297-2621-395

Digital Switching Systems

UCS DMS-250

Billing Records Application Guide

SN06 (DMS) Standard 09.03 September 2003

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UCS DMS-250

Billing Records Application Guide

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Publication history

September 2003

SN06 (DMS) Standard release 09.03. Corrected entries in the Appendix A, CRD field descriptions per CR Q00600940 and CR Q00627663.

July 2002

Deleted the following sentence “CDR fields PIC, TDP, TRIGGER, and RTELIST are added.” in Chapter 4, “Internal billing formatters.”

February 2002

Standard release 09.01 for UCS17 (CSP17) software release.

May 2001

Standard release 08.02 for UCS15 (CSP15) software release.

The following fields are added as CDR billing fields: OACESID, Table 902, Size 4, MC 908, Originating Access ID; reserved fields for future use: DIGIDJIP, DIGIDNPA, DIGIDTRN.

May 2001

Standard release 08.01 for UCS15 (CSP15) software release.

February 2001

Standard release 07.03 for UCS14 (CSP14) software release.

If the dump side load’s FCDR_CDR_TMPLT parameter in table OFCENG is set to UCS07 or UCS07FLEX, then UCS11 is used by the FCDR_CDR_TMPLT parameter by default. UCS11 is also used by default for the FCDR_CDR_TMPLT parameter if a user–defined template is provisioned that is based on UCS07 or UCS07FLEX including any or all of the PIC, TDP, and TRIGGER fields.

November 2000

Standard release 07.02 for UCS14 (CSP14) software release.

Added call types codes 47, 74, 110, and 117 as values for the AMACALLC CDR field in Table 9-1 of Appendix A, “CDR field descriptions.” Also added these call type codes to Table 14-4, “Supported BAF codes,” and to the Call Type codes list that proceeds the table in Appendix F, “CDR to SDM interaction.”

September 2000

Preliminary release 07.01 for UCS14 (CSP14) software release.

Added information to Chapter 1, “Billing overview,” for the UCS14 software release.

Added UCS14 data to the “Units of memory” section in Chapter 2, “Billing record storage.”

Added CDR2AMA2 and CDR2AMA3 data to Chapter 4, “Internal billing formatters,” Chapter 5, “Flexible billing formatters,” and Chapter 6, “Creating your own CDR templates.”

Added field descriptions to Appendix A “CDR field descriptions,” for the following CDR fields: AMABAFMD, AMACALLT, AMASIZE, COMPCODE2, HEXID, MODMAP, OPERINV, ROUTIND, SVCFTR, and TRMOSEAS. Also, added another table entry for the CALLEVTS field that only applies to the call processing of the ISUP EXM message by the UCS DMS-250 switch.

Added more values for the the AMACALLC and the AMASC fields. Changed the field description for the SLPID field. The field SVCFTR field contains information that use to be populated in the SLPID field.

Added CDR2AMA2 and CDR2AMA3 templates to Appendix B, “CDR templates.”

Added CDR to BAF conversion information to Appendix F, “CDR to SDM interaction.”

May 2000

Standard release 06.02 for software release UCS13 (CSP13).

A60006696 stated that OPCHOICE is removed from the UCS12 CDR template. The field decription however, is still required and supported. The OPCHOICE field was put back into the decription of fields.

March 2000

Preliminary release 06.01 for software release UCS13 (CSP13).

A60007776 modifies

— A new pre-defined UCS13 template is added. PIC, TDP, TRIGGER, RTELIST and DCR fields are removed and replaced with SPARE1, SPARE2, SPARE3, SPARE4 and SPARE5 respectively. DCR field is also removed from UCS09, UCS11, UCS12 and UCS13 pre-defined templates and replaced with FILL1. The existing UCS07 and UCS07FLEX templates are removed.

November 1999

Standard release 05.02 for software release UCS12 (CSP12).

Removed Enhanced Operator Position System (EOPS) functionality from Chapter three, Operator services records.

ATTENTION

The UCS12 software release does not support Enhanced Operator Position System (EOPS) functionality. The UCS software continues to support operator-assisted calls through other platforms such as Enhanced Services Provider (ESP). Refer to Appendix A in the *UCS DMS-250 Feature Change Reference Guide* for additional information about EOPS removal.

August 1999

Preliminary release 05.01 for software release UCS12 (CSP12). This document replaces the *UCS DMS-250 Billing Records Application Guide*, 297-2631-395.

May 1999

Standard release 02.02 for software release UCS11 (CSP11).

March 1999

Preliminary release 02.01 for software release UCS11 (CSP11).

November 1998

Standard release 01.02 for software release UCS09 (CSP09 and CSP10). This document replaces the *UCS DMS-250 Billing Records Application Guide*, 297-2621-395, and the *UCS DMS-250 Billing Records Application Guide*, 297-2643-395.

October 1998

Preliminary release 04.01 for software release UCS09 (CSP09 and CSP10).

Contents

About this document

This document describes the UCS DMS-250 billing records. Information is provided for understanding, planning, datafilling, and testing the billing system.

Intended audience

This publication assists telecommunications engineers, technicians, switching system developers, operating company personnel, and anyone else who requires technical information on UCS DMS-250 billing.

This document assumes the user's switch is installed, commissioned, and active.

Personnel using this document require the following:

- Table Editor training
- Nortel Networks approved datafill, translations, and maintenance training

How this document is organized

The chapters in this document provide the following:

Chapter 1, Billing overview

Chapter 1 provides an overview of the Flexible billing system.

Chapter 2, Billing record storage

Chapter 2 provides information on event header records and billing record storage.

Chapter 3, Operator services records

Chapter 3 describes the data stored within operator services records.

Chapter 4, Internal billing formatters

Chapter 4 provides required information for provisioning the internal billing formatters for CDR templates.

Chapter 5, Flexible billing formatters
Chapter 5 provides required information for provisioning the flexible billing formatters for CDR templates.

Chapter 6, Creating your own CDR templates
Chapter 6 instructs you on creating your own CDR templates.

Chapter 7, Call detail record logging facility
Chapter 7 describes the CDR logging facility.

Chapter 8, Flexible CDR searching
Chapter 8 describes CDR searching utility.

Appendix A, CDR field descriptions
Appendix A describes each field of the CDR.

Appendix B, CDR templates
Appendix B contains the available CDR templates.

Appendix C, Working template
Appendix C provides a working template for designing CDR templates.

Appendix D, OSR field descriptions
Appendix D describes each field of the OSR.

Appendix E, Related data schema, logs, OMs, and commands
Appendix E lists the related data schema, logs, OMs, and commands.

Appendix F, CDR to SDM interaction
Appendix F describes required CDR fields needed by the Supernode Data Manager (SDM) for proper CDR to Bellcore Automatic Message Accounting Format (BAF) conversion.

Appendix G, Software optionality control
Appendix G provides information on software optionality control for billing.

Appendix H, DMS–250/500 CDR Bulletin
Appendix H provides information about CDR test cases and supporting documentation.

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 rereleased in the *same* software release cycle. For example, the second release of a document in the same software release cycle is 01.02.

To determine which version of this document applies to the software in your office and which is the latest issue, check the release information in *UCS DMS-250 Master Index of Publications*, 297-2621-001.

References in this document

The following documents are referred to in this document:

- *Bellcore Automatic Message Accounting Format (BAF) Requirements*, Bellcore Specification GR-1100-CORE, Issue 2
- *UCS DMS-250 Billing Server Application Guide*, 297-2621-320
- *UCS DMS-250 Commands Reference Manual*, 297-2621-819
- *UCS DMS-250 Data Schema Reference Manual*, 297-2621-851
- *UCS DMS-250 Feature Change Reference Guide*, 297-2621-050
- *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 Logs Reference Manual*, 297-2621-840
- *UCS DMS-250 Operational Measurements Reference Manual*, 297-2621-814
- *UCS DMS-250 Office Parameters Reference Manual*, 297-2621-855
- *UCS DMS-250 NetworkBuilder Application Guide*, 297-2621-370
- *UCS DMS-250 Local Number Portability Feature Application Guide*, 297-2621-371
- *UCS DMS-250 CAIN/Flexdial Interaction Guide*, 297-2621-372
- *UCS DMS-250 Software Optionality Control User's Manual*, 297-2621-301
- *DMS-100 Family Software Optionality Control User's Manual*, 297-8991-901
- *Device Independent Recording Package Administration Manual*, 297-1001-345

- *Device Independent Recording Package Planning and Engineering Guide,* 297-1001-175
- *Device Independent Recording Package Product Guide,* 297-1001-013
- *Device Independent Recording Package Translations Guide,* 297-1001-356
- *Disk Maintenance Subsystem Reference Manual,* 297-1001-526
- *SDMC SuperNode Billing Application User Guide* 297-2667-328

Information about related documents can be found in either the *UCS DMS-250 Master Index of Publications*, 297-2621-001, or the *Product Documentation Directory,* 297-8991-001.

What precautionary messages mean

The types of precautionary messages used in Nortel Networks' 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.

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.

Document conventions

This document conforms to the following conventions.

Input prompt (>)

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

>CTMPLT

Commands and fixed parameters

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

>TEMPLATE

Variables

Variables are shown in lowercase letters:

>TEMPLATE all

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:

```
The list of indices and defined template's is as follows:
0 : CDR2AMA
1 : Reserved01
2 : Reserved02
3 : Reserved03
4 : Reserved04
5 : Reserved05
6 : UCS09
7 : UCS11
8 : UCS12
9 : UCS13
```

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

1 Show the defined templates by typing the following:

>TEMPLATE string
and pressing the Enter key.

where

string is the template to identify or all.

Sample entry: **>TEMPLATE all**

Example of a MAP response:

```
The list of indices and defined template's is as follows:
0 : CDR2AMA
1 : Reserved01
2 : Reserved02
3 : Reserved03
4 : Reserved04
5 : Reserved05
6 : UCS09
7 : UCS11
8 : UCS12
9 : UCS13
```

Billing overview

The UCS14 software release adds billing enhancements to the UCS DMS-250 switch. These enhancements allow billing software for the switch to populate Call Detail Record (CDR) fields that the SuperNode Data Manager (SDM) needs for the CDR to Bellcore Automatic Message Accounting Format (BAF) conversion.

The billing enhancements feature for the UCS14 software release adds the following fields to the CDR:

- AMABAFMD
- AMACALLT
- AMASIZE
- COMPCODE2
- HEXID
- MODMAP
- OPERINV
- ROUTIND
- SVCFTR
- TRMOSEAS

The billing enhancements also add the ORIGPLAN, TERMPLAN, and EXOSEAS CDR fields, but these fields are reserved for future use.

The UCS14 software release also adds support to the CAIN framework for receiving a TCAP response message or conversational message from an Service Control Point (SCP) that contains a Furnish_AMA_Information operation. This support includes three CDR fields, AMABAFMD, AMASIZE, and HEXID.

Note: Although the AMABAFMD can hold up to 128 bytes of BAF table information, the CDR273 log for the UCS DMS-250 switch only displays up to 16 bytes of information. However, the UCS DMS-250 switch passes all information in the AMABAFMD field to the SDM.

The CDR to BAF enhancements add the CDR2AMA2 and CDR2AMA3 templates.

The UCS14 software release maintains the Flex CDR billing system introduced in the UCS06 software release. This Flex CDR billing system was expanded in UCS07 for the UCS DMS-250 switch and can do the following:

- change the billing system settings to meet your specific billing needs
- utilize one of the call detail record (CDR) templates provided to format the billing data in the CDRs
- create up to 54 CDR templates containing only the billing data you need

  Note: By purchasing the UBFR0001 SOC option, you can create your own billing templates.

- generate smaller CDRs containing the call processing data required for a certain type of call
- define certain call processing criteria to populate a specific template

  Note: By purchasing the UBFR0001 SOC option, you can select a CDR template through call processing provisioning.

- identify a default template for use when call processing does not specify a template
- change the size of event records, operator services records (OSRs), and CDRs in order to store more data in billing files
- migrate from the UCS09, UCS11, UCS12, or UCS13 billing formats when needed

CAUTION
Changes may affect site functionality
Changes to the billing system require updates to engineering parameters that may affect site functionality. Any changes to the billing system may affect downstream processing of billing records. Nortel Networks recommends that only experienced personnel make changes to the billing system.

The billing system

The DMS-Core, Billing Server, and SuperNode Data Manager (SDM) use the Flex CDR billing system.

Note: UCS14 billing software is backward compatible with the UCS13, UCS12, and UCS11 software loads.

You can provision the Flex CDR billing system to best fit your billing needs; choose from the Internal CDR formatters or flexible (user-customized) CDR formatters.

Internal CDR template formatters

Customers who use the CDR templates provided in each software load, and set the office parameters appropriately, cause the billing platform to use internal CDR formatters. The internal formatters are optimized for greatest speed.

Using an internal formatter is therefore, a speed optimized subset of the overall Flex CDR billing platform.

For details on office parameter settings, see Chapter 4.

Internal CDR template formatters offer the following:

- Billing data, collected by the switch, is formatted using speed-optimized formatter routines. These routines format the billing data into a pre-defined, hard-coded CDR format.
- You can identify one CDR template that best fits your traffic. UCS14 software provides the internal formatter for the following CDR templates:
  - The CDR2AMA2 template consists of all fields required to convert a CDR to a BAF record. The CDR2AMA2 template contains 41 words of data.

— The CDR2AMA3 template consists of all fields required to convert a CDR to a BAF record. The CDR2AMA3 template contains up to 106 words of data.

— The CDR2AMA template consists of all fields required to convert a CDR to a specific BAF record. The CDR2AMA template contains 37 fields of data and 2 words of header information packed into 39 words.

— The UCS09 template consists of the UCS08 CDR fields, plus new fields populated by the UCS09 software.

— The UCS11 template consists of UCS09 CDR fields, plus new fields populated by the UCS11 software.

— The UCS12 template consists of UCS11 CDR fields, plus new fields populated by the UCS12 software.

— The UCS13 template consists of UCS12 CDR fields, plus new fields populated by the UCS13 software.

Note: The CDR2AMA2, CDR2AMA3, CDR2AMA, UCS09, UCS11, UCS12, and UCS13 templates do not include any billing fields required for the FlexDial feature. For more information on FlexDial, refer to the *UCS DMS-250 FlexDial Framework Application Guide*.

The following benefits are gained from using internal formatters:

- optimized for speed
- conforms to current customer configurations
- requires no additional provisioning
- requires no changes at the downstream processor
- upgrades template (from UCS09, UCS11 or UCS12 to UCS13) when required

Flexible CDR template formatters

The Flex CDR billing system provides CDR formatters which can format billing records based solely on customer provisioning.

The flexibility of the Flex CDR billing system offers the following:

- The billing data collected by the switch is formatted by user-customized settings to populate the billing records.
- The following pre-defined templates have been created for your use:

— The CDR2AMA2 template consists of all fields required to convert a CDR to a BAF record. The CDR2AMA2 template contains 41 words of data.

— The CDR2AMA3 template consists of all fields required to convert a CDR to a BAF record. The CDR2AMA3 template contains up to 106 words of data.

— The CDR2AMA template consists of all fields required to convert a CDR field to a specific BAF record. The CDR2AMA template contains 37 fields of data and 2 words of header information packed into 39 words.

— The UCS09 template consists of the UCS08 CDR fields, plus fields populated by the UCS09 software.

— The UCS11 template consists of the UCS09 CDR fields, plus fields populated by the UCS11 software.

— The UCS12 template consists of the UCS11 CDR fields, plus new fields populated by the UCS12 software.

— The UCS13 template consists of the UCS12 CDR fields, plus new fields populated by the UCS13 software.

- Through datafill, you can provision certain call processing criteria that indicate a specific template to be used during CDR population.
- When call processing does not specify a template you can

  — identify a default template to use

  — allow the switch to perform a bestfit analysis on the call data and choose the most appropriate CDR template available.
- You can specify the size of event records, OSRs and CDRs.

  Note 1: Prior to UCS06, the event record was the same size as the CDR. Several words of filler padded the records. Refer to Chapter 2, “Billing record storage,” for more information.

  Note 2: Prior to UCS06, the OSR record was the same size as the CDR. Several words of filler padded the records. Refer to Chapter 3, “Operator services records,” for more information.
- By purchasing the UBFR0001 SOC option, you can create your own user-defined billing templates.

The following benefits are gained from using the flexible CDR template formatters of the Flex CDR billing system:

- user-defined CDR templates
- smaller CDRs containing only the specific billing fields required

- CDR template selection based on CDRTMPLT option provisioned in tables ANISCUSP, AUTHCODU, AUTHCODUx, RTEATTR, TRKGRP, STDPRTCT, TRKFEAT and FEXTYPE collectibles
- definable record (CDR, OSR, event) size, which allows more CDR storage in billing files
- ability to change CDR formats as required

How is the data handled within the switch?

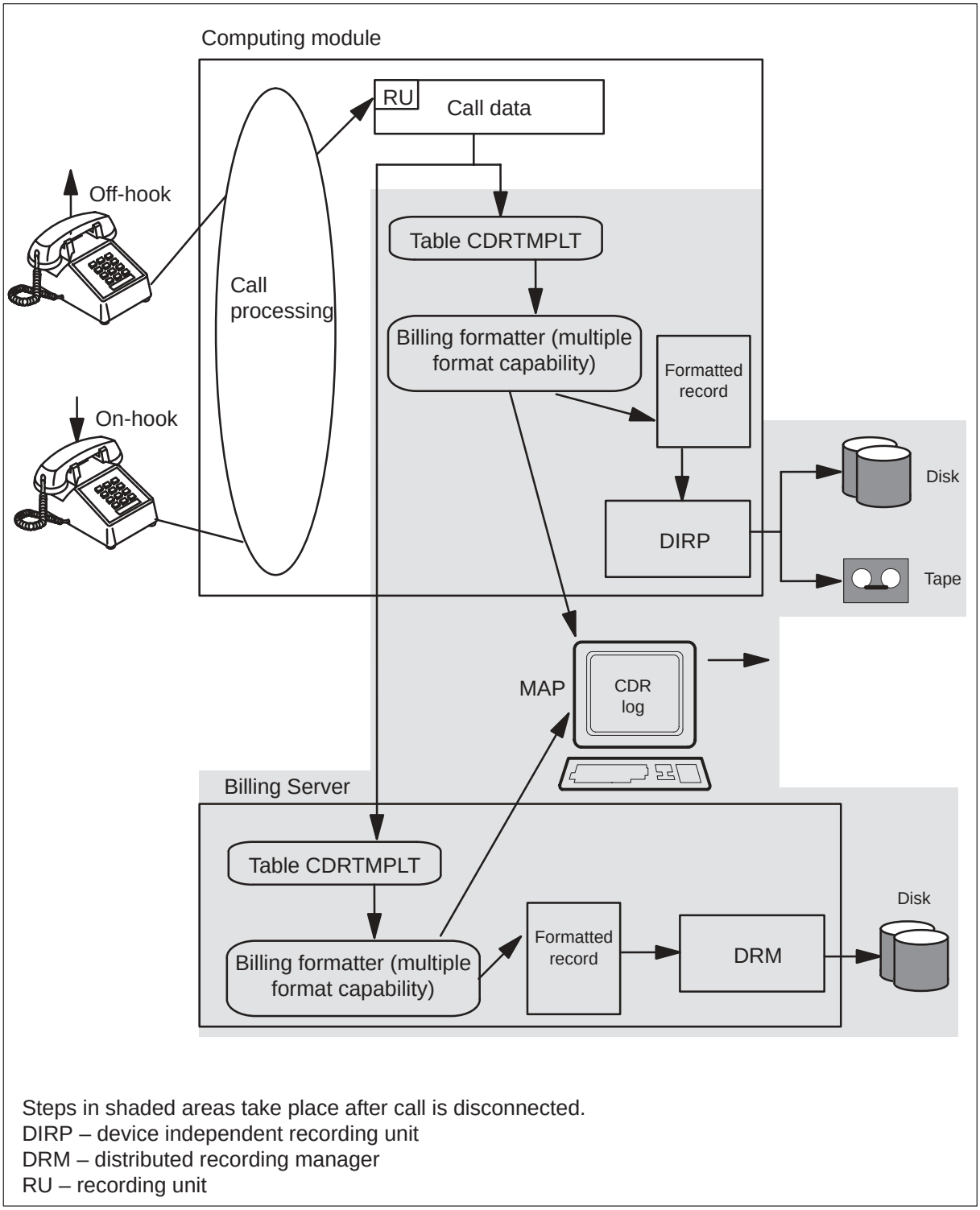
The UCS DMS-250 billing system begins capturing call data when off-hook is detected. The call data is stored in the recording unit (RU) until call termination.

Once the call is terminated, the switch delivers the raw data to the Flex CDR billing formatter. The appropriate billing record is populated and the formatted billing record is stored for future use when a downstream processor requests the stored data.

Figure 1-1 shows the billing system with Billing Server.

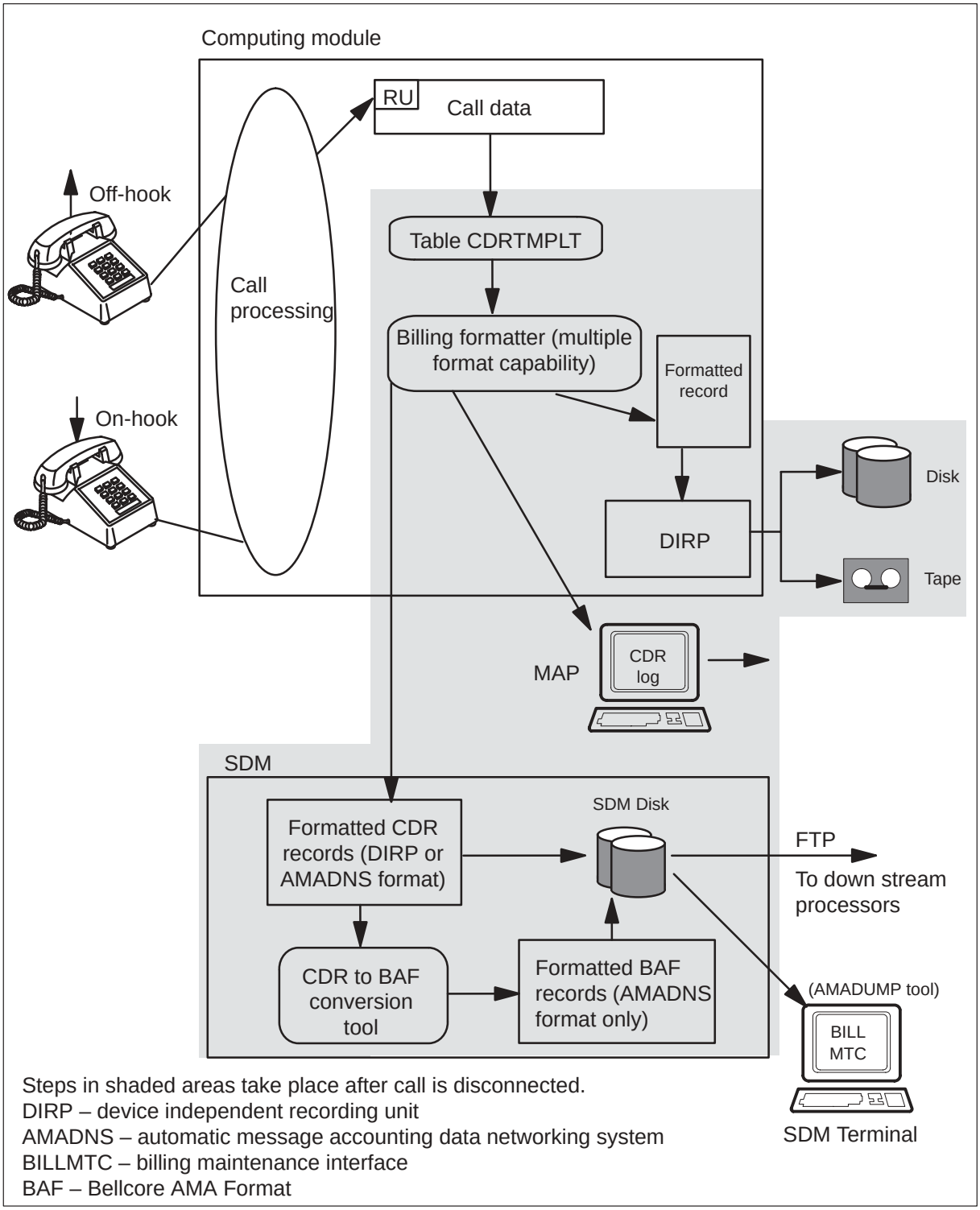
Figure 1-2 shows the billing system with SDM.

Figure 1-1
Billing system with Billing Server



Steps in shaded areas take place after call is disconnected.
DIRP – device independent recording unit
DRM – distributed recording manager
RU – recording unit

Figure 1-2
Billing system with SDM



Call data

The types of call data stored in the RU for each call varies depending on the type of call and the different features required to complete the call. The following call data is collected for most calls:

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

Primarily used for customer billing, call data is also useful for studies on service, division of revenue, engineering, and fraud.

Call data formatters

At call termination, the switch delivers the raw data to the computing module (CM)-based formatters or the formatter/storage agent (FSA) located on the Billing Server. Billing records are formatted in the same way, regardless of the location of the formatter.

CM-based formatter

Billing records formatted by the CM-based formatter are stored by the device independent recording package (DIRP). Refer to the following documentation for more information on DIRP:

- *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*

Billing Server formatter

Billing records formatted by the formatter/storage agent are stored by the distributed recording manager (DRM). Refer to the *UCS DMS-250 Billing Server Application Guide* for more information.

SDM CDR to BAF conversion

CDR Billing records, formatted by the CM, are off-loaded to the SuperNode Data Manager (SDM). The SDM can be configured to convert the formatted CDR billing records to BAF format. CDR and BAF records are placed in billing files and stored on the SDM disk. The billing files can be stored in DIRP format or the automatic message accounting data networking system

(AMADNS) format. Refer to the *SDMC SuperNode Billing Application User Guide* for more information.

Billing records

A billing record is populated for every attempted call. The switch can generate the following billing records:

- event records
- CDRs
- operator services records (OSRs)

Note 1: 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). If a caller misdials and presses the reset button, a CDR is not generated.

Note 2: OSRs are populated when the Enhanced Operator Services platform is accessed or release link trunking (RLT) is used.

Note 3: IMT originations may not generate a CDR. Refer to the *UCS DMS-250 Office Parameters Reference Manual* for information on parameters CDR_FOR_IMT and CDR_FOR_ISUP (table OFCVAR).

Note 4: When the RU extension block is unavailable and office parameter CDR_UNAVAIL_BLOCK (table OFCVAR) is set to N, call processing and no billing is generated for the call. Refer to the *UCS DMS-250 Office Parameters Reference Manual* for information.

Event records

Each billing system creates the following event records to indicate the state of the billing blocks and files:

- block header records (BHR)
- graceful start records (GSR)
- graceful end records (GER)
- emergency start records (ESR)
- system restart records (SRR)
- clock change records (CCR)

Note: Refer to Chapter 2, “Billing record storage,” for more information.

CDRs

CDRs are generated upon completion of the call (when the originator or terminator disconnects). Using the answer CDR capability, CDRs can be generated when answer occurs on the call. Also, long call CDRs generate incremental CDRs in long call duration scenarios.

Additional CDRs are generated for the following:

- Release Link Trunk (RLT) call scenarios. For more information, see Chapter 3, "Operator services records" .
- Network Security (NETSEC) interactions. For more information, refer to *UCS DMS-250 Feature Group D (FGD) Application Guide.*
- Answer CDR functionality for FlexDial calls. For more information, refer to the *UCS DMS-250 FlexDial Framework Application Guide.*

OSRs

OSRs are generated when direct access trunks originate requests for operator assistance or when SS7 RLT is used. Each OSR is associated with a corresponding CDR. An OSR contains operator-assisted long distance call data.

The OSR size is user-definable; office parameter FCDR_OSR_SIZE (table OFCENG) determines the size of the OSR. 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. Refer to Chapter 3, "Operator services records," for more information.

Record storage

Storage of billing records is handled by one of the following billing devices: the CM-based DIRP, the Billing Server, or the SuperNode Data Manager (SDM). There are three levels of storage within these billing systems. Billing records are stored in blocks; blocks are stored in files.

Note 1: See Chapter 2, "Billing record storage," for more information on record storage.

Note 2: Refer to the following documentation for more information on DIRP:

- *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*

Note 3: Refer to the *UCS DMS-250 Billing Server Application Guide* for more information on the Billing Server.

Note 4: Refer to the *SDMC SuperNode Billing Application User Guide* for more information on the SDM.

Office parameters

The following office parameter tables are used to provision the billing software:

- table OFCENG (Office Engineering)
- table OFCVAR (Office Variable)

Table OFCENG

CAUTION

Changes may affect site functionality

Changes to the billing system require updates to engineering parameters that may affect site functionality. Any changes to the billing system may affect downstream processing of billing records. Nortel Networks recommends that only experienced personnel make changes to the billing system.

Provision the following office parameters to customize billing software for the different types of records:

Event records parameters

- FCDR_BHR_SIZE – defines the size of a block header record
- FCDR_GSR_SIZE – defines the size of a graceful start record
- FCDR_GER_SIZE – defines the size of a graceful end record
- FCDR_ESR_SIZE – defines the size of an emergency start record
- FCDR_SRR_SIZE – defines the size of a system restart record
- FCDR_CCR_SIZE – defines the size of a clock change record

OSR parameters

- FCDR_OSR_SIZE – defines the size of an operator services record

CDR parameters

- FCDR_CDR_SIZE – defines the size of a CDR. You can specify either FIXED or VARIABLE:
  - — FIXED – sets the size of all CDRs, regardless of the provisioned template. The RECCD field contains F0 and the header is two words.
  - — VARIABLE – the CDR size is based on the template. The RECCD field contains FX and the header is three words.

- FCDR_CDR_TMPLT – identifies the format and template used to format a CDR when call processing does not select a template. You can set the template as INTERNAL, FIXED, or VARIABLE.
  - — INTERNAL overrides all other template selection and the specified template is always used to format data. When the internal template is set, the FCDR_CDR_SIZE and FCDR_CDR_WORD_LAYOUT parameter values must correspond to the selected template. The internal formatters have a fixed size requirement for each of the CDR2AMA2, CDR2AMA3, CDR2AMA, UCS09, UCS11, UCS12, and UCS13 templates.

    Note 1: CDR2AMA call detail record (CDR) contains 39 words of data. Therefore, a block contains up to 12 records.

    Note 2: UCS09 call detail record (CDR) contains 83 words of data. Therefore, a block contains up to 12 records.

    Note 3: UCS11, UCS12, and UCS13 call detail records (CDRs) each contain 83 words of data. Therefore, a block contains up to 12 records.
  - — FIXED sets a default template for use when call processing does not specify a template.
  - — VARIABLE uses a best fit analysis (when call processing does not specify a template) to select the best formatting to perform on the data stored for a call.
- FCDR_CDR_WORD_LAYOUT – determines the layout of a CDR (whether data is read in a normal (right-to-left) or left-to-right configuration)

  Note 1: The UCS09, UCS11, UCS12, and UCS13 internal formatters require FCDR_CDR_WORD_LAYOUT be set to READLR.

  Note 2: The CDR2AMA, CDR2AMA2, and CDR2AMA3 templates requires FCDR_CDR_WORD_LAYOUT be set to NORMAL.

  Note 3: CDR Record Header is always read in the left-to-right configuration.

Table OFCVAR

Provision the following office parameters to customize the billing software:

- FCDR_ANSCDR_CDT – identifies the call data type to use for CDRs generated by the answer CDR feature for the DIRP billing stream
- FCDR_ANSCDR_SBSCDT – identifies the call data type to use for CDRs generated by the answer CDR feature for the Billing Server billing stream
- FCDR_GEN_600_LOG – determines if the FCDR600 log is generated

- FCDR_GEN_601_LOG – determines if the FCDR601 log is generated

Refer to *UCS DMS-250 Office Paramters Reference Manual* for more information on office parameters.

Table control

Table CDRTMPLT contains the available billing templates. This software release provides templates: CDR2AMA2, CDR2AMA3, CDR2AMA, UCS09, UCS11, UCS12, and UCS13. You need the UBFR0001 SOC option to create any other templates and to utilize the full capabilities of the billing system.

Refer to *UCS DMS-250 Data Schema Reference Manual* for more information on data schema tables.

Commands

Use the following commands to implement and utilize the billing software:

- CTMPLT tool
- flexible CDR search menu (FCDRSRCH)

CTMPLT command set

The CTMPLT command set is used to upgrade user-defined changes to the billing system. Information regarding the provisioned billing system can also be accessed from the CTMPLT tool. The CTMPLT tool can be entered from any MAP level. Refer to *UCS DMS-250 Commands Reference Manual* for more information on CTMPLT commands.

Flexible CDR search menu

Use the flexible CDR search (FCDRSRCH) menu to view CDRs stored on the DMS-Core or on the Billing Server. A set of commands are provided to narrow the search by defining a time window or field values. A search can be limited to the number of blocks or records being searched.

The FCDRSRCH menu can be accessed by typing the following at the CI prompt:

```
>MAPCI;MTC;APPL;OAMAP;FCDRSRCH
```

Refer to *UCS DMS-250 Commands Reference Manual* for more information on FCDRSRCH commands.

Note: FCDRSRCH replaces the CDRSRCH and DCDRSRCH command sets. The FCDRSRCH command cannot search on the AMABAFMD field; therefore, the command does not work with any template that contains the AMABAFMD field.

Logs

The UCS DMS-250 switch generates the following CDR logs:

- CDR272 – CDR_Call_Entry
- CDR273 – CDR_Call_Entry
- CDR280 – OSR_Call_Entry
- CDR281 – OSR_Call_Entry
- FCDR300 – CDR Format Truncated
- FCDR600 – CDR Format Padded
- FCDR601 – CDR Fields Empty
- FCDR602 – Forced Internal CDR

Use the log utility (LOGUTIL) tool to view these CDR-related logs. Refer to *UCS DMS-250 Commands Reference Manual* for more information on LOGUTIL commands.

Operational measurements

The UCS DMS-250 billing system pegs the following operational measurements:

- CDR250 – monitors the status and use of resources during call detail recording operation in a DMS-250
- FCDRALGR – counts the method used to identify the CDR template (through call processing or office parameters)
- FCDRLOG – counts the number of times FCDR logs are generated
- FCDRTMP1/FCDRTMP2 – counts the number of times a template is used to format a CDR

Refer to *UCS DMS-250 Operational Measurements Reference Manual* for more information on OMs.

Software Optionality

Software optionality control (SOC), part of the DMS Evolution product delivery process, controls the definition and delivery of product computing module loads (PCL).

All of the billing systems are available with the base software. However, the ability to create CDR templates requires the UBFR0001 (Flexible CDR) SOC option.

Refer to *UCS DMS-250 Software Optionality Control User's Manual* for more information on SOC.

Billing record storage

CAUTION

Changes may affect site functionality

Changes to the billing system require updates to engineering parameters that may affect site functionality. Any changes to the billing system may affect downstream processing of billing records. Nortel Networks recommends that only experienced personnel make changes to the billing system.

After a billing record is formatted on the computing module (CM) or the Billing Server, the record is placed in a 2048 byte (2 Kbyte) block. Once the block is filled, it is placed into the billing file and a new block receives the billing records. The maximum size of the billing file is dependent on the size of the disk.

The following billing record storage systems are available to the UCS DMS-250 switch:

- device independent recording package (DIRP) located on the CM
- distributed recording manager (DRM) used by the Billing Server application and located on the file processor (FP)
- SuperNode data manager (SDM) billing peripheral

Device independent recording package

The device independent recording package (DIRP) is a utility that manages the reading and writing of data between various DMS subsystems and recording devices. Refer to the following documents for more information:

- *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*

Billing Server

Billing Server uses the SuperNode multicomputing base platform. The Billing Server relieves the UCS DMS-Core of responsibilities by formatting billing data, and providing storage capabilities and transfer protocols. The Billing Server creates real-time savings to call processing. For more information, refer to the *UCS DMS-250 Billing Server Application Guide*.

SuperNode Data Manager

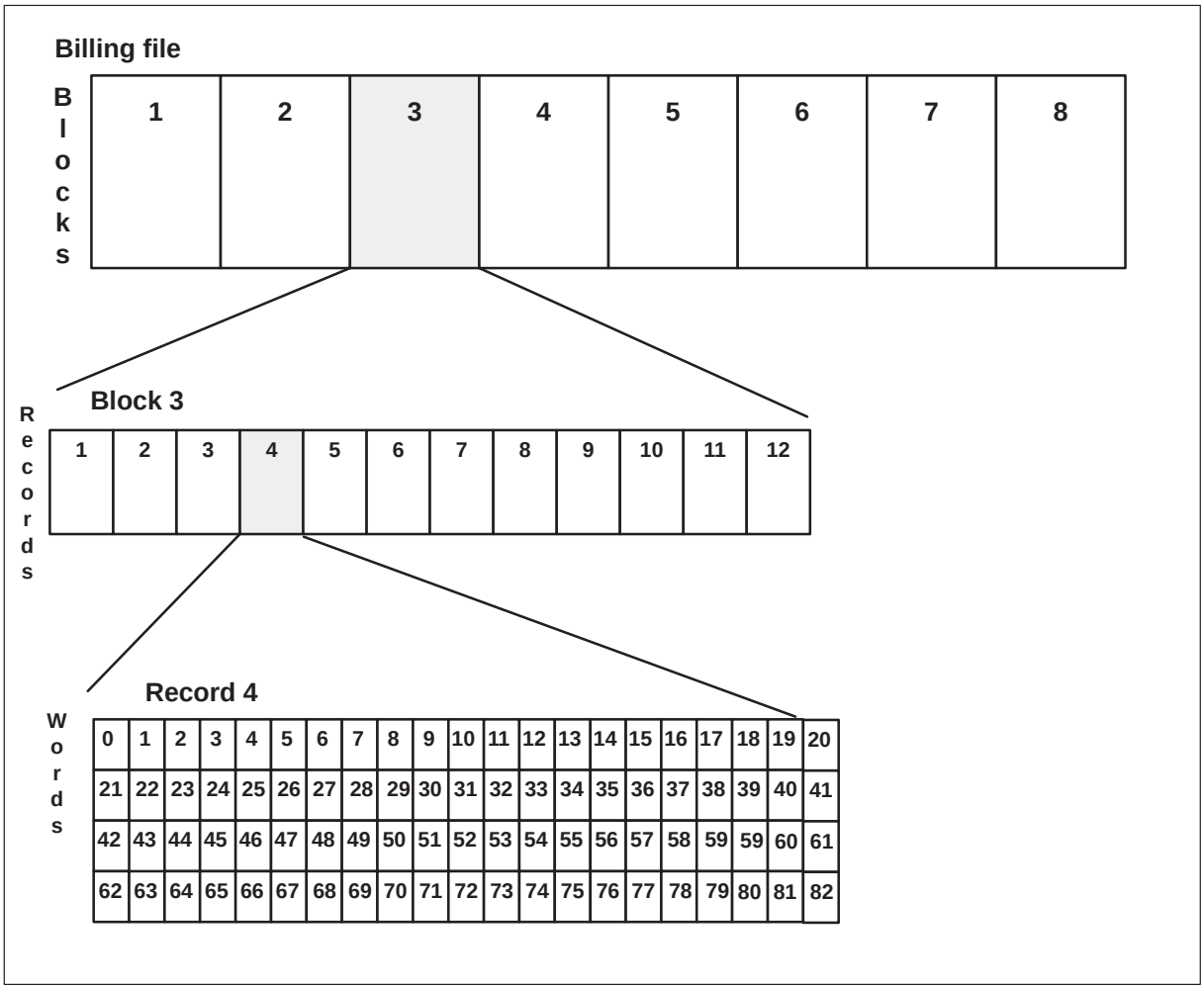
The SuperNode Data Manager (SDM) off-loads formatted CDR billing records from the Computing Module (CM). The SDM can also be configured to convert the CDR billing records to Bellcore Automatic Message Accounting Format (BAF). CDR and BAF records are stored in files on the SDM disk in DIRP format or automatic message accounting data networking system (AMADNS) format. The billing files can be sent to an operating company's downstream processor, or viewed on the SDM using the AMADUMP tool. For more information, refer to the *SDMC SuperNode Billing Application User Guide*.

Billing file structure

All billing records are stored in billing files, regardless of the storage location (CM, FP, or SDM). The billing file size is user-definable. Multiple billing files can be created on a disk. Each file contains blocks of data in 2 Kbyte increments. The number of records stored within a block is determined by the provisioning of the billing system.

Figure 2-1 shows the billing file division for Fixed size records.

Figure 2-1
Fixed size billing records file division

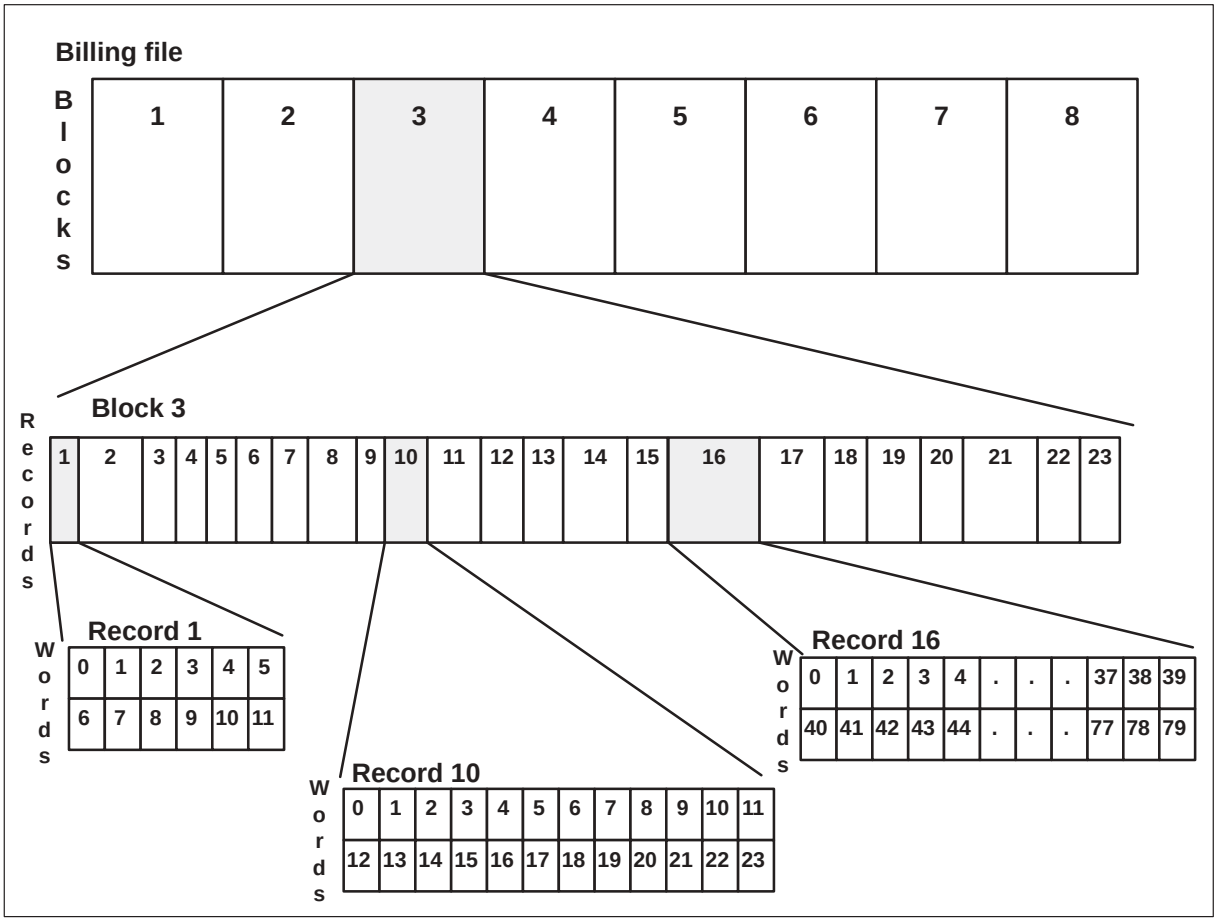


Flexible billing

The Flex CDR billing system allows provisioning of the record lengths. 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 provisioning smaller record sizes, more data can be stored on the billing file. Figure 2-2 shows the division of a billing file into varied length records.

Figure 2-2
Flexible size billing record file division



Event records

Both billing storage systems create the event records to define the state of the billing file:

- start of each billing file block (BHR)
- normal (graceful) start (scheduled or manual rotate) of a billing file (GSR)
- normal (graceful) end (scheduled or manual rotate) of a billing file (GER)
- warm or cold system restart (SRR)
- clock (date or time) change (CCR)
- emergency start (emergency rotate) of a billing file (ESR)

Event records are always stored in the READLR format.

Billing files

Each billing system (DIRP and DRM) generates billing files in the same manner.

Descriptions of each type of records follow the Billing File examples.

Billing file examples:

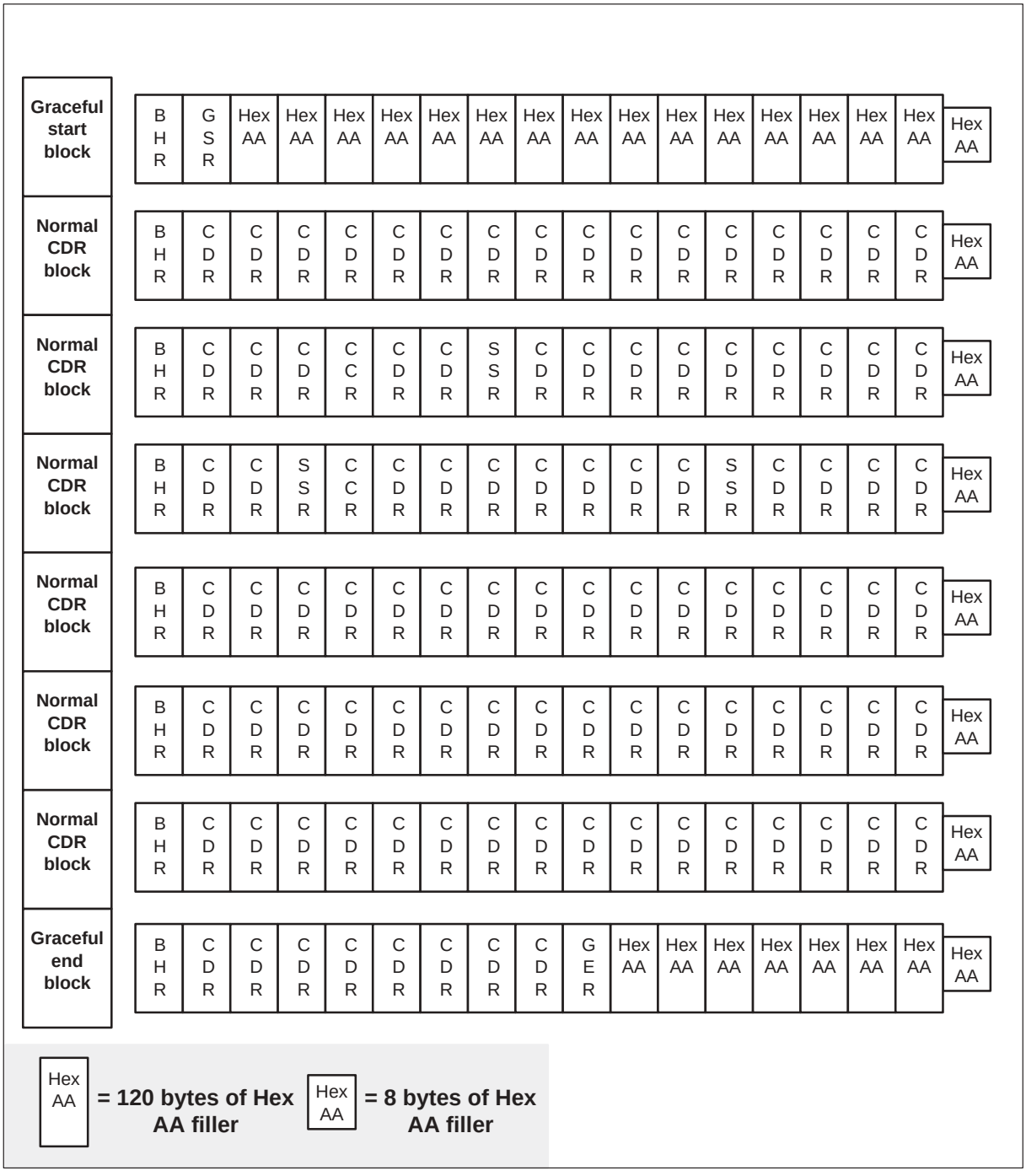
Example one:

A billing file starting with a graceful start and ending with a graceful end consists of the following:

- one graceful start block
  - — block header record (BHR)
  - — graceful start record (GSR)
  - — filler data (hex AA)
- zero, one or more normal call detail record (CDR) blocks
  - — BHR
  - — 11 records for UCS09, UCS11, UCS12, or UCS13, in any combination of the following:
    - – CDR
    - – OSR
    - – clock change record (CCR)
    - – system restart record (SRR)
  - — filler data (hex AA) to make total block size equal to 2 Kbytes
- one graceful end block
  - — BHR
  - — one or more records in any combination of the following:
    - – CDR
    - – OSR
    - – CCR
    - – SRR
  - — GER
  - — filler data (hex AA) to make total block size equal 2 Kbytes

Figure 2-3 shows an example of a graceful start and graceful end billing file.

Figure 2-3
Example of a graceful start and graceful end billing file



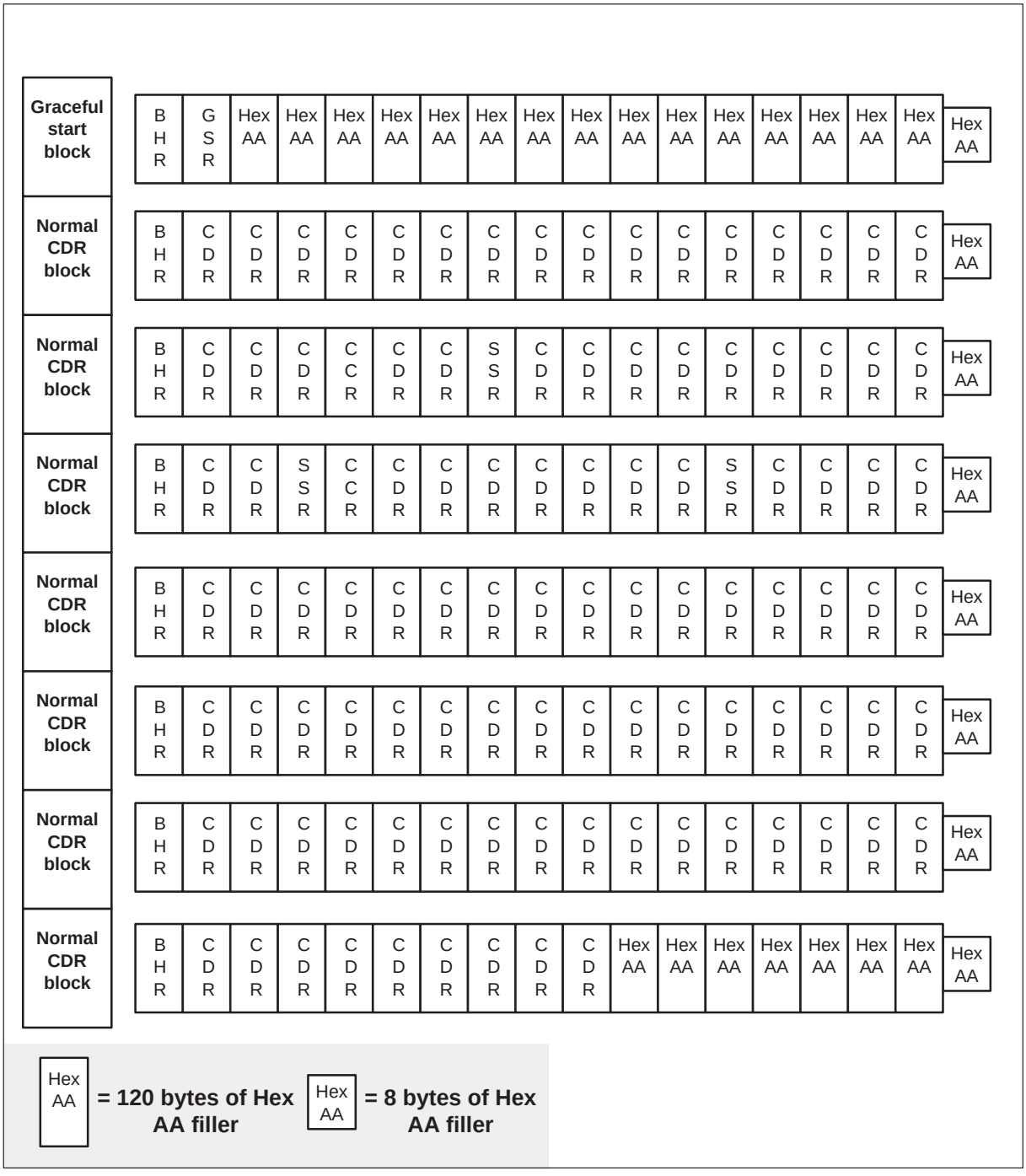
Example two:

A billing file starting with a graceful start and ending without a graceful end consists of the following:

- one graceful start block
  - — block header record (BHR)
  - — graceful start record (GSR)
  - — filler data (hex AA)
- zero, one or more normal call detail record (CDR) blocks
  - — BHR
  - — one or more records in any combination of the following:
    - – CDR
    - – OSR
    - – clock change record (CCR)
    - – system restart record (SRR)
  - — filler data (hex AA) to make total block size equal 2 Kbytes

Figure 2-4 shows an example of a billing file with a graceful start and ending without a graceful end.

Figure 2-4
Example of a graceful start and emergency ending billing file



Example three;

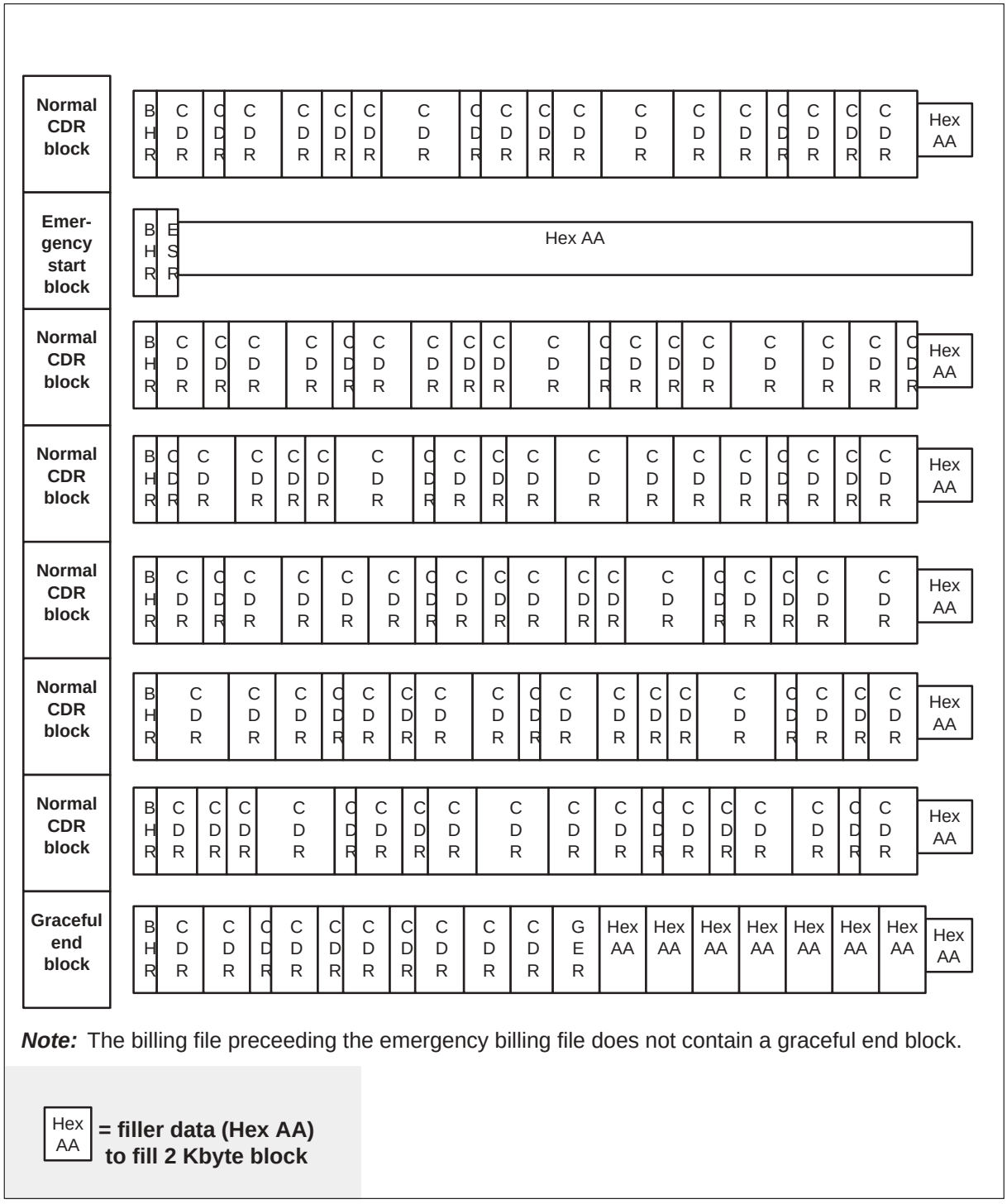
A billing file starting with an emergency start and ending with a graceful end consists of the following:

- one normal CDR block
  - — BHR
  - — one or more records in any combination of the following:
    - – CDR
    - – OSR
    - – clock change record (CCR)
    - – system restart record (SRR)
  - — filler data (hex AA) to make total block size equal to 2 Kbytes
- one emergency start block
  - — block header record (BHR)
  - — emergency start record (ESR)
  - — filler data (hex AA)
- zero, one or more normal call detail record (CDR) blocks
- one graceful end block
  - — BHR
  - — one or more records in any combination of the following:
    - – CDR
    - – OSR
    - – CCR
    - – GER
  - — filler data (hex AA) to make total block size equal to 2 Kbytes

Figure 2-5 shows an example of a billing file with an emergency start and graceful end.

Note: When an emergency rotate occurs in the billing file system, the billing file preceeding the emergency billing file does not contain a graceful end block.

Figure 2-5
Example of an emergency start and graceful end billing file



Note: The billing file preceeding the emergency billing file does not contain a graceful end block.

Example four:

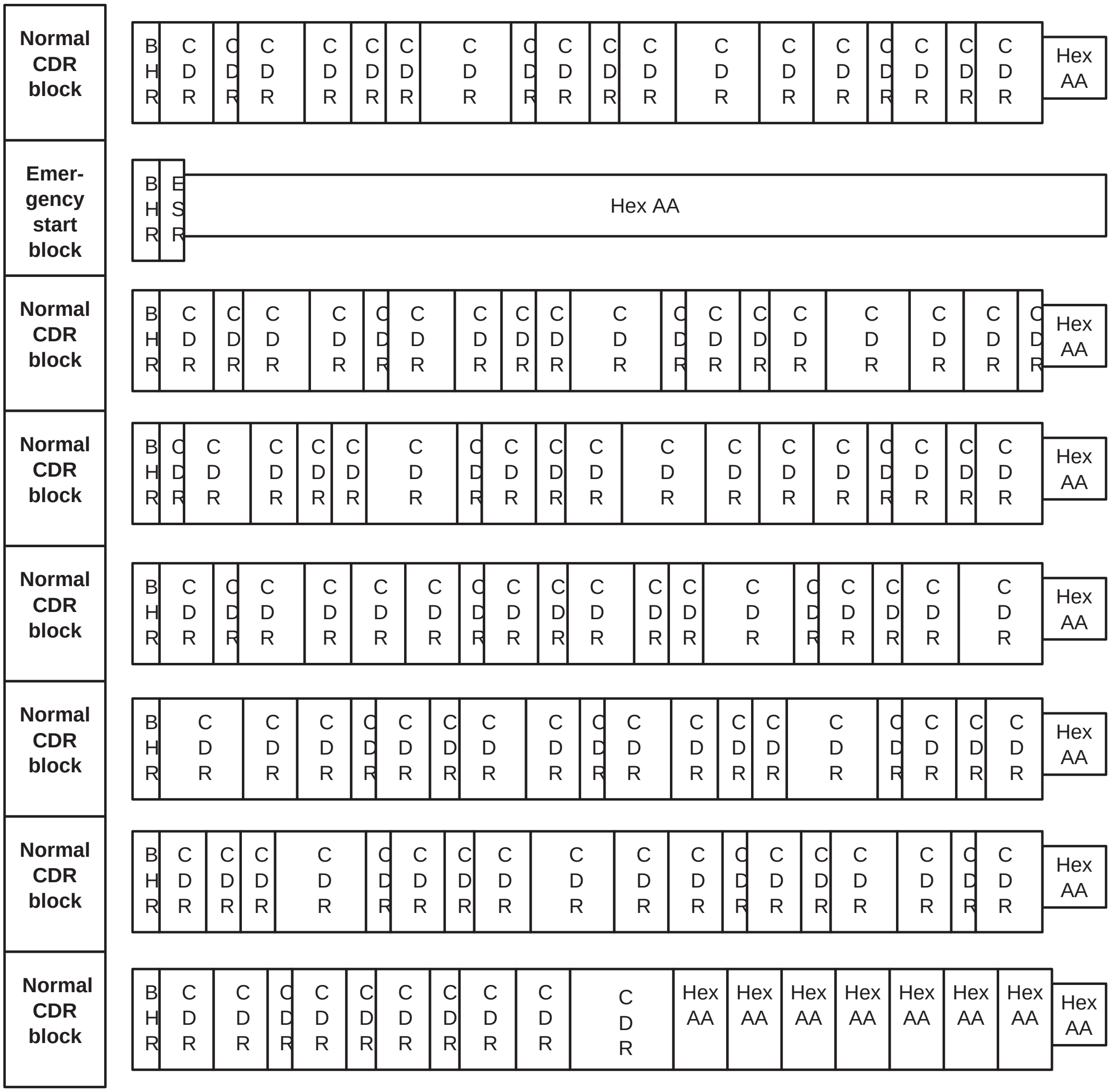
A billing file starting with an emergency start and ending without a graceful end consists of the following:

- one normal CDR block
  - — BHR
  - — one or more records in any combination of the following:
    - – CDR
    - – OSR
    - – clock change record (CCR)
    - – system restart record (SRR)
  - — filler data (hex AA) to make total block size equal to 2 Kbytes
- one emergency start block
  - — block header record (BHR)
  - — emergency start record (ESR)
  - — filler data (hex AA)
- zero, one or more normal call detail record (CDR) blocks
  - — BHR
  - — one or more records in any combination of the following:
    - – CDR
    - – OSR
    - – CCR
    - – SRR
  - — filler data (hex AA) to make total block size equal to 2 Kbytes

Figure 2-6 shows an example of a billing file with an emergency start and no graceful end.

Note: When an emergency rotate occurs in the billing file system, the billing file preceeding the emergency billing file does not contain a graceful end block.

Figure 2-6
Example of an emergency start and emergency end billing file



Note: The billing file preceeding the emergency billing file does not contain a graceful end block.

Hex AA **= filler data (Hex AA) to fill 2 Kbyte block**

Block header record

The first record in every block is a block header record (BHR). The BHR provides a sequential block count for every block written to the billing file. The count is incremented for every block, even when a warm or cold restart occurs.

The size of a BHR is provisioned in table OFCENG (Office Engineering) by the FCDR_BHR_SIZE office parameter. The BHR can be 12–128 words in length. The following rules apply:

- When the BHR is provisioned at 12 words, the record contains 12 words of data.
- When provisioned to more than 12, the record contains 12 words of data and the remaining words contain filler data (hex AA).

Table 2-1 and Figure 2-7 describe the format of the BHR with a size of 12 words.

Table 2-1
BHR 12-word format (in READLR format)

Field name	Size (in bits)	Field contents	Offset (in bits)
RECCD	16	Record code (contains an EBCDIC AA) ***Note:*** An EBCDIC AA is equal to C1C1 in TBCD.	0
BLKTIME		Date/time of block header record	
Minute	6	00 to 59	16
Month	4	01 to 12	22
Year	6	00 to 63 (years since 1976)	26
Second	6	00 to 59	32
Hour	5	00 to 23	38
Day	5	01 to 31	43
BLKCOUNT	16	Count of blocks since last reload (00000 to 65535)	48
SWITCHID	48	Switch identification (EBCDIC) ***Note:*** The value stored corresponds to the CDR_OFFICE_ID office parameter.	64

—continued—

Table 2-1
BHR 12-word format (in READLR format) (continued)

Field name	Size (in bits)	Field contents	Offset (in bits)
SOFTWREL	48	Software release level (EBCDIC) ***Note:*** The value stored corresponds to the SITELABELINFO office parameter.	112
F	1	Indicates if the CDR data storage format: • 0 = read right to left format • 1 = read left to right format ***Note 1:*** The value stored corresponds to the FCDR_CDR_WORD_LAYOUT office parameter. ***Note 2:*** Event records are always stored in READLR format.	160
ACTIDX	3	Identifies the version of table CDRTMPLT	161
F/V	1	Identifies the size characteristic of the CDRs within the block: • 0 = fixed length • 1 = variable length ***Note:*** The value stored corresponds to the FCDR_CDR_SIZE office parameter.	164
CDRSIZE	8	Call detail record size (3 to 128) ***Note:*** The value stored corresponds to the FCDR_CDR_SIZE office parameter.	165
FILLER	3	empty	173
BHRSIZE	8	Block header record size (12 to 128) ***Note:*** The value stored corresponds to the FCDR_BHR_SIZE office parameter.	176
OSRSIZE	8	OSR size ***Note:*** The value stored corresponds to the FCDR_OSR_SIZE office parameter. TOTAL= 192 bits (12 words)	184
—end—			

Figure 2-7
BHR bitmap (in READLR format)

	MSB															LSB
WORD/BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
00	RECCD(1)								RECCD(2)							
01	BLKTIME (Year)						BLKTIME (Month)				BLKTIME (Minute)					
02	BLKTIME (Day)					BLKTIME (Hour)					BLKTIME (Second)					
03	BLKCOUNT															
04	SWITCHID															
05	SWITCHID															
06	SWITCHID															
07	SOFTWREL															
08	SOFTWREL															
09	SOFTWREL															
10				CDRSIZE								F/V	ACTIDX			F
11	OSRSIZE								BHRSIZE							
BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

Graceful start record

A graceful start record (GSR) is generated every time a normal billing file rotate occurs. A normal billing file rotate is a scheduled, manual, or space rotate. The GSR is always the second record of the graceful start block.

A GSR identifies the start block of the billing file. After the GSR is formatted, the start block is immediately dumped onto the billing file device even though the block is not full. The remainder of the start block is filled with hexadecimal AA (as initialized).

The size of a GSR is provisioned in table OFCENG by the FCDR_GSR_SIZE office parameter. The GSR can be 0 or 5–128 words in length. The following rules apply:

- When the GSR is provisioned at 0 words, GSR records are not generated.
- When provisioned to 5 words, the GSR contains 5 words of data store.
- When provisioned to more than 5, the record contains 5 words of data and the remaining words contain filler data (hex AA).

Table 2-2 and Figure 2-8 describe the format of the GSR with a size of 5 words.

Table 2-2
GSR 5-word format (in READLR format)

Field name	Size (in bits)	Field contents	Offset (in bits)
RECCD	16	Record code (contains an EBCDIC FA) ***Note:*** An EBCDIC FA is equal to C6C1 in TBCD.	0
STRTTIME		Date/time of graceful start record	
Minute	6	00 to 59	16
Month	4	01 to 12	22
Year	6	00 to 63 (years since 1976)	26
Second	6	00 to 59	32
Hour	5	00 to 23	38
Day	5	01 to 31	43
ACTIDX	3	Identifies the version of table CDRTMPLT	48
F/V	1	Identifies the size characteristic of the CDRs within the block: • 0 = fixed length • 1 = variable length ***Note:*** The value stored corresponds to the FCDR_CDR_SIZE office parameter.	51
CDRSIZE	8	Call detail record size (3 to 128) ***Note:*** The value stored corresponds to the FCDR_CDR_SIZE office parameter.	52
FILLER	4	empty	60
GSRSIZE	8	Block header record size (12 to 128) ***Note:*** The value stored corresponds to the FCDR_GSR_SIZE office parameter.	64
OSRSIZE	8	OSR size ***Note:*** The value stored corresponds to the FCDR_OSR_SIZE office parameter. TOTAL= 80 bits (5 words)	72

—end—

Figure 2-8
GSR bitmap (in READLR format)

	MSB															LSB
WORD/BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
00	RECCD(1)								RECCD(2)							
01	STRTTIME (Year)						STRTTIME (Month)				STRTTIME (Minute)					
02	STRTTIME (Day)					STRTTIME (Hour)					STRTTIME (Second)					
03					CDRSIZE								F/V	ACTIDX		
04	OSRSIZE								GSRSIZE							
BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

Graceful end record

A graceful end record (GER) is generated every time a normal billing file rotate occurs. A GER identifies the end block of a billing file. The GER is the last formatted record of the end block. After a GER is formatted, the end block is immediately dumped onto the billing file device, whether or not the block is full. The remainder of the end block is filled with hexadecimal AA (as initialized).

The size of a GER is provisioned in table OFCENG by the FCDR_GER_SIZE office parameter. The GER can be 0 or 8–128 words in length. The contents of the GER depends on the size of the record. The following rules apply:

- When the GER is provisioned at 0 words, GER records are not generated.
- When provisioned to 8 words, the GER contains 8 words of data.
- When provisioned as 9–23 words, the record contains 8 words of data and 1–15 words of filler data (hex AA).
- When provisioned to 24 or more words, the GER contains 24 words of data, including the name of the billing file, and the remaining words contain filler data (hex AA).

Table 2-3 and Figure 2-9 describe the format of the GER with a size of 24 words.

Table 2-3
GER 24-word format (in READLR format)

Field name	Size (in bits)	Field contents	Offset (in bits)
RECCD	16	Record code (contains an EBCDIC FB) ***Note:*** An EBCDIC FB is equal to C6C2 in TBCD.	0
ENDTIME		Date/time of graceful end record	
Minute	6	00 to 59	16
Month	4	01 to 12	22
Year	6	00 to 63 (years since 1976)	26
Second	6	00 to 59	32
Hour	5	00 to 23	38
Day	5	01 to 31	43
ACTIDX	3	Identifies the version of table CDRTMPLT	48
F/V	1	Identifies the size characteristic of the CDRs within the block: • 0 = fixed length • 1 = variable length ***Note:*** The value stored corresponds to the FCDR_CDR_SIZE office parameter.	51
CDRSIZE	8	Call detail record size (3 to 128) ***Note:*** The value stored corresponds to the FCDR_CDR_SIZE office parameter.	52
FILLER	4	Hex AA	60
GERSIZE	8	Graceful end record size (12 to 128) ***Note:*** The value stored corresponds to the FCDR_GER_SIZE office parameter.	64
OSRSIZE	8	OSR size ***Note:*** The value stored corresponds to the FCDR_OSR_SIZE office parameter.	72
BLOCKCOUNT	16	Contains the number of blocks stored within the normal billing file	80
RECORDCOUNT	32	Contains the number of CDR records stored within the normal billing file	96

—continued—

Table 2-3
GER 24-word format (in READLR format) (continued)

Field name	Size (in bits)	Field contents	Offset (in bits)
FILENAME	256	Identifies the name of the billing file (EBCDIC). Up to 32 characters are stored. If the filename is less than 32 characters, the name is suffixed by space characters (‘ ’). TOTAL=384bits (24words)	128
		—end—	

Figure 2-9
GER bitmap (in READLR format)

	MSB															LSB
WORD/BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
00	RECCD(1)								RECCD(2)							
01	ENDTIME (Year)						ENDTIME (Month)				ENDTIME (Minute)					
02	ENDTIME (Day)					ENDTIME (Hour)					ENDTIME (Second)					
03					CDRSIZE								F/V	ACTIDX		
04	OSRSIZE								GERSIZE							
05	BLOCKCOUNT															
06	RECORDCOUNT (1)															
07	RECORDCOUNT (2)															
08	FILENAME (1)								FILENAME (2)							
09	FILENAME (3)								FILENAME (4)							
10	FILENAME (5)								FILENAME (6)							
11	FILENAME (7)								FILENAME (8)							
12	FILENAME (9)								FILENAME (10)							
13	FILENAME (11)								FILENAME (12)							
14	FILENAME (13)								FILENAME (14)							
15	FILENAME (15)								FILENAME (16)							
16	FILENAME (17)								FILENAME (18)							
17	FILENAME (19)								FILENAME (20)							
18	FILENAME (21)								FILENAME (22)							
19	FILENAME (23)								FILENAME (24)							
20	FILENAME (25)								FILENAME (26)							
21	FILENAME (27)								FILENAME (28)							
22	FILENAME (29)								FILENAME (30)							
23	FILENAME (31)								FILENAME (32)							
BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

Clock change record

A CCR is generated each time a clock change (SETDATE or SETTIME) command occurs. The CCR can occur anywhere within a normal CDR block, but always appears after a BHR.

The size of a CCR is provisioned in table OFCENG by the FCDR_CCR_SIZE office parameter. The CCR can be 0 or 7–128 words in length. The following rules apply:

- When the CCR is provisioned at zero (0) words, CCR records are not generated.
- When provisioned to seven words, the CCR contains seven words of data.
- When provisioned to more than seven, the record contains seven words of data and the remaining words contain filler data (hex AA).

Table 2-4 and Figure 2-10 describe the format of the CCR with a size of seven words.

Table 2-4
CCR seven-word format (in READLR format)

Field name	Size (in bits)	Field contents	Offset (in bits)
RECCD	16	Record code (contains an EBCDIC FE) ***Note:*** An EBCDIC FE is equal to C6C5 in TBCD.	0
OLDTIME		Time when clock change occurs	
Minute	6	00 to 59	16
Month	4	01 to 12	22
Year	6	00 to 63 (years since 1976)	26
Second	6	00 to 59	32
Hour	5	00 to 23	38
Day	5	01 to 31	43
NEWTIME		New time set	
Minute	6	00 to 59	48
Month	4	01 to 12	54
Year	6	00 to 63 (years since 1976)	58
Second	6	00 to 59	64
Hour	5	00 to 23	70
Day	5	01 to 31	75
ACTIDX	3	Identifies the version of table CDRTMPLT	80

—continued—

Table 2-4
CCR seven-word format (in READLR format) (continued)

Field name	Size (in bits)	Field contents	Offset (in bits)
F/V	1	Identifies the size characteristic of the CDRs within the block: • 0 = fixed length • 1 = variable length ***Note:*** The value stored corresponds to the FCDR_CDR_SIZE office parameter.	83
CDRSIZE	8	Call detail record size (3 to 128) ***Note:*** The value stored corresponds to the FCDR_CDR_SIZE office parameter.	84
FILLER	4	empty	92
CCRSIZE	8	Clock change record size (12 to 128) ***Note:*** The value stored corresponds to the FCDR_CCR_SIZE office parameter.	96
OSRSIZE	8	OSR size ***Note:*** The value stored corresponds to the FCDR_OSR_SIZE office parameter. TOTAL=112 bits (7 words)	104
		—end—	

Figure 2-10
CCR bitmap (in READLR format)

	MSB															LSB
WORD/BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
00	RECCD(1)								RECCD(2)							
01	OLDTIME (Year)						OLDTIME (Month)				OLDTIME (Minute)					
02	OLDTIME (Day)					OLDTIME (Hour)					OLDTIME (Second)					
03	NEWTIME (Year)						NEWTIME (Month)				NEWTIME (Minute)					
04	NEWTIME (Day)					NEWTIME (Hour)					NEWTIME (Second)					
05					CDRSIZE								F/V	ACTIDX		
06	OSRSIZE								CCRSIZE							
BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

System restart record

A system restart record (SRR) is generated each time a warm or cold restart occurs. The SRR can occur anywhere within a normal CDR block but after the block header record (BHR).

When a cold restart occurs, call data is lost; however, data written to memory prior to the cold restart remains intact.

When a warm restart occurs, call data remains intact for calls in progress, as well as for calls completed prior to warm restart.

When a reload restart occurs under CM device independent recording package (DIRP) billing, a CDR is written, but the last record is not functional. Under FP distributed recording manager (DRM) billing, a CDR is written and the last record is functional.

The size of an SRR is provisioned in table OFCENG by the FCDR_SRR_SIZE office parameter. The SRR can be 0 or 6–128 words in length. The following rules apply:

- When the SRR is provisioned at zero (0) words, SRR records are not generated.
- When provisioned to six words, the SRR contains six words of data.
- When provisioned to more than six, the record contains six words of data and the remaining words contain filler data (hex AA).

Table 2-5 and Figure 2-11 describe the format of the SRR with a size of six words.

Table 2-5
SRR six-word format (in READLR format)

Field name	Size (in bits)	Field contents	Offset (in bits)
RECCD	16	Record code (contains an EBCDIC FD) ***Note:*** An EBCDIC FD is equal to C6C4 in TBCD.	0
RSTRCODE	16	Restart code (0=cold restart, 1=warm restart)	16
RSTRTIME		Date/time of system restart record	
Minute	6	00 to 59	32
Month	4	01 to 12	38

—continued—

Table 2-5
SRR six-word format (in READLR format) (continued)

Field name	Size (in bits)	Field contents	Offset (in bits)
Year	6	00 to 63 (years since 1976)	42
Second	6	00 to 59	48
Hour	5	00 to 23	54
Day	5	01 to 31	59
ACTIDX	3	Identifies the version of table CDRTMPLT	64
F/V	1	Identifies the size characteristic of the CDRs within the block: • 0 = fixed length • 1 = variable length ***Note:*** The value stored corresponds to the FCDR_CDR_SIZE office parameter.	67
CDRSIZE	8	Call detail record size (3 to 128) ***Note:*** The value stored corresponds to the FCDR_CDR_SIZE office parameter.	68
FILLER	4	empty	76
SRRSIZE	8	System restart record size (12 to 128) ***Note:*** The value stored corresponds to the FCDR_SRR_SIZE office parameter.	80
OSRSIZE	8	OSR size ***Note:*** The value stored corresponds to the FCDR_OSR_SIZE office parameter. TOTAL=96 bits (6words)	88
		—end—	

Figure 2-11
SRR bitmap (in READLR format)

	MSB															LSB
WORD/BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
00	RECCD(1)								RECCD(2)							
01	RSTRCODE								RSTRCODE							
02	RSTRRTIME (Year)						RSTRTIME (Month)				RSTRTIME (Minute)					
03	RSTRTIME (Day)					RSTRTIME (Hour)					RSTRTIME (Second)					
04					CDRSIZE								F/V	ACTIDX		
05	OSRSIZE								SRRSIZE							
BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

Emergency start record

An emergency start record (ESR) is generated each time an emergency billing file rotate occurs. An ESR identifies the emergency start block of a billing file. The ESR is always the second record of the second block of a billing file started after an emergency occurred.

Any physical problem with a disk causes an emergency billing file rotate. The presence of an ESR indicates that the previous billing file does not contain a graceful end block.

An emergency condition exists when billing is not active. Billing records are formatted into the current buffer, but no device volumes have been allocated to receive the buffers. When billing is initialized, an emergency rotate generates an ESR.

The size of an ESR is provisioned in table OFCENG by the FCDR_ESR_SIZE office parameter. The ESR can be 0 or 5–128 words in length. The following rules apply:

- When the ESR is provisioned at zero (0) words, ESR records are not generated.
- When provisioned to five words, the ESR contains five words of data.
- When provisioned to more than five, the record contains five words of data and the remaining words contain filler data (hex AA).

Table 2-6 and Figure 2-12 describe the format of the ESR with five words.

Table 2-6
ESR five-word format (in READLR format)

Field name	Size (in bits)	Field contents	Offset (in bits)
RECCD	16	Record code (EBCDIC FC) ***Note:*** An EBCDIC FC is equal to C6C3 in TBCD.	0
EMERTIME		Date/time of emergency start record	
Minute	6	00 to 59	16
Month	4	01 to 12	22
Year	6	00 to 63 (years since 1976)	26
Second	6	00 to 59	32
Hour	5	00 to 23	38
Day	5	01 to 31	43
ACTIDX	3	Identifies the version of table CDRTMPLT	48
F/V	1	Identifies the size characteristic of the CDRs within the block: • 0 = fixed billing • 1 = variable billing ***Note:*** The value stored corresponds to the FCDR_CDR_SIZE office parameter.	51
CDRSIZE	8	Call detail record size (3 to 128) ***Note:*** The value stored corresponds to the FCDR_CDR_SIZE office parameter.	52
FILLER	4	empty	60
ESRSIZE	8	System restart record size (12 to 128) ***Note:*** The value stored corresponds to the FCDR_ESR_SIZE office parameter.	64
OSRSIZE	8	OSR size ***Note:*** The value stored corresponds to the FCDR_OSR_SIZE office parameter. TOTAL=80 bits (5 words)	72

Figure 2-12
ESR bitmap

	MSB															LSB
WORD/BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
00	RECCD(1)								RECCD(2)							
01	EMERTIME (Year)						EMERTIME (Month)				EMERTIME (Minute)					
02	EMERTIME (Day)					EMERTIME (Hour)					EMERTIME (Second)					
03					CDRSIZE								F/V	ACTIDX		
04	OSRSIZE								ESRSIZE							
BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

Provisioning event record sizes

The length for all event records is provisioned by the following office parameters in table OFCENG:

- FCDR_BHR_SIZE
- FCDR_GSR_SIZE
- FCDR_GER_SIZE
- FCDR_CCR_SIZE
- FCDR_SRR_SIZE
- FCDR_ESR_SIZE

Note: Provisioning of OSR and CDR record sizes is discussed in later chapters.

Changing an office parameter

At the CI prompt

1 Enable the UCS DMS-250 to make changes to the office parameters by typing:

>RWOK on
Example of a MAP response:

```
WRITE ACCESS ENABLED FOR RESTRICTED DATA
```

2 Enter table OFCENG.

3 Replace the defined parameter by typing:

>REP parmname parmval
where

parmname is one of the following office parameters:
FCDR_BHR_SIZE
FCDR_GSR_SIZE
FCDR_GER_SIZE
FCDR_CCR_SIZE
FCDR_SRR_SIZE
FCDR_ESR_SIZE

parmval is the size of the record. The following table shows supported values for each parameter.

Office parameter	Minimum value	Maximum value	Disable record	Default value
FCDR_BHR_SIZE	12	128	N/A	60
FCDR_GSR_SIZE	5	128	0	60
FCDR_GER_SIZE	8	128	0	60
FCDR_CCR_SIZE	7	128	0	60
FCDR_SRR_SIZE	6	128	0	60
FCDR_ESR_SIZE	5	128	0	60

Note: Every event record (except the BHR) can be disabled by entering 0 for the record size.

Sample entries: **>REP FCDR_BHR_SIZE 12**
>REP FCDR_GSR_SIZE 5
>REP FCDR_GER_SIZE 24
>REP FCDR_ESR_SIZE 5
>REP FCDR_SRR_SIZE 6
>REP FCDR_CCR_SIZE 7

4 Enter the CTMPLT tool to complete the changes by typing:

>CTMPLT

5 Upgrade the billing system to reflect the changes by typing:

>UPGRADE

> **ATTENTION**
>
> The UPGRADE command automatically rotates any mounted billing files.
>
> Use the UPGRADE command any time a change is made to the FCDR (Flexible CDR) office parameters in table OFCENG.

6 Ensure upgrade was performed by typing:

>**STATUS**

Example of a MAP response:

```
The Active version of CDRTMPLT table is: Version index = 1
The Active CDRTMPLT table version timestamp is:1999/03/09 00:32:54.000 TUE.
                          Active            Edit           History
                      ---------------- ---------------- -----------------
FCDR_BHR_SIZE:         60                60               60
FCDR_GSR_SIZE:         60                60               60
FCDR_GER_SIZE:         60                60               60
FCDR_ESR_SIZE:         60                60               60
FCDR_SRR_SIZE:         60                60               60
FCDR_CCR_SIZE:         60                60               60
FCDR_OSR_SIZE:         60                60               60
FCDR_CDR_SIZE
Method:               FIXED_SIZE        FIXED_SIZE       FIXED_SIZE
Length:                83                83               83
FCDR_CDR_TMPLT
Method:               FIXED_TMPLT       FIXED_TMPLT      FIXED_TMPLT
Template Index:       UCS09             UCS09            UCS11
FCDR_CDR_WORD_LAYOUT: READLR            READLR           READLR
FCDR_GEN_600_LOG:       N                 N                N
FCDR_GEN_601_LOG:       N                 N                N
```

Decoding records

All billing and event records are stored in binary. However, each field is decoded differently according to the type of data stored. Refer to Appendix A, Table 9-6, for the numeric relationships between binary, decimal, hex, telephony binary coded digits (TBCD), and personal identification digits (pindigs).

Record code

The record type is identified by the contents of the record code (RECCD) field. The RECCD contains one of the following two-byte EBCDIC values:

- F0 (C6F0 in Hex) for CDRs
- F1 (C6F1 in Hex) for domestic OSRs
- F3 (C6F3 in Hex) for international OSRs
- FX (C6E7 in Hex) for variable length CDRs
- AA (C1C1 in Hex) for BHRs
- FA (C6C1 in Hex) for GSRs
- FB (C6C2 in Hex) for GERs
- FC (C6C3 in Hex) for ESRs
- FD (C6C4 in Hex) for SRRs
- FE (C6C5 in Hex) for CCRs

Units of memory

The following list defines the units of memory used for data storage:

- 4 bits = 1 nibble.
- 8 bits = 2 nibbles = 1 byte.
- 16 bits = 4 nibbles = 2 bytes = 1 word.
- 1 record = 41 words (for CDR2AMA2); 106 words (for CDR2AMA3); 39 words (for CDR2AMA); 83 words (for UCS09 fixed billing); 83 words (for UCS11 fixed billing); 83 words (for UCS12 fixed billing); 83 words (for UCS13 fixed billing); up to 128 words (for user-defined templates).
- 1 block = 2048 bytes of data, consisting of multiple CDRs, OSRs, event records, and AA (hex) filler.
- 2048 bytes = 2 Kbytes = 1 block.
- A bit holds a binary 0 or 1.
- Hex and TBCD digits occupy 1 nibble of space.
- One alphanumeric character occupies 1 byte of space.
- One EBCDIC character occupies 1 byte of space.

Operator services records

ATTENTION

The Enhanced Operator Position Services (EOPS) function, previously discussed in this chapter, has been removed from the UCS12 software release and is no longer supported. The UCS software continues to support operator assisted calls through other platforms such as Enhanced Services Provider (ESP). In addition, operator services records (OSR) and release link trunks (RLT) continue to be supported and are independent of EOPS end of life strategy.

CAUTION

Changes may affect site functionality

Changes to the billing system require updates to engineering parameters that may affect site functionality. Any changes to the billing system may affect downstream processing of billing records. Nortel Networks recommends that only experienced personnel make changes to the billing system.

An operator services record (OSR) maintains an accurate profile for direct access originating operator calls within the UCS DMS-250 switch. The OSR contains all the information found in automatic message accounting (AMA) F1 and F3 records and their associated extension records, E0, E1, E2, and E4.

For operator calls other than originating direct access, an individual AMA record is created in the AMA stream. For each operator call processed by the switch, an OSR/CDR pair is created with the OSR following the CDR. The records are correlated by the call's assigned sequence number.

OSRs are formatted in the interexchange carrier (IXC) stream rather than the AMA record stream. Instead of the binary coded decimal (BCD) used for AMA, OSR uses telephony binary coded decimal (TBCD) numbering to

maintain the same format as CDR. Table 9-6 cross-references the decimal integers with equivalent BCD and TBCD terms.

OSRs are generated when direct access trunks originate requests for operator assistance. OSRs contain information similar to AMA records and extension records. Like CDRs, OSRs are produced and formatted in the IXC data stream. For direct access trunk calls, CDR/OSR pairs have matching billing sequence numbers to facilitate billing correlation.

OSR length

Billing Records software allows the OSR size to be provisioned. The OSR can be 39 to 128 words in length. The record contains 39 words of data. When the OSR size is provisioned as more than 39 words, the record is padded with filler (hex AA). Use the following procedure to change the size of the OSR.

Provisioning OSR size

At the CI prompt

1 Enable the UCS DMS-250 to make changes to the office parameters by typing:

>RWOK on
Example of a MAP response:

```
WRITE ACCESS ENABLED FOR RESTRICTED DATA
```

2 Enter table OFCENG.

>TABLE OFCENG

3 Replace the defined parameter by typing:

>REP FCDR_OSR_SIZE parmval
where

parmval is the size of the record (39 to 128 words).

Sample entries: **>REP FCDR_OSR_SIZE 39**

4 Enter the CTMPLT tool to complete the changes by typing:

>CTMPLT

5 Upgrade the billing system to reflect the changes by typing:

>UPGRADE

> **ATTENTION**
>
> The UPGRADE command automatically rotates any mounted billing files.
>
> Use the UPGRADE command any time a change is made to the FCDR (Flexible CDR) office parameters in table OFCENG.

6 Ensure upgrade was performed by typing:

>STATUS

Example of a MAP response:

```
The current Active template index is: 1
The timestamp of the Active template index is: 1999/11/12 04:18:22.000 FRI.
                          Active            Edit            History
                      ---------------- ---------------- -----------------
FCDR_BHR_SIZE:         12                12                60
FCDR_GSR_SIZE:          5                 5                60
FCDR_GER_SIZE:         24                24                60
FCDR_ESR_SIZE:          5                 5                60
FCDR_SRR_SIZE:          6                 6                60
FCDR_CCR_SIZE:          7                 7                60
FCDR_OSR_SIZE:         39                39                60
FCDR_CDR_SIZE
Method:               FIXED_SIZE        FIXED_SIZE       FIXED_SIZE
Length:                80                80               80
FCDR_CDR_TMPLT
Method:               INTERNAL_TMPLT    INTERNAL_TMPLT   INTERNAL_TMPLT
Template Index:       UCS09             UCS09            UCS07
FCDR_CDR_WORD_LAYOUT: READLR            READLR           READLR
FCDR_GEN_600_LOG:       N                 N                N
FCDR_GEN_601_LOG:       N                 N                N
```

For information on the format of the OSR and field descriptions, refer to Appendix D, “OSR field descriptions.”

Trunk interfaces

Call billing reports for operator-handled calls vary depending on the trunk configuration. Several UCS DMS-250 trunk interfaces can originate requests for operator assistance in call processing.

Description of trunk interfaces

Operator access trunk applications and terminology is described in the following paragraphs.

Direct access line

The direct access line (DAL) is a trunk interface that connects a PBX, key system, or single telephone set to a UCS DMS-250 switch.

Off-network access line/Feature Group A

The off-network access line (ONAL)/Feature Group A (FGA) is a line interface that connects a UCS DMS-250 switch to the line side of the central office. Off-network access line circuits accept incoming calls over a FGA trunk with access to store account codes, authorization codes, PIN codes, travel card numbers, and destination digits. Off-network access line circuits support two-way interface to FGA trunks.

Off-network access trunk/Feature Groups B or C

The off-network access trunk (ONAT)/Feature Group B (FGB)/Feature Group C (FGC) provides the switch with FGB capabilities. They interface incoming FGB/FGC calls with the optional capability to accept automatic number identification (ANI).

Equal access network trunk/Feature Group D

The equal access network trunk (EANT)/Feature Group D provides pre-subscribed access, cut-through dialing to permit signaling to continue after an interexchange carrier has been accessed. EANTs support authorization and account code verification, as well as incoming call screening using automatic number identification.

Inter-machine trunk

The inter-machine trunk (IMT) connects the switch to another switching office in a tandem configuration.

Billing records

Billing records are created in two billing streams. CDR and OSR are recorded in the interexchange carrier billing stream. AMA billing records, with associated extension records, are recorded in the AMA billing stream. The billing records produced depend on the trunk configuration (direct access or non-direct access).

Operator access trunk combinations

The switch generates different call billing records depending on the combination of direct or non-direct trunk circuits employed. In any operator-assisted toll call, up to six combinations of non-direct and direct access trunks set up an originating party to operator/operator to terminating

party connection. These combinations and their billing record association are illustrated in Table 3-1.

Direct access

Direct access generates a CDR/OSR pair in the billing stream. CDR and OSR are distinguishable by their individual record codes. The CDR RECCD is F0 or FX; OSR record codes are F1 for domestic operator assistance and F3 for international operator assistance.

Non-direct access

Non-direct access creates two CDRs, one OSR, an AMA record, and, many times, several AMA extension records. Two billing streams are used. The IXC billing stream generates CDRs and the AMA billing stream generates AMA records and AMA extension records.

Table 3-1
Direct access and non-direct access trunk configurations

Trunk configuration	Call records generated
Originating party to operator direct access/ operator to terminating party non-direct access	1 OSR/CDR pair, 1 CDR
Both originating party to operator and operator to terminating party direct access	1 OSR/CDR pair
Both originating party to operator and operator to terminating party non-direct access	1 OSR/CDR pair, 2 CDRs
Originating party to operator non-direct access/ operator to terminating party direct access	1 CDR, 1 OSR/CDR pair
Operator originated party direct access	1 OSR/CDR pair
Operator originated non-direct access	1 CDR, 1 OSR/CDR pair

Recording unit overflow

When switch recording units are not available, AMA records are generated in place of OSRs. EXT operational overflow measurements record resource shortages. Table ALARMTAB/OMTHRESH monitors operational measurements (OM) for specific thresholds over a predetermined time. When the threshold is exceeded, an OM alarm is generated along with an OM200 log to identify the OM that exceeded its threshold. The alarm level may be set at Major, Minor, or Critical and must be set low enough to generate an alarm as soon as overflow occurs.

Overflows indicate a system engineering problem that should be addressed immediately. Once a threshold has been exceeded and a log generated, another alarm for that OM will not generate for 15 minutes to prevent log buffer overflows.

Classes of billing

Class charge keys enter classes of billing that record billing methods for long distance calls. Two categories of long distance calls require billing data: station-to-station and person-to-person. There are five billing classes, as follows:

- Class 1, paid calls, are paid for by the calling party. They can be either station-to-station or person-to-person. Calls may be paid in cash or charged to the caller's telephone or room number.
  - — Person-to-person calls are directed to a specific person, extension, or room number at the called location. The call is announced by the operator, who remains on the line until the called party answers.
  - — Station-to-station calls are directed from one telephone to another. The operator retires from the call when ringing commences and timing for billing purposes begins as soon as the called station answers.
- Class 2, collect calls, are charged to the called party. A "collect call for anyone" is used when it is presumed that someone at the called location will recognize the caller and accept charges. They can be either station-to-station or person-to-person. Calls may be paid in cash or charged to the called party's telephone or room number.
- Class 3, special calling calls, are long distance calls charged to a third telephone number. A third telephone number is usually the caller's permanent home or business number, or calling card, major credit card, or authorization code. A third telephone number and credit card numbers, are operator-verified before conversation takes place. They can be either station-to-station or person-to-person.
- Class 4, special called calls, start out as collect calls. Billing is then changed by the answering party to a third telephone number or major credit card. They can be either station-to-station or person-to-person.
- Class 5, automatic collect calls, are calls made to 800 numbers when no other charges to the calling party are applied by the operator.

Call types

Table 3-2 describes the call types and the number of CDRs and OSRs generated for each call.

Table 3-2
Call types

Call type	Description	Number of CDRs generated	Number of OSRs generated
Auto collect	Operator presses the auto collect key, or call is made to an 800 number and no other class charge keys are pressed. A class charge key overrides auto collect.		
No-charge	Verification calls, charge adjustments, and operator-initiated calls. Field INFODIGS is set to 1.		
Charge adjustment	The first OSR contains charge adjustment information and the second contains terminating call information. Sequence numbers match.	1	2
Charge adjustment only	The first OSR contains charge adjustment information and the second does not contain terminating call information. Sequence numbers match.	1	2
Operator-originated	Direct access termination where a CDR/OSR record pair is generated. Sequence numbers match. The CDR does not contain originating trunk information.	1	1
Basic operator-assisted	Direct access origination and termination where the call is successfully terminated and billing is acceptable. A CDR/OSR pair with matching sequence numbers is generated. OSR code is F1 for domestic calls and F3 for international calls.	1	1

—continued—

Table 3-2
Call types (continued)

Call type	Description	Number of CDRs generated	Number of OSRs generated
Operator-assisted with multiple termination attempts	Direct access calls only. An OSR/CDR pair is generated for each unsuccessful attempt to complete the call. The sequence numbers for the final CDR and the OSR of the completed call match. CDR sequence numbers of unsuccessful attempts do not match. They may be matched downstream as CDR/OSR pairs by locating originating trunk group and member origination time, automatic number identification, and dialed number. ***Note:*** If the call was a 0 – type, the CDRs will not have a called number field, but the called number field appears in the OSR.	1	1
Third party billed	Direct access termination for third party verification.	1	1
	—end—		

Rating system

The switch rating system automatically computes charges for hotel-paid and time and charges request calls. The rating system is a collection of data tables containing the customer-dependent data needed to make real-time rate step and charges calculations. Calls where time and charges are quoted directly to the subscriber, hotel autoquotes, and voice quotes are rated on a real-time basis. System rate tables make use of the distances between originating and terminating exchanges and their geographical locations.

Interpreting billing

The billing number field in the OSR shows if a call was billed to a third party, calling card, or credit card. A maximum of 19 digits may be stored. Third party billing is registered with 10 digits in NPA-NXX-XXXX format followed by 0000. Calling card billing is registered with 19 digits in NPA format. Credit card billing is registered with a 10-digit reference number that starts with 1 and is followed by the file server number and a sequence number to match the record entry on the referenced file server.

19-digit major credit card number

The 19-digit major credit card number feature allows the entire credit card number to be stored instead of a sequence number. This capability simplifies billing by eliminating the need for cross-referencing whenever the major credit card number is 19 digits or less. Sequence numbers are retained in cases where the credit card number exceeds 19 digits.

Call reorigination

Basic call reorigination allows subscribers to sequence calls without again entering billing information. Once billing has been established by either calling card, credit card, automatic number identification (ANI) or authcode, subscribers may reoriginate their calls by entering the pound sign (#) followed by new directory digits.

This action redirects the call to another termination without having to hang up and dial a completely new call. Operator call billing is automatically updated to apply the initial calling party identification, for example, the authcode or calling card number, to the new reoriginated call.

Trunk types that support this feature are FGA, FGB, FGC, FGD, and DAL.

Calls eligible for call reorigination include station-to-station and person-to-person calls except for coin station paid calls. The billing types supported are credit card, ANI/pseudo automatic number identification (PANI), and authcode. Charge classes not eligible for reorigination are collect, called party billed, or third party billed.

To redirect these calls, subscribers must hang up and redial. Reorigination also does not apply to operator-initiated calls. When reorigination is requested over an ISUP IMT with release link functionality, the ISUP forwards an entry code that must be examined for reorigination eligibility.

Reorigination billing

For most calls, billing information is automatically copied into the new billing. When account codes are used along with authorization codes, the subscriber is prompted while dialing to put in an account code for the reoriginated call. When the reoriginated call is direct dial, only a CDR is required. For all operator-assisted calls, an OSR/CDR pair is generated for the first call. A CDR is generated only for each reoriginated call with copied billing information from the first call.

If there are no CDR recording units available, the reoriginated call is blocked due to the CDR_UNAVAIL_BLOCK office parameter. If set to Y, the call is blocked by receiving NO_SERVICE_CKT (NOSC) TREATMENT. If set to N, the reoriginated call may continue. This feature

interacts with the standard switch call reorigination feature and uses existing datafill options.

The switch billing number capacity accepts 19 digits to support call reorigination and the CDR billing field accommodates an extended OSR capacity.

Information copied from OSR is as follows:

- ANISP (ANI Spill)
- INFODIG (information digits)
- BILLNUMB (billing number)

Information copied from CDR is as follows:

- TRAP
- PINDIGS
- UNIVACC (universal account code)
- ORIGOPART (originating portion)

ISUP IMT and billing record generation

ISUP RLT affects the billing generation of a switch configuration. The operator services switch generates an OSR/CDR pair for the operator services portion of the call. The billing/bridging switch provides the subscriber billing portion of the call. The OSR contains only the relevant information passed over the ISUP IMT.

Cases affecting billing generation

Cases which affect billing generation are described in the following paragraphs.

No bridging attempt

When a call is being handled by an operator and the calling party hangs up, a CDR is generated at the originating switch for the first leg of the call. The CDR is generated whether the hang up occurred during extension of the call, or before RLT access is attempted,

Third party billed calls

The information contained is identical to that normally supplied for third party verification.

Multiple termination attempts

Multiple attempts presumes that the operator remains with the call, and an additional OSR/CDR pair is generated for each attempt at the switch. An OSR/CDR pair is generated for the final attempt at the bridging switch.

Bridged charge adjustment calls

An OSR/CDR pair is generated at the bridging switch for the call being completed. This OSR/CDR pair contains billing and charge adjust information.

Bridging and billing switching timing fields

Bridging and billing switch timing fields are STARTTIME and ELPSDTME.

The STARTTIME FIELD contains the date and time of called party answer or the start time as sent by the facility indicator parameter. Cancel time cancels the start time as sent. Each new start time sent over the ISUP resets this field. Start time and cancel time are sent in the facility indicator parameter.

The ELPSDTME field uses the STARTTIME sent over the facility indicator parameter in the ISUP to calculate elapsed time and call duration.

Office billing parameters

With ISUP RLT, office billing parameters affect billing generation at the tandem switch, and the bridging or billing switch as shown in Table 3-3.

Table 3-3
Office billing parameter changes

Switch	CDR for ISUP	OSR for ISUP	Record generated
Tandem switch	Y	Y	CDR
	Y	N	CDR
	N	Y	None
	N	N	None
Bridging switch	Y	Y	OSR/CDR
	Y	N	None
	N	Y	None
	N	N	None

Digit format requirements

The 15-digit billing number formats are shown in Table 3-4. In the table, x is any digit from 0 to 9.

Table 3-4
Billing number digit formats

Digit	Format	Type
15	xxxxxxxxxxxxxxx	Major credit card ***Note:*** The entire 15 digits are significant in the makeup of the major credit card number.
14	NPA - NXXX The last four digits are 0000.	Third party numbers
14	The last seven digits are 0000000.	Authcodes

Sequence numbers separate major credit card sequence (BILLNUM) numbers that are different from true call billing numbers, calling cards, authcodes, credit cards, and downstream sequence numbers stored in the BILLNUM field. Sequence numbering starts at 100-000-0001 and rolls over at 199-999-9999. Sequence numbering control, within a dedicated sequence numbering range, resides independently in each file server.

An example for each of the four file servers is as follows:

- file server 1 = 110-000-0001 to 119-999-9999
- file server 2 = 120-000-0001 to 129-999-9999
- file server 3 = 130-000-0001 to 139-999-9999
- file server 4 = 140-000-0001 to 149-999-9999

Sequence numbering prevents duplication of billing numbers.

Calling card numbers are 14 digits long in NPA-NXXX format. A third party number is 14 digits long in NPA-NXXX format. The last four digits are 0000. Authcodes are 14 digits long. The last seven digits are 0000000.

EOPS call extension block

The amount and type of information stored in the OSR record is limited by the size of the base data storage area. This data storage area has always formed the basis of AMA and OSR record generation. An extension block to increase data storage, DMS-250_EOPS_EXT, is added to every TOPS_NUM_RU (TOPS number of recording units in table OFCENG). It increases the data store of the switch according to the size of this office parameter. If no DMS-250_EOPS_EXT blocks are available during call processing, the call is routed to storage overflow reorder (SODR) treatment, and the subscriber is advised to hang up and try again.

Class of service override

Class of service override (COSOVE) allows a subscriber to dial an authcode after class of service (COS) screening has failed for the original authcode or ANI. COSOVE is available on DAL trunks with fully filed authcodes and EANT trunks that are software network capability (SNC) dedicated. 0- and 0+ calls on SNC dedicated trunks are blocked, so COSOVE interaction occurs only on DAL trunks.

If COS screening fails, the subscriber is prompted to dial another authcode. If COS screening succeeds for the second authcode, the call continues. If COS screening fails for the second authcode, treatment is set and the call continues with treatment routing. If COSOVE is invoked and COS screening succeeds for the second authcode, routing continues according to the OPCHIDX for the first authcode. Reorigination is not supported when COSOVE has been invoked.

Class of Service screening on 0+ and 0- calls

Class of Service screening on 0- and 0+ calls provide the following:

- a means to alternately route operator service calls (0-, 0+, 01+, EA INTOA) by enhancing the class of service screening
- time of day screening for 0- calls
- two class of service call types that identify 0- or 0+ calls in table COSUS
- the capability to route an operator service call based on the authcode or 10-digit ANI associated with the call
- the option to disallow routing calls that are given permanent signal treatment (PSIG) to the operator

Class of Service screening supports originations on the following agencies:

- FGA
- FGB
- FGC
- PTS FGD
- CCS7 FGD
- DAL

Time of day screening for 0- calls

The database entry for the calling authcode, 10-digit ANI, or PANI assigns an index, MLTCOSID, to the call. The default MLTCOSID is 0, which indicates no screening will occur in table COSUS. If the MLTCOSID is anything other than 0, table MULTICOS and then table COSUS is accessed with a calltype of zminus.

Only time of day screening (no destination screening) is provided for calls with zminus or zplus COS calltype.

Calltypes for 0- and 0+ calls

A call receives Class of Service screening based on its Class of Service calltype. Calltypes are

- onnet (occurs when pretranslations yield a calltype of ONNET)
- iddd (occurs when pretranslations yield a translation system of INTERNATIONAL or INTERNATIONAL PARTITIONED)
- dd (occurs when the call is neither onnet or iddd)

- zplus (occurs when pretranslations yield this calltype. However, time of day and destination screening still may be applied to 0+ calls when the ZPLUS selector is not specified.)

Routing for 0- calls

0- calls route to the operator position specified in the field ZEROMPOS in table TRKGRP (or OPERRTE, if present) for the trunk group on which the call is originated. In addition, the 0- call may be routed to an alternate operator position based on the calling authcode, 10-digit ANI, or PANI, which are screened in table AUTHCODU, AUTHCODx (x = 2, 3, 4, 5, as applicable), table ANISCUSP, or tables ANIVAL/UNIPROF.

Note: The OPERRTE feature provides alternate routing for operator service calls based on the originating trunk group's carrier number. If the OPERRTE feature is present, operator service calls with a non-zero carrier number route according to table OPERRTE. If OPERRTE is not present or if the carrier number is 0, routing uses TRKGRP values.

The optional field OPCHIDX in table AUTHCODx, tables ANISCUSP and UNIPROF may be datafilled as an index between 1 and 1023, inclusive. Table ANIVAL points to an entry in table UNIPROF. This OPCHIDX index accesses table OPCHOICE. Of the five OPCHOICE fields—ZMPOS, ZPRTNM, and INTOAPOS—ZMPOS specifies to which position to route the call. If ZMPOS is set to none, then field ZMRTE is checked. IF ZMRTE is "none," then the entry in table TRKGRP is used.

Routing for EA INTOA calls

EA INTOA calls route to the operator position specified in table OFCVAR (or OPERRTE, if present). In addition, these calls route to an alternate operator position based on the ANI.

Note: The OPERRTE feature provides alternate routing for operator service calls based on the originating trunk group's carrier number. If the OPERRTE feature is present, operator service calls with a non-zero carrier number route according to table OPERRTE. If OPERRTE is not present or if the carrier number is 0, routing uses TRKGRP values.

The optional field OPCHIDX datafilled as an index between 1 and 1023, inclusive, accesses table OPCHOICE. Of the five fields in table OPCHOICE—ZMPOS, ZPPRTNM, and INTOAPOS—INTOAPOS specifies to which position to route the call. IF INTOAPOS is "none," then INTOARTE is checked. If INTOARTE is "none," then OFCVAR EA_INTOA_Position is used.

Routing for 01+ calls

01+ calls route using the pretranslator specified in field PRTNM in table TRKGRP (or OPERRTE, if present) for the trunk group on which the call

originates. In addition, these calls route to an alternate translator based on the calling authcode, 10-digit ANI, or PANI, which are screened in table AUTHCODx, table ANISCUSP, or tables ANIVAL/UNIPROF.

Note: The OPERRTE feature provides alternate routing for operator service calls based on the originating trunk group's carrier number. If the OPERRTE feature is present, operator service calls with a non-zero carrier number route according to table OPERRTE. If OPERRTE is not present or if the carrier number is 0, routing uses TRKGRP values.

Routing for 0+ calls

0+ calls route using the pretranslator specified in field PRTNM in table TRKGRP (or OPERRTE, if present) for the trunk group on which the call originates. In addition, these calls route to an alternate translator based on the calling authcode, 10-digit ANI, or PANI, which are screened in table AUTHCODx, table ANISCUSP, or tables ANIVAL/UNIPROF.

Note: The OPERRTE feature provides alternate routing for operator service calls based on the originating trunk group's carrier number. If the OPERRTE feature is present, operator service calls with a non-zero carrier number route according to table OPERRTE. If OPERRTE is not present or if the carrier number is 0, routing uses TRKGRP values.

The optional field OPCHIDX, datafilled as an index between 1 and 1023, inclusive, accesses table OPCHOICE. Of the five fields in table OPCHOICE—ZMPOS, ZPPRTNM, and INTOAPOS—ZPPRTNUM specifies which pretranslator to use to route the call.

Routing for calls with permanent signal (PSIG) treatment

Some calls with subscriber dialed digits that receive PSIG treatment route to an operator position even if the number is not 0- or 0+.

For example, if the call originates on an FGD trunk with subscriber dialing or a DAL trunk, or if the operator position is not datafilled, the call is given PSIG treatment. However, if the originating trunk is not an FGD or DAL trunk and the operator position is datafilled, the treatment is reset to NIL and the call routes to a specified position.

Correct PSIG treatment is ensured through office parameter OPERATOR_ON_PSIG in table OFCVAR.

Call number type

The originating trunk type, trunk group data, and dialing plan may all be used to determine the billing type of a call, as shown in Table 3-5. If the billing type is an authcode, the authcode tuple in table AUTHCODx also determines authcode features such as MLTCOSID and OPCHOICE index.

Similarly, if the billing type is ANI, the tuple in table ANISCUSP or tables ANIVAL/UNIPROF is used.

Table 3-5
Billing types

Billing type	Trunk type	Dial plan
AUTHCODE	DAL	AUTHCODE dialing plan
	FGA	AUTHCODE dialing plan
	FGB	AUTHCODE dialing plan
	FGC	AUTHCODE dialing plan
	FGD	AUTHCODE dialing plan
		Cut-through without AUTHCODE
		UA
ANI	FGD	Pure
		Cut-through without AUTHCODE
		International
PANI	DAL, FGA, FGB, FGD	PANI

For PANI calls, the billing number is always recorded in the ANISP field of the CDR, however, the database tuple used for additional features (such as MLTCOSID and OPCHIDX) can either come from ANISCUSP, ANIVAL/UNIPROF or AUTHCODx, depending on the PANI selector and some optional features, as shown in Table 3-6.

Note: The VANIDB option specifies whether the PANI is verified in the ANI database.

Table 3-6
Billing types for PANI calls

PANIVAL field of TRKGRP	VANIDB option set	VANIDB option not set
None	AUTHCODE	AUTHCODE
ANISNPA, ANIPIN	ANI	ANI
AUTHANI	ANI	Neither AUTHCODE or ANI
AUTHONLY	AUTHCODE	AUTHCODE

Selector AUTHANI adds support for authcode features and makes ANI validation, which requires NPA-NXX-XXXX format, optional.

AUTHANI and AUTHPIN selectors allow a single PIN or multi-PIN to form a PIN-based PANI.

AUTHONLY allows PANI to be comprised of either SNPA+AUTHCODE or AUTHCODE+PIN, where the PIN is either a single or a multi-pin. With this selector, authcode features are supported and ANI screening is bypassed. In addition, if PANI format is AUTHCODE+PIN, PIN may be captured in the PINDIGS field. If the format is SNPA+AUTHCODE, the PINDIGS field is blank.

PANI is treated by the operator services call processing software as ANI.

Dial plan types

Various dial plans allow the switch to work with networks comprised of switches from other networks. These are described in the following paragraphs.

For PANI and FGD calls, the ANI/PANI displays in the calling number field of the operator station when a call is routed to the operator because of ANI database failure, ANI account recently disallowed, or ANI account status not allowed.

FGD cut-through calls require an authcode on a trunk-by-trunk basis. This is accommodated through option CTRUAUTH in the OPTION field of table TRKGRP for EANT trunks. If the option is set, FGD cut-through calls require an authcode; if the option is not set, an authcode is not supported on FGD cut-through calls.

FGD cut-through and FGD transitional calls with an authcode generate a PANI on a trunk-by-trunk basis. This is accommodated by the option PANIVAL in the OPTION field of table TRKGRP for EANT trunks. This option allows selection of one of four PANI values: AUTHANI, ANIPIN, ANISNPA, or AUTHONLY.

FGD transitional calls generate a PANI while FGD cut-through calls with an authcode remain ANI calls on the same trunk group. This is accommodated by field CTRUPANI for the PANIVAL option in table TRKGRP for EANT trunks. If set to Y, FGD cut-through calls with an authcode generate a PANI which overrides the ANI. If set to N, FGD cut-through calls with an authcode remain ANI calls and no PANI is generated. Since an authcode is required for PANI, the CTRUAUTH option must be set if CTRUPANI is set to Y.

DAL, FGA, FGB, FGD cut-through, FGD transitional, and FGD universal access 0+ and 01+ calls route to the operator without an authcode. 0- calls route to the operator with or without an authcode. Option OPNOAUTH in the OPTION field of table TRKGRP for EANTs, DALs, ONALs, and ONATs allow this to occur. If set, no authcode is required for 0+ and 01+ calls. If not set, the same call needs an authcode to route to an operator station. This allows one common trunk group to accept both authcode-based and non-authcode based dialing plans. The type of dialing plan used is determined by the subscriber digit stream. For example, if the subscriber digits identify the call as a 0+ or 01+ call, the non-authcode-based dialing plan is assumed and the call is routed to the operator. If the first digit is 1-9, or if the call is identified as a 011+ call, an authcode dialing plan is assumed. Only the authcode first dialing plan is supported for operator calls routing without an authcode.

For PANI and FGD cut-through calls with an authcode, ANI database failure treatment is not applied if the authcode is valid. This is accommodated by the option VANIDB in the OPTION field of table TRKGRP for DAL, ONAL, ONAT, and EANT trunks. When set, PANI and FGD cut-through calls which fail screening in table ANISCUSP are given ANI database failure treatment. If not set, PANI and FGD cut-through calls with a valid authcode are not given ANI database failure treatment. For ANIPIN and ANISNPA PANI calls, the authcode is not validated, so VANIDB must be set. For AUTHONLY PANI calls, the PANI is never validated, so VANIDB cannot be set.

For FGB non-PANI calls routed to the operator, append PIN digits to the authcode display in the specified number field. This allows the use of up to eleven-digit authcodes recognized at the operator station by combining the authcode and PIN values. This is accommodated by the option AUTHPIN in the OPTION field of table TRKGRP for ONAT trunks. When set, the special number field for FGB non-PANI calls routed to the operator contains the

authcode followed by the PIN. If not set, the special field for FGB non-PANI calls routed to the operator contains the authcode only. The PIN can be datafilled either as SINGLE PIN (in the authcode database) or MULTIPIN and referenced by an index and a length in the authcode database).

AMA/billing information

For FGD cut-through and FGD transitional PANI calls

- ANISP field contains the PANI
- INFODIGS field contains 00
- BILLNUM field is blank
- PINDIGS field is blank

If partial dial (PDIL) or permanent signal (PSIG) treatment is applied when collecting digits used to generate a PANI, the partially formed PANI is placed in the BILLNUM field of the CDR.

Reorigination for operator services with RLT

Operator calls using RLT SS7 protocol are returned to the operator upon reorigination. Indication is provided in the answer message (ANM) to enable or disable this functionality.

Enhanced operator services reorigination is supported on the following originating agencies:

- DAL
- FGA
- FGB
- FGC
- per-trunk signaling (PTS) FGD
- common channel signaling #7 (SS7) FGD

Calls terminating to 800 or 900 numbers from operator services are allowed to reoriginate back to the operator.

Calls not designated as operator assisted (OA) are allowed to reoriginate.

Office parameter REORIG_FOR_OPERATOR_SERVICES enables or disables operator services reorigination on a per-switch basis.

Operator calls using RLT

For an operator call using the RLT SS7 protocol, operator services reorigination has one of three possible behaviors:

- If operator services reorigination is allowed and reorigination is invoked, the originator receives dialtone. A new dialed number is collected, translated, and routed (Normal reorigination).
- If operator services reorigination is allowed and reorigination is invoked, the call is immediately translated and routed based on the original dialed number. No dialtone is returned, and no new digits are collected (Boomerang reorigination).
- No reorigination is allowed for the call.

The operator services reorigination behavior for operator calls using RLT is determined on a per-call basis by a field Reorig_Type provided in the Operator_Information parameter of a FAR or ANM message.

The Call Reference parameter is parsed to extract the call identity of the incoming ANM message. The call identity is also present in the Generic_Digits parameter of a FAR message. The CALLID received in the FAR message takes precedence over the CALLID received in the ANM message. This call identity is included in the IAM message of the reoriginated call.

Boomerang Reorigination

The RLT operator services reorigination behavior of immediately translating and routing the reoriginated call is based on the original dialed number. In this instance, no dialtone is returned when the reorigination digit is pressed, and no new digits are collected. The call is handled as though it is reoriginated with the original dialed number.

All traffic on an RLT SS7 IMT trunk is assumed to use operator services as long as office parameter ALL_RLT_OPR_CALLS is set to Y. When set to N, non-operator calls are handled normally. An OSR is generated at the bridging switch for all calls, even those not designated as OA.

The dialed number from the CDR recording unit of the current call is used to reoriginate. If there is no CDR generated for the current call, reorigination is not allowed; the call is given NO_SERVICE_CRKT (NOSC) treatment regardless of the OFCENG office parameter CDR_UNAVAIL_BLOCK.

While there is no number dialed for the reoriginated call, the CDR generated indicates that the original dialed number is used as dialed digits. The PREDIG field reflects the prefix digit of the original dialed number; the DIALEDNO field contains the remaining digits originally dialed.

A field in the Transit Network Selector parameter of the outgoing SS7 IAM indicates that the call is a Boomerang reoriginated call (translating and routing based on the original dialed number). The call identity obtained from the Call Peference parameter of the incoming SS7 ANM or from a Generic Digit parameter from a FAR, for the previous call is returned in a Generic Digits parameter added to the IAM. This parameter indicates the predecessor of the reoriginated call.

Usage notes

- Reorigination is allowed only for the following station-to-station or person-to-person non-collect billing types:
  - calling card
  - credit card
  - ANI
  - authcode
- Third party billing verification calls are not allowed to reoriginate.
- Reorigination is not allowed on calls involving recall to operator services. This restriction includes calls requesting time and charges.
- Prison calls are not allowed to reoriginate.
- 911 calls are not allowed to reoriginate.
- Reorigination is not allowed until the operator has floated and released the call from operator services. A transfer float from the operator does not activate reorigination on the originating agency.
- For RLT calls, reorigination is allowed only if the call is bridged at the originating caller's switch.
- Calls terminating from the operator directly to a treatment are not allowed to reoriginate.
- Reorigination is not allowed for calls in queue for an operator position.
- Operator originated calls are not allowed to reoriginate.
- Non-RLT calls terminating to 800 or 900 numbers from operator services are not allowed to reoriginate.

RLT pretranslator

The switch RLT provides routing through translations, operator assistance for emergency calls, intercept indication for treated calls, special keystroke routing, routing to live operator queues, and the ability to match CDR/OSR records from the remote office.

RLT accomplishes the following functions:

- allows a pretranslator other than the one used by the caller's origination at the remote office to be used by the operator to complete an operator-assisted call
- allows the operator to remain on the line after completing the customer's call
- uses the CALLID field to match a given call's OSRs at the host and remote switches and modify an OSR bit to identify a successfully bridged call

Description

When 0+/0- calls enter a remote switch, the calls route to the ESP via an ISUP RLT IMT. The routing translations from the remote switch to the ESP switch are determined by the pretranslator of the incoming call. This uses a different pretranslator than when the operator redirects the call.

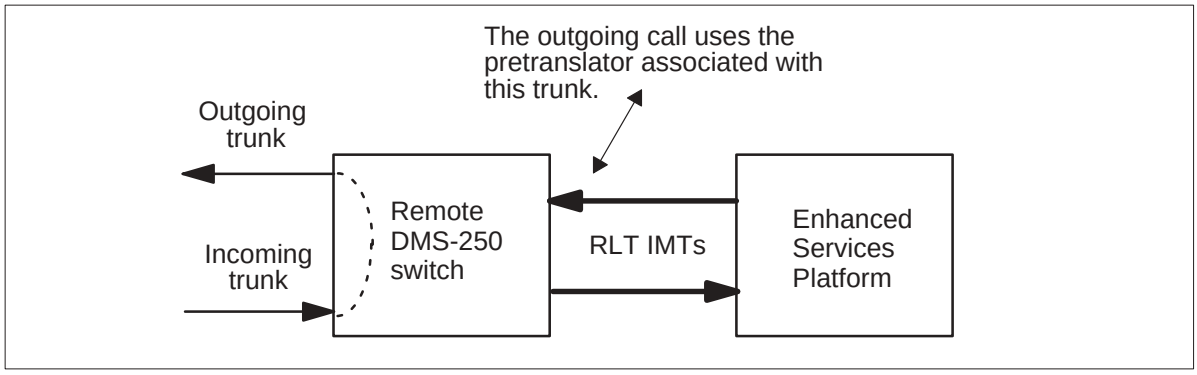
For third party scenario calls, a second RLT trunk establishes the connection between the ESP and remote switches, as shown in Figure 3-1. The second RLT trunk uses the pretranslator associated with the trunk group that carries the operator's call. Both trunks are released after the ESP receives the Facility Accept (FAA) message from the remote switch.

The second trunk is only used for the time interval between the initial address message (IAM), and when the remote switch bridges the two calls and returns an FAA message.

Using two RLT trunks for all calls allows the operator to stay on the line as necessary.

Although the second trunk between the ESP and remote are up ordinarily only for the duration of the operator's interaction with the called party, in the event of a bridging failure at the remote, both trunks remain up for the duration of the call.

Figure 3-1
Release link trunk call structure for third party scenario RLT calls



Treated calls

Any treatment, including permanent signal (PSIG), partial dial (PDIL), ANI database failure (ADBF), and invalid authcode (INAU), routes over an ISUP RLT IMT from a remote office to an ESP.

When a treated call routes to an operator, the remote switch sets the nature of address indicator in the called party number parameter in the IAM to the value of 1110000, which indicates it is a treated call. The remote switch also sends a Generic Digits parameter to the ESP.

Tuple RLTIMT in table TMTCNTL translates treated calls coming from RLT IMTs.

For calls in a multiple RLT configuration, each office is responsible for routing the treatment. This means when a treated call arrives at a tandem switch, the RLTIMT tuple in table TMTCNTL determines how the call routes. The treatment is retrieved from the Generic Digits parameter.

Treated calls route over an ISUP RLT IMT from a remote office to an ESP office. In addition, there is an indication that they have been intercepted.

Internal billing formatters

CAUTION

Changes may affect site functionality

Changes to the billing system require updates to engineering parameters that may affect site functionality. Any changes to the billing system may affect downstream processing of billing records. Nortel Networks recommends that only experienced personnel make changes to the billing system.

The UCS14 software provides internal billing formatters for the following CDR templates. You can identify one of the following CDR templates that best fits your billing needs.

- The CDR2AMA2 template consists of all fields required to convert a CDR to a BAF record. The CDR2AMA2 template contains 50 words of information.
- The CDR2AMA3 template consists of all fields required to convert a CDR to a BAF record. The CDR2AMA3 template contains 115 words of information.
- The CDR2AMA template consists of all fields required to convert a CDR field to a specific BAF record. The CDR2AMA template contains 39 words of information.
- The UCS09 template consists of all UCS08 CDR fields, plus fields added by the UCS09 software.
- The UCS11 template consists of all UCS09 CDR fields and no new fields are added or existing fields modified.
- The UCS12 template consists of all UCS11 CDR fields, plus fields added by the UCS12 software.
- The UCS13 template consists of all UCS12 CDR fields, plus fields removed by the UCS13 software.

UCS14 Default Template

The default template for the UCS14 load is the UCS13 template from table CDRTMPLT. The default template is used by the billing system in the following conditions:

- in a newly commissioned UCS DMS-250 switch with a UCS14 software load. The office parameter FCDR_CDR_TMPLT in table OFCENG, is set to INTERNAL_TMPLT UCS14.
- for a UCS DMS-250 switch going from a UCS11, UCS12, or UCS13 software release to the UCS14 software release. The template identified in the FCDR_CDR_TMPLT office parameter in the UCS14 software release is set from the UCS09, UCS11, UCS12, or UCS13 software release. However, if the template identified is not a valid template in the UCS14 software release, then the FCDR_CDR_TMPLT value is reset to the default. The default is INTERNAL_TMPLT UCS14. This also applies to the CDRTMPLT option.
- if the billing system cannot determine which template to use to format a CDR, or an error occurs in the system. The UCS14 default template is then used to format the CDR.

Internal formatter for the CDR2AMA2 and CDR2AMA3 templates

For more information on the CDR2AMA2 and the CDR2AMA3 field definitions, refer to Appendix A, “CDR field descriptions.”

For more information on the CDR2AMA2 and CDR2AMA3 templates, refer to Appendix B, “CDR Templates.”

Figures 10-10 and 10-11 in Appendix B show the CDR2AMA2 and CDR2AMA3 templates in NORMAL layout.

Note: Only NORMAL format is valid for the internal formatter for the CDR2AMA2 and CDR2AMA3 templates.

Provisioning

When you want to set the internal formatter for the CDR2AMA2 or CDR2AMA3 templates, perform the following procedure.

Note: Changes to the billing system may affect the downstream processor.

Provisioning the CDR2AMA2 and CDR2AMA3 templates using the internal billing formatter

At the CI prompt

1 Enable the UCS DMS-250 to make changes to the office parameters by typing:

>RWOK on

Example of a MAP response:

```
WRITE ACCESS ENABLED FOR RESTRICTED DATA
```

CAUTION

Changes may affect site functionality

After the RWOK command is issued, changes to engineering parameters can be made. Changes to these parameters may affect site functionality. Any changes to the billing system may affect downstream processing of billing records. Nortel Networks recommends that only experienced personnel make changes to the billing system.

2 Enter table OFCENG.

>TABLE OFCENG; FORMAT PACK

3 Change to the CDR2AMA2 or CDR2AMA3 Internal template by typing one of the following commands:

>REP FCDR_CDR_TMPLT INTERNAL_TMPLT CDR2AMA2
>REP FCDR_CDR_TMPLT INTERNAL_TMPLT CDR2AMA3

4 Set the size of the template by typing one of the following commands:

>REP FCDR_CDR_SIZE FIXED_SIZE 41
>REP FCDR_CDR_SIZE FIXED_SIZE 106

5 Identify the way you want your billing records populated:

>REP FCDR_CDR_WORD_LAYOUT normal

6 Enter the CTMPLT tool to complete the changes by typing:

>CTMPLT

7 Upgrade the billing system to reflect the changes by typing:

>UPGRADE

> **ATTENTION**
>
> The UPGRADE command automatically rotates any mounted billing files.
>
> Use the UPGRADE command any time a change is made to the FCDR (Flexible CDR) office parameters in table OFCENG.

8 Ensure upgrade was performed by typing:

>STATUS

Example of a MAP response:

```
The current Active template index is: 2
The timestamp of the Active template index is: 1998/06/12 04:18:22.000 FRI.
                          Active            Edit           History
                       ---------------- ---------------- -----------------
FCDR_BHR_SIZE:          12                12               60
FCDR_GSR_SIZE:           5                 5               60
FCDR_GER_SIZE:          24                24               60
FCDR_ESR_SIZE:           5                 5               60
FCDR_SRR_SIZE:           6                 6               60
FCDR_CCR_SIZE:           7                 7               60
FCDR_OSR_SIZE:          38                38               60
FCDR_CDR_SIZE
Method:                FIXED_SIZE        FIXED_SIZE       FIXED_SIZE
Length:                 41                41               83
FCDR_CDR_TMPLT
Method:                INTERNAL_TMPLT    INTERNAL_TMPLT   INTERNAL_TMPLT
Template Index:        CDR2AMA2           CDR2AMA2         UCS14
FCDR_CDR_WORD_LAYOUT: NORMAL             NORMAL           READLR
FCDR_GEN_600_LOG:       N                  N                N
FCDR_GEN_601_LOG:       N                  N                N
```

Internal billing formatter for the CDR2AMA template

The CDR2AMA template is 39 words in length, consisting of 37 fields of data and 2 words of header information.

For more information on the CDR2AMA field definitions, refer to Appendix A, “CDR field descriptions.”

For more information on the CDR2AMA template, refer to Appendix B, “CDR Templates.”

Figure 10-1 in Appendix B shows the CDR2AMA template in NORMAL layout.

Note: Only NORMAL format is valid for the internal formatter for the CDR2AMA template.

Provisioning

When you want to set the internal formatter for the CDR2AMA template, perform the following procedure.

Note: Changes to the billing system may affect the downstream processor.

Provisioning the CDR2AMA template using the internal billing formatter

At the CI prompt

1 Enable the UCS DMS-250 to make changes to the office parameters by typing:

>RWOK on

Example of a MAP response:

```
WRITE ACCESS ENABLED FOR RESTRICTED DATA
```

CAUTION

Changes may affect site functionality

After the RWOK command is issued, changes to engineering parameters can be made. Changes to these parameters may affect site functionality. Any changes to the billing system may affect downstream processing of billing records. Nortel Networks recommends that only experienced personnel make changes to the billing system.

2 Enter table OFCENG.

>TABLE OFCENG; FORMAT PACK

3 Change to the CDR2AMA Internal template by typing the following command:

>REP FCDR_CDR_TMPLT INTERNAL_TMPLT CDR2AMA

4 Set the size of the template by typing the following command:

>REP FCDR_CDR_SIZE FIXED_SIZE 39

5 Identify the way you want your billing records populated:

>REP FCDR_CDR_WORD_LAYOUT normal

6 Enter the CTMPLT tool to complete the changes by typing:

>CTMPLT

7 Upgrade the billing system to reflect the changes by typing:

>UPGRADE

> **ATTENTION**
>
> The UPGRADE command automatically rotates any mounted billing files.
>
> Use the UPGRADE command any time a change is made to the FCDR (Flexible CDR) office parameters in table OFCENG.

8 Ensure upgrade was performed by typing:

>STATUS

Example of a MAP response:

```
The current Active template index is: 2
The timestamp of the Active template index is: 1998/06/12 04:18:22.000 FRI.
                          Active            Edit           History
                       ---------------- ---------------- -----------------
FCDR_BHR_SIZE:          12                12               60
FCDR_GSR_SIZE:           5                 5               60
FCDR_GER_SIZE:          24                24               60
FCDR_ESR_SIZE:           5                 5               60
FCDR_SRR_SIZE:           6                 6               60
FCDR_CCR_SIZE:           7                 7               60
FCDR_OSR_SIZE:          38                38               60
FCDR_CDR_SIZE
Method:                FIXED_SIZE        FIXED_SIZE       FIXED_SIZE
Length:                 39                39               83
FCDR_CDR_TMPLT
Method:                INTERNAL_TMPLT    INTERNAL_TMPLT   INTERNAL_TMPLT
Template Index:        CDR2AMA2           CDR2AMA2         UCS14
FCDR_CDR_WORD_LAYOUT: NORMAL             NORMAL           READLR
FCDR_GEN_600_LOG:       N                  N                N
FCDR_GEN_601_LOG:       N                  N                N
```

Internal billing formatter for the UCS09 template

The UCS09 CDR is 83 words in length and replaces the previously used ROUTE LIST (RTELIST field = 10 bits) with ROUTE INDEX (RTEINDEX field = 14 bits).

For more information on the CDR field definitions, see Appendix A, “CDR field descriptions.”

For more information on the UCS09 CDR templates, see Appendix B, “CDR Templates.”

Figure 10-2 in Appendix B shows the UCS09 CDR template in READLR layout.

Note: The internal billing formatter for the UCS09 template only supports the READLR layout.

Provisioning

When you want to set the internal billing formatter for the UCS09 template, perform the following procedure.

Note: Changes to the billing system may affect the downstream processor.

Provisioning the UCS09 template using the internal billing formatter

At the CI prompt

1 Enable the UCS DMS-250 to make changes to the office parameters by typing:

>RWOK on
Example of a MAP response:

```
WRITE ACCESS ENABLED FOR RESTRICTED DATA
```

CAUTION
Changes may affect site functionality
After the RWOK command is issued, changes to engineering parameters can be made. Changes to these parameters may affect site functionality. Any changes to the billing system may affect downstream processing of billing records. Nortel Networks recommends that only experienced personnel make changes to the billing system.

2 Enter table OFCENG.

>TABLE OFCENG; FORMAT PACK

3 Change to the UCS09 Internal template by typing:

>REP FCDR_CDR_TMPLT INTERNAL_TMPLT UCS09

4 Set the size of the template by typing:

>REP FCDR_CDR_SIZE FIXED_SIZE 83

5 Identify the way you want your billing records populated:

>REP FCDR_CDR_WORD_LAYOUT readlr

6 Enter the CTMPLT tool to complete the changes by typing:

>CTMPLT

7 Upgrade the billing system to reflect the changes by typing:

>UPGRADE

> **ATTENTION**
>
> The UPGRADE command automatically rotates any mounted billing files.
>
> Use the UPGRADE command any time a change is made to the FCDR (Flexible CDR) office parameters in table OFCENG.

8 Ensure upgrade was performed by typing:

>STATUS

Example of a MAP response:

```
The current Active template index is: 2
The timestamp of the Active template index is: 1998/06/12 04:18:22.000 FRI.
                          Active            Edit           History
                       ---------------- ---------------- -----------------
FCDR_BHR_SIZE:          12                12               60
FCDR_GSR_SIZE:           5                 5               60
FCDR_GER_SIZE:          24                24               60
FCDR_ESR_SIZE:           5                 5               60
FCDR_SRR_SIZE:           6                 6               60
FCDR_CCR_SIZE:           7                 7               60
FCDR_OSR_SIZE:          38                38               60
FCDR_CDR_SIZE
Method:                FIXED_SIZE        FIXED_SIZE       FIXED_SIZE
Length:                 83                83               83
FCDR_CDR_TMPLT
Method:                INTERNAL_TMPLT    INTERNAL_TMPLT   INTERNAL_TMPLT
Template Index:        UCS09             UCS09            UCS13
FCDR_CDR_WORD_LAYOUT: READLR             READLR           READLR
FCDR_GEN_600_LOG:       N                 N                N
FCDR_GEN_601_LOG:       N                 N                N
```

Internal billing formatter for the UCS11 template

The UCS11 CDR is 83 words in length. No new fields are added and no existing fields are modified or deleted from the UCS09 CDR.

For more information on the CDR field definitions, see Appendix A, “CDR field descriptions.”

For more information on the UCS11 CDR templates, see Appendix B, “CDR Templates.”

Figure 10-4 in Appendix B shows the UCS11 CDR template in READLR layout.

Note: The internal billing formatter for the UCS11 template only supports the READLR layout.

Provisioning

When you want to set the internal billing formatter for the UCS11 template, perform the following procedure.

Note: Changes to the billing system may affect the downstream processor.

Provisioning the UCS11 template using the internal billing formatter

At the CI prompt

1 Enable the UCS DMS-250 to make changes to the office parameters by typing:

>RWOK on

Example of a MAP response:

```
WRITE ACCESS ENABLED FOR RESTRICTED DATA
```

CAUTION

Changes may affect site functionality

After the RWOK command is issued, changes to engineering parameters can be made. Changes to these parameters may affect site functionality. Any changes to the billing system may affect downstream processing of billing records. Nortel Networks recommends that only experienced personnel make changes to the billing system.

2 Enter table OFCENG.

>TABLE OFCENG; FORMAT PACK

3 Change to the UCS11 Internal template by typing:

>REP FCDR_CDR_TMPLT INTERNAL_TMPLT UCS11

4 Set the size of the template by typing:

>REP FCDR_CDR_SIZE FIXED_SIZE 83

5 Identify the way you want your billing records populated:

>REP FCDR_CDR_WORD_LAYOUT readlr

6 Enter the CTMPLT tool to complete the changes by typing:

>CTMPLT

7 Upgrade the billing system to reflect the changes by typing:

>UPGRADE

> **ATTENTION**
>
> The UPGRADE command automatically rotates any mounted billing files.
>
> Use the UPGRADE command any time a change is made to the FCDR (Flexible CDR) office parameters in table OFCENG.

8 Ensure upgrade was performed by typing:

>STATUS

Example of a MAP response:

```
The current Active template index is: 2
The timestamp of the Active template index is: 1999/03/09 00:31:53.000 TUE.
                          Active            Edit            History
                       ---------------- ---------------- -----------------
FCDR_BHR_SIZE:          60                60                60
FCDR_GSR_SIZE:          60                60                60
FCDR_GER_SIZE:          60                60                60
FCDR_ESR_SIZE:          60                60                60
FCDR_SRR_SIZE:          60                60                60
FCDR_CCR_SIZE:          60                60                60
FCDR_OSR_SIZE:          60                60                60
FCDR_CDR_SIZE
Method:                FIXED_SIZE        FIXED_SIZE        FIXED_SIZE
Length:                 83                83                83
FCDR_CDR_TMPLT
Method:                INTERNAL_TMPLT    INTERNAL_TMPLT    INTERNAL_TMPLT
Template Index:        UCS11             UCS13              UCS13
FCDR_CDR_WORD_LAYOUT: READLR             READLR            READLR
FCDR_GEN_600_LOG:       N                 N                 N
FCDR_GEN_601_LOG:       N                 N                 N
```

Internal billing formatter for the UCS12 template

The UCS12 CDR is 83 words in length and is altered from the UCS11 CDR. The eight bit OPCHOICE field is removed and a ten bit EXOPCH field is added in its place.

For more information on the CDR field definitions, see Appendix A, “CDR field descriptions.”

For more information on the UCS12 CDR templates, see Appendix B, “CDR Templates.”

Figure 10-4 in Appendix B shows the UCS12 CDR template in READLR layout.

Note: The internal billing formatter for the UCS12 template only supports the READLR layout.

Provisioning

When you want to set the internal billing formatter for the UCS12 template, perform the following procedure.

Note: Changes to the billing system may affect the downstream processor.

Provisioning the UCS12 template using the internal billing formatter

At the CI prompt

1 Enable the UCS DMS-250 to make changes to the office parameters by typing:

>RWOK on

Example of a MAP response:

```
WRITE ACCESS ENABLED FOR RESTRICTED DATA
```

CAUTION

Changes may affect site functionality

After the RWOK command is issued, changes to engineering parameters can be made. Changes to these parameters may affect site functionality. Any changes to the billing system may affect downstream processing of billing records. Nortel Networks recommends that only experienced personnel make changes to the billing system.

2 Enter table OFCENG.

>TABLE OFCENG; FORMAT PACK

3 Change to the UCS12 Internal template by typing:

>REP FCDR_CDR_TMPLT INTERNAL_TMPLT UCS12

4 Set the size of the template by typing:

>REP FCDR_CDR_SIZE FIXED_SIZE 83

5 Identify the way you want your billing records populated:

>REP FCDR_CDR_WORD_LAYOUT readlr

6 Enter the CTMPLT tool to complete the changes by typing:

>CTMPLT

7 Upgrade the billing system to reflect the changes by typing:

>UPGRADE

> **ATTENTION**
>
> The UPGRADE command automatically rotates any mounted billing files.
>
> Use the UPGRADE command any time a change is made to the FCDR (Flexible CDR) office parameters in table OFCENG.

8 Ensure upgrade was performed by typing:

>STATUS

Example of a MAP response:

```
The current Active template index is: 2
The timestamp of the Active template index is: 1999/03/09 00:31:53.000 TUE.
                          Active            Edit            History
                       ---------------- ---------------- -----------------
FCDR_BHR_SIZE:          60                60                60
FCDR_GSR_SIZE:          60                60                60
FCDR_GER_SIZE:          60                60                60
FCDR_ESR_SIZE:          60                60                60
FCDR_SRR_SIZE:          60                60                60
FCDR_CCR_SIZE:          60                60                60
FCDR_OSR_SIZE:          60                60                60
FCDR_CDR_SIZE
Method:                FIXED_SIZE        FIXED_SIZE        FIXED_SIZE
Length:                 83                83                83
FCDR_CDR_TMPLT
Method:                INTERNAL_TMPLT    INTERNAL_TMPLT    INTERNAL_TMPLT
Template Index:        UCS12             UCS12             UCS13
FCDR_CDR_WORD_LAYOUT: READLR             READLR            READLR
FCDR_GEN_600_LOG:       N                 N                 N
FCDR_GEN_601_LOG:       N                 N                 N
```

Internal billing formatter for the UCS13 template

The UCS13 CDR is 83 words in length and is altered from the UCS12 CDR. CDR fields PIC, TDP, TRIGGER, RTELIST, and DCR are removed.

For more information on the CDR field definitions, see Appendix A, “CDR field descriptions.”

For more information on the UCS13 CDR templates, see Appendix B, “CDR Templates.”

Figure 10-4 in Appendix B shows the UCS13 CDR template in READLR layout.

Note: The internal billing formatter for the UCS13 template only supports the READLR layout.

Provisioning

When you want to set the internal billing formatter for the UCS13 template, perform the following procedure.

Note: Changes to the billing system may affect the downstream processor.

Provisioning the UCS13 template using the internal billing formatter

At the CI prompt

1 Enable the UCS DMS-250 to make changes to the office parameters by typing:

>RWOK on

Example of a MAP response:

```
WRITE ACCESS ENABLED FOR RESTRICTED DATA
```

CAUTION

Changes may affect site functionality

After the RWOK command is issued, changes to engineering parameters can be made. Changes to these parameters may affect site functionality. Any changes to the billing system may affect downstream processing of billing records. Nortel Networks recommends that only experienced personnel make changes to the billing system.

2 Enter table OFCENG.

>TABLE OFCENG; FORMAT PACK

3 Change to the UCS13 Internal template by typing:

>REP FCDR_CDR_TMPLT INTERNAL_TMPLT UCS13

4 Set the size of the template by typing:

>REP FCDR_CDR_SIZE FIXED_SIZE 83

5 Identify the way you want your billing records populated:

>REP FCDR_CDR_WORD_LAYOUT readlr

6 Enter the CTMPLT tool to complete the changes by typing:

>CTMPLT

7 Upgrade the billing system to reflect the changes by typing:

>UPGRADE

> **ATTENTION**
>
> The UPGRADE command automatically rotates any mounted billing files.
>
> Use the UPGRADE command any time a change is made to the FCDR (Flexible CDR) office parameters in table OFCENG.

8 Ensure upgrade was performed by typing:

>STATUS

Example of a MAP response:

```
The current Active template index is: 1
The timestamp of the Active template index is: 1999/03/09 00:31:53.000 TUE.
                          Active            Edit           History
                        ---------------- ---------------- -----------------
FCDR_BHR_SIZE:           60                60               60
FCDR_GSR_SIZE:           60                60               60
FCDR_GER_SIZE:           60                60               60
FCDR_ESR_SIZE:           60                60               60
FCDR_SRR_SIZE:           60                60               60
FCDR_CCR_SIZE:           60                60               60
FCDR_OSR_SIZE:           60                60               60
FCDR_CDR_SIZE
Method:                 FIXED_SIZE        FIXED_SIZE       FIXED_SIZE
Length:                  83                83               83
FCDR_CDR_TMPLT
Method:                 INTERNAL_TMPLT    INTERNAL_TMPLT   INTERNAL_TMPLT
Template Index:         UCS13             UCS13            UCS011
FCDR_CDR_WORD_LAYOUT:   READLR            READLR           READLR
FCDR_GEN_600_LOG:         N                 N                N
FCDR_GEN_601_LOG:         N                 N                N
```

Flexible billing formatters

CAUTION

Changes may affect site functionality

Changes to the billing system require updates to engineering parameters that may affect site functionality. Any changes to the billing system may affect downstream processing of billing records. Nortel Networks recommends that only experienced personnel make changes to the billing system.

The Flex CDR billing system offers the following flexible billing capabilities:

- The billing data collected by the switch is formatted by user-customized settings to populate the billing records.
- The following pre-defined templates for your use:
  - — The CDR2AMA2 template consists of all fields required to convert a CDR to a specific BAF record. The CDR2AMA2 template contains 50 words of information.
  - — The CDR2AMA3 template consists of all fields required to convert a CDR to a specific BAF record. The CDR2AMA3 contains 115 words of information.
  - — The CDR2AMA template consists of all fields required to convert a CDR field to a specific BAF record. The CDR2AMA template contains 39 words of information.
  - — The UCS09 template is comprised of the UCS08 CDR fields, plus fields populated by the UCS09 software.
  - — The UCS11 template is comprised of the UCS09 CDR fields, plus fields populated by the UCS11 software.
  - — The UCS12 template is comprised of the UCS11 CDR fields, plus fields populated by the UCS12 software.

— The UCS13 template is comprised of the UCS12 CDR fields, plus fields populated by the UCS13 software.

- A CDRTMPLT option for provisioning call processing can select a specific template to be used during CDR formatting.

- When call processing does not specify a template you can
  - — identify a default template for use (controlled by office parameter FCDR_CDR_TEMPLT, table OFCENG)
  - — allow the switch to perform a bestfit analysis on the call data and choose the most appropriate CDR template available.
- You can specify the size of event records, OSRs, and CDRs.

  Note 1: In releases previous to UCS06, the event record was the same size as the CDR. Several words of filler padded the records. Refer to Chapter 2, “Billing record storage,” for more information.

  Note 2: In releases previous to UCS06, the OSR record was the same size as the CDR. Several words of filler padded the records. Refer to Chapter 3, “Operator services records,” for more information.
- CDR fields can be populated in either read left-to-right order, (called READLR, format used in software releases previous to UCS06) or in a read right-to-left order (called NORMAL, due to bit ordering within the switch). The word layout is controlled by office parameter FCDR_CDR_WORD_LAYOUT (table OFCENG). Refer to Chapter 6, “Creating your own CDR templates,” for more information.
- CDR sizes can be fixed to a particular size (regardless of the template) or set to a variable size (dependent on the size of the template). CDR size is controlled by office parameter FCDR_CDR_SIZE (table OFCENG). Refer to Chapter 6, “Creating your own CDR templates,” for more information on variable template sizing.
- You can define the call data type for CDRs on answer (controlled by office parameter FCDR_ANSCDR_CDT for CM or FCDR_ANSCDR_SBSCDT for FP, in table OFCVAR).
- By purchasing the UBFR0001 SOC option, you can create your own CDR templates. Optimize your billing system by creating new, smaller templates specifically designed for certain call scenarios. Refer to Chapter 6, “Creating your own CDR templates,” for more information.

Template selection using FCDR_ANSCDR_CDT, FCDR_ANSCDR_SBSCDT

The purpose of the CDR on answer feature is to generate incomplete CDRs upon the answer event of the call. When answer occurs for a call with the answer feature activated, the per-call recording unit is copied and delivered to the billing system for formatting. Upon disconnect, a completed CDR is also formatted for the call.

The call data type used for the incomplete CDRs is identified by the FCDR_ANSCDR_CDT and the FCDR_ANSCDR_SBSCDT office parameters (table OFCVAR). Datafill in the following tables identifies the stream for the incomplete, formatted CDRs:

- DIRP billing: tables CRSMAP, CRSFMT, DIRPSYS, and DIRPPOOL
- Billing Server: tables SBSMAP, SBSFMT, DRMAPPL, and DRMPOOL

Provisioning call processing to select a template

You can provision certain call processing criteria that indicates a specific template to be used during CDR population through the CDRTMPLT option in the following tables:

- FLEXTYPE – subscriber number screening
- FLEXFEAT – subscriber number screening
- TRKGRP – for AXXESS, DAL, ONAL, ONAT, FGD, IMT, or PRI originating agencies
- ANISCUSP – subscriber number screening
- AUTHCODU – subscriber number screening
- RTEATTR – route termination
- TRKFEAT – trunk features
- STDPRTCT – pretranslator selectors CT, DC, ES, NT, UA, and UAX

When multiple templates are provisioned for a particular call, call processing chooses the CDR template as follows.

For non-AXXESS trunk agents, call processing:

- checks the originating TRKGRP for the CDRTMPLT option and stores the template ID, if provisioned
- checks table ANISCUSP or ANIVAL/UNIPROF for the CDRTMPLT option and stores the template ID, if provisioned, overwriting any previously stored template ID
- checks table AUTHCODU for the CDRTMPLT option and stores the template ID, if provisioned, overwriting any previously stored template ID
- checks table STDPRTCT, subtable STDPRT, for the CDRTMPLT option and stores the template ID, if provisioned, overwriting any previously stored template ID
- checks table terminating TRKGRP for the CDRTMPLT option and stores the template ID, if provisioned, overwriting any previously stored template ID

If no template was previously stored, call processing uses the default

For AXXESS trunk agents, call processing:

- checks the originating TRKFEAT for the CDRTMPLT option and stores the template ID, if provisioned
- checks table FLEXTYPE for the CDRTMPLT option and stores the template ID, if provisioned, overwriting any previously stored template ID
- checks table FLEXFEAT for the CDRTMPLT option and stores the template ID, if provisioned, overwriting any previously stored template ID
- checks table terminating REATTR for the CDRTMPLT option and stores the template ID, if provisioned, overwriting any previously stored template

If no template ID is stored, the default specified by the FCDR_CDR_TMPLT entry in table OFCENG is used. This works only when the FCDR_CDR_TMPLT field is not set to Internal and the FCDR_CDR_SIZE field is large enough.

Default CDR templates

The template used for default billing is set by office parameter FCDR_CDR_TMPLT. The default template is used when call processing does not identify a template.

Provisioning CDR2AMA2 or CDR2AMA3 as default CDR template

Perform the following procedure to provision billing using the CDR2AMA2 or CDR2AMA3 template as the default template.

Provisioning the CDR2AMA2 or CDR2AMA3 template as the default template

At the CI prompt

1 Enable the UCS DMS-250 switch to make changes to the office parameters by typing:

>RWOK on
Example of a MAP response:

```
WRITE ACCESS ENABLED FOR RESTRICTED DATA
```

CAUTION
Changes may affect site functionality
After the RWOK command is issued, changes to engineering parameters can be made. Changes to these parameters may affect site functionality. Any changes to the billing system may affect downstream processing of billing records. Nortel Networks recommends that only experienced personnel make changes to the billing system.

2 Enter table OFCENG.

>TABLE OFCENG; FORMAT PACK

3 Change to the CDR2AMA2 or CDR2AMA3 Internal template by typing one of the following commands:

>REP FCDR_CDR_TMPLT FIXED_TMPLT CDR2AMA2
>REP FCDR_CDR_TMPLT FIXED_TMPLT CDR2AMA3

4 Set the size of the template by typing one of the following commands:

>REP FCDR_CDR_SIZE FIXED_SIZE 41
>REP FCDR_CDR_SIZE FIXED_SIZE 106

5 Identify the way you want your billing records populated:

>REP FCDR_CDR_WORD_LAYOUT normal

Note: NORMAL is the only valid entry for this Internal template formatter, which performs CDR to BAF conversion.

6 Enter the CTMPLT tool to complete the changes by typing:

>CTMPLT

7 Upgrade the billing system to reflect the changes by typing:

>UPGRADE

> **ATTENTION**
>
> The UPGRADE command automatically rotates any mounted billing files.
>
> Use the UPGRADE command any time a change is made to the FCDR (Flexible CDR) office parameters in table OFCENG.

8 Ensure upgrade was performed by typing:

>STATUS

Example of a MAP response:

```
The current Active template index is: 1
The timestamp of the Active template index is: 1998/06/12 04:18:22.000 FRI.
                          Active            Edit            History
                       ---------------- ---------------- -----------------
FCDR_BHR_SIZE:          12                12                60
FCDR_GSR_SIZE:           5                 5                60
FCDR_GER_SIZE:          24                24                60
FCDR_ESR_SIZE:           5                 5                60
FCDR_SRR_SIZE:           6                 6                60
FCDR_CCR_SIZE:           7                 7                60
FCDR_OSR_SIZE:          38                38                60
FCDR_CDR_SIZE
Method:                FIXED_SIZE        FIXED_SIZE       FIXED_SIZE
Length:                 41                41                83
FCDR_CDR_TMPLT
Method:                FIXED_TMPLT     FIXED_TMPLT      INTERNAL_TMPLT
Template Index:        CDR2AMA2         CDR2AMA2         UCS14
FCDR_CDR_WORD_LAYOUT: NORMAL           NORMAL           READLR
FCDR_GEN_600_LOG:       N                 N                N
FCDR_GEN_601_LOG:       N                 N                N
```

Provisioning CDR2AMA as default CDR template

Perform the following procedure to provision billing using the CDR2AMA template as the default template.

Provisioning the CDR2AMA template as the default template

At the CI prompt

1 Enable the UCS DMS-250 switch to make changes to the office parameters by typing:

>RWOK on
Example of a MAP response:

```
WRITE ACCESS ENABLED FOR RESTRICTED DATA
```

CAUTION
Changes may affect site functionality
After the RWOK command is issued, changes to engineering parameters can be made. Changes to these parameters may affect site functionality. Any changes to the billing system may affect downstream processing of billing records. Nortel Networks recommends that only experienced personnel make changes to the billing system.

2 Enter table OFCENG.

>TABLE OFCENG; FORMAT PACK

3 Change to the CDR2AMA2 or CDR2AMA3 Internal template by typing the following command:

>REP FCDR_CDR_TMPLT FIXED_TMPLT CDR2AMA

4 Set the size of the template by typing the following command:

>REP FCDR_CDR_SIZE FIXED_SIZE 39

5 Identify the way you want your billing records populated:

>REP FCDR_CDR_WORD_LAYOUT normal

Note: NORMAL is the only valid entry for this Internal template formatter, which performs CDR to BAF conversion.

Note: The CDR2AMA template has an internal billing formatter. Therefore, by setting the size and word layout accordingly, the Flex CDR system automatically optimizes the generation of any CDRs using the CDR2AMA template.

6 Enter the CTMPLT tool to complete the changes by typing:

>CTMPLT

7 Upgrade the billing system to reflect the changes by typing:

>UPGRADE

> **ATTENTION**
>
> The UPGRADE command automatically rotates any mounted billing files.
>
> Use the UPGRADE command any time a change is made to the FCDR (Flexible CDR) office parameters in table OFCENG.

8 Ensure upgrade was performed by typing:

>STATUS

Example of a MAP response:

```
The current Active template index is: 1
The timestamp of the Active template index is: 1998/06/12 04:18:22.000 FRI.
                          Active            Edit           History
                       ---------------- ---------------- -----------------
FCDR_BHR_SIZE:          12                12               60
FCDR_GSR_SIZE:           5                 5               60
FCDR_GER_SIZE:          24                24               60
FCDR_ESR_SIZE:           5                 5               60
FCDR_SRR_SIZE:           6                 6               60
FCDR_CCR_SIZE:           7                 7               60
FCDR_OSR_SIZE:          38                38               60
FCDR_CDR_SIZE
Method:                FIXED_SIZE        FIXED_SIZE       FIXED_SIZE
Length:                 40                40               83
FCDR_CDR_TMPLT
Method:                FIXED_TMPLT     FIXED_TMPLT      INTERNAL_TMPLT
Template Index:        CDR2AMA2         CDR2AMA2         UCS14
FCDR_CDR_WORD_LAYOUT: NORMAL           NORMAL           READLR
FCDR_GEN_600_LOG:       N                 N                N
FCDR_GEN_601_LOG:       N                 N                N
```

Provisioning UCS09 as default template

Perform the following procedure to provision billing using the UCS09 fixed template.

Provisioning the UCS09 template as the default template

At the CI prompt

1 Enable the switch to make changes to the office parameters by typing:

>RWOK on

Example of a MAP response:

```
WRITE ACCESS ENABLED FOR RESTRICTED DATA
```

CAUTION

Changes may affect site functionality

After the RWOK command is issued, changes to engineering parameters can be made. Changes to these parameters may affect site functionality. Any changes to the billing system may affect downstream processing of billing records. Nortel Networks recommends that only experienced personnel make changes to the billing system.

2 Enter table OFCENG.

>TABLE OFCENG; FORMAT PACK

3 Change to the UCS09 fixed template by typing:

>REP FCDR_CDR_TMPLT FIXED_TMPLT UCS09

4 Set the size of the template by typing:

>REP FCDR_CDR_SIZE FIXED_SIZE 83

5 Identify the way you want your billing records populated:

>REP FCDR_CDR_WORD_LAYOUT readlr

Note: The UCS09 template has an internal billing formatter. Therefore, by setting the size and word layout accordingly, the Flex CDR system automatically optimizes the generation of any CDRs using the UCS09 template.

6 Enter the CTMPLT tool to complete the changes by typing:

>CTMPLT

7 Upgrade the billing system to reflect the changes by typing:

>UPGRADE

> **ATTENTION**
>
> The UPGRADE command automatically rotates any mounted billing files.
>
> Use the UPGRADE command any time a change is made to the FCDR (Flexible CDR) office parameters in table OFCENG.

8 Ensure upgrade was performed by typing:

>STATUS

Example of a MAP response:

```
The current Active template index is: 2
The timestamp of the Active template index is: 1999/04/12 04:18:22.000 MON.
                          Active            Edit           History
                       ---------------- ---------------- -----------------
FCDR_BHR_SIZE:          12                12               60
FCDR_GSR_SIZE:           5                 5               60
FCDR_GER_SIZE:          24                24               60
FCDR_ESR_SIZE:           5                 5               60
FCDR_SRR_SIZE:           6                 6               60
FCDR_CCR_SIZE:           7                 7               60
FCDR_OSR_SIZE:          38                38               60
FCDR_CDR_SIZE
Method:                FIXED_SIZE        FIXED_SIZE       FIXED_SIZE
Length:                 83                83               80
FCDR_CDR_TMPLT
Method:                FIXED_TMPLT    FIXED_TMPLT      FIXED_TMPLT
Template Index:        UCS09             UCS09         UCS13
FCDR_CDR_WORD_LAYOUT: READLR             READLR        READLR
FCDR_GEN_600_LOG:        N                 N                N
FCDR_GEN_601_LOG:        N                 N                N
```

Provisioning UCS11 as default template

Perform the following procedure to provision billing using the UCS11 fixed template.

Provisioning the UCS11 template as the default template

At the CI prompt

1 Enable the switch to make changes to the office parameters by typing:

>RWOK on

Example of a MAP response:

```
WRITE ACCESS ENABLED FOR RESTRICTED DATA
```

CAUTION

Changes may affect site functionality

After the RWOK command is issued, changes to engineering parameters can be made. Changes to these parameters may affect site functionality. Any changes to the billing system may affect downstream processing of billing records. Nortel Networks recommends that only experienced personnel make changes to the billing system.

2 Enter table OFCENG.

>TABLE OFCENG; FORMAT PACK

3 Change to the UCS11 fixed template by typing:

>REP FCDR_CDR_TMPLT FIXED_TMPLT UCS11

4 Set the size of the template by typing:

>REP FCDR_CDR_SIZE FIXED_SIZE 83

5 Identify the way you want your billing records populated:

>REP FCDR_CDR_WORD_LAYOUT readlr

Note: The UCS11 template has an internal billing formatter. Therefore, by setting the size and word layout accordingly, the Flex CDR system automatically optimizes the generation of any CDRs using the UCS11 template.

6 Enter the CTMPLT tool to complete the changes by typing:

>CTMPLT

7 Upgrade the billing system to reflect the changes by typing:

>UPGRADE

> **ATTENTION**
>
> The UPGRADE command automatically rotates any mounted billing files.
>
> Use the UPGRADE command any time a change is made to the FCDR (Flexible CDR) office parameters in table OFCENG.

8 Ensure upgrade was performed by typing:

>STATUS

Example of a MAP response:

```
The current Active template index is: 2
The timestamp of the Active template index is: 1999/03/09 00:31:53.000 TUE.
                          Active            Edit           History
                       ---------------- ---------------- -----------------
FCDR_BHR_SIZE:          60                60                60
FCDR_GSR_SIZE:          60                60                60
FCDR_GER_SIZE:          60                60                60
FCDR_ESR_SIZE:          60                60                60
FCDR_SRR_SIZE:          60                60                60
FCDR_CCR_SIZE:          60                60                60
FCDR_OSR_SIZE:          60                60                60
FCDR_CDR_SIZE
Method:                FIXED_SIZE        FIXED_SIZE        FIXED_SIZE
Length:                 83                83                83
FCDR_CDR_TMPLT
Method:                INTERNAL_TMPLT    INTERNAL_TMPLT    INTERNAL_TMPLT
Template Index:        UCS11             UCS11             UCS07
FCDR_CDR_WORD_LAYOUT: READLR             READLR            READLR
FCDR_GEN_600_LOG:       N                 N                 N
FCDR_GEN_601_LOG:       N                 N                 N
```

Provisioning UCS13 as default template

Perform the following procedure to provision billing using the UCS13 fixed template.

Provisioning the UCS13 template as the default template

At the CI prompt

1 Enable the switch to make changes to the office parameters by typing:

>RWOK on

Example of a MAP response:

```
WRITE ACCESS ENABLED FOR RESTRICTED DATA
```

CAUTION

Changes may affect site functionality

After the RWOK command is issued, changes to engineering parameters can be made. Changes to these parameters may affect site functionality. Any changes to the billing system may affect downstream processing of billing records. Nortel Networks recommends that only experienced personnel make changes to the billing system.

2 Enter table OFCENG.

>TABLE OFCENG; FORMAT PACK

3 Change to the UCS13 fixed template by typing:

>REP FCDR_CDR_TMPLT FIXED_TMPLT UCS13

4 Set the size of the template by typing:

>REP FCDR_CDR_SIZE FIXED_SIZE 83

5 Identify the way you want your billing records populated:

>REP FCDR_CDR_WORD_LAYOUT readlr

Note: The UCS13 template has an internal billing formatter. Therefore, by setting the size and word layout accordingly, the Flex CDR system automatically optimizes the generation of any CDRs using the UCS13 template.

6 Enter the CTMPLT tool to complete the changes by typing:

>CTMPLT

7 Upgrade the billing system to reflect the changes by typing:

>UPGRADE

> **ATTENTION**
>
> The UPGRADE command automatically rotates any mounted billing files.
>
> Use the UPGRADE command any time a change is made to the FCDR (Flexible CDR) office parameters in table OFCENG.

8 Ensure upgrade was performed by typing:

>STATUS

Example of a MAP response:

```
The current Active template index is: 2
The timestamp of the Active template index is: 1999/03/09 00:31:53.000 TUE.
                          Active            Edit           History
                       ---------------- ---------------- -----------------
FCDR_BHR_SIZE:          60                60               60
FCDR_GSR_SIZE:          60                60               60
FCDR_GER_SIZE:          60                60               60
FCDR_ESR_SIZE:          60                60               60
FCDR_SRR_SIZE:          60                60               60
FCDR_CCR_SIZE:          60                60               60
FCDR_OSR_SIZE:          60                60               60
FCDR_CDR_SIZE
Method:                FIXED_SIZE        FIXED_SIZE       FIXED_SIZE
Length:                 83                83               83
FCDR_CDR_TMPLT
Method:                FIXED_TMPLT    FIXED_TMPLT       FIXED_TMPLT
Template Index:        UCS13             UCS13            UCS011
FCDR_CDR_WORD_LAYOUT: READLR             READLR           READLR
FCDR_GEN_600_LOG:       N                 N                N
FCDR_GEN_601_LOG:       N                 N                N
```

Creating your own CDR templates

ATTENTION

User-defined templates require the UBFR0001 SOC option. Refer to Appendix G, “SOC functionality,” for more information.

The UCS14 software release supports user-defined Call Detail Record (CDR) templates. These templates are defined in table CDRTMPLT (CDR Template).

Table CDRTMPLT

Table CDRTMPLT allows you to create new CDR templates. Each tuple in the table represents a template; and the table can contain up to 64 templates. The following pre-defined templates are provided in the UCS14 software release: CDR2AMA2, CDR2AMA3, CDR2AMA, UCS09, UCS11, UCS12, UCS13, and UCS14. The first ten templates are reserved for pre-defined templates. You can create an additional 54 templates.

The CDRTMPLT table does not require other datafill to be present in order for it to be provisioned. The UBFR0001 SOC option must be in the “ON” state before table CDRTMPLT can be modified. The first ten pre-defined templates can never be changed.

SOC option UBFR0001 allows the creation of new templates. The software allows each template to have an active or inactive status. When a template is active, it is available for CDR population.

Table CDRTMPLT consists of the following fields:

- NAME – up to 16 alphanumeric characters naming the template
- ACTIVE – Y indicates the template can be used to format call detail records; N indicates the template is not available.
- PRIMARY – Y indicates the template is used as a primary template during best fit analysis; N indicates the template is used as a secondary template.

- FIELDS – contains the fields that define the CDR template. Each template can hold up to 96 fields.

  Note 1: Fields RECCD, TEMPLID, ACTIDX, USEEDIT, TOOLGEN, and VARLNGTH are common to all CDRS. These fields are not datafilled in table CDRTMPLT.

  Note 2: When office parameter FCDR_CDR_SIZE (table OFCENG) is set to VAR_SIZE, the LENGTH field is added to all CDRs and data cannot be entered in that field.

- REORIGCP – contains the fields that are copied into a new CDR when reorigination occurs. This field must be equal to, or a subset of the FIELDS field.

Template creation rules

Before creating a new CDR template, become familiar with the following creation rules:

- When the billing software populates a fixed size record (parameter FCDR_CDR_SIZE set to FIXED_SIZE), the following five fields are automatically placed in the first two words of the record:
  - RECCD (1 word)
  - TEMPLID (7 bits)
  - ACTIDX (3 bits)
  - TOOLGEN (1 bit)
  - USEEDIT (1 bit)
  - VARLNGTH (1 bit)
- When the billing software populates a variable size record (parameter FCDR_CDR_SIZE set to VAR_SIZE), the following six fields are automatically placed in the first three words of the record:
  - RECCD (1 word)
  - TEMPLID (7 bits)
  - ACTIDX (3 bits)
  - TOOLGEN (1 bit)
  - USEEDIT (1 bit)
  - VARLNGTH (1 bit)
  - LENGTH (8 bits)

Note: Therefore, when you create a template you are determining the layout of the CDR following the header information (which is automatically populated by the billing software). Keep in mind that when you specify a fixed size template, the header is two words in length. When you specify a variable size template, the header is three words in length.

- Only fields listed in the FIELDS field are populated in a CDR using the defined template.
- The CDR is populated according to the datafilled order of the fields and the value in parameter FCDR_CDR_WORD_LAYOUT (table OFCENG).
- Word boundaries must be maintained when ordering the CDR fields in the template.

  — Each 16-bit area (one word) must be completely filled before attempting to define the next area.

  Note 1: Use the FILL1, FILL2, FILL3, FILL4, and FILL8 fields to pad the words as needed to remain within the 16-bit boundaries.

  Note 2: Use the FILL1, FILL2, FILL3, FILL4, and FILL8 fields sparingly, in order to pack as much actual data as possible into the record.

  Note 3: A template can only contain 96 fields. Each time you use a filler field, it counts as one field.

  Note 4: Figure 6-1 gives an example of an appropriate template layout.

  — Templates must end on a word boundary. For example, a template can be 33 words in length, but not 33.5 words.

— CDR fields can cross the 16-bit boundaries under the following conditions:

Note: Table control for table CDRTMPLT verifies that the 16-bit boundary rule is followed. When a field splits incorrectly, table control notes the error. To correct the error, re-evaluate the field in error to the end of the template and make corrections as necessary.

– When defining fields across word boundaries, the bits you are defining must be **equal to** or **exact multiples** of the field's defined split size. The split size for each field is available by using the FLDINFO command (from the CTMPLT command set).

For example, the ADIN field requires space for two TBCD digits. Each TBCD digit uses four bits. The split size for the ADIN field is four bits. The second field layout, in Figure 6-1, shows how the ADIN field can be split across the word boundary.

Note 1: To position the ADIN field correctly, a FILL2 field is necessary in this example.

Note 2: Examine a sample template (fields CALLEDNO and DIALEDNO) to see an example of splitting larger fields.

Figure 6-1
CDR template creation

READLR format

CORRECT

WORD/ BIT	MSB															LSB
	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
11	ORIGDATE									CNPREDIG			ANSTYPE			
12	PINDIGS															
13	ORIGTIME															
BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

This example is correct, because no fields cross word boundaries.

READLR format

CORRECT

WORD/ BIT	MSB															LSB
	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
11	OPART										FILL2		ADIN(1)			
12	ADIN(2)				ORIGOPRT										FILL2	
13	SEQNUM															
BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

This example is correct, because the ADIN split size is four.

NORMAL format

INCORRECT

WORD/ BIT	MSB															LSB
	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
11	PINDIGS(2)			PINDIGS(1)				ORIGDATE								
12	ORIGTIME						QD	PINDIGS(4)				PINDIGS(3)				PD(2)
13								ORIGTIME								
BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

This example is incorrect because the ORIGTIME split size is 16, not 6; PINDIGS split size is 4, not 3. PD(2) is the incorrect bit.

Restrictions and Limitations

The following are restrictions and limitations found with adding data in table CDRTMPLT:

- The 16 character index provides a maximum of 63 table entries.

- A maximum 96 CDR field types may be provisioned in the FIELDS and REORIGCP vector of the table.
- Only the templates at the editing numeric index are visible through CDRTMPLT table control. The numeric index is not visible through table control. Templates at other indices must be viewed using the CTMPLT CI directory commands TLIST and TDUMP. See Figure 6-3.
- A table entry may not be deleted until all references to the index are removed from provisioned CDRTMPLT options in other tables or from any office parameters.
- The ordering of the fields in the FIELDS vector is validated to ensure an attampt is not made to align data over a word (16 bit) boundary. Data can only cross a 16 bit boundary if it is more than 16 bits in size. When this occurs, the data field must start at the beginning of the 16 bit boundary.
- An empty FIELDS vector is not allowed. A FIELDS vector must consist of at least one defined CDR field type, or an error message is displayed and the table edit routine is unsuccessful. The REORIGCP vector may be left empty.
- CDR field types may not be duplicated within the FIELDS or REORIGCP vectors. The exception to this is the FILL1, FILL2, FILL3, FILL4, and FILL8 field types.
- The set of fields represented by the REORIGCP vector must be equal to, or a subset of, the fields represented by the FIELDS vector.
- The fields FILL1, FILL2, FILL3, FILL4, and FILL8 are ignored when they are placed in the REORIGCP vector. In other words, there is no word boundary requirements for the REORIGCP vector.
- CDRTMPLT table control displays the size (in words) of a successfully added or modified tuple.

CDR length (FCDR_CDR_SIZE)

The length of the CDR template is provisioned in the FCDR_CDR_SIZE office parameter (OFCENG).

Fixed size

Setting this parameter to FIXED_SIZE forces all CDRs to be the same length. The size value should match the length of the largest template used.

If the provisioned size is smaller than the largest template, an FCDR300 log is generated for each CDR. Each CDR is formatted with a template larger than the set size and shows the lost data.

If the provisioned size is larger than the largest template and the FCDR_GEN_600_LOG office parameter is set to Y, an FCDR600 log is

generated for each CDR. Each CDR is formatted with a template smaller than the set size to indicate the number of padded words. The FCDR600 log aids in fine tuning template definitions and template selection during call processing.

Variable size

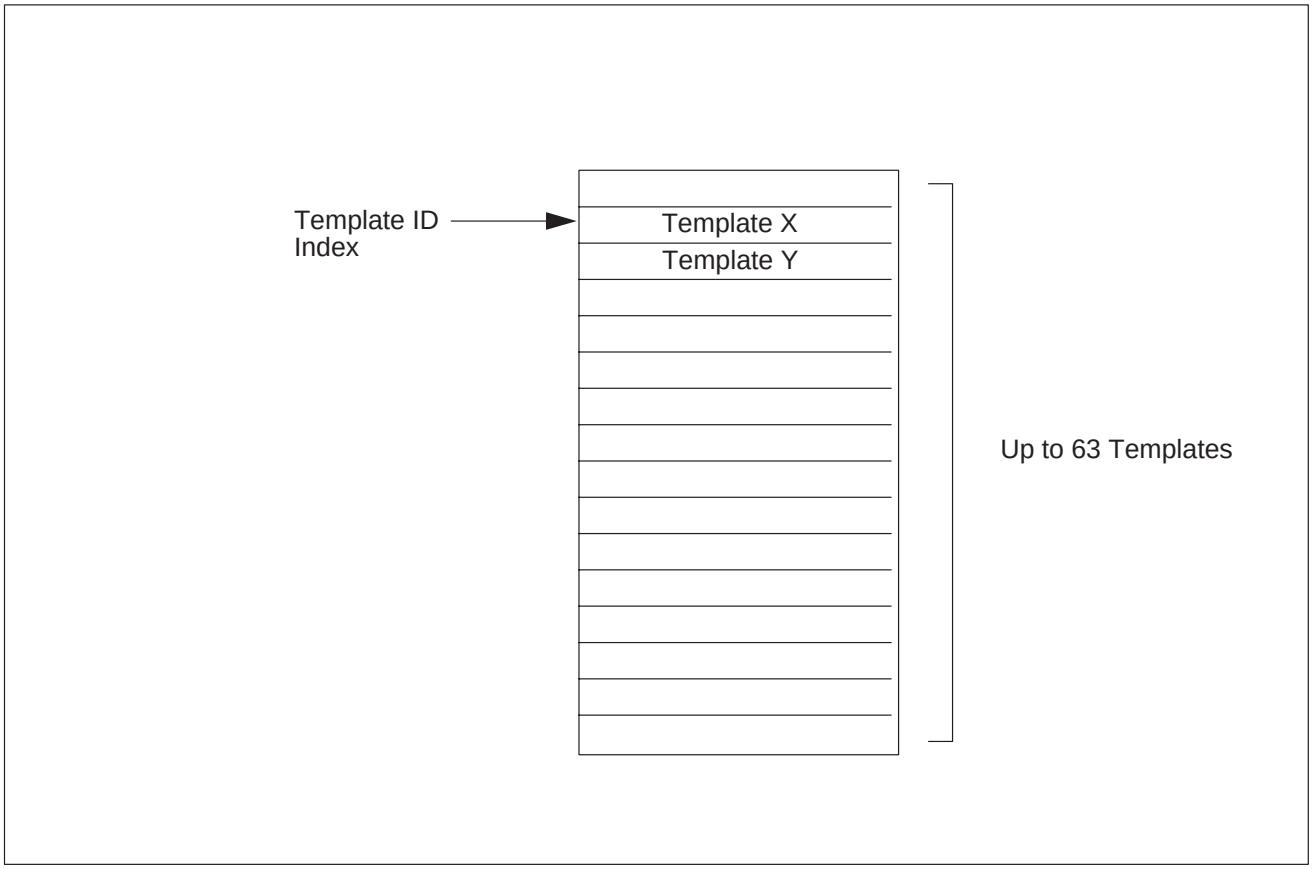
When you set this parameter to VAR_SIZE, CDRs are formatted according to the size of the template. Your downstream processor must be capable of handling variable sized CDRs. When specifying VAR_SIZE, you will need to enter a size (in words); this value is ignored.

Template history

The CDR template (CDRTMPLT) table defines templates for formatted call detail recording. The table achieves this functionality by providing a defined CDR template layout through a vector field (vector of CDR field types) for each entry. The table also provides a history capability with use of the correlating CTMPLT CI directory. This allows a “history” of templates to be stored and strict control to be implemented in order to switch to a new template version defined. See Figure 6-3.

Logically, the table contains up to 63 user defined templates for CDR formatting use.

Figure 6-2
Example for using the CDR template index



The CDRTMPLT table employs a method of having an active versus inactive table version. While the table is active, the inactive indices are modified by a technician. Then, through the CTMPLT CI directory commands, the inactive templates become the active templates.

In addition to providing the inactive versus active table versions, the CDRTMPLT table also provides a history of the revisions of templates within the table. The previous six versions of a template are retained by the table for administration and tools purposes.

The table is indexed by a 16 character string (1 to 16 characters). The character string index provides a naming mechanism for defined templates and allows for 63 unique table entries.

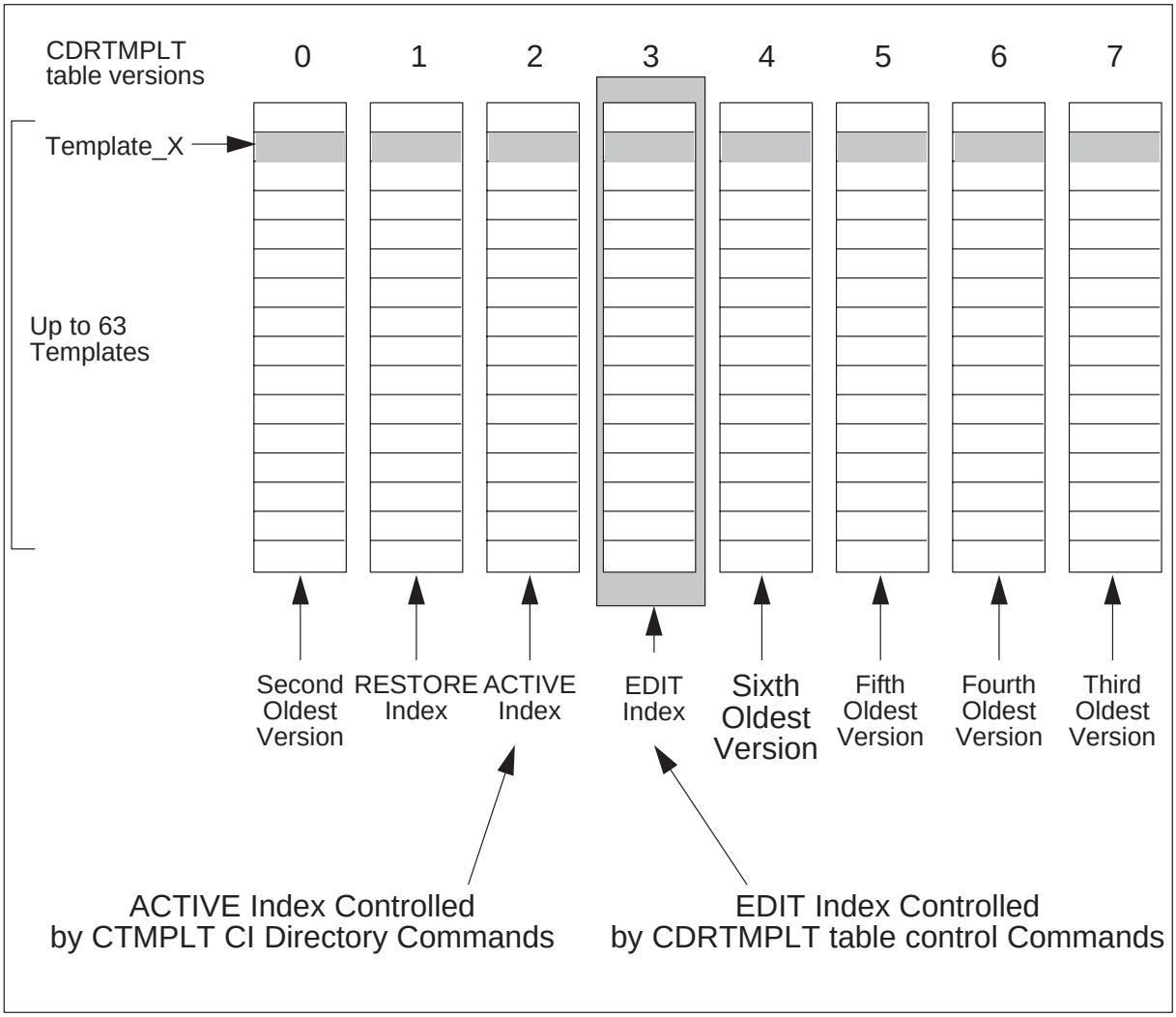
A second dimensional numeric index is used to identify the currently active set of CDR templates in use by call processing and for editing purposes. A defined template eventually exists at all numeric indices in the second dimension of the table as different versions. One of the indices is the active index, another is the editing index, and the remaining provide a history of the last six changes of the template.

Only the string index of the table key is entered by the technician. The numeric index is not visible through CDRTMPLT table control. The editing numeric index is maintained by the switch and is used internally when indexing the table. The editing numeric index is updated by the CTMPLT CI directory commands.

Only the template at the editing index is viewable through CDRTMPLT table control. The active index and other stored templates are viewable using the CTMPLT CI directory TLIST and TDUMP commands.

When an UPGRADE is performed, a timestamp is recorded against the newly active set of templates. This timestamp is required by the FCDRSRCH tool to verify that the file it is reading is valid. When a new file is created, a timestamp is automatically recorded for the file. Within the file of stored records, the active index (which specifies the set of templates used to format the CDR records) is also recorded. When FCDRSRCH is set on a file, it compares the timestamp of the file with the timestamp recorded for the set of templates at the index. The index timestamp is identified through the active index in the records. If the file timestamp is older than the timestamp recorded for the template set, FCDRSRCH can not process the file. In such a situation, the templates at the identified index may have been altered since the file was generated. Such a scenario implies that the data may not be valid.

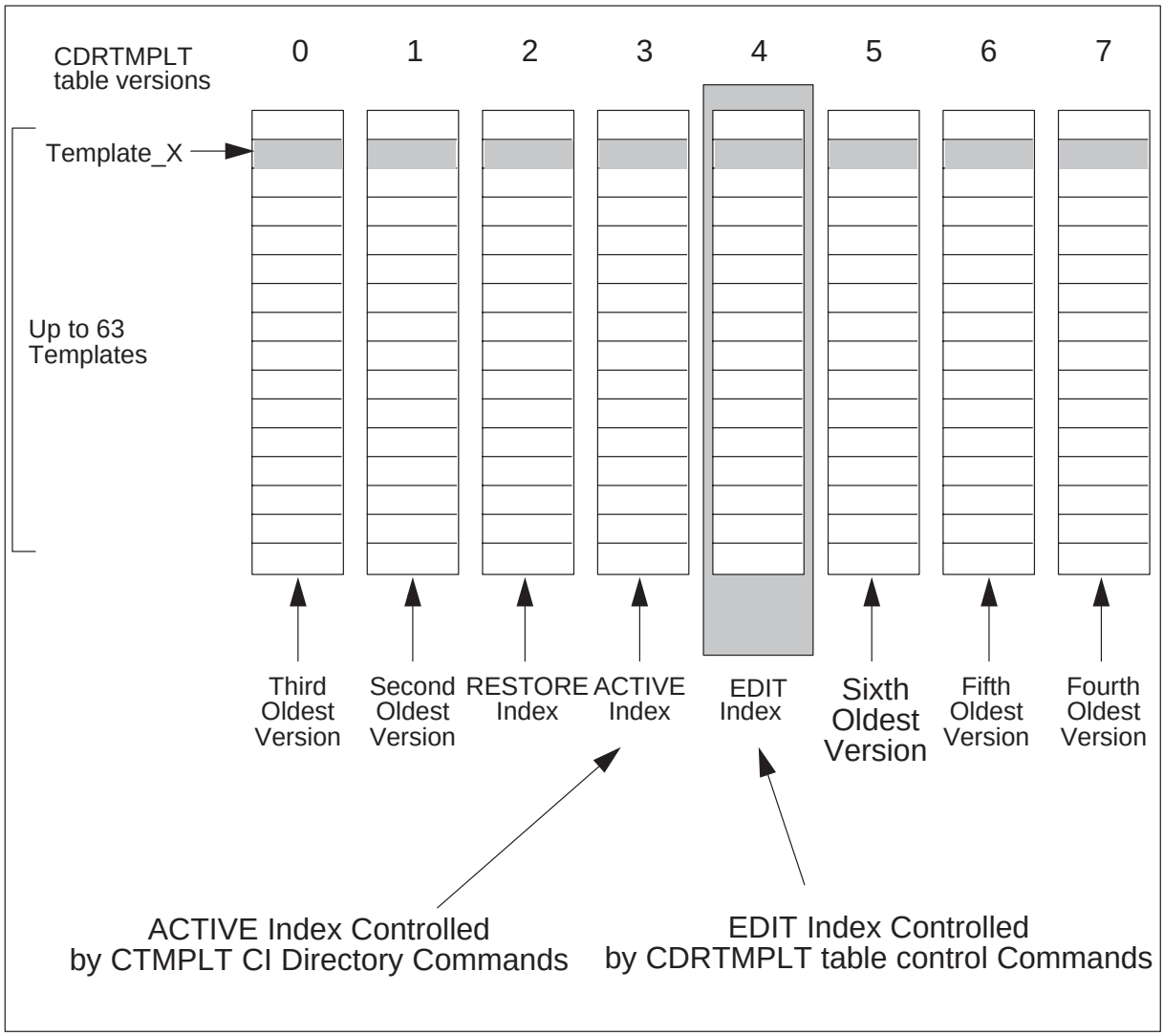
Figure 6-3
CDRTMPLT Table - System View



The CTMPLT CI directory of commands is used to control the active template index used in formatting CDR records. When templates have been updated to satisfaction, the CTMPLT command is used to upgrade the switch to use the new template versions.

For a view of CDRTMPLT table after the UPGRADE command has been performed, see Figure 6-4.

Figure 6-4
CDRTMPLT table after UPGRADE



When an upgrade occurs, the following steps are performed:

- All templates at the editing index are copied to the new editing index, overwriting the oldest version of the template with the newest.
- The active and editing indices are updated.
- A timestamp is recorded for the newly active index.

Table CDRTMPLT contains the version of each template that can be edited. Every time you use the UPGRADE command (from the CTMPLT command set), the DMS-Core makes a copy of table CDRTMPLT. The copy of table CDRTMPLT is saved to create a history file that can contain up to eight

copies of the table. Each history file contains an Active version of the table (viewable by the CTMPLT command set) and an Editable version (viewable in table CDRTMPLT).

Note: The Active version is stored in the ACTIDX field.

Once you have enabled the SOC option to create your own templates, a Restore version of the table is available. By using the RESTORE command (from the CTMPLT command set), you can restore the most recently upgraded version of the table. Refer to *UCS DMS-250 Commands Reference Manual* for more information on CTMPLT commands.

Figure 6-5 shows how the switch creates a history file.

The FCDRSRCH command set can use the older versions of the table to view records that were formatted using an old template. FCDRSRCH automatically chooses the correct version using the TMPLID field, ACTIDX field, and timestamp (recorded when an UPGRADE is performed).

Figure 6-5
History file creation

1. History file before SOC is enabled.

Version	0	1	2	3	4	5	6	7
	Active version	Editable version						

2. SOC is enabled.
3. You create new templates and issue the UPGRADE command..

Version	0	1	2	3	4	5	6	7
	Restore version	Active version	Editable version					

4. You make changes to table CDRTMPLT and issue the UPGRADE command.

Version	0	1	2	3	4	5	6	7
	Old version #1	Restore version	Active version	Editable version				

5. You make changes to table CDRTMPLT and issue the UPGRADE command four times.

Version	0	1	2	3	4	5	6	7
	Old version #5	Old version #4	Old version #3	Old version #2	Old version #1	Restore version	Active version	Editable version

6. You make changes to table CDRTMPLT and issue the UPGRADE command.

Version	0	1	2	3	4	5	6	7
	Editable version	Old version #5	Old version #4	Old version #3	Old version #2	Old version #1	Restore version	Active version

7. You need to restore the previous version (from step 5), so issue the RESTORE command (from the CTMPLT command set).

Version	0	1	2	3	4	5	6	7
	Lost version	Old version #4	Old version #3	Old version #2	Old version #1	Restore version	Active version	Editable version

When the UPGRADE was performed is step 6, Old Version #5 was deleted. When the RESTORE was executed, Old Version #5 became a Lost Version and is unavailable.

CDR word layout

As of the UCS06 software release the billing system allows the user to provision the method for storing data. Prior to UCS06, CDR data was only stored in a read left-to-right format. Beginning with UCS06, data can be stored in a read left-to-right (READLR) format or in a read right-to-left (NORMAL) format.

Office parameter FCDR_CDR_WORD_LAYOUT (table OFCENG) controls the layout of data storage. For CDR fields that do not consume whole words of store, a value of READLR indicates that the most significant bits in the word are consumed first by a formatted CDR field. A value of NORMAL indicates that the least significant bits in the word are consumed first.

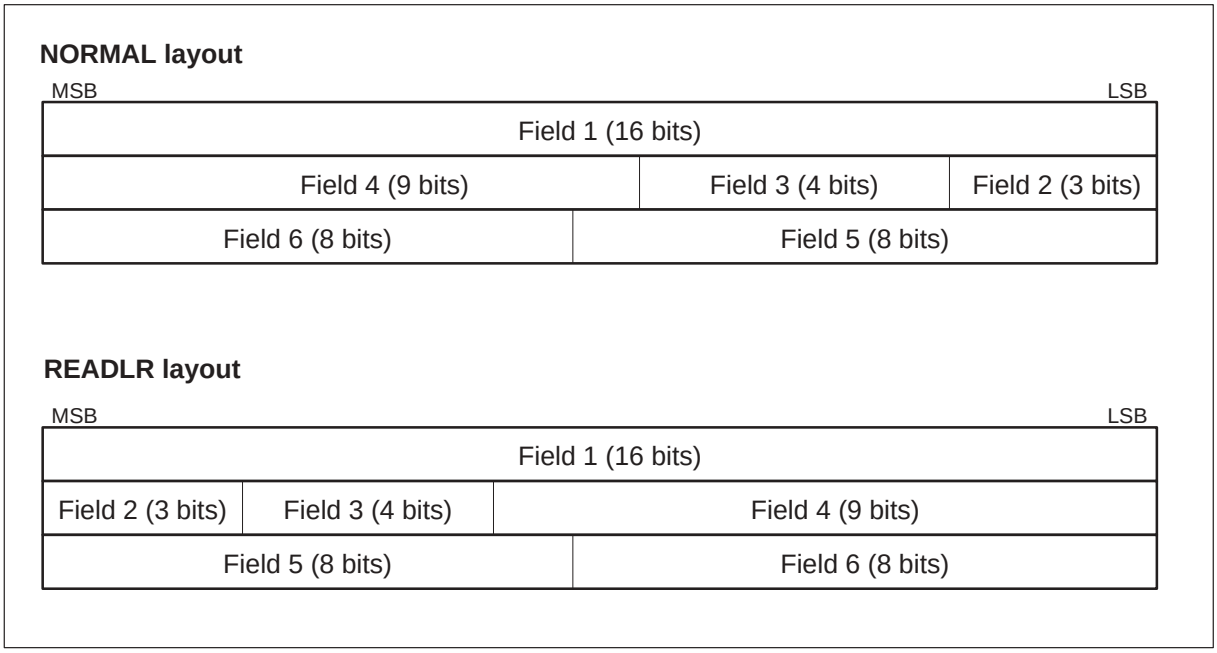
CAUTION

Changes may affect site functionality

Changes to the billing system require updates to engineering parameters that may affect site functionality. Any changes to the billing system may affect downstream processing of billing records. Nortel Networks recommends that only experienced personnel make changes to the billing system.

Regardless of the use of either NORMAL or READLR, the ordering of bits within each CDR field is unaltered. Also, the mandatory header on each record is always formatted in a read left-to-right format. Figure 6-6 shows examples of NORMAL word layouts in relation to fields split across word boundaries.

Figure 6-6
Formatting methods



NORMAL layout

When data is stored using the NORMAL layout, the data can easily be read back into a similar data structure by the downstream billing processor. Figure 6-7 shows an example of the NORMAL layout.

Figure 6-7
NORMAL storage

For example: the ANISP field requires 10 nibbles. If the number 2145551234 is stored in NORMAL layout it will appear as:

15			0
5	4	1	2
2	1	5	5
		4	3

NORMAL format reduces an unnecessary step at both the switch and the downstream processor by allowing both systems to utilize normal computer data ordering in dealing with the CDR data.

READLR layout

When data is stored using the READLR layout, the raw data cannot be dumped into a similar data structure. Figure 6-8 shows an example of the READLR layout.

Figure 6-8
READLR storage

For example: the ANISP field requires 10 nibbles. If the number 2145551234 is stored in READLR layout it will appear as:

15			0
2	1	4	5
5	5	1	2
3	4		

The downstream processor must apply special formatting to retrieve all digits and rearrange them properly.

Provisioning

Perform the following procedure to create a new billing template.

Creating and activating a template

At the CI prompt

1 Ensure the SOC option, UBFR0001, is enabled.

SOC; SELECT OPTION UBFR0001; QUIT

Note: The SOC command is a single user command.

2 Enter table CDRTMPLT.

>TABLE CDRTMPLT; FORMAT PACK

3 Add a new template by typing:

>ADD name active primary fields reorigcp
where

name	is the name of the new template (up to16 alphanumeric characters).
active	determines if the template can be used for formatting CDRs.
primary	indicates if the template is marked for the primary best fit analysis.
fields	is a multiple-entry vector containing the CDR field names.

reorigcp is the same entry or a subset of FIELDS. This field should contain any fields that should be copied to a new CDR on reorigination.

Sample entry: **>ADD newtmplt n n seqnum cic origtime origdate anstype timechng origampm incintl disctime discdate anisuff discampm incbill fill1 $ $**

4 Enter the CTMPLT tool to complete the changes by typing:

>CTMPLT

5 Upgrade the billing system to reflect the changes by typing:

>UPGRADE

ATTENTION

The UPGRADE command automatically rotates any mounted billing files.

Use the UPGRADE command any time a change is made to the FCDR (Flexible CDR) office parameters in table OFCENG.

6 Ensure upgrade was performed by typing:

>STATUS

Example of a MAP response:

```
The current Active template index is: 2
The timestamp of the Active template index is: 1999/03/03 01:10:11.000 TUE.
                         Active           Edit           History
                       ---------------- ---------------- ----------------
FCDR_BHR_SIZE:          12               12               60
FCDR_GSR_SIZE:           5                5               60
FCDR_GER_SIZE:          24               24               60
FCDR_ESR_SIZE:           5                5               60
FCDR_SRR_SIZE:           6                6               60
FCDR_CCR_SIZE:           7                7               60
FCDR_OSR_SIZE:          38               38               60
FCDR_CDR_SIZE
Method:                VAR_SIZE        FIXED_SIZE       FIXED_SIZE
Length:                 7                8                83
FCDR_CDR_TMPLT
Method:                FIXED_TMPLT       FIXED_TMPLT      FIXED_TMPLT
Template Index:        NEWTMPLT          NEWTMPLT         UCS11
FCDR_CDR_WORD_LAYOUT: NORMAL             NORMAL           READLR
FCDR_GEN_600_LOG:        N                 N                N
FCDR_GEN_601_LOG:        N                 N                N
```

Setting up your system for best fit analysis

The variable billing system provides a means of allowing the switch to determine the best CDR template for formatting the CDR when call processing has not identified a template. Best fit analysis occurs when office parameter FCDR_CDR_TMPLT (table OFCENG) is set to VAR_TMPLT.

An ideally formatted CDR only contains fields that have data about the call. The best fit algorithm attempts to find the template that is the closest match to the data captured for the call.

When data is captured, the list of fields containing data is compared to each template and the appropriate template is selected.

The CTMPLT tool (using the SET command) allows you to set mandatory fields for CDR population.

Enable the FCDR601 log to identify empty fields within a template. This feature can be used to fine tune CDR templates for different call types. The FCDR601 log is enabled by the FCDR_GEN_601_LOG office parameter.

Refer to Appendix E, “Related data schema, logs, OMs, and commands.”

Setting mandatory fields

Examine the available fields for each call scenario and identify the ones you consider mandatory for all calls. Once you have completed this analysis, use the SET command (from the CTMPLT command set) to identify the field as mandatory (MUSTHAVE) or not (DONTCARE).

The PRIMARY field (table CDRTMPLT) allows you to fine tune the best fit analysis. The switch first checks any templates with PRIMARY set to Y for a best fit. A best fit is reached when a template contains all fields set to MUSTHAVE. If multiple templates contain all the MUSTHAVE fields, the template that contains the most DONTCARE fields is used to format the CDR.

When the switch does not find a suitable template in the PRIMARY=Y set, all templates with the PRIMARY set to N are examined for a best fit. These non-PRIMARY templates should contain all fields. Predefined templates such as the CDR2AMA, UCS09, UCS11, UCS12, UCS13 templates are non-PRIMARY templates.

The FCDR602 log is generated when the best fit analysis does not find a suitable template (one that contains all MUSTHAVE fields) in the set of PRIMARY templates. This log aids in fine tuning the defined templates and the selection of templates through call processing.

Selecting a template

The CDRTMPLT option that is filled in tables FLEXDIAL, FLEXTYPE, TRKFEAT, RTEATTR, TRKGRP, AUTHCODU, FLEXFEAT, ANISCUSP, UNIPROF, AUTHCODx, STDPRTCT (route selector CT, DC, ES, NT, UA, UAX of subtable STDPRT) can only be provisioned using an ACTIVE template from the CDRTMPLT table. After adding a new template to the

CDRTMPLT table, the user must utilize the CTMPLT tool's UPGRADE command to make the edited version of CDRTMPLT into an active version. At this point, the new template is available for use in the CDRTMPLT option in the tables referred to above.

Application of the CDRTMPLT option for formatting

A template specified at the start of a call may be overridden by a template specified later in the handling of a call. An example would be a template identified by the originating trunk group or an agent that can be overridden by a template which has been identified through the subscriber number screening or call type use. The RTEATTR table provides the last mechanism for identifying the template to use for the call.

The template chosen must be an active template in the CDRTMPLT table. If it is not active, the office parameter FCDR_CDR_TMPLT is used for identification of a template.

If the CDR format, as identified in the FCDR_CDR_TMPLT office parameter, is set to INTERNAL-TMPLT, the template specified is used to format all CDR records. This supercedes the template specified by call processing.

If the CDR format is set to FIXED-TMPLT and a template has not been identified by call processing, the CDRTMPLT table template identified by the FCDR_CDR_TMPLT office parameter is used to format the CDR record for the call.

If the CDR format is set to VAR-TMPLT and a template has not been identified by call processing, the best fit analysis scans the bit-mapped CDR field type indicator of the CDRTMPLT table entry with similar bit-mapped field capture table in the per-call recording unit.

Dumping and restoration of tables

Initial deployment of table CDRTMPLT does not require a dump and restore from any other table(s).

When performing an ONP from UCS09 to UCS14, or UCS11 to UCS14, or UCS12 to UCS14, or UCS13 to UCS14 the inactive side of the UCS14 load will be restored with the ACTIVE side's data in table CDRTMPLT.

Note 1: If a tuple in any applicable table (AUTHCODU, AUTHCDUx, RTEATTR, TRKGRP, TRKFEAT, ANISCUSP, UNIPROF, FLEXFEAT, FLEXTYPE, or STDPRTCT(route selector CT, DC, ES, NT, UA, UAX of subtable STDPRT)) on the dump side contains the CDRTMPLT option provisioned with a template that is not supported in UCS14, the tuple is restored to the UCS14 default template.

Note 2: If the dump side load's FCDR_CDR_TMPLT parameter in table OFCENG is set to UCS07 or UCS07FLEX, then UCS11 is used by the FCDR_CDR_TMPLT parameter by default. UCS11 is also used by default for the FCDR_CDR_TMPLT parameter if a user–defined template is provisioned that is based on UCS07 or UCS07FLEX including any or all of the PIC, TDP, and TRIGGER fields..

ONP upgrades supported in UCS14

The UCS DMS-250 switch and DMS-500 switch upgrade strategy is based on the Common Services Platform (CSP), release minus three CSP releases.

In UCS 14, the following one night process (ONP) configuration upgrades are supported:

- UCS09 (based on CSP10) upgrades to UCS14.
- UCS11 (based on CSP11) upgrades to UCS14.
- UCS12 (based on CSP12) upgrades to UCS14.
- UCS13 (based on CSP13) upgrades to UCS14.
- UCS14 (based on CSP14) upgrades to UCS14.

Note: UCS13 has been an exception to the "minus three CSP releases" rule because UCS skipped the CSP09 release.

In NCS 14, the following one night process (ONP) configuration upgrades are supported:

- NCS10 (UCS09 based on CSP10) upgrades to NCS14.
- NCS11 (UCS11 based on CSP11) upgrades to NCS14.
- NCS12 (UCS12 based on CSP12) upgrades to NCS14.
- NCS13 (UCS13 based on CSP13) upgrades to NCS14.
- NCS14 (UCS14 based on CSP14) upgrades to NCS14.

Call detail record logging facility

The UCS DMS-250 switch generates a call detail record (CDR) log using treatment codes as a selection mechanism. Any combination of treatment codes associated with complete or incomplete calls can be selected for logging through the MAP terminal. When a call is treated with one of the selected treatment codes, an output report containing the captured call data is generated. See the *UCS DMS-250 Logs Reference Manual* for a complete description of CDR log reports and the *UCS DMS-250 Data Schema Reference Manual* for treatment code descriptions.

CDR logging commands

Access the CDR map level by entering the following:

>MAPCI;MTC;IOD;CDR

Refer to Figure 7-1 for a CDR level display and menu.

SETLOG

The SETLOG command selects a treatment code for logging. Type the word ALL or enter a treatment code number. An error message is printed if no entry is made.

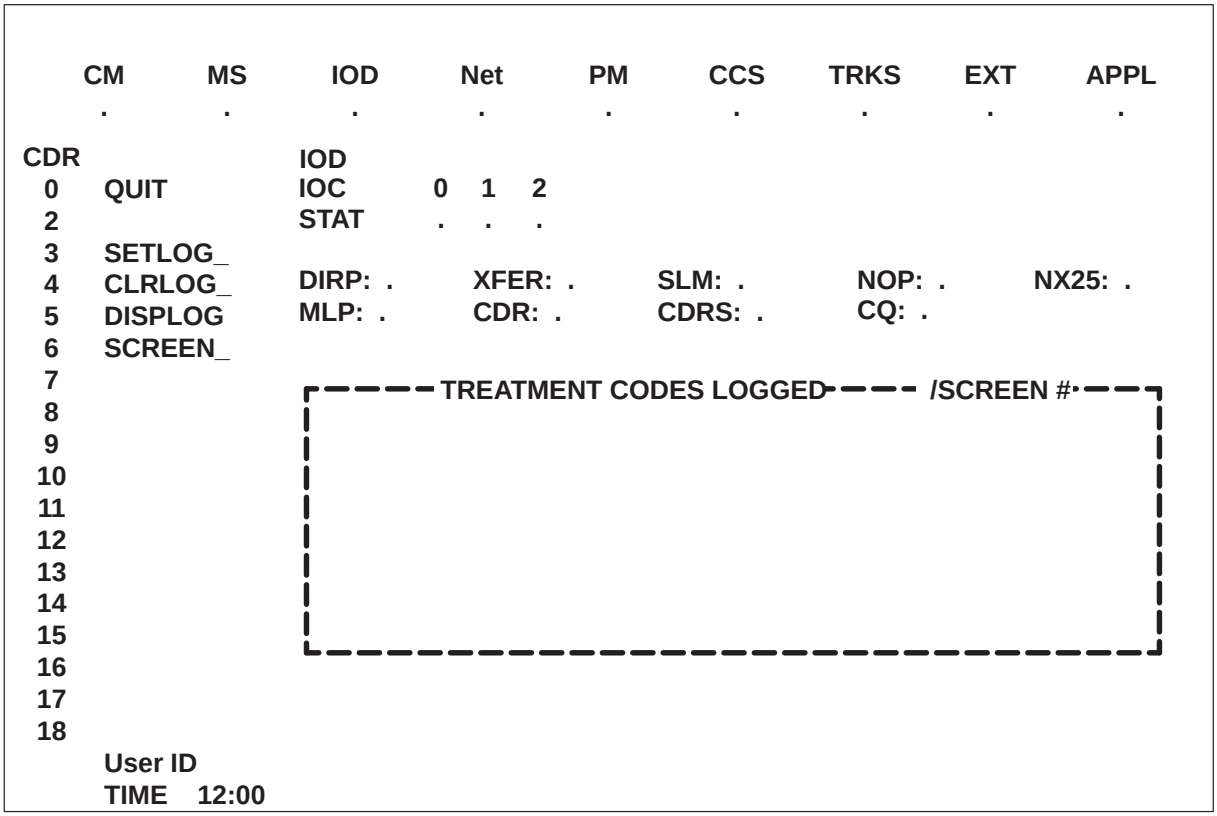
>SETLOG treatment_code
where

treatment is the word ALL or a treatment code number

Response: `The treatment code selected is now logging.`

Note: If the OFCENG parameter CDR_ENABLE_LOG_ALL is set to N, a treatment code of “0” cannot be added to the list of treamtment codes that cause CDR logs to be generated. Refer to the *UCS DMS-250 Office Parameters Reference Manual* for more information regarding the OFCENG parameter.

Figure 7-1
CDR map level display



CLRLOG

The CLRLOG command deselects a treatment code for logging. Type the word ALL or enter a treatment code number. An error message is printed if ALL or a treatment code number is not entered.

>CLRLOG treatment_code
where

treatment is the word ALL or a treatment code number

Response: `The specified treatment is removed from the list of treatment codes logged.`

DISPLOG

The DISPLOG command displays all the treatment codes. If only DISPLOG is entered, the status display on the MAP terminal is updated. If a treatment code is entered, the short four-character name (for example, VACT) and the long name (for example, VACANT_CODE) of the treatment code numbers are printed.

>DISPLOG treatment_code

where

treatment is the word ALL or a treatment code number

Examples

>DISPLOG 011

```
011 EMR1 EMERGENCY_1
```

>DISPLOG 006

```
006 VACT VACANT_CODE
```

Limitations and warnings—CDR logging facility

The LOG output of CDR is a convenience that provides data monitoring without active participation. However, during heavy traffic periods, turning off the reporting aspects of CDR allows time savings in case a UCS DMS-250 switch becomes CPU bounded. During heavy traffic, it is recommended that only the buffering feature be used to avoid errors in the LOG system.

Flexible CDR searching

The flexible CDR search (FCDRSRCH) menu provides the user with the ability to view CDRs and OSRs 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

ATTENTION

FCDRSRCH commands replaces the CDRSRCH and DCDRSRCH commands. The FCDRSRCH command does not work for any CDR template that contains the AMABAFMD field (CDR2AMA3).

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

```
>MAPCI;MTC;APPL;OAMAP;FCDRSRCH
```

Figure 8-1 shows the FCDRSRCH menu. Table 8-1 lists the commands available for FCDRSRCH. Refer to *UCS DMS-250 Commands Reference Manual* for further details on FCDRSRCH commands.

Figure 8-1
FCDRSRCH menu

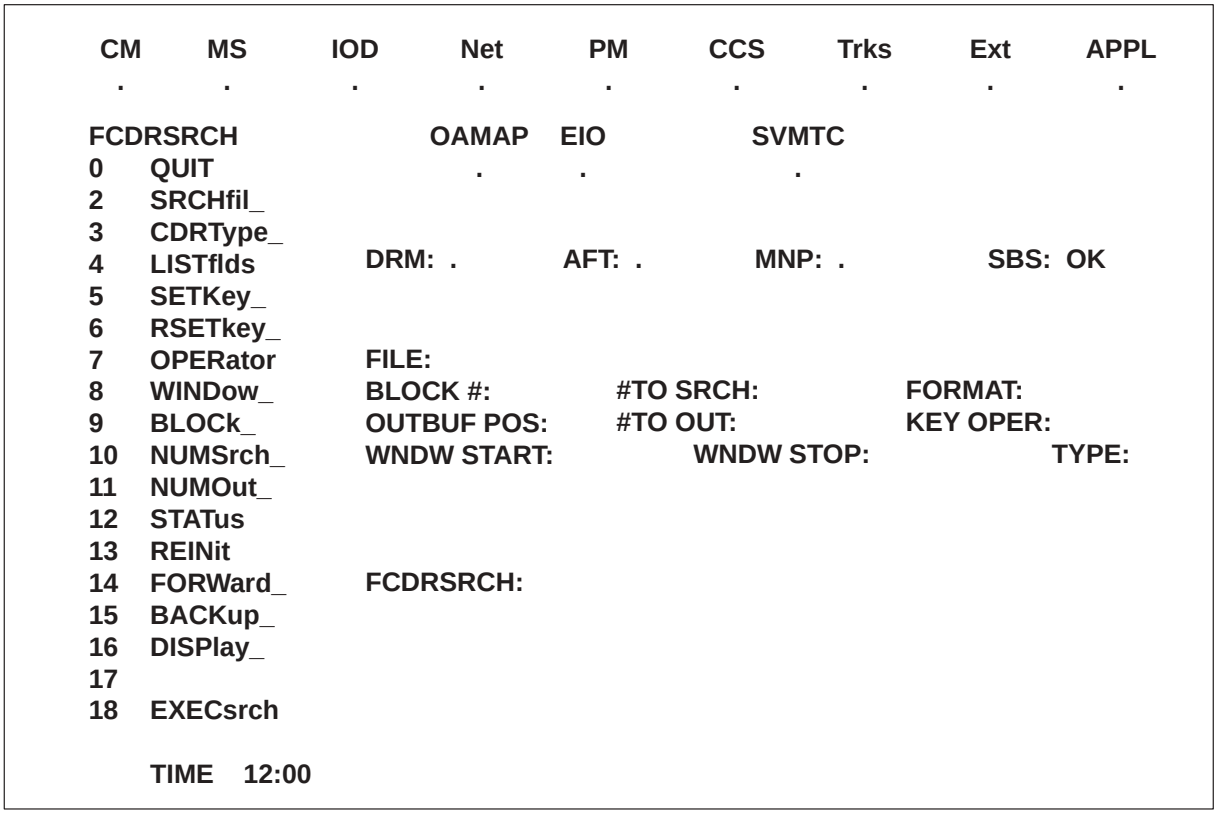


Table 8-1
FCDRSRCH commands

Command	Syntax	Description
BACKUP	BACKUP backup_#	backward positioning within output buffer
BLOCK	BLOCK block_#	set starting block number
DISPLAY	DISPLAY number_of_entries	displays contents of output buffer
EXECSRCH	EXECSRCH	initiates search session
CDRTYPE	CDRTYPE type	selects format type (either CDR or OSR)
FORWARD	FORWARD forward_#	forward positioning within output buffer
HELP	HELP	dixplays this table information on the user's MAP screen

—continued—

Table 8-1
FCDRSRCH commands (continued)

Command	Syntax	Description
LISTFLDS	LISTFLDS	list of billing record fields pertaining to selected billing file
NUMOUT	NUMOUT output_#	number of records to output (optional)
NUMSRCH	NUMSRCH number	number of records to search (optional)
OPERATOR	OPERATOR	toggle logical condition (AND is default)
QUIT	QUIT	exit current menu level
REINIT	REINIT	reinitialize all non-research keys
RSETKEY	RSETKEY cdrfield cdrdata	edit current search key definitions
SETKEY	SETKEY cdrfield cdrdata	define search keys or list defined search keys
SRCHFIL	SRCHFIL stream block or SRCHFIL filename crsfmt block	selection of billing file desired
SRCHSTAT	SRCHSTAT	FCDRSRCH status information displayed on the MAP screen, such as Filename, Search window, etc.
STATUS	STATUS	provides information about last completed search
WINDOW	WINDOW begyear begmonth begday beghour begminute endyear endmonth endday endhour endminute	define time window (a beginning time can be specified without an end time, but not vice versa)

—end—

Access modes

Before starting an FCDRSRCH session, the user must decide which access mode to use, automatic or manual.

Automatic mode

The automatic mode allows the user to access the billing file directly without any knowledge of the billing file name or disk volume. The billing stream (OCC) and the state (active or parallel) are required; optionally, you can include the starting block number. The syntax is as follows:

>SRCHFIL stream state [block#]

Manual mode

The manual mode requires more information. The user must know on which disk device the billing file resides, then mount and list the appropriate disk volume.

The command to attach a disk volume to a user's MAP directory is LISTVOL. It is not necessary to attach a disk volume for the FP. A complete description of the disk utility system can be found in *Disk Maintenance Subsystem Reference Manual*.

When the disk volume directory is properly attached, specify the name and format for the desired billing file. The manual mode permits access to any billing file that can be referenced within the DMS file system. The syntax is as follows:

```
>SRCHFIL filename crsfmt [block#]
```

Note: Variable crsfmt can be found in table CRSFMT.

Search keys

Specify one or more fields in the CDR to use as search keys. Each field in the CDR can be used to define search keys. Use the following command to set the search parameters:

```
>SETKEY cdrfield cdrdata
```

To generate a list of valid key search fields, enter the following command:

```
>LISTFLDS
```

The asterisk (*) character can be used as a wildcard character for the data item of a search key. When the * is used as the only character in the key data, a match will always be made regardless of what is contained in the field. However, when used at the end of the key data, only the characters that precede the * are used by the search for a match.

Note: The command interpreter of the MAP terminal assumes that all numeric input of five characters or less is intended to be a number. Enclose all numeric input strings that are greater than six characters with single quotation marks (’). This procedure is required only when specifying a numeric string for a key data item. In practice, it may be more convenient to use single quotes for all numeric strings.

Change search keys by using the RSETKEY command. The RSETKEY command deletes search keys based on CDR field name alone, or CDR field name and a given value.

>RSETKEY cdrfield cdrdata

Logical operators

If multiple search keys are specified, the search keys should be ANDed or ORed together.

AND operation

If the AND option is used, there must be a match on every key given before the CDR is returned. The default option is AND. Therefore, if a logical operator is not specified, all keys defined are ANDed together.

OR operation

If the OR option is used, the CDR is returned if any one of the given keys match.

Search limits

Constraints may be set up to indicate the point of the billing file where the search must start and end. The default starting point is the first block of a file. There are four ways to set up billing file search limits: time window, search block, number search, and number of CDRs output.

Time window

The time window defines a block of time within the file's active collection period indicating a starting and an optional stopping time. Use the WINDOW command to define a time window.

Search block

The BLOCK command allows the user to begin the search at a specific block. There is no provision for setting an ending block.

Number search

You can specify the number of records to be searched. Use the NUMSRCH command to set the number of records to be searched.

Number output

You can specify that the search continue until a specified number of matching records are found. Use the NUMOUT command to set the number of records to be found.

End conditions

The conditions which cause a search request to end are as follows:

- End of time window (user-defined) — use the WINDOW command
- Requested number of records searched (user-defined) — use the NUMSRCH command
- Requested number of records output (user-defined) — use the NUMOUT command
- Output buffer filled (system-defined) — determined by the office parameter SRCHOUTPUT, ranges of 0 to 200, found in table OFCENG. When buffer is filled with matched records, and no other stopping conditions have been met, the search returns control to the user allowing results of the incomplete search session to be viewed. Continue the search by re-entering the EXECSRCH command. Clear the search parameters by entering the REINIT command.
- Search error encountered (system-defined) — monitors problems with DMS system resources, ensures proper feature data fill, and maintains integrity of file system interaction. The search cannot fix problems, but does detect, recover, and report them. When an error is found, the search suspends itself and reports the error condition. The search continues to report errors upon each new search request until the problem has been cleared. Corrective action must be performed to eliminate problems reported by the search feature.
- End of data on the billing file (system-defined)

Search process

The following steps define the search process:

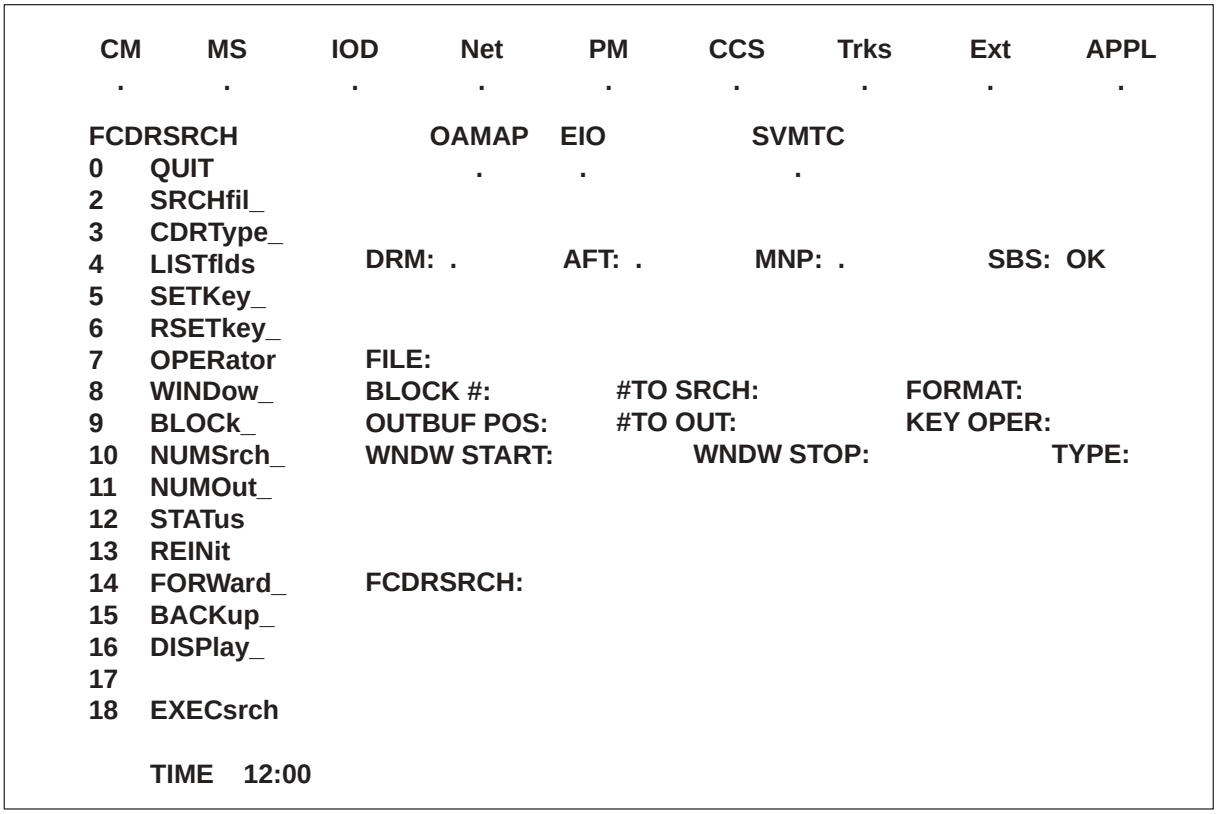
User steps:

1 Enter the FCDRSRCH menu from MAP by typing:

>MAPCI;MTC;APPL;OAMAP;FCDRSRCH
and pressing the Enter key (Figure 8-2).

Note: Commands may be entered by pressing the number corresponding to the command on the FCDRSRCH menu.

Figure 8-2
FCDRSRCH menu



2 Select billing file by typing:

>SRCHFIL stream state
and pressing the Enter key.

3 OPTIONAL: Select billing record type by typing:

>CDRTYPE type
and pressing the Enter key.

4 Define search keys by typing:

>SETKEY cdrfield cdrdata
and pressing the Enter key.

5 OPTIONAL: Define search constraints using WINDOW, BLOCK, NUMOUT, or NUMSRCH commands.

6 Initiate search by typing:

EXECSRCH
and pressing the Enter key.

System steps:

1 Reads billing file

2 Advances to requested or default starting point in file

3 Compares each record against defined search keys

4 Appends matching records to output buffer

Note 1: The output buffer can hold up to 200 CDRs.

Note 2: USER: To terminate execution of a search session, press the break key followed by HX or STOP, then press return.

5 Repeats steps 3 and 4 until end condition occurs

6 Completes search and indicates success or failure

If the search is successful, matched CDRs may be displayed from within the output buffer by using the DISPLAY, BACKUP, and FORWARD commands.

A prompt character (>) indicates the feature is ready to accept input for one of the following:

- viewing output buffer
- altering search parameters (billing file, search keys, logical condition, or imposed constraints)
- initiating another search session
- continuing the current search session
- exiting FCDRSRCH level of the MAP terminal

A search is continued by re-entering the EXECSRCH command. Any CDRs in the output buffer are erased when a new search is requested. Search parameters remain as defined, unless you update them by using the RSETKEY command. Unless a new billing file is accessed or a new starting point is defined, a new search (by default) begins with the first record following the last referenced CDR.

To exit the FCDRSRCH menu, request a different MAP level or issue the QUIT command. In either case, the search process is terminated and all temporary DMS system resources are freed. A new search must be defined each time the FCDRSRCH level is entered.

User requirements

The minimum user requirements for initiating an FCDRSRCH are as follows:

- Open a file to search..
- Specify at least one search key.
- Execute the EXECSRCH command.

The search is performed on the appropriate file storage device when initiated by the EXECSRCH command.

OSR search keys

The FCDRSRCH tools can also search for OSRs contained in the billing file. Most of the same commands used for the CDR search process are used for OSR searching. The following are a few examples:

CDRTYPE

Use the CDRTYPE command to set the search ‘TYPE’ field to OSR. The ‘FORMAT’ search field must be ‘UCSEOPS’ to search for OSRs. The UCSEOPS stream format must be filled in table CRSFMT in the CDRSRCH field of the stream being searched.

SETKEY

Use the SETKEY command to set the search parameters for OSRs, the same as for CDRs except for using the OSR fields. Use the following command to set the search parameters:

>SETKEY osrfield osrdata

WINDOW

The time WINDOW command is not applicable to OSR searching.

OSR search process

The following steps define the search process:

User steps:

1 Enter the FCDRSRCH menu from MAP by typing:

>MAPCI;MTC;APPL;OAMAP;FCDRSRCH
and pressing the Enter key (Figure 8-2).

Note: Commands may be entered by pressing the number corresponding to the command on the FCDRSRCH menu.

2 Select billing file by typing:

>SRCHFIL stream state
and pressing the Enter key.

3 OPTIONAL: Select billing record type by typing:

>OSRTYPE type
and pressing the Enter key.

4 Define search keys by typing:

>SETKEY osefield osrdata
and pressing the Enter key.

5 OPTIONAL: Define search constraints using BLOCK, NUMOUT, or NUMSRCH commands.

6 Initiate search by typing:

EXECSRCH
and pressing the Enter key.

If the search is successful, matched OSRs may be displayed from within the output buffer by using the DISPLAY, BACKUP, and FORWARD commands.

A prompt character (>) indicates the feature is ready to accept input for one of the following:

- viewing output buffer
- altering search parameters (billing file, search keys, logical condition, or imposed constraints)
- initiating another search session
- continuing the current search session
- exiting FCDRSRCH level of the MAP terminal

A search is continued by re-entering the EXECSRCH command. Any OSRs in the output buffer are erased when a new search is requested. Search parameters remain as defined, unless you update them by using the RSETKEY command. Unless a new billing file is accessed or a new starting point is defined, a new search (by default) begins with the first record following the last referenced CDR.

To exit the FCDRSRCH menu, request a different MAP level or issue the QUIT command. In either case, the search process is terminated and all temporary DMS system resources are freed. A new search must be defined each time the FCDRSRCH level is entered.

Office parameters that control FCDRSRCH

CDR_SEARCH_Process_LIMIT

- located in table OFCSTD
- values: 0–20
- This office parameter sets the number of FCDRSRCH processes allowed. Since FCDRSRCH is a multi-user tool, multiple FCDRSRCH processes can be active at any given time.

  This office parameter can be used to limit access, memory usage, or both.

SRCHOUTPUT

- located in table OFCENG
- values: 0–200
- This office parameter sets the number of output buffers allocated by an FCDRSRCH process. When the user executes the search, CDR/OSRs that match the user-defined search keys are read from the billing file. As soon as they are read, they are converted to ASCII characters and stored in an output buffer. The user may then view the CDR found by setting the output buffer(s) to display.

  This office parameter can be used to limit memory usage.

Appendix A
CDR field descriptions

Tables 9-1 through 9-23 describe each field of the CDR. These fields are populated only if they are present in the CDR template used by the call. The following definitions assume the field is populated.

Some fields are populated for every call; other fields are populated only when applicable. For example, if a call does not have an account code, the account code field is not populated. Other fields are only populated by certain features. Fields that are not populated always contain the value of 0.

For a description of the various data types, see Table 9-6, at the end of this chapter.

A's

Table 9-1
CDR field descriptions

Field name	Field size	Split size (in bits)	Data type	Field description
ACCTCD	12 nibbles	4	TBCD	ACCOUNT CODE. This field is populated with the account code digits collected for the call.
ACCTV	2 bits	2	Decimal	ACCOUNT CODE VALIDATION. This field contains the screening status for the collected account code. The collected digits are stored in field ACCTCD. Call processing stores one of the following values: 0 = No account code was collected or the number of digits collected was less than the ACCTLEN identified in table ANISCUSP or one of the AUTHCODU tables. 0 is the default value. 1 = Account code was collected, but was not validated. ACCTVAL (identified in table ANISCUSP, UNIPROF, or one of the AUTHCODU tables) was set to N. 2 = Account code was collected and validation was attempted. ACCTVAL (identified in table ANISCUSP, UNIPROF, or one of the AUTHCODU tables) was set to Y.

—continued—

Table 9-1
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
				3 = Account code was collected and validated. Occurs when the account code validation database is empty, indicating the account code validation index has no account codes provisioned and the office parameter ALLOW_EMPTY_ASCRN is set to Yes (Y). ***Note 1:*** In-switch account code verification is performed through table ACSCRN2. ***Note 2:*** Off-switch validation is performed on the ANI or authcode.
ACG	1 bit	1	Boolean	AUTOMATIC CALL GAPPING. This field identifies if ACG occurred on the call. Call processing stores one of the following values: ***Note:*** ACG occurs when off-switch validation receives too many queries. Table ACGDUR provisions the ACG timer. 0 = Control number not present in control list 1 = Control number is present in control list ***Note:*** The control list is located off-switch.
ACTIDX	3 bits	3	Decimal	ACTIVE TEMPLATE IDENTIFICATION INDEX. Contains the version of the CDR template (identified in field TEMPLID) used to format the call data. A CDR template can have up to 8 versions.

—continued—

Table 9-1
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
				ACTIDX is a required field for all CDR templates and is, therefore, already provisioned for every template. This field is always located in Word 1, bits 7 through 9. This field contains one of the following values: 0 = Version 0 1 = Version 1 2 = Version 2 3 = Version 3 4 = Version 4 5 = Version 5 6 = Version 6 7 = Version 7 ***Note:*** Do not attempt to include the ACTIDX field when creating new templates using table CDRTMPLT.
ADDRNUM	2 bits	2	Decimal	ADDRESS NUMBER. This field identifies one of the following overflow translated numbers used for the call: This number is used for FlexDial. 0 = Not used 1 = Address #1 (default) 2 = Address #2 3 = Address #3

—continued—

Table 9-1
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
ADIN	2 nibbles	4	TBCD	AUTHCODE DATABASE INDEX. This field identifies the index into table AUTHDIN. The index is originally identified in table TRKGRP. The index identifies the database used for authcode screening.
ALTBILL	11 nibbles	4	TBCD	ALTERNATE BILLING NUMBER. This field identifies the value of the AMAAlternateBillingNumber parameter received in the CAIN TCAP SCP response message. The range of this field is up to 11 TBCD digits. For 3rd-party RLT calls, the CDR merging rules for the ALTBILL field are as follows: • If ALTBILL is populated on the second leg of the call, the value is used for the merged CDR. • If ALTBILL is not populated on the second leg of the call, the value in the field for the first leg of the call, if populated, is used for the merged CDR.
AMABAFMD	128 bytes		Hexadecimal	AUTOMATIC MESSAGE ACCOUNTING BELLCORE AUTOMATIC MESSAGE ACCOUNTING FORMAT MODULE. This field contains the BAF encoded Module Codes.
AMACALLC	10 bits		Decimal	AMA CALL CODE. This field contains the call code needed for the BAF record. It has a range of 000 to 722. The field can have the following values:

—continued—

Table 9-1
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
				0 = No datafill or SCP message indicated a call type code for the call. 47 = Generated when the UCS DMS-250 switch receives a TCAP Analyze_Route message with an AMAslpID parameter. 47 = Generated when the call is a non-8YY and non-dial around call and has to be default routed due to bad or missing routing and billing instructions from the SCP. 74 = Generated when a call is identified as a 911 call. 110 = Generated for direct-dialed, and station-paid internetwork calls routed by means of an interexchange carrier. The record provides carrier connect details for applying access charges. 117 = Generated for an internetwork Public Switched Digital Service (PSDS) call. Call Code 117 provides carrier connect details. 119 = Captured based on the AMAREC option datafilled in table TRKGRP for the originating trunk. 141 = Captured based on the SCP response message BillingIndicator parameter containing AMACallType code of 4 (LEC routed).

—continued—

Table 9-1
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
				142 = Captured based on the SCP response message BillingIndicator parameter containing AMACallType code of 0 (Onnet call) and the latest CN*REQ CDR field containing a value of 18 (Tollfree Service Query). 720 = Captured based on the AMAREC option datafilled in table TRKGRP for the originating trunk. ***Note:*** This CDR field is only populated when the EDGE_SWITCH parameter in table OFCVAR is set to Y.
AMACALLT	10 bits		Decimal	AMA CALL TYPE. This field contains the value for the call type. If the switch receives an OverflowBillingIndictor or PrimaryBillingIndicator parameter populated with a non-zero AMA Call Type value, this field is populated with the received Call Type value. This field maps to BAF module code 30, BAF table 89, and BAF field Translation Settable Field. The range of this field is 0–999.
AMAMOD1	10 bits		Decimal	AUTOMATIC MESSAGE ACCOUNTING MODULE 1. This field contains the first module, if any, to be appended to the BAF record. It has a range of 1 to 999, and is populated as follows:

—continued—

Table 9-1
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
				22 = A long duration call. ***Note:*** When INCBILL indicates a long duration call, BAF Module 22 is appended to the BAF record for the call. To be compliant with *GR-508-CORE* regarding long call duration handling, the office parameter which controls long call duration must be set accordingly. 720 = An LNP query occurred for the call. An originating and/or terminating number was ported. ***Note:*** This CDR field is only populated when the EDGE_SWITCH parameter in table OFCVAR is set to Y.
AMAMOD2	10 bits		Decimal	AUTOMATIC MESSAGE ACCOUNTING MODULE 2. This field contains the second module, if any, to be appended to the BAF record. It has a range of 1 to 999, and is populated as follows: 22 = A long duration call. ***Note:*** When INCBILL indicates a long duration call, BAF Module 22 is appended to the BAF record for the call. To be compliant with *GR-508-CORE* regarding long call duration handling, the office parameter which controls long call duration must be set accordingly. 720 = An LNP query occurred for the call. An originating and/or terminating number was ported.

—continued—

Table 9-1
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
				Note: This CDR field is only populated when the EDGE_SWITCH parameter in table OFCVAR is set to Y.
AMASC	14 bits		Decimal	AMA STRUCTURE CODE. This field contains the structure code needed for conversion to the BAF record. It has a range of 0 to 9999. Supported structure codes are: 220 360, 364, 625, 645, 653. Values are set as follows: • 0 = No call type code is indicated. This occurs under certain error conditions such as missing datafill or a bad response from the SCP. • 220 = Populated for calls that interact with an Advanced Intelligent Network (AIN). • 360 = Number Services calls when a Call Type code of 141 is received in the SCP response, indicating the call is to be routed by an IC. ***Note:*** For BAF structure code 360, call type code 141, the UCS DMS-250 switch makes the connection to the IEC through an AT, and the ORIGTIME is captured upon the receipt of the ANM.

—continued—

Table 9-1
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
				• 364 = Number Services calls when a Call Type code of 142 is received in the SCP response, indicating the call is to be routed by a LEC. ***Note:*** In the UCS09 software release, 625 and 653, were added for calls that orginate to a UCS DMS-250 switch. In the UCS14 software release, 625 and 645, were added for calls that terminate at a UCS DMS-250 switch. • 625 = Calls originating to the UCS DMS-250 (UCS09). • 625 = Calls terminating to the UCS DMS-250 (UCS14). • 645 = Populated for calls that originate access into a network that is connected to the UCS DMS-250 switch and then terminate at the UCS DMS-250 switch. • 653 = Calls originating to the UCS DMS-250 when the ANI/CPN is not received and is not datafilled (terminate access to a network connected to the UCS DMS-250 switch. ***Note:*** This CDR field is only populated when the EDGE_SWITCH parameter in table OFCVAR is set to Y.

—continued—

Table 9-1
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
AMASIZE	7 bits		Decimal	AUTOMATIC MESSAGE ACCOUNTING SIZE. This field contains the size of the AMABAFMD field in bytes.
ANICPN	2 bits		Decimal	AUTOMATIC NUMBERING IDENTIFIER/ CALLING PARTY NUMBER. This field in the BAF record indicates whether ANI and/or CPN is normally provided for the call. It is populated as follows: 0 = ANI and CPN are not available. 1 = Only ANI is available. 2 = Only CPN is available. 3 = ANI and CPN are available. ***Note:*** This CDR field is only populated when the EDGE_SWITCH parameter in table OFCVAR is set to Y.
ANISP	10 nibbles	4	TBCD	AUTOMATIC NUMBER IDENTIFICATION SPILL. This field is populated with one of the following: • ANI for MF originating agencies • Charge Number for SS7 originating agencies • Calling Line ID for PRI originating agencies • Line Number field of AMALineNumber when Line Number Type is ANI

—continued—

Table 9-1
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
ANISUFF	3 bits	3	Decimal	ANI SUFFIX. This field identifies the nature of a FGD call determined by the start digit received. Call processing stores one of the following values: 0 = No ST digit received ***Note 1:*** A value of 0 does not appear in the CDR log, but is available in the billing record. 1 = ST3P received (transitional call) 2 = STP received (cut-thru call) 3 = ST2P received (transitional call) 4 = ST received (pure) 5 = Invalid ST digit received ***Note 2:*** ANISUFF is not filled for FlexDial calls. Instead, the nature of address is captured in the called party address field (CLDNOA) and the dialed number field (DIALNOA).
ANSCDR	1 bit	1	Boolean	ANSWER CDR. This field indicates if a CDR was generated at the answer event for the call. Call processing stores one of the following values: 0 = Answer CDR not generated 1 = Answer CDR generated

—continued—

Table 9-1
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
ANSTYPE	4 bits	4	Decimal	ANSWER TYPE. This field contains the type of answer detected. Call processing stores one of the following values: ***Note:*** Software answer refers to an ATD receiver connected for answer detection. • 0 = Nil value (For example, caller abandon during origination.) • 1 = Software answer, no voice detected • 2 = Software answer, voice detected • 3 = Software answer, audio ringback detected

—continued—

A's (end)

Table 9-1
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
				• 4 = Hardware answer • 5 = Software answer, silence detected • 6 = Software answer, persistent ringing • 7 = Audio tone detector (ATD) hardware error or forced disconnect and continuous tone at remote switch • 8 = Software answer, busy tone detected • 9 = Software answer, reorder tone detected • 10 = IMT software answer • 11 = IMT hardware answer • 12 = Early billing active with no answer • 13 = Early billing active with answer • 14–15 = Not used
			—end—	

Table 9-2
CDR field descriptions

Field name	Field size	Split size (in bits)	Data type	Field description
BILLNUM	24 nibbles	4	TBCD	BILLING NUMBER. This field is populated with one of the following and identifies the billing number for a call: • Travel card number • Authcode • N00 called number (NXX-NXX-XXXX).
BILLTYPE	6 bits	6	Decimal	BILLING TYPE. This field contains the billing type returned from an IN/1 N00 TCAP query. This field only applies to calls that query the IN/1 SCP for an N00 number translation. It is populated when the ENHANCED_N00_TCAP office parameter is set to ON or the VER_2_N00_TCAP is set to Y.

C's

Table 9-3
CDR field descriptions

Field name	Field size	Split size (in bits)	Data type	Field description
CAINCT	3 bits	3	Decimal	CARRIER AIN CALL TYPE. This field contains the CAIN call type received from the SCP response within the callType extension parameter. Non-CAIN calls do not populate this field. 0 = OFFNET (default) 1 = ONNET 2 = FORCED_ONNET 3 = VIRTUAL_ONNET 4 = LEC_ROUTE 5 = Reserved 6–7 = Reserved for SCP determined values
CALLDUR	32 bits	8	Decimal	CALL DURATION. This field contains the duration of a call, measured in 10ms ticks. Call duration is measured as the time between called party answer and on-hook by either called party or calling party. The CDR log shows this value in seconds. The value in this field is only valid if the call is answered and CDR field ANSTYPE does not equal 0 (nil answer).
CALLEDNO	15 nibbles	4	TBCD	CALLED NUMBER. This field is populated with the translated called party digits for a call.
CALLEVTS	4 bits		Decimal	CALL EVENT STATUS. This field in the BAF record identifies the call event status. It describes how far a call involving Interexchange Carriers progressed before terminating, and identifies the conditions associated with the call's termination.

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Table 9-3
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
				The field can have the following values which can be coded into characters 2-3 as follows: • 00 = Call was abandoned or released before the Initial Address Message (IAM) was sent by the UCS DMS-250 switch. • 01 = Call was abandoned or released after the Initial Address Message (IAM) was sent by the UCS DMS-250 switch. • 02-03 = Not applicable to SS7. • 04 = indicates a time-out occurs after the Exit Message (EXM) is received by the originating exchange carriers' end office (EO) from the access tandem (AT). • 05 = Not applicable to SS7. • 06 = (Terminating access only) Call was abandoned or released after the IAM was received by the UCS DMS-250 switch, but before the answer message (ANM) was received. • 07 = Call is abandoned or released after the Address Completion Message (ACM) is received by the originating exchange carrier's end office. • 08 = (Terminating access only) The terminating end either did not receive or did not recognize the called NXX number.

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Table 9-3
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
				• 09 = (Terminating access only) The call cannot be set up to the terminating office. • 10 = The call was abandoned or released after the Answer Message (ANM) was received by the originating UCS DMS-250 switch. ***Note:*** This CDR field is only populated when the EDGE_SWITCH parameter in table OFCVAR is set to Y.

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Table 9-3
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
CALLEVTS	4 bits		Decimal	CALL EVENT STATUS. Refer to CALLEVTS description in preceding table entry. Values apply only when the EXIT_MSG_RECEIVING office parameter is set to Y, and the adjacent switch is an Access Tandem (AT). Direct Routed Calls • 00 = Call was abandoned or released before the switch sent the IAM. • 01 = Call was abandoned or released after the switch sent the IAM. • 07 = Call was abandoned or released after the switch received the ACM. • 10 = Call was abandoned or released after the switch received the ANM. • 00 = Call was abandoned or released before the switch sent the IAM or before the switch receives the EXM from the AT. Tandem Routed Calls • 01 = Call was abandoned or released after the switch receives the EXM from the AT. • 04 = Time-out occurred after the switch receives the EXM from the AT. • 07 = Call was abandoned or released after the switch receives the ACM. • 10 = Call was abandoned or released after the switch receives the ANM.
CALLTYPE	16 bits	16	Decimal	FLEXDIAL CALL TYPE. This field is populated with the following call originator data:

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Table 9-3
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
				• Access – type of access (5 bits) • Service – type of service (6 bits) • NUMBER – originating number (5 bits) The populated data is set in FLEXDIAL SUBR Collectible processing or FLEXDIAL Calltype collectable processing through the FLEXTYPE BILLFLGS option. Refer to the *UCS DMS-250 FlexDial Framework Application Guide* for more information.
CARRSEL	1 nibble	4 bits	Decimal	CARRIER SELECTION. This field is 0 = No indication (default) 1 = Selected Carrier Identification Code is presubscribed to and not input by calling party. 2 = Selected Carrier Identification Code is presubscribed to and input by calling party. 3 = Selected Carrier Identification Code is presubscribed to. There is no indication if input by calling party or not. 4 = Selected Carrier Identification Code is not presubscribed to, and input by calling party. 5–15 spare values
CDRALGOR	3 bits	3	Decimal	CDR ALGORITHM. This field identifies the method used to select the CDR formatting template. 0 = Internal CDR format 1 = Template set by CALLTYPE FLEXDIAL

—continued—

Table 9-3
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
				2 = Template set through Subscriber Number validation. 3 = Template set through table TRKGRP/TRKFEAT specification. 4 = Template set by TCAP bill number. 5 = Template used is fixed (via FCDR_CDR_TMPLT office parameter). 6 = Template chosen via FLEXCDR BESTFIT mechanism. 7 = Template set by table RTEATTR specification.
CIC	4 nibbles	4	TBCD	CARRIER IDENTIFICATION CODE. This field identifies the long distance carrier for the call by using a three or four digit code. A three digit CIC is prefixed with a 0. For example, a CIC of 233 is populated as 0233. ***Note:*** This CDR field is only populated when the UCS Translations and Routing SOC UTRS0001 is turned on.
CICCASU	1bit	1	Boolean	CARRIER IDENTIFICATION CODE CASUAL USAGE. This field indicates when the CIC_CASU option, datafilled in table CICROUTE, is used for a call. 0 = CIC_CASU option not used 1 = CIC_CASU option is used
CICORIGN	2 bits	2	Decimal	CARRIER IDENTIFICATION CODE ORIGIN. This field indicates the origin of the CIC used for a call.

—continued—

Table 9-3
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
				00 = No CIC for the call 01 = Received CIC used for the call 02 = Default CIC from table TRKGRP 03 = CIC received from the SCP on CAIN call
CLDNOA	7 bits	7	Decimal	CALLED PARTY NATURE OF ADDRESS. 0 = Spare 1 = Subscriber number 2 = Spare Reserved for national use 3 = National (significant) number 4 = International number 5 = Non–Zero, national number, operator requested 6 = Non–Zero, international number, operator requested 7 – 95 = Spare 96–100= Reserved for CAIN 101 = Cain Hotline number 102 – 103 = Reserved for CAIN 104 = Cain VPN number 105 = Cain N00 number 106 – 111 = Spare 112 = Treated call (proprietary) 113 = Subscriber number, operator requested (0+) (113) 114 = National number, operator requested (0+) (114)

—continued—

Table 9-3
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
				115 = International number, operator requested (01+) (115) 116 = No address present, operator requested 117 = No address present, cut–through call to carrier 118 = 950+ call from LEC public station, hotel/motel line, or non EAEO 119 = Test line test code 120 – 126 = Reserved for network–specific use 127 = Reserved
CLGNOA	7 bits	7	Decimal	CALLING PARTY NATURE OF ADDRESS. 0 = Spare 127 = Reserved 1 = Unique subscriber number 2 = Spare 3 = Unique national (significant) number 4 = Unique international number 5 – 95 = Spare 96 = Cain partitioned number 97 = Cain account code number 98 = Cain ANI number 99 = Cain I2ANI number 100= Cain authcode number

—continued—

Table 9-3
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
				101 = Reserved for CAIN 102 = Cain MCCS number 103 = Cain PIN number 104 – 105= Reserved for CAIN 106 – 112 = Spare 113 = Non–unique subscriber number 114 = Reserved for national use 115 = Non–unique national (significant) number 116 = Non–unique international number 117 – 118 = Spare 119 = Test line test code 120 – 126 = Reserved for network–specific use
CLGPTYNO	15 nibbles	4	TBCD	CALLING PARTY NUMBER. This field identifies the calling party number of an originating SS7 call or value of the Line Number field of the AMALineNumber parameter when the Line Number Type is calling party identification.

—continued—

Table 9-3
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
				This CDR field is populated as follows when the EDGE_SWITCH parameter in table OFCVAR is set to Y: For DAL trunk originations, the field is populated with the optional CPN field from table TRKGRP. For SS7 FGD originations, the field is populated with the contents of the Charge Number Parameter received from the IXC or LEC/CLEC. If no Charge Number is received, the Calling Party Number is then populated.
CN1REQ	6 bits	6	Decimal	CAIN FIRST REQUEST. This field contains the first NetworkBuilder trigger/event that sends a TDP/EDP request message to an SCP (Service Control Point).
CN2REQ	6 bits	6	Decimal	CAIN SECOND REQUEST. This field contains the next unique NetworkBuilder trigger/event that sends a TDP/EDP request message to an SCP (Service Control Point).
CN3REQ	6 bits	6	Decimal	CAIN THIRD REQUEST. This field contains the last unique NetworkBuilder trigger/event that sends a TDP/EDP request message to an SCP (Service Control Point).

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Table 9-3
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
CN1TREQ	3 bits	3	Decimal	CAIN FIRST REQUEST TOTALS. This field contains the number of times the CN1REQ trigger/event sends a TDP/EDP request message to an SCP (Service Control Point) during the life of a call. ***Note:*** When the maximum value (7) for the totals field is reached, the value stays at maximum.
CN2TREQ	3 bits	3	Decimal	CAIN SECOND REQUEST TOTALS. This field contains the number of times the CN2REQ trigger/event sends a TDP/EDP request message to an SCP (Service Control Point) during the life of a call. ***Note:*** When the maximum value (7) for the totals field is reached, the value stays at maximum.
CN3TREQ	3 bits	3	Decimal	CAIN THIRD REQUEST TOTALS. This field contains the number of times the CN3REQ trigger/event sends a TDP/EDP request message to an SCP (Service Control Point) during the life of a call. ***Note:*** More than three unique trigger/events cause CN3REQ to be overwritten with the latest trigger/event. The counter is reset when CN3REQ is overwritten. ***Note:*** When the maximum value (7) for the totals field is reached, the value stays at maximum.
CNPREDIG	3 bits	3	Decimal	CALLED PARTY PREFIX DIGITS. This field identifies one of the following as the translated called number's prefix digits.

—continued—

Table 9-3
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
				0 = No prefix digits 1 = 0 Prefix 2 = 01 Prefix 3 = 011 Prefix 4 = 1 Prefix 5–7 = Not used
CNTOTREQ	4 bits	4	Decimal	CAIN REQUEST TOTALS. This field contains the total number of times TDP/EDP request messages were sent to an SCP (Service Control Point) during the life of a call. ***Note:*** When the maximum value (15) for the totals field is reached, the value stays at maximum.
COLLTIME	8 bits	8	Decimal	COLLECTION TIME. This field identifies the time (in 1-second ticks) when all digits have been collected by the switch. The timer starts from origination time.
COMPCODE	4 bits	4	Decimal	COMPLETION CODE. This field identifies reason for call completion and contains one of the following values: 0 = Normal completed call 1 = Treated call 2 = Abandoned call 3 = Abnormal call 4 = Signaling system error 5 = Forced disconnect invoked 6 = Offnet route advance invoked 7 = Test call

—continued—

Table 9-3
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
				8 = Recorded promotion 9 = TCAP DCP response time-out 10 = Not used 11 = Not used 12= Abnormal release call 13 = Completed answer CDR 14= Not used 15 = COS failure

—continued—

Table 9-3
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
COMPCODE2	10 bits		Decimal	COMPLETION CODE2. This field contains the status of a call completion and has a range of values from 0–999. This field applies to BAF structure code 220. This field maps to BAF field Completion Indicator and to BAF table 280. The following values apply to this field: • 001 = Completed: Connected • 002 = Not used • 003 = Not completed: Setup Restrictions Table • 004 = Not used • 005 = Not completed: no circuits • 006 = Not completed: ringing • 007 = Not completed: busy • 008 = Not completed: no answer supervision • 009–011 = Not used • 012 = Not completed: network failure • 013 = Not completed: caller abandon • 014 = Not used • 015 = Not completed: call sent to treatment • 016–998 = Not used • 999 = Unknown
COSINDEX	10 bits	10	Decimal	CLASS OF SERVICE INDEX. Identifies the index into table COSUS that was used to perform class of service screening.

—continued—

C's (end)

Table 9-3
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
				This field is empty when COS screening is successful after processing all the indexes provided in table MULTICOS. When screening fails, the index responsible for the failure is captured.
COSOVE	1 bit	1	Boolean	CLASS OF SERVICE OVERRIDE. When COS screening fails, a call is normally sent to treatment. If the COSOVE option is datafilled against the trunk group, then the switch overrides the screening and collects an authcode. This field identifies if COS override was invoked. 0 = Override not invoked 1 = Override invoked
CRID	36 bits	4	TBCD	PSN CALL REFERENCE IDENTIFER. This field is used to correlate SCU and switch billing records. This field is only populated by a PSN SCU TCP/IP response with the appropriate parameter. Non-PSN calls do not populate this field.
			—end—	

Related codes and values

Related codes and values for Various CDR Fields

Treatment code values, Release cause values, and telephony binary coded decimal format values are listed in the following tables.

Treatment code values for CDR field TRTMTCD

The treatment codes that can be applied to a call in CDR field TRTMTCD, are shown in Table 9-4.

Note: Treatment values 0–221 are static reserved definitions. Treatment values of 222 and higher are dynamic and can not be guaranteed; these values may vary depending on a specialized load.

Table 9-4
Treatment codes for CDR field TRTMTCD

Value in CDR	Short name	Long name
000	UNDT	Undefined Treatment
001	NOSC	No Service Circuit
002	PDIL	Partial Dial
003	PSIG	Permanent Signal
004	INAC	Invalid Account Code
005	CNDT	Coin Denied Termination
006	VACT	Vacant Code
007	MSCA	Misdirected CAMA Call
008	MSLC	Misdirected Local
009	NBLH	Network Block Heavy Traffic
010	NBLN	Network Block Normal Traffic
011	EMR1	Emergency 1
012	EMR2	Emergency 2
013	UNCA	Unauthorized CAMA Code
014	SYFL	System Failure
015	CQOV	CAMA Queue Overflow
016	HNPI	HNPA Code Intercept

—continued—

Table 9-4
Treatment codes for CDR field TRTMTCD (continued)

Value in CDR	Short name	Long name
017	UNDN	Unassigned Number
018	BLDN	Blank Directory Number
019	BUSY	Busy Line
020	UNOW	Unauthorized OUTWATS
021	TDND	Toll Denied
022	UNIN	Unauthorized INWATS
023	SSTO	Start signal time out
024	NCRT	No circuit
025	RODR	Reorder
026	MANL	Manual line
027	ORSS	Origanator suspended service
028	TESS	Terminator suspended service
029	OPRT	Regular intercept
030	TRBL	Trouble intercept
031	ANCT	Machine intercept
032	PNOH	Permanent signal no ROH
033	DNTR	Denied termination
034	NECG	Near end cong
035	FECG	Far end cong
036	ORMC	Originator reverse multi-coded
037	TOVD	Toll overload
038	CONF	Confirm tone
039	RRPA	Reverse ring PFXA
040	ORAF	Originator reverse frequency
041	TRRF	Terminator reverse frequency
042	ORAC	Originator reverse coded

—continued—

Table 9-4
Treatment codes for CDR field TRTMTCD (continued)

Value in CDR	Short name	Long name
043	ORMF	Originator reverse multi-frequency
044	SRRR	Single reverse ring
045	DISC	Disconnect timeout treatment
046	UNPR	Unauthorized precedence
047	BLPR	Blocked precedence call
048	EMR3	Emergency 3
049	EMR4	Emergency 4
050	NOCN	No coin
051	PMPT	Preempt tone
052	SORD	Storage overflow reorder
053	INAU	Invalid authorization code
054	TINV	Temporarily invalid
055	CNOT	Coin overtime treatment
056	DCFC	Disallow coin free call
057	PRSC	Priority screen fail
058	GNCT	Generalized no circuit
059	ATBS	Attendant busy
060	MHLD	Music on hold
061	DODT	Deny originating data terminal
062	TDBR	Testdesk bridge
063	RSDT	Restricted date time
064	PTOF	Premature trunk offer
065	VACS	Vacant speed number
066	ANTO	Answer timeout
067	NMZN	No metering zone
068	FNAL	Feature not allowed

—continued—

Table 9-4
Treatment codes for CDR field TRTMTCD (continued)

Value in CDR	Short name	Long name
069	UMOB	Unregistered mobile
070	ERDS	Trunk permanently grounded
071	STOB	Signal timeout BOC
072	STOC	Signal timeout IC INC
073	EMR5	Emergency 5
074	EMR6	Emergency 6
075	INOC	Invalid OIC code
076	ANIA	ANI account status not available
077	CFWV	CFW verification
078	NACK	Feature action NACK
079	CACE	Carrier access code error
080	D950	Dial 950
081	N950	No dial 950
082	ILRS	Inter-LATA res
083	NACD	No dial access code
084	DACD	Dial access code
085	ADBF	ANI database failure
086	PGTO	Mobile page timeout
087	AIFL	AIOD failure
088	FDNZ	First digit not zero
089	CCTO	Calling card timeout
090	CCNV	Call card invalid
091	CCNA	Calling card not allowed
092	FDER	Feature data error
093	NOSR	No software resource
094	CGRO	Customer group resource

—continued—

Table 9-4
Treatment codes for CDR field TRTMTCD (continued)

Value in CDR	Short name	Long name
095	VCCT	Vacant country code
096	LCAB	Local calling area barred
097	INCC	Invalid city code
098	CONP	Connection not possible
099	NINT	Changed number intercept
100	SCFL	DBS communication failure
101	NCIX	NCS incoming exclusion
102	NCII	NCS invalid identification code
103	NCTF	NCS translation failure
104	NONT	Not on network
105	NCUN	NCS unexpected error
106	ATDT	ATD timeout
107	ANBB	ANI FGB block
108	IVCC	Invalid corridor call
109	SCUN	Service currently unavailable
110	INPD	Invalid PIN digits
111	NPAR	NPA restricted
112	IDPB	IDDD prohibited
113	CNAC	Call not accepted
114	CBTN	Clear back tone
115	MTOC	MFC timeout or confusion
116	ANFL	Announcement failure
117	CHAN	Changed number announcement
118	CHAF	Changed number forwarded
119	OSVR	Operator services voice
120	N00B	N00 call blocked

—continued—

Table 9-4
Treatment codes for CDR field TRTMTCD (continued)

Value in CDR	Short name	Long name
121	CFOV	CFW simultaneous overflow
122	ILRR	ILR restricted
123	COSX	COS exceeded
124	CACB	Carrier access code blocked
125	SINT	Service intercept
126	IWUC	International wakeup call
127	INBT	INS treatment
128	NC8F	NCS 800 failure
129	FRDR	Feature reorder
130	C7AP	CCS7 application failure
131	DTFL	Datafill error
132	BBFS	STR blue box fraud detected
133	NTRS	No terminal responding
134	CREJ	Call rejected
135	UPAB	Universal public access blocked
136	SORE	STN origination restriction error
137	CNAD	Call not allowed
138	VPFX	Vacant prefix code
139	CCAP	Credit card announcement prompt
140	ACPR	Authorization code prompt
141	CCIR	Credit card number invalid
142	ADPA	Address digits prompt
143	CCDT	Credit card dial tone
144	UCCN	Unpaid credit card number
145	CBDN	Call back destination
146	N9DF	NCS 900 database failure

—continued—

Table 9-4
Treatment codes for CDR field TRTMTCD (continued)

Value in CDR	Short name	Long name
147	N9OB	NCS 900 number out of band
148	N9NS	NCS 900 not in service
149	CCCF	Carrier call completion failure
150	SCRJ	SCRJ call reject
151	ICNF	Invalid conference code
152	LECV	LEC calling card valid
153	LCNV	LEC calling card not valid
154	CGFL	CUG service not allowed
155	VPFL	VPN service not allowed
156	PTFL	POTS service not allowed
157	SCA	SCA call reject
158	NCS0	NCS treatment 0
159	NCS1	NCS treatment 1
160	CHNF	Channel neg failure
161	BCNI	BC not implemented
162	RING	Audible ringing tone
163	JACK	Justified ALT CLG knowledge
164	ITCF	ITC invalid
165	NVIP	Not very important person
166	ACRJ	ACRJ call reject
167	FCNI	Facility not implemented
168	PERR	Protocol error
169	INVM	Invalid message
170	SONI	Service option not implemented
171	CDAS	CDA activation successful
172	CDAF	CDA activation failure

—continued—

Table 9-4
Treatment codes for CDR field TRTMTCD (continued)

Value in CDR	Short name	Long name
173	CDDS	CDA deactivation successful
174	CDDF	CDA deactivation failure
175	AARD	ANI account recently discontinued
176	DSCN	DSCWID_DISCON
177	GFNV	Global FONCARD not valid
178	LBSY	Local busy
179	TBSY	Toll busy
180	IIEC	Invalid information element
181	NOBC	No BC available
182	NORA	No routing available
183	PER1	Protocol error 1
184	PER2	Protocol error 2
185	PER3	Protocol error 3
186	PER4	Protocol error 4
187	PER5	Protocol error 5
188	CER1	CUG error 1
189	WUCR	WUCR call treatment
190	MTBL	Mobile trouble
191	MWKP	Mobile weak power
192	RFCS	RMT feature control success
193	RFCD	RMT feature control denied
194	RFCE	RMT feature control error
195	EROR	MTX ERV originator (only in non–DMS)
195	MLNP	Misrouted Local Number Portability (in DMS only)
196	ERTR	MTX ERV terminator
197	ERTO	MTX ERV timeout

—continued—

Table 9-4
Treatment codes for CDR field TRTMTCD (continued)

Value in CDR	Short name	Long name
198	TRGB	Trigger block
199	ESNF	Manufacturer ESN fraud
200	MBIA	Mobile inactive
201	Q33A	Q33 failure
202	Q33B	Q33 fail2
203	AIND	AIN disconnect call
204	AINF	AIN final treatment
205	INRF	Invalid redirect feature code
206	RTTE	REDR tandem threshold exceeded
207	ITDN	International toll denied
208	PRTO	Profile timeout
209	PAGE	Mobile is being paged
210	CFWD	Call is being forwarded
211	LDAA	LDSA activated
212	LDAD	LDSA deactivated
213	ORBT	Overflow from ring to busy
214	AVPF	Authentication failed
215	AVP2	Authentication 2
216	BLMO	Black listed mobile
217	CCRG	Customer controlled reconfiguration general
218	CCRP	Customer controlled reconfiguration payphone
219	CCRM	Customer controlled reconfiguration mobile
220	CCRH	Customer controlled reconfiguration personal HS
221	CCRT	Customer controlled reconfiguration third party
222	MSOA	Operator unauthorized
223	RTEE	Routing error

—continued—

Table 9-4
Treatment codes for CDR field TRTMTCD (continued)

Value in CDR	Short name	Long name
224	CRTC	Call redirect confirmation
225	CBFC	CASOP block final carrier
226	CMGA	CMG ring activation
227	CMGD	CMG ring deactivation
228	RMIA	Remote message indicator activation
229	RMID	Remote message indicator deactivation
230	LNPM	LNP misrouted call to ported number
231	PODN	Ported out directory number
232	RSVD	NP reserved number
233	B900	Blocked 900 calls
234	ICSA	In call service activated
235	ICSD	In call service deactivated
236	ISAX	ISA exit
237	PSNF	Not used
238	IRET	International direct distance dialing dial tone restricted
239	ISCN	International direct distance dialing class of service screening failed
240	IDST	International direct distance dialing destination failed
241	DDPB	Direct distance dialing prohibited
242	DRET	Direct distance dialing dial tone restricted
243	DDSN	Direct distance dialing class of service screening failed
244	DDST	Direct distance dialing destination failed
245	ONPB	Onnet prohibited
246	ORET	Onnet dial tone restricted
247	OSCN	Onnet class of service screening failed
248	ODST	Onnet destination failed
249	ZMPB	Zminus prohibited

—continued—

Table 9-4
Treatment codes for CDR field TRTMTCD (continued)

Value in CDR	Short name	Long name
250	ZMRT	Zminus dial tone restricted
251	ZPPB	Zplus prohibited
252	ZPRT	Zplus dial tone restricted
253	MAUC	Multiple calls per authcode
	—end—	

Note: To verify the values for treatment codes, print a list of the values from table TMTMAP.

Example:

```
table tmtmap;
  ddedit
  zz EXTENDED_TREATMENT
```

Release cause values for CDR field RELCAUSE

Table 9-5 shows the values for the release cause received in a CCS7 release message. These values are stored in the RELCAUSE CDR field.

Table 9-5
Release cause values for CDR field RELCAUSE

Cause value	Description
1	Unallocated number
2	No route to specified transit networK
3	No route to destination
4	Send special info tone
5	Incorrectly dialed trunk prefix
6	Channel unacceptable
7	Call_award_est_chan
9	Preemption circuit restriction
10–16	Not used
16	Normal clearing
17	User busy
18	No user responding
19	No answer from user
20	Subscriber absent
21	Call rejected
22	Number changed
23–24	Not used
25	Translations failed
26	Call returns or misrouted LNP call
27	Destination out of service or NP QOR number not found
28	Address incomplete
29	Facility rejected
30	Apply locally

—continued—

Table 9-5
Release cause values for CDR field RELCAUSE (continued)

Cause value	Description
31	Normal, unspecified or previous billing determination
32–33	Not used
34	No circuit available
35	Termination overflow
36–37	Not used
38	Network out of order
39	Bridging failed due to reorigination failure
40	Permanent frame mode
41	Temporary failure
42	Switching equipment congestion
43	User information discarded
44	Requested channel unavailable
45	Preemption
46	No preemption circuit available
47	Resource unavailable – unspecified
48	Spare
49	Quality of service unavailable
50	Requested facility not subscribed
51	Spare
52	Outgoing calls barred
53	Incompatible agents
54	Spare
55	Incoming call barred incoming custom users group
56	Spare
57	Bearer capability not authorized
58	Bearer capability not available
59–61	Spare

—continued—

Table 9-5
Release cause values for CDR field RELCAUSE (continued)

Cause value	Description
62	Inconsistant out class
63	Service or option not available
64	Spare
65	Bearer capability not implemented
66	Chnnel type not implemented
67–68	Spare
69	Facility not implemented
70	Restricted digital beared capability is available
71–78	Spare
79	Service or option not implemented
80	Spare
81	Invalid call referance value
82	Channel does not exist
83	Suspended call exists
84	Call ID in use
85	No call suspended
86	Call requested call ID cleared
87	User not member of custom user group
88	Incompatible destination
89	Spare
90	Non_extnt_cug
91	Invalid translation network selected
92–94	Spare
95	Invalid message
96	Mandatory information elemment missing
97	Message type not implemented
98	Message not complete

—continued—

Table 9-5
Release cause values for CDR field RELCAUSE (continued)

Cause value	Description
99	Parameter not implemented
100	Invalid parameter contents
101	Message not compatible with call state
102	Recovery on timer expiration
103	Parmeter not passes or not implemented
110	Message with unrecognized parameter discription
111	Protocol error
112–126	Spare
127	Interworking unspecified
—end—	

Related codes and values (end)

Telephone binary coded decimal format

Table 9-6 shows the format used in telephony binary coded decimal (TBCD) format. This table shows the numeric relationships between binary, decimal, hex, telephony binary coded digits (TBCD) and personal identification digits (pindigs).

Table 9-6
Numeric relationships

Binary	Decimal	Hex	TBCD	Pindigs
0	0	0	NULL	NULL
1	1	1	1	1
10	2	2	2	2
11	3	3	3	3
100	4	4	4	4
101	5	5	5	5
110	6	6	6	6
111	7	7	7	7
1000	8	8	8	8
1001	9	9	9	9
1010	10	A	0	0
1011	11	B	* (DTMF Digit A)	A
1100	12	C	# (DTMF Digit B)	B
1101	13	D	D (DTMF Digit C)	C
1110	14	E	E (DTMF Digit D)	D
1111	15	F	F (Reserved)	not used
10000	16	10		
10001	17	11		
etc.	etc.	etc.		

D's

Table 9-7
CDR field descriptions

Field name	Field size	Split size (in bits)	Data type	Field description
DIALEDNO	15 nibbles	4	TBCD	DIALED NUMBER. This field contains the dialed number or a hotline number for hotline calls. This field is also populated when an LNP LRN is received on an incoming IAM.
DIALNOA	7 bits	7	Decimal	DIALED NUMBER NATURE OF ADDRESS. This field contains one of the following NOAs for the dialed number: 0 = Unknown 1 =Unique subscriber number 2 = reserved 3 = Unique national number 4 = Unique international number 5–102 = not used 103 = Unique, 3-digit national number 104 = No ANI received 105–111 not used 112 = Treated call, operator requested 113 = Non-unique subscriber number, operator requested 114 = National number, operator requested 115 = International number, operator requested 116 = No number present, operator requested 117 = No number present, cut thru 118 = ISUP 950-WXXX from various

—continued—

Table 9-7
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
				119 = ISUP test line 120 = ISUP IMT PANI 121 = N00 post-paid 800 call 122 = N00 pre-paid 900 call or international inbound operator call 123 = International operator-to-operator within World zone 1 124–125 = not used 126 = Intelligent network service, peculiar number of network, or NCCI network specific number 127 = not used
DIGDATA	1 bit	1	Boolean	DIGIT DATA. This field contains a 1 when the call is made using only digital lines and trunks. 0 = Non-data call 1 = Data call
DIGIDJIP	10 nibbles	4	TBCD	DIGIT IDENTIFICATION JURISDICTION INFORMATION PARAMETER. This field contains the value received in an IAM or from the JIP field in table TRKGRP. The range is 0 to 9999999999.
DIGIDNPA	3 nibbles	4	TBCD	DIGIT INDENTIFICATION NUMBERING PLAN AREA. This field contains the NPA from the NPA field in table TRKGRP. The range is 0 to 999.
				—continued—

Table 9-7
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
DIGIDTRN	10 nibbles	4	TBCD	DIGIT IDENTIFICATION TRUNK RATING NUMBER. This field contains the value populated for the field TRN in table TRKGRP. The range is 0 to 9999999999.
DISC10TH	4 bits		Decimal	DISCONNECTION TENTHS OF A SECOND. This field in the BAF record is captured at disconnect time in tenths of a second. It increases the precision of the DISCONNECT TIME. Valid values are 0 to 9. • 0 = 0 tenths • 1 = .1 second • 2 = .2 second • 3 = .3 second • 4 = .4 second • 5 = .5 second • 6 = .6 second • 7 = .7 second • 8 = .8 second • 9 = .9 second

—continued—

Table 9-7
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
				Note: This CDR field is only populated when the EDGE_SWITCH parameter in table OFCVAR is set to Y.
DISCAMPM	1 bit	1	Decimal	DISCONNECTION AM OR PM. This field indicates whether the disconnection time was am or pm. 0 = AM (00:00 :00 to 11:59:59) 1 = PM (12:00:00 to 23:59:59)
DISCDATE	9 bits	9	Decimal	DISCONNECTION DATE. This field contains the disconnection date. The range is 1 to 366 (January 1 to December 31).
DISCTIME	16 bits	16	Decimal	DISCONNECTION TIME. This field contains the disconnection time (in 1-second tics) since noon or midnight (identified by field DISCAMPM). Disconnection time is when either the called or calling party goes on hook.
DISCTYPE	2 bits	2	Decimal	DISCONNECT TYPE. This field contains one of the following that identify how the call was disconnected: 0 = Clear forward (originator terminates the call) 1 = Clear backward (terminator terminates the call)

—continued—

Table 9-7
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
				2 = Reorigination 3 = Switch initiated default value (operator calls always have default value).
DISCYEAR	4 bits		Decimal	DISCONNECT YEAR. This field in the BAF record indicates the last digit of the call disconnect year. Valid values are 0 to 9. • 0 = Year ending in 0 • 1 = Year ending in 1 • 2 = Year ending in 2 • 3 = Year ending in 3 • 4 = Year ending in 4 • 5 = Year ending in 5 • 6 = Year ending in 6 • 7 = Year ending in 7 • 8 = Year ending in 8 • 9 = Year ending in 9 ***Note:*** This CDR field is only populated when the EDGE_SWITCH parameter in table OFCVAR is set to Y.
DLPRESUB	4 bits		Decimal	DIALING AND PRESUBSCRIPTION. This field in the BAF record describes how the user accessed a particular Carrier Access Code (CAC). Valid values are 0 to 9. 0 = Dialed digits cannot be determined 1 = Carrier access code (CAC) not dialed, customer presubscribed, no presubscription indication arrangement with IC/INC

—continued—

Table 9-7
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
				2 = CAC dialed, customer not presubscribed, no presubscription indication arrangement with IC/INC 3 = 950-XXXX dialed 4 = CAC not dialed, customer presubscribed, presubscription indication arrangement with IC/INC 5 = CAC dialed, customer not presubscribed, presubscription indication arrangement with IC/INC 6 = CAC dialed, customer presubscribed, presubscrption indication arrangement with IC/INC 7 = CAC dialed, customer presubscribed, no presubscription indication arrangement with IC/INC 8 = No CAC dialed, station not presubscribed, no presubscription indication arrangement with IC/INC 9 = No indication CAC dialed, station presubscribed, presubscription indication forwarded to IC/INC ***Note:*** This CDR field is only populated when the EDGE_SWITCH parameter in table OFCVAR is set to Y.
DNIS	15 nibbles	4	TBCD	DIALED NUMBER IDENTIFICAITON SERVICES. This field contains originally dialed, secondary, called party information for N00 (800, 700, 900, and 888) services.
DNISNOA	7 bits	7	Decimal	DNIS NATURE OF ADDRESS. This field contains one of the following NOAs for the DNIS:
			—continued—	

Table 9-7
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
				• 0 = Unknown • 1 = Unique subscriber number • 2 = Reserved • 3 = Unique national number • 4 = Unique international number • 5–102 = not used • 103 = Unique 3-digit national number • 104 = No ANI received • 105–111 = not used • 112 = Treated call, operator requested • 113 = Non-unique subscriber number, operator requested • 114 = National number, operator requested • 115 = International number, operator requested • 116 = No number present, operator requested • 117 = No number present, cut thru • 118 = ISUP 950-WXXX from various • 119 = ISUP test line • 120 = ISUP IMT PANI • 121 = N00 post-paid 800 call • 122 = N00 pre-paid 900 call or international inbound operator call

—continued—

Table 9-7
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
				• 123 = International operator-to-operator within World zone 1 • 124–125 = Not used • 126 = Intelligent network service, peculiar number of network, or NCCI network specific number • 127 = Not used
			—end—	

E’s

Table 9-8
CDR field descriptions

Field name	Field size	Split size (in bits)	Data type	Field description
ECRM1	5 bit	5	Decimal	ECHO CANCELLER RESOURCE MODULE ONE. This field contains the ECAM Resource Module number for the forward echo canceller (range is 0–31).
ECRM2	5 bit	5	Decimal	ECHO CANCELLER RESOURCE MODULE TWO. This field contains the ECAM Resource Module number for the backward echo canceller (range is 0–31).
ECRN1	9 bit	9	Decimal	ECHO CANCELLER RESOURCE NUMBER ONE. This field contains the Resource Number in the first RM (range is 0–511).
ECRN2	9 bit	9	Decimal	ECHO CANCELLER RESOURCE NUMBER TWO. This field contains the Resource Number in the second RM (range is 0–511).
EXOPCH	10 bit	10	Decimal	EXPANDED OPTIONAL CHOICE. This field indicates the expanded index into table OPCHOICE, used to route the call (range is 0–1023). This field is populated only if table OPCHOICE is used in routing the call, otherwise, it is left blank.
EXOSEAS				This field is reserved for future use.

Table 9-9
CDR field descriptions

Field name	Field size	Split size (in bits)	Data type	Field description
FILL1	1 bit	1	N/A	FILLER ONE. This field contains one bit of filler data.
FILL2	2 bits	2	N/A	FILLER TWO. This field contains two bits of filler data.
FILL3	3 bits	3	N/A	FILLER THREE. This field contains three bits of filler data.
FILL4	4 bits	4	N/A	FILLER FOUR. This field contains four bits of filler data.
FILL8	8 bits	8	N/A	FILLER EIGHT. This field contains eight bits of filler data.
FINSID	10 bits	10	Decimal	FINAL SWITCH IDENTIFICATION. This field contains the SWID for the final switch. The range is 0 to 999. When the call leaves the network, the last switch in the network returns the terminating SWID value to the originating switch.
FINTKGRP	14 bits	14	Decimal	FINAL TERMINATING TRUNK GROUP. This field contains the number (from table CLLICDR on the terminating switch) of the final terminating trunk group. When the call leaves the network, the last switch in the network returns the FINTKGRP value to the originating switch.
FINTKMEM	16 bits	16	Decimal	FINAL TRUNK MEMBER. This field contains the identification of the final trunk member. When the call leaves the network, the last switch in the network returns the FINTKMEM value to the originating switch.

H's (end)

Table 9-10
CDR field descriptions

Field name	Field size	Split size (in bits)	Data type	Field description
HEXID	1 bit		Boolean	HEXADECIMAL IDENTIFIER. This field identifies the beginning of a record and indicates whether there are errors in the record that require special handling. This field is used for the CDR to BAF conversion and maps to BAF field Hexadecimal Identifier and BAF table 00. For the CAIN framework, the value for the AMASetHexABIndicator parameter populates this field.

Table 9-11
CDR field descriptions

Field name	Field size	Split size (in bits)	Data type	Field description
INC_INTL	1 bit	1	Decimal	INTERNATIONAL. This field indicates if the CLGPTYNO is an international number. 0 = National 1 = International The CDR273 log will display this value as "N" for 0 or "I" for 1. ***Note:*** This field is only populated when the CLGPTYNO field is populated.
INCBILL	2 bits	2	Decimal	INCREMENTAL BILLING. This field indicates the CDR is part of a group of CDRs that were produced for a long duration call. 0 = No long call 1 = First incremental CDR for long call 2 = Interim CDR(s) of incremental set for the same call 3 = Last CDR of incremental set
INFODIG	2 nibbles	4	TBCD	INFORMATION DIGITS. This field contains the information digits. Information digits precede the ANISP digits. FGB agencies use one information digit; FGD uses two. ***Note:*** For FGB agencies, only one information digit is used; the second is filled with a TBCD null.

L's

Table 9-12
CDR field descriptions

Field name	Field size	Split size (in bits)	Data type	Field description
LATA	10 bits		Decimal	LOCAL ACCESS TRANSPORT AREA. This field in the BAF record indicates the numerical identifier of a Local Access and Transport Area (LATA) or value of the LATA parameter when sent from the switch. It has a range of 0 to 999. ***Note:*** This CDR field is only populated when the EDGE_SWITCH parameter in table OFCVAR is set to Y.
LENGTH	8 bits	8	Decimal	RECORD LENGTH. When the F/V field is populated with a 1, this field contains the size (in words) of the record. The record size does not include the first 3 words of non-provisionable data. ***Note 1:*** Do not attempt to include the LENGTH field when creating new templates using table CDRTMPLT. ***Note 2:*** This field is only present when office parameter FCDR_CDR_SIZE (table OFCENG) is set to VAR_SIZE. This field is always located in Word 2, bits 0 through 7, when VAR_SIZE office parameter is set. ***Note 3:*** See related VARLNGTH field for more information.
LNPCHECK	3 bits		Decimal	LOCAL NUMBER PORTABILITY CHECK. This is an integer field which indicates the use of LNP functionality in the call. The range of values is: 0 = No LNP (default) 1 = Incoming bit M set (query made on a previous leg) 2 = Spare

—continued—

Table 9-12
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
				3 = LNP trigger check, Continue response 4 = LNP trigger check, no query 5 = LNP originating query to SCP made 6 = Incoming Home LRN 7 = Home LRN peroriginating query to SCP
LRNSRC1	4 bits		Decimal	LOCATION ROUTING NUMBER SOURCE INDICATOR 1. This field contains the value to store in the BAF Table 734, character 1, for an originating LRN. This value indicates the source of the LRN contained in Table 731. Because this is an originating LRN, the Party Identifier is set to 1. The range of values is from 1 to 4, and 9. The fields are populated as follows: 1 = LNP database 2 = Switching system data 3 = Incoming signaling 4 = Switch LRN 9 = Unknown ***Note:*** This CDR field is only populated when the EDGE_SWITCH parameter in table OFCVAR is set to Y.
LRNSRC2	4 bits		Decimal	LOCATION ROUTING NUMBER SOURCE INDICATOR 2. This field contains the value to store in the BAF Table 734, character 1, for a terminating LRN. This value indicates the source of the LRN contained in Table 731. Because this is a terminating LRN, the Party Identifier is set to 2.

—continued—

L's (end)

Table 9-12
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
				The range of values is from 1 to 4, and 9. The fields are populated as follows: 1 = LNP database 2 = Switching system data 3 = Incoming signaling 4 = Switch LRN 9 = Unknown ***Note:*** This CDR field is only populated when the EDGE_SWITCH parameter in table OFCVAR is set to Y.
			—end—	

Table 9-13
CDR field descriptions

Field name	Field size	Split size (in bits)	Data type	Field description
MLTCOSID	11 bits	11	Decimal	MULTI-CLASS OF SERVICE IDENTIFIER. This field contains the index, within table MULTICOS, used to perform multiple COS screening. Table MULTICOS is indexed by one of the following tables: ANISCUSP, AUTHCODU, AUTHCDU2, AUTHCDU3, AUTHCDU4, AUTHCDU5, TCNFAST, CICROUTE, FLEXFEAT, FRLCOS, SPEEDTAB or UNIPROF.
MODMAP	16 bits		Binary	MODULE MAP. This field indicates what AMA module codes are present. This field consists of a table with 16 characters. Each character with a value of 1 indicates the presence of a BAF element. Each character with a value of 0 indicates the absence of a BAF element. Individual BAF elements map to this field. Appendix F, "CDR to SDM interaction" has an example of this field.

N's

Table 9-14
CDR field descriptions

Field name	Field size	Split size (in bits)	Data type	Field description
NETOPNO	15 nibbles	4	TBCD	NETWORK OUTPULSED NUMBER. ***Note:*** This CDR field is not populated in UCS11 Release.
NETOPNOA	7 bits	7	Decimal	NETWORK OUTPULSED NUMBER NATURE OF ADDRESS. ***Note:*** This CDR field is not populated in UCS11 Release.
NETSEC	1 bit	1	Boolean	NETWORK SECURITY. This field indicates whether or not a Network Security Log was generated for the call. 0 = Network Security Log not generated 1 = Network Security Log generated
NUMADDRS	2 bits	2	Decimal	NUMBER OF ADDRESSES AVAILABLE. This field indicates the number of translated numbers available for overflow for the call: ***Note:*** This field is only populated by the FLEXDIAL feature. 0 = No address returned 1 = Single address available 2 = Two addresses available 3 = Three adresses available
NUMWBCKT	5 bits	5	Decimal	NUMBER OF WIDEBAND CIRCUITS. This field contains the number of DS0s on a T1 involved in a wideband call. If the call is not a wideband call, this field contains a 0. Otherwise, the range of values is 2–24.

Table 9-15
CDR field descriptions

Field name	Field size	Split size (in bits)	Data type	Field description
OACESID	10 bits		Decimal	ORIGINATING ACCESS ID. This field contains the value populated for the field ACCESSID in table TRKGRP. The range is 0 to 999.
OPART	10 bits	10	Decimal	ORIGINATION PARTITION. This field contains the subscriber's region and can be used to determine if the subscriber is in the home region. This field is populated from one of the following and converted from an STS in table STSTOPAR: • TRKGRP data • AUTHCODE • UA selector • ANI • CAIN-SCP interaction
OPCHOICE	8 bits	8	Decimal	OPERATOR CHOICE. This field contains the identified index into table OPCHOICE. ***Note:*** Call processing only populates this field if table OPCHOICE is used to route the call; otherwise, the field is empty.

—continued—

Table NO TAG1
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
OPERINV	4 bits		Decimal	OPERATOR INVOLVEMENT. This field indicates whether an operator was involved in a call and if the Carrier Indentification Code (CIC) was known.This field can have the following values: 0 = Not used. 1 = The CIC is a FGD identity; the call is dialed direct; no IC/INC operator system is involved. 2 = The CIC is a FGD identity; an IC/INC operator system involvement cannot be determined. 3 –9 = Not used.
ORIG10TH	4 bits		Decimal	ORIGINATION TENTHS OF A SECOND. This field in the BAF record is captured at origination time in tenths of a second. It increases the precision of ORIGITIME. Valid values are 0 to 9. • 0 = 0 tenths • 1 = .1 second • 2 = .2 second • 3 = .3 second • 4 = .4 second • 5 = .5 second • 6 = .6 second • 7 = .7 second • 8 = .8 second • 9 = .9 second

—continued—

Table NO TAG1
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
				Note: This CDR field is only populated when the EDGE_SWITCH parameter in table OFCVAR is set to Y.
ORIGAMPM	1 bit	1	Decimal	ORIGINATION AM OR PM. This field indicates whether the origination time was am or pm. 0 = AM (00:00 :00 to 11:59:59) 1 = PM (12:00:00 to 23:59:59)
ORIGDATE	9 bits	9	Decimal	ORIGINATION DATE. This field contains the origination date. The range is 1 to 366 (January 1 to December 31).
ORIGECHO	2 bits	2	Decimal	ORIGINATING ECHO CANCELLER. This field identifies the state of the NT6X50EC echo canceller during the call for the originating agent. The field values are as follows: 0 = NT6X50 Not Installed (default) 1 = Enabled 2 = Switch disabled 3 = Tone disabled ***Note:*** This CDR field is not populated in UCS11 Release.
ORIGGRP	14 bits	14	Decimal	ORIGINATION GROUP. This field contains the origination EXTNUM from table CLLICDR.

—continued—

Table NO TAG1
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
ORIGLRN	10 nibbles	4	TBCD	ORIGINATING LOCATION ROUTING NUMBER. This field contains an originating LRN. The LRN is received in an ISUP JIP parameter with the SS7 IAM message, or provisioned in the JIP option of table TRKGRP. The number identifies the actual switch that owns the calling party's number.
ORIGMEM	14 bits	14	Decimal	ORIGINATION MEMBER. This field identifies the origination trunk member number (from field EXTRKNM in table TRKMEM) within the originating trunk group. Each trunk has up to 2048 members, having a range of 0–9999.
ORIGOPRT	10 bits	10	Decimal	ORIGINATING ORIGINATION PARTITION. This field contains the first OPART used to route the call after call origination and is populated from one of the following: • Table STDPRTCT (UA calls) • OPART field of table TRKGRP (some EOPS and IMT calls) • Table STSTRAN3 (some IMT calls) • Returned by the SCP or DCP • Table STSTOPAR (most cases)
ORIGPLAN				This field is reserved for future use.

—continued—

Table NO TAG1
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
ORIGPVN	15 nibbles	4	TBCD	ORIGINATING PRIVATE NUMBER This field contains the customer-defined dialing plan number assigned to the station or the user originating the VPN call. This field is populated from a CAIN response received from the SCP in the AMADigitsDialedWC parameter. Non-CAIN calls do not populate this field.
ORIGSTS	10 bits	10	Decimal	ORIGINATING STS. This field contains the first STS used in the call and is populated by the FLEXDIAL feature.
ORIGTIME	16 bits	16	Decimal	ORIGINATION TIME. This field contains the origination time (in 1-second tics) since noon or midnight (identified by field ORIGAMPM). Origination time is when the calling party goes off-hook.
ORIGYEAR	4 bits		Decimal	ORIGINATION YEAR. This field contains the last digit of the current year. Valid values are 0 to 9. • 0 = Year ending in 0 • 1 = Year ending in 1 • 2 = Year ending in 2 • 3 = Year ending in 3 • 4 = Year ending in 4 • 5 = Year ending in 5 • 6 = Year ending in 6 • 7 = Year ending in 7 • 8 = Year ending in 8 • 9 = Year ending in 9 ***Note:*** This CDR field is only populated when the EDGE_SWITCH parameter in table OFCVAR is set to Y.

—continued—

O's (end)

Table NO TAG1
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
OSRASSOC	1 bit	1	Boolean	OSR ASSOCIATED. This field Indicates whether an operator service record (OSR) is associated with this CDR. 0 = No OSR is associated 1 = An OSR is associated
OTPULNOA	7 bits	7	Decimal	OUTPULSED NUMBER NATURE OF ADDRESS. This field is not populated in the UCS06 software release.
OUTNOA	1 bit	1	Boolean	OUTGOING NUMBER NATURE OF ADDRESS. This field indicates whether the NOA (Nature of Address) in the IAM has been updated by datafilling OUTNOA option in table TRKGRP. 1 = The OUTNOA field in table TRKGRP is set to Y 0 = The OUTNOA field in table TRKGRP is set to N
OUTPULNO	15 nibbles	4	TBCD	OUTPULSED NUMBER. This field contains the outpulsed number, as translated by the switch.
OVERFLOW	2 bits	2	Decimal	OVERFLOW INDICATOR. This field is populated by the FLEXDIAL feature and contains one of the following overflow indicators for the call: 0 = No overflow 1 = SS7 RLS with cause returned, overflow to the next available address 2 = No answer or timer expired, overflow to next available address 3 = Not used
			—end—	

Table 9-15
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
OPERINV	4 bits		Decimal	OPERATOR INVOLVEMENT. This field indicates whether an operator was involved in a call and if the Carrier Indentification Code (CIC) was known.This field can have the following values: 0 = Not used. 1 = The CIC is a FGD identity; the call is dialed direct; no IC/INC operator system is involved. 2 = The CIC is a FGD identity; an IC/INC operator system involvement cannot be determined. 3 –9 = Not used.
ORIG10TH	4 bits		Decimal	ORIGINATION TENTHS OF A SECOND. This field in the BAF record is captured at origination time in tenths of a second. It increases the precision of ORIGITIME. Valid values are 0 to 9. • 0 = 0 tenths • 1 = .1 second • 2 = .2 second • 3 = .3 second • 4 = .4 second • 5 = .5 second • 6 = .6 second • 7 = .7 second • 8 = .8 second • 9 = .9 second

—continued—

Table 9-15
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
				Note: This CDR field is only populated when the EDGE_SWITCH parameter in table OFCVAR is set to Y.
ORIGAMPM	1 bit	1	Decimal	ORIGINATION AM OR PM. This field indicates whether the origination time was am or pm. 0 = AM (00:00 :00 to 11:59:59) 1 = PM (12:00:00 to 23:59:59)
ORIGDATE	9 bits	9	Decimal	ORIGINATION DATE. This field contains the origination date. The range is 1 to 366 (January 1 to December 31).
ORIGECHO	2 bits	2	Decimal	ORIGINATING ECHO CANCELLER. This field identifies the state of the NT6X50EC echo canceller during the call for the originating agent. The field values are as follows: 0 = NT6X50 Not Installed (default) 1 = Enabled 2 = Switch disabled 3 = Tone disabled ***Note:*** This CDR field is not populated in UCS11 Release.
ORIGGRP	14 bits	14	Decimal	ORIGINATION GROUP. This field contains the origination EXTNUM from table CLLICDR.

—continued—

Table 9-15
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
ORIGLRN	10 nibbles	4	TBCD	ORIGINATING LOCATION ROUTING NUMBER. This field contains an originating LRN. The LRN is received in an ISUP JIP parameter with the SS7 IAM message, or provisioned in the JIP option of table TRKGRP. The number identifies the actual switch that owns the calling party's number.
ORIGMEM	14 bits	14	Decimal	ORIGINATION MEMBER. This field identifies the origination trunk member number (from field EXTRKNM in table TRKMEM) within the originating trunk group. Each trunk has up to 2048 members, having a range of 0–9999.
ORIGOPRT	10 bits	10	Decimal	ORIGINATING ORIGINATION PARTITION. This field contains the first OPART used to route the call after call origination and is populated from one of the following: • Table STDPRTCT (UA calls) • OPART field of table TRKGRP (some EOPS and IMT calls) • Table STSTRAN3 (some IMT calls) • Returned by the SCP or DCP • Table STSTOPAR (most cases)
ORIGPLAN				This field is reserved for future use.
			—continued—	

Table 9-15
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
ORIGPVN	15 nibbles	4	TBCD	ORIGINATING PRIVATE NUMBER This field contains the customer-defined dialing plan number assigned to the station or the user originating the VPN call. This field is populated from a CAIN response received from the SCP in the AMADigitsDialedWC parameter. Non-CAIN calls do not populate this field.
ORIGSTS	10 bits	10	Decimal	ORIGINATING STS. This field contains the first STS used in the call and is populated by the FLEXDIAL feature.
ORIGTIME	16 bits	16	Decimal	ORIGINATION TIME. This field contains the origination time (in 1-second tics) since noon or midnight (identified by field ORIGAMPM). Origination time is when the calling party goes off-hook.
ORIGYEAR	4 bits		Decimal	ORIGINATION YEAR. This field contains the last digit of the current year. Valid values are 0 to 9. • 0 = Year ending in 0 • 1 = Year ending in 1 • 2 = Year ending in 2 • 3 = Year ending in 3 • 4 = Year ending in 4 • 5 = Year ending in 5 • 6 = Year ending in 6 • 7 = Year ending in 7 • 8 = Year ending in 8

—continued—

Table 9-15
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
				• 9 = Year ending in 9 ***Note:*** This CDR field is only populated when the EDGE_SWITCH parameter in table OFCVAR is set to Y.
OSRASSOC	1 bit	1	Boolean	OSR ASSOCIATED. This field Indicates whether an operator service record (OSR) is associated with this CDR. 0 = No OSR is associated 1 = An OSR is associated
OTPULNOA	7 bits	7	Decimal	OUTPULSED NUMBER NATURE OF ADDRESS. This field is not populated in the UCS06 software release.
OUTNOA	1 bit	1	Boolean	OUTGOING NUMBER NATURE OF ADDRESS. This field indicates whether the NOA (Nature of Address) in the IAM has been updated by datafilling OUTNOA option in table TRKGRP. 1 = The OUTNOA field in table TRKGRP is set to Y 0 = The OUTNOA field in table TRKGRP is set to N
OUTPULNO	15 nibbles	4	TBCD	OUTPULSED NUMBER. This field contains the outpulsed number, as translated by the switch.
OVERFLOW	2 bits	2	Decimal	OVERFLOW INDICATOR. This field is populated by the FLEXDIAL feature and contains one of the following overflow indicators for the call: 0 = No overflow 1 = SS7 RLS with cause returned, overflow to the next available address

—continued—

Table 9-15
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
				2 = No answer or timer expired, overflow to next available address 3 = Not used
			—end—	

P's

Table 9-16
CDR field descriptions

Field name	Field size	Split size (in bits)	Data type	Field description
PASSTHRU	2 bits	2	Decimal	PASSTHRU ACTION. This field identifies one of the following passthru actions for the call: 0 = No Passthru 1 = FGD Pure Passthru 2 = FGD Cut-thru Passthru 3 = N00 Passthru ***Note 1:*** Passthru allows a switch to route a call to the next network switch without performing DTMF digit collection. ***Note 2:*** The field is filled from table ANISCUSP or an IN/1 N00 TCAP response.
PINDIGS	4 nibbles	4	TBCD	PERSONAL IDENTIFICATION NUMBER DIGITS. This field contains the subscriber's PINDIGS. An optional level of screening beyond authorization code and automatic number identification can be provided by this field.
PORTEDNO	10 nibbles	4	TBCD	PORTED NUMBER. This field is populated by one of the following: • the called party address from the LNP GAP if an LRN is present in an incoming SS7 IAM • the CPA from the LNP GAP if the SCP returns an LRN • the CPA from the LNP SCP if the LNP SCP returns an LRN
PREDIG	3 bits	3	Decimal	PREFIX DIGITS. This field identifies one of the following as the dialed number's prefix digits.

—continued—

Table 9-16
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
				0 = No prefix digits 1 = 0 Prefix 2 = 01 Prefix 3 = 011 Prefix 4 = 1 Prefix 5–7 = Not used
PRESIND	2 bits	2	Decimal	PRESENTATION RESTRICTION INDICATOR. This field indicates if the calling party number can be presented to the called party on SS7 calls (or presentation restriction indicator field of the AMALineNumber parameter). 0 = Presentation allowed 1 = Presentation restricted 2 = Not used 3 = Not used
PRJCODE	32 bits	4	TBCD	PROJECT CODE. This field indicates the project code value in the Carrier AIN TCAP message received from the SCP. The project code is used to refine the account code.
			—end—	

Q's

Table 9-17
CDR field descriptions

Field name	Field size	Split size (in bits)	Data type	Field description
QRYSTIND	7 bits		Decimal	QUERY STATUS INDICATOR. This field contains the value to store in the BAF Table 734, Characters 2-3. It only applies to the terminating LRN. The range of values is from 1 to 15, and 99. It is populated as follows: 1 = Successful query. 2 = No query response message received as response. 3 = AIN CONTINUE message received as response. 4 = Protocol error is received in response message. 5 = Error detected in response data. 6 = Query rejected. 7 = Last resort routing. 8 = Not used. 9 = No query done. 10 = Not used. 11 = Successful QoR. 12 = QoR initiated. 13 = WoR received. 14 = Portability Outside the Rate Center (PORC) Last Resort-donor. 15 = PORC Last Resort - Surrogate Donor. 99 = Query unsuccessful, reason unknown

—continued—

Q's (end)

Table 9-17
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
				Note: This CDR field is only populated when the EDGE_SWITCH parameter in table OFCVAR is set to Y.
QUEUED	1 bit	1	Boolean	QUEUED. This field indicates whether the call has been placed in a queue. 0 = Call was not queued 1 = Call was queued
			—end—	

R's

Table 9-18
CDR field descriptions

Field name	Field size	Split size (in bits)	Data type	Field description
RECCD	16 bits	16	EBCDIC	RECORD CODE. This field contains one of the following: F0 = Fixed size CDR FX = Variable size CDR ***Note:*** These values are set in office parameter FCDR_CDR_SIZE. RECCD is a required field for all CDR templates and is, therefore, already provisioned for every template. This field is always located in Word 0, bits 0 through 15. ***Note:*** Do not attempt to include the RECCD field when creating new templates using table CDRTMPLT.
RELCAUSE	8 bits	8	Decimal	RELEASE CAUSE. This field identifies the cause value received in a CCS7 release message. Refer to Table 9-5 for the release cause values.
REORGCTR	4 bits	4	Decimal	REORIGINATION COUNTER. This field contains the number of reoriginations that occurred for the call.
RLTCDR	2 bits	2	Decimal	RELEASE LINK TRUNK CDR. This field indicates whether another CDR is associated with an RLT call. 0 = No other CDRs are associated with the RLT call 1 = Other CDR(s) are associated with the RLT call 2–3 = Not used

—continued—

Table 9-18
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
ROUTIND	3 bits		Decimal	ROUTE INDICATOR. This field indicates whether direct or tandem routing was used.This field can have the following values: 0 = Direct 1 = Tandem 3–5 = Not used
RTEINDEX	14 bits	14	Decimal	ROUTE INDEX. This field indicates the number used to index into the routing table. The range of this field is 0 to 16383. For example, if the following tuple is used to route the call: 220 (S D IMT761C7LP10) (S D DAL220TWDTGS) $ this field would contain a value of 220. ***Note:*** The same as RTELIST, except it allows for larger values. 220 (S D IMT761C7LP10) (S D DAL220TWDTGS) $ this field would contain a value of 220.
RTENO	5 bits	5	Decimal	ROUTE NUMBER. This field contains the route number used in routing the call. For example, if the following tuple is used to route the call: 220 (S D IMT761C7LP10) (S D DAL220TWDTGS) $ and the second route (S D DAL220TWDTGS) is used, this field would contain a value of 1.

—continued—

R's (end)

Table 9-18
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
RTETAB	4 bits	4	Decimal	ROUTING TABLE. Identifies the routing table used to specify the route for the call. The field values are as follows: 0 = Default value 1 = Table STDPRTCT (subtable STDPRT) 2 = HNPACONT, RTEREF 3 = Table CTRTE 4 = Table OFRT 5 = Table OFR2 6 = Table OFR3 7 = Table OFR4 8 = TANDMRTE 9 = TERMRTE 10 = FNPACONT, RTEREF ***Note:*** For all the treated calls that are not routed, the RTETAB field is populated with the default value.
			—end—	

Table 9-19
CDR field descriptions

Field name	Field size	Split size (in bits)	Data type	Field description
SCPBILL	32 bits	8	Hex	SERVICE CONTROL POINT BILLING. This field is used to correlate SCP and switch billing records. This field is only populated by a CAIN TCAP response with the appropriate parameter. Non-CAIN calls do not populate this field.
SEQNUM	16 bits	16	Decimal	SEQUENCE NUMBER. This field contains a unique sequence number assigned to the call at disconnect. Reloads and cold restarts reset this variable to 0 during reload and cold restarts.
SLPID	36 bits		Decimal	SERVICE LOGIC IDENTIFICATION. This field indicates the service logic used at the SCP. This field contains information returned in the AMAslpID field of a CAIN response message to the UCS DMS-250 switch. The range of values are 000000000–899999999. In the CDR2AMA template, this field holds SVCFTR information returned in the Billing Indicator parameter from TR533 (N00).
STS	10 bits	10	Decimal	SERVING TRANSLATION SCHEME. This field is populated by the FlexDial feature and contains the STS used for the call.
SUBRIDX1	20 bits	20	Decimal	FIRST SUBSCRIBER INDEX. This field is populated by the FlexDial feature and contains the numeric index into table FLEXVAL that was used to validate the subscriber number.

—continued—

Table 9-19
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
SUBRIDX2	20 bits	20	Decimal	SECOND SUBSCRIBER INDEX. This field is populated by the FlexDial feature and contains the numeric index into table FLEXVAL that was used to validate the subscriber number.
SUBRLOG1	1 bit	1	Boolean	FIRST SUBSCRIBER LOG. This field is populated by the FlexDial feature and indicates whether a log was generated due to a possible fraudulent use of a subscriber number. 0 = No log generated 1 = Log generated
SUBRLOG2	1 bit	1	Boolean	SECOND SUBSCRIBER LOG. This field is populated by the FlexDial feature and indicates whether a log was generated due to a possible fraudulent use of a subscriber number.

—continued—

Table 9-19
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
				0 = No log generated 1 = Log generated
SUBRNUM1	16 nibbles	4	TBCD	FIRST SUBSCRIBER NUMBER. This field is populated by the FlexDial feature and contains the subscriber number.
SUBRNUM2	16 nibbles	4	TBCD	SECOND SUBSCRIBER NUMBER. This field is populated by the FlexDial feature and contains the subscriber number.
SUBRTYP1	10 bits	10	Decimal	FIRST SUBSCRIBER TYPE. This field is populated by the FlexDial feature and contains the FLEXTYPE index value for the subscriber number.
SUBRTYP2	10 bits	10	Decimal	SECOND SUBSCRIBER TYPE. This field is populated by the FlexDial feature and contains the FLEXTYPE index value for the subscriber number.
SUBRVAL1	2 bits	2	Decimal	FIRST SUBSCRIBER VALIDATION. This field is populated by the FlexDial feature and if and how the subscriber number was validated. 0 = No subscriber number received 1 = Subscriber number received, but not validated

—continued—

Table 9-19
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
				2 = Subscriber number received and validated 3 = Subscriber number received and validated due to empty index
SUBRVAL2	2 bits	2	Decimal	SECOND SUBSCRIBER VALIDATION. This field is populated by the FlexDial feature and if and how the subscriber number was validated. 0 = No subscriber number received 1 = Subscriber number received, but not validated 2 = Subscriber number received and validated 3 = Subscriber number received and validated due to empty index
SVCFTR	10 bits		Decimal	SERVICE FEATURE. This field contains the value for the Service Feature ID. If the switch receives an OverflowBillingIndicator or PrimaryBillingIndictor parameter populated with a non-zero Service Feature ID value, this field is populated with the received Service Feature ID value. The range of this field is 0–999. This field maps to BAF module code 30, BAF table 89, and to BAF field, Translation Settable Field. The following are values for the BAF Service Feature Codes: 000 = None of the following values apply 001 – LEC-owned standard interface public line 002 = Hotel/motel, no tax

—continued—

Table 9-19
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
				005 = Chargeable quotation 006 = Centrex attendant 008 = INWATS 010 = Three-way calling 011 = Hotel/motel with tax 012 = Call forwarding 014 = Call forwarding busy line or call forwarding don't answer 015 = Public switched digital service with toll-free service 017 = Remote call forwarding 018 = Usage-sensitive three-way calling 023 = Cellular Mobile Carrier – type-2A 026 = Private virtual network – remote access indicator 027 = AIN – default 031 = Wakeup call activation 049 = Usage-sensitive call forwarding 055 = Call forwarding – immediate+busy/don't answer/no page response (vendor specific) 056 = Call waiting (vendor specific) 060 = Mobile (vendor specific) 061 = Marine (vendor specific) 083 = Call delivery to call waiting (vendor specific) 089 = Feature activiation/deactiviation via CN (vendor specific)

—continued—

S's (end)

Table 9-19
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
				103 = Call waiting + call forwarding – don't answer (vendor specific 104 = Mobile station test (vendor specific) 109 = Abbreviated dialing with acknowledgment (vendor specific) 202 = LEC-owned alternate interface public line 203 = IPP (independent payphone provider)-owned standard interface public line 204 = IPP-owned alternate interface public line 800–999 = LEC-assignable
			—end—	

Table 9-20
CDR field descriptions

Field name	Field size	Split size (in bits)	Data type	Field description
TEMPLID	7 bits	7	Decimal	TEMPLATE IDENTIFIER. This field identifies the template (datafilled in table CDRTMPLT) that was used to format the CDR. TEMPLID is a required field for all CDR templates and is, therefore, already provisioned for every template. This field is always located in Word 1, bits 0 through 6. The field values are as follows: 0 –4 = Reserved 5 = UCS08 6 = UCS09 7 = UCS11 8–9 = Reserved 10 – 63 = User defined templates ***Note:*** Do not attempt to include the TEMPLID field when creating new templates using table CDRTMPLT.
TERMECHO	2 bits	2	Decimal	TERMINATING ECHO CANCELLER. This field identifies the state of the NT6X50EC echo canceller during the call for the terminating agent. The field values are as follows: 0 = NT6X50 Not Installed (default) 1 = Enabled 2 = Switch disabled 3 = Tone disabled ***Note:*** This CDR field is not populated in UCS11 Release.

—continued—

Table 9-20
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
TERMGRP	14 bits	14	Decimal	TERMINATION GROUP. This field contains the termination EXTNUM from table CLLICDR.
TERMLRN	40 bits		TBCD	TERMINATING LOCATION ROUTING NUMBER. This field is populated with the 10-digit terminating LRN for a call when it matches one of the LRNs assigned as the Home LRN. The range of values is a 10-digit integer.
TERMMEM	14 bits	14	Decimal	TERMINATION MEMBER. This field identifies the termination trunk member number (from field EXTRKNM in table TRKMEM) within the terminating trunk group. Each trunk has up to 2048 members, having a range of 0–9999.
TERMPLAN				This field is reserved for future use.
TERMPVN	15 nibbles	4	TBCD	TERMINATING PRIVATE NUMBER. This field contains the customer-defined dialing plan number assigned to the called party. This field is populated from a CAIN response received from the SCP in the AMADigitsDialedWC parameter. Non-CAIN calls do not populate this field.
TIMECHNG	1 bit	1	Boolean	TIME CHANGE. This field indicates if a time change occurred during the call. 0 = No time change occurred 1 = Time change occurred

—continued—

Table 9-20
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
TIMEGARD	2 bits		Decimal	TIME GUARD. This field in the BAF record indicates that a timing guard condition is experienced on the call. The TIMING GUARD flag is set if a switch maintenance phase occurs and a call drops during the phase. This flag insures that the call is not overbilled but may be underbilled. This field can have the following values: 0 = Default 2 = Timing guard condition exists ***Note:*** This CDR field is only populated when the EDGE_SWITCH parameter in table OFCVAR is set to Y.
TOOLGEN	1 bit	1	Boolean	TOOL GENERATED. When populated with a 1, this field indicates that the CDR was generated through the use of a test tool such as FLEXSIM or TRAVER. TOOLGEN is a required field for all CDR templates and is, therefore, already provisioned for every template. This field is always located in Word 1, bit 10. 0 = CDR generated by call processing 1 = CDR generated by a call generating tool ***Note:*** Do not attempt to include the TOOLGEN field when creating new templates using table CDRTMPLT.

—continued—

Table 9-20
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
TPART	5 bits	5	Decimal	TERMINATION PARTITION. This field contains the termination region. This field is populated from one of the following and converted from an STS in table STSTOPAR: • AUTHCODE • ANI • CAIN-SCP interaction
TRAP	1 bit	1	Boolean	TRAP. This field indicates possible abuse of the billing number. 0 = Not abused 1 = Authcode or travel card number possibly abused
TRKGRP	14 bits		Decimal	TRUNK GROUP NUMBER. This field in the BAF record indicates the incoming Trunk Group Number (TGN). It has a range of 0 to 9999. For call code 141 (Incoming Number Services) this field is populated with the outgoing trunk group number (TERMGRP). For call codes 119 (Terminating Access Record) and 720 (Connecting Network Access Incoming Record), this field is populated with the incoming trunk group number (ORIGGRP). ***Note:*** This CDR field is only populated when the EDGE_SWITCH parameter in table OFCVAR is set to Y.

—continued—

Table 9-20
CDR field descriptions (continued)

Field name	Field size	Split size (in bits)	Data type	Field description
TRMOSEAS	4 bits		Decimal	TERMINATION OVERSEAS. This field indicates the international call type. This field applies to all BAF structure codes, and maps BAF field Overseas Indicator and to BAF table 15. This field can have the following values: 0 = Numbering Plan Area (NPA) dialed by the customer or provided by another network element non-international call 1 = NPA determined by the network element (non-international call) 2 = Less than 7-digit international number 3 = 7-digit international number 4 = 8-digit international number 5 = 9-digit international number 6 = 10-digit international number 7 = 11-digit international number 8 = 12-digit international number 9 = Operaor inward-dialed code is in the call number field
TRTMTCD	8 bits	8	Decimal	TREATMENT CODE. This field identifies the treatment code applied to a call. Refer to Table 9-4 for treatment code values.
			—end—	

U's

Table 9-21
CDR field descriptions

Field name	Field size	Split size (in bits)	Data type	Field description
UNIVACC	10 nibbles	4	TBCD	UNIVERSAL ACCESS. This field contains the 8XX number assigned to FGD and FGC, or for FGB, the 950-WXXXX number outpulsed from the operating company to the carrier.
USEEDIT	1 bit	1	Boolean	EDITING INDEX USED. When populated with a 1, this field indicates that the USEEDIT field in CDRTMPLT option is set to Y for this call. USEEDIT is a required field for all CDR templates and is, therefore, already provisioned for every template. This field is always located in Word 1, bit 11. ***Note:*** Do not attempt to include the USEEDIT field when creating new templates using table CDRTMPLT.

Table 9-22
CDR field descriptions

Field name	Field size	Split size (in bits)	Data type	Field description
VARLNGTH	1 bit	1	Boolean	VARIABLE LENGTH. When populated with a 1, this field indicates that variable length records are being populated. ***Note:*** A value of 1 indicates that word 3 of the CDR is populated with the length of the record (see the LENGTH field definition). The data fields start in word 4. 0 = Fixed length CDRs 1 = Variable length CDRs. The additional length field is added as the third (3rd) word of the CDR. The CDR273 log and the FCDRSRCH tool display this value as "N" for 0 and"Y" for 1. VARLNGTH is a required field for all CDR templates and is, therefore, already provisioned for every template. This field is always located in Word 1, bit 15. ***Note:*** Do not attempt to include the VARLNGTH field when creating new templates using table CDRTMPLT.

W's

Table 9-23
CDR field descriptions

Field name	Field size	Split size (in bits)	Data type	Field description
WBCKTS	32 bits	8	Binary	WIDEBAND CIRCUITS. This field contains a channel use bitmap of the T1 for DS0s used in a wideband call. The channels are read from left to right, 1 through 24. For each bit, 0 is the channel not used and 1 is the channel used. See Table 9-24 for an example of the channel use bitmap.

Table 9-24
CDR field WBCKTS bitmap (in NORMAL format)

MSB															**LSB**
15	**14**	**13**	**12**	**11**	**10**	**09**	**08**	**07**	**06**	**05**	**04**	**03**	**02**	**01**	**00**
8	7	6	5	4	3	2	1	16	15	14	13	12	11	10	09
24	23	22	21	20	19	18	17	32	31	30	29	28	27	26	25

Table 9-25
CDR field WBCKTS bitmap (in READLR format)

MSB															**LSB**
15	**14**	**13**	**12**	**11**	**10**	**09**	**08**	**07**	**06**	**05**	**04**	**03**	**02**	**01**	**00**
16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17

W's (end)

Note: The CDR273 log displays the Wideband circuits (WBCKTS) field information in the following format. The values shown are used as an example only. In the example, the field name is listed, followed by bits 1-8, bits 9-16, and bits 17-24.

```
CDR273

   WBCKTS      11010000      00000111      11010110
```

Appendix B
CDR templates

This appendix contains the CDR2AMA, UCS09, UCS11, UCS12, UCS13, CDR2AMA2 (UCS14), and CDR2AMA3 (UCS14) bitmaps.

Figure 10-1
CDR2AMA CDR template (in NORMAL format)

MSB															LSB	
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	WORD/BIT
RECCD(1)								RECCD(2)								00
VL	RESERVED1			UE	TG	ACTIDX			TEMPLID							01
SEQNUM																02
CIC(4)				CIC(3)				CIC(2)				CIC(1)				03
ORIGTIME																04
OA	INCBILL			ANSTYPE				ORIGDATE								05
DISCTIME																06
DISCDATE								QRYSTIND								07
CALLDUR(2)								CALLDUR(1)								08
CALLDUR(4)								CALLDUR(3)								09
CLGPTYNO(4)				CLGPTYNO(3)				CLGPTYNO(2)				CLGPTYNO(1)				10
CLGPTYNO(8)				CLGPTYNO(7)				CLGPTYNO(6)				CLGPTYNO(5)				11
CLGPTYNO(12)				CLGPTYNO(11)				CLGPTYNO(10)				CLGPTYNO(9)				12
DIALEDNO(1)				CLGPTYNO(15)				CLGPTYNO(14)				CLGPTYNO(13)				13
DIALEDNO(5)				DIALEDNO(4)				DIALEDNO(3)				DIALEDNO(2)				14
DIALEDNO(9)				DIALEDNO(8)				DIALEDNO(7)				DIALEDNO(6)				15
DIALEDNO(13)				DIALEDNO(12)				DIALEDNO(11)				DIALEDNO(10)				16
CALLEDNO(2)				CALLEDNO(1)				DIALEDNO(15)				DIALEDNO(14)				17
CALLEDNO(6)				CALLEDNO(5)				CALLEDNO(4)				CALLEDNO(3)				18
CALLEDNO(10)				CALLEDNO(9)				CALLEDNO(8)				CALLEDNO(7)				19
CALLEDNO(14)				CALLEDNO(13)				CALLEDNO(12)				CALLEDNO(11)				20
TERMLRN(3)				TERMLRN(2)				TERMLRN(1)				CALLEDNO(15)				21
TERMLRN(7)				TERMLRN(6)				TERMLRN(5)				TERMLRN(4)				22
SLPID(1)				TERMLRN(10)				TERMLRN(9)				TERMLRN(8)				23
SLPID(5)				SLPID(4)				SLPID(3)				SLPID(2)				24
SLPID(9)				SLPID(8)				SLPID(7)				SLPID(6)				25
ORIGLRN(4)				ORIGLRN(3)				ORIGLRN(2)				ORIGLRN(1)				26
ORIGLRN(8)				ORIGLRN(7)				ORIGLRN(6)				ORIGLRN(5)				27
LRNSRC2				LRNSRC1				ORIGLRN(10)				ORIGLRN(9)				28
DISCYEAR				DISC10TH				ORIGYEAR				ORIG10TH				29
TC	DA														AMASC	30
DLPRESUB				TMGD		AMAMOD1										31
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	BIT

Figure 10-1
CDR2AMA CDR template (in NORMAL format) (end)

MSB															LSB	
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	WORD/BIT
ANISP(1)				ANICPN		AMAMOD2										32
ANISP(5)				ANISP(4)				ANISP(3)				ANISP(2)				33
ANISP(9)				ANISP(8)				ANISP(7)				ANISP(6)				34
FILL2		AMACALLC										ANISP(10)				35
FILL3			LNPCHECK			LATA										36
FILL2		TRKGRP														37
FILL8								FILL4				CALLEVTS				38
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	BIT

The following abbreviations and conventions are used in Figure 10-1:

- DA stands for DISCAMPM
- OA stands for ORIGAMPM
- TC stands for TIMECHNG
- TG stands for TOOLGEN
- TMGD stands for TIMEGARD
- UE stands for USEEDIT
- VL stands for VARLNGT

Figure 10-2
UCS09 CDR template (in READLR format)

	MSB															LSB
WORD/BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
00	RECCD(1)								RECCD(2)							
01	VL	RESERVED1			UE	TG	ACTIDX		TEMPLID							
02	SEQNUM															
03	CIC(1)				CIC(2)				CIC(3)				CIC(4)			
04	ORIGTIME															
05	ORIGDATE								ANSTYPE				TC	OA	II	
06	DISCTIME															
07	DISCDATE								ANISUFF				DA	INCBILL	F1	
08	CALLDUR(1)								CALLDUR(2)							
09	CALLDUR(3)								CALLDUR(4)							
10	PINDIG(1)				PINDIG(2)				PINDIG(3)				PINDIG(4)			
11	ANISP(1)				ANISP(2)				ANISP(3)				ANISP(4)			
12	ANISP(5)				ANISP(6)				ANISP(7)				ANISP(8)			
13	ANISP(9)				ANISP(10)				INFODIG(1)				INFODIG(2)			
14	BILLNUM(1)				BILLNUM(2)				BILLNUM(3)				BILLNUM(4)			
15	BILLNUM(5)				BILLNUM(6)				BILLNUM(7)				BILLNUM(8)			
16	BILLNUM(9)				BILLNUM(10)				BILLNUM(11)				BILLNUM(12)			
17	BILLNUM(13)				BILLNUM(14)				BILLNUM(15)				BILLNUM(16)			
18	BILLNUM(17)				BILLNUM(18)				BILLNUM(19)				BILLNUM(20)			
19	BILLNUM(21)				BILLNUM(22)				BILLNUM(23)				BILLNUM(24)			
20	ACCTCD(1)				ACCTCD(2)				ACCTCD(3)				ACCTCD(4)			
21	ACCTCD(5)				ACCTCD(6)				ACCTCD(7)				ACCTCD(8)			
22	ACCTCD(9)				ACCTCD(10)				ACCTCD(11)				ACCTCD(12)			
23	CLGPTYNO(1)				CLGPTYNO(2)				CLGPTYNO(3)				CLGPTYNO(4)			
24	CLGPTYNO(5)				CLGPTYNO(6)				CLGPTYNO(7)				CLGPTYNO(8)			
25	CLGPTYNO(9)				CLGPTYNO(10)				CLGPTYNO(11)				CLGPTYNO(12)			
26	CLGPTYNO(13)				CLGPTYNO(14)				CLGPTYNO(15)				RLTNO		ACCTV	
27	UNIVACC(1)				UNIVACC(2)				UNIVACC(3)				UNIVACC(4)			
28	UNIVACC(5)				UNIVACC(6)				UNIVACC(7)				UNIVACC(8)			
29	UNIVACC(9)				UNIVACC(10)				DIALEDNO(1)				DIALEDNO(2)			
30	DIALEDNO(3)				DIALEDNO(4)				DIALEDNO(5)				DIALEDNO(6)			
31	DIALEDNO(7)				DIALEDNO(8)				DIALEDNO(9)				DIALEDNO(10)			
BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

Figure 10-2
UCS09 CDR template (in READLR format) (continued)

	MSB															LSB
WORD/BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
32	DIALEDNO(11)				DIALEDNO(12)				DIALEDNO(13)				DIALEDNO(14)			
33	DIALEDNO(15)				CALLEDNO(1)				CALLEDNO(2)				CALLEDNO(3)			
34	CALLEDNO(4)				CALLEDNO(5)				CALLEDNO(6)				CALLEDNO(7)			
35	CALLEDNO(8)				CALLEDNO(9)				CALLEDNO(10)				CALLEDNO(11)			
36	CALLEDNO(12)				CALLEDNO(13)				CALLEDNO(14)				CALLEDNO(15)			
37	OUTPULNO(1)				OUTPULNO(2)				OUTPULNO(3)				OUTPULNO(4)			
38	OUTPULNO(5)				OUTPULNO(6)				OUTPULNO(7)				OUTPULNO(8)			
39	OUTPULNO(9)				OUTPULNO(10)				OUTPULNO(11)				OUTPULNO(12)			
40	OUTPULNO(13)				OUTPULNO(14)				OUTPULNO(15)				OUT–NOA	CIC–CASU	CICORIGN	
41	ORIGOPRT										PREDIG			CNPREDIG		
42	OPART										TPART					QD
43	OPCHOICE								COLLTIME							
44	ADIN(1)				ADIN(2)				LNPCHECK				NUMWBCKT			
45	WBCKTS(1)								WBCKTS(2)							
46	WBCKTS(3)								WBCKTS(4)							
47	FINSID										BILLTYPE					
48	ORIGGRP														DT	
49	ORIGMEM														PSTHRU	
50	TERMGRP														PRESIND	
51	TERMMEM														OS	DD
52	FINTKGRP														TR	CS
53	FINTKMEM															
54	SCPBILL(1)								SCPBILL(2)							
55	SCPBILL(3)								SCPBILL(4)							
56	TRTMTCD								COMPCODE				CRID(1)			
57	CRID(2)				CRID(3)				CRID(4)				CRID(5)			
58	CRID(6)				CRID(7)				CRID(8)				CRID(9)			
59	DNIS(1)				DNIS(2)				DNIS(3)				DNIS(4)			
BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

Figure 10-2
UCS09 CDR template (in READLR format) (end)

	MSB															LSB
WORD/BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
60	DNIS(5)				DNIS(6)				DNIS(7)				DNIS(8)			
61	DNIS(9)				DNIS(10)				DNIS(11)				DNIS(12)			
62	DNIS(13)				DNIS(14)				DNIS(15)				ORIGPVN(1)			
63	ORIGPVN(2)				ORIGPVN(3)				ORIGPVN(4)				ORIGPVN(5)			
64	ORIGPVN(6)				ORIGPVN(7)				ORIGPVN(8)				ORIGPVN(9)			
65	ORIGPVN(10)				ORIGPVN(11)				ORIGPVN(12)				ORIGPVN(13)			
66	ORIGPVN(14)				ORIGPVN(15)				TERMPVN(1)				TERMPVN(2)			
67	TERMPVN(3)				TERMPVN(4)				TERMPVN(5)				TERMPVN(6)			
68	TERMPVN(7)				TERMPVN(8)				TERMPVN(9)				TERMPVN(10)			
69	TERMPVN(11)				TERMPVN(12)				TERMPVN(13)				TERMPVN(14)			
70	TERMPVN(15)				ORIGLRN(1)				ORIGLRN(2)				ORIGLRN(3)			
71	ORIGLRN(4)				ORIGLRN(5)				ORIGLRN(6)				ORIGLRN(7)			
72	ORIGLRN(8)				ORIGLRN(9)				ORIGLRN(10)				PORTEDNO(1)			
73	PORTEDNO(2)				PORTEDNO(3)				PORTEDNO(4)				PORTEDNO(5)			
74	PORTEDNO(6)				PORTEDNO(7)				PORTEDNO(8)				PORTEDNO(9)			
75	PORTEDNO(10)				CAINCT			ACG	DNISNOA							FILL
76	MLTCOSID											FILL1	CARRSEL			
77	COSINDEX										FILL1	RTENO				
78	RTEINDEX														FILL2	
79	CN1REQ							CN2REQ					CN1TREQ			NET-SEC
80	CN2TREQ				CN3REQ					CNTOTREQ				CN3TREQ		
81	ECRN1									ECRM1					FILL2	
82	ECRN2									ECRM2					FILL2	
BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

The following abbreviations and conventions are used in Figure 10-2:

- VL stands for VARIABLE_LENGTH
- UE stands for USEEDIT
- TG stands for TOOLGENERATED
- TC stands for TIMECHNG
- OA stands for ORIGAMPM
- DA stands for DISCAMPM
- II stands for INC_INTL

- QD stands for QUEUED
- DT stands for DISCTYPE
- PSTHRU stands for PASSTHRU
- OS stands for OSRASSOC
- DD stands for DIGDATA
- TR stands for TRAP
- CS stands for COSOVE
- F1 stands for FILL1
- Shading indicates unused space

Figure 10-3
UCS09 CDR template (in NORMAL format)

MSB															LSB	
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	WORD/BIT
RECCD(1)								RECCD(2)								00
VL	RESERVED1			UE	TG	ACTIDX				TEMPLID						01
SEQNUM																02
CIC(4)				CIC(3)				CIC(2)				CIC(1)				03
ORIGTIME																04
II	OA	TC	ANSTYPE					ORIGDATE								05
DISCTIME																06
FILL1	INCBILL		DA	ANISUFF				DISCDATE								07
CALLDUR(2)								CALLDUR(1)								08
CALLDUR(4)								CALLDUR(3)								09
PINDIG(4)				PINDIG(3)				PINDIG(2)				PINDIG(1)				10
ANISP(4)				ANISP(3)				ANISP(2)				ANISP(1)				11
ANISP(8)				ANISP(7)				ANISP(6)				ANISP(5)				12
INFODIG(2)				INFODIG(1)				ANISP(10)				ANISP(9)				13
BILLNUM(4)				BILLNUM(3)				BILLNUM(2)				BILLNUM(1)				14
BILLNUM(8)				BILLNUM(7)				BILLNUM(6)				BILLNUM(5)				15
BILLNUM(12)				BILLNUM(11)				BILLNUM(10)				BILLNUM(9)				16
BILLNUM(16)				BILLNUM(15)				BILLNUM(14)				BILLNUM(13)				17
BILLNUM(20)				BILLNUM(19)				BILLNUM(18)				BILLNUM(17)				18
BILLNUM(24)				BILLNUM(23)				BILLNUM(22)				BILLNUM(21)				19
ACCTCD(4)				ACCTCD(3)				ACCTCD(2)				ACCTCD(1)				20
ACCTCD(8)				ACCTCD(7)				ACCTCD(6)				ACCTCD(5)				21
ACCTCD(12)				ACCTCD(11)				ACCTCD(10)				ACCTCD(9)				22
CLGPTYNO(4)				CLGPTYNO(3)				CLGPTYNO(2)				CLGPTYNO(1)				23
CLGPTYNO(8)				CLGPTYNO(7)				CLGPTYNO(6)				CLGPTYNO(5)				24
CLGPTYNO(12)				CLGPTYNO(11)				CLGPTYNO(10)				CLGPTYNO(9)				25
ACCTV	RLTNO			CLGPTYNO(15)				CLGPTYNO(14)				CLGPTYNO(13)				26
UNIVACC(4)				UNIVACC(3)				UNIVACC(2)				UNIVACC(1)				27
UNIVACC(8)				UNIVACC(7)				UNIVACC(6)				UNIVACC(5)				28
DIALEDNO(2)				DIALEDNO(1)				UNIVACC(10)				UNIVACC(9)				29
DIALEDNO(6)				DIALEDNO(5)				DIALEDNO(4)				DIALEDNO(3)				30
DIALEDNO(10)				DIALEDNO(9)				DIALEDNO(8)				DIALEDNO(7)				31
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	BIT

Figure 10-3
UCS09 CDR template (in NORMAL format) (continued)

MSB															LSB	
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	WORD/BIT
DIALEDNO(14)				DIALEDNO(13)				DIALEDNO(12)				DIALEDNO(11)				32
CALLEDNO(3)				CALLEDNO(2)				CALLEDNO(1)				DIALEDNO(15)				33
CALLEDNO(7)				CALLEDNO(6)				CALLEDNO(5)				CALLEDNO(4)				34
CALLEDNO(11)				CALLEDNO(10)				CALLEDNO(9)				CALLEDNO(8)				35
CALLEDNO(15)				CALLEDNO(14)				CALLEDNO(13)				CALLEDNO(12)				36
OUTPULNO(4)				OUTPULNO(3)				OUTPULNO(2)				OUTPULNO(1)				37
OUTPULNO(8)				OUTPULNO(7)				OUTPULNO(6)				OUTPULNO(5)				38
OUTPULNO(12)				OUTPULNO(11)				OUTPULNO(10)				OUTPULNO(9)				39
CICORIGN		CIC–CASU	OUT–NOA	OUTPULNO(15)				OUTPULNO(14)				OUTPULNO(13)				40
CNPREDIG			PREDIG	ORIGOPRT												41
QD	TPART			OPART												42
COLLTIME								OPCHOICE								43
NUMWBCKT				LNPCHECK				ADIN(2)				ADIN(1)				44
WBCKTS(2)								WBCKTS(1)								45
WBCKTS(4)								WBCKTS(3)								46
BILLTYPE				FINSID												47
DT	ORIGGRP															48
PSTHRU	ORIGMEM															49
PRESIND	TERMGRP															50
DD	OS	TERMMEM														51
CS	TR	FINTKGRP														52
FINTKMEM																53
SCPBILL(2)								SCPBILL(1)								54
SCPBILL(4)								SCPBILL(3)								55
CRID (1)				COMPCODE				TRTMTCD								56
CRID(5)				CRID (4)				CRID(3)				CRID(2)				57
CRID(9)				CRID(8)				CRID(7)				CRID(6)				58
DNIS(4)				DNIS(3)				DNIS(2)				DNIS(1)				59
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	BIT

Figure 10-3
UCS09 CDR template (in NORMAL format) (end)

MSB															LSB	
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	WORD/BIT
DNIS(8)				DNIS(7)				DNIS(6)				DNIS(5)				60
DNIS(12)				DNIS(11)				DNIS(10)				DNIS(9)				61
ORIGPVN(1)				DNIS(15)				DNIS(14)				DNIS(13)				62
ORIGPVN(5)				ORIGPVN(4)				ORIGPVN(3)				ORIGPVN(2)				63
ORIGPVN(9)				ORIGPVN(8)				ORIGPVN(7)				ORIGPVN(6)				64
ORIGPVN(13)				ORIGPVN(12)				ORIGPVN(11)				ORIGPVN(10)				65
TERMPVN(2)				TERMPVN(1)				ORIGPVN(15)				ORIGPVN(14)				66
TERMPVN(6)				TERMPVN(5)				TERMPVN(4)				TERMPVN(3)				67
TERMPVN(10)				TERMPVN(9)				TERMPVN(8)				TERMPVN(7)				68
TERMPVN(14)				TERMPVN(13)				TERMPVN(12)				TERMPVN(11)				69
ORIGLRN(3)				ORIGLRN(2)				ORIGLRN(1)				TERMPVN(15)				70
ORIGLRN(7)				ORIGLRN(6)				ORIGLRN(5)				ORIGLRN(4)				71
PORTEDNO(1)				ORIGLRN(10)				ORIGLRN(9)				ORIGLRN(8)				72
PORTEDNO(5)				PORTEDNO(4)				PORTEDNO(3)				PORTEDNO(2)				73
PORTEDNO(9)				PORTEDNO(8)				PORTEDNO(7)				PORTEDNO(6)				74
FILL1	DNISNOA							ACG	CAINCT			PORTEDNO(10)				75
CARRSEL				FILL1	MLTCOSID											76
RTENO					FILL1	COSINDEX										77
FILL2	RTEINDEX															78
NET-SEC	CN1TREQ			CN2REQ					CN1REQ							79
CN3TREQ			CNTOTREQ				CN3REQ						CN2TREQ			80
FILL2	ECRM1						ECRN1									81
FILL2	ECRM2						ECRN2									82
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	BIT

The following abbreviations and conventions are used in Figure 10-3:

- VL stands for VARIABLE_LENGTH
- UE stands for USEEDIT
- TG stands for TOOLGENERATED
- TC stands for TIMECHNG
- OA stands for ORIGAMPM
- DA stands for DISCAMPM
- II stands for INC_INTL

- QD stands for QUEUED
- DT stands for DISCTYPE
- PSTHRU stands for PASSTHRU
- OS stands for OSRASSOC
- DD stands for DIGDATA
- TR stands for TRAP
- CS stands for COSOVE
- F1 stands for FILL1
- Shading indicates unused space

Figure 10-4
UCS11 CDR template (in READLR format)

	MSB															LSB
WORD/BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
00	RECCD(1)								RECCD(2)							
01	VL	RESERVED1			UE	TG	ACTIDX			TEMPLID						
02	SEQNUM															
03	CIC(1)				CIC(2)				CIC(3)				CIC(4)			
04	ORIGTIME															
05	ORIGDATE								ANSTYPE				TC	OA	II	
06	DISCTIME															
07	DISCDATE								ANISUFF				DA	INCBILL	F1	
08	CALLDUR(1)								CALLDUR(2)							
09	CALLDUR(3)								CALLDUR(4)							
10	PINDIG(1)				PINDIG(2)				PINDIG(3)				PINDIG(4)			
11	ANISP(1)				ANISP(2)				ANISP(3)				ANISP(4)			
12	ANISP(5)				ANISP(6)				ANISP(7)				ANISP(8)			
13	ANISP(9)				ANISP(10)				INFODIG(1)				INFODIG(2)			
14	BILLNUM(1)				BILLNUM(2)				BILLNUM(3)				BILLNUM(4)			
15	BILLNUM(5)				BILLNUM(6)				BILLNUM(7)				BILLNUM(8)			
16	BILLNUM(9)				BILLNUM(10)				BILLNUM(11)				BILLNUM(12)			
17	BILLNUM(13)				BILLNUM(14)				BILLNUM(15)				BILLNUM(16)			
18	BILLNUM(17)				BILLNUM(18)				BILLNUM(19)				BILLNUM(20)			
19	BILLNUM(21)				BILLNUM(22)				BILLNUM(23)				BILLNUM(24)			
20	ACCTCD(1)				ACCTCD(2)				ACCTCD(3)				ACCTCD(4)			
21	ACCTCD(5)				ACCTCD(6)				ACCTCD(7)				ACCTCD(8)			
22	ACCTCD(9)				ACCTCD(10)				ACCTCD(11)				ACCTCD(12)			
23	CLGPTYNO(1)				CLGPTYNO(2)				CLGPTYNO(3)				CLGPTYNO(4)			
24	CLGPTYNO(5)				CLGPTYNO(6)				CLGPTYNO(7)				CLGPTYNO(8)			
25	CLGPTYNO(9)				CLGPTYNO(10)				CLGPTYNO(11)				CLGPTYNO(12)			
26	CLGPTYNO(13)				CLGPTYNO(14)				CLGPTYNO(15)				RLTNO		ACCTV	
27	UNIVACC(1)				UNIVACC(2)				UNIVACC(3)				UNIVACC(4)			
28	UNIVACC(5)				UNIVACC(6)				UNIVACC(7)				UNIVACC(8)			
29	UNIVACC(9)				UNIVACC(10)				DIALEDNO(1)				DIALEDNO(2)			
30	DIALEDNO(3)				DIALEDNO(4)				DIALEDNO(5)				DIALEDNO(6)			
31	DIALEDNO(7)				DIALEDNO(8)				DIALEDNO(9)				DIALEDNO(10)			
BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

Figure 10-4
UCS11 CDR template (in READLR format) (continued)

	MSB															LSB
WORD/BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
32	DIALEDNO(11)				DIALEDNO(12)				DIALEDNO(13)				DIALEDNO(14)			
33	DIALEDNO(15)				CALLEDNO(1)				CALLEDNO(2)				CALLEDNO(3)			
34	CALLEDNO(4)				CALLEDNO(5)				CALLEDNO(6)				CALLEDNO(7)			
35	CALLEDNO(8)				CALLEDNO(9)				CALLEDNO(10)				CALLEDNO(11)			
36	CALLEDNO(12)				CALLEDNO(13)				CALLEDNO(14)				CALLEDNO(15)			
37	OUTPULNO(1)				OUTPULNO(2)				OUTPULNO(3)				OUTPULNO(4)			
38	OUTPULNO(5)				OUTPULNO(6)				OUTPULNO(7)				OUTPULNO(8)			
39	OUTPULNO(9)				OUTPULNO(10)				OUTPULNO(11)				OUTPULNO(12)			
40	OUTPULNO(13)				OUTPULNO(14)				OUTPULNO(15)				OUT–NOA	CIC–CASU	CICORIGN	
41	ORIGOPRT										PREDIG			CNPREDIG		
42	OPART										TPART					QD
43	OPCHOICE								COLLTIME							
44	ADIN(1)				ADIN(2)				LNPCHECK				NUMWBCKT			
45	WBCKTS(1)								WBCKTS(2)							
46	WBCKTS(3)								WBCKTS(4)							
47	FINSID										BILLTYPE					
48	ORIGGRP														DT	
49	ORIGMEM														PSTHRU	
50	TERMGRP														PRESIND	
51	TERMMEM														OS	DD
52	FINTKGRP														TR	CS
53	FINTKMEM															
54	SCPBILL(1)								SCPBILL(2)							
55	SCPBILL(3)								SCPBILL(4)							
56	TRTMTCD								COMPCODE				CRID(1)			
57	CRID(2)				CRID(3)				CRID(4)				CRID(5)			
58	CRID(6)				CRID(7)				CRID(8)				CRID(9)			
59	DNIS(1)				DNIS(2)				DNIS(3)				DNIS(4)			
BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

Figure 10-4
UCS11 CDR template (in READLR format) (end)

	MSB															LSB
WORD/BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
60	DNIS(5)				DNIS(6)				DNIS(7)				DNIS(8)			
61	DNIS(9)				DNIS(10)				DNIS(11)				DNIS(12)			
62	DNIS(13)				DNIS(14)				DNIS(15)				ORIGPVN(1)			
63	ORIGPVN(2)				ORIGPVN(3)				ORIGPVN(4)				ORIGPVN(5)			
64	ORIGPVN(6)				ORIGPVN(7)				ORIGPVN(8)				ORIGPVN(9)			
65	ORIGPVN(10)				ORIGPVN(11)				ORIGPVN(12)				ORIGPVN(13)			
66	ORIGPVN(14)				ORIGPVN(15)				TERMPVN(1)				TERMPVN(2)			
67	TERMPVN(3)				TERMPVN(4)				TERMPVN(5)				TERMPVN(6)			
68	TERMPVN(7)				TERMPVN(8)				TERMPVN(9)				TERMPVN(10)			
69	TERMPVN(11)				TERMPVN(12)				TERMPVN(13)				TERMPVN(14)			
70	TERMPVN(15)				ORIGLRN(1)				ORIGLRN(2)				ORIGLRN(3)			
71	ORIGLRN(4)				ORIGLRN(5)				ORIGLRN(6)				ORIGLRN(7)			
72	ORIGLRN(8)				ORIGLRN(9)				ORIGLRN(10)				PORTEDNO(1)			
73	PORTEDNO(2)				PORTEDNO(3)				PORTEDNO(4)				PORTEDNO(5)			
74	PORTEDNO(6)				PORTEDNO(7)				PORTEDNO(8)				PORTEDNO(9)			
75	PORTEDNO(10)				CAINCT			ACG	DNISNOA							FILL1
76	MLTCOSID											FILL1	CARRSEL			
77	COSINDEX										FILL1		RTENO			
78	RTEINDEX														FILL2	
79	CN1REQ							CN2REQ					CN1TREQ			NET-SEC
80	CN2TREQ				CN3REQ					CNTOTREQ				CN3TREQ		
81	ECRN1									ECRM1					FILL2	
82	ECRN2									ECRM2					FILL2	
BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

The following abbreviations and conventions are used in Figure 10-4:

- VL stands for VARIABLE_LENGTH
- UE stands for USEEDIT
- TG stands for TOOLGENERATED
- TC stands for TIMECHNG
- OA stands for ORIGAMPM
- DA stands for DISCAMPM
- II stands for INC_INTL

- QD stands for QUEUED
- DT stands for DISCTYPE
- PSTHRU stands for PASSTHRU
- OS stands for OSRASSOC
- DD stands for DIGDATA
- TR stands for TRAP
- CS stands for COSOVE
- F1 stands for FILL1
- Shading indicates unused space

Figure 10-5
UCS11 CDR template (in NORMAL format)

MSB															LSB	
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	WORD/BIT
RECCD(1)								RECCD(2)								00
VL	RESERVED1			UE	TG	ACTIDX				TEMPLID						01
SEQNUM																02
CIC(4)				CIC(3)				CIC(2)				CIC(1)				03
ORIGTIME																04
II	OA	TC	ANSTYPE					ORIGDATE								05
DISCTIME																06
FILL1	INCBILL		DA	ANISUFF				DISCDATE								07
CALLDUR(2)								CALLDUR(1)								08
CALLDUR(4)								CALLDUR(3)								09
PINDIG(4)				PINDIG(3)				PINDIG(2)				PINDIG(1)				10
ANISP(4)				ANISP(3)				ANISP(2)				ANISP(1)				11
ANISP(8)				ANISP(7)				ANISP(6)				ANISP(5)				12
INFODIG(2)				INFODIG(1)				ANISP(10)				ANISP(9)				13
BILLNUM(4)				BILLNUM(3)				BILLNUM(2)				BILLNUM(1)				14
BILLNUM(8)				BILLNUM(7)				BILLNUM(6)				BILLNUM(5)				15
BILLNUM(12)				BILLNUM(11)				BILLNUM(10)				BILLNUM(9)				16
BILLNUM(16)				BILLNUM(15)				BILLNUM(14)				BILLNUM(13)				17
BILLNUM(20)				BILLNUM(19)				BILLNUM(18)				BILLNUM(17)				18
BILLNUM(24)				BILLNUM(23)				BILLNUM(22)				BILLNUM(21)				19
ACCTCD(4)				ACCTCD(3)				ACCTCD(2)				ACCTCD(1)				20
ACCTCD(8)				ACCTCD(7)				ACCTCD(6)				ACCTCD(5)				21
ACCTCD(12)				ACCTCD(11)				ACCTCD(10)				ACCTCD(9)				22
CLGPTYNO(4)				CLGPTYNO(3)				CLGPTYNO(2)				CLGPTYNO(1)				23
CLGPTYNO(8)				CLGPTYNO(7)				CLGPTYNO(6)				CLGPTYNO(5)				24
CLGPTYNO(12)				CLGPTYNO(11)				CLGPTYNO(10)				CLGPTYNO(9)				25
ACCTV	RLTNO			CLGPTYNO(15)				CLGPTYNO(14)				CLGPTYNO(13)				26
UNIVACC(4)				UNIVACC(3)				UNIVACC(2)				UNIVACC(1)				27
UNIVACC(8)				UNIVACC(7)				UNIVACC(6)				UNIVACC(5)				28
DIALEDNO(2)				DIALEDNO(1)				UNIVACC(10)				UNIVACC(9)				29
DIALEDNO(6)				DIALEDNO(5)				DIALEDNO(4)				DIALEDNO(3)				30
DIALEDNO(10)				DIALEDNO(9)				DIALEDNO(8)				DIALEDNO(7)				31
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	BIT

Figure 10-5
UCS11 CDR template (in NORMAL format) (continued)

MSB															LSB	
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	WORD/BIT
DIALEDNO(14)				DIALEDNO(13)				DIALEDNO(12)				DIALEDNO(11)				32
CALLEDNO(3)				CALLEDNO(2)				CALLEDNO(1)				DIALEDNO(15)				33
CALLEDNO(7)				CALLEDNO(6)				CALLEDNO(5)				CALLEDNO(4)				34
CALLEDNO(11)				CALLEDNO(10)				CALLEDNO(9)				CALLEDNO(8)				35
CALLEDNO(15)				CALLEDNO(14)				CALLEDNO(13)				CALLEDNO(12)				36
OUTPULNO(4)				OUTPULNO(3)				OUTPULNO(2)				OUTPULNO(1)				37
OUTPULNO(8)				OUTPULNO(7)				OUTPULNO(6)				OUTPULNO(5)				38
OUTPULNO(12)				OUTPULNO(11)				OUTPULNO(10)				OUTPULNO(9)				39
CICORIGN		CIC–CASU	OUT–NOA	OUTPULNO(15)				OUTPULNO(14)				OUTPULNO(13)				40
CNPREDIG			PREDIG	ORIGOPRT												41
QD	TPART			OPART												42
COLLTIME								OPCHOICE								43
NUMWBCKT				LNPCHECK				ADIN(2)				ADIN(1)				44
WBCKTS(2)								WBCKTS(1)								45
WBCKTS(4)								WBCKTS(3)								46
BILLTYPE				FINSID												47
DT	ORIGGRP															48
PSTHRU	ORIGMEM															49
PRESIND	TERMGRP															50
DD	OS	TERMMEM														51
CS	TR	FINTKGRP														52
FINTKMEM																53
SCPBILL(2)								SCPBILL(1)								54
SCPBILL(4)								SCPBILL(3)								55
CRID (1)				COMPCODE				TRTMTCD								56
CRID(5)				CRID (4)				CRID(3)				CRID(2)				57
CRID(9)				CRID(8)				CRID(7)				CRID(6)				58
DNIS(4)				DNIS(3)				DNIS(2)				DNIS(1)				59
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	BIT

Figure 10-5
UCS11 CDR template (in NORMAL format) (end)

MSB															LSB	
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	WORD/BIT
DNIS(8)				DNIS(7)				DNIS(6)				DNIS(5)				60
DNIS(12)				DNIS(11)				DNIS(10)				DNIS(9)				61
ORIGPVN(1)				DNIS(15)				DNIS(14)				DNIS(13)				62
ORIGPVN(5)				ORIGPVN(4)				ORIGPVN(3)				ORIGPVN(2)				63
ORIGPVN(9)				ORIGPVN(8)				ORIGPVN(7)				ORIGPVN(6)				64
ORIGPVN(13)				ORIGPVN(12)				ORIGPVN(11)				ORIGPVN(10)				65
TERMPVN(2)				TERMPVN(1)				ORIGPVN(15)				ORIGPVN(14)				66
TERMPVN(6)				TERMPVN(5)				TERMPVN(4)				TERMPVN(3)				67
TERMPVN(10)				TERMPVN(9)				TERMPVN(8)				TERMPVN(7)				68
TERMPVN(14)				TERMPVN(13)				TERMPVN(12)				TERMPVN(11)				69
ORIGLRN(3)				ORIGLRN(2)				ORIGLRN(1)				TERMPVN(15)				70
ORIGLRN(7)				ORIGLRN(6)				ORIGLRN(5)				ORIGLRN(4)				71
PORTEDNO(1)				ORIGLRN(10)				ORIGLRN(9)				ORIGLRN(8)				72
PORTEDNO(5)				PORTEDNO(4)				PORTEDNO(3)				PORTEDNO(2)				73
PORTEDNO(9)				PORTEDNO(8)				PORTEDNO(7)				PORTEDNO(6)				74
FILL1	DNISNOA							ACG	CAINCT			PORTEDNO(10)				75
CARRSEL				FILL1	MLTCOSID											76
RTENO					FILL1	COSINDEX										77
FILL2	RTEINDEX															78
NET-SEC	CN1TREQ			CN2REQ				CN1REQ								79
CN3TREQ			CNTOTREQ				CN3REQ					CN2TREQ				80
FILL2	ECRM1						ECRN1									81
FILL2	ECRM2						ECRN2									82
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	BIT

The following abbreviations and conventions are used in Figure 10-5:

- VL stands for VARIABLE_LENGTH
- UE stands for USEEDIT
- TG stands for TOOLGENERATED
- TC stands for TIMECHNG
- OA stands for ORIGAMPM
- DA stands for DISCAMPM
- II stands for INC_INTL

- QD stands for QUEUED
- DT stands for DISCTYPE
- PSTHRU stands for PASSTHRU
- OS stands for OSRASSOC
- DD stands for DIGDATA
- TR stands for TRAP
- CS stands for COSOVE
- F1 stands for FILL1
- Shading indicates unused space

Figure 10-6
UCS12 CDR template (in READLR format)

	MSB															LSB
WORD/BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
00	RECCD(1)								RECCD(2)							
01	VL	RESERVED1			UE	TG	ACTIDX		TEMPLID							
02	SEQNUM															
03	CIC(1)				CIC(2)				CIC(3)				CIC(4)			
04	ORIGTIME															
05	ORIGDATE								ANSTYPE				TC	OA	II	
06	DISCTIME															
07	DISCDATE								ANISUFF				DA	INCBILL	F1	
08	CALLDUR(1)								CALLDUR(2)							
09	CALLDUR(3)								CALLDUR(4)							
10	PINDIG(1)				PINDIG(2)				PINDIG(3)				PINDIG(4)			
11	ANISP(1)				ANISP(2)				ANISP(3)				ANISP(4)			
12	ANISP(5)				ANISP(6)				ANISP(7)				ANISP(8)			
13	ANISP(9)				ANISP(10)				INFODIG(1)				INFODIG(2)			
14	BILLNUM(1)				BILLNUM(2)				BILLNUM(3)				BILLNUM(4)			
15	BILLNUM(5)				BILLNUM(6)				BILLNUM(7)				BILLNUM(8)			
16	BILLNUM(9)				BILLNUM(10)				BILLNUM(11)				BILLNUM(12)			
17	BILLNUM(13)				BILLNUM(14)				BILLNUM(15)				BILLNUM(16)			
18	BILLNUM(17)				BILLNUM(18)				BILLNUM(19)				BILLNUM(20)			
19	BILLNUM(21)				BILLNUM(22)				BILLNUM(23)				BILLNUM(24)			
20	ACCTCD(1)				ACCTCD(2)				ACCTCD(3)				ACCTCD(4)			
21	ACCTCD(5)				ACCTCD(6)				ACCTCD(7)				ACCTCD(8)			
22	ACCTCD(9)				ACCTCD(10)				ACCTCD(11)				ACCTCD(12)			
23	CLGPTYNO(1)				CLGPTYNO(2)				CLGPTYNO(3)				CLGPTYNO(4)			
24	CLGPTYNO(5)				CLGPTYNO(6)				CLGPTYNO(7)				CLGPTYNO(8)			
25	CLGPTYNO(9)				CLGPTYNO(10)				CLGPTYNO(11)				CLGPTYNO(12)			
26	CLGPTYNO(13)				CLGPTYNO(14)				CLGPTYNO(15)				RLTNO		ACCTV	
27	UNIVACC(1)				UNIVACC(2)				UNIVACC(3)				UNIVACC(4)			
28	UNIVACC(5)				UNIVACC(6)				UNIVACC(7)				UNIVACC(8)			
29	UNIVACC(9)				UNIVACC(10)				DIALEDNO(1)				DIALEDNO(2)			
30	DIALEDNO(3)				DIALEDNO(4)				DIALEDNO(5)				DIALEDNO(6)			
31	DIALEDNO(7)				DIALEDNO(8)				DIALEDNO(9)				DIALEDNO(10)			
BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

Figure 10-6
UCS12 CDR template (in READLR format) (continued)

	MSB															LSB
WORD/BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
32	DIALEDNO(11)				DIALEDNO(12)				DIALEDNO(13)				DIALEDNO(14)			
33	DIALEDNO(15)				CALLEDNO(1)				CALLEDNO(2)				CALLEDNO(3)			
34	CALLEDNO(4)				CALLEDNO(5)				CALLEDNO(6)				CALLEDNO(7)			
35	CALLEDNO(8)				CALLEDNO(9)				CALLEDNO(10)				CALLEDNO(11)			
36	CALLEDNO(12)				CALLEDNO(13)				CALLEDNO(14)				CALLEDNO(15)			
37	OUTPULNO(1)				OUTPULNO(2)				OUTPULNO(3)				OUTPULNO(4)			
38	OUTPULNO(5)				OUTPULNO(6)				OUTPULNO(7)				OUTPULNO(8)			
39	OUTPULNO(9)				OUTPULNO(10)				OUTPULNO(11)				OUTPULNO(12)			
40	OUTPULNO(13)				OUTPULNO(14)				OUTPULNO(15)				OUT–NOA	CAINCT		
41	ORIGOPRT										PREDIG			CNPREDIG		
42	OPART										TPART					QD
43	DNISNOA							FILL1	COLLTIME							
44	ADIN(1)				ADIN(2)				LNPCHECK			NUMWBCKT				
45	WBCKTS(1)								WBCKTS(2)							
46	WBCKTS(3)								WBCKTS(4)							
47	FINSID										BILLTYPE					
48	ORIGGRP														DT	
49	ORIGMEM														PSTHRU	
50	TERMGRP														PRESIND	
51	TERMMEM														OS	DD
52	FINTKGRP														TR	CS
53	FINTKMEM															
54	SCPBILL(1)								SCPBILL(2)							
55	SCPBILL(3)								SCPBILL(4)							
56	TRTMTCD								COMPCODE				CRID(1)			
57	CRID(2)				CRID(3)				CRID(4)				CRID(5)			
58	CRID(6)				CRID(7)				CRID(8)				CRID(9)			
59	DNIS(1)				DNIS(2)				DNIS(3)				DNIS(4)			
BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

Figure 10-6
UCS12 CDR template (in READLR format) (end)

	MSB															LSB
WORD/BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
60	DNIS(5)				DNIS(6)				DNIS(7)				DNIS(8)			
61	DNIS(9)				DNIS(10)				DNIS(11)				DNIS(12)			
62	DNIS(13)				DNIS(14)				DNIS(15)				ORIGPVN(1)			
63	ORIGPVN(2)				ORIGPVN(3)				ORIGPVN(4)				ORIGPVN(5)			
64	ORIGPVN(6)				ORIGPVN(7)				ORIGPVN(8)				ORIGPVN(9)			
65	ORIGPVN(10)				ORIGPVN(11)				ORIGPVN(12)				ORIGPVN(13)			
66	ORIGPVN(14)				ORIGPVN(15)				TERMPVN(1)				TERMPVN(2)			
67	TERMPVN(3)				TERMPVN(4)				TERMPVN(5)				TERMPVN(6)			
68	TERMPVN(7)				TERMPVN(8)				TERMPVN(9)				TERMPVN(10)			
69	TERMPVN(11)				TERMPVN(12)				TERMPVN(13)				TERMPVN(14)			
70	TERMPVN(15)				ORIGLRN(1)				ORIGLRN(2)				ORIGLRN(3)			
71	ORIGLRN(4)				ORIGLRN(5)				ORIGLRN(6)				ORIGLRN(7)			
72	ORIGLRN(8)				ORIGLRN(9)				ORIGLRN(10)				PORTEDNO(1)			
73	PORTEDNO(2)				PORTEDNO(3)				PORTEDNO(4)				PORTEDNO(5)			
74	PORTEDNO(6)				PORTEDNO(7)				PORTEDNO(8)				PORTEDNO(9)			
75	PORTEDNO(10)				CICORIGN				EXOPCH							
76	MLTCOSID											ACG	CARRSEL			
77	COSINDEX										CIC	RTENO				
78	RTEINDEX														FILL2	
79	CN1REQ							CN2REQ					CN1TREQ			NET-SEC
80	CN2TREQ				CN3REQ					CNTOTREQ				CN3TREQ		
81	ECRN1									ECRM1					FILL2	
82	ECRN2									ECRM2					FILL2	
BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

The following abbreviations and conventions are used in Figure 10-6:

- VL stands for VARIABLE_LENGTH
- UE stands for USEEDIT
- TG stands for TOOLGENERATED
- TC stands for TIMECHNG
- OA stands for ORIGAMPM
- DA stands for DISCAMPM
- II stands for INC_INTL

- QD stands for QUEUED
- DT stands for DISCTYPE
- PSTHRU stands for PASSTHRU
- OS stands for OSRASSOC
- DD stands for DIGDATA
- TR stands for TRAP
- CS stands for COSOVE
- CIC stands for CICCASU
- Shading indicates unused space

Figure 10-7
UCS12 CDR template (in NORMAL format)

MSB															LSB	
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	WORD/BIT
RECCD(1)								RECCD(2)								00
VL	RESERVED1			UE	TG	ACTIDX				TEMPLID						01
SEQNUM																02
CIC(4)				CIC(3)				CIC(2)				CIC(1)				03
ORIGTIME																04
II	OA	TC	ANSTYPE					ORIGDATE								05
DISCTIME																06
FILL1	INCBILL		DA	ANISUFF				DISCDATE								07
CALLDUR(2)								CALLDUR(1)								08
CALLDUR(4)								CALLDUR(3)								09
PINDIG(4)				PINDIG(3)				PINDIG(2)				PINDIG(1)				10
ANISP(4)				ANISP(3)				ANISP(2)				ANISP(1)				11
ANISP(8)				ANISP(7)				ANISP(6)				ANISP(5)				12
INFODIG(2)				INFODIG(1)				ANISP(10)				ANISP(9)				13
BILLNUM(4)				BILLNUM(3)				BILLNUM(2)				BILLNUM(1)				14
BILLNUM(8)				BILLNUM(7)				BILLNUM(6)				BILLNUM(5)				15
BILLNUM(12)				BILLNUM(11)				BILLNUM(10)				BILLNUM(9)				16
BILLNUM(16)				BILLNUM(15)				BILLNUM(14)				BILLNUM(13)				17
BILLNUM(20)				BILLNUM(19)				BILLNUM(18)				BILLNUM(17)				18
BILLNUM(24)				BILLNUM(23)				BILLNUM(22)				BILLNUM(21)				19
ACCTCD(4)				ACCTCD(3)				ACCTCD(2)				ACCTCD(1)				20
ACCTCD(8)				ACCTCD(7)				ACCTCD(6)				ACCTCD(5)				21
ACCTCD(12)				ACCTCD(11)				ACCTCD(10)				ACCTCD(9)				22
CLGPTYNO(4)				CLGPTYNO(3)				CLGPTYNO(2)				CLGPTYNO(1)				23
CLGPTYNO(8)				CLGPTYNO(7)				CLGPTYNO(6)				CLGPTYNO(5)				24
CLGPTYNO(12)				CLGPTYNO(11)				CLGPTYNO(10)				CLGPTYNO(9)				25
ACCTV	RLTNO			CLGPTYNO(15)				CLGPTYNO(14)				CLGPTYNO(13)				26
UNIVACC(4)				UNIVACC(3)				UNIVACC(2)				UNIVACC(1)				27
UNIVACC(8)				UNIVACC(7)				UNIVACC(6)				UNIVACC(5)				28
DIALEDNO(2)				DIALEDNO(1)				UNIVACC(10)				UNIVACC(9)				29
DIALEDNO(6)				DIALEDNO(5)				DIALEDNO(4)				DIALEDNO(3)				30
DIALEDNO(10)				DIALEDNO(9)				DIALEDNO(8)				DIALEDNO(7)				31
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	BIT

Figure 10-7
UCS12 CDR template (in NORMAL format) (continued)

MSB															LSB	
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	WORD/BIT
DIALEDNO(14)				DIALEDNO(13)				DIALEDNO(12)				DIALEDNO(11)				32
CALLEDNO(3)				CALLEDNO(2)				CALLEDNO(1)				DIALEDNO(15)				33
CALLEDNO(7)				CALLEDNO(6)				CALLEDNO(5)				CALLEDNO(4)				34
CALLEDNO(11)				CALLEDNO(10)				CALLEDNO(9)				CALLEDNO(8)				35
CALLEDNO(15)				CALLEDNO(14)				CALLEDNO(13)				CALLEDNO(12)				36
OUTPULNO(4)				OUTPULNO(3)				OUTPULNO(2)				OUTPULNO(1)				37
OUTPULNO(8)				OUTPULNO(7)				OUTPULNO(6)				OUTPULNO(5)				38
OUTPULNO(12)				OUTPULNO(11)				OUTPULNO(10)				OUTPULNO(9)				39
CAINCT			OUT–NOA	OUTPULNO(15)				OUTPULNO(14)				OUTPULNO(13)				40
CNPREDIG			PREDIG	ORIGOPRT												41
QD	TPART			OPART												42
COLLTIME								FILL1	DNISNOA							43
NUMWBCKT				LNPCHECK				ADIN(2)				ADIN(1)				44
WBCKTS(2)								WBCKTS(1)								45
WBCKTS(4)								WBCKTS(3)								46
BILLTYPE				FINSID												47
DT	ORIGGRP															48
PSTHRU	ORIGMEM															49
PRESIND	TERMGRP															50
DD	OS	TERMMEM														51
CS	TR	FINTKGRP														52
FINTKMEM																53
SCPBILL(2)								SCPBILL(1)								54
SCPBILL(4)								SCPBILL(3)								55
CRID (1)				COMPCODE				TRTMTCD								56
CRID(5)				CRID (4)				CRID(3)				CRID(2)				57
CRID(9)				CRID(8)				CRID(7)				CRID(6)				58
DNIS(4)				DNIS(3)				DNIS(2)				DNIS(1)				59
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	BIT

Figure 10-7
UCS12 CDR template (in NORMAL format) (end)

MSB															LSB	
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	WORD/BIT
DNIS(8)				DNIS(7)				DNIS(6)				DNIS(5)				60
DNIS(12)				DNIS(11)				DNIS(10)				DNIS(9)				61
ORIGPVN(1)				DNIS(15)				DNIS(14)				DNIS(13)				62
ORIGPVN(5)				ORIGPVN(4)				ORIGPVN(3)				ORIGPVN(2)				63
ORIGPVN(9)				ORIGPVN(8)				ORIGPVN(7)				ORIGPVN(6)				64
ORIGPVN(13)				ORIGPVN(12)				ORIGPVN(11)				ORIGPVN(10)				65
TERMPVN(2)				TERMPVN(1)				ORIGPVN(15)				ORIGPVN(14)				66
TERMPVN(6)				TERMPVN(5)				TERMPVN(4)				TERMPVN(3)				67
TERMPVN(10)				TERMPVN(9)				TERMPVN(8)				TERMPVN(7)				68
TERMPVN(14)				TERMPVN(13)				TERMPVN(12)				TERMPVN(11)				69
ORIGLRN(3)				ORIGLRN(2)				ORIGLRN(1)				TERMPVN(15)				70
ORIGLRN(7)				ORIGLRN(6)				ORIGLRN(5)				ORIGLRN(4)				71
PORTEDNO(1)				ORIGLRN(10)				ORIGLRN(9)				ORIGLRN(8)				72
PORTEDNO(5)				PORTEDNO(4)				PORTEDNO(3)				PORTEDNO(2)				73
PORTEDNO(9)				PORTEDNO(8)				PORTEDNO(7)				PORTEDNO(6)				74
EXOPCH											CICORIGN	PORTEDNO(10)				75
CARRSEL				ACG	MLTCOSID											76
RTENO						CIC	COSINDEX									77
FILL2	RTEINDEX															78
NET-SEC	CN1TREQ			CN2REQ						CN1REQ						79
CN3TREQ			CNTOTREQ				CN3REQ						CN2TREQ			80
FILL2	ECRM1						ECRN1									81
FILL2	ECRM2						ECRN2									82
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	BIT

The following abbreviations and conventions are used in Figure 10-7:

- VL stands for VARIABLE_LENGTH
- UE stands for USEEDIT
- TG stands for TOOLGENERATED
- TC stands for TIMECHNG
- OA stands for ORIGAMPM
- DA stands for DISCAMPM
- II stands for INC_INTL

- QD stands for QUEUED
- DT stands for DISCTYPE
- PSTHRU stands for PASSTHRU
- OS stands for OSRASSOC
- DD stands for DIGDATA
- TR stands for TRAP
- CS stands for COSOVE
- CIC stands for CICCASU
- Shading indicates unused space

Figure 10-8
UCS13 CDR template (in READLR format)

	MSB															LSB
WORD/BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
00	RECCD(1)								RECCD(2)							
01	VL	RESERVED1			UE	TG	ACTIDX		TEMPLID							
02	SEQNUM															
03	CIC(1)				CIC(2)				CIC(3)				CIC(4)			
04	ORIGTIME															
05	ORIGDATE								ANSTYPE				TC	OA	II	
06	DISCTIME															
07	DISCDATE								ANISUFF				DA	INCBILL	Fill1	
08	CALLDUR(1)								CALLDUR(2)							
09	CALLDUR(3)								CALLDUR(4)							
10	PINDIG(1)				PINDIG(2)				PINDIG(3)				PINDIG(4)			
11	ANISP(1)				ANISP(2)				ANISP(3)				ANISP(4)			
12	ANISP(5)				ANISP(6)				ANISP(7)				ANISP(8)			
13	ANISP(9)				ANISP(10)				INFODIG(1)				INFODIG(2)			
14	BILLNUM(1)				BILLNUM(2)				BILLNUM(3)				BILLNUM(4)			
15	BILLNUM(5)				BILLNUM(6)				BILLNUM(7)				BILLNUM(8)			
16	BILLNUM(9)				BILLNUM(10)				BILLNUM(11)				BILLNUM(12)			
17	BILLNUM(13)				BILLNUM(14)				BILLNUM(15)				BILLNUM(16)			
18	BILLNUM(17)				BILLNUM(18)				BILLNUM(19)				BILLNUM(20)			
19	BILLNUM(21)				BILLNUM(22)				BILLNUM(23)				BILLNUM(24)			
20	ACCTCD(1)				ACCTCD(2)				ACCTCD(3)				ACCTCD(4)			
21	ACCTCD(5)				ACCTCD(6)				ACCTCD(7)				ACCTCD(8)			
22	ACCTCD(9)				ACCTCD(10)				ACCTCD(11)				ACCTCD(12)			
23	CLGPTYNO(1)				CLGPTYNO(2)				CLGPTYNO(3)				CLGPTYNO(4)			
24	CLGPTYNO(5)				CLGPTYNO(6)				CLGPTYNO(7)				CLGPTYNO(8)			
25	CLGPTYNO(9)				CLGPTYNO(10)				CLGPTYNO(11)				CLGPTYNO(12)			
26	CLGPTYNO(13)				CLGPTYNO(14)				CLGPTYNO(15)				RLTNO		ACCTV	
27	UNIVACC(1)				UNIVACC(2)				UNIVACC(3)				UNIVACC(4)			
28	UNIVACC(5)				UNIVACC(6)				UNIVACC(7)				UNIVACC(8)			
29	UNIVACC(9)				UNIVACC(10)				DIALEDNO(1)				DIALEDNO(2)			
30	DIALEDNO(3)				DIALEDNO(4)				DIALEDNO(5)				DIALEDNO(6)			
31	DIALEDNO(7)				DIALEDNO(8)				DIALEDNO(9)				DIALEDNO(10)			
BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

Figure 10-8
UCS13 CDR template (in READLR format) (continued)

	MSB															LSB
WORD/BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
32	DIALEDNO(11)				DIALEDNO(12)				DIALEDNO(13)				DIALEDNO(14)			
33	DIALEDNO(15)				CALLEDNO(1)				CALLEDNO(2)				CALLEDNO(3)			
34	CALLEDNO(4)				CALLEDNO(5)				CALLEDNO(6)				CALLEDNO(7)			
35	CALLEDNO(8)				CALLEDNO(9)				CALLEDNO(10)				CALLEDNO(11)			
36	CALLEDNO(12)				CALLEDNO(13)				CALLEDNO(14)				CALLEDNO(15)			
37	OUTPULNO(1)				OUTPULNO(2)				OUTPULNO(3)				OUTPULNO(4)			
38	OUTPULNO(5)				OUTPULNO(6)				OUTPULNO(7)				OUTPULNO(8)			
39	OUTPULNO(9)				OUTPULNO(10)				OUTPULNO(11)				OUTPULNO(12)			
40	OUTPULNO(13)				OUTPULNO(14)				OUTPULNO(15)				OUT–NOA	CAINCT		
41	ORIGOPRT										PREDIG			CNPREDIG		
42	OPART										TPART					QD
43	DNISNOA							Fill 1	COLLTIME							
44	ADIN(1)				ADIN(2)				LNPCHECK			NUMWBCKT				
45	WBCKTS(1)								WBCKTS(2)							
46	WBCKTS(3)								WBCKTS(4)							
47	FINSID										BILLTYPE					
48	ORIGGRP														DT	
49	ORIGMEM														PSTHRU	
50	TERMGRP														PRESIND	
51	TERMMEM														OS	DD
52	FINTKGRP														TR	CS
53	FINTKMEM															
54	SCPBILL(1)								SCPBILL(2)							
55	SCPBILL(3)								SCPBILL(4)							
56	TRTMTCD								COMPCODE				CRID(1)			
57	CRID(2)				CRID(3)				CRID(4)				CRID(5)			
58	CRID(6)				CRID(7)				CRID(8)				CRID(9)			
59	DNIS(1)				DNIS(2)				DNIS(3)				DNIS(4)			
BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

Figure 10-8
UCS13 CDR template (in READLR format) (end)

	MSB															LSB
WORD/BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
60	DNIS(5)				DNIS(6)				DNIS(7)				DNIS(8)			
61	DNIS(9)				DNIS(10)				DNIS(11)				DNIS(12)			
62	DNIS(13)				DNIS(14)				DNIS(15)				ORIGPVN(1)			
63	ORIGPVN(2)				ORIGPVN(3)				ORIGPVN(4)				ORIGPVN(5)			
64	ORIGPVN(6)				ORIGPVN(7)				ORIGPVN(8)				ORIGPVN(9)			
65	ORIGPVN(10)				ORIGPVN(11)				ORIGPVN(12)				ORIGPVN(13)			
66	ORIGPVN(14)				ORIGPVN(15)				TERMPVN(1)				TERMPVN(2)			
67	TERMPVN(3)				TERMPVN(4)				TERMPVN(5)				TERMPVN(6)			
68	TERMPVN(7)				TERMPVN(8)				TERMPVN(9)				TERMPVN(10)			
69	TERMPVN(11)				TERMPVN(12)				TERMPVN(13)				TERMPVN(14)			
70	TERMPVN(15)				ORIGLRN(1)				ORIGLRN(2)				ORIGLRN(3)			
71	ORIGLRN(4)				ORIGLRN(5)				ORIGLRN(6)				ORIGLRN(7)			
72	ORIGLRN(8)				ORIGLRN(9)				ORIGLRN(10)				PORTEDNO(1)			
73	PORTEDNO(2)				PORTEDNO(3)				PORTEDNO(4)				PORTEDNO(5)			
74	PORTEDNO(6)				PORTEDNO(7)				PORTEDNO(8)				PORTEDNO(9)			
75	PORTEDNO(10)				CICORIGN			EXOPCH								
76	MLTCOSID											ACG	CARRSEL			
77	COSINDEX										CIC	RTENO				
78	RTEINDEX														FILL2	
79	CN1REQ							CN2REQ					CN1TREQ			NET-SEC
80	CN2TREQ			CN3REQ						CNTOTREQ				CN3TREQ		
81	ECRN1									ECRM1					FILL2	
82	ECRN2									ECRM2					FILL2	
BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

The following abbreviations and conventions are used in Figure 10-8:

- VL stands for VARIABLE_LENGTH
- UE stands for USEEDIT
- TG stands for TOOLGENERATED
- TC stands for TIMECHNG
- OA stands for ORIGAMPM
- DA stands for DISCAMPM
- II stands for INC_INTL

- QD stands for QUEUED
- DT stands for DISCTYPE
- PSTHRU stands for PASSTHRU
- OS stands for OSRASSOC
- DD stands for DIGDATA
- TR stands for TRAP
- CS stands for COSOVE
- CIC stands for CICCASU
- Shading indicates unused space

Figure 10-9
UCS13 CDR template (in NORMAL format)

MSB															LSB	
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	WORD/BIT
RECCD(1)								RECCD(2)								00
VL	RESERVED1			UE	TG	ACTIDX				TEMPLID						01
SEQNUM																02
CIC(4)				CIC(3)				CIC(2)				CIC(1)				03
ORIGTIME																04
II	OA	TC	ANSTYPE					ORIGDATE								05
DISCTIME																06
FILL1	INCBILL		DA	ANISUFF				DISCDATE								07
CALLDUR(2)								CALLDUR(1)								08
CALLDUR(4)								CALLDUR(3)								09
PINDIG(4)				PINDIG(3)				PINDIG(2)				PINDIG(1)				10
ANISP(4)				ANISP(3)				ANISP(2)				ANISP(1)				11
ANISP(8)				ANISP(7)				ANISP(6)				ANISP(5)				12
INFODIG(2)				INFODIG(1)				ANISP(10)				ANISP(9)				13
BILLNUM(4)				BILLNUM(3)				BILLNUM(2)				BILLNUM(1)				14
BILLNUM(8)				BILLNUM(7)				BILLNUM(6)				BILLNUM(5)				15
BILLNUM(12)				BILLNUM(11)				BILLNUM(10)				BILLNUM(9)				16
BILLNUM(16)				BILLNUM(15)				BILLNUM(14)				BILLNUM(13)				17
BILLNUM(20)				BILLNUM(19)				BILLNUM(18)				BILLNUM(17)				18
BILLNUM(24)				BILLNUM(23)				BILLNUM(22)				BILLNUM(21)				19
ACCTCD(4)				ACCTCD(3)				ACCTCD(2)				ACCTCD(1)				20
ACCTCD(8)				ACCTCD(7)				ACCTCD(6)				ACCTCD(5)				21
ACCTCD(12)				ACCTCD(11)				ACCTCD(10)				ACCTCD(9)				22
CLGPTYNO(4)				CLGPTYNO(3)				CLGPTYNO(2)				CLGPTYNO(1)				23
CLGPTYNO(8)				CLGPTYNO(7)				CLGPTYNO(6)				CLGPTYNO(5)				24
CLGPTYNO(12)				CLGPTYNO(11)				CLGPTYNO(10)				CLGPTYNO(9)				25
ACCTV	RLTNO			CLGPTYNO(15)				CLGPTYNO(14)				CLGPTYNO(13)				26
UNIVACC(4)				UNIVACC(3)				UNIVACC(2)				UNIVACC(1)				27
UNIVACC(8)				UNIVACC(7)				UNIVACC(6)				UNIVACC(5)				28
DIALEDNO(2)				DIALEDNO(1)				UNIVACC(10)				UNIVACC(9)				29
DIALEDNO(6)				DIALEDNO(5)				DIALEDNO(4)				DIALEDNO(3)				30
DIALEDNO(10)				DIALEDNO(9)				DIALEDNO(8)				DIALEDNO(7)				31
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	BIT

Figure 10-9
UCS13 CDR template (in NORMAL format) (continued)

MSB															LSB	
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	WORD/BIT
DIALEDNO(14)				DIALEDNO(13)				DIALEDNO(12)				DIALEDNO(11)				32
CALLEDNO(3)				CALLEDNO(2)				CALLEDNO(1)				DIALEDNO(15)				33
CALLEDNO(7)				CALLEDNO(6)				CALLEDNO(5)				CALLEDNO(4)				34
CALLEDNO(11)				CALLEDNO(10)				CALLEDNO(9)				CALLEDNO(8)				35
CALLEDNO(15)				CALLEDNO(14)				CALLEDNO(13)				CALLEDNO(12)				36
OUTPULNO(4)				OUTPULNO(3)				OUTPULNO(2)				OUTPULNO(1)				37
OUTPULNO(8)				OUTPULNO(7)				OUTPULNO(6)				OUTPULNO(5)				38
OUTPULNO(12)				OUTPULNO(11)				OUTPULNO(10)				OUTPULNO(9)				39
CAINCT			OUT–NOA	OUTPULNO(15)				OUTPULNO(14)				OUTPULNO(13)				40
CNPREDIG			PREDIG	ORIGOPRT												41
QD	TPART			OPART												42
COLLTIME								Fill 1	DNISNOA							43
NUMWBCKT				LNPCHECK				ADIN(2)				ADIN(1)				44
WBCKTS(2)								WBCKTS(1)								45
WBCKTS(4)								WBCKTS(3)								46
BILLTYPE				FINSID												47
DT	ORIGGRP															48
PSTHRU	ORIGMEM															49
PRESIND	TERMGRP															50
DD	OS	TERMMEM														51
CS	TR	FINTKGRP														52
FINTKMEM																53
SCPBILL(2)								SCPBILL(1)								54
SCPBILL(4)								SCPBILL(3)								55
CRID (1)				COMPCODE				TRTMTCD								56
CRID(5)				CRID (4)				CRID(3)				CRID(2)				57
CRID(9)				CRID(8)				CRID(7)				CRID(6)				58
DNIS(4)				DNIS(3)				DNIS(2)				DNIS(1)				59
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	BIT

Figure 10-9
UCS13 CDR template (in NORMAL format) (end)

MSB															LSB	
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	WORD/BIT
DNIS(8)				DNIS(7)				DNIS(6)				DNIS(5)				60
DNIS(12)				DNIS(11)				DNIS(10)				DNIS(9)				61
ORIGPVN(1)				DNIS(15)				DNIS(14)				DNIS(13)				62
ORIGPVN(5)				ORIGPVN(4)				ORIGPVN(3)				ORIGPVN(2)				63
ORIGPVN(9)				ORIGPVN(8)				ORIGPVN(7)				ORIGPVN(6)				64
ORIGPVN(13)				ORIGPVN(12)				ORIGPVN(11)				ORIGPVN(10)				65
TERMPVN(2)				TERMPVN(1)				ORIGPVN(15)				ORIGPVN(14)				66
TERMPVN(6)				TERMPVN(5)				TERMPVN(4)				TERMPVN(3)				67
TERMPVN(10)				TERMPVN(9)				TERMPVN(8)				TERMPVN(7)				68
TERMPVN(14)				TERMPVN(13)				TERMPVN(12)				TERMPVN(11)				69
ORIGLRN(3)				ORIGLRN(2)				ORIGLRN(1)				TERMPVN(15)				70
ORIGLRN(7)				ORIGLRN(6)				ORIGLRN(5)				ORIGLRN(4)				71
PORTEDNO(1)				ORIGLRN(10)				ORIGLRN(9)				ORIGLRN(8)				72
PORTEDNO(5)				PORTEDNO(4)				PORTEDNO(3)				PORTEDNO(2)				73
PORTEDNO(9)				PORTEDNO(8)				PORTEDNO(7)				PORTEDNO(6)				74
EXOPCH											CICORIGN	PORTEDNO(10)				75
CARRSEL				ACG	MLTCOSID											76
RTENO						CIC	COSINDEX									77
FILL2	RTEINDEX															78
NET-SEC	CN1TREQ			CN2REQ						CN1REQ						79
CN3TREQ			CNTOTREQ				CN3REQ						CN2TREQ			80
FILL2	ECRM1						ECRN1									81
FILL2	ECRM2						ECRN2									82
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	BIT

The following abbreviations and conventions are used in Figure 10-9:

- VL stands for VARIABLE_LENGTH
- UE stands for USEEDIT
- TG stands for TOOLGENERATED
- TC stands for TIMECHNG
- OA stands for ORIGAMPM
- DA stands for DISCAMPM
- II stands for INC_INTL

- QD stands for QUEUED
- DT stands for DISCTYPE
- PSTHRU stands for PASSTHRU
- OS stands for OSRASSOC
- DD stands for DIGDATA
- TR stands for TRAP
- CS stands for COSOVE
- CIC stands for CICCASU
- Shading indicates unused space

Figure 10-10
CDR2AMA2 (UCS14) CDR template (In Normal formal) (continued)

MSB															LSB	
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	WORD/BIT
RECCD(1)								RECCD(2)								00
VL	RESERVED1			UE	TG	ACTIDX			TEMPLID							01
SEQNUM																02
CIC(4)				CIC(3)				CIC(2)				CIC(1)				03
ORIGTIME																04
OA	INCBILL			ANSTYPE				ORIGDATE								05
DISCTIME																06
QRYSTIND								DISCDATE								07
CALLDUR(1)								CALLDUR(0)								08
CALLDUR(3)								CALLDUR(2)								09
CLGPTYNO(3)				CLGPTYNO(2)				CLGPTYNO(1)				CLGPTYNO(0)				10
CLGPTYNO(7)				CLGPTYNO(6)				CLGPTYNO(5)				CLGPTYNO(4)				11
CLGPTYNO(11)				CLGPTYNO(10)				CLGPTYNO(9)				CLGPTYNO(8)				12
DIALEDNO(0)				CLGPTYNO(14)				CLGPTYNO(13)				CLGPTYNO(12)				13
DIALEDNO(4)				DIALEDNO(3)				DIALEDNO(2)				DIALEDNO(1)				14
DIALEDNO(8)				DIALEDNO(7)				DIALEDNO(6)				DIALEDNO(5)				15
DIALEDNO(12)				DIALEDNO(11)				DIALEDNO(10)				DIALEDNO(9)				16
CALLEDNO(1)				CALLEDNO(0)				DIALEDNO(14)				DIALEDNO(13)				17
CALLEDNO(5)				CALLEDNO(4)				CALLEDNO(3)				CALLEDNO(2)				18
CALLEDNO(9)				CALLEDNO(8)				CALLEDNO(7)				CALLEDNO(6)				19
CALLEDNO(13)				CALLEDNO(12)				CALLEDNO(11)				CALLEDNO(10)				20
TERMLRN(2)				TERMLRN(1)				TERMLRN(0)				CALLEDNO(14)				21
TERMLRN(6)				TERMLRN(5)				TERMLRN(4)				TERMLRN(3)				22
SLPID(0)				TERMLRN(9)				TERMLRN(8)				TERMLRN(7)				23
SLPID(4)				SLPID(3)				SLPID(2)				SLPID(1)				24
SLPID(8)				SLPID(7)				SLPID(6)				SLPID(5)				25
ORIGLRN(3)				ORIGLRN(2)				ORIGLRN(1)				ORIGLRN(0)				26
ORIGLRN(7)				ORIGLRN(6)				ORIGLRN(5)				ORIGLRN(4)				27
LRNSRC2				LRNSRC1				ORIGLRN(9)				ORIGLRN(8)				28
DISCYEAR				DISC10TH				ORIGYEAR				ORIG10TH				29
DA	TC	AMASC														30
TMGD		DLPRESUB				AMACALLT										31
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	BIT

Figure 10-10
CDR2AMA2 (UCS14) CDR template (in NORMAL format) (end)

MSB															LSB	
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	WORD/BIT
ANISP(0)				ANICPN		SVCFTR										32
ANISP(4)				ANISP(3)				ANISP(2)				ANISP(1)				33
ANISP(8)				ANISP(7)				ANISP(6)				ANISP(5)				34
TP		AMACALLC										ANISP(9)				35
ROUTIND				LNPCHECK		LATA										36
OP		TRKGRP														37
FILL2		COMPCODE2										CALLEVTS				38
ALTBILL(0)				EXOSEAS				OPERINV				TRMOSEAS				39
ALTBILL(4)				ALTBILL(3)				ALTBILL(2)				ALTBILL(1)				40
ALTBILL(8)				ALTBILL(7)				ALTBILL(6)				ALTBILL(5)				41
DIGIDTRN(1)				DIGIDTRN(0)				ALTBILL(10)				ALTBILL(9)				42
DIGIDTRN(5)				DIGIDTRN(4)				DIGIDTRN(3)				DIGIDTRN(2)				43
DIGIDTRN(9)				DIGIDTRN(8)				DIGIDTRN(7)				DIGIDTRN(6)				44
MODMAP																45
DIGIDJIP(3)				DIGIDJIP(2)				DIGIDJIP(1)				DIGIDJIP(0)				46
DIGIDJIP(7)				DIGIDJIP(6)				DIGIDJIP(5)				DIGIDJIP(4)				47
DIGIDNPA(1)				DIGIDNPA(0)				DIGIDJIP(9)				DIGIDJIP(8)				48
FILL2		OACES10										DIGIIDNPA(2)				49
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	BIT

Figure 10-10 uses the following abbreviations and conventions:

- DA stands for DISCAMPM
- HX stands for HEXID
- OA stands for ORIGAMPM
- OP stands for ORIGPLAN
- TC stands for TIMECHNG
- TG stands for TOOLGENERATED
- TMGD stands for TIMEGARD
- TP stands for TERMPLAN
- UE stands for USEEDIT
- VL stands for VARIABLE_LENGTH

Figure 10-11
CDR2AMA3 (UCS14) CDR template (in NORMAL format) continued

MSB															LSB	
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	WORD/BIT
RECCD(1)								RECCD(2)								00
VL	RESERVED1			UE	TG	ACTIDX			TEMPLID							01
SEQNUM																02
CIC(4)				CIC(3)				CIC(2)				CIC(1)				03
ORIGTIME																04
OA	INCBILL			ANSTYPE				ORIGDATE								05
DISCTIME																06
QRYSTIND								DISCDATE								07
CALLDUR(1)								CALLDUR(0)								08
CALLDUR(3)								CALLDUR(2)								09
CLGPTYNO(3)				CLGPTYNO(2)				CLGPTYNO(1)				CLGPTYNO(0)				10
CLGPTYNO(7)				CLGPTYNO(6)				CLGPTYNO(5)				CLGPTYNO(4)				11
CLGPTYNO(11)				CLGPTYNO(10)				CLGPTYNO(9)				CLGPTYNO(8)				12
DIALEDNO(0)				CLGPTYNO(14)				CLGPTYNO(13)				CLGPTYNO(12)				13
DIALEDNO(4)				DIALEDNO(3)				DIALEDNO(2)				DIALEDNO(1)				14
DIALEDNO(8)				DIALEDNO(7)				DIALEDNO(6)				DIALEDNO(5)				15
DIALEDNO(12)				DIALEDNO(11)				DIALEDNO(10)				DIALEDNO(9)				16
CALLEDNO(1)				CALLEDNO(0)				DIALEDNO(14)				DIALEDNO(13)				17
CALLEDNO(5)				CALLEDNO(4)				CALLEDNO(3)				CALLEDNO(2)				18
CALLEDNO(9)				CALLEDNO(8)				CALLEDNO(7)				CALLEDNO(6)				19
CALLEDNO(13)				CALLEDNO(12)				CALLEDNO(11)				CALLEDNO(10)				20
TERMLRN(2)				TERMLRN(1)				TERMLRN(0)				CALLEDNO(14)				21
TERMLRN(6)				TERMLRN(5)				TERMLRN(4)				TERMLRN(3)				22
SLPID(0)				TERMLRN(9)				TERMLRN(8)				TERMLRN(7)				23
SLPID(4)				SLPID(3)				SLPID(2)				SLPID(1)				24
SLPID(8)				SLPID(7)				SLPID(6)				SLPID(5)				25
ORIGLRN(3)				ORIGLRN(2)				ORIGLRN(1)				ORIGLRN(0)				26
ORIGLRN(7)				ORIGLRN(6)				ORIGLRN(5)				ORIGLRN(4)				27
LRNSRC2				LRNSRC1				ORIGLRN(9)				ORIGLRN(8)				28
DISCYEAR				DISC10TH				ORIGYEAR				ORIG10TH				29
DA	TC	AMASC														30
TMGD		DLPRESUB				AMACALLT										31
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	BIT

Figure 10-11
CDR2AMA3 (UCS14) CDR template (in NORMAL format) (end)

MSB															LSB	
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	WORD/BIT
ANISP(0)				ANICPN		SVCFTR										32
ANISP(4)				ANISP(3)				ANISP(2)				ANISP(1)				33
ANISP(8)				ANISP(7)				ANISP(6)				ANISP(5)				34
TP		AMACALLC										ANISP(9)				35
ROUTIND			LNPCHECK			LATA										36
OP		TRKGRP														37
FILL2		COMPCODE2										CALLEVTS				38
ALTBILL(0)				EXOSEAS				OPERINV				TRMOSEAS				39
ALTBILL(4)				ALTBILL(3)				ALTBILL(2)				ALTBILL(1)				40
ALTBILL(8)				ALTBILL(7)				ALTBILL(6)				ALTBILL(5)				41
DIGIDTRN(1)				DIGIDTRN(0)				ALTBILL(10)				ALTBILL(9)				42
DIGIDTRN(5)				DIGIDTRN(4)				DIGIDTRN(3)				DIGIDTRN(2)				43
DIGIDTRN(9)				DIGIDTRN(8)				DIGIDTRN(7)				DIGIDTRN(6)				44
DIGIDJIP(3)				DIGIDJIP(2)				DIGIDJIP(1)				DIGIDJIP(0)				45
DIGIDJIP(7)				DIGIDJIP(6)				DIGIDJIP(5)				DIGIDJIP(4)				46
DIGIDNPA(1)				DIGIDNPA(0)				DIGIDJIP(9)				DIGIDJIP(8)				47
FILLER		OACES10										DIGIDNPA(3)				48
MODMAP																49
FILLER								HEXID	AMASIZE							50
AMABFMD(3)				AMABFMD(2)				AMABFMD(1)				AMABFMD(0)				51
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	BIT

Figure 10-11 uses the following abbreviations and conventions:

- DA stands for DISCAMPM
- HX stands for HEXID
- OA stands for ORIGAMPM
- OP stands for ORIGPLAN
- TC stands for TIMECHNG
- TG stands for TOOLGENERATED
- TMGD stands for TIMEGARD
- TP stands for TERMPLAN
- UE stands for USEEDIT

- VL stands for VARIABLE_LENGTH

Appendix C
Working template

Use Figure 11-1 to design new call detail record templates.

Figure 11-1
Working template

	MSB															LSB
WORD/BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
00	RECCD(1)								RECCD(2)							
01	VL	FILL3			UE	TG	ACTIDX		TEMPLID							
02																
03																
04																
05																
06																
07																
08																
09																
10																
11																
12																
13																
14																
15																
16																
17																
18																
19																
20																
21																
22																
23																
24																
25																
26																
27																
28																
29																
30																
31																
BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

Figure 11-1
Working template (continued)

	MSB															LSB
WORD/BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
32																
33																
34																
35																
36																
37																
38																
39																
40																
41																
42																
43																
44																
45																
46																
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50																
51																
52																
53																
54																
55																
56																
57																
58																
59																
60																
61																
62																
63																
BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

Figure 11-1
Working template (continued)

	MSB															LSB
WORD/BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
64																
65																
66																
67																
68																
69																
70																
71																
72																
73																
74																
75																
76																
77																
78																
79																
80																
81																
82																
83																
84																
85																
86																
87																
88																
89																
90																
91																
92																
93																
94																
95																
BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

Figure 11-1
Working template (end)

	MSB															LSB
WORD/BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
96																
97																
98																
99																
100																
101																
102																
103																
104																
105																
106																
107																
108																
109																
110																
111																
112																
113																
114																
115																
116																
117																
118																
119																
120																
121																
122																
123																
124																
125																
126																
127																
BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

Appendix D
OSR field descriptions

Table 12-1 contains field numbers, names, bits per field, bit offset of each field, and definitions of field name acronyms. Table 12-2 describes the purpose and meaning of each OSR field.

Table 12-1
OSR format

No.	Field name	Bits	Offset	Field Contents
1	RECCODE	16	0	Record code
2	ENTCODE	8	16	Entry code
3	INFODIGS	8	24	Information digits
4	SERVFEAT	8	32	Service feature code
5	CALLNGNO	40	40	Calling number
6	CALLEDNO	60	80	Called number
7	EVENTDIG	4	140	Event information digits
8	STARTTME	36	144	Start time
9	OPERNUMB	12	180	Operator number
10	ELPSDTME	24	192	Elapsed time
11	CNOVTRCL	4	216	Coin overtime recalls
12	TRDIGS	4	220	Enhanced transfer digits
13	EOPSINFO	16	224	EOPS information digits
14	INDIC	2	240	Credit indicator
15	BILLCODE	2	242	Billing number code
16	TRBLCODE	7	244	Trouble code

—continued—

Table 12-1
OSR format (continued)

No.	Field name	Bits	Offset	Field Contents
17	TEAMNUMB	5	251	Team number
18	BILLNUMB	92	256	Billing number digits
19	ADJTYPE	4	348	Type of adjustment
20	ROOMNUMB	24	352	Room number
21	ADJENTRY	8	376	Adjustment entry code
22	GUEST	80	384	Guest name
23	HOTELTAX	16	464	Hotel tax
24	QUOTEAMT	16	480	Quoted amount
25	ADJTIME	16	496	Adjustment time
26	ADJAMT	16	512	Adjustment amount
27	SEQNUMB	16	528	Sequence number
28	WALKAWAY	16	544	Pay phone abuse
29	SSASCODE	8	560	Coin call abuse codes
30	CALLID	24	568	Call ID number
31	CNCREDIT	1	592	Coin credit adjustment
32	SSASINDC	1	593	Station signaling indicator
33	RLTBRDG	1	594	Release Link Trunk bridge
34	COIN	1	595	Coin call indicator
35	SWID	10	596	Switch ID
36	FILLER	82	606	TBCD nulls
Total = 688 bits (43 words, including fillers)				

—end—

Table 12-2
OSR field descriptions

Field	Name	Description
1	RECCODE	The record code indicates the type of operator handling the call. An F1 record code denotes a domestic operator-handled record. An F3 record code denotes an international operator-assisted record.
2	ENTCODE	The entry code is a two-digit code with a value of 00 through 99 that identifies the type of call being recorded. Types of calls identified may be person-to-person, station-to-station, prepaid, collect, international, or domestic. Entry code meanings are 20 = Charge adjust for domestic station-to-station (STA PD, STA COL, STA SPL CLG, STA SPL CLD) ***Note:*** Three records generated are: one CDR and two OSRs. The first OSR contains charge adjust information. The second does not contain terminating call information. Sequence numbers match. 22 = Station-to-station Special (Calling Party) 23 = Charge adjust for domestic person-to-person (PER PD, PER COL, PER SPL CLG, PER SPL CLD PCB PD, PCB SPL CLG, PCB UNSPECIFIED) ***Note:*** Three records generated are: one CDR and two OSRs. The first OSR contains charge adjust information. The second does not contain terminating call information. Sequence numbers match. 24 = Person-to-person Collect 25 = Person-to-person Special (Calling Party) 26 = Auto Collect (or 800 Number Default) appears in an OSR when the operator presses the auto collect key or when a call is made to an 800 number and no other class charge keys were pressed. A class charge key overrides auto collect. 27 = Station-to-station Special (Called Party) 28 = Person-to-person Special (Called Party) 29 through 59 = Not Used 60 = Charge adjust for station paid operator-assisted (International) (STA PD, STA COL, STA SPL CLG, STA SPL CLD) ***Note:*** Three records generated are: one CDR and two OSRs. The first OSR contains charge adjust information. The second does not contain terminating call information. Sequence numbers match.

—continued—

Table 12-2
OSR field descriptions (continued)

Field	Name	Description
		61 = Station-to-station Collect (International) 62 = Station-to-station Special (Calling Party International) 63 = Charge adjust for person-to-person (International) (PER PD, PER COL, PER SPL CLG, PER SPL CLD PCB PD, PCB SPL CLG, PCB UNSPECIFIED) ***Note:*** Three records generated are: one CDR and two OSRs. The first OSR contains charge adjust information. The second does not contain terminating call information. Sequence numbers match. 64 = Person-to-person Collect (International) 65 = Person-to-person Special (Calling Party International) 66 = Not used 67 = Station-to-station Special (Called Party International) 68 = Person-to-person Special (Called Party International) 69 through 95 = Not used 97 = Cancelled Call (Domestic) 96 = Other charge adjustments 98 = Cancelled Call (International) 99 = Test Call
3	INFODIGS	Information digits 1 and 2 each use a single digit code, 0 through 7, to record data on call events that occur during the call record interval. The first digit (INFODIG 1) contains data about Service Analyzed, Charge, and Traffic Sampled call events. The second digit (INFODIG 2) contains data about ANI Fail, Operator Dialed, and Operator Identified call events. The values 0 through 7 represent a set of Y and N flags for events associated with each information digit. For example, if a call is not service analyzed but is chargeable and traffic sampled, a value of 6 is given to INFODIG 1. Table 3-3 illustrates these events and the corresponding set of Y and N flags associated with the event for information digits 1 and 2.
4	SERVFEAT	The service feature code is identified by two digits: X and Y. X indicates the calling party's service class, and Y indicates the called party's service class. Three values for either X or Y are available for assignment:

—continued—

Table 12-2
OSR field descriptions (continued)

Field	Name	Description
		0 = Default 1 = Not used 2 = Hotel/motel Hotel calls are set on receipt of the identification digits 06 or when the HOTEL key is entered by the operator.
5	CALLNGNO	Calling number identification is provided in the 10-digit OSR calling number field. It holds the same number as the ANISP or BILLNUM field of the corresponding CDR except when the operator overwrites the field with a new number for special billing.
6	CALLEDNO	The called number field normally contains the same number as the DIALEDNO field in the corresponding CDR for any given call. An exception is when the operator overrides the entry with a new called number.
7	EVENTDIG	The EVENTDIG field indicates answer when two conditions are met—the operator has depressed the STTMG key at the console and answer supervision has been returned from the called party. EVENTDIGS provide information concerning answer, calling party disconnect, called party disconnect, blue box fraud, and blocked calls. Refer to Table 3-4 for digit values. Interface with an ISUP IMT affects this field in two ways: • Answer is set only if the call is answered before it is bridged by the operator. • Called Party Disconnect is set if the called party hangs up while the operator is in the call and also when the call is bridged and the RELease message is received from the called party first.
8	STARTTME	The nine-digit STARTTME field record contains one of the following: • Answered Calls: This record contains date and time when called party answer occurs (valid answer signal detected). • Unanswered calls: This record contains date and time of initial outgoing trunk seizure. The nine-digit time record contains the following information: Day of year: 001-366 Hour: 00-23

—continued—

Table 12-2
OSR field descriptions (continued)

Field	Name	Description
		Minute: 00-59 Second: 00-59 • Interface with an ISUP IMT affects the field two ways: — When answer occurs while the operator is still bridged in the call (bridge after answer), STARTTIME corresponds to answer time. — When call is bridged before answer, STARTTIME is the initial outgoing trunk seizure time.
9	OPERNUM	The OPERNUM field contains the assigned number of the operator handling the call or verification attempt. The field is displayed in binary with a range of 0 – 4095.
10	ELAPSDTME	The ELAPSDTME field holds a six-digit record that identifies the total conversation time in seconds for answered calls. For unanswered calls, the ELAPSDTME field identifies the total elapsed time in seconds that the circuit was held. Elapsed time OSR correlates to call duration in CDR as follows: • Call answered, followed by ST-TMG key entry: — CALLDUR = Duration since call answer — ELPSDTME = Duration since ST_TMG entry • ST-TMG key entered, followed by call answer: — CALLDUR = Duration since call answer — ELPSDTME = Duration since call answer • Call not answered, ST-TMG key not entered: — CALLDUR = 0 — ELPSDTME = 0 • Call not answered, ST-TMG key entered: — CALLDUR = 0 — ELPSDTME = Duration since ST_TMG entry
11	CNOVTRCL	This field indicates how often a coin call is recalled to the operator. Recalls occur for initial charge payment, payment of overtime charges, operator suspected fraud, and operator assistance timeout.

—continued—

Table 12-2
OSR field descriptions (continued)

Field	Name	Description
12	TRDIGS	Enhanced Transfer Digits are recorded in this two-byte field to identify a special type of transfer applied by the last operator to service a call. There are 15 logical queues available for Enhanced Transfer. They may be assigned, for example, to various foreign language operators or other operators that are called in only for special functions. The default value of this field is 00, which indicates that no enhanced transfer has occurred. Any field value of 01 through 15 indicates that an enhanced transfer has been applied to the call. The numeric value identifies the last enhanced group. Logical values 0 to 15 may be assigned. (For example, 01 could mean that a transfer to a French-speaking operator has been performed.)
13	EOPSINFO	EOPS information digits are displayed in a four-digit code with each digit having a value of 0 through 7. This display provides additional call information by means of a yes/no system.
14	INDIC	The credit indicator field accepts a two-bit code that determines how a call credit is applied, usually for charge-adjusted calls. An INDIC value of 1 identifies the minutes to be credited, a value of 2 identifies the dollars and cents to be credited, and a value of 3 indicates that the entire call is to be credited. A value of 0 means no indicator is provided.
15	BILLCODE	The billing code number field has a 0-3 value and is displayed in binary. It identifies the type of billing number (BILLNUM) recorded. A binary 01 indicates calling card billing and a binary 11 indicates authcode billing. 0 = Station paid, collect, or no charge 1 = 14-digit calling card or COMM credit card 2 = Not used 3 = 7-digit authorization code, 10-digit third party number, or 7-digit third party number
16	TRBLCODE	The trouble code is a seven-bit customer-defined code entered by the operator when a call problem occurs.
17	TEAMNUMB	This field contains a two-digit code that identifies the operator team number.
18	BILLNUMB	This field may contain a true billing number (calling card, authcode, or third party) or a sequence number that is used by downstream billing to match with an ONC CDR. Sequence number matching is required for commercial credit card billing.

—continued—

Table 12-2
OSR field descriptions (continued)

Field	Name	Description
19	ADJTYPE	This field contains a one-digit code (0-9) entered by the operator to identify the reason for charge adjustment: 5 = Call Cutoff 6 = Manually Rated 7 = Change Billing 8 = Not Assigned 9 = Not Assigned
20	ROOMNUMB	This field identifies the number of the hotel room from which a call was placed. The field accepts any alphanumeric combination up to six hexadecimal characters (three bytes).
21	ADJENTRY	The adjustment entry code is a two-digit field that is identical to the Entry Code in the initial billing record if no change in billing has occurred. ADJENTRY is used for room identification purposes. Refer to table 3-5 for digit information.
22	GUEST	The guest name field holds up to eight digits or four bytes used to identify a long distance call from a hotel room.
23	HOTELTAX	The four-digit hotel tax field identifies the hotel tax surcharge calculated by tables within the DMS-250 switch.
24	QUOTEAMT	The four-digit quoted amount field contains either the amount quoted (less tax) for a hotel call or the dollars and cents quoted on a time and charges call.
25	ADJTIME	The four-digit adjustment time field marks the approximate hour and minutes of the call adjusted by the operator. If no time is provided, system time is used.
26	ADJAMT	The Adjustment Entry Code identifies the adjustment amount applied by the operator when a change of billing is performed. It is presented as an integer and entered in cents up to 9999 or in minutes up to 99. If the entire call is to be credited, the value is 0.
27	SEQNUMB	For each EOPS call processed by the DMS-250 switch, an OSR/CDR record pair is generated. To prevent duplicate billing, an identifying sequence number is assigned to each operator-handled call upon disconnect. Downstream billing uses the sequence number to match call record forms, ensuring that a single, accurate call billing record results.

—continued—

Table 12-2
OSR field descriptions (continued)

Field	Name	Description
28	WALKAWAY	This field contains the amount that was deposited for a coin call according to one of the following five cases: Case 1: Call with coin credit where the amount of credit is greater than or equal to the amount collected for the call. WALKAWAY equals 0. Case 2: Call with coin credit where the amount of credit is less than the amount collected for the call. WALKAWAY equals amount collected minus the amount of credit. Case 3: Coin call with a walkaway detected by either ACTS or the operator, where the amount of the walkaway is greater than or equal to the charge for the call. WALKAWAY equals 0. Case 4: Coin credit call with a walkaway detected by either ACTS or the operator, where the amount of the walkaway is less than the charge for the call.WALKAWAY equals amount of charge less amount of walkaway. Case 5: Coin call with no walkaways detected. WALKAWAY equals amount collected for call. This field contains 16 bits (0-65535).
29	SSASCODE	Station Signaling and Announcement Subsystem (SSAS) codes are used to indicate specific types of coin call fraud or a walkaway from a pay phone. Combinations of call attributes or operator keying actions are mapped to provide the following readouts: 12: ACTS call and operator suspected fraud 18: ACTS call 22: ACTS call, operator override, and operator suspected fraud 28: ACTS call and operator override 32: Call not handled by ACTS and operator suspected fraud 38: Call not handled by ACTS 52: ACTS call, operator entered walkaway, and operator suspected fraud 58: ACTS call and operator entered walkaway 62: ACTS call, operator override, operator entered walkaway, operator suspected fraud 68: ACTS call, operator override, and operator entered walkaway

—continued—

Table 12-2
OSR field descriptions (continued)

Field	Name	Description
		72: Call not handled by ACTS, operator suspected fraud, and operator entered walkaway 78: Call not handled by ACTS and operator entered walkaway 92: ACTS detected walkaway and operator suspected fraud 98: Call handled by ACTS and ACTS detected walkaway
30	CALLID	This field contains a six-digit call identification number, which is stored in the OSR and generated for all operator services calls (including multiple attempts and third party verification). It allows the ONC to display call information on the operator screen when the call is transferred to another position. It also correlates OSR with the billing record generated by the ONC. CALLID is sent to the ONC upon call origination, operator-originated calls with no call on other loop, call transfer, time and charges, coin overtime recall, or notify recall condition. With release link trunk (RLT), the CALLID field of the remote OSR is matched with that of the host OSR by setting a bit in the host OSR to indicate the call was successfully bridged. Online billing systems need the OSR flag to indicate that there is further billing information about the call at a remote switch. The billing system uses the CALLID field to match the two records. The CALLID is sent from the host to the remote in the Generic Digits parameter of the bridging FAR message. The remote copies this value into the CALLID field of the OSR for the call. For calls involved in a multiple RLT configuration, the CALLID is not recorded in the tandem switch. The Facility Request message containing the CALLID passes through the tandem office.
31	CNCREDIT	CNCREDIT is used to indicate that a non-standard charge adjustment for a coin credit was entered by the operator (for example, CNCREDIT, WALKAWAY). The CNCREDIT field is set to 1 to show the adjustment. Additional OSR records are generated for non-standard adjustments. 0 = No credit 1 = Credit
32	SSASINDC	This field is set to 1 if the call is handled strictly by ACTS. If there is operator involvement, the field is set to 0.
33	RLTBRDG	RLTBRDG indicates whether or not an RLT call is successfully bridged at the remote switch.

—continued—

Table 12-2
OSR field descriptions (continued)

Field	Name	Description
34	COIN	A value of TRUE indicates that the call was a coin call. A value of FALSE indicates other than a coin call. The values used are 0 and 1.
35	SWID	This 10-bit field contains the switch ID. SWID is derived from the office parameter ORIG_SWITCH_ID. The range is 0 to 999.
36	Filler	TBCD nulls
		—end—

Table 12-3
Information digit values

Value	Information digit 1			Information digit 2		
	Service analyzed?	**Charge?**	**Traffic sampled?**	**ANI fail?**	**Operator dialed?**	**Operator identified?**
0	N	N	N	N	N	N
1	Y (Note 1)	N	N	Y (Note 4)	N	N
2	N	Y (Note 2)	N	N	Y (Note 5)	N
3	Y (Note 1)	Y (Note 2)	N	Y (Note 4)	Y (Note 5)	N
4	N	N	Y (Note 3)	N	N	Y (Note 6)
5	Y (note 1)	N	Y (Note 3)	Y (Note 4)	N	Y (Note 6)
6	N	Y (Note 2)	Y (Note 3)	N	Y (Note 5)	Y (Note 6)
7	Y (Note 1)	Y (Note 2)	Y (Note 3)	Y (Note 4)	Y (Note 5)	Y (Note 6)

Note 1: The call was selected by the switch for service analysis. It is not an indication of the service observed identifier forming part of the ANI spill.

Note 2: Call originated on a chargeable route. A NO flag appears if the call was a charge adjust.

Note 3: Call is being traffic sampled by the switch. The rate of sampling is defined by the operating company in Table TRAFSAMP. The Y flag is set if the call is traffic sampled and routed to an operator position.

Note 4: The ANI spill was not available from the local office. The ANI fail might be generated as part of the ANI spill or by the toll office receiving mutilated digits from the end office.

Note 5: The forward connection was established by the operator using, for example, FWD + digits + ST TMG or RLS FWD + ST TMG. This flag cannot be reversed after operating the START key.

Note 6: Calling party was operator identified rather than ANI identified. Operator identified and ANI fail are mutually exclusive; they cannot both be set to Y at the same time.

Table 12-4
Event digit values

Eventdig	Answer	Clng D/C	Clld D/C	Fraud	Block
0	Yes	Yes	No	No	No
1	Yes	No	Yes	No	No
2	No	Yes	No	No	No
3	No	No	Yes	No	No
4	Yes	Yes	No	Yes	No
5	Yes	No	Yes	Yes	No
6	No	Yes	No	Yes	No
7	No	No	Yes	Yes	No
8	No	Yes	No	No	Yes

Note: EVENTDIGS provide information concerning answer, calling party disconnect (CLNG D/C), called party disconnect (CLLD D/C), blue box fraud (FRAUD), and blocked calls (BLOCK).

Table 12-5
ADJENTRY

Room number	Digits	AMA hexadecimal
ABCD	C1C2C3C4	C2C1 C4C3
123456	123456	3412 XX56
123	123AAA	3A12 XXAA
A123	C1123A	12C1 XX3A
1A23	1C123A	121C XX3A
12A3	12C13A	C112 XX3A
123A	123C1A	3C12 XX1A
1A2B	1C12C2	121C XXC2

Figure 12-6
OSR bitmap format

	MSB															LSB
WORD/BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
00	RECCD(1)								RECCD(2)							
01	ENTCODE(1)				ENTCODE(2)				INFODIGS(1)				INFODIGS(2)			
02	SERVFEAT(1)				SERVFEAT(2)				CALLNGNO(1)				CALLNGNO(2)			
03	CALLNGNO(3)				CALLNGNO(4)				CALLNGNO(5)				CALLNGNO(6)			
04	CALLNGNO(7)				CALLNGNO(8)				CALLNGNO(9)				CALLNGNO(10)			
05	CALLEDNO(1)				CALLEDNO(2)				CALLEDNO(3)				CALLEDNO(4)			
06	CALLEDNO(5)				CALLEDNO(6)				CALLEDNO(7)				CALLEDNO(8)			
07	CALLEDNO(9)				CALLEDNO(10)				CALLEDNO(11)				CALLEDNO(12)			
08	CALLEDNO(13)				CALLEDNO(14)				CALLEDNO(15)				EVENTDIG			
09	STARTTME(1)				STARTTME(2)				STARTTME(3)				STARTTME(4)			
10	STARTTME(5)				STARTTME(6)				STARTTME(7)				STARTTME(8)			
11	STARTTME(9)				OPERNUM											
12	ELPSDTME(1)				ELPSDTME(2)				ELPSDTME(3)				ELPSDTME(4)			
13	ELPSDTME(5)				ELPSDTME(6)				CNOVTRCL				TRDIGS			
14	EOPSINFO(1)				EOPSINFO(2)				EOPSINFO(3)				EOPSINFO(4)			
15	INDIC		BILLCODE		TRBLCODE							TEAMNUM				
16	BILLNUM(1)				BILLNUM(2)				BILLNUM(3)				BILLNUM(4)			
17	BILLNUM(5)				BILLNUM(6)				BILLNUM(7)				BILLNUM(8)			
18	BILLNUM(9)				BILLNUM(10)				BILLNUM(11)				BILLNUM(12)			
19	BILLNUM(13)				BILLNUM(14)				BILLNUM(15)				BILLNUM(16)			
20	BILLNUM(17)				BILLNUM(18)				BILLNUM(19)				BILLNUM(20)			
21	BILLNUM(21)				BILLNUM(22)				BILLNUM(23)				ADJTYPE			
22	ROOMNUM(1)				ROOMNUM(2)				ROOMNUM(3)				ROOMNUM(4)			
23	ROOMNUM(5)				ROOMNUM(6)				ADJENTRY(1)				ADJENTRY(2)			
24	GUEST(1)				GUEST(2)				GUEST(3)				GUEST(4)			
25	GUEST(5)				GUEST(6)				GUEST(7)				GUEST(8)			
26	GUEST(9)				GUEST(10)				GUEST(11)				GUEST(12)			
27	GUEST(13)				GUEST(14)				GUEST(15)				GUEST(16)			
28	GUEST(17)				GUEST(18)				GUEST(19)				GUEST(20)			
29	HOTELTAX															
30	QUOTEAMT															
31	ADJTIME(1)				ADJTIME(2)				ADJTIME(3)				ADJTIME(4)			
BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

Figure 12-6
OSR bitmap format (end)

	MSB															LSB
WORD/BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
32	ADJAMT															
33	SEQNUMB															
34	WALKAWAY															
35	SSASCODE(1)				SSASCODE(2)				CALLID(1)				CALLID(2)			
36	CALLID(3)				CALLID(4)				CALLID(5)				CALLID(6)			
37	FILLER								CALLID(7)				CALLID(8)			
38	FILLER			CN	SI	RLT	COIN	SWID								
39 ▪ ▪ 127	FILLER															
BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

Appendix E
Related data schema, logs, OMs, and commands

Once data for a call is captured during call processing, a CDR is generated. The CDR format is determined by the data entered in the CDRTMPLT table. Refer to the *UCS DMS-250 Data Schema Reference Manual* for a detailed description of the CDRTMPLT table.

Table 13-1 lists the logs associated with the billing records.

Table 13-1
Related logs

Log	Description
CDR272	The CDR272 billing log is generated when the following conditions exist: • The CDR log output must be enabled by the SETLOG command in the CDR level of the MAP terminal. • The treatment code (TRMTCD) captured in the CDR matches one of the treatment codes selected by the SETLOG command in the CDR level of the MAP terminal. Command example: mapci; mtc; IOD; CDR; setlog 010 • The office parameter CDR_LOG_FIELD_DESCRIPTORS in table OFCVAR is set to N.
CDR273	The CDR273 billing log is generated when the following conditions exist: • The CDR log output must be enabled by the SETLOG command in the CDR level of the MAP terminal.
Note: Refer to the *UCS DMS-250 Logs Reference Manual* for a detailed description of logs.	

—continued—

Table 13-1
Related logs (continued)

Log	Description
	• The treatment code (TRMTCD) captured in the CDR matches one of the treatment codes selected by the SETLOG command in the CDR level of the MAP terminal. • The office parameter CDR_LOG_FIELD_DESCRIPTORS in table OFCVAR is set to Y.
FCDR300	The FCDR300 log is genereated when data is truncated from the Call Detail Record (CDR) in order to fit the provisioned CDR. The office parameter FCDR_CDR_SIZE (table OFCENG) sets the length of a CDR. A major switch alarm is activated.
FCDR600	FCDR600 logs identify CDRs that are padded to fit the size of the CDR provisioned by office parameter FCDR_CDR_SIZE (table OFCENG).
FCDR601	FCDR601 logs identify empty CDR fields and can be used to streamline your CDRs. The UCS DMS-250 switch generates FCDR601 logs when the CDR template is set to variable (office parameter FCDR_CDR_TMPLT in table OFCENG).
FCDR602	FCDR602 logs identify the system-forced CDRs generated by the internal CDR formatter due to system error or default conditions.
Note: Refer to the *UCS DMS-250 Logs Reference Manual* for a detailed description of logs.	
—end—	

Table 13-2 lists the operational measurements associated with the billing records.

Table 13-2
Related OMs

OM group	Description
CDR250	The DMS-250 Call Detail Record (CDR250) group provides OMs for monitoring the status and use of resources during call detail recording operation in a DMS-250 switch.
FCDRALGR	The Flexible Call Detail Record (FlexCDR) Algorithm (FCDRALGR) group provides OMs for counting the CDR template method used to format the CDRs.
FCDRLOG	The Flexible Call Detail Record (FlexCDR) Log (FCDRLOG) group provides OMs for counting the CDRs formatted with padded data, truncated data, missing data, or wasted space.
FCDRTMP1	The Flexible Call Detail Record Template (FCDRTMP1) OM group counts the number of times templates 0 through 31 are used to format a CDR.
FCDRTMP2	The Flexible Call Detail Record Template (FCDRTMP2) OM group counts the number of times templates 32 through 63 are used to format a CDR.
Note: Refer to the *UCS DMS-250 Operational Measurements Reference Manual* for a detailed description of OMs.	
—end—	

Table 13-3 lists the commands associated with the billing records.

Table 13-3
Related commands

Command	Description
CTMPLT	The Call Detail Record Template (CTMPLT) command allows you to enter the CTMPLT directory and perform various display and editing functions to control the FLEX CDR Billing Platform. The CTMPLT command set allows you to: • apply changes to the billing system (Changes to the billing system are made through office parameters in table OFCENG.) • display the CDR templates defined in table CDRTMPLT
Note: Refer to the *UCS DMS-250 Commands Reference Manual*. for a detailed description of commands.	
—continued—	

Table 13-3
Related commands (continued)

Command	Description
	• copy existing templates • display the CDR fields, including the size and format of data stored in the field • display the current billing record status
FCDRSRCH	With FCDRSRCH, you can extract records from a billing file residing on a disk volume. Records contain call information, catagorized by call types. You can issue MAP terminal commands to • select a billing file to be searched • set the type of records (CDR or OSR) to search for • define keys to compare against data in the call billing record fields • set a logical condition among the defined keys • impose constraints on the scope of the search • initiate a search • view the records that are returned as a result of the search session
LOGUTIL	The Log Utility (LOGUTIL) command allows the user to access the LOGUTIL directory and perform various display and editing functions.
Note: Refer to the *UCS DMS-250 Commands Reference Manual*. for a detailed description of commands.	
—end—	

Appendix F
CDR to SDM interaction

CDRs are Nortel Networks' proprietary billing format records generated by all UCS DMS-250 based products. Another type of billing record is the Bellcore Automatic Message Accounting Format (BAF) defined in *GR-1100-CORE* Generic Requirements. Prior to UCS11, BAF records were not supported for the UCS DMS-250 switch. BAF records are very different from CDR records, not only in structure, but also in content.

For a BAF record to be generated from a CDR, the UCS DMS-250 switch is required to capture additional billing information in the CDR. During call processing, as the call is received and routed by UCS software, BAF required billing data is captured and placed in CDR fields. After the CDR is generated, it is sent to a SuperNode Data Manager (SDM) which converts the CDR data into the appropriate BAF structure. The BAF record is then sent to the operating company's downstream processor.

For more information about CDR to BAF conversion on the SDM, refer to the *SDM Billing Application Guide,* Appendix H, "CDR to BAF Conversion".

BAF elements

BAF records consist of Table, Structure, and Module elements. The basic element of a BAF record is a field of data, also referred to as a Table. Data fields (Tables) occur in defined groups in a BAF record. There are two types for the groups of fields: Structure and Module.

BAF Tables

Each BAF data field (Table) is defined by its contents, format, and length. A set of eight common Tables are required in all BAF records, followed by a group of Tables that identify the type of service invoked by the call, for which the data is being recorded. BAF Tables are referred to by their Table numbers.

BAF records begin with the network element followed by the following ordered set of eight common Tables:

- Record Descriptor Word (Table 000) – states total octets in the BAF record (in binary)
- Hexadecimal Identifier (Table 00) – identifies the start of the BAF record and flags records containing possible errors
- Structure Code (Table 0) – identifies the structure and indicates whether or not modules are appended to the structure
- Call Type (Table 1) – identifies the type of call, or service/technology
- Sensor Type (Table 2) – identifies the type of sensor that generated and/or formatted the data in the record
- Sensor Identification (Table 3) – identifies the sensor and indicates whether the record might have been output previously
- Recording Office Type (Table 4) – identifies the type of recording office that captured the record for transport
- Recording Office Identification (Table 5) – identifies the recording office and indicates whether the record is generated or formatted by a system undergoing validation testing

BAF Structures

A BAF Structure is a grouping of Tables. Structures consist of the eight common Tables listed above, followed by a group of predefined Tables that identify the type of service invoked by the call. Each Structure identifies a unique set of Tables. BAF Structures are identified by a unique Structure code.

BAF Modules

A BAF Module is also a grouping of Tables. A Module, like a Structure, consists of a predefined group of Tables that can be appended to a Structure. Each Module is named and identified by a unique Module code. Modules are appended to Structures to further identify information associated with the service invoked or to capture information associated with specific conditions. Modules in a BAF record are appended as needed. More than one Module may be appended to a Structure. No specific order is required when appending Modules, except that Module 000 must be the last Module if Modules are appended in a record. No limit is placed on the number of Modules that may be appended, however, the maximum record size for BAF records may limit appending.

BAF Call Type

In the network, Call Types identify services or capabilities provided to a customer or carrier. BAF Call Types are identified by a unique Call Type

code. The Call Type code in a BAF record provides processing information to accounting systems. Call Types and call conditions determine the Structure used. Several different Structures can often be used for a given Call Type. Call conditions, such as long duration, interLATA, or Local Number Portability (LNP), determine the correct Structure to use. Call Type and conditions also determine when Modules may be used and to which Structures they may be appended.

New CDR Fields

The following diagrams list all of the new fields needed to create the BAF records for the structure codes and module codes in UCS15.

The ’Table” column lists the BAF Table number. Bellcore numbers its information formats as ’Table ##’. This can be a bit confusing in this feature document since it contains ’Diagrams’ of information and the information is referred to as ’Table ##’.

The ’Size’ column indicates the size of the table format in BCD characters.

The ’MC’ column indicates the BAF module codes which contain the table.

The “BAF Field” column lists the table description.

The “CDR Field” column indicates the CDR fields(s) containing the data required to fill the appropriate BAF record and the size (in bits) of the CDR field.

Table 14-1
New CDR Fields for Module Codes

Table	Size	MC	BAF Field(s)	CDR Field(s)
78	4	831	Digits Identifier	Derived from: DIGIDTRN (40 bits) DIGIDJIP (40 bits) DIGIDNPA (12 bits)
902		908	Originating Access ID	OACESID (10 bits)

New CDR Field:

OACCESSID

3–digit AccessID Value

The following new CDR fields are being added, but are reserved for future use: DIGIDJIP, DIGIDNPA, and DIGIDTRN.

CAIN Furnish_AMA_Information Operation

In UCS14, support is added in the CAIN framework for receiving a TCAP response message or conversational message containing a Furnish_AMA_Information operation. This operation consists of the following optional parameters:

- *AMABAFModules: This parameter consists of a string of hexadecimal digits of up to 128 bytes of information. This hexadecimal string consists of BAF encoded Module Codes. The information returned is stored in the new CDR field AMABAFMD and is passed on to the SDM. This information is not decoded or used at the UCS DMS–250 switch. In addition the new CDR field AMASIZE is used to store the size of the accompanying AMABAFMD CDR field in bytes.*

  Note: Although the CDR field AMABAFMD can hold up to 128 bytes of BAF table information, the log, CDR273 that is used to display the CDR on the UCS DMS–250 MAP terminal only displays up to 16 bytes of information. However, all (up to 128 bytes) of the information stored in the AMABAFMD CDR field is passed to the SDM.

- *AMASetHexABIndicator: This parameter is used by the Service Control Point (SCP) to indicate that a potential error exists in the accompanying AMABAFModules parameter. This parameter is a boolean and is used to populate the new HEXID CDR field.*

Modified CDR Fields

Table 14-2 lists all of the existing fields that are modified to create the BAF records for the structure codes and module codes.

Table 14-2
Modified CDR Fields – Structure Codes

Table	Size	SC/MC	BAF Field(s)	CDR Field(s)
0	6	SC00001 SC00220	Structure Code	AMASC
1	4	SC00220	Call Code Type	AMACALLC
83	6	MC021	Trunk Group Signaling Type Indicator	Derived from ROUTIND
88	4	MC029 MC306 MC908 MC831	Module Code	MODMAP
—end—				

BAF Tables Supported

The following sections describe in detail the BAF Tables listed in Tables 14-1 and 14-NO TAG. The GR–1100–CORE BAF document contains definitions for the BAF table diagrams.

Any BAF field listed with a CDR status of ‘N/A’ indicates that no CDR data is captured.

The fields listed in the CDR Status column indicate the CDR fields needed to capture the corresponding BAF data. CDR fields listed in **BOLD type are new CDR fields added to capture the corresponding data.**

When modules are appended to the records and if there if no information to populate some field the UCS DMS–250/Succession switch will populate

these fields with Hex Fs. Values to be recorded are populated right justified and padded to the left with zeros.

Bitmapped Fields

The MODMAP CDR field is a table of 16 characters. Each character indicates the presence of a BAF element with a value of ’1’. A value of ’0’ indicates the absence of that BAF element.

Individual BAF elements are mapped to the new CDR field as follows:

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Reserved	MC 720	Reserved	Reserved	MC 030–b	MC 030–a	MC 022	MC 021

Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8
spare	spare	spare	spare	MC 831	MC 908	MC 306	MC 29

Module Code 831, bit 11, is set when either DIGIDNPA, DIGIDTRN or DIGIDJIP is populated.

An example of what this new CDR field looks like is as follows:

MODMAP 00001100 00000001 which indicates that Module Code 21, 908, 831 are generated.

Note:

The **MODMAP CDR** *field is not supported in user defined CDR templates.*

Table 14-3 lists the call type codes associated with the Structure and Module codes supported for the CDR to BAF conversion. Also listed is a description of the call which causes the record to be generated.

Table 14-3
Supported BAF codes

Call type code	Structure code	Module code	Record trigger description
47	220	21, 22, 30, 720	A TCAP Analyze_Route message is received with an AMAslpID parameter.
47	220	21, 22, 30, 720	The call is a non-8YYY and non-dial around call and has to be default routed due to bad or missing routing and billing instructions from the SCP. The call type code is determined by the type of originator.
74	220	21	The call is identified as a 911 call.
110	625		A call originates from the UCS DMS-250/Succession switch with ORIGACC=cc110, and no other structure code has been triggered.
117	645		A call originates from the UCS DMS-250/Succession switch with ORIGACC=cc117, and no other structure code has been triggered.
119	625	22, 720	A call terminates to the UCS DMS-250 switch from an Interexchange Carrier (IXC) or Access Tandem. Module code 22 is added for long duration calls. Module code 720 is appended for Local Number Portability (LNP) calls.
119	653	22, 720	A call terminates to the UCS DMS-250 switch from an IXC or Access Tandem and an ANI or CPN is not received. Module code 22 is added for long duration calls. Module 720 is added for LNP calls.
141	360	720	A Toll-free call transported by an IC (Interexchange Carrier). (For Number Services calls a value of 141 is returned in an 8YY SCP response Call Type code indicating the call is to be routed by an IC.) Module 720 is appended for LNP calls.
142	364	22, 720	A Toll-free call transported by a Local Exchange Carrier (LEC). (For Number Services calls a value of 142 is returned in 8YY SCP response Call Type code indicating the call is to be transported by the LEC.) Module 720 is appended for LNP calls.

—continued—

Table 14-3
Supported BAF codes (continued)

Call type code	Structure code	Module code	Record trigger description
	220	21, 22, 30, 720	A TCAP Analyze_Route message is received with an AMAslpID parameter. Default routed for call type code 47.
	645	22, 720	
720	625	22, 720	A call terminates to the UCS DMS-250 switch from a LEC or Competitive Local Exchange Carrier (CLEC) end office (EO). Module 720 is appended for LNP calls.
720	653	22, 720	A call terminates to the UCS DMS-250 switch from a LEC or CLEC EO and an ANI or CPN is not received. Module 720 is appended for LNP calls.
			—end—

Call Type codes:

- 47 – AIN Service Record—Default Routing
- 74 – 911 Service Record
- 110 – Originating Access Record
- 117 – Originating Access Record
- 119 – Terminating Access Record
- 141 – IC Number Services
- 142 – LEC Number Services
- 720 – Connecting Network Access Incoming Record

Module codes:

- 021 – Carrier Access Originating
- 022 – Long Duration Connection
- 030 – Translation Settable
- 720 – Local Number Portability (LNP) Module (Vendor Specific)
- 908 – Originating Access Call with accessid.

CDR fields required for conversion to BAF

Table 14-4 lists required CDR field(s) for BAF Tables and Structure code(s) in which they are used.

Note: The Size column in table 14-4 indicates the size, in binary coded digit (BCD) characters, of the BAF data field (Table). Entries in the Structure code column listed as "All" indicate the associated BAF Table is found in all Structures. Entries in the Required CDR field(s) column listed as "N/A" indicate that no CDR data is captured for the associated BAF Table.

Table 14-4
BAF Tables/CDR field(s) for Structure codes(s)

Table	Size	Structure code	Table (data field) name	Required CDR field(s)
000	4	All	Record Descriptor Word	N/A
00	1	All	Hexadecimal Identifier	N/A if using CDR2AMA template
00	2	All	Hexadecimal Identifier	HEXID if using CDR2AMA3 template
0	6	All	Structure Code	AMASC, MODMAP
1	4	All	Call Code	AMACALLC
2	4	All	Sensor Type (0–999)	N/A
3	8	All	Sensor Identification	N/A
4	4	All	Recording Office Type	N/A
5	8	All	Recording Office Identification	N/A
6	6	All	Connect Date	Derived from: CALLDUR, DISCYEAR, DISCDATE, DISCTIME, DISC10TH, DISCAMPM, TIMECHNG
6	6	625 653 360	Carrier Connect Date	ORIGYEAR, ORIGDATE

—continued—

Table 14-4
BAF Tables/CDR field(s) for Structure codes(s) (continued)

Table	Size	Structure code	Table (data field) name	Required CDR field(s)
7	6	All	Timing Indicator	TIMEGARD, INCBILL
8	8	All	Study Indicator	N/A
9	2	All	Called Party Off-Hook Indicator	ANSTYPE
10	2	All	Service Observed/Traffic Sampled	N/A
11	2	All	Operator Action	N/A
12	4	All	Service Feature	SLPID if using CDR2AMA template SVCFTR if using CDR2AMA2 or CDR2AMA3 template
13	4	360 364 625	Originating NPA	CLGPTYNO, ANISP, ANICPN
13	4	360 364	Dialed NPA	DIALEDNO
14	8	360 364 625	Origination Number	CLGPTYNO, ANISP, ANICPN
14	8	360 364	Dialed Number	DIALEDNO
15	2	All	Overseas (International Call) Indicator	N/A if using CDR2AMA template
15	2	All	Overseas (International Call) Indicator	TRMOSEAS if using CDR2AMA2 or CDR2AMA3 templates
16	6	All	Terminating NPA/Destination NPA	CALLEDNO
17	8	All	Terminating Number/Destination Number	CALLEDNO

—continued—

Table 14-4
BAF Tables/CDR field(s) for Structure codes(s) (continued)

Table	Size	Structure code	Table (data field) name	Required CDR field(s)
18	8	All	Connect Time	Derived from: CALLDUR, DISCDATE, DISCTIME, DISC10TH, DISCAMPM, TIMECHNG
18	8	625 653 360	Carrier Connect Time	ORIGTIME, ORIG10TH, ORIGAMPM
19	10	All	Elapsed Time	CALLDUR
19	10	625 653 360	Elapsed Time from Carrier Connect	Derived from: DISCTIME, DISCDATE, DISCAMPM, DISC10TH, ORIGTIME, ORIGDATE, ORIGAMPM, ORIG10TH, TIMECHNG
46		360 364	Customer Revenue Accounting Office (RAO) Number	N/A
57	6	625 653 360	IC (Interexchange Carrier)/INC (International Carrier)	CIC
57	6	625, 653, 220	IC (Interexchange Carrier)/INC (International Carrier)	OPERINV
58	4	625 653 360	IC/INC Call Event Status	CALLEVTS
59	2	625 653 360 220	IC/INC Routing Indicator	N/A ROUTIND

—continued—

Table 14-4
BAF Tables/CDR field(s) for Structure codes(s) (continued)

Table	Size	Structure code	Table (data field) name	Required CDR field(s)
60	2	625 360	ANI/CPN Indicator	ANICPN
77	10	All	Service Logic Identification	SLPID
83	6	625 653 360	Trunk Group Number	TRKGRP ROUTIND
85	2	625 360	Dialing and Presubscription Indicator	DLPRESUB
197	4	360 364	Local Access and Transport Area	LATA
280	4	220	Completion Indicator	COMPCODE2
—end—				

Table 14-5 lists the required CDR fields for BAF Tables and Module code(s) in which they are used.

Table 14-5
BAF Tables/CDR field(s) for Module code(s)

Table	Size	Module code	Table (data field) name	Required CDR field(s)
6	6	22	Present Date	DISCYEAR, DISCDATE
18	8	22	Present Time	DISCTIME, DISC10TH, DISCAMPM
88	4	22, 720	Module Code Identification	AMAMOD1, AMAMOD2 when using CDR2AMA template
—continued—				

Table 14-5
BAF Tables/CDR field(s) for Module code(s) (continued)

Table	Size	Module code	Table (data field) name	Required CDR field(s)
88	4	All	Module Code Identification	MODMAP when using CDR2AMA2 or CDR2AMA3 templates
89			AMACALLT/SVCFTR	
732	10	720	Service Provider Identity	N/A
730	4	720	Party Identifier	LRNSRC1, LRNSRC2
731	12	720	Location Routing Number (LRN)	ORIGLRN, TERMLRN, CALLEDNO, DIALEDNO, LNPCHECK LRNSRC1, LRNSRC2
733	16	720	Location	N/A
734	8	720	Supporting Information	LRNSRC1, LRNSRC2, QRYSTIND
—end—				

BAF Tables supported by conversion

Tables 14-6 to 14-39 diagram each supported BAF Table by subfield, subfield name, subfield value, subfield description, and required CDR field(s) for each subfield in the Table. Refer to Appendix A, “CDR field descriptions,” for a detailed description of CDR fields. Refer to *GR-1100-CORE* for more specific information on BAF Tables.

Structure Code (Table 0)

The Structure Code Table (Table 0) identifies the structure code used in the BAF record and whether modules are appended to that structure. This information is used by SDM to determine how to build the BAF record.

Table 14-6
Structure Code – Table 0

Subfield character position(s)	Subfield name	Subfield value	Subfield description	Required CDR field(s)
1	Module Indicator	0 or 4	Indicates whether modules are appended to the Structure	N/A
2–5	Structure Code	0–9999	4 digit structure code to use with this call code	AMASC
6	SIGN	hex–C	Constant	N/A

The supported AMASC structure codes are 0001, 360, 364, 625, 645, 653, and 220. Structure code 220 is populated for calls that interact with an Advanced Intelligent Network (AIN).

Structure Codes 00001 and 00220 are populated for calls that are received over a certain Feature Group D trunk call.

For UCS15, Structure Code is modified to populate char 2–5 with the value ’0001’ or ’0220’.

Call Code (Table 1)

The call code is used by the customer’s accounting system to determine the type of processing that should be applied to the BAF record.

Table 14-7
Call Code – BAF Table 1

Subfield character position(s)	BAF Field(s)	Subfield value	Subfield description	Required CDR field(s)
1–3	Call Type	0–999	Call code associated with this BAF record	AMACALLC
4	SIGN	hex -C	Constant	N/A

Existing CDR field”

AMACALLC

In UCS 15 new call code 342 is added—Originating ACV recording. If the ORGSAREC indicator in table Trunk Group is ’on’, ’342’ is populated for AMACALLC.

New call code 060 is added–Station Paid. If the call is default routed, ’060’ is populated for AMACC.

A value of 119 is generated for calls coming from an Interexchange Carrier.

A value of 141 is generated for tollfree calls that are transported by an Interexchange Carrier.

A value of 142 is generated for tollfree calls that are transported by a Local Exchange Carrier.

A value of 720 is generated for LNP calls with AMA details generated for the call.

A value of 47 is generated in an Advanced Intelligent Network (AIN) environment. It is used in Structure 220.

A value of 74 is generated for calls identified as 911 calls.

A value of 110 is generated for direct-dialed, station–paid internetwork calls routed by way of an interexchange carrier. The record provides connection details for applying access charges.

A value of 117 is generated for an internetwork Public Switched Digital Service (PSDS) call. Call Code 117 provides carrier connection details.

Carrier Connect Date (Table 6)

The Carrier Connect Date Table (Table 6) identifies the date the IAM or offhook is received by the UCS DMS-250 switch in a terminating access record, and the date the ANM is received in an originating access record.

Table 14-8
Carrier Connect Date – Table 6

Subfield character position(s)	Subfield name	Subfield value	Subfield description	Required CDR field(s)
1	Last Digit of Year	0–9	Least significant digit of year	ORIGYEAR
2–3	Month of Year	01–12	Number of month	ORIGDATE
4–5	Day of Month	01–31	Number of day of month	ORIGDATE
6	SIGN	hex -C	Constant	N/A

Connect Date (Table 6)

The Connect Date Table (Table 6) identifies the date the ANM or offhook is received by the UCS DMS-250 switch. If the call is abandoned or released before the answer is received, then this field must be populated with the date when the circuit was released.

Table 14-9
Connect Date – Table 6

Subfield character position(s)	Subfield name	Subfield value	Subfield description	Required CDR field(s)
1	Last Digit of Year	0–9	Least significant digit of year	Derived by SDM
2–3	Month of Year	01–12	Number of month	Derived by SDM
4–5	Day of Month	01–31	Number of day of month	Derived by SDM
6	SIGN	hex -C	Constant	N/A

Present Date (Table 6)

The Present Date Table (Table 6) identifies the date used to timestamp a long duration call. It is associated with Module 22.

Table 14-10
Present Date – Table 6

Subfield character position(s)	Subfield name	Subfield value	Subfield description	Required CDR field(s)
1	Last Digit of Year	0–9	Least significant digit of year	DISCYEAR
2–3	Month of Year	01–12	Number of month	DISCDATE
4–5	Day of Month	01–31	Number of day of month	DISCDATE
6	SIGN	hex -C	Constant	N/A

Timing Indicator (Table 7)

The Timing Indicator Table (Table 7) identifies use of special timing and service capabilities.

Table 14-11
Timing Indicator – Table 7

Subfield character position(s)	Subfield name	Subfield value	Subfield description	Required CDR field(s)
1	Timing Guard Flag	0 or 2	Indicates a timing guard condition is experienced on the call	TIMEGARD
2	Short Called Party Off-Hook Indicator	0–1	Indicates short on-hook, off-hook, on-hook transition	N/A
3	Long Duration/Service Party Capability Indicator	0–3	Used to flag records generated for long duration call events. The Call Type code determines its use.	INCBILL
4	N/A	0	Default	N/A
5	N/A	0	Default	N/A
6	SIGN	hex -C	Constant	N/A

Called Party Off-Hook Indicator (Table 9)

The Called Party Off-Hook Indicator Table (Table 9) is used to indicate if the called party goes off-hook.

Table 14-12
Called Party Off-Hook Indicator – Table 9

Subfield character position(s)	Subfield name	Subfield value	Subfield description	Required CDR field(s)
1	Called Party Off-Hook Indicator	0–3, 9	Indicates billing conditions for called party off-hook	ANSTYPE
2	SIGN	hex -C	Constant	N/A

Service Feature Code (Table 12)

The Service Feature Code Table (Table 12) identifies any special features associated with the call.

Table 14-13
Service Feature Code – Table 12

Subfield character position(s)	Subfield name	Subfield value	Subfield description	Required CDR field(s)
1–3	Service Feature Code	000–999	Indicates any special services associated with the call	SLPID SVCFTR in CDR2AMA2 and CDR2AMA3
4	SIGN	hex -C	Constant	N/A

Note: The existing CDR SLPID field, which normally contains the 9 digit Service Line Provide ID, is used to store the Service Feature Code values. This applies to the CDR2AMA template only.

Originating NPA (Table 13)

The Originating NPA Table (Table 13) identifies the originating numbering plan area (NPA). The originating NPA is coordinated with the use of the Originating Number.

Table 14-14
Originating NPA – Table 13

Subfield character position(s)	Subfield name	Subfield value	Subfield description	Required CDR field(s)
1–3	NPA	NPA	Originating Numbering Plan Area	CLGPTYNO ANISP
4	SIGN	hex -C	Constant	N/A

Note: The Calling Party Number CDR field is populated according to the originating type of trunk, an SS7 or a DAL. If the originating trunk is an SS7, the Charge Number parameter from the IAM is used; if no Charge Number is received, the CallingPartyNumber parameter is used. If the originating trunk is a DAL, the CallingPartyNumber option in table TRKGRP is used.

Originating Number (Table 14)

The Originating Number Table (Table 14) identifies the originating number. The Originating Number is coordinated with the use of the Originating NPA.

Table 14-15
Originating Number – Table 14

Subfield character position(s)	Subfield name	Subfield value	Subfield description	Required CDR field(s)
1–3	NXX	NXX	Originating NXX	CLGPTYNO ANISP
4–7	Station Number	XXXX	Originating number	CLGPTYNO ANISP
8	SIGN	hex -C	Constant	N/A

Note: The Calling Party Number CDR field is populated according to the originating type of trunk, an SS7 or a DAL. If the originating trunk is an SS7, the Charge Number parameter from the IAM is used; if no Charge Number is received, the CallingPartyNumber parameter is used. If the originating trunk is a DAL, the CallingPartyNumber option in table TRKGRP is used.

Dialed NPA (Table 13)

The Dialed NPA Table (Table 13) identifies the dialed NPA used with Call Type codes 141 and 142.

Table 14-16
Dialed NPA – Table 13

Subfield character position(s)	Subfield name	Subfield value	Subfield description	Required CDR field(s)
1–3	NPA	NPA	Dialed NPA	DIALEDNO
4	SIGN	hex -C	Constant	N/A

Dialed Number (Table 14)

The Dialed Number Table (Table 14) identifies the dialed number used with Call Type codes 141 and 142.

Table 14-17
Dialed Number – Table 14

Subfield character position(s)	Subfield name	Subfield value	Subfield description	Required CDR field(s)
1–3	NXX	NXX	Dialed NXX	DIALEDNO
4–7	Station Number	XXXX	Originating number	DIALEDNO
8	SIGN	hex -C	Constant	N/A

Overseas (International Call) Indicator – Table 15

The International Call Indicator is used with the Terminating NPA and Terminating Number fields. The switch uses the terminating number to route a call.

Table 14-18
Overseas (International Call) Indicator – Table 15

Chars	BAF Field(s)	Description	Values	CDR Status
1	International Call Indicator	Indicates the type of international call	0–9	TRMOSEAS
2	SIGN	Constant	hex–C	N/A

The following information applies to the TRMOSEAS field:

- Indicates the type of international call
- Size is 4 bits
- Data type is decimal (range 0–9)
- Values are set as follows:
  - 0 = Numbering Plan Area (NPA) dialed by the customer or provided by another network element non–international call)
  - 1 =NPA determined by the network element (non–international call)
  - 2 =Less than 7–digit international
  - 3 =7–digit international number
  - 4 = 8–digit international number
  - 5 = 9–digit international number
  - 6 = 10–digit international number
  - 7 = 11–digit international number
  - 8 = 12–digit international number
  - 9 = Operator inward–dialed code is in the called number field

Terminating NPA/Destination NPA (Table 16)

The Terminating NPA/Destination NPA Table (Table 16) identifies the address used to route the call (not necessarily the dialed number).

Table 14-19
Terminating NPA/Destination NPA – Table 16

Subfield character position(s)	Subfield name	Subfield value	Subfield description	Required CDR field(s)
1–2	International Expander Positions	0–99	Used with Table 15 to indicate international calls	CALLEDNO
3–5	Numbering Plan Area	NPA	Dialed or derived NPA	CALLEDNO
6	SIGN	hex -C	Constant	N/A

Terminating Number/Destination Number (Table 17)

The Terminating Number/Destination Number Table (Table 17) identifies the number used to route the call (not necessarily the dialed number).

Table 14-20
Terminating Number/Destination Number – Table 17

Subfield character position(s)	Subfield name	Subfield value	Subfield description	Required CDR field(s)
1–3	NXX	NXX	Dialed or derived	CALLEDNO
4–7	Station Number	XXXX	Dialed or derived	CALLEDNO
8	SIGN	hex -C	Constant	N/A

Connect Time (Table 18)

The Connect Time Table (Table 18) identifies the connect time for the call. Connect time is not defined as receipt of a called party off-hook or ANM. If the call is abandoned or released before the receipt of the answer message, then the Connect Time is the date when the circuit is released.

Table 14-21
Connect Time – Table 18

Subfield character position(s)	Subfield name	Subfield value	Subfield description	Required CDR field(s)
1–2	Hours	0–23	Hour connected	Derived
3–4	Minutes	0–59	Minute connected	Derived
5–6	Seconds	0–59	Second connected	Derived
7	Tenths-of-Seconds	0–9	Tenths-of-second connected	Derived
8	SIGN	hex -C	Constant	N/A

Carrier Connect Time (Table 18)

The Carrier Connect Time Table (Table 18) identifies the time the IAM or off-hook is received by the UCS DMS-250 switch in a terminating access record, and the time an ANM is received in an originating access record.

Table 14-22
Carrier Connect Time – Table 18

Subfield character position(s)	Subfield name	Subfield value	Subfield description	Required CDR field(s)
1–2	Hours	0–23	Hour connected	ORIGTIME
3–4	Minutes	0–59	Minute connected	ORIGTIME
5–6	Seconds	0–59	Second connected	ORIGTIME
7	Tenths-of-Seconds	0–9	Tenths-of-second connected	ORIG10TH
8	SIGN	hex -C	Constant	N/A

Present Time (Table 18)

The Present Time Table (Table 18) identifies the time used to timestamp a long duration call. It is associated with Module 22.

Table 14-23
Present Time – Table 18

Subfield character position(s)	Subfield name	Subfield value	Subfield description	Required CDR field(s)
1–2	Hours	0–23	Hour connected	DISCTIME
3–4	Minutes	0–59	Minute connected	DISCTIME
5–6	Seconds	0–59	Second connected	DISCTIME
7	Tenths-of-Seconds	0–9	Tenths-of-Second connected	DISC10TH
8	SIGN	hex -C	Constant	N/A

Elapsed Time (Table 19)

The Elapsed Time Table (Table 19) identifies the time from receipt of ANM or off-hook until a release message is receive by the UCS DMS-250 switch. If the call is abandoned the Elapsed Time is zero.

Table 14-24
Elapsed Time – Table 19

Subfield character position(s)	Subfield name	Subfield value	Subfield description	Required CDR field(s)
1	Constant	0	Constant 0	N/A
2–6	Minutes	0–999	Minutes connected	CALLDUR
7–8	Seconds	0–59	Seconds connected	CALLDUR
9	Tenths-of-Seconds	0–9	Tenths-of-second connected	CALLDUR
10	SIGN	hex -C	Constant	N/A

Carrier Elapsed Time (Table 19)

The Carrier Elapsed Time Table (Table 19) identifies the duration time between carrier connect time and the REL message received or sent by the UCS DMS-250 switch.

Table 14-25
Carrier Elapsed Time – Table 19

Subfield character position(s)	Subfield name	Subfield value	Subfield description	Required CDR field(s)
1	Constant	0	Constant 0	N/A
2–6	Minutes	0–999	Minutes connected	Derived
7–8	Seconds	0–59	Seconds connected	Derived
9	Tenth-of-Seconds	0–9	Tenths-of-second connected	Derived
10	SIGN	hex -C	Constant	N/A

IC/INC Prefix (Table 57)

The IC/INC Table (Table 57) identifies the carrier identification code (CIC).

Table 14-26
IC/INC Prefix – Table 57

Subfield character position(s)	Subfield name	Subfield value	Subfield description	Required CDR field(s)
1–4	IC/INC Identification	0–9999	CIC which identifies the carrier that transports the call	CIC
5	Operator Involvement Indicator	0–9	Indicates whether an operator was involved and if the CIC was known	OPERINV
6	SIGN	hex -C	Constant	N/A

The following information applies to CDR field OPERINV:

- Indicates whether an operator was involved in the call
- Size is 4 bits
- Data type is decimal, range (0–9)
- Values are set as follows:
  - 0 = Not used

- — 1 = The CIC is a FGD identity, the call is dialed direct, and no IC/INC operator system is involved
- — 2 = The CIC is a FGD identity, and IC/INC operator system involvement cannot be determined
- — 3 = Not used
- — 4 = Not used.
- — 5 = Not used
- — 7 = Not used
- — 8 = Not used
- — 9 = Not used

IC/INC Call Event Status (Table 58)

The IC/INC Call Event Status Table (Table 58) identifies how far a call involving Interexchange Carriers progressed before terminating and identifies the conditions associated with the call's termination.

Table 14-27
IC/INC Call Event Status – Table 58

Subfield character position(s)	Subfield name	Subfield value	Subfield description	Required CDR field(s)
1	Constant	0	Constant 0	N/A
2–3	IC/INC Call Event Status	0–15	Identifies the status of the call	CALLEVTS
4	SIGN	hex -C	Constant	N/A

IC/INC Indicator (Table 59)

The IC/INC Indicator indicates whether direct or tandem routing is used to deliver traffic to an Interexchange Carrier/International Carrier (IC/INC) from the end office or from an IC/INC to an end office. This field indicates the routing of the call, regardless of where the AMA record is made.

Table 14-28
IC/INC Indicator – Table 59

Subfield character position(s)	Subfield name	Subfield value	Subfield description	Required CDR field(s)
1	Constant	0–5	Indicates whether direct or tandem routing is used.	ROUTIND
2	SIGN	hex -C	Constant	N/A

The following information applies to CDR field ROUTIND:

- Indicates the routing of the call
- Size is 3 bits
- Data type is decimal, range (0–5)
- Values are set as follows:
  - — 0 = Direct
  - — 1 = Tandem
  - — 2 = Not used
  - — 3 = Not used
  - — 4 = Not used
  - — 5 = Not used

ANI/CPN Indicator (Table 60)

The ANI/CPN Indicator Table (Table 60) identifies whether ANI and/or CPN is provided for the call.

Table 14-29
ANI/CPN Indicator – Table 60

Subfield character position(s)	Subfield name	Subfield value	Subfield description	Required CDR field(s)
1	ANI/CPN Indicator	0–3	Indicates whether ANI and/or CPN is normally provided for the call	ANICPN
2	SIGN	hex -C	Constant	N/A

Note: The ANI/CPN Indicator field is populated according to the type of trunk, an SS7 or a DAL, that the calling party number is coming from. If the originating trunk is an SS7, the CallingPartyNumber parameter of the IAM is checked. If the originating trunk is a DAL, the CallingPartyNumber (CPN) option in table TRKGRP is checked.

Service Logic Identification – Table 77

This field is used in an Advanced Intelligent Network (AIN) environment. It records an identification of the service logic used at the Service Control Point (SCP). The value is contained in an AMAslpID parameter received from the SCP.

Table 14-30
Service Logic Identification – Table 77

Subfield character position(s)	Subfield name	Subfield value	Subfield description	Required CDR field(s)
1–9	Service Logic Identification	0–3	Indicates the service logic used at the SCP	SLPID
10	SIGN	hex -C	Constant	N/A

Previously, the SLPID field was used to store Service Feature information that was returned in a response message from an Intelligent Network/1 processor. The processor is used to translate toll-free calls.

In UCS14, that functionality is transferred to the SVCFTR field. The SLPID field is used to hold information returned in the AMAslpID field of a CAIN response message. This field is used in Structure 220.

Trunk Group Number (Table 83)

The Trunk Group Number Table (Table 83) identifies the signaling type and the trunk group which corresponds to the call.

Table 14-31
Trunk Group Number – Table 83

Subfield character position(s)	Subfield name	Subfield value	Subfield description	Required CDR field(s)
1	Trunk Group Signaling Type Indicator	1–6, 9	Indicates type of signaling on the trunk group specified	Derived from ROUTIND
2–5	Trunk Group Number	0–9999	Incoming TGN	TRKGRP
6	SIGN	hex -C	Constant	N/A

The following information applies to CDR field ROUTIND:

- Indicates the routing of the call
- For table 83, the trunk group signaling (Char 1) is derived from the ROUTIND field
- If ROUTIND is 0, the trunk group signaling value is 3. If ROUTIND is 1, the trunk group signaling value is 4.
- Size is 4 bits
- Data type is decimal, range (1–9)
- Values are set as follows:
  - 1 = Call is routed between end offices on a multiple frequency trunk. (Corresponding ROUTIND value is 2).
  - 2 = Not Used
  - 3 = Call is routed directly to the carrier
  - 4 = Call is routed by way of an LEC AT
  - 5 = Not used
  - 7 = Not used
  - 8 = Not used
  - 9 = Not used

Dialing and Presubscription Indicator (Table 85)

The Dialing and Presubscription Indicator Table (Table 85) identifies to the accounting office whether the end user dialed a CAC, whether the station being used is presubscribed, and whether the CIC involved has a service arrangement with the LEC.

Table 14-32
Dialing and Presubscription Indicator – Table 85

Subfield character position(s)	Subfield name	Subfield value	Subfield description	Required CDR field(s)
1	Dialing and Presubscription Indicator	0–9	Describes how the user accessed this CAC	DLPRESUB
2	SIGN	hex -C	Constant	N/A

Local Access and Transport Number (Table 197)

The Local Access and Transport Number Table (Table 197) identifies the numerical identifier of a Local Access and Transport Area.

Table 14-33
Local Access and Transport Number – Table 197

Subfield character position(s)	Subfield name	Subfield value	Subfield description	Required CDR field(s)
1–3	LATA	0–9999	Numerical identifier of LATA	LATA
4	SIGN	hex -C	Constant	N/A

Module Code Identification (Table 88)

The Module Code Identification Table (Table 88) identifies the Module code associated with the Module.

Table 14-34
Module Code Identification – Table 88

Subfield character position(s)	Subfield name	Subfield value	Subfield description	Required CDR field(s)
1–3	Module Code	1–999	Identifies the Module	MODMAP (16 bits)
4	SIGN	hex -C	Constant	N/A

MODMAP indicates what module codes are present.

In UCS15 the new values are 29, 306, 831 and 908.

Table 14-35
Translation Settable Field – Table 89

Subfield character position(s)	Subfield name	Subfield value	Subfield description	Required CDR field(s)
1–3	Translation Settable Field	0–999	Identifies the call attribute	AMACALLT (10 bits) SVCFTR (10 bits)
4	SIGN	hex -C	Constant	N/A

The following information applies to the AMACALLT field:

- Contains the Call Type Value
- Size is 10 bits
- Data Type is decimal, range (0–999)

If the switch receives an OverflowBillingIndicator or PrimaryBillingIndicator parameter populated with an non–zero AMA Call Type Value.

The following information applies to the SVCFTR field:

- Contains the Service Feature ID Value
- Size is 10 bits
- Data Type is decimal, range (0–999)

If the switch receives an OverflowBillingIndicator or PrimaryBillingIndicator parameter populated with a non-zero Service Feature ID value, this field is populated with the received Service Feature ID Value.

Table 14-36
Completion Indicator – Table 280

Subfield character position(s)	Subfield name	Subfield value	Subfield description	Required CDR field(s)
1–3	Completion Indicator	0–999	Contains the status of a call completion call	COMPCODE2 (4 bits)
4	SIGN	hex -C	Constant	N/A

The following information applies to the COMPCODE2 field:

- Identifies the status of a call completion call
- Size is 10 bits
- Data Type is decimal, range (0–999)
- Values are set as follows:
  - 001 = Completed: Connected
  - 002 = Not used
  - 003 = Not completed: Setup Restrictions Table
  - 004 = Not used
  - 005 = Not Completed: No circuits
  - 006 = Not Completed: Ringing
  - 007 = Not Completed: Busy
  - 008 = Not Completed: No Answer Supervision
  - 009 – 011 = Not Used
  - 012 = Not Completed: Network Failure
  - 013 = Not Completed: Caller abandon
  - 014 = Not used
  - 015 = Not Completed: Call Sent to treatment
  - 016 – 998 = Not used
  - 999 = Unknown

Party Identifier (Table 730)

The Party Identifier Table (Table 730) is part of Module 720 which is used for LNP calls. It identifies the directory number reference of the party.

Table 14-37
Party Identifier – Table 730

Subfield character position(s)	Subfield name	Subfield value	Subfield description	Required CDR field(s)
1–3	Party Identifier	1–999	Identifies the directory number reference of the party	LRNSRC1 LRNSRC2
4	SIGN	hex -C	Constant	N/A

Location Routing Number (LRN) (Table 731)

The Location Routing Number (LRN) Table (Table 731) is part of Module 720 which is used for LNP calls. It identifies the switching entity that provides service to the party identified in Table 730.

Table 14-38
Location Routing Number (LRN) – Table 731

Subfield character position(s)	Subfield name	Subfield value	Subfield description	Required CDR field(s)
1	Constant	0	Constant value	N/A
2–11	Location Routing Number	NPA-NX X-XXXX	Identifies the switching entity that provides service to the party identified in Table 730	ORIGLRN, TERMLRN, CALLEDNO, DIALEDNO, LNPCHECK, LRNSRC1, LRNSRC2
12	SIGN	hex -C	Constant	N/A

Supporting Information (Table 734)

The Supporting Information Table (Table 734) is part of Module 720 which is used for LNP calls.

Table 14-39
Supporting Information – Table 734

Subfield character position(s)	Subfield name	Subfield value	Subfield description	Required CDR field(s)
1	LRN Source Indicator	1–4, 9	Source of LRN populated in Table 731	LRNSRC1 LRNSRC2
2–3	Query Status Indicator	01–15, 99	Result status of the query	QRYSTIND
4	Constant	0	Reserved for future use	N/A
5	Constant	0	Reserved for future use	N/A
6	Constant	0	Reserved for future use	N/A
7	Constant	0	Reserved for future use	N/A
8	SIGN	hex -C	Constant	N/A

—end—

Sample CDR template for BAF conversion

The CDR template layout is a pre-defined template provisioned in table CDRTMPLT. Refer to Appendix A, “CDR field descriptions,” for more information on CDR fields.

There is a new template ’AMAREC.’ This template is used for CDR to BAF conversions done on the CM.

CDR2AMA template

The CDR to BAF conversion uses the following fields in the CDR2AMA template:

- AMASC
- AMACALLC
- TIMEGUARD
- ORIGYEAR
- DISYEAR
- ORIG10TH
- CALLEVTS
- TRKGRP
- ANICPN
- LATA
- AMAMOD1
- AMAMOD2
- DLPRESUB
- LRNSRC1
- LRNSRC2
- QRYSTIND

CDR2AMA2

The CDR to BAF conversion uses the following fields in the the CDR2AMA2 template:

- AMASC
- AMACALLC
- TIMEGUARD
- ORIGYEAR

- DISCYEAR
- ORIG10TH
- CALLEVTS
- TRKGRP
- ANICPN
- LATA
- AMAMOD1
- AMAMOD2
- DLPRESUB
- LRNSRC1
- LRNSRC2
- QRYSTIND
- TRMOSEAS
- OPERINV
- ROUTIND
- COMPCODE2
- MODMAP
- AMACALLT
- SVCFTR
- ORIGPLAN (for future use)
- TERMPLAN (for future use)
- EXOSEAS (for future use)

CDR2AMA3

The CDR2AMA3 template contains all the fields which the CDR2AMA2 template uses for CDR to BAF conversion plus HEXID, AMASIZE, and AMABAFMD.

For CDR-BAF conversion, the office parameter FCDR_CDR_LAYOUT in table OFCENG must be set to NORMAL.

For the BAF fields to be populated in a CDR when using the CDR2AMA template, the office parameter EDGE_SWITCH in table OFCVAR must be set to Y.

Figure 14-1 is a sample CDR template layout containing all necessary CDR fields required for BAF record conversion.

Figure 5-1
UCS15 Sample CDR template for BAF conversion (in NORMAL format)

MSB															LSB	
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	WORD/BIT
RECCD(1)								RECCD(2)								00
VL	RESERVED1			UE	TG	ACTIDX			TEMPLID							01
SEQNUM																02
CIC(4)				CIC(3)				CIC(2)				CIC(1)				03
ORIGTIME																04
OA	INCBILL			ANSTYPE				ORIGDATE								05
DISCTIME																06
QRYSTIND								DISCDATE								07
CALLDUR(1)								CALLDUR(0)								08
CALLDUR(3)								CALLDUR(2)								09
CLGPTYNO(3)				CLGPTYNO(2)				CLGPTYNO(1)				CLGPTYNO(0)				10
CLGPTYNO(7)				CLGPTYNO(6)				CLGPTYNO(5)				CLGPTYNO(4)				11
CLGPTYNO(11)				CLGPTYNO(10)				CLGPTYNO(9)				CLGPTYNO(8)				12
DIALEDNO(0)				CLGPTYNO(14)				CLGPTYNO(13)				CLGPTYNO(12)				13
DIALEDNO(4)				DIALEDNO(3)				DIALEDNO(2)				DIALEDNO(1)				14
DIALEDNO(8)				DIALEDNO(7)				DIALEDNO(6)				DIALEDNO(5)				15
DIALEDNO(12)				DIALEDNO(11)				DIALEDNO(10)				DIALEDNO(9)				16
CALLEDNO(1)				CALLEDNO(0)				DIALEDNO(14)				DIALEDNO(13)				17
CALLEDNO(5)				CALLEDNO(4)				CALLEDNO(3)				CALLEDNO(2)				18
CALLEDNO(9)				CALLEDNO(8)				CALLEDNO(7)				CALLEDNO(6)				19
CALLEDNO(13)				CALLEDNO(12)				CALLEDNO(11)				CALLEDNO(10)				20
TERMLRN(2)				TERMLRN(1)				TERMLRN(0)				CALLEDNO(14)				21
TERMLRN(6)				TERMLRN(5)				TERMLRN(4)				TERMLRN(3)				22
SLPID(0)				TERMLRN(9)				TERMLRN(8)				TERMLRN(7)				23
SLPID(4)				SLPID(3)				SLPID(2)				SLPID(1)				24
SLPID(8)				SLPID(7)				SLPID(6)				SLPID(5)				25
ORIGLRN(3)				ORIGLRN(2)				ORIGLRN(1)				ORIGLRN(0)				26
ORIGLRN(7)				ORIGLRN(6)				ORIGLRN(5)				ORIGLRN(4)				27
LRNSRC2				LRNSRC1				ORIGLRN(9)				ORIGLRN(8)				28
DISCYEAR				DISC10TH				ORIGYEAR				ORIG10TH				29
DA	TC	AMASC														30
TMGD		DLPRESUB				AMACALLT										31
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	BIT

MSB															LSB	
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	WORD/BIT
ANISP(0)				ANICPN		SVCFTR										32
ANISP(4)				ANISP(3)				ANISP(2)				ANISP(1)				33
ANISP(8)				ANISP(7)				ANISP(6)				ANISP(5)				34
TP		AMACALLC										ANISP(9)				35
ROUTIND				LNPCHECK		LATA										36
OP		TRKGRP														37
FILL2		COMPCODE2										CALLEVTS				38
ALTBILL (00)				EXOSEAS				OPERINV				TRMOSEAS				39
ALTBILL (04)				ALTBILL (03)				ALTBILL (02)				ALTBILL (01)				40
ALTBILL (08)				ALTBILL (07)				ALTBILL (06)				ALTBILL (05)				41
DIGIDTRN (01)				DIGIDTRN (00)				ALTBILL (10)				ALTBILL (09)				42
DIGIDTRN (05)				DIGIDTRN (04)				DIGIDTRN (03)				DIGIDTRN (02)				43
DIGIDTRN (09)				DIGIDTRN (08)				DIGIDTRN (07)				DIGIDTRN (06)				44
MODMAP																45
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	BIT

MSB															LSB	
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	WORD/BIT
DIGIDJIP (03)				DIGIDJIP (03)				DIGIDJIP (01)				DIGIDJIP (00)				46
DIGIDJIP (07)				DIGIDJIP (06)				DIGIDJIP (05)				DIGIDJIP (04)				47
DIGIDNPA (01)				DIGIDNPA (00)				DIGIDJIP (09)				DIGIDJIP (08)				48
FILL2		OACESID										DIGIDNPA (02)				49
																50
																51
																52
																▪
						▪ ▪ ▪										▪
						▪ ▪ ▪										▪
						▪ ▪ ▪										▪
						▪ ▪ ▪										▪
						▪ ▪ ▪										▪
						▪ ▪ ▪										105
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00	BIT

Figure 6-1 uses the following abbreviations and conventions:

- DA stands for DISCAMPM
- HX stands for HEXID
- OA stands for ORIGAMPM
- OP stands for ORIGPLAN
- TC stands for TIMECHNG
- TG stands for TOOLGENERATED
- TMGD stands for TIMEGARD
- TP stands for TERMPLAN
- UE stands for USEEDIT
- VL stands for VARIABLE_LENGTH

Primary Tracer Records

This record is generated every hour on the hour. It contains the count of calls that have been generated during the day. The count is reset at the number of seconds after midnight that is specified in the parameter RESETIME9042 from table AMAPARM.

Hourly AMA Audit Records

This record is generated every hour on the hour. It contains the count of calls that have generated during the hour. The count gets reset every hour.

Clock Change Record

The BAF Time Change Record (Structure 9000) contains fields to indicate the date before change and date after change. Prior to UCS11 the UCS DMS-250 switch generated a Clock Change Record (CCR) which was similar to the BAF Time Change Record, however, it did not contain time stamps to the nearest tenth of a second.

Starting in UCS11, if the EDGE_SWITCH parameter in table OFCVAR is set to Y, the CCR is formatted as shown in Figure 14-2 containing two fields with time stamps to the nearest tenths of a second.

Figure 14-2
Clock Change Record

	MSB															LSB
WORD/BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
00	Record Code															
01	Old Year							Old Month					Old Minute			
02	Old Day							Old Hour					Old Second			
03	New Year							New Month					New Minute			
04	New Day							New Hour					New Second			
05					CDR Size								F/V	ACTIDX		
06	OSR Size								CCR Size							
07								New 10ths second					Old 10th second			
BIT	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

Appendix G
Software Optionality Control

Software Optionality Control (SOC) enables software to be defined and delivered in product computing-module loads (PCL). All functionality in a PCL is categorized as either base or optional. Base functionality is available for immediate use. Optional functionality is grouped into commercial units called SOC options, which can be purchased by operating companies. SOC options correspond to functional groups and functions and are controlled by Nortel Network-supplied passwords.

SOC is the tool for managing options in a PCL. These options reside in the software. When an operating company purchases an option, SOC allows the company to monitor and control its use. Options can be ordered, activated, and used without a software reload or restart.

Note: Refer to the *UCS DMS-250 Software Optionality Control User's Manual* for more information on UCS DMS-250 SOC or the *DMS-100 Family Software Optionality Control User's Manual* for general SOC commands and information.

Billing SOC

This chapter describes the billing SOC. This SOC consists of order code UBFR0001.

Order code UBFR0001 – Flexible CDR

The UBFR0001 order code allows the creation of customer-specific call detail record (CDR) templates Refer to the *UCS DMS-250 Software Optionality Control User's Manual* for more information on usage limits.

Dependencies

This SOC order code is not dependent on any other SOCs.

Datafill information

This SOC option does not affect any datafill.

Office parameters

This SOC option does not affect any office parameters.

Appendix H
DMS–250/500 CDR Bulletin

Test cases and Test document

The purpose of this document is to provide Call Detail Record (CDR) test cases and supporting documentation.

Prior to UCS17/LLT17, test cases for Call Detail Records were delivered to the telephone company via DAT, electronically, or 9–track tape. Nortel is now providing CDR test cases that can be accessed through Helmsman. Both binary and text files are provided. Telephone companies no longer have to request and wait for delivery of the tapes and documentation. DAT and 9–track tapes are still available upon request, by calling: 972–685–8269 or Email rchsdc@nortelnetworks.com.

The purpose of the CDR test cases is to help ensure that telephone company, and down stream billing programs are able to process Call Detail Records (CDR) correctly prior to upgrading to a new PCL software release. If your CDR template is not supported you may lose CDR billing data after the upgrade.

Just as there are upgrade rules for PCLs (switch releases), there are upgrade rules for CDR billing templates. In each new switch release, there is a possibility that new billing records have been added to the CDR in support of new software development. A telephone company may be required to upgrade to a billing template that is supported in the new release.

Call Detail Records (CDR) templates supported in UCS17 and NCS17 are UCS09, UCS11, UCS12, UCS13, CDR2AMA, CDR2AMA2, and CDR2AMA3. The default template for UCS17 and NCS17 is UCS13. There are no changes to the CDR default template since UCS12.

Please refer to NTP 297–2621–328, DMS250 CDR Tape Reference Manual and 297–2621–395, DMS250 Billing Records Application Guide. You can access these documents and CDR billing template by logging on to Helmsman Express. The instructions are listed below.

If you experience this problem please contact your next level of support to determine what CDR billing template to use.

Accessing online documentation via Helmsman Express

1 Go to http://www.nortelnetworks.com.

2 If you are already registered for access to Helmsman Express, click the Login button and enter your user ID and password.

3 If you are not a registered user, click the Register button and submit your request. This will only require a few minutes of your time and is free of charge. You will receive an email with your login information within one to three days.

List of terms

ACT
Automatic CDR Throttling

AIN
Advanced Intelligent Network

AINF
AIN Final treatment

AMA
Automatic Message Accounting

ANI
automatic number identification

ANSCDR
ANSwer Call Detail Record

BAF
Bellcore Automatic Message Accounting Format

BHR
block header record

CAC
carrier access code

CAIN
Carrier Advanced Intelligent Network

CCR
clock change record

CCS7
Common Channel Signaling #7

CDR
call detail record

CDRTMPLT
CDR Template table

CIC
Carrier Identification Code

CLEC
Competitive Local Exchange Carrier

CLLI
common language location identifier

CM
computing module

CPN
calling party number

CTR
Connect_To_Resource

CTMPLT
CDR Template tool

DIRP
device independent recording package

DMS
Digital Multiplex System

DN
Directory Number

DP
Detection Point

DRM
distributed recording manager

EANT
Equal Access Network Trunk

EBCDIC
extended binary coded decimal interchange code

EDP
Event Detection Point

EOPS
Enhanced Operator Position System

Enhanced Operator Services feature

EOS
Enhanced Operator Services system

ESR
emergency start record

FCDR
Flexible Call Detail Record

FCDRSRCH
flexible call detail record search

FGD
Feature Group D

FLEXDIAL
flexible dial plan

FSA
formatter/storage agent

FSD
Feature Group D (EANT)

GAP
Generic Address Parameter

GER
graceful end record

GSR
graceful start record

IC
Inter-Exchange Carrier

IAM
Initial Address Message

IEC
Inter-Exchange Carrier

IMT
Inter–Machine Trunk

IN
Intelligent Network

INC
International Carrier

IN1
Intelligent Network 1

IOD
input/output device

IP
Intelligent Peripheral

IPL
initial program load

ISDN
Integrated Services Digital Network

ISUP
Integrated Services User Part

IXC
Inter–Exchange Carrier

LNP
Local Number Portability

LRN
Local Routing Number

LOGUTIL
Log Utility

MLNP
Misrouted Local Number Portability

NOA
Nature Of Address

NPA
Numbering Plan Area

NTP
Northern Telecom Publication

OFCENG
Office Engineering table

OM
Operational Measurement

ONP
One Night Process

OPART
origination part

OPCHOICE
operator choice

OSR
operator services record

PBX
Private Branch Exchange

PCL
product computing module load

PIC
point in call

POTS
Per TrunkPlain Old Telephone System

PRI
primary rate interface

RLT
release link trunk

RRBCME
Request_Report_BCM_Event

RTETAB
Route Table

RU
recording unit

SDM
SuperNode Data Manager

SOC
software optionality control

SRR
system restart record

SS7
Signaling System 7

STDPRT
Standard Pretranslator

STDPRTCT
Standard Pretranslator Control Table

TBCD
telephony binary coded decimal

TCAP
Transaction Capabilities Application Part

TERMRTE
Treatment Route

TRTMTCD
Treatment Code

TDP
trigger detection point

TPART
Termination part

UCS
Universal Carrier Services

VAMP
Variable AIN Messaging Platform

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	Yes
Individual NTPs (paper)	Merchandising Order Service	1-877-662-5669	Yes
Marketing documents	Sales and Marketing Information Center (SMIC)	1-800-4NORTEL (1-800-466-7835)	No
PCL software	Nortel Networks	Consult your Nortel Networks sales representative	Yes

When ordering publications on CD

Please have the CD number and software version available, for example, **HLM-2621-ENCDRPDF 02.02**.

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, **UCS00014**, 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

Billing Records Application Guide

Product Documentation–Dept 3423
Nortel Networks
P.O. Box 13010
RTP, NC 27709–3010
1-877-662-5669

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