits parameter of the Begin Message as the key, the NCP looks for a match in the table.
    - If the dialed number matches an entry in the Backhaul table, then the NCP will respond to the switch with an End message containing a Return Error Component with an Error Code of "Error in Customer Record, Other Miscellaneous Problems." End of NCP flow, go to step 13.
    - If the dialed number does not match an entry in the Backhaul table, then the NCP begins normal call processing by accessing the Dialed Number Translation Table. Go to set 10.
10. The NCP accesses the Dialed Number Translation Table. Using the 10-digits of the dialed number passed in the digits parameter of the Begin Message as the key, the NCP looks for a match in the table.
    - If the dialed number matches an entry in the Dialed Number Translation Table, then the NCP uses the account ID associated with the dialed number and accesses the customer account. Go to step 12.
    - If the dialed number does not match an entry in the Dialed Number Translation Table, then the NCP accesses the vacant code account. Go to step 11.
11. The vacant code account is executed as today. The NCP responds to the switch with an End Message containing a Return Error Component with an Error Code of "Blocked Payphone Originated Call." End of NCP flow, go to step 13.

12. The NCP accesses the customer account.

    - If a new "Payphone Blocking" node is found in the routing plan for the 8YY number and the received OLI/II = 27, 29 or 70, then the NCP responds to the switch with an end message containing a return error component with a Error Code of "Blocked Payphone Originated Call." End of NCP flow, go to step 13.
    - If a new "Payphone Blocking" node is found in the routing plan for the 8YY number and the received OLI/II is not 27, 29 or 70, then the NCP processes the call using the customer account logic. End of NCP flow, go to step 13.
    - If a new "Payphone Blocking" node is not found in the routing plan for the 8YY number, then the NCP processes the call using the customer account logic. End of NCP flow, go to step 13.

13. The *4ESS* switch receives the response from the NCP.

    - If the switch receives a normal response, the switch proceeds with existing call processing. End of call flow. If the 8YY number was not an SDN NRA number, then the switch routes the call and creates a normal 8YY record containing OLI/II. If the 8YY number is an SDN NRA number, then the switch routes the call to an ATP switch. The records for SDN NRA calls are generated at the ATP switch.
    - If the response indicates "Error in Customer Record, Other Miscellaneous Problems," then the switch backhauls the call per existing requirements.
    - If the response indicates "Missing Customer Record," then the switch checks the ANT Table. Go to step 14.
    - If the response indicates "Blocked Payphone Originated Call," then go to step 15.

14. The *4ESS* switch checks the ANT Table for a match.

    - If a match is found, then the switch checks the "payphone Blocking Indicator." The switch does the same logic given here in step 6.
    - If no match is found, then the switch does existing call processing.

15. If the *4ESS* switch receives an end message containing a return error component with an error code of "Blocked Payphone Originated Call," then the switch plays a new "Payphone Blocking" announcement using the ISAIC SCS platform. The switch also disconnects the caller and generates a new FHC for the call. End of call flow.

3. Provisioning

OD4OFCCOPY2 Structure

3.01 Item OD4PF51 is assigned as the office parameter to show whether the payphone blocking feature is active in the switch. ON means the feature is active, the default is OFF.

Recent Change Impacts

A. RC Form 809

3.02 Recent Change (RC) form 809 populates the on/off flag for this feature. The 809 form entry is located at PF51 with 0=Off and 1=On.

B. RC Impacts

3.03 The *4ESS* switch supports a payphone blocking indicator in the ANT and HOT Tables.

3.04 The *4ESS* switch provides a Recent Change and Verify capability for the provisioning of the payphone blocking indicator in the ANT and HOT Tables.

3.05 In the HICAP RC:MISC;FHT,FTA: a,b,c,d,e,f,g! message, two new values have been added for a.

- HICAPINF1 = 800 INFO - 1, Payphone Indicator = YES
- HICAPINB1 = Inbound Service, Payphone Indicator = YES.

3.06 In the ANT RC:MISC;FHT,FTA: j,a,b,c,d,e! message, one new value has been added for j.

- ANTRECOR1 = ANT record with Payphone Indicator = YES.

Verify Messages Impacts

3.07 In the HICAP format six new values have been added for the TYPE field e.

- PF = INFO-1, no routing number, Payphone Indicator = YES
- PFP = INFO-1, routing number in POTS domain, Payphone Indicator = YES
- PFD = INFO-1. routing number in DEV domain, Payphone Indicator = YES

- PB = Inbound, no routing number, Payphone Indicator = YES
- PBP = Inbound, routing number in POTS domain, Payphone Indicator = YES
- PBD = Inbound, routing number in DEV domain, Payphone Indicator = YES.

3.08 In the ANT format one new value has been added to the DIGITS field.

- P = Payphone Indicator

A. Verify Forms Affected

3.09 The ON OFF flag can be verified via forms 16az and 8j.

4. Recording

4.01 The OLI/II, if received from the local service provider, is recorded in the AMA Table 421, in the 8YY AMA Structures and in Module 921, in the SDN NRA Structures. If the 8YY call is blocked, then the long distance service record may be generated because of far-end network block provisioning.

5. Network Management (Not Affected)

6. Maintenance/Troubleshooting

New Final Handling Codes

6.01 There is 1 new Final Handling Code (FHC) associated with this feature. The handling of failures is covered in Lucent 234-010-315, *Domestic Call-Irregularity Maintenance Reference Handbook*, *4ESS*™ Switch.

Table 20-A. New Finaling Handling Code Failures

FHC	Failure and Handling Method
1399	**Last Normal Condition–**Message was successfully received from the NCP by the switch. **Irregular Condition–**The NCP determined that this call should be blocked. **Handling–**The switch will attempt to play a customized announcement and final handled the call.

7. Transition Considerations

Ubiquity

7.01 It is not necessary for all *4ESS* switches in the network to be running the 4E22 Release 4 Generic for this feature to be fully operational.

Turn On/Turn Off Mechanism

7.02 The RC Form 809 is used to enable or disable this feature. This feature is activated or deactivated by populating the FEATURE ITEM field with PF51 and setting the ON or OFF field to either ON or OFF. To activate this feature, set the ON or OFF field to ON. To deactivate the feature, set the ON or OFF field to OFF. The default is OFF.

A. Turn On/Turn Off Using Absolute Word Change

7.03 This feature can also be turned on or off by an absolute word change. Item OD4PF51 in ODA structure OD4OFCCOPY2 is the office parameter that controls the state of the feature.

CAUTION:
The OD4OFCCOPY2 structure also contains the on/off bits for many other features. Be certain that any changes you make affect this feature only.

7.04 The following is the information needed to turn ODA bit OD4PF51 on or off using the absolute word change:

- Structure: OD4OFCCOPY2
- Core address in 4E22 Generic: 7145446
- Size of OD4PF51: 1
- Displacement: 2
- On: 1
- Off: 0

8. Input/Output Manual Pages (Not Affected)

Automatic Message Accounting for Government Emergency Telecommunications Service Pseudo—Destination Number Feature (6190)

21

Contents **Page**

1. Feature Description 21-1
2. Call Flow 21-2
3. Provisioning (Not Affected) 21-7
4. Recording 21-7
5. Network Management (Not Affected) 21-7
6. Maintenance/Troubleshooting (Not Affected) 21-7
7. Transition Considerations 21-7
Ubiquity 21-7
Turn On/Turn Off Mechanism 21-7
8. Input/Output Manual Pages (Not Affected) 21-8

Automatic Message Accounting for Government Emergency Telecommunications Service Pseudo—Destination Number Feature (6190)

21

1. Feature Description

1.01 The Government Emergency Telecommunications Service (GETS) is a Software Defined Network–Network Remote Access (SDN/NRA) based service that allows Government callers to dial a special number (710-627-4387) to access the network. This service then prompts for additional digits (authorization code and destination number) to complete the call.

1.02 Phase 1 of the Pseudo-Destination Number (PDN) feature allows users to enter a pre-provisioned PDN in place of the actual destination number when placing a call. The PDN is translated into an actual destination number and the call was completed. The actual destination number is recorded on the Call Detail Record (CDR). Phase 1 is based on the Virtual On-net Number (VON) feature in the SDN.

1.03 For this feature, Automatic Message Accounting (AMA) for GETS PDN, Phase 2, the actual destination number does not appear on the CDR provided to the GETS Integration Contractor (IC), GTE. PDN calls will have the same fields displayed as Number Translation calls on the CDR.

2. Call Flow

2.01 The following call flow describes the steps that take place for a GETS PDN call:

1. The caller dials one of the following to access GETS:
   - 1+710-627-4387
   - The Carrier Access Code 10288 For AT&T plus 1-710-627-4387
   - The country-specific international access code plus 1-710-627-4387.

2. If the call originates from a switched access location, the Local Exchange Carrier (LEC) End Office (EO) performs 3-digit translation on the dialed number and routes the call over dedicated Special Routing Arrangement Service (SRAS) Number Translation (NT) Trunk Sub-Groups (TSGs) to the Originating AT&T Switch (OAS).

   If the call originates from a Foreign Administration (FA), the call is routed to the AT&T International Switching Center (ISC) the same as a Plain Old Telephone Service (POTS) call Is routed from that FA.

   If the call originates from International World Zone 1 (IWZ1), the call enters the AT&T network through a gateway.

   If the call originates from a direct connect location (for example, MEGACOM®* telecommunications services), the call is routed directly to the OAS over the direct connect TSG.

3. The *4ESS*™ switch performs the 6-digit translation on 710-627. If the 6-digit translation indicates a GETS call, the OAS tries to set up a path to a Network Services Complex (NSCX) or Service Circuit System (SCS) as follows:

If an NSCX or SCS is...	**Then...**
Available	The *4ESS* switch seizes a circuit to it and connects the original call to the SCS.
Not available (no SCS/NSCX)	Call processing continues with Step 6.

4. The SCS/NSCX plays a tone prompting the caller to enter a 12-digit authorization code.

* MEGACOM® telecommunications services is a registered trademark of AT&T

5. The SCS/NSCX collects the 12 digits and, using a voice announcement, prompts the caller to enter a destination number. The destination number may be one of the following:
   - 710-NXX-XXXX (SRAS NT)
   - NPA-NXX-XXXX (POTS)
   - PDN
   - International (INTL).

6. The *4ESS* switch formats a query [Transaction Capabilities Application Part (TCAP) Begin message] to the Number 2-Direct Services Automatic Number Identification-based/Number 2-Network Control Point (2DSA/2NCP).

If an NSCX or SCS...	Then the TCAP Begin message...
Collected the authorization code and destination number data from the caller	Includes the destination number and authorization code.
Is not available at the OAS	Does not include the caller-entered destination number or the authorization code.

7. The *4ESS* switch waits for a response from the 2DSA/2NCP.
8. The 2DSA/2NCP directs the query to the GETS Call Processing Record (CPR) based on the customer identification.
9. The CPR checks to see if an authorization code and destination number have been collected.

If the data...	Then...
Were collected	Call processing continues with Step 11.
Were not collected	The 2DSA/NCP instructs the OAS to perform a normal service assist by playing the appropriate tones and announcements and collecting the authorization code and destination number.

10. If the service assist is not successful, the 2DSA/2NCP instructs the *4ESS* switch to use Dual-Tone Multifrequency (DTMF) receivers to prompt the caller for digit collection. The collected digits are sent back to the 2DSA/2NCP.
11. The CPR validates the authorization code and the destination number.

If the...	Then...
Authorization code is valid	The CPR checks the calling privileges for that code. • The customer's PDN tables are searched to see if the dialed number is a PDN. • If the destination number is valid/allowed for the particular authorization code, call processing continues with Step 12. If the destination number is a PDN, the number is translated, and the translated number is used in place of the destination number. • If the destination number is invalid/not allowed, the 2DSA/2NCP directs the *4ESS* switch to terminate the call and play the appropriate Vacant Code Announcement (VCA).
Authorization code is invalid	The CPR checks to see if the caller has been prompted three times for the authorization code. • If the caller has been prompted three times for the authorization code, the 2DSA/2NCP directs the *4ESS* switch to terminate the call and play the appropriate terminating announcement. • If the caller has not been prompted three times, the 2DSA/2NCP directs the *4ESS* switch to use the SCS/NSCX to prompt the caller for an authorization code. The collected digits are forwarded to the 2DSA/2NCP for validation.

12. The 2DSA/2NCP directs the *4ESS* switch to record and route the call with a TCAP End message.
13. The call is processed as follows if the *4ESS* switch does not receive a return message from the 2NCP or if other Fail-Open conditions occur.

If the authorization code and destination number...	And the...	Then the...
Were collected	Network is provisioned to allow calls to complete without NCP verification (Failed Open ON)	*4ESS* switch routes the call to the destination number (Step 18).
Were not initially collected		Information is collected by the DTMF receivers in the *4ESS* switch.

14. If Fail Open is provisioned **ON** in the network, the *4ESS* switch continues call processing for basic call types as described in Step 15 after collecting the authorization code and destination number with the DTMF receivers. However, the *4ESS* switch indicates that the authorization code was not validated. If Fail Open is provisioned **OFF**, the *4ESS* switch plays the No Circuits Announcement and terminates the call.

15. The originating *4ESS* switch creates an AMA record and initiates the creation of an Initial Address Message (IAM). The *4ESS* switch sets the Calling Party's Category (CPC) parameter of the IAM to the High Probability of Completion (HPC) value of NS/EP. The destination number is not entered into the billing record for either SRAS NT calls or PDN calls.

16. Once the HPC value is set, the OAS passes the CPC IAM setting of the NS/EP to the terminating *4ESS* switch. The HPC value is preserved as it travels through the signaling network.

17. The SRAS NT destinations (710-NXX-XXXX) are routed in the Dedicated Egress Voice (DEV) domain. POTS and INTL calls are routed in their respective domains. For example, PDNs translated to SRAS numbers are routed in the DEV domain.

18. The GETS calls are routed to destination as follows:

    (a) If available, the direct route is selected.

    NOTE:
    A satellite trunk may be selected.

    (b) If the direct route is not available, the OAS sends a query (in real time) to the Terminating AT&T Switch (TAS) via the AT&T Switched Network (ASN) Common Channel Signaling network. The response received from the TAS (containing the load status bit maps of via routes) is ANDED with the OAS load status bit maps of via routes. This produces a two-link path or Via AT&T Switch (VAS).

NOTE:
A satellite trunk(s) may be selected.

(c) If the second route is not available, a new via route is selected by ANDING the OAS non-busy load status bit map of via routes with the TAS satellite connectivity bit map of via routes. Crankbacks at the VAS are allowed.

(d) If the third route is not available, a new via route is selected by ANDING the OAS satellite connectivity bit map of via routes (obtained by querying the TAS). Retrials at the OAS and crankbacks at the VAS are allowed.

(e) If the fourth route is not available, a new via route is selected by ANDING the OAS satellite connectivity bit map of via routes with the TAS satellite connectivity bit map of via routes. Retrials at the OAS and crankbacks at the VAS are allowed.

19. If the OAS cannot find an idle path to the TAS and that TAS is the only TAS available or is the final TAS, the OAS invokes the RRAP call processing logic. A DTMF receiver is connected to play a tone to the caller and call processing is suspended for 0.6 seconds. If all DTMF receivers are busy during a particular iteration of RRAP, the tone is not played for that iteration. Once 0.6 seconds elapses, the DTMF receiver is disconnected (if it was connected) and the OAS reinitiates the E-Real Time Network Routing (RTNR) procedure. This process continues until an idle path is found to the TAS, the caller abandons the call, or call timeout occurs.

20. After an idle path is found, the call is launched to the TAS. The TAS initiates the trunk hunt process to find an idle trunk to the terminating LEC EO or Access Tandem. If the TAS cannot find an idle trunk and that TAS is the only TAS available, the TAS invokes the RRAP call processing logic and dictates control of the call. Call processing is suspended for 0.6 seconds. Once 0.6 seconds elapses, the TAS reinitiates the trunk hunt process. This process continues until an idle path is found to the LEC EO or Access Tandem, the caller abandons the call, or call timeout occurs.

21. If the TAS cannot find an idle path to the TAS and more than one TAS is available, the call cranks back to the OAS. If the TAS from which the call cranked back is the final TAS, the OAS invokes the RRAP call processing logic. A DTMF receiver is connected to play a tone to the caller and call processing is suspended for 0.6 seconds. If all DTMF receivers are busy during a particular iteration of RRAP, the tone is not played for that iteration. Once 0.6 seconds elapses, the DTMF receiver is disconnected (if it was connected) and the OAS selects a first choice TAS and reinitiates the E-RTNR routing procedure. This process continues until an idle path is found to the TAS, the caller abandons the call, or call timeout occurs.

22. After the call is successfully routed to the terminating *4ESS* switch, the HPC value is preserved and forwarded to the LEC EO or Access Tandem.

3. Provisioning (Not Affected)

4. Recording

4.01 For calls using a PDN, the SDN-Service Management System (SMS) populates the Digits (Dialed Number) field of the TCAP End message with the PDN dialed number. For calls not using a PDN, this field is populated with zeroes. The *4ESS* switch transfers the data from the TCAP End message to the Dialed NPA/Dialed Number fields of the AMA record which is then passed to the Recorded Information Collection System (RICS).

4.02 The RICS passes the information in the Dialed NPA/Dialed Number field to GETS-MPS. If GETS-MPS sees that the Dialed NPA/Dialed Number fields do not contain zeroes, the true destination number on the CDR sent to GTE is suppressed. If the fields contain zeroes, the information is not suppressed.

5. Network Management (Not Affected)

6. Maintenance/Troubleshooting (Not Affected)

7. Transition Considerations

Ubiquity

7.01 It is not necessary for all *4ESS* switches in the network to be running the 4E22 Release 4 Generic for this feature to be fully operational.

Turn On/Turn Off Mechanism

7.02 This feature is turned on automatically by software deployment.

8. Input/Output Manual Pages (Not Affected)

Release Summary—4E22 Release 4 Generic

22

Contents **Page**

1. Growth and Retrofit Documents 22-1
2. Input/Output Messages 22-2
3. OS Interfaces 22-3
4. New or Changed Alarms 22-4
5. Measurements/OSOR 22-5
6. Feature Activation Summary 22-6

Release Summary—4E22 Release 4 Generic

22

1. Growth and Retrofit Documents

1.01 The Growth and Retrofit Planning Group reports that the following documents are affected by new hardware and software in the 4E22 Release 4 Generic.

- Feature 5563—SCS Software Update Tool
  - — 234-100-211 Issue 1 User Guide
- Features 5568—SCS 9GB Disk Drive and 5794—Announcement Seconds Expansion
  - — 234-153-060AC Section NTP-003
  - — IEH 264A, Vol.III Section NTP-008
  - — IEH 264A, Vol.II Section184, New NTP-020
  - — IEH 264A, Vol.II Section 176D, New NTP-021
  - — IEH 264A Vol.I Section 176C
  - — 234-151-077AC SCS Maintenance TOP
  - — 234-100-210AC SCS Application
  - — 234-100-130AC SCS Description.

2. Input/Output Messages

2.01 The following are lists of new and revised input and output messages for the 4E22 Release 4 Generic. All the messages are revised unless otherwise indicated.

- 4E22R4 Input Messages (IM-4B000-01)
  - copy:scs
  - dgn:scs
  - dump:disk-scs
  - init:scs
  - load:disk-scs
  - ver:codelist.
- 4E22R4 Output Messages (OM-4B000-01)
  - ver:allrdb. (New)
- Proprietary Input Messages
  - test:tcapdsd
  - ver:codegrp-lnp.
- Proprietary Output Messages
  - test:tcapdsd.
- 4AP15R4 Input Messages
  - aud:tdas.
- 4AP15R4 Output Messages
  - copy:update
  - rept:cnce
  - rept:ring-trst-er
  - rept:scs-su. (New)

3. OS Interfaces

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

3.01 Several features in this release interface with various Operation Support Systems (OSSs). The following are any interfaces with AMA, DARICS, IRAS, MACOSS, NEMOS, RICS, TDAS, and TOPAS. The items shown are based on the references in the Product Release Document (PRD) for the 4E 22 Release 4 Generic.

- 4898 DARICS
- 4941 AMA
- 5241 NEMOS
- 5308 AMA, DARICS, NEMOS, RICS, TOPAS
- 5371a AMA, NEMOS
- 5532 AMA, RICS
- 5805 IRAS
- 5840 NEMOS
- 5844 DARICS, NEMOS, TDAS
- 6164 AMA
- 6190 AMA, RICS.

4. New or Changed Alarms

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

4.01 The following features have new or changed alarms:

- Feature 5563, SCS Software Update Tool, includes an audible minor alarm to indicate an error because of a tool input message. Manual intervention by maintenance personnel is required to restart the tool after the last successful step.
- Feature 5835, Announcement Administration Processor Disk Copy Enhancement, reports a major alarm to the Total Network Manager (TNM) if the copy process fails.
- Feature 5844, Announcement Set D on ISAIC, does not have any new or changed alarms. However, the Operations Network Administration Center (ONAC) notifies the Advanced Features Service Center (AFSC) if there are any application alarms.

5. Measurements/OSOR

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

5.01 Feature 4898, Service Identity Traffic Data Collection, involves the collection of hourly RTNR and ECOS traffic data.

5.02 Feature 5241, Segmentation Directory Black Hole Detection and Removal, uses five-minute switch data to identify a pattern of timeouts in the network that would indicate a black hole.

5.03 Feature 5308, Consolidated Access Traffic, includes several service measurements, which are described in the Recording and Maintenance/Troubleshooting sections of the chapter about this feature in the Product Release Document (234-090-224AC).

5.04 Feature 5840, 1+Carrier Identification Code Wholesale Features, sends the following 5-minute counts to the Network Management Operations System (NEMOS):

- Resell_Feature_CIC_Cnt
- Resell_UGT_Query_Cnt
- Resell_NCP_Query_Cnt
- Resell_UGT_Err_Cnt
- Resell_NCP_Err_Cnt.

The *4ESS* switch also sets the following 30-second discretes in certain instances:

- Resell_UGT_Err_Dsc
- Resell_NCP_Missing_Record_Err_Dsc.

5.05 Feature 5844, Announcement Set D on ISIAC, includes several measurements for NEMOS and DEMS/DARICS. These measurements are described in the Maintenance/Troubleshooting section of the chapter about this feature in the Product Release Document (234-090-224AC).

6. Feature Activation Summary

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

(1) **Feature 477—Test Query Enhancement**

This feature is turned on automatically by software deployment.

(2) **Feature 4898/5531i—Service Identity Traffic Data Collection**

This feature is turned on automatically by software deployment.

(3) **Feature 4941—Transfer Connect Service Interaction with Alternate Destination Routing**

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
4E22R4	RC 809	OD4OFCCOPY2	OD4PF42	7145445	H=17,S=1

(4) **Feature 5024—Enhanced Switch User Messages for Tollfree/900 Translations**

This feature is turned on automatically by software deployment.

(5) **Feature 5241—Segmentation Directory Black Hole Detection and Recovery**

This feature is turned on automatically by software deployment.

(6) **Feature 5308/5700—Consolidated Access Traffic**

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
4E22R4	RC 809	OD4OFCCOPY	OD4PF23	6732167	H=22,S=1

(7) **Feature 5371a—Local Service for Nodals–Phase 2**

This feature is activated by an on/off bit with Recent Change Form 809. The feature can also be activated by an absolute word change. In either case, local ANI provisioning must be done on the Trunk Sub-Groups.

REL	ON/OFF	ODA Word	Field Name	Address	Disp&Size
4E22R4	RC 809	OD4OFCCOPY2	OD4PF34	7145445	H=9,S=1

(8) **Feature 5506—Selective Blocking of Codesets**

This feature is turned on automatically by software deployment.

(9) **Feature 5563—SCS Software Update Tool**

This feature is turned on automatically by software deployment. However, an activation procedure must be followed to use the feature.

(10) **Feature 5568—SCS–9 Gigabyte Disk Units**

This feature is activated by installation of the new disk units.

(11) **Feature 5645—Local Service for Nodals–Phase 2.1**

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
4E22R4	RC 809	OD4OFCCOPY2	OD4PF48	7145445	H=23,S=1

(12) **Feature 5742—Improved Code Verify List**

This feature is turned on automatically by software deployment.

(13) **Feature 5794—SCS Announcement Seconds Expansion**

This feature is activated via hardware deployment, growth, or on-site maintenance procedures. 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
4E22R4	RC 809	OD4OFCCOPY2	OD4PF43	7145445	H=18,S=1

(14) **Feature 5805—Inbound Service 10-Digit Global Title Translation Expansion**

This feature is turned on automatically by software deployment.

(15) **Feature 5835—AAP Disk Copy Enhancement**

This feature is turned on automatically by software deployment.

(16) **Feature 5840—Carrier Solutions Account/Authorization Code**

This feature is activated by an on/off bit with Recent Change Form 809. It can also be activated by an absolute word change. OD4PF30 and ODF4PF49 must also be turned on for this feature to work.

REL	ON/OFF	ODA Word	Field Name	Address	Disp&Size
4E22R4	RC 809	OD4OFCCOPY2	OD4PF50	7145446	H=1,S=1

(17) **Feature 5844—Announcement Set D on ISAIC**

This feature is activated by an on/off bit with Recent Change Form 809. It can also be activated by an absolute word change. See the activation information above for feature 5794.

(18) **Feature 5899—MR on Feature 4323**

This feature is turned on automatically by software deployment.

(19) **Feature 5907—Cellular Busy/Ring No Answer for TC/ER Service**

This feature is turned on automatically by software deployment.

(20) **Feature 6164—Payphone Compensation–Phase 2**

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
4E22R4	RC 809	OD4OFCCOPY2	OD4PF51	7145446	H=2,S=1

(21) **Feature 6190—AMA Recording Fix for Government Emergency Telecommunications Service**

This feature is turned on automatically by software deployment.

(22) **Feature 6224—1+Branding for Leave a Message (4900)**

This is a restricted feature. The information about activation of this feature is contained in a Restricted PRD chapter which has been give to AT&T's Technology Management group for distribution to those who need it.

Abbreviations and Acronyms

2DSA
Number 2-Direct Services Automatic Number Identification

2NCP
Number 2-Network Control Point

2NCP/2DSA
Number 2 Network Control Point/Number 2 Direct Services

2NCPAS
2 Network Control Point Administrative System

A

AAP
Announcement Administration Processor

AATOS
Alternate Access to Operator Service

ABC
Adjunct Based Capability

ACCS
Automated Calling Card Services

ACM
Address Complete Message

ACO
AT&T Call Organizer

ACP
Action Control Point

ACQS
Automated Charge Quotation Service

ACV
Access Charge Verification

ADR
Alternate Destination Routing

AFSC
Advanced Features Service Center

AILS
Automated Inward Line Screening

ALA
Adjunct Logical Address

AMA
Automatic Message Accounting

ANI
Automatic Number Identification

ANITT
ANI Trigger Table

ANM
Answer Message

ANSER
AT&T Network Servicing System

ANSI
American National Standards Institute

ANT
Alternate Number Translation

APG
Announcement Provisioning Group

APN
Action Point Numbering

ARU
Automatic Response Unit

ASN
AT&T Switched Network

ASR
Automatic Speech Recognition

AT
Access Tandem

ATP
AT&T Trigger Platform

ATP
Access Transport Parameter

B

B/RNA
Busy/Ring No Answer

BCS
Business Communications Services

BN
Billing Number

BSI
Backhaul Screening Indicator

BWM/SU
Broadcast Warning Message/Software Update

C

CAC
Customized Announcement Capabilities

CADCS
Call Attempt Data Collection System

CAL
Customer Application Language

CAP
Competitive Access Provider

CAT
Consolidated Access Traffic

CAUCS
Centralized Announcement Update Control System

CCITT7
Consultative Committee-International Telephone and Telegraph 7

CCS
Consumer Communication Services

CCS7
Common Channel Signaling System 7

CdPN
Called Party Number

CDR
Call Detail Record

CDRM
Call Detail Recording Monitor

CDRP
Call Detail Recording Platform

CDSU
Custom Data Service Unit

CIC
Carrier Identification Code

CID
Customer ID

CIP
Carrier Identification Parameter

CLD
Consumer Long Distance

CLLI
Common Language Location Identifier

CMC
Cellular Mobile Carrier

COS
Class Of Service

CPC
Calling Party's Category

CPDL
Call Processing Data Link

CPG
Call Progress Message

CPN
Calling Party Number

CPR
Call Processing Record

CRC
Cyclic Redundancy Check

CSB
Call Store Bus

CSG
Communications Services Group

CUC
Customer Unit Code

D

DA
Directory Assistance

DARICS
Data Acquisition Reports and Integrated Control System

DEMS
Dynamic Engineering Mechanized System

DEV
Direct Egress Voice

DLN
Direct Link Node

DN-TT
Destination Number Trigger Table

DSD
Direct Services Dialing

DSDAS
Direct Services Dialing Assignment System

DSF
Direct Signaling Failure

DSN
Destination Switch Number

DTMF
Dual Tone Multifrequency

DTO
Dedicated Trunk Sub-group Option

E

EA
Equal Access

ECOS
End-to-end Class of Service

ENAC
Engineering Network Administration Center

EO
End Office

F

FA
Foreign Administration

FCI
Forward Call Indicator

FDOC
Focused Destination Overload Control

FENPA
Far-End NPA

FG-D
Feature Group D

FHC
Final Handling Code

FIR
Forced Intertoll Routing

FISC
Foreign International Switching Center

FRF
Feature Request Form

FSD
Feature Specification Document

G

GAP
Generic Address Parameter

GB
Gigabyte

GETS
Government Emergency Telecommunications Service

GNS
Go/No Go Screening

GOP
Generic Operations Parameter

GPA
General Procurement Agreement

GSS
Global Support System

GTT
Global Title Translation

GW
Gateway

H

H/M
Hotel/Motel

HAS
Hand-off AT&T Switch

HOT
HICAP Originating Treatment

I

IAM
Initial Address Message

IBGTT
Inbound Global Title Translation

IC
Integration Contractor

ICDR
International Call Detail Recording

IDB
Inwats Database

IE
Information Element

II
Information Indicator

INTL
International

IRAS
Integrated Routing Assignment System

ISAIC
Improved Service Announcement and Information Collection

ISC
International Switching Center

ISDN
Integrated Services Digital Network

ISE
Integrated Support Environment

ISET
Inbound Services Emergency Translations

ISUP
Integrated Services Digital Network User Part

ISUP-NI
ISDN User Part-Network Interconnect

ITN
Integrated Test Network

ITU
International Telecommunications Union

IWZ1
International World Zone 1

IXC
Inter-Exchange Carrier

J

JIP
Jurisdiction Information Parameter

L

LAN
Local Area Network

LANI
Local Automatic Number Identification

LAS
Last Access Switch

LATA
Local Access and Transport Area

LCC
Local Carrier Connecting

LDS
Long Distance Service

LEC
Local Exchange Carrier

LERG
Local Exchange Routing Guide

LNP
Local Number Portability

LRN
Location Routing Number

LS
Listing Services

LSBD
Listing Service Database

LSI
Local Screening Index

LSP
Local Service Provider

LTD
Local Toll Differentiation

M

MF
Multi-Frequency

MIN
Mobile Identification Number

MRT
Multiple Routing Treatment

MTSO
Mobile Telephone Switching Office

N

NAI
Network Access Interrupt

NANP
North American Numbering Plan

NAP
Network Adjunct Platform

NCA
No Circuits Announcement

NCC
Network Control Center

NCP
Network Control Point

NDB
Number Services Routing Data Block

NEAT
Network Engineering and Analysis Tool

NEMOS
Network Management Operations System

NESAC
National Electronic Switching Assistance Center

NI
Network Interconnect

NMC
Network Management Center

NNS
Next Network Switch

NOC
Network Operations Center

NPA
Numbering Plan Area

NPA-NXX
Numbering Plan Area Number

NSCX
Network Services Complex

NSD
Network Services Division

NSN
Network Switch Number

NSP
Network Service Provisioning

NT
Number Translation

NVT
Network Verification Testing

O

OAS
Originating AT&T Switch

OBGTT
Outbound Global Title Translation

ODA
Office Data Assembler

OE
Operator Express

OLI
Originating Line Information

OLI/II
Originating Line Identification/Interexchange Identification

OLS
Originating Line Screening

ONAC
Operations Network Administration Center

OS
Operation Systems

OSPS
Operator Service Position System

OSRB
Operations Systems Requirements Brief

OTP
Operations Technical Plan

P

PBX
Private Branch Exchange

PC
Point Code

PC/SSN
Point Code/Subsystem Number

PCP
Positive Call Processing

PCPGTT
Positive Call Processing Global Title Translation

PDD
Post Dial Delay

PDN
Pseudo-Destination Number

PECC
Product Engineering Control Center

PLU
Positive Look-Up

POTS
Plain Old Telephone Service

PRD
Product Release Document

PRI
Primary Rate Interface

Q

QDRS
Quantum Data Routing System

R

RC
Recent Change

RDB
Routing Data Block

RDBI
Routing Data Block Index

REACH
REmote Access Call Handling

RICS
Recorded Information Collection System

RII
Routing Information Indicator

RLC
Release Complete

RNA
Ring No Answer

RTNR
Real Time Network Routing

S

SAFER
Split Access/Flexible Egress Routing

SCC
Signal Conversion Circuit

SCS
Service Circuit System

SCU
Service Circuit Unit

SD
Segmentation Directory

SD
Switched Digital

SDN
Software Defined Network

SDN NRA
Software Defined Network-Network Remote Access

SDNA
Software Defined Network Access

SHARP
Shared Adjunct Resource Platform

SI
Service Identity

SIC
Service Indicator Code

SID
Station ID

SII
Service Identity Indicator

SLT
Switch Local Time

SMS
Service Management System

SP
Service Processor

SRAS
Special Routing Arrangement Service

SS7
Signaling System 7

SSA
Small Scale Adjunct

SSP
Service Switching Point

SSS
Service Support System

SST
Signaling Service Type

STP
Signaling Transfer Point

T

TA
Toll and Assist

TAS
Terminating AT&T Switch

TBDN
Trunk Billing Directory Number

TBN
True Billing Number

TCAP
Transaction Capabilities Application Part

TCC
Technology Control Center

TCS
Transfer Connect Service

TGN
Trunk Group Number

TGRN
Trunk Group Rating Number (used by OSPS)

TNM
Total Network Management

TNS
Transit Network Selection

TOP
Task Oriented Practice

TORIG
Type of Origination

TOT
Type Of Trunk

TRN
Trunk Group Rating Number (used by *4ESS* switch)

TRS
Telecommunications Relay Service

TSA
Technical Service Administration

TSGA
Trunk Sub-Group Access

TSAA
Terminating Switch Access Arrangement

TSG
Trunk Sub-Group

U

UTA
Universal T1.5 Access

UUI
User-to-User Information

V

VAS
Via AT&T Switch

VCA
Vacant Code Announcement

VON
Virtual On-net Number

W

WSG
Wireless Service Group

WZ1
World Zone 1