297-2621-100

Digital Switching Systems

UCS DMS-250

General Description

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Digital Switching Systems

UCS DMS-250

General Description

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Preliminary release 03.01 for software UCS08 (CSP08).

Contents

About this document

This manual provides an overview of the UCS DMS-250 switch so as to give the reader a high-level understanding of the functionality available with the product.

When to use this document

This NTP should be used to obtain a high-level overview of the UCS DMS-250 switch and to answer questions such as:

- What is the UCS DMS-250 switch?
- How does it fit into the network?
- What types of features and services are available and how are they used?
- How does it handle billing?
- How is it maintained?

Intended audience

This publication assists personnel responsible for marketing and sales, planning, operations, and support of the UCS DMS-250 switch.

How this document is organized

The chapters in this document provide the following:

Chapter 1, Product overview

Chapter 1 provides a high-level introduction to the UCS DMS-250 switch product.

Chapter 2, Software overview

Chapter 2 provides an overview of the software architecture, and descriptions of UCS software loads and feature options.

Chapter 3, Hardware overview

Chapter 3 provides an overview of the hardware architecture, and descriptions of UCS DMS-250 switch hardware.

Chapter 4, System access

Chapter 4 introduces and briefly describes system access with the UCS DMS-250 switch.

Chapter 5, Translations and routing

Chapter 5 introduces and briefly describes the UCS DMS-250 switch translations and routing functions.

Chapter 6, Screening and validation

Chapter 6 introduces and briefly describes the UCS DMS-250 switch screening and validation functions.

Chapter 7, Call information delivery features

Chapter 7 introduces and briefly describes call information delivery on the UCS DMS-250 switch.

Chapter 8, Mechanized Calling Card Service

Chapter 8 introduces and briefly describes the UCS DMS-250 switch Mechanized Calling Card Service.

Chapter 9, N00/NXX services

Chapter 9 introduces and briefly describes the N00 and NXX services on UCS DMS-250 switch.

Chapter 10, Intelligent network architecture

Chapter 10 introduces and briefly describes the different intelligent network architectures used for the UCS DMS-250 switch.

Chapter 11, Billing

Chapter 11 provides an overview of the billing collection, storage, and transfer functions.

Chapter 12, Operations, administration, and maintenance (OA&M)

Chapter 12 contains items which are used in the operation and maintenance of the UCS DMS-250 switching system.

Appendix A, UCS DMS-250 switch features

Appendix A provides a brief description of the UCS features listed by functionality and by software release; it also includes a synopsis of each listed feature

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 *next* 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.

To determine which version of this document applies to the software in your office and how documentation for your product is organized, check the release information in UCS DMS-250 Master Index.

This document is written for all UCS DMS-250 offices in World Zone 1 (US, Canada, Caribbean, except Haiti and Cuba). More than one version of this document may exist. To determine whether you have the latest version of this document and how documentation for your product is organized, check the release information in UCS DMS-250 Master Index.

References in this document

The following documents are referred to in this document:

- *AIN 0.2 Switch-SCP/Adjunct Interface Generic Requirements*, Bellcore Specification GR-1299-CORE, Issue 2
- *AIN 0.2 Switching Systems Generic Requirements*, Bellcore Specification GR-1298-CORE, Issue 2
- *Bell Communications Research Specification for Signalling System Number 7*, Bellcore Specification GR-246-CORE, Issue 1
- *Device Independent Recording Package Administration Guide*, 297-1001-345
- *Digital Recorded Announcement Machine DRAM and EDRAM Guide*, 297-1001-527
- *DMS-100 Family Software Optionality Control User's Manual*, 297-8991-901
- *Network Management System Reference Manual*, 297-1001-453
- *Switching Systems Generic Requirements for Interexchange Carrier Interconnection Using the Integrated Services Network User Part (ISUP)*, Bellcore Specification GR-394-CORE, Issue 1

- *UCS05 Software Release Document*, PLN-2621-004
- *UCS06 Software Release Document*, PLN-2621-004
- *UCS07 Software Release Document*, PLN-2621-004
- *UCS09 Software Release Document*, PLN-2621-004
- *UCS11 Software Release Document*, PLN-2621-004
- *UCS DMS-250 NetworkBuilder AIN 0.2 TCAP Protocol Definition*, PLN-2621-010 (Contact your Nortel Sales Representative for information on obtaining this document.)
- *UCS DMS-250 Master Index of Publications*, 297-2621-001
- *UCS DMS-250 ISDN Reference Manual*, 297-2621-106
- *UCS DMS-250 Dialable Wideband Services Feature Application Guide*, 297-2621-110
- *UCS DMS-250 Software Optionality Control User's Manual*, 297-2621-301
- *UCS DMS-250 One Night Process Procedures Guide*, 297-2621-303
- *UCS DMS-250 Mechanized Calling Card Services (MCCS) Application Guide*, 297-2621-305
- *UCS DMS-250 Billing Server Application Guide*, 297-2621-320
- *UCS DMS-250 SuperNode Operational Measurements (S/OM) Reference Manual*, 297-2621-322
- *UCS DMS-250 International Application Guide*, 297-2621-327
- *UCS DMS-250 Gateway IMT Application Guide*, 297-2621-331
- *UCS DMS-250 CIC Routing Application Guide*, 297-2621-333
- *UCS DMS-250 Basic Translations Guide*, 297-2621-335
- *UCS DMS-250 Reorigination Application Guide*, 297-2621-336
- *UCS DMS-250 SS7 RLT Feature Application Guide*, 297-2621-345
- *UCS DMS-250 PRI RLT Application Guide*, 297-2621-347
- *UCS DMS-250 Transaction Capabilities Application Part (TCAP) Application Guide*, 297-2621-355
- *UCS DMS-250 X.25 Data Transport Application Guide*, 297-2621-360
- *UCS DMS-250 NT6X50EC Integrated Echo Canceller Application Guide*, 297-2621-365
- *UCS DMS-250 NetworkBuilder Application Guide*, 297-2621-370
- *UCS DMS-250 Local Number Portability Application Guide*, 297-2621-371

- *UCS DMS-250 CAIN/FlexDial Interactions*, 297-2621-372
- *UCS DMS-250 Programmable Service Node (PSN) Application Guide*, 297-2621-380
- *UCS DMS-250 Feature Group D (FGD) Application Guide*, 297-2621-385
- *UCS DMS-250 FlexDial Framework Application Guide*, 297-2621-390
- *UCS DMS-250 Billing Records Application Guide*, 297-2621-395
- *UCS DMS-250 Commands Reference Manual*, 297-2621-819
- *UCS DMS-250 Alarm and Performance Monitoring Procedures*, 297-2621-543
- *UCS DMS-250 Operational Measurements Reference Manual*, 297-2621-814
- *UCS DMS-250 Logs Reference Manual*, 297-2621-840
- *UCS DMS-250 Data Schema Ref. Manual*, 297-2621-851
- *DMS-10 and DMS-100 Product Documentation Directory*, 297-8991-001.

Information about related documents can be found in either the *UCS DMS-250 Master Index of Publications*, or the *DMS-10 and DMS-100 Product Documentation Directory.*

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)

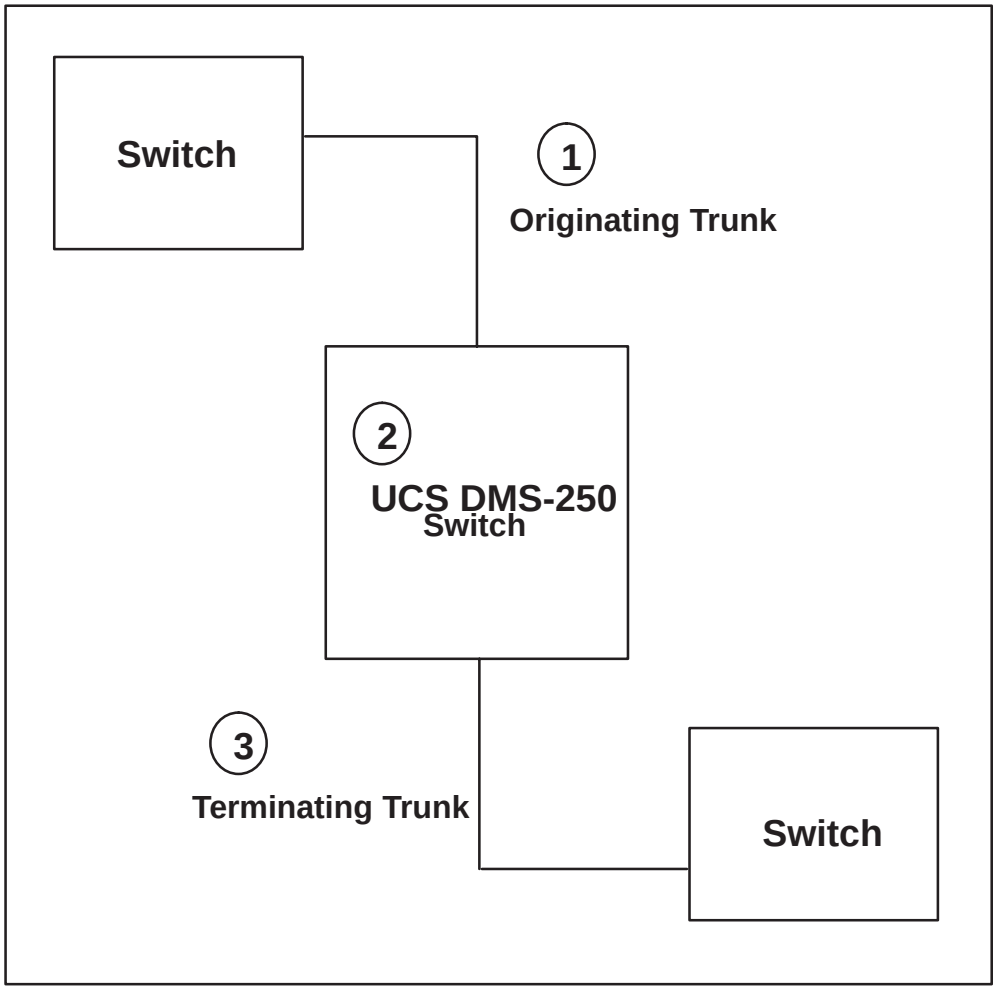
Example of a MAP response:

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

Product overview

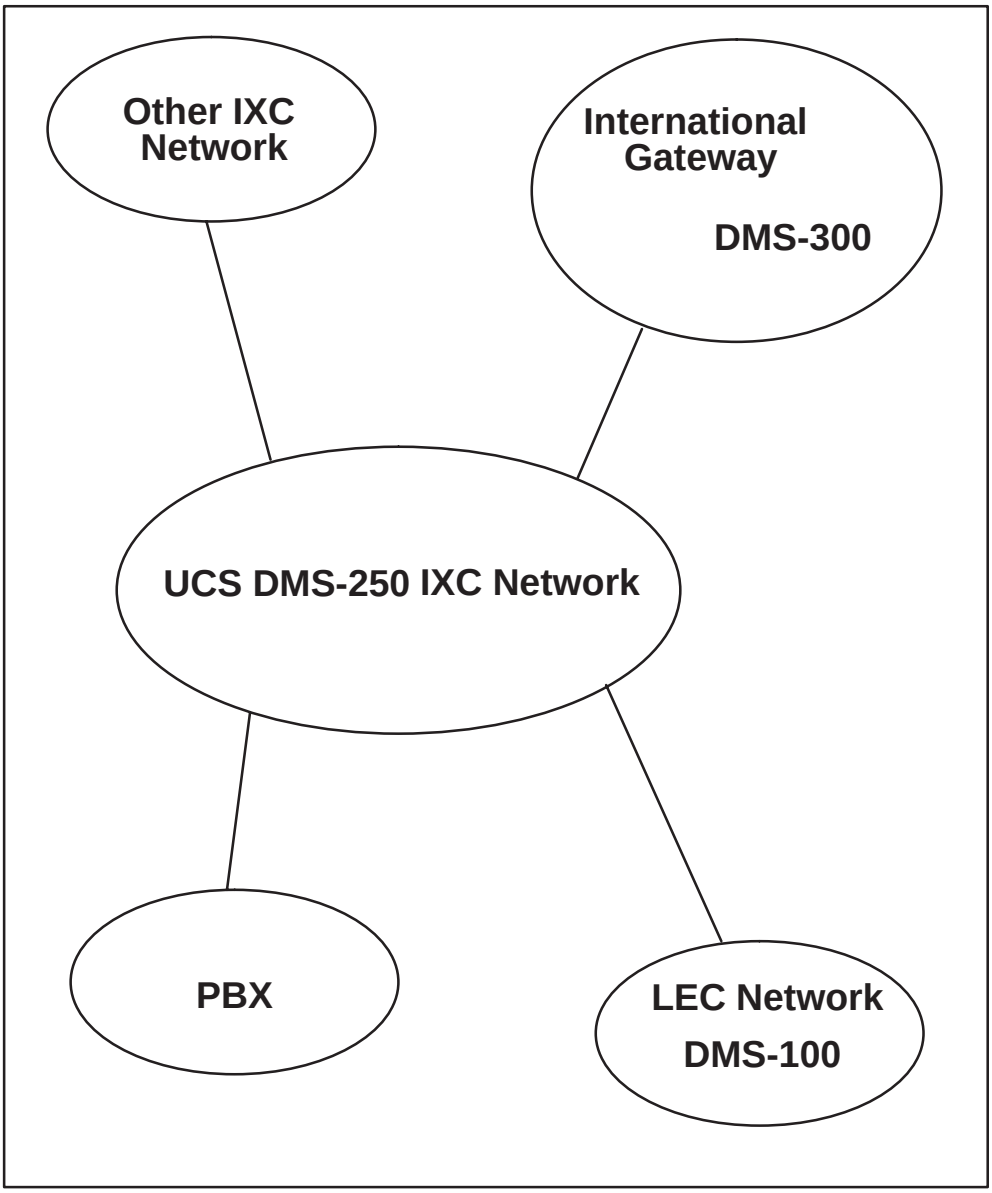
The UCS DMS-250 switch is a tandem digital multiplexing switch (DMS) that processes Inter Local Access and Transport Area (LATA) long distance phone calls. The UCS DMS-250 switch provides transport switching functions for small, medium, or large interexchange carriers (IXCs), as shown in Figure 1-1.

Figure 1-1
UCS DMS-250 switch functionality



The UCS DMS-250 switch processes phone calls originating from one local exchange carrier (LEC) and transports them for connection to a caller outside the local area. To process a call, a UCS DMS-250 switch interacts with Intra LATA switches such as the DMS-100. It may also interact with private branch exchanges (PBX), other carrier switches, and international gateway switches, as shown in Figure 1-2.

Figure 1-2
UCS DMS-250 switch network applications



Key characteristics of the UCS DMS-250 switch

The modular hardware architecture of the UCS DMS-250 switch facilitates capacity expansion, allowing easy growth to match market needs. A system can grow from 480 to approximately 100,000 ports (depending on call mix) through incremental additions. Due to a redundant architecture, enhanced processors, additional switching matrices, peripherals, and trunk cards can be added without redesigning the system or interrupting service. This architectural redundancy also ensures a high degree of operational survivability. The UCS DMS-250 switch duplicates crucial system components, such as the core processing module ("hot" standby units), which are ready to take over operations automatically, if necessary.

The DMS family switching systems all operate on a common hardware base platform. This universality lends flexibility to the UCS DMS-250. The UCS DMS-250 system can be upgraded to function with an international platform, utilizing the DMS-300. A UCS DMS-250 switch can also function as a DMS-500 switch when DMS-100 software and hardware are added.

The UCS DMS-250 system is compatible with industry-standard telecommunications protocols, including Common Channel Signaling No. 7 (CCS7), Integrated Services Digital Network (ISDN), and Bellcore's Advanced Intelligent Networking (AIN).

Services of the UCS DMS-250

The UCS DMS-250 switch offers a large portfolio of services. These services include:

- Multiple dial plans and protocols for switch access—The UCS DMS-250 switch supports standard protocols for connecting to LECs, PBXs, International Gateways, and other IXC switches. In addition, custom dial plans can be defined and implemented by the operating company through the FlexDial service.

  For more information on dial plans and protocols, refer to Chapter 4, "System Access".

- Call screening, validation and routing—Originating calls can be screened, and the billing number validated, based on information received with the incoming call. Call routing can be determined by such call characteristics as call type (for example, an operator services call), or the incoming Carrier Identification Code (CIC) received with the call.

  For more information on call screening, validation and routing, refer to Chapter 6, "Screening and Validation".

- N00/NXX services—The UCS DMS-250 switch supports call processing for services triggered by the subscriber dialing 5XX, 7XX, 8XX, or 9XX. For example, 800 and 888 calls are supported for toll-free service.

  For more information on N00/NXX services, refer to Chapter 9, “N00/NXX services”.

- Calling Card services—The Mechanized Calling Card Service (MCCS) allows subscribers to bill calls to a 14-digit Travel Card Number (TCN). A variety of options enable the operating company to customize the calling card services for their customers.

  For more information on Calling Card services, refer to Chapter 8, “Mechanized Calling Card Service”.

- Intelligent Networking Services—Three levels of intelligent networking are available using IN/1 TCAP, NetworkBuilder, or the Programmable Service Architecture (PSA). This enables operating companies to develop customized services that target their own specific market needs.

  For more information on Intelligent Networking Services, refer to Chapter 10, “Intelligent Network Architecture”.

- Billing Services—The UCS DMS-250 switch provides multiple billing options based primarily on the call capacity requirements of the switch. A call detail record (CDR) is used to capture information for all call originations. The CDR format can be the default format containing all information captured for the call, or the FlexCDR feature can be used to define a customized CDR content. In addition, tools and features are available to help the carrier detect possible billing fraud.

  For more information on billing, refer to Chapter 11, “Billing.”

- Operations, Administration and Maintenance—A variety of capabilities exist to help the operating company operate, maintain, and administer the switch, including:

  — local or remote maintenance interfaces

  — informational logs

  — operational measurements

  — external interfaces for transferring information to and from the switch

  — test facilities

  For more information on switch maintenance, refer to Chapter 12, “Operations, administration, and maintenance.”

Software overview

The UCS DMS-250 switch software programs consist of the following functional areas:

- operating system
- call processing
- administration
- database management

The operating system handles the control functions associated with the UCS DMS-250 switch. The operating system is a real-time system, capable of simultaneously handling a number of different tasks, such as managing calls in different stages of completion and performing routine maintenance functions. The functions performed by the operating system include: allocating storage, scheduling and timing of processes, sharing system resources, queuing, passing messages, maintaining the log, performing I/O, and providing file systems. The operating system also handles the command interpreter and program loader.

Call processing software provides the Call processing functions associated with different types of telephone agents, such as trunks in the UCS DMS-250 switch. Call processing procedures are executed when one action triggers the appropriate series of programmed instructions.

The administrative functions of the system are system loading and initialization, support of primary system functions, and the development of a plan for long-term growth and operation.

The database management software is the means for directing queries and changes to the system. The database is accessible from the MAP workstation. Refer to Chapter 12, “Operations, administration, and maintenance” for more information on the MAP utility. The facilities that enable a user to define, access, or modify system data at various levels include the following:

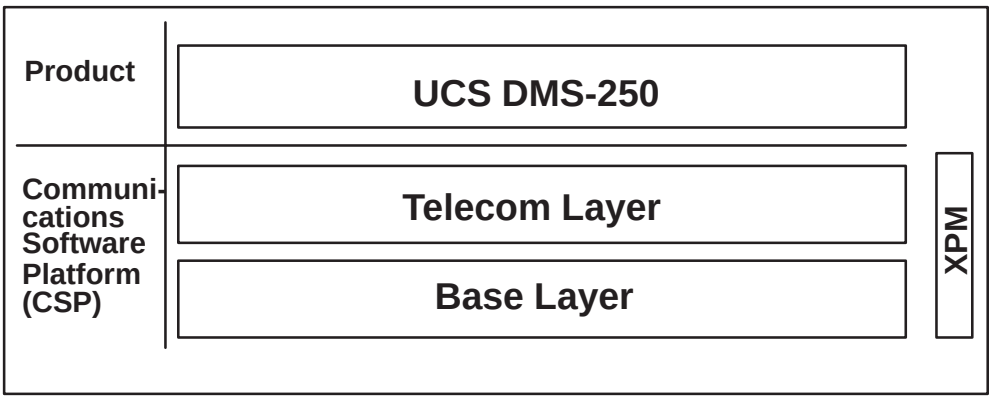
- table control

- table editor
- service order system
- journal file

The UCS DMS-250 switch software structure is modular. Each module contains the data and procedures necessary for specific software processes. The system operates by delegating functions to various interconnected modules.

Blocks of functionally related modules are arranged into a software layer, with each layer being an independent unit with standardized interfaces. One defining characteristic of a software layer is that the modules it contains may only call modules in the same or lower layers. The two basic layers of software are the Communications Services Platform (CSP), and the application (also called product) layer. Figure 2-1 illustrates these software layers in the UCS DMS-250 switch.

Figure 2-1
UCS DMS-250 software layers



The CSP layer, which accounts for approximately forty percent of the system's software, consists of the foundation software for the UCS DMS-250 switch. A CSP release is a naming convention for referencing three defined software feature sets as follows:

- base layer
- telecom layer
- extended peripheral module (XPM) load

The software in the CSP release serves as the common platform for all DMS-Family applications, with such fundamental capabilities as the base operating system, basic telephony functions, and standard operations, administration, and maintenance software.

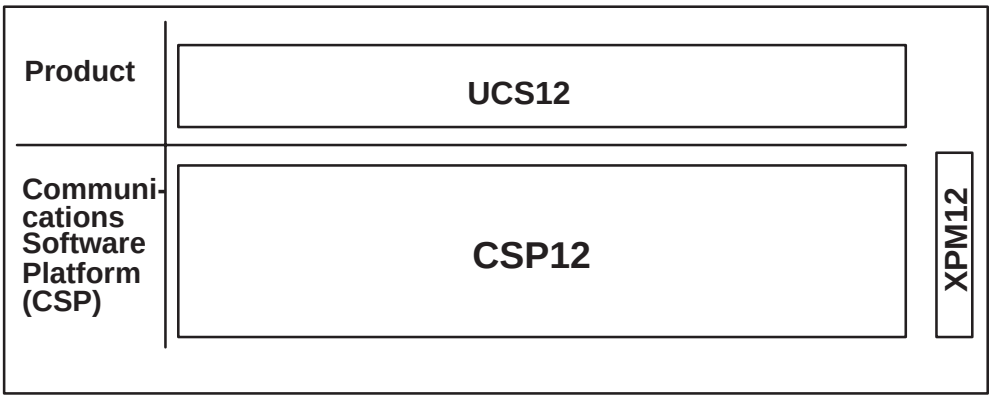
The application (or product) software layer contains specific software for a defined switch application and market type. This layer can be enhanced independently of CSP software to accelerate the development and testing of new software features meeting the specific requirements of each market. The application layer contains standard features integral to the UCS DMS-250 switch operation, as well as Software Optionality Control (SOC). Refer to the SOC section of this chapter for additional information.

By building the software system in layers, products are built on the stable, well defined CSP base. This decoupled software structure is beneficial in that it allows distinct layers to be upgraded on separate schedules. New features can be added with minimal upset to the working configuration of the system.

Product Computing Module (PCL)

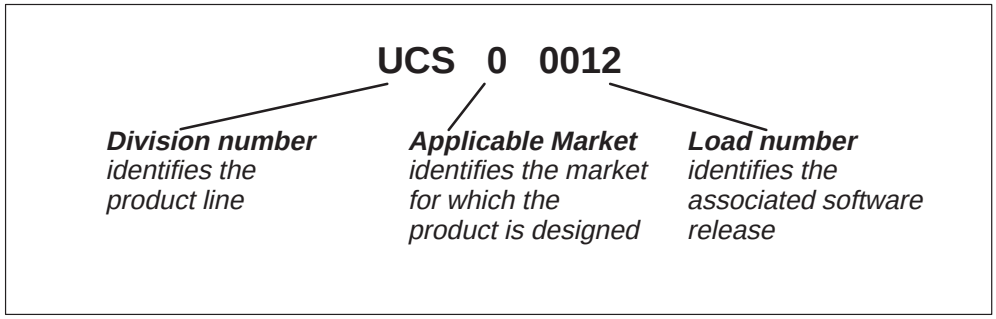
A Product Computing Module (PCL) is a layered software load containing a specific set of features. By providing defined loads, the aspects of engineering and provisioning are less complex. PCLs allow quick activation of new services through Software Optionality Control (SOC) without loading additional software. This allows the operating company to enable feature software already present in a load without the requirement of a field software upgrade. Figure 2-2 illustrates the concept of a PCL.

Figure 2-2
Example of a PCL



Each PCL load is given a name which contains eight characters, as shown in Figure 2-3.

Figure 2-3
PCL naming convention



UCS DMS-250 switch specific PCLs

For the UCS DMS-250 switch market, Nortel Networks defines the PCL in which they address each of the major long-distance market segments. As of UCS12, there is one PCL available. The STP Base is incorporated in the Tandem Services Base software. The EOPS Base is discontinued in UCS12. Refer to Table 2-1.

Table 2-1
PCL division and layer numbers

PCL number	NTP layer number	Applicable market
UCSO0012	2621	UCS DMS-250 Tandem Services (Base Services) and STP

Software Optionality Control (SOC)

Software Optionality Control (SOC) provides the operating company with a secure method of quickly deploying new services from the PCL already present in their switch. This switch-based utility manages software license keys that control access to individual features or entire services. Access to SOC is protected by passwords to prevent unauthorized or accidental service activation. To access an option protected by SOC, the operating company buys a right-to-use (RTU) password. No additional software is required to activate the SOC.

SOC provides three types of control for options:

- State control—This is for options that can be purchased and then used without restriction. These options can be set to one of the following states:

— On: the option is available for use

— Idle: the option can be datafilled, but not used

- Usage control—This is for options that are paid for on a usage basis; operating companies can either pay a fixed sum each time the option is used, or they can buy the right to use an option a limited number of times
- Combined control—This will allow state-controlled components to be grouped with usage-controlled components in a single option.

Each option within a PCL is assigned an eight digit ordering code. The first four characters of the code identify the software for a specific type of service. For example, all ordering codes beginning with CRDS refer to Card Services options. The last four numbers identify each option, as shown in the example in Table 2-2.

The number of SOCs change with each release, depending on the features that are added. For more detailed SOC information, refer to the *UCS DMS-250 Software Optionality Control User's Manual*. The following Table 2-2 lists some of the Card Services SOCs available to the UCS DMS-250 switch.

Table 2-2
UCS DMS-250 switch SOCs

Order Code	Name
CRDS0001	Card Services
CRDS0002	TCAP-Based Card Services
CRDS0003	MCCS MVP Card Services
CRDS0005	CRDS Quick Call
—end—	

Hardware overview

This chapter provides an overview of the hardware architecture of the Digital Multiplex System (DMS) 250. The DMS-250 is a system of networked components, which includes a CPU, memory units, and interfaces.

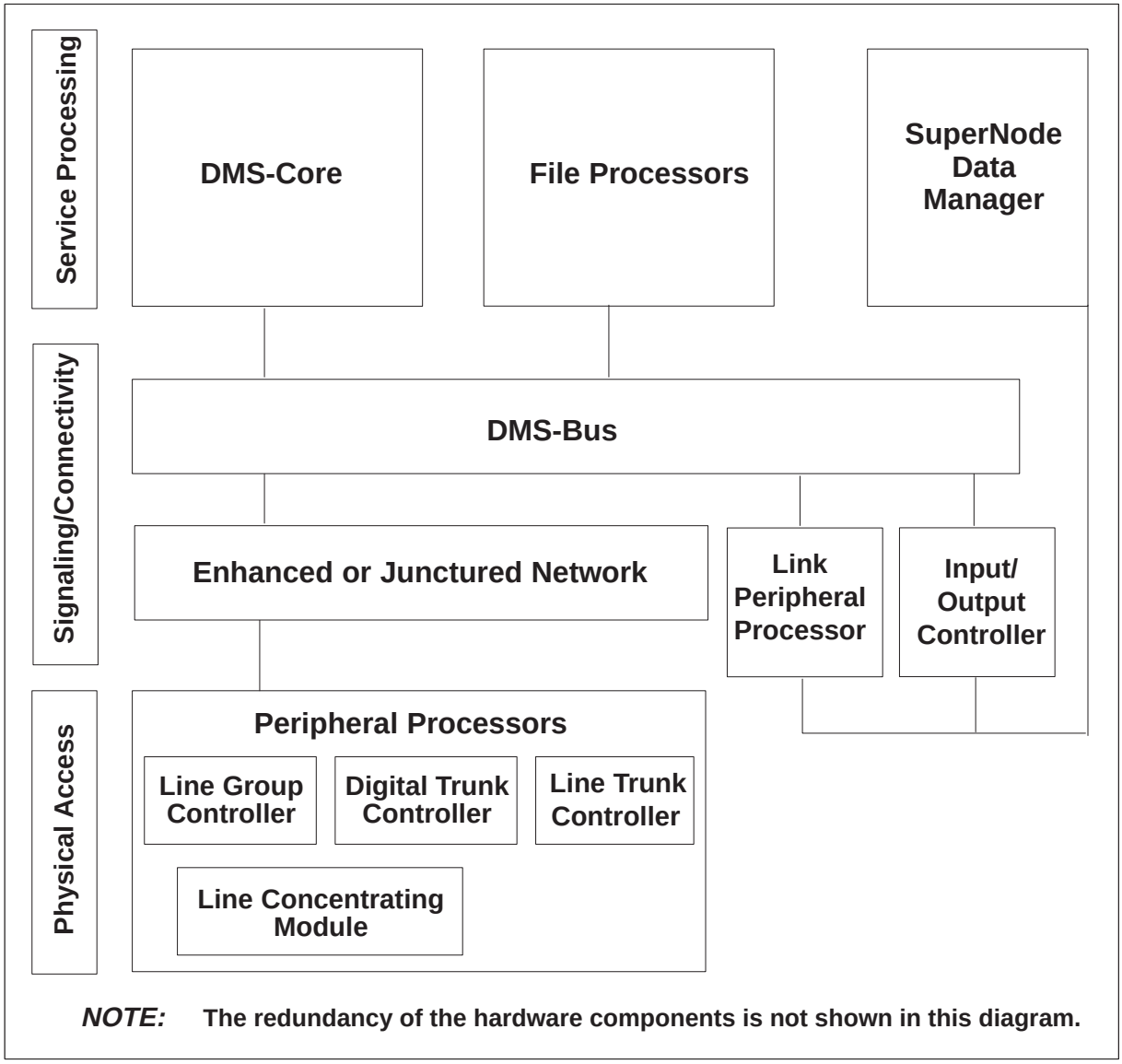
Hardware architecture layers

The major hardware components of the DMS switch are grouped into three layers: the service processing layer, the signalling and connectivity layer, and the physical access layer. Each layer has distinct functions with well-defined interfaces, as illustrated in Figure 3-1, ”DMS-250 hardware architecture layers.” This layering permits independent product evolution and component development. Each layer can be configured separately for specific applications, allowing for maximum flexibility when configuring a DMS switch for a customer.

Generally, the duplicated control components of the service processing layer operate in instruction synchronism mode (also known as SYNC-matched hardware operation), with both units executing the same tasks in parallel.

In contrast, the duplicated message handling components of the lower two layers normally operate in a load-sharing fashion. However, any of these duplicated units has the capability of assuming the entire load in the event that its mate fails.

Figure 3-1
DMS-250 hardware architecture layers



NOTE: **The redundancy of the hardware components is not shown in this diagram.**

Service processing layer

Although every layer includes many CPUs, the top layer contains the processing for central call handling, system control and system management as well as higher level functions associated with the wide variety of telecommunications services provided on the DMS-250. This includes the SuperNode that provides the “brains” of the system, and maintenance and administration hardware that enable system operators to monitor and maintain the system.

The service processing layer supports the following:

- high level call processing for lines and trunks terminating on a switch
- central operation administration, maintenance & provisioning (OAM&P)
- some operations support systems (OSS) interfaces (OSS is an external database used by telephone companies to configure and administrate their telephone networks)
- intelligent network services which use the CCS7 protocol

The main components of the service processing layer are the DMS-Core and file processors. These components use commercial CPUs and storage devices, which can be upgraded as the technology evolves. The processors are interconnected by the DMS-Bus and are built around a common hardware base.

Signalling and connectivity layer

The signalling and connectivity layer contains the DMS-Bus, which carries traffic from processor to processor. The DMS-bus is composed of the transaction bus, which carries payload messages; and the processor bus, which controls the transaction bus and peripherals.

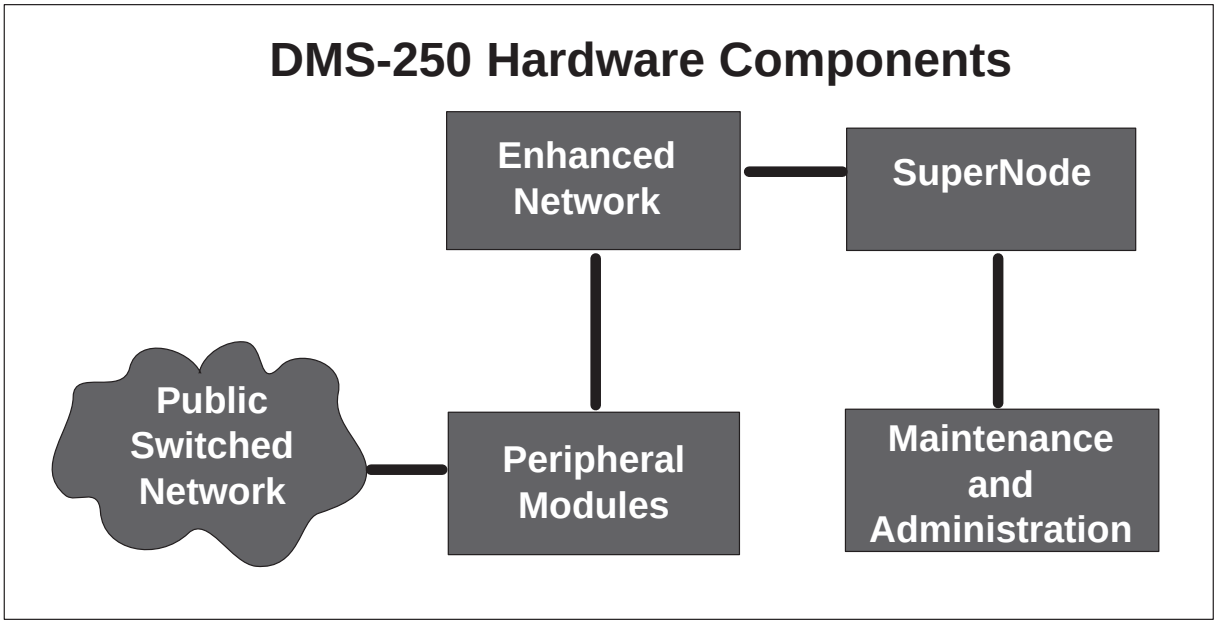
To carry the traffic, this layer uses Link Peripheral Processors (LPPs) and Input/Output Controllers (IOCs). This layer also uses the enhanced network (ENET) or junctored network (JNET) switch fabric for DS0-based connections.

Physical access layer

The physical access layer provides terminations, signal processing, service-specified protocol handling, and multiplexing. It includes peripheral processors that link the DMS-250 system to the “outside world” by way of lines and trunks carrying voice or data traffic.

Figure 3-2 “DMS-250 hardware architecture” shows the key components of the DMS-250 architecture.

Figure 3-2
DMS-250 hardware components



Peripheral modules (PMs)

The peripheral modules (PMs) connect the DMS-250 to the public switched network. These modules perform signaling, monitoring, and message-handling functions. PMs connect to the enhanced network by fiber-optic and copper links.

The DMS-250 uses three types of peripheral modules:

- series 1 peripherals
- series 2 peripherals
- series 3 peripherals

Series 1 peripherals

Series 1 peripherals have a single processor and occupy a single shelf in a trunk module equipment (TME) frame. The TME also contains a frame supervisory panel (FSP) in the center position. The FSP provides power, control, and alarm circuits for the modules housed in an equipment frame. It also displays a list of the modules in the frame and shows, with inch markers, the location of each. Because they have only one processor, series 1 peripherals lose all connection with the network if the processor card goes out. Series 1 peripherals connect to the network with DS30 copper links.

The series 1 peripherals are the following:

- Trunk module (TM)

  In the DMS-250, TMs are used to change the various characteristics of data on incoming trunks to the DMS format. The TMs encode and multiplex incoming voice data, changing it from analog to digital form. A single TM can handle a maximum of 30 analog trunks.

- Maintenance trunk module (MTM)

  Also contained in the TME frame may be one or several Maintenance Trunk Modules. MTMs have all the functions of a TM and can accept all trunk interface cards used in a TM. MTMs are usually equipped with test and service circuits.

- Integrated services module (ISM)

  In some offices, an integrated service module takes the place of the TM and MTM. The ISM can also co-exist in an office with TMs and MTMs. The ISM combines the functions of the TM and MTM in a compact, single-shelf unit as shown in Figure 3-3 “Integrated service module”.

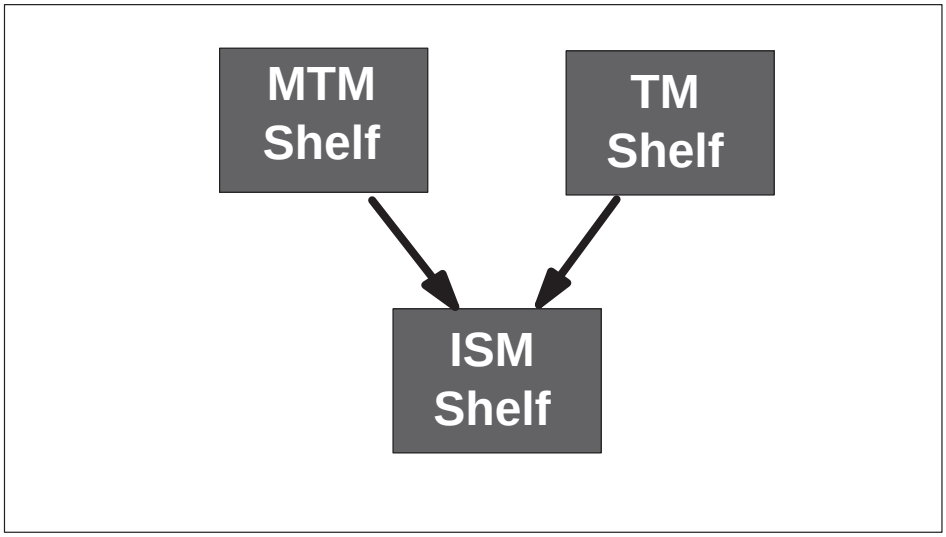
- Digital recorded announcement machine (DRAM)

  While the ISM combines TMs and MTMs in a single-shelf peripheral, another series 1 peripheral, the DRAM, modifies the function of the MTM. DRAMs are specialized components that store, in digital format, up to 64 different recorded announcements.

- Enhanced digital recorded announcement machine (EDRAM)

  The EDRAM is a stand-alone peripheral module that plugs into a slot on an MTM or ISM. An entire 12-pack DRAM shelf can be condensed into a single circuit pack to form an EDRAM. EDRAMs offer enhanced audio quality, reliability, and flexibility.

Figure 3-3
Integrated service module



Series 2 peripherals

Series 2 peripherals occupy two shelves housed in a digital trunk equipment (DTE) frame. They have two processors. One processor is active, handling the load for the entire module. The other processor is in synchronous operation with the active processor, but it is inactive and does not carry traffic. If the active processor card goes out, the inactive processor takes over immediately. Series 2 peripherals connect to the network through DS512 fiber-optic links or DS30 copper links. Like the TME frame, the DTE frame also holds a frame supervisory panel.

The Series 2 peripherals are the following:

- Digital trunk controller (DTC)

  For linking digital trunks, the DMS-250 uses a digital trunk controller. As series 2 peripherals, DTCs are housed on two shelves in the digital trunk equipment (DTE) frame. One shelf is called digital trunk array 0 (DTA0), and the other shelf is called digital trunk array 1 (DTA1). One contains the active processor; the other contains the inactive processor.

- ISDN digital trunk controller (DTCI)

  The DTE frame holds both digital trunk controllers and integrated services digital network (ISDN) digital trunk controllers. DTCIs support the ISDN trunk. DTCIs, like DTCs, are dual-shelf, dual-processor peripherals.

Series 3 peripherals

Series 3 peripherals have a single shelf and operate in load-sharing mode. They use DS30 links to connect to the network or to the SuperNode.

The following is a series 3 peripheral:

- Link peripheral processor (LPP)

  The LPP is a SuperNode-based peripheral. The LPP provides limited local switching capabilities with direct access to special networks, such as CCS7, DataSPAN/Frame Relay, Ethernet, and the Public Packet Switching Network.

  The LPP operates in a load-sharing mode. Its dual processors handle traffic at the same time. If one processor card goes out, the other processor takes on the full load.

  The LPP is housed in a link interface module cabinet. On the uppermost shelf is the frame supervisory panel. The next shelf houses the local message switch (LMS). The LMS is the high-speed transaction bus that handles messaging between the individual link interface units (LIUs) of the LPP. Beneath the LMS is the link interface shelf (LIS), which houses 12 LIUs. Two other shelves also house 12 LIUs each. The link interface module frame can thus hold a total of 36 interface units.

  In a smaller office, the LPP is housed in a single shelf, rather than in a full-sized cabinet, which can contain a total of 12 LIUs.

Enhanced network module

The enhanced network is the backbone of the DMS-250 system. It provides and maintains two-way speech and message transmission between peripherals. It also performs multiplexing, signaling, self-testing, and timing between itself and the peripheral modules. The network module does not operate on its own; it receives its instructions from the SuperNode.

The network module currently used with DMS-250 is called the enhanced network (ENET). ENET is a single-stage time switch that interfaces with the peripheral modules by DS512 fiber-optic links or by DS30 copper links. As a member of the network family using SuperNode architecture, ENET has reduced the amount of office equipment needed for switching.

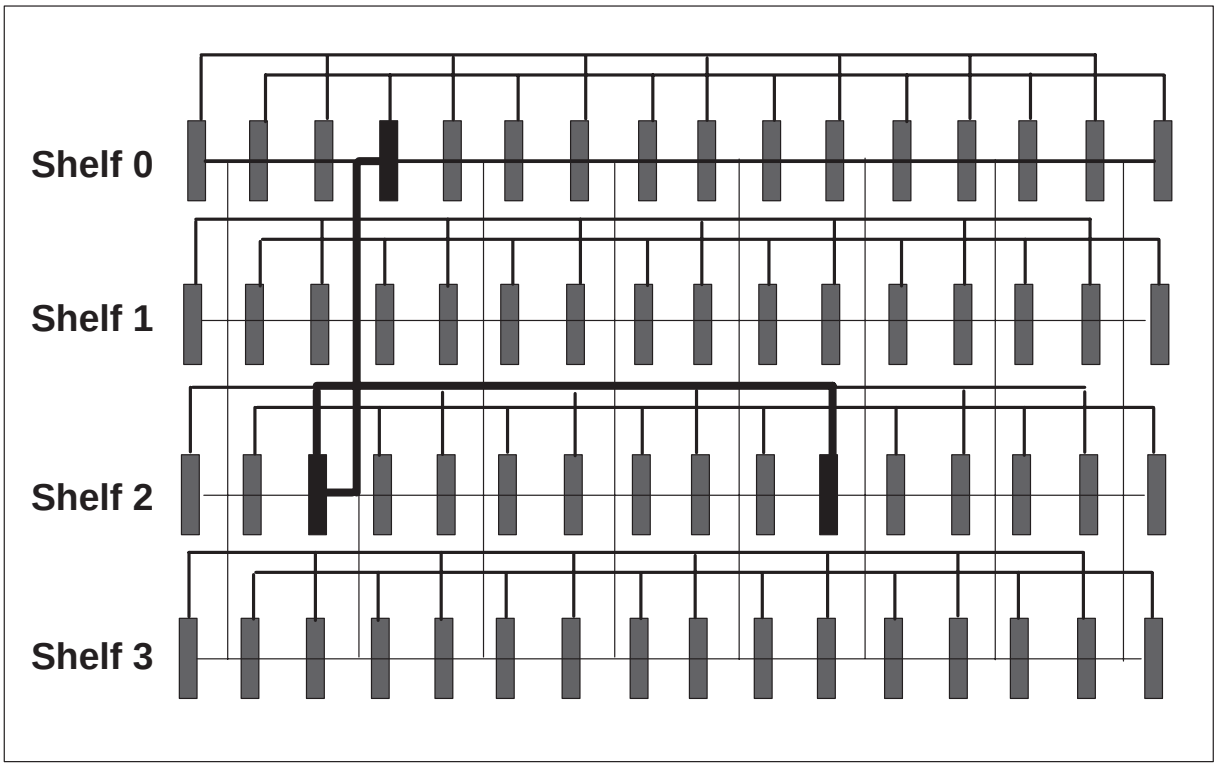
ENET is a fully duplicated network, with two independent planes. If a malfunction occurs in one, a switch of activity (SWACT) is performed with no loss of established calls.

The number of ENET shelves an office requires depends on the number of peripherals to be linked. In a single ENET cabinet configuration, 64,000

one-way voice paths are supported. In the dual-cabinet configuration, four shelves make up a single plane, which supports 128,000 one-way voice paths.

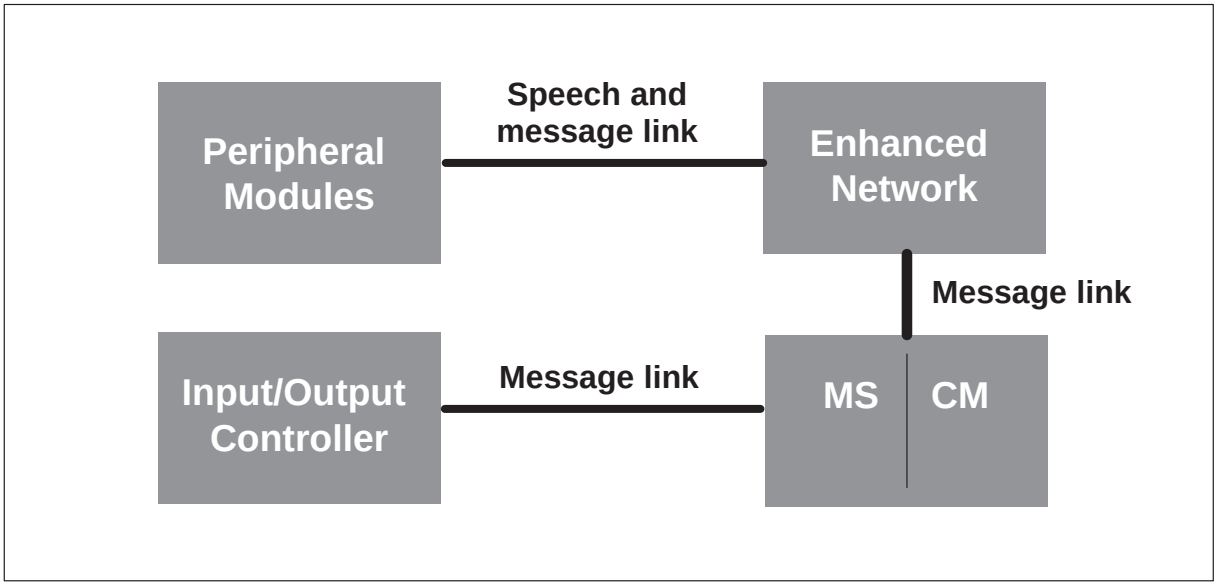
The ENET module uses time switching to route calls through the network. It does so by taking in calls on one channel, storing them in a buffer, and releasing them onto another channel as shown in Figure 3-4. The order of channels in a time-division multiplexed bit stream are rearranged to allow any network-side channel to connect to any peripheral-side channel. ENET uses the vertical bus, the horizontal bus, and crosspoint cards for time switching.

Figure 3-4
Time switching



Dual-planed ENET modules are the basic building blocks of the DMS-250 network. The network needs a means of interfacing with the other parts of the DMS-250 system. To make this connection, the network uses speech and message links, which connect the ENET to the various peripheral modules as shown in Figure 3-5. These links provide a two-way transmission path for 32 channels: 30 channels of voice data and 2 channels of messages.

Figure 3-5
Speech and message links



Message links are used to connect the network to the message switch portion of the SuperNode. These message links also connect the input/output controller to the message switch. Message links devote all 32 channels to messaging.

SuperNode

The SuperNode is an integral part of the DMS-250 system. It is the “brains” of the system. The SuperNode consists of the core hardware and software for DMS-250 operations. The three major components of the SuperNode switch are the following:

- DMS-Core
- DMS-Bus
- DMS-Link

The DMS-Core performs the computing and system control functions and is the true power of the SuperNode. The DMS-core can be one of two types: the computing module (CM) type, or the XA-Core type. Both the CM type and the XA-Core type of DMS-core have the same architecture. The XA-Core, however, has a higher call processing capacity. This document gives a high level description of both types.

DMS-Core CM type

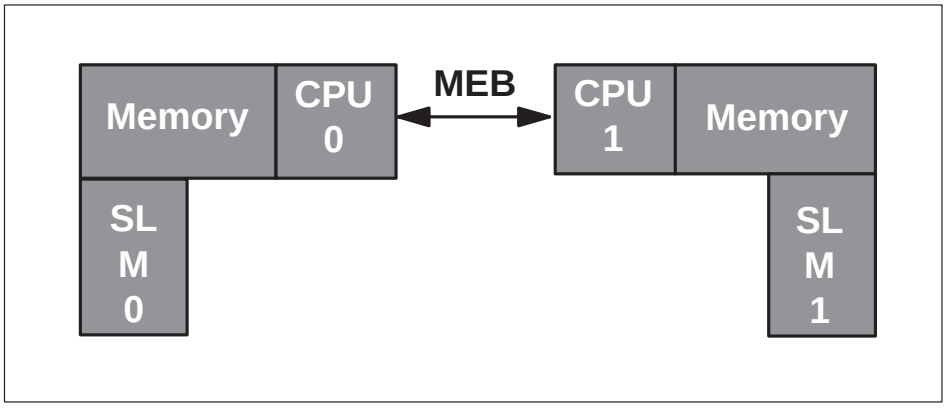
The CM type of DMS-Core is the switch computing engine. It consists of duplicated, high capacity, single-chip microprocessors with duplicated

memory, communications buses and interfaces to the DMS-Bus. The DMS-Core provides overall system control, conventional switched call routing, maintenance and management functions.

Generally, the DMS-Core is responsible for functions which are less real-time critical. In smaller DMS systems (the SuperNode SE), the DMS-Core is the main computing resource. To support larger systems and provide enhanced functionality, file processors are deployed in support of the DMS-Core.

The DMS-Core CM type, has two main components: the computing module and the system load module, as illustrated in Figure 3-6. A Mate Exchange Bus (MEB) provides communication between the two CPUs.

Figure 3-6
DMS-Core CM type



Computing modules

The two computing modules contain the central processing units (CPUs), and the core's memory. They store both the program information necessary for call processing and maintenance and all customer database information.

System load modules

The DMS Core uses the system load module (SLM) for storage of the switch software loads, data, office images (an image of the software and data for a particular customer's switch) and peripheral processor software loads. The SLM includes a cartridge magnetic tape drive and a high-capacity disk drive, along with controllers for both storage devices. The SLM is connected to the DMS-Core's processor bus.

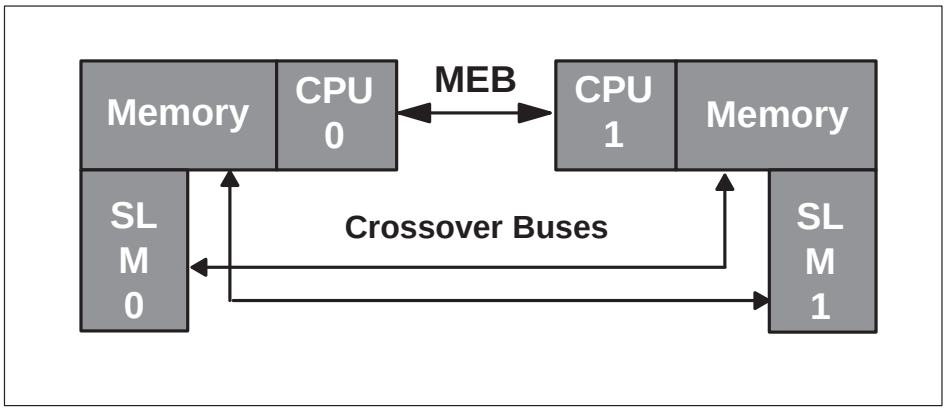
The two system load modules store the information necessary for SuperNode functions. They are used for emergency booting, software loading, and office images. The two system load modules (referred to as "redundant" modules) are SLM 0 and SLM 1.

CM and SLM communication

A computing module contains both an active and an inactive CPU. Each memory unit has a sufficient amount of memory to be referred to as "redundant" memory. This redundancy gives the switch a high degree of reliability and fault tolerance. It also allows its operators to perform maintenance and upgrades without disrupting service.

Refer to Figure 3-7 for an illustration of the two crossover buses that provide connection between the two CPUs and the two system load modules discussed earlier. CPU 0 is connected to SLM 1, and CPU 1 is connected to SLM 0.

Figure 3-7
DMS-Core crossover buses



DMS-Core XA-Core type

The XA-Core is a new core architecture, allowing scalable computing power. Through the use of multiprocessor architecture, the XA-Core offers significant improvement in switching capacity. When XA-Core is installed, it replaces the existing CM/SLM core.

The XA-Core type of DMS-core consists of the following components:

- processor and memory
- interfaces
- reset control
- bus termination
- time of day (TOD) clocks
- point-of-use power supply (PUPS)

Processor and memory

The processor and memory controls call processing, configuration, and maintenance of the switch. The processor amd memory include the following circuit packs:

- processor element (PE) circuit packs
- input/output processor (IOP) circuit packs
- shared memory (SM) circuit packs

Interfaces

The interfaces allow XA-Core to communicate with other nodes in the switch and with storage devices. The interfaces with other nodes in the switch are through the Message switch (MS). Communication between the XA-Core and the MS is over core-Message Switch interconnect (CMIC) links.

The interfaces with storage devices support the storage of billing records, logs, load images, and other file system records. A direct memory access (DMA) device connects the XA-Core directly with the MS and storage devices.

Reset control

The reset control provides a utility for a local or remote reset of the XA-Core. The reset control displays the status of total XA-Core processing. The reset control also has command interpreter (CI) capability but no display of menu-type levels of the maintenance and administration position (MAP) terminal. The reset terminal interface (RTIF) is an interface to a display terminal for reset control. The RTIF can be a local or a remote terminal.

Bus termination

The single slot circuit pack filler is the terminator circuit pack for the XA-Core midplane. The terminator circuit pack is in XA-Core slots of the processor element (PE), shared memory (SM), and the input/output processors (IOP) that are not in use.

Time of day clocks

The time of day (TOD) clocks provide link synchronization of the XA-Core to the clock subsystem of the message switch (MS). A TOD update message from the MS maintains TOD accuracy.

Point-of-use power supply

The power supply provides power for the XA-Core shelf. A DMS SuperNode switch is provided with three power feeds for either the A or B battery. The power feeds connect to the point-of-use power supplies (PUPS) on the hardware modules.

DMS-Bus

The second major component of the DMS-250 SuperNode is the DMS-Bus. The DMS-Bus provides message transport functions for the distributed processors of the DMS system on a peer-to-peer basis and is the messaging hub of the SuperNode. It also houses the system clocks. This central clock can be synchronized to an external clock source for higher accuracy.

The DMS-Bus consists of two load sharing planes (each is an independent DMS-Bus). Each plane has a CPU, memory and a set of interfaces to the DMS-Core, file processors, enhanced network, and other components. Devices connect to the DMS-Bus by means of port interfaces.

The DMS-Bus is also called the message switch bus, because it contains two message switches: message switch 0 and message switch 1. Each message switch contains two internal buses: a processor bus (PBus) and a transaction bus (TBus), as shown in Figure 3-8.

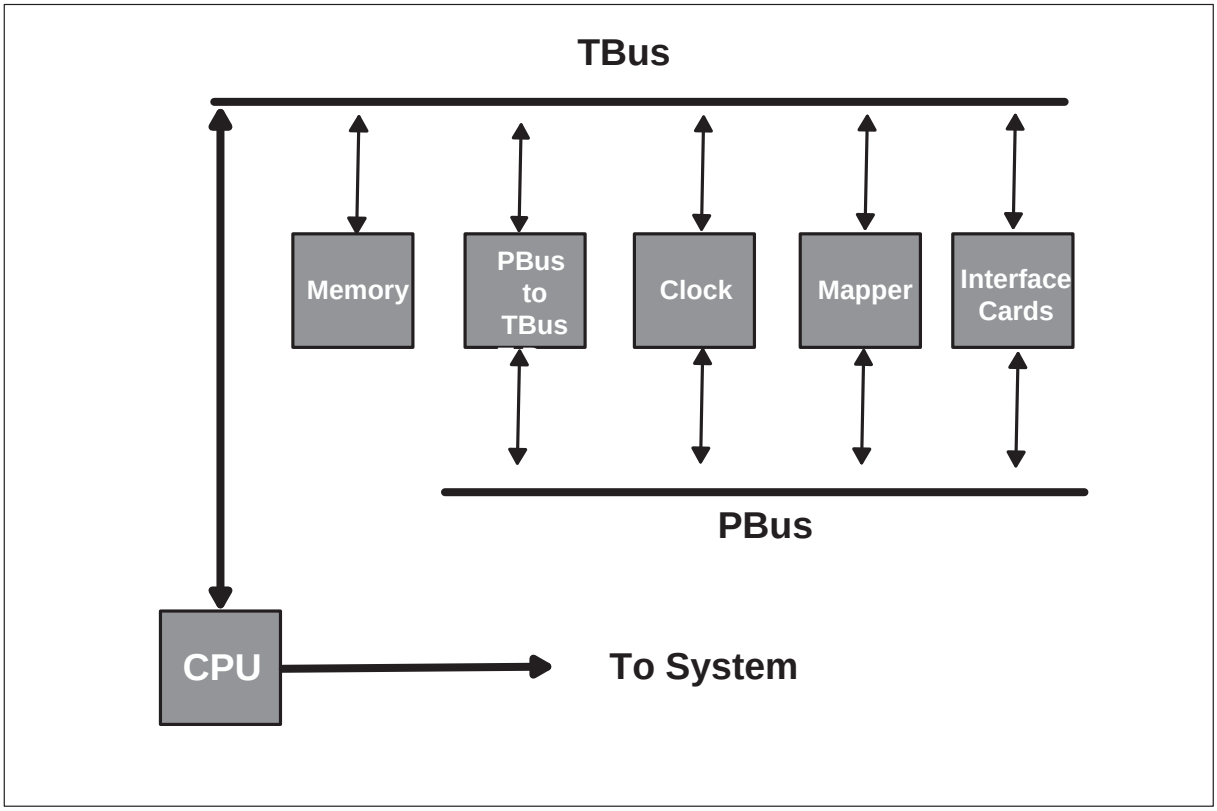
PBus

The PBus is the primary bus. It updates the mapper tables, provides initialization, configures and maintains other message-switch components and verifies the parameters of the clock system. This bus carries only the control messages required for DMS-Bus operation.

TBus

The TBus is the messaging bus. It routes payload messages through the message switch.

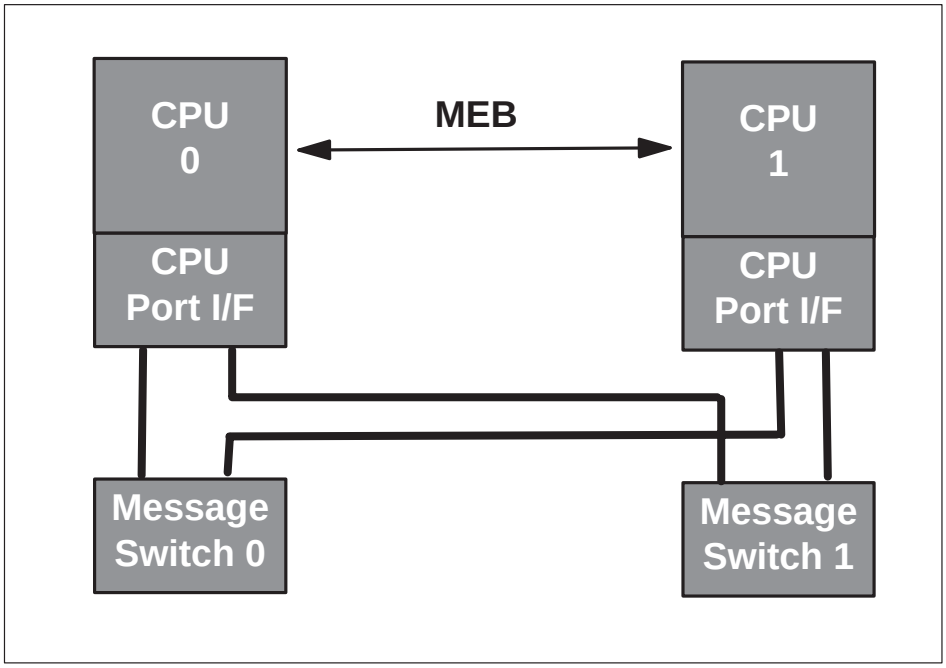
Figure 3-8
Message switch bus structure



Computing module interconnect

For the DMS-Core to communicate with the DMS-Bus, it must have some type of linking system. This link is called the computing module interface card (CMIC). A CMIC is a pair of fiber-optic links that connect the CPUs with the message switches of the DMS-bus. The two primary (P) links connect the active CPU (CPU0) to both message switches. The two secondary (S) links connect the inactive CPU (CPU1) with the message switches. If one or both of the P-links fail, the active CPU can re-route message traffic through the port crossover bus to the S-links. Refer to Figure 3-9 for an example of the CMIC link connectivity.

Figure 3-9
CMIC link connectivity



DMS-Link

The DMS-link is the third major component of the SuperNode, and it is not a physical link at all. It is the software infrastructure that allows the SuperNode to connect multivendor environments. Through the DMS-bus hardware, the DMS-link permits the SuperNode to link CCS7, ISDN, 800 services, enhanced billing services, and virtual private networking.

SuperNode SE

While the DMS-250 SuperNode is designed for offices with a large customer base, smaller offices also have an efficient, viable option: the SuperNode SE (SNSE). The SuperNode SE, designed for small and medium sized offices, combines all the capabilities of the SuperNode system in a single cabinet. Like the SuperNode, the SuperNode SE contains the DMS-Core, DMS-Bus, ENET and LPP. In addition to providing a compact and economical cabinet configuration, the SuperNode SE supports all the services of the SuperNode: dialable wideband services, CCS7 and ISDN. It also supports all of the series 1, 2 and 3 peripherals that the SuperNode supports.

Maintenance and administration

The maintenance and administration hardware component of the DMS-250 system provides the means to monitor, measure, maintain, and test the system's key functions. The maintenance and administration component consists of the following subcomponents:

- maintenance and administration position
- input/output controller
- billing server

Maintenance and administration position

The maintenance and administration position (MAP) allows system operators to monitor the DMS-250 hardware and software within an office. If something goes wrong with a piece of equipment, the MAP will show an alarm message that specifies the type of alarm and where the problem is located. Alarms are categorized as critical, major, or minor.

To test external trunks coming into an office, the MAP station provides several test-equipment jacks.

To provide phone links both within the office and outside, there is a voice communication module (telephone).

Reset/remote terminal interfaces (RTIFs) are an important part of the MAP. These two terminals monitor and control the SuperNode's CPUs. The RTIF screen shows the status of the CPU with which it interfaces. RTIF 0 monitors CPU 0, and RTIF 1 monitors CPU 1. If the switch goes down and can't recover on its own, the RTIF terminal can be used to bring the switch back up.

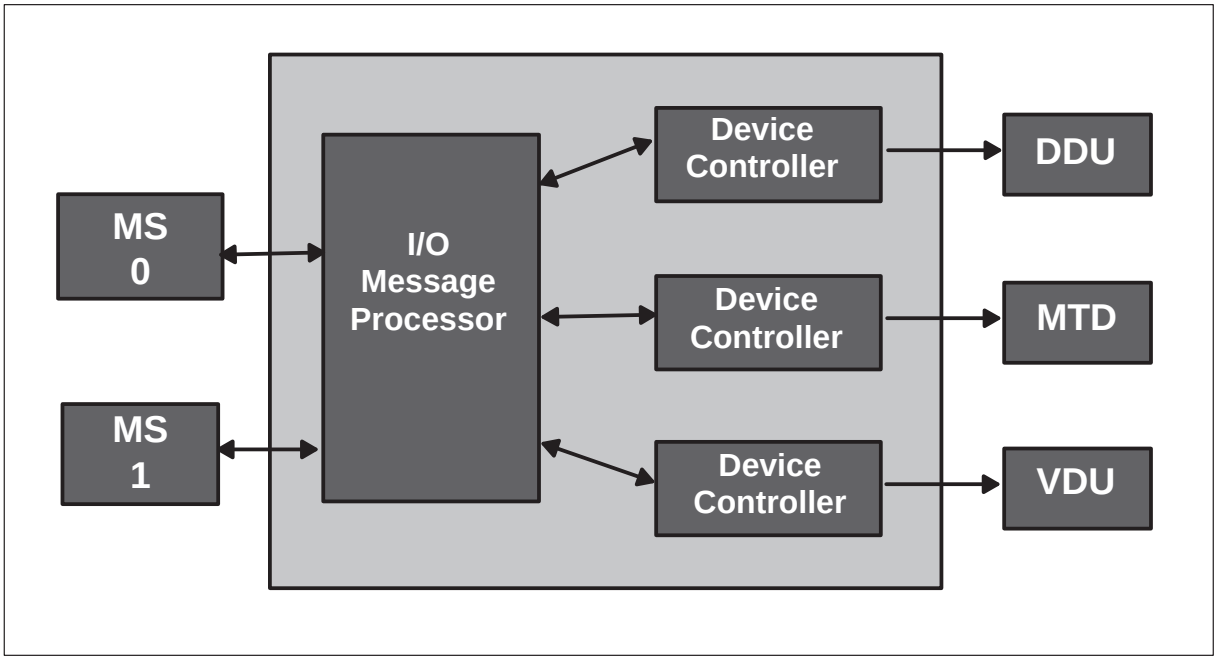
Input/output controller

An input/output controller (IOC) acts as an interface between the DMS-250 and the MAP. Within the IOC is a message processor, which provides two-way communication between the message switches and various input/output device controllers.

The input/output device controllers communicate with the actual input/output devices, such as the disk drives, the magnetic tape drive, and the visual display unit.

In a typical input/output equipment (IOE) frame, there is an input/output shelf that houses the message processor and up to nine input/output device controllers. It also contains a magnetic tape drive and several disk drives.

Figure 3-10
Input/output controller



Billing Server

The Billing Server processes and stores call-billing data for an office and can handle approximately 1,000,000 calls an hour. The formatting and managing functions of billing records, previously handled by the SuperNode's computing module, is now handled by the Billing Server.

Billing Server hardware

The various components of the billing server are housed in the applications processor cabinet (APC). These components include the file processor, up to twelve small computer standard interface (SCSI) devices, and the Ethernet interface unit (EIU).

The file processor contains the hardware used to process the billing data. It has its own CPU and memory. The SCSI devices, which store the billing information, include up to six shadowed disks and one digital audio tape (DAT) drive. The EIU connects the Billing Server to the down stream processor or Ethernet LAN, enabling IXC personnel to access billing data through their workstations. In some systems the EIU is a card on the LPP. In others, it is found on a fiberized link interface shelf (FLIS).

Billing Server software

The Billing Server software includes the billing system base, the distributed recording manager, the fault tolerant file system, and the file transfer access management.

The billing system base provides the infrastructure for the billing formatters. It takes the raw billing information from call processing and other sources, formats it, and passes the resulting billing records on to the distributed recording manager (DRM).

The distributed recording manager manages the volumes used for storing the billing data. It writes the billing data to the file system, keeps track of the files generated, monitors the file and volume states, and monitors available space. It can also be used to back up files to nine-track or digital audio tape.

The fault tolerant file system (FTFS) is used for storage and retrieval on the file processor (FP). It provides disk shadowing, copying of files to DAT, and copying of files to IOC tape.

File transfer management (FTM) transfers partial or entire files from the FTFS disks to the Ethernet LAN. IXC personnel can then access the files through their workstations or through the downstream processor.

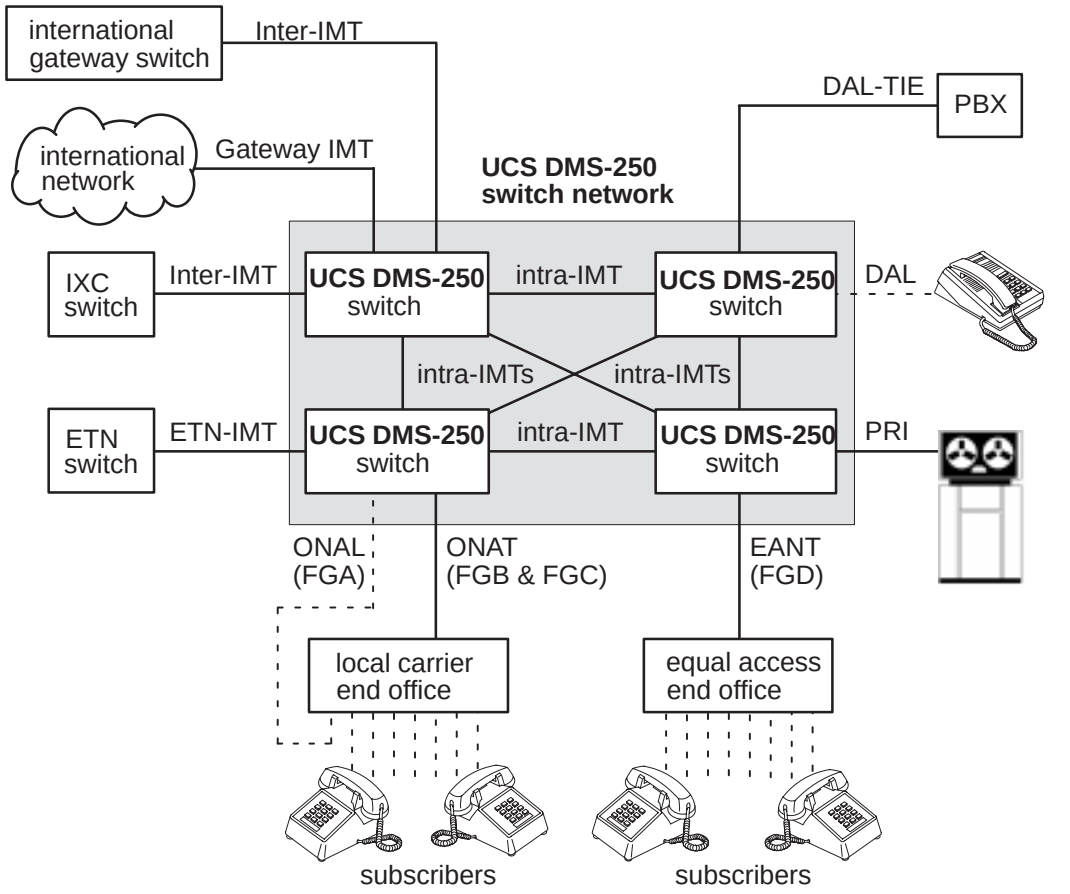
System access

An operational UCS DMS-250 switch forms part of a network comprised of one or more UCS DMS-250 switches. Access into and out of the network occurs at the individual UCS DMS-250 switch, through any one of a number of industry recognized interfaces. The UCS DMS-250 switch is capable of interfacing with each of the following:

- Local exchange carrier (LEC) switches connected by means of:
  - — an off-network access line (ONAL) used for Feature Group A
  - — an off-network access trunk (ONAT) used for Feature Group B and Feature Group C
  - — an equal access network trunk (EANT) for Feature Group D
- Customer premises equipment (CPE) connected by means of:
  - — a dedicated access line (DAL) for a single telephone connection
  - — a dedicated access line-terminal interface equipment (DAL-TIE) for interconnecting a private branch exchange (PBX) or key system
  - — a primary rate interface (PRI) providing ISDN connectivity with a PBX, key system, local area network, or host computer
- Other switches and networks by using intermachine trunks (IMTs):
  - — intra-network IMTs connect UCS DMS-250 switches in the same network
  - — inter-network IMTs connect to other interexchange carrier (IXC) switches or gateway switches
  - — Electronic Tandem Network (ETN)-IMTs connect to private networks
  - — Gateway IMTs connect to international networks

Figure 4-1 shows each type of connection as it interfaces into a typical UCS DMS-250 switch network.

Figure 4-1
Connecting into the UCS DMS-250 switch network



Notes:

line connections: - - - - - - - - -
trunk connections: ————————

Abbreviations:

DAL	dedicated access line
DAL-TIE	DAL-terminal interface equipment
EANT	equal access network trunk
ETN	Electronic Tandem Network
FGA	Feature Group A
FGB	Feature Group B

Abbreviations (cont)

FGC	Feature Group C
FGD	Feature Group D
IMT	intermachine trunk
Inter-IMT	inter-network IMT
Intra-IMT	intra-network IMT
IXC	interexchange carrier
ONAL	off-network access line
ONAT	off-network access trunk
PBX	private branch exchange
PRI	primary rate interface

Local exchange carrier (LEC) switch connectivity

The feature group protocols were defined by BellCore to connect local exchange carrier (LEC) switches to interexchange carrier (IXC) switches. Each protocol has different functionality with Feature Group A being the least sophisticated and Feature Group D being the most sophisticated.

Off-network access line (ONAL)

An off-network access line (ONAL) is a line connection between the UCS DMS-250 switch and a local carrier end office. ONALs are used to support the Feature Group A (FGA).

Feature Group A

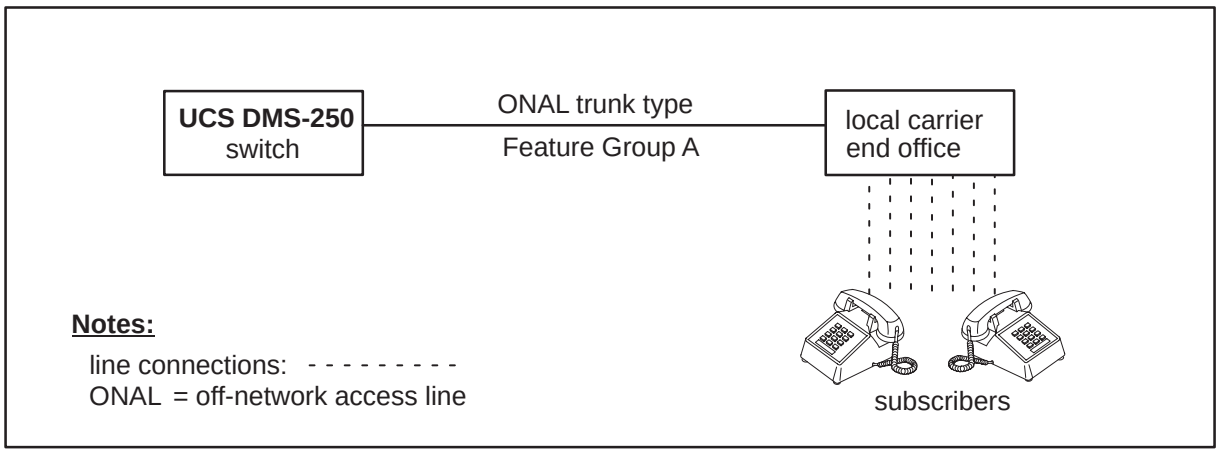
FGA was developed to provide subscribers with a means of using an interexchange carrier of their choice. Access is provided through local numbers that differ from region to region. Originating, terminating, and two-way FGA access is supported by the UCS DMS-250 switch.

FGA connects the line-side of a class-five central office to the UCS DMS-250 switch using an off-network access line (ONAL). With the use of FGA, subscribers must use a dual-tone multifrequency (DTMF) phone because dial pulses cannot be passed over this connection. FGA uses per trunk signaling (PTS).

A connection is established to the UCS DMS-250 switch based on a local, seven-digit access number dialed by the subscriber. Once connected, the UCS DMS-250 switch provides dial tone to the subscriber and collects the billing information (authorization code or travel card number) and the dialed number (address).

Figure 4-2 illustrates a FGA connection with the UCS DMS-250 switch using an ONAL trunk type.

Figure 4-2
FGA connection with the UCS DMS-250 switch using an ONAL



FGA dialing plans

In FGA the subscriber gains access to the interexchange carrier through the local exchange carrier (LEC) by dialing a local seven-digit number (NXX-XXXX). The subscriber receives a second dial tone from the interexchange carrier and then dials one of the following sequences:

AUTH first: [AUTH] + [PIN] + ADDR + [ACCT]
AUTH last: ADDR + [AUTH] + [PIN] + [ACCT]
MCCS: 0 + ADDR + TCN + [ACCT] or
01 + CC + NN + TCN + [ACCT]

where,

ACCT = account code (1–12 digits)
ADDR = address (7 digits NXX-XXXX or 10-digits NPA-NXX-XXXX)
AUTH = authorization code (5–7 digits)
CC = true country code (padded to 3 digits with leading zeros)
MCCS = Mechanized Calling Card Service
N = one dialed number digit in the range of 2–9
NN = national number (15 digits maximum)
PIN = personal identification number (1–4 digits)
TCN = travel card number
X = one dialed number digit in the range of 0–9

Note: Brackets [ ] indicate optional parameters.

Off-network access trunk (ONAT)

An off-network access trunk (ONAT) is a trunk connection between the UCS DMS-250 switch and a local carrier end office. ONATs are used to support both the Feature Group B (FGB) and Feature Group C (FGC) protocols.

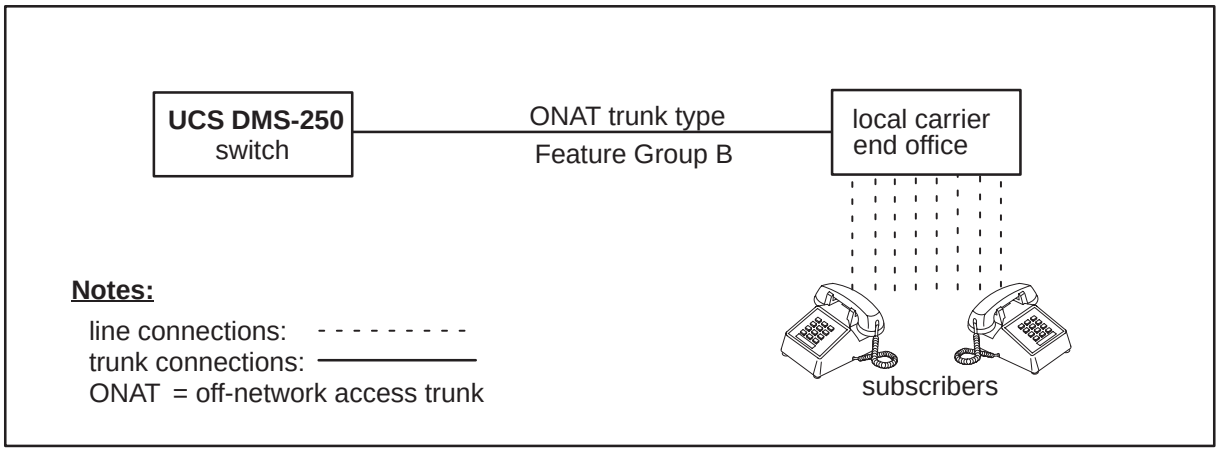
FGB expands on FGA by using universal access codes (UACs), which allow subscribers to access their long-distance carrier of choice with one consistent access number, regardless of geographical location. Originating, terminating, and two-way FGB access is supported by the UCS DMS-250 switch.

FGB connects the trunk-side of a class-five central office, or a class-four or five tandem office to the UCS DMS-250 switch using an off-network access trunk (ONAT). Subscribers must use a DTMF phone, because dial pulses cannot be passed over this connection. FGB uses per trunk signaling (PTS).

A connection is established to the UCS DMS-250 switch when the subscriber dials the carrier's 7-digit UAC in the format of 950-XXXX, where XXXX is the Carrier Identification Code (CIC). Once connected, the LEC uses multi-frequency (MF) streams to optionally send the UAC and automatic number identification (ANI). The UCS DMS-250 switch then collects the billing number (authcode or travel card number) and dialed number (ADDR) through subscriber dialed DTMF digits.

Figure 4-3 illustrates a FGB connection with the UCS DMS-250 switch using an ONAT trunk type.

Figure 4-3
FGB connection with the UCS DMS-250 switch using an ONAT



FGB dialing plans

FGB is a trunk-side access arrangement that requires the subscriber to dial a UAC in the format of 950-XXXX to gain access to the interexchange carrier.

The LEC switch sends the following MF digit stream to the long distance switch:

MF digit stream: KP + [950-XXXX] + ST
KP + 1 + [7-DIGIT ANI] + ST

The subscriber receives a second dial tone from the long-distance carrier and then dials one of the following sequences:

DTMF subscriber dialing:

AUTH first: [AUTH] + [PIN] + ADDR + [ACCT]
AUTH last: ADDR + [AUTH] + [PIN] + [ACCT]
MCCS: 0 + ADDR + TCN + [ACCT] or
01 + CC + NN + TCN + [ACCT]

where,

ACCT = account code (1–12 digits)
ADDR = address (7 digits NXX-XXXX or 10 digits NPA–NXX–XXXX))
ANI = automatic number identification (3, 6, or 10 digits)
AUTH = authorization code (5–7 digits)
CC = true country code (padded to 3 digits with leading zeros)
KP = key pulse, signifies start of MF digit stream
MCCS = Mechanized Calling Card Service
N = one dialed number digit in the range of 2–9
NN = national number (15 digits maximum)
PIN = personal identification number (1–4 digits)
ST = stop transmit, signifies end of MF digit stream
TCN = Travel Card Number (14 digits)
XXXX = Carrier Identification Code (CIC)
X = one dialed number digit in the range of 0–9

Note: Brackets [ ] indicate optional parameters.

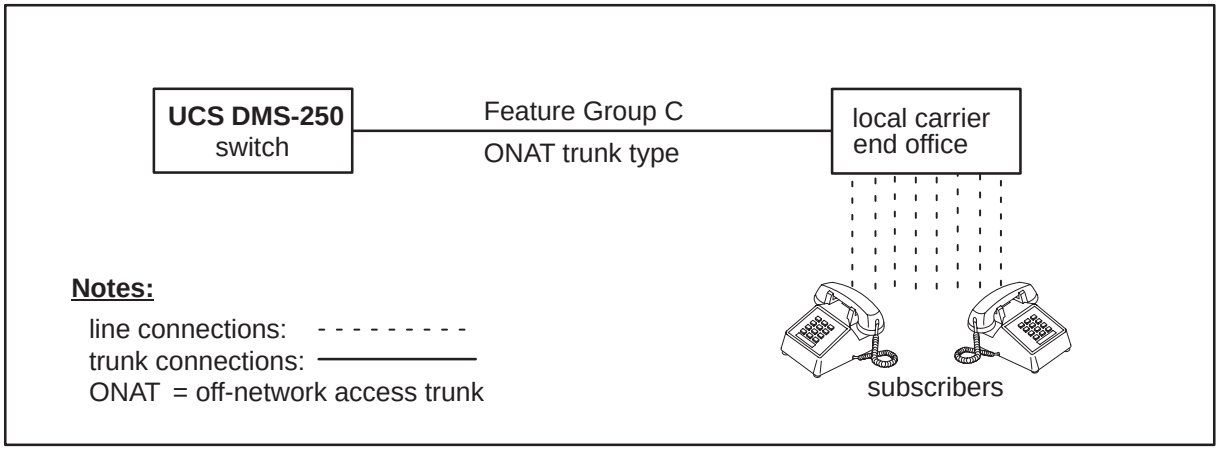
Feature group C

FGC was originally used by the LECs to connect with AT&T prior to the divestiture. FGC provides address digits but not billing identification (CANI). Interexchange carriers (IXCs) may use FGC to connect to a LEC that does not support Feature Group D (FGD) for calling card and 800 inwats services.

FGC connects the trunk-side of a class-five central office to the UCS DMS-250 switch using an off-network access trunk (ONAT). FGC uses per trunk signaling (PTS). Originating, terminating, and two-way FGC access is supported by the UCS DMS-250 switch.

Figure 4-4 illustrates a FGC connection with the UCS DMS-250 switch using an ONAT trunk type.

Figure 4-4
FGC connection with the UCS DMS-250 switch using an ONAT



FGC dialing plans

FGC access uses of one of the following dialing plans:

Inwats

MF digit stream: KP + 8XX+NXX+XXXX+ST

Universal access

The LEC switch sends the following MF digit stream ot the long-distance switch:

MF digit stream: KP + 8XX + NXX + XXXX + ST

The subscriber receives a second dial tone and then dials one of the following sequences.

DTMF subscriber dialing:

AUTH first: [AUTH] + [PIN] + ADDR + [ACCT]
AUTH last: ADDR + [AUTH] + [PIN] + [ACCT]
MCCS: 0 + ADDR + TCN + [ACCT] or
01 + CC + NN + TCN + [ACCT]

where,

ACCT = account code (1–12 digits)
ADDR = address (7 digits NXX-XXXX)
ANI = automatic number identification (3, 6, or 10 digits)
AUTH = authorization code (5–7 digits)
CC = true country code (padded to 3 digits with leading zeros)

KP	= key pulse, signifies start of MF digit stream
MCCS	= Mechanized Calling Card Service
N	= one dialed number digit in the range of 2–9
NN	= national number (15 digits maximum)
PIN	= personal identification number (1–4 digits)
ST	= stop transmit, signifies end of MF digit stream
TCN	= travel card number (14 digits)
X	= one dialed number digit in the range of 0–9

Note: Brackets [ ] indicate optional parameters.

Equal access network trunk (EANT)

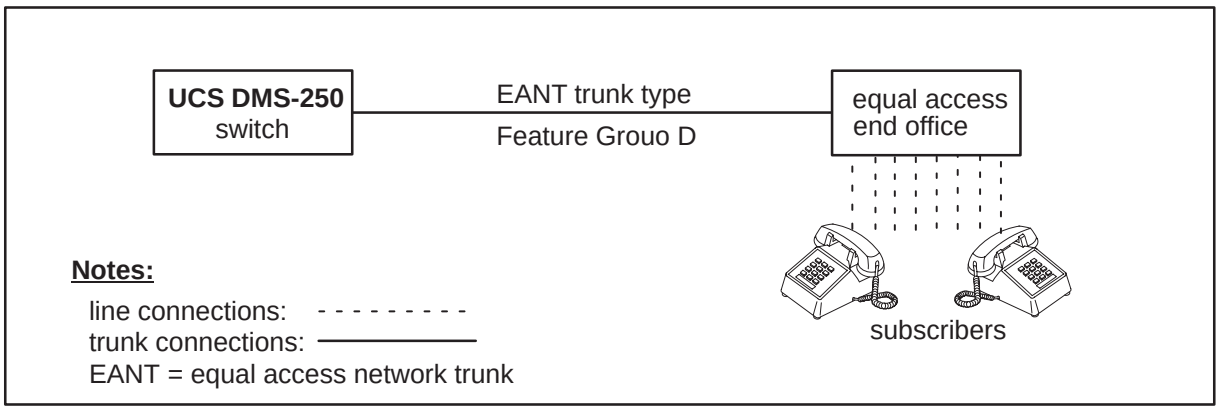
An equal access network trunk (EANT) is a trunk connection between the UCS DMS-250 switch and an equal access end office or a tandem switch. EANTs are used to support Feature Group D (FGD). The following paragraphs provide a brief overview of FGD. For more information on FGD, refer to the *UCS DMS-250 Feature Group D (FGD) Application Guide*.

FGD was developed in order to simplify billing by providing automatic number identification (ANI) and allowing access to the subscriber's carrier of choice without the need to dial carrier access codes. When a call is made from a pre-subscribed phone, meaning the call is made from a phone registered to that subscriber, an ANI is provided and subscriber dialed billing digits (authcode or travel card number) are not required.

FGD connects the trunk-side of an equal access end office (EAEO) or a class-four or five access tandem office with an equal access network trunk (EANT). FGD can use per trunk signaling (PTS) or Signaling System 7 (SS7).

Figure 4-5 illustrates a FGD connection with the UCS DMS-250 switch using an EANT trunk type.

Figure 4-5
FGD connection with the UCS DMS-250 switch using an ONAT



FGD dialing plans

There are five different types of dialing plans used with FGD, defined as follows:

- pure-national
- pure-international
- cut-through
- transitional
- univeral access number

Each of these FGD dialing plans are discussed in the following paragraphns.

Pure-national

The subscriber is pre-subscribed to a carrier and only dials 1 + address.

MF digit stream: KP + OZZ + CIC + ST
KP + II + ANI + ST
KP + ADDR + ST

DTMF subscriber dialing: [PIN] + [ACCT]

where,

ACCT = account code (1–12 digits)
ADDR = address (7 digits NXX-XXXX
or 10-digits NPA-NXX-XXXX)
ANI = automatic number identification (3, 6, or 10 digits)
CIC = Carrier Identification Code
II = indicates two information digits
KP = key pulse, signifies start of MF digit stream
OZZ = indicates to an access tandem that translation of the CIC

is required to derive carrier identity
PIN = personal identification number (1–4 digits)
ST = stop transmit, signifies end of MF digit stream

Note: Brackets [ ] indicate optional parameters.

Pure-international

The subscriber is pre-subscribed to a carrier and dials 01 + country code + national number.

MF digit stream: KP + 1N(')X + (X)XXX + CCC + ST
KP + II + ANI + ST
KP + CC + NN + ST

DTMF subscriber dialing: [PIN] + [ACCT]

where,
ANI = automatic number identification (3, 6, or 10 digits)
AUTH = authorization code (5–7 digits)
CC = true country code (padded to 3 digits with leading zeros)
CCC = pseudo country code (padded to 3 digits, leading zeros)
II = indicates two information digits
KP = key pulse, signifies start of MF digit stream
N = one dialed number digit in the range of 2–9
NN = national number (15 digits maximum)
ST = stop transmit, signifies end of MF digit stream
(X)XXX = Carrier Identification Code (CIC)
1NX = indicates a non-operator assisted call
1N(')X = indicates an operator assisted call
X = one dialed number digit in the range of 0–9

Note: Brackets [ ] indicate optional parameters.

Cut-through

The subscriber dials 10XXX or 101XXXX to receive a second dial tone, bypassing the pre-subscribed carrier and accessing a different carrier of choice. The CIC is signified by the variable (X)XXX.

MF digit stream: KP + II + ANI + STP

DTMF subscriber dialing:

AUTH first: [AUTH] + [PIN] + ADDR + [ACCT]
AUTH last: ADDR + [AUTH] + [PIN] + [ACCT]
MCCS: 0 + ADDR + TCN + [ACCT] or
01 + CC + NN + TCN + [ACCT]

where,

ACCT = account code (1–12 digits)
ADDR = address (7 digits NXX-XXXX)
ANI = automatic number identification (3, 6, or 10 digits)
AUTH = authorization code (5–7 digits)
CC = true country code (padded to 3 digits with leading zeros)
II = indicates two information digits
KP = key pulse, signifies start of MF digit stream
MCCS = mechanized calling card service
N = one dialed number digit in the range of 2–9
NN = national number (15 digits maximum)
PIN = personal identification number (1–4 digits)
ST = stop transmit, signifies end of MF digit stream
TCN = travel card number (14 digits)
X = one dialed number digit in the range of 0–9

Note: Brackets [ ] indicate optional parameters.

Transitional

This type of dialing is used primarily to transition FGB calls to FGD. The subscriber accesses their carrier from any location by dialing 950-XXXX, where XXXX identifies the carrier.

MF digit stream: KP + [II + ANI] + ST2P or ST3P

DTMF subscriber dialing:

AUTH first: [AUTH] + [PIN] + ADDR + [ACCT]
AUTH last: ADDR + [AUTH] + [PIN] + [ACCT]
MCCS: 0 + ADDR + TCN + [ACCT] or
01 + CC + NN + TCN + [ACCT]

where,

ACCT = account code (1–12 digits)
ADDR = address (7 digits NXX-XXXX)
ANI = automatic number identification (3, 6, or 10 digits)
AUTH = authorization code (5–7 digits)
CC = true country code (padded to 3 digits with leading zeros)
II = indicates two information digits
KP = key pulse, signifies start of MF digit stream
MCCS = Mechanized Calling Card Service
N = one dialed number digit in the range of 2–9
NN = national number (15 digits maximum)
PIN = personal identification number (1–4 digits)
ST = stop transmit, signifies end of MF digit stream
ST2P = *undefined*
ST3P = *undefined*

TCN = travel card number (14 digits)
X = one dialed number digit in the range of 0–9

Note: Brackets [ ] indicate optional parameters.

Universal access number

The subscriber must dial a universal access (UA) code in the format of 1-8XX-NXX-XXXX to access the carrier. After dialing the UA number, the subscriber receives a second dial tone.

MF digit stream: KP + II + ANI + ST
KP + 8XX + NXX + XXXX + ST

DTMF subscriber dialing:

AUTH first: [AUTH] + [PIN] + ADDR + [ACCT]
AUTH last: ADDR + [AUTH] + [PIN] + [ACCT]
MCCS: 0 + ADDR + TCN + [ACCT] or
01 + CC + NN + TCN + [ACCT]

where,

ACCT = account code (1–12 digits)
ADDR = address (7 digits NXX-XXXX)
ANI = automatic number identification (3, 6, or 10 digits)
AUTH = authorization code (5–7 digits)
CC = true country code (padded to 3 digits with leading zeros)
II = indicates two information digits
KP = key pulse, signifies start of MF digit stream
N = one dialed number digit in the range of 2–9
NN = national number (15 digits maximum)
MCCS = Mechanized Calling Card Service
PIN = personal identification number (1–4 digits)
ST = stop transmit, signifies end of MF digit stream
TCN = travel card number (14 digits)
X = one dialed number digit in the range of 0–9

Note: Brackets [ ] indicate optional parameters.

Information digit screening

Information digit (ID) screening is performed on the information digits that accompany the ANI. Information digit assignments are defined in Table 4-1.

Table 4-1
ANI information digit assignments

Information digits	Assigned definition
00	identified line – no special treatment
01	Operator Number Identification (ONI) – multi-party
02	automatic number identification (ANI) failure
06	hotel/motel without room identification
07	coinless, hospital, or prison
08	inter-LATA restriction – identified line
10	test call
12–19	not assigned – conflict with 1NX
20	automatic Identified outward dialing – (AIOD)
24	translated 8XX number (requires software option N00R0001)
27	coin call
68	inter-LATA restricted – coin call
78	inter-LATA restricted – coinless, hospital, prison
95	test call 01 transition call
	—end—

Customer premises equipment (CPE) connectivity

Customer premises equipment (CPE), such as private branch exchanges (PBXs), key systems, or ISDN terminals, may be directly connected into the UCS DMS-250 switch without going through the LEC office. Specific CPE may be connected to the UCS DMS-250 switch in one of three ways:

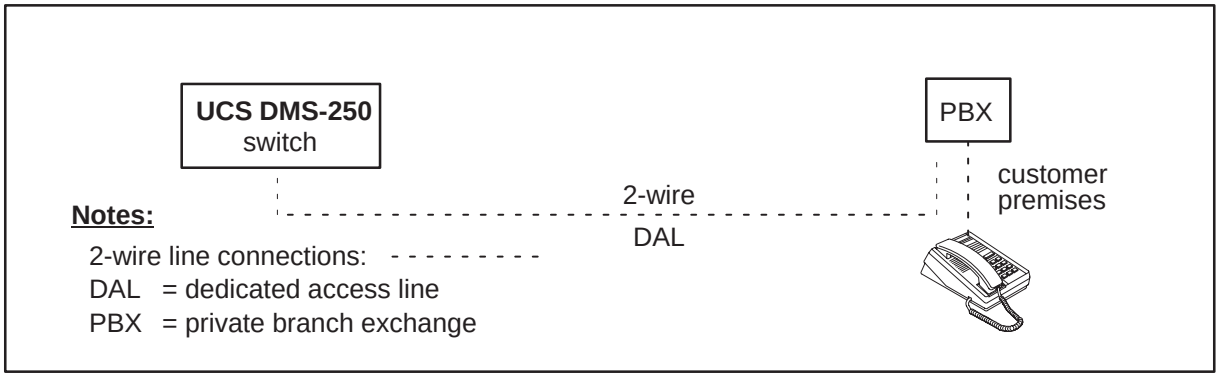
- dedicated access line (DAL)
- dedicated access line-terminal interface equipment (DAL-TIE)
- primary rate interface (PRI)

Dedicated access line (DAL)

A dedicated access line (DAL) is a 2-wire interface between the UCS DMS-250 switch and a single telephone, a shared access line, or a virtual PBX system. Originating, terminating, and two-way DAL access over loopstart and ground start is supported.

Figure 4-6 illustrates a 2-wire DAL connection between the UCS DMS-250 switch and a PBX.

Figure 4-6
DAL connection between the UCS DMS-250 switch and a PBX



DAL dialing plans

DAL access uses one of the following dialing plans:

DTMF subscriber dialing:

AUTH first: [AUTH] + [PIN] + ADDR + [ACCT]
AUTH last: ADDR + [AUTH] + [PIN] + [ACCT]
MCCS: 0 + ADDR + TCN + [ACCT] or
01 + CC + NN + TCN + [ACCT]

where,

ACCT = account code (1–12 digits)
ADDR = address (7 digits NXX-XXXX)
AUTH = authorization code (5–7 digits)
CC = true country code (padded to 3 digits with leading zeros)
MCCS = mechanized calling card service
N = one dialed number digit in the range of 2–9
NN = national number (15 digits maximum)
PIN = personal identification number (1–4 digits)
TCN = travel card number (14 digits)
X = one dialed number digit in the range of 0–9

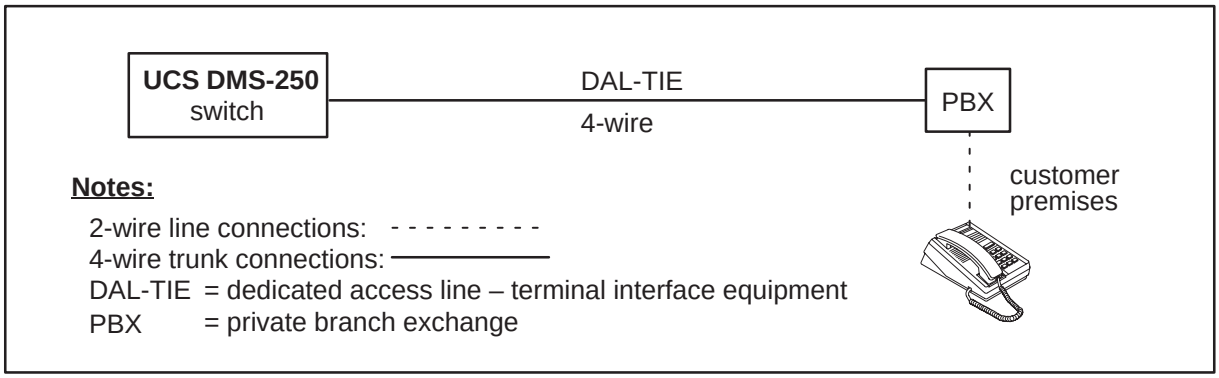
Note: Brackets [ ] indicate optional parameters.

Dedicated access line-tie (DAL-TIE)

Dedicated access line-terminal interface equipment (DAL-TIE) is a four-wire interface between the UCS DMS-250 switch and a PBX, key system, or other customer premises equipment. Originating, terminating, and two-way DAL-TIE access is supported. DAL-TIE uses PTS.

Figure 4-7 illustrates a four-wire DAL-TIE connection between the UCS DMS-250 switch and a PBX.

Figure 4-7
DAL-TIE connection between the UCS DMS-250 switch and a PBX



DAL-TIE dialing plans

DAL-TIE access uses one of the following dialing plans:

MF digit stream: KP + [AUTH] + [PIN] + ADDR + [ACCT] + ST

DTMF subscriber dialing:
AUTH first: [AUTH] + [PIN] + ADDR + [ACCT]
AUTH last: ADDR + [AUTH] + [PIN] + [ACCT]
MCCS: 0 + ADDR + TCN + [ACCT] or
01 + CC + NN + TCN + [ACCT]

or MF digit stream: KP + [AUTH] + [PIN] + 0 ADDR + ST
DTMF subscriber dialing: TCN + [ACCT]

where,

ACCT	= account code (1–12 digits)
ADDR	= address (7 digits NXX-XXXX)
AUTH	= authorization code (5–7 digits)
CC	= true country code (padded to 3 digits with leading zeros)
KP	= key pulse, signifies start of MF digit stream
MCCS	= Mechanized Calling Card Service
N	= one dialed number digit in the range of 2–9
NN	= national number (15 digits maximum)
PIN	= personal identification number (1–4 digits)
ST	= stop transmit, signifies end of MF digit stream
TCN	= travel card number (14 digits)
X	= one dialed number digit in the range of 0–9

Note: Brackets [ ] indicate optional parameters.

Primary rate interface (PRI)

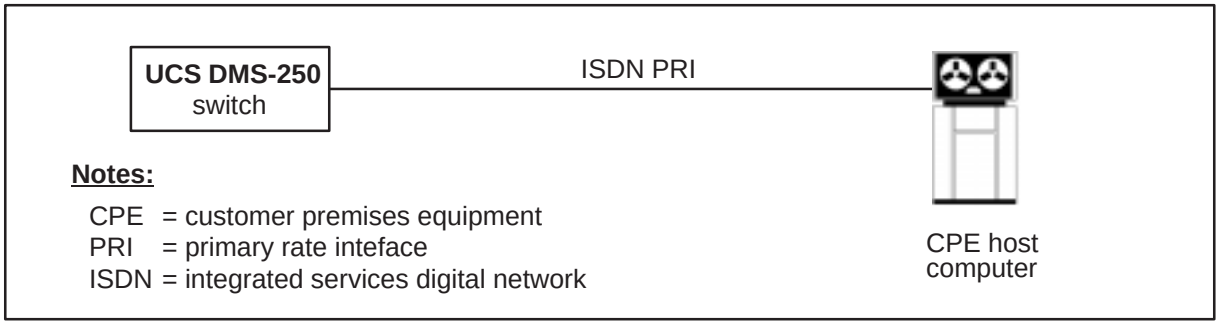
Primary rate interface (PRI) provides ISDN connectivity between the UCS DMS-250 switch and a PBX, key system, local area network, host computer, or other customer premises equipment.

PRI trunks provide 23, 64-kbits/s bearer channels and one, 64-kbits/s data channel. The data channel carries signaling information for the bearer channels. The UCS DMS-250 switch supports both Generic PRI and TR-41449 PRI calls:

- Generic call type is compatible with ANSI and National ISDN-1 standards.
- TR-41449 call type enables the UCS DMS-250 switch to interwork with the AT&T PBX PRI circuits.

Figure 4-8 illustrates PRI connectivity between the UCS DMS-250 switch and a CPE host computer.

Figure 4-8
PRI connectivity between the UCS DMS-250 switch and a CPE host computer



PRI dialing plans

PRI access uses one of the five dialing plans, defined in the following paragraphs. Asterisks (*) indicate infomation received in the PRI setup message.

For a fully filed authcode or a calling line identification (CLID) with class of service not exceeded;

DTMF subscriber dialing: ADDR* + [ACCT]

For a fully filed authcode or CLID with class of service exceeded;

DTMF subscriber dialing: ADDR + AUTH + [PIN] + [ACCT]

For a fully filed or partially dialed authcode;

DTMF subscriber dialing: AUTH + [PIN] + [ADDR] + [ACCT]

For an MCCS call;

DTMF subscriber dialing: 0 + ADDR* + TCN + [ACCT]

For a cut-through call;

DTMF subscriber dialing: ADDR* + [PIN] + ADDR + ACCT

where,

ACCT	= account code (1–12 digits)
ADDR	= address (7 digits NXX-XXXX)
AUTH	= authorization code (5–7 digits)
CC	= true country code (padded to 3 digits with leading zeros)
KP	= key pulse, signifies start of MF digit stream
MCCS	= Mechanized Calling Card Service
N	= one dialed number digit in the range of 2–9
NN	= national number (15 digits maximum)
PIN	= personal identification number (1–4 digits)
ST	= stop transmit, signifies end of MF digit stream
TCN	= travel card number (14 digits)
X	= one dialed number digit in the range of 0–9

Note 1: An asterisk (*) indicates information received in the PRI setup.

Note 2: Brackets [ ] indicate optional parameters.

Intermachine trunk (IMT) connectivity

Intermachine trunks (IMTs) interface the UCS DMS-250 switch to other UCS DMS-250 switches within the UCS network or to other switches outside the network. An IMT connection can be made in a number of ways, such as microwave, fiber or satellite. The direction of an IMT can be either two-way or originating only.

IMTs can use per trunk signaling (PTS) or Signaling System No. 7 (SS7). SS7 IMTs can optionally be marked as Intra-network IMTs (between the UCS DMS-250 switch and another switch within the same network) or as Inter-network IMTs (between the UCS DMS-250 switch and another switch outside of the UCS network). Different feature sets are utilized depending on whether the IMT is within the network or crosses network boundaries.

The different types of IMTs supported by the UCS DMS-250 switch are described in the following paragraphs.

Intra-network IMT

An Intra-network IMT connects the UCS DMS-250 switch to another UCS DMS-250 switch within the same network.

Inter-network IMT

An Inter-network IMT connects the UCS DMS-250 switch to another switch outside of the network. The UCS IMTs can interwork with other carrier switches, including;

- **DSC DEX switch**—The UCS to DEX ISDN User Part (ISUP) interworking enables the UCS DMS-250 switch to interwork over SS7 facilites with any other switch that complies with American National Standards Institue (ANSI) SS7 interworking specifications. The trunk group datafill identifies the far-end connection as an ANSI-compliant switch.
- **Sprint**—The UCS to Sprint ISUP interworking feature enables the UCS DMS-250 switch to interwork with a Sprint DMS-250 switch over SS7 IMT facilites. This feature is implemented in trunk group datafill, where the far-end connection is identified as a Sprint DMS-250 system.
- **International Gateway switch**—An Inter-network IMT can be used to connect to International gateway switches, like the DMS-300.
- **Other UCS DMS-250 switches**—An Inter-network IMT can be used to connect to UCS DMS-250 or MCI DMS-250 switches in other IXC networks.

Electronic tandem network IMT (ETN-IMT)

The electronic tandem network (ETN) is a specialized network used in private business configurations. The UCS DMS-250 switch allows subscribers to originate ETN-IMT calls, providing compatibility with Electronic Tandem Network switches for private network configurations.

Gateway IMT

A Gateway IMT allows the UCS DMS-250 switch to directly access the international network without routing through a gateway switch. The UCS DMS-250 switch supports the two common types of protocol used for international network connectivity:

- Q.764 ISDN User Part (ISUP)
- Q.767 ISUP

IMT dialing plans

The UCS DMS-250 switch IMTs use one of the following dialing plans:

ADDR:

MF digit stream: KP + ADDR + ST

DTMF subscriber dialing: ADDR + [#]

I3PA

MF digit stream: KP + FC + PART +ADDR + ST

DTMF subscriber dialing: FC + PART + ADDR + [#]

QS3PA0, standard call

MF digit stream: KP + Q + SAT + TPART + ADDR + ST

DTMF subscriber dialing: Q + SAT + TPART + ADDR

QS3PA0, virtual private network (VPN) call

MF digit stream: KP + Q + SAT + ADDR + OPART + ST

DTMF subscriber dialing: Q + SAT + TPART + ADDR + OPART

Universal access, authorization code call

MF digit stream: KP + 8XX-NXX-XXXX + ST

DTMF subscriber dialing: AUTH + [PIN] + ADDR + [ACCT]

Universal access, MCCS call

MF digit stream: KP + 8XX-NXX-XXXX + ST

DTMF subscriber dialing: 0 + ADDR + TCN + [ACCT]

where,

ACCT = account code (1–12 digits)
ADDR = address (7 digits NXX-XXXX)
FC = facility code (refer to Table 4-2)
KP = key pulse, signifies start of MF digit stream
MCCS = Mechanized Calling Card Service
N = one dialed number digit in the range of 2–9
OPART = originating partition
PART = partition
PIN = personal identification number (1–4 digits)
Q = queing indicator (1= queing not performed by switch; 2 = queing was performed by previous switch)
SAT = satellite indicator
ST = stop transmit, signifies end of MF digit stream
TCN = travel card number (14 digits)

TPART = terminating partition
X = one dialed number digit in the range of 0–9

Note 1: The pound sign (#) indicates end of digit stream.

Note 2: Brackets [ ] indicate optional parameters.

Table 4-2 defines the facility code (FC) digits used in the preceding I3PA dialing plan.

Table 4-2
Facility code (FC) digits used by I3PA IMT dialing plan

FC digit	Assigned definition
00	queuing not performed by previous switch, no satellite used
01	queuing not performed by previous switch, satellite was used
02	queuing performed by previous switch, no satellite used
03	queuing performed by previous switch, satellite was used
20	queuing not performed by previous switch, no satellite used, send COS index
21	queuing not performed by previous switch, satellite was used, send COS index
22	queuing performed by previous switch, no satellite used, send COS index
23	queuing performed by previous switch, satellite was used, send COS index
56	call is a 56 k/bps data call

—end—

Data and video services

The UCS DMS-250 switch provides the following switched data and dialable wideband services.

Switched 56 Kbp/s data service

Switched 56 enables subscribers to originate 56-kilobyte data calls over DAL trunk groups and IMTs. Switched 56 provides a platform that addresses not only the voice requirements of the end user, but also the data and videoconferencing communications needs.

Dialable wideband service

The dialable wideband services (DWS) feature enables the network provider to offer multi-rate bandwidth on demand for videoconferencing, distance learning, remote surveillance, high-speed data transfer, image transfer, private line redundancy, and local area network/wide area network (LAN/WAN) connections.

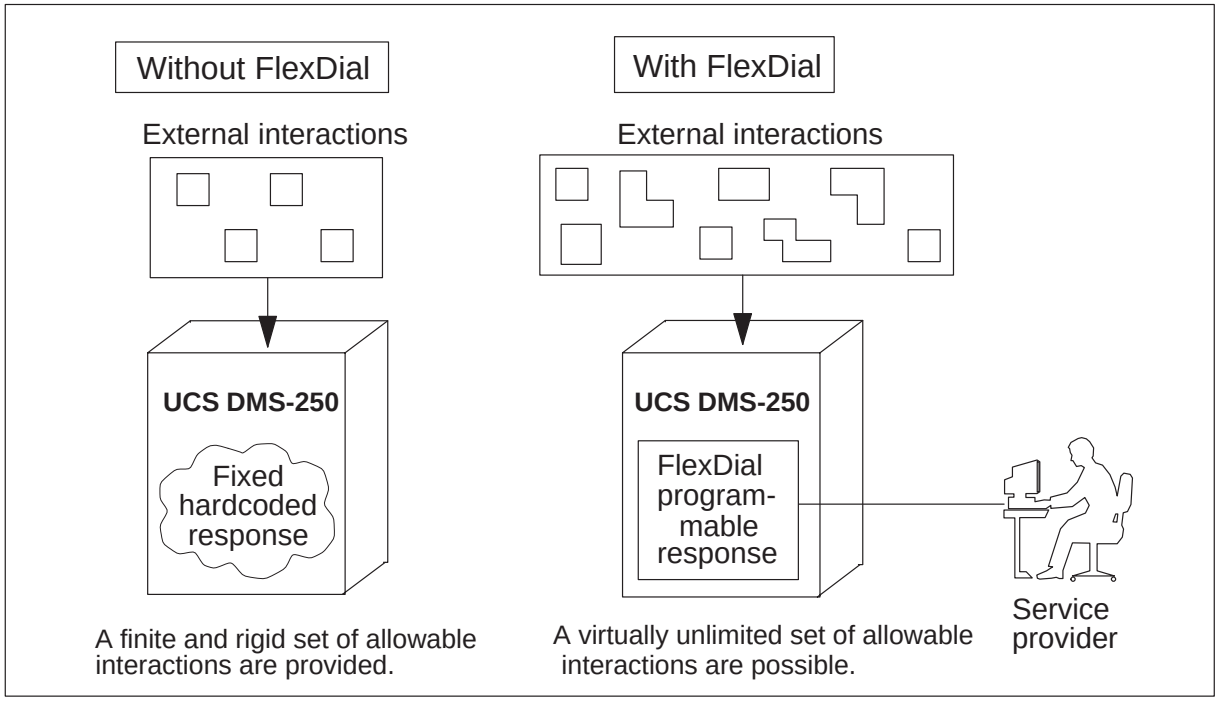
DWS is a multi-rate, circuit-mode service aimed at satisfying end-user needs for flexible wideband connectivity in the switched network. It offers a dialable, on-demand, real-time switched service that allows the user to establish network connections with rates as high as 1.5 megabits per second (Mbps). These services support SS7 FGD, SS7 IMT, and PRI.

FlexDial Framework

The FlexDial Framework is a call processing application that defines, through provisioning, any desired interaction with the originating agent. For example, FlexDial can mimic FGA or FGD interactions, or introduce an interaction set that is unique from existing functionality.

Without the FlexDial framework, the UCS DMS-250 software architecture relies heavily on hardcoding to make critical decisions during call setup. Customizing dial plan interactions requires costly software development. With the FlexDial application, this restriction can be removed through use of datafill control for dial plan, agent, and subscriber features. The actual dialog with the user interface for a particular access terminal is completely provisioned by the operating company, as shown in Figure 4-3.

Figure 4-3
FlexDial and external interactions



With FlexDial, you can essentially "program" the origination side of the call to implement customized functionality. FlexDial opens up all aspects of the interactions (or dial plan) with the originating agent through a *provisioning data model* that is used to define the desired interaction.

The FlexDial framework identifies three areas of provisioning:

- dial plan provisioning, allowing you to mimic existing protocols or interactions (such as FGD or DAL), modify existing protocols or interactions, or create your own interactions or services.
- agent provisioning, allowing you to customize agent features independent of dial plan interactions. With few exceptions, the functionality of the FlexDial agency meets or exceeds the capability of non-FlexDial agencies.
- subscriber provisioning, allowing you to treat all subscriber numbers generically and create your own subscriber number types with specific services, such as account codes or Mechanized Calling Card Services (MCCS). With few exceptions, the capability of processing subscriber numbers and subscriber features meets or exceeds the capability of non-FlexDial subscriber provisioning.

FlexDial introduces a flexible dialing plan trunk agency, the AXXESS trunk.

The FlexDial feature requires activation of SOC UTRS0002, Flexible Dialing Plans.

Note: For more information on FlexDial, refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

Release Link Trunk (RLT)

The RLT feature provides the UCS DMS-250 switch with the capability to release redundant trunk resources used in a call after a redirection event. Without RLT, redundant trunk resources are used after a call redirection such as call transfer or operator redirection. With RLT, the redundant circuits are released so that a normal path is maintained. Typically RLT is used for call forwarding or call transfer scenarios.

During release link trunking, a UCS DMS-250 switch bridges the originating or terminating trunk of one call to the terminating trunk of a second call, then releases trunks and switches between the UCS DMS-250 remote switch (the switch receiving the incoming call) and the Enhanced Services Provider (ESP). An ESP is a software system that provides specialized switching, billing, and call processing features.

Although the switches provide the RLT capability, services platforms initiate RLT.

After release link trunking, the ESP is available for other calls. Without release link trunking, the ESP and the trunks involved must maintain at least one call connection until the call is over.

SS7 RLT

Using elements of signaling system 7 (SS7), an SS7 RLT connects a remote UCS DMS-250 switch to a services platform.

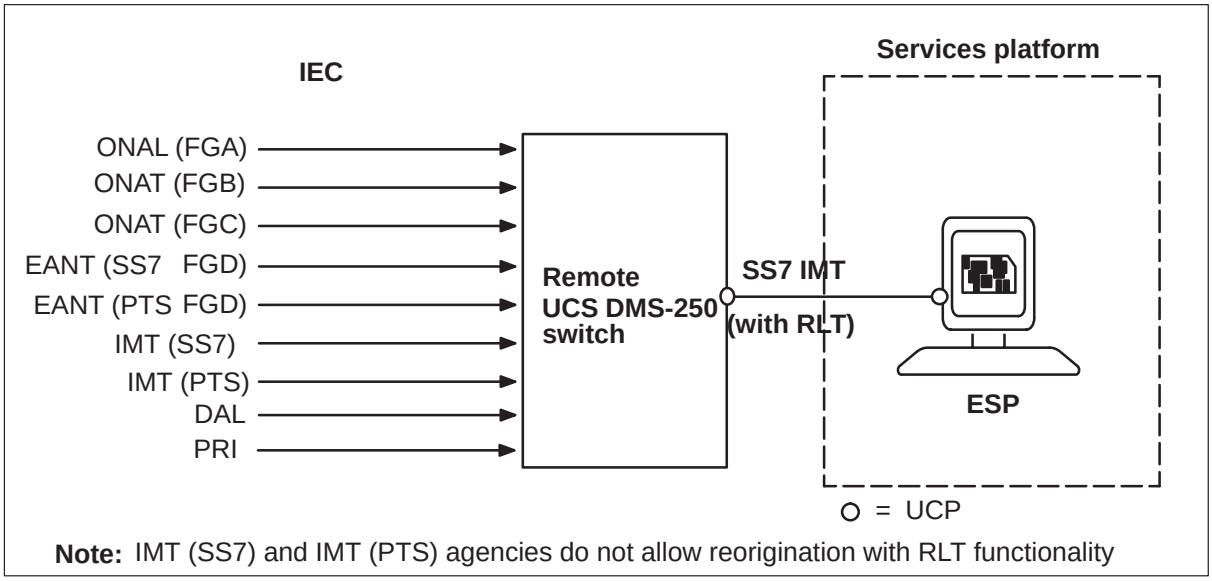
SS7 RLT functionality is available between the following entities:

- two or more UCS DMS-250 switches
- a UCS DMS-250 switch and an ESP

UCS DMS-250 switches with SS7 RLT functionality also generate billing records for RLT calls.

Figure 4-9 shows the trunk interworkings for the remote UCS DMS-250 switch and its connection to an ESP. This figure indicates the types of trunk group originations for calls entering the network.

Figure 4-9
Trunk interworkings for SS7 RLT at an ESP



Note: For UCS08 and beyond, SS7 RLT also works with the traffic operator position system (TOPS).

The SS7 RLT features require activation of SOC URLT0001, SS7 RLT Base.

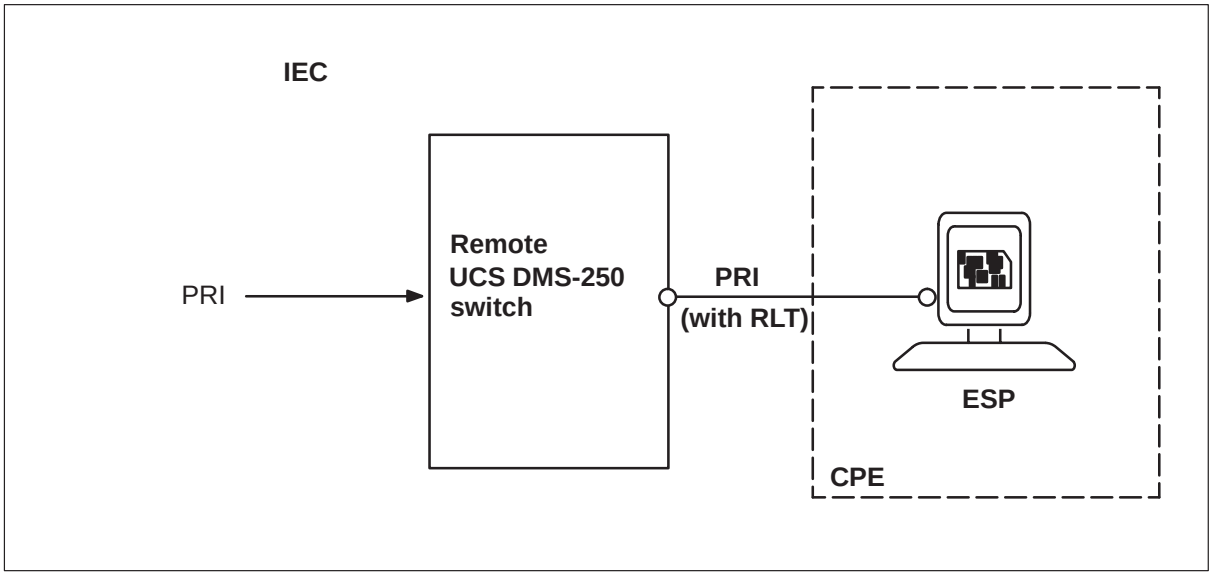
Note: For more information on SS7 RLT, refer to the *UCS DMS-250 SS7 RLT Feature Application Guide*.

Primary Rate Interface (PRI) RLT

PRI RLT functionality allows a UCS DMS-250 switch to release a PRI trunk while it bridges one call's originator to a second call's terminator. After release link trunking, the CPE is available for other calls. RLT functionality increases a UCS DMS-250 switch's traffic handling capacity and saves resources during call routing. Without release link trunking, the CPE and trunks involved must maintain at least one call connection until a call is over.

Figure 4-10 shows the trunk interworkings for the remote UCS DMS-250 switch and its connection to the CPE. This figure indicates the types of trunk group originations for calls entering the network.

Figure 4-10
PRI trunk interworkings for RLT at a UCS DMS-250 switch



The UCS DMS-250 switch uses the Q.932 FACILITY message and Facility information element (FIE) to provide RLT capability.

The PRI RLT features requires activation of SOC PRLT0001, PRI RLT.

Note: For more information on PRI RLT, refer to the *UCS DMS-250 PRI RLT Feature Application Guide*.

Other subscriber dialing features

Subscribers have access to specific features when placing calls, including reorigination dialing, speed dialing, and hotline dialing. Each of these dialing features are defined briefly in the following paragraphs.

Reorigination dialing

The reorigination dialing feature allows a subscriber to make a number of calls without having to re-access the switch. This feature, if activated by the carrier, returns a dial tone to the calling party within a specified period of time after the called party hangs up. Otherwise, the subscriber dials either an octothorpe (#) or an asterisk (*) to receive another dial tone.

The feature requires entering an authcode or travel card number when making the first call. All call detail records contain the applicable authcode, the travel card number, the PIN and/or account code digits entered by the subscriber even if the subscriber entered them only on the first call.

Speed dialing

The speed dialing feature provides a way to use an abbreviated dialing plan to reach frequently dialed numbers. Speed dialing lets subscribers use three- or four-digit numbers associated with their authcode or ANI digits.

The UCS DMS-250 switch uses the speed dial number to retrieve the full number and make the call; it translates the three-digit (for public speed dialing) or four-digit (for private speed dialing) speed dial numbers into a seven-digit, ten-digit, or international direct distance dialing number.

The UCS DMS-250 switch supports 256,000 private speed dial indexes, each index supporting a maximum of 99 private speed numbers. It supports a maximum of 999 public speed lists.

Hotline dialing

The hotline dialing feature allows calls to be routed based on a predetermined number without requiring the originating subscriber to enter and dial directory number digits. Usually seven- or ten-digit hotline numbers are filed against the originating subscriber's authorization code (authcode). End users can use hotline dialing for standard 1+, 0+, 0-, 01+, and 011+ call types. The UCS DMS-250 switch uses the following three variations of the feature:

- Hotline by trunk group uses hotline digits associated with an authcode filed against a particular trunk group. The subscriber dials no digits.
- Conditional hotline allows the subscriber to override a stored authcode. If no digits are entered within a period of time specified by the carrier, the call is routed to the hotline number.
- Special feature hotline allows the carrier to datafill special codes (one or two digits) that subscribers dial for routing. This feature is often used for carrier customer service or trouble desks.

Hotline dialing is a specialized feature that decreases the time it takes for callers to connect to emergency services such as hospitals, ambulance dispatcher, police, and fire departments. This leads to a faster response in handling traumas and other time-critical rescue operations.

Translations and routing

The UCS DMS-250 switch uses a complex decision making process when processing calls. Upon call arrival the switch generates a series of queries that must be answered in order to successfully process and complete a call. The answers to call processing queries are stored in the translation tables.

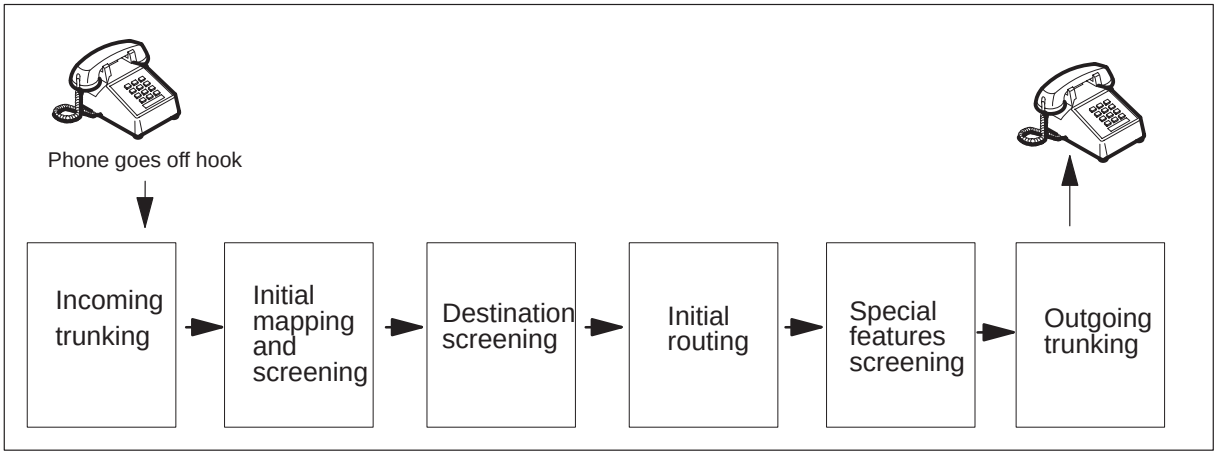
Translations stages

Translations is the reading of selected entries in designated tables in order to determine the path a call should follow. The process can be seen as the completion of six basic stages:

- incoming trunking
- initial mapping and screening
- destination screening
- initial routing
- special features screening
- outgoing trunking

Figure 5-1 shows the progress of a call though the common translation stages.

Figure 5-1
Standard translations stages



Incoming trunking

The incoming trunking stage of translations refers to basic trunk tables containing detailed information about each trunk connected to the originating office.

Initial mapping and screening

Initial mapping and screening tables screen incoming calls by identifying the originator of the call. For more information on initial screening, please refer to the Screening and Validation chapter of this NTP.

Destination screening

Destination screening consists of screening the address digits received to determine a destination point for a given call. For more information on destination screening, please refer to the Screening and Validation chapter of this NTP.

Initial routing

Routing tables are responsible for routing calls to their destination. The information found in these tables dictates how and where a call will be completed, or if the call will be directed to a recorded announcement or treatment. Routing tables list a primary path for a call plus up to eight alternate routes for call completion.

Special features screening

Operating companies use the special features screening side of the translation process to provide information about the originator to determine whether a subscriber's call is to be blocked or allowed to proceed with

specific restrictions. For more information on special features screening, please refer to the Screening and Validation chapter of this NTP.

Outgoing trunking

The outgoing trunking stage of translations refers to basic trunk tables containing detailed information about each trunk connected to the terminating office.

Components of the translation system

The translation system is a collection of data and the facilities for accessing and manipulating that data. It includes the following elements:

- the translation database, which consists of a collection of tables
- the table editor, which is the software that controls data entry, storage and retrieval of information in the data tables.

For more information on the table editor, refer to the *Basic Translations Tools Guide*.

Translation tables structure

A translation table consists of rows and columns. A row is called a tuple and the columns within a tuple are called fields.

Key fields

The UCS DMS-250 switch reads selected tuples within the translation tables to determine the progression of a call through the switch. Each tuple in a table is identified by a field known as key field. Key fields make each of the tuples unique so that the UCS DMS-250 switch can distinguish which tuple to index when processing a call. For most tables key fields comprise only one field: in some tables, however more than one field of data is required to make the key field unique.

Data fields

The other fields in the tables are called data fields. In some cases a field may be composed of two or more subfields. Some tables do not have sufficient room to store additional data pertaining to a specific field. In these cases the field contains a pointer to a subable containing the additional data.
Figure 5-2 illustrates the structure of a translation table.

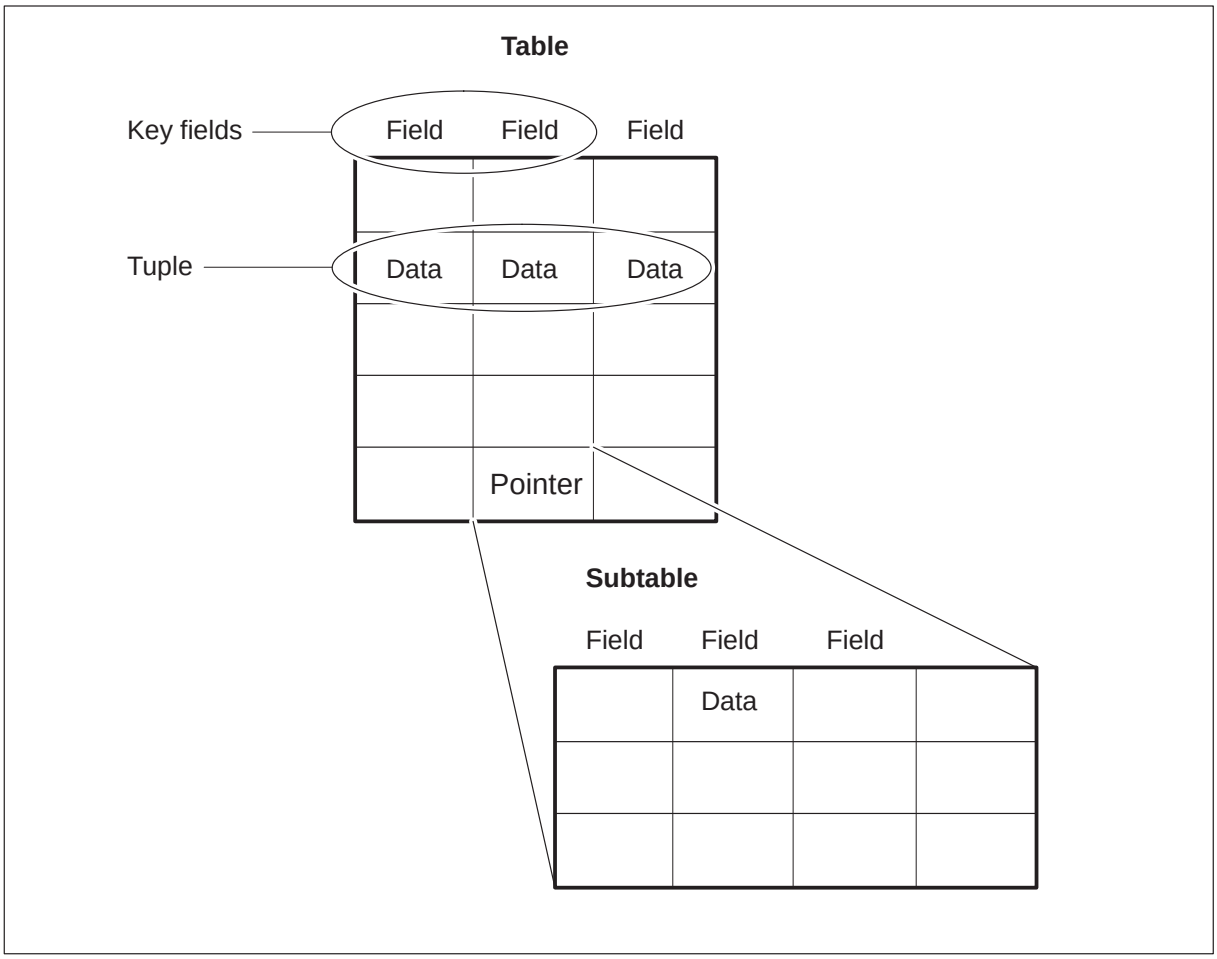
Datafill

Refers to the data entered into a table. The act of entering the datafill is referred to as provisioning. Datafill is often used as a synonym for the data itself. Also the term translation and datafill are sometimes used interchangeably.

Pointers

A pointer is a name identifying an absolute address to a location in data store. It is a field of data in a tuple that indexes the key field of another tuple in a different table or subtable.

Figure 5-2
Translation table structure



Partitions and serving translation scheme (STS)

Switch partions and serving translations schemes (STSs) are used to route calls through the switch.

A call that enters the UCS DMS-250 switch can originate from an NPA (numbering plan area) different from the one where the switch resides, from a private network or even a common trunk group. Because of this, in order to facilitate the determination of the point of origin of a call, the area of operation of the switch is partitioned.

The UCS DMS-250 switch uses a three-digit code known as the serving translation scheme (STS) to derive the routing plan for any call it processes. STSs allow the switch to separate its customers into unique partitions.

Partitions

The UCS DMS-250 switch is physically located in one area code; however it "partitions" pieces of itself (STSs) in the same or in other area codes.

Partitioning allows the UCS DMS-250 switch to set up private networks that can operate independently of each other, even though they share access to the same switch. A common carrier can partition the entire translations and routing system of the switch to provide businesses/customer groups (1000 maximum) with unique dialing plans, call routing and access to facilities. Partitioning also allows segregation of dialing plans and routing patterns that are not shared, while allowing common portions to remain shared.

Partition values include OPART (originating partition) and TPART (terminating partition). They are determined in a variety of ways, depending upon the trunk group type, the dial plan defined for the trunk group and the type of call (on-network or off-network) being processed. Originating and terminating partitions are used to map the STS that is ultimately used to route the call. OPART numbers can range in value from 000 to 999. TPART numbers can range in number from 0 to 31.

STS

The Serving Translation Scheme is like an area code that is unique to a particular customer or group of customers. The common Carrier's network divides areas served by that carrier's respective switch sites. Each switch site's serving area assigns an STS, which is a three digit number from 000-999, depending on the carrier's preferred numbering convention.

A few characteristics of STSs are:

- A UCS DMS-250 can have up to a 1000 STSs
- Table HNPACONT contains the actual STS values
- Each STS has its own set of NPAs/NXXs

The main difference between STSs and partitions is that STSs are unique numbers assigned within the switch to a customer or group of customers that use the same routing scheme, while partition values are associated with the network configuration.

Partition and STS derivation

The partitions and STS for a call can be derived in many different ways such as:

By authcode

When a call originates on FGA, FGB, FGD or a DAL trunk group, the STS is derived from originating partition (OPART) and terminating partition (TPART) numbers that can be found in the authorization code database. These numbers are then mapped to the partition database to obtain the value for the STS.

By ANI

When a call originates on FGD or PRI, the STS is derived by analyzing the ANI digits in two ways:

- When a 10-digit ANI is used to identify the subscriber, the OPART and TPART numbers found in the ANI database are mapped to the partition database to obtain the value for the STS.
- When only a 3- or 6-digit ANI (Causual ANSI) are used to identify the subscriber, a default STS is assigned through the system-wide office parameter database.

Note: The calling line ID (CLIO) associated with the PRI call is treated as an ANI.

By IMT partition

When a call travels over an (inter-machine trunk (IMT), the STS is derived from the three-digit partition received as part of the dial plan over the IMT. This partition is mapped to a specific database in order to obtain the actual STS value.

By office parameter in MCCS calls

- If the validation of the calling card number occurs at the service control point (SCP), the SCP returns an OPART that may be translated to a different STS.
- If the response from the SCP times out, then the office parameter MCCS_STS provides the STS.
- If the calling card number is validated inswitch, office parameter MCCS_STS provides the STS.

BY CIC

If the call is determined to be a CIC Routing call, then the following applies:

- If the status of the ANI associated with the call is filed as CASUAL in the ANI table, then the STS associated with the CIC is used to route the call.
- If the STS override option is used in the CIC Routing table, then the STS associated with the CIC will override the STS derived from the ANI.

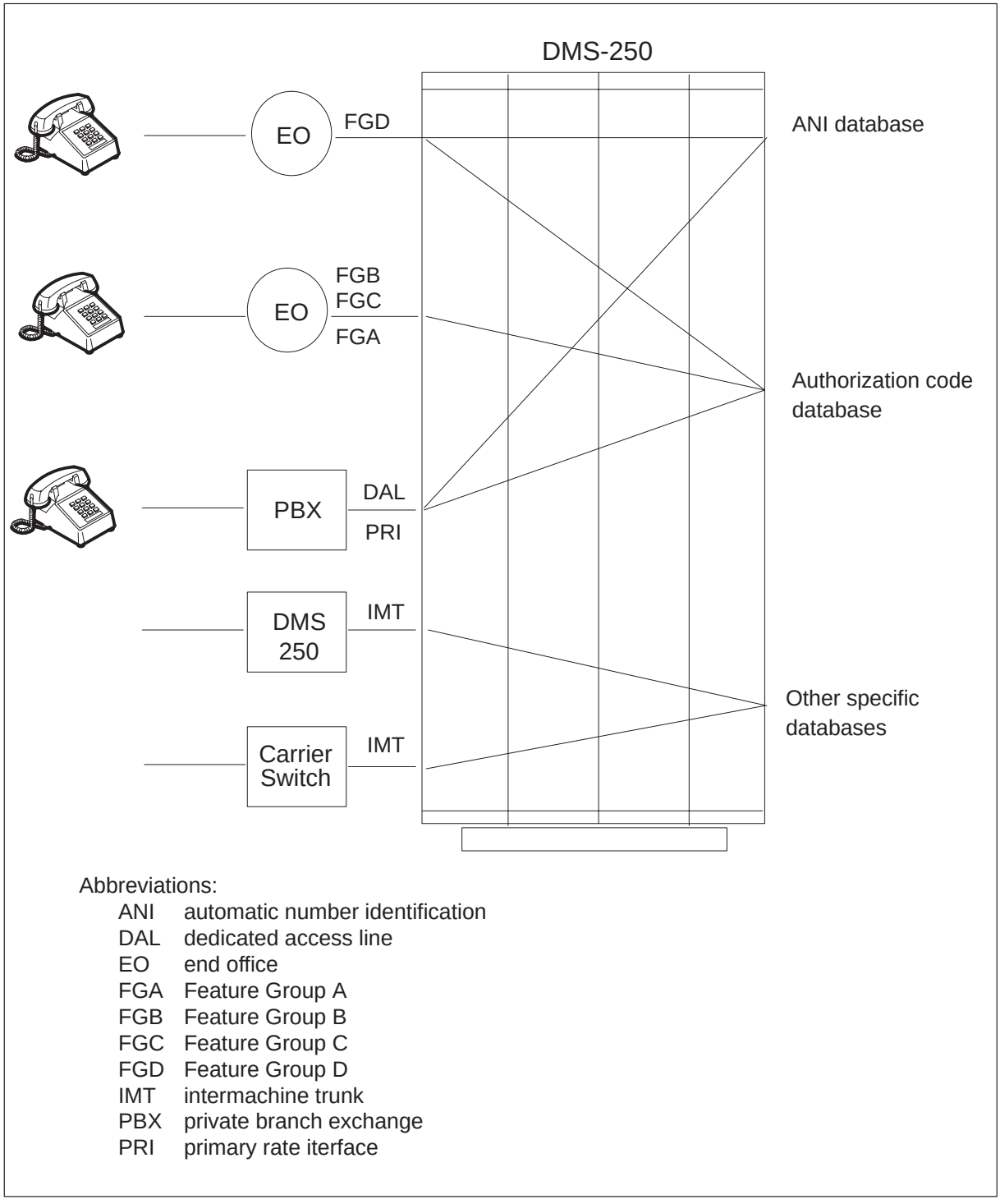
Refer to *UCS DMS-250 CIC Routing Application Guide* for more information on deriving the STS by CIC.

By default

If it is not possible to obtain an STS value from any other source, the parameter DEFAULT_STS, provides an STS value for the call.

Figure 4–3 shows the databases used by each originating trunk agency to obtain the partitions that should be used to derive the STS.

Figure 5-3
STS derivation



Abbreviations:

ANI	automatic number identification
DAL	dedicated access line
EO	end office
FGA	Feature Group A
FGB	Feature Group B
FGC	Feature Group C
FGD	Feature Group D
IMT	intermachine trunk
PBX	private branch exchange
PRI	primary rate iterface

Routing overview

Routing is the process the UCS DMS-250 switch follows in order to identify and select a path on which to complete the call. The UCS DMS-250 switch offers several routing features, such as:

- time of day routing
- adaptive routing
- direct termination service
- global title translations

Time of day routing

Time of day routing provides the capability for the UCS DMS-250 switch to allow or deny route choices for a call based on the time of the day when the call is made. The UCS DMS-250 switch selects the route for the call by progressively trying the choices contained in the active route list. The route list is compiled based on the time of the day and the day of the year.

Each day of the year is classified into one of the following categories:

- weekday
- Sunday
- Saturday
- holiday
- special day

Each of these categories can be broken down further into 16 time-of-day ranges. End offices have a global indicator that points out which route schedule is currently active based on the current day category, time-of-day and time-of-day schedule. All of this information is stored in the time-of-day database.

Office personnel set up route schedules and time-of-day schedules and can change them dynamically on a need basis. Office personnel also have the capability of forcing a route schedule to be active overriding the current active schedule in order to accommodate special traffic situations.

Carrier identification code (CIC) Routing

The CIC Routing feature provides the UCS DMS-250 switch the capability to route calls based on a received CIC on the originating truck or a default CIC assigned to the trunk group. The CIC identifies a particular carrier and is recorded in the call detailed record.

For more information on CIC Routing, refer to the *UCS DMS-250 CIC Routing Application Guide*.

Adaptive routing

The adaptive routing feature enables the UCS DMS-250 switch to route a call over off-net facilities, in the event that the required on-net facilities are not available.

Under normal routing conditions, an on-net call is routed to a specific trunk group and, if there are lines available, will be terminated on one of these lines.

If no lines are available (all the lines in the trunk group are busy, or no lines have been assigned within a virtual trunk group), the call is adaptively routed. This is accomplished by allowing the carrier to replace or substitute digits and pauses into the digit stream to allow the call to be properly routed independently of the actual dialed digits.

Adaptive routing consists of 3 steps:

1 A separate field is referenced in the routing database.

2 The 10-digit off-net number in this field is substituted for the 7-digit on-net number.

3 The 10-digit number is routed via off-net facilities for indirect termination at the subscriber's remote location.

All of the previous translation and routing is disregarded and translation occurs on the assigned 10-digit number.

Adaptive routing may be applied to any UCS DMS-250 switch within a subscriber's private network. Each UCS DMS-250 switch in the private network includes the adaptive 10-digit number for a particular NXX. If the location is virtual, adaptive routing is applied at the originating switch. If the location is actual, adaptive routing may be applied at the originating, tandeming, or terminating switch, as applicable.

Direct termination service

Direct termination service (DTS) allows calls that would ordinarily terminate off the network to be translated and routed to a seven-digit on-network number for termination over a DAL or a ETN-IMT trunk group facility.

The extended translation capability provided by this feature, identifies the last 4 digits (XXXX) of a 10-digit dialed number and maps them to the extended digit screening database to obtain a route list number that cross-references the Extended Digit Route database. The extended digit route database identifies a list of outgoing route choices for the call.

Global title translations

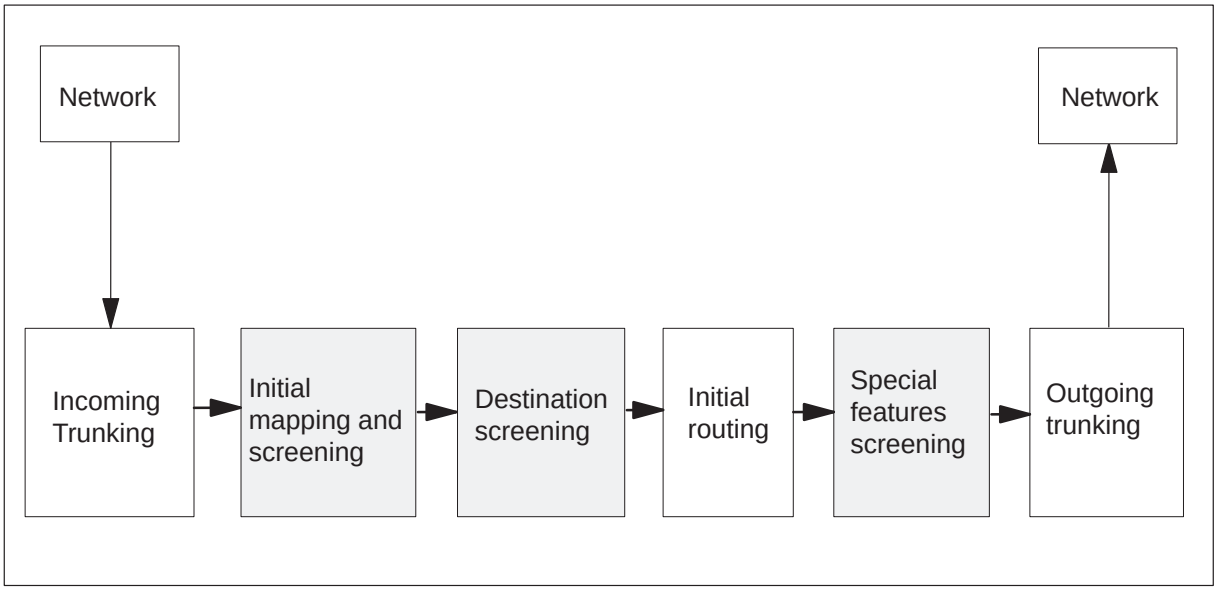
Global title translations (GTT) provides the capability for the UCS DMS-250 switch to route SS7 messages or database queries, based upon dialed digits, to specific signal transfer points (STPs) or service control points (SCPs).

GTT converts an application-specific address, such as the dialed number, into the Common Channel Signalling System #7 (CCS7) network address. A CCS7 network address consists of a subsystem number (SSN) and a point code (PC). The SSN is a numeric identifier for a specific application. The PC is the node in the network where the application resides. This network address designates the appropriate STP or SCP.

Screening and validation

The typical call flow in a UCS DMS-250 switch or network of switches consists of several stages, as shown in Figure 6-1. This chapter provides information about the screening stages of a call: initial mapping and screening, destination screening, and special features screening.

Figure 6-1
UCS DMS-250 high-level call flow



In the screening stages of a call, the UCS DMS-250 switch analyzes the dialed digits and call originator identification to determine if the call follows correct rules. An example of screening is the validation of the leading digits to establish if it goes outside the system, or to preclude the selection of any satellite circuits in the entire end-to-end connection of a call.

The screening and validation features on the UCS DMS-250 switch:

- allow only certain classes of users on the switch enhanced calling privileges. For example, only certain managers of a company may be allowed to dial international numbers or 900 numbers

- provide end users with detailed billing based on digits dialed
- protect against fraud, such as the unauthorized use of unattended phones
- route calls efficiently and cost effectively through the network

Note 1: For more information on billing, refer to Chapter 11, "Billing" of this document.

Note 2: For more information on routing, refer to Chapter 5, "Translations and Routing" of this document.

Initial screening

The UCS DMS-250 switch performs initial screening on calls at their inception by identifying the originator of the call and the digits the originator dials. The operating company uses screening tables to provide information about the originator to determine whether a subscriber's call is to be blocked, allowed to proceed, or allowed to proceed with specific restrictions. The originator is identified by where they are making the call, what number they are calling, and any optional codes that are dialed, such as authorization codes and personal identification codes.

ANI screening and billing

ANI screening enables the UCS DMS-250 switch to block or allow a call based on the originator's automatic number identification (ANI) digit stream. The ANI digits are used by the operating company to identify the originator of a call, that is, where the caller is dialing from. ANI digits can be used by the operating company as a method of determining if a subscriber's call will be allowed or blocked, and if it is blocked, what information (treatment) to provide to the caller. The ANI screening feature supports calls originating from the following types of trunks:

- feature group B (FGB)
- feature group D (FGD)
- dedicated access line (DAL)—uses pseudo-ANI (PANI)
- Primary rate interface (PRI) originations for calling line ID (CLID) screening

Note: The originating number is called CLID for ISDN PRI originations.

The format of the ANI is variable, and the database used for screening depends on the type of trunk group being used, and whether the ANI is received on the originating trunk group or being generated by using a Pseudo-ANI (a "fake" ANI that is used for the purposes of screening and validation).

For FGD originations, the UCS DMS-250 switch screens the subscriber's ANI at the three-, six-, or ten-digit level (NPA, NPA-NXX, or NPA-NXX-XXXX). Those screened at three or six digits are considered casual-user calls, and an originating trunk group casual-user parameter determines whether these calls are allowed or blocked.

Originations screened at ten digits are considered to be pre-subscribed end users and have available to them the following features:

- personal identification number (PIN) digits
- public speed dialing
- validated/non-validated account codes
- class of service
- partitions
- satellite restriction

For cut-through call originations, the UCS DMS-250 switch determines whether to perform authorization code (authcode) or ANI screening.

The UCS DMS-250 switch can provide different profiles (such as class of service) for an ANI based on the CIC received with the call and the jurisdiction of the call. The jurisdiction of a call is determined by analyzing the calling and called numbers and can be intraLATA, interLATA or international. The ability to set up multiple profiles by ANI, CIC and jurisdiction requires SOCs UTRS0200, Multiple Profile ANI by CIC and UTRS0201, Multiple Profile ANI by Jurisdiction. For more information, refer to the *UCS DMS-250 Feature Group D (FGD) Application Guide*.

Additional ANI functionality exists, such as features that allow suspending ANI screening on selected FGD trunk groups.

ANI screening and billing is included in the UCS base software.

For more information on ANI screening and billing, refer to the *UCS DMS-250 Feature Group D (FGD) Application Guide*.

Authorization code screening and billing

An authorization code (authcode) is a five-to-seven-digit code used to

- identify a subscriber
- bill a call
- prevent unauthorized network access
- determine the originator's class of service (COS)

- control access to special features

An authcode can be entered entirely by the subscriber, filed in the originating trunk group information (entered as part of datafill for that trunk group), or partly entered by the subscriber and partly filed.

In-switch authcode screening supports the following types of trunks:

- FGA
- FGB
- FGC
- FGD cut-through, transitional, and universal access (UA) originations
- DAL
- Inter–network IMT UA

The UCS DMS-250 switch looks up the authcode in an authcode database to determine whether the call can proceed or should be blocked.

The following features are associated with authcodes:

- PIN digits
- hotline numbers
- validated/non-validated account codes
- satellite restriction
- class of service
- private speed number index
- partitions
- filed only classmark

Originating Partition (OPART) screening restricts particular authcodes from accessing specific incoming trunk groups. Each trunk group has a three-digit OPART (0 to 511) stored with it. The screening is performed by comparing the OPART stored in the originating trunk group to the OPART stored in the authcode. If the OPARTs match, the switch checks for account code and PIN requirements and collects those digits if necessary.

Note: For more information on OPART, refer to Chapter 5, “Translations and Routing.”

Authorization screening and billing is included in the UCS base software.

Account code screening and billing

Account code screening permits the UCS DMS-250 switch to collect and optionally screen from 2 to 12 account code digits as specified by either the ANI or authcode within a call involving a business account. Account codes are used to charge calls back to user projects, departments, or accounts, and also protects against fraud with increased digit screening. Account codes are typically used by companies that have many employees working from multiple geographical locations and require a method of itemizing communications charges to individual employees. For example, the switch can provide a single authcode for a group of people with each person having one or more account codes.

Account codes can either be validated or non-validated. For validated account codes, the switch ensures that the digits dialed by the subscriber match exactly those on that subscriber's account code index. For non-validated account codes, the switch verifies that the originating subscriber dialed the correct number of digits before system software allows a call to proceed. Account codes are recorded in call detail records (CDRs) for billing purposes.

Note: For more information on account code billing, refer to Chapter 11, "Billing."

In-switch account code screening supports the following types of trunks:

- FGA
- FGB
- FGC
- FGD
- DAL
- PRI
- inter-network IMT UA

Note: Whether or not to dial an account code is the option of the originating subscriber on per-call basis; it is not a requirement on a per-trunk basis or per-authcode basis.

Account code screening is included in the UCS base software.

IN/1 transaction capabilities application part (TCAP)-based authcode and account code validation

The IN/1 TCAP optional functionality enables a carrier to provide subscribers authcode and account code services using an external service control point (SCP) to verify the authorization code or account code. This

feature simplifies authcode and account code administration by using a central location—an external SCP.

The IN/1 TCAP capabilities enable the UCS DMS-250 switch to:

- send account codes of up to 12 digits to an SCP for validation
- send authcodes of between five and seven digits to an SCP for validation

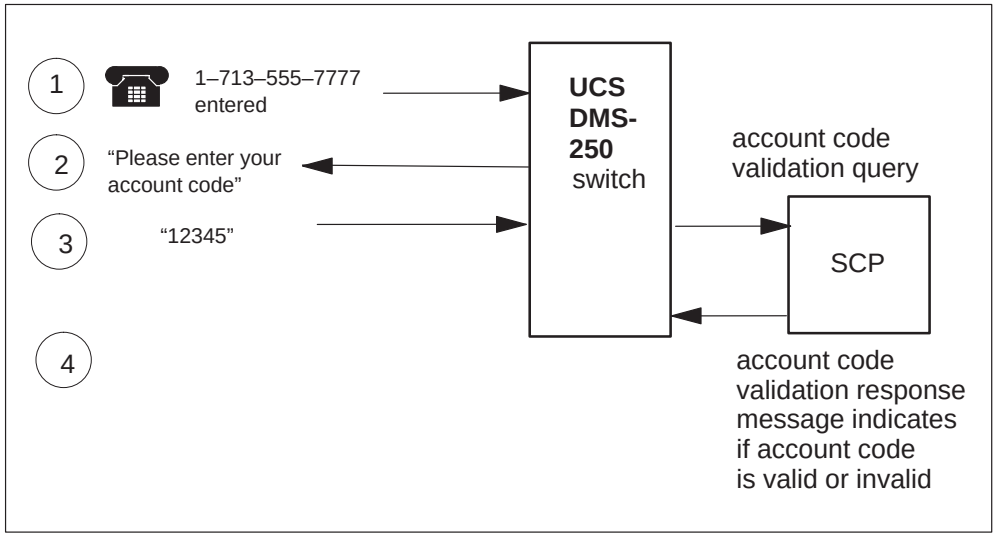
The following authcode/account code validation options are available:

- search in the switch's authcode database
- search in the remote SCP database
- search first in the switch database, then in the remote SCP database

Note: NetworkBuilder also has the capability to validate authcodes and account codes. For more information, refer to Chapter 10, "Intelligent Network Architecture" in this book, or the *UCS DMS-250 NetworkBuilder Application Guide*.

Figure 6-2 shows a high-level example of account code validation where validation is performed at the SCP.

Figure 6-2
Example of TCAP-based account code validation



- In Step 1 the user dials a 10-digit address
- In Step 2 the user is prompted to enter account code
- In Step 3 the user enters account code and the switch launches a TCAP query to the SCP to validate the account code

- In Step 4 SCP returns a TCAP response with a valid or invalid response message. If valid call processing continues as normal. If invalid the switch may prompt the user to enter the account code or route the call to treatment.

Note: For more information on TCAP, refer to the *UCS DMS-250 Transaction Capabilities Applications Part (TCAP) Application Guide* . Also reference Chapter 10, "Intelligent Network Architecture".

TCAP-based authcode and account code validation requires activation of SOC NSER0002, N00/NXX TCAP Services.

PIN screening and billing

A PIN is a control code that is used as an added safety mechanism to further identify authorized users of the network. PINs are also used for billing purposes. PINs are optionally collected and then validated by the UCS DMS-250 switch.

PINs can be entered by a subscriber over the following types of trunks:

- FGA
- FGB
- FGC
- FGD
- DAL
- PRI
- inter-network IMT UA

The UCS DMS-250 switch has the capability of storing multiple PINs per authcode or ANI, with a maximum of 100 two-digit PINs or 1000 three-digit PINs per authcode. The switch supports 4095 lists of two-digit PINs or 4096 of three-digit PINs. The PIN index and PIN length are parameters that are set by the operating company.

PIN digits can be one to four digits in length, each with a value of zero to nine. Single PINs support fourth column DTMF digits; however, multiple PINs per authcode do not.

PIN screening and billing is included in the UCS base software.

FGD EANT Reorigination Blocking

FGD Equal Access Network Trunk (EANT) reorigination blocking disallows the use of reorigination for equal access calls over pure FGD

trunks. Allowing reorigination for these call types would expose the network provider to fraud and loss of revenue.

FGD EANT Reorigination Blocking is included in the UCS base software.

Destination screening and special services screening

The UCS DMS-250 switch provides destination screening to determine a destination point for a given call. Special features screening adds additional layers of screening protection for its users.

Class of service (COS) screening

COS screening assigns service class indexes, which can be associated with the calling number, authorization number, or travel card number. For example, COS screening could be used to restrict, by the authorization number the calling party dials, the destinations to which a long distance call can be completed. For example, companies can restrict certain classes of users (such as non-managers) from making long distances calls from their desk.

COS screening can restrict call completion based upon the following:

- the type of subscriber. Subscribers can be assigned different COSs, depending on what type of calling privileges they can have.
- the call type, such as direct distance dialing (DDD), international DDD (IDDD), on-network, or operator-assisted (0+, and 0–)
- the digits dialed by the subscriber. The switch can screen up to a maximum of 18 digits.
- The time-of-day. Different time-of-day restriction classes (based on time-of-day, day-of-week, or day-of-year) can be assigned to a subscriber or group of subscribers depending on the type of call being placed (for example, IDDD, DDD, or on-net). The times can be set according to rate schedules of the carriers accessible to the user. For example, this functionality can be used to restrict calls being made during non-business hours.
- restrictions on MCCS calls based on datafill in travel card number (TCN) table

COS screening is available on the following types of trunks:

- FGA
- FGB
- FGC
- FGD

- DAL
- PRI
- inter-network IMT

COS screening is included in the UCS base software.

Additional COS capabilities

The COS screening enhancement option enhances the basic COS screening feature by:

- providing a unique treatment for each of the 18 reasons a call can fail COS screening. Some examples of these include: 0– Call Disallowed, IDDD Day and Time Restricted/Blocked, and DDD Destination Digits Screening Failed.
- allowing the operating company to indicate for each failure reason whether calls that fail COS screening for that reason are routed to treatment, an announcement, or tone
- allowing multiple destination digit screening names to be assigned to each COS index
- populating a call detail record (CDR) field to indicate if a call fails due to COS screening

Without the COS screening enhancement option, the UCS DMS-250 switch routes calls that fail COS screening to a generic treatment, other than for treatments “IDDD calls being Disallowed” and “Time of Day Restriction Screening.”

The COS screening enhancements option requires activation of SOC UTRS0004, Class of Service Screening Enhancements.

Satellite screening

The UCS DMS-250 switch provides satellite screening for two reasons:

- to preclude the selection of any satellite circuits in the entire end-to-end connection of a call (based on authcode and trunk subgroup parameters)
- to preclude the use of more than one satellite circuit in a call to prevent satellite double-hopping (based on trunk subgroup and IMT parameters)

Satellite screening functionality can be used to provide clearer signals or prevent long delays on certain calls.

The UCS DMS-250 switch uses the following algorithm for satellite screening:

- The switch determines whether or not satellite circuits are allowed based on a parameter in the ANI database (for FGB, FGD, DAL, and PRI trunks), and/or a parameter in the authcode database (for FGA, FGB, FGC, or DAL trunks).
  - — If the authcode or ANI is satellite-restricted and the terminating trunk group uses a satellite (based on a trunk subgroup parameter), the current route choice is abandoned and the next route choice is considered for termination.
  - — If the authcode or ANI is not satellite-restricted, the current route choice is abandoned if both the terminating and originating trunk group use satellites.
- If the call originates on an IMT, the current route choice is abandoned only if the terminating trunk group uses a satellite (based on a trunk subgroup parameter) and a satellite route has already been used for the call.

Satellite screening is included in the UCS base software.

Intra-local access and transport area (LATA) and intra-state screening

Intra-LATA/intra-state screening provides the ability to screen all traffic types based on the originating or terminating LATA or state. The Intra-LATA screening feature is necessary for regulatory compliance. The features provide the following functions:

- Intra-LATA screening

  Intra-LATA screening is the process the UCS DMS-250 switch uses to block or allow traffic depending on the originating and terminating LATA. The originating LATA is derived from the originator's ANI, and the terminating LATA is derived from the dialed digits. Intra-LATA screening also allows the carrier to screen calls based on a call's originating and/or terminating state.

  Intra-LATA screening compares the NPA (or NPA-NXX) of both the originator's ANI and the address digits. If these digits are in the same LATA, the LATA tables are checked to determine if the call should be blocked. If either of the NPA or NPA-NXX combinations are not found, the call proceeds by default. The UCS DMS-250 switch can define and block Intra-LATA calls for up to 1023 LATAs.

- Intra-state screening

  Intra-state screening is the process the switch uses to block or allow traffic depending on the originating and terminating state. Originating

and terminating state is determined by the originating subscribers' ANI NPA-NXX and the dialed NPA-NXX digits respectively.

Note 1: Inter-LATA screening uses the same algorithms and data tables as intra-LATA screening. Inter-LATA screening is the basic functionality used to screen and bill long-distance calls.

Note 2: The three- and six-digit screening feature provides the same functionality as intra-LATA screening.

Intra-LATA and intra-state screening are included in the UCS base software.

8XX INWATS incoming exclusion screening

8XX INWATS incoming exclusion screening is a direct result of the intra-LATA screening functionality. Incoming exclusion allows the network provider to allow or deny 8XX INWATS calls based on the originator's numbering plan area (NPA).

Incoming number exclusion prevents subscribers from calling back into their own local calling area, and supports the UCS DMS-250 switch's capability to block intra-state traffic that is not permitted by law for a specialized common carrier. One example of this feature would be to block calls to a local 8XX number so the 8XX subscriber would not be billed for local calls.

Trunk COS screening

The UCS DMS-250 switch performs trunk group COS screening to determine if the originating and terminating types of trunks are allowed to be connected to each other, based on their class of service.

Each trunk has a COS associated with it with a value of 0 to 29. The switch looks up the COS value for the originating and terminating trunk groups in a table, and if the combination is not allowed, the present route choice is abandoned, and the next route choice in the route list is considered. Also, the switch optionally generates a log report.

Trunk COS screening is included in the UCS base software.

Mechanized Calling Card Service (MCCS) screening and billing

MCCS provides another layer of screening and billing by providing calling card services. Subscribers can place calls through the UCS DMS-250 switch from any location and have the billing charged against a 14-digit calling card. Control for these calls is on a trunk group basis through datafill. MCCS requires the activation of SOC CRDS0001 (Card Services) and optionally CRDS0002 (TCAP Based Card Services), CRDS0003 (MCCS MVP Card Services), and CRDS0005 (MCCS Quick Call).

For more information, refer to the “Mechanized Calling Card Services (MCCS)” chapter in this document or to the *UCS DMS-250 Mechanized Calling Card Service (MCCS) Application Guide*.

Call information delivery features

Call information delivery features provide the UCS DMS-250 switch with the ability to deliver to the terminating agency calling number information associated with the call. These features include the following:

- **Automatic Number Identification (ANI) Delivery**. This feature provides the following:
  - — ANI Delivery on Dedicated Access Line (DAL) Terminal Interface Equipment (TIE) trunks. This feature provides calling number delivery using dual-tone multi-frequency (DTMF) signaling on DAL-TIE trunks terminating from the UCS DMS-250 switch.
  - — ANI Delivery on Primary Rate Interface (PRI), Feature Group B (FGB), Feature Group D (FGD), and inter-machine trunk (IMT) agencies.
- **National Caller Identification (ID).** This feature passes the calling party's number and its associated Privacy Indicator to connecting carriers (on SS7 agencies) for interstate calls. National Caller ID is an FCC compliance feature.
- **Carrier Identification Code (CIC) delivery.** This feature provides control over the delivery of the CIC associated with the call. A CIC is an identification number associated with a particular carrier and may be used for routing and translation of a call.

Software Optionality Control (SOC) for call information delivery

The following SOC codes are associated with call information delivery:

- SOC code NSER0001, Network Services, provides the functionality for ANI Delivery (both on DAL-TIE trunks and the other agencies listed above).
- The National Caller ID is included in the UCS DMS-250 switch base software.

ANI Delivery for call termination

The ANI Delivery feature controls the delivery of ANI from the UCS DMS-250 switch for call termination on DAL-TIE, PRI, ISUP IMT, FGB, ISUP FGD, or PTS FGD trunks. The operating company can decide whether

to pass the ANI to the terminating trunk group. In this manner, the operating company can control the delivery of ANI and ensure that sufficient agreements are set before passing information.

ANI Delivery for call termination requires activation of SOC NSER0001, Network Services.

ANI Delivery on DAL-TIE

The ANI Delivery on DAL-TIE feature provides real time calling number delivery on DAL-TIE trunks terminating to a Private Branch Exchange (PBX). It combines ANI and address digits in a single stream using DTMF signaling.

With the ANI Delivery on DAL-TIE feature, the PBX is able to receive the address and Calling Party Information (CPI) under several outpulsing conditions. The various outpulsing options are determined by the trunk group datafill and the availability of ANI at the originating trunk.

Note: Calling Party Information normally indicates ANI and information digits. For the ANI Delivery on DAL-TIE feature, the terms CPI and ANI are used interchangeably since no information digits are outpulsed in the DTMF signaling scheme.

The ANI Delivery on DAL-TIE feature supports the following originations where the CPI includes the originator's ANI from the originating office, if provided:

- ISDN PRI
- PTS FGD
- SS7 FGD
- SS7 Inter-network IMT
- SS7 Intra–network IMT
- Q.767 Gateway IMT
- Q.764 (ISUP92) Gateway IMT
- AXXESS

For PRI and SS7 originating calls that are paid for by the calling party, the FCC mandates that the presentation indicator (PI) associated with the call in the SS7 Calling Party Number (CPN) or ISDN Calling Party Number (CgPN) must be honored. Therefore, if the PI bit is set to ALLOWED in the incoming CPN or CgPN, then the ANI is delivered over the terminating DAL-TIE trunk. If the PI bit is set to RESTRICTED or UNAVAILABLE, then the ANI is not delivered over the terminating DAL-TIE trunk.

In addition, for SS7 originating calls that contain both an ISUP Calling Party Number (CPN) and ISUP Charge Number (CGN), the terminating DAL-TIE can be datafilled to outpulse either the CPN or CGN.

For the following supported originations, the CPI will include the three-digit Serving Numbering Plan Area (SNPA) filed against the trunk group from the non-conforming Local Exchange Office (LEC).

- FGC
- Transitional FGD

ANI Delivery on other agencies

The UCS DMS-250 switch also provides control over the delivery of ANI for call originations and terminations on PRI, ISUP IMT, FGB, SS7 FGD and PTS FGD. ANI Delivery is controlled on an office-wide or ANI basis for originations and on a trunk group basis for terminations. It can also control ANI Delivery on a Logical Terminal basis for PRI originations and terminations.

The feature includes the following:

- control of ANI Delivery on ISUP IMTs, ISUP FGD and PRI trunks
- support of PTS FGD trunks for origination and termination
- control of ANI Delivery through N00/NXX transaction capabilities application part (TCAP) response information
- control of parameters delivered
  - — delivery of Calling Party Number (CPN) parameter only
  - — delivery of Charge Number (CGN) parameter and Originating Line Information (OLI) parameter only
  - — delivery of CPN and CGN and OLI
  - — delivery of neither CPN nor CGN nor OLI
- screening of the presentation indicator (PI) on incoming SS7 and PRI calls to determine if the CLID should be delivered on terminating PRI trunks

If any controlling mechanism—origination, termination or N00 TCAP—indicates that the ANI parameters are to be blocked, then the specified ANI parameter (CPN, CGN and OLI, or Calling Line ID [CLID]) will not be sent.

National Caller ID

As name and number display phone sets begin to permeate the marketplace, the demand for calling party services has grown tremendously in the past

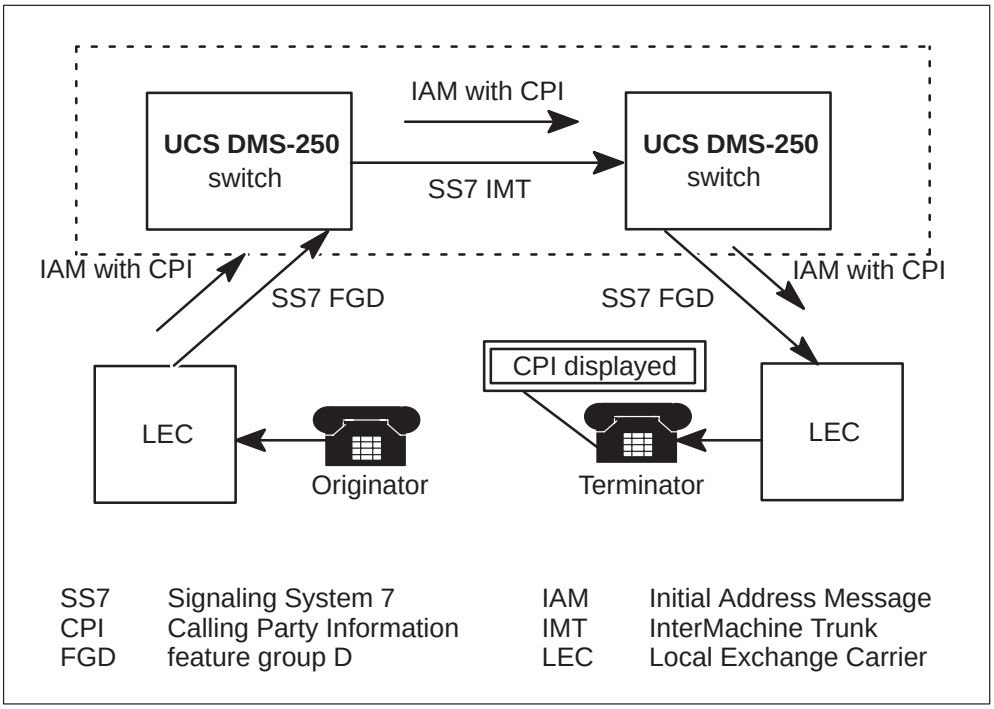
few years. Whether the subscriber seeks to only answer certain calls or avoid answering calls from certain numbers, the feature is in heavy demand. Also, there is a high demand for the caller ID feature from telemarketing companies.

New rules mandated by the FCC in 1996 require SS7 carriers to pass the calling party's number and its associated Privacy Indicator to connecting carriers on interstate calls. If deemed necessary by the calling party, the Privacy Indicator also provides the ability to protect their number from being passed to the terminating line. National Caller ID provides complete compliance with these new regulatory requirements, including TR-394 compliance for Charge Number and Calling Party Number transport.

As shown in Figure 7-1, the originator's local exchange carrier (LEC) builds an Initial Address Message (IAM) containing the Calling Party Information (CPI) and sends this message to the connecting carrier. The connecting carriers must not modify the CPI; it is sent within an IAM to the terminator's LEC. The necessary CPI is then delivered to the user of the terminating number.

The National Caller ID feature is included in the UCS base software.

Figure 7-1
Calling Party Information flow



CIC delivery

CIC delivery provides control over the delivery of the CIC associated with a call to a terminating agency. A CIC is an identification number associated with a particular carrier and is used for routing and translation of a call.

CIC delivery consists of the following:

- delivery of the CIC received from the previous switch
- delivery of the CIC filed against the trunk group that overrides the CIC received from the previous switch

  If a CIC is not received (either because the trunk group does the support the receipt of a CIC, or the LEC does not provide the CIC), the switch can deliver a default CIC datafilled against the originating trunk.

- option of delivering either a three-digit or four-digit CIC

  The CIC can be converted from three digits to four digits by adding a leading zero. For example, if translations are set up for the outpulsing CIC to be four digits, the switch adds a leading zero to the received CIC, and the resultant four-digit CIC is outpulsed.

For per-trunk signaling (PTS) FGD terminations, CIC delivery depends on a trunk group field that controls multistage outpulsing. Multistage outpulsing outpulses a three-stage dial plan where the first stage contains the CIC.

CIC delivery is only applicable if the switch has the CIC Routing feature. This feature is activated only when Software Optionality Control (SOC) option UTRS0001 is set to ON.

Agencies supported

CIC delivery is only supported for trunk agencies where the protocol supports the CIC, including:

- PTS FGD
- SS7 FGD

  Note: For SS7 terminations, CIC delivery is independent of ANI Delivery.

- SS7 Inter-network IMT—integrated services digital network user part (ISUP) inter-machine trunk (IMT)
- Gateway IMT

Note: For information about the CIC Routing feature, refer to Chapter 5, “Translations and routing” in this document, or refer to the *UCS DMS-250 CIC Routing Application Guide*.

Mechanized Calling Card Service

The 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 travel cards provide subscribers with the freedom to charge their long distance calls to one number. Subscribers often find travel cards especially helpful during travel or emergencies.

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). If your system configuration includes a remote database, you can also use remote validation service for travel card numbers.

Tone Prompt service

Tone Prompt service guides subscribers through the process of making a call with a series of tones. Where tones occur depends on the type of originating trunk. However, generally there are three tones.

- *prompt for address*—The first tone signals the subscriber to enter the called number (or address).
- *prompt for travel card number*—The second tone signals the subscriber to enter the travel card number.
- *signal that confirms switch processing*—The third tone occurs after the switch has validated the travel card number. This tone lets the subscriber know the call will be completed. When an invalid travel card number is entered, an error tone will be played.

Voice Prompt service

Voice Prompt service provides user-friendly announcements to guide subscribers through the placement of travel card calls. Recorded voice announcements tell subscribers what to do next in a series of steps required to place a travel card call. Also, companies can “brand” the travel card service with customized announcements that mention the company name.

Remote Validation service

Remote Validation service provides the UCS DMS-250 (SCP) switch the ability to verify travel card numbers from a remote database. The benefits of remote validation include:

- *account code use*—Subscribers can use account codes that are validated by the remote database.
- *increased capacity*—The capacity for travel card numbers is limited only by the capacity of the remote database.
- *efficiency*—In networks with multiple UCS DMS-250 switches, you datafill validation information once in one database instead of every switch.
- *security*—Fraud detection is easier with one database.

Quick Call service

Quick Call service subscribers who are are calling the number assigned to their travel card (such as home or business number) only need to enter a four-digit quick call personal identification number (PIN). The UCS DMS-250 switch creates the 14-digit travel card number from the 10-digit address and quick call PIN. This allows subscribers to easily call their home or office from any location (if they are dialing the 10-digit address that makes up the travel card number).

For more information on MCCS Tone Prompt, Voice Prompt, Remote Validation and Quick Call service, see *UCS DMS-250 MCCS Application Guide*.

N00/NXX services

N00/NXX routing services allow customers to dial unique numbers for special services on the UCS DMS-250 switch. The switch translates N00/NXX calls either in-switch using an internal database, or out-of-switch using a service control point (SCP).

Some examples of N00/NXX services include the following:

- Toll-free services, or 800 services. These services allow users to dial toll-free numbers (called-party billed) from the convenience of their own phone. This feature allows businesses or customers to receive, and pay for, high levels of incoming calling traffic across local calling area boundaries.
- Universal International Freephone service. This service provides worldwide toll-free numbers.
- Universal access (UA) 800 services. These services allow users to access a network by dialing a toll-free number, after which the UCS DMS-250 switch requests either an authorization code or travel card number from the calling party to complete the call. The 8XX UA service helps business and residential users make long distance calls while traveling.
- Special network services, or 700 services. These services offer customer service numbers for information and assistance with network-offered features, such as an announcement that verifies the customer's pre-subscription to equal access.
- Premium services, or 900 services. These services allow subscribers to dial special numbers for polling purposes, such as for public opinion polls, or information access, such as stock quotes or weather information. These calls are typically called-party billed.
- Personal Communication Services, or 500 services. These services are used for digital PCS. Digital PCS allows users enjoy the benefits of a pager, wireless phone, and voice-mail system with one convenient personal telephone.

NXX dialing plans

Due to increased customer usage, "N00 numbers" have been expanded to offer additional toll-free numbers and emerging toll-free services. With the

NXX-NXX-XXXX dialing plan, N=2–9, and X=any number. With this dialing plan, each NXX prefix yields up to eight million numbers.

The NXX expansion allows service providers to offer more N00 numbers; thus the N00 service can be marketed to their entire customer base, including small businesses and residential customers.

Translations for the NXX dialing plans are supported as follows:

- Translations for 700, 800, and 900 services are available both in-switch and out-of-switch by accessing a service control point (SCP).
- 8XX (for example, 888) number translation is available both in-switch and out-of-switch by accessing a SCP.
- 7XX number translation is available out-of-switch accessing a SCP.
- 9XX number translation is available out-of-switch accessing a SCP.
- Translations for 500 and 5XX services are available out-of-switch accessing a SCP.

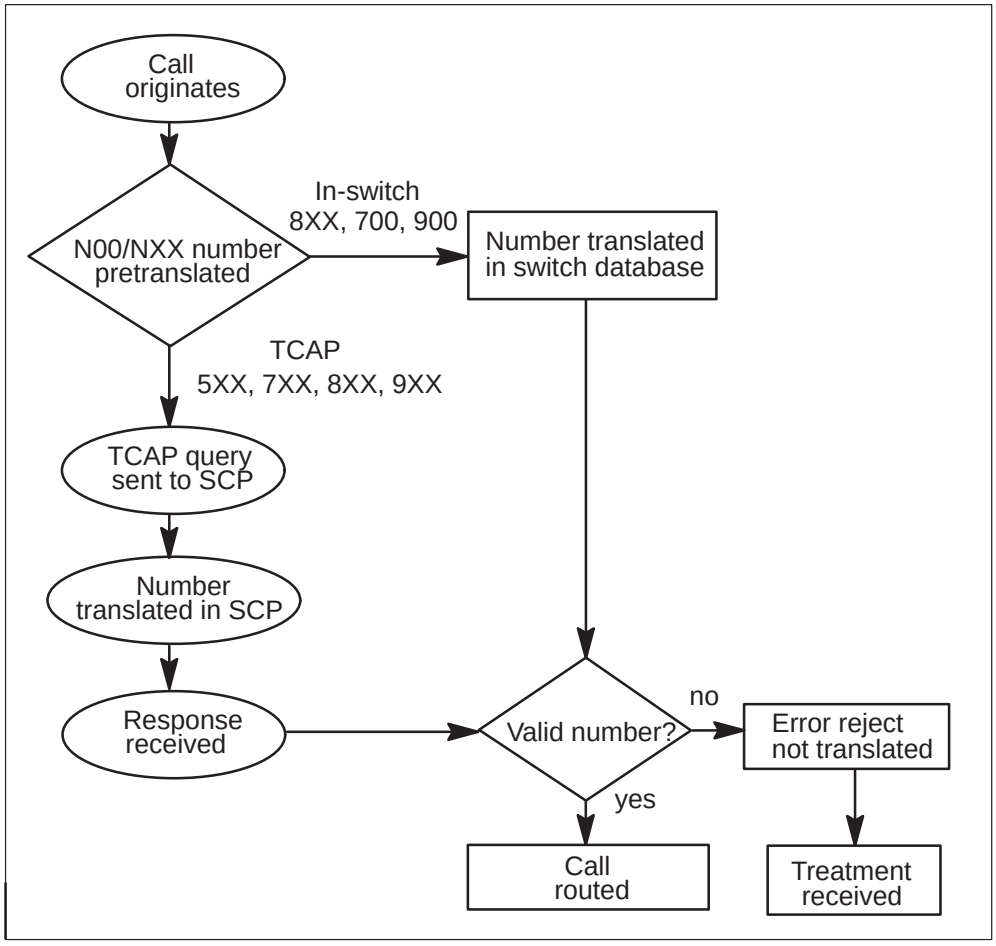
Note: For more information on out-of-switch support of N00/NXX dialing plans, refer to the "Transaction capabilities application part (TCAP)-based N00/NXX routing" section in this chapter. Also, refer to Chapter 10, "Intelligent network architecture," of this document for information on IN/1 TCAP and NetworkBuilder.

N00/NXX translations overview

N00/NXX calls require re-translation to determine the actual destination number, and then the route to reach that destination. However, the incoming number may not belong to the receiving switch, and may be transported rather than translated. The receiving switch has several options to choose from, one being the use of TCAP signaling system no. 7 (SS7) messaging to an external (out-of-switch) database, the other is to use one of two internal (in-switch) databases.

An overview of the call scenario for a N00/NXX number translation is provided in Figure 9-1.

Figure 9-1
N00/NXX number translation call scenario



Software Optionality Control (SOC) for N00/NXX routing

Four separate SOC codes provide N00/NXX services to UCS DMS-250 switch customers:

- SOC N00R0001 provides basic N00/NXX routing services and Information Digit 24 functionality on the UCS DMS-250 switch.
- SOC N00R0002 provides transaction capabilities application part (TCAP)-based routing. TCAP-based routing provides out-of-switch N00/NXX routing services for subscribers by using a centralized SCP to translate the N00/NXX number.
- SOC N00R0200 for Universal International Freephone Number. This feature allows users to call the same toll-free number from anywhere in the world.
- SOC NXXR0001 provides the capability to block NXX calls based on the information digits received.

- SOC NXXR0002 provides the capability to optionally collect and validate an account code for NXX calls that are translated in-switch.

N00/NXX routing

SOC option N00R0001 enables carriers who opt to process N00/NXX calls using in-switch databases. The software provides the following capabilities for in-switch routing:

- 8XX INWATS dialing
- 700 dialing
- 900 dialing
- information digit 24 functionality

8XX inward wide area telecommunications service (INWATS) dialing

The 8XX INWATS service provides subscribers the ability to dial 8XX INWATS numbers over Feature Group C (FGC) and Feature Group D (FGD) trunk group facilities.

The 8XX INWATS service provides the following capabilities:

- incoming exclusion screening
- 8XX digit translations
- partitioning
- time-of-day routing

Incoming exclusion screening

Incoming exclusion screening allows the network provider to allow or deny 8XX INWATS calls based on the originator's numbering plan area (NPA).

Incoming number exclusion prevents subscribers from calling back into their own local calling area, and supports the UCS DMS-250 switch's capability to block intra-state traffic that is not permitted by law for a specialized common carrier. One example of this feature would be to block calls to a local 8XX number so the 8XX subscriber would not be billed for local calls.

The UCS DMS-250 switch uses the original NPA, the NPA + exchange code (NXX) from the automatic number identification (ANI) spill, or the serving numbering plan area (SNPA) filed against the trunk for comparison in the appropriate incoming exclusion table. If the originating NPA + NXX is allowed, further translation continues; otherwise, the switch blocks the call, and applies Local Call Area Barred (LCAB) treatment.

Incoming exclusion can accommodate up to 160 NPAs, and up to eight of these NPAs can be further excluded in combination with an NXX. It is possible to identify up to 256 incoming exclusion schemes.

8XX digit translation

8XX digit translation provides a simple conversion of 8XX INWATS numbers to the associated seven- or ten-digit directory number, without using complicated digit manipulation.

Partitioning

Partitioning allows the network provider to specify the serving translation scheme (STS) to be used to route INWATS calls based on the 8XX number received. Each 8XX INWATS number can be assigned a unique partition (STS), or several INWATS numbers can be routed within the same partition. One example of this feature is that a company could use its own four-digit or five-digit dialing plan to dial within their own network.

For more information, refer to Chapter 5, “Translations and routing.”

Time-of-day routing

Time-of-day routing provides the ability to define the least-cost routes based on the time day the 8XX call is placed. The UCS DMS-250 system can route calls to particular trunk groups based on the time of day, the day of the week, and holidays.

For more information, refer to Chapter 6, “Screening and validation” and Chapter 5, “Translations and routing.”

Information digit 24 functionality

Due to the introduction of 800 Number Portability in the U.S. market, UCS DMS-250 switches support both 8XX dialed numbers and translated 8XX number calls from the local exchange carriers (LECs). The info digit 24 functionality allows the carrier to recognize 10-digit received numbers as original 800 numbers that have been translated to the actual destination address.

To identify the 10-digit received number as having originated as an 8XX number, the local office passes the information digit number of “24” to the IXCs. This allows the UCS DMS-250 switch to recognize the number as being a translated 800 number and bypass ANI screening. The switch recognizes that the call is an 8XX call and not a calling-party billed call. The UCS DMS-250 switch call processing then uses the 10-digit number to determine whether the call has Incoming Exclusion screening and derives the associated STS to route the call.

The information digit 24 functionality is supported on SS7 FGD, PTS FGD, and SS7 IMT trunks.

700 dialing

The 700 dialing feature provides the following two unique dialing capabilities:

- **carrier verification**—700 carrier verification permits the establishment of a unique 700 number that lets subscribers verify their 1+ Equal Access pre-subscription. This feature allows the pre-subscribed customer to dial a non-chargeable 700 number in the form 700-NNX-XXXX and route to an announcement, such as "Welcome to the Network." This feature is also available to other subscribers when dialing 950-WXXX or 10XXX to access the UCS DMS-250 switch. The assignment of 700 numbers and definitions of the announcement can be datafilled by office personnel.
- **originating ANI replacement**—The UCS DMS-250 switch provides for 700 NPA replacement for calls originating over FGD trunk groups when the UCS DMS-250 switch receives the originating subscriber's ANI and replaces the 700 digits with the first three digits of the subscriber's ANI.

700 calls are supported over Feature Group A (FGA), FGB, FGD, and dedicated access line (DAL) type of trunks.

The main benefit of 700 services is that it allows a customized service to subscribers, such as dialing into their business long distance network. The carrier verification feature allows the creation of personalized announcements by the carrier to welcome subscribers to the network. The originating ANI replacement feature allow carriers to offer inter-local access and transport area (LATA) toll service.

900 dialing

The 900 dialing feature allows originating subscribers to dial 900 numbers over FGD trunk group facilities with billing typically charged to the calling party.

The unique 900 numbers can be used for polling purposes ("Dial 1-900-555-1234 for yes, or dial 1-900-555-1235 for no"), or information access.

900 dialing provides the following capabilities:

- 900 digit translations provides a simple conversion of 900 numbers to the associated seven- or ten-digit directory number without using complicated digit manipulation.

- Partitioning specifies the serving translation scheme (STS) to be used to route 900 calls based on the 900 number received.
- Time-of-day routing provides the ability to define least-cost routes based on the time of day the 900 call is place.

900 calls are supported over FGD trunks.

8XX dialing universal access (UA)

Universal access 8XX service provides subscribers access to the network by dialing an 8XX (X=0 through 9) number as defined by the operating company. After collection and validation of the 8XX number, the UCS DMS-250 switch returns dial tone to the originating subscriber, at which time the switch expects to receive either a Mechanized Calling Card Services (MCCS) call, or an authorization (authcode) call. The 8XX UA service helps business and residential users make long distance calls while traveling.

Once access has been attained and the billing information and destination number have been provided, the call can be screened and routed in many ways. The billing information can be validated to protect the network from invalid access. The destination number can then be screened and routed through the network.

UA calls are supported over FGC, FGD, and SS7 Inter-network IMT trunk groups only. The UCS DMS-250 switch supports the UA feature both with in-switch and external databases.

Note: Refer to Chapter 6, “Screening and validation” and Chapter 8, “Mechanized Calling Card Service (MCCS)” for more detail. Also, refer to the *UCS DMS-250 Mechanized Calling Card Service (MCCS) Application Guide*.

Transaction capabilities application part (TCAP)-based N00/NXX routing

SOC N00R0002 provides IN/1 TCAP-based N00/NXX routing. TCAP-based N00/NXX routing provides N00 routing services for subscribers by using an out-of-switch service control point (SCP) to translate the dialed N00/NXX number. Using the IN/1 TCAP protocol provided by SS7 signaling, the UCS DMS-250 switch routes caller and N00/NXX number information to an SCP for lookup. Since all N00/NXX numbers can be stored in a single database (rather than being replicated throughout the carrier’s network), database management is simplified. In addition, the use of an SCP increases flexibility in the services available to the caller and the owner of the N00/NXX number.

TCAP-based NXX dialing plan

Due to increased customer usage, the original N00 numbers have been expanded to NXX, with N=2–9, and X=any number. The feature extends toll-free (and other features) recognition to the SS7 intelligent network, using TCAP messaging between UCS DMS-250 switching systems and SCP databases to verify and translate NXX numbers.

Originating trunk agencies

N00/NXX service calls (5XX, 7XX, 8XX, or 9XX) can originate from various trunk types as follows:

- 7XX calls can come from FGA, FGB, FGD, and DAL trunks
- 8XX calls can come from FGC, FGD, and inter-network IMT trunks
- 9XX calls can come from FGD trunks
- 5XX calls can come from FGD trunks.

7XX/9XX dialing

TCAP allows 700 and 900 numbers to be expanded to 7XX and 9XX, respectively, with N=2–9, and X=any number.

500/5XX dialing

5XX numbers are reserved for Personal Communications Services (PCS). Digital PCS allows users to enjoy the benefits of a pager, wireless phone, and voice-mail system with one convenient personal telephone.

Automatic code gapping

Automatic code gapping allows the UCS DMS-250 switch to throttle TCAP query messages, upon request from the SCP, based upon pre-defined priority levels. This allows the carrier to prioritize the types of queries to be handled in the case of TCAP traffic congestion. The carrier benefits from additional protection during high traffic periods. For example, during a radio station contest, the switch could handle an unusually high number of calls and thus queries to the SCP. Automatic code gapping would prevent a SCP overload failure from the high call volume.

N00 TCAP route advance

The N00 TCAP route advance allows an N00 type call terminating to either a primary rate interface (PRI) or ISDN User Part (ISUP) trunk to route advance from a predefined list of terminations when receiving select release causes. Route advance occurs with either an expired timer or the receipt of a Release With Cause message.

Version 2 N00

Version 2 N00 number translation supports additional parameters in the N00 number translation Query message and the handling of new call processing service switching point or SSP (actions being returned from the SCP).

For more information on TCAP, refer to Chapter 10, “Intelligent network architecture.” Also refer to the *UCS DMS-250 Transaction Capabilities Applications Part (TCAP) Application Guide*.

Universal International Freephone service

Universal International Freephone provides worldwide toll-free numbers by allowing operating companies to register an 8XX number for use throughout the world. This feature provides toll-free functionality associated with the UIF number (UIFN) on the UCS DMS-250 switch. The UIF service enables a UIF subscriber in one country to be assigned one or more special telephone numbers that allow callers in other countries to call the UIF subscriber free of charge.

The UIFN feature allows the UCS DMS-250 switch to begin processing the UIFN with in-switch translations. Out-of-switch UIFN translations are supported via NetworkBuilder. There are no interactions between in-switch and out-of-switch UIF functionality as shown in Figure 9-2.

Note: For more information on NetworkBuilder, refer to the “NetworkBuilder” section of Chapter 10, “Intelligent network architecture” in this document. Also, refer to the *UCS DMS-250 NetworkBuilder Application Guide.*

NXX Call Blocking Based on Information Digits

The NXX Call Blocking Based on Information Digits feature provides the capability to block NXX calls, that are translated in–switch, based on the information digits received with the call. The NXX numbers can be blocked on a per-NXX number basis or a switch-side basis.

On a per-NXX number basis, an NXX call blocking option against the originating trunk group identifies up to 20 ranges of information digits to block for each NXX number. On a switch-wide basis, an office parameter specifies up to nine different information digits to block. The default value for this office parameter is 27 for coin treatment and a log is generated (NXXB101).

NXX calls originating on the following trunk agencies are supported for this feature:

- PTS FGD

- SS7 FGD
- SS7 Intra-network IMT
- SS7 Inter-network IMT
- AXXESS

This feature provides call blocking for NXX calls that are translated in-switch only. For NXX numbers translated out-of-switch, the SCP determines whether the call should be blocked.

The NXX Call Blocking Based on Information Digits feature requires the SOC NXXR0001, NXX Calling Blocking.

NXX Account Code Activation

The NXX Account Code Activation feature provides the capability to optionally collect and validate an account code for NXX calls that are billed to the called party. If the NXX Account Code option is activated for the originating trunk group, a datafillable tone prompt is played to signal the user to enter their account code. Once collected, the account code is validated in-switch. If the account code is valid, call processing continues. If it is invalid, the call is routed to Invalid Account Code (INAC) treatment, a log is generated (NXXA101), and the invalid account code operational measurement (OM) is pegged (TCUINAC).

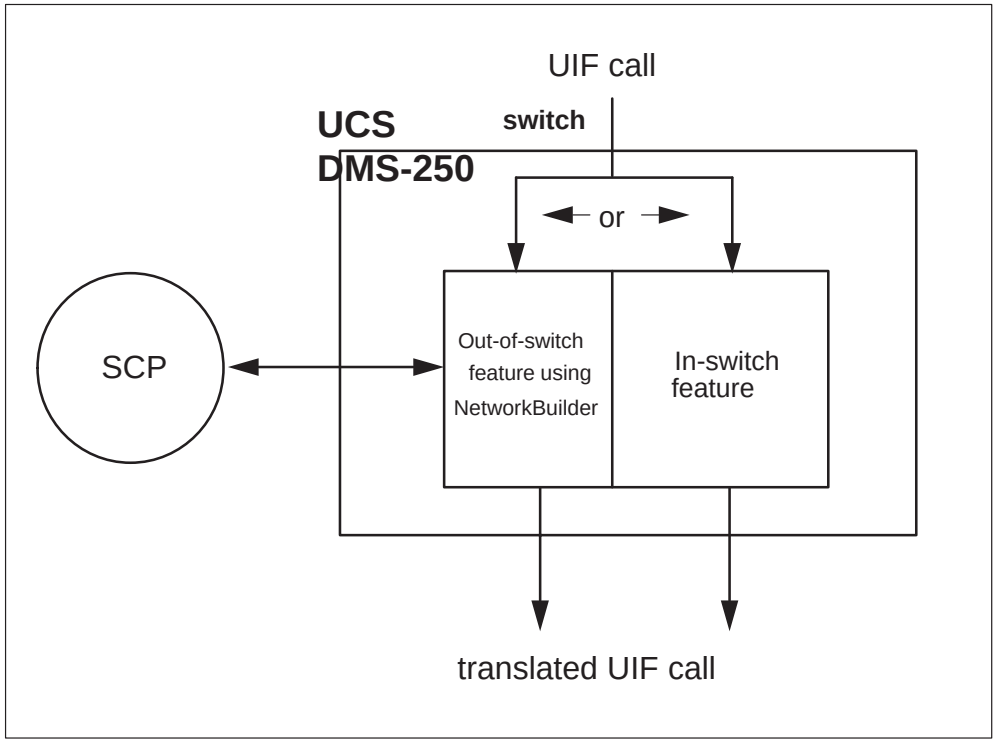
NXX calls originating on the following trunk agencies are supported for this feature:

- PTS FGD
- SS7 FGD
- SS7 Intra-network IMT
- SS7 Inter-network IMT

Note: AXXESS agencies support NXX account code in-switch validation through a different implementation. For more information, refer to the *UCS DMS-250 FlexDial Application Guide*.

This feature is only supported for NXX calls that are translated in-switch. The NXX Account Code Activation feature requires the SOC NXXR0002, Toll Free NXX Account. For more information, refer to the *UCS DMS-250 Feature Group D Application Guide*.

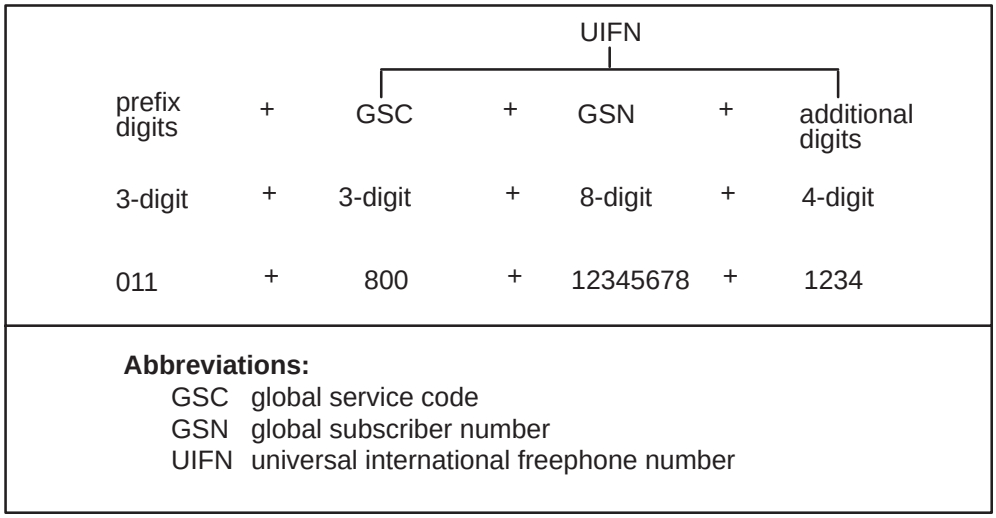
Figure 9-2
High-level overview of UIF call on UCS DMS-250 switch



The UIF number remains the same throughout the world, regardless of the country or carrier. The UIF dialed digits consist of the 3-digit international prefix (for example, “011”), followed by the UIFN. A UIFN is composed of a 3-digit global service code (GSC) (for example, “800”) followed by an 8-digit global subscriber number (GSN), resulting in an 11-digit format. Up to four additional digits can follow for commercial purposes as needed. These additional digits are ignored for routing and translations of the UIF call within the UCS DMS-250 switch.

Figure 9-3 contains an example of the UIF dialed digits.

Figure 9-3
High-level overview of UIF call on UCS DMS-250 switch



The Universal International Freephone feature also supports incoming exclusion screening, and three types of translation systems: national (NA), international (IN) and International partitioned (IP). The international prefix digits, the GSC, and the 8-digit GSN are captured in the call detail record (CDR).

The UIF feature supports UIFN on the following originating agencies:

- DAL
- DAL-terminal interface equipment (TIE)
- PTS FGD
- SS7 FGD
- ISDN primary rate interface (PRI)
- PTS IMT
- SS7 inter-network IMT
- SS7 intra-network IMT
- AXXESS trunk agents: PTS/SS7 FGD, DAL, and DAL-TIE

The UIF feature supports UIFN on the following terminating agencies:

- DAL
- DAL-TIE
- FGA
- FGB

- FGC
- PTS FGD
- SS7 FGD
- ISDN PRI
- PTS IMT
- SS7 inter-network IMT
- SS7 intra-network IMT
- all AXXESS trunk agents

The Universal International Freephone (UIF) service requires activation of SOC N00R0200.

N00/NXX feature interactions

The following sections outline feature interactions with the N00/NXX feature.

Automatic number identification (ANI) screening

ANI screening enables the UCS DMS-250 to block or allow a call based on the originator's ANI digit stream. ANI screening may be performed on N00/NXX calls, although called-party billed calls will not be blocked. For example, you could block all 900 calls from a particular ANI.

For more information on ANI screening, refer to Chapter 6, "Screening and validation."

Call reorigination from N00 calls

Call reorigination allows a subscriber to place numerous calls through the operating companies' network without the requirement to re-input the authorization code or MCCS travel card number. The UCS DMS-250 switch supports both manual call reorigination and automatic call reorigination.

Reorigination on N00/NXX calling-party billed calls are allowed; however, reorigination on N00/NXX called-party billed calls are not allowed.

For more information on reorgination, refer to "Other subscriber dialing features" in Chapter 4, "System access".

Intelligent network architecture

Before the concept of intelligent network (IN) architecture was introduced, service logic was contained within each switch on the public network.

In the early 80's, IN technology placed the service logic in a centralized network database instead of within each individual switch. The out-of-switch database, referred to as a service control point (SCP), became a shared resource across a carrier's network of switches. This was the beginning of off-loading call control from the switch.

The transfer of power to the IN is changing the telecom industry by offering service providers the ability to do the following:

- quickly design and deploy new features
- rapidly develop customized features for distinction in a highly competitive marketplace
- put certain network-based services onto centralized databases that all network switches can access

This chapter discusses three levels of intelligent networking systems that have evolved and are supported on the UCS DMS-250 switch. With the exception of the programmable service architecture (PSA) platform, call processing services are handed off from the switch to a customer defined (SCP). The systems are as follows:

- IN/1 TCAP services. A query/response system that communicates with the switch by using transaction capabilities application part (TCAP) protocol.
- Advanced Intelligent Networks (AIN). This system is known as Carrier AIN or NetworkBuilder. NetworkBuilder is based on the Bellcore standards for advanced intelligent networks (AIN) 0.2.
- Programmable Services Architecture (PSA) platform. Through this platform, the service control unit (SCU) can have complete control of call processing.

The need for intelligent networks

An intelligent network separates the control of calls from the call itself. Services are implemented by service logic programs residing on an SCP or external database. The switch only implements basic call processing so that if any services are requested by the call, a query is sent to the SCP. The SCP responds by sending a message back to the switch with instructions for handling the service that was requested.

For example, an external database or SCP, could contain information that translates 800 numbers into the actual directory number of the location. Or an external database could contain detailed records about subscribers. For instance, the kinds of calls subscribers can make, authorization or account codes of subscribers, and even telephone numbers they are allowed to call.

By placing this information on an external database rather than on the switch itself, it can be accessed by many switches. In addition, an external database can be updated in one or a few locations, rather than at every switch in the network.

In the IN/1 system, the SCPs are service specific, containing logic for only one service per platform. If other services are desired, a new SCP has to be configured in the network, making the process expensive. Because of these limitations, IN networks are used mostly as a shared resource for other networks. They provide customized databases for card validation, subscriber screening, and N00 services.

For more information about these features, refer to Chapter 6, “Screening and validation” and Chapter 9, “N00/NXX services.”

CCS7 and TCAP

Switches communicate with the SCP using Common Channel Signaling No. 7 (CCS7) and transaction capabilities application part (TCAP) messaging.

CCS7 is a packet switched messaging system that moves call control information between connected switches. Also known as Signaling System No. 7 (SS7), CCS7 is a standard protocol for network routing. It is referred to as SS7 in this chapter.

When using the SS7 protocol, signaling information is transmitted on a high-speed data link, separate from the voice and data path. The trunks over which SS7 calls take place are called ISUP trunks. The SS7 signaling packets are sent over signaling links.

The SS7 protocol performs the tasks of call set-up and monitoring of line status, without tying up voice lines and trunks. It bypasses the operations of

call processing switches and interoffice trunks, allowing them to handle only calls that are successfully established. The result is more efficient use of network services, and greatly improved speed of call set-up.

The following example shows how SS7 is used for control and status functions. An end office is trying to set up a call for a customer who just dialed a long distance number. The office switch sends signals through the nodes and then to the end office of the called party, to establish a “path”. This “path” between the end office switches, carries the voice message that remains until the conversation is over. Meanwhile, the call set-up signals are still monitoring the status of the call. When the parties hang up, the “path” within the switch is ended. The signaling function then waits until another request comes for its control and monitoring services.

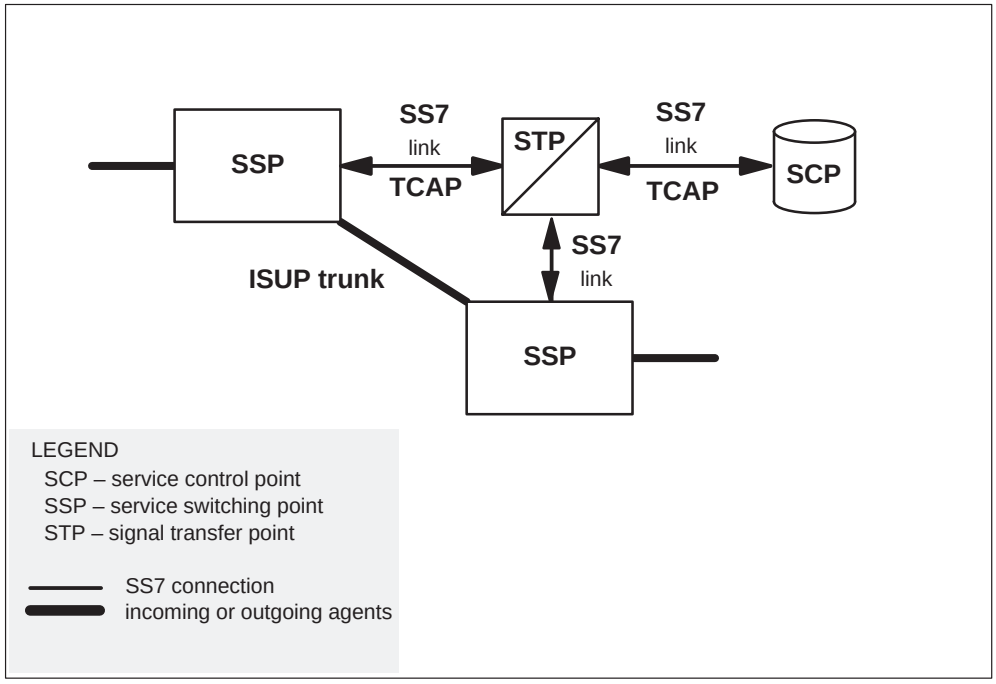
SS7 benefits

Some benefits of SS7 are as follows:

- more information transferred than with signaling on other types of trunks
- faster call setup, reducing the amount of time needed to establish each call
- shorter call holding times as a result of the faster call setup
- error conditions eliminated that tie up trunk circuits
- treatments applied at the originating node, provide better use of trunks

Figure 10-1 shows the communication between the service switching point (SSP) and the service control point (SCP). TCAP is the basis for communication between the SSP and the SCP. This communication is assisted by the signal transfer point (STP) and occurs over SS7 links.

Figure 10-1
The SS7 network



Understanding the functions of the SSP, STP, and SCP is integral to understanding the SS7 network. A brief definition of each follows.

Service switching point (SSP). The SSP initiates a dialogue with the SCP through the use of SS7 links. SSPs can also be linked directly to each other. The UCS DMS-250 switch is an SSP.

Signal transfer point (STP). The STP routes messages between the SSP and the SCP. It is also involved in link management and network recovery. These are packet switches.

Service control point (SCP). The SCP responds to requests that are sent from the SSP. The SCP is an off-board processor that stores call handling instructions and service logic in a network database. It translates the digits related to a call, such as address, ANI, and information digits, and sends them to the network for routing. SS7 links are used to carry the TCAP message to and from the SCP.

For more information about TCAP, refer to the *UCS DMS-250 Transaction Capabilities Application Part (TCAP) Application Guide*.

IN/1 TCAP services

Prior to IN/1, all network functions were performed in-switch. IN/1 technology permits service logic to be off-loaded to an out-of-switch intelligent service control point (SCP) or external network database for certain translations and validation functions.

Services offered by IN/1 TCAP

The IN/1 technology uses out-of-switch databases to provide translations and routing services, card validation, and subscriber screening for network switching systems. In many cases, the out-of-switch databases called SCPs, are a shared resource across a carrier's network of switches. TCAP provides the ability for the service switching point (SSP) to communicate with the service control point (SCP).

This communication is limited on a per-call basis to simple query and response messages between the switch and the database. Therefore, the technology is limited to one service per platform.

High volume, low margin services, such as 800 number translation and calling card validation, characterize the IN/1 platform. A separate platform is required for each of these services implemented with IN/1.

The following IN/1 TCAP services are supported by the UCS DMS-250 switch.

TCAP-based authorization code validation

This service enables the carrier to validate authorization codes by using IN/1 TCAP queries to an off-board SCP.

TCAP-based account code validation

This service enables the carrier to validate account codes by using IN/1 TCAP queries to an off-board SCP

TCAP-based private speed dial translation

This service enables the carrier to translate speed dial numbers by using IN/1 TCAP queries to an off-board SCP.

TCAP based travel card number (TCN) validation

This service allows the carrier to validate travel card numbers (TCNs) associated with the Mechanized Calling Card Services (MCCS), by using IN/1 TCAP queries to an off-board SCP.

TCAP-based NXX translation and routing

This service provides NXX number translations services for subscribers by using TCAP queries to an off-board SCP.

N00 TCAP route advance

This feature allows the UCS DMS-250 switch to re-route an N00 type call to predefined alternative destinations. Route advance occurs when either a timer expires or a release with cause message is received.

Automatic code gapping (ACG)

This feature allows the UCS DMS-250 switch to hold back TCAP query messages upon request from the SCP, based upon pre-defined priority levels. By holding back specific messages, the carrier can prioritize the types of queries to handle if TCAP traffic congestion occurs. This additional protection benefits the carrier during high traffic periods.

For additional information about these services, Refer to the *UCS DMS-250 Transaction Capabilities Application Part (TCAP) Application Guide*.

Software Optionality Control (SOC) options

The services offered by IN/1 TCAP, relate to the following SOC options:

- CRDS0002 TCAP-Based Card Services (requires CRDS0001 Card Services)
- N00R0002 N00/NXX TCAP Services (requires N00R001 N00 Routing)
- NSER0002 TCAP-Based Authcode and Account Code Validation (also includes TCAP–Based Speed Dialing translations)

Advantages of IN/1 networks

In general, the overall advantages of IN/1 networks are to reduce costs and increase competitiveness. Other specific advantages include the following:

- reduce the complexity of the switches
- make use of cheaper general-purpose computers
- reduce dependency on switch manufacturers for services and open up the creation of services to carriers, customers or third parties

Disadvantages of IN/1 networks

In most IN models, there is only one query/response transaction per call. This limits the service to one service per platform. In addition, the service control point (SCP) is used as a remote database without intelligence or a set of standards. The SCP, therefore, never takes control of call processing.

With the emergence of the advanced intelligent network, AIN0.2, more service logic resides off-board, enabling increased service control outside the switch.

NetworkBuilder

NetworkBuilder is the software component developed by Nortel Networks to implement more advanced intelligent networking. This software is based on the Bellcore standard specifications for advanced intelligent networks (AIN) 0.2. Nortel Networks calls the application Carrier AIN (CAIN) or NetworkBuilder, designed for the UCS DMS-250 switch.

NetworkBuilder call processing changes the way the switch handles a call. Instead of controlling all aspects of a call, the switch off-loads some of the call processing functions to an intelligent service control point (SCP). This off-loading can relieve switch responsibilities and allow greater control over the call services offered to subscribers.

AIN overview

With optional UCS DMS-250 NetworkBuilder software, carriers can create completely new services, or combine existing services and functionality in new ways. NetworkBuilder is fully compatible with any vendor's standards-compliant AIN 0.2 networking infrastructure, which includes Nortel Network's ServiceBuilder portfolio of products.

Note: ServiceBuilder is Nortel Network's SCP product, a package that includes hardware, services, and service creation tools. With this product, carriers, operating personnel, or third parties, can create the service logic on the SCP.

Bellcore developed standards for the advanced intelligent network (AIN) to allow the following:

- multiple services to be deployed on a single service processor
- continuous switch-to-database communications instead of the old query-and-response format
- greater customization of services

Bellcore specifications

Bellcore specifications *GR-1298-CORE* and *GR-1299-CORE* define AIN 0.2. However, the Bellcore specifications define local exchange carrier (LEC) functions that do not necessarily apply to interexchange carriers (IXC). Also, the Bellcore specifications do not meet the needs of unique IXC applications.

Nortel Networks developed the AIN 0.2-based application for interexchange carriers, known as Carrier AIN (CAIN) or NetworkBuilder.

NetworkBuilder allows call processing to be off-loaded from the SSP to a customer-defined SCP. The SCP is able to take control of a call and direct

call processing. This intelligent SCP can also contain feature logic and necessary databases.

AIN network model

An SSP and an SCP are mandatory for an AIN network. The AIN network can consist of the following components:

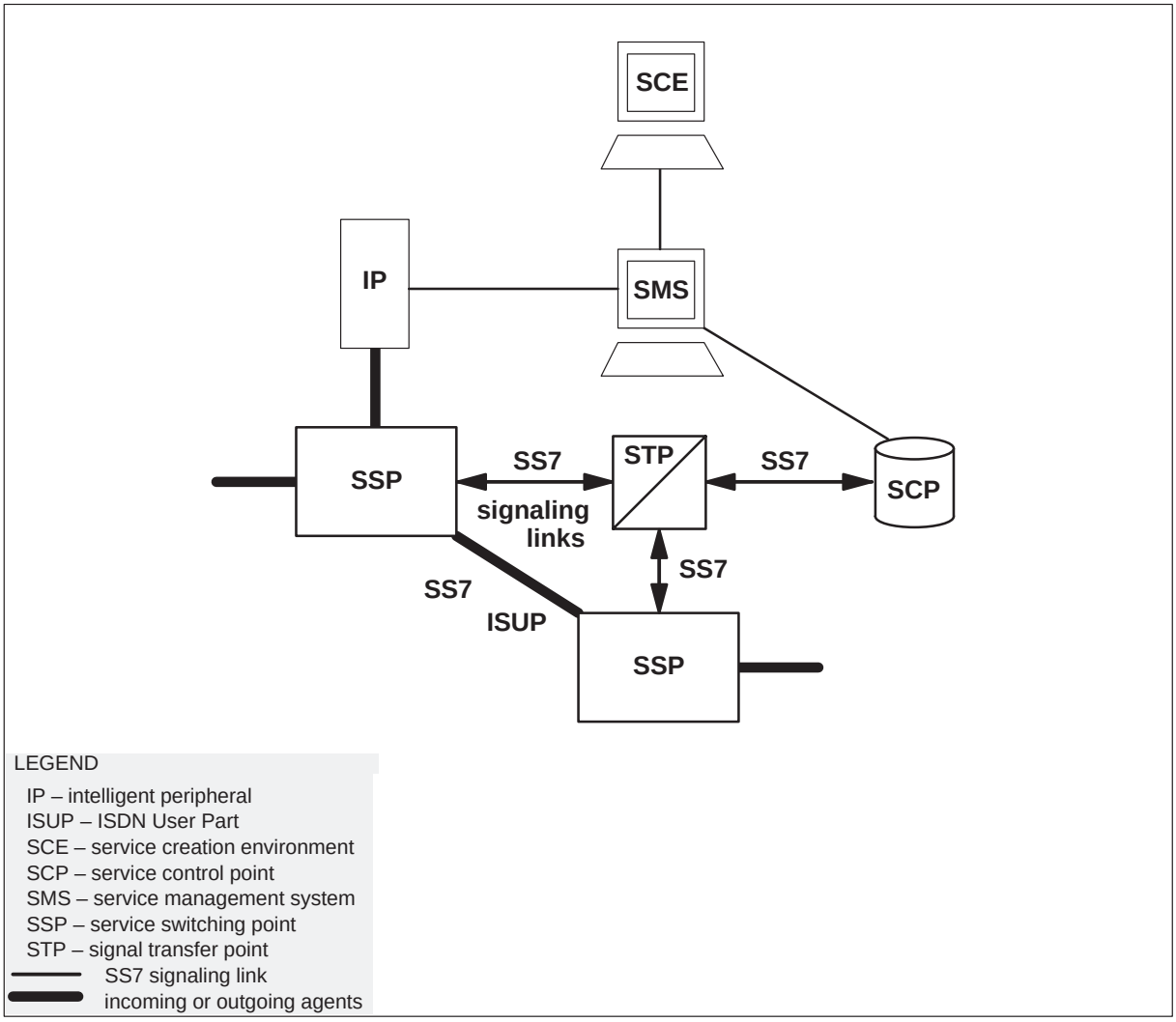
- service switching point (SSP)
- service control point (SCP)
- signal transfer point (STP)
- service management system (SMS)
- service creation environment (SCE)
- intelligent peripheral (IP)

Peripheral software development is independent of SSP software development.

Note: NetworkBuilder requires the use of a UCS DMS-250 switch as the SSP.

Figure 10-2 shows the hardware components available for designing an AIN system. Descriptions of each component follow Figure 10-2.

Figure 10-2
Example of an AIN network model



Service switching point (SSP). The SSP identifies calls requiring AIN service and initiates a dialog with the appropriate AIN service logic in the network.

Note: NetworkBuilder requires a UCS DMS-250 switch to be used as the SSP.

Service control point (SCP). The SCP contains the service logic and data for AIN services. The SCP responds to requests for services from the SSP. The SCP also provides a service creation environment (SCE) tool kit that you can use to create and customize services.

Signal transfer point (STP). STP functions include link management, routing of messages between SSPs and SCPs, and network recovery.

Service management system (SMS). The SMS enables provisioning and administration of AIN services.

Service creation environment (SCE). The SCE provides tools for creation and customization of services residing on the SCP.

Intelligent peripheral (IP). The IP contains functions and resources for exchanging information. The exchange of information with a subscriber can occur through voice announcements and dual-tone multifrequency (DTMF) digit collection.

AIN 0.2 TCAP messaging

TCAP messaging on SS7 is the medium for communication between the SSP and SCP.

For more information about AIN0.2 TCAP, refer to the *UCS DMS-250 NetworkBuilder Application Guide*.

AIN 0.2 call model

AIN 0.2 introduces the concept of a call model. A call model represents the progression of a call through a switching system. It identifies different points in a call that can be processed by the SCP.

Carrier AIN 0.2 call model

Carrier AIN 0.2 uses the AIN 0.2 call model. Therefore, the Carrier AIN 0.2 call model represents the progression of a call and identifies different points where the SCP can take control. These points in a call can receive CAIN services through interaction with the SCP. Only calls that have been configured for CAIN, called CAIN-capable, can access the NetworkBuilder framework.

Carrier AIN call model

The call model divides call processing into several key states, where each state known as a point in call (PIC). The switch performs a defined set of functions within each PIC.

After certain procedures have occurred within a PIC, the call encounters trigger detection points (TDPs) and examines the triggers.

A trigger is a point within the PIC that suspends call processing and begins AIN feature processing. Information about the call is evaluated at each trigger. The evaluation occurs through a table associated with that trigger.

The datafill in the trigger table contains the action required for the call and is referred to as the trigger criteria.

When call processing encounters a TDP, in-switch logic and the datafill in tables are consulted to determine if the trigger criteria is met. When met, the switch can off-load call processing to the SCP as directed by the datafill. The call may continue in-switch processing, or call processing may be suspended and direction may be requested from the SCP.

Event detection points (EDPs). Carrier AIN also supports event detection points (EDPs) at several PICs. EDPs are similar to TDPs. When a call queries the SCP, the SCP may return a conversational package. This package could include a call-related or a non-call related component, such as

- **`Analyze_Route`**
- **`Continue`**
- **`Collect_Information`**
- **`Request_Report_BCM_Event`** (non-call related)

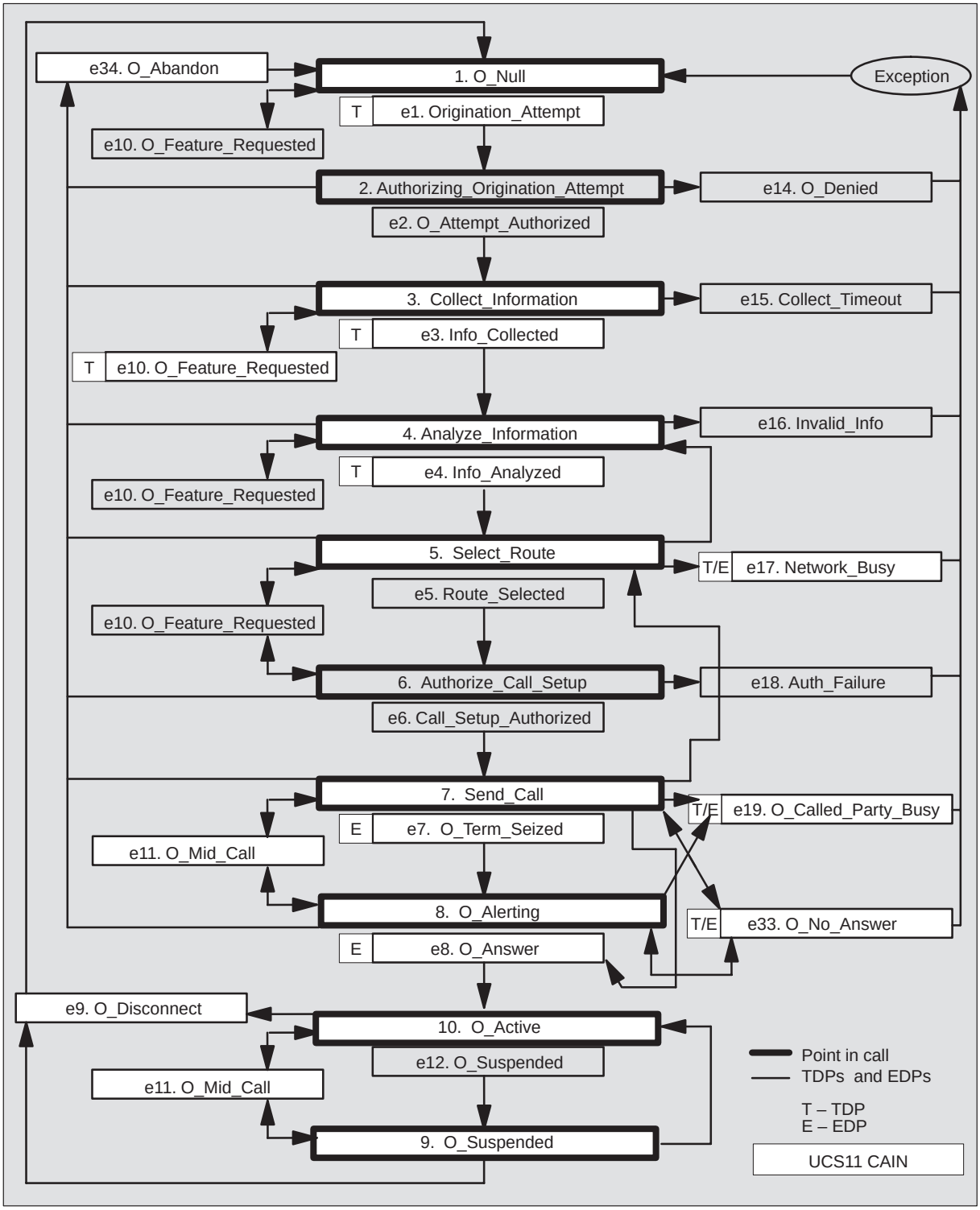
The non-call-related component, **`Request_Report_BCM_Event`**, contains a list of one or more EDPs that occur later in the call model. The EDP list is used to activate EDPs. The list of EDPs to activate is called the next event list (NEL). The NEL informs the switch to send an EDP-Request or EDP-Notification message back to the SCP when an EDP is encountered.

The call-related component is processed first, then the call follows its standard logic. Until the activated EDP is encountered or EDPs are deactivated, the call ignores all TDPs and triggers, except the *Office_Code* trigger associated with Local Number Portability.

For more information about Local Number Portability, refer to the *UCS DMS-250 Local Number Portability Application Guide*.

Figure 10-3 shows the CAIN originating call model.

Figure 10-3
CAIN originating call model



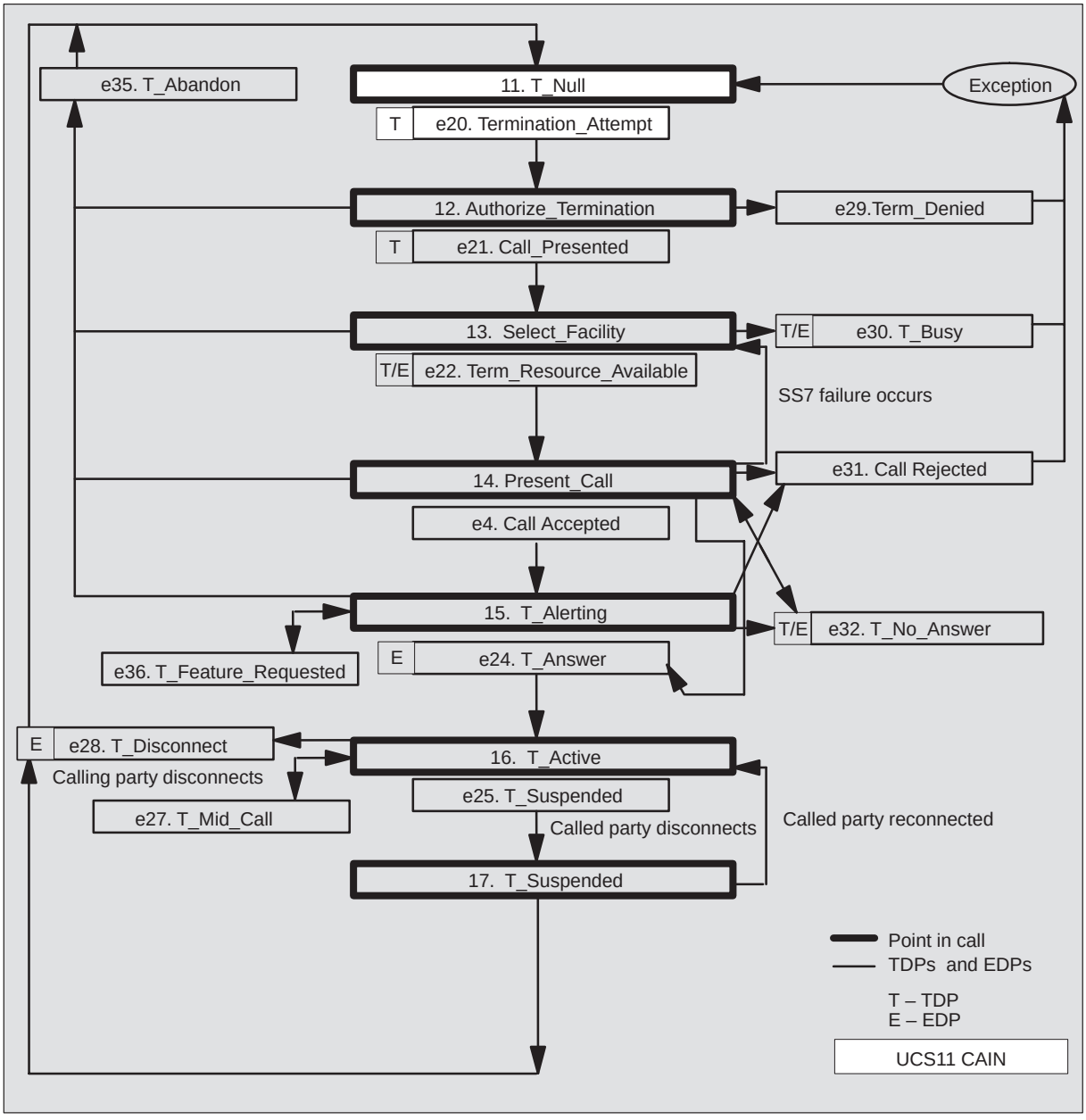
CAIN Terminating call model

The terminating call model represents the terminating half of the AIN Call Processing Model. During a basic two-party call, call processing logic is performed at the ***Termination_Attempt*** TDP, where the trigger criteria is evaluated.

Call processing enters the **T_Null** PIC when indication of a desire to deliver a call is received from the originator.

Figure 10-4 shows the CAIN terminating call model.

Figure 10-4
CAIN terminating call model



CAIN subscription

Any call originating on a supported agency (DAL, FGD, SS7 Inter-network IMT, SS7 Global IMT, AXXESS, or PRI) can subscribe to CAIN originating services.

Addresses, authcodes, ANIs, originating agents, or the office can subscribe to an originating CAIN group. The originating CAIN group, in turn, enables

one or more triggers in the originating call model. Enabling a trigger provides an index into an appropriate trigger table, which is required to query the SCP.

Any call terminating to a supported agency (DAL, FGB, FGC, FGD, IMT, AXXESS, or PRI) can subscribe to CAIN terminating services.

Only terminating agents can be provisioned to subscribe to a terminating CAIN group that enables a trigger in the terminating call model.

Note: In addition, the SCP can return a CAIN group, thereby controlling subscription for the call.

Note: CAIN group subscription is handled differently for AXXESS agents. Refer to *UCS DMS-250 CAIN/FlexDial Interactions* for more information.

Within the trigger tables, you define the trigger criteria. Trigger criteria are the required call conditions and the actions the switch takes when the conditions are met. If a call meets the trigger criteria, the switch performs one of the following actions:

- queries the SCP for instructions
- route advances at *Network_Busy*, *O_Called_Party_Busy*, or *O_No_Answer* trigger
- ignores the criteria and continues processing
- blocks the call and applies AIN Failure (AINF) treatment
- exits the trigger detection point and continues processing as directed by the datafill
- exits NetworkBuilder and continues normal call processing

CAIN call processing stores up to six subscription methods (groups) for use throughout the call. These six groups, listed in the order of precedence, are determined by the following means:

1 SCP-returned CAIN group

2 Address subscription

3 Authorization code subscription

4 ANI subscription

5 Agent subscription

6 Office subscription

Supported PICs

The NetworkBuilder software supports the following PICs, TDP/EDPs, and trigger/events:

Table 10-1
Supported PICs, TDPs, EDPs, triggers, and events

PIC	TDP/EDP	Trigger/Event
PIC 1: **O_Null**	***Origination_Attempt*** TDP	*Off_Hook_Immediate* trigger
PIC 3: **Collect_Information**	***O_Feature_Requested*** TDP	*O_Feature_Requested* trigger
	Info_Collected TDP	*Tollfree_Service* (note)
		Offhook_Delay trigger
		Shared_Interoffice_Trunk trigger
		PRI_B-Channel trigger
	O_Abandon EDP	*O_Abandon* event
PIC 4: **Analyze_Information**	***Info_Analyzed*** TDP	*Specific_Feature_Code* trigger
		Customized_Dialing_Plan trigger
		Specific_Digit_String trigger
		Office_Code trigger
	O_Abandon EDP	*O_Abandon* event
PIC 5: **Select_Route**	***Network_Busy*** TDP	*Network_Busy* trigger
	Network_Busy EDP	*Network_Busy* event
	O_Abandon EDP	*O_Abandon* event
PIC 7: **Send_Call**	***O_Term_Seized*** EDP	*O_Term_Seized* event
	O_Called_Party_Busy TDP	*O_Called_Party_Busy* trigger
	O_Called_Party_Busy EDP	*O_Called_Party_Busy* event
	O_Mid_Call TDP	*O_IEC_Reorigination* trigger

Note: NetworkBuilder supports Bellcore's *TR-NWT-000533* toll-free service specifications. The ability to subscribe to mulitple CAIN groups allows for a service integration of the CAIN triggers and the IN/1 *Tollfree_Service* trigger defined in *TR-NWT-000533*.

—continued—

Table 10-1
Supported PICs, TDPs, EDPs, triggers, and events (continued)

PIC	TDP/EDP	Trigger/Event
PIC 8: **O_Alerting**	***O_Mid_Call*** EDP	*Switch_Hook_Flash* event
	O_Abandon EDP	*O_Abandon* event
	O_Answer EDP	*O_Answer* event
	O_No_Answer TDP	*O_No_Answer* trigger
	O_No_Answer EDP	*O_No_Answer* event
PIC 9: **O_Active**	***O_Mid_Call*** TDP	*O_IEC_Reorigination* trigger
	O_Mid_Call EDP	*Switch_Hook_Flash* event
	O_Abandon EDP	*O_Abandon* event
	O_Disconnect EDP	*O_Disconnect* event
PIC 10: **O_Suspended**	***O_Mid_Call*** TDP	*O_IEC_Reorigination* trigger
	O_Mid_Call EDP	*Timeout* event
		Switch_Hook_Flash event
	O_Disconnect EDP	*O_Disconnect* event
	O_Mid_Call TDP	*O_IEC_Reorigination* trigger
	O_Mid_Call EDP	*Timeout* event
PIC 11: **T_Null**	***Termination_Attempt*** TDP	*Termination_Attempt* trigger

Note: NetworkBuilder supports Bellcore's *TR-NWT-000533* toll-free service specifications. The ability to subscribe to mulitple CAIN groups allows for a service integration of the CAIN triggers and the IN/1 *Tollfree_Service* trigger defined in *TR-NWT-000533*.

—end—

SCP interaction

CAIN call processing interacts with the SCP to determine how the call is handled. The SCP may direct the switch to do the following:

- collect digits
- apply treatment and disconnect
- play announcements
- connect to an IP

- route the call according to SCP instructions

Services offered by NetworkBuilder

The AIN SCP controls a call by directing call processing. By directing call processing, carriers can develop customized services that target their own specific market needs. With NetworkBuilder, the carrier can start with only one trigger and expand to additional triggers and events as revenue streams increase.

The following are examples of NetworkBuilder services listed according to their associated triggers or events:

Off_Hook_Immediate trigger

This trigger is activated when the subscriber requires immediate call completion without dialing digits. Carriers can use it to implement services that use non-standard dialing plans such as the following:

- Automatic Call Blocking
- Hotline calls
- Menu routing

O_Feature_Requested trigger

This trigger reduces messaging overhead when collecting multiple numbers for a call. For example, address digits, account codes, and PIN digits can be collected in-switch and then sent in a single message to an SCP. This eliminates the need for multiple messages. Use this trigger for applications such as:

- Enhanced Travel Card Services
- Account Code/Authorization Code Screening
- Automatic Numbering Identification (ANI) Screening

Tollfree_Service trigger

This trigger is used to determine the carrier who owns the dialed N00 number. This trigger is implemented as defined by Bellcore *TR-NWT-000533* IN/1 tollfree services.

Off_Hook_Delay trigger

This trigger allows services based on dialed digits, when both the address and the ANI digits have been received. The SCP is then queried for ANI screening to be used for the following services:

- Follow Me, Find Me, Do Not Disturb Me
- Customized Call Branding

- Chat Lines

Shared_Interoffice_Trunk trigger

This trigger uses authorization codes, account codes, and PIN screening to promote more efficient call processing. Carriers can use this trigger for the following services:

- Follow Me, Find Me, Do Not Disturb Me
- Customized Call Branding
- Call Screening

PRI_B-Channel trigger

This trigger is implemented for PRI originating agencies. Use this trigger for the following services:

- CIC Routing and Branding
- ANI Screening
- Chat Lines

Specific_Feature_Code trigger

This trigger allows services delivery based on a three-digit service code or a special code such as *55. Use this trigger for a wide range of information services such as:

- Stock quotes and Televoting
- Customized Announcements
- OFFNET Overflow

Customized_Dialing_Plan trigger

This trigger is used principally to implement the services of a virtual private network (VPN). It is also assigned by the subscriber to an automatic number identification (ANI) code or authorization code (Authcode). Other services this trigger implements include:

- Forced ONNET
- Alternate Billing Numbers
- Black Box Screening

Specific_Digit_String trigger

This trigger is used for mass market services such as 800/N00 services and for off-board ANI screening. Use this trigger for the following services:

- Speed Dial/Hotline calls
- Account Code Screening

- Bill to Office

Office_Code trigger

This trigger is specific for the Ported Number Determination of the Local Number Portability (LNP) service. LNP allows you to keep your directory number (referred to as the Ported Number) when you change service providers. This trigger determines where to route calls to ported numbers.

Network_Busy trigger or event

This trigger or event implements automatic rerouting services when a busy network signal is encountered at the Select Route Point In Call (PIC). Services offered by this trigger or event are:

- Network Forwarding
- Network Queuing
- CIC Routing and Branding

O_Terminator_Seized event

This event is used to identify that a terminating trunk has been seized on the UCS DMS-250 switch. The O_No_Answer_Timer may be started.

O_Called_Party_Busy trigger or event

This trigger or event is used for mass market services such as 800/N00 services and for off-board ANI screening. Use this trigger or event for the following services:

- Rerouting on Busy Signal
- Call Forwarding
- CIC Routing and Branding

Switch_Hook_Flash event

This event is detected when a user holds the asterisk (*) key for 0.6 seconds. This event enables call transfer, three-party calls, and multi-party (conference) calls.

O_IEC_Reorigination trigger

This trigger provides enhanced reorigination control services.

O_Answer event

This event is used to identify that the terminating party has answered the call.

O_No_Answer trigger or event

This trigger or event enables you to specify a time limit in which the called party should answer the call. If the limit is exceeded, this trigger or event can provide value-added services such as the following:

- Rerouting on No Answer
- Call Forwarding
- CIC Routing and Branding

O_Abandon event

This event is detected when the calling party disconnects before the called party answers. This event can be used during call transfer, three-party calls, and multi-party (conference) calls.

O_Disconnect event

This event is detected when the calling or called party disconnects. Debit card service is an example of a service that can be developed on the SCP for this event. This can also be used during call transfer, three-party calls, and multi-party (conference) calls.

Timeout event

This event is used to indicate when the Timeout timer expires. Debit card service is an example of a service that can be developed on the SCP for this event.

Termination_Attempt trigger

This trigger allows service functions and call control for the terminating part of the call. It supports the following services:

- Caller ID Delivery
- IP Services for playing announcements
- 800/900 Number Translation

Software Optionality Control (SOC) options

NetworkBuilder uses the following SOC options:

- CAIN0100 (Messages)
- CAIN0200 (Extension Parms)
- CAIN0300 (SCP Simulator)
- CAIN0400 (Test Query Tool)
- CAIN0500 (CUSTDP Trigger)
- CAIN0501 (CAIN SPECDIG Trigger)

- CAIN0502 (OFFHKIM Trigger)
- CAIN0503 (SIOTRK Trigger)
- CAIN0504 (PRIBCHNL Trigger)
- CAIN0505 (ONOANSWER Trigger)
- CAIN0506 (NETBUSY Trigger)
- CAIN0507 (OCLDBUSY Trigger)
- CAIN0508 (OFTRREQ Trigger)
- CAIN0509 (OIECREO Trigger)
- CAIN0510 (TERMATT Trigger)
- CAIN0511 (SPECFEAT Trigger)
- CAIN0512 (OFFHKDEL Trigger)
- CAIN0513 (TOLLFREE Trigger)
- CAIN0600 (Con Digit Collect)
- CAIN0601 (SCP Trigger Sub)
- CAIN0602 (EDPs)
- CAIN0603 (STR Connection)
- CAIN0604 (Inter IMT Support)
- CAIN0605 (Global IMT Support)
- CAIN0606 (1129-Style IP)
- CAIN0607 (Virtual IP)
- CAIN0610 (CAINPRT Digit Coll)
- CAIN0700 (LNP QOO Trigger)
- CAIN0800 (Mid Call Services 1)
- CAIN0801 (Mid Call Services 2)
- CAIN0802 (Takeback & Transfer)
- CAIN0900 Auto Code Gapping
- CAIN0901 Manual Code Gapping

NetworkBuilder (AIN 0.2) versus IN/1

AIN 0.2, in comparison with IN/1 services, improves functionality by introducing the call model that allows more service logic to reside off-board. Because more service control remains outside the switch, more complex interactions are possible between the switch and databases that support advanced services.

IN/1 is limited to simple query-response interactions, which in turn limits the network to one service per platform. NetworkBuilder's "conversational mode" switch-database interaction allows multiple services on a single platform, which lets carriers differentiate their offerings.

Figure 10-5 shows the NetworkBuilder (AIN0.2) advantages over IN/1.

Figure 10-5
NetworkBuilder (AIN0.2) versus IN/1

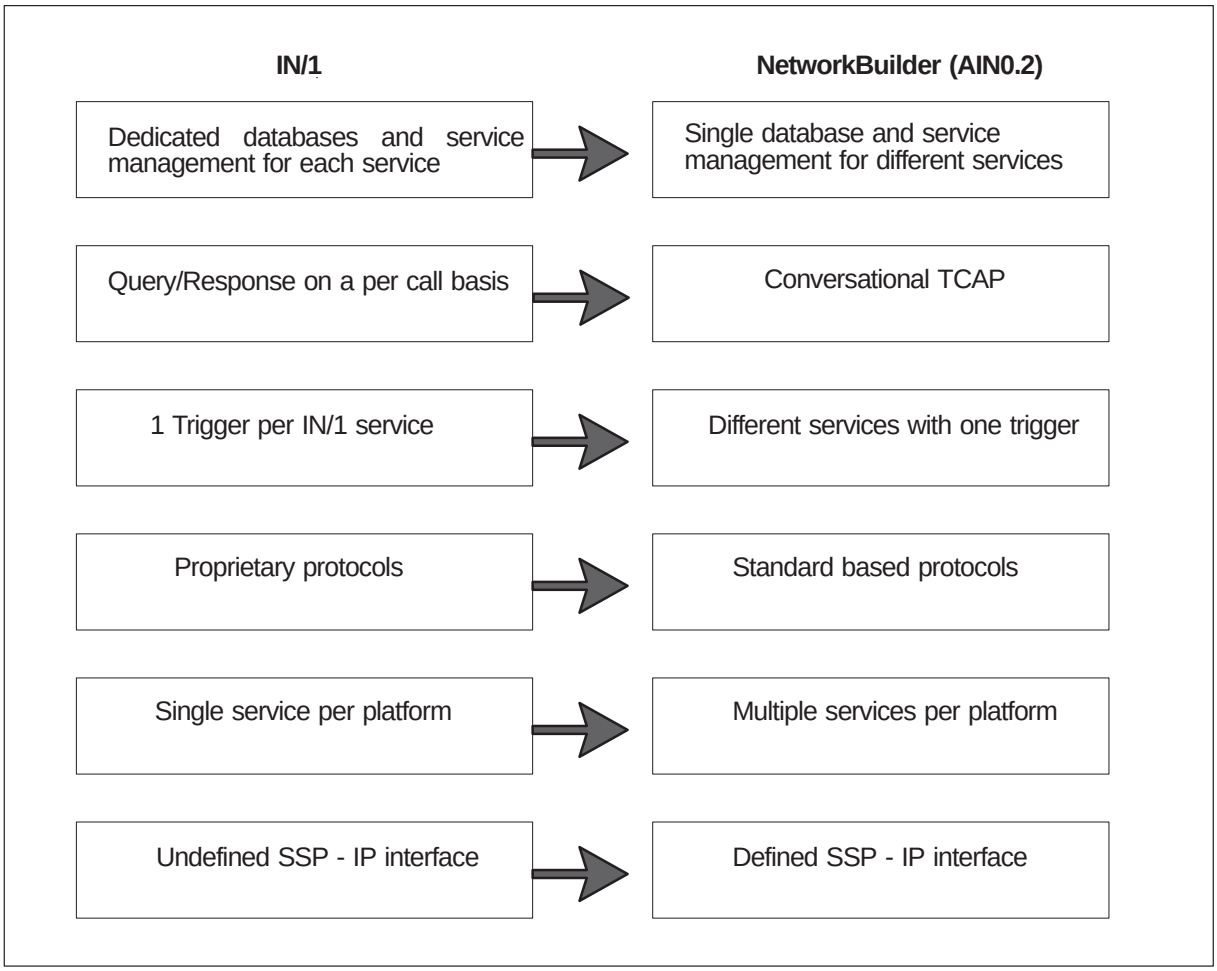
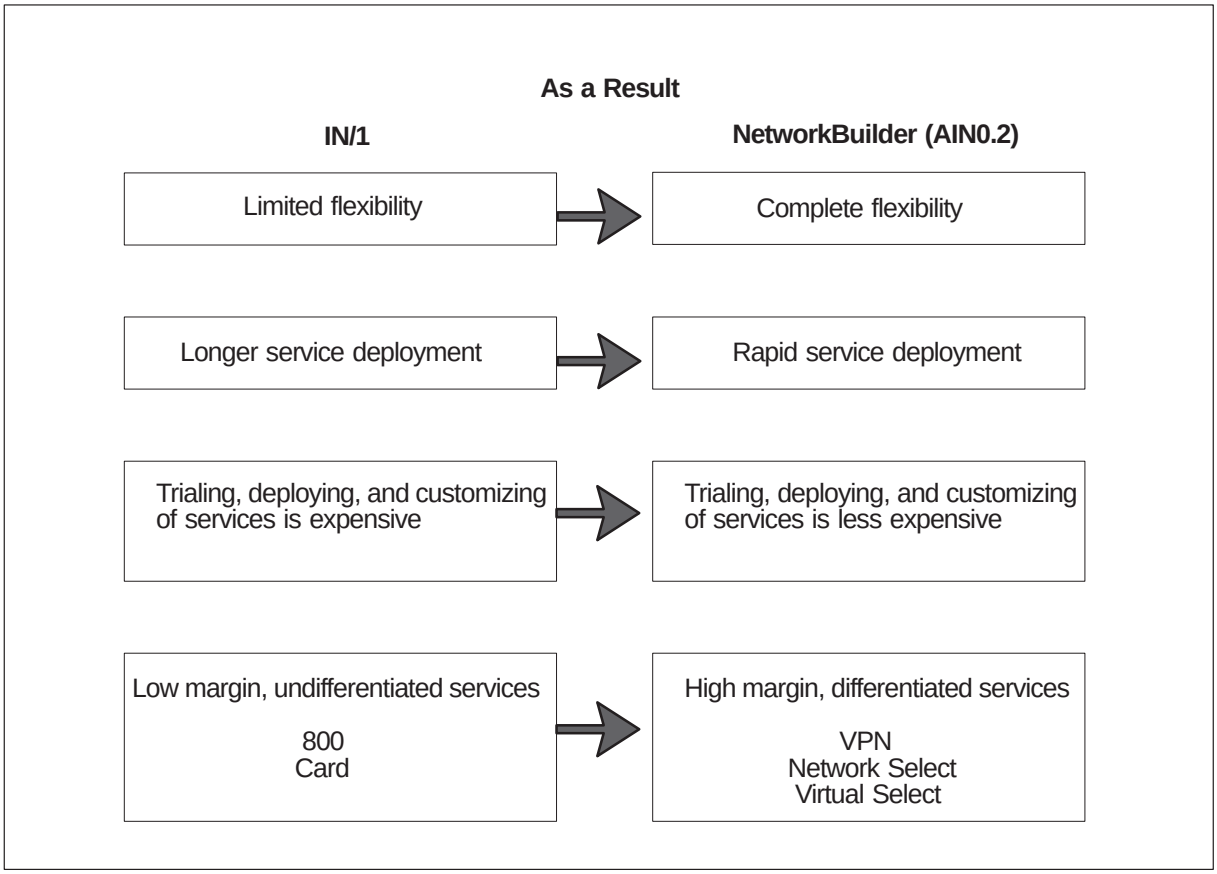


Figure 10-6 shows the comparison results between two levels of IN architecture that have evolved and are supported on the UCS DMS-250 switch.

Figure 10-6
NetworkBuilder (AIN0.2) versus IN/1 results



Programmable Services Architecture

The DMS Programmable Services Architecture (PSA) is software developed for the UCS DMS-250 switching system. Nortel Networks designed this product to give service providers a means to rapidly create and deploy advanced services into their network. This is achieved by allowing an external computing platform to control call processing on the switch, using high speed data links.

The PSA consists of the switching matrix, the services control platform, and the media resource platform. Nortel Network's offering of the PSA consists of the following components:

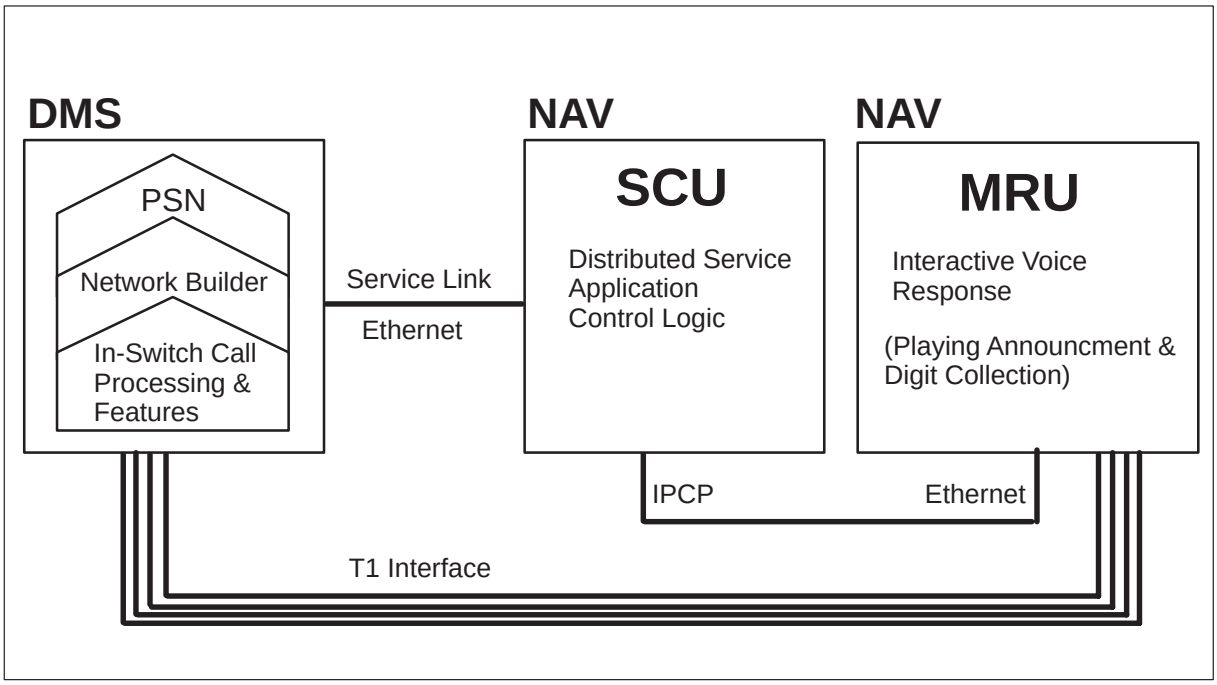
- switching matrix—Digital Multiplex System (DMS) Programmable Service Node (PSN). This is the UCS DMS–250 switch.
- service control platform—Network Applications Vehicle (NAV) Service Control Unit (SCU)

- media resource platform—NAV Media Resource Unit (MRU)

Note: The NAV platform is a reliable Bellcore-compliant system that offers digital signal processing technology and user programmability.

Figure 10-7 shows the PSA platform components and their high-speed data links. Descriptions of each component follow Figure 10-7.

Figure 10-7
Programmable Services Architecture



DMS Programmable Service Node (PSN). The DMS PSN software, provides an integrated programmable switching matrix within the UCS DMS-250 system. The PSN provides traditional call control capability and the ability to transfer complete control of call processing outside the switch. Once control of a call is presented to the service control unit (SCU), it does not return to the switch. PSN is ideally suited for applications that require the continuing control of a call.

NAV Service Control Unit (SCU). The NAV SCU is an external service control unit that controls PSN call processing for the purpose of providing advanced services. The NAV SCU is connected to the UCS DMS-250 switch by a high-speed Ethernet link.

NAV Media Resource Unit (MRU). The NAV MRU, under control of the SCU, provides a range of advanced services, including voice processing and voice recognition.

Ethernet data link. The PSN to SCU interface sends and receives information on a high-speed Ethernet data link.

ServiceLink applications program interface (API). The ServiceLink API provides a commercially available protocol and a peer-to-peer protocol. These protocols allow connectivity to any service control platform.

SCU controlled call flow

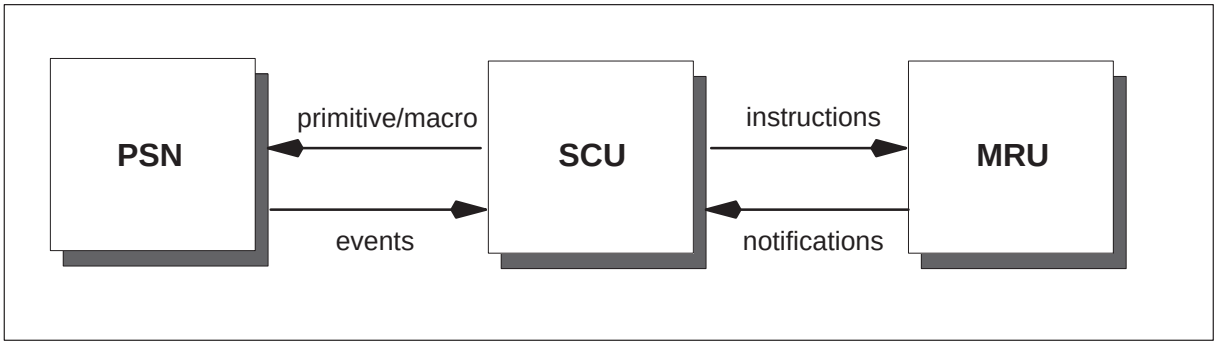
The PSA platform provides a means for operating companies to rapidly develop and deploy advanced services into the network through the SCU. The SCU provides service control capabilities for a call originating on the DMS PSN and identified as a service call. The PSN passes control of the call to the SCU, along with the data required for the service to be invoked.

The following section describes the process by which control is handed off to the SCU, and the general flow of the call.

- Once the SCU determines which service is to be invoked on the call, the call enters the server mode. The call is now under complete control of the SCU.
- The SCU provides instructions to the PSN on how to proceed with the call. These instructions are called primitives or macros, which are bundles of primitives.
- The PSN, in turn, provides event messages, used to report events to the SCU. By exchanging messages, the SCU controls call processing on the PSN.
- The SCU provides instructions to the MRU to perform media functions on calls.
- The MRU, in turn, provides notification messages used to report events to the SCU.

Figure 10-8, SCU to PSN and SCU to MRU Messaging, shows a simplified flow of instructions and event notification messages between the PSN and the SCU.

Figure 10-8
SCU to PSN and SCU to MRU Messaging



The SCU has the ability to invoke over one or more parties involved in an SCU controlled call, such functions as

- digit collection
- call terminations
- bridging
- playing announcements and tones
- specialized tone monitoring
- outpulsing,

Services offered by Progammable Services Architecture

The following are examples of PSA services:

- Debit Card
- Call Redirection
- International Callback
- Call Transfer
- Pre-paid Card
- Personal Number

Software Optionality Control (SOC) options

PSA uses the following SOC option:

- UPSN0001 (Programmable Service Node)

Billing

UCS DMS-250 billing system

The UCS DMS-250 switch provides the customer two primary billing options:

- core-based billing, in which the billing is handled internally by the computing module (CM) and
- billing server, a dedicated processor that receives the raw billing data from the CM.

With both options, billing records are generated to capture call information. The billing records can be downloaded to an external computing system and processed to provide customer bills, analyze traffic patterns, and identify potential fraud.

Billing records

The billing system begins capturing call data every time a user attempts a call. An attempted call is defined as off-hook followed by at least one dialed digit (except for hotline calls, which do not require dialed digits). The switch can generate the following billing records:

- event records
- call detail records (CDR)
- operator service records (OSR)

Event records

Event records are used to indicate the state of the billing blocks and files. Types of event records include:

- Block header records (BHR)—The first record in every block is a BHR. The BHR is the marker used to perform a sequential block count for every block written to the billing file.
- Graceful start records (GSR)—A GSR is generated every time a normal billing file rotate occurs. It identifies the start block of the billing file.

- Graceful end records (GER)—A GER is generated every time a normal billing file rotate occurs. It identifies the end block of a billing file and is the last formatted record of the end block.
- Emergency start records (ESR)—An ESR is generated each time an emergency billing file rotate occurs. It identifies the emergency start block of a billing file and is always the second record of the second block of an emergency billing file.
- System restart records (SRR)—A SSR is generated each time a warm or cold restart occurs. It can be located anywhere within a normal CDR block.
- Clock change records (CCR)—A CCR is generated each time a clock change command occurs. It can be located anywhere within a normal CDR block, always after a BHR.

Note: For more information on event records please refer to *UCS DMS-250 Billing Records Application Guide*.

CDRs

A call detail record (CDR) is populated for every attempted call, at the time of its completion, when either the originator or the terminator disconnects. The Recording Unit (RU) stores the call data until call termination. If a caller misdials and presses the reset key, the billing system does not generate a CDR.

For more information on CDRs please refer to *UCS DMS-250 Billing Records Application Guide*.

OSRs

Operator service records (OSRs) are generated when SS7 release link trunk (RLT) is involved in the call. Each OSR is associated with a corresponding CDR. An OSR contains information about the portion of the call using RLT.

The OSR size is user-definable. An OSR always contains 38 words of data, but can be provisioned to a larger size. When the OSR is provisioned to contain more than 38 words, null characters are used to pad the record.

For more information on OSRs please refer to *UCS DMS-250 Billing Records Application Guide*.

Call data

The types of call data stored in the recording unit (RU) varies depending on the nature of the call and the different features required to complete the call. The call data collected for most calls is the following:

- subscriber number

- address digits dialed by the subscriber
- originating agent identification
- terminating agent identification
- timestamps (including origination date, termination date, call duration, collections time)

Billing record formatting options

The billing system offers the user two basic billing formatting options:

- Internal billing
- Flexible billing

Internal billing

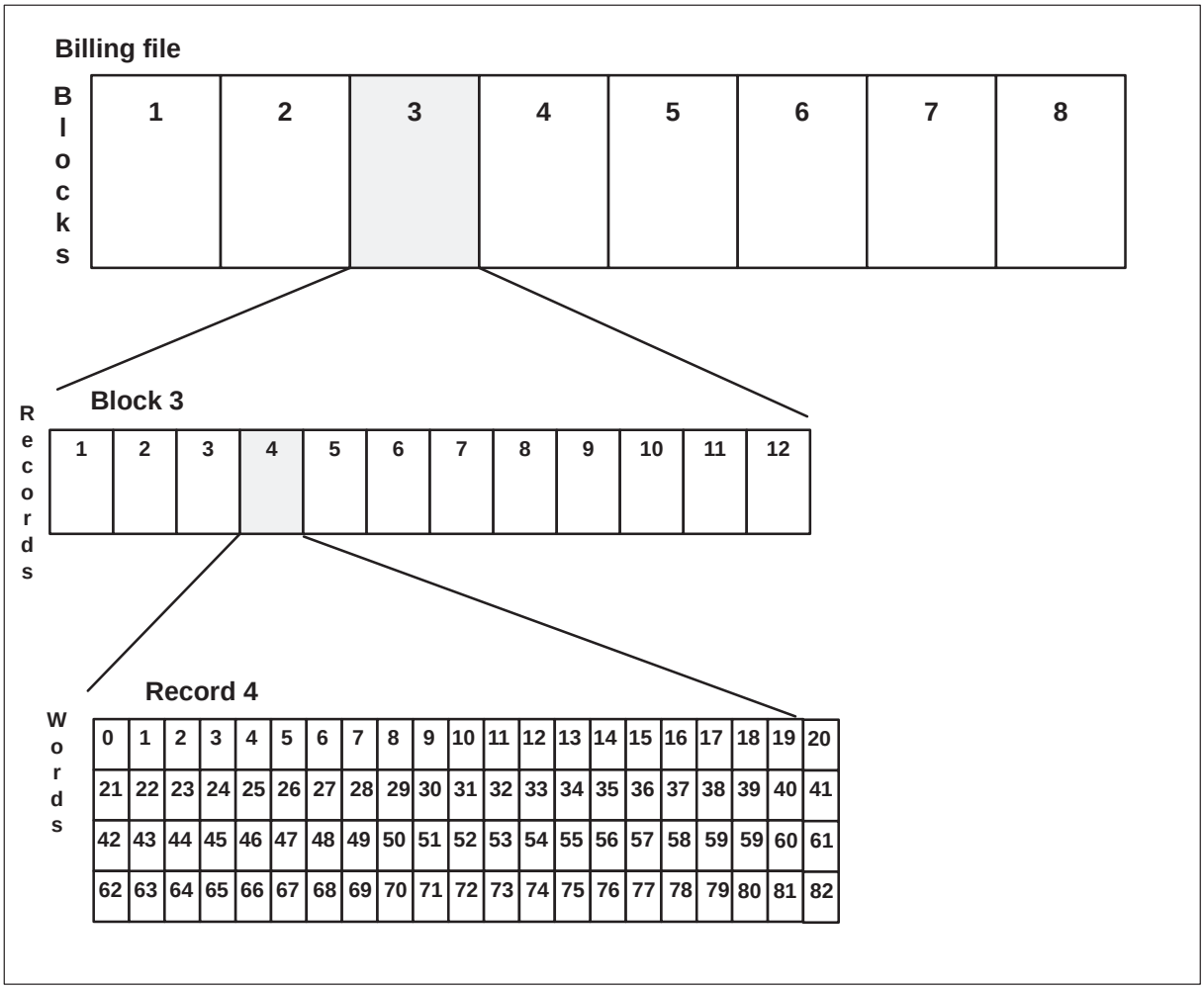
Internal billing uses one of the pre-defined, fixed format billing records. This pre-defined or default CDR format contains billing data captured in the recording unit (RU).

For example, the pre-defined templates available in UCS12 are:

- CDR2AMA containing 39 words.
- UCS07 containing 80 words.
- UCS07FLEX containing 84 words.
- UCS09 containing 83 words.
- UCS11 containing 83 words.
- UCS12 containing 83 words

Figure 10–1 shows a graphic representation of how the billing file is divided into blocks, records and words.

Figure 11-1
Internal billing file division



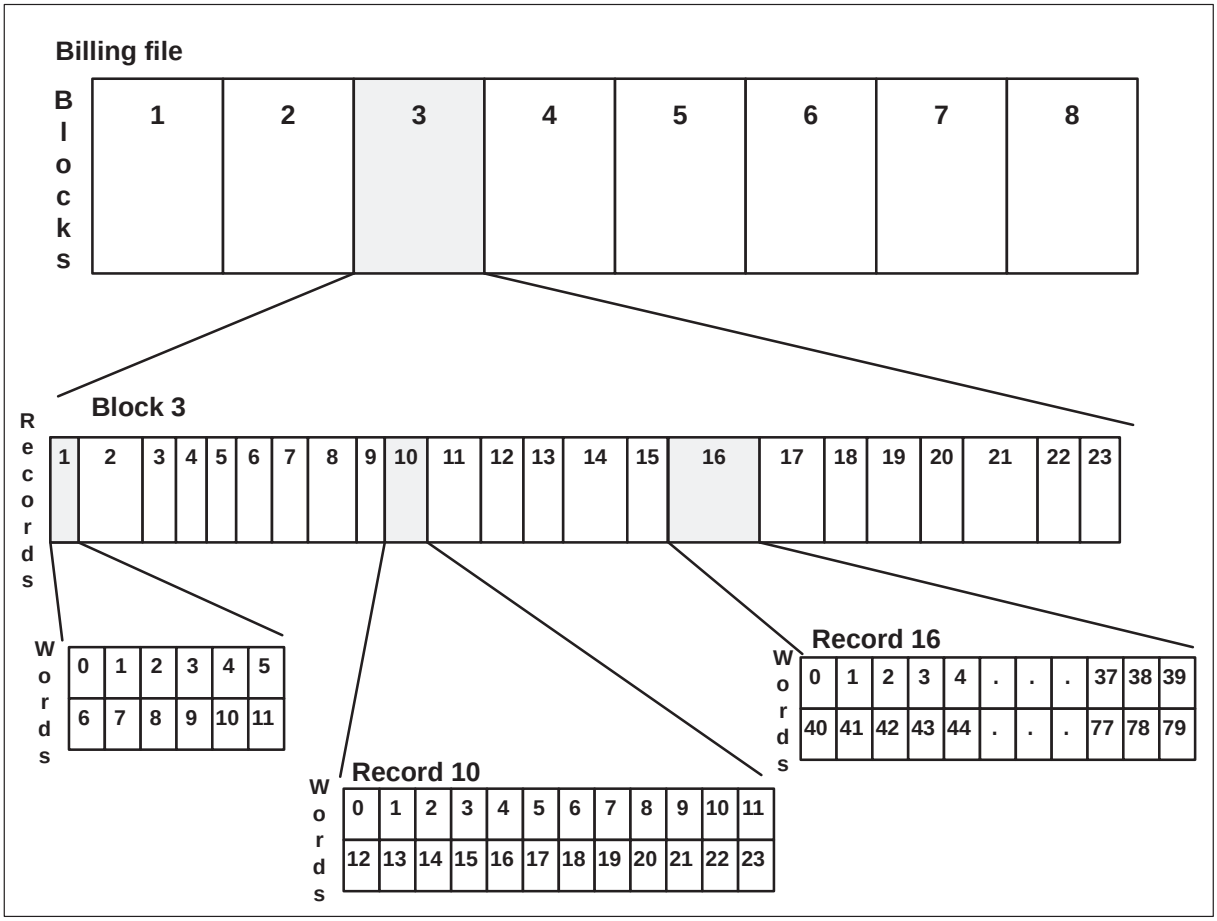
Flexible billing

In flexible billing, also called FlexCDR, the operating company can define the content of billing records. In addition, different CDR records can be defined for different call types.

CDRs can contain 3 to 128 words of data; OSRs, 38 to 128 words; and event records, 0 to 128 words, depending on the event record.

By defining smaller billing records sizes, more data can be stored on the billing file and downstream processors are not required to deal with unused fields. Figure 11-2 shows the division of a billing file into varied length records.

Figure 11-2
Flexible billing file division



Billing & fraud tools

Several features and tools exist on the UCS DMS-250 switch, including:

- CDRSEARCH
- long call duration audit
- long call incremental CDR
- answer CDR generation
- Network Security

CDR search

The flexible CDR search (FCDRSRCH) menu provides the user with the ability to view CDRs from a billing file residing on a disk volume. MAP terminal menu commands are issued to perform the following functions:

- select a billing file desired for searching

- define keys to compare against data in the call detail record (CDR) fields
- set a logical condition among the defined keys
- impose constraints on the scope of the search
- initiate the search
- view the CDRs that are returned as a result of the search session

FCDRSRCH allows the carrier to reference both active and closed billing files.

To enter the FCDRSRCH menu from a MAP, type the following:

>MAPCI;MTC;APPL;OAMAP;FCDRSRCH

Figure 10–3 shows the FCDRSRCH menu display.

Figure 11-3
FCDRSRCH menu

```
 CM    MS     IOD    Net    PM     CCS    Trks   Ext    APPL
 .     .      .      .      .      .      .      .      .

FCDRSRCH             OAMAP  EIO          SVMTC
0   QUIT               .     .              .
2   SRCHfil_
3   CDRType_
4   LISTflds    DRM:  .      AFT:  .      MNP:  .        SBS:  OK
5   SETKey_
6   RSETkey_
7   OPERator    FILE:
8   WINDow_     BLOCK #:          #TO SRCH:           FORMAT:
9   BLOCk_      OUTBUF POS:       #TO OUT:            KEY OPER:
10  NUMSrch_    WNDW START:           WNDW STOP:              TYPE:
11  NUMOut_
12  STATus
13  REINit
14  FORWard_    FCDRSRCH:
15  BACKup_
16  DISPlay_
17
18  EXECsrch

    TIME    12:00
```

Long call duration audit

The long call duration audit feature disconnects calls that remain unanswered for excessive lengths of time. It also produces maintenance logs

about lengthy calls. Both the unanswered call disconnect and the logs for lengthy calls can be disabled independently.

Long Call Incremental CDR

When a call extends beyond a specified time period, the billing system produces some interim billing records. This feature allows the carrier to begin billing a customer for calls that are held up for an excessively long period of time prior to disconnection.

The interim billing records consist of a group of CDRs in which the field INCBILL (incremental billing) can assume the following values:

1 First incremental CDR for a long duration call. The DISCONNECT_TOD (disconnect time of day) is set to the pre-specified long call duration time period (usually midnight) and the CDR is filed.

2 Interim incremental CDR(s) for long duration call. The first of the interim incremental CDRs is created with an ORIGINATION_TOD (Origination Time of Day) set to the same value as the DISCONNECT_TOD in the previous CDR.

3 Last incremental CDR for long duration call. The call has been completed and disconnected.

Answer CDR Generation

With the Answer CDR Generation feature, the billing system generates a CDR upon receipt of Answer indication from the far end on a terminating route. The CDR is generated upon the call being anwered as well when the call is disconnected.

Network Security

The Network Security (NETSEC) feature provides the capability for the UCS DMS-250 switch to generate a log (NETS601) or extra CDR upon call answer for international calls or national calls that terminate to specific NPAs within World Zone 1. An office parameter determines whether the log or CDR is generated.

The following originating trunk agencies are supported for this feature:

- DAL
- PRI
- PTS FGD
- SS7 FGD
- PTS IMT
- SS7 Inter–network IMT

- Q.767 Gateway IMT
- ISUP92 (Q.764) Gateway IMT
- AXXESS

A Command Interpreter (CI) command set for the NETSEC feature is available through the MAP terminal and includes:

- LIST – lists the network security status on a given CLLI or trunk group
- SET – adds or removes the NETSEC option to or from a CLLI
- LISTFRAUD – lists all the active possible fraud calls
- HELP – displays all of the NETSEC CI commands along with a short description and the command syntax

Note: The NETSEC CI command does not support AXXESS trunk agencies.

With the addition of the UBFR0003 SOC, Fraud Enhancements, additional functionality is added to the Network Security feature, including:

- generating a NETSEC log at call answer time based on the terminating trunk group
- enhancing fraud screening criteria to include
  - — time of day screening
  - — day of week screening
  - — nature of address
  - — information digits
  - — country code
- generating a NETSEC log at the time when the suspect call is released

The following terminating trunk agencies are supported for the Network Security feature:

- DAL
- PRI
- PTS FGD
- SS7 FGD
- PTS IMT
- SS7 Inter-network IMT
- Q.767 Gateway IMT
- ISUP92 (Q.764) Gateway IMT

- AXXESS

For terminating trunk agencies, screening is based on the fraud profile screening criteria of time-of-day, day-of-week, nature of address, information digits, and country code datafilled against the terminating trunk group. If all of the fraud profile screening criteria are met, a log (NETS603) or CDR is generated upon call answer.

The enhanced fraud screening criteria is also supported for originating agencies. If the World Zone screening criteria are met (the call is an international call or national call to a specific NPA, NPA-NXX, or NPA-NXX-XXXX within World Zone One) fraud profile screening can also be performed. Fraud profile screening is based on the time-of-day, day –of–week, nature of address, information digits, and country code screening criteria for that trunk group.

The SOC UBFR0003, Fraud Enhancements, also provides the capability to generate a log or CDR upon call release. If a log or CDR is generated for either the originating or terminating trunk agencies upon call answer, then a corresponding log (NETS602 or NETS604) is also generated upon call release.

For more information on the Network Security feature, refer to the *UCS DMS-250 Feature Group D (FGD) Application Guide*, *UCS DMS-250 FlexDial Application Guide*, or *UCS DMS-250 Gateway IMT Application Guide*.

Core-based billing

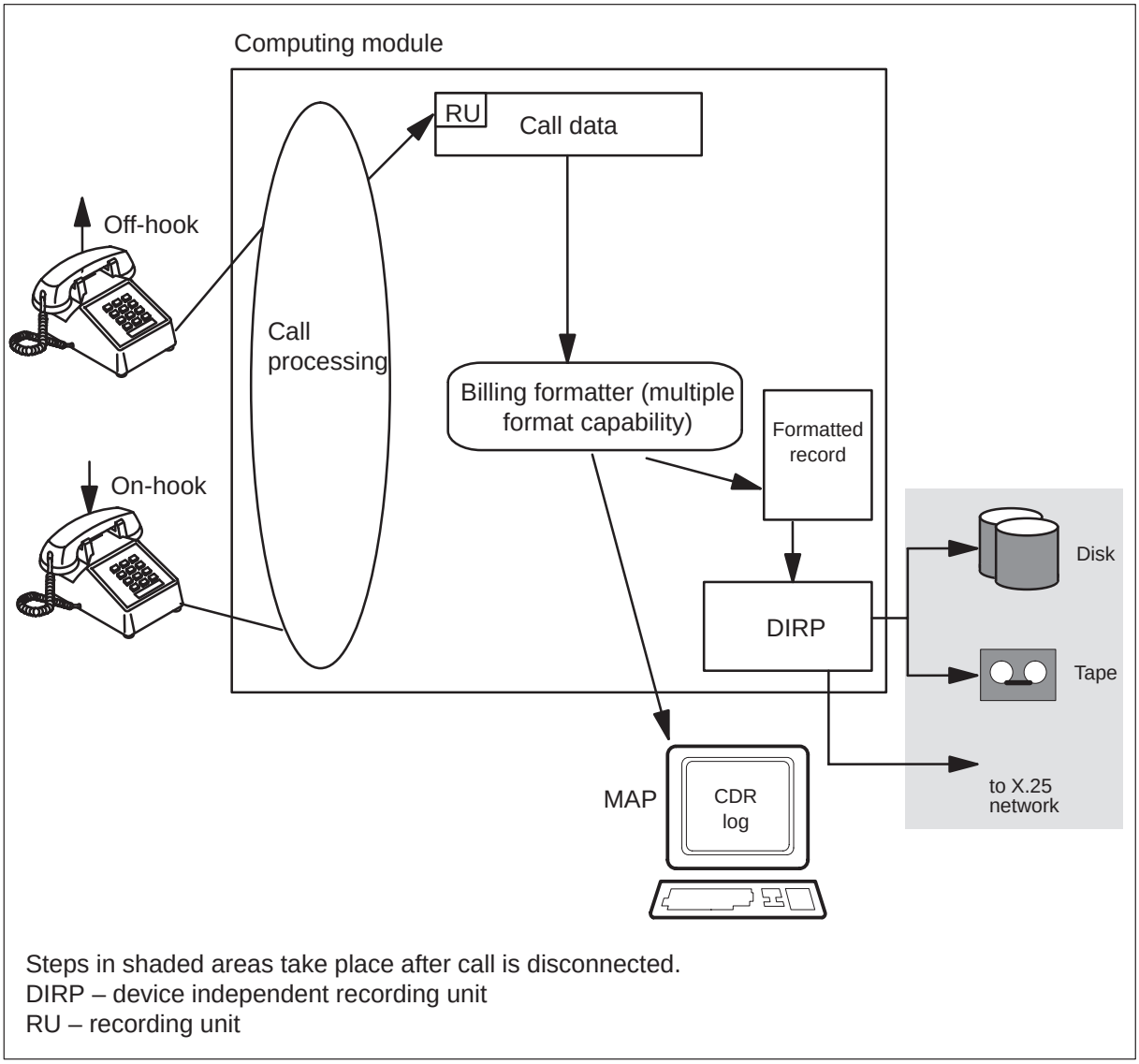
With core-based billing when the call terminates, the raw data routes to the computing module (CM)-based formatters, where it is formatted into billing records. The billing records are then stored by the device independent recording package (DIRP) and subsequently routed to IOC (input/output controller) disks, tapes and/or system load module (SLM) disks for downstream processing (Refer to Fig 10-4). For more information on DIRP, please refer to the following documentation:

- *Device Independent Recording Package Administration Guide*
- *Device Independent Recording Package Translations Guide*
- *Device Independent Recording Package Planning and Engineering Guide*
- *Device Independent Recording Package Product Guide*

In order to transfer billing data with core-based billing, the switch uses a process called AFT (automatic file transfer) in which the active billing stream of DIRP files is transfered over an X.25 communications point-to-point link to a host computer. Transfered data includes call detail

records (CDRs), operator service records (OSRs), operational measurements (OMs) and log files. For more information on AFT refer to *UCS DMS-250 X.25 Application Guide*.

Figure 11-4
Core billing system



Billing Server

If the switch has Billing Server, at call termination, the raw data routes from the billing collector interface residing on the CM to the stream collector manager (SCM).

The SCM, which resides on the DMS core, handles the physical transfer of the raw data to the formatter/storage agent (FSA), located on the billing server.

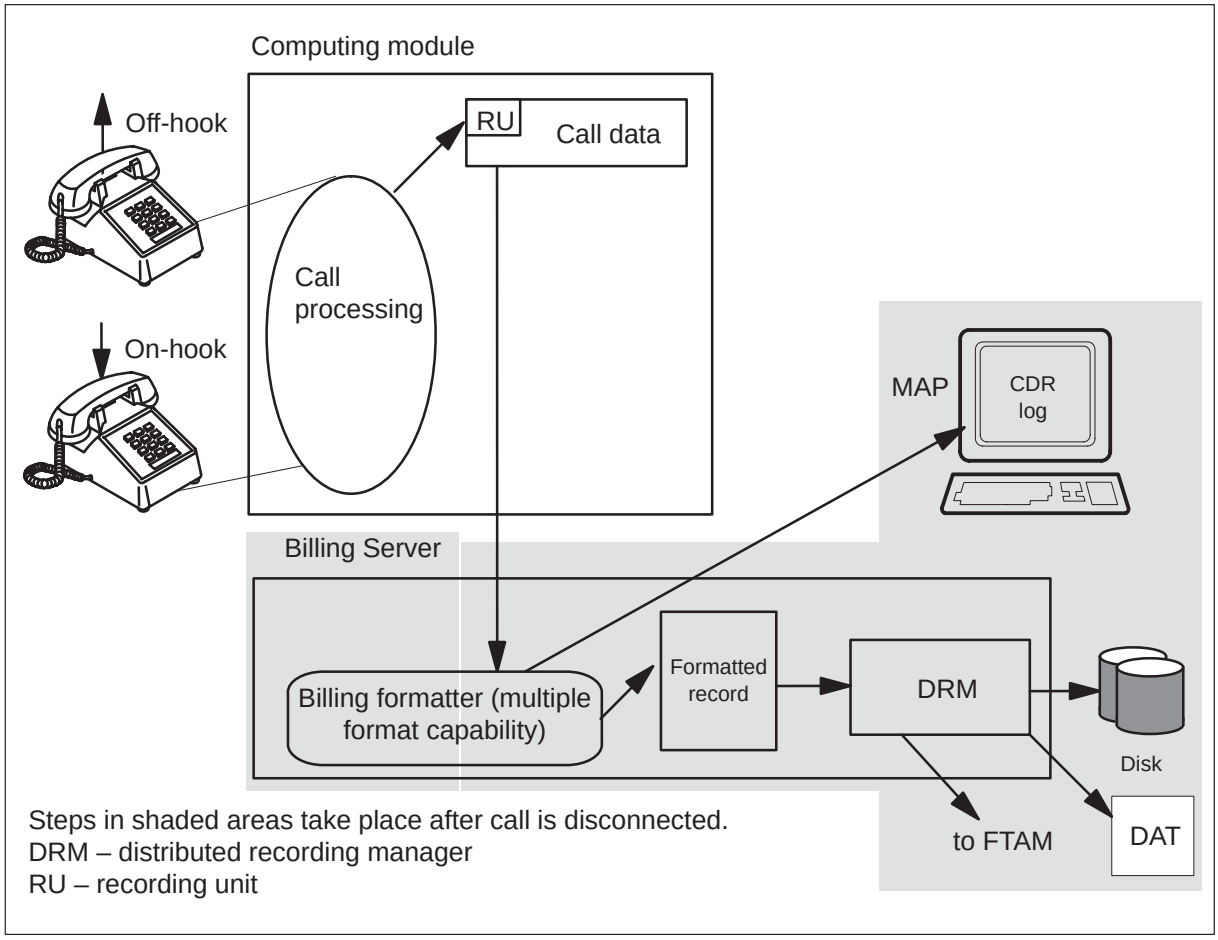
The FSA is part of the file processor (FP) platform, which is connected to the DMS-bus. The FSA formats the raw billing data and places it into blocks. The blocked data then routes to the distributed recording manager (DRM) to be written to disk.

When the switch operates real-time billing, the Billing Server sends the active billing stream over an Ethernet connection using FTAM (file transfer access and management) protocols at speeds up to 50 bytes/s. Refer to Figure 11-5 for a simple representation of Billing Server's functionality.

The need for billing server arises when processing a very high volume of calls. The exact volume of calls is determined by the CDR size and the feature mix the operating company elects to use.

Note: For more information on billing server please refer to *UCS DMS-250 Billing Server Application Guide*.

Figure 11-5
Billing system with billing server



Operations, administration, and maintenance (OA&M)

Operations, administration, and maintenance (OA&M) on the UCS DMS-250 switch covers those areas of the switch that are required after the switch is in-service. Through an integral maintenance and billing subsystem, the switch facilitates billing and various OA&M activities that are crucial to the cost-effective management of a carrier switching environment. Some of the OA&M features and activities that are covered in this chapter include:

- the function of the MAP terminal
- the command interpreter (CI) and its major sublevels on the MAP terminal
- switch operations and maintenance via the MAP terminal
  - — alarm system
  - — log system
  - — trunk testing
- administration from the MAP terminal
  - — billing
  - — network management
  - — operational measurements (OM)
  - — table editor
- Dynamically Controlled Routing (DCR)
- test tools and utilities
- Transmission Control Protocol/Internet Protocol (TCP/IP) maintenance interface
- Engineering and Administrative Data Acquisition System (EADAS)

MAP terminal

Nortel's MAP terminal is the primary human interface (HMI) between a user and the UCS DMS-250 switch and provides control of the OA&M activities. The basic components of the MAP terminal are a monitor with keyboard, a

telephone link providing monitor and talk capabilities on lines and trunks, testing facilities, and a printer. The MAP terminal can be co-located with the switch or connected via a dedicated transmission facility or dial-up data link for remote locations.

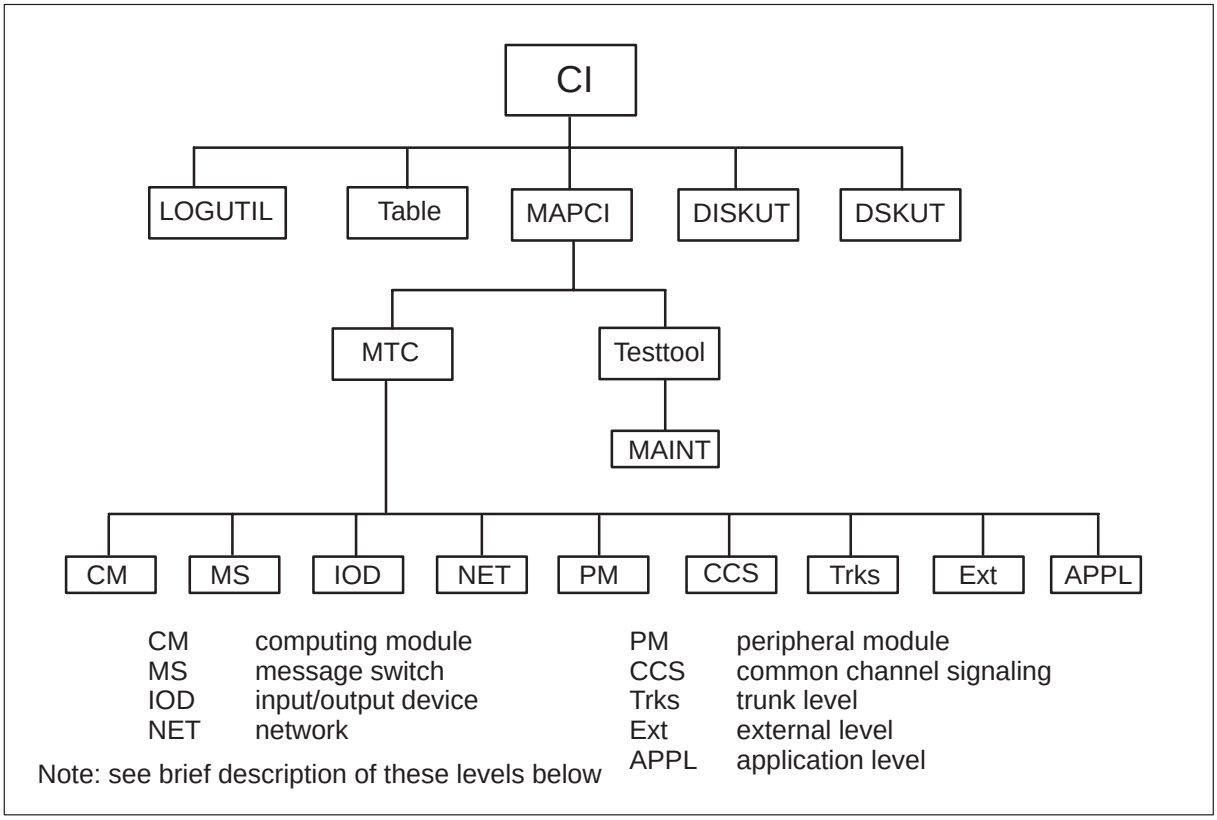
The major MAP terminal functions include the following:

- operations
  - — alarms
  - — log alerting
  - — status displays
  - — control panel
  - — security
- switch maintenance
  - — trunk testing
  - — test access
  - — fault localization
- administration
  - — operational measurements
  - — network management
  - — billing

The MAP terminal functions are provided via the command interpreter (CI), which consists of several layers or levels of commands. Figure 12-1 shows a block diagram of the major levels and some commands at the MAP terminal level, beginning at the top level or the “CI” level.

To access each of the sublayers of the commands, type that command at the CI prompt. For example, if you want to get to the maintenance NET level from the CI level, you could type “mapci (carriage return) mtc (carriage return) net (carriage return)” or just type “mapci;mtc;net (carriage return)” from the CI prompt.

Figure 12-1
Block diagram of the major levels of the MAP terminal



Switch operations and maintenance

The UCS DMS-250 switch maintenance system provides complete maintenance of the hardware and software by monitoring key functional areas, and by detecting, analyzing, correcting and reporting errors occurring in these areas.

Switch operations and maintenance using the MAP terminal

The MAP terminal uses the concept of menu hierarchies to examine system status or trouble. Displays start at the maintenance subsystem (top) level, and descend to lower levels until the fault is eventually traced to a replaceable component or system malfunction.

Figure 12-2 shows a sample MAP terminal display screen at the first maintenance level. Maintenance headings shown are for example only. The headings on another display may be slightly different. To get this screen, type “mapci;mtc” at the CI prompt. To get back to the CI level, type “quit all” or type “quit” at each level until you get back to the CI level. To get to a lower level, type the number of that level (for example, type “9” or “CM” to access the CM level).

Figure 12-2
Sample MAP terminal display (MTC level)

```
CM      MS     IOD     Net     PM     CCS     Trks     Ext    APPL
.       .    NO OCC     .      .      .     27 GC      .      .
               M                              *C*

          MTC
          0 Quit
          2 Activity
          3 MTCNA
          4 SRSTATUS
          5 BERP
          6 CPSTATUS
          7
          8
          9 CM
          10 MS
          11 IOD
          12 Net
          13 PM
          14 CCS
          15
          16 Trks
          17 Ext
          18 APPL
```

The following is a brief description of the major levels:

- CM—The computing module (CM) level is the brain of the system, or the “front-end.” The CM connects to the message switch (MS).
- MS—The message switch (MS) level transfers messages to the CM, Enhanced Network (ENET), input/output device (IOD), and Series III peripheral modules (PMs).
- IOD—The input/output device (IOD) level contains input/output controllers that have connections to various devices.
- NET—The network (NET) level provides connectivity between the MS and the Series I and Series II PMs.
- PM—The peripheral module (PM) level offloads the CM and provides connections to various circuit types, such as trunks, tone receivers, and conference ports.
- CCS—The common channel signaling (CCS) level provides connections to CCS7 signaling links and routes.

- Trks—The trunk (Trks) level is a gateway level to two major levels: carrier and trunk test position (TTP), which allow maintenance on PM carriers and circuits, respectively.
- Ext—The external (Ext) level provides statistical information about alarms currently on the switch.
- APPL—The application (APPL) level is used for customer-specific applications.

Alarm system

The alarm system consists of hardware and software elements that monitor key points in the system and provide audible or visual indicating devices. The indicating devices respond to alarm inputs detected by the monitoring elements.

Alarms are originated in three ways:

- locally detected alarms, for example fuse and power converter failures
- Central Processor detected alarms, for example, software faults
- externally detected alarms, for example carrier group failures

Detected trouble conditions are classified in decreasing order of severity, such as “critical,” “major,” and “minor.” Indications of current alarm classes existing in the various maintenance subsystems are displayed on the MAP terminal, as shown in Figure 12-2. In that example, “M” indicates major alarms, “*C*” indicates critical alarms, and “.” indicates minor alarms.

For more information on alarms, refer to the *UCS DMS-250 Alarm and Performance Monitoring Procedures*.

Log system

A log report is a message generated by the UCS DMS-250 switch whenever a significant event has occurred in the switch or one of its peripherals. Log reports include status and activity reports, as well as reports on hardware or software faults, test results, changes in state, and other events or conditions likely to affect the performance of the switch. A log report may be generated in response to either a system or a manual action.

Controlling output from the log system

Log output—including storage, distribution, prioritization, suppression, and thresholds—may be controlled in two ways. First, individual offices may customize the output from the log system to meet local requirements by making changes to the appropriate customer data tables. Second, specific log utility (LOGUTIL) commands may be executed in the LOGUTIL level of the MAP terminal display. LOGUTIL commands may be used temporarily

to override parameters set in the customer data tables, for example, to turn log reports OFF, or to route output temporarily to a different device.

Log buffers

Each log buffer is of sufficient size to hold several hours of subsystem reports at peak output rates

The output reports are stored in the log buffers in chronological order as they are generated; for example, a central message controller (CMC) report generated at 16:04:39 would be logged before a report generated at 16:08:33. Once a subsystem buffer is full, the next report that is generated displaces the oldest report. Unless the displaced log report had been previously routed to some type of external storage device, the report is lost and is unretrievable by the user.

The critical message prioritization feature provides an additional method of defining the order in which log reports are output to a specified log device.

When active, the log reports are categorized by their alarm levels (critical, major, minor, no alarm). The reports are then output to specified devices in order of most critical to least critical alarm. Reports of the same alarm category are stored chronologically.

The following is an example of a log report:

```
OCC213 APR17 10:20:33 6504 INFO TCN IS NOT DATAFILLED
TRBCODE = TCN_IS_NOT_IN_TABLE_TCNFAST
TCN = 41255544443333
```

Routing log reports

In addition to storing the reports, the output reporting system is capable of routing the reports to operating company defined devices, such as magnetic tape drive (MTD), disk drive unit (DDU), data link, printer, and video display unit (VDU). Each device is allocated a buffer area, which under normal conditions is sufficient to handle a large number of log reports.

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

Trunk testing

A MAP terminal can be dedicated to trunk testing and perform various manual and automatic tests on distance and local offices. Trunk testing checks the transmission and signaling functions of the transmission facility and the near-end and far-trunk circuits. Tests of outgoing trunks and the outgoing portion of two-way trunks are controlled by the local office. Tests of incoming trunks are initiated and controlled by the distant office (where

the trunks originate) and the local office only provides the standard test interfaces.

Automatic testing is performed routinely on trunk groups, while manual testing is applied to specific trunks. The manual trunk testing software also permits office personnel to query circuit state and data, to setup conditions and monitor trunk operation in order to identify the origin of a signaling or transmission problem.

Automatic trunk testing (ATT)

ATT enables the UCS DMS-250 switch to use automatic trunk routining (ATR) trunks to connect to an outboard T105 responder test device to provide automated trunk testing. ATT also allows a carrier to specify which DS-0 channel to use for testing.

Manual trunk testing

The manual trunk testing feature enables a MAP terminal to function as a trunk test position (TTP). The TTP handles three levels of testing: diagnostic test, testlines test, and manual test connections.

Testlines test

The UCS DMS-250 switch testlines facilitates various manual and automatic tests to distant toll and local offices without human intervention at the called office. Testlines procedures are invoked by the trunk test procedure (TTP) or automatic trunk testing (ATT).

The switch supports the following direct test line terminations:

- T100 test line (also known as quiet or balanced termination) provides noise and loss measurements.
- T101 test line (also known as communication test line) establishes two-way talking capability between a test board or test position and any trunk or line outgoing to the UCS DMS-250 switch.
- T102 test line (also known as milliwatt testing) provides one-way transmission loss measurements (far-to-near).
- T103 test line (also known as supervisory and signaling test line) provides overall testing of supervisory and signaling features on intertoll trunks.
- T104 test line (also known as transmission test line) provides two-way transmission loss measurements, a far-to-near noise measurement, and near-to-far noise check.

- T105 test line provides quick two-way transmission loss measurements, and two-way noise measurements on outgoing trunks, and on the outgoing portions of two-way trunks. T105 test line is an automated testing feature.

Automatic Transmission Measurement System (ATMS)

ATMS provides quick two-way transmission loss and noise measurements on outgoing and outgoing portions of two-way trunks to distant office T105 terminating test line. The tests can run automatically through ATT diagnostic commands to eliminate costly manual testing.

Diagnostics test

The UCS DMS-250 switch includes diagnostic programs to perform fault verification and resolution for all UCS DMS-250 switch applications. Diagnostics are invoked manually or automatically to locate any faults in the subsystem of the switch. If no fault condition is found, a report is issued to the MAP terminal requesting the diagnostic. If a fault is found, the faulty unit is automatically removed from service and appropriate messages are routed to the log system and the alarm system.

All trunks busy using logs

This feature provides traffic congestion information by numbering plan area (NPA). The UCS DMS-250 switch increments a counter each time an NPA receives an All Trunks Busy (ATB) signal. When the counter reaches a specified level, the information is entered in a log. This feature helps identify NPAs that might need additional facilities.

All trunks busy using operational measurements (OMs)

This feature provides traffic congestion information by NPA through the operational measurement (OM) system. The UCS DMS-250 switch increments a counter each time an NPA receives an all trunks busy (ATB) signal. When the counter reaches a specified level, the information is entered in an OM. This feature helps identify NPAs that might need additional facilities. See the section “Operational measurements (OMs)” for more information on OMs.

Switch administration

Some of the major administration features of the MAP terminal consist of billing or call detail recording (CDR), network management (NWM), and operational measurements (OM). Other MAP terminal administration functions include equipment provisioning, software changes, service provisioning, translations, and custom programming.

Billing (CDR)

The CDR function records comprehensive billing information for the UCS DMS-250 switch. The data is recorded onto a tape or a disk, or the data is sent over X.25 to an external system.

A CDR is generated for each attempted call. An attempted call is defined as an off-hook followed by at least one dialed digit, except for hotline calls, which do not require dialed digits.

CDR also provides information on traffic, equipment, engineering, fraud, and division of revenue.

For more information, refer to Chapter 11, “Billing” or the *UCS DMS-250 Billing Records Application Guide*.

Network management (NWM)

NWM allows the supervision and control of the traffic flowing through an office to ensure the maximum flow of traffic under adverse and overload conditions. NWM controls are either expansive or protective:

- Expansive controls manipulate routing patterns to use alternative capacities not normally selected as the shortest route pattern in a switch hierarchy.
- Protective controls restrict certain kinds of traffic to prevent system degradation (NET delays) due to overload.

Operational measurements (OMs)

The OM system collects information relating to the call handling capability of the UCS DMS-250 switch. Equipment usage, network occupancy, dial tone delay, quantity of calls handled, and other useful measurements are made available to the office personnel.

The types of measurements made include peg counts, overflow counts, and usage. They are scheduled on a half-hourly, hourly, daily, weekly, or monthly basis, depending on the item and according to a collection schedule. Collection schedules and the routing of these reports can be modified by office personnel. The OMs enable carriers to engineer and provision their networks and facilities efficiently.

OM group descriptions are arranged alphabetically according to group name. Each group description includes one or more flow charts and a description of each register in the group.

OMs can provide measures of active call processing as well as other processing activities, such as clock and scheduler interrupts, to indicate the efficiency of the CPU.

For more information, see the *UCS DMS-250 Operational Measurements Reference Manual* and the *UCS DMS-250 SuperNode Operational Measurements (S/OM) Reference Manual*.

Table editor

The table editor provides access to all customer data on the switch. It allows for prompted or unprompted input, syntax checking, consistency checking, schema queries, and several levels of error messages. It provides formatted table output and high level query facilities based on table contents. It also permits office personnel to write "execs" for performing complex data operations with one command (for example, write their own data modifications).

For information on translations and how to use the table editor, refer to Chapter 5, "Translations and routing."

For more information on the UCS DMS-250 data tables, refer to the *UCS DMS-250 Data Schema Reference Manual*.

Transmission control protocol/Internet protocol interface

Transmission Control Protocol/Internet Protocol (TCP/IP) is a suite of data communication network protocols. The UCS DMS-250 switch supports the TCP/IP protocol suite, which includes the following services:

- File Transfer protocol (FTP)
- Telecommunication Network (Telnet)

File Transfer protocol

FTP is a standard protocol for an operating company at a MAP terminal on a UCS DMS-250 switch. FTP provides high-speed file transfer capabilities between the UCS DMS-250 switch and a remote workstation at a UNIX host computer. FTP is a session-oriented tool which means that an operating company must login to the workstation before file exchange can take place. The FTP transfers two types of data:

- binary—transfers any kind of file
- text—transfers text files only

Note: For high-speed file transfer capabilities between the host workstation and a remote UCS DMS-250 switch an operating company must use Telnet (see below).

Telnet

Telnet is a standard protocol that enables an operating company to log in from a UNIX host workstation onto a remote UCS DMS-250 switch. In addition, Telnet allows an operating company to log onto a remote system

without any knowledge of the lower-level network protocols. As a result, the Telnet protocol treats the operating company's node as if it were a local terminal on the UCS DMS-250 switch.

Engineering and administrative data acquisition system

The Engineering and Administrative Data Acquisition System (EADAS) allows an operating company to define six UCS DMS-250 specific operational measurement (OM) groups. In addition, EADAS registers and provides access to network management downstream processors. The three interfaces which provide these capabilities include the following:

- TR-740 compliant interface
- TR-746 compliant interface
- SR-3942 non-compliant interface

TR-740 compliant interface

The TR-740 compliant interface (EADAS data collection) transmits switch performance OM data to downstream data collection processing systems. In addition, as part of the TR-740 compliant interface, EADAS data collection includes an increase in the buffer size.

The buffer size for EADAS/data collection is 256k words. The TR-740 compliant interface utilizes this buffer to store switch performance OMs prior to sending these OMs to a downstream data collection processor. The buffer size includes the following three classes of data collection:

- 30 minute
- 60 minute
- 24 hour

TR-746 compliant interface

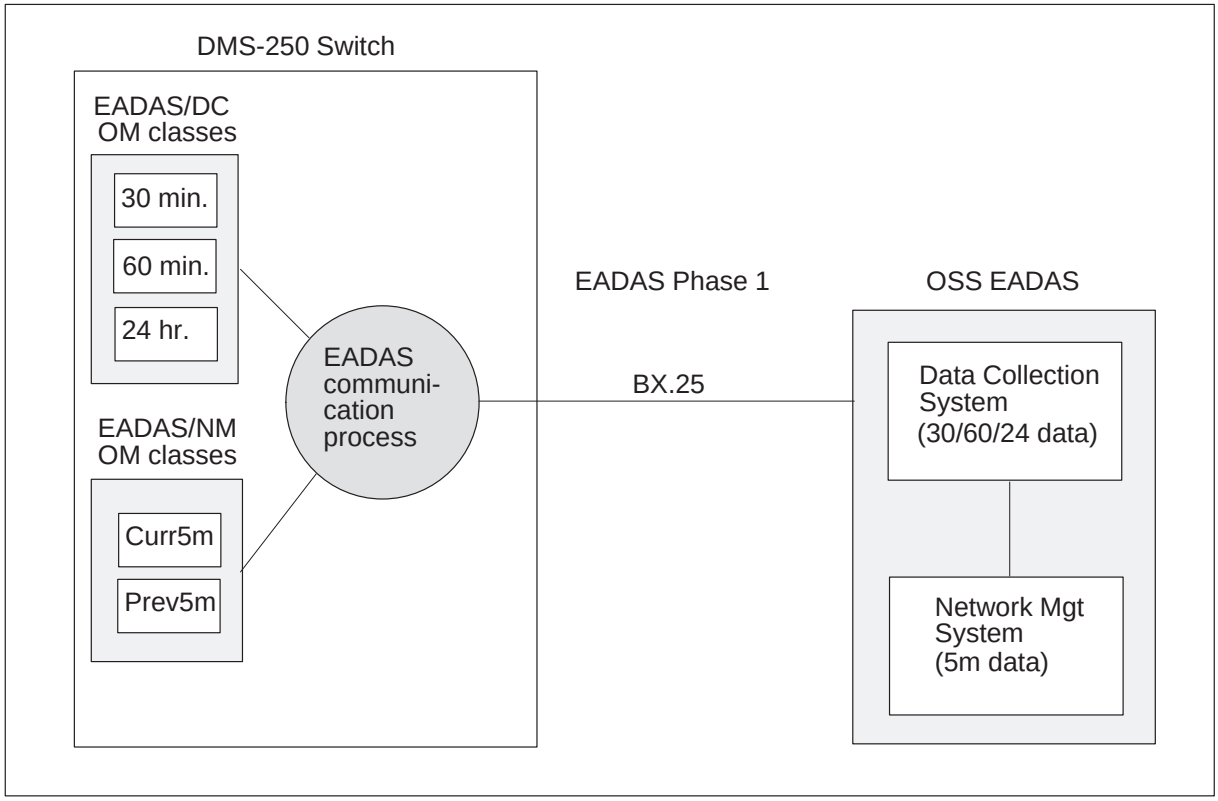
The TR-746 compliant interface (EADAS network management) transmits traffic measurement OMs data of up to 250 trunk groups. Network management downstream processing systems process this data. If the network management downstream processing system requires further action or additional information, it sends audit and control messages to the UCS DMS-250 switch. The switch responds with the appropriate action or information. Figure 12-3 illustrates the EADAS configuration with TR-740 and TR-746 compliant interfaces (see note).

Note: Figure 12-3 also illustrates the EADAS configuration with TR-740 and SR-3942 non-compliant interfaces (in place of the TR-746 interface).

SR-3942 non-compliant interface

The SR-3942 non-compliant interface (enhanced network management) transmits traffic measurement data for OM groups of up to 1024 trunk groups. Network management downstream processing systems process this data. If the network management downstream processing system requires further action or additional information, it sends audit and control messages to the UCS DMS-250 switch. The switch responds with the appropriate action or information.

Figure 12-3
EADAS configuration with TR-740 and TR-746 compliant interfaces



Dynamically Controlled Routing

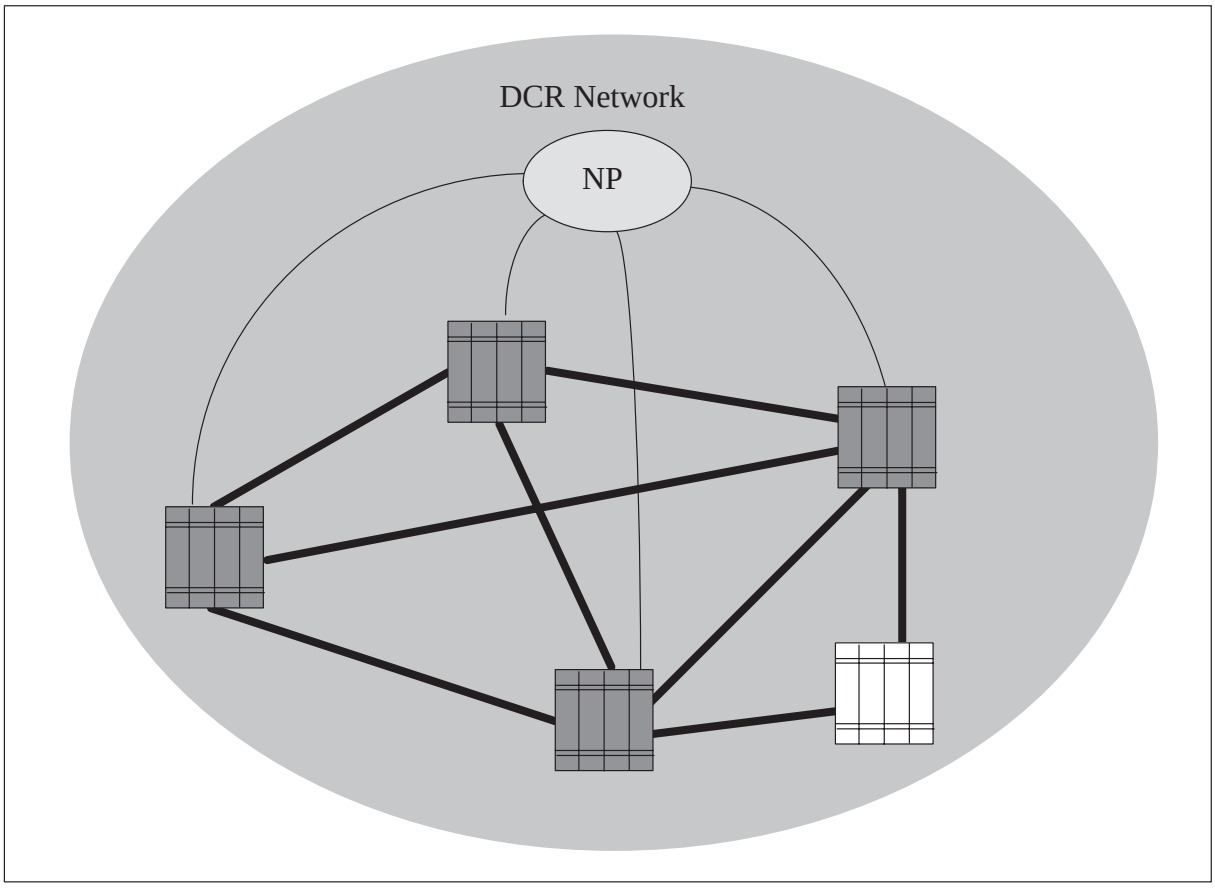
Dynamically Controlled Routing (DCR) is an automatic, intelligent network management system that uses switch and traffic information to automatically reroute overflow traffic. DCR allows toll and local telecommunications networks to make routing decisions based on the actual moment-to-moment status of the network. In addition, DCR reserves idle trunks in trunk groups. As a result, DCR provides routes for overflowing traffic separated by one or two links from an originating toll switch. Each switch with DCR functionality sends its idle trunk and trunk overflow data to a network processor (centralized processor) at 10 second intervals.

Figure 12-4 is a simplified diagram of a DCR network that shows the relationship between the system elements. The following list illustrates this relationship:

- arch lines represent the switch network processor communication links
- heavy lines represent DCR traffic trunks
- shaded boxes represent the intelligent switches
- white boxes represent the non-intelligent switches

Note: The network processor calculates routing recommendations for calls that overflow a trunk group for the UCS DMS-250 switch.

Figure 12-4
Simplified diagram of a DCR network



Test tools

The paragraphs that follow include brief descriptions on available test tools.

SCP simulator

NetworkBuilder uses a service control point (SCP) simulator to test SCP responses to CAIN framework queries. These queries provide simulator logic through user-defined data input. Through this user-defined data input, the simulator provides the following SCP services:

- accepts and decodes transaction capabilities application part (TCAP) messages
- detects and reports errors
- checks incoming message parameters against a customer-defined database
- determines appropriate response messages, including error cases
- encodes response message into TCAP message format
- sends TCAP messages to the CAIN framework
- allows conversation

Translation verification

The translation verification (TRAVER) tool simulates a call from a specific originating trunk to a specific address. TRAVER examines and displays translation and routing data for a single call leg. TRAVER performs the following services:

- verifies the translation tables
- aids in debugging translation and routing datafill
- aids in analyzing translation and routing datafill
- determines reasons for unexpected results

TRAVER displays the following information:

- tables used to translate and route a call
- treatment
- CAIN subscription method and group
- tuples where trigger criteria are met
- message parameters

CAIN tools

CAIN tools include CAINTEST, VPTRACE, and CAINSCPT.

CAINTEST

CAINTEST is the CAIN message query test tool. This tool allows an operating company to create and send test TCAP queries to the SCP. The

SCP responds as if an actual call were being made. In addition, the SCP does not recognize any difference between a CAINTEST-generated message and a call-generated message.

VPTRACE

VPTRACE allows an operating company to enable or disable the tracing of variable AIN messaging platform (VAMP) messages (logged into VAMP 90x logs). If called with no parameter, the command displays the current status of tracing (enabled or disabled).

CAINSCPT

CAINSCPT enables an operating company to select different commands to perform different tasks. In addition, CAINSCPT supports the CAIN SCP simulator. CAINSCPT performs the following services:

- idles the specified transaction identifiers (trids)
- marks the specified trid(s) in use
- displays information associated with the given trid(s)
- details information associated with the simulator's timeout wheel

Utilities and non-resident administrative aids

The paragraphs that follow include brief descriptions of available utilities and non-resident administrative aids.

Software Optionality Control

Software Optionality Control (SOC) is the tool which manages the options in a product computing module load (PCL). The SOC utility provides an interface for tracking and monitoring optional functions available for use on a UCS DMS-250 switch. The SOC interface consists of a command interpreter (CI) command at the MAP terminal. In addition, the SOC utility provides password protection for options licensed by each operating company. This password protection, required to change the option's right-to-use state, allows an operating company to choose the following options:

- access
- activate
- deactivate

Log analysis program

The log analysis program generates valuable information about system responses under certain conditions. Certain types of log reports provide advanced warning of imminent system problems. For example, analysis of log reports generated one period at a time often reveal patterns of system

behavior. As a result, these reports are very helpful in isolating the real cause of a problem.

Transition of circuits to digits dialed

Transition of circuits to digits dialed (also known as automated call-through test system) allows an operating company to specify incoming and outgoing circuits. In addition, it returns the dialing information necessary to complete the call.

OM tape print utility

The OM tape print utility is a non-resident software that stores operational measurements (OM) on a magnetic tape. This magnetic tape is sent, or dumped, to a down-stream processing center to produce traffic or trend analysis reports. In addition, the OM tape print utility prints in the following formats:

- human-readable
- crude

AMA/CDR tape dump utility program

The automatic message accounting (AMA) call detail record (CDR) tape dump utility program is a non-resident program that prints all or selected records of a call detail record (CDR) in either mnemonic or hexadecimal formats.

Data dictionary dump

The data dictionary dump is a lab tool to monitor data schema changes. As a result, it provides the following features in the data schema table:

- name of data table
- name of fields
- types of field, which include the following:
  - — numeric
  - — symbolic
  - — table
  - — structure
  - — descriptor
  - — procedure
  - — pointer
  - — area
- range of values

- semantics of fields

Enhanced trunk inventory and spares testing

Enhanced trunk inventory and spares testing integrates trunk inventory data into the call processing stream and into the maintenance software. As a result, this integration ensures data integrity and the ability to test non-working trunks.

Journal file dump

The journal file dump allows the cross batch change supplement (BCS) application of the journal file to avoid a data modification order (DMO) freeze. To accomplish this, a non-resident command interpreter (CI) command dumps the journal file(s) as a sequence of data input commands. In addition, the DMOPRO module restores this data into the new load.

Mechanized line card assignment

The mechanized line card assignment allows an operating company to determine possible assignment patterns for newly ordered line cards during office extensions. In addition, it is possible for an operating company to automatically update the document management system (DMS) database to implement the chosen assignment of cards.

Office record report of working spare trunks

The office record report of working spare trunks is a non-resident software utility that allows an operating company to generate reports of circuit assignments for the following:

- analog and digital trunks
- card assignments for analog and digital trunk cards
- card slot vacancies for analog and digital trunk cards

Software monitoring system

The software monitoring system (DMSMON) compares the performance of an added software release to the current software release. As a result, an operating company can determine whether a service problem is due to an overload condition or to the addition of software.

Appendix A
UCS DMS-250 switch features

UCS DMS-250 features grouped by functionality

Refer to the DMS–250 Release Change Reference Manual for any addition of or changes to the functionality of the features.

UCS DMS-250 features grouped by software release

Refer to the DMS–250 Release Change Reference Manual for any addition of or changes to the functionality of the features.

Synopses of UCS DMS-250 features

Feature synopses

This section provides a brief description of UCS DMS-250 switch features from IEC02 to UCS12.

Note: This section is organized by the DDOC number in ascending order.

AD5113: 0- and 0+ call enhancements

This feature enhances class of service screening by adding the following functions:

- time of day screening for 0- calls
- class of service call types that identify 0- and 0+ calls in the class of service screening table (COSUS)

In addition, this feature provides alternate routes (see note) for operator service calls based upon the authcode or the 10-digit automatic number identification (ANI) associated with a call.

Note: This feature allows an operating company to disable the routing function for permanent signal (PSIG) treatment calls.

Software release:

IEC02

Optionality

Included in UCS base software.

References:

For more information on 0- and 0+ call enhancements, refer to the *UCS DMS-250 Data Schema Reference Manual*.

AD5117: Information digits 24

This feature allows the recognition of incoming 10-digit called party numbers as being 8XX and 800 numbers that have been translated to a 10-digit destination number. The following trunk groups receive information digits 24 calls (see note):

- signaling system no. 7 Feature Group D (SS7 FGD)
- per-trunk signaling Feature Group D (PTS FGD)
- signaling system no. 7 inter-machine trunk (SS7 IMT)

In addition, this feature performs the following:

- adds the table Trunk Group (TRKGRP) option, ID24_ON, to allow special translation and the routing of calls with information digits of 24
- allows calls with information digits of 24 to bypass automatic number identification (ANI) screening in the table Automatic Number Identification Screening Customer Profile (ANISCUSP) for the SS7 FGD and PTS FGD trunk groups only
- uses the following fields in the table Inward Wide Area Translation (INWTRANS) to translated and route incoming 10-digit number calls
  - — Incoming Trunk Exclusion Index (IEXCINDX)
  - — Serving Translation Scheme (STS)
  - — Translation Digits (TRANSDIG)

Note: The functionality of this feature includes calls originating as an 800 called party billed number only.

Software release:

IEC02

Optionality:

The SOC that controls this feature is N00 Routing. The SOC ordering code is N00R0001.

References:

For more information on information digits 24, refer to the *UCS DMS-250 General Description*.

AD5336: Enhanced reorigination for operator services with RLT

This feature enhances the UCS DMS-250 switch operator services reorigination capability. As a result, this feature returns operator calls using the Release Link Trunk (RLT) signaling system no. 7 (SS7) protocol to the operator upon reorigination (see note). The following trunk groups support operator services reorigination:

- dedicated access line (DAL)
- Feature Group A (FGA)
- Feature Group B (FGB)
- Feature Group C (FGC)
- per-trunk signaling Feature Group D (PTS FGD)
- signaling system no. 7 (SS7) FGD

Synopses of UCS DMS-250 features (continued)

Note: The answer message (ANM) indicates whether to enable or disable the functionality of this feature.

Software release:

IEC02

Optionality:

The SOC that controls this feature is SS7 RLT Protocol Enhancements. The SOC ordering code is URLT0002.

References:

For more information on enhanced reorigination for operator services with RLT, refer to the *UCS DMS-250 SS7 RLT Feature Application Guide*.

AD5544: Dialable Wideband Service

This feature provides an operating company with multi-rate, circuit-mode service for flexible wideband connectivity within a switch network. This wideband connectivity offers a dialable, real-time switch service that allows subscribers to establish network connections with rates as high as 1.536 Mbit/s. This feature provides call processing, table control, and billing changes on the following agents:

- signaling system no. 7 Feature Group D (SS7 FGD)
- signaling system no. 7 inter-machine trunk (SS7 IMT)

Software release:

IEC02

Optionality:

The SOC that controls this feature is UCS DWS. The SOC ordering code is UDWS0001.

References:

For more information on Dialable Wideband Service, refer to the *UCS DMS-250 Dialable Wideband Services Feature Application Guide*.

AD5594: Enhanced calling card

This feature provides class of service (COS) screening to the UCS DMS-250 switch calling card database. As a result, this feature screens calling card numbers through the class of service universal screening (COSUS) for the following call types:

- international direct distance dialing (IDDD)

- direct distance dialing (DDD)

Software release:
IEC02

Optionality:
The SOC that controls this feature is Card Services. The SOC ordering code is CRDS0001.

References:
For more information on enhanced calling card, refer to the *UCS DMS-250 MCCS Application Guide*.

AD5676: CDR enhancements

This feature enhances the call detail record (CDR) for the UCS DMS-250 switch. As a result, this feature adds the following fields to the CDR:

- redirection identification (REDIRID)
- redirection switch identification (REDRSWID)
- redirection count (REDIRCNT)
- feature duration (FEATDUR)

In addition, this feature modifies the field Originating Country Code (ORIGCC) to become the field Country Code (CC).

Software release:
IEC02

Optionality:
Included in UCS base software.

References:
For more information on CDR enhancements, refer to *UCS DMS-250 Billing Records Application Guide*.

AD6040: Blocking reorigination on FGD trunks for pure equal access

This feature blocks the use of reorigination on Feature Group D (FGD) trunks for pure equal access calls. As a result, this feature protects the operating company against fraud and loss of revenue.

Software release:
IEC02

Synopses of UCS DMS-250 features (continued)

Optionality:
Included in UCS base software.

References:
For more information on blocking reorigination on FGD trunks for pure equal access, refer to *UCS DMS-250 Feature Group D (FGD) Application Guide* and *UCS DMS-250 General Description*.

AD6172: ANI Delivery on terminating DTMF DAL TIE trunks

This feature provides real-time calling number delivery on dedicated access line (DAL) terminal interface equipment (TIE) trunks that terminate from the UCS DMS-250 switch. In addition, this feature provides automatic number identification (ANI) and address digits in a single stream, using dual tone multi-frequency (DTMF) signaling.

Software release:
IEC02

Optionality:
The SOC that controls this feature is Network Services. The SOC ordering code is NSER0001.

References:
For more information on ANI Delivery on terminating DTMF DAL TIE trunks, refer to the *UCS DMS-250 General Description.*

AD6182: PRI with dial tone return

This feature returns dial tone and account code prompts to the subscriber over a B channel to collect the following digits:

- address
- account code
- personal identification numbers (PIN)

Software release:
IEC02

Optionality:
Included in base software.

References:
None

AD6281: RLT intercept message

This feature enhances the Release Link Trunk (RLT) by performing the following:

- provide intercept indication for treatment calls
- allow treatment calls to route over an ISDN user part (ISUP) RLT inter-machine trunk (IMT) from a remote office to a host office

Software release:
IEC02

Optionality:
The SOC that controls this feature is SS7 RLT Base. The SOC ordering code is URLT0001.

References:
For more information on RLT intercept message, refer to the *UCS DMS-250 SS7 RLT Feature Application Guide*.

AD6282: Release Link Trunk and OGTSPKEY

This feature routes high usage calls through the use of the table OGTSPKEY.

Software release:
IEC02

Optionality:
The SOC that controls this feature is SS7 RLT Base. The SOC ordering code is URLT0001.

References:
For more information on Release Link Trunk and OGTSPKEY, refer to the *UCS DMS-250 SS7 RLT Feature Application Guide*.

AD6283: Release Link Trunk XFER OPSEL fails

This feature allows remote offices to route calls directly to an alternate queue at the host office.

Software release:
IEC02

Synopses of UCS DMS-250 features (continued)

Optionality:

The SOC that controls this feature is SS7 RLT Base. The SOC ordering code is URLT0001.

References:

For more information on Release Link Trunk XFER OPSEL fails, refer to the *UCS DMS-250 SS7 RLT Feature Application Guide*.

AD6284: Release Link Trunk OSR and CDR fields

This feature allows an operating company to determine whether a call is a Release Link Trunk (RLT) call and whether the call was bridged.

Software release:

IEC02

Optionality:

The SOC that controls this feature is SS7 RLT Base. The SOC ordering code is URLT0001.

References:

For more information on Release Link Trunk OSR and CDR fields, refer to the *UCS DMS-250 SS7 RLT Feature Application Guide*.

AD6285: Enhanced account codes

This feature increases the account codes of the Account Code index (see note) from 500 to 65,535.

In addition, this feature performs the following:

- increases the number of account code indexes from 2048 to 100,000
- improves the real-time and memory efficiency of the account code validation feature

Note: The tables AUTHCODE and ANISCUSP contain the Account Code index.

Software release:

IEC02

Optionality:

Included in UCS base software.

References:
None

AD6767: TCAP authcode and account code enhancements

This feature allows the UCS DMS-250 switch to perform the following applications by enhancing the intelligent network 1 (IN/1) transaction capabilities application part (TCAP) authorization code (authcode) and account code functionalities:

- send account codes of a length of up to 12-digits to a service control point (SCP) for validation
- send authcodes with length of 5- to 7-digits to an SCP for validation
- change authcode response message structure to accommodate the new account code size

Software release:
UCS05

Optionality:
Included in UCS base software.

References:
For more information on TCAP authcode and account code enhancements, refer to the *UCS DMS-250 Transaction Capabilities Application Part (TCAP) Application Guide*.

AD6849: ANI Delivery enhancements

This feature controls the outpulsing of automatic number identification (ANI) from a UCS DMS-250 switch for call originations and terminations on the following trunk groups:

- primary rate interface (PRI)
- signaling system no. 7 (SS7) inter-machine trunk (IMT)
- SS7 Feature Group D (FGD)
- per trunk signaling (PTS) Feature Group D (FGD)

Software release:
UCS05

Optionality:
The SOC that controls this feature is Network Services. The SOCs ordering code is NSER0001.

Synopses of UCS DMS-250 features (continued)

References:

For more information on automatic number identification delivery enhancements, refer to the *UCS DMS-250 Feature Group D (FGD) Application Guide* and *UCS DMS-250 General Description*.

AD7402: SS7 Inter and Intra Network IMTs

This feature allows an operating company to distinguish between the following trunk networks:

- intra-network trunks
- inter-network trunks

As a result, an operating company can determine whether the generation of billing records occurs for calls originating on either of these trunk networks (see note). This feature also allows an operating company to determine the terminating switch and trunk ID information included in the answer message (ANM).

Note: An operating company has the option to turn the billing function on or off for intra-network trunks.

Software release:

UCS05

Optionality:

The SOC that controls this feature is Inter/Intra IMT Support. The SOC ordering code is NSER0003

References:

For more information on SS7 Inter and Intra Network IMTs, refer to the *UCS DMS-250 SS7 RLT Feature Application Guide* and *UCS DMS-250 Billing Records Application Guide*.

AD7411: UCS SS7 RLT enhancements

This feature enhances signaling system no. 7 (SS7) Release Link Trunk (RLT) capability by performing the following:

- allow host UCS DMS-250 switches to perform redirection with the use of enhanced operator position system (EOPS)
- calculate call duration based on either the first or last answer message (ANM)
- populate the calling and called number fields in the operator services record (OSR) with values from the merged call detail record (see note)

- block the Generic Digits and Transit Network Selector parameters on out-going SS7 inter-machine trunks (IMTs)
- treat non-operator RLT calls as standard calls rather than operator services calls
- locate the field REORIGINATION_TYPE in the Operator Information parameter, which provides the following services:
  - — boomerang
  - — no reorigination
- populate the field operator services record associated (OSRASSOC), which determines any association between an OSR and a call detail record (CDR)

Note: This feature does not populate the calling and called number fields if the values do not appear in the bridging facility request (FAR) message.

Software release:

UCS05

Optionality:

The SOCs that control this feature are SS7 RLT Base, SS7 Enhanced Reorigination, and Non-zero RLT . The SOC ordering codes are URLT0001, URLT0002, and URLT0003, respectively.

References:

For more information on UCS SS7 RLT enhancements, refer to the *UCS DMS-250 SS7 RLT Feature Application Guide*.

AD7640: UCS Billing Server

This feature collects raw billing data on the computing module (CM) and sends this data to the File Processor (FP) for the UCS Billing Server. In addition, this feature performs the following:

- expands the billing capacity of the UCS DMS-250 switch by off-loading the duties to format and store the billing records from the CM onto the FP
- gains a longer retention period for billing data because of larger disk space
- increases the number of simultaneous call detail record (CDR) searches from 2 to 20
- supports robust file transfer by using the file transfer access and management (FTAM) protocol

Synopses of UCS DMS-250 features (continued)

Software release:
UCS05

Optionality:
Included in UCS base software.

References:
For more information on UCS billing server, refer to the *UCS DMS-250 Billing Server Application Guide*.

AD7729: Enhanced NT6X50EC echo canceller maintenance capability

This feature monitors echo canceller performance on a per trunk basis and probes calls which exhibit suspect echo canceller performance.

Software release:
UCS05

Optionality:
Included in UCS base software.

References:
For more information on enhanced NT6X50EC echo canceller maintenance capability, refer to the *UCS DMS-250 NT6X50EC Integrated Echo Canceller Application Guide*.

AD7730: UCS ISDN PRI RLT

This feature provides Release Link Trunk (RLT) capability for primary rate interface (PRI) trunks when call redirection occurs on the UCS DMS-250 switch. This feature performs the following:

- enhances existing FACILITY information element (IE) to facilitate RLT related functions
- bridges calls at the UCS DMS-250 switch
- populates the field RLTCDR field of the call detail record (CDR) to indicate a relationship between another CDR and the RLT call

Software release:
UCS05

Optionality:
The SOC that controls this feature is Release Link Trunk. The SOC ordering code is PRLT0001

References:

For more information on UCS ISDN PRI RLT, refer to the *UCS DMS-250 PRI RLT Application Guide*.

AD7758: Carrier Advanced Intelligent Network framework

This feature manages Carrier Advanced Intelligent Network (CAIN) communication between a UCS DMS-250 switch service switching point (SSP) and a service control point (SCP).

Software release:

UCS05

Optionality:

The SOC that controls this feature is Carrier AIN Usage Based Messages. The SOC ordering code is CAIN0100.

References:

For more information on Carrier Advanced Intelligent Network framework, refer to the *UCS DMS-250 NetworkBuilder Application Guide*.

AD7759: Carrier Advanced Intelligent Network test queries

This feature allows an operating company to initiate test messages to a service control point (SCP) and then to receive the responses.

Software release:

UCS05

Optionality:

The SOC that controls this feature is Carrier AIN Test Query. The SOC ordering code is CAIN0400.

References:

For more information on Carrier Advanced Intelligent Network test queries, refer to the *UCS DMS-250 NetworkBuilder Application Guide*.

AD7760: CAIN logs and operational measurements

This feature provides logs and operational measurements (OMs) required for the UCS implementation of the Carrier Advanced Intelligent Network (CAIN).

Synopses of UCS DMS-250 features (continued)

Software release:
UCS05

Optionality:
The SOC Carrier AIN Usage Based Messages control this feature. The SOC ordering code is CAIN0100.

References:
For more information on advanced intelligent network logs and operational measurements, refer to the *UCS DMS-250 NetworkBuilder Application Guide*.

AD7761: Carrier Advanced Intelligent Network SCP simulator

This feature provides a service control point (SCP) simulator for the implementation of the Carrier Advanced Intelligent Network (CAIN) on the UCS DMS-250 switch.

Software release:
UCS05

Optionality:
SOC Carrier AIN SCP Simulator controls this feature. The SOC ordering code is CAIN0300.

References:
For more information on Carrier Advanced Intelligent Network SCP simulator, refer to the *UCS DMS-250 NetworkBuilder Application Guide*.

AD7762: Carrier Advanced Intelligent Network and table Trunk Group

This feature adds the Carrier Advanced Intelligent Network (CAIN) option to the table Trunk Group (TRKGRP) for the following trunk groups and tables:

- equal access network trunk (EANT) trunk group
- dedicated access line (DAL) trunk group
- primary rate interface (PRI) trunk group
- UCS automatic number identification screening customer profile (ANISCUSP) table
- UCS authcode database (AUTHCODU) table

In addition, this feature introduces the tables Termination Routing (TERMRTE) and Tandem Route (TANDMRTE).

Software release:
UCS05

Optionality:
SOC Carrier AIN Usage Based Messages controls this feature. The SOC ordering code is CAIN0100.

References:
For more information on Carrier Advanced Intelligent Network and table Trunk Group, refer to the *UCS DMS-250 NetworkBuilder Application Guide*; *UCS DMS-250 Feature Group D (FGD) Application Guide*; and *UCS DMS-250 Data Schema Reference Manual*.

AD7764: Carrier Advanced Intelligent Network encoders/decoders

This feature provides the encoders and decoders for the transaction capabilities application part (TCAP) message parameters.

These encoders and decoders support the following message parameters:

- ***Info_Analyzed*** trigger detection point (TDP)
- **`Analyze_Route`** incoming message
- **`Continue`** incoming message
- **`Disconnect`** incoming message
- **`Send_To_Resource`** incoming message
- **`Application_Error`** outgoing message
- **`Close`** incoming and outgoing message
- **`Failure_Report`** outgoing message
- **`Report_Error`** outgoing message

Software release:
UCS05

Optionality:
SOC Carrier AIN Usage Based Messages controls this feature. The SOC ordering code is CAIN0100.

References:
For more information on Carrier Advanced Intelligent Network encoders/decoders, refer to the *UCS DMS-250 NetworkBuilder Application Guide*.

Synopses of UCS DMS-250 features (continued)

AD7765: Carrier Advanced Intelligent Network message driver

This feature implements the transaction capabilities application part (TCAP) message driver for the Carrier Advanced Intelligent Network (CAIN) message set. In addition, this feature uses portions of the variable automatic number identification messaging platform (VAMP), which supports CAIN TCAP messaging.

Note: VAMP provides resources used in CAIN messaging, such as transaction IDs and T1 timing.

Software release:

UCS05

Optionality:

SOC Carrier AIN Usage Based Messages controls this feature. The SOC ordering code is CAIN0100.

References:

For more information on Carrier Advanced Intelligent Network message driver, refer to the *UCS DMS-250 NetworkBuilder Application Guide*.

AD7766: Carrier Advanced Intelligent Network UCS call processing aspects

This feature provides an interface between the current UCS call processing architecture and the Carrier Advanced Intelligent Network (CAIN) framework.

In addition, this feature allows a UCS call processing code to perform the following:

- provide population of query data for data sent to the service control point (SCP)
- process response data from the SCP
- update billing information with information received from the SCP
- relay the terminating switch ID and Trunk Group Generic Digits parameter in the initial address message (see note)

Note: This feature provides tandem routing capabilities for calls terminating to ISDN user part (ISUP) inter-machine trunks (IMTs).

Software release:
UCS05

Optionality:
SOC Carrier AIN Usage Based Messages controls this feature. The SOC ordering code is CAIN0100.

References:
For more information on Carrier Advanced Intelligent Network UCS call processing, refer to the *UCS DMS-250 NetworkBuilder Application Guide*.

AD7767: Carrier Advanced Intelligent Network call model

This feature maps the Carrier Advanced Intelligent Network (CAIN) call model into the UCS DMS-250 switch call processing architecture. In addition, this feature provides a trigger mechanism for the CAIN call model. As a result, the CAIN call model identifies trigger detection points (TDPs) and determines the point in call processing at which enough information is known. Once enough information is known about the TDP, the CAIN call model accesses a set of tables to determine the next call processing action to take.

Software release:
UCS05

Optionality:
SOC Carrier AIN Usage Based Messages controls this feature. The SOC ordering code is CAIN0100.

References:
For more information on Carrier Advanced Intelligent Network call model, refer to the *UCS DMS-250 NetworkBuilder Application Guide*.

AD7970: Called number announcement support

This feature enables the UCS DMS-250 switch to automatically play the called party digits as an announcement for the subscriber.

Software release:
UCS05

Optionality:
Included in UCS based software.

Synopses of UCS DMS-250 features (continued)

References:
None

AD7971: QACCT tool

This feature provides eight functions which manage information in the table Account Code Screening 2 (ACSCRN2).

The following list briefly describes these eight QACCT functions:

- help—This function displays a description of the specified QACCT function and the associated parameters.
- idx—This function displays the index number, the length of the account codes in a specified index, and the number of account codes stored in the index.
- dump—This function displays each index number, the length of the account codes in each index, and the number of account codes stored in each index.
- list—This function displays the index number, the length of the account codes in the index, the number of account codes stored in the specified index, and the account code entries in the index.
- copy—This function copies all the account code entries from a specified index to a different, specified index that is not allocated.
- delete—This function removes all the account code entries stored in a specified index.
- find—This function displays the account code entries in a table or index that either fully or partially match a single specified account code.
- audit—This function restores any corrupt indexes in the table to a state that is not allocated.

Software release:
UCS05

Optionality:
Included in UCS base software.

References:
None

AD8143: Base FlexDial table control

This feature implements the FlexDial base table control. In addition, this feature establishes the internal structure and implements the collectables for

FlexDial. A collectable is a primitive operation that represents a component in the dialing plan for an originating trunk.

Software release:
UCS06

Optionality:
The SOC that controls this feature is Flexible Dialing Plans. The SOC ordering code is UTRS0002.

References:
For more information on base FlexDial table control, refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

AD8146: Table FLEXFEAT options implementation

This feature implements the available options for the table Flexible Feature (FLEXFEAT). In addition, this feature provides a separate options interface for the base FLEXFEAT table.

Software release:
UCS06

Optionality:
The SOC that controls this feature is Flexible Dialing Plans. The SOC ordering code is UTRS0002.

References:
For more information on table FLEXFEAT options implementation, refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

AD8147: Table FLEXFEAT base implementation

This feature implements the base portion of the table FLEXFEAT and is necessary for the use of the FlexDial framework.

Software release:
UCS06

Optionality:
The SOC that controls this feature is Flexible Dialing Plans. The SOC ordering code is UTRS0002.

Synopses of UCS DMS-250 features (continued)

References:

For more information on table FLEXFEAT base implementation, refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

AD8148: FLEXTYPE table implementation

This feature creates the table FLEXTYPE for the UCS DMS-250 switch. Use of the FlexDial framework is dependent upon this feature.

Software release:

UCS06

Optionality:

The SOC that controls this feature is Flexible Dialing Plans. The SOC ordering code is UTRS0002.

References:

For more information on FLEXTYPE table implementation, refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

AD8150: FLEXVAL table implementation

This feature identifies a subscriber to a respective list of features by a three-part process. This three-part process includes the following:

- FLEXTYPE consists of the subscriber value type, for example ANI, PIN, authcode, and account code in call processing (see note).
- SUBSCRIBER NUMBER consists of a digit vector which maintains up to 16 digits.
- NUMERIC ID identifies the precise subscriber with a range from 0 to 1,047,999.

Note: FLEXTYPE is not limited to these features. For example, datafill manipulation is possible through the use of the table FLEXTYPE.

Software release:

UCS06

Optionality:

The SOC that controls this feature is Flexible Dialing Plans. The SOC ordering code is UTRS0002.

References:

For more information on FLEXVAL table implementation, refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

AD8153: Suspend/resume message handling enhancements

This feature provides signaling system no. 7 (SS7) suspend and resume message handling on the UCS DMS-250 switch. As a result, message handling prevents unintentional disconnects from the called party in the event that the called party disconnects first from an ISDN user part (ISUP) terminator.

Software release:

UCS05

Optionality:

Included in UCS base software.

References:

For more information on Suspend/resume message handling enhancements, refer to the *UCS DMS-250 SS7 RLT Feature Application Guide* and *UCS DMS-250 Feature Group D (FGD) Application Guide*.

AD8154: CIC Routing

This feature allows the UCS DMS-250 switch to support the routing of calls originating on the following trunk groups based on a Carrier Identification Code:

- signaling system no. 7 Feature Group D (SS7 FGD)
- per-trunk signaling (PTS) FGD
- SS7 inter-network inter-machine trunk (IMT)

Software release:

UCS05

Optionality:

SOC UCS Transporting and Routing controls this feature. The SOC ordering code is UTRS0001.

References:

For more information on CIC Routing, refer to the *UCS DMS-250 CIC Routing Application Guide*.

AD8165: Carrier Advanced Intelligent Network user interaction framework

This feature provides conversational digit collection by routing calls to announcements and tones. In addition, this feature supports the **Send_To_**

Synopses of UCS DMS-250 features (continued)

Resource message with a Disconnect Flag parameter. As a result, this feature allows for a graceful end to a Carrier Advanced Intelligent Network (CAIN) call.

Software release:
UCS05

Optionality:
SOC Carrier AIN Usage Based Messages. The SOC ordering code CAIN0100.

References:
For more information on Carrier Advanced Intelligent Network user interaction framework, refer to the *UCS DMS-250 NetworkBuilder Application Guide*.

AD8172: Table TRKSIG

This feature identifies the following AXXESS trunk agent characteristics in the table Trunk Signaling (TRKSIG):

- signaling
- interfacing

This feature replaces the use of the table TRKSGRP for AXXESS trunk agencies.

Software release:
UCS06

Optionality:
The SOC that controls this feature is Flexible Dialing Plans. The SOC ordering code is UTRS0002.

References:
For more information on table TRKSIG, refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

AD8173: Table TRKFEAT

This feature identifies AXXESS trunk agent characteristics in the table Trunk Features (TRKFEAT). This feature replaces the use of the table TRKSGRP for AXXESS trunk agencies.

Software release:
UCS06

Optionality:
The SOC that controls this feature is Flexible Dialing Plans. The SOC ordering code is UTRS0002.

References:
For more information on table TRKFEAT, refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

AD8178: NXX functionality for N00 TCAP service

This feature supports NXX services on the UCS DMS-250 switch.

In addition, this feature enables either of the following:

- allows an in-switch database to translate NXX numbers in the table Inward Wide Area Translation (INWTRANS)
- allows an out-of-switch database (located in an SCP) to translate NXX numbers by way of a transaction capabilities application part (TCAP) query

Software release:
UCS05

Optionality:
SOC Universal International Freephone Numbering (UIFN) Service controls this feature. The SOC ordering code is N00R0002.

References:
For more information on NXX functionality for N00 TCAP service, refer to the *UCS DMS-250 Transaction Capabilities Application Part (TCAP) Application Guide*.

AD8209: UCS MCCS enhancements

This feature enhances the Mechanized Calling Card Services (MCCS) on the UCS DMS-250 switch. As a result, this feature allows the use of announcements, known as Mechanized Voice Prompts (MVP), to prompt for the called address and card number for the following calls:

- Feature Group C universal access (FGC UA)
- Feature Group D universal access (FGD UA)
- Feature Group D (FGD) MCCS

Synopses of UCS DMS-250 features (continued)

- inter-machine trunk (IMT) UA

Software release:
UCS05

Optionality:
SOC MCCS MVP Card Services controls this feature. The SOC ordering code is CRDS0003.

References:
For more information on UCS MCCS enhancements, refer to the *UCS DMS-250 MCCS Application Guide*.

AD8210: OPCHOICE enhancements

This feature enhances the alternate operator routing scheme of the UCS DMS-250 switch. As a result, this feature performs the following:

- expands the table, operator choice (OPCHOICE), to support up to 255 entries
- enhances the alternate operator routing scheme for zero minus and equal access (EA) international operator assisted (INTOA) calls by adding the following fields to the table OPCHOICE:
  - — zero minus route (ZMRTE)
  - — international operator assisted route (INTOARTE)
- modifies the range for the field operator choice index (OPCHIDX) in all references to accommodate a range from 0 to 255
- captures the OPCHIDX in the table OPCHOICE of the recording unit when OPCHOICE routes a call

Software release:
UCS05

Optionality:
Included in UCS base software.

References:
For more information on OPCHOICE enhancements, refer to the *UCS DMS-250 Data Schema Reference Manual*.

AD8215: UCS no copy to tape requirement for automatic file transfer

This feature removes the copy to tape before marking as processed requirement for files in the Device Independent Recording Package (DIRP) subsystems (see note).

Note: The copy to tape before marking as processed requirement does not pertain to the Other Common Carrier (OCC) subsystems.

Software release:

UCS05

Optionality:

Included in UCS base software.

References:

For more information on UCS no copy to tape requirement for automatic file transfer, refer to the *UCS DMS-250 X.25 Data Transport Application Guide* and *UCS DMS-250 General Description*.

AD8236: Call processing simulator for FlexDial

This feature requires a command interpreter (CI). A CI allows the operating company to validate provisioning within the FlexDial framework.

Software release:

UCS06

Optionality:

The SOC that controls this feature is Flexible Dialing Plans. The SOC ordering code is UTRS0002.

References:

For more information on call processing simulator for FlexDial, refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

AD8237: AXXESS agent exec lineup (PTS)

This feature implements an Extended Peripheral Module (XPM) exec lineup. The XPM exec lineup allows per-trunk signaling (PTS) on the FlexDial framework.

Synopses of UCS DMS-250 features (continued)

Software release:
UCS06

Optionality:
The SOC that controls this feature is Flexible Dialing Plans. The SOC ordering code is UTRS0002.

References:
For more information on AXXESS agent exec lineup (PTS), refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

AD8238: AXXESS agent RTS supervision support

This feature supports the following for the FlexDial framework:

- return to service (RTS) routine
- supervision templates

Software release:
UCS06

Optionality:
The SOC that controls this feature is Flexible Dialing Plans. The SOC ordering code is UTRS0002.

References:
For more information on AXXESS agent RTS supervision support, refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

AD8283: QFLEXVAL tool

This feature implements the command interpreter (CI) tool Query Flex Value (QFLEXFAL) that displays data in the table SUBFEAT. In addition, this feature is one of the provisioning tables for the FlexDial framework.

Software release:
UCS06

Optionality:
The SOC that controls this feature is Flexible Dialing Plans. The SOC ordering code is UTRS0002.

References:
For more information on QFLEXVAL tool, refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

AD8285: FlexDial SEQUENCE and CALLTYPE collectables

This feature implements the following FlexDial collectables:

- SEQUENCE
- CALLTYPE

A collectable is a primitive operation that represents a component in the dialing plan for an originating trunk.

Software release:
UCS06

Optionality:
The SOC that controls this feature is Flexible Dialing Plans. The SOC ordering code is UTRS0002.

References:
For more information on FlexDial SEQUENCE and CALLTYPE collectables, refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

AD8286: FlexDial PROTOCOL and FRAMEWORK collectables

This feature implements the following FlexDial collectables:

- PROTOCOL
- FRAMEWORK

A collectable is a primitive operation that represents a component in the dialing plan for an originating trunk.

Software release:
UCS06

Optionality:
The SOC that controls this feature is Flexible Dialing Plans. The SOC ordering code is UTRS0002.

References:
For more information on FlexDial PROTOCOL and FRAMEWORK collectables, refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

Synopses of UCS DMS-250 features (continued)

AD8287: FlexDial DIGIT collectables implementation

This feature implements the DIGIT FlexDial collectable.

A collectable is a primitive operation that represents a component in the dialing plan for an originating trunk.

Software release:
UCS06

Optionality:
The SOC that controls this feature is Flexible Dialing Plans. The SOC ordering code is UTRS0002.

References:
For more information on FlexDial DIGIT collectables implementation, refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

AD8288: Table FLEXMOD base implementation

This feature implements the table FlexDial Digits Modification (FLEXMOD). FLEXMOD contains the replacement digits when the table FLEXDIAL indicates that it is necessary to replace the origination digits.

Software release:
UCS06

Optionality:
The SOC that controls this feature is Flexible Dialing Plans. The SOC ordering code is UTRS0002.

References:
For more information on table FLEXMOD base implementation, refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

AD8289: TRKGRP AXXESS trunk type

This feature adds the AXXESS trunk agent to the table Trunk Group (TRKGRP). In addition, this feature implements the provisioning function for the FlexDial framework.

Software release:
UCS06

Optionality:
The SOC that controls this feature is Flexible Dialing Plans. The SOC ordering code is UTRS0002.

References:
For more information on TRKGRP AXXESS trunk type, refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

AD8291: Network security log

This feature allows an operating company to selectively disable automatic number identification (ANI) screening on a per trunk group basis. The following trunk groups support this functionality:

- per-trunk signaling Feature Group D (PTS FGD)
- signaling system no. 7 Feature Group D (SS7 FGD)

In addition, this feature provides billing information for international calls immediately upon answer on a per trunk group basis. The following trunk groups support this functionality:

- per-trunk signaling Feature Group D (PTS FGD)
- signaling system no. 7 Feature Group D (SS7 FGD)
- dedicated access line (DAL)
- primary rate interface (PRI)

Software release:
UCS05

Optionality:
Included in UCS base software.

References:
For more information on network security log, refer to the *UCS DMS-250 PRI RLT Application Guide* and *UCS DMS-250 Feature Group D (FGD) Application Guide*.

AD8292: National caller ID compliance

This feature allows the Calling Number Identification Service to comply with the following governmental rules and policies:

Synopses of UCS DMS-250 features (continued)

- FCC Report and Order
- Further Notice of Proposed Rulemaking

Software release:
UCS05

Optionality:
Included in UCS base software.

References:
None

AD8293: UCS PRI for Dialable Wideband Service

This feature provides Dialable Wideband Service (DWS) for primary rate interface (PRI) calls on the UCS DMS-250 switch. In addition, this feature allows PRI calls to interwork with the following trunk groups:

- ISDN user part inter-machine trunks (ISUP IMT)
- ISUP Feature Group D (FGD)

Software release:
UCS05

Optionality:
The SOC that controls this feature is UCS DWS. The SOC ordering code is UDWS0001.

References:
None

AD8294: UCS interchangeable NPA support

This feature removes the numbering plan areas (NPA) digit restriction to allow NYX calls to perform as NXX calls. For example, consider the following NYX call ranges:

- N represents 2 through 9
- Y represents 0 through 1
- X represents 0 through 9

This feature allows the following ranges for NXX calls:

- N represents 2 through 9

- X represents 0 through 9
- X represents 0 through 9

Software release:
UCS05

Optionality:
Included in UCS base software.

References:
None

AD8295: Enhanced Carrier Identification Code support

This feature supports the transition from 3- to 4-digit Carrier Identification Codes (CICs) on the following trunk agencies:

- per-trunk signaling (PTS)
- ISDN user part Feature Group D (ISUP FGD)
- ISDN user part inter-machine trunks (ISUP IMTs)

Software release:
UCS05

Optionality:
Included in UCS base software.

References:
For more information on enhanced Carrier Identification Code support, refer to the *UCS DMS-250 CIC Routing Application Guide*.

AD8299: IMT ADDR dial plan and EOPS

This feature allows an ISDN user part (ISUP) inter-machine trunk (IMT) call with an address (ADDR) dial plan to interface with the UCS enhanced operator position system (EOPS). As a result, an operating company can use the ADDR dial plan for inter- and intra-network ISUP IMTs to interconnect to a UCS DMS-250 switch and to a non UCS DMS-250 switch alike.

Software release:
UCS05

Optionality:
Included in UCS base software.

Synopses of UCS DMS-250 features (continued)

References:
None

AD8321: 15 digit international direct digit dialing

This feature increases the maximum number of international digits from 12 to 15. The international direct digit dialing (IDDD) address digits consist of the following digits:

- country code (CC)
- national number (NN)
- subscriber number (SN)
- national number and subscriber number (NSN)

The length restrictions of IDDD consist of the following:

- CC is from 1 to 3 digits
- NSN is from 1 to 14 digits
- CC and NSN is less than or equal to 15 digits

Software release:
UCS05

Optionality:
Included in UCS base software.

References:
For more information on 15 digit international direct digit dialing, refer to the *UCS DMS-250 Feature Group D (FGD) Application Guide*.

AD8328: Carrier Advanced Intelligent Network SOC

This feature provides Software Optionality Control (SOC) for the Carrier Advanced Intelligent Network (CAIN). As a result, this feature provides SOC state and usage options (see note 1 and 2) for the following services:

- *Customized_Dialing_Plan* trigger
- *Specific_Digit_String* trigger
- service control point (SCP) simulator
- CAIN test query command interpreter (CI) tool
- extension parameters
- CAIN message to the SCP (see note 2)

Note 1: A state option controls a feature by assigning a state of either IDLE or ON to the option.

Note 2: A usage option controls a feature by assigning a limit to the number of resources that the option controls.

Table 13-1 contains a list of SOC order codes for CAIN available in the UCS05 release.

Table 13-1
Carrier Advanced Intelligent Network (CAIN) 0.2 SOC order codes

Feature Name	SOC order code
CAIN messages	CAIN 0100
CAIN extension parameters	CAIN0200
CAIN SCP simulator	CAIN0300
CAIN Test query tool	CAIN0400
CAIN CUSTDP trigger	CAIN0500
CAIN SPECDIG trigger	CAIN0501
—end—	

Software release:

UCS05

Optionality:

See Table 13-1 for a list of SOC order codes.

References:

For more information on Carrier Advanced Intelligent Network SOC, refer to the *UCS DMS-250 Software Optionality Control User's Manual* and *UCS DMS-250 NetworkBuilder Application Guide*.

AD8341: Call detail record changes

This feature increases the size and adds additional fields to the call detail record (CDR) to create a more space efficient structure. As a result, the CDR increases in size from 43 to 60 words.

Synopses of UCS DMS-250 features (continued)

Software release:
UCS05

Optionality:
Included in UCS base software.

References:
For more information on call detail record changes, refer to the *UCS DMS-250 Billing Records Application Guide*.

AD8343: Global Title Enhancements

This feature creates the Global Title parameter and consists of the following fields:

- Translation Type
- Address Information

The Global Title parameter indicates which format to use (type only or type and encode of the translation). It also determines which digits to place in the Address Information field.

Software release:
UCS05

Optionality:
Included in UCS base software.

References:
For more information on global title enhancements, refer to AD8343 PLN–2621–004 release 04.02 *DMS-250 UCS05 Software Release Manual*.

AD8347: 15 digit international direct digit dialing, translation and routing

This feature increases the Translation Digits (TRANSDIG) field to allow values from 0 to 18.

Software release:
UCS05

Optionality:
Included in UCS base software.

References:
For more information on 15 digit international direct digit dialing, translations and routing, refer to the *UCS DMS-250 Data Schema Reference Manual*.

AD8348: V2 transaction capabilities application part enhancements

This feature supports additional parameters in the N00 transaction capabilities application part (TCAP) query message. In addition, this feature handles call processing actions returned by the service control point (SCP).

Software release:
UCS05

Optionality:
Included in UCS base software.

References:
For more information on V2 transaction capabilities application part enhancements, refer to the *UCS DMS-250 Transaction Capabilities Application Part (TCAP) Application Guide*.

AD8350: FGD pure and cut-through passthrough

This feature transfers a call to another switch to perform the following:

- process automatic number identification (ANI)
- collect subscriber digits

Software release:
UCS05

Optionality:
Included in UCS base software.

References:
For more information on FGD pure and cut-through passthrough, refer to the *UCS DMS-250 Feature Group D (FGD) Application Guide*.

AD8351: Account code screening enhancements

This feature provides in-switch account code screening for the following:

- partial validation capability
- non-provisioned account code screening II (ACSCRN2) table indexes

Synopses of UCS DMS-250 features (continued)

Software release:
UCS05

Optionality:
Included in UCS base software.

References:
For more information on account code screening enhancements, refer to the *UCS DMS-250 General Description*.

AD8388: LOPER and flow control for UCS PSN

This feature deploys the low overhead protocol encoding rule (LOPER) on the Programmable Service Node (PSN) platform. In addition, this feature implements the following for LOPER:

- UCS specific messages
- UCS specific parameters
- PSN flow control

Software release:
UCS06

Optionality:
The SOC that controls this feature is Programmable Service Node. The SOC ordering code is UPSN0001.

References:
For more information on LOPER and flow control for UCS PSN, refer to the *UCS DMS-250 Programmable Service Node (PSN) Application Guide*.

AD8416: UCS long call audit

This feature produces interim billing records for calls that extend beyond a pre-specified period of time. In addition, this feature enhances the long call duration audit process, which performs the following:

- writes incremental call detail records (CDRs) once a call duration has exceeded a set timing threshold specified in the office parameter ***INCR_CDR_INTERVAL***
- adds the field INCBILL to the CDR to reflect an incremental CDR generated for extended call

Software release:
UCS05

Optionality:
Included in UCS base software.

References:
For more information on UCS long call audit, refer to the *UCS DMS-250 General Description*.

AD8436: Support for User to User parameter

This feature provides User to User Service (UUS) for the following protocols:

- ISDN primary rate interface (PRI) Q.931, which supports the following:
  - — User to User Information (UUI) information element (IE)
- ISDN user part (ISUP), which supports the following:
  - — UUI parameter
  - — UUI Indicator parameter

In addition, this feature enhances to the following functionalities for the UCS DMS-250 switch:

- call processing
- table control

Software release:
UCS05

Optionality:
Included in UCS base software.

References:
For more information on support for User to User parameter, refer to the *UCS DMS-250 Data Schema Reference Manual*.

AD8466: Modify table STDPRTCT for universal access selector

This feature adds a universal access selector (UAX) to the field Pretranslator Route (PRETRTE) in the table Standard Pretranslator Control (STDPRTCT). In addition, this feature addresses digit validation to allow the following:

Synopses of UCS DMS-250 features (continued)

- identify interactions with the originating agent
- revise interactions with the originating agent

Software release:
UCS06

Optionality:
Included in UCS base software.

References:
For more information on modify table STDPRTCT for universal access selector, refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

AD8472: UCS N00/NXX TCAP route advance

This feature allows an N00/NXX call type to route advance from a predefined termination list upon receipt of a select release cause (see note). Route advance also occurs on an originating N00/NXX call type upon expiration of a no answer timer.

Note: For this feature, an N00/NXX call type terminates to either a primary rate interface (PRI) or an ISDN user part (ISUP) trunk group.

Software release:
UCS05

Optionality:
The SOC that controls this feature is Universal International Freephone Numbering (UIFN) Service. The SOC ordering code is N00R0002.

References:
For more information on UCS N00/NXX TCAP route advance, refer to the *UCS DMS-250 Transaction Capabilities Application Part (TCAP) Application Guide*.

AD8497: AXXESS outpulser

This feature adds an outpulser for the AXXESS trunk group.

Software release:
UCS06

Optionality:
The SOC that controls this feature is Flexible Dialing Plans. The SOC ordering code is UTRS0002.

References:

For more information on AXXESS outpulser, refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

AD8498: AXXESS agent interface

This feature defines how the AXXESS trunk group interfaces with the FlexDial call processing framework.

Software release:

UCS06

Optionality:

The SOC that controls this feature is Flexible Dialing Plans. The SOC ordering code is UTRS0002.

References:

For more information on AXXESS agent interface, refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

AD8533: Inter-network IMT route advance capability

This feature allows calls which originate on inter network inter-machine trunk (IMT) to route advance upon receipt of the following cause values:

- no circuit available
- equipment congestion
- no response available

Software release:

UCS05

Optionality:

The SOC that controls this feature is Inter/Intra IMT Support. The SOC ordering code is NSER0003.

References:

None

AD8576: PTS AXXESS agent supervision

This feature implements the trunk-to-trunk supervision procedures that support connections between the AXXESS trunk group and the following UCS DMS-250 switch agencies:

Synopses of UCS DMS-250 features (continued)

- dedicated access line (DAL)
- off-network access line (ONAL)
- off-network access trunk (ONAT)
- equal access network trunk (EANT)
- equal dedicated access line (EDAL)
- inter-machine trunk (IMT)
- primary rate interface (PRI)

Software release:
UCS06

Optionality:
The SOC that controls this feature is Flexible Dialing Plans. The SOC ordering code is UTRS0002.

References:
For more information on PTS AXXESS agent supervision, refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

AD8577: FlexDial framework trunk starter modifications

This feature removes non-UCS DMS-250 switch specific messages for the procedure `TRUNK_STARTER`.

Software release:
UCS06

Optionality:
The SOC that controls this feature is Flexible Dialing Plans. The SOC ordering code is UTRS0002.

References:
For more information on FlexDial framework trunk starter modifications, refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

AD8578: AXXESS trunk call processing hooks

This feature supports AXXESS trunk group call processing for the FlexDial framework. In addition, this feature modifies utility procedures to ensure the proper retrieval of AXXESS trunk group data.

Software release:
UCS06

Optionality:
The SOC that controls this feature is Flexible Dialing Plans. The SOC ordering code is UTRS0002.

References:
For more information on AXXESS trunk call processing hooks, refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

AD8615: FlexDial route selector

This feature provides a route selector for the following tables:

- table HNPACONT
  - — sub-table RTEREF
- table OFRT
- table OFR2
- table OFR3
- table OFR4
- table CTRTE
- table OPERRTE

In addition, the route selector incorporates a common language location identifier (CLLI) and a 16-character field to the table Route Attribute (RTEATTR).

Software release:
UCS06

Optionality:
Included in UCS base software.

References:
For more information on FlexDial route selector (SX), refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

AD8616: FlexDial framework message center

This feature implements the message center for the FlexDial framework. In addition, this feature passes message center optional data between FlexDial

Synopses of UCS DMS-250 features (continued)

collectables. A collectable is a primitive operation that represents a component in the dialing plan for an originating trunk.

Software release:
UCS06

Optionality:
The SOC that controls this feature is Flexible Dialing Plans. The SOC ordering code is UTRS0002.

References:
For more information on FlexDial framework message center, refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

AD8646: Programmable Service Node for UCS

This feature implements the Programmable Service Node (PSN) platform for the UCS DMS-250 switch. This platform allows an operating company to quickly deploy advanced services into an existing network. In addition, PSN uses a high-speed data link to allow an external service control unit (SCU) to control call processing on a UCS DMS-250 switch.

Software release:
UCS06

Optionality:
The SOC that controls this feature is Programmable Service Node. The SOC ordering code is UPSN0001.

References:
For more information on Programmable Service Node for UCS, refer to the *UCS DMS-250 Programmable Service Node (PSN) Application Guide*.

AD8696: SS7 AXXESS agent supervision

This feature implements setup supervision for calls interworking with the signaling system no. 7 (SS7) AXXESS agent.

Software release:
UCS06

Optionality:
The SOC that controls this feature is Flexible Dialing Plans. The SOC ordering code is UTRS0002.

References:

For more information on SS7 AXXESS agent supervision, refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

AD8788: COSUS treatment granularity

This feature allows an operating company to datafill the action for each class of service (COS) screening failure in the table class of service universal screening (COSUS). This screening failure can be any of the following:

- treatment
- announcement
- tone

This feature also adds fifteen additional treatment codes.

Software release:

UCS06

Optionality:

The SOC that controls this feature is Class of Service Screening Enhancements. The SOC ordering code is UTRS0004.

References:

For more information on COSUS treatment granularity, refer to the *UCS DMS-250 Data Schema Reference Manual*.

AD8789: Expansion of time of day restriction tables

This feature expands the restriction indexes from the current range of 1 to 4, to a range of 1 to 255. This index change affects the following tables:

- Usage Restricted by Date (UNRESDAT)
- Usage Restricted by Day (UNRESDAY)
- Usage Restricted by Date and Time (UNRESTIM)

In addition, this feature increases the restriction vectors in the table UNRESTIM. Table UNRESTIM contains the time of day (TOD) restrictions, from 5 to 8.

Note: The value of 0 indicates that a restriction is not enforced.

Software release:

UCS06

Synopses of UCS DMS-250 features (continued)

Optionality:

The SOC that controls this feature is Class of Service Screening Enhancements. The SOC ordering code is UTRS0004.

References:

For more information on time of day restriction tables, refer to the *UCS DMS-250 Data Schema Reference Manual*.

AD8790: Expansion of speed list indexes

This feature increases the size of the speed list indexes from 0 to 32 kbytes to 0 to 256 kbytes for the following tables:

- Speed Number Control (SPEEDCT)
- Speed Number Table (SPEEDTAB)
- Authorization Code (AUTHCODE), which includes the following:
  - — Authorization Code Database (AUTHCODU)
  - — Authorization Code Database 2 (AUTHCDU2)
  - — Authorization Code Database 3 (AUTHCDU3)
  - — Authorization Code Database 4 (AUTHCDU4)
  - — Authorization Code Database 5 (AUTHCDU5)

The size increase of the speed list index allows more subscribers to use private speed dialing. In addition, the table Flexible Feature (FLEXFEAT), option PVSPDIX, supports a speed list value from 1 to 256 kbytes.

Software release:

UCS06

Optionality:

Included in UCS base software.

References:

For more information on expansion of speed list indexes, refer to the *UCS DMS-250 Data Schema Reference Manual*.

AD8791: Cause and treatment mapping modifications

This feature enhances table control and call processing on the UCS DMS-250 switch. In addition, this feature handles and inputs data for the mappings between the treatment and cause values on a per trunk group basis for the following trunk agencies:

- ISDN user part (ISUP)
- primary rate interface (PRI)

This feature makes changes to table control, which include the following:

- enhances the table TMTMAP, which maps a three-part key of the following values:
  - — protocol
  - — treatment
  - — bearer capability
- add the table CSEMAP, which maps a two-part key of the following:
  - — protocol
  - — treatment

This feature also makes changes to call processing, which include the following:

- inputs data in the tables TMTMAP and CSEMAP on a signaling system no. 7 (SS7) or a primary rate interface (PRI) protocol with the following actions:
  - — apply the treatment in-band
  - — map the treatment to a cause value
- applies the treatment in-band from the table CSEMAP for the following actions:
  - — route advance
  - — release with a cause
  - — map the treatment to a cause value

Software release:

UCS06

Optionality:

The SOC that controls this feature is Routing Enhancements. The SOC ordering code is UTRS0003.

References:

For more information on cause and treatment mapping modifications, refer to the *UCS DMS-250 Data Schema Reference Manual*.

Synopses of UCS DMS-250 features (continued)

AD8792: Route based outgoing parameter modifications

This feature allows an operating company to modify outgoing parameters on the following trunk agencies:

- per trunk signaling (PTS)
- primary rate interface (PRI)
- signaling system no. 7 (SS7)

Software release:
UCS06

Optionality:
The SOC that controls this feature is Routing Enhancements. The SOC ordering code is UTRS0003.

References:
For more information on route based outgoing parameter modifications, refer to the *UCS DMS-250 FlexDial Framework Application Guide* and *UCS DMS-250 Software Optionality Control User's Manual*.

AD8823: CAIN TRAVER support

This feature allows the operating company to verify triggers and table datafill for simulated Carrier Advanced Intelligent Network (CAIN) calls.

Software release:
UCS06

Optionality:
Included in UCS base software.

References:
For more information on CAIN TRAVER support, refer to the *UCS DMS-250 NetworkBuilder Application Guide*.

AD8824: CAIN PRI trigger and EDP

This feature adds the *PRI_B-Channel* trigger to the Carrier Advanced Intelligent Network (CAIN) call model. This trigger allows an operating company to gain the multiplicity of integrated services digital network (ISDN) services through a set of standard multipurpose network interfaces.

Software release:
UCS06

Optionality:

The SOC that controls this feature is Carrier AIN 0.2 PRI B Channel Trigger. The SOC ordering code is CAIN0504.

References:

For more information on CAIN PRI trigger and EDP, refer to the *UCS DMS-250 NetworkBuilder Application Guide*.

AD8825: CAIN ISUP digit collection

This feature adds the following functions to NetworkBuilder:

- ISDN user part (ISUP) digit collection, of which the following trunk group supports:
  - signaling system no. 7 (SS7) equal access network trunk (EANT)
- ***O_Feature_Requested*** trigger detection point and trigger, of which the following trunk groups support:
  - primary rate interface (PRI)
  - dedicated access line (DAL)
  - signaling system no. 7 (SS7) equal access network trunk (EANT)
  - per trunk signaling (PTS) equal access network trunk (EANT)

Software release:

UCS06

Optionality:

The SOC that controls this feature is Carrier AIN 0.2 Originating Feature Trigger Request. The SOC ordering code is CAIN0508.

References:

For more information on CAIN ISUP digit collection, refer to the *UCS DMS-250 NetworkBuilder Application Guide*.

AD8826: CAIN simulator for conversation

This feature updates the simulator functionality for Carrier Advanced Intelligent Network (CAIN). This feature provides the following functions:

- transaction ID management
- SCP initiated message timeout handling
- logic to control the `Send_To_Resource` and `Resource_Clear` operations
- message and parameter support for UCS06

Synopses of UCS DMS-250 features (continued)

Software release:
UCS06

Optionality:
The SOC that controls this feature is Carrier AIN SCP Simulator. The SOC ordering code is CAIN0300.

References:
For more information on CAIN simulator for conversation, refer to the *UCS DMS-250 NetworkBuilder Application Guide*.

AD8827: CAIN user interaction framework

This feature guides calls through the Carrier Advanced Intelligent Network (CAIN) by interacting with the **`Send_To_Resource`** message for the following:

- announcements
- tones
- digit collection

This framework performs the following:

- connects a CAIN call to a tone or to an announcement
- supports CAIN conversational digit collection
- supports custom call branding

Software release:
UCS06

Optionality:
The SOC that controls this feature is Carrier AIN 0.2 Conversational Digit Collection. The SOC ordering code is CAIN0600.

References:
For more information on CAIN user interaction framework, refer to the *UCS DMS-250 NetworkBuilder Application Guide*.

AD8828: CAIN Off-hook Immediate and Shared Interoffice Trunk triggers

This feature adds the following triggers to the Carrier Advanced Intelligent Network (CAIN) originating call model:

- *Off_Hook_Immediate*, which supports the following:

— loop start for dedicated access lines (DAL) trunks

— ground start for dedicated access lines (DAL) trunks

- *Shared_Interoffice_Trunk*, which supports the following:

  — dedicated access lines (DAL) trunks

  — per trunk signaling (PTS)

  — signaling system no. 7 (SS7) equal access network trunk (EANT)

Software release:

UCS06

Optionality:

The SOCs that control this feature are Carrier AIN 0.2 Shared Interoffice Trigger and Carrier AIN 0.2 Offhook Immediate Trigger. The ordering codes are CAIN0502 and CAIN0503, respectively.

References:

For more information on CAIN Off-hook Immediate and Shared Interoffice Trunk triggers, refer to the *UCS DMS-250 NetworkBuilder Application Guide*.

AD8829: CAIN Conversation framework

This feature adds support of the conversational messaging to the Carrier Advanced Intelligent Network (CAIN) call processing framework for NetworkBuilder.

In addition, this feature provides call processing support required for the following:

- use of the ***O_No_Answer*** trigger
- use of the AMADigitsDialedWC parameter
- use of the CAIN Subscription Group, treatment, and ReorigAllowed extension parameters
- support for multiple Class of Service (COS) screening
- support for a connection for an intelligent peripheral (IP)

Software release:

UCS06

Optionality:

The SOC that controls this feature is Carrier AIN 0.2 Origination No Answer. The SOC ordering code is CAIN0505.

Synopses of UCS DMS-250 features (continued)

References:

For more information on CAIN Conversation framework, refer to the *UCS DMS-250 NetworkBuilder Application Guide*.

AD8830: CAIN Busy triggers

This feature adds two triggers to the Carrier Advanced Intelligent Network (CAIN) call model for NetworkBuilder:

- **`Network_Busy`**
- **`O_Called_Party_Busy`**

In addition, this feature determines whether the trigger criteria is met and if a service control point (SCP) query is necessary. If an SCP query is necessary, this feature populates the query message as well as processes any response messages received from the SCP.

Software release:

UCS06

Optionality:

The SOCs that control this feature are Carrier AIN 0.2 Network Busy Trigger and Carrier AIN 0.2 Originating Called Party Busy Trigger. The SOC ordering codes are CAIN0506 and CAIN0507, respectively.

References:

For more information on CAIN Busy triggers, refer to the *UCS DMS-250 NetworkBuilder Application Guide*.

AD8831: CAIN logs and OMs

This feature provides the following for the Carrier Advanced Intelligent Network (CAIN):

- adds the two logs CAIN902 and CAIN903
- updates existing logs
- adds the operational measurement (OM) group CAINUIF
- updates existing OM registers
- adds five fields to the CDR

In addition, this feature provides the following call detail record (CDR) fields for CAIN:

- adds Originating Location Routing Number (ORIGLRN)

- adds Terminating Location Routing Number (TERMLRN)
- adds Originating Private Number (ORIGPVN)
- adds Terminating Private Number (TERMPVN)
- adds CAIN CallType (CAINCT)

Software release:
UCS06

Optionality:
Included in UCS base software.

References:
For more information on CAIN logs and OMs, refer to the *UCS DMS-250 NetworkBuilder Application Guide*; *UCS DMS-250 Operational Measurements Reference Manual*; and *UCS DMS-250 Logs Reference Manual*.

AD8832: CAIN test queries

This feature enhances the CAINTEST tool to support Carrier Advanced Intelligent Network (CAIN) requirements. In addition, this feature supports the following messages and their respective parameters:

- **`Close`** message and related parameters
- **`Info_Collected`** message and related parameters
- **`Network_Busy`** message and related parameters
- **`O_Called_Party_Busy`** message and related parameters
- **`O_No_Answer`** message and related parameters
- **`Origination_Attempt`** message and related parameters
- **`Resource_Clear`** message and related parameters
- **`O_Feature_Requested`** message and related parameters

Software release:
UCS06

Optionality:
The SOC that controls this feature is Carrier AIN Test Query. The SOC ordering code is CAIN0400.

Synopses of UCS DMS-250 features (continued)

References:

For more information on CAIN test queries, refer to the *UCS DMS-250 NetworkBuilder Application Guide*.

AD8833: CAIN SOC

This feature provides the Software Optionality Control (SOC) of the Carrier Advanced Intelligent Network (CAIN) for NetworkBuilder. This feature provides SOC for the following triggers and trigger detection points (TDPs):

- *Off_Hook_Immediate* trigger (SOC CAIN0502)
- *Shared_Interoffice_Trunk* trigger (SOC CAIN0503)
- *PRI_B-Channel* trigger (SOC CAIN0504)
- **O_No_Answer** TDP (SOC CAIN0505)
- **Network_Busy** TDP (SOC CAIN0506)
- **O_Called_Party_Busy** TDP (SOC CAIN0507)
- *O_Feature_Requested* trigger (SOC CAIN0508)

In addition, this feature provides SOC for the following:

- CAIN conversational digit collection (SOC CAIN0600)
- CAIN SCP trigger subscription (SOC CAIN0601)

Software release:

UCS06

Optionality:

Refer to the above information.

References:

For more information on CAIN SOC, refer to *UCS DMS-250 NetworkBuilder Application Guide* and *UCS DMS-250 Software Optionality Control User's Manual*.

AD8834: CAIN trigger tables

This feature provides trigger tables for all UCS06 CAIN triggers as well as enhancements to existing CAIN subscription database tables.

Software release:

UCS06

Optionality:

The ability to datafill these tables depends on the SOC state of each trigger (trigger's SOC must be ON to datafill).

References:

For more information on CAIN trigger tables, refer to the *UCS DMS-250 NetworkBuilder Application Guide* and *UCS DMS-250 Data Schema Reference Manual*.

AD8836: CAIN TCAP enhancements

This feature enhances the transaction capabilities applications part (TCAP) message driver to support Carrier Advanced Intelligent Network (CAIN) requirements. In addition, this feature supports the following messages and their respective parameters:

- **`Close`** message and related parameters
- **`Info_Collected`** message and related parameters
- **`Network_Busy`** message and related parameters
- **`O_Called_Party_Busy`** message and related parameters
- **`O_Feature_Requested`** message and related parameters
- **`O_No_Answer`** message and related parameters
- **`Origination_Attempt`** message and related parameters
- **`Resource_Clear`** message and related parameters
- **`Cancel_Resource_Event`** message and related parameters

Software release:

UCS06

Optionality:

SOC Carrier AIN Usage Based Messages controls this feature. The SOC ordering code is CAIN0100.

References:

For more information on CAIN TCAP enhancements, refer to the *UCS DMS-250 NetworkBuilder Application Guide*.

AD8837: CAIN PTS digit collection

This feature implements the conversational digit collection for the following agencies:

Synopses of UCS DMS-250 features (continued)

- dedicated access line (DAL)
- primary rate interface (PRI)

Software release:
UCS06

Optionality:
This feature is controlled by SOC CAIN0600 CAIN Conversational Digit Collection.

References:
For more information on CAIN PTS digit collection, refer to the *UCS DMS-250 NetworkBuilder Application Guide*.

AD8876: Table FEATBYTE

This feature enhances the transaction capabilities application part (TCAP) response message. In addition, this feature implements the table Feature Byte (FEATBYTE), which identifies certain call types and interaction requirements contained in a (TCAP) response message. Options which are available in the table FEATBYTE include the following:

- provisioning development include the following:
  - — provide an index into the table FlexDial
  - — provide an index into the table FEATBYTE
  - — provide a specific call processing data value
  - — modify the table TCAP Announcements (TCAPANNC)
- call processing development include the following (AXXESS agent only):
  - — use of the table FEATBYTE
  - — use of the table TCAPANNC
  - — identify feature associated with N00 digits
  - — process all routing number parameters
- call processing development include the following (all agencies):
  - — process Dialed Number Identification Service (DNIS) parameters
  - — process billing Number parameters

Software release:
UCS06

Optionality:

SOC N00R0003 is required for the DNIS parameter of this feature only.

References:

For more information on table FEATBYTE, refer to the *UCS DMS-250 NetworkBuilder Application Guide*.

AD8877: FlexDial framework Call Processing digit buffer

This feature provides a central repository that stores and manipulates digits for the FlexDial call processing framework.

Software release:

UCS06

Optionality:

The SOC that controls this feature is Flexible Dialing Plans. The SOC ordering code is UTRS0002.

References:

For more information on FlexDial framework call processing digit buffer, refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

AD8878: FlexDial framework generic pool

This feature implements the generic collection pool necessary for the FlexDial call processing framework.

Software release:

UCS06

Optionality:

The SOC that controls this feature is Flexible Dialing Plans. The SOC ordering code is UTRS0002.

References:

For more information on FlexDial framework generic pool, refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

AD8885: Address collectable call processing

This feature implements call processing for the following collectables on the FlexDial framework:

- Address (ADDR)

Synopses of UCS DMS-250 features (continued)

- Address parameter (ADDRPARM)

Software release:
UCS06

Optionality:
The SOC that controls this feature is Flexible Dialing Plans. The SOC ordering code is UTRS0002.

References:
For more information on Address collectable call processing, refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

AD8886: SUBR collectable call processing

This feature implements call processing for the following collectables on the the FlexDial framework:

- Subscriber Number (SUBR) in-band
- Subscriber Number (SUBRPARM) out-of-band

Software release:
UCS06

Optionality:
The SOC that controls this feature is Flexible Dialing Plans. The SOC ordering code is UTRS0002.

References:
For more information on SUBR collectable call processing, refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

AD8888: Signaling and Conditional collectables

This feature implements call processing for the following FlexDial framework collectables:

- Signaling (SIG)
- Send Signal (SNDSIG)
- Receive Signal (RCVSIG)
- Terminate Call to Destination (TERMINATE)
- Apply Treatment (APTRMT)
- Identify Destination (ROUTE)
- Match Digits Conditional Branch (IFDIGS)

- IFNDIGS
- Match Digit Count Conditional Branch (IFCNT)
- Match Nature of Address (IFNOA)
- IFNNOA
- Clear Call Features (CLRFTRS)

Software release:
UCS06

Optionality:
The SOC that controls this feature is Flexible Dialing Plans. The SOC ordering code is UTRS0002.

References:
For more information on Signaling and Conditional collectables, refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

AD8889: Digit collectables call processing implementation

This feature implements call processing for the following FlexDial framework collectables:

- Add Digits (ADDDIGS)
- Delete Digits (DELDIGS)
- Modify Digits (MODDIGS)
- Copy Digits (COPYDIGS)
- Agent Data (AGNTDATA)
- Branch Execute Without Return (GOTO)
- Branch Execute With Return (DO)
- Include List (INCLUDE)
- Calltype (CALLTYPE)
- Modify Nature of Address (MODNOA)

Software release:
UCS06

Optionality:
The SOC that controls this feature is Flexible Dialing Plans. The SOC ordering code is UTRS0002.

Synopses of UCS DMS-250 features (continued)

References:

For more information on Digit collectables call processing implementation, refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

AD8905: COLDIG, OLI, and CIC collectables call processing code

This feature implements the call processing code for the following collectables on the FlexDial framework:

- Collect Digits (COLDIG)
- Originating Line Information (OLI)
- Carrier Identification Code (CIC)

Software release:

UCS06

Optionality:

The SOC that controls this feature is Flexible Dialing Plans. The SOC ordering code is UTRS0002.

References:

For more information on COLDIG, OLI, and CIC collectables call processing code, refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

AD8906: FlexCDR, user interface and data synchronization

This feature provides the user interface software necessary to control the Flex call detail record (CDR).

Software release:

UCS06

Optionality:

The SOC that controls this feature is Flexible Call Detail Record. The SOC ordering code is UBFR0001.

References:

For more information on FlexCDR, user interface and data synchronization, refer to the *UCS DMS-250 Billing Records Application Guide*.

AD8907: FlexCDR framework

This feature provides the following call detail record (CDR) functionalities on the FlexCDR framework:

- field object definitions
- computing module (CM) formatter
- floating point (FP) formatter
- data capture routines
- operational measurements
- logs
- office parameters

Software release:
UCS06

Optionality:
The SOC that controls this feature is Flexible Call Detail Record. The SOC ordering code is UBFR0001.

References:
For more information on FlexCDR framework, refer to the *UCS DMS-250 Billing Records Application Guide*.

AD8908: FlexDial framework reorigination

This feature implements reorigination handling for the FlexDial call processing framework.

Software release:
UCS06

Optionality:
The SOC that controls this feature is Flexible Dialing Plans. The SOC ordering code is UTRS0002.

References:
For more information on FlexDial framework reorigination, refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

AD8909: FlexDial framework ID manager

This feature provides an interface for requesting a unique ID. Specifically, this feature defines the method necessary to request an ID, generate that ID, and guarantee the uniqueness within the call.

Synopses of UCS DMS-250 features (continued)

Software release:
UCS06

Optionality:
The SOC that controls this feature is Flexible Dialing Plans. The SOC ordering code is UTRS0002.

References:
For more information on FlexDial framework ID manager, refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

AD8910: FlexDial framework event aspects

This feature implements events for the FlexDial call processing framework. In addition, this feature provides a mechanism to connect the following:

- event aspects to agencies
- setup collector to obtain the event aspects during origination

Software release:
UCS06

Optionality:
The SOC that controls this feature is Flexible Dialing Plans. The SOC ordering code is UTRS0002.

References:
For more information on FlexDial framework event aspects, refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

AD8911: FlexDial framework call processing collectable manager

This feature implements an administrator and an interface to manage and manipulate the list of collectables processed for the FlexDial call processing framework.

Software release:
UCS06

Optionality:
The SOC that controls this feature is Flexible Dialing Plans. The SOC ordering code is UTRS0002.

References:
For more information on FlexDial framework call processing collectable manager, refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

AD8918: Variable phrase standard announcement capability

This feature enables the UCS DMS-250 switch to play the following digits as a standard announcement:

- called number
- dialed number
- calling number
- charged number

Software release:
UCS06

Optionality:
Included in UCS base software.

References:
For more information on variable phrase standard announcement capability, refer to the *UCS DMS-250 Data Schema Reference Manual*.

AD8919: AXXESS agent CCS7 subclass implementation

This feature implements the Common Channel Signaling No. 7 (CCS7) subclass for FlexDial framework AXXESS trunk agencies.

Software release:
UCS06

Optionality:
The SOC that controls this feature is Flexible Dialing Plans. The SOC ordering code is UTRS0002.

References:
For more information on AXXESS agent CCS subclass implementation, refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

AD8920: AXXESS agent PTS subclass implementation

This feature implements the per trunk signaling (PTS) subclass for FlexDial framework AXXESS trunk agencies.

Synopses of UCS DMS-250 features (continued)

Software release:
UCS06

Optionality:
The SOC that controls this feature is Flexible Dialing Plans. The SOC ordering code is UTRS0002.

References:
For more information on AXXESS agent PTS subclass implementation, refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

AD8921: AXXESS agent enhancements

This feature enhances the AXXESS trunk agencies by defining the following:

- class interface with the FlexDial framework
- call processing
- AXXESS agent supervision
- AXXESS executive line-up

Software release:
UCS06

Optionality:
The SOC that controls this feature is Flexible Dialing Plans. The SOC ordering code is UTRS0002.

References:
For more information on AXXESS agent enhancements, refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

AD8937: Replace Digits collectable

This feature implements a Replace Digits collectable to collect digits from an originating agent through multi-frequency (MF) or dual-tone multifrequency (DTMF) inband tones. In addition, this feature replaces these collected digits in the digit buffer.

Software release:
UCS06

Optionality:
The SOC that controls this feature is Flexible Dialing Plans. The SOC ordering code is UTRS0002.

References:
For more information on Replace Digits collectable, refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

AD8938: SOC for FlexDial

This feature implements the Software Optionality Control (SOC) for the FlexDial framework to allow an operating company to select one or more optional features.

Software release:
UCS06

Optionality:
The SOC that controls this feature is Flexible Dialing Plans. The SOC ordering code is UTRS0002.

References:
For more information on SOC for FlexDial, refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

AD8948: FlexDial framework generate CDR upon request

This feature generates a network security log or a call detail record (CDR) when a subscriber answers a call. Once a subscriber answers a call, a switch datafill determines whether to generate a network security log or a CDR. The following originating agencies support this feature:

- primary rate interface (PRI)
- dedicated access line (DAL
- Feature Group D (FGD)
- FlexDial access trunk (AXXESS)

Synopses of UCS DMS-250 features (continued)

Software release:
UCS06

Optionality:
The SOC that controls this feature is Flexible Dialing Plans. The SOC ordering code is UTRS0002.

References:
For more information on FlexDial framework generate CDR upon request, refer to the *UCS DMS-250 FlexDial Framework Application Guide* and *UCS DMS-250 Billing Records Application Guide*.

AD8949: Table Message Center

This feature implements the table Message Center (MSGCTR) for the FlexDial framework. As as result, this feature moves the existing MSGCTR option from the following tables:

- FlexDial Subscriber Number and Call Type Features (FLEXFEAT)
- FlexDial Trunk Group Features (TRKFEAT)

In addition, this feature updates the MSGCTR option in these tables to act as an index into the table MSGCTR.

Software release:
UCS06

Optionality:
The SOC that controls this feature is Flexible Dialing Plans. The SOC ordering code is UTRS0002.

References:
For more information on table Message Center, refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

AD8950: FlexDial framework data manager

This feature implements the feature data manager (FDM) for the FlexDial framework. As a result, this feature implements method calls for the data delivered to the FDM and defines where and how to store this data.

Software release:
UCS06

Optionality:
The SOC that controls this feature is Flexible Dialing Plans. The SOC ordering code is UTRS0002.

References:
For more information on FlexDial framework data manager, refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

AD8955: Multiple Class of Service table

This feature implements the table Multiple Class of Service Screening (MULTICOS) and the respective call processing enhancements. The table MULTICOS creates a one-to-many relationship between a subscriber number and the indexes of the table Class of Service Universal Screening (COSUS). In addition, this feature provides the following tables:

- MULTICOS, which defines the following:
  - — up to 32 indexes of the table COSUS for each MLTCOSID per vector
- Automatic Number Identification Screening Customer Profile (ANISCUSP) supports the field MLTCOSID
- Authorization Code (AUTHCODE), which includes the following, supports the field MLTCOSID:
  - — Authorization Code Database (AUTHCODU)
  - — Authorization Code Database 2 (AUTHCDU2)
  - — Authorization Code Database 3 (AUTHCDU3)
  - — Authorization Code Database 4 (AUTHCDU4)
  - — Authorization Code Database 5 (AUTHCDU5)
- Travel Card Number Fast (TCNFAST) supports the field MLTCOSID

Software release:
UCS06

Optionality:
Included in UCS base software.

References:
For more information on Multiple Class of Service table, refer to the *UCS DMS-250 Feature Group D (FGD) Application Guide*.

Synopses of UCS DMS-250 features (continued)

AD8956: AXXESS originating allocator

This feature implements the originating allocator for per trunk signaling (PTS) and Common Channel Signaling No. 7 (CCS7) trunk types for the FlexDial framework.

Software release:
UCS06

Optionality:
The SOC that controls this feature is Flexible Dialing Plans. The SOC ordering code is UTRS0002.

References:
For more information on AXXESS originating allocator, refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

AD8987: FlexDial conversion tool

This feature converts existing trunk agencies to AXXESS trunk agencies to allow for FlexDial capability.

As a result, this feature allows the operating company to perform the following:

- move trunk members from one trunk group common language location identifier (CLLI) to another trunk group CLLI, for example, from a non-AXXESS agent to an AXXESS agent
- change the route references from one trunk group to another
- delete the one trunk group and rename the other trunk group as the name of the deleted trunk group

Software release:
UCS06

Optionality:
The SOC that controls this feature is Flexible Dialing Plans. The SOC ordering code is UTRS0002.

References:
For more information on FlexDial conversion tool, refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

AD8988: MCCS Mechanized Voice Prompts enhancements

This feature enhances Mechanized Voice Prompts (MVP), which allows an operating company to customize operator services and announcements based on universal access (UA) numbers. In addition, this feature decouples MVP from MCCS tones-based functionality for UA calls.

Software release:

UCS06

Optionality:

The SOC that controls this feature is MCCS MVP Card Services. The SOC ordering code is CRDS0003.

References:

For more information on MCCS Mechanized Voice Prompts enhancements, refer to the *UCS DMS-250 MCCS Application Guide* and *UCS DMS-250 One Night Process Procedures Guide*.

AD8990: Operator call routing enhancements

This feature provides a flexible method of routing operator calls within a network by expanding the option Operator Choice (OPCHOICE).

As a result, this feature adds OPCHOICE to the table Trunk Group (TRKGRP) for the following trunk groups:

- dedicated access line (DAL)
- Feature Group A (FGA)
- Feature Group B (FGB)
- Feature Group C (FGC)
- Feature Group D (FCD)
- per trunk signaling
- signaling system no. 7 Feature Group D (SS7 FGD)

This feature also provides an OPCHOICE Index (OPCHIDX), which allows the UCS DMS-250 switch to pass this index across SS7 inter-machine trunks (IMT). In addition, this feature allows the UCS DMS-250 switch to obtain the OPCHIDX from the originating SS7 IMT.

Synopses of UCS DMS-250 features (continued)

Software release:
UCS06

Optionality:
Included in UCS base software.

References:
For more information on operator call routing enhancements, refer to the *UCS DMS-250 Data Schema Reference Manual* and *UCS DMS-250 Operational Measurements Reference Manual*.

AD8996: Reorigination at point of presence

This feature enables the point of presence (POP) to setup reorigination based on a facility request (FAR) message received from the bridging switch. As a result, the POP receives the FAR from the bridging switch where it contains reorigination information forwarded from the enhanced service provider (ESP) or host.

Note: The POP cannot be the bridging switch for this feature.

Software release:
UCS06

Optionality:
The SOC that controls this feature is SS7 RLT Base. The SOC ordering code is URLT0001.

References:
For more information on reorigination at point of presence, refer to the *UCS DMS-250 SS7 RLT Feature Application Guide* and *UCS DMS-250 FlexDial Framework Application Guide*.

AD9001: SS7 RLT billing enhancements

This feature enhances the UCS DMS-250 switch signaling system no. 7 (SS7) Release Link Trunk (RLT) functionality by providing the following:

- An Enhanced Services Platform (ESP) that determines, on a per-call basis, whether the billing duration time (CALLDUR) in the call detail record (CDR) begins from the first answer message (ANM) or from the last ANM.
- The capability to populate the CDR fields, BILLNUM, UNIVACC, PINGIGS, and ACCTCD from information received from an ESP.

Software release:
UCS06

Optionality:
The SOC that controls this feature is SS7 RLT Billing Enhancements. The SOC ordering code is URLT0004.

References:
For more information on SS7 RLT billing enhancements, refer to the *UCS DMS-250 SS7 RLT Feature Application Guide*.

AD9016: Open numbering plan for UCS ISUP IMTs

This feature enhances UCS ISDN user part (ISUP) inter-machine trunk (IMT) functionality by performing the following on UCS ISUP IMT Global and Intra trunk agencies:

- process incoming calls (see note 1)
- provide open number dialing plan for the global market (see note 1)
- provide a universal translation system for national calls in the global market
- support network information processing
- send an early address complete message (ACM) or an early answer message (ANM) (see note 2)

Note 1: World Zone 1 markets include, Canada, the USA, and the Caribbean (excluding Haiti and Cuba).

Note 2: This functionality is for the UCS ISUP IMT Global trunk group only.

Software release:
UCS06

Optionality:
The SOC that controls this feature is Global Inter-Machine Trunk. The SOC ordering code is GIMT0001.

References:
For more information on open numbering plan for UCS ISUP IMTs, refer to the *UCS DMS-250 Data Schema Reference Manual* and *UCS DMS-250 Software Optionality Control User's Manual*.

Synopses of UCS DMS-250 features (continued)

AD9017: Basic call using ITU ISUP protocol

This feature supports basic calls originating on the International Telecommunication Union (ITU) ISDN user part (ISUP) inter-machine trunk (IMT) agencies, using universal translations, on the UCS DMS-250 switch for the following:

- onnet
- offnet
- international

This feature is only available for UCS DMS-250 International switches located outside of World Zone 1 (see note).

Note: World Zone 1 markets include, Canada, the USA, and the Caribbean (excluding Haiti and Cuba).

Software release:

UCS07

Optionality:

The SOC that controls this feature is Global Inter-Machine Trunk. The SOC ordering code is GIMT0001.

References:

For more information on basic call using ITU ISUP protocol, refer to the *UCS DMS-250 International Application Guide*.

AD9020: Table control for global UCS feature

This feature implements the necessary table control changes to allow for global functionality. As a result, this feature increases the size of the following fields for the call type (CT) selector from 18 to 20 digits.

- minimum digits (MINDIGS)
- maximum digits (MAXDIGS)

Software release:

UCS06

Optionality:

The SOC that controls this feature is Global Inter-Machine Trunk. The SOC ordering code is GIMT0001.

References:

For more information on table control for global UCS feature, refer to the *UCS DMS-250 Data Schema Reference Manual* and *UCS DMS-250 Software Optionality Control User's Manual*.

AD9023: ITU ISUP protocol for UCS

This feature complies with the Q.764 ITU ISUP protocol which enables the UCS DMS-250 switch to operate outside of World Zone 1 (see note). This feature performs the following:

- implements a subset of Q.764 ITU ISUP protocol on the UCP ISUP IMT trunk agency
- supports overlap sending on an originating ITU ISUP IMT agency (overlap sending supports two-way trunks)
- builds and sends an information request (INR) message when the calling party number information in the initial address message (IAM) is one of the following:
  - — unavailable
  - — empty
  - — incomplete
- provides interworking between ITU ISUP and the following trunk agencies:
  - — UCP Global IMT
  - — UCP Intra IMT

Note: World Zone 1 markets include, Canada, the USA, and the Caribbean (excluding Haiti and Cuba).

Software release:

UCS07

Optionality:

The SOC that controls this feature is Global Inter-Machine Trunk. The SOC ordering code is GIMT0001.

References:

For more information on ITU ISUP protocol for UCS, refer to the *UCS DMS-250 International Application Guide*.

Synopses of UCS DMS-250 features (continued)

AD9067: Support for UUI parameters

This feature provides User-to-User Service (UUS) for the following protocols:

- ISDN primary rate interface (PRI) Q.931, which supports the following:
  - — User-to-User Information (UUI) information element (IE)
- ISDN user part (ISUP), which supports the following:
  - — UUI parameter
  - — UUI Indicator parameter

In addition, this feature enhances to the following functionalities for the UCS DMS-250 switch:

- call processing
- table control

Software release:
UCS06

Optionality:
The SOC that controls this feature is Network Interfaces - PRI. The SOC ordering code is NPRI0001.

References:
For more information on support for UUI parameters, refer to the *UCS DMS-250 ISDN Reference Manual.*

AD9124: Include base DCR

This feature adds the base Dynamically Controlled Routing (DCR) software to the UCS06 release. In addition, this feature verifies that DCR functionality is dormant when the DCR base SOC is idle.

Software release:
UCS06

Optionality:
Included in UCS base software.

References:
For more information on include base DCR, refer to the *UCS DMS-250 Software Optionality Control User's Manual*.

AD9255: FlexDial enhancements

This feature provides eight FlexDial collectables that allow an operating company to more efficiently define diverse dial plans. A collectable is a primitive operation that represents a component in the dialing plan for an originating trunk.

This feature performs the following:

- creates eight collectables
  - — Match Prompt Type Conditional Branch (IFPRMT)
  - — Set Treatment (SETTRMT)
  - — Treatment Match Conditional Branch (IFTRMT)
  - — Operational Measurement (OM)
  - — Time-of-Day Comparison Conditional Branch (IFTOD)
  - — Variable Operation (VAROP)
  - — Variable Comparison Conditional Branch (IFVAR)
  - — Apply Reset (APRESET)
- adds two fields to allow enforcement of a common RESET digit across a call for the following:
  - — table Trunk Signaling (TRKSIG)
  - — protocol collectable Signaling (SIG)
- adds a field to the RESET FAILACT to defer the reset at the time of failure for the following collectables:
  - — Originating Line Information (OLI)
  - — Address (ADDR)
  - — Subscriber Number (SUBR)
- creates two office parameters to limit both the size and execution of the collectable list

Software release:
UCS07

Optionality:
The SOC that controls this feature is Flexible Dialing Plans. The SOC ordering code is UTRS0002.

Synopses of UCS DMS-250 features (continued)

References:

For more information on FlexDial enhancements, refer to the *UCS DMS-250 FlexDial Framework Application Guide* and *UCS DMS-250 CAIN/FlexDial Interactions*.

AD9258: FLEXSIM enhancements

This feature is a tool that interworks with FlexDial. FLEXSIM implements the necessary changes to add a Level 2 and Level 3 to the displayed call information. For example, Level 1 shows the translations used to place a call. This level confirms that a call origination is set up correctly. Level 2 adds event information, including Level 1. Level 3 adds data flow, including Level 1 and 2.

Software release:

UCS07

Optionality:

This feature is included in the UCS base software.

References:

For more information on FLEXSIM, refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

AD9447: UCS DCR support

This feature allows the UCS DMS-250 switch to interact with Dynamically Controlled Routing (DCR). This feature performs the following:

- adds DCR Handicap Removal allowing calls to terminate by a direct route to a terminating switch
- provides a pegging mechanism for the following calls:
  - — retranslated route selector calls
  - — reoriginated calls
  - — route advanced calls
  - — N00 routed calls
- modifies the DCR algorithm during a route advance

Software release:

UCS07

Optionality:

The SOC that controls this feature is Dynamically Controlled Routing. The SOC ordering code is DCR00001.

References:

For more information on UCS DCR support, refer to the *UCS DMS-250 Software Optionality Control User's Manual*.

AD9470: LNP on NetworkBuilder

This feature retains a directory number (DN) when the subscriber moves between service providers.

Software release:

UCS07

Optionality:

The SOC that controls this feature is Local Number Portability. The SOC ordering code is CAIN0700.

References:

For more information on LNP on NetworkBuilder, refer to the *UCS DMS-250 NetworkBuilder Application Guide* and *UCS DMS-250 Local Number Portability Application Guide*.

AD9471: NetworkBuilder GVNS, configuration 2

This feature implements the global virtual network service (GVNS), configuration 2. GVNS is a multi-network international service which provides private network functions to subscribers at geographically dispersed locations. In addition, GVNS minimizes the need for dedicated network resources.

Software release:

UCS07

Optionality:

The SOC that controls this feature is Carrier AIN Usage Based Messages. The SOC ordering code is CAIN0100.

References:

For more information on NetworkBuilder GVNS, configuration 2, refer to the *UCS DMS-250 NetworkBuilder Application Guide*.

Synopses of UCS DMS-250 features (continued)

AD9472: NetworkBuilder carrier routing and trigger enhancements

This feature enhances the NetworkBuilder carrier routing and trigger functions by adding the following trigger criteria types:

- adds the ADIN trigger criteria type to the following triggers:
  - *Shared_Interoffice_Trunk*
  - *PRI_B-Channel*
  - *O_Feature_Requested*
  - *Specific_Digit_String*
  - *Customized_Dialing_Plan*
- adds translated address (XLAADDR) to the following triggers:
  - *Customized_Dialing_Plan*
  - *Specific_Digit_String*
  - *O_Called_Party_Busy*
  - *Network_Busy*
  - *O_No_Answer*

In addition, this feature performs the following:

- adds the Carrier parameter to the transaction capabilities application part (TCAP) **`Analyze_Route`** message (see note)
- adds a Carrier Advanced Intelligent Network (CAIN) group to entries in the subtable Standard Pretranslator (STDPRT) of the table Standard Pretranslator Control (STDPRTCT)

Note: The UCS DMS-250 switch attempts to route a call when the Carrier parameter is present.

Software release:

UCS07

Optionality:

The SOC that controls this feature is Carrier AIN Usage Based Messages. The SOC ordering code is CAIN0100.

References:

For more information on NetworkBuilder carrier routing and trigger enhancements, refer to the *UCS DMS-250 NetworkBuilder Application Guide*.

AD9473: CAIN Flex user interaction framework

This feature supports the following for AXXESS trunk agencies:

- user interaction framework (UIF) for NetworkBuilder
- **`Send_To_Resource`** connection for intelligent peripheral (IP) interaction (supported by originating AXXESS trunk agencies only)

Software release:

UCS07

Optionality:

SOC does not apply to this feature.

References:

For more information on CAIN Flex user interaction framework, refer to the *UCS DMS-250 CAIN/FlexDial Interactions*.

AD9474: NetworkBuilder event detection points

This feature implements event detection points (EDPs) for NetworkBuilder. These EDPs and their respective parameters are as follows:

- ***`Network_Busy`*** EDP request message contains the following parameters:
  - ***`UserID`***
  - ***`BearerCapability`***
  - ***`ExtensionParameter`***
  - ***`NotificationIndicator`***
  - ***`BusyCause`***
- ***`O_Called_Party_Busy`*** EDP request message contains the following parameters:
  - `busyRoute`
  - `termTrunkInfo`
- ***`O_No_Answer`*** EDP request message contains the following parameters:
  - ***`UserID`***
  - ***`BearerCapability`***
  - ***`ExtensionParameter`***
  - ***`Notification Indicator`***
- ***`O_Term_Seized`*** EDP notification message contains the following parameters:

Synopses of UCS DMS-250 features (continued)

— ***UserID***

— ***BearerCapability***

— ***NotificationIndicator***

— ***ExtensionParameter***

- ***O_Answer*** EDP notification message contains the following parameters:

  — ***UserID***

  — ***BearerCapability***

  — ***NotificationIndicator***

  — ***Extension Parameter***

Note: The ***UserID***, ***BearerCapability***, and ***NotificationIndicator*** parameters are mandatory.

Software release:

UCS07

Optionality:

The SOCs that controls this feature is NetworkBuilder EDPs, Phase II. The SOC ordering code is CAIN0602

References:

For more information on NetworkBuilder event detection points, refer to the *UCS DMS-250 NetworkBuilder Application Guide*.

AD9475: Flex CAIN call processing

This feature implements call processing for NetworkBuilder on the FlexDial platform. As a result, this feature supports the following functionalities:

- ADIN simulation for Carrier Advanced Intelligent Network (CAIN)
- FlexDial interactions, including special cases, such as terminate with continue and release with cause
- CAIN messaging framework changes to support FlexDial, including message interception and extension block interactions
- FlexDial reorigination interactions with CAIN
- CAIN transactions capability application part (TCAP) parameter population changes

Software release:

UCS07

Optionality:
SOC does not apply to this feature.

References:
For more information on Flex CAIN call processing, refer to the *UCS DMS-250 CAIN/FlexDial Interactions*.

AD9476: NetworkBuilder IMT support

This feature supports NetworkBuilder for the inter-machine trunk (IMT) group. In addition, this feature ensures that the global and inter network IMTs are capable of interacting with the Carrier Advanced Intelligent Network (CAIN) framework. As a result, this feature supports the following:

- Global IMTs using universal translations
- Inter-network IMTs using the standard HNPACONT method of translations

Software release:
UCS07

Optionality:
The SOCs that control this feature are NetworkBuilder Inter IMT Support and NetworkBuilder Global IMT Support. The SOC ordering codes are CAIN0604 and CAIN0605, respectively.

References:
For more information on NetworkBuilder IMT support, refer to the *UCS DMS-250 NetworkBuilder Application Guide* and *UCS DMS-250 International Application Guide*.

AD9477: FlexDial support of CAIN

This feature implements the Carrier Advanced Intelligent Network (CAIN) on the FlexDial platform.

Software release:
UCS07

Optionality:
SOC does not apply to this feature.

References:
For more information on FlexDial support of CAIN, refer to the *UCS DMS-250 NetworkBuilder Application Guide*; *UCS DMS-250 FlexDial*

Synopses of UCS DMS-250 features (continued)

Framework Application Guide; and *UCS DMS-250 CAIN/FlexDial Interactions*.

AD9478: Flex CAIN call processing

This feature implements call processing for NetworkBuilder on the FlexDial platform.

As a result, this feature performs the following:

- adds the CAIN flag (CAINFLG) option to the table FLEXTYPE
- updates the Billing Field (BILLFLD) option in the table FLEXTYPE
- updates FlexDial collectables to recognize and act on a CAINFLG option
- adds a mask of CAIN trigger options to the table Trunk Features (TRKFEAT)
- provides CAIN information through the FlexDial Simulator (FLEXSIM) tool

Software release:

UCS07

Optionality:

SOC does not apply to this feature.

References:

For more information on Flex CAIN call processing, refer to the *UCS DMS-250 CAIN/FlexDial Interactions*.

AD9479: NetworkBuilder STR connection

This feature documents the NetworkBuilder requirements for a **`Send_To_Resource`** (STR) connection with an intelligent peripheral (IP). Examples of IP capabilities include the following:

- play a pre-recorded announcement or music
- collect dual tone multi-frequency (DTMF) digits
- record voice or modulated voice information
- play recorded voice or modulated voice information
- perform speaker-dependent or speaker-independent voice recognition

Software release:

UCS07

Optionality:

The SOC that controls this feature is STR Connection. The SOC ordering code is CAIN0603.

References:

For more information on Networkbuilder STR connection, refer to the *UCS DMS-250 NetworkBuilder Application Guide*.

AD9480: Flex Call model

This feature implements the Carrier Advanced Intelligent Network (CAIN) call model on AXXESS trunk agencies. As a result, this feature supports the following functionalities:

- subscribes to CAIN on FlexDial
- updates CAIN trigger detection points to recognize AXXESS trunk agencies
- supports changes to FlexDial outgoing message population data sources
- supports CAIN902 log changes
- supports treatment log suppression

Software release:

UCS07

Optionality:

SOC does not apply to this feature.

References:

For more information on the Flex Call model, refer to the *UCS DMS-250 CAIN/FlexDial Interactions*.

AD9490: NetworkBuilder termination overflow enhancements

This feature enhances the ***Network_Busy*** trigger detection point (TDP) to allow for specific call scenarios. These call scenarios allow the TDP to route the next subscriber found in the Carrier Advanced Intelligent Network (CAIN) route list instead of the current route list.

Software release:

UCS07

Optionality:

The SOC that controls this feature is Carrier AIN 0.2 Network Busy Trigger. The SOC ordering code is CAIN0506.

Synopses of UCS DMS-250 features (continued)

References:

For more information on NetworkBuilder termination overflow enhancements, refer to the *UCS DMS-250 NetworkBuilder Application Guide*.

AD9533: DMS-250/500 Quick Call

This feature enhances the Mechanized Calling Card Service (MCCS). This feature allows the subscriber to enter a 4-digit Quick Call personal identification number (PIN) when the dialed and billing numbers are the same (rather than a 14-digit travel card number).

Software release:

UCS07

Optionality:

The SOC that controls this feature is CRDS Quick Call. The SOC ordering code is CRDS0005.

References:

For more information on UCS DMS-250 Quick Call, refer to the *UCS DMS-250 General Description* and *UCS DMS-250 MCCS Application Guide*.

AD9568: CAIN NetInfo/MBG support

This feature supports NetworkBuilder for Multi-switch Business Group (MBG) calls. An SL-100 switch sends MBG calls to NetworkBuilder with the business group information mapped onto a serving translation scheme (STS). This mapping takes place at the UCS DMS-250 service switching point (SSP). In addition, this feature enhances the following:

- transaction capabilities application part (TCAP) messaging (to and from the service control point)
- UCS DMS-250 SSP call processing

Software release:

UCS07

Optionality:

The SOC that controls this feature is Network Services. The SOC ordering code is NSER0001.

References:

For more information on CAIN NetInfo/MBG support, refer to the *UCS DMS-250 NetworkBuilder Application Guide*.

AD9572: Table control changes for supporting Flexible R2

This feature supports the Mexican Regional No. 2 (R2) trunks on the UCS DMS-250 international switch. This feature can only be used on UCS DMS-250 switches outside of World Zone 1 (see note).

Note: World Zone 1 markets include, Canada, the USA, and the Caribbean (excluding Haiti and Cuba).

Software release:

UCS07

Optionality:

The SOC that controls this feature is R2 Trunks. The SOC ordering code is GLR20001.

References:

For more information on table control changes for supporting Flexible R2, refer to the *UCS DMS-250 International Application Guide*.

AD9573: Basic call implementation on Flexible R2 trunks

This feature implements basic call processing for the UCS DMS-250 international switch on R2 trunks. This feature can only be used on the UCS DMS-250 switch outside of World Zone 1 (see note 1). This feature only supports the Mexican variant of the R2 signaling system. This feature supports the following:

- universal translations for the following calls:
  - — on-net
  - — off-net
  - — international
- Carrier Identification Code (CIC) functions, which include the following (see note 2):
  - — routing
  - — delivery
- calling line identification (CLI) functions, which include the following (see note 2):

Synopses of UCS DMS-250 features (continued)

  - — screening
  - — delivery
- R2 trunks interworking with the following trunk agencies:
  - — UCP ISUP (both Intra and Global) IMT
  - — ITU ISUP IMT
  - — Mexican ISUP IMT
- trunk class of service screening
- billing
- treatment handling

Note 1: World Zone 1 markets include, Canada, the USA, and the Caribbean (excluding Haiti and Cuba).

Note 2: This feature only supports simple CIC and CLI functions.

Software release:
UCS07

Optionality:
The SOC that controls this feature is R2 Trunks. The SOC ordering code is GLR20001.

References:
For more information on basic call implementation on Flexible R2 trunks, refer to the *UCS DMS-250 International Application Guide*.

AD9575: Implementation of Mexican R2 protocol on UCS

This feature implements the Mexican R2 signaling system on the UCS DMS-250 international switch. This signaling system interfaces with the public switching telephone network (PSTN) and private branch exchanges (PBXs). This feature only supports UCS DMS-250 switches located outside of World Zone 1 (see note).

Note: World Zone 1 markets include, Canada, the USA, and the Caribbean (excluding Haiti and Cuba).

Software release:
UCS07

Optionality:
The SOC that controls this feature is R2 Trunks. The SOC ordering code is GLR20001.

References:

For more information on the implementation of Mexican R2 protocol on UCS, refer to the *UCS DMS-250 International Application Guide*.

AD9576: Variable CLI Screening and CIC Routing on ITU ISUP trunks

This feature enhances the UCS DMS-250 international switch to support calls which are routed on the following originating trunk agencies based on a Carrier Identification Code (CIC):

- ITU ISUP IMT
- Mexican ISUP IMT

This feature also modifies CIC Routing on the UCP intra and global IMTs outside of World Zone 1 (see note).

In addition, this feature provides the variable length calling line identification (CLI) screening on the following trunk agencies:

- ITU ISUP IMT
- Mexican Global IMT

Note: World Zone 1 markets include, Canada, the USA, and the Caribbean (excluding Haiti and Cuba).

Software release:

UCS07

Optionality:

The SOCs that control this feature are UCS Transporting and Routing and Global Inter-Machine Trunk (IMT). The SOC ordering codes are UTRS0001 and GIMT0001, respectively.

References:

For more information on variable CLI Screening and CIC Routing, refer to the *UCS DMS-250 International Application Guide*.

AD9577: Flexible SAC and UA calls support on ITU ISUP trunks

This feature supports the following calls on the UCS DMS-250 international switch:

- flexible service access (FSAC)
- universal access (UA)
  - — authcode

Synopses of UCS DMS-250 features (continued)

— calling card

This feature only supports UCS DMS-250 switches located outside of World Zone 1 (see note).

Note: World Zone 1 markets include, Canada, the USA, and the Caribbean (excluding Haiti and Cuba).

Software release:
UCS07

Optionality:
The SOCs that control this feature are Global Inter-Machine Trunk (IMT) and Mexican ISUP IMT. The SOC ordering codes are GIMT0001 and GIMT0002, respectively.

References:
For more information on flexible SAC and UA calls support on ITU ISUP trunks, refer to the *UCS DMS-250 International Application Guide*.

AD9581: Conditional routing through Universal Translation tables

This feature supports conditional routing on the UCS DMS-250 International switch for the following originating trunk agencies:

- ITU ISUP IMT
- Mexican ISUP IMT
- UCP Global IMT

Conditional routing enhances routing capabilities based upon the chosen rate of dynamic decisions of the following:

- random percentage
- time of day
- call characteristics

This feature only supports UCS DMS-250 switches located outside of World Zone 1 (see note).

Note: World Zone 1 markets include, Canada, the USA, and the Caribbean (excluding Haiti and Cuba).

Software release:
UCS07

Optionality:

The SOC that controls this feature is Global Inter-Machine Trunk (IMT). The SOC ordering code is GIMT0001.

References:

For more information on conditional routing through universal translation tables, refer to the *UCS DMS-250 International Application Guide*.

AD9582: Test and data calls on ITU and UCP trunks

This feature supports data and test calls on the UCS DMS-250 international switch for the following trunk agencies:

- UCP Global IMTs
- UCP Intra IMTs
- Mexican ISUP IMTs
- ITU ISUP IMTs

This feature can only be used on the UCS DMS-250 switch outside of World Zone 1 (see note).

Note: World Zone 1 markets include, Canada, the USA, and the Caribbean (excluding Haiti and Cuba).

Software release:

UCS07

Optionality:

The SOC that controls this feature is Global Inter-Machine Trunk (IMT). The SOC ordering code is GIMT0001.

References:

For more information on test and data calls on ITU and UCP trunks, refer to the *UCS DMS-250 International Application Guide*.

AD9583: Implementation of Mexican ITU ISUP protocol on UCS

This feature implements the Mexican ISUP protocol on the UCS DMS-250 international switch with for compliancy within the Mexican market. As a result, this feature allows the UCS DMS-250 international switch to interface with the public switch telephone network (PSTN). This feature can only be used on the UCS DMS-250 international switch outside of World Zone 1 (see note).

Synopses of UCS DMS-250 features (continued)

Note: World Zone 1 markets include, Canada, the USA, and the Caribbean (excluding Haiti and Cuba).

Software release:
UCS07

Optionality:
The SOC Mexican ISUP IMT controls this feature. The SOC ordering code is GIMT0002.

References:
For more information on implementation of Mexican ITU ISUP protocol on UCS *UCS DMS-250 International Application Guide*.

AD9584: Interworking between the various global agencies

This feature tests how the various global trunk agencies interwork together. These global trunk agencies include the following:

- Mexican R2 trunk
- ITU ISUP IMT
- Mexican ISUP IMT
- UCP Global IMT
- UCP Intra IMT

Software release:
UCS07

Optionality:
Included in UCS base software.

References:
For more information on interworking between the various global agencies, refer to the *UCS DMS-250 International Application Guide*.

AD9585: Operator services for UCS international agencies

This feature provides operator services on the following trunk agencies:

- Mexican R2
- ITU ISUP IMT
- Mexican ISUP IMT
- UCP Global IMT

- UCP Intra IMT

In addition, this feature provides a Mexican R2 trunk interface between the Traffic Operator Position System (TOPS) and the UCS DMS-250 international switch. This feature can only be used on the UCS DMS-250 switch outside of World Zone 1 (see note).

Note: World Zone 1 markets include, Canada, the USA, and the Caribbean (excluding Haiti and Cuba).

Software release:

UCS07

Optionality:

The SOCs that control this feature are Global Inter-Machine Trunk (IMT) and R2 Trunks. The SOC ordering codes are GIMT0001 and GLR20001, respectively.

References:

For more information on operator service for UCS international agencies, refer to the *UCS DMS-250 International Application Guide*.

AD9586: Support of filed authcode calls on Mexican R2 trunks

This feature allows filed authorization code (authcode) calls to originate on Mexican R2 trunks by interworking with Global UCP IMT trunks. As a result, this feature supports the following authcode features:

- authcode validation
- PIN digit collection and validation (optional)
- account code digit collection and screening (optional)
- OPART/TPART support for STS derivation
- class of service screening
- authorization trap (authtrap)
- satellite restriction

This feature can only be used on the UCS DMS-250 switch outside of World Zone 1 (see note).

Note: World Zone 1 markets include, Canada, the USA, and the Caribbean (excluding Haiti and Cuba).

Synopses of UCS DMS-250 features (continued)

Software release:
UCS07

Optionality:
The SOCs that control this feature are Global Inter-Machine Trunk (IMT) and R2 Trunks. The SOC ordering codes are GIMT0001 and GLR20001, respectively.

References:
For more information on support of filed authcode calls on Mexican R2 trunks, refer to the *UCS DMS-250 International Application Guide*.

AD9587: Test and data calls on R2 trunks

This feature supports test and data calls originating on Mexican R2 trunks. This feature can only be used on the UCS DMS-250 international switch outside of World Zone 1.

Note: World Zone 1 markets include, Canada, the USA, and the Caribbean (excluding Haiti and Cuba).

Software release:
UCS07

Optionality:
The SOC that controls this feature is R2 Trunks. The SOC ordering code is GLR20001.

References:
For more information on test and data calls on R2 trunks, refer to the *UCS DMS-250 International Application Guide*.

AD9588: Dialed Number Inward Service

This feature transmits the original dialed toll-free number, or a portion of the toll-free number, through a switch network to the subscriber. As a result, this feature connects the subscriber to a UCS DMS-250 switch through any of the following trunk agencies:

- per trunk signaling (PTS)
- ISDN user part (ISUP)
- integrated services digital network (ISDN)

Software release:
UCS07

Optionality:

The SOC Routing Enhancements controls this feature. The SOC ordering code is UTRS0003.

References:

For more information on Dialed Number Inward Service, refer to the *UCS DMS-250 NetworkBuilder Application Guide*.

AD9608: UCS Carrier Selection parameter CDR enhancements

This feature adds the field, Carrier Selection (CARRSEL), in the UCS call detail record (CDR). The CARRSEL field captures and stores the carrier pre-subscription selection information in the Carrier Selection Information (CSI) parameter of the ISDN user part (ISUP) Initial Address Message (IAM).

Software release:

UCS07

Optionality:

Included in UCS base software.

References:

For more information on UCS Carrier Selection parameter CDR enhancements, refer to the *UCS DMS-250 Billing Records Application Guide*.

AD9609: UCS multiple ANI profile support, Phase I

This feature improves memory usage and provides the framework for future support of multiple profiles per automatic number identification (ANI). This feature provides the following tables:

- adds the table ANI Validation (ANIVAL) which contains the following:
  - — ANIs with 3-, 6-, or 10-digits
  - — type of profile
  - — index for table UNIPROF
- adds the table Universal Profile (UNIPROF). This table contains the identical profile information which is available in the table ANI Screening Customer Profile (ANISCUSP), excluding the bearer capability name field (BCNAME).

Software release:

UCS07

Synopses of UCS DMS-250 features (continued)

Optionality:

Included in base software controlled by the office parameter: ANI_ SCREENING_ORDER.

References:

For more information on UCS multiple ANI profile support, Phase I, refer to the *UCS DMS-250 Feature Group D (FGD) Application Guide*.

AD9629: NetworkBuilder routing enhancements

This feature enhances the routing control and trigger tables for NetworkBuilder.

This feature performs the following:

- adds a global title which allows for better service discrimination
- adds an optional overflow service control point (SCP) which queries on T1 timeouts
- enhances the **`Analyze_Route`** message process which allows the control to return to the following:
  - — **Analyze_Information** point in call (PIC)
  - — **Select_Route** (PIC)
- enhances the **`Analyze_Route`** message process which attempts standard routing when an SCP returns a serving translation scheme (STS)
- adds a `callctrl` extension parameter which provides enhanced call control with the following:
  - — **`Continue`**
  - — **`Analyze_Route`**
- adds the trigger action LEAVE_TDP which causes call processing to exit the current trigger detection point (TDP)
- adds the trigger action CONT_NOTRIG which causes call processing to exit the current TDP and disallows any NetworkBuilder interaction for the call

Software release:

UCS07

Optionality:

The SOC that controls this feature is Carrier AIN Usage Based Messages. The SOC ordering code is CAIN0100 .

References:

For more information on NetworkBuilder routing enhancements, refer to the *UCS DMS-250 NetworkBuilder Application Guide*.

AM0389: UCS Software Optionality Control Dialable Wideband Service

This feature provides Software Optionality Control (SOC) for Dialable Wideband Service (DWS).

Software release:

UCS05

Optionality:

The SOC that controls this feature is UCS DWS. The SOC ordering code is UDWS0001.

References:

AM0391: Automatic code gapping for UCS

This feature provides additional functionality to N00 number translations, using transaction capabilities application part (TCAP)messaging. As a result, this feature allows the UCS DMS-250 switch to reduce the number of queries sent to the service control point (SCP). These queries come in the form of an automatic code gapping (ACG) when the SCP is in one of the following conditions:

- database overload
- vacant code
- out of band
- destination mass calling
- control initiated by service management system

Software release:

UCS05

Optionality:

The SOC that controls this feature is Universal International Freephone Numbering. The SOC ordering code is N00R0002.

References:

For more information on automatic code gapping for UCS, refer to the *UCS DMS-250 Transaction Capabilities Application Part Application Guide*.

Synopses of UCS DMS-250 features (continued)

AX0182: ISUP call processing enhancements

This feature improves the UCS DMS-250 switch real-time performance for ISDN user part (ISUP) initial address message (IAM) call processing. ISUP call processing enhancements include improvements to the following areas:

- incoming IAM
- outgoing IAM
- bitmap utilities
- route attributes table (RTEATTR)

Software release:
UCS08

Optionality:
Included in UCS base software.

References:
None

AX0186: NetworkBuilder O_Mid_Call trigger

This feature implements the **`O_Mid_Call`** trigger detection point (TDP) request and the *O_IEC_Reorigination* trigger in the Carrier Advanced Intelligent Network (CAIN) originating call model for NetworkBuilder on a UCS DMS-250 switch.

Software release:
UCS08

Optionality:
The SOC that controls this feature is Offhook Delay Trigger. The SOC ordering code is CAIN0509.

References:
For more information on NetworkBuilder O_Mid_Call trigger, refer to the *UCS DMS-250 NetworkBuilder Application Guide*.

AX0187: Specific_Feature_Code trigger

This feature supports the originating basic call model (BCM) based upon Bellcore's GR-1298-CORE recommendations for the following:

- *Specific_Feature_Code* trigger at the **Analyze_Information** point in call (PIC)

- ***Info_Analyzed*** trigger detection point (TDP)

Software release:
UCS08

Optionality:
The SOC that controls this feature is Specific Feature Code Trigger. The SOC ordering code is CAIN0511.

References:
For more information on Specific_Feature_Code trigger, refer to the *UCS DMS-250 NetworkBuilder Application Guide*.

AX0188: NetworkBuilder Virtual Intelligent Peripheral

This feature enables the UCS DMS-250 switch to simulate an intelligent peripheral (IP) for services that require announcements or announcements plus digit collection. This simulation occurs during conversational messaging between the switch and service control point (SCP) by introducing the following IP-based parameters:

- ***FlexParameterBlock***
- ***IPReturnBlock***

NetworkBuilder invokes the VIP capability if a ***FlexParameterBlock*** parameter (in a **Send_To_Resource** or a **Connect_To_Resource** message) does not include a ***DestinationAddress*** parameter. In this case, the ***FlexParameter Block*** parameter instructs the service switching point (SSP) on how to interact with the subscriber. The ***IPReturnBlock*** parameter then supplies the SCP (through a **Resource_ Clear** or a **Connect_To_Resource** message) with the dialed digits. The VIP collects the dialed digits based upon the ***FlexParameterBlock*** collectable list.

Software release:
UCS08

Optionality:
The SOCs that control this feature are NetworkBuilder Virtual IP and NetworkBuilder LNP Interactions with SS7 RLT. The SOC ordering codes are CAIN0607 and CAIN0700, respectively.

References:
For more information on NetworkBuilder Virtual Intelligent Peripheral, refer to the *UCS DMS-250 NetworkBuilder Application Guide*.

Synopses of UCS DMS-250 features (continued)

AX0189: CAIN LNP interactions with SS7 RLT

This feature implements local number portability (LNP) functionality with the SS7 Release Link Trunk (RLT) when the trunk's connection is a second call leg. A second call leg is the connection from the services platform to the called party.

Software release:

UCS08

Optionality:

The SOCs that control this feature are NetworkBuilder Inter IMT Support and NetworkBuilder LNP Interactions with SS7 RLT. The SOC ordering codes are CAIN0604 and CAIN0700, respectively.

References:

For more information on CAIN LNP interactions with SS7 RLT, refer to the *UCS DMS-250 NetworkBuilder Application Guide*; *UCS DMS-250 SS7 RLT Feature Application Guide*; and *UCS DMS-250 Local Number Portability Application Guide*.

AX0190: GR-1129 based IP interaction

This feature implements the GR-1129 style of intelligent peripheral (IP) interaction. IP capabilities include the following:

- play pre-recorded announcements or music
- collect dual tone multi-frequency (DTMF) digits
- record voice or modulated voice information
- perform speaker-dependent or speaker-independent voice recognition

Software release:

UCS08

Optionality:

The SOC that controls this feature is GR-1129 Based IP Interaction. The SOC ordering code is CAIN0606.

References:

For more information on GR-1129 based IP interaction, refer to the *UCS DMS-250 NetworkBuilder Application Guide*.

AX0197: NetworkBuilder Termination_Attempt trigger

This feature provides the terminating call model (TCM) for the NetworkBuilder framework. In addition, this feature implements the terminating basic call model (BCM) *Termination_Attempt* trigger based upon Bellcore's GR-1298-CORE recommendations.

Software release:

UCS08

Optionality:

The SOC that controls this feature is Termination_Attempt. The SOC ordering code is CAIN0510.

References:

For more information on NetworkBuilder Termination_Attempt trigger, refer to the *UCS DMS-250 NetworkBuilder Application Guide*.

AX0198: LNP on NetworkBuilder

This feature implements local number portability (LNP) on NetworkBuilder. This implementation allows LNP queries when event detection points (EDPs) are active or when the service control point (SCP) retains previously returned data.

Software release:

UCS08

Optionality:

The SOC that controls this feature is NetworkBuilder LNP Interactions. The SOC ordering code is CAIN0700.

References:

For more information on LNP on NetworkBuilder, refer to the *UCS DMS-250 NetworkBuilder Application Guide* and *UCS DMS-250 Local Number Portability Application Guide*.

AX0199: NetworkBuilder O_Feature_Requested enhancements

This feature provides operating companies with the flexibility to interact with subscribers through the *O_Feature_Requested* trigger. Rather than having a list of collectibles hardcoded in a particular order based upon datafill in the table Originating Feature Requested (OFTRREQ), the order of collectibles changes based upon the actual digits input by the subscriber.

Synopses of UCS DMS-250 features (continued)

Software release:
UCS08

Optionality:
This feature is controlled by SOC CAIN0508 CAIN 0.2 Originating Feature Requested Trigger.

References:
For more information on NetworkBuilder O_Feature_Requested enhancements, refer to the *UCS DMS-250 NetworkBuilder Application Guide*.

AX0200: NetworkBuilder event detection points

This feature supports the following request events:

- timeout, detected at the ***O_Mid_Call*** trigger detection point/event detection point (TDP/EDP)
- disconnect, detected at the ***O_Disconnect*** event detection point (EDP)

In addition, this feature performs the following:

- supports calls originating on FlexDial agencies
- allows *Office_Code* triggering while EDPs are active (for local number portability)
- provides an informational log for EDPs

Software release:
UCS08

Optionality:
The SOC that controls this feature is NetworkBuilder EDPs, Phase 2.

References:
For more information on NetworkBuilder event detection points, refer to the *UCS DMS-250 NetworkBuilder Application Guide*; *UCS DMS-250 CAIN/FlexDial Interactions*; and *UCS DMS-250 Local Number Portability Application Guide*.

AX0201: NetworkBuilder Off-hook_Delay trigger

This feature supports the *Offhook_Delay* trigger in the CAIN originating call model for NetworkBuilder.

Software release:
UCS08

Optionality:
The SOC that controls this feature is NetworkBuilder Mid-Call Trigger. The SOC ordering code is CAIN0512.

References:
For more information on NetworkBuilder Offhook_Delay trigger, refer to the *UCS DMS-250 NetworkBuilder Application Guide*.

AX0202: UCS CDR management

This feature implements the required changes to the call detail record (CDR) for the UCS08 development stream. In addition, this feature interacts with other UCS08 features as shown in Table 13-2. Fourteen fields with a record size of 63 bits are added by this feature.

Table 13–2
Feature interactions

Feature ID	Title	Field Usage	Number of Fields	Number of Bits
AX0205	UCS Trunkgroup NOA enhancements	TrunkGroup NOA to indicate usage of network reserved codes in the IMT	1	1
AX0207	CAIN CDR Enhancements	CAIN CDR trigger events that request SCP interaction	7	31
AX0212	CIC Route Enhancements	CIC casual usage	1	1
AX0213	Default CIC Assignments	CIC Routing	1	2
AX0222	UCS CDR ECAN RM/RN Feature	SPM ECAN RM/RN identifying the echo cancelors used	4	28

—end—

Software release:
UCS08

Optionality:
Included in UCS base software.

Synopses of UCS DMS-250 features (continued)

References:

For more information on UCS CDR management for UCS08, refer to the *UCS DMS-250 Billing Records Application Guide*.

AX0203: UCS MCCS VPROMPTS and OPCHOICE enhancements

This feature allows an operating company to access the table Operator Choice (OPCHOICE) to gain universal access (UA) Mechanized Calling Card Services (MCCS) voice prompts (VPROMPTS) functionality. This functionality allows the operating company to standardize operator routing throughout the entire network.

Software release:

UCS08

Optionality:

This feature is controlled by SOC CRD%0003 MVP Card Services.

References:

For more information on UCS MCCS VPROMPTS and OPCHOICE enhancements, refer to the *UCS DMS-250 MCCS Application Guide*.

AX0204: UCS Network Security activation enhancements

This feature creates a command interpreter (CI) command that allows an operating company to control the Network Security (NETSEC) functionality in the table Trunk Group (TRKGRP) without entering the table. In addition, this feature lists the NETSEC status of specific NETSEC common language location identifiers (CLLI) or active NETSEC trunk groups. CI supports the following trunks:

- dedicated access line (DAL)
- equal access network (EANT)
- primary rate interface (PRI)

Software release:

UCS08

Optionality:

This feature is included in the UCS base software.

References:

For more information on UCS Network Security activation enhancements, refer to the *UCS DMS-250 Commands Reference Manual*.

AX0205: UCS trunk group Nature of Address enhancements

This feature manipulates the Nature of Address (NOA) subfield of the Called Party Number parameter for a terminating signaling system no. 7 (SS7) inter-machine trunk (IMT). As a result, this functionality allows the network to utilize the network specific codes of the NOA.

Note: This feature applies to third party interaction and is not applicable for UCS DMS-250 switch to UCS DMS-250 switch interaction.

Software release:

UCS08

Optionality:

This feature is included in the UCS base software.

References:

For more information on UCS trunk group Nature of Address enhancements, refer to the *UCS DMS-250 Feature Group D (FGD) Application Guide* and *UCS DMS-250 SS7 RLT Feature Application Guide*.

AX0206: UCS CAIN STS extension parameter enhancements

This feature creates additional extension parameters that allow the service control point (SCP) to return multiple intelligent peripheral (IP) serving translation schemes (STSs) within an **`Analyze_Route`** response message. Each returned STS corresponds directly to each standard routing parameter and each termination parameter, which include the following:

- ***`CalledPartyID`*** standard routing parameter
- ***`GenericAddressLists`*** parameter's `OverflowRoutingNo` standard routing parameter
- ***`PrimaryTrunkGroup`*** direct termination parameter
- ***`AlternateTrunkGroup`*** direct termination parameter
- ***`SecondAlternateTrunkGroup`*** direct termination parameter

The multiple STS extension parameters offer the flexibility necessary to route each standard routing termination by a separate STS. These parameters provide a more diverse range of terminating options. In addition, this feature allows the operating company to determine which trunk group parameter is actually used in reaching the end subscriber.

Software release:

UCS08

Synopses of UCS DMS-250 features (continued)

Optionality:

This feature is controlled by SOC CAIN0200 CAIN Extension Parameters.

References:

For more information on UCS CAIN STS extension parameter enhancements, refer to the *UCS DMS-250 NetworkBuilder Application Guide* and *UCS DMS-250 Commands Reference Manual*.

AX0207: UCS CAIN CDR enhancements

This feature records information in the call detail record (CDR) for up to three separate NetworkBuilder triggers or events. For each trigger or event, two CDR fields are populated. The first field indicates the point in call (PIC), the trigger detection point (TDP), and the event detection point (EDP) that request service control point (SCP) interaction. The CDR stores the first field information in one of three fields: CN1REQ, CN2REQ, or CN3REQ.

The second field holds a numerical count of each time the SCP receives TDP and EDP request messages based upon the evaluation of the corresponding trigger or event. The CDR stores the second field information in one of three fields: CN1REQ, CN2REQ, or CN3REQ.

In addition, this feature populates the CDR with a numerical count of each time the SCP receives TDP and EDP request messages, during the life of a NetworkBuilder call. The CDR stores this information in the CNTOTREQ field.

Software release:

UCS08

Optionality:

The SOC that controls this feature is Carrier AIN Usage Based Messages. The SOC ordering code is CAIN0100.

References:

For more information on UCS DMS-250 enhancements, refer to the *UCS DMS-250 NetworkBuilder Application Guide* and *UCS DMS-250 Billing Records Application Guide*.

AX0208: UCS code optimazation

This feature optimizes UCS DMS-250 switch call processing by decreasing real-time requirements, which results in call capacity improvements.

Software release:
UCS08

Optionality:
Included in UCS base software.

References:
None

AX0209: UCS SS7 RLT protocol enhancements

This feature creates Release Link Trunk (RLT) capabilities by exchanging call context information between a services platform (for example, Enhanced Services Platform or Traffic Operator Position System) and the UCS DMS-250 switch.

Software release:
UCS08

Optionality:
The SOCs that control this feature are SS7 RLT Protocol Enhancements and SS7 RLT Billing Enhancements. The SOC ordering codes are URLT0002 and URLT0004, respectively.

References:
For more information on UCS SS7 RLT protocol enhancements, refer to the *UCS DMS-250 SS7 RLT Feature Application Guide*.

AX0210: Multiple profile ANI by CIC

This feature provisions and accesses multiple profiles on a per automatic number identification (ANI) and Carrier Identification Code (CIC) basis. In addition, this feature offers a contingency process when sufficient information is unavailable to choose a profile.

Software release:
UCS08

Optionality:
The SOC that controls this feature is Multiple Profile ANIs by CIC. The SOC ordering code is UTRS0200.

Synopses of UCS DMS-250 features (continued)

References:

For more information on multiple profile ANI by CIC, refer to the *UCS DMS-250 General Description* and *UCS DMS-250 Feature Group D (FGD) Application Guide*.

AX0211: Multiple ANI database

This feature aids in the transition from the table Automatic Number Identification Screening Customer Profile (ANISCUSP) to the tables Automatic Number Identification Validation (ANIVAL) and Universal Profile (UNIPROF) by providing the following:

- a tool to convert from table ANISCUSP to tables ANIVAL and UNIPROF
- a tool to maintain tables ANIVAL, UNIPROF, and Multiple Profile (MULTPROF)
- an increase in the maximum number of tuples that table UNIPROF contains (from 4,096 to 65,534)

Software release:

UCS08

Optionality:

Included in UCS base software.

References:

For more information on multiple ANI database, refer to the *UCS DMS-250 General Description*; *UCS DMS-250 Feature Group D (FGD) Application Guide* and *UCS DMS-250 Commands Reference Manual*.

AX0212: CIC Routing enhancements

This feature enhances the functionality associated with Carrier Identification Code (CIC) Routing and CIC Outpulsing. The CIC Routing enhancements provided by this feature include the following:

- supports the use of a CIC and carrier selection indicator (CSI) combination index in the table Carrier Identification Code Routing (CICROUTE)
- provides the option to interact with automatic number identification (ANI) screening and routing

The CIC Outpulsing enhancements provided by this feature include the following:

- outpulses the CIC value datafilled against the OUTCIC option in the table Trunk Group (TRKGRP) in a Carrier Identification parameter (CIP). This outpulse occurs for national calls where CIP is not received.
- outpulses the OUTCIC value even when the orginating trunk receives a CIC

Software release:
UCS08

Optionality:
The SOC that controls this feature is UCS Transporting and Routing. The SOC ordering code is UTRS0001.

References:
For more information on CIC Routing enhancements, refer to the *UCS DMS-250 General Description* and *UCS DMS-250 CIC Routing Application Guide*.

AX0213: Default CIC assignments

This feature provides the option to datafill a default Carrier Identification Code (CIC) value on a trunk group basis in the table TRKGRP. In addition, this feature provides the following:

- the option to datafill values that the default CIC uses for each call
- a call detail record (CDR) field that indicates the origin of the CIC value used for the call (see note)
- a CIC CDR field with a default CIC value, in which data is input against the originating trunk group for all calls where a CIC is not received

Note: Origin is either the received CIC, the default CIC, or the CIC received from the service control point (SCP) for a Carrier Advanced Intelligent Network (CAIN) call.

Software release:
UCS08

Optionality:
The SOC that controls this feature is UCS Transporting and Routing. The SOC ordering code is UTRS0001.

Synopses of UCS DMS-250 features (continued)

References:

For more information on default CICs assignments, refer to the *UCS DMS-250 CIC Routing Application Guide*.

AX0221: Universal International Freephone Number

This feature provides toll-free functionality associated with the universal international freephone number (UIFN) on the UCS DMS-250 switch. The UIFN service assigns one or more telephone numbers to a universal international freephone (UIF) subscriber. This allows callers from other countries to call the UIF subscriber free of charge.

Software release:

UCS08

Optionality:

The SOC that controls this feature is Universal International Freephone Numbering Service. The SOC ordering code is N00R0200.

References:

For more information on Universal International Freephone Number, refer to the *UCS DMS-250 Feature Group D (FGD) Application Guide*.

AX0300: UCS/NCS early answer supervision provided for UA numbers

This feature sends an answer message (ANM) immediately after the address complete message (ACM) to cut-through voice path for universal access (UA) calls.

Software release:

UCS08

Optionality:

The SOC that controls this feature is UCS DMS-250 Early Answer Supervision for Universal Access Number. The SOC ordering code is UTRS0005.

References:

For more information on UCS/NCS early answer supervision provided for UA numbers, refer to the *UCS DMS-250 SS7 RLT Feature Application Guide*; *UCS DMS-250 NetworkBuilder Application Guide*; *UCS DMS-250 Local Number Portability Application Guide*; *UCS DMS-250 Feature Group D (FGD) Application Guide*; and *UCS DMS-250 FlexDial Framework Application Guide*.

AX0361: EADAS TR compliance

This feature provides protocol conversion and data link capabilities. These capabilities enable the use of six operational measurements (OM) stored in the UCS DMS-250 switch by the Engineering and Administrative Data Acquisition System (EADAS) compliant operational support systems (OSS). In addition, this feature provides the following capabilities:

- survey
- reroute
- report
- monitor
- control traffic loads

Software release:
UCS08

Optionality:
The SOC that controls this feature is UCS EADAS Data Collection Interface. The SOC ordering code is UOAM0001.

References:
For more information on EADAS TR compliance, refer to the *UCS DMS-250 SuperNode Operational Measurements Reference Manual* and *UCS DMS-250 One Night Process Procedures Guide*.

AX0362: TR compliance – EADAS/DC buffer expansion

This feature enhances the DMS-100 EADAS interface and the DMS-250 EADAS interface. As a result, this feature provides the following:

- increases the size of the Engineering and Administrative Data Acquisition System (EADAS) data collection (DC) into the following classes of data collection buffers (see note):
  - — 30 minute
  - — 60 minute
  - — 24 hour
- adds software optionality control (SOC) functionality that selects the amount of data to transmit to the downstream operational support systems (OSS) machine
- addresses the loss of correspondence between an EADAS record and a tuple in a multiple Operational Measurements (OM) group

Synopses of UCS DMS-250 features (continued)

- eliminates the need to restart when the size of the EADAS/DC buffer changes from a non-zero value

Software release:
UCS08

Optionality:
The SOC that controls this feature is UCS EADAS Data Collection Interface. The SOC ordering code is UOAM0001.

References:
For more information on TR compliance – EADAS/DC buffer expansion, refer to the *UCS DMS-250 Software Optionality Control User's Manual* and *UCS DMS-250 General Description*.

AX0363: UCS DMS-250 EADAS interfaces – ONP considerations

This feature addresses Engineering and Administrative Data Acquisition System (EADAS) one night process (ONP) functionality, which include the following:

- transitions from the DMS-100/250/500 states to a DMS-500 state during ONP
- creates different EADAS datafill files for Technical Reference (TR) and non-TR compliant interfaces to meet the following criteria:
  - — associates the extension registers with the base registers in the table EADAS for a TR compliant interface
  - — adds six DMS-250 Operational Measurement (OM) groups to the DMS-250 and DMS-500 TR compliant EADASOM_INFO data structures
  - — generates different EADAS/DC datafill structures for TR compliant DMS-250 and DMS-500 EADAS data collection (DC) interfaces

Software release:
UCS08

Optionality:
The SOC that controls this feature is UCS EADAS Data Collection. The SOC ordering code is UOAM0001.

References:
For more information on DMS-250/500 EADAS interfaces - ONP considerations, refer to the *UCS DMS-250 One Night Process Procedures Guide*.

AX0499: UCS DMS-250 Gateway functionality

This feature provides a limited set of gateway services on the UCS DMS-250 switch with a partial compliance of the following:

- International Telecommunications Union (ITU)-T Recommendation Q.767 Blue Book version signaling protocol
- International Telecommunications Union (ITU)-T Recommendation Q.764 White Book version ISDN user part (ISUP) 1992 signaling protocol (international use only)

These services allow Interexchange Carriers (IXCs) to connect North American UCS DMS-250 switches directly to foreign exchanges in the international network without having to go through a gateway switch.

Software release:

UCS08

Optionality:

The SOC that controls this feature is Gateway IMT. The SOC ordering code is GIMT0003.

References:

For more information on UCS DMS-250 Gateway functionality, refer to the *UCS DMS-250 Gateway IMT Application Guide*.

AX0500: UCS DMS-250 Yr 2000 support

This feature ensures that the UCS DMS-250 switch is year 2000 compliant.

Software release:

UCS08

Optionality:

Included in UCS base software.

References:

None

AX0952: UCS CAIN Route Advance Announcements

Prior to this feature, when multiple CAIN route choices were returned from the service control point (SCP), a long period of time could elapse with the end-used only hearing silence. This resulted in a high-rate of abandoned calls. This feature fixes the silence problem for CAIN route advances in the

Synopses of UCS DMS-250 features (continued)

situation where the terminator does not answer, by providing an announcement to the end-used that the call is being transferred.

Software Release:
UCS09

Optionality:
This feature is controlled by CAIN0505, O_NO_ANSWER Trigger Activated

References:
For more information on the UCS CAIN Route Advance Announcements feature, refer to the *UCS DMS-250 NetworkBuilder Application Guide*.

AX0953: UCS CAIN CDR Enhancements – Phase 2

This feature provides the following CDR enhancements for NetworkBuilder:

- populates the existing CDR field Route List (RTELIST) and the new CDR field Route Index (RTEINDEX) when tables Tandem Route (TANDMRTE) or Termination Route (TERMRTE) are used for routing the call.
- creates a new treatment, Local Number Portability Misroute (LNPM), which is used when the SS7 Release message from the terminating LEC contains a value of 26, indicating a routing failure of the ported number.
- allows receipt of a project code in a TCAP message from the service control point (SCP), which is one to eight digits in length and captured in the new CDR field Project Code (PRJCODE).

Software Release:
UCS09

Optionality:
This feature is controlled by the SOC CAIN100, CAIN Usage-Based Messages.

References:
For more information on the UCS CAIN CDR Enhancements – Phase 2 feature, refer to the *UCS DMS-250 NetworkBuilder Application Guide* and the *UCS DMS-250 Billing Records Application Guide*.

AX0954: UCS NT6X50EC Datafill Maintenance

This feature provides the ability to block datafill in table Trunk Member (TRKMEM) if the corresponding NT6X50EC datafill in tables Carrier

Maintenance Control (CARRMTC), Line Trunk Controller P-Side Link Inventory (LTCPSINV), and Trunk Subgroup (TRKSCRP) or Trunk Signaling (TRKSIG) is inconsistent. This aids datafill integrity by ensuring the tables CARRMTC, LTCPSINV, and TRKSCRP (or TRKSIG) have consistent datafill prior to datafilling table TRKMEM.

Software Release:

UCS09

Optionality:

The functionality provided by this feature is included in UCS base software.

References:

For more information on the UCS NT6X50EC Datafill Maintenance feature, refer to the *UCS DMS-250 NT6X50EC Integrated Echo Cancellation Application Guide*.

AX0958: UCS GNCT Log Enhancement

This feature adds the serving translation scheme (STS) to a General No Circuit Treatment (GNCT) trunk log (TRKT205). The TRKT205 log is generated when a call is routed to treatment due to a traffic or hardware failure. Adding the STS to the TRKT205 log helps to identify the location of trouble in a network due to traffic or hardware failure.

Software Release:

UCS09

Optionality:

The functionality provided by this feature is included in UCS base software.

References:

For more insormation on the UCS GNCT Log Enhancement feature, refer to the *UCS DMS-250 Logs Reference Manual*.

AX0960: UCS Increased Switch ID

This feature increases the Switch ID (SWID) range from 0-127 to 0-999. Enhancements are made to

- the Switch ID range and call processing for SS7 ISUP messages
- CAIN routing tables and message parameters
- logs

Synopses of UCS DMS-250 features (continued)

- tools
- operator services record (OSR)

In addition, this feature adds a new option, SWID, for SS7 IMTs in table Trunk Group (TRKGRP) and a new office parameter, INCREASED_SWITCH_ID, in table Office Variables (OFCVAR) to provide the capability to network with other switches that support either Switch ID ranges.

Software Release:

UCS09

Optionality:

The functionality provided by this feature in included in UCS base software.

References:

For more information on the UCS Increased Switch ID feature, refer to the *UCS DMS-250 NetworkBuilder Application Guide* and the *UCS DMS-250 Billing Records Application Guide*.

AX0962: UCS Pure FGD MCCS VPROMPTS Enhancements

This feature expands the UCS05 feature AD8209, UCS MCCS Enhancements, which provided LEC subsystem validation for pure FGD MCCS Voice Prompts (VPROMPT) calls, by allowing MCCS VPROMPT calls originating on FGD pure to also be validated by the Travel Card Number (TCN) subsystem. This feature also adds a value of TCN to the office parameter LEC_CC_TCAP in the Office Engineering (OFCENG) table.

Software Release:

UCS09

Optionality:

This feature requires SOC CRDS0003, MVP Card Services

References:

For more information on the UCS Pure FGD MCCS VPROMPTS Enhancements feature, refer to the *UCS DMS-250 MCCS Application Guide*.

AX0963: UCS Reorigination Rearchitecture

This feature rearchitects the reorigination software on the UCS DMS-250 switch to introduce a new level of fraud prevention during treatment processing.

Software Release:
UCS09

Optionality:
The functionality provided by this feature is included in UCS base software.

References:
For more information on the UCS Reorigination Rearchitecture feature, refer to the *UCS DMS-250 Reorigination Application Guide*.

AX0964: UCS MCCS VPROMPTS Announcement Set Expansion

This feature increases the number of supported universal access (UA) Mechanized Calling Card Services (MCCS) Voice Prompts (VPROMPTS) announcement sets from 100 to 1024.

Software Release:
UCS09

Optionality:
This feature is controlled by the SOC CRDS0003, MVP Card Services.

References:
For more information on the UCS MCCS VPROMPTS Announcement Set Expansion feature, refer to the *UCS DMS-250 MCCS Application Guide*.

AX0972: NetworkBuilder Termination Notification

This feature provides NetworkBuilder support for Termination Notification to the SCP based upon Bellcore AIN 0.2 requirements GR-1290 and GR-1299. With this feature, Termination Notification works as follows:

- the SCP notifies the SSP to deliver a Termination_Notification message
- the SSP continues with normal call processing until the call is released
- once the call is released, the SSP sends a Termination_Notification message to the SCP in reponse to the Send_Notification message

The functionality provided by this feature enables Network Builder to support services such as budget cards or enhanced SCP billing.

Software Release:
UCS09

Optionality:
This feature is controlled by the SOC CAIN0609, Termination_Notification

Synopses of UCS DMS-250 features (continued)

References:

For more invormation on the NetworkBuilder Termination Norification feature, refer to the *UCS DMS-250 NetworkBuilder Application Guide*.

AX0973: NetworkBuilder GR–1299–Core Protocol Alignment

This feature aligns the existing NetworkBuilder message set more closely to the protocol specified in GR-1299 for long distance services by encoding standard parameters according to GR-1299 guidelines and moving UCS DMS-250 switch specific protocol extensions to the NetworkBuilder extension parameters. Backwards compatibility and protocol versioning for this feature is controlled through the CAIN_PROTOCOL_STREAM and CAIN_PROTOCOL_VERSION parameters in the CAIN Parameters (CAINPARM) table.

Software Release:

UCS09

Optionality:

This feature is controlled by SOC CAIN0100, CAIN Usage-Based Messages.

References:

Fore more information on the NetworkBuilder GR-1299-Core Protocol Alignment feature, refer to the *UCS DMS-250 NetworkBuilder Application Guide*.

AX0974: NetworkBuilder Connect_to_Resource

This feature adds NetworkBuilder support for the receipt of the Connect_to_Resource message in response to the Timeout event detection point (EDP) request. It also adds the ability to connect a resource to an existing two-party call.

Software Release:

UCS09

Optionality:

This feature requires the following SOCs: CAIN0600, Conversational Digit Collection; CAIN0603, STR Connection; CAIN606, GR-1129 Based IP Interaction; CAIN607, Virtual IP; CAIN800, Mid-Call Services 1; and CAIN801, Mid-Call Services 2.

References:
For more information on the NetworkBuilder Connect_to_Resource feature, refer to the *UCS DMS-250 NetworkBuilder Application Guide*.

AX0975: NetworkBuilder Manual Code Gapping

This feature adds support of Subsystem Management System (SMS) Originated Code Control (SOCC) to allow the SMS to request specific manual controls for finer and more selective code gapping. The SMS is a provision and data management system on the SCP that can generate and send messages to the SSP via the SCP. SOCC controls are manually initiated to restrict certain queries at the SSP (manual code gapping).

Software Release:
UCS09

Optionality:
This feature is controlled by SOC CAIN0901, Manual Code Gapping.

References:
For more information on the NetworkBuilder Manual Code Gapping feature, refer to the *UCS DMS-250 NetworkBuilder Application Guide*.

AX0976: NetworkBuilder Automatic Code Gapping

This feature provides automatic code gapping (ACG) for the CAIN protocol. ACG provides the capability to prevent overloading a given SCP and reduce the impact of mass calling events by reducing the number of queries from the SSP to the SCP. The SCP automatically sends an ACG control message to the SSP when the SCP senses an overload condition.

Software Release:
UCS09

Optionality:
This feature is controlled by SOC CAIN0900, Automatic Code Gapping.

References:
For more information on the NetworkBuilder Automatic Code Gapping feature, refer to the *UCS DMS-250 NetworkBuilder Application Guide*.

Synopses of UCS DMS-250 features (continued)

AX0980: NETSEC Enhancements

This feature enhances the Network Security (NETSEC) feature by

- expanding the existing NETSEC functionaly to the PTS IMT, Q.767 Gateway IMT and ISUP92 (Q.764) Gateway IMT originating trunk agencies
- generating a NETSEC log or CDR for the following terminating trunk agencies: PTS FGD, SS7, FGD, PRI, DAL, SS7 Inter-network IMT, PTS IMT, Q.767 Gateway IMT, ISUP92 Gateway IMT and AXXESS
- generating a NETSEC log upon release of the suspect fraud call
- providing a new Network Security Profile table (NETSPROF) which is indexed from tables Trunk Group (TRKGRP) and FlexDial Trunk Group Features (TRKFEAT)
- enhancing fraud screening criteria to include time-of-day, day-of-week, nature of address, information digits, and country code
- modifying the existing World Zone (WZONE) table to allow datafill of six-digit (NPA-NXX) and ten–digit (NPA-NXX-XXXX) numbers for network security screening
- modifying the existing NETSEC Command Interpreter (CI) to display the newly supported trunk agencies, display all of the active fraud calls, and enable or disable fraud profile screening
- implementing the new SOC UBFR0003, Fraud Enhancements, for the profile screening and new log generations

Software Release:

UCS09

Optionality:

The new profile screening, log or CDR generation based on terminating trunk and log or CDR generation upon call release functionality is controlled by the SOC UBFR0003, Fraud Enhancements. All other enhancements provided by this feature are included in the UCS base software.

References:

For more information on the NETSEC Enhancements feature, refer to the *UCS DMS-250 Feature Group D (FGD) Application Guide*; *UCS DMS-250 FlexDial Application Guide*, and *UCS DMS-250 Gateway IMT Application Guide*.

AX0986: UCS CDR Management for UCS09

This feature provides the CDR changes for UCS09, including:

- the addition of a new field, Project Code (PRJCODE) to capture the project code value in the CAIN TCAP message received from the SCP
- the addition of a new field, Route Index (RTEINDEX) to indicate the number obtained from the routing table used to route the call
- the addition of a new field, SLPID to indicate the AMAslpID value in the CAIN TCAP message received from the SCP
- the modification of the existing field, Route Table (RTETAB) to identify the table that was used to route the call.

Software Release:

UCS09

Optionality

The SOC UBFR0001, Flexible CDR must be active to support the fields PRJCODE, SLPID, and RTETAB. The RTEINDEX field is available in the UCS09 fixed CDR format that is included in UCS base software.

References:

For more information on the UCS CDR Management for UCS09 feature, refer to the *UCS DMS-250 Billing Records Application Guide*.

AX0987: SNI Screening for FGD UA MCCS Calls

This feature allows the UCS DMS-250 switch to perform ANI screening on FGD universal access (UA) MCCS calls and optionally route these calls to an operator when ANI failures occur or when an ANI is not received. Only the Status field from the ANI profile is applied to the call.

Software Release:

UCS09

Optionality:

This feature is controlled by SOC UBRF0004, MCCS Fraud Enhancements.

References:

For more information on the ANI Screening for FGD UA MCCS Calls feature, refer to the *UCS DMS-250 MCCS Application Guide*.

Synopses of UCS DMS-250 features (continued)

AX0988: UCS LNP RX Selector Robustness

This feature enhances the existing code that supports a Local Number Portability (LNP) query for RX routed calls. This feature also updates the Traver tool to support an LNP query for RX routed calls.

Software Release:

UCS09

Optionality:

This feature is controlled by SOC UBRF0004, MCCS Fraud Enhancements.

References:

For more information on the UCS LNP RX Selector Robustness feature, refer to the *UCS DMS-250 Local Number Portability Application Guide* and the *UCS DMS-250 NetworkBuilder Application Guide*.

AX0992: UCS CAIN Office Code Entry Increase

This feature increases the maximum number of allowable tuple entries in the NetworkBuilder table Office Code (OFFCCODE) from 64 thousand to one million. This increase is required due to the increased number of NPA-NXX combinations needed by the Local Number Portability feature.

Software Release:

UCS09

Optionality:

This feature is controlled by SOC CAIN0700, Local Number Portability.

References:

For more information on the UCS CAIN Office Code Entry Increase feature, refer to the *UCS DMS-250 Local Number Portability Application Guide* and the *UCS DMS-250 NetworkBuilder Application Guide*.

AX0993 CLID Processing Enhancements

This feature provides enhancements to Calling Line Identification (CLID) processing to make the UCS DMS-250 switch compliant with the FCC statements about CLID delivery as follows:

- provides the capability for the UCS DMS-250 switch to screen the Presentation Indicator (PI) bit of incoming Calling Party Number (CPN/CgPN) parameters to further determine outpulsing conditions for PRI and DAL-TIE terminations

- provides the capability to screen calls coming into the UCS DMS-250 network for called party billed calls that have a CPN/CgPN PI bit set to RESTRICTED. These calls will have their PI bits reset to ALLOWED and an informational log produced on the switch
- modifies processing for PRI and DAL-TIE terminations to provide Charge Number (CGN) and Calling Party Number (CPN) precedence options when outpulsing the ISDN Calling Party Number Information Element (CgPN IE) or in-band ANI respectively
- modifies CLID processing for PRI originations involving ISUP terminations. When no CgPN IE is received in the incoming ISDN Setup message, the default CLID from the table Call Attribute Translation (CALLATTR) will be mapped to the outgoing ISUP CGN parameter

Software Release:

UCS09

Optionality:

This feature is controlled by SOC NSER0001, Network Services.

References:

For more information on the CLID Processing Enhancements feature, refer to the Call information delivery chapter of this document or to Design Document (DDOC) AX0993, CLID Processing Enhancements, found in the UCS09 Software Release Document.

AX0998: Variable Account Code Prompt Tones

This feature enhances the account code prompt tone functionality by providing a new sub-field, ACTONE, on DAL, DAL-TIE, FGA, FGB, FGC, PTS FGD, SS7 FGD, PRI, SS7 Inter-network IMT, and Global IMT originating trunk groups. When ACTONE is enabled, two different account code prompt tones and two different tone duration intervals can be selected.

Software Release:

UCS09

Optionality:

The functionality provided by this feature is included in UCS base software.

References:

For more information on the Variable Account Code Prompt Tones feature, refer to the *UCS DMS-250 Feature Group D (FGD) Application Guide*.

Synopses of UCS DMS-250 features (continued)

AX0999: Multiple Profile ANI by Jurisdiction

This feature expands the functionality provided in UCS08 by the feature AX0210, Multiple ANI Profiles per ANI/CIC, by enabling the UCS DMS-250 switch users to provide unique ANI profiles based on ANI, CIC and jurisdiction for SS7 FGD pure originations. Jurisdictions are defined as intraLATA, interLATA, and international.

Software Release:

UCS09

Optionality:

This feature is controlled by SOC UTRS0201, Multiple Profile ANI by Jurisdiction.

References:

For more information on the Multiple Profile ANI by Jurisdiction feature, refer to the *UCS DMS-250 Feature Group D (FGD) Application Guide*.

AX1001: FlexDial Evolution

This feature provides real–time improvements for AXXESS SS7 trunk agencies by consolidating multiple SS7 parameter digit collectibles (OLIPARM, CICPARM, SUBPARM and ADDRPAM) into one digit collectable (FGDPARM). The FGDPARM collectable executes the SS7 FGD protocol in one step for AXXESS SS7 trunk agencies.

Software Release:

UCS09

Optionality:

This feature is controlled by SOC UTRS0002, Flexible Dialing Plans.

References:

For more information on the FlexDial Evolution feature, refer to the *UCS DMS-250 FlexDial Application Guide*.

AX1002: AXXESS CIC Enhancement

This feature provides AXXESS trunk agencies with the Carrier Identification Code (CIC) enhancements introduced in the UCS08 features AX0212, CIC Route Enhancements and AX0213, Default CIC Assignments. Specific AXXESS enhancements include:

- provide default CIC functionality
- add option CIC Size (CICSIZE) to table Trunk Group (TRKGRP)

- allow CIC processing to be performed using the Inband Subscriber Number (SUBR) or Out-of-band Subscriber Number (SUBRPARM) collectibles
- expand the capability of subscriber digit processing by adding the CIC option to table FlexDial Trunk Group Features (TRKFEAT); the International Translations STS (ITRANSTS) and CIC Delivery (CICDELV) options to table FlexDial Subscriber Number and Call Type Features (FLEXFEAT); and the Validate, Fail Action (FAILACT), and Feature Ignore (FEATIGN) messages to table Message Center (MSGCTR)
- replace the CICDELV option in table TRKFEAT with a CIC Block (CICBLK) option in table Trunk Signaling (TRKSIG)
- provide enhanced CIC outplusing incorporating the Default CIC (DEFCIC) option in table TRKFEAT and the name (OUTCIC) and CIC Block (CICBLK) options in table TRKSIG
- provide the ability to populate the CIC CDR field with the default CIC
- populate the CIC Casual (CICCASU) CDR filed when the CIC Casual (CIC_CASU) option is used to complete a call
- interact with the ONP to translate pre-UCS09 datafill into the UCS09 format

Software Release:
UCS09

Optionality:
This feature is controlled by SOC UTRS0001, Carrier Identification Code Routing.

References:
For more information on the AXXESS CIC Enhancements feature, refer to the *UCS DMS-250 FlexDial Application Guide* and the *UCS DMS-250 CIC Routing Application Guide*.

AX1015: UCS09 Capacity

This feature implements several modifications to existing UCS code in order to regain real-time for the UCS customers.

Software Release:
UCS09

Optionality:
The functionality provided by this feature is included in UCS base software.

Synopses of UCS DMS-250 features (continued)

References:

For more information on the UCS09 Capacity feature, refer to Design Document (DDOC) AX1015 in the *UCS09 Software Release Document*

AX1122:UCS DMS-250 CTRTE Selector Enhancements

This feature adds a conditional selector in table name (CTRE) similar to the conditional selector in the Office Route (OFRx) tables. This selector simplifies time-of-day routing for International Partitioned (IP) calls.

Software Release:

UCS09

Optionality:

The functionality provided by this feature is included in UCS base software.

References:

For more information on the UCS DMS-250 CTRTE Selector Enhancements feature, refer to the *UCS DMS-250 Basic Translations Guide* and the *UCS DMS-250 Data Schema Reference Manual*.

AX1198: NXX Call Blocking Based on Information Digits

This feature provides the ability for the UCS DMS-250 switch to block NXX calls, on a per-NXX number basis or switch-wide basis based on the information digits received with the call.

Software Release:

UCS09

Optionality:

This feature is controlled by SOC NXXR0001, NXX Call Blocking.

References:

For more information on the NXX Call Blocking Based in Information Digits feature, refer to the *UCS DMS-250 Feature Group D (FGD) Application Guide*, the UCS DMS-250 NetworkBuilder Application Guide and the *UCS DMS-250 FlexDial Application Guide*.

AX1210: FlexCDR Data Sync with SDM

This feature provides code in the Computing Module (CM) to send the FlexCDR office parameters and CDR template definitions to the SuperNode Data Manager (SDM) peripheral.

Software Release:
UCS09

Optionality:
The functionality provided by this feature is included in UCS base software. However, this feature only becomes active when the SDM peripheral is attached to the switch.

References:
For more information on the FlexCDR Data Sync with SDM feature, refer to the Design Document AX1210 in the *UCS09 Software Release Document*.

AX1247: Edge Switch Enhancements

This feature covers a variety of translations and routing development items that enhance the UCS DMS-250 switch as an edge vehicle platform. In addition, it modifies SS7 processing for additional compliance to the BellCore GR-317-CORE specification.

Software Release:
UCS09

Optionality:
The functionality provided by this feature is included in UCS base software. However, SOCs UTRS0201, Multiple Profile ANI by Jurisdiction and UBFR0001, Flexible CDR may be required.

References:
For more information on the Edge Switch Enhancements feature, refer to the Design Document (DDOC) AX1247 in the *UCS09 Software Release Document*.

AX1248: CDRTMPLT Option Enhancements

This feature provides modifications to the existing CDRTMPLT option to provide the ability to disable CDR generation on a per-call basis. It also allows the CDRTMPLT option to identify end-of-call formatting preferences according to

- originating trunk group (tables TRKGRP, TRKFEAT)
- originating subscriber number (tables AUTOCODx, ANISCUSP, UNIPROF, FLEXTYPE, and FLEXFEAT)
- called party address (table STDPRTCT, subtable STDPRT)
- terminating route destination (table RTEATTR)

Synopses of UCS DMS-250 features (continued)

Software Release:
UCS09

Optionality:
This feature is controlled by SOC UBFR0001, Flexible CDR.

References:
For more information on this feature, refer to the *UCS DMS-250 Billing Records Application Guide* and the *UCS DMS-250 Data Schema Reference Manual*.

AX1302:NXX Account Code Activation

This feature allows service providers to screen NXX calls using account codes as follows:

- the account code is dialed together with the NXX number
- the dialed account code is compared to the account code datafilled in the switch
- if they do not match, the Invalid Account Code (INAC) treatment is applied

Software Release:
UCS09

Optionality:
This feature is controlled by SOC NXXR0002, Toll Free NXX Account.

References:
For more information on the NXX Account Code Activation feature, refer to the Design Document (DDOC) AX1302 in the *UCS09 Software Release Document* and the *UCS DMS-250 Data Schema Reference Manual*.

AX1321: UCS DMS-250 Automatic CDR Throttling

This feature provides a means of throttling the CDRs for calls originating on SS7 Intra-network IMTs to aid in diminishing the loss of CDR data for billable calls when a very high percentage of recording units are in use. This feature also helps reduce the amount of CPU time spent in collecting and formatting billing data during busy periods in order to provide increased call handling capacity.

Software Release:
UCS09

Optionality:

This feature is controlled by UBFR0005, Automatic CDR Throttling.

References:

For more information on the *UCS DMS-250* Automatic CDR Throttling feature, refer to the *UCS DMS-250 Billing Records Application Guide*.

AX1340: CDR to SDM Interaction

This feature implements the required Call Detail Record (CDR) fields needed by the Supernode Data manager (SDM) for proper CDR to Bellcore Automatic Message Accounting Format (BAF) conversion.

Software Release:

UCS11

Optionality:

The CDR fields added by this feature require UBFR0001, Flexible CDR.

References:

For more information on CDR to SDM interaction, refer to the *UCS DMS-250 Billing Records Application Guide*.

AX1344: CM Alarms on SDM Control Module

This feature implements the CM side of the SDM maintenance API. It reports the alarms associated with the CCS and trunk maintenance subsystems of the DMS-250 to the CM side of the SDM maintenance API. The SDM maintenance API then transmits the alarm information to the SDM, which allows the SDM to monitor the state of CCS and trunk resources.

Software Release:

UCS11

Optionality:

The SDMC alarm conduit is included in SDM base software.

References:

For more information on alarms, refer to the *UCS DMS-250 Alarm and Performance Monitoring Procedures Reference Manual* and the *SDMC Alarm Conduit Application User Guide*.

Synopses of UCS DMS-250 features (continued)

AX1346: Implementation of Echo Cancellors for PRI Trunks in UCS

This feature implements changes in call processing support, on a per call basis, to control Spectrum Peripheral Module (SPM) integrated echo cancellers (ECANs) on Primary Rate Interface (PRI) trunks.

Software Release:
UCS11

Optionality:
Included in UCS base software.

References:
For more information on implementation of echo cancellors for PRI trunks in UCS, refer to the *UCS DMS-250 NT6X50EC Integrated Echo Canceller Application Guide*.

AX1360: UCS CDR Management for UCS11

This feature consolidates the CDR changes required for UCS11 development. It provides the actual changes to the CDR and adds new OMs to be pegged for calls completing without a CDR (free calls).

Software Release:
UCS11

Optionality:
The CDR fields added by this feature require UBFR0001, Flexible CDR.

References:
For more information on CDR to SDM interaction, refer to the *UCS DMS-250 Billing Records Application Guide*.

AX1361: MCCS Reorigination and Reset Dialing

This feature adds additional processing before allowing Mechanized Calling Card Service (MCCS) calls to reoriginate and when processing reset dialing for MCCS calls. Specifically, this feature does the following:

- verifies that a valid billing number exists before allowing an MCCS call to reoriginate
- ensures that billing fields and call type fields are reset appropriately when reset dialing occurs for MCCS calls

Software Release:
UCS09

Optionality:

This functionality provided by this feature is included in UCS base software. However, MCCS requires SOC CRDS0001, Card Services.

References:

For more information on the MCCS Reorigination and Reset Dialing feature, refer to the *UCS DMS-250 MCCS Application Guide*.

AX1365: Adjustable Tail Delay for NT6X50EC – UCS

This feature allows provisioning of NT6X50EC echo cancellers with an adjustable tail delay on a per T1 basis or on a switch-wide basis.

Software Release:

UCS11

Optionality:

Included in UCS base software.

References:

For more information on provisioning echo cancellors with an adjustable tail delay, refer to the *UCS DMS-250 NT6X50EC Integrated Echo Canceller Application Guide*.

AX1372: NWB Midcall Services Framework

This feature develops a NetworkBuilder framework for call take back and transfer. This feature implements the AIN 0.2 Switch_Hook_Flash event.

Software Release:

UCS11

Optionality:

This feature is controlled by CAIN0802, Takeback & Transfer.

References:

For more information on the NetworkBuilder Mid-Call services framework, refer to the *UCS DMS-250 NetworkBuilder Application Guide*.

AX1373: NB Protocol Alignment Phase 3

This feature enhances NetworkBuilder software to more closely align with the Bellcore standards.

Synopses of UCS DMS-250 features (continued)

Software Release:
UCS11

Optionality:
Although this feature is not specifically controlled by a specific SOC, it is inherently controlled through various CAIN SOC options required to enable CAIN calls.

References:
For more information on the NetworkBuilder protocol alignment changes, refer to the *UCS DMS-250 NetworkBuilder Application Guide*.

AX1377: TR533 Toll-Free Database Interworking

This feature supports the Bellcore TR-NWT-000533 specification, which identifies how IN/1 SSP functionality is to be achieved for Bellcore compliant companies, and is the specification that is followed by the LECs with respect to toll-free service handling on their switches. This feature introduces TR533 compliance for the UCS DMS-250 switch by incorporating the required elements into the existing NetworkBuilder call processing architecture.

Software Release:
UCS09

Optionality:
This feature is controlled by CAIN0513, Toll Free Trigger.

References:
For more information on the TR533 Toll Free Database Interworking feature, refer to the *UCS DMS-250 NetworkBuilder Application Guide*.

AX1378: UCS09 Terminating LRN Recognition

This feature provides the ability for the UCS DMS-250 switch to function as a Receipient Switch serving a ported Directory Number for the Local Service Provider Portability (LSPP) phase of Local Number Portability. This feature accepts an incoming call, determines if it recognizes the Location Routing Number (LRN) as its own, then translates and routes the call based on the contents of the Local Number Portability (LNP) Generic Address parameter (GAP). The selected route will typically correspond to a direct line from the UCS DMS-250 switch to a Private Branch Exchange (PBX).

Software Release:
UCS09

Optionality:

This feature is controlled by SOC CAIN0700, Local Number Portability (LNP).

References:

For more information on the LNP Terminating LRN Recognition feature, refer to the *UCS DMS-250 Local Number Portability Application Guide*.

AX1397: UCS Super Generic Digits – Phase 1

This feature allows a UCS DMS-250 switch to receive and send an IAM with a Super Generic Digits (SuperGD) parameter.

Software Release:

UCS11

Optionality:

The functionality provided by this feature is controlled by NSER0004, Super GD Control.

References:

For more information on the support for the Super Generic Digits parameter, refer to the *UCS DMS-250 Data Schema Reference Manual* and the *UCS DMS-250 Office Parameters Reference Manual*.

AX1405: Reorigination and Reset Dialing

This feature adds control to cal reorigination and reset dialing to prevent fraud.

Software Release:

UCS11

Optionality:

Included in UCS base software.

References:

For more information on the Reorigination and Reset dialing control for fraud prevention, refer to the *UCS DMS-250 Reorigination Application Guide*.

Synopses of UCS DMS-250 features (continued)

60006447: Edge Base SOC

This activity implements a new SOC option, EDGE0001 Edge Base SOC, designed to provide optionality control for the following aspects of Features AX1247 UCS09 Edge Switch Enhancements and AX1377 UCS09 TR-533 Toll-Free Database Interworking:

- PANI generation using the PANIVAL ANINPA value for DAL TRKGRP entries
- Population of ISUP Charge Number and Originating Line Information parameter for termination of operator calls
- Population of Originating Station ID for outgoing TR-533 query messages
- Population of ISUP Charge Number parameter for termination of TR-533 Toll-Free database calls
- Population of ISUP Originating Line Information parameter for termination of TR-533 Toll-Free database calls which do not route based on a returned CIC value of 0110

Software Release:

UCS11

Optionality:

The SOC that controls this feature is Edge Base SOC. The SOC ordering code is EDGE0001.

References:

For more information on Edge Base SOC refer to the *UCS DMS-250 Software Optionality Control User's Manual*.

60006449: OPCHOICE expansion phase II

This feature provides the capability to expand table OPCHOICE to support up to 1023 entries and modifies the range of the OPCHOICE index field (OPCHIDX) of the OPCHOICE option in tables TRKGRP, ANISCUSP, UNIPROF, AUTHCODx, CICROUTE, and MSGCTR. It adds the new EXOPCH CDR field used to capture the expanded range of OPCHOICE indexes. It also modifies the OPCHOICE Generic Digits Parameter to support an OPCHOICE index larger than 8 bits.

Software Release:

UCS11

Optionality:

Included in UCS base software.

References:

For more information on OPCHOICE expansion refer to the *UCS DMS-250 Data Schema Reference Manual*.

60082684: Automatic Congestion Control

The Automatic Congestion Control (ACC) feature helps to maximize call completions by dynamically regulating traffic in the network to levels that can be handled most efficiently.

Software Release:

UCS11

Optionality:

The functionality provided by this feature is contained within ISP70003, Automatic Congestion Controls. ISP70003 is a tracking SOC used for software tracking purposes only. This SOC does not control the activation or deactivation of the functionality. The activation/deactivation of the functionality described in this document is controlled by the office parameter, trunk group, and Network Management provisioning.

References:

For more information on Automatic Congestion Control (ACC), refer to the *UCS DMS-250 Data Schema Reference Manual*, *UCS DMS-250 Office Parameters Reference Manual*, and *Network Management System Reference Manual*.

PSD07012: FGB OFFCCODE trigger

This feature allows the CAIN option in table TRKGRP to be provisioned on FGB trunk groups allowing an OFFCCODE trigger.

Software Release:

UCS11

Optionality:

The SOC that controls this feature is NetworkBuilder LNP Interactions. The SOC ordering code is CAIN0700.

References:

For more information on OFFCCODE trigger and FGB interactions refer to the *UCS DMS-250 Local Number Portability Application Guide*.

Synopses of UCS DMS-250 features (continued)

PSD07030: IN/1 Query support for the Analyze_Route message

This activity adds the capability for NetworkBuilder to send an IN/1 SACREMOT query upon receipt of an AIN0.2 Analyze_Route message from the SCP. This functionality is required for supporting the migration of the IN/1 ServiceBuilder 3.1 platform to AIN ServiceBuilder 4.0.

Software Release:

UCS11

Optionality:

Included in NetworkBuilder call processing SOC option CAIN0100.

References:

For more information on NetworkBuilder support for IN/1 SACREMOT queries refer to the *UCS DMS-250 NetworkBuilder Application Guide*.

PSD07031: Expansion of ANM Intranetwork parameter

This activity enhances the size of the optional Intranetwork Specific ANM parameter from 6 bytes to 8 bytes and provides limited support for the expanded Switch ID field. This will allow successful interwork with a DEX connected to a DMS-250 or DMS-250/300 through Intra IMTs using the UCP protocol.

Software Release:

UCS11

Optionality:

Included in UCS base software.

References:

For more information on expansion of ANM Intranetwork parameter, refer to the Design Document (DDOC) PSD07031 in the *UCS11 Software Release Document*.

60006696: UCS CDR management for UCS12

This feature consolidates the CDR changes required for UCS12 development. It provides the actual changes to the CDR, which include the following:

- A new pre-defined UCS12 CDR template is defined by this feature, which removes the 8-bit OPCHOICE field and adds the 10-bit EXPOPCH field.
- A new pre-defined CDR2AMA CDR template is defined by this feature.

- Support is re-added for the previously existing pre-defined UCS07 and UCS07FLEX CDR templates.
- The pre-defined UCS08 CDR template is removed by this feature.
- The existing OM register, CDRFREE, is pegged when a dead process occurs.

Software Release:
UCS12

Optionality:
The CDR fields added by this feature require SOC UBFR0001 and Flexible CDR.

References:
For more information on CDR to SDM interaction, refer to the *UCS DMS-250 Billing Records Application Guide*.

60006720: Enhanced Reorigination with STR card NT6X62EA

This feature modifies the UCS12 release to implement a reorigination time in the range of 40 milliseconds to 300 milliseconds with the new STR NT6X62EA card.

Software Release:
UCS12

Optionality:
The functionality provided by this feature is controlled by the UCS12 software release and the STR NT6X62EA card.

References:
For more information on reorigination, refer to the *UCS DMS-250 Reorigination Manual*.

60007173: EOPS End-of-life on *UCS DMS-250*

This feature documents the functionality resulting from the discontinued support of operator services through EOPS (Enhanced Operator Position System) in the *UCS DMS-250* switch.

Software Release:
UCS12

Synopses of UCS DMS-250 features (continued)

Optionality:

The functionality provided by this feature is included in UCS base software.

References:

For more information on how the discontinuation of EOPS impacts logs, office parameters, billing, and data schema, refer to the following manuals: *UCS DMS-250 Logs Reference Manual*, *UCS DMS-250 Office Parameters Reference Manual*, *UCS DMS-250 Billing Records Application Guide*, and *UCS DMS-250 Data Schema Reference Manual*.

60007298: Short Digit Duration Reorigination on the SPM

This feature provides short duration recognition of the reorigination digit using the Spectrum Peripheral Module (SPM). Tones with a duration as low as 40 milliseconds can be detected by the SPM.

Software Release:

UCS12

Optionality:

The functionality provided by this feature is included in UCS base software. However, this feature only becomes active when the switch is equipped with an SPM.

References:

For more information on Short Digit Duration Reorigination on the SPM, refer to the *UCS DMS-250 Reorigination Manual*.

60089224: TR533 CIC Routing

This feature provides the UCS DMS-250 switch the ability to route calls based on a Carrier Identification Code (CIC) and a Local Access and Transport Area (LATA). A new table, TR533CIC, is used to allow for translations and routing based on a CIC and LATA pair.

Software Release:

UCS12

Optionality:

This feature is activated only when the SOC option code, UTRS0001 is set to on.

References:

For more information on table TR533CIC, refer to the *UCS DMS-250 NetworkBuilder Application Guide*, and the *UCS DMS-250 CIC Routing Application Guide.*

S60091564: Calling Card Global Title Translation Enhancements

This feature adds the new office parameter TCN_ENHANCED_GT_CDPA to table OFCVAR. The purpose of this office parameter is to indicate which digits are placed in the Service Connection Control Part (SCCP) Global Title Address Information field. Global Title Translations (GTT) provides the capability for the UCS DMS-250 switch to route database queries. The routing of these queries is based upon dialed digits to specific Service Transfer Points (STPs) or Service Control Points (SCPs).

Software Release:

UCS12

Optionality:

This feature only affects TCN global title translations.

References:

For more information on Global Title Translations, refer to the *Bell Communications Research Specification for Signalling System Number 7*, Bellcore Specification GR-246-CORE, Issue 1

S60093650: CAIN: Increase maximum NUM_CAIN_ECCBS

This feature increases the maximum number of CAIN extended call condensed blocks (ECCBS) that can be allocated. The number of CAIN ECCBs allocated is provisioned in table CAINPARM in parameter NUM_CAIN_ECCBS. The value of the parameter is increased from 32767 to 65535.

Software Release:

UCS12

Optionality:

The functionality provided by this feature is included in the UCS base software.

References:

For more information on NUM_CAIN_ECCBS, refer to the *UCS DMS-250 NetworkBuilder Application Guide.*

Synopses of UCS DMS-250 features (continued)

10258838: New TRK201 Log Generated Upon Receipt of a Corrupt Abandon Message from the PM

This activity creates a new Trunk (TRK) log. The new log number is TRK201. This log is generated when an Abandon message is received from the Peripheral Module (PM) on an SS7 FGD originating agent with a corrupt length indicator.

Software Release:
UCS12

Optionality:
The functionality provided by this feature is included in the UCS base software.

References:
For more information on logs, refer to the *UCS DMS-250 Logs Reference Manual*.

NR90253: Suspend Resume Message Handling Passed to DMS-300

This feature allows a UCS DMS-250 switch to send Suspend and Resume messages to the DMS-300 switch, using originating SS7 IMT trunks. A new office parameter, DMS300_ORIG_BOUNCE_SUS_RES, is added by this activity to table OFCVAR.

Software Release:
UCS12

Optionality:
The functionality provided by this feature is included in the UCS base software.

References:
For more information on the support for the DMS300_ORIG_BOUNCE_SUS_RES parameter, refer to the UCS feature AD8153.

PSD07023: UCS DMS-250 DNIS Trunk Option

This feature allows the ability to buffer an NXX number on origination. NXX calls can forward the original dialed number through the network to the terminator without the use of an SCP or table RTEATTR.

Software Release:
UCS12

Optionality:

This feature is controlled by patch ROC19, new trunk group option, INCDNIS, and SOC NXXR0003, Dialed Number Inward Service (DNIS) Trunk Option.

References:

For more information on the DNIS Trunk Option, refer to the *UCS DMS-250 Data Schema Reference Manual,*. and the *UCS DMS-250 Local Number Portability Feature Application Guide.*

PSD08007: LNP Intra-IMT RX Selector

This feature allows the UCS DMS-250 switch the ability to query for Local Number Portability (LNP) calls that originate over Intra-IMT agencies. The customer can continue to use the RX selector in their routing schemes without adverse effects to Local Number Portability.

Software Release:

UCS12

Optionality:

This patch is password-activated. All functions defined in this PSD are active when the patch is active, and disabled when the patch is not active.

References:

For more information on the LNP Intra-IMT RX Selector option, refer to the *UCS DMS-250 NetworkBuilder Application Guide,* and the *UCS DMS-250 Local Number Portability Feature Application Guide*

List of terms

ACCT
account code

ACG
automatic code gapping

ACM
Address Complete Message

ADDR
address

AFT
automatic file transfer

AIN
Advanced Intelligent Network

ANI
automatic number identification

ANM
Answer Message

ANSI
American National Standards Institute

API
applications program interface

ATMS
automatic transmission measurement system

AUTH
authorization code

authcode
authorization code

BCM
Basic Call Model

BHR
block header records

CAIN
Carrier Advanced Intelligent Network

CC
true country code

CCR
clock change records

CCS7
Common Channel Signaling # 7

CDR
call detail record

CGN
1) charge number

2) calling party number

CI
command interpreter

CIC
carrier identification code

CLID
calling line ID

CIP
Carrier Identification Code parameter

CLLI
common language location identifier

CM
computing module

CMIC

computing module interface card

CMF

CAIN messaging framework

COS

class of service

COSUS

class of service universal screening

CPI

1) calling party information

2) calling party identification

3) calling party's identity

CPN

Calling Party Number

CSI

1) carrier selection indicator

2) calling station identification

3) calling station identifier

CSP

Communications Services Platform

DAL

1) dedicated access line

2) direct access line

DAT

1) digital audio tape

2) direct access trunk

DCR

Dynamically Controlled Routing

DDD

direct distance dialing

DIRP

device independent recording package

DN

1) dialed number

2) directory number

3) destination number

DNIS

1) Dialed Number Inward Service

2) Dialed Number Identification Services

DTMF

dual-tone multifrequency

DTS

Direct Termination Services

DWS

Dialable Wideband Services

EADAS

Engineering and Administrative Data Acquisition System

EAEO

equal access end office

EANT

equal access network trunk

EDP

event detection point

EOPS

Enhanced Operator Position System

ESL

enhanced services link

ESP

enhanced service provider

ESR

emergency start record

ETN
electronic tandem network

FAR
Facility Request message

FCDRSRCH
Flexible Call Detail Record Search feature

FDM
feature data manager

FGA
feature group A

FGB
feature group B

FGC
feature group C

FGD
feature group D

FP
file processor

FSA
formatter/storage agent

FST
flexible signaling trunk

FTAM
file transfer access and management

FTM
file transfer management

GER
graceful end records

GSC
global service code

GSN
global service number

GSR

graceful start records

GVNS

global virtual network service

IAM

Initial Address Message

IDDD

international direct distance dialing

IE

information element

IMT

inter-machine trunk

IN

1) intelligent network

2) international

IN/1

Intelligent Network (initial implementation)

INWATS

inward wide area telecommunications service

IOC

input/output controller

IP

1) intelligent peripheral

2) interface paddleboard

3) Internet Protocol

4) international partitioned

ISDN

Integrated Services Digital Network

ISUP

ISDN User Part

ITU
International Telecommunication Union

IXC
interexchange carriers

KP
key pulse

LATA
local access and transport area

LCAB
Local Call Area Barred

LEC
local exchange carrier

LNP
local number portability

LOPER
low overhead protocol encoding rule

LPP
link pheripheral processor

LRN
location routing number

MAP
Maintenance And Administration Position

MBG
1) Multi–switch Business Group

2) Multi–location Business Group

MCCS
Mechanized Calling Card Services

MF
multi-frequency

MRU
Media Resource Unit

MVP
Mechanized Voice Prompts

NAV
Network Applications Vehicle

NN
national number

NOA
nature of address

NPA
numbering plan area

OAM&P
operation administration, maintenance & provisioning

OLI
originating line information

OM
operation measurement

ONAL
off-network access line

ONAT
off-network access trunk

ONP
one night process

OPART
Originating Partition

OSR
operator service record

OSS
1) operations support system

2) operator services systems

PBX
private branch exchange

PCL
Product Computing Module Load

PCS
personal communications services

PIC
point in call

PIN
personal identification number

POP
point of presence

POTS
plain old telephone service

PRI
primary rate interface

PSA
Programmable Service Architecture

PSN
Programmable Service Node

PSTN
public switch telephone network

PTS
per trunk signaling

R2
regional no. 2

RLT
release link trunk

RTIF
reset/remote terminal interface

RTS
return to service

RU
recording unit

SCE
service creation environment

SCM
stream connection manager

SCP
service control point

SCU
service control unit

SMS
service management system

SNPA
serving numbering plan area

SOC
Software Optionally Control

SRR
system restart record

SSP
service switching point

SS7
Signaling System 7

ST
1) start translation (last digit in MF digit stream)

2) start digits

STP
signaling transfer point

STR
1) send_to_resource

2) special tone receiver

STS
serving translation scheme

TCAP
Transaction Capabilities Application Part

TCM
1) terminating call model

2) traveling class mark

TCN
travel card number

TDP
trigger detection point

TIE
terminal interface equipment

TOPS
Traffic Operator Position System

TR
technical reference

UA
universal access

UAC
universal access code

UAX
universal access selector

UCP
Universal Carrier Protocol

UCS
Universal Carrier Service

UIF
Universal International Freephone service

UIFN
universal international freephone number

UUI
user-to-user information

UUS

user-to-user service

VIP

Virtual Intelligent Peripheral

X.25

data transmission protocol defined by CCITT

XA-Core

eXtended Architecture Core

XPM

Extended Peripheral Module

Ordering information

Use the following table for ordering Nortel Networks NTPs (Northern Telecom Publications) and Product Computing-Module Loads (PCLs):

Type of product	Source	Phone	Cost
Technical documents (paper or CD-ROM)	Nortel Networks Product Documentation	1-877-662-5669 From the menu choose options 1; 3; 1	Yes
Individual NTPs (paper)	Merchandising Order Service	1-800-347-4850	Yes
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When ordering publications on CD

Please have the CD number and software version available, for example, **HLM-2621-ENCDRPDF 06.02**.

When ordering individual paper documents

Please have the document number and name available, for example, **297-2621-001, UCS DMS-250 Master Index of Publications**.

When ordering software

Please have the eight-digit ordering code, for example, **UCS00012**, as well as the ordering codes for the features you wish to purchase. Contact your Nortel Networks representative for assistance.

Digital Switching Systems

UCS DMS-250

General Description

Product Documentation–Dept 3423
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1–877–662–5669

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