Critical Release Notice

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The content of this customer NTP supports the SN09 (DMS) software release.

Bookmarks used in this NTP highlight the changes between the UCS15 baseline and the current release. The bookmarks provided are color-coded to identify release-specific content changes. NTP volumes that do not contain bookmarks indicate that the UCS15 baseline remains unchanged and is valid for the current release.

Bookmark Color Legend

Black: Applies to content for the UCS15 baseline that is valid through the current release.

Red: Applies to new or modified content for UCS17 that is valid through the current release.

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Pink: Applies to new or modified content for SN08 (DMS) that is valid through the current release.

Orange: Applies to new or modified content for SN09 (DMS) that is valid through the current release.

Attention!
Adobe ® Acrobat ® Reader ™ 5.0 or higher is required to view bookmarks in color.

Publication History

Note: *Refer to the UCS15 baseline document for Publication History prior to the UCS17 release.*

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297-2621-385

Digital Switching Systems

UCS DMS-250

Feature Group D (FGD) Application Guide

UCS12 Standard 07.02 November 1999

NORTEL NETWORKS

How the world shares ideas.

Digital Switching Systems

UCS DMS-250

Feature Group D (FGD) Application Guide

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- revised Chapter 11, “Mechanized calling card service (MCCS)”
- added NETSEC enhancements to Chapter 13, “Network security”
- added ANI screening for FGD UA MCCS calls to Chapter 2, “Automatic number identification screening”
- added Multiple Profile ANI by CIC and Jurisdiction to Chapter 2, “Automatic number identification screening”

August 1998

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Revisions for this release are as follows:

- updated ANI screening chapter
- modified Carrier identification code routing chapter
- added Early answer supervision for universal access calls chapter
- added Limited calls per authcode chapter
- added Network security chapter
- dded Universal international freephone chapter

Contents

About this document

Feature Group D (FGD) is an equal access long distance dialing plan that connects local exchange carriers (LEC) and interexchange carriers (IEC) across equal access network trunks (EANT). Specifically, FGD connects the trunk side of a Bell Equal Access End Office (EAEO) or a class 4/5 Access Tandem (AT) office to UCS DMS-250 switches in an IEC network.

With FGD, subscribers have means to obtain long distance service easily, either by subscribing to a designated long distance company or by using one of the FGD dialing plans.

Feature activation

These features are activated only when the software optionality control (SOC) option for each feature is set to ON. For additional information on the SOC option, see the *UCS DMS-250 Software Optionality Control (SOC) Application Guide*.

Intended audience

This publication assists telecommunications engineers, technicians, switching system developers, operating company personnel, and anyone else who requires technical information on UCS DMS-250 switch features available for FGD calls.

How this document is organized

Chapter 1, Introduction to Feature Group D (FGD)

Chapter 1 provides an overview of FGD and the features that use FGD signaling on the UCS DMS-250 switch. Information on trunk types, FGD dialing plans, and an overview of call processing with FGD are also discussed.

Chapter 2, Automatic Number Identification screening

Chapter 2 describes ANI screening in tables ANISCUSP and ANIVAL.

Chapter 3, Calling Party Information (CPI) message handling

Chapter 3 describes how the UCS DMS-250 switch handles CPI messaging using signaling system 7 (SS7)/common channel signaling 7 (CCS7).

Information on the transmission of “calling party number” and “presentation indicator” is included.

Note: SS7 will be used throughout this NTP as the designation for common channel signalling. However, users should be aware that SS7 and CCS7 are often used interchangeably in Nortel (Northern Telecom) documentation. Specific questions about differences between national SS7 and global CCS7 operations should be directed to appropriate personnel.

Chapter 4, Carrier Identification Code routing

Chapter 4 provides a brief description of the CIC feature and its relationship to FGD.

Chapter 5, Dynamically Controlled Routing

Chapter 5 provides a brief overview of DCR and its relationship to FGD.

Chapter 6, Early Answer Supervision for universal access calls

Chapter 6 describes early answer supervision on universal access calls.

Chapter 7, FGD PASSTHRU

Chapter 7 describes the FGD PASSTHRU feature. This chapter includes information on both “pure” and “cut-thru” processing. Datafill requirements are also provided.

Chapter 8, Fifteen-digit International Direct Digit Dialing (IDDD)

Chapter 8 describes the digit collection, translations, routing, and digit outpulsing services required for the 15-digit IDDD feature.

Chapter 9, FlexDial Framework

Chapter 9 provides a brief overview of the FlexDial call processing application and its relationship to FGD.

Chapter 10, Limited calls per authcode

Chapter 10 describes how to limit the number of simultaneous calls allowed for an authcode.

Chapter 11, Mechanized Calling Card Service (MCCS)

Chapter 11 provides a brief overview of the MCCS feature and its relationship to FGD.

Chapter 12, NetworkBuilder

Chapter 12 provides a brief overview of NetworkBuilder and its relationship to FGD.

Chapter 13, Network Security

Chapter 13 describes the network security (NETSEC) option in table TRKGRP and the NETSEC CI commands.

Chapter 14, Partial/Empty account code screening

Chapter 14 describes partial/empty account code screening on the UCS DMS-250 switch.

Chapter 15, Suspend-Resume message handling

Chapter 15 describes the handling of SUS and RES messages over SS7 and PTS FGD originating agencies.

Chapter 16, Transaction Capabilities Application Part (TCAP)

Chapter 16 provides an overview of the TCAP protocol and its relationship to FGD.

Chapter 17, Universal International Freephone

Chapter 17 describes the universal international freephone numbers, international toll-free numbers.

How to check the version and issue of this document

The version and issue of the document are indicated by numbers, for example, 01.01.

The first two digits indicate the version. The version number increases each time the document is updated to support a new software release. For example, the first release of a document is 01.01. In the second software release cycle, the first release of the same document is 02.01.

The second two digits indicate the issue. The issue number increases each time the document is revised but released again in the *same* software release cycle. For example, the second release of a document in the first software release cycle is 01.02.

This document is written for all UCS DMS-250 Family offices. More than one version of this document may exist. To determine whether you have the correct version of this document for the software in your office, check the release information in the *DMS-250 Master Index of Publication*. The *DMS-250 Master Index of Publications* also describes how the documentation for your product is organized.

References in this document

The following documents are referred to in this document:

- 297–1001-475, *DCR User Guide*
- 297–2621–395, *UCS DMS-250 Billing Records Application Guide*
- 297-2621-819, *UCS DMS-250 Commands Reference Manual*
- 297–2621–851, *UCS DMS-250 Data Schema Reference Manual*
- 297–2621–390, *UCS DMS-250 FlexDial Framework Application Guide*
- 297-2621-840, *UCS DMS-250 Logs Reference Manual*
- 297-2621-001, *UCS DMS-250 Master Index of Publications*
- 297–2621–305, *UCS DMS-250 Mechanized Calling Card Services (MCCS) Application Guide*
- 297–2621–370, *UCS DMS-250 NetworkBuilder Application Guide*
- 297–2621–855, *UCS DMS-250 Office Parameters Reference Manual*
- 297-2621-814, *UCS DMS-250 Operational Measurements Reference Manual*
- 297–2621–347, *UCS DMS-250 PRI RLT Feature Application Guide*
- 297–2621–380, *UCS DMS-250 Programmable Service Node (PSN) Application Guide*
- 297–2621–301, *UCS DMS-250 Software Optionality Control (SOC) User's Manual*
- 297-2621-345, *UCS DMS-250 SS7 Release Link Trunk (RLT) Feature Application Guide*
- 297–2621–355, *UCS DMS-250 Transaction Capabilities Application Part (TCAP) Application Guide*

What precautionary messages mean

The types of precautionary messages used in NT documents include attention boxes and danger, warning, and caution messages.

An attention box identifies information that is necessary for the proper performance of a procedure or task or the correct interpretation of

information or data. Danger, warning, and caution messages indicate possible risks.

Examples of the precautionary messages follow.

ATTENTION Information needed to perform a task

ATTENTION

If the unused DS-3 ports are not deprovisioned before a DS-1/VT Mapper is installed, the DS-1 traffic will not be carried through the DS-1/VT Mapper, even though the DS-1/VT Mapper is properly provisioned.

DANGER Possibility of personal injury

DANGER

Risk of electrocution

Do not open the front panel of the inverter unless fuses F1, F2, and F3 have been removed. The inverter contains high-voltage lines. Until the fuses are removed, the high-voltage lines are active, and you risk being electrocuted.

WARNING Possibility of equipment damage

WARNING

Damage to the backplane connector pins

Align the card before seating it, to avoid bending the backplane connector pins. Use light thumb pressure to align the card with the connectors. Next, use the levers on the card to seat the card into the connectors.

CAUTION Possibility of service interruption or degradation

CAUTION

Possible loss of service

Before continuing, confirm that you are removing the card from the inactive unit of the peripheral module. Subscriber service will be lost if you remove a card from the active unit.

How commands, parameters, and responses are represented

Commands, parameters, and responses in this document conform to the following conventions.

Input prompt (>)

An input prompt (>) indicates that the information that follows is a command:

>BSY

Commands and fixed parameters

Commands and fixed parameters that are entered at a MAP terminal are shown in uppercase letters:

>BSY CTRL

Variables

Variables are shown in lowercase letters:

>BSY CTRL ctrl_no

The letters or numbers that the variable represents must be entered. Each variable is explained in a list that follows the command string.

Responses

Responses correspond to the MAP display and are shown in a different type:

```
FP 3 Busy CTRL 0: Command request has been submitted.
FP 3 Busy CTRL 0: Command passed.
```

The following excerpt from a procedure shows the command syntax used in this document:

1 Manually busy the CTRL on the inactive plane by typing

>BSY CTRL ctrl_no
and pressing the Enter key.

where

ctrl_no is the number of the CTRL (0 or 1)

Example of a MAP response:

```
FP 3 Busy CTRL 0: Command request has been submitted.
FP 3 Busy CTRL 0: Command passed.
```

Introduction to Feature Group D (FGD)

Feature Group D (FGD) is an equal access long distance dialing plan that connects local exchange carriers (LEC) and inter-exchange carriers (IEC) across equal access network trunks (EANT). Specifically, FGD connects the trunk side of a Bell Equal Access End Office (EAEO) or a class 4/5 Access Tandem (AT) office to UCS DMS-250 switches in an IEC network.

With the FGD access method, subscribers have equal access to any IEC for inter-Local Access Transport Area (LATA) services. Subscribers may pre-register their carrier of choice for all inter-LATA services, but may also override that choice on a per-call basis by dialing 10XXX or 101XXX [XXX = carrier identification code (CIC)].

In addition, the UCS DMS-250 switch provides the following features and services that enhance FGD operation:

- Automatic Congestion Control (ACC)
- Automatic Number Identification (ANI) Screening
- Calling Party Information (CPI) message handling
- CIC routing
- COS screening
- Cut–Thru
- Dynamically controlled routing (DCR)
- Early answer supervision on universal access (UA) calls
- FGD PASSTHRU
- Fifteen-digit International Direct Digit Dialing (IDDD)
- Flexible Dialing (FlexDial)
- ID24
- Incoming Exclusion Screening (IEXCLINX)
- LATA screening
- Limited Calls per Authorization Code (AUTHCODE)
- Mechanized Calling Card Services (MCCS)

- N00 Services
- NetworkBuilder
- Network Security (NETSEC)
- Offhook Queing
- OPCHOICE Routing
- Partial/Empty Account Code Screening
- Reorigination
- Suspend (SUS) and Resume (RES) message handling
- Transitional
- Transaction Capabilities Application Part (TCAP)
- Universal International Freephone
- VPROMPTS

Note: This NTP describes features introduced or modified in the UCS05/UCS06/UCS07/UCS08 software load; it is not an all-inclusive list of FGD features supported by the UCS DMS-250 switch.

What are trunks?

Trunks connect one switch to another switch. UCS DMS-250 switches carry long distance traffic between LATAs over the following trunk types:

- ONAL (Offnet Access Line)—connects the line side of an end office (EO) using Feature Group A (FGA) signaling. Originating, terminating, and two-way access is provided over “ground start” facilities; terminating access is provided over “loop start” facilities.
- ONAT (Offnet Access Trunk)—connects the trunk side of an end office (EO) using Feature Group B (FGB) and Feature Group C (FGC) signaling. Originating, terminating, and two-way access is provided.
- DAL (Dedicated Access Line)—connects a PBX, key system, or single telephone. Originating, terminating, and two-way access is provided over “ground start,” “loop start,” and “tie trunk” facilities.
- IMT (Inter-machine Trunk)—connects to another switching machine in an IEC network. Originating, terminating, and two-way access is provided. IMTs also support multi-frequency (MF), dual-tone multi-frequency (DTMF) per trunk signaling (PTS), and signaling system 7 (SS7) signaling.

- EANT (Equal Access Network Trunk)—connects to an Equal Access End Office (EAEO) or Access Tandem using FGD signaling. Originating, terminating, and two-way EANT access is provided. PTS or SS7 ISUP access is also supported.

What is the FGD trunk?

FGD is one of the most sophisticated signaling protocols available for a LEC-to-IEC connection. It allows equal IEC access through the entry of a "1" and a specific long distance carrier code or IEC code (known as "1 +" dialing). FGD also supports the collection of specific data located in the subscriber's address digits and other transaction-specific data that is distributed to LECs and IECs for the provisioning of selected services.

Dialing plans supported by the FGD trunk

FGD dial plans are used to access the features on the UCS DMS-250 switches. Table 1-1 lists the supported FGD dialing plans and their dialing patterns.

Table 1-1
FGD dialing plans

Dialing plan	Dialing patterns
PURE FGD—	
MF	KP + (II + 3- or 10-digit ANI) + ST KP + ADDR + ST
MF (three-stage domestic)	KP + OZZ + XXX(X) + ST KP + II + ANI + ST DP + ADDR + ST
Note: "Pure" FGD subscribers have the option of designating one carrier for their primary Inter LATA or international service by pre-subscription. Once subscribers select a carrier, the subscribers enter "1 +10 digits" when placing a direct distance dialing (DDD) call.	
CUT-THRU FGD—	
MF	KP + II + 10-digit ANI + STP ***Note:*** The "cut-thru" dialing pattern must include one of the subscriber-dialed DTMF streams.

—continued—

Table 1-1
FGD dialing plans (continued)

Dialing plan	Dialing patterns
DTMF ***Note:*** "Cut-thru" FGD allows subscribers to access their carrier from any location by identifying the carrier identification code (CIC). For example, the 10XXX in an "10XXX + NXX-XXXX" stream indicates the carrier code (for example, AT&T, MCI, Sprint, etc.).	Subscriber-dialed streams include: Authcode first = (AUTH) + (PIN) + (ADDR) + (ACCT) Authcode last = (ADDR) + (ACCT) + (PIN) + (ACCT)
TRANSITIONAL FGD—	
MF	KP + (II + 3- or 10-digit ANI) + ST2P or ST3P
DTMF ***Note:*** "Transitional" FGD allows subscribers to access their carrier from any location by dialing the following digits: 950-WXXX where W = 0 or 1; XXX = CIC	Subscriber dialed streams include: Authcode first = (AUTH) + (PIN) + (ADDR) + (ACCT) Authcode last = (ADDR) + (ACCT) + (PIN) + (ACCT) MCCS = 0 + ADDR + 14-digit travel card number (+ AUTH)
UNIVERSAL ACCESS (UA) FGD—	
MF	KP + II + 10-digit ANI + ST KP + 800-NXX-XXXX + ST ***Note:*** Datafill in table STDPRT (Standard Pretranslations) defines the 800 number as a Universal Access (UA) number for this type of call.

—continued—

Table 1-1
FGD dialing plans (continued)

Dialing plan	Dialing patterns
DTMF ***Note:*** "UA" FGD allows the subscriber to dial an "800" number in the 800-NXX-XXX format and receive dial tone from the UCS DMS-250 (or similar) switch. The switch processes the subscriber-dialed stream as required.	Subscriber-dialed streams include: Authcode first = (AUTH) + (PIN) + (ADDR) + (ACCT) Authcode last = (ADDR) + (ACCT) + (PIN) + (ACCT) MCCS = 0 + ADDR + 14-digit travel card number (+ AUTH)
INTERNATIONAL FGD—	
MF ***Note:*** "International" FGD allows a subscriber to dial a prescribed international phone number.	KP + 1N(')X + XXX(X) + CCC + ST KP + II + ANI + ST KP + CC + NN + ST
TEST CALL FGD—	
MF	KP + 95X-XXXX + ST
MF (alternative)	KP + 10X + ST
	—end—

Table 1-2 describes the abbreviations and codes used in the FGD dialing plans.

Table 1-2
FGD dialing plans' abbreviations and codes

Acronyms	Description
ACCT	Subscriber account number (length = 1–12 digits)
ADDR	Address digits (length = 7–10 digits) Typically NXX-XXXX or NXX-NXX-XXXX
ANI	Automatic Number Identifier NXX or NXX-NXX-XXXX
AUTH	Authorization Code
CC	Country Code (range = 2–3 digits) ***Note:*** This is the "true" country code that is datafilled in the Country Code Table (CCTR).
DTMF	Dual-tone multi-frequency
I	One information digit
II	Two information digits ***Note:*** These digits are datafilled in the equal access pretranslator for EANTs.
KP	Signal that indicates the start of the multi-frequency digit stream
MCCS	Mechanized Calling Card Service
MF	Multi-frequency

—continued—

Table 1-2
FGD dialing plans' abbreviations and codes (continued)

Acronyms	Description
1NX	International Dial Plan: non-operator assisted call (1 + N = 9; X = 0–9)
1N(')X	International Dial Plan: operator assisted call (1 + N = 9; X = 0–9)
N	Any digit (range = 2–9)
NN	National number (for international calls)
NXX-XXXX	Address stream (7 digits; N = 2–9; X = 0–9)
OZZ	Address stream (7 digits; N = 2–9; X = 0–9)
PIN	Personal Identification Number
ST, STP, ST2P, ST3P	Signal that indicates the end of the multi-frequency digit stream
X	Any digit (range = 0–9)
XXX(X)	Carrier Identification Code (CIC) (minimum, 3 digits; maximum, 4 digits)
—end—	

How the FGD trunk processes calls

Typical call processing between the LEC and the UCS DMS-250 switch includes the following steps:

1 Both ends of the trunk between the LEC and the switch send "on-hook" signals when the trunk is idle.

2 The receipt of a sustained “offhook” signal indicates that the LEC has a call and would like to use the FGD trunk to process the call.

3 When it receives an “offhook” signal, the switch performs two actions:

- completes setup needed to process the call
- allocates a Universal Tone Receiver (UTR) to capture the MF digits expected from the LEC

4 When the call setup is complete, the switch sends a “wink” signal (proceed to send) to the other switch indicating a readiness to accept the subscriber digits. The wink signal is a short off-hook
(minimum 140 ms) .

5 The switch receives MF digits from the LEC. It processes all digits in the order received. For example, two MF digit streams are received in a “pure” FGD dialing pattern:

first message stream: KP + II + ANI + ST
second message stream: KP + ADDRESS + ST

The first message stream becomes an internal “digits message.” After it verifies the first message stream, the switch verifies the second message stream and determines what additional processing is required based on data contained in the ADDRESS field.

Note: If the digits in the ADDRESS field indicate that the billing source is invalid or if an incorrect number of digits have been sent, the call is not processed and the appropriate call treatment is sent. The call treatment may be in the form of an announcement to the subscriber, special tones, or routing to an operator for further processing.

6 When all digits are verified, the switch determines the terminating trunk based on the translation and routing information contained in the digits.

7 The switch checks designated trunks to make sure the originating and terminating trunk can “talk” to each other. When the switch completes the checks the terminating trunk is prepared to receive from the originating trunk.

Note: The switch uses the network management (NWM) system routines to determine trunk compatibility based on data in the Trunk Class of Service (TRKCOS) table and the satellite control (SATOVER) table.

8 Connection between originating and terminating trunk occurs.

9 When the terminator answers, an answer supervision signal is sent back to the originating switch and a two-way voice path is set up. Answer is indicated by a sustained “off-hook” signal sent by the originating switch.

10 The call is taken down when the originating switch receives a “clear forward” signal or a “clear back” signal. Disconnect is sent back to the other trunk.

Note: A “clear forward” indicates the calling party disconnected first. A “clear back” indicates the called party disconnected first.

11 Both ends of the trunk between the LEC and the switch send “on-hook” signals indicating a return to idle status.

How do I activate the FGD trunk?

To activate the FGD trunk, you must enter data in six tables in the following sequence:

1 CLLI

2 CLLICDR

3 TRKGRP

Note: The group type for the FGD trunk is EANT.

4 TRKGRP1

5 TRKSGRP

6 TRKMEM

Automatic number identification screening

This chapter describes automatic number identification (ANI) screening, the ANI databases, and the ANIMOVE tool, a tool that helps you manipulate data in the ANI databases. The chapter also explains how to use carrier identification codes (CICs) to map ANIs to profiles, and it explains the QANI tool, a tool that helps you manipulate data between the CIC and ANI databases.

What is an automatic number identification?

An automatic number identification (ANI) is a 3-digit, 6-digit, or 10-digit number that identifies the calling party and the calling party's services.

A 3-digit ANI is the NPA, the area code, of a call. A 6-digit ANI includes the NPA and the NXX, the exchange, of a call. A 10-digit ANI includes the NPA, NXX, and XXXX, the station digits, of the calling party. The (NPA) NXX-XXXX format is the format of national telephone numbers.

The UCS DMS-250 switch receives the ANI in a call's initial address message (IAM) or call setup message.

What is a psuedo ANI?

If the originating trunk agency has the option PANIVAL active in table TRKGRP, the UCS DMS-250 switch builds a psuedo ANI (PANI) when the originating trunk agency does not provide an ANI. If UCS DMS-250 switch builds a PANI, it treats the PANI just like an ANI. In other words, it screens the PANI as if it had received the PANI in the initial address message (IAM) or the call setup message.

Note: Throughout this chapter, you can assume that we are referring to both ANIs and PANIs when we use the term ANI.

What is ANI screening?

When the UCS DMS-250 switch receives an ANI, it screens the ANI. To screen an ANI means to check for data you entered against that ANI. The data, called a profile, contains information like which features and call types apply to the calling party and who to bill for the call.

ANI screening for FGD UA MCCS calls

ANI screening allows the UCS DMS-250 switch to screen universal access (UA) mechanized calling card services (MCCS) calls that originate on PTS FGD or SS7 FGD trunks. ANI screening for these calls requires datafilling table TRKGRP with the UAANISCR option for FGD trunks and requires the software optionality control (SOC) UBFR0004, 0004 MCCS Fraud Enhancements.

Note: This ANI screening feature does not screen the information digits for UA MCCS calls that originate on FGD trunks.

The UCS DMS-250 switch can route the call to an operator or apply treatment, if ANI screening fails for any of the following reasons,:

- If the ANI is not received, the call receives ANI_DATABASE_FAILURE (ADBF) treatment and a TRK255 log is generated with the trouble code UA_ANI_NOT_RECVD.
- If the ANI is not present in the ANI database, the call receives ADBF treatment and a TRK255 log is generated with the trouble code UA_ANI_INVALID.
- If the ANI is not a three-digit or ten-digit ANI, the call receives ADBF treatment and a TRK255 log is generated with the trouble code UA_ANI_INVALID.
- If the ANI is marked as disallowed (DA), the call receives ANI_ACCOUNT_NOT_ALLOWED (ANIA) treatment and a TRK255 log is generated with the trouble code UA_ANI_INVALID.

Routing UA MCCS calls to the operator that fail ANI screening requires datafilling table STDPRTCT with the RTETOPER option for the UA selector. If this option is not datafilled against the UA MCCS number, the calls route to treatment.

If ANI screening is successful, the UA MCCS calls follow the MCCS call processing logic. Only the STATUS field from the ANI profile is applied to UA MCCS calls.

Interactions

The ANIB YP feature takes precedence over ANI screening for FGD UA MCCS calls. If both options, ANIB YP and UAANISCR, are present for originating FGD trunks, the ANI is not screened for FGD UA MCCS calls.

What are the ANI databases?

The ANI databases are tables ANISCUSP and ANIVAL. Table ANISCUSP contains ANIs and their profiles, while table ANIVAL contains only ANIs with an index into table UNIPROF, which contains the ANIs' profiles. Table ANIVAL also contains an index into table MULTPROF, which maps a call's carrier identification code (CIC) and, optionally, a call's jurisdiction information with a specific profile in table UNIPROF. The processing of ANIs and profiles using tables ANIVAL, UNIPROF, and MULTPROF is referred to as Multiple Profile per ANI (MPA) processing.

For more information on MPA processing using table MULTPROF, see the section, "How do I use CICs and jurisdiction information to map ANIs to profiles?" in this chapter.

How do I activate MPA processing?

To activate MPA processing, do the following:

- set the ANI_SCREENING_ORDER office parameter
- datafill tables ANIVAL and UNIPROF

To activate MPA processing to include the mapping of a CIC to a profile, do the following:

- set the ANI_SCREENING_ORDER office parameter
- datafill tables ANIVAL and UNIPROF
- order and activate SOC UTRS0200, Multiple Profile ANI by CIC
- datafill table MULTPROF

To activate MPA processing to include the mapping of a CIC and jurisdiction information to a profile, do the following:

- set the ANI_SCREENING_ORDER office parameter
- datafill tables ANIVAL and UNIPROF
- order and activate SOC UTRS0200, Multiple Profile ANI by CIC
- order and activate SOC UTRS0201, Multiple Profile ANI by Jurisdiction
- datafill table MULTPROF

Do I need to use both ANI databases?

You do not need to use both ANI databases to screen ANIs. Tables ANIVAL and UNIPROF are designed to improve memory usage. These tables can replace table ANISCUSP.

Table ANISCUSP contains ANIs and their profiles. Figure 2-1, Format of table ANISCUSP, shows the format of the data in table ANISCUSP. Note how some ANIs, depicted by the arrows, in table ANISCUSP use the same profiles.

Table ANIVAL contains only ANIs with an index into table UNIPROF, which contains the ANIs' profiles. Figure 2-2, Format of tables ANIVAL and UNIPROF, shows the format of the data in tables ANIVAL and UNIPROF. Note how three ANIs, depicted by the arrows, contain the same profile index, UNIKEY1. The profile index is a key into table UNIPROF. The ANIs with the profile index UNIKEY1 reuse the profile assigned to UNIKEY1 in table UNIPROF. Since it reuses the profile, the same profile does not need to be entered into the table several times.

Figure 2-1
Format of table ANISCUSP

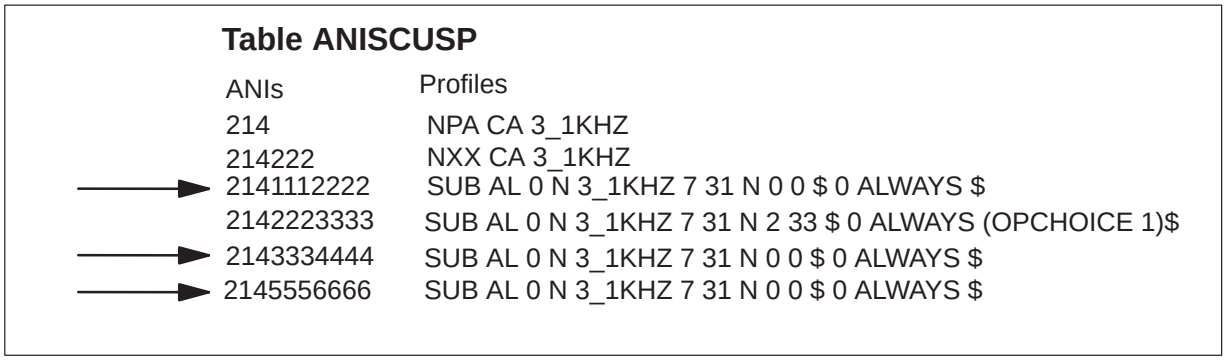
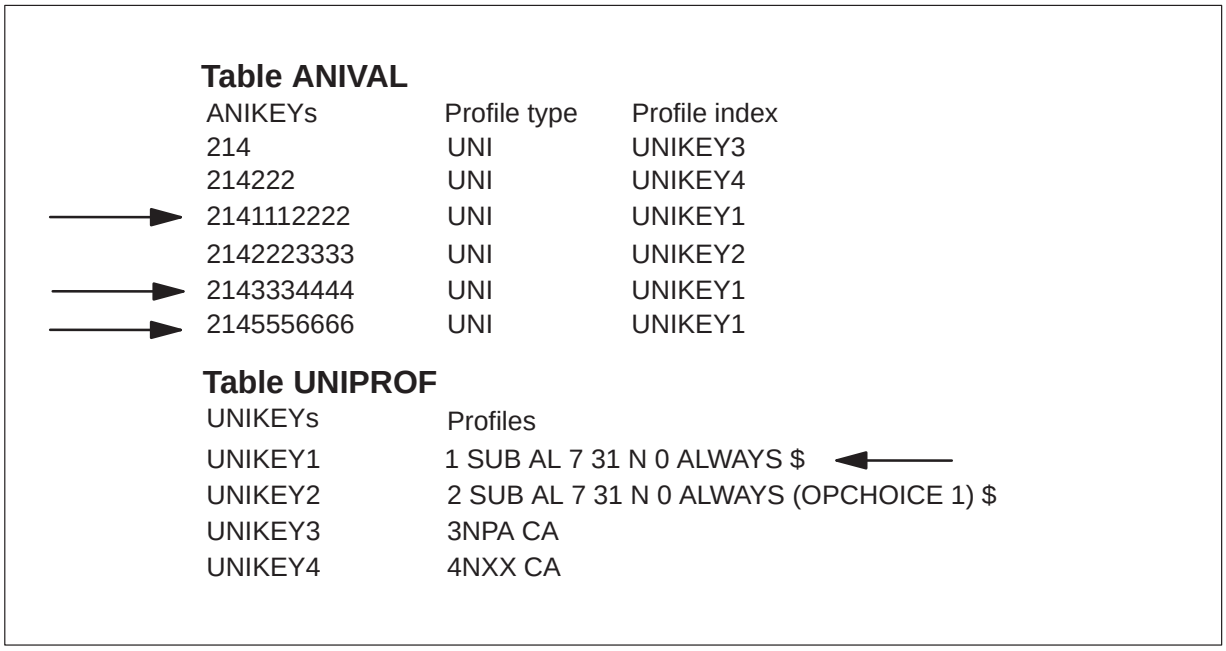


Figure 2-2
Format of tables ANIVAL and UNIPROF



How do I enter new ANIs and profiles into table ANISCUSP?

This section explains how to enter new ANIs and profiles into table ANISCUSP. You won't enter data into every field in table ANISCUSP because which fields contain data depends upon what data you entered into previous fields. This section explains these dependencies.

Note: To reduce the impact on the UCS DMS-250 switch's memory, Nortel recommends you enter new ANIs in table ANIVAL and their corresponding profiles in table UNIPROF. For more information, see "How to enter new ANIs and profiles into tables ANIVAL and UNIPROF."

See Table 2-1, Table ANISCUSP. Table 2-1 describes field names, subfield names, and valid data ranges for table ANISCUSP.

Table 2-1
Table ANISCUSP

Field	Subfield	Entry	Explanation and action
KEY		Up to 18 alphanumeric characters (0 to 9, B to F, N)	KEY. Enter a 3-digit ANI, with NPA format, when field ANITYPE=NPA. Enter a 6-digit ANI, with NPA-NXX format, when field ANITYPE=NXX. Enter a 10-digit ANI, with NPA-NXX-XXXX format, when field ANITYPE=SUB.
ANITYPE			AUTOMATIC NUMBER IDENTIFICATION TYPE. Identifies the ANI type.
		NPA	• NPA. Enter NPA when the KEY contains a 3-digit ANI. See section ANITYPE=NPA or NXX for field data.
		NXX	• NXX. Enter NXX when the KEY contains a 6-digit ANI. See section ANITYPE=NPA or NXX for field data.
		SUB	• SUB. Enter SUB when the KEY contains a 10-digit ANI. See section ANITYPE=SUB for field data.
REFAREA			REFINEMENT AREA. Refer to the ANITYPE=NPA or NXX section for NPA and NXX REFAREA field datafill. Refer to the ANITYPE=SUB section for SUB REFAREA field datafill.

The next step depends on the value you entered in the ANITYPE field of table ANISCUSP. See the following table:

If	then
ANITYPE is NPA or NXX	enter data only into the fields shown in Table 2-2, ANITYPE=NPA or NXX.
ANITYPE is SUB	enter data only into the fields shown in Table 2-3, ANITYPE=SUB and Table 2-4, OPTION=CDRTMPLT.

Table 2-2
ANITYPE=NPA or NXX

Field	Subfield	Entry	Explanation and action
STATUS			STATUS. For ANIs validated on an NPA or NPA-NXX level, enter one of the following codes that describes the status of the calling party:
		CA	• CA. Enter CA when the call processes based on the presence of the FGD trunk group option CASUALU. If the option is not present on the trunk, then the call routes to treatment. If the option is present the call is allowed to proceed.
		DA	• DA. Enter DA when 10-digit ANI represents a subscriber being disallowed access to the network.
		NA	• NA. Enter NA when ANI is not assigned.
BCNAME		Valid BC datafilled in table BCDEF	BEARER CAPABILITY NAME. Enter a bearer capability defined in table BCDEF. There is no default.

Table 2-3
ANITYPE=SUB

Field	Subfield	Entry	Explanation and action
STATUS			Enter one of the following:
		CA	• Enter CA when the call processes based on the presence of the FGD trunk group option CASUALU. If the option is not present on the trunk, then the call routes to treatment. If the option is present the call is allowed to proceed.
		AL	• Enter AL when calls originating with the specified 10-digit ANI are allowed to proceed.
		DA	• Enter DA when 10-digit ANI represents a subscriber being disallowed access to the network.
		RD	• Enter RD when 10-digit ANI defined represents a subscriber who has been recently disallowed access to the network.
			Note: If status of ANI digits defined is DA (Disallowed) or RD (Recently Disallowed), the UCS DMS-250 switch routes the call to ADBF treatment.
ACCTLEN		0 to 12	ACCOUNT CODE LENGTH. Enter the number of digits the system is to collect for the account code. If the subscriber is not required to dial an account code, enter 0.
ACCTVAL		Y or N	ACCOUNT CODE VALIDATION. This field indicates whether account code validation is required. Enter Y if account code validation is required. Enter N if account code validation is not required.
BCNAME		Valid BC datafilled in table BCDEF	BEARER CAPABILITY NAME. Enter a bearer capability defined in table BCDEF. There is no default.
OPART		0 to 999	ORIGINATING PARTITION NUMBER. Enter an originating partition (OPART) number.

—continued—

Table 2-3
ANITYPE=SUB (continued)

Field	Subfield	Entry	Explanation and action
TERMPART		0 to 31	TERMINATING PARTITION NUMBER. When ANIDIGS field identifies a 10-digit ANI, enter the terminating partition number associated with the subscriber that is translated to a serving translation scheme (STS) for off-net calling.
SATREST		Y or N	SATELLITE RESTRICTED. This field allows the operating company to designate which ANIs are restricted from satellite switching. Enter one of the following: • Y, calls associated with this ANI are restricted from satellite switching • N, calls associated with this ANI are allowed satellite switching
PINLEN		0, 2, or 3	PERSONAL IDENTIFICATION NUMBER LENGTH. This field identifies the number of personal identification number (PIN) digits to collect from the originating subscriber for the ANI number. The default value is 0, and indicates there are no multiple PIN digits.
PININDEX		0 to 8191	PERSONAL IDENTIFICATION NUMBER INDEX. This field identifies the index into the MULTIPIN table for validating received PIN digits. The default value is 0, which indicates there are no multiple PINs.
PINDIGS		0 to 4 digits (0 to 9, A to D)	PERSONAL IDENTIFICATION NUMBER DIGITS. PIN digits are used to further identify authorized users of the system. Enter up to 4 characters in length with a combination of 0–9 and/or A–D (fourth column DTMF digits). Enter $ when PIN digits are not required, or when multiple PINs are being defined via table MULTIPIN fields PINLEN and PININDEX.

—continued—

Table 2-3
ANITYPE=SUB (continued)

Field	Subfield	Entry	Explanation and action
MLTCOSID		0 to 2047	MULTIPLE CLASS OF SERVICE (COS) INDEX. This field indexes into table MULTICOS to indirectly point to table COSUS. The default value is 0 to indicate no COS screening is performed. With table MULTICOS, a single MLTCOSID can contain up to 32 COSUS indexes, and therefore COS screening can be performed up to 32 times per call.
ANIDELV			ACCOUNT NUMBER IDENTIFICATION DELIVERY. This field controls the delivery of ANI for FGD and PRI CLID-billed originations. This field is only used for 10-digit ANIs.
		ALWAYS	ALWAYS – For ISUP, deliver the CPN and CGN and OLI. For PTS, deliver the ANI. For PRI, deliver the CLID.
		NEVER	NEVER – Do not deliver anything
		CPNONLY	CPNONLY – For ISUP, deliver only the CPN. For PTS, deliver the ANI. For PRI, deliver the CLID.
		CGNONLY	CGNONLY – For ISUP, deliver only the CGN and OLI. For PTS, deliver the ANI. For PRI, deliver nothing.
OPTION			OPTION. This field consists of subfields that can be datafilled as necessary.
		ACCTIDX	Enter ACCTIDX to enable this option. Datafill the ACCTIDX field. ***Note:*** Datafill this option only when the VALIDATE_ACCT_DMS250 office parameter and the ACCTVAL field are set to Y.
	ACCTIDX	0 to 4294967295	ACCOUNT INDEX. Enter a number between 0 and 4294967295 to index table ACSCRN2. Enter 0 to disable the ACCTIDX option.
		OPCHOICE	Enter OPCHOICE to provide alternate routing for operator service calls. This option is only available for 0– or 0+ calls. Datafill the OPCHIDX field.

—continued—

Table 2-3
ANITYPE=SUB (continued)

Field	Subfield	Entry	Explanation and action
	OPCHIDX	0 to 255	Enter a number between 0 and 255 to index table OPCHOICE.
		CAINGRP	CAIN GROUP. Enter CAINGRP to specify a CAIN subscription group for the originating agency. Datafill the CAINGRP field.
	CAINGRP	Valid CAIN group datafilled in table CAINGRP	CAIN GROUP. Enter a valid CAIN group datafilled in table CAINGRP. The originating agency subscribes to CAIN services through the CAIN group.
	Note: Datafill table CAINGRP before datafilling the CAINGRP option of the OPTION vector.		
		PASSTHRU	PASSTHRU. This option identifies the particular FGD call types using this ANI number where the PASSTHRU feature is active. The valid values are: • PUREONLY. Identifies that only pure-FGD calls originating with this ANI number use the PASSTHRU feature. • CUT_ONLY. Identifies that only cut-through FGD calls originating with this ANI number use the PASSTHRU feature. • PURE_CUT. Identifies that both pure-FGD and cut-through FGD calls originating with this ANI number use the PASSTHRU feature.
		CDRTMPLT	CDR TEMPLATE. Use this option to identify the CDR template used to generate CDRs for the specified ANI. See Table 2-4, OPTION=CDRTMPLT.
		Note: Datafill CDR templates in table CDRTMPLT before datafilling the CDRTMPLT option.	
—end—			

Table 2-4
Option=CDRTMPLT

Field	Subfield	Entry	Explanation and action
TMPLTIDX		Valid name datafilled in table CDRTMPLT	TEMPLATE INDEX. The UCS05, UCS06, and UCS06FLEX templates are available without a SOC. When SOC option UBFR0001 is enabled, you can use table CDRTMPLT to create new CDR template. For more information on CDR templates, see *UCS DMS-250 Billing Records Application Guide.*
USEEDIT		N or Y	USE EDIT. Enter N to use the active version of the CDR template. Y indicates that the edit version is used. ***Note:*** This field is used for testing purposes only. It should be set to N, which is the default.

How do I enter new ANIs and profiles into tables ANIVAL and UNIPROF?

This section explains how to enter new ANIs into table ANIVAL and the ANIs' corresponding profiles into table UNIPROF. It is separated into two subsections: "How to enter new ANIs in table ANIVAL" and "How to enter new profiles into table UNIPROF." For information on how to convert existing ANIs and profiles in table ANISCUSP to tables ANIVAL and UNIPROF, see "How do I convert ANIs and profiles from table ANISCUSP to tables ANIVAL and UNIPROF?" also in this chapter.

How to enter new ANIs in table ANIVAL

See Table 2-5, Table ANIVAL. It describes how to enter data into table ANIVAL.

Table 2-5
Table ANIVAL

Field	Description	Values
ANIKEY ANI Key	The key into table ANIVAL.	3-, 6-, or 10-digit ANI Enter 3-digit ANIs with a PROFIDX that has a corresponding tuple in table UNIPROF indicating a UNITYPE of NPA. Enter 6-digit ANIs with a PROFIDX that has a corresponding tuple in table UNIPROF indicating a UNITYPE of NXX. Enter 10-digit ANIs with a PROFIDX that has a corresponding tuple in table UNIPROF indicating a UNITYPE of SUB.
PROFTYPE Profile Type	The profile type	UNI, MULT
Note: The UCS DMS-250 switch does not screen ANIs in table ANIVAL until you set the office parameter ANI_SCREENING_ORDER. ***Note:*** A tuple is a row in a table.		

—continued—

Table 2-5
Table ANIVAL (continued)

Field	Description	Values
REFAREA Refinement Area	An index into the profile tables; UNI directly maps an ANI to a single profile in table UNIPROF; MULT indexes to table MULTPROF and, based on the CIC, gets a profile from table UNIPROF.	UNIKEY, MULTPRF; up to 8 characters
Note: Enter data into the UNIKEY field in table UNIPROF before you enter data into the REFAREA field in table ANIVAL.		
Note: The UCS DMS-250 switch does not screen ANIs in table ANIVAL until you set the office parameter ANI_SCREENING_ORDER. ***Note:*** A tuple is a row in a table.		
—end—		

Example of MAP terminal display for table ANIVAL

Figure 2-3, MAP display example for table ANIVAL, shows how the data in table ANIVAL appears on the MAP terminal. This figure shows sample data only. Your table will have the same format, but will contain different data.

Figure 2-3
MAP display example for table ANIVAL

```
ANIKEY     PROFTYPE     REFAREA
-------------------------------------------------------
214         UNI         UNIKEY1
214444      UNI         UNIKEY2
2142221234 UNI          UNIKEY3
9725554321  MULT         MULTPRF2
2146667890  MULT         MULTPRF6
9725551234  MULT         MULTPRF2
```

How to enter new profiles into table UNIPROF

See Table 2-6, Table UNIPROF data. It describes the fields and data in table UNIPROF.

Table 2-6
Table UNIPROF data

Field	Subfield	Entry	Explanation and action
UNIKEY		vector of up to 8 characters	UNIVERSAL PROFILE KEY. This field is the key to the table.
PROFNUM		0 to 64533	PROFILE NUMBER. A unique identifier for the profile.
UNITYPE		NPA, NXX, or SUB	UNIVERSAL PROFILE TYPE. Enter the type of profile to be used. For NPA and NXX UNI types, datafill the STATUS field. For SUB UNI types, datafill the STATUS, OPART, TERMPART, SATRES, MLTCOSID, ANIDELV, and OPTIONS fields.

The next step depends on the value you entered in the UNITYPE field. See the following table:

If	then
UNITYPE is NPA or NXX	enter data only into the fields shown in Table 2-7, UNITYPE=NPA or NXX.
UNITYPE is SUB	enter data only into the fields shown in Table 2-8, UNITYPE=SUB and Table 2-9, Options in table UNIPROF.

Table 2-7
UNITYPE=NPA or NXX

Field	Subfield	Entry	Explanation and action
	STATUS	CA, NA, DA	STATUS. Enter the status of the type. • CA=casual • DA=disallowed • NA=not allowed

Table 2-8
UNITYPE=SUB (continued)

Field	Subfield	Entry	Explanation and action
	STATUS	CA, DA, AL, RD	STATUS. Enter the status of the type. • CA=casual • DA=disallowed • NA=not allowed • RD=recently disallowed
	OPART	0 to 999	ORIGINATING PARTITION NUMBER. Enter an originating partition (OPART) number.
	TPART	0 to 31	TERMINATING PARTITION NUMBER. When ANIDIGS field identifies a 10-digit ANI, enter the terminating partition number associated with the subscriber that is translated to a serving translation scheme (STS) for off-net calling.
	SATRES	N or Y	SATELLITE RESTRICTED. Enter Y to restrict the call from being routed through a satellite.
	MLTCOSID	0 to 2047	MULTIPLE CLASS OF SERVICE INDEX. This field indexes into table MULTICOS to indirectly point to table COSUS. The default value is 0 to indicate no COS screening is performed. With table MULTICOS, a single MLTCOSID can contain up to 32 COSUS indexes. and therefore COS screening can be performed up to 32 times per call.
	ANIDELV		ACCOUNT NUMBER IDENTIFICATION DELIVERY. This field controls the delivery of ANI for FGD and PRI CLID-billed originations. This field is only used for 10-digit ANIs.
		ALWAYS	ALWAYS. For ISUP, deliver the CPN, CGN and OLI. For PTS, deliver the ANI. For PRI, deliver the CLID.
		NEVER	NEVER. Do not deliver anything
		CPONLY	CPONLY. For ISUP deliver only the CPN. For PTS, deliver the ANI. For PRI, deliver the CLID.

—continued—

Table 2-8
UNITYPE=SUB (continued)

Field	Subfield	Entry	Explanation and action
		CGNONLY	CGNONLY. For ISUP, deliver only the CGN and OLI. For PTS, deliver the ANI. For PRI, deliver nothing.
	OPTIONS	ACCTIDX, ACCT, PIN, PINDIGS, OPCHOICE, PASSTHRU, CAINGRP, CDRTMPLT	OPTIONS. Enter up to ten options, one at a time, and datafill the corresponding field(s) after each one. see Table 2-9, “Options in table UNIPROF” for field information.
		—end—	

Table 2-9
Options in table UNIPROF

Option	Field	Entry	Explanation and action
ACCTIDX			ACCOUNT INDEX. This option indexes the account code database.
	ACCTIDX	0 to 4294967295	ACCOUNT INDEX. Enter the value for the account code database index.
ACCT			ACCOUNT CODE. If this option is selected, an account code will be collected.
	ACCTLEN	0 to 12	ACCOUNT CODE LENGTH. Enter the number of digits that should be collected for the account code.
	ACCTVAL	Y or N	ACCOUNT CODE VALIDATION. The entry in this field determines whether or not the the account code should be validated.
PIN			PERSONAL IDENTIFICATION NUMBER.
	PINLEN	0, 2, or 3	PIN LENGTH. This field identifies the length of all multiple PIN digits.
	PININDEX	0 to 8191	PIN INDEX. Enter the index to table MULTIPIN.
		—continued—	

Table 2-9
Options in table UNIPROF (continued)

Option	Field	Entry	Explanation and action
PINDIGS			PERSONAL IDENTIFICATION NUMBER DIGITS. This option is used to further identify authorized users of the system.
	PINDIGS	0 to 4 digits (0 to 9, A to D)	Enter up to 4 characters with a combination of numbers or A through D. Enter $ when PIN digits are no longer required.
OPCHOICE			OPERATOR CHOICE. Enter OPCHOICE to provide alternate routing of operator service calls. This option is only available for 0– or 0+ calls.
	OPCHIDX	0 to 255	OPERATOR CHOICE INDEX. This value is an index to table OPCHOICE
PASSTHRU			PASS THROUGH. This option identifies the particular FGD call types using this ANI number where the PASSTHRU feature is active.
	PASSTHRU	PURE_ONLY	Only pure-FGD calls originating with this ANI profile use the PASSTHRU feature.
		CUT_ONLY	Only cut-through FGD calls originating with this ANI profile use the PASSTHRU feature.
		PURE_CUT	Both pure-FGD and cut-through FGD calls originating with this ANI profile use the PASSTHRU feature.
CAINGRP			CAIN GROUP. This option allows the originating agency to subscribe to CAIN services.
	CAINGRP	a valid CAIN group from table CAINGRP	CAIN GROUP. Specify the CAIN group to subscribe to.
CDRTMPLT			CDR TEMPLATE. This option is used to identify the CDR template used to generate CDRs for the specified ANI.

—continued—

Table 2-9
Options in table UNIPROF (continued)

Option	Field	Entry	Explanation and action
	TMPLTIDX		TEMPLATE INDEX. The UCS05, UCS06, UCS06FLEX, UCS07, and UCS07FLEX templates are available without a SOC. When SOC option UBFR0001 is enabled, you can use table CDRTMPLT to create new CDR templates. For more information on CDR templates, see *UCS DMS-250 Billing Records Application Guide*.
	USEEDIT	Y or N	USE EDIT. Enter N to use the active version of the CDR template. Y indicates that the edit version is used. ***Note:*** This option is for testing only and should be set to N, which is the default.
			—end—

Example of MAP terminal display for table UNIPROF

Figure 2-4, MAP terminal display example for table UNIPROF, shows how the data in table UNIPROF appears on the MAP terminal. This figure shows only sample data. Your table will have the same format, but will contain different data.

Figure 2-4
MAP terminal display example for table UNIPROF

```
UNIKEY   PROFNUM   UNITYPE   REFAREA
-------------------------------------------------------
UNIKEY1 1 NPA CA
UNIKEY2 2 NXX CA
UNIKEY3 3 SUB AL 7 31 N 0 ALWAYS (OPCHOICE 2) (ACCTIDX 1)
$
UNIKEY4 4 SUB AL 7 31 N 0 ALWAYS (ACCT 2 N) (PIN 2 33) $
```

How do I convert ANIs and profiles from table ANISCUSP to tables ANIVAL and UNIPROF?

To convert or move ANIs and profiles that already exist in table ANISCUSP to tables ANIVAL and UNIPROF, use the ANIMOVE tool. The ANIMOVE tool has three purposes:

- converts all or some of the data in table ANISCUSP to data in tables ANIVAL and UNIPROF
- deletes the converted data from table ANISCUSP
- keeps track of the converted tuples during a conversion

  Note: A tuple is a row in a table.

How the ANIMOVE tool works

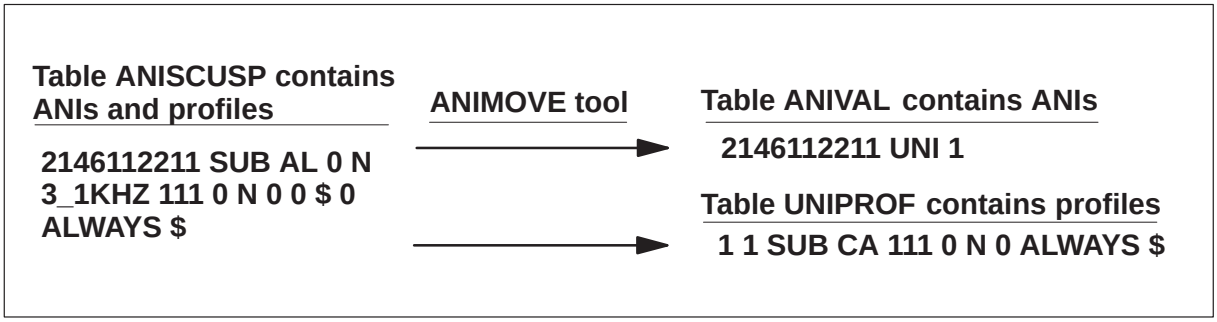
The ANIMOVE tool converts the ANIs in table ANISCUSP to ANIs in table ANIVAL. It creates the PROFTYPE and REFAREA fields in table ANIVAL since these fields are nonexistent in table ANISCUSP. The ANIMOVE tool converts the remaining fields in table ANISCUSP to profiles in table UNIPROF.

Note: The ANIMOVE tool only converts the PROFTYPE field to UNI. If you want your profiles to be multiple profiles, you must enter MULT as the PROFTYPE. See "How do I use CICs to map ANIs in table ANIVAL to profiles in table UNIPROF?" for more information.

During conversion, if the number of unique profiles becomes greater than 65,534, the UCS DMS-250 switch halts the conversion. Only the tuples processed up to this point are converted. You can find out the last tuple converted through the ANIMOVE status command. See "ANIMOVE commands" for more information.

The ANIMOVE tool is unable to duplicate tuples in table UNIPROF. In other words, if a tuple exists in table UNIPROF, the ANIMOVE tool is unable to create another tuple just like the existing one. However, to create duplicate tuples in table UNIPROF, you can enter data into the table without the ANIMOVE tool. See "How to enter new profiles in table UNIPROF" to learn how to enter profiles in table UNIPROF without using the ANIMOVE tool.

Figure 2-5
ANIMOVE conversion



ANIMOVE commands

You can access the ANIMOVE tool from any level of the MAP terminal. The ANIMOVE tool takes precedence over the command interpreter (CI) command tools. The ANIMOVE tool gives you six commands:

- Status — displays a summary of the current conversion
- Halt — stops the conversion process
- Purge — removes the converted ANIs from table ANISCUSP
- Partial — converts portions of table ANISCUSP
- Total — converts all of table ANISCUSP at once
- Help — gives descriptions of the ANIMOVE commands and their parameters

Note 1: Normal call processing takes precedence over the ANIMOVE tool.

Note 2: Only one person at a time can use the ANIMOVE tool.

Note 3: While the ANIMOVE tool is running, you are unable to change tables ANISCUSP, ANIVAL, and UNIPROF, however you can display the tables.

If you want to	then use the	Example of command
display descriptions of the ANIMOVE commands and their parameters,	Help command.	ANIMOVE help
display a summary of the current conversion,	Status command.	ANIMOVE status
Note: The following sections further explain the ANIMOVE commands. For more information, see the *UCS DMS-250 Commands Reference Manual*.		
—continued—		

If you want to	then use the	Example of command
stop a total or partial conversion while it is in progress,	Halt command.	ANIMOVE halt
remove all converted tuples from table ANISCUSP,	Purge command.	ANIMOVE purge 2146112211 9726112211
convert portions of table ANISCUSP to tables ANIVAL and UNIPROF,	Partial command.	ANIMOVE partial 2146112211 9726112211
convert all tuples in table ANISCUSP to tables ANIVAL and UNIPROF,	Total command.	ANIMOVE total
Note: The following sections further explain the ANIMOVE commands. For more information, see the *UCS DMS-250 Commands Reference Manual*.		
—end—		

Status command

The status command displays a summary of the conversion, including

- the number of ANIs it converted
- the number of ANIs and profiles added to tables ANIVAL and UNIPROF during the last conversion
- the last ANI it converted

You can use this command while you are running a total or partial conversion and after you have completed a conversion.

To display a summary of a conversion, enter the following at the MAP terminal:

>ANIMOVE status

Halt command

The halt command stops a total or partial conversion while it is in progress and displays

- the number of ANIs it converted
- the number of ANIs and profiles added to tables ANIVAL and UNIPROF during the last conversion
- the last ANI it converted

To stop a total or partial conversion while it is in progress, do the following:

1 Open a second MAP terminal.

2 At the second MAP terminal, enter the following while a conversion is in progress:

ANIMOVE halt

Purge command

The purge command removes a specified range of converted ANIs from table ANISCUSP. This command only removes ANIs you converted through the ANIMOVE tool. The following example shows the format of the purge command:

>ANIMOVE purge <from ANI> <to ANI>

Note: Nortel recommends that you run a one night process (ONP) to reduce memory fragmentation after you use the purge command.

To remove converted ANIs from table ANISCUSP, enter the following at the MAP terminal:

>ANIMOVE purge <from ANI> <to ANI>

where:

from ANI is the first ANI in the range you want to delete.

to ANI is the last ANI in the range you want to delete.

The following is an example of the purge command:

>ANIMOVE purge 2146112211 9726112211

If	then
you want to remove the specified ANIs from table ANISCUSP,	enter YES.
you do not want to remove the specified ANIs from table ANISCUSP,	enter NO.

If you have set the ANI_SCREENING_ORDER office parameter to ANISCUSP, the ANIMOVE tool displays the following message:

```
The ANI_SCREENING_ORDER office parameter in table OFCVAR is
set to ANISCUSP. Calls that require ANI screening will
receive ADBF treatment for the ANIs you are about to Purge.
```

This message warns you to either reset the ANI_SCREENING_ORDER office parameter before you perform the ANIMOVE purge command or abort the ANIMOVE purge. See the section entitled “What is the ANI_SCREENING_ORDER office parameter?” in this chapter to learn more about this office parameter.

Partial command

The partial command converts portions of table ANISCUSP. It converts a specified range of ANIs and displays:

- the range of ANIs it will convert
- a warning message that explains the impact the conversion will have on the UCS DMS-250 switch’s capacity and performance

The following shows the format of the partial command:

>ANIMOVE partial <from ANI> <to ANI>

To convert part of table ANISCUSP to tables ANIVAL and UNIPROF, enter the following at the MAP terminal:

>ANIMOVE partial <from ANI><to ANI>

where:

from ANI is the first ANI in the range you want to delete.

to ANI is the last ANI in the range you want to delete.

The following is an example of the partial command:

>ANIMOVE partial 2146112211 9726112211

If	then
you want to convert the specified ANIs from table ANISCUSP,	enter YES.
you do not want to convert the specified ANIs from table ANISCUSP,	enter NO.

Total command

The total command converts all of table ANISCUSP at once.

Note: Nortel recommends that you only run this command if you have small ANI databases and during low traffic periods.

To convert all of table ANISCUSP to tables ANIVAL and UNIPROF, enter the following at the MAP terminal:

>ANIMOVE total

If the conversion terminates, you can run the total command again to restart the conversion.

If	then
you want to convert all the ANIs from table ANISCUSP,	enter YES.
you do not want to convert all the ANIs from table ANISCUSP,	enter NO.

Note: If portions of table ANISCUSP have already been converted, the ANIMOVE total command informs you that it will only convert ANIs in table ANISCUSP that have not been converted.

Help command

The help command gives descriptions of the ANIMOVE commands and their parameters. The following is the format of the help command:

>ANIMOVE Help <command>

To get help using the ANIMOVE commands, enter the following at the MAP terminal:

>ANIMOVE Help <command>

where:

<command> is the name of an ANIMOVE command.

The following gives two examples of the help command:

>ANIMOVE Help total
>ANIMOVE Help partial

What is the ANI_SCREENING_ORDER office parameter?

The ANI_SCREENING_ORDER office parameter in table OFCVAR allows you to control

- which databases the UCS DMS-250 switch uses to screen ANIs
- which sequence it searches the ANI databases for the ANIs.

You can set the ANI_SCREENING_ORDER office parameter to one of four values:

- ANISCUSP (default)
- ANIVAL
- ANISCUSP_ANIVAL
- ANIVAL_ANISCUSP

If you want the UCS DMS-250 switch to	then set the office parameter to
validate ANIs in table ANISCUSP only,	ANISCUSP.
validate ANIs in table ANIVAL only,	ANIVAL.
first search for and validate ANIs in table ANISCUSP, and then search for and validate ANIs in table ANIVAL,	ANISCUSP_ANIVAL.
first search for and validate ANIs in table ANIVAL, and then search for and validate ANIs in table ANISCUSP,	ANIVAL_ANISCUSP.

Note: ANISCUSP is the office parameter's default value.

ANI_SCREENING_ORDER set to ANISCUSP or ANIVAL

When the office parameter is set to ANISCUSP, the UCS DMS-250 switch screens the ANI only in table ANISCUSP. If it is unable to find the ANI in table ANISCUSP, the UCS DMS-250 gives the call ANI database failure (ADBF) treatment.

When the office parameter is set to ANIVAL, the UCS DMS-250 switch screens the ANI only in table ANIVAL. If it is unable to find the ANI in table ANIVAL, the UCS DMS-250 gives the call ANI database failure (ADBF) treatment.

ANI_SCREENING_ORDER set to ANISCUSP_ANIVAL

When the office parameter is set to ANISCUSP_ANIVAL, the UCS DMS-250 switch first screens for the ANI in table ANISCUSP and if the ANI was not found in table ANISCUSP then it screens table ANIVAL.

The following scenario shows how the UCS DMS-250 switch searches for ANIs when the office parameter is set to ANISCUSP_ANIVAL. If the UCS DMS-250 switch finds the ANI, at any point in this process, it stops searching and validates the ANI. It only gives the ANI database failure (ADBF) treatment after it exhausts all these searches.

1 The UCS DMS-250 switch receives a 10-digit ANI.

2 The UCS DMS-250 switch searches table ANISCUSP for the 10-digit ANI.

3 The UCS DMS-250 switch searches table ANIVAL for the 10-digit ANI.

4 The UCS DMS-250 switch searches table ANISCUSP for the six-digit ANI.

5 The UCS DMS-250 switch searches table ANIVAL for the six-digit ANI.

6 The UCS DMS-250 switch searches table ANISCUSP for the three-digit ANI.

7 The UCS DMS-250 switch searches table ANIVAL for the three-digit ANI.

ANI_SCREENING_ORDER set to ANIVAL_ANISCUSP

When the office parameter is set to ANIVAL_ANISCUSP, the UCS DMS-250 switch first screens for the ANI in table ANIVAL. If it is unable to find the ANI in table ANIVAL, then it screens table ANISCUSP.

The following scenario shows how the UCS DMS-250 switch searches for ANIs when the office parameter is set to ANIVAL_ANISCUSP. If the UCS DMS-250 switch finds the ANI, at any point in this process, it stops searching and validates the ANI. It only gives the ANI database failure (ADBF) treatment after it exhausts all these searches.

1 The UCS DMS-250 switch receives a 10-digit ANI.

2 The UCS DMS-250 switch searches table ANIVAL for a 10-digit ANI.

3 The UCS DMS-250 switch searches table ANISCUSP for the 10-digit ANI.

4 The UCS DMS-250 switch searches table ANIVAL for the six-digit ANI.

5 The UCS DMS-250 switch searches table ANISCUSP for the six-digit ANI.

6 The UCS DMS-250 switch searches table ANIVAL for the three-digit ANI.

7 The UCS DMS-250 switch searches table ANISCUSP for the three-digit ANI.

How do I know which office parameter setting to choose?

The ANI_SCREENING_ORDER office parameter is designed to improve memory usage. For example, if you set the office parameter to ANIVAL_ANISCUSP, but the UCS DMS-250 switch finds and validates most ANIs in table ANISCUSP, then you should reset the office parameter to ANISCUSP or ANISCUSP_ANIVAL.

To determine which office parameter setting to choose, use the following:

- ANI Overflow operational measurement (OM)
- the OCC212 log reports

OMs and log reports help you make decisions about changes you should make to your UCS DMS-250 switch.

How to interpret the ANI Overflow operational measurement

Since the UCS DMS-250 switch screens ANIs in both tables ANISCUSP and ANIVAL, the ANI Overflow (ANIOVFL) operational measurement (OM) counts the number of times the switch finds the ANI in the second table it screens.

The ANIOVFL OM consists of two registers:

- Register CUSP2VAL counts the number of times the UCS DMS-250 switch finds the ANI in table ANIVAL when the office parameter ANI_SCREENING_ORDER is set to ANISCUSP_ANIVAL.
- Register VAL2CUSP counts the number of times the UCS DMS-250 switch finds the ANI in table ANISCUSP when the office parameter ANI_SCREENING_ORDER is set to ANIVAL_ANISCUSP.

With this OM, you can determine whether you should reset the ANI_SCREENING_ORDER office parameter. For instance, if the UCS DMS-250 switch frequently pegs the CUSP2VAL register, it is finding most ANIs in table ANIVAL. You should reset the office parameter to ANIVAL or ANIVAL_ANISCUSP. Or, if the UCS DMS-250 switch frequently pegs the VAL2CUSP, it is finding most ANIs in table ANISCUSP. You should reset the office parameter to ANISCUSP or ANISCUSP_ANIVAL.

If	then
the UCS DMS-250 switch frequently pegs the CUSP2VAL register,	reset the ANI_SCREENING_ORDER office parameter to ANIVAL or ANIVAL_ANISCUSP.
the UCS DMS-250 switch frequently pegs the VAL2CUSP,	reset the ANI_SCREENING_ORDER office parameter to ANISCUSP or ANISCUSP_ANIVAL.

For more information on operational measurements, see the *UCS DMS-250 Operational Measurements Reference Manual*.

How to interpret the OCC212 log report

The UCS DMS-250 switch creates the log report OCC212, which is related to the ANI_SCREENING_ORDER office parameter. The log report OCC212 has four trouble codes:

- no data associated with ANI in table ANIVAL
- no data associated with ANI in table ANISCUSP
- no data associated with converted ANI in table ANIVAL
- no data associated with ANI in ANI tables

This code	means the office parameter is set to	and the switch	you should
no data associated with ANI in table ANIVAL	ANIVAL	cannot find the ANI in table ANIVAL	enter the ANI in table ANIVAL or reset the office parameter to screen ANIs in table ANISCUSP also.
no data associated with ANI in table ANISCUSP	ANISCUSP	cannot find the ANI in table ANISCUSP	enter the ANI in table ANISCUSP or reset the office parameter to screen ANIs in table ANIVAL also.
no data associated with converted ANI in table ANIVAL	ANIVAL_ANISCUSP	cannot find the ANI in table ANIVAL, but finds the ANI in table ANISCUSP	check to see if the ANI was unsuccessfully converted.
no data associated with ANI in ANI tables	ANISCUSP_ANIVAL or ANIVAL_ANISCUSP	cannot find the ANI in tables ANIVAL and ANISCUSP	enter the ANI in one or both of the ANI databases.

For more information on log reports, see the *UCS DMS-250 Logs Reference Manual*.

How do I use CICs and jurisdiction information to map ANIs to profiles?

You can use table MULTPROF to map ANIs from table ANIVAL, based on their CICs, to profiles in table UNIPROF. A CIC is a three-digit or four-digit code that specifies an inter-exchange carrier (IEC). In addition to the latter, SS7 FGD calls containing both the ANI and the called party number in the initial address message (IAM) support the mapping of ANIs, based on their CICs and jurisdictions, to profiles.

Note: SS7 FGD cut-through, transitional, and universal access require DTMF dialing for address digits and, therefore, do not support the mapping of ANIs, based on their CICs and jurisdictions, to profiles.

To use CICs to map ANIs to profiles, you must order and activate the software optionality control (SOC) UTRS0200, Multiple Profile ANI by CIC. To use CICs and jurisdiction information to map ANIs to profiles, you must order and activate the SOCs UTRS0200 and UTRS0201, Multiple Profile ANI by Jurisdiction.

This section is divided into three subsections:

- "How CICs are used to map ANIs to profiles" explains how CICs are used to map the ANIs in table ANIVAL to profiles in table UNIPROF.
- "How CICs and jurisdictions are used to map ANIs to profiles," explains how CICs and the jurisdiction information from tables LATASCRN and LATAID are used to map the ANIs in table ANIVAL to profiles in table UNIPROF.
- "How to enter data into table MULTPROF" explains how to set up table MULTPROF so you can use CICs to map ANIs to profiles.
- "How to control data in tables MULTPROF, ANIVAL, and UNIPROF" explains how to use the QANI tool to manipulate data in these three tables.

How CICs are used to map ANIs to profiles

Table ANIVAL accesses profiles from table UNIPROF. It can access table UNIPROF directly, or it can use table MULTPROF to access table UNIPROF indirectly.

The following example shows how table ANIVAL uses table MULTPROF to access profiles in table UNIPROF:

1 The UCS DMS-250 switch receives an ANI with the value 9725554321 and a CIC of 0888.

2 The UCS DMS-250 switch analyzes the ANI in table ANIVAL.

Table 2-10
Table ANIVAL

ANIKEY	PROFTYPE	INDEX
9725554321	MULT	MULTPRF2

3 The UCS DMS-250 switch accesses table MULTPROF to determine the profile to use from table UNIPROF since the ANI's profile type is MULT.

Table 2-11
Table MULTPROF

Key	Option	Field
MULTPRF2	CIC	0555 UNIPROF3
	CIC	0888 UNIPROF9
	DEFAULT	UNIPROF7

The key MULTPRF2 has three possible profiles. Since the CIC for this call is 0888, the switch uses the index UNIPROF9 to access the profile in table UNIPROF.

Table 2-12
UNIPROF9 index in table UNIPROF

KEY	PROFNUM	UNITYPE	STATUS	OPART	TERMPART
UNIPROF9	9	SUB	AL	7	31
	SATRES	**MLTCOSID**	**ANIDELV**	**OPTIONS**	
	N	0	ALWAYS	(ACCTIDX) $	

How CICs and jurisdictions are used to map ANIs to profiles

Table ANIVAL accesses profiles from table UNIPROF. It can access table UNIPROF directly, or it can use table MULTPROF to access table UNIPROF indirectly.

The following example shows how table ANIVAL uses table MULTPROF to access profiles in table UNIPROF:

1 The UCS DMS-250 switch receives an ANI with the value 2145551234, a called number of 2145561111, and a CIC of 0001.

2 The UCS DMS-250 switch analyzes the ANI in table ANIVAL.

Table 2-13
Table ANIVAL

ANIKEY	PROFTYPE	INDEX
2145551234	MULT	MULTPRF3

3 The UCS DMS-250 switch accesses table MULTPROF with the MULTPRF3 index to determine the profile to use.

Table 2-14
Table MULTPROF

Key	Option	Refinement		
MULTPRF3	CICJUR	0001	INTER	UNIPROF6
			INTRA	UNIPROF2
			INTL	UNIPROF9
			DEFJUR	UNIPROF4
	CICJUR	0003	INTRA	UNIPROF3
	CICJUR	0005	INTL	UNIPROF9
			DEFJUR	UNIPROF4

The CICJUR option has been assigned to the MULTPRF3 index. Since the CIC is 0001 for this call, the four sub-options are INTER, INTRA, INTL, and DEFJUR.

4 Since the CICJUR option is assigned to the MULTPRF3 index, the switch accesses table LATASCRN to determine the jurisdictions of the ANI, 2145551234, and the called party number, 2145561111.

Table 2-15
Table LATASCRN

Key	LATA name
214	LATA2
214555	LATA5
214556	LATA5
Note: LATA names are datafilled in table LATAID.	

The ANI and the called party number are within the same LATA, LATA5, so the call is an IntraLATA call.

Note: If either the ANI or called party number was 2149991111, then the LATA would have defaulted to LATA2 and the call would have been an InterLATA call because 214999 is not datafilled in table LATASCRN.

5 In this example the call is an IntraLATA call, so the switch uses the index UNIPROF2 to access the profile in table UNIPROF.

Table 2-16
UNIPROF2 index in table UNIPROF

KEY	PROFNUM	UNITYPE	STATUS	OPART	TERMPART
UNIPROF2	2	SUB	AL	7	31
	SATRES	**MLTCOSID**	**ANIDELV**	**OPTIONS**	
	N	0	ALWAYS	(OPCHOICE 2) (ACCTIDX 1)$	

How to interpret the OCC222 log

The UCS DMS-250 switch generates the log report OCC222, which is related to multiple profile per ANI processing. The log report OCC222 has four trouble codes:

- no profile in MULTPROF for ANI
- SOC UTRS0200 required for MPA
- Valid Jurisdiction not found for ANI
- UTRS0201 required for MPA Jur.

This code	means	you should
No profile in MULTPROF for ANI	the ANI and CIC combination does not have a profile nor a default profile option datafilled in table MULTPROF	(in table MULTPROF) datafill the CIC or datafill a default profile for the ANI.
SOC UTRS0200 required for MPA	the SOC UTRS0200 is idle	order and activate SOC UTRS0200.
Valid Jurisdiction not found for ANI	the CICJUR option, associated with the call's CIC, does not have a sub-option (INTRA, INTER, INTL) that matches the call's jurisdiction and does not have a default jurisdiction (DEFJUR) sub–option datafilled in table MULTPROF	datafill a CICJUR option in table MULTPROF that matches the jurisdiction or datafill the DEFJUR option.
UTRS0201 required for MPA Jur.	the SOC UTRS0201 is idle	order and activate SOC UTRS0201.

For more information on log reports, see the *UCS DMS-250 Logs Reference Manual*.

How to enter CICs and jurisdictions into table MULTPROF

Table MULTPROF provides for automatic number identification (ANI). Table ANIVAL can index MULTPROF to obtain a profile from table UNIPROF. The profile obtained through MULTPROF is based on the CIC and the jurisdiction information associated with the call.

Table 2-17, Table MULTPROF, describes the data for table MULTPROF.

Note: If a CIC is available and the CICRTE option in table TRKGRP has data, then CIC routing overrides the information in table MULTPROF.

Table 2-17
Table MULTPROF

Field	Subfield or refinement	Entry	Explanation and action
KEY		string of 1 to 8 characters	KEY. This key field is indexed by table ANIVAL.
OPTION			OPTION. The OPTION field is a vector of up to 10 multiples with options CIC, DEFAULT, and EVAL63, CICJUR.
		CIC	CARRIER IDENTIFICATION CODE. This option specifies a UNIPROF index for a given CIC. Enter datafill for the CIC and UNIPROFIDX refinements.
	CIC	1 to 9999	CARRIER IDENTIFICATION CODE. Enter a valid CIC.
	UNIPROFIDX	string of 1 to 8 characters	UNIVERSAL PROFILE INDEX. Enter a valid profile from table UNIPROF for ten digit ANIs.
		EVAL63	EVAL63. This option returns the ANI to table ANIVAL if the CIC associated with the ANI has not been specified for the given MULTPROF key.
		DEFAULT	DEFAULT. This option specifies a default UNIPROF index for a MULTPROF key that has no associated CIC. Enter datafill for the UNIPROFIDX refinement.

—continued—

Table 2-17
Table MULTPROF (continued)

Field	Subfield or refinement	Entry	Explanation and action
		CICJUR	CARRIER IDENTIFICATION CODE and JURISDICTION. This option indicates that an ANI is screened based on CIC and jurisdiction. Enter a valid CIC from 1 to 9999. When CICJUR is datafilled, enter the following options: INTER, INTRA, INTRN, DEFJUR.
		INTER	INTER LATA. This option processes INTER LATA calls using the ANI associated with the INTER key. Datafill with the UNIPROFIDX refinement.
		INTRA	INTRA LATA. This option processes INTRA LATA calls using the ANI associated with the INTRA KEY. Datafill with the UNIPROFIDX refinement.
		INTL	INTERNATIONAL– This option processes international calls using the ANI associated with the INTL key. Datafill with the UNIPROFIDX refinement.
		DEFJUR	DEFAULT JURISDICTION. This options is used when the jurisdiction of this call is not specified as one of the options for this call. The call is then processed using the ANI associated with the DEFJUR key. Datafill with the UNIPROFIDX refinement.
		—end—	

Sample table MULTPROF data

See Figure 2-6, Sample data in table MULTPROF. It gives an example of how table MULTPROF's data appears on the MAP terminal.

Figure 2-6
Sample data in table MULTPROF

```
KEY              OPTIONS
_____________________________________________________________________
MULTPRF1   (CIC 0001 UNIPROF6) (CIC 0002 UNIPROF7)
            (CIC0010 UNIPROF9) $
MULTPRF2   (CIC 0555 UNIPROF3) (CIC 0888 UNIPROF9)
            (DEFAULT UNIPROF7) $
MULTPRF3   (CIC 0999 UNIPROF4) (EVAL63) $
MULTPRF4   (CIC0555 UNIPROF4) (CIC0777 UNIPROF5) (CIC0999
          UNIPROF5) (CIC0444 UNIPROF8) (CIC0666 UNIPROF1)$
```

Table MULTPROF restrictions

The following restrictions apply to table MULTPROF options:

- You must enter datafill in table MULTPROF before the MULT selector value can be used by table ANIVAL.
- You can only enter ten options for each MULTPROF key.
- The DEFAULT and EVAL63 options are mutually exclusive, which means that if you enter one of these options for a MULTPROF key, you are unable to enter the other option for the same MULTPROF key.

  For one MULTPROF key, you can enter nine CIC options and either one DEFAULT or one EVAL63 option; or, for one MULTPROF key, you can enter ten CIC options. If you add a MULTPROF key without adding the DEFAULT or EVAL63 option, the UCS DMS-250 switch displays the following warning:

  ```
  Warning:  This entry does not contain the  DEFAULT or
  EVAL63 option. A call using this entry will receive
  treatment if the CIC associated with the call is not
  datafilled in this entry.
  ```

  Although this warning appears, you can enter a MULTPROF key without using the DEFAULT or EVAL63 options. This warning appears because the UCS DMS-250 switch sends the call to treatment if an entry in table MULTPROF does not contain the DEFAULT or EVAL63 option and the CIC associated with the call is not entered in the MULTPROF key.

How to enter ANIs and called party numbers into table LATASCRN

Table LATASCRN associates an ANI with a LATA to determine jurisdiction. Each ANI may be datafilled against a valid LATA name from the table LATAID. Table 2-18, Table LATASCRN, describes the data for table LATASCRN.

Table 2-18
Table LATASCRN

Field	Subfield or refinement	Entry	Explanation and action
DIGITS		3 or 6 digit ANI	Enter 3 or 6 digits ANI. The default value is NIL.
LATA		Vector of up to 8 characters from table LATAID	Enter up to 8 characters. The default value is NIL.
Note: Datafill the LATAs in table LATAID. See the section, "How to enter LATA names in table LATAID."			

Table LATASCRN restrictions

Table LATAID must be datafilled before table LATASCRN.

How to enter LATA names into table LATAID

Table LATAID stores all valid LATA names for defining the service areas for the Local Exchange Carriers (LEC). Table 2-19, Table LATAID, describes the data for table LATAID.

Table 2-19
Table LATAID

Field	Subfield or refinement	Entry	Explanation and action
LATAID		up to16 characters	LOCAL AREA TRANSPORT IDENTIFICATION stores LATA names. Enter up to 16 characters. The default value is NIL.
LATANUM		3 digit code	LOCAL AREA TRANSPORT NUMBER contains NPA or NXX digits. Enter a three digit code in the range (N, 1, 2, 3, 4, 5, 6, 7, 8, 9, 0, B, C, D, E, F). The default value is 555.

Table LATAID restrictions

Table LATAID must be datafilled before table LATASCRN.

How do I control data in tables ANIVAL, MULTPROF, and UNIPROF?

You can use the QANI tool to display and manipulate the data in tables ANIVAL, MULTPROF, and UNIPROF. The QANI tool allows you to manipulate and display a range of data simultaneously.

Note: You must enter data into tables ANIVAL, UNIPROF, and MULTPROF before you use the QANI tool.

QANI commands

The QANI tool is a command interpreter (CI) tool that you access from any of the MAP terminal's levels. The tool can be used simultaneously by two or more people using different MAP terminals.

To access the QANI tool from the CI, enter the following:

```
>QANI
```

The QANI tool gives you 11 commands:

- Help — displays descriptions of the QANI commands and their parameters
- Copy — copies data from a row in one of the three tables and pastes it in another row in the same table
- Count — displays the number of entries in one of the three tables
- Display — displays all possible profiles of a particular ANI
- Disprof — determines the jurisdiction and displays both the information in table MULTPROF and the profile in table UNIPROF when you specify the ANI, CIC, called party number, and nature of address (NOA)

  Note: The NOA is optional.

- Dump — displays a range of rows in one of the three tables
- Find — displays all the rows in the tables that match a certain criteria
- List — lists the information that pertains to an entry
- Delete — removes all the information that pertains to an entry
- Rename — gives a new name to a key in either table MULTPROF or UNIPROF and updates the entries associated with that key in table ANIVAL
- Quit (also, leave) — quits the QANI environment and returns you to the CI

If you want to	use the	Example of command
display descriptions of the QANI commands and their parameters,	Help command.	Help copy
copy data from one tuple and paste it in another tuple in the same table,	Copy command.	Copy Uniprof unikey1 unikey2
display the number of entries in one of the three tables,	Count command.	Count ANIVAL
display the information in table MULTPROF (optional) and all possible profiles in table UNIPROF associated with an ANI	Display command.	Display 2146112211
display the information in table MULTPROF and the profile in table UNIPROF associated when you specify an ANI, CIC, called party number, and nature of address (NOA) ***Note:*** The NOA information is optional.	Disprof command.	Disprof 2145551234 0001 2149991234
display a range of tuples in one of the three tables,	Dump command.	Dump Uniprof unikey1 unikey2
display all the tuples in the three tables that match a certain criteria,	Find command.	Find Unitype SUB
list the information that pertains to an entry,	List command.	List Uniprof unikey1
remove all the information that pertains to an entry,	Delete command.	Delete Uniprof unikey1
rename a key in either table MULTPROF or table UNIPROF and update the entries associated with that key in table ANIVAL,	Rename command.	Rename Uniprof oldunikey newunikey
quit the QANI environment and return to the CI,	Quit command.	Quit

Note: The following sections further explain the QANI commands. For more information, see the *UCS DMS-250 Commands Reference Manual*.

Help command

The help command describes the QANI commands. The following is the format of the help command:

>Help <command>

To use the help command, enter the following at the MAP terminal:

>Help <command>

where:

<command> is the name of a QANI command.

The following shows two examples of the help command:

Help copy
Help find

Copy command

The copy command copies data from one table's row and pastes it in another row of the same table. If you try to copy from from an empty row or to a row that contains data, an error message appears.

The following is the format of the copy command:

>Copy <table> <from row> <to row>

To use the copy command, enter the following at the MAP terminal:

>Copy <table> <from row> <to row>

where:

<table> is table ANIVAL, UNIPROF, or MULTPROF.

<from row> is the row from which you want to copy.

<to row> is the row to which you want to paste.

The following shows examples of the copy command:

>Copy Anival 2146112211 9726112211
>Copy Uniprof unikey1 unikey2
>Copy Multprof multkey1 multkey2

Count command

The count command displays the number of rows in tables ANIVAL, UNIPROF, or MULTPROF.

The following is the format of the count command:

>Count <table>

To use the count command, enter the following at the MAP terminal:

>Count <table>

where:

<table> is table ANIVAL, UNIPROF, or MULTPROF.

The following shows examples of the count command:

>Count Anival
>Count Uniprof
>Count Multprof

Display command

The display command displays an ANI's profile. The display command will only display profiles that are in tables UNIPROF or MULTPROF. When the ANI's profile type is MULT (in table ANIVAL), the switch displays both the information in table MULTPROF and the profile in table UNIPROF associated with the ANI.

The following is the format of the display command:

>Display <3-, 6-, or 10-digit ANI>

To use the display command, enter the following at the MAP terminal:

>Display <3-, 6-, or 10-digit ANI>

where:

<3-, 6-, or 10-digit ANI> is a 3-digit, 6-digit, or 10-digit ANI.

If you enter an ANI that is not in one of the ANI databases, the UCS DMS-250 switch displays an error message.

The following are examples of the display command:

>Display 2146112211
>Display 214611
>Display 214

Disprof command

The disprof command determines the jurisdiction and displays both the information in table MULTPROF and the profile in table UNIPROF when you specify the ANI, CIC, called party number, and nature of address (NOA). For an ANI with a profile type of UNI, the profile from table UNIPROF is displayed. For a multiple profile ANI, the profile from table MULTPROF is displayed followed by the profile from table UNIPROF.

Note: The NOA is optional. It is only necessary when determining the international jurisdiction.

The following is the format of the disprof command:

Disprof <ANI> <CIC> <Dialed Number> <NOA>

To use the disprof command, enter the following at the MAP terminal:

Disprof <ANI> <CIC> <Dialed Number> <NOA>

where:

<ANI> is a valid ANI.

<CIC> is a valid CIC.

<Called Party Number> is a valid dialed (called party) number.

<NOA> is a valid NOA.

Dump command

The dump command displays data in a specified range of rows from tables ANIVAL, UNIPROF, MULTPROF. In the dump command, if you specify an empty row, the UCS DMS-250 switch does not display the rows.

The following is the format of the dump command:

>Dump <table> <from row> <to row>

To use the dump command, enter the following at the MAP terminal:

>Dump <table> <from row> <to row>

where:

<table> is table ANIVAL, UNIPROF, or MULTPROF.

<from row> is the beginning row in the specified range.

<to row> is the last row in the specified range.

The following are examples of the dump command:

```
>Dump Anival 214 9726112211
>Dump Uniprof unikey1 unikey2
>Dump Multprof multkey1 multkey2
```

Since the profiles in tables UNIPROF and MULTPROF are listed in a non-sequential order, the dump command also displays the profiles in a non-sequential order.

Find command

The find command allows you to search through tables ANIVAL and UNIPROF. It compares each row in the tables to a specified criteria and displays the rows from both tables that match the criteria.

The following shows the format of the find command:

```
>Find <field> <value>
```

To use the find command, enter the following at the MAP terminal:

```
>Find <field> <value>
```

where:

<field> is a field in either table ANIVAL or UNIPROF. You can also specify to search all fields by entering ALL.

<value> is a value that can be found in the specified field, such as a profile or a key.

The following are examples of the find command:

```
>Find Unitype SUB
>Find All SUB AL 7 31 N 0 ALWAYS CAINGRP OFFGRP ACCTIDX 0 $
```

List command

The list command displays one row's data from tables ANIVAL, UNIPROF, or MULTPROF.

The following is the format of the list command:

```
>List <table> <row>
```

To use the list command, enter the following at the MAP terminal:

>List <table> <row>

where:

<table> is table ANIVAL, UNIPROF, or MULTPROF.

<row> is a row from the specified table.

The following are examples of the list command:

>List Uniprof unikey1
>List Anival 2146112211
>List Multprof multkey1

Delete command

The delete command removes a row from tables ANIVAL, UNIPROF, or MULTPROF. If you try to enter a row that does not exist, the UCS DMS-250 switch displays a tuple not found message.

The following is the format of the delete command:

>Delete <table> <row>

To use the delete command, enter the following at the MAP terminal:

>Delete <table> <row>

where:

<table> is table ANIVAL, UNIPROF, or MULTPROF.

<row> is a row from the specified table.

The following are examples of the delete command:

>Delete Anival 2146112211
>Delete Uniprof unikey1
>Delete Multprof multkey1

If	then
you want to delete the row from the specified table,	enter YES.
you do not want to delete the row from the specified table,	enter NO.

Rename command

The rename command gives a UNIPROF or MULTPROF key a new name and updates the associated ANIVAL rows that reference the renamed key. The following is the format of the rename command:

>Rename <table> <from key> <to key>

To use the rename command, enter the following at the MAP terminal:

>Rename <table> <from key> <to key>

where:

<table> is table UNIPROF or MULTPROF.

<from key> is the key you want to rename.

<to key> is the new name for the key.

The following are examples of the rename command:

>Rename Uniprof oldunikey newunikey
>Rename Uniprof oldmltkey newmltkey

Quit (or leave) command

The quit (also leave) command quits the QANI tool.

To quit the QANI tool, enter one of the following:

>quit

>leave

Calling Party Information (CPI) message handling

The Calling Party Information (CPI) message handling feature uses Signaling System 7 (SS7) to transmit the Calling Party Number parameter and its associated "presentation indicator" from the originating local exchange carrier (LEC) to the terminating LEC without modification.

Note: Nortel's CPI message handling feature is in compliance with the FCC's "Report and Order and Further Notice of Proposed Rulemaking in the matter of Rules and Policies regarding Calling Number Identification Service." This feature also complies with TR-394 by transmitting the Calling Party Number and Charge Number parameters to connecting carriers on interstate calls without alteration.

How does CPI message handling work

Message handling data (including the Calling Party parameter) is located in the initial address message (IAM) parameter built by the originator's local exchange carrier (LEC) and sent to the connecting carrier. The connecting carrier then forwards the information to the terminator's LEC and on to the terminating number.

The Calling Party Number parameter is transferred in the following manner:

- The parameter is always passed from the incoming IAM to the outgoing IAM without modification.
- When the originating agency is a per trunk signaling (PTS) trunk, the generated automatic number identification (ANI) or pseudo automatic number identification (PANI) is placed in the Address Signal subfields of the Charge Number parameter. Other subfield values are derived from this ANI/PANI value.

When the UCS DMS-250 switch generates a PANI

A PANI is generated to replace the ANI for FGD "cut-thru" calls and for FGD "transitional" calls. Its value, which is independent of the Calling Party Number or Charge Number parameters, is sent on the terminator. The PANI value also appears in the call detail record (CDR) as an ANI spill (ANISP).

FGD enhances PANI functionality and allows the PANI value to be written to the Address Signal subfields in the Charge Number parameter. When an incoming trunk generates a PANI, the following events occur:

- Charge Number parameter is built and used in the outgoing IAM to transport information about the PANI.
- PANI is placed in the Address Signal subfields of the Charge Number parameter and appears in the ANISP of the CDR.
- Odd/Even indicator is set according to the number of digits in the Charge Number parameter (Address Signal subfields).
- Nature of Address indicator is set according to the value in the Charge Number parameter (Address Signal subfields).
- Numbering Plan indicator is set according to the value in the Charge Number parameter (Address Signal subfields).
- Calling Party Number parameter subfields (if present) remain unchanged and their value is placed in the outgoing IAM. They remain unchanged throughout the call.

For additional information on CPI message handling, see Figure 2-1. For information on the format of the Calling Party Number and Charge Number parameters, see Figures 2-2 and 2-3.

Figure 3-1
CPI message handling

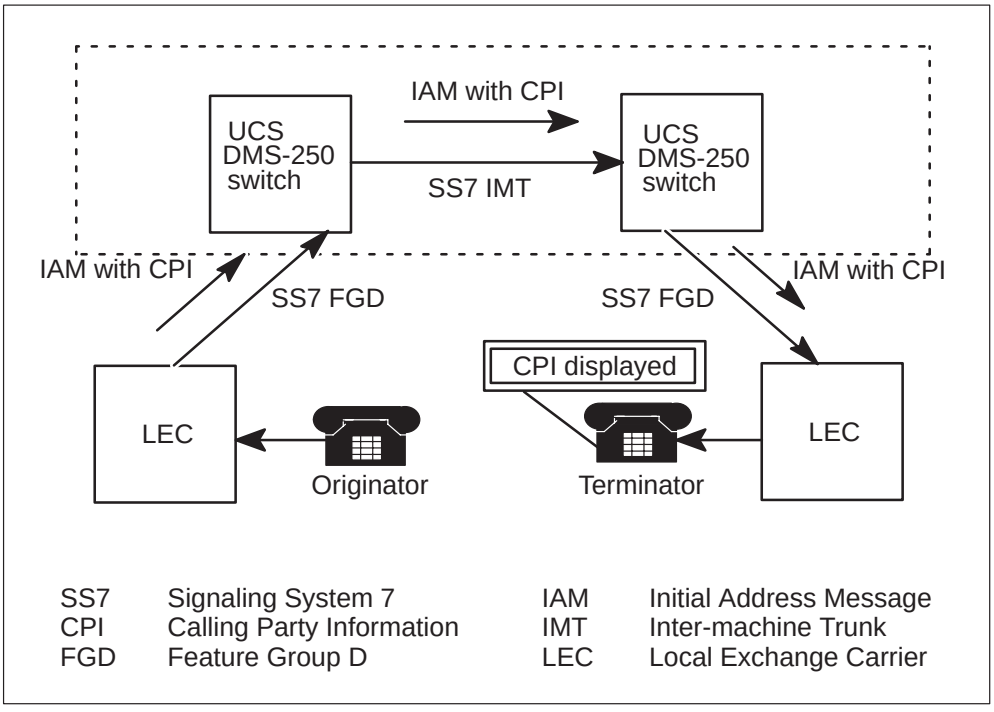


Figure 3-2
Calling Party Number parameter format

Octet	8	7	6	5	4	3	2	1
1	Odd/ Even Indicator	Nature of Address indicator						
2	Spare	Numbering Plan Indicator			Presentation Indicator		Screening	
3	Second Address Signal				First Address Signal			
4	Third Address Signal				Fourth Address Signal			
...								
N	Filler, if necessary				Nth Address Signal			

Figure 3-3
Charge Number parameter format

Octet	8	7	6	5	4	3	2	1
1	Odd/ Even Indicator	Nature of Address indicator						
2	Spare	Numbering Plan Indicator			Reserved			
3	Second Address Signal				First Address Signal			
4	Third Address Signal				Fourth Address Signal			
...								
N	Filler, if necessary				Nth Address Signal			

How do the Calling Party Number/Charge Number parameter interwork?

The transfer of the Calling Party Number and Charge Number parameters differs according to the originating trunk and terminating trunk. FGD trunk types with specific CPI message handling requirements include

- PTS originator to SS7 terminator
- SS7 originator to PTS terminator
- SS7 originator to SS7 terminator
- SS7 originator to primary rate interface (PRI) terminator

PTS originator to SS7 terminator

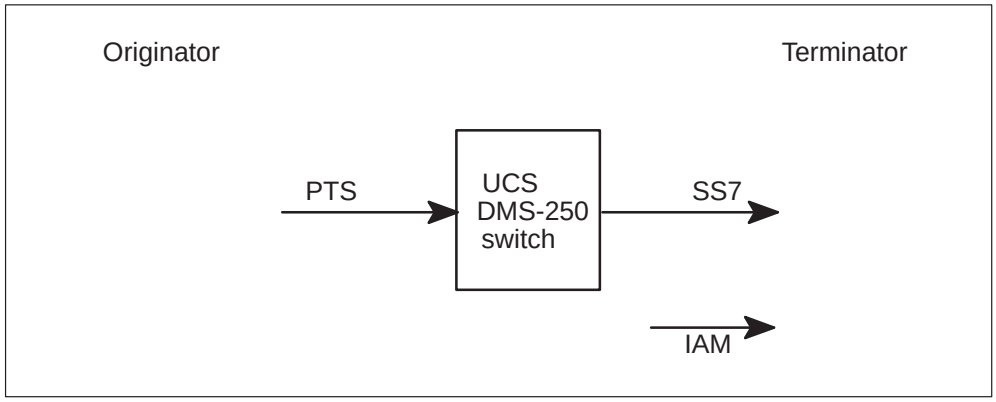
Figure 3-4 shows how message handling information is transferred through a UCS DMS-250 switch with a PTS originator and an SS7 terminator. In this scenario, the Charge Number parameter is built instead of the Calling Party Number parameter. Values associated with its individual subfields include

- Address Signal subfields—contain the ANI/PANI value generated on the incoming trunk

  Note: The value from the Address Signal subfields is placed in the ANISP field of the CDR.

- Odd/Even Indicator—set according to the number of digits placed in the Address Signal subfields
- Nature of Address Indicator—contains the nature of address associated with the Address Signal subfields
- Numbering Plan Indicator—indicates the numbering plan used with the Address Signal subfields

Figure 3-4
PTS to SS7

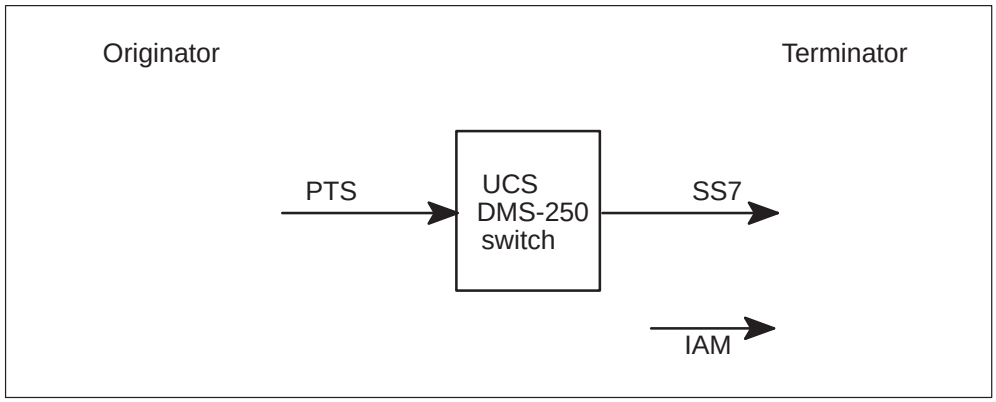


SS7 originator to PTS terminator

Figure 3-5 shows how message handling information is transferred through a UCS DMS-250 switch with an SS7 originator and a PTS terminator. In this scenario, values in the individual subfields depend on the parameter(s) in the message. Possible combinations for SS7 to PTS signaling include

- Calling Party Number parameter received only
- Charge Number parameter received only
- both Calling Party Number and Charge Number parameters received

Figure 3-5
SS7 to PTS



Only Calling Party Number parameter received only

If only the Calling Party Number parameter is present in the incoming call, the value from the Address Signal subfields is outpulsed as an ANI and is placed in the ANISP field of the generated CDR.

Charge Number parameter received only

If only the Charge Number parameter is present in the incoming call, the value from the Address Signal subfields is outpulsed as an ANI and is placed in the ANISP field of the generated CDR.

Both Charge Number and Calling Party Number parameters received

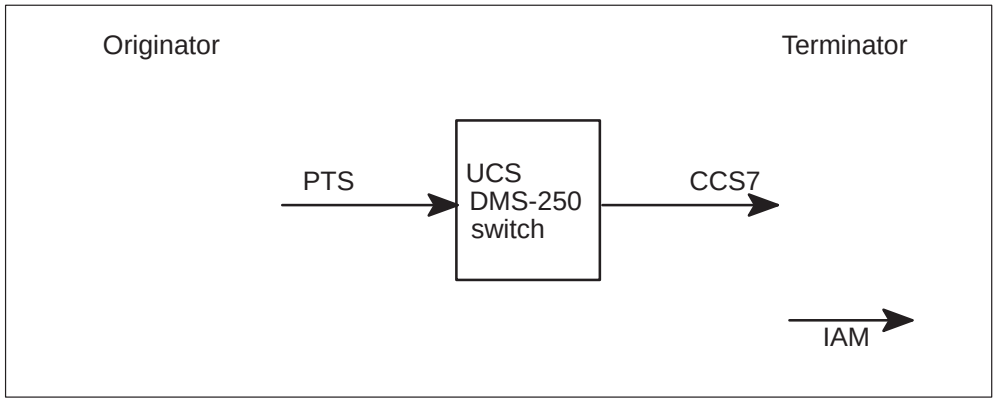
If both the Charge Number and the Calling Party Number parameters are present in the incoming call, the value from both Address Signal subfields is outpulsed as an ANI and is placed in the ANISP field of the generated CDR.

SS7 originator to SS7 terminator

Figure 3-6 shows how message handling information is transferred through a UCS DMS-250 switch with an SS7 originator and an SS7 terminator. In this scenario, values located in individual subfields depend on the parameter(s) in the message. Possible combinations for SS7 to PTS signaling include

- only Calling Party Number parameter received
- only Charge Number parameter received
- both Charge Number and Calling Party parameters received

Figure 3-6
SS7 to SS7



Calling Party Number parameter received only

If only the Calling Party Number parameter is present in the incoming IAM, the following values are used:

- Calling Party Number parameter—mapped directly from the incoming IAM to the Calling Party Number parameter in the outgoing IAM
- Address Signal subfields—placed in the ANISP field of the generated CDR
- Charge Number parameter—not built

Charge Number parameter received only

If only the Charge Number parameter is present in the incoming IAM, the following values are used:

- Charge Number parameter—mapped directly from the incoming IAM to the Charge Number parameter in the outgoing IAM

- Address Signal subfields—placed in the ANISP field of the generated CDR
- Calling Party Number parameter—not built

Both Charge Number and Calling Party Number parameters received

If both the Charge Number and Calling Party Number parameters are present in the incoming call, the following values are used:

- If the value in the Address Signal subfields (Charge Number parameter) is equal to the value in the Address Signal subfields (Calling Party Number parameter), the following values are used:
  - — Charge Number parameter—not placed in the outgoing IAM
  - — Calling Party Number parameter—mapped directly from the incoming IAM to the Calling Party Number parameter in the outgoing IAM
  - — Address Signal subfields (Calling Party Number parameter—placed in the ANISP field of the generated CDR
- If the value in the Address Signal subfields of the Charge Number parameter is not equal to the value in the Address Signal subfields of the Calling Party Number parameter, the following values are used:
  - — Calling Party Number parameter—mapped directly from the incoming IAM to the Calling Party Number parameter in the outgoing IAM
  - — Charge Number parameter—mapped directly from the incoming call to the outgoing call's Charge Number parameter
  - — Address Signal subfields (Charge Number parameter)—placed in the ANISP field of the generated CDR

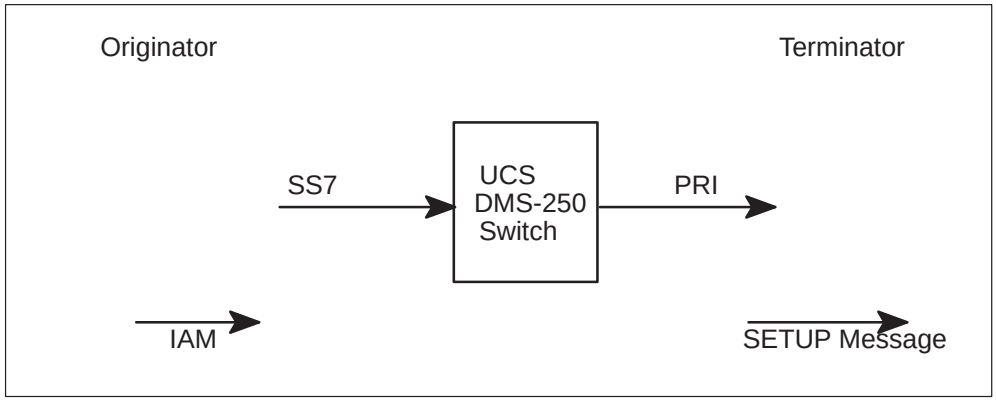
SS7 originator to PRI terminator

Figure 3-7 shows how message handling information is transferred through a UCS DMS-250 switch with an SS7 originator and PRI terminator. In this scenario, values placed in individual subfields depend on the parameter(s) in the message. Possible combinations for SS7 to PRI signaling include

- Calling Party Number parameter received
- Charge Number parameter received
- Charge Number and Calling Party parameter received

Note: This functionality is not addressed by the FCC "Report and Order regarding Caller ID." Figure 2–7 illustrates message handling.

Figure 3-7
SS7 to PRI



Calling Party Number parameter received only

If only the Calling Number parameter is received in the incoming call, the following occur:

- CGN_Digits parameter (outgoing PRI SETUP Calling Party Number IE)—set to the value in the Address Signal subfields of the incoming SS7 Calling Party Number parameter
- CGN_PI parameter (outgoing PRI SETUP Calling Party Number IE)—set to the value in the Presentation Indicator field of the incoming SS7 Calling Party Number parameter

  Note: If the incoming SS7 generates a PANI, the PANI value appears in the CGN_Digits parameter of the outgoing SETUP Calling Party Number IE.

- Address Signal subfields (Calling Party Number parameter)—value is located in the ANISP field of the generated CDR

Charge Number parameter received only

If only the Charge Number parameter is received in the incoming call, the following occurs

- CGN_Digits parameter (outgoing PRI SETUP Calling Party Number IE)—set to the value in the incoming SS7 Address Signal subfields of the Charge Number parameter
- CGN_PI parameter (outgoing PRI SETUP Calling Party Number IE)—set to the value in the PRESENTATION_ALLOWED field
- Address Signal subfields (Charge Number parameter)—placed in the ANISP field of the generated CDR

Both Charge Number and Calling Party Number parameters received

If both the Charge Number and the Calling Party Number parameters are received, the following occurs

- CGN_Digits parameter (outgoing PRI SETUP Calling Party Number IE)—set to the value in the Address Signal subfields of the incoming SS7 Charge Number parameter
- CGN_PI parameter (outgoing PRI SETUP Calling Party Number IE)—set to the value in the PRESENTATION_ALLOWED field

Carrier identification code routing

A carrier identification code (CIC) is a three- or four-digit code that identifies a local exchange carrier (LEC) or an inter-exchange carrier (IEC). The UCS DMS-250 switch receives and sends the CIC with the other call information, depending upon which trunk is carrying the CIC. For example, the SS7 FGD trunk sends the CIC in the TNS parameter of the initial address message. When the UCS DMS-250 switch receives a CIC with a call, it can route the call based on the CIC; this process is known as CIC routing.

The following trunk agencies support CIC routing:

- PTS FGD
- SS7 FGD
- PTS FGA
- PTS FGB
- PTS FGC
- SS7 IMT (inter)
- SS7 IMT (intra)
- PTS DAL
- DAL TIE
- AXXESS trunk agencies

CIC routing has three functions:

- allows you to offer different resellers or carriers unique routes based on their CIC
- allows you to offer subscribers and non-subscribers access to your network
- allows you to datafill a default CIC against an originating trunk, so a call that is received without a CIC can be routed based on the default CIC

For more information on CIC routing, see the *UCS DMS-250 Carrier Identification Code Routing Application Guide*.

Dynamically Controlled Routing

Signaling System 7 (SS7) Feature Group D (FGD) trunks support dynamically controlled routing (DCR).

DCR allows the UCS DMS-250 switch to route overflow traffic that must travel one or two links to reach a destination. DCR reduces the need for pre-programmed routing and increases the network's ability to survive in most traffic conditions.

The DCR network consists of five components:

- A Network Processor — a centralized processor that calculates and recommends routes to the switches
- Intelligent Switches — switches, including the UCS DMS-250 switch, that communicate with the Network Processor
- Non-intelligent Switches — switches that are incapable of communicating with the Network Processor
- DCR Traffic Trunks — trunks, including SS7 FGD and SS7 inter-machine trunks (IMTs), that carry DCR traffic
- Switch/Network Processor Communication Links — dedicated X.25 communication links between the switches and the Network Processor

The intelligent switches, including the UCS DMS-250, tell the Network Processor how many of their resources are currently in use. The Network Processor uses this information to calculate routes for calls that overflow a trunk group and then recommends these routes to the switches. To recommend call routes, the Network Processor updates data tables. These data tables manage how originating switches connect to destination switches.

When DCR is inactive or when the UCS DMS-250 switch is not in DCR mode, the UCS DMS-250 switch uses Fixed Routing (FR) to route calls. FR sends overflow traffic along pre-programmed routes in a fixed sequence. If the first route in the route list is busy, the call attempts the next route on the list. The call attempts each pre-programmed route until it finds an available

route. If all of the routes are busy, then the UCS DMS-250 switch blocks the call.

DCR routes the call away from local congestion. If the direct route is unavailable, DCR allows the call to tandem through another switch or DCR will route the call to another switching node using exception routing. If all the routes are unavailable, then the UCS DMS-250 switch will block the call.

DCR Handicap Removal

Nortel enhanced DCR to remove DCR Handicap. Formerly, DCR Handicap allowed only incoming calls to terminate via a direct route to a terminating switch from the tandem switch. In other words, DCR Handicap allowed only incoming calls to tandem once. DCR tags a call when the call enters the DCR network. This tag is also called a handicap because it classifies the call according to how many links the call must use to reach its destination. The DCR network classifies incoming calls into three types:

- Handicap-0 (H0) is assigned to calls that can connect to their destinations through one link
- Handicap-1 (H1) is assigned to calls that can connect to their destinations through a two–link path via a tandem switch
- Handicap-2 (H2) is assigned to calls that must use three or more links to connect to their destinations

Note: H2 calls use fixed routing, which is the default routing scheme, to complete their first link, and then they use a tandem recommended by the Network Processor to complete the remaining links.

DCR Handicap Removal allows call processing to identify when a retranslation or redirection has occurred. Since the called party address which delivers retranslated and redirected calls to the UCS DMS-250 switch is not the final address, the DCR Handicap Removal handles these calls as a new call that originated in the DCR network. For example, if the DCR network classifies a call as H1 or H2 at the UCS DMS-250 switch, DCR Handicap Removal will reset the handicap to H0, H1, or H2 to make the call look like it originated in the DCR network. DCR Handicap Removal removes the handicap for the following calls:

- retranslated calls that use the RX selector
- ISUP RLT redirected calls
- reoriginated calls

- route-advanced calls
- calls that use N00 routing
- CAIN calls that use the Called Party ID parameter to route or that use the Generic Address List's Overflow Routing Number

DCR Operational Measurement (OM) Pegging

DCR pegs DCR OMs once per call. When a UCS DMS-250 switch retranslates, redirects, reoriginates, or route-advances a call that uses the DCR network the DCR resets the OM pegging to handle these calls as if they are new calls rather than incoming calls.

DCR pegs DCR OMs for the following calls:

- retranslated calls that use the RX selector
- redirected calls that use ISUP RLT
- reoriginated calls
- route advanced calls
- calls that use N00 routing
- CAIN calls that use the Called Party ID parameter to route or that use the Generic Address List's Overflow Routing Number

To learn more about DCR, see the *DCR User Guide, 297–1001–475.*

Early answer supervision for universal access calls

What is a universal access call?

A universal access (UA) call is a toll-free call that gives subscribers access to your network even when you are away from home. The subscribers dial a toll-free number to access your network, and then dial the called party's number plus their travel card numbers.

What is early answer supervision?

Without early answer supervision, the subscribers could encounter an error when placing UA calls: the originating switch establishes only a one-way voice path with the UCS DMS-250 switch until the UCS DMS-250 switch sends an answer message to the originating switch. With this one-way voice path, when subscribers place a UA call they hear the automated messages, but the UCS DMS-250 switch is unable to receive their responses to the messages.

Note: Early answer supervision is controlled by the software optionality control (SOC) UTRS0005.

ATTENTION

Some originating switches already establish two-way voice paths before they receive an answer message from the UCS DMS-250 switch. These originating switches do not require early answer supervision.

With early answer supervision, the UCS DMS-250 switch supplies an answer message to the originating switch before it receives the answer message from the terminating switch. When the originating switch receives the answer message it establishes a two-way voice path. The two-way voice path allows the UCS DMS-250 switch to receive the subscribers' responses to the automated messages during a UA call.

You can apply early answer supervision to a trunk group or to specific UA numbers on a specific trunk. If you apply it to a trunk group, it provides an early answer indication for all UA calls that originate on that trunk group.

If you apply early answer supervision to specific universal access numbers on a specific trunk, it provides an early answer indication only to the specified UA numbers on that trunk. When you use this method, you lessen the impact early answer supervision has on switches further ahead in the network. This method is especially useful if you carry UA calls from different service providers, service providers who may not require an early answer indication to establish a voice path, on the same originating trunk.

ATTENTION

Nortel recommends you only apply early answer supervision to specific UA numbers on a specific trunk.

How does early answer supervision work?

Early answer supervision allows the UCS DMS-250 switch to send an answer indication to the originating switch when it receives a UA number.

Only originating SS7 FGD and SS7 IMT (inter) trunks support early answer supervision. However, the terminating trunk agency can be SS7 FGD, SS7 IMT (inter), PTS, or PRI. Table 6-1, Trunk agency interworkings, shows which trunk agencies can interwork to support early answer supervision.

Table 6-1
Trunk agency interworkings

Originating trunks	Terminating trunks
SS7 FGD/ SS7 IMT	SS7 FGD
SS7 FGD/ SS7 IMT	SS7 IMT
SS7 FGD/ SS7 IMT	PTS
SS7 FGD/ SS7 IMT	PRI

See Figure 6-1, SS7–FGD to SS7–FGD UA call's message flow without early answer supervision, and Figure 6-2, SS7–FGD to SS7–FGD UA call's message flow with early answer supervision. These figures compare how an SS7-FGD UA call's messaging flows with and without early answer supervision.

To compare the messaging flow between an SS7-FGD trunk to a PTS trunk, see Figures 6-3, SS7-FGD to PTS UA call's message flow without early answer supervision, and 6-4, SS7-FGD to PTS UA call's message flow with early answer supervision.

To compare the messaging flow between an SS7-FGD to a PRI trunk, see Figures 6-5, SS7-FGD to PRI UA call's message flow without early answer supervision, and 6-6, SS7-FGD to PRI UA call's message flow with early answer supervision.

Note: The figures that show UA calls without early answer supervision assume that the originating switch can establish two-way voice path without early answer supervision.

Figure 6-1
SS7-FGD to SS7-FGD UA call's message flow without early answer supervision

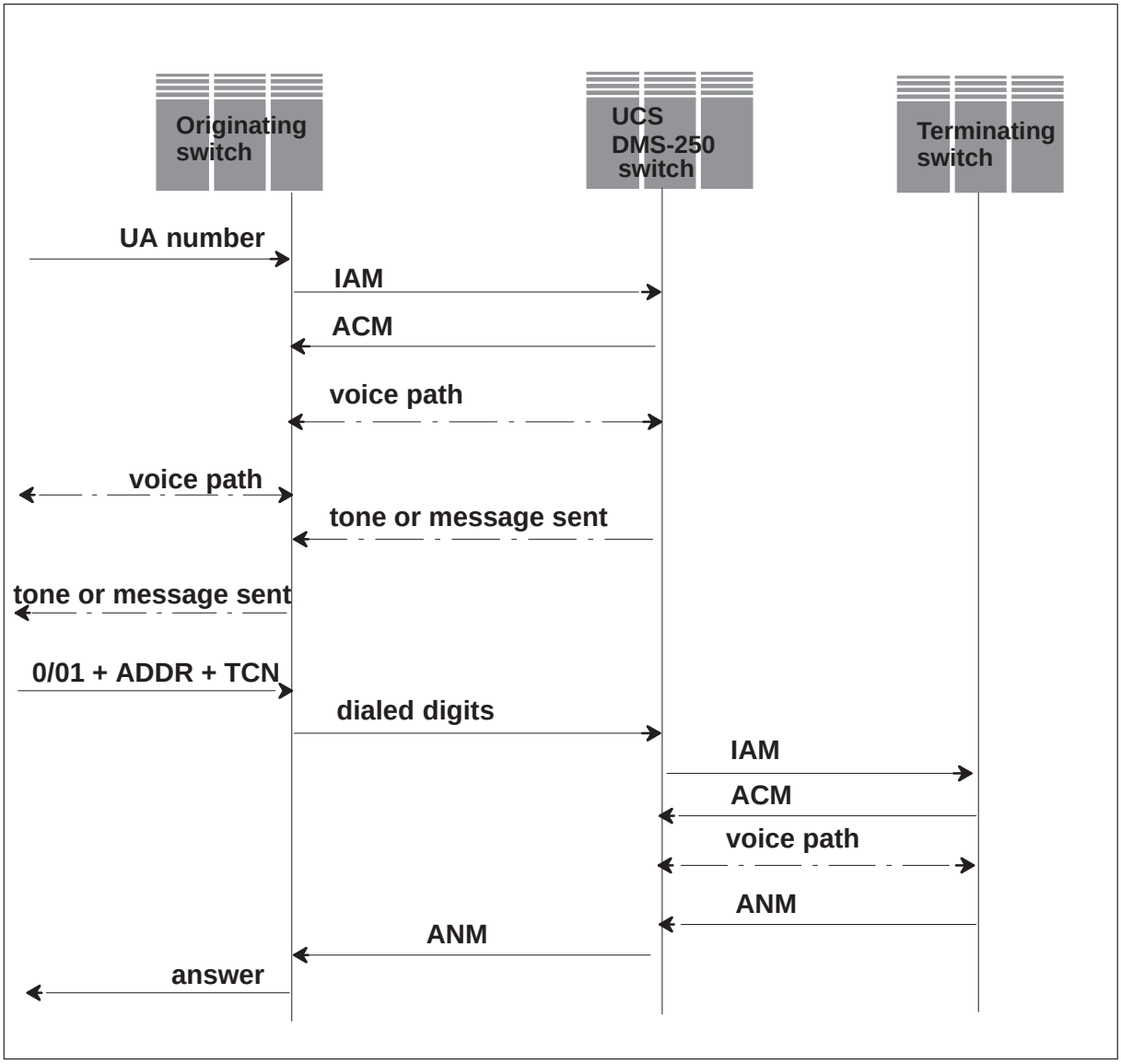


Figure 6-2
SS7-FGD to SS7-FGD UA call's message flow with early answer supervision

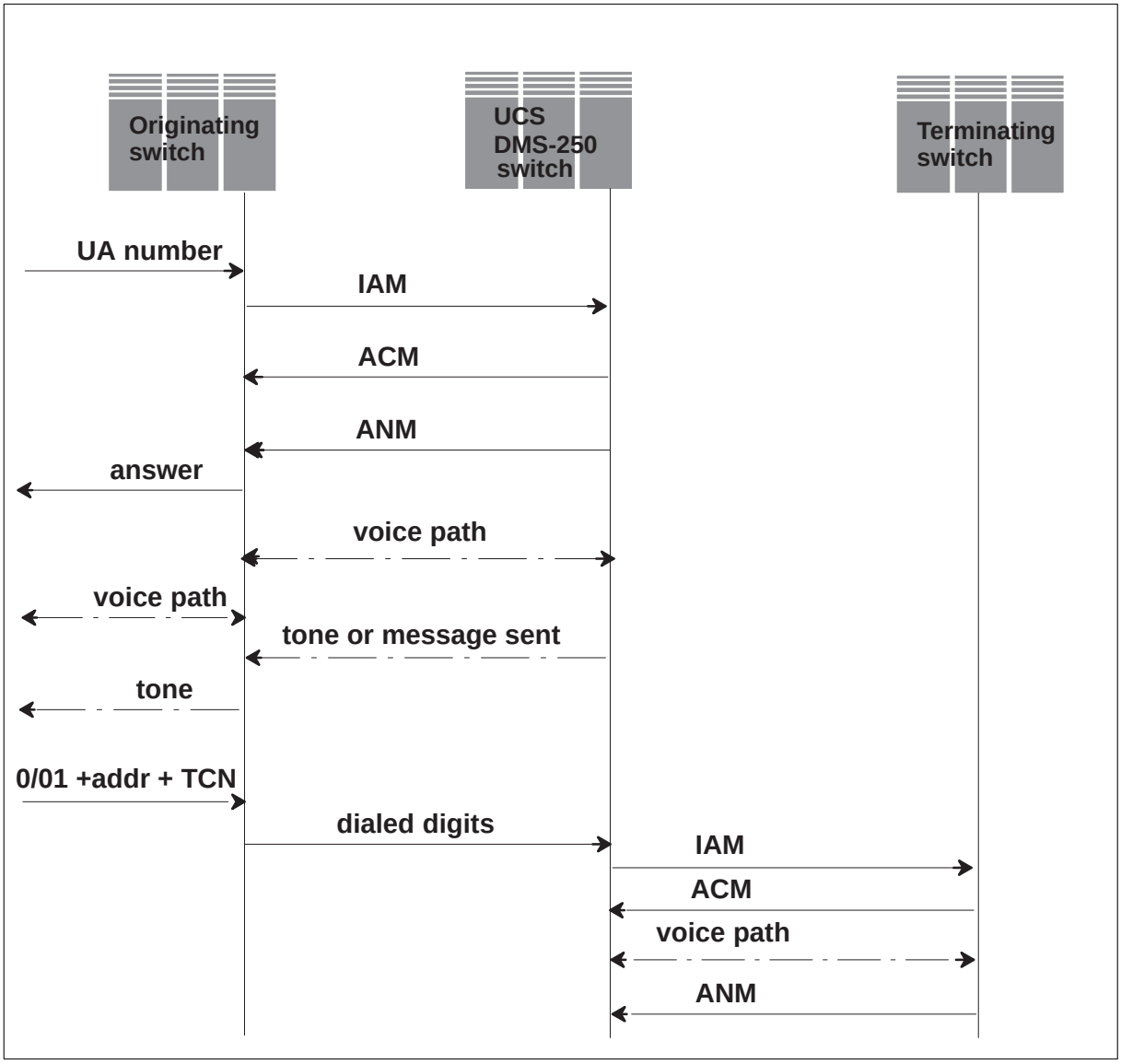


Figure 6-3
SS7-FGD to PTS UA call's message flow without early answer supervision

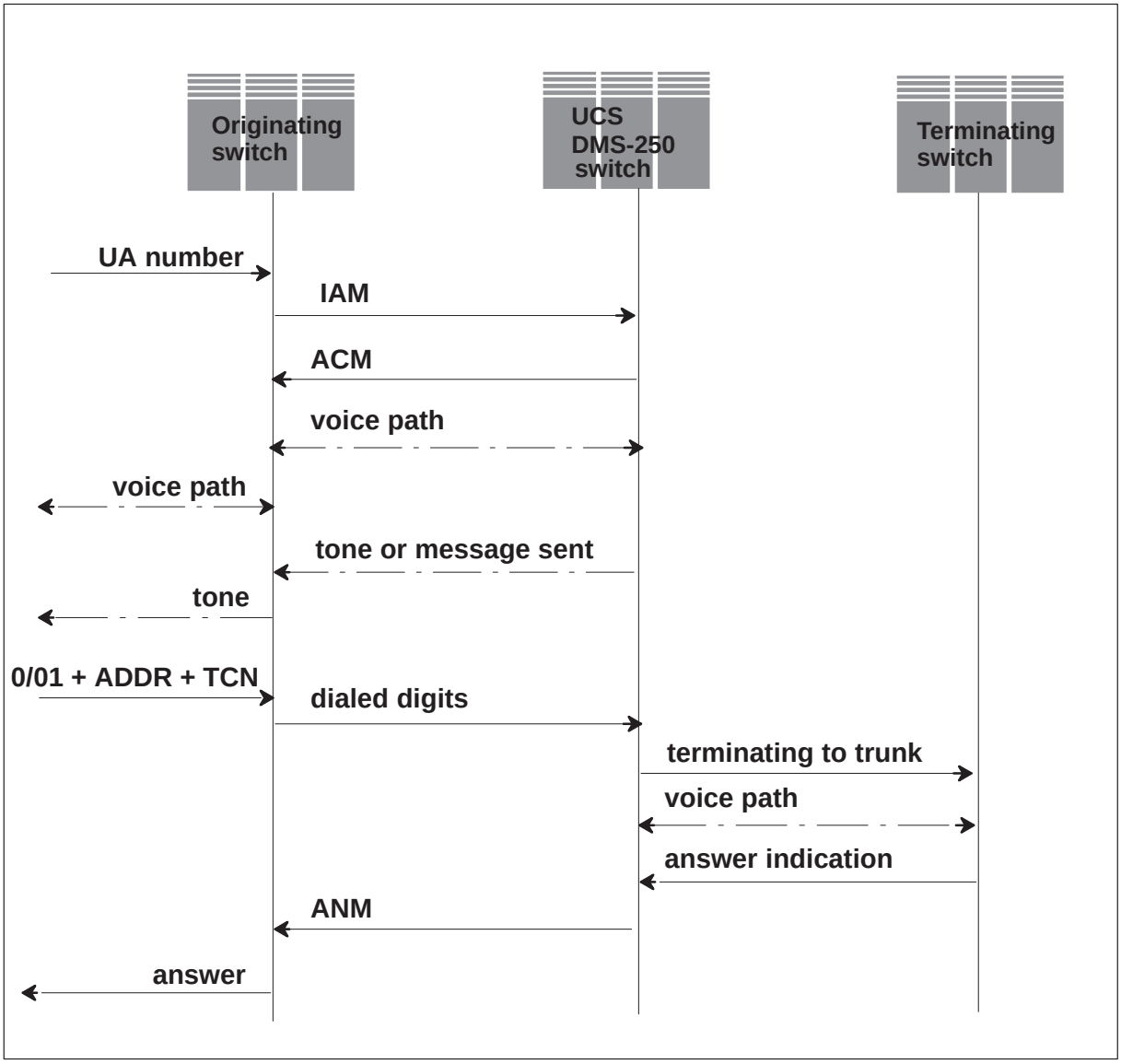


Figure 6-4
SS7-FGD to PTS UA call's message flow with early answer supervision

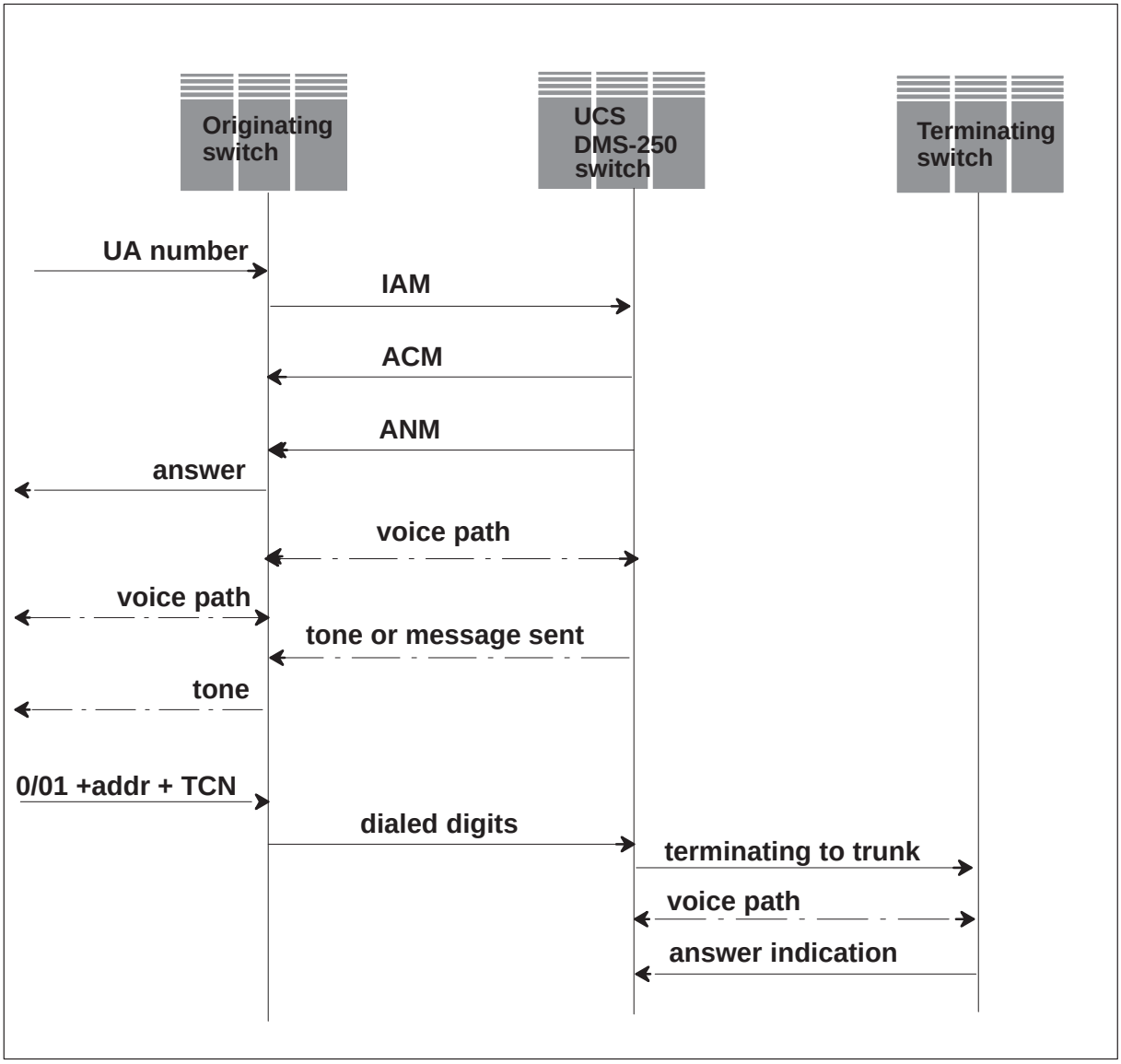


Figure 6-5
SS7-FGD to PRI UA call's message flow without early answer supervision

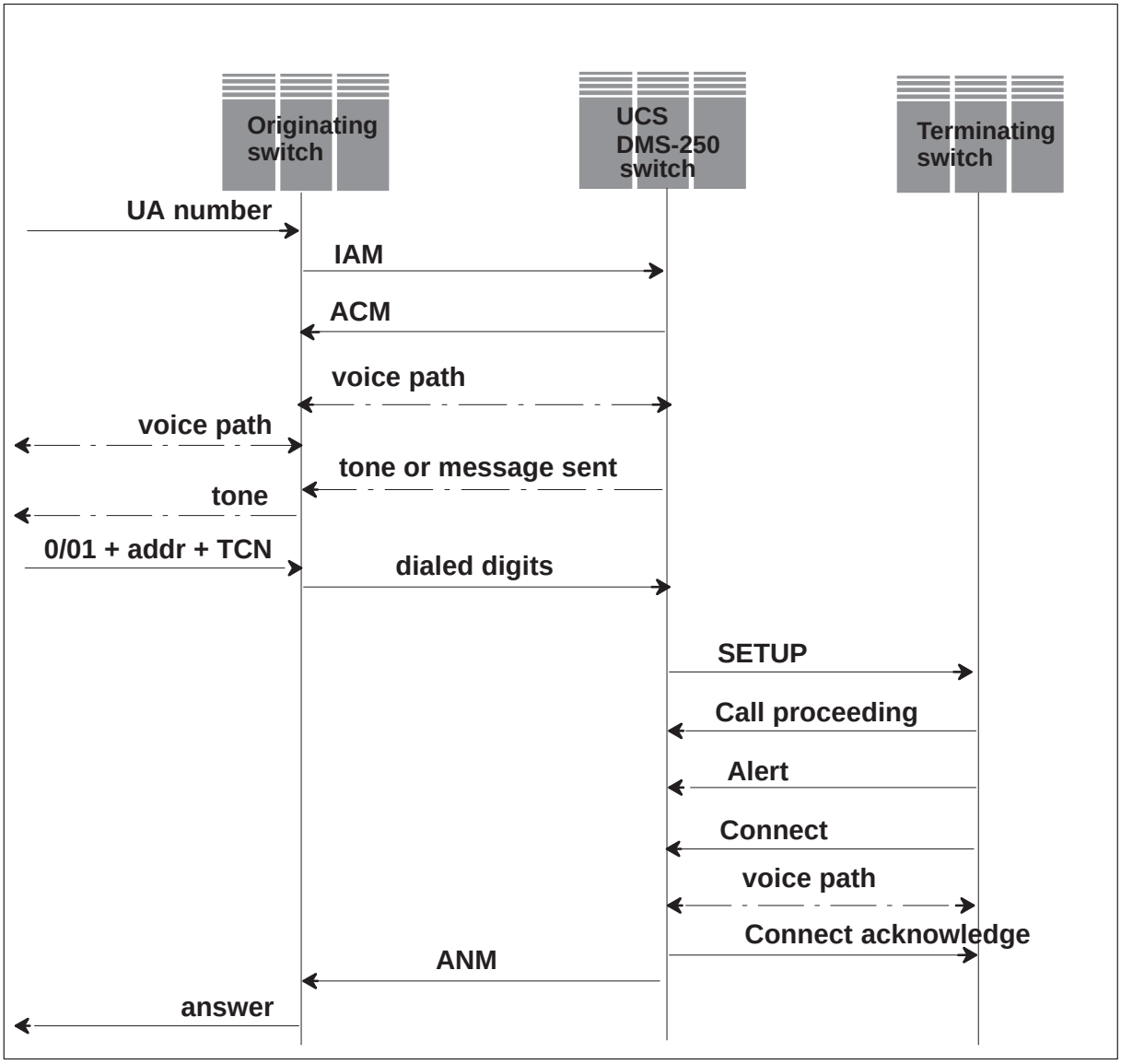
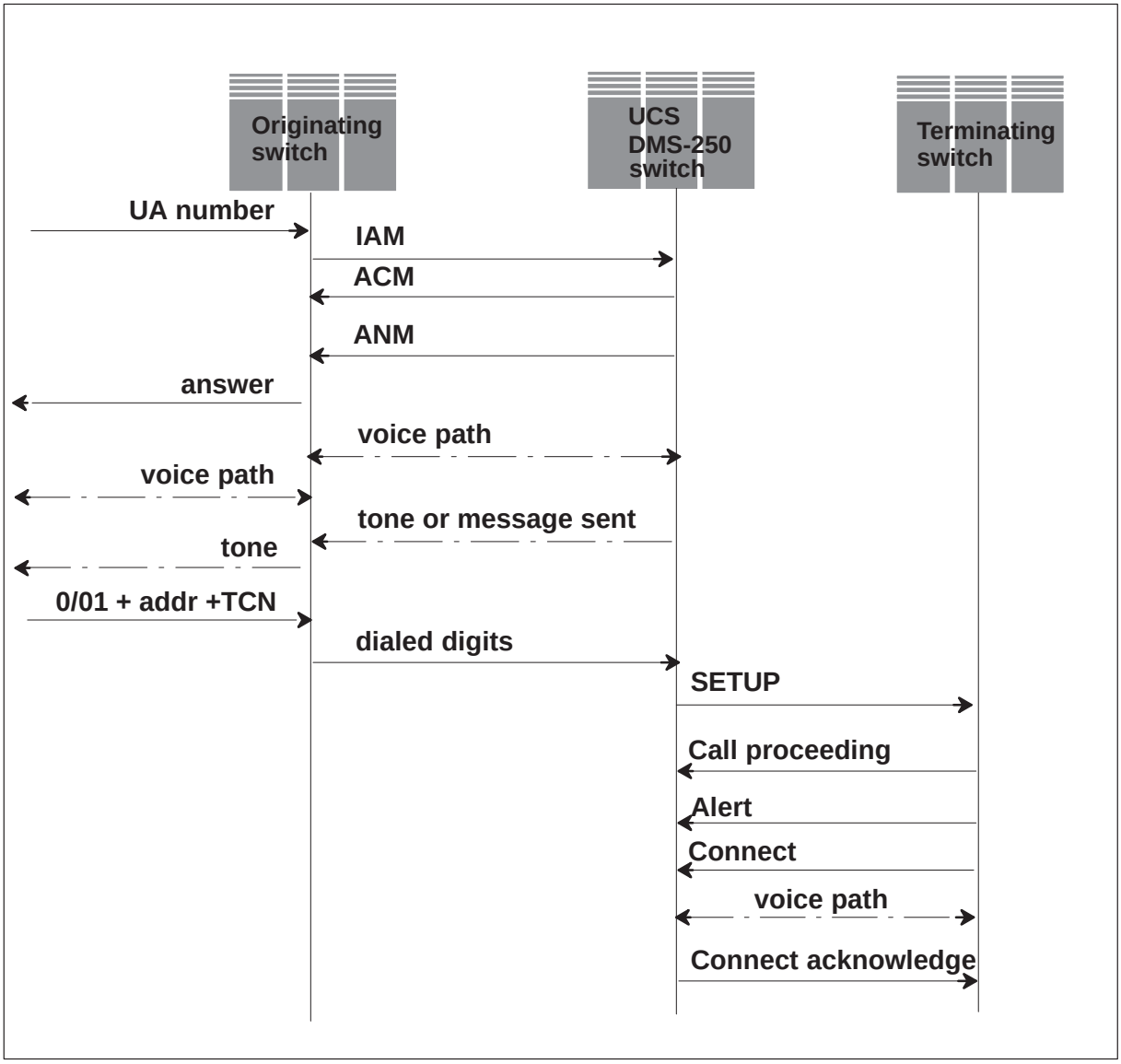


Figure 6-6
SS7-FGD to PRI UA call's message flow with early answer supervision



How do I activate early answer supervision?

To apply early answer supervision to a trunk group, follow these instructions:

1 Order and activate the Early Answer Supervision software optionality control (SOC), UTRS0005.

2 Datafill the SS7 protocol in table TRKSGRP.

Table 6-2
Table TRKSGRP, field SGRPVAR

Field	Description	Value Heading
SGRPVAR	the field where you enter the trunk's protocol	C7UP

ATTENTION

The ANSWRPVD option is valid only when you datafill the protocol as SS7 in table TRKSGRP.

3 Datafill the ANSWRPVD option in table TRKGRP.

Table 6-3
Table TRKGRP, option ANSWRPVD

Field	Description	Value
Option	establishes early answer supervision for UA calls when this is the originating trunk group	ANSWRPVD

4 Datafill the EARLY_ANSWER_SELECTOR office parameter in table OFCVAR.

Table 6-4
Table OFCVAR, EARLY_ANSWER_SELECTOR office parameter

Office parameter	Description	Value
EARLY_ANSWER_ SELECTOR	specifies whether early answer supervision is applied to a trunk group or to specific UA numbers	TRKGRP
Note: TRKGRP is the default value.		

Note: If you change the value of this office parameter from TRKGRP_AND_UA to TRKGRP, the UCS DMS-250 switch displays the following warning:

```
WARNING:The ANSWRPVD option datafilled in STDPRTCT will be
ignored.
```

Ignore this warning. When you apply early answer supervision to a trunk group you don't need to datafill the ANSWRPVD option in table STDPRTCT.

The following example shows the datafill to apply early answer supervision to a trunk group:

1 Table TRKGRP datafill:

```
EAN651TWMFWK EANT 50 NPDGP NCOF 0 2W EAN MIDL 16 7 16 EAPT
2 2 214 NILIDX OT 214111 MANUAL 0 NONE 0 1 VOICE_DATA
(MCCS) (ANSWRPVD) $
```

2 Table OFCVAR datafill

```
EARLY_ANSWER_SELECTOR TRKGRP
```

To specify early answer supervision on specific UA numbers on a specific trunk, follow these instructions:

1 Order and activate the Early Answer Supervision software optionality control (SOC), UTRS0005.

2 Datafill the SS7 protocol in table TRKSGRP.

Table 6-5
Table TRKSGRP, field SGRPVAR

Field	Description	Value Heading
SGRPVAR	the field where you enter the trunk's protocol	C7UP

ATTENTION
The ANSWRPVD option is only valid when you datafill the protocol as SS7 in table TRKSGRP.

3 Datafill the ANSWRPVD option in table TRKGRP.

Table 6-6
Table TRKGRP, option ANSWRPVD

Field	Description	Value
Option	establishes early answer supervision for UA calls when this is the originating trunk group	ANSWRPVD

4 Datafill the UA pretranslations selector, for each UA number that you want to apply early answer indication to, in table STDPRTCT, subtable STDPRT.

Table 6-7
UA pretranslations selector, table STDPRTCT.STDPRT

Field	Description	Value
Option	establishes early answer supervision to this specific UA number	ANSWRPVD

5 Datafill the EARLY_ANSWER_SELECTOR office parameter in table OFCVAR.

Table 6-8
Table OFCVAR, EARLY_ANSWER_SELECTOR office parameter

Office parameter	Description	Value
EARLY_ANSWER_ SELECTOR	specifies whether early answer supervision is applied to a trunk group or to specific UA numbers	TRKGRP_AND _UA
Note: TRKGRP is the default value.		

Note: If you change the value of this office parameter from TRKGRP to TRKGRP_AND_UA, the UCS DMS-250 switch displays the following warning:

```
WARNING:The option ANSWRPVD must also be datafilled in
STDPRTCT.
```

The following example shows the datafill to apply early answer supervision to specific UA numbers on a trunk group:

1 UA pretranslations selector for the UA number 8009501051, table STDPRTCT, subtable STDPRT:

```
8009501051 8009501051 UA 1 111 N TCN 5 PROCEED (ANSWRPVD)
$
```

2 Table TRKGRP:

```
EAN651TWMFWK EANT 50 NPDGP NCOF 0 2W EANA MIDL 16 7 16 16
EAPT 2 214 NILIDX OT 214111 MANUAL 0 NONE 0 1 VOICE_DATA
(MCCS) (ANSWRPVD) S
```

3 Table OFCVAR:

```
EARLY_ANSWER_SELECTOR TRKGRP_AND_UA
```

How are unsuccessful UA calls treated?

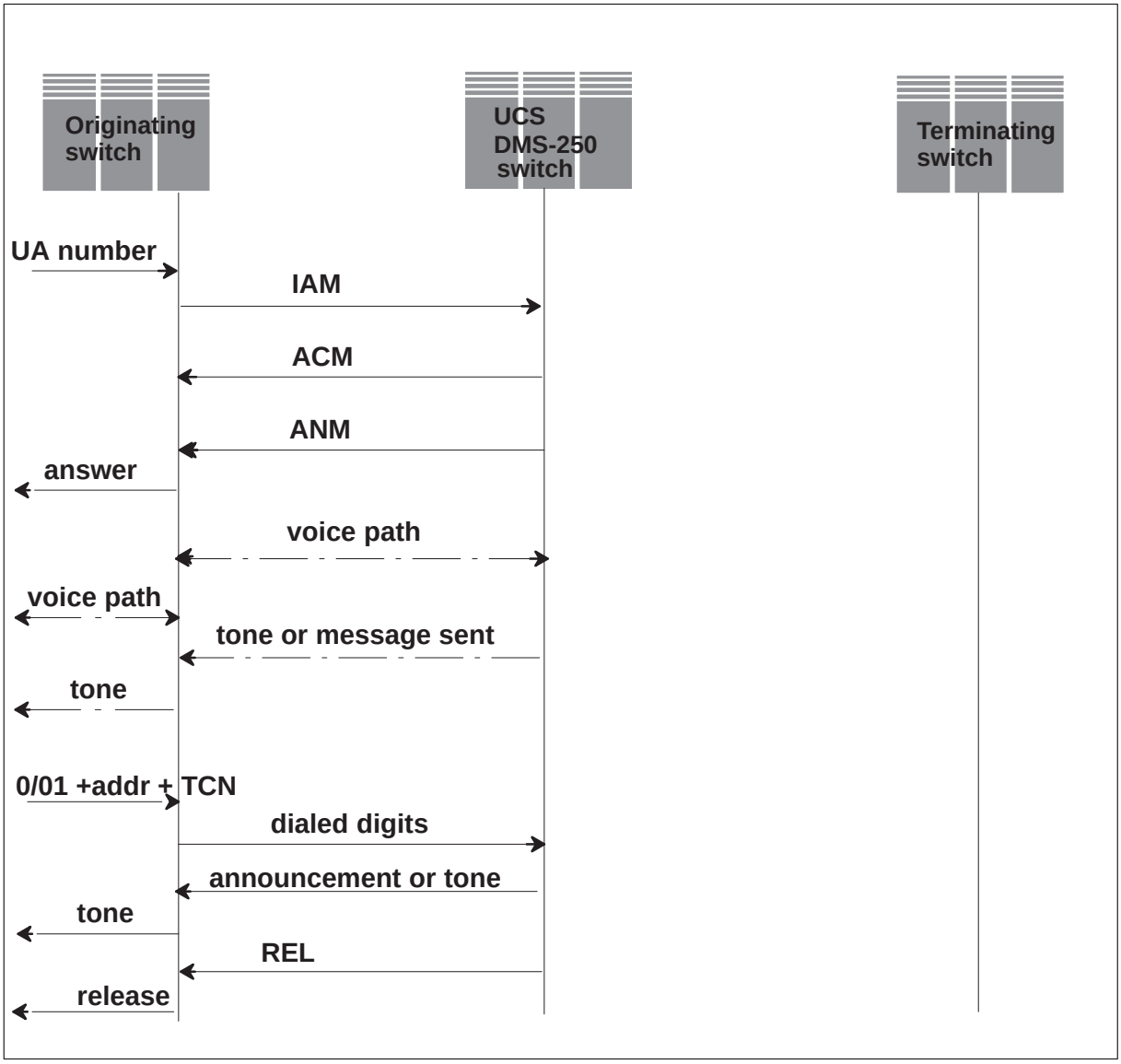
This section describes how the UCS DMS-250 switch handles unsuccessful UA calls when

- the UA call is unsuccessful at the UCS DMS-250 switch
- the UA call is unsuccessful at the terminating switch

UA calls unsuccessful at the UCS DMS-250 switch

After the UCS DMS-250 switch provides early answer supervision to a UA call, it can treat the call if an error occurs. If a UA call with early answer supervision is unsuccessful at the UCS DMS-250 switch, the UCS DMS-250 switch locally treats the call. When it determines the error, it applies treatment to the call and releases the call. Figure 6-7, Unsuccessful UA call on a UCS DMS-250 switch providing early answer supervision, shows the flow of messages when a UA call with early answer supervision is unsuccessful at the UCS DMS-250 switch.

Figure 6-7
Unsuccessful UA call on a UCS DMS-250 switch providing early answer supervision



In Figure 6-7, the UCS DMS-250 switch does not start billing. The call detail report's (CDR's) field TRMTCD is set to the treatment code and the COMPCODE field is set to 1, which indicates the call was treated.

ATTENTION
Call duration records for the originating LEC or IEC may be affected.

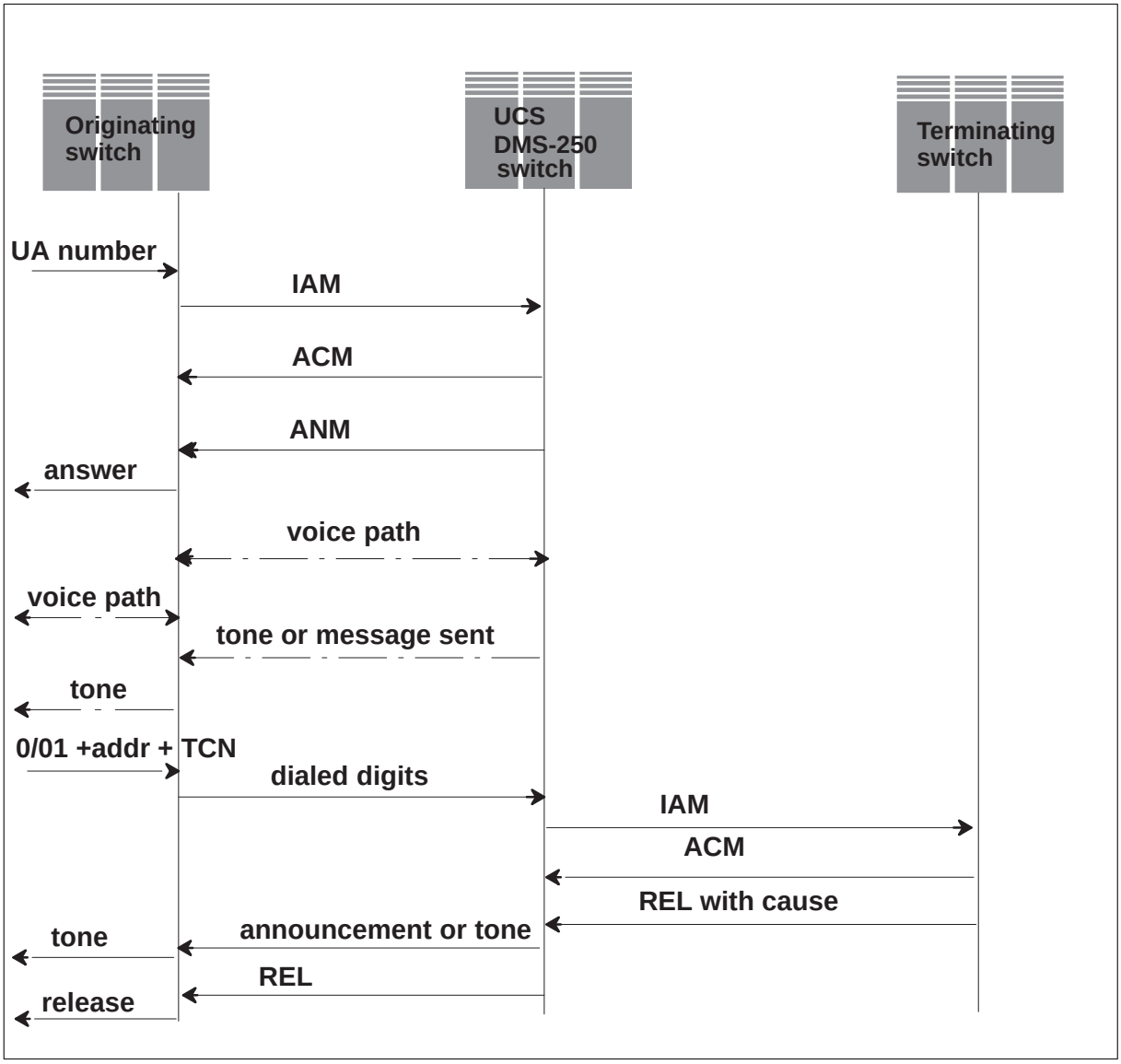
Since an early answer message was sent before treating the call at the UCS DMS-250 switch that provides the early ANM, call duration records for the LEC or IEC may be affected. If the originating switch is a DMS switch, either an IEC switch or LEC switch, the call duration begins when the early ANM is received and no treatment is indicated (TRTMTCD and COMPCODE are not set).

UA call unsuccessful at the terminating switch

If a call is unsuccessful at the terminating switch, the call is treated locally at the UCS DMS-250 switch that provided the early answer indication, regardless of the datafill in table TMTMAP. When the UCS DMS-250 switch determines the error, it applies treatment to the call and releases the call. If the terminating switch has already treated the call, it may send a "normal" release message and the UCS DMS-250 switch that provides early answer indication does not apply treatment to the call.

Figure 6-8, Unsuccessful UA call at the terminating switch, shows the flow of messages when a UA call with early answer supervision is unsuccessful at the terminating switch.

Figure 6-8
Unsuccessful UA call at the terminating switch



In Figure 6-8, the call is treated locally at the UCS DMS-250 switch that provides the early answer indication. The UCS DMS-250 switch does not start call duration. In the CDR, the TRTMTCD field is set to treatment code, and the COMPCODE field is set to 1, which indicates the call was treated.

Note 1: This treatment logic does not apply to FGD, IMT, or PRI terminating agents provisioned for dialable wideband services (DWS).

Note 2: This treatment logic does not apply to FGD, IMT, or PRI terminating agents provisioned for dialable wideband services (DWS).

ATTENTION
Call duration records for the originating LEC or IEC may be affected.

Since an early answer message was sent before treating the call at the UCS DMS-250 switch that provides the early answer message, call duration records for the terminating switch may be affected. If the originating switch is a DMS switch, either LEC or IEC, call duration begins when the early ANM is received. No treatment is indicated.

How does early answer supervision affect billing?

Billing in the UCS DMS-250 switch, that provides early answer supervision, is unaffected by early answer supervision. Since the early answer message is sent before the terminating trunk answers, call duration records for the originating switch may be affected. However, this is an expected outcome of this feature and is outside Nortel's control.

FGD PASSTHRU

The FGD PASSTHRU feature allows the UCS DMS-250 switch to bypass normal routing practices and route an incoming call to the PTS FGD or SS7 FGD trunk designated by an office parameter.

When PASSTHRU is provisioned against the ANI (and the matching call type occurs on the trunk group originating with the ANI number), the UCS DMS-250 switch bypasses all ANI features and routes the call to the destination specified by the office parameter. ANI features and subscriber digit collection occur at this destination.

Also, when CASU_CUT_THRU is datafilled against the FGD trunk, and the originating cut-thru call contains a casual ANI, the UCS DMS-250 switch invokes passthru and routes the call to the destination specified by the office parameter FGD_CUTTHRU_PASSTHRU. At this destination, the ANI features and the subscriber digit collection occur.

How do I activate FGD passthru?

The following options in field PASSTHRU in table ANISCUSP (Automatic Number Identification Screening) identify the route choice for “pure” or “cut-thru” calls originating on FGD agents with a specified ANI:

- PURE_ONLY—only “pure-FGD” calls originating with the specified ANI use the PASSTHRU feature
- CUT_ONLY—only “cut-thru FGD” calls originating with the specified ANI use the PASSTHRU feature
- PURE_CUT—both “pure” and “cut-thru FGD” calls originating with the specified ANI use the PASSTHRU feature

Nortel recommends calls using the PASSTHRU feature terminate to FGD agencies only. Although other currently supported UCS DMS-250 switch agents may be used as the terminating agent, FGD termination ensures all information received on the originating agent is sent (outpulsed) correctly to the next switch.

Note: Because of protocol restrictions, the UCS DMS-250 switch does support termination of PASSTHRU CUTTHRU calls to SS7 IMT agents.

Table 7-1 shows a comparison of the PASSTHRU FGD origination and termination with the PASSTHRU feature. For additional information on FGD dialing plans, see Table 1-1 and Table 1-2 in chapter 1, “Introduction to FGD.”

Table 7-1
PASSTHRU FGD origination/termination comparison

Call Type (originating/terminating agent)	Information received	Information outpulsed
“Pure” FGD	KP + II + ANI + ST	KP + II + ANI + ST
	KP + ADDR + ST	KP + ADDR + ST
(PTS FGD/PTS FGD)	KP + 1NX + XXX(X) + CCC + ST	KP + 1NX + XXX(X) + CCC + ST
	KP + II + ANI + ST	KP + II + ANI + ST
	KP + CC + NN + ST	KP + CC + NN + ST
“Cut-thru” FGD **(PTS FGD/PTS FGD)**	KP + II + ANI + ST	KP + II + ANI + STP
“Pure” FGD	KP + II + ANI + ST KP + ADDR + ST	IAM includes information digits (OLI), ANI (CHRG), and Address (CPDA). The nature of the address value for CHRG indicates a “national” or subscriber call. IAM includes information digits (OLI), ANI (CHRG), and Carrier ID Code (TNS). The nature of the address value for CHRG indicates an “international” call.
Note: When the PASSTHRU feature is active, the switch does not perform DTMF digit collection.		

—continued—

Table 7-1
PASSTHRU FGD origination/termination comparison (continued)

Call Type (originating/terminating agent)	Information received	Information outpulsed
(PTS FGD/ISUP FGD)	KP + 1NX + XXX(X) + CCC + ST KP + II + ANI + ST KP + CC + NN + ST	IAM includes information digits (OLI), ANI (CHRG), and Carrier ID Code (TNS). The nature of the address value for CHRG indicates an “international” call.
“Pure” FGD **(PTS FGD/ISUP FGD)**	KP + II + ANI + STP	IAM includes Information Digits (OLI) and ANI (CHRG). The nature of the address value for CDPA indicates subscriber cut-through, no number present.
“Pure” FGD **(ISUP FGD/PTS FGD)**	IAM includes Information Digits (OLI), ANI (CHRG or CGPA), Address (CDPA) and Carrier ID Code (TNS). The nature of the address value for CDPA indicates a subscriber or national number.	KP + II + ANI + ST KP + ADDR + ST
	IAM includes Information Digits (OLI), ANI (CHRG or CGPA) Address Digits (CDPA), and Carrier ID Code (TNS). The nature of the address value for CDPA indicates an international number.	KP + 1NX + XXX(X) + CCC + ST KP + II + ANI + ST KP + CC + NN + ST
Note: When the PASSTHRU feature is active, the switch does not perform DTMF digit collection.		

—continued—

Table 7-1
PASSTHRU FGD origination/termination comparison (continued)

Call Type (originating/terminating agent)	Information received	Information outpulsed
"Cut-thru" FGD **(ISUP FGD/PTS FGD)**	IAM includes Information Digits (OLI) and ANI (CHRG or CGPA). The nature of the address value for CDPA indicates a subscriber cut-through, no number present.	KP + II + ANI + STP
Note: When the PASSTHRU feature is active, the switch does not perform DTMF digit collection.		
—end—		

How does the UCS DMS-250 switch process calls when FGD passthru is active?

When the FGD PASSTHRU feature is active, the following call processing conditions apply:

- ANI features are no longer processed. This includes account code/PIN digit collection, class of service screening, and table OPCHOICE (Operator Choice) screening.
- Translations on the called party address digits ceases.

  Note: The switch does perform pretranslations. However, if the call is identified as "called party address billed," the switch does not apply PASSTHRU functionality.

- DTMF (subscriber) digits collection for the call is discontinued. This applies to account code/PIN digit collection and "cut-thru" calls.

  Note: If PASSTHRU is activated on a cut-through call, the call routes to the destination identified by the office parameter after the receipt of the ANI number. No address digits are collected from the subscriber by the switch.

- If PASSTHRU is activated on a "pure" FGD call, a call routes immediately to the destination identified by the office parameter after the MF address digits have been collected and screened in table STDPRTCT (Standard Pretranslator).
- Reorigination is not allowed.

Note: Current UCS DMS-250 software does not allow reorigination on a “pure” FGD call. In addition, the process the switch uses to manage this type of call does not allow reorgination.

How do I enter data into table ANISCUSP?

Table ANISCUSP

ANISCUSP is indexed by the ANI digits (3-, 6-, or 10-digit number) and it performs the following:

- screens received ANI digits and identifies any features and call types applicable to the subscriber number

  Note: ANIs can be screened in Table ANIVAL. See chapter 13, “ANI Screening.”

- provides “pure” and “cut-thru” PASSTHRU options for FGD

Note: There are no table dependencies for ANISCUSP provisioning.

Table 7-2 describes the fields located in table ANISCUSP.

Table 7-2
Table ANISCUSP field descriptions

Field	Description	Values
ANITYPE ANI Type	10-digit ANI	NPA—KEY contains a 3-digit ANI NXX—KEY contains a 6-digit ANI ***Note:*** ANITYPE must be set to SUB for FGD PASSTHRU.
STATUS Status	ANI calling party status	STATUS. For ANIs validated on an NPA or NPA-NXX level, enter one of the following codes that describes the status of the calling party: • CA. Enter CA when the call processes based on the presence of the FGD trunk group option CASUALU. If the option is not present on the trunk, then the call routes to treatment. If the option is present the call is allowed to proceed. • DA. Enter DA when 10-digit ANI represents a subscriber being disallowed access to the network. • NA. Enter NA when ANI is not assigned. • RD. Enter RD when 10-digit ANI represents a subscriber recently disallowed access to the network. • AL. Enter AL when 10-digit ANI calls are allowed to proceed. ***Note:*** STATUS must be set to “CA” for cut-thru calls originating on trunks provisioned with CASU_CUT_THRU if the FGD_CUTTHRU_PASSTHRU office parameter is to route the call ***Note:*** STATUS must be set to “AL” for FGD PASSTHRU.
Note: Table ANISCUSP fields do not apply unless customers set VANIDB in Table TRKGRP for FGD calls requiring an authcode.		

—continued—

Table 7-2
Table ANISCUSP field descriptions (continued)

Field	Description	Values
ACCTLEN Account Code Length	number of account code digits collected from the originating subscriber for the ANI	range = 0 to 12 ***Note:*** Enter 0 if the subscriber is not required to dial an account code.
ACCTVAL Account Code Validation	account code digits are required or not required	N—account code validation not required Y—account code validation required
BCNAME Bearer Capability Name	bearer capability (BC) associated with the ANI number	valid name ***Note:*** Name is assigned in table BCDEF (Bearer Capability Definition).
OPART Origination Partition Number	ANI Originating partition number	range = 0 to 999
TERMPART Terminating Partition Number	ANI terminating partition value	range = 0 to 31 ***Note:*** Enter the terminating partition number associated with the subscriber that is translated to a STS for off–net dialing. TERMPART is used when the ANDIGS field identifies a 10-digit ANI.
SATRES Satellite Restricted	ANI is restricted or not restricted from satellite switching	N—satellite switching allowed Y—satellite switching restricted
PINLEN Personal Identification Number	number of personal identification number (PIN) digits collected from the originating subscriber for the ANI number	value = 0, 2, or 3 default = 0; no multiple PINs present
Note: Table ANISCUSP fields do not apply unless customers set VANIDB in Table TRKGRP for FGD calls requiring an authcode.		

—continued—

Table 7-2
Table ANISCUSP field descriptions (continued)

Field	Description	Values
PININDEX Personal Identification Number Index	index into table MULTIPIN for validating received PIN digits	range = 0 to 8191
PINDIGS Personal Identification Number Digits	PIN digits that must be received from the subscriber	size = 0 to 4 digits value = 0 to 9; A to D
MLTCOSID Multiple Class of Service	index into table MLTICOS	range = 0 to 1023
Note: Table ANISCUSP fields do not apply unless customers set VANIDB in Table TRKGRP for FGD calls requiring an authcode.		

—continued—

Table 7-2
Table ANISCUSP field descriptions (continued)

Field	Description	Values
ANIDELV Account Number Identification Delivery	type of ANI delivery to terminating switch ***Note:*** This field is used only with 10-digit ANIs.	ALWAYS—deliver the following depending on trunk type: ISUP: CPN, CNG, and OLI PTS: ANI PRI: CLID NEVER—deliver nothing CPNONLY—deliver the following depending on trunk type: ISUP: CPN and OLI PTS: ANI PRI: deliver nothing CGNONLY—deliver the following depending on trunk type: ISUP: CPN PTS: ANI PRI: deliver nothing Definition of terms used in ANIDELV include: ANI = automatic number identification CLID = calling line identifier CNG = called number group CPN = calling party number OLI = originating line information
Note: Table ANISCUSP fields do not apply unless customers set VANIDB in Table TRKGRP for FGD calls requiring an authcode.		

—continued—

Table 7-2
Table ANISCUSP field descriptions (continued)

Field	Description	Values
OPTIONS Options	ANI option assignments ***Note:*** This field is made up of options that may be provisioned against the ANI.	ACCTIDX—Account Index value = 0 to 4294967295 value = OPCHOICE ***Note:*** Enter OPCHOICE to provide alternate routing for operator service (”0–” or ”0+” calls). Enter ”0” to disable the option. OPCHIDX—Operator Index value = 0 to 255 value = CAINGRP ***Note:*** Enter CAINGRP to specify a CAIN subscription group for the originating agency. PASSTHRU—FGD trunk types that use the ANI value = PURE_ONLY CUT_ONLY PURE_CUT
Note: Table ANISCUSP fields do not apply unless customers set VANIDB in Table TRKGRP for FGD calls requiring an authcode.		
—end—		

Which office parameters apply to FGD passthru?

FGD PASSTHRU uses the following parameters in table Office Variable (OFCVAR) to identify routing requirements:

- FGD_CUTTHRU_PASSTHRU— identifies the destination of the call for “cut-thru” FGD calls with the PASSTHRU feature active.
- VER_2_N00_PASSTHRU—identifies the destination of the call when the N00 PASSTHRU feature is active.

Note: When the N00 Number Translation feature is allowed at the service control point (SCP), the UCS DMS-250 switch sends "N00" or 700, 800, 900 numbers located in an incoming call to remote databases. Data is transferred over a SS7 network using the Transaction Capabilities Application Part (TCAP). See *UCS DMS-250 Transaction Capabilities Application Part (TCAP) Application Guide* for additional information on this capability.

Three values are valid for these office parameters:

- S—identifies a CLLI (previously defined in table CLLI) as the destination of the call
- T—identifies an available office route that specifies the route list for the call
- VACT—indicates the call routes to vacant code (VACT) treatment

  Note: VACT is the default.

How does FGD passthru affect billing?

The UCS DMS-250 switch captures information from the PASSTHRU parameter that indicates whether the feature was active for a call and the type of PASSTHRU that occurred. Table 7-3 contains information on these field values.

Table 7-3
PASSTHRU parameter values

PASSTHRU parameter values	Explanation
0	No PASSTHRU occurred on the call.
1	PASSTHRU occurred on the pure FGD call.
2	PASSTHRU occurred on the cut-through FGD call.
3	N00 PASSTHRU occurred for the call.

What restrictions and limitations apply to FGD passthru?

The following restrictions and limitations apply to FGD PASSTHRU:

- FGD agents (either SS7 or PTS) must be used as the terminating agent.

  Note: However, UCS DMS-250 switch provisioning system does not enforce the use of terminating FGD agents on PASSTHRU.

- Reorigination is not allowed.
- PASSTHRU is supported only for ten-digit ANI numbers.
- Status of the screened ten-digit ANI number must be set to ”AL” for PASSTHRU activation.
- Pseudo-ANI (PANI) interactions with PASSTHRU are not allowed.

Feature implementation

The UCS DMS-250 switch applies FGD PASSTHRU functionality to an incoming PTS FGD/SS7 FGD call under the following conditions:

- Originating agent is a FGD Equal Access Network Trunk (EANT).
- ANI status is set to “AL,” or the ANI status is set to “CA” if the call is a cut-thru call with the CASU_CUT_THRU option.
- Call type is “calling party billed.”

  Note: “Called party billed (8XX)” calls are not supported.

- PASSTHRU is provisioned against the received ANI. The received ANI also must match the FGD call type (“pure” or “cut-thru” FGD).
- Received ANI must be screened in table ANISCUSP.
- Table TRKGRP options like CTRUAUTH (Cut Thru Authcode) and ANIBYP (ANI Bypass) and specific call types (like ID24), prevent the screening of the ANI in the ANI database. The PASSTHRU feature is not activated for these call types.

System requirements

The switch does not require additional storage for the ANISCUSP table to store the PASSTHRU option.

Fifteen-digit International Direct Digit Dialing (IDDD)

The UCS DMS-250 switch supports both the North American Numbering Plan (NAPA) and the International Numbering Plan. The 15-digit International Direct Digit Dialing (15-digit IDDD) feature affects only the International Numbering Plan. This feature allows a maximum of 15 digits to be used in international dialing plans.

The 15-digit IDDD expansion enables the UCS DMS-250 switch to be in compliance with the following ITU/CCITT recommendations:

- E.164—Numbering Plan for the ISDN ERA
- E.165—Timetable for the Coordinated Implementation of the Full Capability of the Numbering Plan for the ISDN Era

How do fifteen-digit IDDD calls work?

International Numbering Plan

The address stream for the International Numbering Plan is made up of the following elements:

- Country Code (CC)
- National Significant Number (NSN)
  - — National Number (NN)
  - — Subscriber Number (SN)

Prior to UCS05, the maximum address length for international calls was 12 digits. In this configuration the CC was 1 to 3 digits and the NSN was 1 to 11 digits.

With the UCS05 release the maximum address length for international calls is 15 digits. In this configuration, the CC is 1 to 3 digits and the NSN ranges from 1 to 14 digits.

Which call processing services does the 15-digit IDDD feature support?

The following call processing services are supported by the 15-digit IDDD feature:

- digit collection
- translations and routing
- digit outpulsing

Digit collection

PTS FGD and SS7 FGD are among the trunk types that support 15-digit IDDD calls. The increased digit collection capacity allows the collection of 18 address digits in the following manner:

- CC + NSN = 15 digits
- international prefix = 01 or 011
- additional digits (as required)

Table 8-1 shows the 15-digit IDDD dialing plan and the digit collection method each supported agency uses for calls incoming to the UCS DMS-250 switch. The table also shows information on the impacted digit streams for SS7 FGD resulting from the increase in the maximum length of IDDD address digits. For additional information on FGD dialing plans, see Table 1-1 and 1-2 in chapter 1, “Introduction to FGD.”

Table 8-1
15-digit–IDDD dialing plan

Access type	IDDD dialing plan	Digit collection method	Address digits (maximum number allowed)	Address digits (total number possible)
PTS FGD (international)	MF: KP + 1N(’) + XXX(X) + CCC + ST MF: KP + ll + ANI + ST **MF: KP_CC + NSN + ST** DTMF: (PIN) + (ACCT)	MF	18	20
—continued—				

Table 8-1
15-digit–IDDD dialing plan (continued)

Access type	IDDD dialing plan	Digit collection method	Address digits (maximum number allowed)	Address digits (total number possible)
PTS FGD (universal access – UA)	MF: KP + (10-digit ANI) + ST MF: KP + 800-NXX-XXXX + ST **DTMF:AUTH + (PIN) + 011 + CC + NSN + (AC)** or MF: KP + (10-digit ANI) + ST MF: KP + 800-NXX-XXXX + ST **DTMF: 01 + CC + NSN + TCN + (PIN) + (AC)**	DTMF	18	45
SS7 FGD	**CC + NSN** (in the Called Party Address parameter of the IAM)	Q.764 protocol	18	18

Note: Items in bold represent the address digits streams impacted by 15-digit IDDD enhancements.
Note: Values in the “Address Digits (maximum number allowed)” column include the “011” or “01” prefix, plus the increased “CC + NSN” digits.
Note: Values in the “Address Digits(total possible number)” column represents the total number of digits possible in the impacted digit stream. This includes (1) “KP” and “ST” variants, (2) any billing number digits, (3) increased CC + NSN address digits.

—end—

Table 8-2 provides a key to the codes used for the international dialing plan.

Table 8-2
15-digit IDDD dialing plan, identifiers

Key	Description	Length (digits)
ACCT	Account Code	1–12
ANI	Automatic Numbering Identification	3, 6, 10
AUTH	Authcode	5–7
CC	Country Code	1–3
CCC	Pseudo Country Code	1–3
DTMF	Dual Tone Multi-frequency	N/A
FC	Facility Code	2
I	One Information Digit	1
II	Information Digits	2
KP	Key Pulse	1
MF	Multi-frequency	N/A
N	Digit (value = 2–9)	1
NSN	National Significant Number	1–14
1NX	Non Operator-Assisted Call	3–4
1N(')X	Operator-Assisted Call	3–4
PIN	Personal Identification Number	1–4
ST	Startkey	1
TCN	Travel Card Number	14
X	Digit (0–9)	1
XXX(X)	Carrier Identification Code	3–4
Note: The combined length of CC and NSN must be less than 15 digits.		
—end—		

Translations and routing

No new call translations or routing schemes have been introduced for 15-digit IDDD calls. However, the following UCS DMS-250 translation tables have been enhanced to handle a maximum of 18 digits:

- SPEEDCT (Speed Number Control)
- INWFEAT (Inward Wide Area Telecommunications Service Feature)
- INWTRANS (Inward Wide Area Translation)

The following tables in the base software layer have also been enhanced to accommodate 15-digit IDDD:

- DIGMAN (Digit Manipulation)—substitutes and replaces digits to provide efficient adaptive routing
- OFRT (Office Route)—contains route lists that direct calls to specific treatments
- RTEREF (Route Reference)—contains route lists that route or translate calls

Table SPEEDCT

SPEEDCT is a write-restricted table that contains all information about speed lines, hotline speed numbers, and public and private speed numbers. Fields in SPEEDCT with 15-digit IDDD association include

- MAXDIGS (Maximum Directory Digits)—specifies the maximum number of digits allowed in the directory table SPEEDTAB (Speed Table)
- DIRNUMB (Directory Number)—contains a list of valid directory numbers

Table INWFEAT

INWFEAT provides the ability to associate a specified INWATS number with an incoming exclusion index and a unique service translations scheme (STS) for INWATS call screening and translating. The TRANSDIG field (table INWTRANS) holds the translation digits for 15-digit IDDD.

Table INWTRANS

INWTRANS returns an incoming exclusion index number, an STS, and a translated number for a particular INWTRANS number. This allows INWATS calls to be screened and translated for inswitch 800 calls.

Digit outpulsing

The digit outpulsing capacity for 15-digit IDDD has been increased to a maximum of 18 address digits for PTS FGD and SS7 FGD trunks. See Table 8-3 for a summary of international digit outpusling from an

originating UCS DMS-250 switch to a tandem switch. Also see Table 8-2 for a key to the codes used for the international dialing plan.

Table 8-3
15-digit IDDD digit outpusing, DMS-250 to tandem switch

Access	Access Type	Outpulsed digits	Outpulse method	Outpulsed Digits (maximum address length)	Outpulsed Digits (total number outpulsed)
UCS DMS-250 to tandem	PTS FGD	**KP + 011 + CC + NSN + ST**	MF	18	20
	SS7 FGD	**011 + CC + NSN** (in the Called Party Address parameter of the IAM) ***Note:*** THE 011/01 prefix depends on the Transit Network Selector (TNS). If the TNS is delivered through the IAM message then the 011 + 01 is not prefixed on the called party. If TNS is not delivered through the IAM, then the 011/01 + NSN is prefixed to the called party.	Q.764 protocol	18	18

Note: Items in bold represent the address digits streams impacted by 15-digit IDDD enhancements.
Note: Values in the “Outpulsed Digits (maximum address length)” column include the “011” or “01” prefix, plus the increased “CC + NSN” digits.
Note: Values in the “Outpulsed Digits (total number outpulsed)” column represents the total number of digits possible in the impacted digit stream. This includes: (1) “KP” and “ST” variants, (2) any billing number digits, (3) increased CC + NSN address digits.

How is billing affected?

The following Call Detail Record (CDR) fields now hold 15-digit IDDD address digits:

- DIALEDNO (Dialed Number)
- CALLEDNO (Called Number)

For additional information on CDR, see *UCS DMS-250 Billing Records Application Guide*.

What restrictions and limitations apply to 15-digit IDDD calls?

The following restriction and limitations exist for 15 digit-IDDD:

- Tables Office Route (OFRT) and Route Reference Table (RTEREF)
  - — Selectors N and NQ—base software limits the number of outpulsed digits to 15; the current limitation of 15 digits does not change.
  - — Selector RT—Replace Digits (REPLDIGS) field can hold a maximum of 11 digits.
- Table Country Code Routing (CTRTE)
  - — Selectors N and NQ—base software limits the number of outpulsed digits to 15; the current limitation of 15 digits does not change.
  - — Selector RT—RT_DIGITS field can hold a maximum of 11 digits.
- Table Digit Manipulation (DIGMAN)
  - — maximum of 15 digits can be datafilled in INCDIGS field.

FlexDial framework

The FlexDial framework is a call processing application that defines, through provisioning, any desired interaction with the originating agent. This allows FlexDial to mimic FGA or FGD interactions or introduce an interaction set that is different from existing functionality.

Without the FlexDial framework application, the UCS DMS-250 software architecture relies heavily on hardcoding to make critical decisions during call setup. These customizing dialplan interactions require costly software development. FlexDial removes this restriction through the use of the new datafill control for dialplan, agent, and subscriber features. The actual dialog with the user interface for a particular access terminal is completely provisioned by the service provider.

How does FlexDial work?

FlexDial offers a new provisioning data model that allows the user to define the following interactions:

- dialplan provisioning—mimics existing protocols or interactions (like FGD), modifies existing protocols or interactions, or creates user-specific interactions or services.
- agent provisioning—customizes agent features independent of dialplan interactions.
- subscriber provisioning—treats all subscriber numbers generically and creates customer-specific subscriber number types with services like Mechanized Calling Card Services (MCCS).

For more information on the FlexDial framework, see *UCS DMS-250 FlexDial Framework Application Guide*.

Limited calls per authcode

The limited calls per authcode feature allows you to limit how many simultaneous calls are allowed for each authcode. The UCS DMS-250 switch ensures that the number of active calls for an authcode doesn't exceed a limit you specify in the authcode databases.

Which FGD trunks can validate active authcode calls?

The following FGD trunks validate active authcode calls:

- PTS FGD
- ISUP FGD

Note: To learn how this feature works on AXXESS trunk agencies, see the *UCS DMS-250 Flexdial Framework Application Guide*.

Which trunk agency interworkings are supported?

The PTS FGD and ISUP FGD trunks can serve as originating or terminating trunks in a call that requires the UCS DMS-250 switch to validate active authcodes. See tables 10-1, PTS FGD/ ISUP FGD as the originating trunk agency, and 10-2, PTS FGD/ ISUP FGD as the terminating trunk agency, to learn which trunk agencies interwork with these FGD trunks.

Note: The limited calls per authcode feature is supported for in-switch authcode validation only.

Table 10-1
PTS FGD/ ISUP FGD as the originating trunk agency

PTS FGD/ ISUP FGD as the originating trunk agency	supported terminating trunk agencies
PTS FGD/ ISUP FGD	DAL
PTS FGD/ ISUP FGD	DAL TIE
PTS FGD/ ISUP FGD	FGA

—continued—

Table 10-1
PTS FGD/ ISUP FGD as the originating trunk agency (continued)

PTS FGD/ ISUP FGD as the originating trunk agency	supported terminating trunk agencies
PTS FGD/ ISUP FGD	FGB
PTS FGD/ ISUP FGD	FGC
PTS FGD/ ISUP FGD	PTS FGD
PTS FGD/ ISUP FGD	ISUP FGD
PTS FGD/ ISUP FGD	PRI
PTS FGD/ ISUP FGD	PTS IMT
PTS FGD/ ISUP FGD	ISUP INTRA IMT
PTS FGD/ ISUP FGD	ISUP INTER IMT
PTS FGD/ ISUP FGD	PTS AXXESS
PTS FGD/ ISUP FGD	ISUP AXXESS

—end—

Table 10-2
PTS FGD/ ISUP FGD as the terminating trunk agency

Supported originating trunk agencies	PTS FGD as the terminating trunk agency
DAL	PTS FGD/ ISUP FGD
DAL TIE	PTS FGD/ ISUP FGD
FGA	PTS FGD/ ISUP FGD
FGB	PTS FGD/ ISUP FGD
FGC	PTS FGD/ ISUP FGD
PTS FGD	PTS FGD/ ISUP FGD
ISUP FGD	PTS FGD/ ISUP FGD
PRI	PTS FGD/ ISUP FGD
PTS IMT	PTS FGD/ ISUP FGD
ISUP INTRA IMT	PTS FGD/ ISUP FGD
ISUP INTER IMT	PTS FGD/ ISUP FGD

—continued—

Table 10-2
PTS FGD/ ISUP FGD as the terminating trunk agency (continued)

Supported originating trunk agencies	PTS FGD as the terminating trunk agency
PTS AXXESS	PTS FGD/ ISUP FGD
ISUP AXXESS	PTS FGD/ ISUP FGD
—end—	

How does the feature work?

The following scenario explains how an authcode call progresses when you have limited the authcode to one active call:

Note: Although this example shows the authcode call limited to one active call, you can specify a limit of zero to 255 active calls allowed for an authcode.

1 You specify in table datafill that a particular authcode can only be used in one active call at a time. This means that if two callers try to use this authcode simultaneously, the second caller's call will receive treatment.

2 The first caller uses the authcode to make a call.

3 The first caller's call terminates to its destination.

4 The CALLPS field increments to one.

The CALLPS field keeps track of how many active calls exist for a specific authcode.

5 The second caller uses the same authcode to make a call while the first call is still active.

6 The switch compares the LIMIT field to the CALLPS field. Since the two fields are both set to one, the switch performs the treatment specified in the ACTION field.

7 The second caller's call receives treatment.

How do I limit the number of simultaneous calls for each authcode?

Follow these steps to limit the number of simultaneous calls for each authcode:

1 Activate software optionality control (SOC) UBFR0002, Fraud.

Note: For information on how to activate the SOC, see the *UCS DMS-250 Software Optionality Control User's Manual*.

2 Enter datafill into the authcode tables. These tables are AUTHCODU, AUTHCDU2, AUTHCDU3, AUTHCDU4, and AUTHCDU5. In this document, the authcode tables are referred to as AUTHCODX.

If you are adding the authcode limit option to authcodes already existing in table AUTHCODX, enter only the datafill for the CPACTVAL option. See table 10-3, Optional fields in table AUTHCODX.

Table 10-3
Required fields in table AUTHCODX

Field	Description	Values
AUTHCODE (Authoriza-tion Code	The authorization code. Enter a five-digit, six-digit, or seven-digit authorization code. All entries must be seven characters. Prefix the five- and six-digit authorization codes with A. For example, AA43689 is a five-digit authorization code. ***Note:*** An authorization code cannot begin with zero.	0 to 9, A
STATUS (Status)	Enter VALID if the authcode is a valid authcode. Enter TEMPINVALID if the authcode is temporarily invalid or unassigned. Enter PERMINVALID if the authcode can never be assigned.	VALID, PERMINVALID, TEMPINVALID
ACCTLEN (Account Code Length)	Enter the number of digits to collect for the account code. If the subscriber is not required to dial an account code, enter 0.	0 to 12

—continued—

Table 10-3
Required fields in table AUTHCODX (continued)

Field	Description	Values
ACSCRIDX (Account Code Screening Index)	If account code validation is required, specify an index number in table ACSCRN2. This is where the subscriber-dialed-account code digits are validated. If account code validation is not required, specify the default value of 0. This information is only valid if office parameter VALIDATE_ACCT_AT_DMS250 is set to Y. If this parameter is N, the account code is validated by way of TCAP to the SCP and table ACSCRN2 is ignored.	0 to 4294967295
OPART (Originating Partition Number)	Enter the originating partition number to be associated with the authcode. The OPART and TPART combination maps to a serving translation scheme (STS) for address digits translations by way of table PARTOSTS.	0 to 999
TPART (Terminating Partition Number)	Enter the terminating partition number to be associated with the authcode. Used with the OPART to determin ethe STS used for the call.	0 to 31
PINDIGS	PIN digits are an added safety mechanism to further identify authorized users of the system. PINDIGS is an optional field; if PINDIGS is not used, enter a $. This field can be four characters in length with a combination of 0 to 9 and fourth column DTMF digits A to D. ***Note:*** The PINDIGS and PININDEX fields cannot contain values at the same time. If a value for PINDIGS is entered, then the PININDEX and PINLENGth fields must be set to 0; if a non-zero value PINIINDEX is entered, then PINDIGS must be set to $, and the PINLEN field must not be 0.	0 to 9, A to D up to four digits long

—continued—

Table 10-3
Required fields in table AUTHCODX (continued)

Field	Description	Values
MLTCOSID (Multiple Class of Service Index)	This field indexes into table MULTICOS to indirectly map to table COSUS. The default value is 0 to indicate no COS screening is performed. With table MULTICOS, a single MLTCOSID can contain up to 32 COSUS indices, and therefore COS screening can be performed up to 32 times per call.	0 to 2047
HOTLINE (Hotline)	If an authcode is associated with a hotline number, enter that number (up to 18 digits). HOTLINE is an optional field; if an authcode is not associated with a hotline number, enter a $.	0 to 9 up to 18 digits long
PVSINDEX	PRIVATE SPEED INDEX. Enter the speed list number used to identify the private speed list for the authcode. Enter 0, if no speed index is assigned.	0 to 262140
SATRES	SATELLITE RESTRICTED. Enter Y when calls associated with this authcode are restricted from switching through a satellite. Enter N if calls associated with this authcode are permitted to switch through a satellite. If the authcode is satellite restricted (SATRES=Y) and the terminating trunk group uses a satellite (trunk subgroup parameter SAT), then the current route choice is abandoned and the next route choice is considered for termination. ***Note:*** A satellite can be used only once during a call.	Y or N
FLDONLY	AUTHFILED ONLY. Enter Y if authcode can only be used when filed with a trunk group, and cannot be subscriber dialed. If dialed, the call is blocked. Enter N if authcode can be filed by trunk group or dialed by subscriber.	Y or N
AUTHTRAP	AUTHORIZATION TRAP. Enter Y to generate a log report each time an authcode is used. Enter N to disable this feature.	Y or N

—continued—

Table 10-3
Required fields in table AUTHCODX (continued)

Field	Description	Values
ACCTVAL	ACCOUNT CODE VALIDATION. This field determines whether account code validation is required. Validation is performed at the switch by way of table ACSCRN2 or by way of an SCP. Reference office parameter VALIDATE_ACCT_AT_DMS250 (table OFCVAR) to determine where validation occurs.The default value is N.	Y or N
SPLASHBK	SPLASHBACK. This feature provides the ability to give splashback tone (DTMF) to the Automatic Dialing Machine/Subsequent Address Message (ADM/SAM) subscriber based on the splashback class identifier (0–4) specified in this field. Splashback classes are defined in table SPLASHID. 0 means not a SAM customer. (Splashback Class Identifier 0 is always the value specified when calling party is not an automatic dial machine subscriber.)	0 to 4
TRVALLOW	TRAVELING AUTHCODE ALLOWED. This field provides the ability to specify an authcode as a Traveling Authcode. When the originating trunk group, OPART, and the subscriber's authcode do not match, this field determines if the call should proceed or be blocked. Enter Y when the authcode can be used as a traveling authcode and calls are allowed to proceed if the necessary PIN digits are dialed. Enter N if calls should be blocked.	Y or N

—continued—

Table 10-3
Required fields in table AUTHCODX (continued)

Field	Description	Values
PININDEX	PERSONAL IDENTIFICATION NUMBER INDEX. Use this field to associate multiple PIN digits with a subscriber's authcode. This value indexes into table MULTIPIN where the dialed PIN digits are validated. Enter a value when multiple PINs are to be associated with the authcode. The index value must be in the range 1–4095 if the PINLEN field is 2. If the PINLEN field is 3, then the index value must be in the range 4096–8191. Enter 0 when the subscriber is not required to dial PIN digits or the PINDIGS field has a PIN digit value. ***Note:*** A value for the PINDIGS and PININDEX fields cannot exist at the same time. If a value for PINDIGS is entered, then the PININDEX and PINLEN fields must be 0; if a PININDEX value (non-zero) is entered, then PINDIGS must be $, and the PINLEN field must not be 0.	0 to 8191
PINLEN	PERSONAL IDENTIFICATION NUMBER LENGTH. This field specifies the number of PIN digits to be dialed by the subscriber. Enter a value designated by the length of PIN digits in table MULTIPIN. Enter a 0 when multiple PIN digits are not used.	0, 2, or 3
	—end—	

Table 10-4, Optional fields in table AUTHCODX, shows the options available in table AUTHCODX. The CPACTVAL option activates the authcode limit feature.

Table 10-4
Optional fields in table AUTHCODX

Option	Field	Subfield	Description	Values
OPCHOICE			OPCHOICE is only available for 0– or 0+ calls to provide alternate routing for operator service calls. When OPTION=OPCHOICE, datafill the OPCHIDX refinement.	OPCHOICE
	OPCHIDX		Enter an index into table OPCHOICE. The default is 0.	0 to 255
CDRTMPLT			CDR TEMPLATE. Use this option to identify the CDR template used to generate CDRs for the specified authcode. Refer to the OPTION=CDRTMPLT section for refinement datafill.	CDRTMPLT
CAINGRP			CAIN GROUP. Enter CAINGRP to specify a CAIN subscription group for the originating agency. When OPTION=CAINGRP, datafill the CAINGRP refinement.	CAINGRP
	CAINGRP		CAIN GROUP. Enter a valid CAIN group datafilled in table CAINGRP. The originating agency subscribes to CAIN services through the CAIN group.	Valid CAIN group datafilled in table CAINGRP
CPACTVAL			Call Processing Active Validation. ***Note:*** If the UCS DMS-250 switch displays an error message while you are entering data into this option, see the section entitled, “Error messages when entering datafill in the CPACTVAL option” to learn what they mean and what actions to take.	CPACTVAL

—continued—

Table 10-4
Optional fields in table AUTHCODX

Option	Field	Subfield	Description	Values
	LIMIT		Limit. Enter the maximum number of active calls for a particular authcode.	0 to 255
	CALLPS		Calls per second. A read-only field that allows you to monitor the current number of calls using a particular authcode. ***Note:*** When you add the CPACTVAL option, you must enter a 0 in this field.	0 to 255
	ACTION	trmt	Action. The action to take when the number of active calls for a particular authcodes exceeds the authcode's limit. ***Note:*** The only treatment allowed is multiple calls per authcode (MAUC) treatment.	TRMT
		override	Override. Override a previous treatment. ***Note:*** You are unable to override a previous treatment.	N
		trmt	Treatment. The name of the treatment the call receives. ***Note:*** The only treatment is multiple calls per authcode (MAUC) treatment. See the section "How do I set MAUC treatment to play an announcement and to route the call to an operator?"	MAUC
			—end—	

Error messages when entering datafill into the CPACTVAL option

The UCS DMS-250 switch has four error messages that pertain to the CPACTVAL option. This section shows each error message, explains what the message means, and tells you what action to take when you receive the message.

This error message:

Warning: Cannot add CPACTVAL with CALLPS greater than zero (0).
A value of zero (0) is being enforced for this entry.

means:

you attempted to set CALLPS to a non-zero value.

Action to take:

none; the UCS DMS-250 switch entered a zero in the field.

This error message:

DUPLICATE CPACTVAL, ONY ONE ALLOWED

means:

you attempted to add more than one CPACTVAL option to an authcode.

Action to take:

none; you already set the CPACTVAL option.

This error message:

Warning: Cannot alter CPACTVAL active CALLPS value.
Current value is maintained.

means:

you attempted to change the CPACTVAL option's fields while the authcode was being used in a call.

Action to take:

Wait until the call is finished, goes offhook, then try to change the CPACTVAL option.

This error message:

Error: Cannot remove in use CPACTVAL option.

means:

you attempted to delete the CPACTVAL option when the authcode was being used in a call.

Action to take:

Wait until the call is finished, goes offhook, then try to delete the CPACTVAL option.

Example datafill in table AUTHCODX

Table 10-5, Example datafill in table AUTHCODX, gives an example of the datafill in table AUTHCODX after the CPACTVAL option has been added.

Table 10-5
Example datafill in table AUTHCODX

Field	1st tuple	2nd tuple
authcode	5112268	5112275
status	valid	valid
acctlen	0	0
acscridx	0	0
opart	111	111
tpart	0	0
mltcosid	3	3
hotline	$	$
pvsindex	0	21
satres	N	N
fldonly	N	N
authtrap	N	N
acctval	N	N
splashbk	0	0
pinindex	Y	Y
pinlen	0	0

Note: A tuple is a row in a table on the MAP terminal.

—continued—

Table 10-5
Example datafill in table AUTHCODX (continued)

Field	1st tuple	2nd tuple
option	(OPCHOICE 1)	(CAINGRP CUSTGRP)
option	(CPACTVAL)	(CPACTVAL)
limit	2	3
callps	0	0
action	TRMT N MAUC	TRMT N MAUC
Note: A tuple is a row in a table on the MAP terminal.		
—end—		

How do I set MAUC treatment to play an announcement and to route the call to an operator?

To play an announcement with the multiple authcodes per call (MAUC) treatment and to route the call to an operator, follow these steps:

1 Enter the following data in table OFRT:

4 (S D ANNC_CLLI) (T TOPS OA) $

Note: ANNC_CLLI is the name of the announcement.

2 Enter the following data in table TMTCNTL

```
>pos offtreat
```

OFFTREAT (137)

```
>sub 2
>pos mauc
```

MAUC Y T OFRT 4

How does the UCS DMS-250 switch know when the calls have exceeded their limits?

The CPACTVAL option in the authcode databases contains the LIMIT and the CALLPS fields. The LIMIT field specifies the limited number of active calls allowed for a specific authcode. The CALLPS field keeps track of the number of active calls for the authcode. If the number in the LIMIT field equals the number in the CALLPS field and another person attempts to use the authcode for a call, the UCS DMS-250 switch sends the call to multiple calls per authcode (MAUC) treatment; the active calls remain unaffected.

How do I know when the calls have exceeded their limits?

The UCS DMS-250 switch creates the log report MAUC101 to notify you when it sends an authcode call to treatment because the call exceeds the limit of active calls allowed for that authcode. The following example shows the format of the MAUC101 log report:

250G MAUC101 OCT25 15:54:23 INFO Active CALLP Limit Enforced for Subscriber Number
AUTHCODE=6115511
LIMIT=3

The multiple calls per authcode (MULTAUTH) operational measurement (OM) register measures the number of times the UCS DMS-250 switch sends an authcode call to treatment because the call exceeds the limit of active calls allowed for that authcode. The following example shows the format of the MULTAUTH OM:

MULTAUTH
CLASS: ACTIVE
START: 1997/12/16 09:00:00 TUE; STOP: 1997/12/16 09:29:40 TUE;
SLOWSAMPLES: 18; FASTSAMPLES: 178

MULTAUTH
0

How does limiting the calls per authcode feature affect billing?

The call detail report (CDR) reports the MAUC treatment code when the UCS DMS-250 switch sends a call to MAUC treatment.

Mechanized calling card service (MCCS)

Mechanized Calling Card Service (MCCS) is an optional travel card service that works with the basic long distance features of the UCS DMS-250 switch. With MCCS, subscribers receive a travel card (much like a credit card) with a number assigned to it. The subscriber can place a long-distance call from any location and charge the call to their travel card number (also called a calling card number). Each MCCS 14-digit travel card number is unique and consists of a telephone number (for example, the subscriber's home or business telephone number) and a personal identification number.

MCCS offers a variety of service options and features that you can customize for subscribers. You can offer your subscribers varied levels of travel card service based on the service options you configure (such as the type of prompt used to guide the caller through the process of making a call). If your system configuration includes a remote database, you can also use Remote Validation service for travel card numbers.

With MCCS, the following service options are available:

- Basic service – tones guide the caller through the process of making a call.
- Voice Prompt service – recorded voice announcements guide a caller through the process of making a call (required for use with Pure FGD).
- Remote Validation service – a remote database validates travel card numbers (required for use with Pure FGD).
- Quick Call service – subscribers can dial a 4-digit number instead of their entire 14-digit travel card number when calling their home or office number.

Originating trunk capability

The following trunk agencies support MCCS service options as listed in Table 11-1, Trunk agencies supporting MCCS services.

Table 11-1
Trunk agencies supporting MCCS services

DAL, DALTIE	FGA (ONAL)—PTS	FGB (ONAT)—PTS	FGC UA—PTS	FGD		IMT UA—SS7	PRI	Service options
				UA—PTS/SS7	Trans—PTS			
X	X	X	X	X	X	X	X	Basic service— tone prompts
			X	X		X		Basic service— dedicated dialing (no 0+ required)
X	X	X	X	X	X	X	X	Basic service— in-switch validation
X	X	X	X	X	X	X		Basic service— reset; reorigination
X	X	X	X	X	X	X	X	Remote Validation service
			X	X		X		Voice Prompt service
X		X	X	X	X	X		Quick Call service with tone prompts
			X	X				Quick Call service with voice prompts

For additional information on MCCS, see *UCS DMS-250 Mechanized Calling Card Services (MCCS) Application Guide*.

NetworkBuilder

The NetworkBuilder application provides an advanced intelligent network (AIN) to the UCS DMS-250 switching platform that is based on Bellcore's AIN 0.2 specifications. The Carrier Networks version of the AIN system is called CAIN.

For additional information on NetworkBuilder, see *UCS DMS-250 NetworkBuilder Application Guide*.

What services does NetworkBuilder support?

CAIN 0.2 intelligent network (IN) call processing operations that relates to FGD trunking include:

- Support of calls originating from a local exchange carrier (LEC) on FGD PTS and FGD SS7 trunks.
- Support of the following services:
  - — Virtual Private Networking (VPN)
    - – Alternate Billing Numbers
    - – Origination/Termination Screening
    - – Customized Announcements
    - – Black Box Screening
    - – Universal Access Authorization
  - — Subscriber Screening
    - – Automatic Numbering Identification (ANI) Screening
    - – Authorization Code Screening
    - – Account Code Screening
    - – Enhanced Travel Card Services

— N00 services
  – "Follow Me," "Find Me," "Do Not Disturb Me"
  – Call Screening
  – Customized Call Branding
  – Prepaid services
  – Universal Access Authorization

What restrictions and limitations apply to NetworkBuilder?

The NetworkBuilder application has the following limitations and restrictions:

- Only originating PTS FGD, SS7 FGD, DAL, and PRI agencies are eligible for CAIN services.
- Interaction between mechanized calling card services (MCCS) and CAIN is not supported.
- Delivery of "calling party ID" and "charge number" is subject to in-switch feature restrictions.
- CAIN outpulsing is subject to in-switch outpulsing logic.
- Class of service (COS) override is not supported when CAIN call processing performs COS screening.
- Direct termination tandem routing is supported only over IMTs that are datafilled to support UCS-to-UCS ISUP protocol.
- Only the following pretranslator selectors are supported: CT, ES, UA, IP, and IN.
- NetworkBuilder does not support interaction with the FlexDial Framework application.
- CAIN supports only offboard IN/1 validation of account codes, speed numbers, or N00 numbers after the call leaves the "Collect_Information" parameter and before the call triggers at "Customized–Dialing_Plan" or "Specific_Digit_String."
- Full implementation of the UCS06 CAIN software requires CAIN parameter CAIN_PROTOCOL_VERSION to be set to UCS06_V1.
- PRI originations do not support reorigination.
- "Continue" messages at the end of conversation originating from "Origination_Attempt," "0_Feature_Requested," "Info_Collected," "Network_Busy," or "0_No_Answer" queries are not supported.

Network security

What is network security?

Network security (NETSEC) is an option in table trunk group (TRKGRP). When the NETSEC option is active for a supported trunk group, it instructs the UCS DMS-250 switch to generate either a log report or a call detail report (CDR) when the UCS DMS-250 switch detects an answer on an international call or on a call that terminates to a number entered in table WZONE. Table WZONE identifies calls to three-, six-, and ten-digit world zone-one numbers that require the generation of log reports or CDR fields related to network security.

For further network security, fraud profile screening is performed on these calls when the software optionality control (SOC) UBFR0003 is ordered and activated. When SOC UBFR0003 is active, the UCS DMS-250 switch performs profile screening through table NETSPROF. Table NETSPROF allows you to screen for fraud profiles based on the following criteria:

- time of day
- day of week
- nature of address
- information digits
- country code

Note: For more information on tables WZONE and NETSPROF, see the *UCS DMS-250 Data Schema Reference Manual*.

When the UCS DMS-250 switch creates the log report or CDR, you can verify whether the call is valid and take appropriate action against the call, or use the log report or CDR to investigate the call.

Which trunk agencies support the network security option?

Both originating and terminating trunk agencies can support the NETSEC feature. The following originating and terminating trunk agencies support the network security option:

- PTS FGD

- SS7 FGD
- DAL
- PRI
- PTS IMT
- Q.767 Global IMT
- ISUP92 Global IMT
- AXXESS

Note: The NETSEC feature works the same for all trunk agencies, but this chapter explains the feature from the perspective of the FGD trunk agency.

How do I control the network security option?

You have two methods to control the network security option:

- enter datafill into the NETSEC option of table TRKGRP
- use the NETSEC command interpreter (CI) commands to activate or deactivate the NETSEC option without entering table TRKGRP

Note: Nortel recommends you use the NETSEC CI commands to control the NETSEC option; only this method is described in this chapter.

NETSEC CI commands

The NETSEC CI commands allow you to control the NETSEC option without entering table TRKGRP; instead, you can control the NETSEC option through the NETSEC CI commands. These commands allow you to

- add the NETSEC option to an originating and/or terminating trunk and the table NETSPROF index to a CLLI in table TRKGRP
- remove the NETSEC option from an originating and/or terminating trunk and the table NETSPROF index from a CLLI in table TRKGRP
- report the NETSEC option's status, whether it is ON or OFF, for a trunk
- report which trunks in table TRKGRP have the NETSEC option active
- report which trunks of a specific trunk group have the NETSEC option active

- report the active calls that are possible fraud calls

If you want to	then use the	Example of command
access the NETSEC CI commands	NETSEC command at the CI prompt.	netsec
deactivate the NETSEC option on an originating or terminating trunk in table TRKGRP	set <CLLI> <ORIG, TERM> off command.	set EAN820C7DR01 ORIG off set EAN820C7DR01 TERM off
activate the NETSEC option on an originating or terminating trunk in table TRKGRP with a specific index to table NETSPROF	set <CLLI> <ORIG, TERM> <index> command.	set EAN820C7DR01 ORIG 1 set EAN820C7DR01 TERM 3
list the NETSEC status of a specific trunk	list <CLLI> command.	list EAN820C7DR01
list all the trunks, of a particular trunk agency, that have the NETSEC option activated	list <trunk agency name> command.	list EANT
list all the trunk agencies that support the NETSEC option with the NETSEC option active	list all command.	list all
list the possible active fraud calls	listfraud command.	listfraud
help using the NETSEC subcommands	help command.	help
exit the NETSEC CI session	quit command.	quit

Note: CLLI is an abbreviation for common language location identifier. A CLLI is the name of a specific trunk.
Note: The following sections explain the Netsec commands. For more information on these commands, see the *UCS DMS-250 Commands Reference Manual*.

—end—

Netsec command

The netsec command allows you to access the NETSEC CI commands. To access the NETSEC CI commands, enter the following at the MAP terminal:

>netsec

The UCS DMS-250 displays the following NETSEC CI prompt:

```
NETSEC:
```

Set <CLLI> orig <index> command

The set <CLLI> on command activates the NETSEC option on a single originating trunk. To activate the NETSEC option on a single originating trunk, enter the following at the NETSEC CI prompt:

>set <CLLI> orig <index>

The UCS DMS-250 displays the following response:

```
NETSEC ORIG option is added to <CLLI> with NETSPROF index of
<index>.

NETSEC:
```

Note: See table 13-1, Responses to set command, for a list of all the responses to the set command and an explanation of what the responses mean.

Set <CLLI> term <index> command

The set <CLLI> on command activates the NETSEC option on a single terminating trunk. To activate the NETSEC option on a single terminating trunk, enter the following at the NETSEC CI prompt:

>set <CLLI> term <index>

The UCS DMS-250 displays the following response:

```
NETSEC TERM option is added to <CLLI> with NETSPROF index of
<index>.
```

Note: See table 13-1, Responses to set command, for a list of all the responses to the set command and an explanation of what the responses mean.

Set <CLLI> orig off command

The set <CLLI> off command removes the NETSEC option from a single originating trunk. To remove the NETSEC option from a single originating trunk, enter the following at the NETSEC CI prompt:

>set <CLLI> orig off

The UCS DMS-250 displays the following response:

```
NETSEC ORIG option is removed from <CLLI>.
```

Note: See table 13-1, Responses to set command, for a list of all the responses to the set command and an explanation of what the responses mean.

Set <CLLI> term off command

The set <CLLI> off command removes the NETSEC option from a single terminating trunk. To remove the NETSEC option from a single terminating trunk, enter the following at the NETSEC CI prompt:

>set <CLLI> term off

The UCS DMS-250 displays the following response:

```
NETSEC TERM option is removed from <CLLI>.
```

Note: See table 13-1, Responses to set command, for a list of all the responses to the set command and an explanation of what the responses mean.

List <CLLI> command

The list <CLLI> command lists the status of the NETSEC option on a single trunk. To list the status of the NETSEC option on a single trunk, enter the following at the NETSEC CI prompt:

>list <CLLI>

The UCS DMS-250 displays the following response if the NETSEC option is inactive on the single trunk:

```
<CLLI> is OFF
```

The UCS DMS-250 displays the following response if the NETSEC originating and terminating options are active on the single trunk:

```
<CLLI> is ON (ORIG <index> TERM <index>)
```

The UCS DMS-250 displays the following response if only the NETSEC originating option is active on the single trunk:

```
<CLLI> is ON (ORIG <index>     )
```

The UCS DMS-250 displays the following response if only the NETSEC terminating option is active on the single trunk:

```
<CLLI> is ON (      TERM <index>)
```

List <trunk agency name> command

The list <trunk agency name> command lists all the trunks of a particular trunk agency that have the NETSEC option activated. To list all the trunks of a trunk agency that have the NETSEC option activated, enter the following at the NETSEC CI prompt:

>list <trunk agency>

The UCS DMS-250 displays all the trunks, of that trunk agency, that have the NETSEC option active:

```
NETSEC is ON for:

EAN820C7DR01 (ORIG 1 TERM 3)
EAN652TWMFWK (       TERM 2)

Total tuple(s) found: 2
```

Note: See table 13-2, Responses to the list command, for a list of all the responses to the list command and an explanation of what the responses mean.

List all command

The list all command lists all the trunks with the NETSEC option on. To list all the trunks with the NETSEC option activated, enter the following at the NETSEC CI prompt:

>list all

The UCS DMS-250 displays all the trunks that have the NETSEC option active:

```
NETSEC is ON for:

EAN820C7DR01 (ORIG 1       )
EAN652TWMFWK (       TERM 3)
PRI922DRN2 (ORIG 2 TERM 5)
DAL232TWDPLS (ORIG 3      )

Total tuple(s) found: 4
```

Note: See table 13-2, Responses to the list command, for a list of all the responses to the list command and an explanation of what the responses mean.

Listfraud command

The listfraud command lists the active calls that are possible fraud calls. To list these calls, enter the following at the NETSEC CI prompt:

>listfraud

The UCS DMS-250 switch displays the following message:

```
Current possible fraud call count is <number of possible
fraud calls>.
Next par is: <NUMBER or ALL> {0 TO 1000, ALL}
```

The switch then displays the prompt. At the prompt, enter the number of possible fraud calls you want to view or enter ALL to view all the possible fraud calls:

>1

The switch displays the number of possible fraud calls you requested to view:

```
ORIG  TERM  CALL      CALLING     CALLED      NET OP TP WZONE
GRP#  GRP#   DUR      NO          NO          SEC
------------------------------------------------------------
3122  3121  00:01:24  2146112211  2148201234    0  0  0  10
```

If you know the number of possible fraud calls you want to view, enter the number or ALL as a parameter of the listfraud command:

listfraud 1

The switch displays the number of possible fraud calls you requested to view.

Help command

The help command gives descriptions of the NETSEC CI commands and their parameters. To get help using the NETSEC CI commands, enter the following at the NETSEC CI prompt:

>help

The UCS DMS-250 displays descriptions of each NETSEC CI command and its parameters:

```
LIST: Command to report the NETSEC status on a given CLLI, or
all NETSEC trunk group.
Syntax: LIST <clli> |DAL|EANT|PRI|IMT|ALL

SET: Command to add/remove the NETSEC ORIG/TERM option and
NETSPROF index to/from a CLLI.
Syntax: SET <clli> <option>

LISTFRAUD: Command to list all active calls that are possible
fraud calls.
Syntax: LISTFRAUD
QUIT: Command to exit the NETSEC CI command.
Syntax: QUIT
```

Quit command

The quit command ends the NETSEC CI session and returns you to the MAP terminal CI prompt. You can use the NETSEC CI command from any level of the MAP terminal; when you quit NETSEC, you are returned to that MAP terminal level. To quit the NETSEC CI session, enter the following at the NETSEC CI prompt:

>quit

```
CI:
```

The UCS DMS-250 quits the NETSEC CI session and returns you to the MAP terminal.

What do the set, list, and listfraud commands' responses mean?

Tables 13-1, "Responses to the set command," 13-2, "Responses to the list command," and 13-3, "Responses to the listfraud command," list the responses to the set command, explains why they appear, and list the action you should take when you receive each response.

Table 13-1
Responses to the set command

This response:	means:	and you should:
`ERROR: The NETSEC option can only be added/removed to/from DAL, EANT, PRI, and IMT trunks`	you tried to activate or deactivate the NETSEC option on a trunk that is not a DAL, EANT, PRI, or IMT trunk	Enter an EANT, a DAL, PRI, or IMT trunk
`ERROR: <CLLI> does not exist in table TRKGRP`	you tried to activate or deactivate the option on a trunk that is not datafilled in table TRKGRP	Enter a trunk that exists in table TRKGRP
`WARNING: NETSEC ORIG option is already ON with NETSPROF index <index>. No change was made.`	you tried to activate the NETSEC option on an originating trunk with an existing NETSPROF index that already has the option activated	N/A
`WARNING: NETSEC TERM option is already ON with NETSPROF index <index>. No change was made.`	you tried to activate the NETSEC option on a terminating trunk with an existing NETSPROF index that already has the option activated	N/A
`WARNING: NETSEC ORIG option is already OFF. No change was made.`	you tried to deactivate the NETSEC option to an originating trunk that already has the option deactivated	N/A

Note: CLLI is an abbreviation for common language location identifier. A CLLI is the name of a specific trunk.

—continued—

Table 13-1
Responses to the set command

This response:	means:	and you should:
`WARNING: NETSEC TERM option is already OFF. No change was made.`	you tried to deactivate the NETSEC option to a terminating trunk that already has the option deactivated	N/A
`NETSEC ORIG option is added to <CLLI> with NETSPROF index <index>.`	you successfully activated the NETSEC option on an originating trunk with the specified NETSPROF index.	N/A
`NETSEC TERM option is added to <CLLI> with NETSPROF index <index>.`	you successfully activated the NETSEC option on a terminating trunk with the specified NETSPROF index.	N/A
`NETSEC ORIG option is removed from <CLLI>`	you successfully deactivated a NETSEC option on an originating trunk.	N/A
`NETSEC TERM option is removed from <CLLI>`	you successfully deactivated a NETSEC option on a terminating trunk.	N/A

Note: CLLI is an abbreviation for common language location identifier. A CLLI is the name of a specific trunk.

—end—

Table 13-2
Responses to the list command

This response:	means:	and you should:
<CLLI> IS ON (ORIG <index> TERM <index>)	the NETSEC option is active on the specified originating and terminating trunk.	N/A
<CLLI> IS ON (TERM <index>)	the NETSEC option is active on the specified terminating trunk.	N/A
<CLLI> IS ON (ORIG <index>)	the NETSEC option is active on the specified originating trunk.	N/A
<CLLI> IS OFF	the NETSEC option is inactive on the specified trunk.	
NETSEC is ON for: <list of trunk> Total tuple(s) found: <number of tuples with the NETSEC option activated>	the trunks listed have the NETSEC option activated.	N/A
ERROR: Invalid CLLI or trunk group type (<CLLI>).	the trunk or trunk group type you entered does not exist in table TRKGRP	Enter a CLLI or trunk group type that exists in table TRKGRP and is an EANT, a DAL, a PRI, or an IMT trunk.
ERROR: NETSEC only supports DAL, EANT, PRI, and IMT trunks.	the trunk exists in table TRKGRP, but it is not a DAL, EANT, PRI, or IMT trunk	Enter a CLLI that is an EANT, a DAL, a PRI, or an IMT trunk.

Note: CLLI is an abbreviation for common language location identifier. A CLLI is the name of a specific trunk.

—end—

Table 13-3
Responses to the listfraud command

This response:	means:	and you should:
`Current possible fraud call count is <call count>.` `Next par is: <NUMBER or ALL>{0 TO 1000, ALL}`	you entered the listfraud command alone	Enter a number or ALL.
`<number> is greater than current count. All calls will be listed.` The switch displays all the possible fraud calls and information on those calls.	you entered an invalid number (a number greater than the call count) for the call count	N/A

`Out of range: <NUMBER or ALL>{0 TO 1000, ALL}`
`Enter: <NUMBER or ALL>`
`>`
	you entered an invalid number (a number either less than 0 or greater than 1000)	Enter a valid number or ALL.

`Invalid symbol: <NUMBER or ALL>{0 TO 1000, ALL}`
`Enter: <NUMBER or ALL>`
`>`
	you did not enter either a number or ALL	Enter a valid number or ALL.

—end—		

How do I tell the UCS DMS-250 switch whether to create a log report or a call detail report?

The office parameter NETWORK_SECURITY_GEN_CDR in table OFCVAR allows you to select whether the UCS DMS-250 switch creates a log report or a call detail report (CDR) when it detects an answer on a call that meets the NETSEC screening criteria.

CDR setting

If you want the UCS DMS-250 switch to create a CDR when it detects an answer on a call that meets the NETSEC screening criteria, do the following:

Set the NETWORK_SECURITY_GEN_CDR office parameter in table OFCVAR to Y.

For a NETSEC CDR, the CDR format is set by the NETSEC_CDR_TMPLT office parameter. The NETSEC_CDR_TMPLT office parameter's default values are

- UCS09 for TMPLTIDX
- N for USEEDIT

Note: If the CTMPLT status shows the active template as "INTERNAL_TMPLT," then the CDR template set by the NETSEC_CDR_TMPLT office parameter is ignored. If the active CTMPLT is set to INTERNAL_TMPLT and you attempt to change the NETSEC_CDR_TMPLT office parameter, the following warning message appears:

```
WARNING: The CDR template set by this office parameter will
NOT be used because active CDR selection is set to INTERNAL
TMPLT. Use CTMPLT to display the status.
```

If the default (UCS09) CDR template is not used, your CDR may not identify the NETSEC call.

Log report setting

If you want the UCS DMS-250 switch to create a log report when it detects an answer on a call that meets the NETSEC screening criteria, do the following:

Set the NETWORK_SECURITY_GEN_CDR office parameter to N.

When are the log reports or CDRs generated?

The UCS DMS-250 switch generates the log reports or CDRs when it detects an answer on a call that meets the NETSEC screening criteria. If you have specified a CDR instead of a log report, the switch generates a CDR each time these criteria are met. If you have specified the log reports, the switch generates a log each time the criteria for that log are met. The four log reports for network security are the NETS601, NETS602, NETS603, and NETS604 log reports.

NETS601 log or CDR

The NETS601 log report and the CDR inform you when the UCS DMS-250 switch detects an answer on a call that meets the NETSEC screening criteria. The switch creates the NETS601 log or the CDR when the SOC UBFR0003 is idle or active, but only performs fraud profile screening when the SOC is active.

When the SOC UBFR0003 is idle, the UCS DMS-250 switch does not perform fraud profile screening, but the switch creates the NETS601 log or CDR at call answer time when three criteria are met:

- the NETSEC option is activated on the originating trunk
- the NETWORK_SECURITY_GEN_CDR office parameter is set to N
- the call is an international call or the call terminates to a number entered in table WZONE

When the SOC UBFR0003 is active, the UCS DMS-250 switch creates the NETS601 log or the CDR when the following criteria are met:

- the NETSEC option is activated on the originating trunk with a profile index set to a value between 0 and 255

  Note: If the profile index is set to 0, the UCS DMS-250 switch does not perform fraud profile screening. Instead, the switch generates the NETS601 log.

- the NETWORK_SECURITY_GEN_CDR office parameter is set to N
- the call is an international call or the call terminates to a number entered in table WZONE
- the fraud profile screening criteria in table NETSPROF are met

NETS602 log or CDR

The UCS DMS-250 switch generates the NETS602 log at call release time if the NETS601 log or a CDR was generated and the SOC UBFR0003 is active at the time the switch detected an answer.

NETS603 log or CDR

The UCS DMS-250 switch generates NETS603 log at call answer time if the SOC UBFR0003 is active and one of the following conditions occurs:

- the NETSEC option is activated on the terminating trunk being used for the call
- the NETWORK_SECURITY_GEN_CDR office parameter is set to N
- the NETSEC option is provisioned for the terminating trunk with a profile index set to a value between 0 and 255

  Note: If the profile index is set to 0, the UCS DMS-250 switch does not perform fraud profile screening, but generates a NETS603 log.

- the fraud profile screening criteria in table NETSPROF

NETS604 log or CDR

The UCS DMS-250 switch generates NETS604 at call release time if the NETS603 log or a CDR was generated at the call answer time.

For more information on the NETS log reports, see the *UCS DMS-250 Logs Reference Manual*.

Partial/Empty account code screening

The Partial/empty Account Code Screening feature allows the UCS DMS-250 switch to perform the following:

- partial account code digit validation
- successful validation against a non-provisioned Table Account Code Screening 2 (ACSCRN2) table index

How do I activate partial/empty account code screening?

Partial/empty account code screening is available only for inswitch validation. The following office parameters must be set correctly in table Office Variables (OFCVAR) for proper operation of the feature:

- VALIDATE_ACCT_AT_DMS250—set to “Y” to allow additional capability
- ALLOW_PARTIAL_ACCT_VAL—set to “Y” to allow partial account code validation
- ALLOW_EMPTY_ACSCRN—set to “Y” to allow the switch to validate account code digits against a non-provisioned ACSCRN2 table index

Note: For more inforamtion on these office parameters, see the *UCS DMS-250 Office Parameters Reference Manual*.

How does partial/empty account code screening affect call processing?

Digit collection

The UCS DMS-250 switch collects account code digits based on the provisioning associated with the calling party subscriber number. Parameters that control account code digit collection include

- Account Code Length (ACCTLEN) in table ANISCUSP must be greater than “0” when compared to the values located in the following fields:
  - — ANI value located in the KEY field of table ANISCUSP (Automatic Number Identification Screen) for FGD
  - — AUTHCODE value located in table Authorization Code Database (AUTHCODx)

Note: If there are fewer account code digits from the subscriber than identified in ACCTLEN, the switch terminates the call to INAC (invalid account code) treatment.

- Account Validation (ACCTVAL) in table AUTHCODU determines whether validation of the received account code digits should occur
- Account Code Index (ACCTIDX) in table ACSCRN2 determines whether account code validation should occur

Partial account code validation

When the length of the account code collected (as specified by the ACCTLEN field) is greater than the length of the account code digit vectors provisioned against the ACCTIDX index (table ACSCRN2), the switch may perform a partial validation of the collected account code.

Successful empty index screening

Successful empty index screening occurs when the ACSCRN2 table index identified by calling party subscriber number provisioning specifies an index that has no account code digit vectors provisioned against it in the table.

Normally the call is terminated to INAC treatment in this scenario. However, if ALLOW_EMPTY_ACSCRN (table OFCVAR) is set to "Y", the validation is attempted against a non-provisioned ACSCRN2 table index. The UCS DMS-250 switch considers this validation process successful.

How does partial/empty account code screening affect billing?

The UCS DMS-250 switch uses the ACCTV field in table Call Detail Record Template (CDRTMPLT) to identify handling of account code digits for the call. This two-bit field contains one of the following values:

- 0 (No Account Code)—no account code digits are collected or the number of account code digits received was less than the amount specified by the ACCTLEN field.

  Note: The value in this field is also the default value for ACCTV. If a call that does not require an account code is made, ACCTV is set to "0" and no account code digits are received.

- 1 (Account Code)—account code digits are collected from the subscriber, but no validation attempt is made.
- 2 (Account Code with Validation)—account code digits are collected from the subscriber, and a validation attempt is performed. This value includes full- and partial-validation attempts.

  Note: The switch determines a successful or unsuccessful validation attempt by the value of the treatment code field in the CDR.

- 3 (Empty Index Validation)—successful validation of received account code digits is due to “successful validation against an empty index.”

All account code digits received by the UCS DMS-250 switch and reported to the central module (CM) are recorded in the ACCTCD field of the Call Detail Record (CDR). Table 14-1 shows an example of CDR values in field ACCTV.

Table 14-1
CRD values located in field ACCTV

ACCTV field values	Description
0	No account code digits were received.
1	Validation attempt was not performed for received account code digits.
2	Validation attempt was performed for received account code digits.
3	Validation performed on empty ACSCRN2 table index.

Which office parameters apply to partial/empty account code screening?

The following office parameters in table Office Variable (OFVCAR) contain datafill used for partial/empty account code screening:

- ALLOW_PARTIAL_ACCT_VAL—indicates whether partial validation of received account code digits is allowed in the UCS DMS-250 switch
- ALLOW_EMPTY_ACSCRN—identifies whether the validation of account code digits against an empty ACSCRN2 table index results in a successful validation attempt

What restrictions and limitations apply to partial/empty account code screening?

The following restrictions and limitations apply to the Partial/Empty Account Code Screening feature:

- Partial account code digit validation and successful empty index apply only to inswitch validation attempts. ACCT TCAP validation is not supported.
- Default value for the No Account Code Received field in table ACCTV is “0.”

Suspend-Resume message handling

Signaling system 7 (SS7) Feature Group D (FGD) originating trunks and per trunk signaling (PTS) FGD originating trunks support suspend (SUS) and resume (RES) message handling. SUS-RES message handling prevents calls transported across SS7 facilities from being unintentionally disconnected. Without this type of message handling, unintentional disconnects, such as “hits” and “flashes,” can occur when a call terminates on an SS7 agency and the called party is the first to disconnect. SUS-RES message handling also supports the ability to send Suspend and Resume messages to the LEC over originating SS7 FGD trunks.

Note: Calls that terminate to agencies other than SS7 are not affected by SUS and RES message handling.

SUS-RES message handling is dependent on the originating agency type and the reorigination status of the call. The new suspend timing (TSUSR) field in table TRKGRP allows all originating trunks to implement suspend timing for a call on a trunk group basis.

How does suspend-resume message handling work?

When the UCS DMS-250 switch receives an SUS message, it interprets the SUS message as a temporary “on-hook” from the called party. The circuit connection remains and billing continues.

For established end-to-end SS7 calls, when office parameter SS7_FGD_ORIG_BOUNCE_SUS_RES is set to ”Y”, the SUS is passed through the inter-exchange carrier (IEC) network to the originating local exchange carrier (LEC). When the SS7_FGD_ORIG_BOUNCE_SUS_RES office parameter is set to ”N”, the SUS-RES message is passed to the originating DMS-250 switch.

When the UCS DMS-250 switch receives the RES message, it interprets the RES message as an “off-hook” from the called party and the call continues. The RES is passed through the IEC network to the originating LEC if the office parameter is set to ”Y”. If the originating switch encounters PTS interworking, it places an on-hook (instead of an SUS) on the originating circuit.

When the originating switch receives an SUS message, it waits a specified length of time to receive an RES message before it takes down the call. How long the switch waits for an RES message depends on the value set in the Timer Suspend Resume (TSUSR) field in table TRKGRP. TSUSR values range from 1 to 254 milliseconds, with a default value of 160 milliseconds.

Note: If the originating switch receives an SUS message and the TSUSR field has been datafilled as "0," the switch treats it as an RELease (REL) message and immediately initiates a "call take-down." All call scenarios described in this chapter assume the switch does not perform suspend timing for a call when TSUSR is set to "0."

SUS and RES message handling applies to SS7 terminating agencies only. It functions in the following manner:

- SUS messages—receipt of an SUS message is interpreted as a temporary on-hook from the called party; the circuit connection remains and billing continues. When an end-to-end SS7 call takes place, the SUS is passed through the inter-exchange carrier (IEC) network to the originating local exchange carrier (LEC), if the office parameter SS7_FGD_ORIG_BOUNCE_SUS_RES is set to "Y". If the office parameter is set to "N", the SUS is passed to the originating DMS-250 switch.

  Note: If per trunk signaling (PTS) interworking is encountered at the originating UCS DMS-250, an on-hook, instead of an SUS, is placed on the originating circuit.

- RES messages—receipt of an RES message is interpreted as an off-hook from the called party and the call continues. The RES is passed through the IEC network to the originating LEC.

Office parameter SS7_FGD_ORIG_BOUNCE_SUS_RES in table OFCVAR controls handling of the Suspend and Resume messages on the UCS DMS-250 when the originating agent is an SS7 FGD trunk type.

When the office parameter SS7_FGD_ORIG_BOUNCE_SUS_RES is set to "Y", the supervision for the receipt of Suspend and Resume messages is changed for SS7 FGD originators to allow the messages to be sent back to the LEC. When the office parameter is set to "N", the Suspend and Resume messages are reported to the CM and not sent to the originating LEC. In this case existing Suspend and Resume message handling procedures are used.

How does suspend-resume message handling affect call processing?

The UCS DMS-250 switch handles SUS and RES messages for the following call types:

- SS7 originator to SS7 terminator
- PTS originator to SS7 terminator
- SS7 originator to SS7 IMT terminating to a DMS-300 switch
- PTS originator to SS7 IMT terminating to a DMS-300 switch

Note: When an SS7 IMT trunk on a UCS DMS-250 switch terminates on a DMS-300 switch, the PRODUCT field in table Adjacent Node (ADJNODE) is datafilled as ”DMS300.”

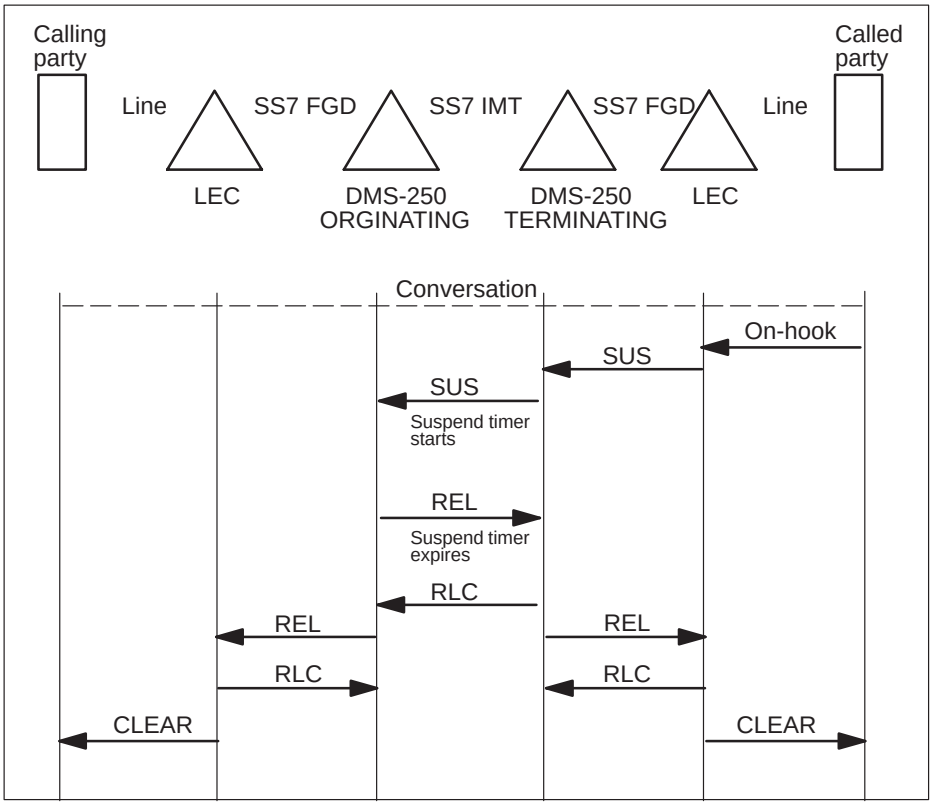
SS7 originator to SS7 terminator

A basic end-to-end, two-party SS7 call between two UCS DMS-250 switches handles SUS and RES messaging in the following manner:

- If the called party disconnects first during a call, the terminating LEC immediately sends a SUS for the call originator.
- If the originating switch receives a RELease (REL) from the terminating circuit before it receives a SUS, the originating switch performs the following:
  - — releases and idles the terminating circuit
  - — returns an RELease complete message (RLC) for that circuit.
  - — sends an REL backwards toward the originating LEC, if office parameter SS7_FGD_ORIG_BOUNCE_SUS_RES in table OFCVAR is set to ”Y”. If the parameter is set to ”N”, the REL is sent to the originating DMS-250 switch.
- When the terminating switch receives a SUS from a LEC, it passes the SUS to the originating switch. The originating switch performs the following:
  - — starts the suspend timer to ensure that no further messaging is received from the terminator
  - — disconnects the call
  - — does not pass the SUS to the originating LEC
- If the suspend timer expires, the originating switch sends a REL toward the terminator. After the originating switch receives a RLC from the terminator, it sends a REL toward the originating LEC.

Figure 15-1 shows the suspend timer expiration on an end-to-end SS7 call.

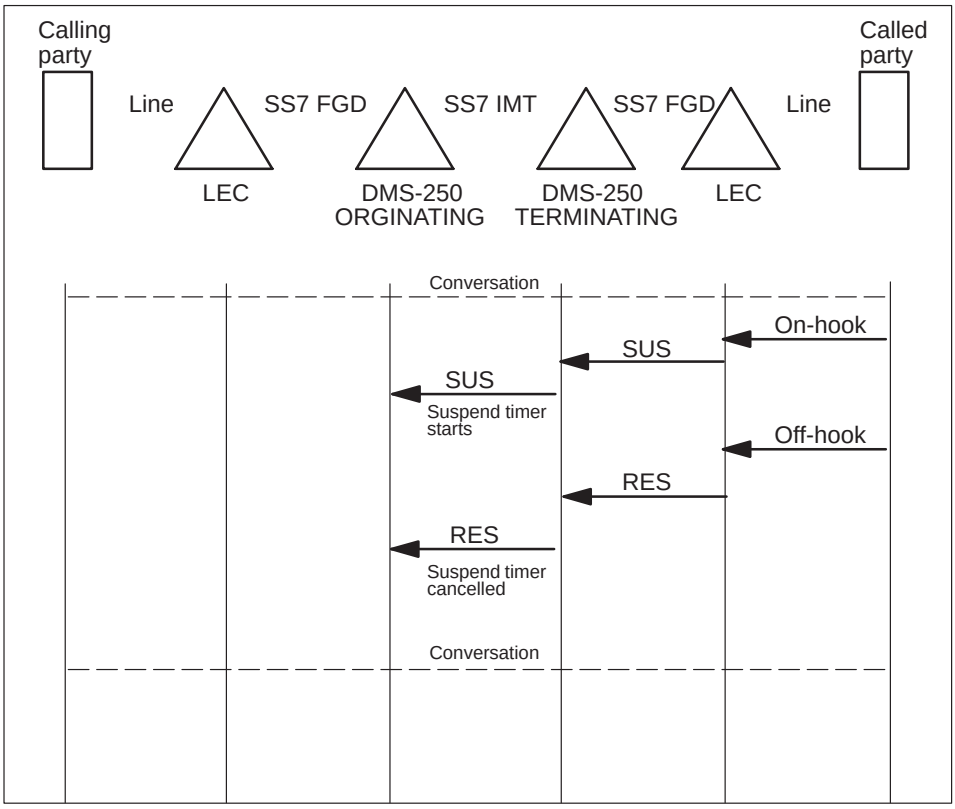
Figure 15-1
Suspend timer expiration, end-to-end SS7



- If the terminating switch receives an RES from the terminating LEC before it receives an REL from the originating circuit, the switch sends the RES toward the originating switch. When the originating switch receives the RES, it cancels the suspend timer and returns the call to a talking state.

  Figure 15-2 shows SUS and RES messaging on an end-to-end SS7 call.

Figure 15-2
SUS-RES messaging, end-to-end SS7



- If the terminating UCS DMS-250 switch receives an REL for the originating circuit before it receives an RES from the terminating LEC, it sends an RLC back to the originating UCS DMS-250 switch.

PTS originator to SS7 terminator

A basic two-party call from a UCS DMS-250 PTS originating switch to a UCS DMS-250 SS7 terminating switch handles SUS and RES messaging in the following manner:

- In an established call, if the originating switch receives an on-hook on the originating circuit before it receives either an REL or an SUS for the terminating circuit, it idles the originating circuit. If the switch has already sent the Initial Address Message (IAM) for the terminating circuit, it releases the terminating circuit and sends an REL for that circuit.
- If the originating switch receives an REL for the terminating circuit before it receives an SUS, it releases and idles the terminating circuit and returns a RLC for that circuit. The switch also sends an on-hook on the originating circuit.

- If the originating switch receives an SUS from the terminating circuit after it has already received an Answer Message (ANM) for that circuit, it does not disconnect the circuit connection until it receives an on-hook on the originating circuit or an REL for the terminating circuit.

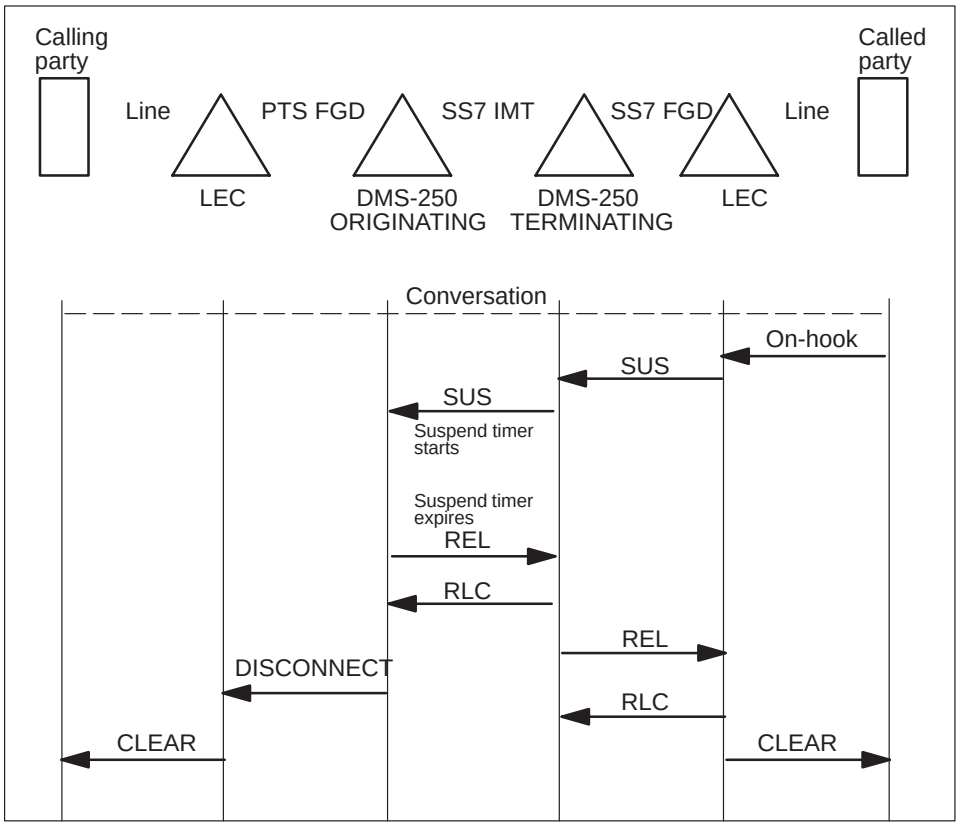
  The originating switch then starts the suspend timer and waits for either an RES from the terminating circuit or an on-hook from the originating PTS circuit.

- If, after the originating switch receives an SUS, the originating switch does not receive any other signaling messages from either the originating PTS circuit or the terminating SS7 circuit and if the suspend timer expires, the switch sends an REL toward the terminating SS7 circuit.

  When the switch receives the RLC from the terminating circuit, it takes down the call in a backward direction and idles the originating circuit.

  Figure 15-3 shows suspend timer expiration on a PTS origination.

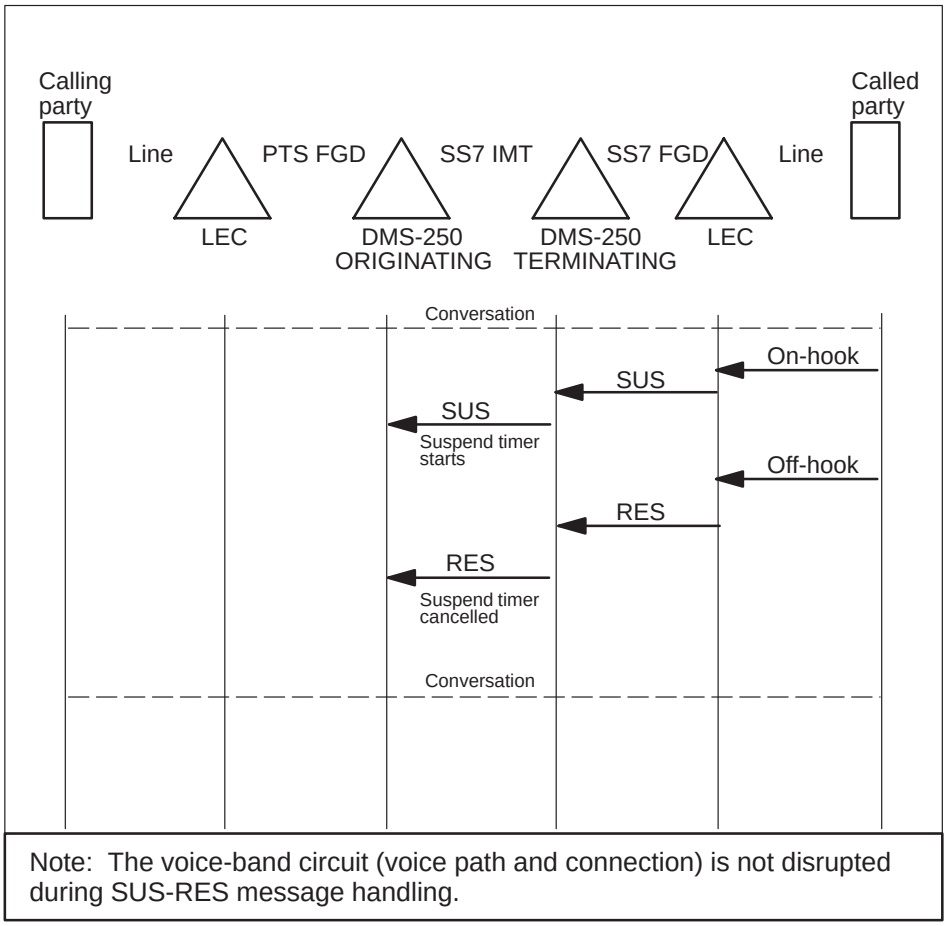
Figure 15-3
Suspend timer expiration, PTS origination



- If the originating switch receives an SUS for the terminating circuit and then receives an RES before it receives either an on-hook on the originating circuit or an REL for the terminating circuit, it cancels the suspend timer and returns the call to the talking state.

  Figure 15-4 shows SUS and RES messaging on a PTS origination.

Figure 15-4
SUS-RES messaging - PTS origination



Note: The voice-band circuit (voice path and connection) is not disrupted during SUS-RES message handling.

- If the originating switch receives an SUS and then receives an on-hook for the originating circuit before it receives an RES or an REL for the terminating circuit, it idles the originating circuit and sends an REL for the terminating circuit.

SS7 originator to SS7 IMT terminator connected to a DMS-300 switch

SUS and RES messaging from an originating UCS DMS-250 SS7 switch to a DMS-300 switch is handled in following manner:

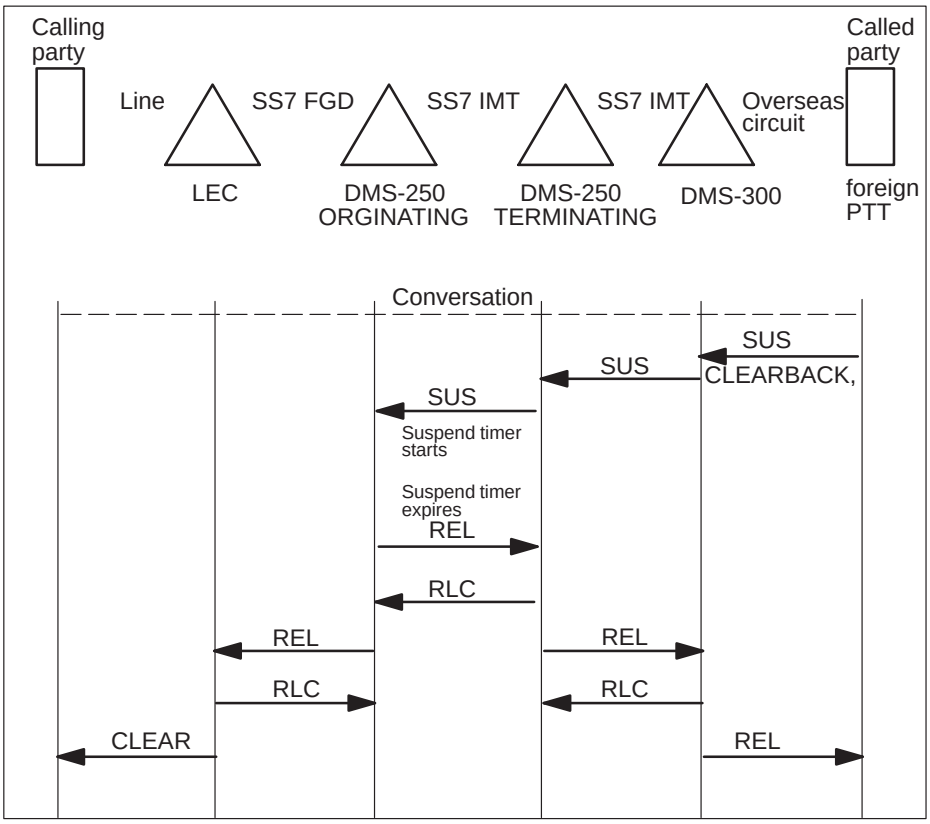
- On terminating international calls, the IMT between the DMS-300 switch and the terminating UCS DMS-250 switch carries SUS and RES messages that are either received from the foreign Postal Telephone and Telegraphs (PTT) or generated by the DMS-300 switch.
- If the originating UCS DMS-250 switch receives an REL for the terminating circuit before it receives an SUS, it releases and idles the terminating circuit and returns an RLC for that circuit.
- When the terminating UCS DMS-250 switch receives an SUS from the DMS-300 switch over the IMT, it passes the SUS to the originating UCS DMS-250 switch.

  The originating UCS DMS-250 switch then starts an SUSpend timer to ensure that the call is disconnected if no messaging is received from the foreign PTT. If the suspend timer expires, the originating UCS DMS-250 switch sends an REL to the terminating UCS DMS-250 switch.

  When the originating UCS DMS-250 switch receives the RLC from the terminating switch, it sends an REL toward the originating LEC.

  Figure 15-5 shows suspend timer expiration for an SS7 originator to an SS7 IMT terminating to a DMS-300 switch.

Figure 15-5
Suspend timer expiration, SS7 origination to SS7 IMT termination connected to DMS-300 switch

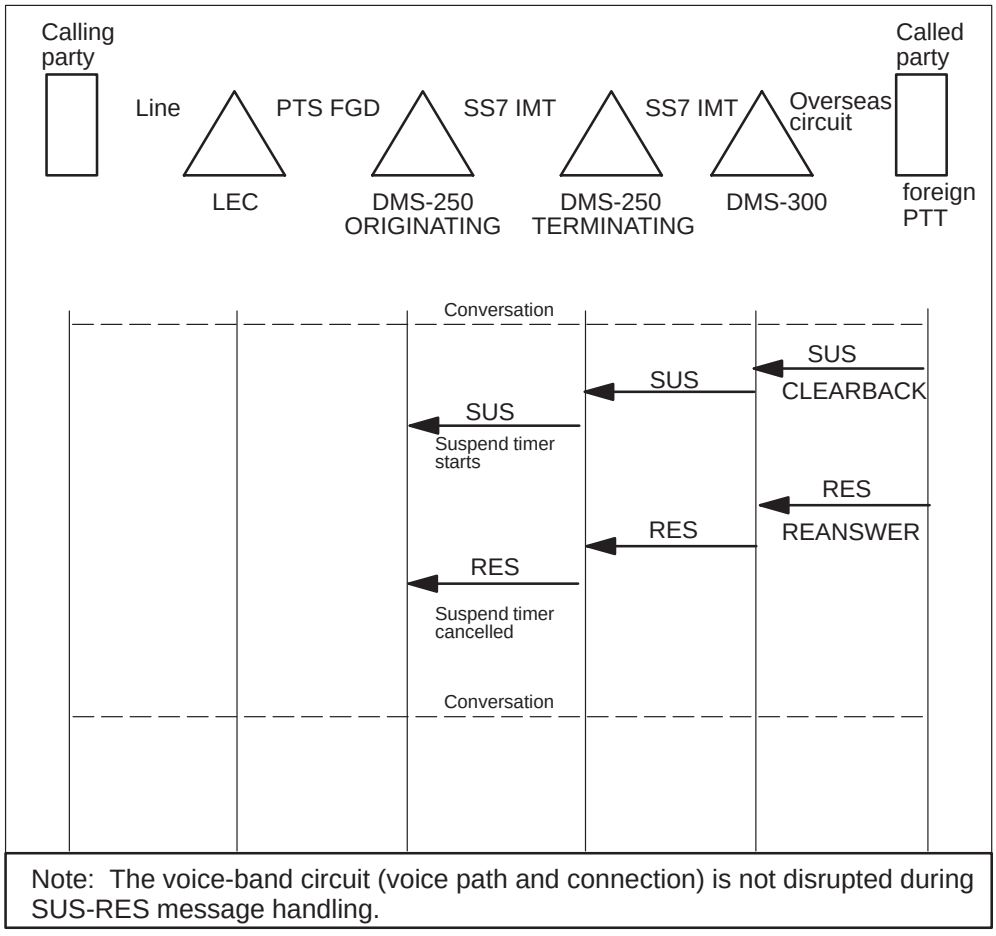


- If the terminating UCS DMS-250 switch receives an RES from the DMS-300 switch before it receives an REL from the originating circuit, it sends an RES to the originating UCS DMS-250 switch.

  When the originating UCS DMS-250 switch receives an RES, it cancels the suspend timer and returns the call to the talking state.

  Figure 15-6 shows SUS and RES messaging for an SS7 originator to an SS7 IMT terminating to a DMS-300 switch.

Figure 15-6
Suspend and resume messaging, SS7 origination to SS7 IMT termination connected to DMS-300 switch



Note: The voice-band circuit (voice path and connection) is not disrupted during SUS-RES message handling.

- If the terminating UCS DMS-250 switch receives an REL for the originating circuit before it receives an RES from the terminator, it sends an RLC back to the originating UCS DMS-250 switch.

PTS originator to SS7 IMT terminating to a DMS-300 switch

SUS and RES messaging from an originating UCS DMS-250 PTS switch to a UCS DMS-250 SS7 IMT switch to a DMS-300 switch is handled in following manner:

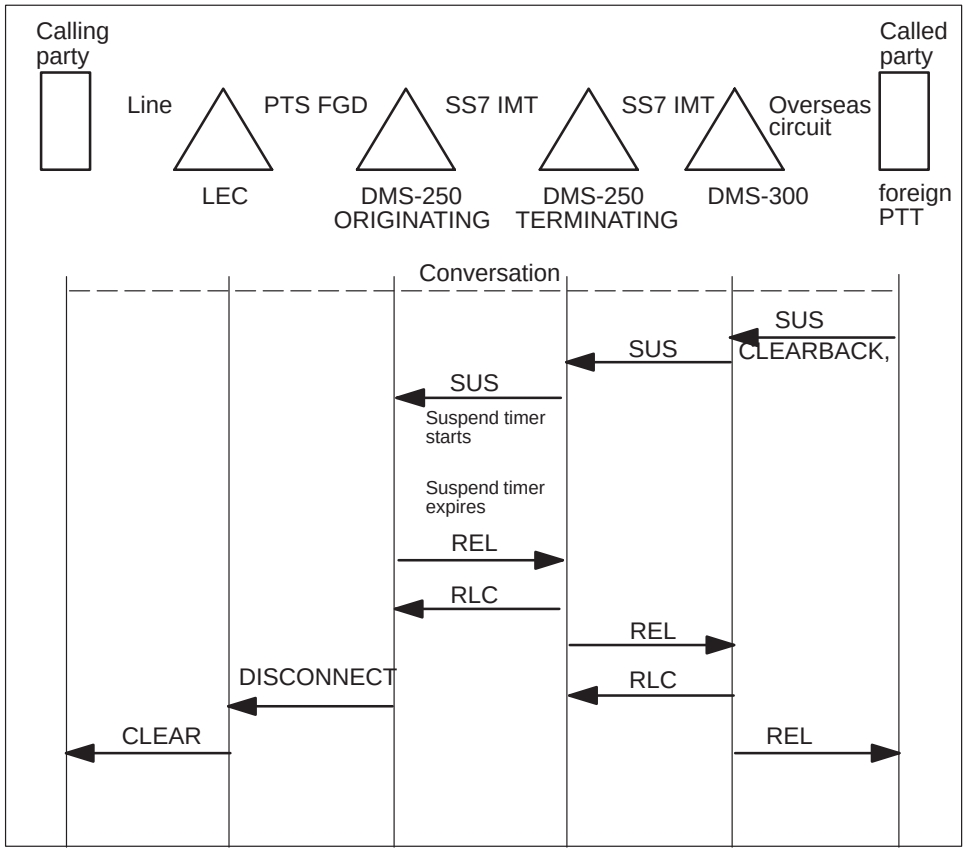
- If the originating UCS DMS-250 switch receives an REL for the terminating circuit before it receives an SUS, it releases and idles the terminating circuit and returns an RLC for that circuit.
- If the originating UCS DMS-250 switch receives an SUS from the terminating SS7 IMT connected to the DMS-300 switch, it does not disconnect the circuit connection until it receives an on-hook on the originating circuit or an REL for the terminating circuit.

  The originating UCS DMS-250 switch then starts the suspend timer and waits for either an RES message from the terminating circuit or an on-hook from the originating PTS circuit.
- If the originating UCS DMS-250 switch receives an SUS and the suspend timer expires before the switch receives any other signaling messages from either the originating PTS circuit or the terminating SS7 circuit, the switch sends an REL toward the terminating SS7 circuit.

  The call is then taken down in a forward direction and the originating circuit is idled.

  Figure 15-7 shows suspend timer expiration on a PTS origination to an SS7 IMT termination connected to DMS-300 switch.

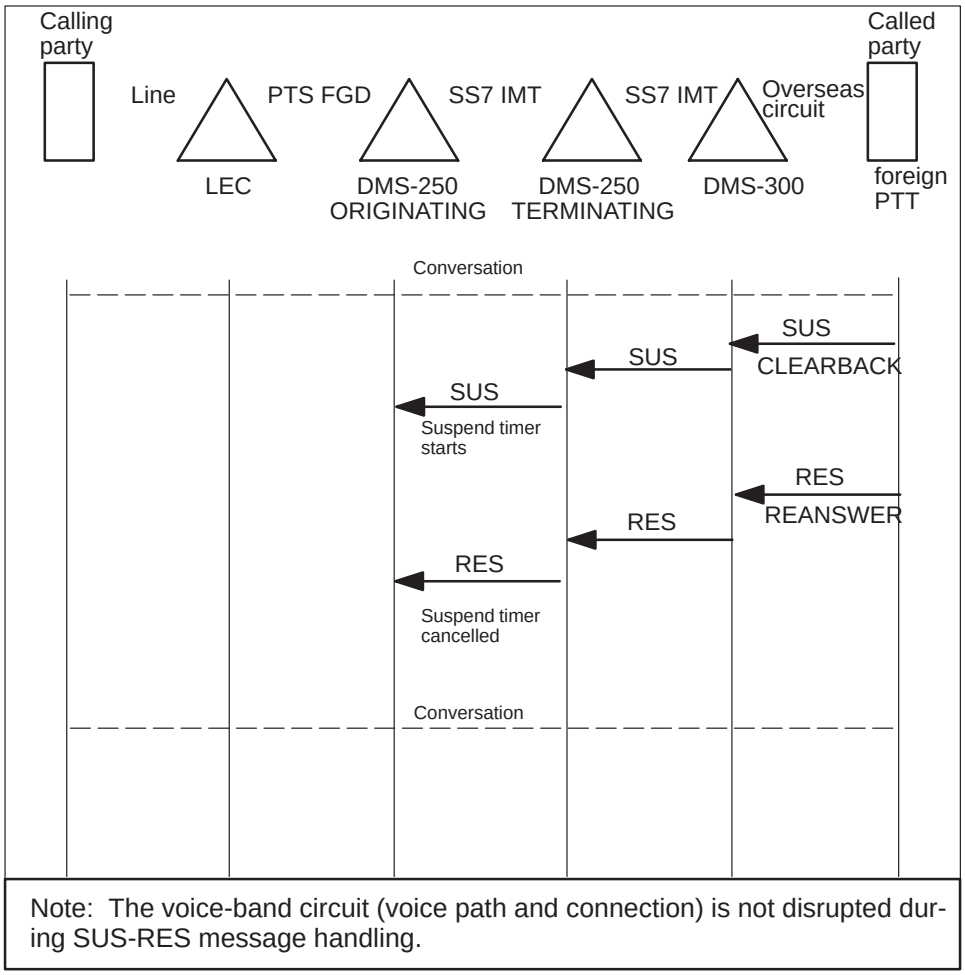
Figure 15-7
Suspend timer expiration, PTS origination to SS7 IMT termination connected to DMS-300 switch



- If the originating UCS DMS-250 switch receives an SUS for the terminating circuit and then receives an RES before receiving either an on-hook on the originating circuit or an REL for the terminating circuit, it cancels the suspend timer and returns the call to the talking state.

  Figure 15-8 shows SUS and RES messaging for a PTS origination to SS7 IMT termination connected to a DMS-300 switch.

Figure 15-8
SUS-RES messaging - PTS origination to SS7 IMT termination connected to DMS-300 switch



Note: The voice-band circuit (voice path and connection) is not disrupted during SUS-RES message handling.

- If the originating UCS DMS-250 switch receives an SUS and then receives an on-hook for the originating circuit before it receives either an RES or an REL for the terminating circuit, it idles the originating circuit and sends an REL for the terminating circuit.
- If the originating UCS DMS-250 switch receives an SUS and then receives an REL before it receives an on-hook, it idles the terminating circuit and sends an RLC for the circuit. If it receives an on-hook from the originating circuit, it idles the originating circuit.

How does suspend-resume message handling interact with other features?

SUS-RES message handling interacts with the following:

- reorigination
- enhanced special platform release line trunk (RLT) calls.
- PRI release link trunk

Note: This document describes SUS-RES message handling interactions with reorigination and with enhanced special platform RLT calls. For information on how SUS-RES message handling interacts with PRI RLT, refer to the *UCS DMS-250 PRI RLT Feature Application Guide*.

Reorigination

When a call scenario involves suspend timing, the following modifications are required to support reorgination:

- Reorigination timer value is taken from the permanent signal (PSIG) timer value. The location of PSIG varies according to the following:
  - — SS7 originations—timer value is datafilled in field Senderize Permanent Signal (SNDRPSIG) in table TRKGRP.
  - — PTS originations—timer value is datafilled in field Permanent Signal or Partial Dial on Seizure Timing (PSPDSEIZ) in table TRKSGRP.
- When an SUS is received during a call, the originating UCS DMS-250 switch starts the suspend timer.

  Note: Timer value is based on the originating agency's Trunk Group Suspend/Resume Timer (TSUSR) field in table TRKGRP. If manual reorigination is allowed for the calling party, the value of the suspend timer and the value of the reorigination timer are compared; the larger of the two values determines the new reorigination timer value.

- Suspend and reorigination timers are started simultaneously. Subsequent call processing depends on the following events:
  - — If a reorigination digit is detected during a call, the call reoriginates.
  - — If the suspend timer is active and an RES is received, the call returns to the talking state.
  - — If the suspend timer expires, the terminating agency is disconnected and the reorigination is active for the originating agency for the remaining duration of the reorigination timer.
  - — If the switch detects the reorigination digit while the reorigination timer is still active, the call reoriginates; otherwise, the call is released.

Note: Datafill in the Recall Dial Tone (RECALLDT) field in table TRKGRP of the originating agency determines which type of reorigination allowed. MANUAL indicates manual reorigination. AUTO indicates auto reorigination. NONE indicates reorigination is not allowed on the call.

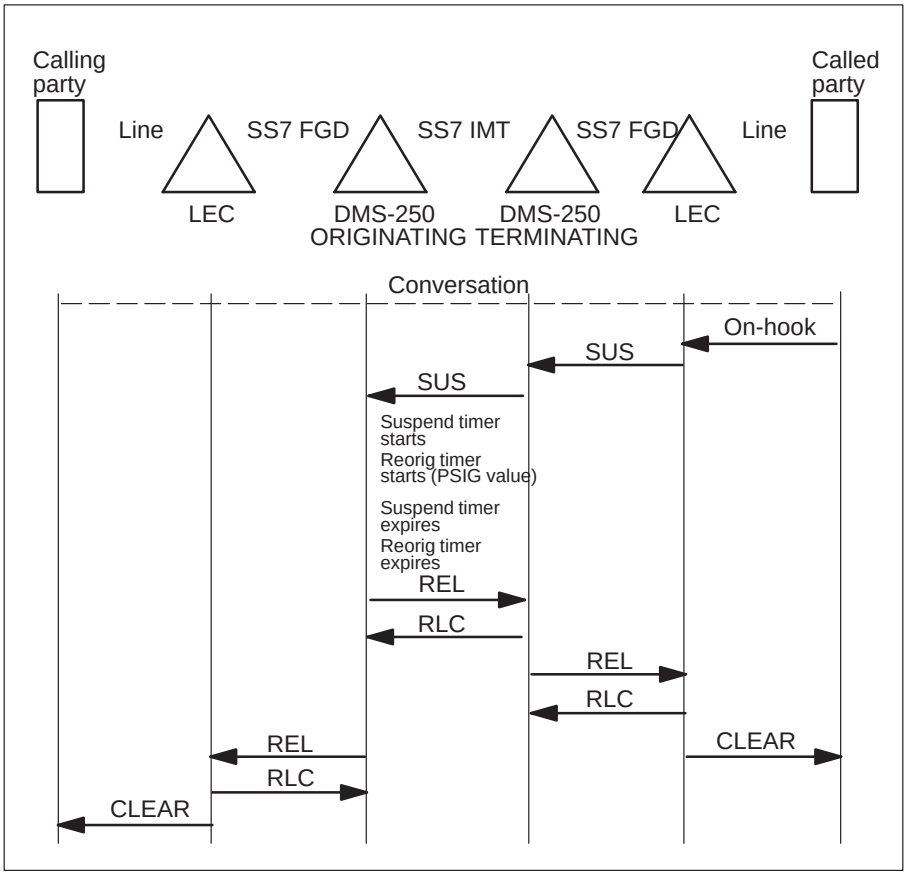
Manual reorigination

If manual reorigination is allowed, the originator can reoriginate during talking, ringing, suspend timing, or reorigination (PSIG) timing. Origination methods are dependent on the status of the timers involved in call processing:

- manual reorgination—suspend and reorgination timers expire
  - — When the originator's RECALLDT field is set to MANUAL and the originating UCS DMS-250 switch receives an SUS, it starts the suspend time. Additionally, to enable parallel reorigination the switch starts the reorigination timer with the PSIG value.
  - — If the switch does not receive either an RES or REL before the suspend timer expires, it sends an REL toward the terminating trunk.
  - — If the originating switch does not receive a reorigination digit before the reorigination timer expires, it disconnects the originator.

Figure 15-9 shows the suspend and reorigination timers expiring on a manual reorigination.

Figure 15-9
Manual reorigination, suspend and reorigination timers expire



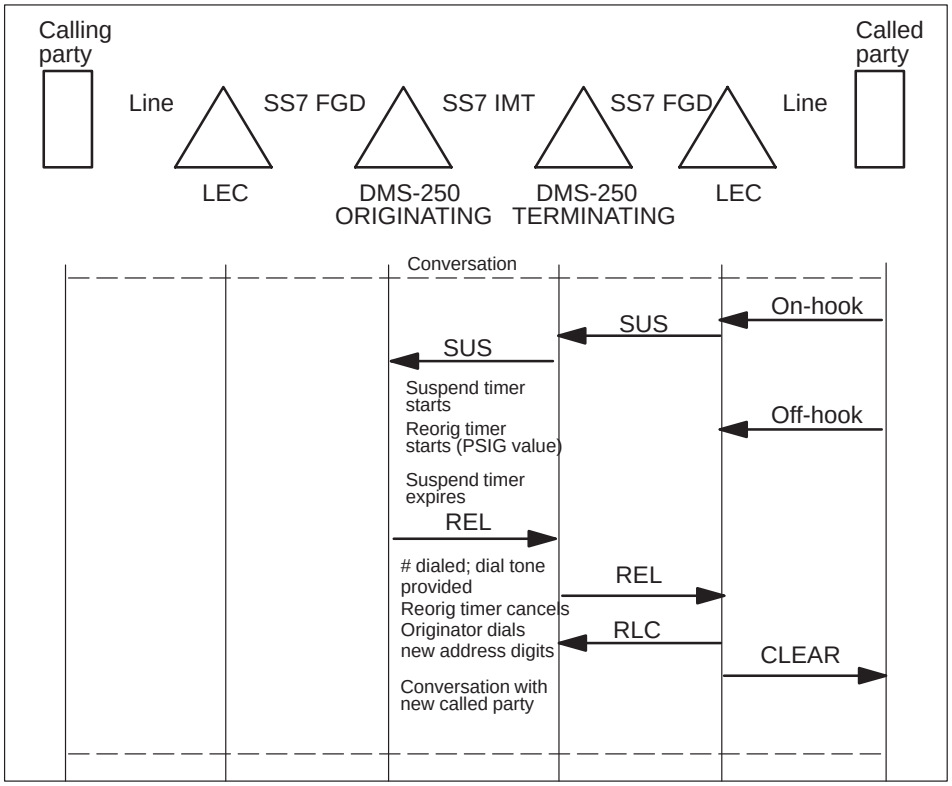
- manual reorgination—suspend timer expires and calling party reorginates before the reorginating timer expires

  — If the terminator goes on-hook, an SUS message is sent to the originating UCS DMS-250 switch. The switch starts the suspend timer using the value from field TSUSR for the originating trunk in table TRKGRP. Additionally, to enable parallel reorigination the switch starts the reorigination timer with the PSIG value.

  — If the originating UCS DMS-250 switch receives the reorigination digit from the originator before either the suspend timer or the reorigination timer expires, the switch cancels both timers. The switch disconnects the terminator. The calling party is given dial tone and can reoriginate the call.

  Figure 10-10 shows a manual reorigination before the originating switch receives an RES message.

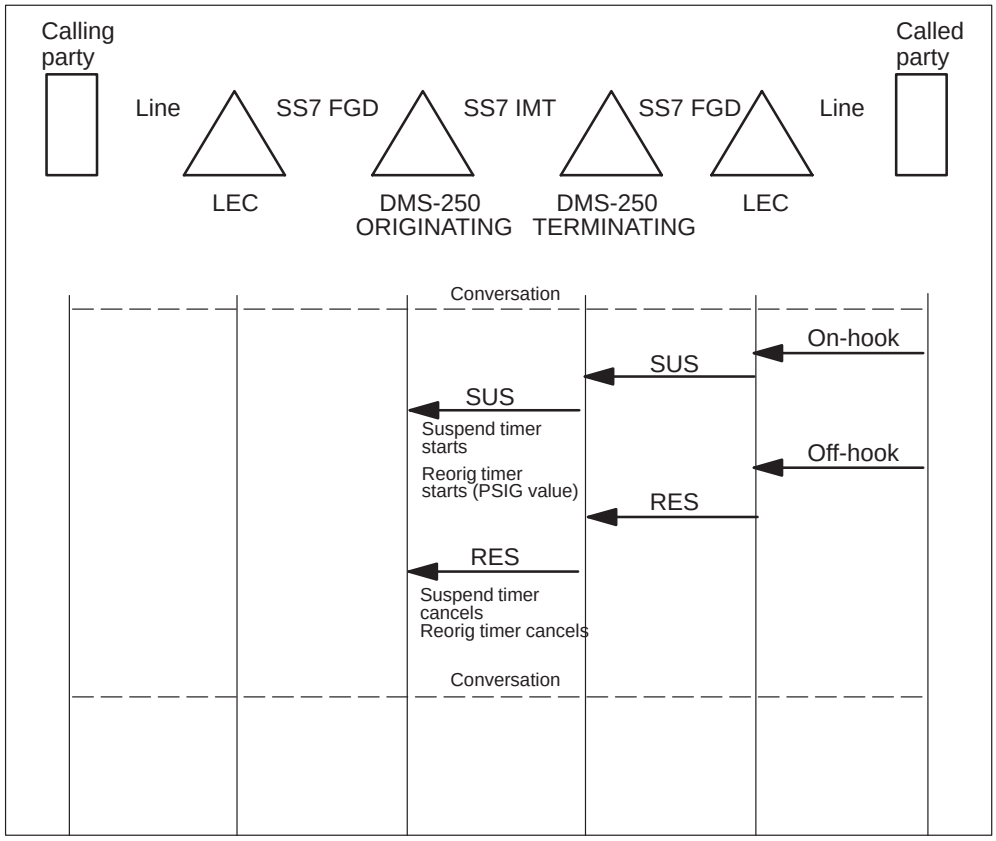
Figure 15-10
Manual reorigination, suspend timer expires and calling party reoriginates before reorigination timer expires



- manual reorgination—suspend and reorgination timers cancelled when originating switch receives RES
  - — If the terminator goes on-hook, the suspend message is propagated to the originating UCS DMS-250 switch. The originating UCS DMS-250 switch starts the suspend timer using the value from field TSUSR for the originating trunk in table TRKGRP. Additionally, to enable parallel reorigination the switch starts the reorigination timer with the PSIG value.
  - — If the RES is received on the terminating trunk before the suspend timer expires, the suspend and reorigination timers are cancelled. The call is allowed to continue.

Figure 15-11 shows the suspend and reorigination timers cancelled when the originating switch receives the RES message.

Figure 15-11
Manual reorigination, suspend and reorigination timers cancelled when originating switch receives RES message



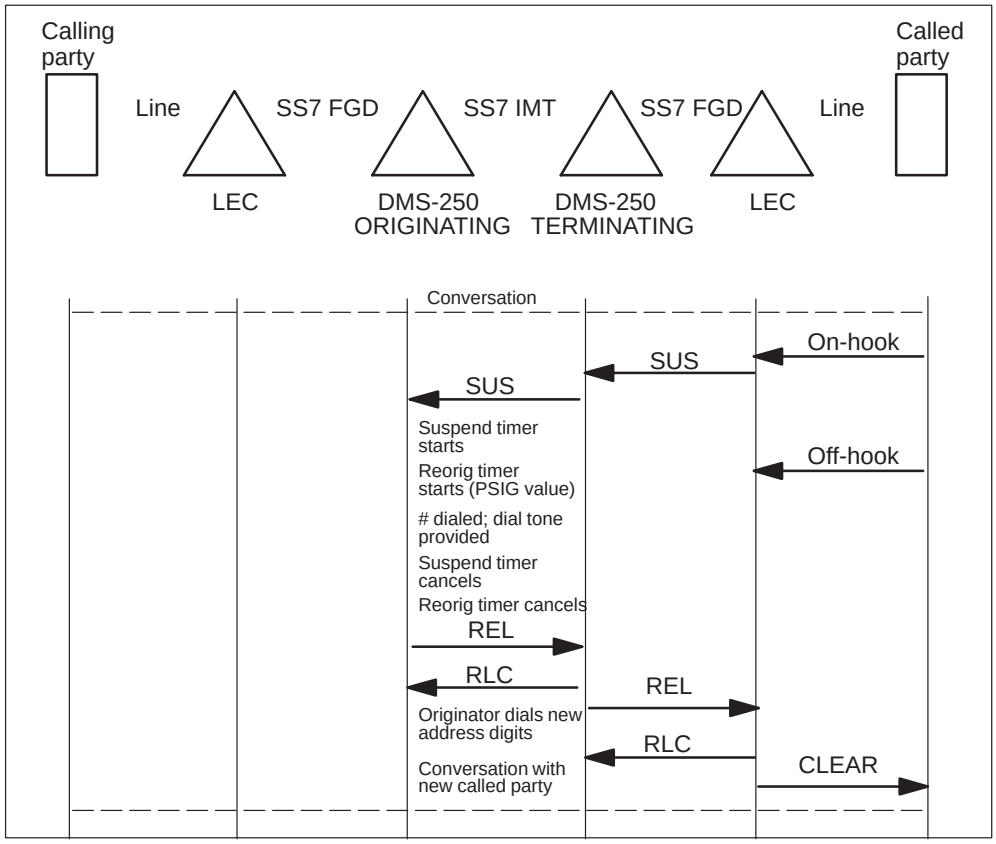
- manual reorgination—suspend and reorgination timers cancelled before originating switch receives an RES

  — If the terminator goes on-hook, an SUS is sent to the originating UCS DMS-250 switch. The switch starts the suspend timer using the value from field TSUSR for the originating trunk in table TRKGRP. Additionally, to enable parallel reorigination the switch starts the reorigination timer with the PSIG value.

  — If the originating UCS DMS-250 switch receives the reorigination digit from the originator before either the suspend timer or the reorigination timer expires, the switch cancels both timers. The switch disconnects the terminator. The calling party is given dial tone and can reoriginate the call.

Figure 15-12 shows a manual reorigination before the originating switch receives an RES message.

Figure 15-12
Manual reorigination before originating switch receives RES message



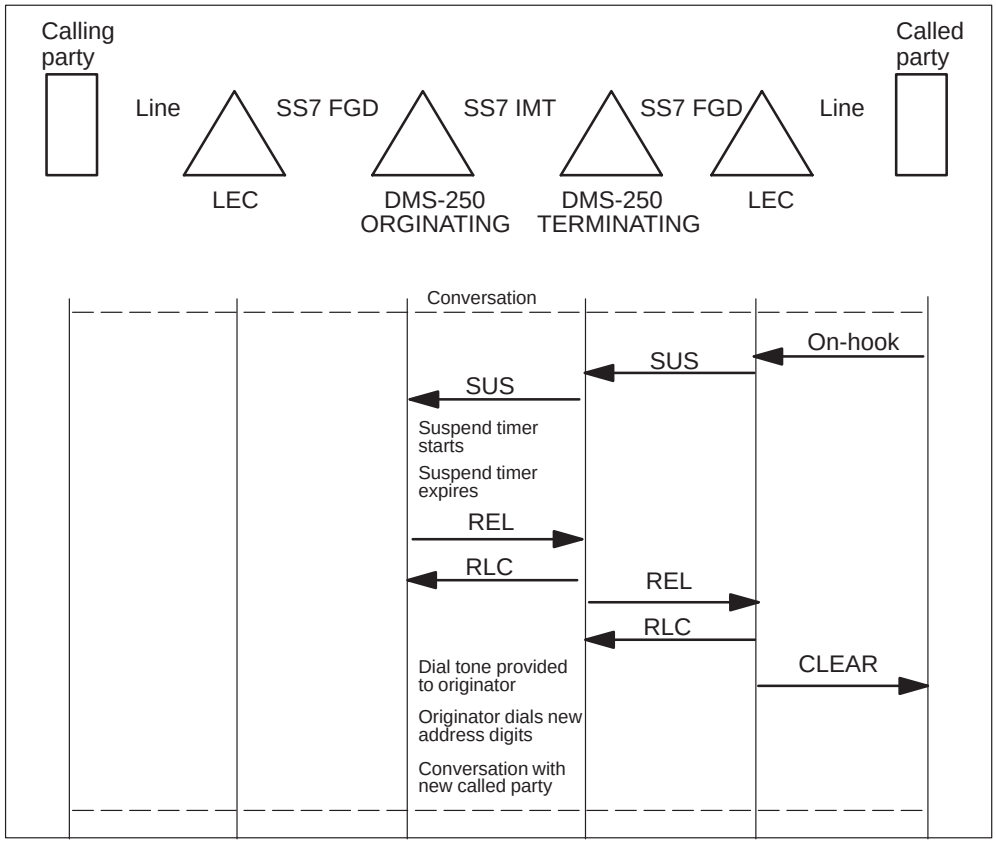
Auto reorigination

If the originator has auto reorigination, the originator is allowed to reoriginate only after the suspend timer expires. Dial tone is provided to the originator immediately after suspend timing. Reorgination methods are dependent on the status of the timers involved in call processing:

- auto reorgination—reorgination after suspend timer expires
  - — If the terminator goes on-hook, the SUS is propagated to the originating UCS DMS-250 switch. The originating UCS DMS-250 switch starts the suspend timer using the value from field TSUSR for the originating trunk in table TRKGRP.
  - — If the suspend timer expires before the originating switch receives an RES or an REL from the terminator, the switch disconnects the terminator. If the originator has auto reorigination, dial tone is provided and the calling party can reoriginate the call.

Figure 15-13 shows reorigination after the suspend timer expires.

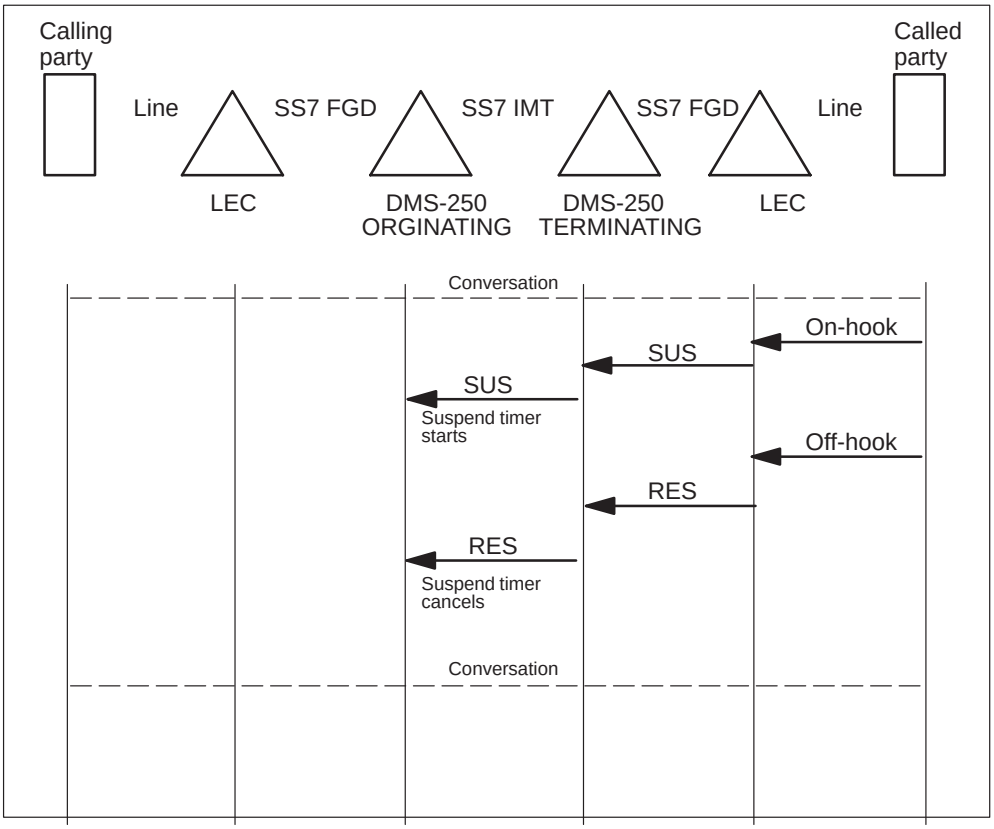
Figure 15-13
Auto reorigination, reoriginate after suspend timer expires



- auto reorgination—received RES message before suspend timer expires
  - — If the terminator goes on-hook, the SUS is propagated to the originating UCS DMS-250 switch. The originating UCS DMS-250 switch starts the suspend timer using the value from field TSUSR field for the originating trunk in table TRKGRP.
  - — If the switch receives an RES before the suspend timer expires, the suspend timer is cancelled and the call is allowed to continue.

Figure 15-14 shows the RES message received before the suspend timer expires.

Figure 15-14
Auto reorigination, receive RES message before suspend timer expires



Enhanced Special Platform RLT calls

SUS and RES message handling also interacts with ESP RLT calls. There are two types of ESP calls:

- redirected ESP calls—ESP collects the billing information and sends the call off to be routed to the called number.
- third-party ESP calls—ESP requires information from the terminator. The ESP calls the terminator, collects the information, and then drops out of the call.

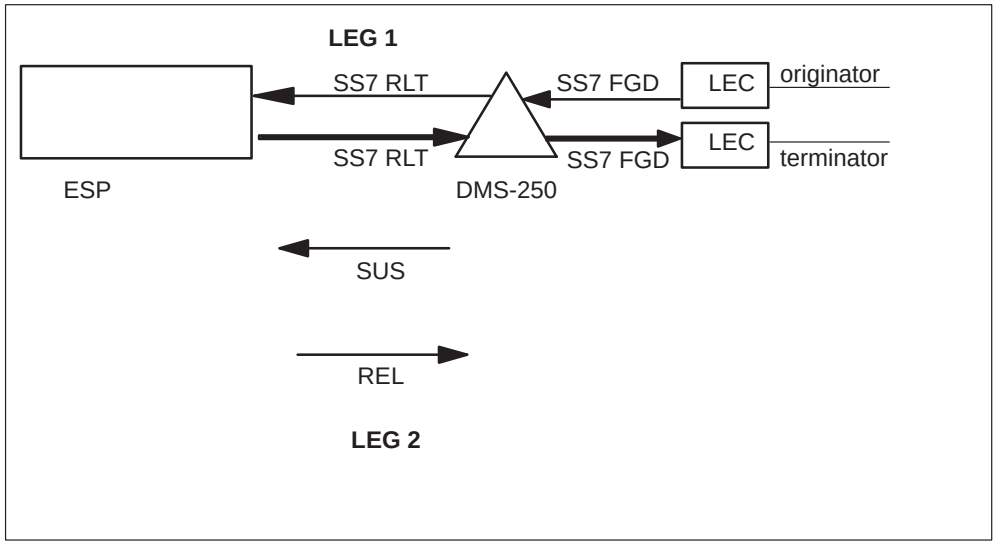
SUS and RES message interaction with redirected ESP calls

SUS and RES message handling does not affect a redirected ESP call before redirection from the ESP. After the ESP closes, SUS and RES messages are handled the same way as they are handled for a normal call.

SUS and RES message interaction with third-party ESP calls

If, in a third-party ESP call, the SS7 terminator on the second leg goes on-hook before bridging, the terminating LEC sends an SUS to the ESP. The SUS message is treated as an REL message at the ESP for ESP operator assisted RLT calls.

Figure 15-15



What are the SUS-RES message formats?

Table 15-1 shows the format for the SUS message. Table 15-2 shows the format for the Suspend Indicator.

Table 15-3 shows the format for the RES message. Table 15-4 shows the format for the Resume Indicator.

Table 15-1
SUS message format

Information element	Type	Length
Message Type (SUSPEND)	M	1
Suspend Indicator	M	1

Table 15-2
Suspend Indicator

Value in Hex	Description
#00	ISDN Subscriber Initiated
#01	Network Initiated

Table 15-3
RES message format

Information element	Type	Length
Message Type (RESUME)	M	1
Resume Indicator	M	1

Table 15-4
Resume Indicator

Value in Hex	Description
#00	ISDN Subscriber Initiated
#01	Network Initiated

How does suspend-resume message handling affect billing?

SUS-RES message handling does not affect billing. Billing continues while suspend timing is in progress.

What restrictions and limitations apply to suspend-resume message handling?

The following restrictions and limitation apply to SUS-RES message handling:

- SUS-RES messaging is available only for SS7 terminators.
- SUS-RES message handling on the UCS DMS-250 switch is dependent on SUS-RES message handling and the suspend timing at the terminating LEC.

Transaction Capabilities Application Part (TCAP)

The Transaction Capabilities Application Part (TCAP) provides a common protocol for remote operations across a signaling system 7 (SS7) network. TCAP provides the means whereby an application process at one node can access the same application process at other nodes.

Note: A node is a UCS DMS-250 switch (or switch of equivalent capability) within a network that has the ability to provide connectionless services by generating and responding to TCAP messages. A service switching point (SSP) is a node with TCAP message transfer capability.

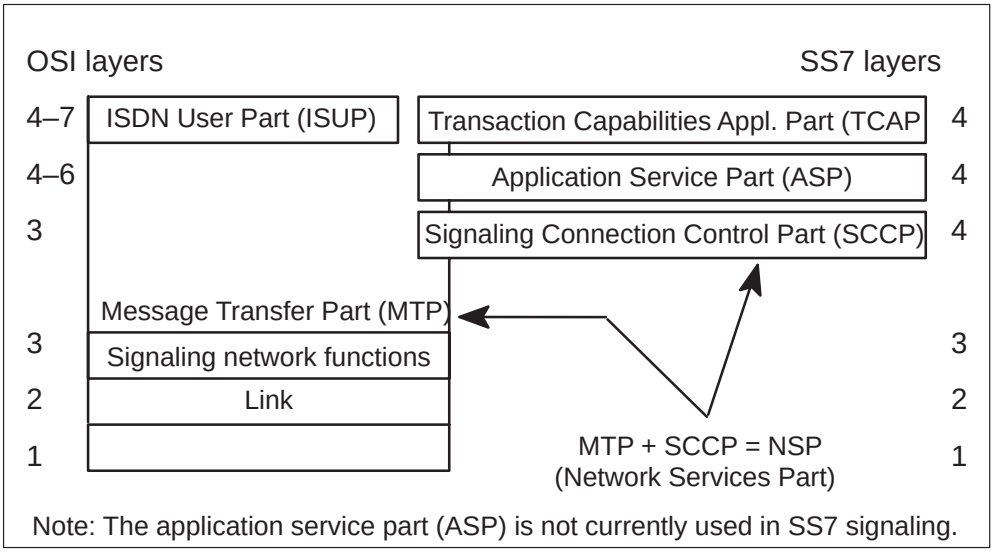
How does TCAP work?

TCAP uses a query-response message format. When a subsystem in a particular node needs information located at another node, it sends a request to the other node in the form of a TCAP request message. Reply messages are then returned to the originator in the form of a TCAP response message. The response messages contain the requested information, if it is available.

TCAP is one of the software-based functions provided by the SS7 signaling protocol. It is one of several layers (see Figure 16-1) that work together to process signaling and data transfer across the SS7 network. These layers include:

- MTP (Message Transfer Part)—provides the signaling message handling that transfers signaling messages to nodes across the network.
- SCCP (Signaling Connection Control Part)—performs any global title translations (GTT) that may be needed to route the messages. The SCCP also routes messages to the correct subsystem within a node.
- TCAP (Transaction Capability Application Protocol)—formats and sends messages that request specific data (for example authorization code, account code validation, N00 number translation) be sent to or from a node.
- ISUP (Integrated Services Digital Network User Part)—performs voice and data messaging functions in an ISDN environment.

Figure 16-1
Open Systems Interconnect (OSI) and SS7 comparison



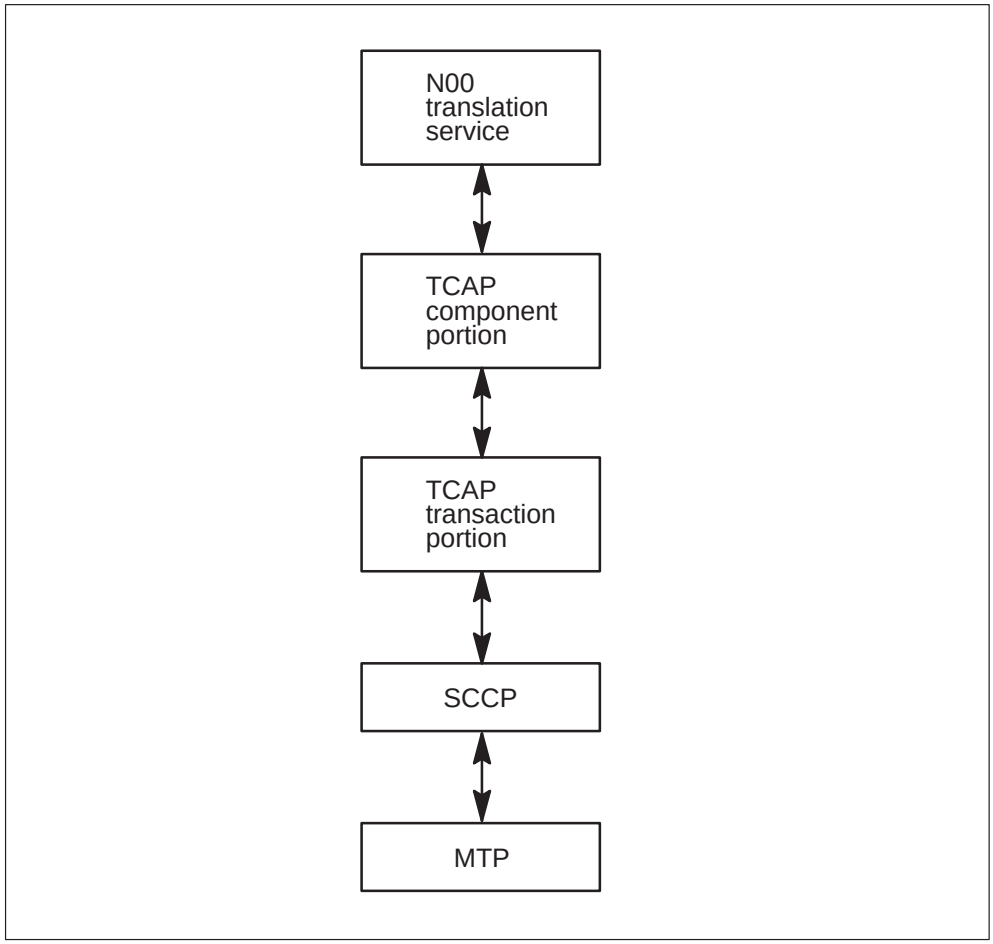
TCAP operation

The transaction capabilities control the transfer of non–circuit-related data between nodes in an SS7 network. Implementation is based on ANSI/ECSA T1X1.1 Recommendations Q.771–Q.774 for SS7 Transaction Capabilities Application Part. Message set and protocol specification conform to Intelligent Network (IN/1) Transaction Capabilities Application Part (TCAP) for the UCS DMS-250 switch and is based on the American National Standard for Telecommunication.

Note: UCS IN/1 TCAP applications are based on ANSI Issue 1 TCAP as standardized in 1988 (T1.114-1988). As a result, these features do not support the Abort package type, and all transaction-portion errors are handled with Reject components in a Response or Unidirectional package.

Figure 16-2 shows a typical transaction in which the TCAP protocol interworks with the SCCP and MTP to provide N00 translation services for 700, 800, or 900 calls.

Figure 16-2
TCAP architecture



What are the TCAP-based services?

The following TCAP-based services are supported on FGD trunks:

- N00 Translation
- Version 2 N00 Number Translation
- Travel Card Validation (MCCS)
- Authorization Code Validation
- Account Code Validation
- Speed Number Translation

This section provides an overview of the translation and validation process handled by TCAP messaging. For additional information on SS7 and TCAP operation, refer to the *Transaction Capabilities Application Part (TCAP) Application Guide*.

N00 translations

TCAP messaging allows the UCS DMS-250 switch to send N00 numbers (700, 800, 900 prefixed calls) received as part of the subscriber's dialed digits for translation to remote databases on the SS7 network for validation.

Note: N00 numbers can originate on all types of FGD trunks. Feature group A (FGA), feature group B (FGB), and dedicated access line (DAL) can originate only 700 numbers; feature group C (FGC) can originate only 800 numbers.

The N00 translation process is made up of the following steps:

1 DMS switch receives a call that requires N00 translation.

2 DMS switch sends a TCAP invoke query to the SCP. The query contains the following data:

- dialed number
- 3-, 6-, or 10-digit ANI/PANI (if available)
- trunk group serving numbering plan area (SNPA) value

3 SCP either translates or does not translate the N00 number.

4 Results of the translation are sent back to the switch using TCAP messaging.

5 DMS switch routes the call to its destination.

Version 2 N00 number translation

Version 2 translation provides additional parameters that allow new call processing actions to be included as part of the TCAP message. Version 2 translation operates in a manner similar to N00 translation, with the following exceptions:

- Queries are encoded in BCD rather than TBCD digit format.
- Additional LATA and information digit parameters are encoded in the query message.
- Parameter identification for the Billing Indicator parameter is changed from #DF#44 to #DF#41, and only the enhanced version of the parameter is supported.

TCAP messaging has also been enhanced to provide the following additional benefits:

- announcement parameter support
- N00 passthru support
- automatic code gapping (ACG) handling datafill
- SCP overload ACG handling
- multiple invoke components
- greater parameter support and more flexible parameter parsing
- dialed number identification service (DNIS) parameter handling
- carrier identification code (CIC) parameter handling (when CIC routing is available)
- feature byte processing
- overflow routing numbers

Travel card validation

TCAP messaging allows travel card validation to occur at the switch or at the SCP. The location of travel card validation and the TCAP messaging requirements are governed by parameters located in table Office Variable (OFCVAR), table Office Engineering (OFCENG), and table Office Option (OFCOPT).

FGD and other trunk group types support travel card validation. Specific trunk group selection is based on the presence of the MCCS field in table TRKGRP and whether the “tone” or “voice prompt” method is required.

- Tone
  - FGA
  - FGB
  - FGC
  - FGD
  - DAL
  - ISUP IMT

- Voice Prompt
  - universal access (UA) Per-Trunk Signaling (PTS) FGD
  - UA IMT
  - UA ISUP FGD

— UA FGC

— “pure” FGD (“0+”) on PTS FGD

— “pure” FGD (“0+”) on ISUP FGD

The travel card validation process is made up of the following steps:

1 DMS switch receives a call that requires travel card validation.

2 DMS switch sends a TCAP invoke query to the SCP. The query contains the 14-digit travel card billing number. Information on “called” and “calling number” parameters may also be included if the ENHANCED_TCN_TCAP parameter is set to “Y.”

Note: The content of these parameters is dependent on the status of the call (national versus international), the type of trunk originating the call (FGA, FGB, FGC, FGD, PRI, IMT, DAL), and the type of digits transferred.

3 SCP either validates or does not validate the travel card number.

4 Results of the validation are sent back to the switch using TCAP messaging.

5 DMS switch routes the call to its destination.

Authcode validation

TCAP messaging allows the UCS DMS-250 switch to send authcode numbers to remote databases on the SS7 network for validation.

The authcode validation process is made up of the following steps:

1 DMS switch receives a call that requires account code validation.

Note: Authcode data is collected by call processing routines and comprises the authcode digits from the dialed digit stream, the originating trunk group, or an aggregate of partially filed and partially dialed data.

2 Switch determines what type of authcode validation search is required based on parameters located in table Authcode Index (AUTHDIN). Search options include:

- in-switch authcode database (maximum available databases = 5)
- authcode database at the remote SCP (maximum available databases = 100)
- in-switch search followed by remote search at the SCP

3 If a remote search is required, the switch sends a TCAP invoke message containing the authcode billing number (five to seven digits) to the SCP.

4 SCP validates the authcode.

5 Results of the validation are sent back to the switch using TCAP messaging.

DMS switch routes the call to its destination.

Account code validation

TCAP messaging allows the UCS DMS-250 switch to send account codes to centralized databases on the SS7 network for validation.

The account code validation process is made up of the following steps:

1 DMS switch receives a call that requires authcode validation.

2 Switch sends a TCAP invoke message to the SCP that contains the authcode number and one of the following additional parameters:

- account code number (range = 1 to 5 digits or 1 to 12 digits) to be validated against the authcode
- ANI number (10 digits) and account code number (range = 1 to 5 digits or 1 to 12 digits) to be validated against the ANI
- TCN number (14 digits) and account code number (range = 1 to 5 digits) to be validated against the TCN

- authcode number (range = 5 to 7 digits), account code number (range = 1 to 5 digits or 1 to 12 digits), and the private speed number (2 digits) that needs to be translated against authcode

Note: The SCP interprets the invoke query based on the number of parameters in the message, the type of digits for each, and the length and numbering plans of the numbers in the digit parameters.

3 SCP validates the authcode and the private speed number (if required).

4 Results of the validation or translation are sent back to the switch using TCAP messaging.

5 Switch routes the call to its destination.

Speed number translation

TCAP messaging allows the UCS DMS-250 switch to send private speed numbers to centralized databases on the SS7 network for translation. The private speed number can be translated by itself, against an authcode, or against an account code with the same authcode.

The speed number translation process is made up of the following steps:

1 DMS switch receives a call that requires speed number translation.

2 Switch sends a TCAP invoke message to the SCP that contains one of the following parameters:

- authcode number (range = five to seven digits) and a private speed number (two digits) that needs to be translated against authcode
- authcode number (range = five to seven digits), account code number (range = one to five digits or one to 12 digits), and private speed number (two digits) that needs to be translated against authcode

3 SCP translates the private speed number and validates the account code (if required).

4 Results of the translation are sent back to the switch using TCAP messaging.

5 Switch routes the call to its destination.

Universal international freephone

What is a universal international freephone number?

A universal international freephone number (UIFN) is an international toll-free number. It allows a person in one country to call another country toll-free. You can register this toll-free number, so people can use it all over the world.

The UCS DMS-250 switch supports incoming exclusion screening and three translations systems with UIF calls:

- national
- international (IN)
- international partitioned (IP)

How do I dial a UIFN?

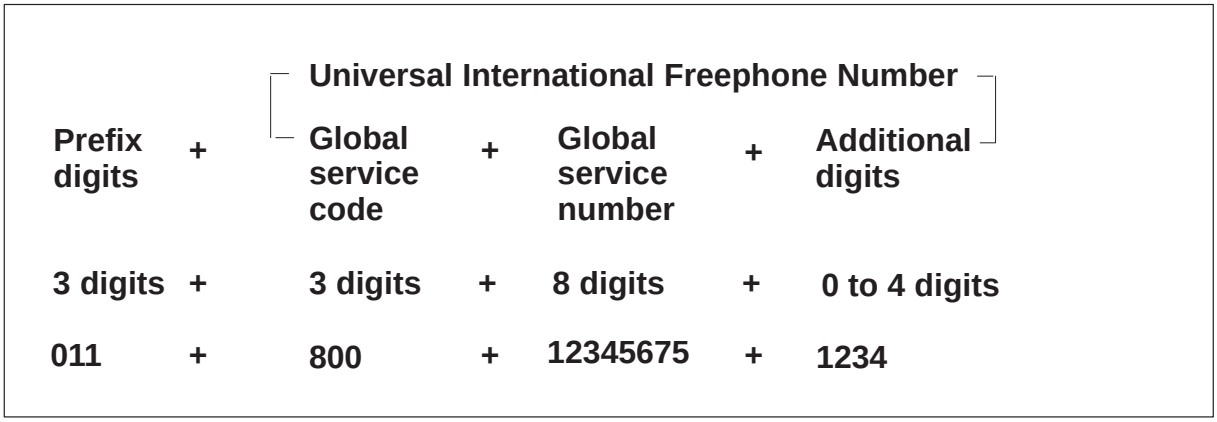
To dial a UIFN, you must first dial the three-digit international prefix number. For example, 011. The UIFN consists of the following:

- 3-digit global service code (GSC), such as 800
- 8-digit global subscriber number (GSN)
- 0 to 4 additional digits

  The additional digits accommodate international dialing plans that use more than 11 digits. The UCS DMS-250 switch ignores these digits during routing and translations.

See figure 17-1, Format of the UIFN.

Figure 17-1
Format of the UIFN



Which trunk agency interworkings are supported?

The PTS FGD and SS7 FGD trunks can serve as originating or terminating trunks in UIF calls. See tables 17-1, PTS/ SS7 FGD as the originating trunk agency, and 17-2, PTS/SS7 FGD as the terminating trunk agency, to learn which trunk agencies interwork with these FGD trunks.

Table 17-1
PTS/ SS7 FGD as the originating trunk agency

PTS FGD/ SS7 FGD as the originating trunk agency	supported terminating trunk agencies
PTS FGD/ SS7 FGD	DAL-TIE
PTS FGD/ SS7 FGD	FGA
PTS FGD/ SS7 FGD	FGB
PTS FGD/ SS7 FGD	FGC
PTS FGD/ SS7 FGD	PTS FGD
PTS FGD/ SS7 FGD	SS7 FGD
PTS FGD/ SS7 FGD	ISDN PRI
PTS FGD/ SS7 FGD	PTS INTER IMT
Note: UIF calls can also originate on PTS/ SS7 FGD and DAL TIE AXXESS trunk agencies. For information on UIF calls on the AXXESS trunk agencies, see the *UCS DMS-250Flexdial Application Guide*.	
—continued—	

Table 17-1
PTS/ SS7 FGD as the originating trunk agency (continued)

PTS FGD/ SS7 FGD as the originating trunk agency	supported terminating trunk agencies
PTS FGD/ SS7 FGD	SS7 INTRA-IMT
PTS FGD/ SS7 FGD	SS7 INTER-IMT
Note: UIF calls can also originate on PTS/ SS7 FGD and DAL TIE AXXESS trunk agencies. For information on UIF calls on the AXXESS trunk agencies, see the *UCS DMS-250Flexdial Application Guide*.	
—end—	

Table 17-2
PTS/SS7 FGD as the terminating trunk agency

Supported originating trunk agencies	PTS FGD/ ISUP FGD as the terminating trunk agency
DAL-TIE	PTS FGD/ SS7 FGD
ISDN PRI	PTS FGD/ SS7 FGD
PTS INTER-IMT	PTS FGD/ SS7 FGD
PTS INTRA-IMT	PTS FGD/ SS7 FGD
SS7 INTER-IMT	PTS FGD/ SS7 FGD
SS7 INTRA-IMT	PTS FGD/ SS7 FGD
Note: UIF calls can also terminate to PTS/ SS7 FGD and DAL TIE AXXESS trunk agencies. For information on UIF calls on the AXXESS trunk agencies, see the *UCS DMS-250Flexdial Application Guide*.	

How does UIFN work?

The UCS DMS-250 switch can translate the UIFN or it can send the UIFN, through CAIN, to an SCP for translations. To learn how the UCS DMS-250 switch translates the UIFN, see the section entitled, "How the UCS DMS-250 switch translates UIFNs." To learn how to translate the UIFN at the SCP, see the *UCS DMS-250 NetworkBuilder Application Guide*.

How the UCS DMS-250 switch translates UIFNs

The following process describes the steps the UCS DMS-250 switch goes through to translate a UIFN:

1 When the UIF call enters the UCS DMS-250 switch, the UIFN goes through standard pretranslations.

2 The UCS DMS-250 switch compares the GSC in the UIFN to the GSCs you entered in table UIFNGSC.

Note: The UIF call takes precedence if a GSC conflicts with a country code during international direct-dialed digit (IDDD) 3-stage UIF calls.

If	then
the UCS DMS-250 switch finds a match,	the UIF call goes through table UIFNDBS.
If the UCS DMS-250 switch is unable to find a match,	it blocks the call, sends the call to feature not allowed (FNAL) treatment, and releases the call.

3 The UCS DMS-250 switch performs incoming exclusion screening. See the section entitled "Incoming exclusion screening" in this chapter.

4 The UCS DMS-250 switch translates the call in table UIFNDBS.

5 The UCS DMS-250 switch uses the translated number and the STS from the STS field in table UIFNDBS to route the call.

6 The UCS DMS-250 switch uses the TRANSYS field in table UIFNDBS, subtable UIFNFEAT to translate the call:

If the TRANSYS contains this value	then
NA	the UIFN number is translated to a domestic number and routed using the STS in table HNPACONT.
IP	the UIFN number is translated in tables CTHEAD and CTCODE.
IN	the UIFN number is translated in tables CCTR and OFRT.

Incoming exclusion screening

The UCS DMS-250 switch performs incoming exclusion screening on UIFNs, the same way it performs incoming exclusion screening on 800 called party billed numbers. To perform incoming exclusion screening it uses the calling party's NPA as an index into the incoming exclusion table, IEXCLUDE:

If	then
the NPA is allowed,	the call continues.
the NPA is disallowed	the call is blocked. See "If the exclusion status is BLOCKED or OFFBLOCK" in this table.
the exclusion status is OFFALLOW,	the call is allowed based on the NPA-NXX combination.
the exclusion status is BLOCKED or OFFBLOCK,	the call is blocked using NPAR treatment.
the NPA is not found,	the call continues without incoming exclusion screening.
Note: The exclusion status BLOCKED deals with the NPA; the exclusion status OFFBLOCK deals with the NPA-NXX combination.	

How do I activate the UIF feature?

Follow these instructions to activate the UIF feature:

1 Order and activate software optionality control (SOC) N00R0200, UIF numbering service.

Note: To process the UIFN through an SCP, you don't need to order and activate SOC N00R0200. See the *UCS DMS-250 NetworkBuilder Application Guide*.

2 Enter datafill into table STDPRTCT, subtable STDPRT, ES selector. Table 17-3, shows which fields relate to UIF in table STDPRTCT, subtable STDPRT, ES selector.

Table 17-3
Table STDPRTCT, subtable STDPRT, ES selector

Field	Description	Value
SVCFEAT	a service feature option	UIFNDBS
MIN_DIGITS	the minimum number of digits for UIF calls	14
MAX_DIGITS	the maximum number of digits for UIF calls	14 to 18
NOPREDIG	the number of prefix digits	3
FROMDIGS		6 to 18 digits (3-digit international prefix + 3-digit GSC from table UIFNGSC)
TODIGS		6 to 18 digits (3-digit international prefix + 3-digit GSC from table UIFNGSC)
STDPRTOPT	standard pretranslations options	• NIL • CAINGRP
Note: Only use the CAINGRP option if you plan to translate the call through an SCP. See the *UCS DMS-250 NetworkBuilder Application Guide*.		
—end—		

3 Enter an STS in table HNPACONT.

4 Enter datafill into table UIFNDBS and its subtable UIFNFEAT.

Table UIFNDBS translates the UIFN to the called party's number. Its subtable derives an STS for routing. See Table 6-4, Table UIFNDBS, and Table 6-5, Table UIFNDBS, subtable UIFNFEAT, to learn how to enter datafill into these tables.

Note: To process the UIFN through an SCP, you don't need to enter datafill into table UIFNDBS. See the *UCS DMS-250 NetworkBuilder Application Guide*.

Table 17-4
Table UIFNDBS

Field	Description	Value
UIFNLEN	the length of the UIFN;this value does not include the additional digits	11
UIFNFEAT	the UIFN feature	• 0 if the UIFN subtable is empty • 1 if the UIFN subtable contains at least one entry

Table 6-5
Table UIFNDBS, subtable UIFNFEAT

Field	Description and action	Value
INWATDIG	INWARD WIDE AREA TELECOMMUNICATION DIGITS. Enter the UIFN; it is the key to this subtable. ***Note:*** Exclude the additional digits from the UIFN as the key to this subtable.	a maximum of 11 digits consisting of the Global Service Code (GSC) plus the Global Service Number (GSN)
IEXCIDX	INCOMING EXCLUSION INDEX. IEXCIDX specifies the incoming exclusion index field. If IEXCIDX = 0, then no screening is performed. If IEXCIDX > 0, then the incoming exclusion screening is performed.	0 to 255
Note: If the UCS DMS-250 switch displays error messages while you are entering datafill into this table, see table 17-6, "Error messages related to table UIFNDBS, subtable UIFNFEAT."		
—continued—		

Table 6-5
Table UIFNDBS, subtable UIFNFEAT

Field	Description and action	Value
STS	SERVICE TRANSLATION SCHEME. Enter the STS used to route the call. The STS must be entered in table HNPACONT prior to entry in this table.	a valid STS
TRANSNUM	TRANSLATED NUMBER. Enter the translated number for the corresponding UIFN. TRANSNUM is used along with STS when routing the call.	7 to 18 digits long using the digits 0 to 9
TRANSYS	TRANSLATION SYSTEM. TRANSYS specifies the type of routing to process the transnum for call processing. Enter NA for OFFNET/ONNET calls. Enter IN for International on IDDD calls. Enter IP for International Partitioned on IDDD calls.	NA, IN, IP
Note: If the UCS DMS-250 switch displays error messages while you are entering datafill into this table, see table 17-6, "Error messages related to table UIFNDBS, subtable UIFNFEAT."		
—end—		

Table 17-6
Error messages related to table UIFNDBS, subtable UIFNFEAT

This error message...	means	Action to take
`**INWATDIG LENGTH ERROR*** Only as many digits as specified in the corresponding head table tuple are allowed for INWATDIG UIFNLEN digits of {0,1, 2, 3, 4, 5, 6, 7, 8, 9} **********`	you entered an incorrect length of digits in the INTWATDIG field.	Enter a maximum of 11 digits in the INWATDIG field.
`*****INWATDIG ERROR******* INWATDIG can only contain UIFNLEN digits of {0, 1, 2, 3, 4, 5, 6, 7, 8, 9} **********`	you entered characters that the UIF feature does not support.	Enter a valid UIFN using only the digits 0 to 9.
—continued—		

Table 17-6
Error messages related to table UIFNDBS, subtable UIFNFEAT

This error message...	means	Action to take
TRANSNUM LENGTH ERROR TRANSNUM must be from 7 to 18 digits in length **********	you entered the incorrect length of digits in the TRANSNUM field.	Enter a seven-digit to 18-digit translated number.
******TRANSNUM ERROR******* TRANSNUM can only contain digits of {0, 1,2,3,4,5,6,7,8,9} **********	you entered characters that the UIF feature does not support	Enter a valid translated number using only the digits 0 to 9.
—end—		

5 Enter datafill into table UIFNGSC.

Table UIFNGSC contains the GSC. See table 17-7, Table UIFNGSC to learn how to enter datafill into this table.

Table 17-7
Table UIFNGSC

Field	Description	Value
GSC_KEY	GLOBAL SERVICE CODE KEY. Enter a 3-digit GSC. ***Note:*** This table supports 1000 GSCs.	3 digits of 0 to 9
Note: If you fail to enter the GSC in this table, the UCS DMS-250 switch sends the UIF call to feature not allowed (FNAL) treatment.		

6 Enter datafill into PASS_UIFN_CALL office parameter in table OFCVAR.

This parameter controls the UIF call routing in case the UIFN is not in table UIFNDBS. If the UIFN is not in table UIFNDBS, the call is passed to the next switch using the common language location identifier (CLLI), the name of a specific trunk, in the office parameter. A vacant (VACT) treatment is issued if the office parameter is set to VACT.

Table 17-8
Table OFCVAR, PASS_UIFN_CALL office parameter

Office parameter	Description	Value
PASS_UIFN_CALL	when the UIFN is not in table UIFNDBS, this parameter passes the UIFN to the next switch if a trunk name is specified or issues VACT treatment	• S <CLLI name> • VACT ***Note:*** VACT is the default value

How does the UIFN feature affect billing?

The call detail report (CDR) captures the international prefix digits, the GSC, and the GSN. It does not capture the additional digits. The values in the BILLNUM and PREDIG fields of the CDR notify you of a UIF call.

The UIF feature affects the following CDR fields:

- The BILLNUM field contains the international prefix digits and the UIFN, but it excludes the additional digits from the UIFN.
- The DIALEDNO field contains the UIFN, but it excludes the additional digits from the UIFN.
- The CALLEDNO field contains the first 15 significant digits of the translated number. The translated number is in field TRANSNUM of table UIFNDBS.
- The PREDIG and CNPREDIG fields contain the number 3, which stands for the three-digit international prefix.

How does universal international freephone interact with other features?

NetworkBuilder

CAIN protocol is supported for out-of-switch translations. See the *UCS DMS-250 NetworkBuilder Application Guide* for more information.

Incoming exclusion screening

Incoming exclusion screening is supported for the NPA of the calling party number. See “Incoming exclusion screening” in this chapter for more information.

Routing

National, international, and international partitioned routing are supported.

AXXESS trunk agents

AXESS trunk agents support UIFN calls. The UIFN function is incorporated within the Address Digit Collectable (ADDR/ADDRPARM). See the *UCS DMS-250 FlexDial Application Guide* for more information.

PRA trunk agents

PRA trunk agents support UIFN calls. The UCS DMS-250 PRA trunk applies the FNAL treatment when a call is not UIFN but any one of the following conditions is set for the call.

- Universal Access (UA)
- Mechanized Calling Card Services (MCCS)
- EANT Cut-Thru
- EANT Transitional
- Authcode required
- INWATS

Universal access calls

The UCS DMS-250 switch applies numbering plan area restricted (NPAR) treatment when a caller dials a UIFN on a universal access (UA) call.

Authorization code calls

The UCS DMS-250 switch applies NPAR treatment when a caller dials a UIFN on a FGD cut-thru call; it applies FNAL treatment when a caller dials a UIFN on a FGD transitional call.

Mechanized calling card services

The UCS DMS-250 switch applies NPAR treatment when a caller dials a UIFN on an MCCS call; UIF and MCCS calls use different dialing plans.

List of terms

ACG
Automatic Call Gapping

ACCTIDX
Account Index

ACCTLEN
Account Length

ACCTVAL
Account Value

ADDR
Address Digits

ADIN
Authcode Database Index

AIN
Advanced Intelligent network

ANI
Automatic Number Identification

ANISCUSP
ANI Screening

ANISP
ANI Spill

Authcode
Authorization Code

BC
Bearer Capability

BCDEF
Bearer Capability Definition

C101
type of test trunk

CAC
Carrier Access Code

CAIN
Carrier Advanced Intelligent network

CARRNUM
Carrier Number

CCAP
Calling Card Prompt

CCC
Pseudo Country Code

CCITT
International Standards Organization

CCNV
Calling Card Not Valid

CCS7
Common Channel Signalling 7; also see SS7

CDR
Call Detail Record

CCTO
Calling Card Time Out

CG
customer group

CGN
Calling Number

CGN_Digits
Calling Number Digits

CGN_PI
Calling Number Presentation Indicator

CGPA
Calling Party Address

CHRG
charge number

CLID
Calling Line Identification

CICROUTE
Call Identification Route

CI
command interpreter

CIC
Carrier Identification Code

CICDELV
CIC Delivery

CICRTE
CIC Route Option

CICROUTE
CIC Route

CICSIZE
CIC Size

CIP
Carrier Identification parameter

CLLI
Common Language Location Identifier

CNG
Called Number Group

CPE
Customer Premises Equipment

CPI
Calling Party Identification

CTRUAUTH
Cut-thru Authorization Code

DAL
Direct Access Line trunk group type

DCP
Database Control Point

DCR
Dynamically Controlled Routing

DMS
Digital Multiplex Switch

DRAM
Digital Recorded Announcement Machine

DTC
digital trunk controller

DTCI
Digital Trunk Controller ISDN

DTFL
Datafill Error

DTMF
Dual-Tone, Multi-Frequency

EANT
Equal Access Network Trunk

EDAL
Electronic Dedicated Access Line

EDRAM
Enhanced Digital Recorded Announcement Machine

EEPROM
Electrically Erasable Programmable Read Only Memory

FAR
Facility Request message

FCC
Federal Communications Commission

FDNZ
First Digit Not Zero

FGA
Feature Group A

FGB
Feature Group B

FGC
Feature Group C

FGD
Feature Group D

GSC
Global Service Code

GSN
Global Subscriber Number

IAM
Initial Address Message

IBN
Integrated Business Network

IDDD
International Direct Digit Dialing

IDPRTNM
Information Digits Pretranslation Name

IE
Information Element

IEC
Inter Exchange Carrier

IMT
Inter Machine Trunk

INAC
Invalid Account Code

IN
Intelligent Network

IN Translations
International Translations

IP Translations
International Partitioned Translations

INTLSTS
International Serving Translations Scheme

INTOAPOS
International Operator Assisted Position

INWATS
Inward Wide Area Telecommunications Service

INWFEAT
Inward Wide Area Telecommunications Feature

INWTRANS
Inward Wide Area Translations

IPL
Initial Program Load

ISDN
Integrated Services Digital Network

ISUP
Integrated Services Digital Network User Part

ITU
International Telecommunication Union; also see CCITT

KP
start of MF digit stream

LATA
Local Access and Transport Area

LCNV
LEC Calling Card Not Valid

LEC
Local Exchange Carrier

LECV
LEC Calling Card Valid

MAP
Maintenance and Administration Position

MCCS
Mechanized Calling Card Service

MF
Multi-Frequency

MLTCOS
Multiple Class of Service

MLTCOSID
Multiple Class of Service Identification

MLTSTAGE
Multiple Stage

MPA
Multiple Profile ANI

MTM
Maintenance Trunk Module

MVP
Mechanized Voice Prompts

NAPA
North American Numbering Plan

NATLSTS
National Serving Translation Scheme

NCOS
Network Class Of Service

NETSEC
Network Security

NN
National Number

OCCINFO
Other Common Carrier Information

OCCNAME
Other Common Carrier Name

OLI
Originator Line Information

OM
Operational Measurement

ONAL
Offnet Access Line

ONAT
Offnet Access Trunk

OPART
Originating Partition

OPCHOICE
Operator Choice

OPIDX
Operator Index

OPCHIDX
Operator Choice Index

PANI
Pseudo Automatic Number Identification

PCL
Product Computing Module

PDIL
Partial Dial

PFGD
Pure Feature Group D access

PIC
Point In Call

PRI
Primary Rate Interface

PRTNM
Pretranslator Name

PSIG
Permanent Signal

PSPDSEIZ
Permanent Signal; Partial Dial on Seizure Timing

PTS
Per Trunk Signalling

RECALLDT
Recall Dial Tone

REL
Release

RES
Resume

RLC
Release Complete

RLT
Release link trunk

RODR
Reorder treatment

RTU
Right To Use

SCCP
Signaling Connection Control Part

SCP
Service Control Point

SNDRPSIG
Senderized Permanent Signal

SNPA
Serving Numbering Plan Area

SOC
Software Optionality Control

SS7
Signaling System 7; also see CCS7

SSP
Service Switching Point

ST
end of MF digit stream

STDPRTCT
Standard Pretranslator

STP
Signal Transfer Point

STS
Serving Translation Scheme

SUS
Suspend message

TCAP
Transaction Capabilities Application Part

TCN
Travel card number

TCNFAST
Travel Card Number Fast

TMCICDLV
Terminating Carrier Identification Code Delivery

TNS
Transit Network Selector

TPART
Terminating Partition

TSUSR
Trunk Group Suspend/Resume Timer

tuple
a row in a table on the UCS DMS-250 switch

UA
Universal Access

UCP
Universal Carrier Protocol

UCS
Universal Carrier Services

UIF
Universal International Freephone

UIFN
Universal International Freephone Number

UTR
Universal Tone Receiver

VACT
Vacant Code

VPIDX
Voice Prompt Index

VPROMPTS
Voice Prompts

XPM
Extended Peripheral Module

XXX(X)
Carrier Identification Code

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Use the following table for ordering Nortel Networks NTPs (Northern Telecom Publications) and Product Computing-Module Loads (PCLs):

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UCS DMS-250

Feature Group D (FGD) Application Guide

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