Meridian 1 and Succession Communication Server for Enterprise 1000

CDR Description and Formats

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Revision history

January 2002

Standard 9.00. This document is up-issued to include content changes for Meridian 1 Release 25.40 and Succession Communication Server for Enterprise 1000 systems.

April 2000

Standard 8.00. This is a global document and is up-issued for X11 Release 25.0x. Document changes include removal of: redundant content; references to equipment types except Options 11C, 51C, 61C, and 81C; and references to previous software releases.

June 1999

Standard 7.00. This document is issued for X11 Release 24.2x.

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Standard 6.00. This document is issued to include updates and changes required for X11 Release 23.

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Standard 5.00. Issued for X11 Release 22.

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Standard 4.00.

July 1995

Standard 3.00. New issue combining North America version 8.00 with International version 2.1. This document replaces the 553-2631-101.

July 1994

Standard 2.00. Updated to include Release 19 and Release 20 capabilities.

July 1993

Standard 1.00. Created stand-alone NTP for X11 Release 18H (Phase 8B) based on Preliminary Issue 3.0 of Appendix 5 to 553-2631-100.

Contents

About this document

This document applies to Meridian 1 Internet Enabled and Succession Communication Server for Enterprise (CSE) 1000 systems.

This document is a global document. Contact your system supplier or your Nortel Networks representative to verify that the hardware and software described is supported in your area.

The document provides:

• an overview of CDR features

• administration options

• record type descriptions

• record field descriptions

• record output formats

• record output examples.

Who should use this document

This document is intended for individuals responsible for CDR administration.

How this document is organized

The information in this book is organized in the following way:

• Basic and optional features which are supported by CDR base package 4 are listed and described in the chapter titled "CDR features" on page 11.

• Configuration instructions for CDR are presented in the chapter titled "Administration" on page 125.

- A description of each call record type is provided in the chapter titled "Call record types" on page 147.

- A description of each call record field is provided in the chapter titled "Call record fields" on page 177.

- The location of fields in TTY output is presented in the chapter which begins on page 205.

- This document concludes with a chapter which presents output examples for several CDR scenarios.

Introduction

The Call Detail Recording (CDR) feature provides information on incoming and outgoing calls for accounting and administration purposes. The information is assembled by software and sent through Serial Data Interface (SDI) ports to any EIA RS-232 compatible output or storage device. Teletypewriters (TTY) and printers are examples of output devices. Single-port or Multi-port CDR storage systems are examples of storage devices.

Related documents

When you configure CDR, refer to the *Administration* (553-3001-311).

For system engineering information refer to *System Engineering* (553-3001-151). For memory calculations refer to *Capacity Engineering* (553-3001-149)

Additional feature description information is found in *Administration* (553-3001-311) For information about engineering specifications and other product details, refer to *Traffic Measurement: Formats and Output* (553-2001-450).

Packaging

Table 1, "CDR software packages," on page 10 lists packages that affect information output in CDR. Consult your Nortel Networks representative for information regarding your specific system requirements.

Table 1
CDR software packages

Feature Name	Package Mnemonic	Package Number
Call Detail Recording (CDR) Base	CDR	4
Multi-Customer	CUST	2
CDR on Teletype	CTY	5
CDR on Data Link	CLNK	6
End-To-End Signaling	EES	10
Automatic Number Identification	ANI	12
Charge Account	CHG	23
Charge Account/Authorization code Base	CAB	24
Basic Authorization code	BAUT	25
Network Automatic Route Selection	NARS	58
Coordinated Dialing Plan	CDP	59
Network Authorization code	NAUT	63
Automatic Call Distribution CDR queue records	CDRQ	83
Multi-Tenant Service	TENS	86
Japan Central office Trunks	JPN	97
Dialed Number Identification System	DNIS	98
Message Registration	MR	101
Internal CDR	ICDR	108
Calling Line Identification in CDR	CCDR	118
Multi-Frequency Compelled signaling	MFC	128
International Supplementary Features	SUPP	131
(Part 1 of 2)		

Table 1
CDR software packages

Feature Name	Package Mnemonic	Package Number
CDR Expansion	CDRE	151
Feature Group D	FGD	158
Scheduled Access Restriction	SAR	162
Meridian 911	M911	224
Format CDR	FCDR	234
Meridian 1 Packet Handler	MPH	248
Station activity Call Detail Recording	SCDR	251
CDR Transfer	CDRX	259
NI2	NI2	291
CDR on Busy Tone	FCDR	234
(Part 2 of 2)		

CDR features

Contents

The following are the topics in this section:

Reference list

The following are the references in this section:

- *Automatic Call Distribution: Feature Description* (553-2671-110)

- *Coordinated Dialing Plan: Description* (553-2751-102)

- *Meridian Link ISDN/AP General Guide* (553-2901-100)

- *Networking Features and Services* (553-2901-301)

- *Features and Services* (553-3001-306)

- *Administration* (553-3001-311)

This chapter contains brief descriptions of base CDR package features as well as optional CDR features. Some features require the Format CDR (FCDR) package 234.The CDR features are listed in Table 2. The requirement for package 234 is shown in table 2 also.

Table 1
CDR features list that shows which features require FCDR package 234.

Features	Is FCDR required?
Priority to CDR	No
Call types	No
Multiple Appearance Directory Numbers (MADNs)	No
Calling Party Number	No
CDR Answer Supervision	No
Flexible CDR Digit Suppression	No
Terminating Carriage Control	No
Multi-Customer operation	No
Multi-Tenant Service	No
In-Band Automatic Number Identification	No
CDR with Outpulsed Digits	No
Coordinated Dialing Plan with CDR Enhancement	No
CDR with Charge Account	No
Authorization Code	No
Japan Central Office Trunks	No
Dialed Number Information Service on CDR	No
Message Registration	No

Table 1
CDR features list that shows which features require FCDR package 234.

Features	Is FCDR required?
Multi-Frequency Compelled signaling	No
Scheduled Access Restriction	No
End-to-end signaling	No
Attendant CDR Enhancement (Release 20 & later)	Yes
Network Metering CDR Enhancement (Release 20 & later)	Yes
Format CDR	Yes
Enhanced Malicious Call Trace	No
CDR on Teletype	No
CDR on Data Link	No
Automatic Call Distribution CDR Queue records	No
Internal Call Detail Recording	No
Calling Line Identification in CDR	No
CDR Expansion	No
Feature Group D Automatic Number Identification	No
Stand-alone and network outgoing non-metered CDR Transfer Enhancement (CDRX)	Yes
Time to Answer	Yes
CDR on Redirected Incoming Calls	No

Table 1
CDR features list that shows which features require FCDR package 234.

Features	Is FCDR required?
Public Network Feature Invocation records	No
Public Service Telephone Network (PSTN) Three Party Conferencing	No
Meridian 1 Packet Handler	No
Stand-alone and network outgoing non-metered CDR Transfer Enhancement	No
Station activity Call Detail Recording	No
CDR 100 Hour Call	Yes
CDR on Busy Tone	Yes
R2MFC CNI/CDR Enhancements	Yes
NPI and TON in CDR Tickets	Yes
Bearer Capability in CDR	Yes

Attendant CDR Enhancement

Trunk calls originated by the attendant and extended to an internal station produce S (Start) records when the attendant releases from the call. The S records indicate the attendant as the originating party and the outgoing trunk as the terminating party. The duration of the call is recorded as the time the attendant spent on the call until the Release key was pressed.

When either the internal station or the far end disconnects, an E (End) record is generated. The E record is generated against the internal station. The duration of the call is recorded from the moment the attendant pressed the Release key until the call is disconnected.

Feature implementation

There are no specific implementation procedures for this feature.

Authorization Code

This feature generates A (Authorization Code/Scheduled Access Restriction) call records when the Authorization Code is used if ACDR = YES in LD 88.

Implementation

Task summary list

The following is a summary of the tasks in this section:

1   LD 88 – Configure Authorization Codes to print in CDR.

LD 88 – Configure Authorization Codes to print in CDR.

Prompt	Response	Description
REQ	CHG	Change existing data block
TYPE	a...a	Type = AUB (Authcode) or RAUB (Room Authcode)
CUST	0-99	Customer Number
...		
ACDR	(NO) YES	Authorization codes in CDR

Automatic Call Distribution (ACD) CDR Queue (connection) records

Connection records produced because of the ACD CDR Queue (CDRQ) package 83 are used in the Integrated ACD/CDR Call Processing Interface feature. The connection records tell the customer-provided computer, in real-time, which Automatic Call Distribution (ACD) agent is connected to which trunk.

Connection records are generated on incoming calls when connection is established between an agent and a trunk and on each conference and transfer connection. The feature is implemented via a CDR-TTY (CTY) port which provides a data link to the customer-provided computer.

Implementation

Task summary list

The following is a summary of the tasks in this section:

1   LD 16 – Configure the trunk route for ACD CDR Queue connection records.

LD 16 – Configure the trunk route for ACD CDR Queue connection records.

Prompt	Response	Description
REQ	CHG	Change existing data block
TYPE	RDB	Type of data block= RDB (Route Data BlockCUST
CUST	xx	Customer number associated with this route
ROUT	0-511	Route Number
DES	x...x	Designator field for trunk (0-16 character alphanumeric)
TKTP	a...a	Trunk Type
...		
CDR	(NO) YES	Call Detail Recording
- QREC	(NO) YES	Q Records

Bearer Capability in Call Detail Recording

The Bearer Capability in Call Detail Recording feature allows the operator to use bearer capability information to apply different rates based on the type of on trunks.

ISDN calls provide information on the bearer capabilities used for each trunk call. Bearer capability information also gives the trunk characteristics for each call such as rate, voice or data dedicated, and packet or circuit mode transfer.

The Bearer Capability in CDR feature applies for CDR involving trunks only. For non-trunk calls, such as set-to-set calls, blank characters are output. For all trunks not listed below, 99 is output in the CDR.

The Bearer Capability in CDR feature supports the following trunks:

- EuroISDN trunks

- Asia Pacific trunks

- MCDN trunks

- QSIG trunks

- DTI and DTI2 trunks

- DASS2 trunks and DPNSS1 trunks

- North American ISDN trunks

Table 2 on page 21 shows the bearer capability codes printed in the CDR and their meaning.

Table 2
Bearer capability information printed in the CDR

Code	Meaning
01	Circuit mode speech
02	Circuit mode 3.1 kHz
03	Circuit mode unrestricted 64 kbit/s digital information transfer
04	Circuit mode unrestricted 64 kbit/s digital information transfer rate adapted from 56 kbit/s
05	Packet mode unrestricted digital information transfer
06	Circuit mode 7 kHz audio or videotelephony
07	Circuit mode restricted 64 kbit/s digital information transfer
08	Circuit mode video
99	Unknown or non-existent

Bearer Capability in the Call Detail Recording for ISDN

For ISDN protocols, the bearer capability is contained in the BCAP Information Element (IE). The IE is a mandatory field of the SETUP message sent to initiate a call. The correspondence between the ISDN BCAP IE and the code for CDR is shown in Table 3 on page 22. When the received BCAP fields do not match the values shown in Table 3 on page 22, 99 is output.

Table 3
Correspondence between the ISDN BCAP Information Element and the CDR code

Code	Byte 3 bits 4-0 information transfer capability	Byte 4 bits 6-5 transfer mode	Byte 5 bits 4-0 user information layer 1 protocol	Meaning of CDR code
01	00000	00	/	Circuit mode speech
02	10000	00	/	Circuit mode 3.1 kHz audio
03	01000	00	/	Circuit mode unrestricted 64 kbit/s digital information transfer
04	01000	00	00001 or 01000 **Note:** See byte5a, bits 4-0, user rate must be 01111 (56 kbit/s).	Circuit mode unrestricted 64 kbit/s digital information transfer rate adapted from 56 kbit/s
05	01000	01	/	Packet mode unrestricted digital information transfer
06	10001	00	/	Circuit mode 7 kHz audio or videotelephony
07	01001	00	/	Circuit mode restricted 64 kbit/s digital information transfer
08	11000	00	/	Circuit mode video

Bearer Capability in the Call Detail Recording for DASS/DPNSS

For DPNSS and DASS2 protocols, the bearer capability is contained in the Service Indicator Code (SIC). The SIC is a mandatory field of the Initial Service Request Message (ISRM) message sent to initiate a call. It contains at least one byte and a maximum of two bytes. Table 4 on page 23 shows the correspondence between the DPNSS SIC and the CDR code. Table 5 on page 24 shows the correspondence between the DASS SIC and the CDR code. When the received SIC fields do not match the values shown in Tables 4 and 5, 99 is output.

Table 4
Correspondence between the DPNSS Service Indicator Code and the CDR code

Code	Byte 1 bits 6-4	Byte 1 bits 3-0	Byte 2 bits 2-0	Byte 2 bits 6-4	Meaning of CDR code
01	001	/	/	/	Circuit mode speech
02	Not supported				Circuit mode 3.1 kHz audio
03	010	0000	/	/	Circuit mode unrestricted 64 kbit/s digital information transfer
04	Not supported				Circuit mode unrestricted 64 kbit/s digital information transfer rate adapted from 56 kbit/s
05	010 or 011	/	100	x1x	Packet mode unrestricted digital information transfer
06	Not supported				Circuit mode 7 kHz audio or videotelephony
07	Not supported				Circuit mode restricted 64 kbit/s digital information transfer
08	Not supported				Circuit mode video

Table 5
Correspondence between the DASS2 Service Indicator Code and the CDR code

Code	Byte 1 bits 6-4	Byte 1 bits 3-0	Byte 2 bits 2-0	Byte 2 bits 6-4	Meaning of CDR code
01	000	/	/	/	Circuit mode speech
	001	0000 or 0010	/	/	
02	001	>=1000 not 1111	/	/	Circuit mode 3.1 kHz audio
03	010	0000 if 2 bytes	/	/	Circuit mode unrestricted 64 kbit/s digital information transfer
04	Not supported				Circuit mode unrestricted 64 kbit/s digital information transfer rate adapted from 56 kbit/s
05	010 or 011	/	100	xlx	Packet mode unrestricted digital information transfer
06	Not supported				Circuit mode 7 kHz audio or videotelephony
07					Circuit mode restricted 64 kbit/s digital information transfer
08					Circuit mode video

Bearer Capability in the Call Detail Recording for DTI/DTI2

For DTI and DTI2 trunks, the bearer capability is set during the call processing according to the value entered at prompt DSEL of the route data block in overlay 16.

For both DTI and DTI2 trunks:

- If it is a voice call, 01 is output in the CDR.

- If it is a data call, 03 is output in the CDR.

Additionally, for DTI2 trunks, if the call is voice and data, 99 is output.

Bearer Capability in the CDR

The CDR format is composed of three lines. Each printed item is assigned a line number and a location on that line. If features are restricted or not equipped, the corresponding field in the CDR record is filled with spaces. The first line is 87 characters long; the second line is 86 characters long.

The bearer capability information is at the end of the third line. The bearer capability information is located at position 49-50.

Table 6 on page 26 shows the format of the third line of CDR tickets with the BCAP field in **bold.**

The BCAP field is filled with blank characters if:

- the calls involves sets only, or

- the new BCAP prompt is set to NO (In LD 15, Type = CDR; CDR = YES; BCAP = NO.)

The bearer capability information is present in all CDR records involving trunks.

Table 6
Third line of the new CDR format

Position	Content	Description
1	blank	
2	&	Third line of TTY
3 - 13	time to answer	Time To Answer ringing/total waiting
14	blank	
15 - 30	blid	Billing Line IDentification
31	blank	
32 - 38	cab	M911 Call Abandon tag
40 - 42	cdr100h	100-Hour Duration
43	blank	
44 - 45	npi	CLID Numbering Plan Identification
46	blank	
47	ton	CLID Type of Number
48	blank	
49 - 50	BCAP	Bearer Capability
51	blank	

Operating parameters

The Bearer Capability in CDR requires the new CDR format (that is, FCDR = NEW in LD 17).

If both the originating and terminating sides are trunks, the bearer capability information is taken from the incoming trunk.

If an initialization (INIT) occurs during an established trunk call, the bearer capability information is lost and 99 is output.

Feature interactions

ISDN Bearer Capability Information Element

The Bearer Capability in CDR feature does not change the bearer capability functionality; the bearer capability information in the CDR record is read from the message Call Register where it is stored. If a particular bearer capability is not supported by Meridian 1, it is not displayed in the bearer capability field in the CDR.

DASS/DPNSS Service Indicator Code

The Bearer Capability in CDR feature does not change the Service Indicator Code (SIC) functionality; the bearer capability information in the CDR record is read from the channel block where it is stored. If a particular SIC is not supported by the Meridian 1, it is not displayed in the bearer capability field in the CDR.

Feature packaging

Bearer Capability in CDR requires these packages:

- Call Detail Recording (CDR) package 4
- Call Detail Recording on Teletype Terminal (CTY) package 5
- New Call Detail Recording (FCDR) package 234

Feature implementation

Task summary list

The following is a summary of the tasks in this section:

1   LD 17 – Configure the CDR records for the system.

2   LD 15 – Enable printing of the Bearer Capability information in the CDR for the customer group.

LD 17 – Configure the CDR records for the system.

Prompt	Response	Description
REQ	CHG	Change existing data.
TYPE	PARM	Change system parameters data.
...		
FCDR	NEW	Enable new format for CDR record.

LD 15 – Enable printing of the Bearer Capability information in the CDR for the customer group.

Prompt	Response	Description
REQ:	CHG	Change existing data.
TYPE:	CDR-DATA	CDR gate opener.
CUST	xx	Customer group
CDR	YES	Allow CDR records for the customer.
...		
PORT	0-15	Serial Data Interface Port.
CNI	a..a	Calling Number Identification.
- BCAP	YES	Enable Bearer Capability in CDR

Feature operation

There are no specific operating procedures required to use this feature.

Call Types

For each Customer group and each trunk route data block, you can program CDR to record the following call types:

- all outgoing trunk calls, or

- all outgoing toll trunk calls and/or

- all incoming toll calls with flexible definition of toll, If Flexible Definition of Toll does not specify digits, toll calls are those with the digits 0 or 1 as the first or second digit after the access code.

   Note: toll calls are flexibly defined based on the first or second digit dialed after the trunk route access code

Implementation

Task summary list

The following is a summary of the tasks in this section:

1   LD 16 – CDR to record specific call types on trunk route.

LD 16 – CDR to record specific call types on trunk route.

Prompt	Response	Description
REQ	CHG	Change existing data block
TYPE	RDB	Type of data block= RDB (Route Data BlockCUST
CUST	xx	Customer number associated with this route
ROUT	0-511	Route Number
DES	x...x	Designator field for trunk (0-16 character alphanumeric)
TKTP	a...a	Trunk Type
...		
CDR	(NO) YES	Call Detail Recording
- INC	(NO) YES	Incoming All Calls
- OAL	(NO) YES	Outgoing All
- - OTL	(NO) YES	Outgoing Toll

Calling Line Identification in CDR

Calling Line Identification in CDR (CCDR) package 118 provides the calling party's number in call records. Calling Line Identification (CLID) is a feature of Integrated Services Digital Network (ISDN).

Incoming Primary Rate Access (PRA) calls contain a CLID field in the call set up message. When the CLID is provided by the far end, it is shown in the user's digit display. As an option, it is included in CDR records. If the option to include CLID in CDR records is active, then CLID is output in N (Normal) and S (Start) records for both terminating and tandem nodes in an ISDN network environment.

CLID is configurable in the Configuration Record (LD 17). Refer to *Meridian Link ISDN/AP General Guide* (553-2901-100) for more details.

CLID and In-Band Automatic Number Identification (IANI) are mutually exclusive because they both use the same field to output their information.

Feature implementation

There are no specific implementation procedures for this feature.

Task summary list

The following is a summary of the tasks in this section:

1   LD 17 – Configure CLID in CDR on the system

LD 17 – Configure CLID in CDR on the system

Prompt	Response	Description
REQ	CHG	Request
TYPE	PARM	Change system parameters
...		
- CLID	(NO) YES	Calling Line ID in CDR

Calling Party Number

The Calling Party Number (CPN) record is useful in matching telephone Detail Records.

A P record is generated when a Calling Party Number (CPN) of 1 to 23 digits is entered for a CPN key assigned to Attendant Consoles and Business Communication Set (BCS) telephones. A BCS set refers to a Meridian 1, Proprietary telephone. A P record is generated each time the user presses the CPN key. Therefore, multiple P records can be generated.

Implementation

Task summary list

The following is a summary of the tasks in this section:

1   LD 16 – Configure a calling party number key on a Meridian 1 proprietary telephone.

2   LD 12 – Configure a calling party number key on an attendant console.

LD 16 – Configure a calling party number key on a Meridian 1 proprietary telephone.

Prompt	Response	Description
REQ:	CHG	Change existing data block
TYPE:	a...a	Type of data block
TN	l s c u	Terminal Number
...		
KEY	xx CPN	Calling Party Number key

LD 12 – Configure a calling party number key on an attendant console.

Prompt	Response	Description
REQ	CHG	Change existing data block
TYPE	a...a	Type of data block
TN	l s c u	Terminal Number
...		
KEY	xx CPN	Calling Party Number key

CDR Answer Supervision

The CDR Answer Supervision feature detects answer supervision which is sent as reverse battery from the Central Office. CDR Answer Supervision is available on the following trunk types:

- North American based Ground Start trunks

- North American answer supervised Loop Start trunks with answer supervision

- International XFCOT Loop Start trunks

- DTI, DASS2 and EuroISDN trunks

CDR Answer Supervision record generation begins when answer supervision is received rather than when the trunk is seized. CDR begins when reverse battery is detected from the CO.

Note 1:   Your response to the prompt SUPN in LD 14 determines whether answer and disconnect supervision is required. For ground start trunks, disconnect supervision is detected even if SUPN = NO.

Note 2:   Trunks without Periodic Pulse Metering (PPM) and answer supervision capability continue to generate Call Detail Records based on when the trunk is seized.

Note 3:   Your response to the prompt OPA in LD 16 determines if CDR or CDAS records are generated for PPM pulses. If OPA = NO, trunks with PPM capability and without answer supervision capability continue to generate Call Detail Records based on when the trunk was seized. If OPA = YES, trunks with PPM capability and without answer supervision capability generate Call Detail Records based on the receipt of the first PPM pulse.

The "A" character in the TERID (Terminating ID) field indicates that answer supervision *was received* on an answer supervised trunk, and that CDR timing started with the receipt of the Answer Supervision signal. A "T" character in the TERID field indicates that answer supervision *was not received* on an answer supervised trunk, and that CDR timing started at trunk seizure. For Ground and Loop Start trunks, the A appears when answer supervision is detected from the CO. This option can be selected via the AIA prompt in LD 16.

Class of Service

To enable answer supervision on North American or North American-based trunks, the Polarity Sensitive Pack (PSP) Class of Service must be set. PSP indicates that answer supervision is detected by battery reversal on the CO trunk.

If Polarity Insensitive Pack (PIP) is set, battery reversal is not detected, and Call Detail Recording begins at trunk seizure or when the first PPM pulse is received for PPM equipped trunks that have OPA = YES in LD 16.

For the international XFCOT to enable answer supervision, CLS must be set to the Battery Supervised (BAT). BAT indicates that answer supervision is detected by battery reversal on the CO trunk. If CLS is not set to Battery Supervised (XBAT), battery reversal is not detected, and Call Detail Recording begins at trunk seizure or when the first PPM pulse is received for PPM equipped trunks that have OPA = YES in LD 16.

Refer to Table 7 on page 35 for the various classes of service, and effects on answer supervision and Call Detail Records. This table applies to North American or North American-based ground and loop start trunks and international XFCOT trunks.

Implementation

Task summary list

The following is a summary of the tasks in this section:

1   LD 16 – Configure trunk route for CDR with Answer Supervision

2   LD 14 – Configure each trunk for supervision_relted Class of Service

LD 16 – Configure trunk route for CDR with Answer Supervision

Prompt	Response	Description
REQ	CHG	Change existing data block
TYPE	RDB	Type of data block= RDB (Route Data Block)
CUST	xx	Customer number
ROUT	0-511	Route Number
DES	x...x	Designator field for trunk (0-16 character alphanumeric)
TKTP	a...a	Trunk Type
CDR	(NO) YES	Call Detail Recording
...		
- OAL	(NO) YES	CDR on outgoing calls
- - AIA	(NO) YES	Answered Call Identification Allowed

LD 14 – Configure each trunk for supervision_relted Class of Service

Prompt	Response	Description
REQ	CHG	Change existing data block
TYPE	a...a	Type of data block
...		
CLS		Class of Service
	(PIP)	Polarity Insensitive Pack
	PSP	Polarity Sensitive Pack
	BST	Battery Supervised

Prompt	Response	Description
	(XBAT)	Battery Supervised COT denied
	BAT	Battery Supervised COT

Table 7
Call Detail Record settings related to answer supervision

OAL	OTL	OAN	PSP/BAT	CDR affected	CDR begins
NO	NO	*	YES/NO	No CDR	
YES	N/A	N/A	NO	All calls	Trunk seizure
NO	YES	N/A	NO	Toll calls	Trunk seizure
YES	N/A	NO	YES	All calls	Reverse battery for answered calls Trunk seizure for unanswered calls
NO	YES	NO	YES	Toll calls	Reverse battery for answered calls Trunk seizure for unanswered calls
YES	N/A	YES	YES	Answered calls	Reverse battery
NO	YES	YES	YES	Toll calls	Reverse battery

* : If OAL and OTL = NO, then OAN is always NO.

Legend:

PSP = Answer Supervision CLS for Ground Start and Loop Start trunks
BAT = Battery Supervised XFCOT Loop Start trunks
OAL = CDR for outgoing calls
OTL = CDR for outgoing toll calls
OAN = CDR for answered calls only
N/A = Not applicable. The option setting has no effect on CDR.

CDR 100 Hour Call

The Call Detail Recording 100 Hour Call feature allows Call Detail Recording (CDR) to accommodate calls with a duration greater than 99:59:59. To enable this feature, FCDR must be set to NEW in LD 17.

This feature produces a 100 Hour Duration field. This field is automatically displayed on the third line of all Fixed Format CDR record types that have the duration field.

The 100 Hour Call measurement reflects the one hundred, thousand and ten thousand hours call duration. Accordingly, Call Detail Recording can record, up to u maximum of approximately eleven years and one hundred and fifty three days.

Implementation

Task summary list

The following is a summary of the tasks in this section:

1   LD 17 – Configure the system for New Format CDR

LD 17 – Configure the system for New Format CDR

Prompt	Response	Description
REQ	CHG	Change
TYPE	PARM	Gate opener to change system parameters.
....		
- FCDR	NEW	Configure New Format CDR.

CDR Expansion

The CDR Expansion (CDRE) package 151 has three basic functions:

- modifies ORIGID and TERID fields to accommodate a 7 digit DN

- adds Feature Group D ANI (FGD ANI) information to a second line

- adds a BLANK and & to the second line

If the DNXP (DN Expansion) package is equipped without the CDRE package, CDR records are generated with the leading digits truncated, i.e., the DN fields contain only the trailing 4 digits of the DN.

This does not apply to packet data.

CDR on Busy Tone

The Call Detail Recording (CDR) on Busy Tone feature enhances the CDR record for abandoned calls.

With the CDR on Busy Tone feature, when the originator of an incoming or internal call disconnects after receiving a busy tone, a B record is produced. The CDR on Busy Tone information can be used for gathering statistics on customer response performance.

The CDR on Busy Tone B record information is displayed on the third line of the CDR B record for customers with the New CDR format (FCDR) configured. The third line is also used by the Time to Answer (TTA) feature. A 'B' (for Busy Tone Condition) is printed in the Redirection Identifier subfield. The TTA subfields that usually show the total ringing time and the total waiting time are left blank.

The fields of the third line of output of a CDR B record are shown in Table 8 on page 37.

Table 8
Third line fields of CDR B record

Line	Position	Field	Field Definition
3	2	&	additional line identifier
3	3-7	< >	5 blank spaces instead of TTA Total Ringing Time
3	8	B	Busy Tone identifier/Time To Answer (Redirection Identifier)
3	9-13	< >	5 blank spaces instead of TTA Total Waiting Time
3	14	< >	1 blank space at the end

Incoming calls and the Route Data Block Last Prompt

The following are examples of incoming call scenarios and record outputs.

Simple incoming call

The following describes a simple incoming call scenario:

1   Route 10 member 4 places an incoming call to DN 4001.

2   DN 4001 is busy.

3   The Meridian 1 produces a CDR B record.

The CDR B record produced in the case of a network call or a Central Office (CO) incoming call has the following format:

```
B  001  00  T010004  4001     00/00  00:08:23
&                                         00 000
&      B
```

Incoming call - redirected internally
Last redirection is by Call Forward All Calls

The following scenario describes an incoming call that is redirected internally. The Call Forward All Calls feature redirects the call to a busy DN.

1   Route 10 member 4 places an incoming call to DN 4000.

2   DN 4000 forwards the call to DN 4001.

3   DN 4001 redirects the call, using Call Forward All Calls, to DN 4002.

4   DN 4002 is busy. The originating party receives a busy tone.

5   The Meridian 1 produces a CDR B record.

If **LAST = YES** in Overlay 16, the printed Terminating ID is the DN of the busy set, DN 4002. The output is the following:

```
B  001  00  T010004  4002       00/00  00:08:23
&                                      000 000
&      B
```

If **LAST = NO** in Overlay 16, the printed Terminating ID is the DN of the dialed DN 4000. The output is the following:

```
B  001  00  T010004  4000      00/00  00:08:23
 &                                         000 000
 &     B
```

Last Redirection is by Hunting

The following scenario describes an incoming call that is redirected internally and the last redirection is by the Hunting feature:

1   Route 10 member 4 places an incoming call to DN 4000.

2   DN 4000 forwards the call to busy DN 4001.

3   DN 4001 is redirected, by Hunting, to DN 4002.

4   DN 4002 is busy. The originating party receives a busy tone.

5   The Meridian 1 produces a CDR B record.

If **LAST = YES** in Overlay 16, the printed Terminating ID is the DN of the first busy set, DN 4001. The output is the following:

```
B  001  00  T010004  4001    00/00  00:08:23
 &                                       000 000
 &     B
```

Note: If the last busy set is a Basic Rate Interface (BRI) set, then the DN of this set is printed as the terminating ID in the CDR B record.

If **LAST = NO** in Overlay 16, the printed Terminating ID is the dialed DN 4000. The output is the following:

```
B  001  00  T010004  4000      00/00  00:08:23
 &                                         000 000
 &     B
```

Last Redirection is by Group Hunt

The following scenario describes an incoming call that is redirected internally and the last redirection is by the Group Hunt feature:

1   Route 10 member 4 places an incoming call to DN 4000.

2   DN 4000 forwards the call, using Call Forward All Calls, to Pilot DN 8888 of a Group Hunt list.

3   All members of the Group Hunt list are busy, and no queuing is allowed. The originating party receives a busy tone.

4   The Meridian 1 produces a CDR B record.

If **LAST = YES** in Overlay 16, the printed Terminating ID is Pilot DN 8888 of the Group Hunt List. The output is the following:

```
B  001  00  T010004  8888        00/00  00:08:23
 &                                       000 000
 &     B
```

If **LAST = NO** in Overlay 16, the printed Terminating ID is the Dialed DN 4000. The output is the following:

```
B  001  00  T010004  4000        00/00  00:08:23
 &                                       000 000
 &     B
```

Internal Calls

The record outputs for internal calls follow the same logic as that for incoming calls when LAST = YES in Overlay 16.

For internal calls, the Originating ID field on the first line of the CDR B record contains the DN of the set that initiates the call. The contents of the Terminating ID field on the first line of the CDR B record depends on the type of the last redirection. The LAST prompt in Overlay 16 does not affect the Terminating ID for internal calls.

Table 9 on page 41 summarizes the content of the Terminating ID field in the CDR B record on Busy Tone for scenarios involving internal calls and incoming calls when LAST = YES in Overlay 16.

Table 9
Content of the Terminating ID field in the CDR B record on Busy Tone for Internal Calls and Incoming Calls when LAST = YES in Overlay 16

Type of Last Redirection	Terminating ID in B record output
Simple Call (Not redirected)	DN of the busy set
Call Forward All Calls	DN of the busy set
Hunting	DN of the first busy set. If terminating set is a BRI set, then DN of the BRI set.
Group Hunt	Pilot DN

Table 10 on page 41 summarizes the content of the Terminating ID field in the CDR B record on Busy Tone for scenarios involving incoming calls when LAST = NO in Overlay 16.

Table 10
Content of the Terminating ID field in the CDR B record on Busy Tone for Incoming Calls when LAST = NO in Overlay 16

Type of Last Redirection	Terminating ID in B record output
Simple Call (Not redirected)	DN of the busy set
Call Forward All Calls	Originally dialed DN
Hunting	Originally dialed DN
Group Hunt	Originally dialed DN

Operating parameters

In order for CDR on Busy Tone to be configured, the New CDR format (FCDR) package must be equipped and FCDR must be configured.

For a CDR B record on Busy Tone to be produced on internal calls, the Internal Call Detail Recording (ICDR) package must be equipped, and Internal CDR allowed must be configured in the class of service of at least one of the sets.

The CDR on Busy Tone feature is enabled/disabled on a route basis for incoming calls and on a set Class of Service basis for internal calls. This is dependent upon general CDR and CDR Time To Answer (TTA) setup.

Incoming routes are configured in the Route Data Block by setting the CDRB prompt to YES.

For internal calls, Class of Service must be set to ABDA in Overlay 10, 11, or 27. In Overlay 12 ABAN must be set to ABDA.

For internal calls, the Terminating ID, printed in the B record, depends upon the type of the last redirection. The LAST concept does not apply.

For incoming calls, the Originating ID field on the first line of the CDR B record contains the Trunk route and member number on which the incoming call arrives. For internal calls, the Originating ID field contains the DN of the set that initiates a call.

For incoming, redirected calls, the contents of the Terminating ID field depends upon the nature of the last redirection and the value of the LAST prompt in Overlay 16. When LAST = YES, the terminating DN (the busy DN) is printed. When LAST = NO, the dialed DN is printed.

The LAST prompt in the Route Data Block is attached to the incoming route. This prompt applies to local redirections that occur after a call arrives from that incoming route. Therefore, redirections that take place before arriving via the above route to the Busy Node are not taken into account.

B records are only output to CDR TTYs.

CDR on Busy Tone works on a stand-alone basis; therefore, redirections involving features, such as DPNSS Diversion and other network redirections do not apply to CDR.

CDR on Busy Tone produces a B record only if the busy condition is provided by a set and not in the case of congestion. Also, the B record is only produced on the Busy Node.

As for Time to Answer, CDR on Busy Tone does not apply to outgoing calls.

In the case of an internal call, if either the originating or the terminating set is equipped with Abandoned Call Record and Time To Answer Allowed (ABDA), a B record is generated when the calling party receives a busy tone and abandons the call.

When Group Hunt is a call's last redirection, only the Abandoned call record and time to answer allowed (ABDA) and Internal Call Detail Recording Allowed (ICDA) Classes of Service of the originating set apply.

In Overlay 27, the maximum number of calls to be received at one time is set by the value of the MCAL prompt in the Digital Subscriber Loop (DSL) and in the Traffic Service Position (TSP). The value of MCAL in the DSL should not be greater than the one in the TSP. If this is the case, a warning is produced during service change in the DSL. However, if a wrong value is entered, no CDR B record is produced on the node concerned.

Feature interactions

Attendant Console

When an incoming call arrives on a busy attendant and is put in a queue, the calling party does not receive a busy tone. However, in situations where a busy tone is provided to the calling party, a CDR B record is produced.

Automatic Call Distribution

When a CDR B record on Busy Tone is produced, the operation of the Automatic Call Distribution (ACD) feature is not affected. If a busy situation is encountered with ACD, the LAST concept does not apply, even in redirection situations. CDR on Busy Tone does not operate after ACD Night Treatment occurs.

Basic Rate Interface Sets

CDR on Busy Tone is supported on Basic Rate Interface (BRI) sets.

If the Hunting feature ends up on a busy BRI set, a B record is produced. In this situation, for internal calls or incoming calls when LAST = YES, the Terminating ID in the B record is the DN of the BRI set itself and not the DN of the first busy set in the redirection chain. For incoming calls with LAST = NO, the TerID in the CDR B record is the dialed DN.

Call Waiting

If the terminating party is established on a call and it has a Call Waiting key configured, the originating party receives a ringback tone. Therefore, no CDR on Busy Tone record is produced.

Call Detail Recording Time To Answer

CDR on Busy Tone displays the busy tone state in the third line of the B record. The third line is displayed if Call Detail Recording Time to Answer (CDR TTA) is configured. CDR TTA also produces the B record for abandoned calls on ringing.

Conference
No Hold Conference
Transfer

If a conferee attempts to extend a conference locally to a busy set, a B record on busy tone is produced. If a remote site in a conference tries to extend the conference to a busy set via an incoming trunk, a CDR B record on busy tone is produced, if CDRB = YES on the incoming route. The same occurs when attempting to transfer a call to a busy set.

Do Not Disturb

When a calling party receives a busy tone from the Do Not Disturb feature, a B record is produced.

Line Lockout

When Line Lockout occurs, the system provides an overflow tone to the "locked out" set as it puts it in a lockout state. Meridian 1 proprietary sets are then idle, and analog (500/2500 type) sets appear busy to any incoming call. In this situation, a busy tone is provided to the calling party, and a CDR B record is produced.

Make Set Busy

If a set is in a busy state because the Make Set Busy key is activated, a CDR B record is produced.

Multiple Directory Number/ Multiple Appearance Directory Number Redirection Prime

Single Call Arrangements (SCR)

When a call is answered, the DN key is lit on all sets that share that DN. If another call attempts to reach that DN, the calling party receives a busy tone, and a CDR B record is produced.

Multiple Call Arrangements

If all appearances of a Multiple Appearance DN are busy, a busy tone is provided, and a CDR B record is produced.

In the case of a local call, a CDR B record is produced if one of the possible terminating sets or the originating set is configured with the Abandoned call record and Time to Answer Allowed (ABDA) Class of Service and the Internal Call Detail Recording Allowed (ICDA) Class of Service. FN an incoming call to a Multiple Appearance Directory Number (MADN), it is the configuration of the incoming route that is taken into account.

For a call involving an MADN, the Originating Auxiliary ID (OrigAuxID) and the Terminating Auxiliary ID (TerAuxID) on the second line of the B record indicate the Terminal Number (TN) of the MADN appearance involved in the call. If the MADN is the originator of the call, the OrigAuxID field contains the TN of the appearance that initiated the call. If the terminating party of the call is a busy MADN, the TN that is printed is the TN of the set that was last configured.

Message Intercept

With this feature when the Ring Again feature encounters a busy DN, the calling party receives an announcement, stating that the Ring Again feature can be activated. In this case a busy tone is not provided, but a CDR B record is produced.

Meridian 911

Meridian 911 calls do not receive a busy tone. The only instance in which a busy tone is returned is when a test call is made which is only supported for 911T trunks. For maintenance purposes, a 911 test call can be made, and the Meridian 1 returns a permanent busy tone to the incoming 911 trunk. In this situation, a CDR B record is produced.

Night Service

If Night Service leads to a busy tone being returned to the originator, no CDR B record is produced.

Radio Paging

When a call is routed to a Radio Pager and encounters a busy tone, a B record is not produced.

Feature packaging

CDR on Busy Tone requires the following packages:

- New Format Call Detail Recording (FCDR) package 234, which has the following package dependencies:

    — Call Detail Recording (CDR) package 4

    — Call Detail Recording on Teletype Machine (CTY) package 5

    — Internal Call Detail Recording (ICDR) package 108

Feature implementation

Task summary list

The following is a summary of the tasks in this section:

1   LD 17 – Configure New Format Call Detail Recording (FCDR) on the system.

2   LD 15 – Configure Time to Answer for the customer group.

3   LD 15 – Configure Call Detail Recording for the customer group.

4   LD 16 – Configure CDR on Busy Tone on a trunk route basis.

    5   LD 10, 11, or 27 – Define Abandoned call record on ringing or busy tone allowed and Internal Call Detail Recording Allowed Class of Service for analog (500/2500 type) sets, Meridian 1 proprietary sets, or Basic Rate Interface (BRI) sets.

    6   LD 12 – Define Internal Call Detail Recording Allowed and Abandoned Call Record on ringing or busy tone for Attendant Consoles.

LD 17 – Configure New Format Call Detail Recording (FCDR) on the system.

Prompt	Response	Description
REQ	CHG	Change existing.
TYPE	PARM	System Parameters.
...		
- FCDR	NEW	Use NEW CDR format.

LD 15 – Configure Time to Answer for the customer group.

Prompt	Response	Description
REQ:	CHG	Change existing data.
TYPE:	FTR	FTR Gate opener.
CUST	xx	Customer number.
...		
OPT	TTAD TTAA	Time To Answer and Abandoned call records Denied/Allowed.

LD 15 – Configure Call Detail Recording for the customer group.

Prompt	Response	Description
REQ	CHG	Change existing data.
TYPE	CDR-DATA	Call Detail Recording Gate Opener.
CUST	xx	Customer Group number.
...		
CDR	YES	CDR (not) provided.

LD 16 – Configure CDR on Busy Tone on a trunk route basis.

Prompt	Response	Description
REQ	CHG	Change existing data.
TYPE	RDB	Route Data Block.
CUST	xx	Customer group number.
ROUT	0-511 0-127	Route Number. For Option 11C.
...		
CDR	(NO) YES	CDR output for the specified route not allowed.
- INC	(NO) YES	CDR records not generated on incoming calls.
- LAST	 (NO) YES	CDR record printing content option for redirected calls. The Terminating ID field in the CDR record will contain the one before the last party The Terminating ID field in the CDR record will contain the last party.
- TTA	(NO) YES	Time To Answer output in CDR (not) provided.
- ABAN	(NO) YES	CDR on abandoned calls on ringing (not) allowed or (denied).
- CDRB	(NO) YES	(Deny)/Allow CDR on abandoned calls on busy tone. In order for the CDRB prompt to appear, TTA must be set to YES.

LD 10, 11, or 27 – Define Abandoned call record on ringing or busy tone allowed and Internal Call Detail Recording Allowed Class of Service for analog (500/2500 type) sets, Meridian 1 proprietary sets, or Basic Rate Interface (BRI) sets.

Prompt	Response	Description
REQ	NEW CHG	Add new data. Change existing data.
TYPE	a..a	Telephone type. Refer to *Administration* (553-3001-311)
TN	l s c u c u	Terminal Number. For Option 11C.
...		
CLS	ABDA	Abandoned call record on ringing or busy tone allowed and Time To Answer allowed.
CLS	ICDA	Internal Call Detail Recording Allowed.

LD 12 – Define Internal Call Detail Recording Allowed and Abandoned Call Record on ringing or busy tone for Attendant Consoles.

Prompt	Response	Description
REQ	NEW CHG	Add new data. Change existing data.
TYPE	xxxx	Console type, where xxxx is: ATT, 1250, 2250.
...		
ICDR	ICDA	Internal Call Detail Recording Allowed.
ABAN	ABDA	Abandoned call record on ringing or busy tone allowed and Time To Answer allowed.

Feature operation

No specific operating procedures are required to use this feature.

CDR on Data Link

The CDR on Data Link (CLNK) package 6 is required when the Single/Multi-port CDR storage system is used. The CLNK software formats the call records into a form suitable for storage on magnetic tape. ANK is not supported for packet data

Implementation

Task summary list

The following is a summary of the tasks in this section:

1   LD 17 – Configure CDR on Data Link on the system

LD 17 – Configure CDR on Data Link on the system

Prompt	Response	Description
REQ	CHG	Request
TYPE	ALARM	Change Alarm Filters
...		
- USER	CDL	CDR Data Link

Internal Call Detail Recording

Internal Call Detail Recording (ICDR) package 108 provides a call record type for internal calls. An internal call record is output for stations or attendants with the Internal Call Detail Allowed (ICDA) Class of Service.

Implementation

Task summary list

The following is a summary of the tasks in this section:

1   LD 10 – Configure Analog (500/2500 type) telephones with Internal CDR Class of Service

2   LD 11 – Configure Meridian 1 Proprietary telephone with Internal CDR Class of Service

3   LD 12 – Configure Attendant console with Internal CDR Class of Service

4   LD 27 – Configure Basic Rate Interface telephone with Internal CDR Class of Service

LD 10 – Configure Analog (500/2500 type) telephones with Internal CDR Class of Service

Prompt	Response	Description
REQ:	CHG	Request
TYPE:	a...a	Type of data block
...		
CLS		Class of Service
	(ICDD) ICDA	Internal Call Detail Recording (Denied) Allowed

LD 11 – Configure Meridian 1 Proprietary telephone with Internal CDR Class of Service

Prompt	Response	Description
REQ:	CHG	Request
TYPE:	a...a	Type of data block
...		
CLS		Class of Service
	(ICDD) ICDA	Internal Call Detail Recording (Denied) Allowed

LD 12 – Configure Attendant console with Internal CDR Class of Service

Prompt	Response	Description
REQ	CHG	Request
TYPE	a...a	Type of data block
TN	l s c u	Terminal Number
...		
ICDR		Class of Service
	(ICDD) ICDA	Internal Call Detail Recording (Denied) Allowed

LD 27 – Configure Basic Rate Interface telephone with Internal CDR Class of Service

Prompt	Response	Description
REQ	CHG	Request
TYPE	DSL	Type of data block= DSL (Digital Subscriber Loop)
...		
CLS		Class of Service
	(ICDD) ICDA	Internal Call Detail Recording (Denied) Allowed

CDR on Redirected Incoming Calls

The Call Detail Recording on Redirected Incoming Calls feature provides enhancements to Call Detail Recording (CDR) operation on incoming calls.

Without this feature, when an incoming call is redirected the Terminating ID field of the CDR record shows the party before the last party in the redirection chain. It does not show the answering party. With the Call Detail Recording on Redirected Incoming Calls feature, the customer is provided with the option to retain that mode of operation, (identify the party before last) or print the last party (the answering party) in the Terminating ID field. This functionality is provided for calls that have been redirected by:

- Call Forward All Calls

- Call Forward No Answer

- Call Forward Busy

- Hunt

- Intercept Computer (ICP) Call Forward

Implementation

Task summary list

The following is a summary of the tasks in this section:

1   LD 15 – Configure the customer group for CDR.

2   LD 16 – Configure the Terminating ID field LAST option in the trunk route.

LD 15 – Configure the customer group for CDR.

Prompt	Response	Description
REQ:	NEW, CHG	Add, or change
TYPE:	CDR-DATA	Gate opener
CDR	(NO) YES	CDR provided. The prompt CDR must be set to YES.

LD 16 – Configure the Terminating ID field LAST option in the trunk route.

Prompt	Response	Description
REQ	NEW, CHG	Add, or change
TYPE	RDB	Route Data Block
CUST	xx	Customer number associated with this route
ROUT	0-511	Route Number
DES	x...x	Designator field for trunk (0-16 character alphanumeric)
TKTP	a...a	Trunk Type
...		
CDR	(NO) YES	CDR provided
- INC	(NO) YES	CDR records generated on incoming calls
- LAST	(NO) YES	CDR record printing content option for redirected calls. If LAST = YES, the Terminating ID field in the CDR record will contain the last party. If LAST = NO, the Terminating ID field in the CDR record will contain the one before the last party.

CDR on TTY

To output call records on one or more RS-232-C compatible devices, CDR on TTY (CTY) package 5 must be equipped. It provides a hard copy of the call records and can be used with the other CDR optional packages.

Implementation

Task summary list

The following is a summary of the tasks in this section:

1   LD 17 – Configure CDR on TTY on the system

LD 17 – Configure CDR on TTY on the system

Prompt	Response	Description
REQ	CHG	Request
TYPE	ALARM	Change Alarm Filters
...		
- USER	CTY	CDR Teletype

CDR with Charge Account

The CDR with Charge Account (CHG) feature provides the capability to directly bill calls to specific charge account numbers.

Implementation

Task summary list

The following is a summary of the tasks in this section:

1   LD 11 – Configure a Charge Account key on a Meridian 1 proprietary telephone

2   LD 12 – Configure a Charge Account key on an Attendant Console.

LD 11 – Configure a Charge Account key on a Meridian 1 proprietary telephone

Prompt	Response	Description
REQ:	CHG	Change existing data block
TYPE:	a...a	Type of data block
TN	l s c u	Terminal Number
...		
KEY	xx CHG	Charge account key

LD 12 – Configure a Charge Account key on an Attendant Console.

Prompt	Response	Description
REQ	CHG	Change existing data block
TYPE	a...a	Type of data block
TN	l s c u	Terminal Number
...		
KEY	xx CHG	Charge account key

CDR with Outpulsed Digits

When a CDR record is generated for an outgoing call on a route which has an outgoing call option for CDR specified, the dialed digits are placed in the call record. When the Outpulsed Digits (OPD) feature is enabled for the route, the DIGITS field contains the digits actually outpulsed by the system.

This feature only applies to Basic Alternate Route Selection (BARS) and Network Alternate Route Selection (NARS) calls. If both the BARS and NARS packages are equipped, then the CDR record follows the BARS format by default. Coordinated Dialing Plan (CDP) and Route Selection-Automatic Number Identification (RS-ANI) are not supported by this feature.

The Outpulsed Digits (OPD) option is most useful when a Location Code call overflows onto the public network. With the OPD option selected, these calls are more easily matched with their toll charges, which are listed in the telephone company's bill.

The following examples show how CDR output is affected by the OPD feature. Each example shows the recorded digits for three CDR records:

Example 1: A Location Code call that stays within ESN

> Digits dialed: 6 555 2315
> Digits Outpulsed: 2315
> Trunk Access Code: 487
> Equipped Package: BARS

• When OPD is not used, the Digits field = 4875552315

- When OPD = NO (disabled), the Digits field = 4875552315

- When OPD = YES (enabled), the Digits field = 4872315

Example 2: A Location Code call that is routed to the public network

>   Digits dialed: 6 555 2315
>   Digits Outpulsed: 14089882315
>   Trunk Access Code: 487
>   Equipped Package: BARS

- When OPD is not used, the Digits field = 4875552315

- When OPD = NO (disabled), the Digits field = 4875552315

- When OPD = YES (enabled), the Digits field = 48714089882315

Example 3: A call onto the public network

>   Digits dialed: 6 408 555 2315
>   Digits Outpulsed: 14085552315
>   Trunk Access Code: 932
>   Equipped Package: BARS

- When OPD not used, the Digits field = 9324085552315

- When OPD = NO (disabled), the Digits field = 9324085552315

- When OPD = YES (enabled), the Digits field = 93214085552315

Example 4: A Location Code call that stays within ESN

>   Digits dialed: 6 555 2315
>   Digits Outpulsed: 2315
>   Trunk Access Code: 457
>   Equipped Package: NARS (BARS not equipped)

- When OPD is not used, the Digits field = 65552315

- When OPD = NO (disabled), the Digits field = 65552315

- When OPD = YES (enabled), the Digits field = 65552315

Note: If the Location Code is outpulsed, then it appears twice in the CDR Digits field.

Example 5: A Location Code call that is routed to the public network

Digits dialed: 6 555 2315
Digits Outpulsed: 14089882315
Trunk Access Code: 457
Equipped Package: NARS (BARS not equipped)

- When OPD is not used, Digits field = 65552315

- When OPD = NO (disabled), Digits field = 65552315

- When OPD = YES (enabled), Digits field = 645714089882315

Example 6: A call onto the public network

Digits dialed: 6 408 555 2315
Digits Outpulsed: 14085552315
Trunk Access Code: 932
Equipped Package: NARS (BARS not equipped)

- When OPD is not used, Digits field = 64085552315

- When OPD = NO (disabled), Digits field = 64085552315

- When OPD = YES (enabled), Digits field = 693214085552315

Implementation

Task summary list

The following is a summary of the tasks in this section:

1 LD 16 – Configure the CDR with Outpulsed Digits option on the trunk route

LD 16 – Configure the CDR with Outpulsed Digits option on the trunk route

Prompt	Response	Description
REQ	CHG	Change existing data block
TYPE	RDB	Type of data block= RDB (Route Data BlockCUST
CUST	xx	Customer number associated with this route
ROUT	0-511	Route Number
DES	x...x	Designator field for trunk (0-16 character alphanumeric)

Prompt	Response	Description
TKTP	a...a	Trunk Type
...		
CDR	(NO) YES	Call Detail Recording
- OAL	(NO) YES	CDR on outgoing calls
- - OPD	(YES) NO	Outpulsed Digits

Coordinated Dialing Plan with CDR Enhancement

The Coordinated Dialing Plan (CDP)/CDR Enhancement allows a customer to preserve CDP digits in CDR output. The customer can select between having the Distant Steering Code (DSC) or Trunk Steering Code (TSC) replaced by the trunk route Access Code (ACOD), or having the trunk route ACOD inserted ahead of the DSC or TSC in the CDR output.

For a complete description of Coordinated Dialing Plan and Electronic Switched Network, refer to *Coordinated Dialing Plan: Description* (553-2751-102).

Implementation

Task summary list

The following is a summary of the tasks in this section:

1   LD 15 – Configure the Coordinated Dialing Plan with CDR Enhancement.

LD 15 – Configure the Coordinated Dialing Plan with CDR Enhancement.

Prompt	Response	Description
REQ:	CHG	Change existing data block
TYPE:	CDR	Call Detail Recording
CUST	xx	Customer Number
...		
CDPR	(NO) YES	Coordinated Dialing Plan (CDP) CDR Enhancement

Dialed Number Identification Service (DNIS)

The Dialed Number Identification Service (DNIS) number (after translation within the system) tells the answering party what number the caller dialed. This number may tell the user what the caller wants. The DNIS can be a maximum of 7 digits.

DNIS can be used with or without Supplementary Features (SUPP) package 131 and regardless of the FCDR setting in LD 17. With FCDR = OLD the Call Detail Record will contain only four (4) DNIS digits, either the first four, or the last four. Which four digits are recorded is determined by the response to the WDGT prompt in LD 16. If WDGT = F, the first four (4) digits will be recorded. If WDGT = L, the last four (4) digits will be recorded. If FCDR = NEW, then the Call Detail Record will contain seven (7) DNIS digits.

The DNIS number is appended to the end of the existing CDR record when the trunk disconnects. The DNIS number is put into the:

- S (Start) record in all cases.

- N (Normal) record when the call is established.

- E (End) record in all cases except cases where the incoming trunk disconnects first.

Dialed Number Identification Service is included in the call record after Feature Group D (FGD) digits only if:

1   DNIS and CDR packages are equipped

2   the route is a DNIS route

3   the DNIS option is turned ON

4   DCDR = YES in the Route Data Block (LD 16)

The In-Band Automatic Number Identification (IANI) feature also uses this field.

DNIS supports Network ACD (NACD) and Feature Group D (FGD). If a DNIS trunk call is rerouted to a remote target ACD agent through NACD and the incoming ISDN trunk's Route Data Block has DNIS-CDR enabled, the DNIS number appears at the end of Normal, Start, and End records. The DNIS number also appears at the end of CDR records for incoming FGD trunks that have the DNIS-CDR option enabled in their Route Data Block.

For details, refer to *Automatic Call Distribution: Feature Description (553-2671-110).*

Packaging

DNIS Length Flexibility is included in DNIS package 98. The DNIS package requires the following packages:

- ACD A package 45

- Digit Display (DDSP) package 19

- Incoming DID Digit Conversion (IDC) package 113

- New CDR Format package 234

Implementation

In addition to enabling the New CDR Format package, the following parameters must be set. (Otherwise, the old CDR format is used, and only four DNIS digits are added to the CDR TTY record.)

Task summary list

The following is a summary of the tasks in this section:

1   LD 16 – Configure DNIS digits to output in CDR for a trunk route.

LD 16 – Configure DNIS digits to output in CDR for a trunk route.

Prompt	Response	Description
REQ	CHG	Change existing data block
TYPE	RDB	Type of data block= RDB (Route Data Block)
CUST	xx	Customer number associated with this route
ROUT	0-511	Route Number

Prompt	Response	Description
DES	x...x	Designator field for trunk (0-16 character alphanumeric)
TKTP	a...a	Trunk Type
...		
AUTO	YES	Auto terminate
- DNIS	(NO) YES	DNIS route
- - NDGT	1-(4)-7	Number of DNIS Digits to record
- - WDGT	(L) F	Last 4 digits to record, first 4 digits to record
- - DCDR	(NO) YES	DNIS in CDR

End-to-End Signaling (EES)

The End-to-End Signaling (EES) digits are always output in the DIGITS field of the Call Detail Record. EES digits are dialed after the end-of-dial (EOD) timer expires, after the octothorpe (#) has been pressed, or after answer supervision is received. EES digits often include sensitive information such as authorization codes and account numbers.

The system administrator has the option of suppressing or including the end-to-end digits in the DIGITD field. This is administered in LD 15 by entering the appropriate response to the ECDR prompt.

Implementation

Task summary list

The following is a summary of the tasks in this section:

1 LD 15 – Configure the CDR to suppress or include the EEs digits

LD 15 – Configure the CDR to suppress or include the EEs digits

Prompt	Response	Description
REQ:	CHG	Change existing data block
TYPE:	CDR	Call Detail Recording
CUST	0-99	Customer Number
...		
ECDR	(NO) YES	End-to-End Signaling digits included in DIGITS field of CDR (Release 19 and later)

Enhanced Malicious Call Trace

Refer to the *Features and Services* (553-3001-306) for detailed information about the operation of the features related to Malicious Call Trace.

- Malicious Call Trace

- Malicious Call Trace ON?TN Print

- Malicious Call Trace Idle

- Malicious Call Trace on Direct Inward Dialing

The Malicious Call Trace (MCT) feature generates a CDR record when the following conditions are met:

- The TRC (trace) key is pressed during an established call on a meridian 1 proprietary telephone or Attendant Console or a Flexible Feature Code is dialed from any set (default is SPRE + 83).

- The Class of Service of the telephone is MCTA

- CDR is allowed for the Customer group

- A TTY port is configured for MCT or there is a maintenance TTY port.

The Malicious Call Trace feature is not supported on BRI sets. The call trace record can be printed on any Serial Data Interface (SDI) port when MCT is defined as a user. It is also written to the history file.

Note: If MCT is not defined, the record is printed on the maintenance TTY(s) only.

The record identifier is MCI for an internal call or MCE for an external call.

An example of a record for an external call follows:

```
MCE CUST01  RM31 10 *ATT05        S 14:24:05 10/03/1994 CNI# 98745678912
CLID#0119012345  *DN1234
```

Table 22 on page 96 describes the first line of the MCT record format. Note positions 12 and 27.

Position	Name	Definition	Format
1–3	RECTYPE	Record Type: Internal Call External Call	 MCI MCE
4	<blank>	Blank space	
5–10	CUSTNO	Customer Number	CUSTxx
11	<blank>	Blank space	(one blank space)
12	STAR1	* if originator activates MCT Blank if terminator activates MCT	* (one blank space)
13–25	ORIGID	Originating Identification: Internal Party Directory Number ACD Position ID Attendant Number	 TNXXXX DNXXXX ACD XXXXXXX ATTNXX
		(Part 1 of 3)	

Position	Name	Definition	Format
		External route and member number	RMXXX XXX
		Conference Number	CFLLNN
26	\<blank\>	Blank space	(one blank space)
27	STAR2	* if terminator activates MCT Blank if originator activates MCT	* (one blank space)
28–40	TERID	Terminating Identification:	
		Internal Party	TNXXXX
		Directory Number	DNXXXX
		ACD Position ID	ACD XXXXXXX
		Attendant Number	ATTNXX
		External route and member number	RMXXX XXX
		Conference Number	CFLLNN
41	\<blank\>	Blank space	(one blank space)
42	ATT	Source is attendant console Destination is attendant console	S D
43	\<blank\>	Blank space	(one blank space)
44–62	TIMESTAMP	Timestamp	HH:MM:SS DD/MM/YYYY
		(Part 2 of 3)	

Position	Name	Definition	Format
63	<blank>	Blank space	(one blank space)
64–67	CNI	Calling Number Identification	CNI#
68	<blank>	Blank space	(one blank space)
69–84	CNINO	CNI Digits for MFC	XXXXXXXXXXXXXXXX
		(Part 3 of 3)	

The second line shows the originating and terminating IDs, as two DNs or as a combination of DN and CLID numbers.

Implementation

1   Activate the MCTA Class of Service for the telephones in LD 16 (analog (500/2500-type) sets and LD 11(Meridian 1 proprietary sets).

2   Assign a TRC key in LD 11 or assign an FFC code in LD 57, if SPRE +83 is not acceptable.

3   Define MCT on a TTY port in LD 17 if you want a dedicated Malicious Call Trace TTY.

Feature Group D (FGD) Automatic Number Identification

CDR records in which an incoming FGD trunk is involved can include an ANI digits field. However, CDRE package 151 must be equipped to have this option. The ANI field option is per route, defined in its FGD block. (FGDB) The ANI field is only supplied in "N" and "S" record types, in both TTY and link formats. It includes two information digits (II) and either a 10 digit number (NPANXXXXXX) or a 3 digit number (NPA).

An indicator appears on the CDR record when the record has an ANI field. The ANI field printout is not dependent on the tenant or CLID fields being printed or if the FCDR prompt in LD 17 is set to OLD if FCDR is equipped.

For example, if no Tenant or CLID information is required, the CDR record consists of one line of ANI as well as tenant and CLID. If the tenant package is equipped and it is printing a record which has tenant number fields, even if no tenant information is printed in the record, the second line is printed. If only II+NPA are received in the call, these are printed in their usual positions and the rest of the ANI field is filled with blank characters. If no ANI information is received for the call, the ANI field is blank.

Implementation

Task summary list

The following is a summary of the tasks in this section:

1 Activate the FGDB in LD19.

2 Assign a Feature Group and Block number (FGNO) to applicable trunk routes

Flexible CDR Digit Suppression

This option allows a customer to suppress a flexible number of dialed digits in the DIGITS field of CDR records. The prompt NDP (number of digits Printed) in LD 16 affects dialed digits, including EES digits, with one exception. When both ECDR = YES in LD 15 and OPD = YES in LD 16, NDP affects only the outpulsed digits; the EES digits *are not* affected. The specified number of digits (0 to 32) are truncated from the end of the dialed digit string on both TTY and magnetic tape outputs.

Implementation

Task summary list

The following is a summary of the tasks in this section:

1 LD 16 – Configure Flexible CDR Digit Suppression on the trunk route data block.

LD 16 – Configure Flexible CDR Digit Suppression on the trunk route data block.

Prompt	Response	Description
REQ	CHG	Change existing data block
TYPE	RDB	Type of data block= RDB (Route Data BlockCUST

Prompt	Response	Description
CUST	xx	Customer number associated with this route
ROUT	0-511	Route Number
DES	x...x	Designator field for trunk (0-16 character alphanumeric)
TKTP	a...a	Trunk Type
...		
CDR	(NO) YES	Call Detail Recording
- NDP	INC 0–32	Output the first 0–32 digits
	EXC 0–32	Suppress the last 0–32 digits

Format CDR

When equipped, the new Format CDR (FCOR package 234 allows the user to select the Format of CDR records output on CDR Teletype (TTY) devices. When the "NEW" CDR format is selected, this feature outputs CDR items in fixed locations. Prior to the introduction of the Format when the "new" CDR format is not selected, CDR items are output in various locations depending on which packages are equipped.

The CDR format is selected on a system-wide basis via input to the FCDR prompt in LD 17. Table 11 on page 67 highlights the requirements for the CDR formats:

Table 11
CDR TTY output format selection

Format CDR (Package 234)	FCDR prompt (LD 17)	CDR output format
Not equipped		OLD
Equipped	OLD	OLD
Equipped	NEW	NEW

Following are examples of the OLD and NEW CDR formats for the Internal CDR record.

Example 1
OLD CDR format Internal CDR L record

```
L 001 00 2238    2238      003.0.00.07 003.0.00.06 02/01 15:17 00:00:02
```

Example 2
NEW CDR format Internal CDR L record

```
L 001 00 2238    2238      02/01 15:17:00 00:00:02.0
 &                                              003.0.00.07 003.0.00.06
 &
```

> *Note:* For the NEW CDR format, all fields are output. If the field is blank, it is output as spaces.

Implementation

Task summary list

The following is a summary of the tasks in this section:

1 LD 17 – Configure the "NEW" CDR format on the system

LD 17 – Configure the "NEW" CDR format on the system

Prompt	Response	Description
REQ	CHG	request
TYPE	PARM	Change system parameters
BCAP	a...a	Bearer Capability (a...a= (SPEECH) or 3.1 KHz)
-FCDR	(OLD) NEW	Format CDR

In-Band Automatic Number Identification

In-Band Automatic Number Identification (IANI) displays the ANI number when a call terminates on an ACD DN. IANI and ISDN cannot be configured on the same trunk group. The ANI display is shown in place of the CLID field on the second display line. For a complete description of the ANI feature, see *Features and Services* (553-3001-306).

IANI and Calling Line Identification (CLID) are mutually exclusive because they both use the same field to output information.

Implementation

Task summary list

The following is a summary of the tasks in this section:

1   LD 19 – Configure the In-Band ANI feature

LD 19 – Configure the In-Band ANI feature

Prompt	Response	Description
REQ	CHG	Change existing data
TYPE	FGDB	Type of data block = Feature Group D
...		
CDAN	(NO) YES	CDR to include Automatic Number Identification

Japan Central Office Trunks

Half Second duration accuracy

With this feature equipped, the user has the option of selecting half second (0.5) duration accuracy instead of normal two (2.0) second duration accuracy. Half second accuracy is selected by responding YES to the DUR5 prompt in LD 17.

Half second duration accuracy is not supported in the CDR Data Link (Tape) format.

Implementation

Task summary list

The following is a summary of the tasks in this section:

1   LD 17 – Configure half second accuracy for CDR records

LD 17 – Configure half second accuracy for CDR records

Prompt	Response	Description
REQ	CHG	Request
TYPE	PARM	Change system parameters
...		
- DUR5	(NO) YES	Half (0.5) second duration accuracy

M911 Enhancements: Call Abandon and MADN Display Coordination

The M911 Enhancements feature enables the Meridian 1 to treat an abandoned call as though the calling party remains on-line. This feature consists of two elements: Call Abandon and Multiple Appearance Directory Number (MADN) Display Coordination.

With the Call Abandon feature activated, a 911 caller who aborts a call is not lost. Instead, the call forwards to an ACD queue. When the call is presented to an ACD agent, Automatic Number Identification (ANI) information appears on the agent's set display and Automatic Location Identification (ALI) appears on the screen update. The call is then tagged in CDR Q and N records as an abandoned call.

The new MADN feature provides the following functionality. When a 911 call taker on a MADN set places an emergency 911 caller on hold, the current terminal screen remains on the display. When a 911 call taker answers another call, either a new call or a retrieved from hold call, the terminal display is updated to include the current information for the call.

No B record is generated for an M911 abandoned call. B record generation is package dependent and applies only to an established call with Internal CDR.

Format CDR package 234 must be equipped and new CDR format (NFCR) must be configured to receive call abandon information.

Implementation

Task summary list

The following is a summary of the tasks in this section:

1   LD 16 – Configure the trunk route for M911 Enhancements.

2   LD 56 – Configure the Call Abandon on Answer tone.

LD 16 – Configure the trunk route for M911 Enhancements.

Prompt	Response	Description
REQ	CHG	Request
TYPE	RDB	Type of data block= RBD (Route data block)
CUST	xx	Customer Number
...		
M911_ANI	(NO) YES	Receive ANI digits for Meridian 911 routes
- M911_ABAN	(NO) YES	(Do not allow) Allow abandoned call treatment for route
- M911_TONE	(YES) NO	(Supply) Do not supply call abandon tone for call taker when abandoned call is answered

LD 56 – Configure the Call Abandon on Answer tone.

Prompt	Response	Description
REQ	CHG	Request
TYPE	FTC	Type of data block = FTC (Flexible Tones and Cadences)
....		
CAB	(NO) YES	M911 Call abandon on Answer tone
TDSH	i bb cc tt	TDS external, burst, cadence, and tone
XTON	0-255	NT8D17 TDS Tone code
XCAD	0-255	NT8D17 cadence code for FCAD

Time to Answer

The Time to Answer (TTA) feature outputs information which indicates the length of time taken to answer a call. The information output is:

- time the call was in the ringing state

- the type of redirection if redirection, occurred

- the total waiting time

The TTA is only output in the NEW CDR format.

TTA information is output on the third line in three subfields. The three subfields are:

- Time to Answer (total ringing time)

- Time to Answer (redirection indicator)

- Time to Answer (total waiting time)

Along with the aforementioned information, the Time to Answer feature also introduces a new B (Abandoned call) record. This record is output when a party, either in the ringing state or in queue, disconnects.

Implementation

Task summary list

The following is a summary of the tasks in this section:

1 LD 17 – Configure NEW Format CDR on your system

2 LD 15 – Configure the Customer Group for Time to Answer CDR information.

3 LD 16 – Configure the trunk route for Time to Answer CDR.

4 LD 10 – Configure Analog (500/2500-type) sets for the Abandoned Call Record Class of Service.

5 LD 11 – Configure Meridian 1 proprietary sets for the abandoned Call Record Class of Service.

6 LD 12 – Configure Attendant Consoles for the Advanced Call Record Class of Service.

7 LD 27 – Configure Basic Rate Interface sets for Abandoned Call Record Class of Service.

LD 17 – Configure NEW Format CDR on your system

Prompt	Response	Description
REQ	CHG	Request
TYPE	PARM	Change system parameters
...		
- FCDR	(OLD) NEW	New Format CDR

LD 15 – Configure the Customer Group for Time to Answer CDR information.

Prompt	Response	Description
REQ:	CHG	Change existing data block
TYPE:	ATT	Attendant Consoles
CUST	0-99	Customer Number
OPT	(TTAD) TTAA	Time to Answer information and Abandoned call records (Denied) Allowed

LD 16 – Configure the trunk route for Time to Answer CDR.

Prompt	Response	Description
REQ	CHG	Change existing data block
TYPE	RDB	Type of data block= RDB (Route Data BlockCUST
CUST	xx	Customer number associated with this route
ROUT	0-511	Route Number
DES	x...x	Designator field for trunk (0-16 character alphanumeric)
TKTP	a...a	Trunk Type
...		

Prompt	Response	Description
CDR	(NO) YES	Call Detail Recording
- TTA	(NO) YES	Time to Answer output
- ABAN	(NO) YES	Abandoned call records output

LD 10 – Configure Analog (500/2500-type) sets for the Abandoned Call Record Class of Service.

Prompt	Response	Description
REQ:	CHG	Request
TYPE:	a...a	Type of data block
...		
CLS		Class of Service
	(ABDD) ABDA	Abandoned call record and Time to Answer (Denied) Allowed

LD 11 – Configure Meridian 1 proprietary sets for the abandoned Call Record Class of Service.

Prompt	Response	Description
REQ:	CHG	Request
TYPE:	a...a	Type of data block
...		
CLS		Class of Service
	(ABDD) ABDA	Abandoned call record and Time to Answer (Denied) Allowed

LD 12 – Configure Attendant Consoles for the Advanced Call Record Class of Service.

Prompt	Response	Description
REQ	CHG	Request
TYPE	a...a	Type of data block
TN	l s c u	Terminal Number

Prompt	Response	Description
...		
ICDR	(ICDD) ICDA	Internal Call Detail Recording (Denied) Allowed
- ABAN	(ABDD) ABDA	Abandoned call record and Time to Answer (Denied) Allowed

LD 27 – Configure Basic Rate Interface sets for Abandoned Call Record Class of Service.

Prompt	Response	Description
REQ	CHG	Request
TYPE	DSL	Type of data block = DSL (Digital Subscriber Loop)
DSL	l s c dsl	Digital Subscriber Loop address
...		
CLS		Class of Service
	(ABDD) ABDA	Abandoned call record and Time to Answer (Denied) Allowed

Meridian 1 Packet Handler (MPH)

CDR for the Meridian 1 Packet Handler package 248 produces two record types. When either or both originating and terminating Terminal Service Profiles (TSPs, defined in LD 27) have CDR, the system generates an internal "G" record. A call that connects to the public data network, including calls between two different MPH applications on the same switch, generates an external "H" record.

External CDR configuration is based on the Customer Data Block (LD 15). Incoming and/or outgoing packet data calls may generate external CDR records.

Implementation

Task summary list

The following is a summary of the tasks in this section:

1   LD 15 – Configure Customer group CDR for packet data calls.

2   LD 27 – Configure CDR in the service profile of the DSL for the BRI terminals.

LD 15 – Configure Customer group CDR for packet data calls.

Prompt	Response	Description
REQ:	CHG	Change existing data block
TYPE:	CDR	Call Detail Recording
CUST	0-99	Customer Number
IMPH	(NO) YES	CDR for incoming packet data call
OMPH	(NO) YES	CDR for outgoing packet data call

LD 27 – Configure CDR in the service profile of the DSL for the BRI terminals.

Prompt	Response	Description
REQ	CHG	Change existing data block
TYPE	TSP	Type of data block = TSP (Terminal Service Profile)
DSL	l s c dsl	Digital Subscriber Loop address
...		
CDR	(NO) YES	Internal CDR

Message Registration

The Message Registration Option is selected on a per-system basis by responding to the MTRO prompt in LD 17 under the PARM gate opener. At the MTRO prompt, either MR (Message Registration) or PPM (Periodic Pulse Metering) can be entered.

Periodic Pulse Metering

With the Message Registration (MR) package (101) equipped and the Periodic Pulse Metering (PPM) feature enabled, the total pulse count and call charge fields are included in CDR records. With PPM enabled, Transfer (X) records are also output containing information about intermediate segments of outgoing calls that are internally transferred several times.

PPM is applicable to both analog and digital Central Office/Public Exchange trunks.

Advice of Charge

Advice of Charge (AOC) information is delivered as part of the Primary Rate Access (PRA) signaling protocol between Meridian 1 and ISDN Public Exchanges.

Two AOC sub-services are supported. The first sub-service is the AOC-ENDC (end of call). With this sub-service, charge information is only delivered at the end of the call when the connection is released between the Meridian 1 and the Public Exchange. With this sub-service, all intermediate X (Transfer) records output OVF99 in the Meter Overflow field indicating that no charge information is available until the end of the call.

The second sub-service is the AOC-DURC (during call). With this sub-service, charge information is delivered as the call is modified and output in X records.

The Meridian 1 is capable of receiving AOC Information Elements from a number of ISDN Public Exchanges.

Metered Transferred Call

Example 3 on page 78 is a sample output example for a Call Transfer which involves a metered call.

Example 3
Metered Transferred Call

```
S 008 00 DN7234 T004016 007.2.04.03 09/07 10:01 00:03:08 9660100
                        00029 000058

X 027 00 DN5345 T004016               09/07 10:10           9660100
                        00037 000074

X 044 00 DN5346 T004016               09/07 10:10           9660100
                        00003 000006

E 046 00 DN5333 T004016               09/07 10:14 00:09:55
                        00031 000062
```

Note 1: The second line in each record is charge information and call.

Note 2: Other unrelated call records may be inserted between these records.

From Example 3 on page 78 the Start and End times, and duration for each segment of the call can be calculated as follows:

ORIGID	Start time	End Time	Duration
7234	10:01	10:04	3 minutes 8 seconds
5345	10:04	10:10	6 minutes
5346	10:10	10:10	Less than 1 minute
5333	10:10	10:14	4 minutes

Total Call10:01 10:14 13 minutes 4 seconds

Implementation

Task summary list

The following is a summary of the tasks in this section:

1   LD 17 – Configure periodic Pulse Metering on the system.

2   LD 15 – Configure Periodic Pulse Metering or Advice of Charge parameters for the customer.

3   LD 16 – Configure Periodic Pulse Metering or Advice of Charge parameters on the truck route.

LD 17 – Configure periodic Pulse Metering on the system.

Prompt	Response	Description
REQ	CHG	Request
TYPE	PARM	Change system parameters
BCAP	a...a	Bearer Capability (a...a = (SPEECH) or 3.1 KHz)
...		
PARM	YES	Parameters
- MTRO	(MR) PPM	Metering Option

LD 15 – Configure Periodic Pulse Metering or Advice of Charge parameters for the customer.

Prompt	Response	Description
REQ:	CHG	Change existing data block
TYPE:	PPM	Periodic Pulse Metering
CUST	0-99	Customer Number
HMTL	(YES) NO	Hotel/Motel environment
PCDL	(NO) YES	PPM and AOC output on CDR Data Link
UCST	0–9999	Unit Cost per PPM or AOC unit

LD 16 – Configure Periodic Pulse Metering or Advice of Charge parameters on the truck route.

Prompt	Response	Description
REQ	CHG	Change existing data block
TYPE	RDB	Type of data block= RDB (Route Data BlockCUST
CUST	xx	Customer number associated with this route
ROUT	0-511	Route Number
DES	x...x	Designator field for trunk (0-16 character alphanumeric)
TKTP	a...a	Trunk Type
...		
OPA	(YES) NO	Outgoing PPM Answer
CCO	(NO) YES	Call Charge Output option
...		
MR		Message Registration
	(NO)	The route is not metered
	STAC	The AOC information is decoded at the start of the call
	DURC	The AOC information is decoded during and at the end of the call
	ENDC	The AOC information is decoded at the end of the call
	PPM	Buffered Periodic Pulse Metering signals to be counted on this route
	RVB	Reverse battery signal from PSTN/CO interpreted as a supervisory signal and used as MR on this route
	XLD	M&MM Lead non-buffered is used on this route
RUCS	0–9999	Route Unit Cost per PPM pulse or AOC unit
RUCF	0–9999 0–3	Route Unit Conversion Factor

Multi-Customer Operation

Multi-Customer Operation allows each customer within a single Meridian 1 system to individually select the CDR feature and its options. The feature is enabled or disabled on a customer basis in the Customer Data Block (LD 15).

Implementation

Task summary list

The following is a summary of the tasks in this section:

1   LD 15 – Configure CDR parameters for Customer Group

LD 15 – Configure CDR parameters for Customer Group

Prompt	Response	Description
REQ:	CHG	Change existing data
TYPE:	CDR_Data	Call Detail Pending
CUST	0-99	Customer number
CDR	(NO) YES	Change CDR data for the Customer Group
...	...	

Multi-Frequency Compelled signaling

The Multi-Frequency Compelled (MFC) signaling feature provides a new Digits Type identifier "C". The C is output in N (Normal), S (Start) and E (End) records to identify MFC Calling Number Identification (CNI) information.

Calling Number Information is output for incoming routes that have CDR activated for incoming calls and that are configured to receive MFC CNI.

Implementation

Task summary list

The following is a summary of the tasks in this section:

1   LD 14 – Configure trunks for Calling Number Identification.

LD 14 – Configure trunks for Calling Number Identification.

Prompt	Response	Description
REQ	CHG	Change existing data block
TYPE	a...a	Type of data block
...		
CLS		Class of Service
	(CND) CNA	Calling Number Identification (Denied) Allowed

Multi-Tenant Service

When your system is equipped with Multi-Tenant Service package (86), the tenant numbers of the originating and terminating parties are included in CDR records.

Implementation

Task summary list

The following is a summary of the tasks in this section:

1   Activate Multi-Tenant Service in LD93

2   Activate Multi-Tenant Service in the class of service of telephones(LD10 and LD11)

3   Assign a tenant number to telephones.

LD 93 – Activate Multi-tenant Services

Prompt	Response	Comment
REQ:	NEW	Add Multi-tenant Service
...		
TYPE:	TENS	Multi-tenant Service data block
...		
CUST	xx	Customer number associated with this function as defined in LD 15

LD 10 – Activate Multi-tenant service in the Class of Services of telephones and assign a tenant number

Prompt	Response	Comment
REQ:	CHG	Change existing data block
...		
TYPE:	a...a	Telephone set data block
...		
TN		Terminal Number
	l s c u	Option 51C, 61C, and 81C
	c u	Option 11C
...		
CLS	TENA	Tenant Service Allowed
...		
TEN	1 - 511	Tenant Number

LD 11 – Activate Multi-tenant service in the Class of Services of proprietary telephones and assign a tenant number

Prompt	Response	Comment
REQ:	CHG	Change existing data block
...		
TYPE:	a...a	Telephone set data block
...		
TN		Terminal Number
	l s c u	Option 51C, 61C, and 81C
	c u	Option 11C
...		
CLS	TENA	Tenant Service Allowed
...		
TEN	1 - 511	Tenant Number

Multiple Appearance Directory Numbers

As a customer option, an auxiliary identification (AUXID) can supplement a Multiple Appearance Directory Number (MADN). An AUXID provides the loop, shelf, card and unit of the originating set. An AUXID field is provided only if the originating set has a MADN as the prime DN. If a call originates from a MADN which is not the prime DN, the prime DN is shown as the originating ID with no AUXID field provided. AUXID output in CDR is configured on a customer basis in LD 15.

Note: The Multiple Appearance DN Redirection Prime (MARP) in Release 18 and later does not affect CDR feature.

Implementation

LD 15 – configure AUXID output in CDR for a customer group

Prompt	Response	Description
REQ	CHG	Change existing Data block
TYPE	CDR_DATA	Call Detail Recording Gate Opener
CUST	00-99	Customer number
CDR	(NO) YES	Change Call Detail Recording Data
...		
AXID	(NO) YES	Auxiliary Identification (not) output in CDR record.

Network Metering CDR Enhancement

If the (CDRX) package 259 is not equipped or the CDRX prompt in LD 16 is no, network call transfers which involve metered trunks generate an S (Start) record for the first transfer and an (E) End record when the last party disconnects.

If a transfer string is "mixed", meaning some local transfers followed by a Network transfer, S and X records are generated for the local transfers. However, the first Network transfer generates an "X" record and no further transfers are recorded. The only further record is the E record.

When the CDRX package 259 is equipped and CDRX = YES LD 16, network call transfers involving metered trunks generate CDR S (Start), X (Transfer)

and E (End) records for all local and network transfers.

The point in time at which the records are generated is determined by the transfer destination. If the call is being transferred within the same node, an X or E record is generated when the party the call is transferred to answers. If the call is being transferred to another node, an X or E record is generated when the transferring party completes the transfer. That is, the X or E record is generated when the transferring party presses the Transfer key a second time for Meridian 1 proprietary sets or goes on-hook following a consultation connection for analog (500/2500-type) sets.

The Network Metering CDR Enhancement requires the NEW CDR format to output the new BLID (Billing Line I.D.) field. The BLID field is added to the third line of the S, X, and E records to indicate the remote billing party for a particular call segment.

In instances where a call accessed the network at one node and terminated at another node without terminating on the first node, only an N (Normal) record will be produced at the first node. The N record will include the BLID (Billing Line I.D.) field.

Implementation

LD 16 – Configure the CDR on the route for the Network Metering CDR Enhancement.

Prompt	Response	Description
REQ	CHG	Change existing data block
TYPE	RDB	Route Data Block
CUST	xx	Customer number associated with this route
ROUT	0-511	Route Number
DES	x...x	Designator field for trunk (0-16 character alphanumeric)
TKTP	a...a	Trunk Type
...		
CDR	(NO) YES	Call Detail Recording
- CDRX	(NO) YES	CDR X records printed for multiple call transfers

NPI and TON in CDR

The Numbering Plan Identification (NPI) and Type Of Number (TON) in Call Detail Recording (CDR) feature allows NPI and TON information to be optionally displayed on the third line of CDR records. NPI and TON are associated with Calling Line Identification (CLID) information, and are useful for billing incoming calls to the originating party.

The NPI and TON are only displayed for calls on an incoming ISDN trunk. Also, the New Format CDR (FCDR) prompt must be set to NEW and the Calling Line Identification (CLID) prompt must be set to YES in Overlay 17. Figure 1 on page 86 illustrates the format of the third line of a CDR ticket.
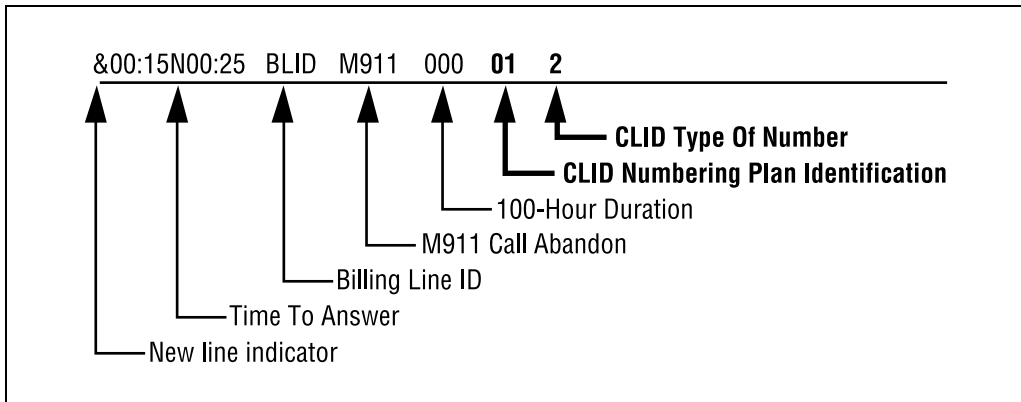
Figure 1
Third line format for CDR record

Table 12 describes the contents of the third line of CDR record.

Table 12
Third line contents of CDR record

Line	Position	Field	Field Definition
3	1	blank	
3	2	&	New line indicator
3	3-7	TTA	Time To Answer (Total ringing time)
3	8	REDIR/B	Time To Answer (Redirection Indicator)/Busy Tone Identifier
3	9-13	TWT	Time To Answer (Total Waiting Time)
3	14	blank	
3	15-30	BLID...xxx	Billing Line ID
3	31	blank	
3	32-38	ABANDON	M911 Call Abandon Tag
3	39	blank	
3	40-42	000	100-Hour Duration
3	43	blank	
3	44-45	NPI	CLID Numbering Plan Identification
3	46	blank	
3	47	TON	CLID Type Of Number
3	48	blank	

Figure 2 on page 88 illustrates a scenario in which DN 4000 (on Node 1) places a call to DN 4100 (on Node 2) over a Meridian Customer Defined Network (MCDN), using a Coordinated Dialing Plan (CDP) Distant Steering Code (DSC). The call arrives at Node 2 on Route 201 Member 4. A CDR N ticket is produced when the call is disconnected.

Figure 2
Scenario involving a call over a Meridian Customer Defined Network
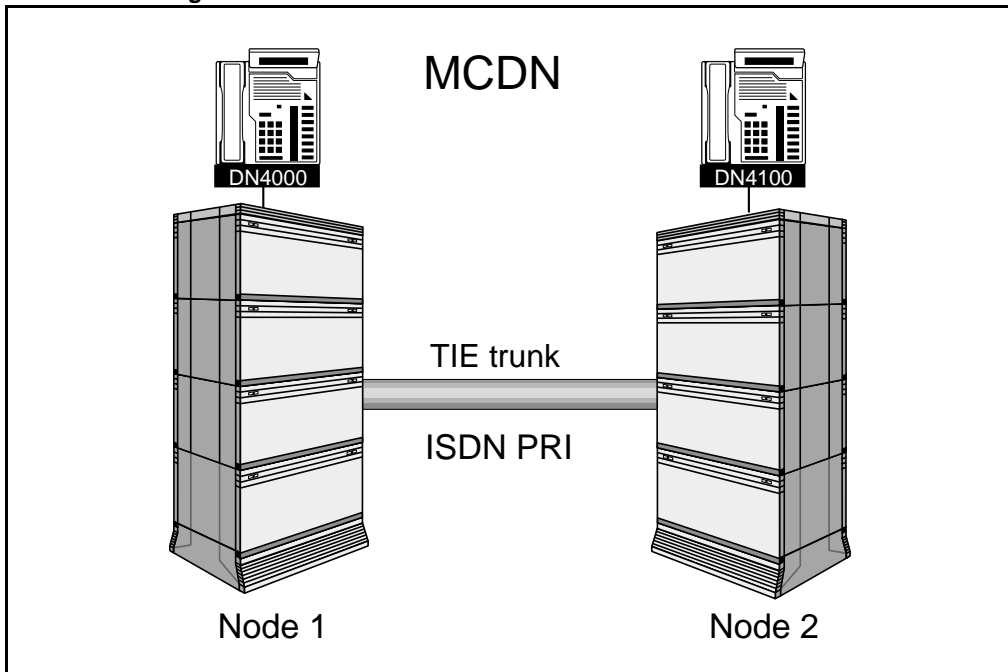
The CDR N ticket produced in the above scenario has the following format:

```
N 001 02 T201004 DN4100 02/10 18:07:15:00:02:24.0
 & 4000XXXXXXXXXXXX
 &00:15N00:25 BLIDXXXXXXXXXXXX      000 09 6
```

On line 3 of the above ticket, the NPI value of "09" represents a private
numbering plan. The TON value of "6" represents an Electronic Switched
Network (ESN) Customer Dialing Plan (CDP). Refer to Table 13 on page 89
and Table 14 on page 90 for the NPI and TON information for an MCDN
incoming trunk.

When an incoming call arrives on the Meridian 1, NPI and TON are sent in the calling party Information Element (IE) and are mapped into internal values. The correspondence between the Meridian 1 values and the values given in the specifications are described in Table 13 on page 89 to Table 22 on page 96.

Tables 13 to 22 show the information printed in the CDR record, depending on the incoming trunk protocol. As shown in these tables, not all combinations of NPI and TON exist.

In the TON tables, only ISDN/Telephony numbering plan (Rec. E.164/E.163) and private numbering plans are detailed. For all other supported NPI values, TON has the value of "unknown number".

Based on the scenario in Figure 2 on page 88, Table 13 on page 89 and Table 14 on page 90 show the NPI and TON information for an MCDN incoming trunk.

Table 13
NPI information printed in the CDR ticket for an MCDN incoming trunk

NPI code in CDR	Corresponding value of NPI in specification
00	000 - unknown numbering plan
01	0001 - ISDN/Telephony numbering plan (Rec. E.164)
02	not used
03	not used
04	not used
08	not used
09	1001 - private numbering plan

Table 14
TON information printed in the CDR ticket for an MCDN incoming trunk

TON code in CDR	Corresponding value of TON in specification	
	NPI = ISDN/Telephony numbering plan (Rec. E.164)	NPI = private numbering plan
0	0000 - unknown number	0000 - unknown number
1	0001 - international number	not used
2	0010 - national number	not used
3	not used	0011 - ESN SPN
4	0100 - local number	not used
5	not used	0101 - ESN LOC
6	not used	0110 - ESN CDP

Table 15 on page 90 and Table 16 on page 91 show the NPI and TON information for a EuroISDN incoming trunk.

Table 15
NPI information printed in the CDR ticket for a EuroISDN incoming trunk

NPI code in CDR	Corresponding value of NPI in specification
00	0000 - unknown
01	0001 - ISDN/Telephony numbering plan (Rec.E.164/E.163)
02	not used
03	0011 - data numbering plan (Rec.X.121)
04	0100 - telex numbering plan (Rec.F.69)
08	1000 - national standard numbering plan
09	1001 - private numbering plan

Table 16
TON information printed in the CDR ticket for a EuroISDN incoming trunk

TON code in CDR	Corresponding value of TON in specification	
	NPI = ISDN/Telephony numbering plan (Rec. E.164)	**NPI = private numbering plan**
0	000 - unknown or 110 - abbreviated number	000 - unknown or 110 - abbreviated number or 001 - level 2 regional number
1	001 - international number	cannot be mapped
2	010 - national number	010 - level 1 regional number
3	011 - network specific number	011 - network specific number
4	100 - subscriber number	100 - subscriber number
5	not used	not used
6	cannot be mapped	cannot be mapped

Table 17 on page 92 and Table 18 on page 93 show the NPI and TON information for a QSIG incoming trunk.

Table 17
NPI information printed in the CDR ticket for a QSIG incoming trunk

NPI code in CDR	Corresponding value of NPI in specification
00	0000 - unknown
01	0001 - ISDN/Telephony numbering plan (Rec.E.164/E.163)
02	not used
03	0011 - data numbering plan (Rec.X.121)
04	0100 - telex numbering plan (Rec. F.69)
08	1000 - national standard numbering plan
09	1001 - private numbering plan
Note: QSIG refers to ISO QSIG and ETSI QSIG.	

Table 18
TON information printed in the CDR ticket for a QSIG incoming trunk

TON code in CDR	Corresponding value of TON in specification	
	NPI = ISDN/Telephony numbering plan (Rec. E.164)	**NPI = private numbering plan**
0	000 - unknown or 110 - abbreviated number	000 - unknown or 110 - abbreviated number or 001 - level 2 regional number or 101 - level3 regional number
1	001 - international number	cannot be mapped
2	010 - national number	010 - level 1 regional number
3	011 - network specific number	011 - PTN specific number
4	100 - subscriber number	100 - local number
5	not used	cannot be mapped
6	cannot be mapped	cannot be mapped
Note: QSIG refers to ISO QSIG and ETSI QSIG.		

Table 19 on page 94 and Table 20 on page 95 show the NPI and TON information for a non-UIPE and non-MCDN incoming trunk.

Table 19
NPI information printed in the CDR ticket for a non-UIPE and non-MCDN incoming trunk

NPI code in CDR	Corresponding value of NPI in specification
00	0000 - unknown numbering plan
01	0001 - Rec. E.164
02	0010 - Rec. E.163
03	0011 - Rec. X.121
04	0100 - Telex numbering plan
08	1000 - national numbering plan
09	1001 - private numbering plan
Note: Non-UIPE refers to the 1TR6, AXE-10 for Australia and Sweden, Swissnet 2, Numeris VN4, SYS-12, and D70 connectivities.	

Table 20
TON information printed in the CDR ticket for a non-UIPE and non-MCDN incoming trunk

TON code in CDR	Corresponding value of TON in specification	
	NPI = ISDN/Telephony numbering plan (Rec. E.164)	**NPI = private numbering plan**
0	0000 - unknown number[1]	0000 - unknown number[1]
1	0001 - international number[2]	not used
2	0010 - national number[2]	not used
3	not used	0011 - network specific number[2]
4	0100 - subscriber number[2]	not used
5	not used	not used
6	not used	0110 - abbreviated number[2]
Note: For SYS-12, AXE-10 for Australia and Sweden, Swissnet, Numeris VN4, and D70 interfaces, all received values are mapped into unknown code.		
Note 1: For all interfaces not mentioned in note1.		

Table 21 on page 96 and Table 22 on page 96 show the NPI and TON information for an NI-2 incoming trunk.

Table 21
NPI information printed in the CDR ticket for an NI-2 incoming trunk

NPI code in CDR	Corresponding value of NPI in specification
00	0000 - unknown numbering plan
01	0001 - ISDN/Telephony numbering plan (Rec. E.164)
02	unused
03	unused
04	unused
08	unused
09	1001 - private numbering plan

Table 22
TON information printed in the CDR ticket for an NI-2 incoming trunk

TON code in CDR	Corresponding value of TON in specification	
	NPI = ISDN/Telephony numbering plan (Rec. E.164)	NPI = private numbering plan
0	not used	not used
1	001 - international number	not used
2	010 - national number	not used
3	not used	not used
4	100 - local number	100 - subscriber number
5	not used	not used
6	not used	not used

Operating parameters

The NPI and TON in CDR Tickets feature applies only for incoming ISDN trunk calls. NPI and TON information depends on the incoming trunk protocol.

The NPI and TON fields are left blank for internal calls, outgoing trunks, incoming non-ISDN trunks, or if the CLID prompt is set to NO.

When the FCDR prompt is set to OLD, the NPI and TON fields do not exist, regardless of how the CLID prompt is defined.

NPI and TON information is available with the following incoming interfaces: EuroISDN, QSIG (ISO and ETSI), MCDN, non-UIPE and non-MCDN, and NI2.

NPI and TON information is included in all types of CDR records that contain CLID information.

NPI and TON information is lost when system initialization occurs and the call is then reconstructed. In this case, if the call involves an incoming ISDN trunk and if the NPI and TON in CDR Tickets feature is configured, the NPI field contains two zeros (00) and the TON field contains one zero (0), regardless of the NPI and TON sent at call setup.

Feature interactions

There are no feature interactions associated with this feature.

Feature packaging

The NPI and TON in CDR feature requires the following packages:

- Call Detail Recording (CDR) package 4

- Call Detail Recording on Teletype Machine (CTY) package 5

- New Format Call Detail Recording (FCDR) package 234

- Calling Line Identification in Call Detail Recording (CCDR) package 118

Feature implementation

LD 17 – Configure the NPI and TON fields in the CDR for the system.

Prompt	Response	Description
REQ	CHG	Change existing data.
TYPE	PARM	System parameters.
...		
FCDR	NEW	New Format CDR.
...		
CLID	YES	TON and NPI fields, in addition to CLID, are included.
...		

Note 1: For the NPI and TON in CDR feature, existing CDR implementation procedures must be performed.

Note 2: CLID must be configured for the NPI and TON in CDR feature. Refer to the Calling Line Identification and ISDN Calling Line Identification Enhancements feature modules in *Networking Features and Services* (553-2901-301).

Feature operation

No specific operating procedures are required to use this feature.

Priority to CDR

When this option is selected, idle call registers are used for CDR operations before they are used for call processing. The Priority to CDR feature helps to ensure that all calls are recorded by CDR. This feature does not apply to packet calls.

Implementation

LD 17 – Configure Priority to CDR on the system.

Prompt	Response	Description
REQ	CHG	Change existing data block
TYPE	PARM	Change system parameters
...		
- PCDR	(NO) YES	Priority for CDR

Public Network Feature Invocation records

To support the NEAX-61 ISDN PRI Connectivity for New Zealand feature in, a "Y" CDR record type is introduced. This record only output in the NEW CDR format and indicates when a Meridian 1 user accesses a feature on the Central Office/Public Exchange to which they are connected via an ISDN link. The only feature capable of generating "Y" records is the "PSTN Three Party Conferencing" feature supported by the NEAX-61.

Whether "Y" records are generated or not is determined on a per-route basis.

Implementation

LD 6 – Configure Y record capability on the trunk route.

Prompt	Response	Description
REQ	CHG	Change existing data block
TYPE	RDB	Type of data block= RDB (Route Data Block)
CUST	xx	Customer number associated with this route
ROUT	0-511	Route Number
DES	x...x	Designator field for trunk (0-16 character alphanumeric)
TKTP	a...a	Trunk Type
...		

Prompt	Response	Description
CDR	(NO) YES	Call Detail Recording
- CDRY	(NO) YES	Call Detail Recording Y (Public Network Feature Invocation) records

Public Service Telephone Network (PSTN) Three Party Conferencing

R2MFC CNI/CDR Enhancements

The R2 Multifrequency Compelled Signaling (R2MFC) Calling Number Identification (CNI)/Call Detail Recording (CDR) Enhancements feature provides the following capabilities across an R2MFC/ISDN gateway:

• the mapping of the R2MFC CNI to the ISDN CLID, and vice versa

• the location of the captured CNI in the CDR is an option to a customer. The CNI can appear in the digits field, the CLID field in line two or not appear at all in the CDR.

• the CNI is provided to the ACD MAX, Network ACD, and Radio Paging equipment, similar to how the CLID is provided

Examples of CDR formats

The following examples provide cases of the CNI (23008) appearing in the digits field, in the CLID field in line two, and not appearing at all in the CDR.

CDR record with CNI in digits field

```
N  003 00  T078001  T008001  31/05  1:40:05   05:30.5   C23008
 &                   0000  0000
```

CDR record with CNI in CLID field

```
N  003 00  T078001  T008001  31/05  13:40:05   0:05:30.5   71082317
 &23008xxxxxxxxxxx  0000  0000
```

CDR record with no CNI appearance

```
N  003 00  T078001  T008001  31/05  13:40:05  0:05:30.5  71082317
 &                            0000  0000
```

Operating parameters

The feature is applicable to Meridian 1 Options 11C, 51C, 61C, 81 and 81C systems.

The maximum length of the CLID field in the CDR is 16 digits.

This feature applies to all supported ISDN interfaces.

On the ISDN side of the R2MFC/ISDN gateway, the ISDN access may be via ISDN Primary Rate Interface (PRI), ISDN Signaling Link (ISL), Virtual Network Services (VNS) or Basic Rate Interface (BRI) trunks.

This feature does not affect the manner in which the CNI is composed at the originating switch of an R2MFC/ISDN gateway.

If the CNI cannot be composed at a R2MFC/ISDN gateway tandem switch, the CNI DN and the Trunk ID will be sent in the CNI.

Feature interactions

Calling Party Privacy

If the CLID is received with presentation denied, it is not mapped to the CNI. Instead, the CNI is composed of the CNI DN and the Trunk ID. Optionally, the CNI request can be ECNI (the CNI End-of-CNI R2MFC level 1 forward signal).

Display Calling Party Denied

If the CLID is received with Display Calling Party Denied, it is not mapped to the CNI. Instead, the CNI is composed of the CNI DN and the Trunk ID. Optionally, the CNI request can be ECNI (the CNI End-of-CNI R2MFC level 1 forward signal).

EuroISDN Continuation

The outgoing CLID element of the EuroISDN Continuation feature is mutually exclusive with the R2MFC CNI/CDR Enhancements feature. If the CLID is to be composed from the EuroISDN Continuation feature, it does not contain the CNI. If the CLID is to be composed from the CNI, no prefixes are added to the number.

Feature Group D

Feature Group D trunks do not support CNI. If a CNI is available, in addition to the CLID on a Feature Group D trunk, the CLID of the Feature Group D trunk is used for the CLID.

In-Band Automatic Number Identification (IANI)

Inband ANI trunks do not support CNI. If a CNI is available, in addition to the IANI on an IANI trunk, the IANI is used for the CLID.

Incoming Trunk Programmable CLID

Incoming Trunk Programmable CLID takes precedence over the R2MFC CNI/CDR Enhancements feature. If the outgoing ISDN trunk is allowed to send a billing number, the billing number is sent out as the CLID, not the CNI from the incoming trunk.

M911

M911 trunks do not support CNI. If a CNI is available on an M911 trunk, in addition to the ANI, the ANI would be used for the CLID.

R2MFC to DPNSS1 Gateway

The R2MFC CNI/CDR Enhancements feature uses the CNI request enhancement (Upfront CNI) developed for the R2MFC to DPNSS1 Gateway feature.

Feature packaging

For the CNI/CLID tandeming enhancement, the following software packages are required:

- Multifrequency Compelled Signaling (MFC) package 128

- Integrated Services Digital Network (ISDN) package 145

- 1.5 Mbps Primary Rate Access (PRA) package 146; **or** ISDN Signaling Link (ISL) package 147; **or** 2.0 Mbps Primary Rate Access (PRI2) package 154; **or** Virtual Network Services (VNS) package 183; **or** Basic Rate Interface Trunk Access (BRIT) package 233; which requires Basic Rate Interface (BRI) package 216

- For EuroISDN applications, EuroISDN (EUROISDN) package 261

- For QSIG applications, QSIG (QSIG) package 263

For the CDR enhancement, the following software packages are required:

- Call Detail Recording (CDR) package 4

- To print or store the CDR record, Call Detail Recording on Teletype Machine (CTY) package 5

- Calling Line Identification in Call Detail Recording (CCDR) package 118

- New Format Call Detail Recording (FCDR) package 234

Feature implementation

Task summary list

The following is a summary of the tasks in this section:

1 LD 17 – Configure the CDR system parameters.

2 LD 15 – Configure the CDR field (if any) in which the CNI will appear for the customer group.

3 LD 15 – Configure the CNI presentation option for the customer group.

4 LD 16 – Configure the CDR option to provide CDR records for calls on the trunk route.

5 LD 16 – Configure the CLID/CNI request options for an R2MFC trunk route (incoming.)

6   LD 16 – Configure the CLID/CNI request options for an R2MFC trunk route (outgoing.)

7   LD 16 – Configure the CLID/CNI request options for an R2MFC trunk route (incoming and outgoing.)

8   LD 16 – Configure the CLID/CNI request options for an ISDN trunk route (incoming.)

9   LD 16 – Configure the CLID/CNI request options for an ISDN trunk route (outgoing.)

10   LD 16 – Configure the CLID/CNI request options for an ISDN trunk route (incoming and outgoing.)

11   LD 16 – Configure the CLID/CNI request options for an R2MFC route (incoming and outgoing) with signaling that is supported by a D-channel (ISL.)

LD 17 – Configure the CDR system parameters.

Prompt	Response	Description
REQ	CHG	Change the existing data.
TYPE	PARM	Change system parameters.
...		
- FCDR	NEW	New format for Call Detail Recording.
...		
- CLID	YES	Calling Line ID in the CDR.
...		

LD 15 – Configure the CDR field (if any) in which the CNI will appear for the customer group.

Prompt	Response	Description
REQ:	CHG	Change the existing data.
TYPE:	CDR	Call Detail Recording data.
CUST	xx	Customer group number.
...		
- PORT	0-15	CDR port.
- CNI		The CDR field (if any) in which the CNI will appear.
	(DGTS)	The CNI is recorded in the digits field.
	CLID	The CNI is recorded in the CLID field.
	NONE	The CNI is not captured in the CDR.

LD 15 – Configure the CNI presentation option for the customer group.

Prompt	Response	Description
REQ:	CHG	Change the existing data.
TYPE:	NET	Networking data.
CUST	xx	Customer group number.
ISDN	YES	ISDN.
...		
- CNDN	0-99999999	Customer CNI DN on outgoing MFC calls (maximum length is eight digits.)
- CNIP	(YES) NO	Option to send CNI when CLID has presentation denied.
		YES = Send the CNI DN and the Trunk ID.
		NO = Do not send a CNI.

LD 16 – Configure the CDR option to provide CDR records for calls on the trunk route.

Prompt	Response	Description
REQ	CHG	Change the existing data.
TYPE	RDB	Route Data Block.
CUST	xx	Customer number.
ROUT	0-511	Route number.
TKTP	DID TIE	Trunk route type.
...		
CDR	YES	Call Detail Recording.
- INC	YES	CDR on incoming calls.
...		
- OAL	YES	CDR on outgoing calls.

LD 16 – Configure the CLID/CNI request options for an **R2MFC** trunk route (**incoming**.)

Prompt	Response	Description
REQ	CHG	Change the existing data.
TYPE	RDB	Route Data Block.
CUST	xx	Customer number.
ROUT	0-511	Route number.
TKTP	DID TIE	Trunk route type.
...		
ICOG	ICT	Incoming trunk route
...		
MFC	YES	MFC.
MFCI	1-127	MFC Incoming table number; must be a non-zero value.

...		
ICIS		Incoming Identifier that is sent.
	YES	YES = The default. Use the CLID/CNI from the incoming ISDN/R2MFC trunk.
		Prompted for incoming trunks (i.e., if ICOG = ICT), and if the route type is R2MFC or ISDN.
ICNP		Incoming Numbering Plan.
	(UKWN) PRV PUB	Unknown. Private Public
		Prompted if the route type is R2MFC and ICIS = YES.
ICNT		Incoming Numbering Type.
	(UKWN) INTL NTN LCL LOC CDP SPN	Unknown Number. International Number. National Number. Local Number. Location Number. Coordinated Dialing Plan. Special Number.
		Prompted if the route type is R2MFC and ICIS = YES.
ICPS		Incoming Presentation Status.
	YES	YES = Indicate the presentation status of the CLID.
		Prompted if the route type is R2MFC and ICIS = YES.
...		

NCNI	(0)-7	Request CNI after the defined number of digits are received.
		If NCNI = 0 (the default), the CNI request does not depend on the number of digits received.
		If the value for NCNI is defined to be greater than the accepted number of digits required for routing the call, CNI will not be requested but the call is routed.
		The NCNI prompt is requested if the trunk type is DID or TIE, the MFC signaling is R2MFC, and the MFC signaling table is defined on the route.
CNIE	YES (NO)	Request CNI after an ESN code is dialled.
		If the value of NCNI has been defined as greater than zero (in response to the NCNI prompt) and CNIE is set to YES, CNI is requested when either one of the conditions is met.
		The CNIE prompt is requested if the trunk type is DID or TIE, the MFC signaling is R2MFC, and the MFC signaling table is defined on the route.

LD 16 – Configure the CLID/CNI request options for an **R2MFC** trunk route (**outgoing**.)

Prompt	Response	Description
REQ	CHG	Change the existing data.
TYPE	RDB	Route Data Block.
CUST	xx	Customer group number.
ROUT	0-511	Route number.
TKTP	DID TIE	Trunk route type.
...		
ICOG	OGT	Outgoing trunk route
...		
MFC	YES	MFC.
MFCO	1-127	MFC outgoing table number; must be a non-zero value.
...		

OGIS		Outgoing Identifier that is sent.
	YES	YES = The default. Use the CLID/CNI from the incoming ISDN/R2MFC trunk, or from the calling set.
		Prompted for outgoing trunks (i.e., if ICOG = OGT), and if the route trunk type is R2MFC or ISDN.
...		
NCNI	(0)-7	Request CNI after the defined number of digits are received.
		If NCNI = 0, the CNI request does not depend on the number of digits received.
		If the value for NCNI is defined to be greater than the accepted number of digits required for routing the call, CNI is not requested but the call is routed.
		The NCNI prompt is requested if the trunk type is DID or TIE, the MFC signaling is R2MFC and the MFC signaling table is defined on the route.
CNIE	YES (NO)	Request CNI after an ESN code is dialed.
		If the value of NCNI has been defined as greater than zero (in response to the NCNI prompt) and CNIE is set to YES, CNI is requested when either one of the conditions is met.
		The CNIE prompt is requested if the trunk type is DID or TIE, the MFC signaling is R2MFC and the MFC signaling table is defined on the route.
...		

LD 16 – Configure the CLID/CNI request options for an **R2MFC** trunk route (**incoming and outgoing**.)

Prompt	Response	Description
REQ	CHG	Change the existing data.
TYPE	RDB	Route Data Block.
CUST	xx	Customer group number.
ROUT	0-511	Route number.
TKTP	DID TIE	Trunk route type.

...		
ICOG	IAO	Incoming and outgoing trunk route.
...		
MFC	YES	MFC.
MFCI	1-127	MFC Incoming table number; must be a non-zero value.
...		
MFCO	1-127	MFC outgoing table number; must be a non-zero value.
...		
ICIS		Incoming Identifier that is sent.
	YES	YES = The default. Use the CLID/CNI from the incoming ISDN/R2MFC trunk.
		Prompted for incoming trunks (i.e., if ICOG = ICT), and if the route type is R2MFC or ISDN.
ICNP		Incoming Numbering Plan.
	(UKWN) PRV PUB	Unknown. Private Public
		Prompted if the route type is R2MFC and ICIS = YES.
ICNT		Incoming Numbering Type.
	(UKWN) INTL NTN LCL LOC CDP SPN	Unknown Number. International Number. Local Number. Location Number. Coordinated Dialing Plan. Special Number.
		Prompted if the route type is R2MFC and ICIS = YES.
ICPS		Incoming Presentation Status.
	YES	YES = Indicate the presentation status of the CLID.
		Prompted if the route type is R2MFC and ICIS = YES.

OGIS		Outgoing Identifier that is sent.
	YES	YES = The default. Use the CLID/CNI from the incoming ISDN/R2MFC trunk, or from the calling set.
		Prompted for outgoing trunks (i.e., if ICOG = OGT), and if the route type is R2MFC or ISDN.
...		
NCNI	(0)-7	Request CNI after the defined number of digits are received.
		If NCNI = 0 (the default), the CNI request does not depend on the number of digits received.
		If the value for NCNI is defined to be greater than the accepted number of digits required for routing the call, CNI is not requested but the call is routed.
		The NCNI prompt is requested if the trunk type is DID or TIE, the MFC signaling is R2MFC, and the MFC signaling table is defined on the route.
CNIE	(NO) YES	Request CNI after an ESN code is dialed.
		If the value of NCNI has been defined as greater than zero (in response to the NCNI prompt) and CNIE is set to YES, CNI is requested when either one of the conditions is met.
		The CNIE prompt is requested if the trunk type is DID or TIE, the MFC signaling is R2MFC, and the MFC signaling table is defined on the route.

LD 16 – Configure the CLID/CNI request options for an **ISDN** trunk route (**incoming**.)

Prompt	Response	Description
REQ	CHG	Change the existing data.
TYPE	RDB	Route Data Block.
CUST	xx	Customer group number.
ROUT	0-511	Route number.
TKTP	DID TIE	Trunk route type.
...		
ISDN	YES	ISDN.
- MODE	PRA	ISDN Primary Rate Access mode of operation.
...		
- IFC		Interface type.
	APAC	Asia Pacific.
	AXEA	Ericsson AXE-10 for Australia.
	AXES	Ericsson AXE-10 for Sweden.
	D70	Japan D70.
	D100	Meridian DMS-100.
	D250	Meridian DMS-250.
	ESIG	ETSI QSIG.
	ESS4	AT&T ESS#4.
	ESS5	AT&T ESS#5.
	EURO	EuroISDN.
	ISIG	ISO QSIG.
	NUME	Numeris for France.
	S100	Meridian SL-100.
	(SL1)	Meridian SL-1.
	SS12	SYS-12 for Norway.
	TCZ	NEAX-61 for New Zealand.
	1TR6	Germany 1TR6.

- - CNTY		Enter country pertaining to EuroISDN and Asia Pacific interface type (if IFC = EURO or APAC.)
	AUS	Austria.
	AUST	Australia.
	DEN	Denmark.
	DUT	Holland.
	EIR	Ireland.
	(ETSI)	ETSI basic protocol.
	FIN	Finland.
	FRA	France.
	GER	Germany.
	HKNG	Hong Kong.
	ITA	Italy.
	NOR	Norway.
	POR	Portugal.
	SING	Singapore.
	SWE	Sweden.
	SWI	Switzerland.
	TCNZ	New Zealand.
	THAI	Thailand.
...		
ICOG	ICT	Incoming trunk route.
...		
ICIS		Incoming Identifier that is sent.
	YES	YES = The default. Use the CLID/CNI from the incoming ISDN/R2MFC trunk.
		Prompted for incoming trunks (i.e., if ICOG = ICT), and if the route type is R2MFC or ISDN.
...		

LD 16 – Configure the CLID/CNI request options for an **ISDN** trunk route (**outgoing**.)

Prompt	Response	Description
REQ	CHG	Change the existing data.
TYPE	RDB	Route Data Block.
CUST	xx	Customer group number.
ROUT	0-511	Route number.
TKTP	DID TIE	Trunk route type.
...		
ISDN	YES	ISDN.
- MODE	PRA	ISDN Primary Rate Access mode of operation.
...		
- IFC		Interface type.
	APAC	Asia Pacific.
	AXEA	Ericsson AXE-10 for Australia.
	AXES	Ericsson AXE-10 for Sweden.
	D70	Japan D70.
	D100	Meridian DMS-100.
	D250	Meridian DMS-250.
	ESIG	ETSI QSIG.
	ESS4	AT&T ESS#4.
	ESS5	AT&T ESS#5.
	EURO	EuroISDN.
	ISIG	ISO QSIG.
	NUME	Numeris for France.
	S100	Meridian SL-100.
	(SL1)	Meridian SL-1.
	SS12	SYS-12 for Norway.
	TCZ	NEAX-61 for New Zealand.
	1TR6	Germany 1TR6.

- - CNTY		Enter country pertaining to EuroISDN and Asia Pacific interface type (if IFC = EURO or APAC.)
	AUS	Austria.
	AUST	Australia.
	DEN	Denmark.
	DUT	Holland.
	EIR	Ireland.
	(ETSI)	ETSI basic protocol.
	FIN	Finland.
	FRA	France.
	GER	Germany.
	HKNG	Hong Kong.
	ITA	Italy.
	NOR	Norway.
	POR	Portugal.
	SING	Singapore.
	SWE	Sweden.
	SWI	Switzerland.
	TCNZ	New Zealand.
	THAI	Thailand.
...		
ICOG	OGT	Outgoing trunk route.
...		
OGIS		Outgoing Identifier that is sent.
	YES	YES = The default. Use the CLID/CNI from the incoming ISDN/R2MFC trunk, or from the calling set.
		Prompted for outgoing trunks (i.e., if ICOG = OGT), and if the route type is R2MFC or ISDN.
...		

LD 16 – Configure the CLID/CNI request options for an **ISDN** trunk route (**incoming and outgoing**.)

Prompt	Response	Description
REQ	CHG	Change the existing data.
TYPE	RDB	Route Data Block.
CUST	xx	Customer group number.
ROUT	0-511	Route number.
TKTP	DID TIE	Trunk route type.
...		
ISDN	YES	ISDN.
- MODE	PRA	ISDN Primary Rate Access mode of operation.
...		
- IFC		Interface type.
	APAC	Asia Pacific.
	AXEA	Ericsson AXE-10 for Australia.
	AXES	Ericsson AXE-10 for Sweden.
	D70	Japan D70.
	D100	Meridian DMS-100.
	D250	Meridian DMS-250.
	ESIG	ETSI QSIG.
	ESS4	AT&T ESS#4.
	ESS5	AT&T ESS#5.
	EURO	EuroISDN.
	ISIG	ISO QSIG.
	NUME	Numeris for France.
	S100	Meridian SL-100.
	(SL1)	Meridian SL-1.
	SS12	SYS-12 for Norway.
	TCZ	NEAX-61 for New Zealand.
	1TR6	Germany 1TR6.

- - CNTY		Enter country pertaining to EuroISDN and Asia Pacific interface type (if IFC = EURO or APAC.)
	AUS	Austria.
	AUST	Australia.
	DEN	Denmark.
	DUT	Holland.
	EIR	Ireland.
	(ETSI)	ETSI basic protocol.
	FIN	Finland.
	FRA	France.
	GER	Germany.
	HKNG	Hong Kong.
	ITA	Italy.
	NOR	Norway.
	POR	Portugal.
	SING	Singapore.
	SWE	Sweden.
	SWI	Switzerland.
	TCNZ	New Zealand.
	THAI	Thailand.
...		
ICOG	IAO	Incoming and outgoing trunk route.
...		
ICIS		Incoming Identifier that is sent.
	YES	YES = The default. Use the CLID/CNI from the incoming ISDN/R2MFC trunk.
		Prompted for incoming trunks (i.e., if ICOG = ICT), and if the route type is R2MFC or ISDN.
OGIS		Outgoing Identifier that is sent.
	YES	YES = The default. Use the CLID/CNI from the incoming ISDN/R2MFC trunk, or from the calling set.
		Prompted for outgoing trunks (i.e., if ICOG = OGT), and if the route type is R2MFC or ISDN.
...		

LD 16 – Configure the CLID/CNI request options for an **R2MFC** route (**incoming and outgoing**) with signaling that is supported by a D-channel (**ISL**.)

Prompt	Response	Description
REQ	CHG	Change the existing data.
TYPE	RDB	Route Data Block.
CUST	xx	Customer group number.
ROUT	0-511	Route number.
TKTP	DID TIE	Trunk route type.
...		
ISDN	YES	ISDN.
- MODE	ISLD	ISL mode of operation.
...		
- IFC		Interface type.
	APAC	Asia Pacific.
	AXEA	Ericsson AXE-10 for Australia.
	AXES	Ericsson AXE-10 for Sweden.
	D70	Japan D70.
	D100	Meridian DMS-100.
	D250	Meridian DMS-250.
	ESIG	ETSI QSIG.
	ESS4	AT&T ESS#4.
	ESS5	AT&T ESS#5.
	EURO	EuroISDN.
	ISIG	ISO QSIG.
	NUME	Numeris for France.
	S100	Meridian SL-100.
	(SL1)	Meridian SL-1.
	SS12	SYS-12 for Norway.
	TCZ	NEAX-61 for New Zealand.
	1TR6	Germany 1TR6.

- - CNTY		Enter country pertaining to EuroISDN and Asia Pacific interface type (if IFC = EURO or APAC.)
	AUS	Austria.
	AUST	Australia.
	DEN	Denmark.
	DUT	Holland.
	EIR	Ireland.
	(ETSI)	ETSI basic protocol.
	FIN	Finland.
	FRA	France.
	GER	Germany.
	HKNG	Hong Kong.
	ITA	Italy.
	NOR	Norway.
	POR	Portugal.
	SING	Singapore.
	SWE	Sweden.
	SWI	Switzerland.
	TCNZ	New Zealand.
	THAI	Thailand.
...		
ICOG	IAO	Incoming and outgoing trunk route.
...		
MFC	YES	MFC.
MFCI	1-127	MFC Incoming table number; must be a non-zero value.
...		
MFCO	1-127	MFC outgoing table number; must be a non-zero value.
...		
ICIS		Incoming Identifier that is sent.
	YES	YES = The default. Use the CLID/CNI from the incoming ISDN/R2MFC trunk.
		Prompted for incoming trunks (i.e., if ICOG = ICT), and if the route type is R2MFC or ISDN.

ICNP		Incoming Numbering Plan.
	(UKWN) PRV PUB	Unknown. Private Public
		Prompted if the route type is R2MFC and ICIS = YES.
ICNT		Incoming Numbering Type.
	(UKWN) INTL NTN LCL LOC CDP SPN	Unknown Number. International Number. National Number. Local Number. Location Number. Coordinated Dialing Plan. Special Number.
		Prompted if the route type is R2MFC and ICIS = YES.
ICPS		Incoming Presentation Status.
	YES	YES = Indicate the presentation status of the CLID.
		Prompted if the route type is R2MFC and ICIS = YES.
OGIS		Outgoing Identifier that is sent.
	YES	YES = The default. Use the CLID/CNI from the incoming ISDN/R2MFC trunk, or from the calling set.
		Prompted for outgoing trunks (i.e., if ICOG = OGT), and if the route type is R2MFC or ISDN.

Feature operation

No specific operating procedures are required to use this feature.

Scheduled Access Restriction

This feature generates A (Authorization Code/Scheduled Access Restriction) call records whenever a Scheduled Access Restriction (SAR) Flexible Feature Code (FFC) is dialed and SCDR in LD 88 is set to YES.

Implementation

LD 88 – Configure the Scheduled Access Restriction in CDR.

Prompt	Response	Description
REQ	CHG	Request
TYPE	SAR	Type = SAR (Scheduled Access Restriction)
CUST	0-99	Customer Number
...		
SCDR	(NO) YES	Scheduled Access Restriction: Flexible Feature Codes in CDR

Stand-alone and network outgoing non-metered CDR Transfer Enhancement (CDRX)

When the Stand-alone and network outgoing non-metered CDR Transfer Enhancement (CDRX) package 259 is not equipped, multiple call transfers for outgoing non-metered calls in stand-alone and network environments generate an S (Start) record for the first transfer and an E (End) record when the last party disconnects.

When the CDRX package is equipped, a call transfer of an outgoing non-metered CO trunk in a stand-alone environment generates an S (Start) record when the originating party of the outgoing trunk call releases from the transfer, regardless of whether the transferred to party has answered or not. This means that the ringing time is charged to the "transferred-to" party, which is different from the metered stand-alone operation.

If the party to which the call is transferred originates another call transfer, then an X (Transfer) record is generated when the transfer is complete. This permits the entire second segment of the call to be charged to the new controlling DN. This rule applies to all succeeding call transfers until the last party disconnects. After final disconnection, an End record is generated.

During multiple call transfers, the Originating field of the S (Start), X (Transfer), and E (End) records is always the DN of the transferring or disconnecting party, and the Terminating field is always the outgoing CO trunk. The duration in each record shows the time segment from when the previous controller disconnects until the new controller disconnects. This capability is controlled through a prompt "CDRX" in LD 16 (Route Data Block).

Network non-metered CDR Transfer Enhancement is based on the existing Network Call Redirection feature. For network multiple call transfers involving non-metered outgoing CO trunks, CDR generates S (Start), (X) Transfer, and (E) End records similar to the stand-alone outgoing non-metered CO trunk. The Stand-alone and network outgoing non-metered CDR Transfer Enhancement requires the NEW CDR format to output the BLID (Billing Line I.D.) field.

A BLID (Billing Line I.D.) is added to the third line of the N, S, X, and E records to indicate the remote billing party for a particular call segment.

Implementation

LD 16 – Configure the Trunk route CDR for the CDR transfer Enhancement.

Prompt	Response	Description
REQ	CHG	Change existing data block
TYPE	RDB	Type of data block= RDB (Route Data Block)
CUST	xx	Customer number associated with this route
ROUT	0-511	Route Number
DES	x...x	Designator field for trunk (0-16 character alphanumeric)
TKTP	a...a	Trunk Type
...		
CDR	(NO) YES	Call Detail Recording
- CDRX	(NO) YES	CDR X records printed for multiple call transfers of non-metered outgoing trunks.

Station activity Call Detail Recording

The Station activity Call Detail Recording (SCDR) package 251 is an extension of the Internal Call Detail Recording (ICDR) functionality.

ICDR sets defined as Internal Call Detail Recording Allowed (ICDA) generate "L" records for internal connections. If a route with CDR set to NO either terminates on, or is accessed by, an ICDA set, no "L" record is generated.

SCDR sets assigned a CDMA class of service output D records whenever a trunk is accessed by, or terminates on, the set. The D record is output regardless of the CDR settings in the Route Data Block (LD 16). The Customer Data Block, however, must have CDR allowed (LD 15). SCDR uses the first line of the NEW CDR format to output its information.

Implementation

Task summary list

The following is a summary of the tasks in this section:

1   LD 10 – Configure analog (500/2500-type) sets for Call Detail Monitoring.

2   LD 11 – Configure Meridian 1 proprietary sets for Call Detail Monitoring.

3   LD 27 – Configure Basic Rate Interface DSL for Call Detail Monitoring

LD 10 – Configure analog (500/2500-type) sets for Call Detail Monitoring.

Prompt	Response	Description
REQ:	CHG	Request
TYPE:	a...a	Type of data block
...		
CLS		Class of Service
	(CDMD) CDMA	Call Detail Monitoring (Denied) Allowed

LD 11 – Configure Meridian 1 proprietary sets for Call Detail Monitoring.

Prompt	Response	Description
REQ:	CHG	Request
TYPE:	a...a	Type of data block
...		
CLS		Class of Service
	(CDMD) CDMA	Call Detail Monitoring (Denied) Allowed

LD 27 – Configure Basic Rate Interface DSL for Call Detail Monitoring

Prompt	Response	Description
REQ	CHG	Change existing data block
TYPE	DSL	Type of data block = DSL (Digital Subscriber Loop)
DSL	l s c dsl	Digital Subscriber Loop address
...		
CLS		Class of Service
	(CDMD) CDMA	Call Detail Monitoring (Denied) Allowed

Terminating Carriage Control

This feature provides a carriage return option to signal a computer that a CDR message is complete. An additional carriage return precedes every CDR record. A single CDR record consists of a carriage return, a line of data, then another carriage return, and results in every other record being a null record. This option is implemented through service change and, when implemented, applies to all CDR TTY ports in the system.

Implementation

LD 15 – Configure

Prompt	Response	Description
REQ:	CHG	Change existing data block
TYPE:	CDR_DATA	Call Detail Recording
CUST	xx	Customer Number
CDr	(NO) YES	Change Call Detail Recording data
...		
TRCR	(NO) YES	Carriage Return sent after each CDR message

Administration

This section explains how to configure various Call Detail Recording (CDR) features and options. The following table lists the steps required to configure CDR:

Feature implementation

Task summary list

The following is a summary of the tasks in this section:

1   LD 17 – Configure CDR in Configuration Record

2   LD 15 – Configure CDR in Customer Data Block

3   LD 16 – Configure CDR in Route Data Block

4   LD 10 – Configure CDR for Single-line, analog (500/2500-type) telephones

5   LD 11 – Configure CDR for Meridian 1 Proprietary telephones.

6   LD 12 – Configure CDR for Attendant consoles

7   LD 14 – Configure CDR for Trunk Data Block

8   LD 19 – Configure CDR for FGD ANI in Code Restriction Data Block

9   LD 27 – Configure CDR for ISDN Basic Rate Interface (BRI) Data Block

10 LD 88 – Configure CDR for Authorization Code Data Block

LD 17 – Configure CDR in Configuration Record

Prompt	Response	Comment
...		
ADAN	NEW TTY x	Configure new port (where: **x** is the port number)
	CHG TTY x	Change existing port (where: **x** is the port number)
...		
- USER	CTY	Enter CTY if port is to be a CDR Teletype port
	CDL	Enter CDL if port is to be a CDR Data Link port
...		
PARM	YES	Parameters
...		
- FCDR		Format CDR
	(OLD)	Enter OLD if old CDR format is required
	NEW	Enter NEW if New Format CDR is required
		FCDR is prompted if FCDR package (234) equipped.
- PCDR		Priority for CDR
	(NO)	No priority for CDR
	YES	Priority for CDR

Prompt	Response	Comment
		A **YES** response to the *PCDR* prompt can degrade the Call Processing capabilities of the system. A **YES** response allows CDR to take precedence over Call Processing when Call Registers are assigned.
- DUR5		Half (0.5) second Duration
	(NO)	Use two second accuracy
	YES	Use half second accuracy
		Prompted if JPN package (97) equipped.
...		
- MTRO		Metering Option
	(MR)	Enter MR for non-Periodic Pulse Metering and non-Advice of Charge environments
	PPM	Enter PPM for Periodic Pulse Metering and Advice of Charge environments
...		
CLID		Calling Line ID
	(NO)	Calling Line ID not included in CDR records
	YES	Calling Line ID included in CDR records

LD 15 – Configure CDR in Customer Data Block

Prompt	Response	Comment
...		
OPT		Options for the specified customer
	(TTAD)	Time to Answer information and Abandoned call records Denied
	TTAA	Time to Answer information and Abandoned call records Allowed
...		
CDR		Call Detail Recording
	(NO)	Do not modify CDR options for the specified customer
	YES	Modify CDR options for the specified customer
IMPH		Incoming Meridian 1 Packet Handler CDR
	(NO)	Do not print CDR records for incoming packet data calls
	YES	Print CDR records for incoming packet data calls
OMPH		Outgoing Meridian 1 Packet Handler CDR
	(NO)	Do not print CDR records for outgoing packet data calls
	YES	Print CDR records for outgoing packet data calls
AXID		Auxiliary Identification
(Part 1 of 3)		

Prompt	Response	Comment
	(NO)	No Auxiliary Identification in CDR records
	YES	Auxiliary Identification in CDR records
TRCR		Terminating Carriage Return
	(NO)	No Carriage Return after records on CTY
	YES	Carriage Return after records on CTY
CDPR		Coordinated Dialing Plan (CDP) CDR Enhancement
	(NO)	Replace Distant Steering Code (DSC) or Trunk Steering Code (TSC) with trunk route Access Code (ACOD)
	YES	Insert ACOD ahead of Distant Steering Code (DSC) or Trunk Steering Code (TSC)
ECDR		End-to-End Signaling digits in CDR record
	(NO)	Do not include End-to-End Signaling digits in CDR
	YES	Include End-to-End Signaling digits in CDR
(Part 2 of 3)		

Prompt	Response	Comment
OTCR		Original Trunk CDR Required
	(NO)	Use CDR options of the trunk route the call stepped to
	YES	Use CDR options of route call stepped from
		OTCR specifies which trunk route's CDR options to use when a call steps to, or from another route
PORT		CDR port
	0–15	Enter port number(s) to use for the specified customer
		Enter a carriage return <cr> by itself to stop the prompting of PORT.
PCDL		PPM and Advice of Charge [AOC) output on CDR Data Link
	(NO)	No PPM (AOC) information output on CDR Data Link
	YES	PPM (AOC) information output on CDR Data Link
UCST		Unit Cost per Periodic Pulse Metering pulse or Advice of Charge (AOC) unit
	0 –9999	Enter the Unit Cost of each PPM pulse or AOC unit. 0 disables the feature.
(Part 3 of 3)		

LD 16 – Configure CDR in Route Data Block

Prompt	Response	Comment
...		
AUTO	YES	
...		
- DNIS		Dialed Number Identification Service
	(NO)	DNIS not allowed on this route
	YES	DNIS allowed on this route
- - NDGT		Number of DNIS Digits required on this route
	1–(4)–7	Enter the number of digits required on this route
- - WDGT		Which DNIS Digits
	(L)	Enter L to output the last four (4) digits of the DNIS number in the Call Detail Record
	F	Enter F to output the first four (4) digits of the DNIS number in the Call Detail Record
		WDGT is prompted when NDGT set to a value greater than four (4) and FCDR package 234 is not equipped on, or FCDR set to "OLD".
(Part 1 of 8)		

Prompt	Response	Comment
- - DCDR		DNIS in CDR
	(NO)	No DNIS number output in CDR
	YES	DNIS number output in CDR
...		
CNTL	(NO) YES	Changes to Controls or timers
- TIMR	aaa xxx	Trunk Timers
	EOD 1024	End of dial timer, non-digitone trunks. Enter this value to allow normal CDR operation
	ODT 1024	End of dial timer, digitone trunks. Enter this value to allow normal CDR operation
....		
CDR		Call Detail Recording
	(NO)	No CDR output for the specified route
	YES	CDR output for the specified route
- INC		Incoming
	(NO)	No CDR output for incoming calls
	YES	CDR output for all incoming calls
(Part 2 of 8)		

Prompt	Response	Comment
- LAST		CDR record printing content option for redirected calls
	(NO)	The terminating ID field in the CDR record will contain the one before the last party
	YES	The terminating ID field in the CDR record will contain the last party
- TTA		Time to Answer
	(NO)	No Time to Answer information output
	YES	Time to Answer information output
- ABAN		Abandoned call records
	(NO)	No Abandoned call records output
	YES	Abandoned call records output
- QREC		Q Record
	(NO)	No Initial connection (Q) record output for incoming calls
	YES	Initial connection (Q) record output for incoming calls
- OAL		Outgoing All
	(NO)	No CDR output for all outgoing calls
(Part 3 of 8)		

Prompt	Response	Comment
	YES	CDR output for all outgoing calls
		If answer supervision is defined for the trunk, CDR records will only be generated on call completion.
- - OTL		Outgoing Toll
	(NO)	No CDR output for all outgoing toll calls
	YES	CDR output for all outgoing toll calls
		OTL is prompted when OAL = NO and TKTP = CAM, COT, DID, FEX or WAT. If answer supervision is defined for the trunk, CDR records will only be generated on call completion.
- - AIA		Answered call Identification Allowed
	(NO)	Do not enable Answered call Identification Allowed
	YES	Enable Answered call Identification Allowed
		AIA is prompted when OAL = YES or OTL = YES. Answered calls are identified by an "A" as the first character in the ORIGID or TERID.
- - OAN		Outgoing Answered
	NO	CDR output for all outgoing calls
	YES	CDR output for answered outgoing calls only
(Part 4 of 8)		

Prompt	Response	Comment
		OAN is only prompted if OAL = YES or OTL = YES. This prompt applies to trunks with answer supervision (CLS = PSP, or SUPN = YES).
		If the supplementary features package (131 SUPP) is equipped, then the default is NO. If the supplementary features package (131 SUPP) is not equipped, then the default is YES.
- - OPD		Outpulsed Digits
	(YES)	Outpulsed digits output in CDR
	NO	Dialed digits output in CDR
		OPD is prompted when OTL = YES, OAL = YES or OAN = YES. The system must be Initialized for changes to the OPD settings to take effect.
- CDRX		Call Detail Recording X (Transfer) records for non-metered trunks
	(NO)	X (Transfer) records are not output for non-metered trunks
	YES	X (Transfer) records are output for non-metered trunks
- NDP		Number of Digits to Print
	INC 0–32	Output the first 0 - 32 digits
	EXC 0–32	Suppress the last 0 - 32 digits
		NDP defaults to output all digits.
(Part 5 of 8)		

Prompt	Response	Comment
- CDRY		Call Detail Recording Y (Public Network Feature Invocation) records
	(NO)	Call Detail Recording Y (Public Network Feature Invocation) records will not be output for this route
	YES	Call Detail Recording Y (Public Network Feature Invocation) records will be output for this route
OPA		Outgoing PPM Answer
	(YES)	Outgoing unsupervised trunks will be considered as answered when PPM pulses are received
	NO	Outgoing unsupervised trunks will not be considered as answered when PPM pulses are received
CCO		Call Charge Output option
	(NO)	CDR N (Normal) records with no CHGINFO will be printed
	YES	CDR N (Normal) records with no CHGINFO will not be printed
...		
IDOP		Identify Original Party
	(NO)	CDR outputs forwarding station as originator
	YES	CDR outputs forwarded (original) party as originator
		IDOP is prompted when CFWR = NO
...		
(Part 6 of 8)		

Prompt	Response	Comment
MR		Message Registration
	(NO)	The route is not metered
	STAC	The AOC information is decoded at the start of the call
	DURC	The AOC information is decoded during and at the end of the call
	ENDC	The AOC information is decoded at the end of the call
	PPM	Buffered Periodic Pulse Metering signals to be counted on this route
	RVB	Reverse battery signal from PSTN/CO interpreted as supervisory signal and used as MR on this route
	XLD	M&MM Lead non-buffered is used on this route
...		
RUCS		Route Unit Cost per PPM pulse or AOC unit
	0–9999	Enter the Unit Cost of each PPM pulse or AOC unit. An entry of 0 disables the feature. The default is the value entered in LD 15 in response to UCST prompt.
(Part 7 of 8)		

Prompt	Response	Comment
RURC	x y	Route Unit Reference Cost. The formula for Route Unit reference Cost is: $X * 10^{(-Y)}$, where: • x = 0 - 9999 • y = (0) - 3 This gives a range from.001 to 9999. Call Charge scenarios: • When call charge in sent in currency: Displayed charge = (Received charge/RURC) * RUCS • When call charge in sent in AOC units: Displayed charge = (Received charge * RUCF) * RUCS units
RUCF		Route Unit Conversion Factor
	0–9999 0–3	Enter Route Unit Conversion Factor required. Applicable to AOC (MR = ENDC of MR = DURC) only Formula for Route Unit Conversion Factor is: $X*10^{(-Y)}$, where: • X = 0–9999 • Y = 0–3 This yields a conversion factor range of 0.001 to 9999. The default is 1 0, which results in a RUCS of 1.

(Part 8 of 8)

LD 10 – Configure CDR for Single-line, analog (500/2500-type) telephones

Prompt	Response	Comment
...		
CLS		Class Of Service options
	(ABDD)	Abandoned call record and Time to Answer Denied
	ABDA	Abandoned call record and Time to Answer Allowed
	(CDMD)	Call Detail Monitoring Denied (Station activity Call Detail Recording)
	CDMA	Call Detail Monitoring Allowed (Station activity Call Detail Recording)
	(ICDD)	Internal Call Detail Recording Denied
	ICDA	Internal Call Detail Recording Allowed

LD 11 – Configure CDR for Meridian 1 Proprietary telephones.

Prompt	Response	Comment
...		
CLS		Class Of Service options
	(ABDD)	Abandoned call record and Time to Answer Denied
	ABDA	Abandoned call record and Time to Answer Allowed
	(CDMD)	Call Detail Monitoring Denied (Station activity Call Detail Recording)
	CDMA	Call Detail Monitoring Allowed (Station activity Call Detail Recording)
	(ICDD)	Internal Call Detail Recording Denied
	ICDA	Internal Call Detail Recording Allowed
KEY		Telephone function key assignments
	xx CHG	Key number, Charge account
	xx CPN	Key number, Calling Party Number

LD 12 – Configure CDR for Attendant consoles

Prompt	Response	Comment
...		
ICDR		Internal CDR
	(ICDD)	Internal Call Detail Recording Denied
	ICDA	Internal Call Detail Recording Allowed
ABAN		Abandoned call record
	(ABDD)	Abandoned call record and Time to Answer Denied
	ABDA	Abandoned call record and Time to Answer Allowed
....		
KEY		Console function key assignments
	xx CHG	Key number, Charge account
	xx CPN	Key number, Calling Party Number

LD 14 – Configure CDR for Trunk Data Block

Prompt	Response	Comment
...		
CLS		Class Of Service options
	(CND)	Calling Number Identification Denied
	CNA	Calling Number Identification Allowed. CNA requires an MFC Class of Service.
	(PIP)	Polarity Insensitive Pack (for QPC 330 and QPC 331 cards)
	PSP	Polarity Sensitive Pack (for QPC 218, QPC 219 and QPC 295 cards)
	BST	Battery Supervised (SIGL = LOP is required)
	(XBAT)	Battery Supervised COT denied
	BAT	Battery Supervised COT allowed
		Must have TYPE = COT, XTRK = XCOT, SIGL = LOP and international XFCOT trunk card.

LD 19 – Configure CDR for FGD ANI in Code Restriction Data Block

Prompt	Response	Comment
...		
CDAN		CDR to include Automatic Number Identification
	(NO)	No ANI information output in CDR records
	YES	ANI information o2utput in CDR records

LD 27 – Configure CDR for ISDN Basic Rate Interface (BRI) Data Block

Prompt	Response	Comment
...		
TYPE	DSL	
...		
CLS		Class Of Service options
	(ABDD)	Abandoned call record and Time to Answer Denied
	ABDA	Abandoned call record and Time to Answer Allowed
	(CDMD)	Call Detail Monitoring Denied (Default) (Station activity Call Detail Recording)
	CDMA	Call Detail Monitoring Denied Allowed (Station activity Call Detail Recording)
	(ICDD)	Internal Call Detail Recording Denied

Prompt	Response	Comment
	ICDA	Internal Call Detail Recording Allowed
...		
TYPE	TSP	
...		
CDR		Internal CDR
	(NO)	Do not print Internal CDR records packet data calls
	YES	Print Internal CDR records for packet data calls

LD 88 – Configure CDR for Authorization Code Data Block

Prompt	Response	Comment
...		
ACDR		Authorization codes in CDR. ACDR has no default.
	NO	No authorization codes output in CDR
	YES	Authorization codes output in CDR
SCDR		Scheduled Access Restriction Flexible Feature Codes in CDR. SCDR has no default.
	NO	No Scheduled Access Restriction Flexible Feature Codes output in CDR
	YES	Scheduled Access Restriction Flexible Feature Codes output in CDR

Establishing baud rates

A CDR record typically has one 80-character line (two if Multi-Tenant Service, CLID, or Feature Group D ANI is involved) and an average length of 100 bytes when the OLD CDR format is selected.

When the NEW CDR format is selected, an 86-character first line is output followed by an 85-character second line and a 42-character third line. If the Time to Answer feature is active, a third 13-character line is output.

A Meridian 1 system with CDR can run out of call registers (CRs) for call processing if the SDI interface transmission rate is less than that of the CDR record generation. The SDI baud rate needs to be high enough so that records do not accumulate in the Meridian 1 output buffer, causing a shortage of call registers.

The Average Busy Season Busy Hour (ABSBH) traffic data provides a starting point for calculating the required capacity. The capacity includes a 30% reserve to accommodate traffic peaks.

Table 23 on page 147 and Table 24 on page 148 show the relationship between baud rate and number of CDR calls per hour for two different record lengths: 100 characters (an average record) and 160 characters (the maximum length) respectively. The tables rely on the following calculations:

SDI port baud rate * 0.70 / record length = records that can be transmitted per second

Records transmitted per second * 60 * 60 = CDR hourly call capacity.

The tables, which apply to all Meridian 1 CPUs, assume that each call uses one call per record. Table 23 on page 147 shows the worst-case scenario, with each record at the maximum 160-character length. For other record lengths, interpolate between the two tables.

Table 23:
CDR data rate and system call capacity: record length 100 characters

Baud Rate	300	1200	2400	4800	9600
CDR calls per hour	1035	4140	8280	16560	33120

Table 24
CDR data rate and system call capacity: record length 160 characters

Baud Rate	300	1200	2400	4800	9600
CDR calls per hour	649	2,596	5,192	10,384	20,768

The table data ignores potential system limitations such as real time or traffic constraints that need to be engineered separately. The tables apply to all Meridian 1 CPUs.

Only calls generating CDR records need be included in capacity estimations. For example some systems keep CDR records only for outgoing calls. Calls that do not generate records should be excluded from the capacity calculations.

Call record types

Contents

The following are the topics in this section:

All calls generate, at a minimum, single call records. Unmodified calls generate a Normal record. Modified calls generate Start, Transfer and End records. Multiple call records may be generated for calls which are impacted by certain features.

Table 25, "Call record types," on page 151 presents a comprehensive list of call record types and the page on which they are described in detail. Each record type is described as it relates to packages, features and call scenarios. Record fields are discussed in the next chapter, starting on page 179.

After each record type is described, Priority connection records and CDR record sequencing are discussed. This chapter concludes with a description of the Enhanced Malicious Call Trace feature as it relates to CDR.

Table 25
Call record types

Record	Description	Page
A	Authorization Code	162
B	Abandoned Call	152
C	Charge	163
D	Station Activity	171
E	End	161
F	Connection (for ACD calls which are conferenced)	167
G	Internal Meridian 1 Packet Handler data call	170
H	External Meridian 1 Packet Handler data call	170
I	Initialization	162
L	Internal Call	168
M	Charge for Conference	166
N	Normal	152
P	Calling Party Number	166
Q	Connection (for calls connecting a trunk and an ACD Agent)	167
R	Connection (for ACD calls which are transferred)	167
S	Start	157
T	Time stamp	162
X	Transfer	160
Y	Public Network Feature Invocation	172

B record (Abandoned call)

B records (Abandoned call) are output when the Time to Answer feature is active and New Format CDR is selected for CDR TTY output (FCDR = NEW in LD 17). B records are only output to CDR Teletype devices.

B records are output when:

- an unanswered incoming trunk disconnects and ABAN = YES in LD 16

- Internal CDR is equipped and an unanswered internal station disconnects from another internal station which has ABDA class of service

With the feature CDR on Busy Tone, a B record is produced when the originator of an incoming or internal call disconnects after receiving a busy tone. The CDR on Busy Tone B record information is displayed on the third line of the CDR B record when the New CDR format (FCDR) is configured.

N (Normal) record

An N record (Normal record) is generated when a simple call is established, whether or not it is extended through the Attendant Console, and when no other telephone feature is activated.

For a Normal record, all telephone set dial pad input is included in the CDR record until such time as the End-of-Dialing (EOD) timer interval is exceeded or the user enters # from the set dial pad. Thus, the dialed DN portion of the CDR record may include * symbols and unused digits. For example, speed call and autodial numbers often include * symbols. Each * symbol causes a software defined pause to occur when the symbol is interpreted by the system.

End-to-End Signaling (EES) digits are dialed after the timer expires, after the octothorpe (#) has been pressed, or after answer supervision is received. EES digits often include sensitive information such as authorization codes and account numbers. These digits appear in the CDR only if the customer chooses to include them. Administrators choose to include these digits in CDR by setting ECDR to YES in the Customer Data Block (LD 15). The default is NO.

A user may enter additional digits prior to the system receiving an EOD time-out or user-initiated # entry. In such cases, the call is completed to the correct destination but the CDR record contains the extra digits.

Feature Interactions/Call Scenarios

Route selection features

When one of the Route Selection features is used, the letter A precedes the DIGITS field on TTY outputs. These features are Basic Alternate Route Selection (BARS), Network Alternate Route Selection (NARS), Route Selection-Automatic Number Identification (RS-ANI) and Coordinated Dialing Plan (CDP). With the BARS and NARS features, the letter E precedes the TTY DIGITS field to indicate the call was completed over facilities that are designated (through service change) as expensive.

Incoming Calls

An incoming call answered by the attendant and extended to a station generates a Normal record, indicating the trunk as the ORIGID and the station as the TERID. No indication is given that the attendant is involved in the call.

A B record is output if the Abandoned Calls feature is active. However, when the call is abandoned during recall, the Attendant Console is shown as the TERID under all circumstances. Incoming calls answered by the attendant but not extended to a station are shown as terminating at the Attendant Console.

TIE trunk operation

If an incoming TIE trunk is connected to a metered trunk, then all charges are assigned to the TIE route access code meter.

Outgoing calls

When the attendant extends an outgoing call to a station, the Normal record shows the trunk as ORIGID and the station as TERID. The DIGITS field includes the station number dialed by the attendant.

Outgoing calls on trunks with answer supervision only generate a record if an answer is received. Billing begins at the time of answer.

CHGINFO and CALLCHG fields are output in the second line if Message Registration (MR) package 101 is equipped and either the Periodic Pulse Metering (PPM) or Advice of Charge (AOC) feature is activated. These fields are output for all outgoing calls on metered Public Switched Telephone Network (PSTN) and Direct Outward Dial (DOD) trunk connections.

Ring Again

When the Ring Again feature is activated, a record is generated only when a trunk is seized.

TIE trunk operation

The duration of calls placed over tandem, unsupervised TIE trunks is calculated from the time the trunk is seized. The duration of calls placed over tandem, supervised TIE trunks is calculated from the time the trunk is answered. For supervised trunks an N (Normal) or S (Start) record is generated only if Answer Supervision is received. Thus, the calling party is not charged for the time taken for outpulsing and ringing.

Tandem calls

In a scenario where a PPM trunk enters a network at one node and terminates on another network node without terminating on the first node, an N (Normal) record is output at the first node if: both of the following conditions are met:

- the CDR Transfer Enhancement (CDRX) package (259) is equipped

- the response to the CDRX prompt is "YES" in LD 16 for both incoming and outgoing trunks

The N record in the aforementioned scenario includes the BLID (Billing Line I.D.) field.

Call forward

When Call Forward is activated and results in a trunk-to-trunk (tandem) call or an incoming TIE-to-outgoing-TIE call, two N (Normal) records are generated. More than two N records may be generated if Trunk Route Optimization is activated.

The first N record shows the incoming trunk as ORIGID and the call forwarded DN as TERID. The second N record shows the call forwarded DN as ORIGID and the outgoing trunk as TERID. Both N records show the same time stamp and duration data.

An E (End) record is generated at the end of the call.

With PPM or AOC activated, charge information is assigned to the forwarding party when an internal call is forwarded over a metered trunk. Charge information appears in the form of PPM pulses or ISDN Information Elements.

One-step call forward

In the case where the call is forwarded directly from the telephone set (Set A) to a trunk or an outgoing TIE, the prompt LAST in LD 16 has no effect. The first Normal record is generated for the incoming part of the call:

ORIGID = incoming TIE/trunk, TERID = set A

The second Normal record is generated for the outgoing part of the call:

ORIGID = set A, TERID = outgoing TIE/trunk, digits = outpulsed digits

Two-step call forward

If the case where the call is forwarded to another telephone set (from Set A to Set B), and then reforwarded to the trunk or outgoing TIE, the prompt LAST in LD 16 affects the second Normal record. The first Normal record is generated for the incoming part of the call:

ORIGID = incoming TIE/trunk, TERID = set A

If LAST = YES in LD 16, the second Normal record is generated as:

ORIGID = set B, TERID = outgoing TIE/trunk, digits = outpulsed digits

If LAST = NO in LD 16, the second Normal record is generated as:

ORIGID = set A, TERID = outgoing TIE/trunk, digits= outpulsed digits

Multi-step call forward

If the case where the call is forwarded through a series of telephone sets (for example, from Set A to Set B, then to Set C), and then reforwarded to the trunk or outgoing TIE, the prompt LAST in LD 16 effects the second Normal record. The first Normal record is generated for the incoming part of the call:

ORIGID = incoming tie/trunk, TERID = set A

If LAST = YES in LD 16, the second Normal record is generated as:

ORIGID = set C, TERID = outgoing TIE/trunk, digits= outpulsed digits

If LAST = NO in LD 16, the second Normal record is generated as:

ORIGID = set B, TERID = outgoing TIE/trunk, digits = outpulsed digits

S (Start) record

A call that is modified by certain features generates an S (Start) record. For example, an S record is generated when a call is transferred or conferenced.

The point in time at which the S (Start) record is generated is determined as follows. If the trunk is Periodic Pulse Metered, then an S record is generated when the called DN answers and the transferring DN releases. If the trunk is not Periodic Pulse Metered, then the S record is generated when the transferring DN releases, regardless of whether or not the called DN answers.

An S record is always generated for an attendant extended outgoing trunk call. The system also outputs S records for calls which are transferred to other Meridian Customer Defined Network (MCDN) stations, if the system is equipped with the CDRX package (259) and the response to the CDRX prompt is "YES" in LD 16.

When transferred across the network, the billable party is identified in the BLID field of the record.

Feature Interactions/Call Scenarios

Call Transfer

When Call Transfer is activated on an established call, an S record is generated instead of an N (Normal) record. The S record is generated when the transfer is complete. The S record indicates which two parties are involved immediately before the feature was activated. The TERID records the transferring DN. On call termination, an E (End) record is generated showing its final disposition. The End record shows the trunk as ORIGID and the DN as TERID.

X records are output if the metered trunk is transferred via an ISDN link to another node in a Meridian Customer Defined Network (MCDN). The E (End) record shows the DN as ORIGID and the trunk as TERID. The billable party is identified by the BLID field in the third line of S, X, and E records.

If the CDRX package (259) is equipped and the CDRX = YES in LD 16, then S, X, and E records are output for both internal and external (to another node in a MCDN) call transfers.

When a call is transferred outside the system (external transfer) and not to another MCDN node, a second S record is generated. For the second S record, ORIGID indicates the transferring DN, TERID indicates the outgoing trunk, and DIGITS indicates the number to which the call is transferred. An E (End) record is generated at the end of the call.

Call Forward

A forwarded call that results in a trunk to trunk (tandem) call generates a consecutive pair of S records. The first record indicates the incoming trunk as ORIGID and the call forwarded DN as TERID. The second record indicates the call forwarded DN as ORIGID and the outgoing trunk as TERID. Both records have the same timestamp and duration data. An End record is generated at the end of the call.

When Call Forward is activated for an incoming TIE-to-outgoing-TIE call, two Normal records are generated— one record for the incoming TIE trunk to telephone, a second record for the telephone to outgoing TIE trunk. In an MCDN network, if the outgoing call is not answered, then only one normal record is generated. If the outgoing call is answered, then two N records are generated as stated above.

With PPM or AOC activated and when a station user who is connected to a metered trunk transfers the trunk to another internal or MCDN station, charge information in the form of either PPM pulses or ISDN Information Elements is assigned as follows:

- While the dialed station is still ringing, charge information accumulates against the transferring station until the call is answered by the called party or abandoned by the dialing party.

- If the station user transfers the call after consulting with the dialed station user, then the charge information is assigned to the transferring station until the call is transferred.

- If the transferred call is redirected for any reason, charge information is assigned to the transferring station until the call is transferred.

With the Time to Answer feature enabled, the time taken to answer the original call is output in the S record. The Time to Answer information for the transfer is output in either the associated X (Transfer) or E (End) record.

Conference

When Conference is activated on an established call, an S record is generated as described for the Call Transfer feature. A subsequent S record is generated for each trunk which has CDR activated that is included in the conference. The Duration field, which appears on CDR tape but not in TTY output, is calculated from the previous S record time stamp to the current S record time stamp. Although the sequence of related S records generated is alterable by CDR processing routines, chronological (time stamp) data remains intact and each S record is generated before its corresponding E (End) record. The E (End) record shows the conference bridge as ORIGID and the trunk as TERID.

With PPM or AOC activated and when a metered trunk is added to a conference, charge information in the form of either PPM pulses or ISDN Information Elements is assigned as follows:

•   The charge information is assigned to the party that included the trunk in the conference until that party disconnects.

•   If the party that included the metered trunk disconnects from the conference prior to the termination of the conference, then all charge information up to that time is applied to that party and all future charge information is assigned to the last station to disconnect from the conference.

With PPM or AOC activated and when an attendant conference includes one or more metered trunks, charge information in the form of either PPM pulses or ISDN Information Elements is assigned as follows:

•   If the metered trunk is the source of the attendant conference and the attendant is the last internal party to disconnect from the conference, then all charge information is assigned to the attendant meter.

•   If an attendant with a metered trunk as the source of an attendant conference disconnects from the conference, then all charge information is assigned to the meter of the last party to disconnect from the conference.

•   If the attendant has the metered trunk or trunks as destinations, then all charge information is assigned to the meter of the source party.

Other features

On established calls, an S record is generated for the following features:

- Barge-In/Busy Verify

- Privacy release

- Override

Calls that would usually generate an N (Normal) record are altered to generate an S record. The record indicates that a feature was activated during the call, as well as any changes to the parties involved. The trunk ID remains consistent throughout. An E (End) record is generated on call termination.

X record (Transfer)

X (Transfer) records contain detailed information about a transfer. The X record shows which parties were connected during the transfer stages of the call.

S (Start), X and E (End) records are generated in order. However, there may be intervening records associated with other calls. All records associated with one call can be identified by the Terminating ID (TERID) which contains the same trunk route member (rrrmmm) number.

Feature Interactions/Call Scenarios

Periodic Pulse Metering (PPM) or Advice of Charge (AOC)

If an outgoing Periodic Pulse Metered or Advice of Charge (AOC) equipped trunk is transferred only once, one S and one E record are generated. If an outgoing Periodic Pulse Metered or AOC equipped trunk is transferred more than once, X records are generated.

The CDRX package 259 allows non-metered outgoing CO trunks to generate X records. However, the Trunk Route type must be one of the CO trunk types: COT, FEX, WAT or DID.

The duration of a call transfer can be calculated by comparing the time stamp in one X record with the time stamp in its preceding X record. This indicates the billing time for this portion of the call for the identified originator. The PPM or AOC count applies only to this segment of the call.

Other Features

When Barge-In, Busy Verification, Privacy Release or Override is applied to an established call, an S record is generated. Calls that would normally generate an N (Normal) record are altered to generate an S (Start) record. The S record indicates that a feature was activated during the call, as well as any changes to the parties involved. The trunk ID remains consistent throughout. An E record is generated on termination of the call.

If a call is transferred with the Time to Answer feature enabled, the time taken to answer the original call is output in the S record. Time to Answer information for the transfer is output in either the associated X or E record.

E record (End)

Each E (End) record is associated with a specific S (Start) record and possibly a number of X (Transfer) records. The E record is generated when the call is terminated. The E record shows the final disposition of the call. The time stamps on corresponding S, X and E records can be used to calculate the duration of a call.

E records can contain a BLID field. The BLID field identifies the billable party where a metered trunk has been transferred to another Meridian Customer Defined Network (MCDN) node.

Feature Interactions/Call Scenarios

Call Transfer with Time to Answer

When a call is transferred with the Time to Answer feature enabled, the time taken to answer the original call is output in the S (Start) record. Time to Answer information for the transfer is output in either an associated X (Transfer) or E (End) record.

End of Call (EOC)

When the EOC option is used, charge information is delivered from the Central Office, (e.g., via a Primary Rate connection) and only included in the End record, using the CHGINFO and CALLCHG fields. CHGINFO and CALLCHG fields for the corresponding Start and Transfer records are Zero. The charge for each segment of a transferred call can be assigned in proportion to the duration for each segment.

The information is given both in equivalent counts (calculated using the internal conversion factor) and cost (using the internal unit cost factor).

I record (Initialization)

After a system initialization, a single I record is generated.

T record (Time stamp)

When the system time or date is changed from either the Attendant Console or a TTY, a consecutive pair of T records is generated specifying the old and new time stamps. The first record in the pair shows the old time stamp, and the second record shows the updated time stamp.

A record (Authorization Code/Scheduled Access Restriction)

The A record is optional and is enabled using LD 88. With ACDR = YES, Authorization Code information is output in the A record. With SCDR = YES, Scheduled Access Restriction (SAR) information is output in the A record. An A record is generated for Authorization Codes when the code is entered and one of the following occurs:

• a trunk is seized

• a local telephone answers Direct Inward System Access (DISA) calls

• Ring Again is activated, in which case both the ORIGID and TERID fields are recorded as the DN associated with the telephone which enters the authorization code

When authorization codes are stored as Auto Dial or Speed Call entries, the number stored must contain the access code followed only by the Authorization Code. All digits after the access code are interpreted as Authorization Code digits.

An A record is generated for Scheduled Access Restriction when a valid SAR Flexible Feature Code (FFC) is entered.

Feature Interactions/Call Scenarios

Ring Again

When Ring Again is activated, an A record for the Authorization Code is generated only after a trunk is seized.

If the Ring Again offer is cancelled or ignored, no CDR A record appears. If the Ring Again offer is accepted, the line is seized when accepted, and a CDR A report is generated.

If an Authorization Code is entered, but the call is not completed, a call record is produced with a blank TERID field.

CDR A records contain the usual fields:

- If there is an internal connection, CDR shows the originating DN and terminating DN.

- If there is a trunk call, CDR shows the originating DN and the terminating route/trunk member.

C record (Charge Account)

The C (Charge Account) record is designed to allow billing of calls to specific charge account numbers. Charge account number lengths (2 to 23 digits) are defined for each customer, using LD 15. A Charge Account record is generated when a charge code is entered at one of the following times:

- before the caller dials to establish a call

- during an established incoming or outgoing call

- before a conference call is established with each party

Feature Interactions/Call Scenarios

Charge numbers of fixed length

The system assumes that a charge account number is valid when the number of digits entered matches the account number length as defined in LD 15.

When a charge account number is entered before establishing a call and too few digits are entered, the system waits 30 seconds (15 seconds for 2500 telephones) for further input. If no further digits are entered, overflow tone is provided for 15 seconds after which the set is locked out by the system. A Charge Account record is generated showing the partially entered account number.

When a charge account number is entered during an established call and too few digits are entered, no response is given until the interdigit time-out occurs. Overflow tone is provided for 15 seconds, and the previously established call is connected. On analog (500/2500-type) telephones, if the user does not wait for a response and has dialed too few digits, then each switchhook flash is interpreted as a digit 1 until the charge account length is reached. Dial tone is then returned and the next switchhook flash connects the call.

On Meridian 1 proprietary telephones without a charge key, if the user does not wait for a response and has dialed too few digits, then the call is reestablished when the DN key is pressed. However, no Charge Account record is produced.

Charge numbers of variable length

Attendant Consoles and Meridian 1 proprietary telephones equipped with a charge (CHG) key permit entry of charge account numbers containing less digits than defined. The charge account number entered is accepted by the system when the CHG key is pressed.

A charge account number entry is also accepted by the system by operating a DN, Call Transfer or Conference key that was active before the CHG key was operated.

The CHG key may also be used to terminate an entry to correct an error or to enter multiple charge account numbers.

Number deletion

A C record is not output by the system unless the call involves a trunk and meets the criteria set for CDR in the Route Data Block.

Call Transfer

An external call transferred from one telephone (A) to another telephone (B) generates an S (Start) record for telephone A and an E (End) record for telephone B when the call is terminated.

However, if telephone B enters a charge account number and transfers the call to another telephone (C), a Charge Account record is output for telephone B.

If the PPM or AOC Message Registration features are not enabled, then the resulting S (Start) and E (End) records do not indicate that telephone B or any other intermediate telephone was involved in the call. An L (Internal) record indicates B's involvement with the call. The S (Start), C, and E (End) records are associated on a time stamp and trunk basis. The trunk is the same on all three records.

If PPM or AOC Message Registration features are enabled, an X (Transfer) record is generated for all metered calls. The S (Start), C (Charge Account), X (Transfer), and E (End) records are associated on a time stamp and trunk basis. The trunk is the same on all records.

No S (Start) or E (End) records are generated when the call is an internal call.

M record (Charge Conference)

M (Charge Conference) records allow one or more charge account numbers to be assigned to one, some or all members of a conference call. Individual S (Start), M (Charge Conference), and E (End) records are generated for each trunk participating in the call. Individual E (End) records are generated for each trunk as it disconnects.

An M record is generated when a charge account code is entered after a conference is completed.

Feature Interactions/Call Scenarios

Different account numbers

To assign portions of a Conference call to different charge account numbers, the account numbers must be entered when adding a trunk to a conference and before the conference is established. For analog (500/2500-type) telephones, the account number is entered after the switch hook flash and before the trunk is dialed. For Meridian 1 proprietary telephones, the account number is entered after the Conference key is pressed, either before or after the trunk is dialed, and before the Conference key is pressed again. A charge account number is generated for each trunk added to the conference.

Single account numbers

When all parties in a Conference call are assigned the same charge account number, only one entry is required. Once all the trunks are included in the conference, the charge account number is entered in the usual manner. An M record shows the telephone entering the number, the trunk added, and the charge account number.

P record (Calling Party Number)

The P (Calling Party Number) record is useful in matching telephone company billing records of collect calls against call detail records. Entering a Calling Party Number (CPN) of 1 to 23 digits by using a CPN key assigned to Attendant Consoles and Meridian 1 proprietary telephones results in the generation of a P record. A P (Calling Party Number) record is generated each time the CPN key is used, allowing for the generation of multiple P (Calling Party Number) records.

P records are not generated until the attendant extends the call.

F, R and Q records (ACD call connections)

Connection records are used with Automatic Call Distribution (ACD) applications connecting to auxiliary facilities, e.g., customer defined host computer processors.

The three types of Connection records are R, Q and F records. R records are generated for ACD calls that are transferred. Q records are generated for calls connecting a trunk and an ACD agent. F records are generated for ACD Conference calls.

The appropriate Connection record is generated for each connection made with an ACD agent linked to a customer provided host computer processor. Connection records allow agents to establish and modify the profile (such as the caller's name, address, or other information) of a transferred or conferenced call which is in progress. This call profile is entered in the host processor and can be displayed on an ACD agent terminal.

When the host processor finds a Connection record, it scans the CDR records for other Connection records related to that call and displays existing call profiles on the Automatic Call Distribution (ACD) agent's screen. If the call is transferred or conferenced to another agent, the call profile appears on the monitor of that agent. The agent can then change the call profile if required. This process is repeated for subsequent transfers and conferences until the agent terminates a call or transfers it to a non-agent.

The DURATION field of Connection records contain the length of time a call has to wait before being served. Optionally, the host processor can read this information and provide RUSH displays on agent screens to signal that calls are waiting too long.

The CDR format of Connection records is similar to the N record, except that the TERID field contains the Terminal Number (TN) (packed format) of the agent telephone.

Note: Magnetic tape devices do not store Connection records.

R records and F records

If the call is transferred to or involved in a conference with another agent, the call profile is output on the second agent's terminal. The second agent can then change the call profile as required. Further transferring or involvement in conferences is treated in the same manner. When the host processor finds a Connection record, it scans the CDR records for other Connection records related to that call. Any call profiles entered earlier are displayed on the ACD agent's screen. This is repeated on all subsequent transfers and conferences until the call is terminated by an agent or transferred to a non-agent.

Note: An incoming central office (CO) trunk does not create any digits in the R record.

Q records

The Q record helps customers link their Voice Response Unit (VRU) with the appropriate trunk for delivering an electronically constructed message to callers. This reduces an agent's work time for the call.

Note: An incoming central office (CO) trunk does not create any digits in the Q record.

L record (Internal CDR)

An L record is produced when the Internal CDR criteria are satisfied. At least one L record is produced when internal calls are modified, forwarded, or transferred.

Packaging requirements

Internal CDR (ICDR) requires basic CDR. To receive an ICDR record the customer must have either CDR-TTY (CTY) or CDR Link (CLNK) enabled.

Feature Interactions/Call Scenarios

Data input for ICDR is not supported by Attendant Administration.

An L (Internal) record is output under the following conditions:

• the Call Detail Recording (CDR) feature is enabled

- all connected parties are stations, attendants or in conference

- at least one of the parties involved has ICDR allowed (CLS = ICDA in LD 10 or LD 11, ICDR = ICDA in LD 12)

If the preceding criteria are satisfied, then the following applies:

- An L (Internal) record is produced at the release of an internal call.

- One or more L (Internal) records are produced at the completion of call modification of an internal call.

- L (Internal) records are produced at the release of a multiparty call.

Automatic Call Distribution (ACD)

L (Internal) records are produced for ACD as follows:

- At the completion of an internal call.

- When the Agent Observe function is released; an L (Internal) record is produced for the agent and the internal party.

- L (Internal) records are produced when the supervisor activates or releases the Answer Emergency feature.

    Note: In all cases, the ACD Position ID is shown in the ORIGID or TERID field.

Busy Verify

When the attendant conducts Busy Verify on a telephone, the established parties are connected in a conference and an L (Internal) record is produced. L (Internal) records are produced when Busy Verify is released, as described for Conference calls.

Call Park

An L (Internal) record is output when an ICDR call is parked.

Conference

Internal records are produced for Conference calls when a party joins or leaves the Conference. Internal records indicate the conference loop as the ORIGID. The last two parties remaining on a Conference call are recorded as a normal call.

Group Call

The L (Internal) record produced when a party is disconnected from a group call identifies the party and the conference loop.

Japan features

The CDR and Answer Supervision features provide a half second accuracy option. L (Internal) records have two second accuracy in the DURATION field, even if the half second option is enabled. For more information, refer to the Japan Central Office Trunks Feature.

Override

When telephone A overrides telephone B which is connected to telephone C, a three-party conference is established. When telephone A releases, L (Internal) records are produced showing the conference loop and each party.

L (Internal) records are also produced when the attendant releases from Override on a Do-Not-Disturb telephone.

Voice messaging

L (Internal) records for calls routed to a voice messaging system contain the agent ID in the TERID field.

G record (Internal Meridian 1 Packet Handler data call)

A G record is produced when:

- CDR is configured for the customer

- the Meridian 1 Packet Handler (MPH) Terminal Service Profile (TSP) has CDR = YES in LD 27

- an internal data connection to the MPH is released

H record (External Meridian 1 Packet Handler data call)

An H record is produced for:

- *incoming* data packet calls from the Public Network to the Meridian 1 Packet Handler (MPH) if IMPH = YES in LD 17

- *outgoing* data packet calls from the MPH to the Public Network if OMPH = YES in LD 17

The records are generated when an external connection has been released.

D record (Station Activity)

A D record is produced when CDR is configured for the customer and a trunk either terminates on, or is accessed by, a set with CDMA class of service (CLS = CDMA in LD 10 or LD 11).

Packaging requirements

D records are output only when the Station Activity Call Detail Recording (SCDR) package 251 is equipped. The SCDR package has the following prerequisites:

• base Call Detail Recording (CDR) package 4

• CDR-TTY (CTY) package 5

Feature Interactions/Call Scenarios

Call Redirection

A D record is produced for a set engaged in a trunk call which has CDMA class of service. A D record is not generated for any set which does not answer the call, regardless of whether it has CDMA or CDMD class of service. Any other records generated during the call are not affected.

Call Transfer

A D record is generated when a set with CDMA class of service transfers a trunk call to another set. CDR X record generation is not affected. The set to which the call is transferred also produces a D record if it has CDMA class of service and answers the call. When the D record is produced, for the set to which the call has been transferred, the digits field of the D record will show the digits dialed by the transferring set.

Conference

A set engaged in a trunk call which has CDMA class of service generates a D record only when the set conferences the first party. Additional "D" records are not generated if the conference is expanded. An additional D record is generated if the last conferencee to go on hook has CDMA class of service and if the last conferencee was not the originator of the conference. This does not affect any other CDR record generation during a conference.

CDR Route options

If a set involved in a call has CDMA class of service then D records are output regardless of the CDR option assigned to the set in the Route Data Block (LD 16). If CDR records are to be output for the trunk route, then D records are output along with the other record types. If CDR records are not to be output for the trunk route, then only D records are generated.

Y record (Public Network Feature Invocation)

A Y record is generated whenever a Meridian 1 user accesses a feature using an ISDN trunk on the Public Exchange/Central Office to which the Meridian 1 is connected. The only feature capable of generating Y records is the "Public Service Telephone Network (PSTN) Three Party Conferencing" feature of the NEAX-61.

Feature Interactions/Call Scenarios

"PSTN Three Party Conferencing" CDR

The CDR output from the "PSTN Three Party Conferencing" is different in certain respects from a Meridian 1 based conference as only a single trunk is used, and no information on a change of state for the external callers is provided, therefore timing information is less reliable. Additionally, whenever a CDR record is generated to indicate the start of a conference there is also an additional, external charge.

As a result, no attempt is made to make the call CDR records match the normal "S" and "E" records of conference calls with two trunks. Instead of two "S" records at the start of the conference, a single "Y" record is generated to indicate a PSTN feature is invoked. This "Y" record includes all digits dialed to access the third party. The final record, produced on call clearing, remains as an "N" record, and includes information from the original call.

For the PSTN Three Party Conferencing feature, CDR "N" record generation is based on having the main call meet the CDR criteria. If CDR is only enabled for incoming calls and if the first party is an incoming external call, an "N" record is generated for the original call. For outgoing calls a CDR will only be generated if the response to the CDR sub-prompt OTL is YES (and the call is toll), or the response to the OAL sub-prompt is YES.

Note: For business systems (Private Branch Exchanges [PBXs]) in New Zealand, all calls are charged varying amounts depending on geographical area; OAL is highly recommended.

CDR "Y" records are controlled by the prompt CDRY in the Route Data Block (RDB). If responded to with YES, CDR "Y" records are generated on the first Trunk Hook-switch Flash (THF) after the Meridian 1 receives the INFO message, Info Request "Complete". In the case of a misoperation where the user releases after the "Complete" rather than doing a THF, the record will also be produced.

Note: CDR "Y" records may be generated for calls without an associated "N" record being generated. The case is as follows: An incoming call has its RDB set to not generate CDR records for incoming calls and the response to CDRY was YES terminates on an internal set. The internal set initiates a "PSTN Three Party Conference". The only record generated would be the "Y" record.

PSTN Three Party Conferencing—Abnormal Operation
Aborting the Conference

The conference operation may be aborted by pressing the Centrex Flash key or dialing the Centrex FFC a second time without dialing a destination. This second flash requests the network complete the operation in progress. As the called number is still incomplete, the PSTN will abort the conference.

Because the INFORMATION message with the Information IE (Information Request Complete) has not been received, the Meridian 1 aborts any CDR processing that would have occurred with a completed call.

Aborting the Conference—Unanswered Call

A second flash (Centrex key or FFC) will cause the NEAX-61 to attempt completion of the conference. As it is not established to the third party, the extra party is dropped. Because the INFORMATION message with the Information IE (Information Request Complete) was received, the Meridian 1 must do all CDR processing as though it was a completed call.

Conference Controlling Party Goes On-Hook

This is a billing concern. Releasing the call to the external parties could leave the PBX as the billed party for calls in which the PBX is no longer involved. However, current operations on the NEAX-61 result in the call being torn down completely if the controlling party goes on-hook.   Therefore, unless there is a change in the PSTN operation, this concern may be ignored.

An incoming call from the PSTN conferencing with another PSTN number will have only charges relating to the SECOND call assigned to the PBX. The call is billed as two separate calls, with each "branch" of the call billed separately, although the CONFERENCE charges is billed to the PBX user.

Other Abnormal Operations

As all other abnormal operations are exclusively in the PSTN environment, these is country and system based, and will conform to local operation standards and regulatory requirements for the PSTN switch.

CDR Record Production

When either the Meridian 1 party (which is the controlling party for the call) releases the call, or both of the public network parties release, the call is torn down.   A CDR record is generated for the original caller's number, if required by the call type.

Note that "TOLL vs. all" should not be a concern for outgoing calls, as all calls in a business environment are charged.   The PSTN provides a flat rate charge for conference feature usage; since the outward call is charged, ANY conference is effectively a toll call. However, from the CDR perspective, we can eliminate "local" calls since the charge is relatively negligible.

Table 26
CDR records output versus options selected

Initial call incoming:				
INC	**OAL**	**OTL**	**CDRY**	**Result**
YES	N/A	N/A	YES	both numbers generate CDR records
YES	N/A	N/A	NO	only the N record is produced
NO	N/A	N/A	YES	only CDR Y record is produced
NO	N/A	N/A	NO	no CDR record is generated

Initial call outgoing TOLL:				
INC	**OAL**	**OTL**	**CDRY**	**Result**
Don't Care	YES	NO	YES	both numbers generate CDR records
Don't Care	NO	YES	YES	both numbers generate CDR records
Don't Care	NO	NO	YES	only CDR Y record is produced
Don't Care	YES	NO	NO	only the N record is produced
Don't Care	NO	YES	NO	only the N record is produced
Don't Care	NO	NO	NO	no CDR record is generated

Initial call outgoing non-TOLL:				
INC	**OAL**	**OTL**	**CDRY**	**Result**
Don't Care	YES	NO	YES	both numbers generate CDR records
Don't Care	NO	YES	YES	only CDR Y record is produced
Don't Care	NO	NO	YES	only CDR Y record is produced
Don't Care	YES	NO	NO	only the N record is produced
Don't Care	NO	YES	NO	no CDR record is generated
Don't Care	NO	NO	NO	no CDR record is generated

Priority Connection Record

Connection records integrate Automatic Call Distribution (ACD) operation with host processor facilities to transfer call profiles among agents. In the integrated environment, call completion has three components:

1   switching through a voice path

2   informing the computer of the connection (Connection record)

3   having the host processor display the call profile on the terminal of the agent receiving the call

The time required to process all three parts of the call is cumulative. To reduce the real-time required to complete the call, Connection records have priority over other types of CDR records. Priorities are assigned in this order:

1   High priority timing queue

2   Network input messages

3   Regular timing queue

4   Call ringing

5   TTY input

6   CDR Connection Call Processing records

7   Other functions at lower priority levels (including other CDR records)

CDR record sequencing

Call sequence for an incoming-trunk-to-agent call

The simplest type of call to an ACD DN is an incoming call from a trunk to an agent. The typical sequence of CDR record for this type of call is:

•   **Q record**: indicates a connection has been established

•   **N record**: indicates that the call is terminated

Call sequence for a transfer or conference call

Calls involving transfer and conference generate a sequence of Connection, S (Start), X (Transfer), and E (End) records.

A typical sequence of records for a transfer call is:

1   **Q record** Indicates that a connection has been established.

2   **S record** Indicates that the first leg of the call was completed. Timing and other data are provided for this portion of the call. This record is only generated for the first leg of a call.

3   **X record** is available for PPM, AOC and CDR Transfer Enhancement (CDRX) related calls. After an S record has been printed, each subsequent call modification will print an X record. This X record provides timing and other PPM and AOC information for that segment of the call.

4   **R record** Indicates that the call was transferred to a second agent. This record may appear before the S record when the first agent disconnects after the second agent answers. Another R record is generated each time the call is transferred to subsequent agents. There can be any number of additional R records.

5   **E record** Indicates that the call is ended. It provides timing and other data for that call.

A typical sequence of records for a conference call is:

1   **Q record** Indicates that a connection was established.

2   **F record** Indicates that a new connection was established between two parties for a conference.

3   **S record** Indicates that the conference was set up (third party included in conference). It provides timing and other information for the connection. Only one S record is generated.

4   **X record** is available for PPM, AOC and CDR Transfer Enhancement (CDRX) related calls. After an S record has been printed, each subsequent call modification will print an X record. This X record provides timing and other PPM and AOC information for that segment of the call.

5   **F record** Generated each time a conference connection is made.

6   **E record** Indicates that the call has ended. It provides timing and data for that call.

Because Connection records are processed at a higher priority than other CDR records, the actual sequence of CDR records may vary. Connection records are always output before other types of records. Under heavy traffic conditions, Connection records may be output five or more seconds before other types of records. Serial numbers indicate the actual sequence of the CDR records.

Call record fields

Contents

The following are the topics in this section:

Reference list

The following are the references in this section:

- *Meridian Link ISDN/AP General Guide* (553-2901-100)

- *Features and Services* (553-3001-306)

This chapter is dedicated to describing each call record field and defining its format. Table 28, "Field to Record Matrix," on page 182 lists each field and the page on which it is described. Table 28, "Field to Record Matrix," on page 182 relates record types to record fields and graphically indicates which fields apply to each record type.

Table 27
Field Descriptions

Field	Definition	Page
RECTYPE	Record Type	183
RECNO	Record Number	184
CUSTNO	Customer Number	184
ORIGID	Originating Identification	184
TERID	Terminating Identification	186
TIMESTAMP	Time of day abandonment occurred	188
DURATION	Length of call	189
INPACK	Number of incoming data packets	202
OUTPACK	Number of outgoing data packets	202
DIGITTYPE	Digit type identifier	191
DIGITS	Digits dialed, output, or modified by software options	192
CLID	Calling Line ID ISDN must be equipped	198
CHGINFO	Message Registration charge information	196
CALLCHG	Message Registration call charge/meter overflow	197
FGDANI	Feature Group D Automatic Number Identification digits	199
DNIS	Dialed Number Identification Service digits	200
ORIGAUXID	Originating Auxiliary Identification	184
TERMAUXID	Terminating Auxiliary Identification	187
ORIGTENO	Originating tenant number, Multi-Tenant only	196
TERTENO	Terminating tenant number, Multi-Tenant only	196
TTA*	Time to Answer	200
BLID	Billing Line I.D.	202
M911	M911 Call Abandon	203
000	CDR 100 Hour duration	204
B	Busy Tone identifier	205

Note: In Table 28 on page 182, if NEW CDR format is selected, all fields are output. If the field is blank, it is output as spaces.

Table 28
Field to Record Matrix

		A	B	C	D	E	F	G	H	I	L	M	N	P	Q	R	S	T	X	Y
									RECORD TYPE											
FIELD	RECTYPE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	RECNO	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1		1	1
	CUSTNO	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1		1	1
	ORIGID	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1		1	1
	TERID	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1		1	1
	TIMESTAMP	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	DURATION		1		1	1	1	1	1		1		1		1	1	1		1	1
	INPACK							1	1											
	OUTPACK							1	1											
	DIGITTYPE					1	1						1		1	1	1		1	
	DIGITS	1		1	1	1	1				1	1	1	1	1	1	1		1	1
	CLID *	1		1		1	1				1	1	1	1	1	1	1		1	
	CHGINFO *		1			1	1						1		1	1	1		1	
	CALLCHG *		1			1	1						1		1	1	1		1	
	FGDANI *		1			1							1				1		1	
	DNIS *		1			1							1				1		1	
	ORIGAUXID *	1	1	1		1	1				1	1	1	1	1	1	1		1	
	TERMAUXID *	1	1	1		1	1				1	1	1	1	1	1	1		1	
	ORIGTENO *	1	1	1		1	1				1	1	1	1	1	1	1		1	
	TERTENO *	1	1	1		1	1				1	1	1	1	1	1	1		1	
	TTA *		1			1	1				1		1		1	1	1		1	
	BLID					1							1				1		1	
	M911 *												1		1					
	000 *		1		1	1	1	1	1		1		1		1	1	1		1	1
	* Fields marked with an asterisk are *optional*.																			

TTY record fields

A call record on a TTY or printer contains the following fields:

RECTYPE: Record Type

The Record Type (RECTYPE) field indicates the type of call record. The field consists of a single letter identifying the type of record:

A   Authorization Code

B   Abandoned call

C   Charge

D   Station Activity

E   End

G   Internal Meridian 1 Packet Handler data call

H   External Meridian 1 Packet Handler data call

F   Connection (Conference connection)

I   Initialization

L   Internal call

M   Charge for Conference

N   Normal

P   Calling Party Number

Q   Connection (initial connection)

R   Connection (transfer connection)

S   Start

T   Time stamp

X   Transfer

Y   Public Network Feature Invocation

See the chapter titled "Call record types" on page 149 for a full description of each record type.

RECNO: Record Number

The Record Number (RECNO) field identifies the number of the current record in the CDR sequence. The field is a three-character field that gives the record sequence number.It is right-justified for the OLD CDR format left justified for the NEW CDR format.

The RECNO field format is:

xxx

Where: xxx = Record Number (000–127)

CUSTNO: Customer Number

The Customer Number (CUSTNO) field identifies the customer associated with the call. The field is a two-character field that identifies the customer number.

The CUSTNO field format is:

xx

Where: xx = Customer Number (00–99)

ORIGID: Originator Identification

For all record types except G and H the Originator Identification (ORIGID) field identifies the apparatus that originated the call. The field output format depends on the type of equipment as follows:

1. Stations are identified in the form DNxxxx, where xxxx = prime DN for the telephone.
2. When the CDRE package is equipped, the format DNxxxx is replaced by xxxxxxx to accommodate up to 7 digits.
3. Trunks have the ORIGID field in the format Trrrmmm, where rrr = route number and mmm = member number. For ISA calls, rrr = the service route number and mmm = the master route member number.
4. Attendants are identified in the form ATTNxx, where xx = the console number (1–63).
5. Conference loops are identified in the form CFlllnn, where lll = loop number 0–159 and nn = the conference number.

6. Arrrmmm, Trrrmmm or TNxxxx

   Where:

   • A = answer supervision was received on an answer supervised trunk output (if AIA = YES in LD 16)

   • T = Option AIA was set to NO in LD 16, or the terminator was an unsupervised trunk, or the terminator was a supervised trunk and the call was not answered.

   • rrr = route number (000–511). For Integrated Service Access (ISA) calls, rrr = the service route number.

   • mmm = member number (000–254). For ISA calls, mmm = the master route member number.

   • TN = packed Terminal Number. The TN format is xxxx, where: x = 0–9, A,B,C,D,E, or F

The Answer Supervision record is identified by an "A" in the ORGID field of the TTY output.

If Answer Supervision is not received during the call, although the trunks are equipped with answer supervision, the duration of the call is calculated from the time of trunk seizure. This type of record is still identified by a "T" in the ORIGID field of the TTY output.

For the G and H record types the ORIGID is a 14 character-wide, left justified field. The ORIGID field is located on the first line and occupies positions 10 to 23. Its contents are:

   • The Data Network Address (DNA) for internal or external outgoing calls, or

   • The TN of the incoming link, either Meridian Communications Unit (MCU) or Primary Rate Interface (PRI) for external incoming calls.

TERID: Terminator Identification

For all record types, except the G and H records, the Terminating
Identification (TERID) field identifies the apparatus on which a call is
terminated. The field output format depends on the type of equipment as
follows:

1. Stations are identified in the form DNxxxx, where xxxx = the prime DN
   for the telephone.

2. When CDRE package is equipped, the format DNxxxx is replaced by
   xxxxxxx to accommodate up to 7 digits.

3. Trunks have the ORIGID field in the format Trrrmmm, where rrr = route
   number and mmm = member number.

4. Attendants are identified in the form ATTNxx, where xx = the console
   number (1–63).

5. Conference loops are identified in the form CFlllnn, where lll = loop
   number 0–159 and nn = conference number.

6. rrrmmm, Trrrmmm or TNxxxx

   Where:

   - A = answer supervision was received on an answer supervised
     trunk output (if AIA = YES in LD 16)

   - T = Option AIA was set to NO in LD 16, or the terminator was an
     unsupervised trunk, or the terminator was a supervised trunk, and the
     call was not answered.

   - rrr = route number (000–511). For Integrated Service Access (ISA)
     calls, rrr = the service route number.

   - mmm = member number (000-–54). For ISA calls, mmm represents
     the master route member number.

   - TN = packed Terminal Number. The TN format is xxxx, where:
     x = 0–9, A,B,C,D,E, or F.

The Answer Supervision record is identified by an "A" in the TERID field of
the TTY output.

If Answer Supervision is not received during the call, although the trunks are
equipped with answer supervision, the duration of the call is calculated from
the time of trunk seizure. This type of record is still identified by a "T" in the
TERID field of the TTY output.

For the G and H record types the TERID is a 14 character wide, left justified field. It is located on the first line and occupies positions 25 to 38. Its contents are:

- The Data Network Address (DNA) for internal or external incoming calls, or

- The TN of the incoming link, either Meridian Communications Unit (MCU) or Primary Rate Interface (PRI) for external outgoing calls.

AUXID: Auxiliary Identification

The Auxiliary Identification (AUXID) field identifies the TN of the originating telephone when the telephone has a multiple appearance Prime DN, and cannot be uniquely identified by ORIGID. This field is output in the OLD CDR format and is used as the originating auxiliary identification field for L (Internal) records. Whether the AUXID is to be printed or not is determined by the response to the AXID prompt in LD 15. The field format is:

LLL.S.CC.UU

Where:

LLL = Loop (000–159)
S = Shelf (0–3)
CC = Card (00–15)
UU = Unit (00–31)

TERMAUXID: Terminating Auxiliary Identification

The Terminating Auxiliary Identification (TERMAUXID) field identifies the TN of the terminating telephone when the telephone has a multiple appearance Prime DN, and cannot be uniquely identified by TERID. This field is output in the OLD CDR format and is used as the terminating auxiliary identification field for L (Internal) records. The TERMAUXID field format is the same as the AUXID field format.

TIMESTAMP: Time stamp

The Time stamp (TIMESTAMP) field gives the date and time. Its exact definition depends on the type of record:

Record Type	Timestamp
N (Normal)	start of call
L (Internal) without call modification	end of call
L (Internal) with call modification	at completion of the call modification
S (Start)	start of call
E (End)	end of call
I (Initialization)	time of system initialization
T (Time stamp)	old or new time stamp
X (Transfer)	completion of transfer
F, Q, and R (Connection)	time of connection
H	start of call
G	start of call
D	end of call
Y	time of feature invocation attempt (second flash for "PSTN Three Party Conferencing)

If the call started on the last day of a month and stopped on the first day of the next month, then the start day is shown as day 0 of the next month.

The Time stamp (TIMESTAMP) field format for the OLD CDR format is:

MO/DD HH:MI

Where:

MO = month (1–12)
/ = forward slash character
DD = day (0–31)
space character
HH = hour (0–23)
: = colon character
MI = minute (0–59)

Note: If the call started on the last day of a month and stopped on the first day of the next month, then the start day is shown as day 0 of the next month.

The Time stamp (TIMESTAMP) field format for the NEW CDR format is:

MO/DD HH:MI:SS

where:

MO = month (1–12)
/ = forward slash character
DD = day (0–31)
space character
HH = hour (0–23)
: = colon character
MI = minute (0–59)
: = colon character
SS = second (0–59)

DURATION: Call Duration

The call duration (DURATION) field, as the name implies, is used to output the duration of the call. The duration accuracy is dependent on whether or not the Japan Central Office trunks package (97) is equipped or not.

Note that the CDR 100-Hour Call feature increases the maximum recordable duration of a call from approximately 100 to 100000 hours. To achieve this result, the CDR 100-Hour Call feature introduces a new "000" field in the third line of all FCDR record types which have a Duration field. See "000: CDR 100 Hour Call" on page 204. for more information.

If the Japan Central Office trunks package (97) is equipped, then DUR5 will be a sub-prompt of the PARM prompt in LD 17. If DUR5 = YES, then the duration will be calculated to within a half (0.5) second of the actual duration. If DUR5 = NO, or if the Japan Central Office trunks package (97) is not equipped, then the duration will be calculated to within two (2) seconds of the actual duration.

In a N (Normal) record, this is the duration of the call from start to disconnect. In a S (Start) record, this is the duration of the call from start to first feature usage at time given by TIMESTAMP. Incoming call duration is measured from the time the call is first presented to the terminating telephone. Outgoing call duration is measured from the time a trunk is first seized (dial tone removed), except for cases where records are only produced upon receipt of Answer Supervision where the call duration starts upon receipt of Answer Supervision.

In an E (End) record, the duration is the total time for the call less the duration of the first segment (which is given in the corresponding S [Start] record). Thus the total call duration is the sum of the duration given in the S (Start) and E (End) records.

In an X (Transfer) record with CDR Transfer Enhancement (CDRX) active, the duration is included and is calculated dependant on the type of transfer. For internal transfers the duration is calculated from the time the transferring party answered until the transferred to party answers. For network transfers the duration is calculated from the time the transferring party completes the transfer until the transferred to party either disconnects or completes another transfer.

In a L (Internal) record, the duration of a simple call is measured from connection to release. With call modification, the duration is measured from the start of the call or call modification, to disconnect or another call modification.

On a route where trunks are equipped with answer supervision and supervision is received during the call, the duration of the call is calculated from the time answer supervision is received to the time of disconnect.

On a route where trunks are not equipped with answer supervision the duration of the call is calculated from the time of seizure to the time of disconnect.

In a Y (Public Network Feature Invocation) record, the duration field indicates either the duration form the start of the original call, or the duration from the previous invocation attempt to the present invocation attempt.

The Call Duration (DURATION) field format is:

1. HH:MI:SS
   (when two (2) second accuracy call duration is in effect for OLD CDR format)

   Where: HH = hour (0–99), : = colon character, MI = minute (0–59), : = colon character, SS = second (0–59)

   Start records output using the OLD CDR format on TTY do not contain a DURATION field.

2. HH:MI:SS.S
   (when half (0.5) second accuracy call duration is in effect for OLD CDR format)

   Where: HH = hour (0–99), : = colon character, MI = minute (0–59), : = colon character, SS = second (0–9), . = period character, S = half second duration indication (0 or 5)

   Start records output using the OLD CDR format on TTY do not contain a DURATION field.

3. HH:MI:SS.S
   (when either two (2) or half (0.5) second accuracy call duration is in effect for the NEW CDR format)

   Where: HH = hour (0–99), : = colon character, MI = minute (0–59), : = colon character, SS = second (0–59), . = period character, S = half second duration indication (0 or 5)

   The Answer Supervision record is identified by an "A" in the ORIGID or TERID field of the CDR TTY output if the following conditions are met:

   - Trunk has answer supervision

   - Option to allow Answer Indication selected (AIA = YES in LD 16)

If Answer Supervision is not received during the call, although the trunks are equipped with answer supervision, the duration of the call is calculated from the time of trunk seizure. This type of record is still identified by a "T" in the ORIGID or TERID field of the CDR TTY output.

CDR Answer Supervision for Ground Start and Loop Start trunks detects answer supervision on Ground and Loop Start trunks when sent as reverse battery from the Central Office, and generates Call Detail Records based on actual answer received rather than trunk seizure. Call Detail Recording begins when answer supervision is received from the CO.

Trunks connected to XUT cards can have LOOP Start Answer Supervision capability via the PSP class of service.

DIGITYPE: Digit Type Identifier

The Digits Type Identifier (DIGITYPE) is used to identify the BARS/NARS routing used by an outgoing call or to indicate that the DIGITS field is storing Multi-Frequency Compelled (MFC) Calling Number Information (CNI) digits for an incoming call.

The Digit Type Identifier (DIGITYPE) field is included in the DIGITS field in the NEW CDR format. The Digit Type Identifier (DIGITYPE) field is an independent field in the OLD CDR format.

The DIGITYPE format is: a

Where a = one of the following:

- A = Automatic Route Selection used to route an outgoing call
- E = BARS/NARS Expensive route was used to route an outgoing call
- C = MFC Calling Number Information digits are stored for an incoming call

DIGITS: Digits

The Digits (DIGITS) field identifies the digits dialed, digits outpulsed, Charge Account code, received Multi-Frequency Compelled Calling Number Identification digits, Authorization Code entered, or Scheduled Access Restriction Flexible Feature Code entered.

Dictation and paging trunks

The CDR printout for dictation and paging trunks accessed by a 2500-type telephone specifies only the trunk access code in the DIGITS field. Dictation trunks require tones to instruct the machines at the far-end. The 2500-type telephone sends these tones directly to the dictation trunk without using a call register to store digits. As these digits are not stored in a call register, the CDR cannot print them out.

With 500-type and Meridian 1 proprietary telephones, the digits must be stored in a call register and then a Digitone Receiver (DTR) translates the digits into tones. Then, the CDR output shows all digits dialed by these telephones.

Route Selection

The digits that appear in the Digits field of Normal or Start records depend on Route Selection as shown in the following:

RS-ANI

Digits shown are those that are actually outpulsed by the system after route selection and any required digit manipulation. The actual digits dialed are reflected only if no digit manipulation was required to process the call.

BARS, CDP

Digits shown are those that are dialed with the exception of the BARS access code or CDP steering code which are replaced with the trunk access code.

An enhancement to CDR for CDP provides the customer with the following options:

- The current method of replacing the Distant Steering Code (DSC) or Trunk Steering Code (TSC) with the trunk access code

- Insert the access code before the dialed digits so that no digits are removed from the CDR record.

  — **NARS** Digits shown are those that are actually dialed. If NARS and RS-ANI exist together, the RS-ANI format is used. If NARS and BARS exist together, the BARS format is used.

  — **BARS/NARS with Outpulsed digits** As an option, the digits shown can be the digits actually outpulsed by the system.

Outpulsed Digits

When the Outpulsed Digits (OPD) feature is enabled, the DIGITS field contains the digits actually outpulsed by the system. This only applies to Basic Alternate Route Selection (BARS), Network Alternate Route Selection (NARS), and Coordinated Dialing Plan (CDP) calls. If both the BARS and NARS packages are equipped, then the CDR record follows the BARS format by default, and the ESN or ISDN access code (AC1 or AC2) is replaced by the trunk access code.

Note: When OPD = YES in LD 16 and IFC = NI2 in LD 17, 011 is not included in the DIGITS field for international calls and 0 is not included in the DIGITS field for operator assisted calls. In order to see dialed digits in CDR output, OPD must be set to NO in LD 16.

Table 29 on page 194, Table 30 on page 194, Table 31 on page 194, and Table 31 on page 194 show what will be placed in the DIGITS field of the CDR record. See also the N (Normal) record examples in this publication.

Table 29
BARS calls

Digits dialed: ESN or ISDN Access Code + digits	
OPD option used	**Digits recorded in CDR**
OPD = NO	Trunk Access Code + the digits dialed after the ESN or ISDN Access Code. The ESN or ISDN Access Code is replaced by the Trunk Access Code.
OPD = YES	Trunk Access Code + the outpulsed digits.

Table 30
NARS calls

Digits dialed: ESN or ISDN Access Code + Location Code + extension	
OPD option used	**Digits recorded in CDR**
OPD = NO	Actual digits dialed
OPD = YES (the call stays in the ESN or ISDN network)	ESN or ISDN Access Code + Location Code + outpulsed digits
OPD = YES (the call overflows to the public network)	ESN or ISDN Access Code + Trunk Access Code + outpulsed digits

Table 31
All other NARS calls

Digits dialed: ESN or ISDN Access Code + digits	
OPD option used	**Digits recorded in CDR**
OPD = NO	Actual digits dialed
OPD = YES	ESN or ISDN Access Code + Trunk Access Code + outpulsed digits

Table 32
CDP calls with OPD and CDPR option

Digits dialed: ESN or ISDN Access Code + digits	
OPD option used	**Digits recorded in CDR**
OPD = NO CDPR = NO	ESN or ISDN Access Code
CDPR = YES	ESN or ISDN Access Code + Trunk Access Code
OPD = YES	ESN or ISDN Access Code + Trunk Access Code + outpulsed digits

In a Y (Public Network Feature Invocation) record, the digits field indicates the digits applying to the feature accessed (i.e., for PSTN Three Party Conferencing this field contains the third party number).

The Digits (DIGITS) field allows up to 32 digits to be recorded.

In the OLD CDR format the field is 34 characters wide. This allows for the inclusion of the DIGITYPE identifier.

The OLD CDR format DIGITS field format is one of the following:

A xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
C xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
E xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

Where:

- x = 0–9

- A = Automatic Route Selection used to route an outgoing call

- C = MFC Calling Number Information digits are stored for an incoming call

- E = BARS/NARS Expensive route was used to route an outgoing call

The NEW CDR format DIGITS field format is:

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

Where: x = 0–9

All output is left justified and padded with blank characters if less than 32 digits. If more that 32 digits are dialed, only the first 16 are recorded correctly. Digit 33 and succeeding digits are cycled over digits 17 to 32.

When the International Supplementary Features (SUPP) package 131 is equipped the number of digits to print is determined on a route-by-route basis. The number of digits to print is defined by the response to the NDP prompt in LD 16.

ORIGTENO and TERTENO: Originating/Terminating Tenant Number

The Originating Tenant (ORIGTENO) field identifies the Tenant Number that is associated with the ORIGID field. The Terminating Tenant (TERTENO) field identifies the Tenant Number that is associated with the TERID field. When the Multi-Tenant Service package 86 is equipped, CDR formats include the originating and terminating Tenant Numbers.

The ORIGTENO and TERTENO field format is: xxx

Where: xxx = Tenant Number (000–512)

CHGINFO: Charge Information

Charge Information is output for outgoing Periodic Pulse Metering (PPM) or Advice of Charge (AOC) Message Registration equipped trunks. The Charge Information (CHGINFO) field contains the following:

- the Periodic Pulse count, for PPM applications

- the "Charge Information" Information Element (IE) contents, for AOC from a 1 TR 6

- the AOC IE contents, for AOC from NUMERIS and SWISSNET

The CHGINFO field format is: xxxxx

Where: xxxxx = Charge Information (00000-32767)

CALLCHG: Call Charge

Call Charge is output for outgoing Periodic Pulse Metering (PPM) or Advice of Charge (AOC) Message Registration equipped trunks. The Call Charge (CALLCHG) field contains the call cost, or is used as a meter overflow indication on TTY output.

For PPM equipped routes, the call cost is determined using the following formula:

CALLCHG = CHGINFO * RUCS (as defined in LD 16)

For AOC equipped routes, the call cost is determined using the following formula:

CALLCHG = CHGINFO * RUCS (as defined in LD 16) * RUCF (as defined in LD 16)

The CALLCHG field format is: aaaaaa

Where: aaaaaa = one of the following:

- call cost (000000 to 999999)

- CHXOVF—indicates CALLCHG field overflowed, use CHGINFO field and Route Unit Cost (RUCS) for PPM or Route Unit Cost (RUCS) and Route Unit Conversion Factor (RUCF) for AOC to calculate cost

- OVF00—indicates terminal meter overflowed four times (terminal meter>262143)

- OVF01—indicates terminal meter overflowed once (terminal meter>32767)

- OVF02—indicates terminal meter overflowed twice (terminal meter>65535)

- OVF03—indicates terminal meter overflowed three times (terminal meter>131071)

- OVF99—indicates that AOC end of call (ENDC) sub-service is in effect. Output for S (Start) and X (Transfer) records. Charge information will be output in associated E (End) record.

CLID: Calling Line Identification

Calling Line Identification (CLID) is a feature provided with Integrated Services Digital Network (ISDN). Refer to *Meridian Link ISDN/AP General Guide* (553-2901-100) for a description of all ISDN features.

When CLID is enabled (in LD 17), the calling party's number (if available), is included in the CDR call records. This gives customers information needed to charge back the calling party for services rendered in connection with an incoming or tandem call.

The CLID field format is: xxxxxxxxxxxxxxxx

Where: xxxxxxxxxxxxxxxx = CLID information; x = 0–9

This 16 character field is always output.

If the CLID is less than 16 digits then blank fields are padded with Xs, for example: 1234567XXXXXXXXX.

IANI: In-Band Automatic Number Identification

In-Band Automatic Number Identification (IANI) displays the ANI number of a call when it terminates on an ACD DN. IANI is supported with the International Supplementary Features (SUPP) package 131 equipped if FCDR is set to NEW in LD 17. For a complete description of the IANI feature, see *Features and Services* (553-3001-306). Since In-Band ANI (IANI) and ISDN cannot be configured on the same trunk route, this feature's reports appear in place of the CLID reports. The ANI number is 10 digits long, with XXXXXX filling up the remaining character spaces.

The IANI field format is: xxxxxxxxxxxxxxxx

Where: xxxxxxxxxxxxxxxx = CLID field where 10 digit IANI number is output.

The rest of the field is padded with Xs, for example: 5066337327XXXXXX.

FGDANI: Feature Group D Automatic Number Identification

CDR records of calls in which an incoming Feature Group D (FGD) trunk is involved can include (optionally) an ANI digits field. You must have CDRE (package 151) equipped. The option is defined per route in the FGD block (LD 19). The ANI field is supplied in N (Normal) and S (Start) records only, in both TTY and link formats.

An indication exists on the CDR record to recognize that it has an ANI field. The ANI field printout is not dependent on the tenant or CLID fields being printed for the OLD CDR format.

If only II+NPA are received in the call, these are printed in their usual positions and the rest of the ANI field is filled with blank characters. If no ANI information is received for the call, the ANI field is blank.

The Feature Group D Automatic Number Identification (FGDANI) field stores the incoming trunk FGD ANI information. In TTY format, the Feature Group D Automatic Number Identification (FGDANI) field appears in the second line of the CDR report. The second character on the second line of a TTY CDR record is "&". The two information digits (II) are separated from the 10 ANI digits (NPANXXXXXX) by a minus sign "–". A minus sign "–" on position 44 of the second line of an OLD CDR format record is a unique characteristic of a TTY CDR record containing a FGD-ANI.

The FGDANI field format is: II-NPANXXxxxx

Where:

II = FGD ANI information digits (00–99)
– = minus character
NPA = Area Code (000–999)
NXX = Exchange Code (000–9999)
xxxx = Exchange Extension number (0000–9999)

If only II+NPA are received in the call, these are printed in their usual positions and the rest of the FGDANI field is filled with blank characters. If no ANI information is received for the call, the ANI field is blank.

DNIS: Dialed Number Identification Service

Dialed Number Identification Service (DNIS) is a number that The system uses to route the call to a person or automated service with information about a specific product line (for example in a telemarketing environment). DNIS is supported with the International Supplementary Features (SUPP) package (131) equipped if FCDR = NEW in LD 17.

DNIS is included in the CDR record after FGD digits only if:

• the customer has the DNIS and CDR packages

• the route is a DNIS route

• the DNIS option is turned ON in the Route Data Block

This applies to Incoming DID Digit Conversion (IDC DNIS) routes within the same system.

DNIS supports Network ACD (NACD) and Feature Group D (FGD). If a DNIS trunk call is rerouted to a remote target ACD agent through the NACD and the incoming ISDN trunk's Route Data Block has DNIS-CDR enabled, the DNIS number appears at the end of Normal, Start, and End records. The DNIS number also appears at the end of CDR records for incoming FGD trunks that have enabled the DNIS-CDR option in their Route Data Block.

If the OLD CDR Format is active, the DNIS field format is: xxxx

> Where: xxxx = DNIS information (0000–9999)-maximum four digits. If less digits are received, the rest of the field is filled with Xs.

If the NEW CDR Format is active, the DNIS field format is: xxxxxxx

> Where: xxxxxxx = DNIS information (0000000–9999999)-maximum seven digits. If fewer digits are received, the rest of the field is filled with X characters.

TTA: Time to Answer (TTY only)

The Time to Answer feature outputs CDR information indicating the length of time taken to answer any given call. Time to Answer requires that FCDR = NEW in LD 17. The information is:

• length of time the call was in the ringing state

- whether the call was redirected; if it was, then the type of redirection it encountered is also output

- total waiting time

Time to Answer expands the CDR record to three lines. The third line accommodates three new subfields. The subfields are:

- TTA—total ringing time

- REDIR—redirection indicator

- TWT—total waiting time

The total waiting time also includes the total ringing time. Therefore, to calculate the actual time in queue (Group Hunt or Attendant) the following formula must be used:

(total waiting time) – (total ringing time) = actual time in queue

The formats of the new subfields are as follows:

- Total ringing time (TTA) field located on line 3 positions 3 to 7. The TTA subfield format is: MI:SS

    Where:

    MI = minutes (00–59)
    : = colon character
    SS = seconds (00–59)

- Redirection indicator (REDIR) subfield located on line 3 position 8. The REDIR subfield format is: A

    Where:

    A = space character — If no redirection occurred
    N—If redirection occurred prior to the terminating set ringing,
    e.g. terminating set has Call Forward All Calls activated
    R—If redirection occurred after terminating set was rung,
    e.g., call was forwarded by Call Forward No Answer.

- Total waiting time (TWT) subfield located on line 3 positions 9 to 13. The TTQ subfield format is: MI:SS

Where:

MI = minutes (00–59)
: = colon character
SS = seconds (00–59)

INPACK: Incoming packet count

The incoming packet count (INPACK) field is used to identify the number of incoming data packets received by the MPH. It is output on the second line and occupies positions 4 to 13.

The INPACK field format is: xxxxxxxxxx

Where: xxxxxxxxxx = INPACK information—x = 0–9 and a maximum of 10 digits are allowed.

OUTPACK: Outgoing packet count

The outgoing packet count (OUTPACK) field is used to identify the number of outgoing data packets sent by the MPH. It is output on the second line and occupies positions 15 to 24.

The OUTPACK field format is: xxxxxxxxxx

Where: xxxxxxxxxx = OUTPACK information—x = 0–9 and a maximum of 10 digits are allowed.

BLID: Billing Line Identification (TTY only)

The Billing Line Identification (BLID) field it is used to identify the billable party when a metered trunk or a non-metered trunk with CDRX set to YES in its Route Data Block has been routed via call modification to another Meridian Customer Defined Network (MCDN) node.

BLID is 16 characters wide and output on line 3 positions 15 to 30 of the NEW CDR format.

The BLID field format is: xxxxxxxxxxxxxxxx

Where: xxxxxxxxxxxxxxxx = BLID information; a maximum of 16 digits are allowed. If fewer digits are received, the rest of the field is filled with X characters.

x = 0–9

If the BLID is less than 16 digits then blank fields are padded with Xs, for example, 1234567XXXXXXXXX.

Terminating Carriage Control (TTY only)

A carriage return option can be implemented to inform a customer-provided computer that a CDR message is complete. With the option activated an additional carriage return precedes every CDR record. A CDR record then consists of a carriage return, a line or lines of data, then another carriage return, resulting in every other record being a null record. This option is implemented through service change and, when implemented, applies to all CDR TTY ports in the system.

Selection of this option is by response to the TRCR prompt in LD 15.

Ampersand (TTY only)

Ampersands (&) are output to indicate the start of the second line in the OLD CDR format, and to indicate the start of lines two and three in the NEW CDR format.

M911: M911 Call Abandon

With the Call Abandon feature activated, a 911 caller who aborts a call is not lost. Instead, the call forwards to an ACD queue. When the call is presented to an ACD agent, Automatic Number Identification (ANI) information appears on the agent's set display and Automatic Location Identification (ALI) appears on the screen update. The call is then tagged in CDR Q and N records as an abandoned call. The call abandon tag appears on line 3 in positions 32-38 as shown in the following example:

```
N 038 01 T081001 DN3434          00/06 06:22 00:00:14
   05217201XXXXXXXX
            ABANDON

Q 039 01 T081001 TN1840          00/06 06:22 00:00:18
   05217201XXXXXXXX
            ABANDON
```

The M911 field format is: xxxxxxx, where xxxxxxx = ABANDON or 7 blank spaces.

000: CDR 100 Hour Call

The Call Detail Recording 100 Hour Call feature expands the Call Detail Recording (CDR) duration measurement capability to accommodate calls with a duration greater than 99:59:59.

This feature provides a 100 Hour Duration field. This field is automatically displayed on the third line of all current Fixed Format CDR record types that have the duration field even though the call may be less than or greater than 99:59:59. Table 1 on page 204 illustrates the CDR format for CDR 100 Hour Call.

Example 1
The CDR format for CDR 100 Hour Call

New 100 Hour Duration Field in CDR

&00:15   N00:25   BLID   M911   000

100 hour duration

M911 Call Abandon

Billing Line ID

Time to Answer

Indicate 3rd Line of TTY
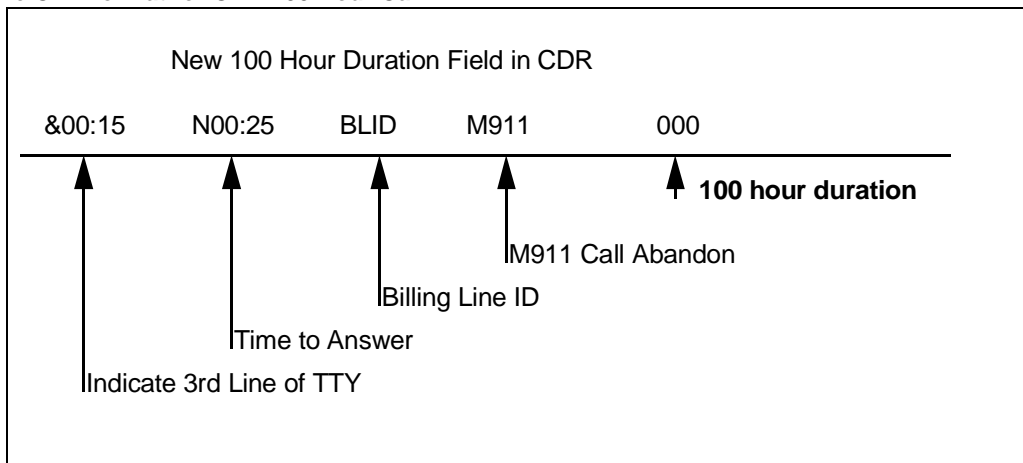
The CDR 100 Hour call field format is: xxx, where xxx = 000 to 999.

B: Busy Tone Identifier

With CDR on Busy Tone, a B record is output when an incoming or internal call is abandoned on busy tone. The CDR on Busy Tone B record information is displayed on the third line of the CDR B record for customers with the New CDR format (FCDR) configured. The third line is also used by the Time to Answer (TTA) feature. A 'B' standing for Busy Tone Condition is printed in the Redirection Identifier subfield. The TTA subfields that usually show the total ringing time and the total waiting time are left blank.

For a simple incoming call, the following CDR B record can be produce

```
B   001   00   T010004   4001     00/00   00:08:23
 &                                                               00 000
 &         B
```

Note the location of the B field on line 3, position 8.

Teletype call record output

Contents

The following are the topics in this section:

Reference list

The following are the references in this section:

- *Trunk Cards: Description* (553-3001-106)

Each call record is output on a Teletype (TTY) as one, two or three lines. The records are broken into fields, the significance of which is determined by their position in a line. Fields are separated by one or more blank characters. The unused fields in a given record are left blank.

Single-port and Multi-port magnetic tape storage options

The CDR magnetic tape storage system has been manufacture discontinued (MD), although it is still supported.

This hardware option consists of a single equipment cabinet that contains a Central Processing Unit (CPU), a 9-track magnetic tape unit, and tape control circuitry. The Multi-port option is capable of storing call records from a maximum of 12 systems, while the Single-port option is restricted to one system.

The CDR magnetic tape storage system collects call records, formats them into blocks and stores the blocks on tape at 1600 bytes per inch in industry-standard Phase-Encoded format. When the tape is full, it is removed from the CDR tape drive and sent for processing. The processing results in reports for billing and administration.

Connections between the system and CDR ports are made using Serial Data Interface (SDI) cards and cables. The cables can be up to 15.24 m (50 ft.) long; otherwise, modem connections are required.

Record output and storage

Records generated by CDR can be output to any device with an RS-232-C compatible interface. An example is records output to a printer for hard copy reports. Records may also be stored on tape for later downstream processing.

Screen or printer output uses the standard ASCII character set. A CDR record takes up one or more lines on a printed page, depending on the release of software and software packages and features enabled.

CDR data may contain the ASCII NUL character that appears randomly interspersed among the CDR characters. The NUL character is a control character that means, "Do nothing". It does not appear on the printed output, and holds no significance to the CDR record. It may be deleted from the data stream without affecting the content of the record. When analyzing it as part of the data flow, view the NUL character as occupying zero character positions, so it does not affect beginning and ending positions for any field in the record.

The Serial Data Interface (SDI) cable between the switch and the CDR cabinet can be up to 15.24 m (50 ft.) long. Beyond this distance, modems are required.

More about TTY output

The output format is dependent on the software release and features enabled. Figure 3 on page 211 shows samples of OLD CDR format TTY records, while the output field locations are given in the following tables:

- Table 33 on page 213 OLD CDR format TTY output field locations (Release 18
  Group H)

- Table 34 on page 219 NEW CDR format TTY output field locations (Release 18
  Group H to 20)

- Table 35 on page 223 G and H records TTY output field locations (Release 19
  and later)

Reversed Wired CO trunk

CDR records will be affected by miswiring the Meridian 1 NT8D14 universal trunk card. Calls will not be released, and reports can indicate abandoned calls, or origination times that are not accurate. Be sure to check any trunk flagged as reversed wired to ensure accurate CDR reports. For a complete description, see *Trunk Cards: Description* (553-3001-106).

Old and New Format CDR

Prior to International Release 18 Group H and North American Release 20, CDR had one format. This format became known as the OLD CDR format when the Format CDR package was introduced. The Format CDR package allows administrators to configure a new CDR format by entering "NEW" at the FCDR prompt in LD 17.

With the OLD CDR format, the packages equipped determine the number of lines to appear in call record output. For example, if Multi-Tenant Service (TENS), Periodic Pulse Metering (PPM), Advice of Charge (AOC), Calling Line Identification (CLID), Feature Group D Automatic Number Identification (FGD ANI) or Dialed Number Identification Service (DNIS) features are enabled with the OLD CDR format, then CDR records are two lines. If none of the aforementioned packages or features are equipped, then OLD CDR format records are one line.

With the new Format CDR (FCDR = NEW), CDR records are two lines if the Time to Answer (TTA) feature is not activated for the customer, or three lines, if the TTA feature is activated for the customer.

With the OLD CDR format, the field location is dependent on which packages are equipped. An example is the TIMESTAMP field. If Internal CDR is equipped then the TIMESTAMP field is line 1 positions 50 to 60 for L records and line 1 positions 38 to 48 for all other records.

With New Format CDR, the fields are given fixed locations and all information is left justified. For example, the TIMESTAMP field is fixed at line 1 positions 26 to 39 for all record types.

Screen or printer output uses the standard ASCII character set. Data may contain the ASCII NUL character randomly interspersed among the CDR characters. The NUL character is a control character that means "Do nothing" and does not appear on the printed output. It may be deleted without affecting the record, and it does not affect beginning and ending positions for any field in the record.

Note 1: Digits prefixed with "A" identify an RS/ANI route selection; those prefixed with an "E" identify a NARS, BARS, or CDP all. "E" indicates an expensive route was used. Digits prefixed with "C" indicate that the digits stored are MFC CNI digits for an incoming call.

Note 2: The Originating and Terminating ID's can be:

Trrrmmm	Trunk route and member number
Arrrmmm	Answered answer supervised Trunk route and member number
DNxxxx	Directory Number
ATTNxx	Attendant number
CFlllnn	loop and conference number.

Note 3: Terminating ID for Connection records is TNxxxx, where xxxx is the shelf/card/units (packed format) of the agent station. The terminating ID for answered calls on supervised trunks is:
Arrrmmm Answered answer supervised Trunk route and member number

Note 4: The Auxiliary ID identifies the Terminal Number of the originating station when the station has a multiple appearance prime DN. The format is lll.s.cc.uu, where: lll = loop, ss = shelf, c = card, and uu = unit.

Note 5: When Multi-Tenant Service is equipped, the Tenant Numbers of the originating and terminating parties are printed on a second line, below the OrigID and TerID fields, as shown below:

```
N 001 00 DN4999 A000009 7.1.02.1    06/28 10:15 00:00:20 9828124
         006     102
```

Figure 3
Sample OLD CDR format TTY records

```
N  001       00     DN4999   A00009  7.1.02.1  06/28   10:15    00:00:20   98289124
             042        019      xxxxx yyyyyy

N  002       00     T00004   DN5064            06/28   10:15    00:00:12

S  003       00     T00004   DN5064            06/28   10:15

N  004       00     DN4999   T00004  7.1.02.1  06/28   10:15    00:00:22   98289124

E  005       00     T00004   DN5055            06/28   10:16

N  006       00     DN4999   T00004  7.1.02.1  06/28   10:15    00:00:20   98289124

N  007       00     DN4999   T00004  7.1.02.1  06/28   10:15    00:00:20   98289124

T                                              06/28   10:16
T                                              06/28   10:17
T                                              06/28   10:18

N  008       00     ATTN02   A00003  7.1.02.1  06/28   10:20    00:00:07   950260411

S  009       00     DN5555   A00001            06/28   10:22    00:00:17   A 98291112

E  010       00     CF0615   A00001  7.1.02.1  06/28   10:22
```

Digits,Dialed
or Outpulsed
(Note 1)

Time   Call Duration

Date

Auxiliary I.D. — ll.s.cc.u (Note 4)

Terminating I.D. (Note 2, 3)

Originating I.D. (Note 2)

Customer Number

Note 8

Record Number (modulo 128)

Record Type

01157F

Note 6: When Calling Line Identification (CLID) is equipped, the CLID is printed on a second line, below the

record number, as shown below:

```
N 002 00 DN4999  DN5064  7.1.02.1    06/28 10:22 00:00:12 9828124
  95551111XXXXXXXX
```

Note 7: When Calling Line Identification (CLID) is equipped, along with CDRE package 151, the CLID is printed on a second line, below the record number, as shown below:

```
N 002 00 DN4999  DN5064  7.1.02.1    06/28 10:22 00:00:12 9828124
  &        95551111XXXXXXXX  (& was introduced in X11 Release 17)
```

Note 8: When Calling Line Identification (CLID) and Multi-Tenant Service are both equipped, they are printed as shown below:

```
N 003 00 DN4999  DN5064  7.1.02.1    06/28 10:26 00:00:08 9828124
       006    102     95551111XXXXXXXX
```

Note 9: When Calling Line Identification (CLID) and Multi-Tenant Service are both equipped, they are printed as shown below:

```
N 003 00 DN4999  DN5064  7.1.02.1    06/28 10:26 00:00:08 9828124
 &006    102     95551111XXXXXXXX
```
(only generated with CDRE package is equipped with FGD)

Note 10: When In-Band ANI (IANI) is operating, the ANI number will be generated in the same field as the CLID feature. It appears on the second line, below the record number, in the format shown below:

```
N 002 00 DN4999  DN5064  7.1.02.1    06/28 10:22 00:00:12 9828124
  123456789XXXXXXX
```

Note 11: PPM or AOC and appropriate CDR options equipped to obtain these fields. (xxxxx = Total Pulse Count; yyyyyy = Call Charge/Meter Overflow). The Pulse Count, Call Charge and Meter Overflow fields only appear for Start, Normal, Transfer and End Records.

Table 33
OLD CDR format TTY output field locations

Line	Position	Field	Field Format	Field Definition
	Fields common to all records:			
1	1	RECTYPE	Y	Record Type
	2	<blank>		Blank space
	Format used by I and T records:			
1	3–25	<blank>		Blank spaces
1	26–36	TIMESTAMP	MO/DD_HH:MI	Time stamp
	Fields common to A, C, E, F, L, M, N, P, Q, R, S, and X records:			
1	3–5	RECNO	XXX	Record Sequence Number
1	6	<blank>		Blank space
1	7–8	CUSTNO	XX	Customer Number
1	9	<blank>		Blank space
1	10–16	ORIGID		Originating Identification:
			TRRRMMM	Trunk
			ARRRMMM	Answered Answer Supervision Trunk
			DNXXXX	Directory Number (see **Note**)
			ATTNXX	Attendant Number
			CFLLLNN	Conference Number
	Note: If the system is equipped with the CDRE package, the format for the DN (or ACD Position ID) in the ORIGID or TERID field is XXXXXXX to accommodate up to 7 digits.			
1	17	<blank>		Blank space
1	18–24	TERID	same as ORIGID	Terminating Identification
	(Part 1 of 6)			

Table 33
OLD CDR format TTY output field locations

Line	Position	Field	Field Format	Field Definition
1	25	<blank>		Blank space
1	26–36	AUXID	LLL.S.CC.UU	Originating Auxiliary Identification for L records, Auxiliary Identification for all other records
1	37	<blank>		Blank space
	Fields common to A, C, E, F, M, N, P, Q, R, S, and X records:			
1	38–48	TIMESTAMP	MO/DD_HH:MI	Time stamp
1	49	<blank>		Blank space
	Fields common to E, F, N, Q, R, and S records:			
1	50–57	DURATION	HH:MI:SS	Duration
1	58	<blank>		Blank space
	Field common to F, N, Q, R, and S records:			
1	59–90	DIGITS	XXX...X	Digits dialed: Up to 32 digits
	or			
1	59–92	DIGITS	A XXX...X	Route Selection was used + up to 32 digits
			C XXX...X	MFC Calling Number Identification + up to 32 digits
			E XXX...X	BARS/NARS call placed over expensive route + up to 32 digits
	(Part 2 of 6)			

Table 33
OLD CDR format TTY output field locations

Line	Position	Field	Field Format	Field Definition
	Field common to A, C, M, and P records:			
1	50–72	DIGITS	XXX...X	Digits dialed 14 Authorization code, or 23 Charge Account, or 23 Calling Party Number
	Format for L records:			
1	38–48	TERMAUXID	LLL.S.CC.UU	Terminating Auxiliary Identification
1	49	<blank>		Blank space
1	50–60	TIMESTAMP	MO/DD_HH:MI	Time stamp
1	61	<blank>		Blank space
1	62–69	DURATION	HH:MI:SS	Duration
1	70	<blank>		Blank space
1	71–73	ORIGTEN0	XXX	Originating Tenant Number
1	74	<blank>		Blank space
1	75–77	TERTEN0	XXX	Terminating Tenant Number
	Format used for CLID only:			
2	1–2	<blank>		Blank spaces
2	3–18	CLID	XXX...X	Calling Line Identification is always 16 characters, for example: 1234567XXXXXXXXX
	(Part 3 of 6)			

Table 33
OLD CDR format TTY output field locations

Line	Position	Field	Field Format	Field Definition
		Format used for CLID and Tenant:		
2	1–9	<blank>		Blank spaces
2	10–12	ORIGTEN0	XXX	Originating Tenant Number
2	13–17	<blank>		Blank spaces
2	18–20	TERTEN0	XXX	Terminating Tenant Number
2	21–24	<blank>		Blank spaces
2	25–40	CLID	XXX...X	Calling Line Identification is always 16 characters. For example: 1234567XXXXXXXXX
		Format used for PPM/AOC only:		
2	1–9	<blank>		Blank spaces
2	10–14	CHGINFO	XXXXX	Charge Information
2	15	<blank>		Blank space
2	16–21	CALLCHG	XXXXXX	Calculated Call Charge/Meter Overflow
		Format used for PPM/AOC and CLID:		
2	1–9	<blank>		Blank spaces
2	10–14	CHGINFO	XXXXX	Charge Information
2	15	<blank>		Blank space
2	16–21	CALLCHG	XXXXXX	Calculated Call Charge/Meter Overflow
2	22–24	<blank>		Blank spaces
(Part 4 of 6)				

Table 33
OLD CDR format TTY output field locations

Line	Position	Field	Field Format	Field Definition
2	25–40	CLID	XXX...X	Calling Line Identification is always 16 characters, for example: 1234567XXXXXXXXX
	Format used for PPM/AOC and Tenant:			
2	1–9	\<blank>		Blank spaces
2	10–12	ORIGTEN0	XXX	Originating Tenant Number
2	13–17	\<blank>		Blank spaces
2	18–20	TERTEN0	XXX	Terminating Tenant Number
2	21–25	\<blank>		Blank spaces
2	26–30	CHGINFO	XXXXX	Charge Information
2	31	\<blank>		Blank space
2	32–37	CALLCHG	XXXXXX	Calculated Call Charge/Meter Overflow
	Format used for PPM/AOC and Tenant and CLID:			
2	1–9	\<blank>		Blank spaces
2	10–12	ORIGTEN0	XXX	Originating Tenant Number
2	13–17	\<blank>		Blank spaces
2	18–20	TERTEN0	XXX	Terminating Tenant Number
2	21–25	\<blank>		Blank spaces
2	26–30	CHGINFO	XXXXX	Charge Information
2	31	\<blank>		Blank space
2	32–37	CALLCHG	XXXXXX	Calculated Call Charge/Meter Overflow
	(Part 5 of 6)			

Table 33
OLD CDR format TTY output field locations

Line	Position	Field	Field Format	Field Definition
2	38–40	<blank>		Blank spaces
2	41–56	CLID	XXX...X	Calling Line Identification is always 16 characters, for example: 1234567XXXXXXXXX
	Format used for CDRE only:			
2	1	<blank>		Blank space
2	2	CDRE	&	Ampersand
	Format used for FGD and DNIS:			
2	1	<blank>		Blank space
2	2	CDRE	&	Ampersand
2	3–41	<blank>		Blank space
2	42–54	FGDANI	XX-NPANXXXXXX	Feature Group D ANI
2	55	<blank>		Blank space
2	56–59	DNIS	XXXX	DNIS number
		(Part 6 of 6)		

Table 34
NEW CDR format TTY output field locations

Line	Position	Field	Field Format	Field Definition
1	1	RECTYPE	Y	Record Type
1	2	<blank>		Blank space
1	3–5	RECNO	XXX	Record Sequence Number
1	6	<blank>		Blank space
1	7–8	CUSTNO	XX	Customer Number
1	9	<blank>		Blank space
1	10–16	ORIGID		Originating Identification:
			TRRRMMM	Trunk
			ARRRMMM	Answered Answer Supervision Trunk
			DNXXXX	Directory Number (see **Note**)
			ATTNXX	Attendant Number
			CFLLLNN	Conference Number
	Note: If the system is equipped with the CDRE package, the format for the DN (or ACD Position ID) in the ORIGID or TERID field is XXXXXXX to accommodate up to 7 digits. For internal calls (RECTYPE L), if the CDRE package is not equipped, the TERID field occupies locations 18-23, and all succeeding fields are printed one character further to the left than shown below.			
1	17	<blank>		Blank space
1	18–24	TERID	same as ORIGID	Terminating Identification
1	25	<blank>		Blank space
1	26–39	TIMESTAMP	MO/DD_HH:MI:SS	Time stamp
1	40	<blank>		Blank space
1	41–50	DURATION	HH:MI:SS.S	Duration
1	51	<blank>		Blank space
1	52	DIGITTYPE	E, A, C, or blank	Digit type identifier A = BARS/NARS routing C = MFC CNI digits E = BARS/NARS routing over expensive route
1	53–84	DIGITS	XXX...X	Digits dialed
1	85–86	<blank>		Blank spaces
			(Part 1 of 4)	

CDR Description and Formats

Table 34
NEW CDR format TTY output field locations

Line	Position	Field	Field Format	Field Definition
1	87	<blank>		
1	88	<cr>		
1	89	<lf>		
2	1	<blank>		Blank space
2	2	&	&	new line indicator
2	3–18	CLID	XXX...X	Calling Line Identification is always 16 characters, for example: 1234567XXXXXXXXX
2	19	<blank>		Blank space
2	20–24	CHGINFO	XXXXX	Charge Information
2	25	<blank>		Blank space
2	26–31	CALLCHG	XXXXXX	Calculated Call Charge/Meter Overflow
2	32	<blank>		Blank space
2	33–45	FGDANI	XX-NPANXXXXXX	Feature Group D ANI
2	46	<blank>		Blank space
2	47–50	DNIS (Release 19 and earlier)	XXXX	DNIS number (Release 19 and earlier)
2	51–53	reserved (Release 19 and earlier	XXX	DNIS future expansion (Blank spaces) (Release 19 and earlier)
2	47–53	DNIS (Release 20 and later)	XXXXXXX	DNIS number (Release 20 and later)
2	54	<blank>		Blank space
2	55–65	ORIGAUXID	LLL.S.CC.UU	Originating Auxiliary Identification
2	66	<blank>		Blank space
2	67–77	TERMAUXID	LLL.S.CC.UU	Terminating Auxiliary Identification
(Part 2 of 4)				

Table 34
NEW CDR format TTY output field locations

Line	Position	Field	Field Format	Field Definition
2	78	<blank>		Blank space
2	79–81	ORIGTEN0	XXX	Originating Tenant Number
2	82	<blank>		Blank space
2	83–85	TERMTEN0	XXX	Terminating Tenant Number
2	86	<blank>		
2	87	<cr>		
2	88	<lf>		
3	1	<blank>		Blank space
3	2	&	&	new line indicator
3	3–7	TTA or <blank>	MI:SS	Time to Answer (total ringing time) or <blank> if CDR on Busy Tone feature applies
3	8	REDIR or B	Y or B	Time to Answer (redirection indicator) or Busy Tone identifier
3	9–13	TWT or <blank>	MI:SS	Time to Answer (total wait time) or <blank> if CDR on Busy Tone feature applies
3	14	<blank>		Blank space
3	15–30	BLID	XXXXXXXXXXXX XXXX	Billing Line I.D. BLID applies only for network multiple call transfers on PPM and non-PPM outgoing CO trunks.
3	31	<blank>		Blank space
3	32–38	ABANDON	ABANDON	Tags the call as abandoned (911 only)
(Part 3 of 4)				

Table 34
NEW CDR format TTY output field locations

Line	Position	Field	Field Format	Field Definition
3	39	<blank>		
3	40–42		000	100-Hour Duration
3	43	<blank>		
3	44–45	NPI	XX	CLID Numbering Plan Identification
3	46	<blank>		
3	47	TON	X	CLID Type of Number
3	48	<blank>		
3	49–50	BCAP	XX	Bearer Capability
3	51	<blank>		
3	52–67	ORIG MIN	XXX...X	Originating Portable's Mobile Identification Number (used to track mobility IS-41 calls for billing purposes).
3	68	<blank>		
3	69–84	TERM MIN	XXX...X	Terminating Portable's Mobile Identification Number (used to track mobility IS-41 calls for billing purposes).
3				If TRCR is set it will end in<cr> <lf>
(Part 4 of 4)				

For the NEW CDR format, all fields are always output. If the field is blank it is output as spaces.

Table 35
G and H records TTY output field locations

Line	Position	Name	Format	Definition
1	1	RECTYPE	Y	Record Type
1	2	<blank>		Blank space
1	3–5	RECNO	XXX	Record Sequence Number
1	6	<blank>		Blank space
1	7–8	CUSTNO	XX	Customer Number
1	9	<blank>		Blank space
1	10–23	ORIGID	XXXXXXXXXXXXXX	Originating Identification: Data Network Address or TN
1	24	<blank>		Blank space
1	25–38	TERID	same as ORIGID	Terminating Identification
1	39	<blank>		Blank space
1	40–50	TIMESTAMP	MO/DD_HH:MI	Time stamp
1	51	<blank>		Blank space
1	52–59	DURATION	HH:MI:SS	Duration
2	1	<blank>		Blank space
2	2	&	&	new line indicator
2	3	<blank>		
2	4–13	INPACK	XXXXXXXXXX	Incoming packet count
2	14	<blank>		
2	15–24	OUTPACK	XXXXXXXXXX	Outgoing packet count

Examples of call records

Contents

The following are the topics in this section:

The basic CDR call records include the identity of the called and calling parties, and the duration of the call. Additional records are generated when certain features are used (such as conference, authorization codes) or by certain system events (such as initialization, change of system time clock).

For all the examples shown in this section, the output described relates to that particular feature only and the output given is the TTY output. Other, unrelated call records may be inserted between the call records shown. Therefore, when using CDR outputs you should pay careful attention to the Record type (RecType) field definition.

Table 36, "CDR examples," on page 227 lists all the examples in this chapter and the page on which they are located.

Table 36
CDR examples

Feature Name	Page
Authorization Code	228
Authorization Code and Call Transfer	229
Charge Account with AUXID	230
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Charge Conference Example 1	232
Charge Conference Example 2	234
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Call Transfer and Charge Account features	238
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Authorization Code

Example 4 on page 228 gives an example involving the Authorization Code feature using the OLD CDR format. Example 5 on page 228 gives an example involving the Authorization Code feature using the NEW CDR format.

- DN 3456 enters an authorization code number 12345678 and dials 9-212-682-3333. The call is completed on route 0, member 45.

- The Authorization Code record is generated after the code is entered and accepted. The Normal call record is generated at the termination of the call.

Example 4
Authorization Code feature using the OLD CDR format

```
A 039 00 DN3456   T000045                 09/07 11:49 12345678

A 039 00 DN3456   T000045                 09/07 11:49 12345678

N 051 00 DN3456   T000045                 09/07 11:51 00:07:15 92126823333
```

Example 5
Authorization Code feature using the NEW CDR format

```
A 039 00 DN3456   T000045 09/07 11:49:00                 12345678
  &
  &
N 051 00 DN3456   T000045 09/07 11:51:30 00:07:15.0  92126823333
  &
  &
```

Note: When DURATION is not recorded, the authorization code is output in that column for "OLD" format CDR.

Authorization Code and Call Transfer

Example 6 on page 229 gives an example involving the Authorization Code and Call Transfer features using the OLD CDR format. Example 7 on page 229 gives an example involving the Authorization Code and Call Transfer features using the NEW CDR format.

- DN 7865 dials 9-*-714-555-9292# and the call completes through route 0 member 19. The call is transferred to DN 3131, but an authorization code (87654321) is entered prior to the transfer. The call terminates shortly after the transfer is made.

- An Authorization Code record is generated after the entry is complete. When the call is transferred, a Start record is generated. When the call is terminated, an End record is generated.

Example 6
Authorization Code and Call Transfer features using the OLD CDR format

```
A 057 00 DN7865  T000019              09/07 13:07          87654321

S 059 00 DN7865  T000019              09/07 13:10          9*7145559292

E 079 00 T000019 DN3131               09/07 13:18
```

Example 7
Authorization Code and Call Transfer features using the NEW CDR format

```
A 057 00 DN7865  T000019 09/07 13:07:20              87654321
 &
 &
S 059 00 DN7865  T000019 09/07 13:10:30              9*7145559292
 &
 &
E 079 00 T000019 DN3131  09/07 13:18:50
 &
 &
```

Note: DURATION is not supplied, but must be calculated from the TIMESTAMP field of the S and E records.

Charge Account with AUXID

Example 8 on page 230 gives an example involving the Charge Account and AUXID features using the OLD CDR format. Example 9 on page 230 gives an example involving the Charge Account and AUXID features using the NEW CDR format.

- DN 7234, a multiple appearance prime DN, dials 9-936-1212 and enters a charge account (123456). The call is completed on route 4, member 16.

- The Charge Account record is generated as soon as the account number is fully entered. The Normal record with AUXID (loop/shelf/card/unit) is generated at the termination of the call.

Example 8
Charge Account and AUXID features using the OLD CDR format

```
C 008 00 DN7234   T004016 007.2.04.03 09/07 10:07 123456

N 017 00 DN7234   T004016 007.2.04.03 09/07 10:07 00:02:10 99361212
```

Example 9
Charge Account and AUXID features using the NEW CDR format

```
C 008 00 DN7234   T004016 09/07 10:07:00                 123456
 &                                                       007.2.04.03
 &

N 017 00 DN7234   T004016 09/07 10:07:00 00:02:10.0  99361212
 &                                                       007.2.04.03
 &
```

Note: When DURATION is not recorded, the digits dialed are output in that column for "OLD" format CDR.

Calling Party Number

Example 10 on page 231 gives an example involving the Calling Party Number (CPN) feature using the OLD CDR format. Example 11 on page 231 gives an example involving the Calling Party Number (CPN) feature using the NEW CDR format.

- DN 9876 receives a collect call on route 0, member 5 and enters CPN 201-949-3000.

- The CPN record is generated after the calling party number is entered and the caller has returned to the call. The Normal record is generated at the termination of the call.

Example 10
Calling Party Number (CPN) feature using the OLD CDR format

```
P 025 00 T000005 DN9876                 09/07 11:10 2019493000

N 027 00 T00005 DN9876               09/07 11:09 00:12:05
```

Example 11
Calling Party Number (CPN) feature using the NEW CDR format

```
P 025 00 T000005 DN9876  09/07 11:10:00                2019493000
  &
  &
N 027 00 T000005 DN9876  09/07 11:09:00 00:12:05.0
  &
  &
```

Note: When DURATION is not recorded, the calling party number digits are output in that column for "OLD" format CDR.

Charge Conference Example 1

Example 12 on page 232 gives an example involving the Charge Conference feature using the OLD CDR format. Example 13 on page 233 gives an example involving the Charge Conference feature using the NEW CDR format.

- DN 6543 establishes a conference call with 3 other parties, entering an account code prior to connecting each party. The parties were connected sequentially on route 0 members 16, 45 and 67. The parties disconnected in the order 67, 16 and 45. Conference loop 19 was used.

- The account codes entered were 123456, 123457 and 123458, in that order.

- The digits dialed were 9-969-9170 for the first party, 9-*-212-262-6170 for the second and 9-201-542-5747 for the third.

- A Charge Account record is generated after each entry is completed. A Start record is generated after each party is added; however, the first two Start records are generated together after the system recognizes the conference situation exists. An End record is generated as each trunk disconnects.

Example 12
Charge Conference feature example 1 using the OLD CDR format

```
C 061 00 DN6543   T000016              09/07 15:10           123456

C 063 00 DN6543   T000045              09/07 15:11           123457

S 071 00 DN6543   T000016              09/07 15:12           99699170

S 072 00 DN6543   T000045              09/07 15:10           9*2122626170

C 073 00 DN6543   T000067              09/07 15:12           123458

S 079 00 DN6543   T000067              09/07 15:13           92015425747

E 087 00 CF01980  T000067              09/07 15:25

E 088 00 CF01980  T000016              09/07 15:31

E 091 00 CF01980  T000045              09/07 15:31
```

Example 13
Charge Conference feature example 1 using the NEW CDR format

```
C 061 00 DN6543  T000016 09/07 15:10:25              123456
  &
  &
C 063 00 DN6543  T000045 09/07 15:11:15              123457
  &
  &
S 071 00 DN6543  T000016 09/07 15:12:20              99699170
  &
  &
S 072 00 DN6543  T000045 09/07 15:10:18              9*2122626170
  &
  &
C 073 00 DN6543  T000067 09/07 15:12:22              123458
  &
  &
S 079 00 DN6543  T000067 09/07 15:13:58              92015425747
  &
  &
E 087 00 CF01980 T000067 09/07 15:25:06
  &
  &
E 088 00 CF01980 T000016 9/07 15:31:08
  &
  &
E 091 00 CF01980 T000045 9/07 15:31:26
  &
  &
```

Note 1: DURATION is not supplied, but must be calculated from the TIMESTAMP field of the S and E records.

Charge Conference Example 2

Example 14 on page 234 gives an example involving the Charge Conference feature using the OLD CDR format. Example 15 on page 235 gives an example involving the Charge Conference feature using the NEW CDR format.

- DN 6543 places the same Conference call as in Example 1 except this time the account code is entered after the conference has been established and the same account code (123456) is intended to apply to all 3 conferees. Conference loop 11 is used.

- A Start record is generated as each party is connected. The first two Start records are generated at the same time as the system recognizes a conference situation.

- After the account code is entered, a separate Charge Conference record is generated for each trunk involved.

Example 14
Charge Conference feature example 2 using the OLD CDR format

```
S 103 00 DN6543   T000016          09/07 11:17         99699170

S 104 00 DN6543   T000045          09/07 11:17         9*2122626170

S 107 00 DN6543   T000067          09/07 11:18         92015425747

M 112 00 T000045 DN6543            09/07 11:19         123456

M 113 00 T000016 DN6543            09/07 11:19         123456

M 115 00 T000067 DN6543            09/07 11:19         123456

E 121 00 CF01122 T000067          09/07 11:40

E 126 00 CF01122 T000016          09/07 11:45

E 127 00 CF01122 T000045          09/07 11:47
```

Note: DURATION is not supplied, but must be calculated from the TIMESTAMP field of the S and E records.

Example 15
Charge Conference feature example 2 using the NEW CDR format

```
S 103 00 DN6543  T000016 09/07 11:17:12          99699170
  &
  &
S 104 00 DN6543  T000045 09/07 11:17:58          9*2122626170
  &
  &
S 107 00 DN6543  T000067 09/07 11:18:46          92015425747
  &
  &
M 112 00 T000045 DN6543  09/07 11:19:06          123456
  &
  &
M 113 00 T000016 DN6543  09/07 11:19:10          123456
  &
  &
M 115 00 T000067 DN6543  09/07 11:19:48          123456
  &
  &
E 121 00 CF01122 T000067 09/07 11:40:48
  &
  &
E 126 00 CF01122 T000016 09/07 11:45:36
  &
  &
E 127 00 CF01122 T000045 09/07 11:47:22
  &
  &
```

Charge Conference Example 3

Example 16 on page 236 gives an example involving the Charge Conference feature using the OLD CDR format. Example 15 on page 235 gives an example involving the Charge Conference feature using the NEW CDR format.

- DN 8765 places a Conference call with 2 other parties on route 0 members 27 and 37. A charge account (123456) is entered after the conference is established. Conference loop 11 is used.

- Later, during the conference, a fourth party on route 0 member 47 is added, but a new charge number (123457) is entered prior to adding the fourth party.

- Two Start records are generated after the conference is established.

- Two Charge Conference records are generated after the charge account entry is made.

- A Charge record is generated after the new charge number is entered.

- Start record is generated after the fourth party is added.

- End records are generated as the trunks disconnect from the conference.

Example 16
Charge Conference feature example 3 using the OLD CDR format

```
S 017 00 DN8765   T000027              09/08 10:10           99291123

S 018 00 DN8765   T000037              09/08 10:11           99461130

M 021 00 T000037  DN8765               09/08 10:12           123456

M 023 00 T000027  DN8765               09/08 10:12           123456

C 037 00 DN8765   T000047              09/08 10:27           123457

S 039 00 DN8765   T000047              09/08 10:29           9*9299170

E 051 00 CF01122  T000037              09/08 11:10

E 053 00 CF01122  T000047              09/08 11:10

E 055 00 CF01122  T000027              09/08 11:11
```

Example 17
Charge Conference feature example 3 using the NEW CDR format

```
S 017 00 DN8765  T000027 09/08 10:10:08            99291123
  &
  &

S 018 00 DN8765  T000037 09/08 10:11:22            99461130
  &
  &

M 021 00 T000037 DN8765  09/08 10:12:56            123456
  &
  &

M 023 00 T000027 DN8765  09/08 10:12:34            123456
  &
  &

C 037 00 DN8765  T000047 09/08 10:27:38            123457
  &
  &

S 039 00 DN8765  T000047 09/08 10:29:00            9*9299170
  &
  &

E 051 00 CF01122 T000037 09/08 11:10:50
  &
  &

E 053 00 CF01122 T000047 09/08 11:10:36
  &
  &

E 055 00 CF01122 T000027 09/08 11:11:24
  &
  &
```

Note 1: DURATION is not supplied, but must be calculated from the TIMESTAMP field of the S and E records.

Call Transfer and Charge Account features

Example 18 on page 238 gives an example involving the Call Transfer and Charge Account features using the OLD CDR format. Example 19 on page 239 gives an example involving the Call Transfer and Charge Account features using the OLD CDR format.

- DN 6789 enters account code 123451 and dials 9*232-916-9166. The call is completed on route 0 member 6 and later transferred to DN 5600.

- Later the call is transferred back to DN 6789 and terminated shortly after.

- An Account Code record is generated when the entry of the code is complete.

- When the call is transferred, a Start record is generated.

- When the second transfer takes place, no record is generated as a Start record already exists for the trunk in use.

- When the call terminates, an End record is generated.

  Note: The identity of the intermediate party (DN 5600) is lost because an additional account code was not entered during or prior to the call transfer.

Example 18
Call Transfer and Charge Account features using the OLD CDR format

```
C 076 00 DN6789   T000006              09/08 11:15            123451

S 081 00 DN6789   T000006              09/08 11:16            9*2329169166

E 097 00 T000006 DN6789                09/08 11:31
```

Note: DURATION is not supplied, but must be calculated from the TIMESTAMP field of the S and E records.

Example 19
Call Transfer and Charge Account features using the NEW CDR format

```
C 076 00 DN6789  T000006 09/08 11:15:10            123451
  &
  &

S 081 00 DN6789  T000006 09/08 11:16:22            9*2329169166
  &
  &

E 097 00 T000006 DN6789  09/08 11:31:42
  &
  &
```

Metered Transferred Call

Example 20 on page 240 gives an example involving a Metered Transferred Call using the OLD CDR format. Example 21 on page 241 gives an example involving a Metered Transferred Call using the NEW CDR format.

Example 22 on page 242 gives an example involving a Metered Transferred Call with the CDR Transfer Enhancement (CDRX) active.

The call scenario for these examples is:

- DN 7234 dials 99660100 to make an outgoing call. The call is routed over a Route 4 member 16. Route 4 is a PPM metered route.

- After three minutes and eight seconds have elapsed, DN 7234 transfers the call to DN 5345.

- DN 5345 talks to the trunk party for six minutes and then transfers the call to DN 5346.

- DN 5346 talks to the trunk party for less than a minute and then transfers the call to DN 5333.

- DN 5333 talks to the trunk party for three minutes and then releases the trunk party.

Example 20
Metered Transferred Call using the OLD CDR format

```
S 008 00 DN7234  T004016 007.2.04.03 09/07 10:01 00:03:08 9660100
         00029 000058
X 027 00 DN5345  T004016              09/07 10:10           9660100
         00037 000074
X 044 00 DN5346  T004016              09/07 10:10           9660100
         00003 000006
E 046 00 DN5333  T004016              09/07 10:13 00:09:56
         00031 000062
```

From Example 20 on page 240 the Start and End times, and duration for each segment of the call can be calculated as follows:

ORIGID	Start time	End Time	Duration
7234	10:01	10:04	3 minutes 8 seconds
5345	10:04	10:10	6 minutes
5346	10:10	10:10	Less than 1 minute
5333	10:10	10:13	3 minutes
Total Call	**10:01**	**10:14**	**13 minutes 4 seconds**

Example 21
Metered Transferred Call using the NEW CDR format

```
S 008 00 DN7234   T004016 09/07 10:01:00 00:03:08.0  9660100
 &                00029 000058                           007.2.04.03
 &

X 027 00 DN5345   T004016 09/07 10:10:08               9660100
 &                00037 000074
 &

X 044 00 DN5346   T004016 09/07 10:11:03               9660100
 &                00003 000006
 &

E 046 00 DN5333   T004016 09/07 10:14:04 00:09:56.0
 &                00031 000062
 &
```

From Example 21 on page 241 the Start and End times, and duration for each segment of the call can be calculated as follows:

ORIGID	Start time	End Time	Duration
7234	10:01	10:04	3 minutes 8 seconds
5345	10:04	10:10	6 minutes
5346	10:10	10:10	55 seconds
5333	10:10	10:14	3 minutes 1 second
Total Call	**10:01**	**10:14**	**13 minutes 4 seconds**

Note: The second line in each record is charge information and call charge if "OLD" format CDR is selected.

Example 22
Metered Transferred Call with CDR Transfer Enhancement active

```
S 008 00 DN7234  T004016 09/07 10:01:00 00:03:08.0  9660100
 &               00029 000058                      007.2.04.03
 &

X 027 00 DN5345  T004016 09/07 10:10:08 00:06:08.0  9660100
 &               00037 000074
 &

X 044 00 DN5346  T004016 09/07 10:11:03 00:00:55.0  9660100
 &               00003 000006
 &

E 046 00 DN5333  T004016 09/07 10:14:04 00:03:01.0
 &               00031 000062
 &
```

Multi-Tenant

Example 23 on page 243 gives examples of calls in the Multi-Tenant Service environment using the OLD CDR format. Example 24 on page 243 gives examples of calls in the Multi-Tenant Service environment using the NEW CDR format.

1   DN 4999, a member of Tenant group 042, Customer 5, dials 9-828-9124. The trunk is a shared system resource.

2   DN 5000 of Customer 4 receives an incoming call. Tenant 4 has not enabled Tenant Service, so all resources contain a 000 in the Tenant Number field.

3   DN 5064 of Tenant 5 receives an incoming call. Customer 5 has Tenant Service enabled but the station does not belong to a Tenant group so all resources contain a 000 in the Tenant Number fields.

Example 23
Multi-Tenant feature using the OLD CDR format

```
N 001 05 DN4999  A001009 027.1.02.01 06/28 10:14 00:00:20 98289124
         042     000

N 001 04 T002010 DN5000               06/28 10:15 00:00:40
         000     000

S 002 05 T002004 DN5064               06/28 10:18
         000     000
```

Example 24
Multi-Tenant feature using the NEW CDR format

```
N 001 05 DN4999  A001009 06/28 10:14:00 00:00:20.0  98289124
 &                                                  027.1.02.01  042 000
 &

N 001 04 T002010 DN5000  06/28 10:15:00 00:00:40
 &                                                               000 000
 &

S 002 05 T002004 DN5064  06/28 10:18:50
 &                                                               000 000
 &
```

Calling Line Identification (CLID)

Example 25 on page 244 gives examples of calls in the Multi-Tenant Service environment with CLID using the OLD CDR format. Example 26 on page 244 gives examples of calls in the Multi-Tenant Service environment with CLID using the NEW CDR format.

- CLID and Multi-Tenant enabled for a customer.

- Only CLID enabled for a customer.

Example 25
Calling Line Identification (CLID) using the OLD CDR format

```
N 001 05 A001009 DN4999  027.1.02.01 06/28 10:14 00:00:20
        042     000     6135552222XXXXXX

N 001 04 T002010 DN5000             06/28 10:15 00:00:40
        000     000     6135552222XXXXXX
```

Example 26
Calling Line Identification (CLID) using the NEW CDR format

```
N 001 05 A001009 DN4999  06/28 10:14:00 00:00:20.0
 &6135552222XXXXXX                                   027.1.02.01
042 000
 &
N 001 04 T002010 DN5000  06/28 10:15:22 00:00:40
 &6135552222XXXXXX
 &
```

Note: The CLID always equals 16 characters; it will fill in remaining characters with Xs.

Calling Line Identification (CLID) on a tandem call

Example 27 on page 245 gives an example of a tandem call in the Multi-Tenant Service environment with CLID using the OLD CDR format. Example 28 on page 246 gives an example of a tandem call in the Multi-Tenant Service environment with CLID using the NEW CDR format.

• DN 2616, at Node A, dials 7000, 7000 is a Directory Number of Node C. Nodes A and B have 7000 configured as a Coordinated Dialing Plan (CDP) Distant Steering Code (DSC). CDP at Node A is configured to route all calls to Node B on route 50, access code 8050. CDP at Node B is configured to route all calls to Node C on route 51, access code 8051. CDPR and AIA are set to "YES" in all the Nodes. The following records are output at all three nodes:

Example 27
Calling Line Identification (CLID) on a tandem call using the OLD CDR format

```
                    Originating Node (Node A) record:

N 001 00 DN2616  A050005              06/26 13:16 00:00:22 A 80507000
         000     000

                    Tandem Node (Node B) record:

N 001 01 A050005 A051005              06/26 13:16 00:00:22 A 80517000
         000     000    2616XXXXXXXXXXXX

                    Terminating Node (Node C) record:

N 001 00 A051005 DN7000               06/26 13:16 00:00:22
         000     000    2616XXXXXXXXXXXX
```

Note: The CLID always equals 16 characters; it will fill in remaining characters with Xs.

Example 28
Calling Line Identification (CLID) on a tandem call using the NEW CDR format

<div style="border:1px solid">

Originating Node (Node A) record:

```
N 001 00 DN2616  A050005 06/26 13:16:00 00:00:22.0 A80507000
 &                                                              000
000
 &
```

Tandem Node (Node B) record:

```
N 001 01 A050005 A051005 06/26 13:16:00 00:00:22.0 A80517000
 &2616XXXXXXXXXXX                                              000
000
 &
```

Terminating Node (Node C) record:

```
N 001 00 A051005 DN7000  06/26 13:16:00 00:00:22.0
 &2616XXXXXXXXXXX                                              000
000
 &
```

</div>

CDR with Outpulsed Digits

The Outpulsed Digits (OPD) option is most useful when a Location Code call overflows onto the public network. With the OPD enabled for these types of calls it is much easier to match the calls with the appropriate toll charges, which are listed in the bill from the telephone company.

Example 29 on page 247 through Example 34 on page 249 show how the CDR output is affected by the OPD feature.

Note 1: In Example 29 on page 247, Example 30 on page 248, and Example 31 on page 248, it makes no difference if the NARS package is equipped.

Note 2: When IFC = NI2 in LD 17 and OPD = YES in LD 16, 011 is not included in the DIGITS field for international calls and 0 is not included in the DIGITS field for operator assisted calls. In order to see dialed digits in CDR output, OPD must be set to NO in LD 16.

Example 29
OPD examples for a Location Code call that stays within ESN

Digits dialed:	6 655 2315
Digits Outpulsed:	2315
Trunk Access Code:	457
Equipped Package:	BARS

When OPD is not used, DIGITS field = 4576552315

When OPD = "NO" (disabled), DIGITS field = 4576552315

When OPD = "YES" (enabled), DIGITS field = 4572315

Example 30
OPD examples for a Location Code call that is routed to the public network

Digits dialed:	6 655 2315
Digits Outpulsed:	14089882315
Trunk Access Code:	457
Equipped Package:	BARS

When OPD is not used, DIGITS field = 4576552315

When OPD = "NO" (disabled), DIGITS field = 4576552315

When OPD = "YES" (enabled), DIGITS field = 45714089882315

Example 31
OPD examples for a call onto the public network

Digits dialed:	6 408 988 2315
Digits Outpulsed:	14089882315
Trunk Access Code:	932
Equipped Package:	BARS

When OPD not used, DIGITS field = 9324089882315

When OPD = "NO" (disabled), DIGITS field = 9324089882315

When OPD = "YES" (enabled), DIGITS field = 93214089882315

Example 32
OPD examples for a Location Code call that stays within ESN

Digits dialed:	6 655 2315
Digits Outpulsed:	2315
Trunk Access Code:	457
Equipped Package:	NARS (BARS not equipped)

When OPD is not used, DIGITS field = 66552315

When OPD = "NO" (disabled), DIGITS field = 66552315

When OPD = "YES" (enabled), DIGITS field = 66552315

Note: If the Location Code is outpulsed, then it appears twice in the CDR Digits field.

Example 33
OPD examples for a Location Code call that is routed to the public network

Digits dialed:	6 655 2315
Digits Outpulsed:	14089882315
Trunk Access Code:	457
Equipped Package:	NARS (BARS not equipped)

When OPD is not used, Digits field = 66552315

When OPD = "NO" (disabled), Digits field = 66552315

When OPD = "YES" (enabled), Digits field = 645714089882315

Example 34
OPD examples for a call onto the public network

Digits dialed:	6 408 988 2315
Digits Outpulsed:	14089882315
Trunk Access Code:	932
Equipped Package:	NARS (BARS not equipped)

When OPD is not used, Digits field = 64089882315

When OPD = "NO" (disabled), Digits field = 64089882315

When OPD = "YES" (enabled), Digits field = 69321408988231

In-Band Automatic Number Identification

Example 35 on page 250 shows an example of a call with In-Band Automatic Number Identification (IANI) using the OLD CDR format. Example 36 on page 250 shows an example of a call with In-Band Automatic Number Identification (IANI) using the NEW CDR format.

Example 35
In-Band ANI (IANI) using the OLD CDR format

```
N 001 02 T000004 DN5000              03/24 10:15 00:00:38
   4155551212XXXXXX
```

Example 36
In-Band ANI (IANI) using the NEW CDR format

```
N 001 02 T000004 DN5000  03/24 10:15:22 00:00:38
  &4155551212XXXXXX
  &
```

Note: The ANI number is always 10 digits, filling in the remaining character spaces with XXXXXX.

Feature Group D Automatic Number Identification

Example 37 on page 251 shows an example of a call with Feature Group D Automatic Number Identification (FGD ANI) using the OLD CDR format. Example 38 on page 251 shows an example of a call with FGD ANI using the NEW CDR format.

Example 37
Feature Group D ANI (FGD ANI) using the OLD CDR format

```
N 006 01 T096003 DN5000              03/24 10:15 00:00:02 A
&                                    00-2142341234
```

Example 38
Feature Group D ANI (FGD ANI) using the NEW CDR format

```
N 006 01 T096003 DN5000  03/24 10:15:22 00:00:02 A
 &                               00-2142341234
 &
```

Abandoned Call

Example 39 on page 252 gives four examples of abandoned call records as output on the TTY.

1   Route 12 member 8 makes an incoming call to DN 4322. DN 4322 rings for fifteen seconds prior to the trunk disconnecting.

2   Route 12 member 8 makes an incoming call. The call is queued for 34 seconds and then presented to the console. The attendant does not answer, after the trunk has been presented for 15 seconds the trunk disconnects.

3   Route 12 member 8 makes an incoming call. The call is queued for 38 seconds prior to the trunk disconnecting. The attendant DN dialled (ATTN DN or LDN) is 2222.

4   Route 12 member 8 makes an incoming call. The call is presented to an idle attendant. The attendant does not answer. After the call has been presented for 27 seconds the trunk disconnects.

Example 39
Abandoned call records

```
B 009 00 T012008 4322    26/02 12:22:50
 &6671212121
 &00:15

B 009 00 T012008 ATTN01  26/02 12:22:50
 &6671212121
 &00:15 00:49

B 009 00 T012008 2222 26/02 12:22:50
 &6671212121
 &      00:38

B 009 00 T012008 ATTN01  26/02 12:22:50
 &6671212121
 &00:27
```

Note: The total time queuing is the total time in either the attendant or group hunt queue and the total ringing time.

911 Abandoned Call

Example 41 on page 254 gives examples of the ACD set CDR N and Q records with the Call abandon feature activated. The sequence of events in the example is as follows:

1 A 911 caller hangs up

2 The abandoned 911 call is placed in an ACD queue

3 The abandoned 911 is tagged as a "call abandon" by CDR in N and Q records

4 The abandoned 911 call is presented to an ACD agent

5 The ACD agent sees both ANI and ALI information on screen

Example 40
M911 Abandoned call records

```
N 038 01 T081001 DN3434          00/06 06:22 00:00:14
   05217201XXXXXXXX
                ABANDON

Q 039 01 T081001 TN1840          00/06 06:22 00:00:18
   05217201XXXXXXXX
                ABANDON
```

Call Transfer, Charge Account, and Time to Answer features

Example 41 on page 254 gives an example involving the Call Transfer, Charge Account and Time to Answer features. The sequence of events in the example is as follows:

1   DN 6789 enters account code 123451 and dials 9*232-916-9166. The call is completed on route 0 member 6 and later transferred to DN 5600. The trunk is in the ringing state for 17 seconds before DN 5600 answers.

2   Later the call is transferred back to DN 6789 and terminated shortly after. DN 6789 rings for 40 seconds before answering the call.

3   An Account Code record is generated when the entry of the code is complete.

4   When the call is transferred, a Start record is generated.

5   When the second transfer takes place, no record is generated as a Start record already exists for the trunk in use.

6   When the call terminates, an End record is generated.

Example 41
Call Transfer, Charge Account, and Time to Answer features

```
C 076 00 DN6789   T000006 09/08 11:15:10              123451
  &
  &

S 081 00 DN6789   T000006 09/08 11:16:22              9*2329169166
  &
  &00:17

E 097 00 T000006 DN6789   09/08 11:31:42
  &
  &00:40
```

Note 1: DURATION is not supplied but must be calculated from the TIMESTAMP field of the S and E records.

Note 2: The identity of the intermediate party (DN 5600) is lost because an additional account code was not entered during or prior to the call transfer.

Metered Transferred Call and Time to Answer

Example 42 on page 255 gives an example involving a Metered Transferred Call and the Time to Answer feature with CDR Transfer Enhancement active.

- DN 7234 places an outgoing call on metered CO route 4 member 16. After three minutes and eight seconds DN 7234 transfers the call to DN 7235. DN 7325 has Call Forward All Calls activated and set to DN 5345. DN 5345 rings for two minutes and thirty seconds prior to answering the call.

- DN 5345 transfers the call to DN 5300, DN 5300 Call Forward No Answer set to 5346. The Call Forward No Answer timer is set to forward the call after 24 seconds. DN 5300 does not answer and after the Call Forward No Answer timer expires the call is forwarded to DN 5346. DN 5346 rings for 15 seconds prior to answering the call.

- DN 5346 then transfers the call to DN 5333. DN 5333 rings for nine seconds prior to answering.

Example 42
Metered Transferred Call using the NEW CDR format with
CDR Transfer Enhancement active

```
S 008 00 DN7234   T004016 09/07 10:01:00 00:05:38.0  9660100
 &                 00029 000058                          007.2.04.03
 &

X 027 00 DN5345   T004016 09/07 10:06:38 00:04:25.0  9660100
 &                 00037 000074
 &02:30N

X 044 00 DN5346   T004016 09/07 10:11:03 00:03:00.0  9660100
 &                 00003 000006
 &00:39R

E 046 00 DN5333   T004016 09/07 10:14:03 00:09:55.0
 &                 00031 000062
 &00:09
```

Attendant CDR Enhancement for outgoing nonmetered CO trunks

With the Attendant CDR Enhancement, and E records are generated when the attendant originates an outgoing call and transfers it to an internal station. The records indicate the attendant as the originating party. Example 43 on page 256 shows sample records for the Attendant CDR Transfer Enhancement using the NEW CDR format.

Example 43 on page 256 shows sample records for the Attendant CDR Enhancement using the NEW CDR format with the CDR Transfer Enhancement (CDRX) package (259) active, (i.e., response to CDRX in LD 16 is "YES").

The call sequence for the following samples is:

1   Attendant establishes an outgoing call on trunk route 10 member 1.

2   The attendant is connected to the trunk for 30 minutes and then transfers the call to an internal station (DN 2020).

3   After being connected to the internal party for ten minutes the trunk disconnects.

Example 43
Transferred outgoing attendant originated trunk call record with Attendant CDR Enhancement with FCDR set to "NEW"

```
S 050 00 ATTN01   T010001 02/17 01:00:00 00:30:00.0 9667610
  &
  &
E 054 00 T010001 DN2020  02/17 01:40:00 00:10:00.0
  &
  &
```

Example 44
Transferred outgoing attendant originated trunk call record with
Attendant CDR Enhancement with FCDR set to "NEW" and CDRX active

```
S 050 00 ATTN01  T010001 02/17 01:00:00 00:30:00.0 9667610
  &
  &
E 054 00 DN2020  T010001 02/17 01:40:00 00:10:00.0
  &
  &
```

CDR Call Transfer Enhancement

CDR Transfer Enhancement feature requires, the CDRX package (259). CDRX allows Call Transfers involving nonmetered CO trunks to generate S, X, and E records.

With CDRX activated, (i.e., response to CDRX prompt in LD 16 is "YES"), the information in the ORIGID and TERID fields for records involving transferred outgoing trunks has been updated. For these calls the ORIGID will contain the information for the internal party while the TERID will contain the information for the trunk. Call Transfer CDR Transfer Enhancement is controlled on a per-route basis by the response to the CDRX prompt.

The following are samples of various transfer scenarios:

- Guarded Call Transfer record samples when FCDR is set to "OLD" in LD 17 are given in Example 45 on page 259, samples of records when FCDR is set to "NEW" in LD 17 and CDRX is set to "NO" are given in Example 46 on page 259. Samples of records when FCDR is set to "NEW" and CDRX is set to "YES" in LD 16 are given in Example 47 on page 259.

- Unguarded Call Transfer record samples when FCDR is set to "OLD" in LD 17 are given in Example 48 on page 260. Samples of records when FCDR is set to "NEW" in LD 17 and CDRX is set to "NO" are given in Example 49 on page 260. While samples of records when FCDR is set to "NEW" and CDRX is set to "YES" in LD 16 are given in Example 50 on page 260.

- Multiple Call Transfer record samples when FCDR is set to "OLD" in LD 17 are given in Example 51 on page 261. While samples of records when FCDR is set to "NEW" and CDRX is set to "YES" in LD 16 are given in Example 52 on page 262.

Simple guarded transfer

The call sequence for the following samples is:

1   Internal station (DN 2020) establishes an outgoing call on nonmetered CO trunk route 10 member 1.

2   After two minutes DN 2020 initiates call transfer to DN 2030.

3   DN 2030 rings for two minutes prior to answering.

4   DN 2030 answers and talks to party on DN 2020 for one minute, then DN 2020 completes transfer (this is a guarded transfer scenario).

5   DN 2030 is now connected to the trunk. After talking to the trunk party for ten minutes DN 2030 disconnects.

Example 45
Guarded Call Transfer with FCDR set to "OLD" (pre-Release 18)

```
S 050 00 DN2020  T010001               02/17 01:00 00:05:00 9667610

E 054 00 T010001 DN2030               02/17 01:15 00:10:00
```

Example 46
Guarded Call Transfer with FCDR set to "NEW" and CDRX set to "NO"

```
S 050 00 DN2020  T010001 02/17 01:00:00 00:05:00.0 9667610
 &
 &
E 054 00 T010001 DN2030  02/17 01:15:00 00:10:00.0
 &
 &
```

Example 47
Guarded Call Transfer with FCDR set to "NEW" and CDRX set to "YES"

```
S 050 00 DN2020  T010001 02/17 01:00:00 00:05:00.0 9667610
 &
 &
E 054 00 DN2030  T010001 02/17 01:15:00 00:10:00.0
 &
 &
```

Simple unguarded transfer

The call sequence for the following samples is:

1   Internal station (DN 2020) establishes an outgoing call on nonmetered CO trunk route 10 member 1.

2   After four minutes DN 2020 initiates call transfer to DN 2030. While DN 2030 is still ringing DN 2020 disconnects (this is an unguarded call transfer scenario).

3   DN 2030 rings for one minute prior to answering.

4   DN 2030 is now connected to the trunk. After talking to the trunk party for ten minutes DN 2030 disconnects.

Example 48
Unguarded Call Transfer with FCDR set to "OLD" (pre-Release 18)

```
S 050 00 DN2020  T010001              02/17 01:00 00:04:00 9667610

E 054 00 T010001 DN2030               02/17 01:15 00:11:00
```

Example 49
Unguarded Call Transfer with FCDR set to "NEW" and CDRX set to "NO"

```
S 050 00 DN2020  T010001 02/17 01:00:00 00:04:00.0 9667610
  &
  &
E 054 00 T010001 DN2030  02/17 01:15:00 00:11:00.0
  &
  &
```

Example 50
Unguarded Call Transfer with FCDR set to "NEW" and CDRX set to "YES"

```
S 050 00 DN2020  T010001 02/17 01:00:00 00:04:00.0 9667610
  &
  &
E 054 00 DN2030  T010001 02/17 01:15:00 00:11:00.0
  &
  &
```

Note: In both the previous examples the duration for DN 2030 also includes the time that DN 2030 was ringing.

Multiple Call Transfers

The call sequence for the following samples is:

1   Internal station (DN 2020) establishes an outgoing call on nonmetered CO trunk route 10 member 1.

2   After two minutes DN 2020 initiates call transfer to DN 2030.

3   DN 2030 answers and talks to party on DN 2020 for three minutes. DN 2020 then disconnects.

4   DN 2030 is now connected to the trunk. After talking to the trunk party for three minutes DN 2030 initiates call transfer to DN 2040.

5   DN 2040 answers and talks to party on DN 2030 for three minutes. DN 2030 then disconnects.

6   DN 2040 is now connected to the trunk. After talking to the trunk party for two minutes DN 2040 initiates call transfer to DN 2050. DN 2040 waits for two minutes while DN 2050 is ringing and finally disconnects.

7   DN 2050 rings for an additional three minutes and answers the call.

8   DN 2050 is now connected to the trunk. After talking to the trunk party for two minutes DN 2050 disconnects.

Example 51
Multiple Call Transfer with FCDR set to "OLD"

```
S 050 00 DN2020  T010001              02/17 01:00 00:05:00 9667610

E 054 00 T010001 DN2050              02/17 01:15 00:15:00
```

Note: In Example 52 on page 262 the duration for DN 2050 also includes the time that DN 2050 was ringing after DN 2040 had disconnected.

Example 52
Multiple Call Transfer with FCDR set to "NEW" and CDRX set to "YES"

```
S 050 00 DN2020  T010001 02/17 01:00:00 00:05:00.0 9667610
  &
  &
X 053 00 DN2030  T010001 02/17 01:11:00 00:06:00.0
  &
  &
X 057 00 DN2040  T010001 02/17 01:15:00 00:04:00.0
  &
  &
E 061 00 DN2050  T010001 02/17 01:20:00 00:05:00.0
  &
  &
```

CDR Call Transfer Enhancement with network calls

Initial and subsequent transfers are recorded for metered trunks if Message Registration (MR) package 101 is equipped and for nonmetered trunks if CDR Transfer Enhancement (CDRX) package 259 is equipped and the response to the CDRX prompt in the Route Data Block, LD 16, is "YES".

Simple network call

. The records output at the tandem node for a simple network call with PPM CDRX advice are given in Example 53 on page 263.

Following is a simple network call scenario. The scenario is as follows:

Station A (DN 2020) on Node 1 establishes an outgoing call on CO trunk route 10 member 1, which is either a metered route or has CDRX set to "YES" in its Route Data Block, on Node 2 for a duration of fifteen minutes. CO trunk route 10 is either a metered route or has CDRX set to "YES" in its Route Data Block (LD 16). Node 2 is connected to Node 1 by TIE route 1.

Example 53
Simple network call Release 20 and later with PPM or CDRX active

```
N 054 00 T001001 T010001 02/17 01:15:00 00:15:00.0
 &                00075 000375
 &          2020XXXXXXXXXXXX
```

> *Note:* In Example 53 on page 263, the fields in the second line are output only if the CO routes is metered and the BLID field is always output as 16 characters. The field is padded to 16 characters with Xs.

Network Call Transfer

Following are Network Call Transfer scenarios. The scenarios are:

— Simple Network Call Transfer examples are shown in Example 54 on page 264 and Example 55 on page 265.

— Multiple Network Call Transfer examples are shown in Example 56 on page 267, Example 57 on page 269, and Example 58 on page 270.

Simple Network Call Transfers case 1

The call sequence for the following samples is:

1   Station A (DN 3020) on Node 2 establishes an outgoing call on CO trunk route 10 member 1 on Node 2. CO trunk route 10 is either a metered route or has CDRX set to "YES" in its Route Data Block (LD 16).

2   After two minutes station A (DN 3020) on Node 2 initiates call transfer over an ISDN MCDN link (trunk route 20 member 2) to station B (DN 2020) on Node 1. Station B (DN 2020) rings for two minutes, then station A (DN 3020) disconnects.

3   Station B (DN 2020) on Node 1 rings for another three minutes and then answers the call.

4   Station B (DN 2020) on Node 1 is now connected to the outgoing CO trunk on Node 2. After talking to the trunk party for ten minutes station B disconnects.

Example 54
Simple Network Call Transfer case 1

```
S 050 00 DN3020  T010001 02/17 01:00:00 00:05:00.0  9667610
 &                00025 000050
 &
E 054 00 T020002 T010001 02/17 01:20:00 00:10:00.0
 &                00050 000100
 &             2020XXXXXXXXXXXX
```

Note: In Example 54 on page 264, the fields in the second line are output only if the CO routes is metered and the BLID field is always output as 16 characters. The field is padded to 16 characters with Xs.

Simple Network Call Transfers case 2

The call sequence for the following samples is:

1 Station A (DN 2020) on Node 1 establishes an outgoing call on CO trunk route 10 member 1 on Node 2. CO trunk route 10 is either a metered route or has CDRX set to "YES" in its Route Data Block (LD 16). The outgoing call involves station A (DN 2020) using ISDN MCDN link (trunk route 20 member 2) to access Node 2, then from Node 2 the outgoing CO trunk route is used.

2 After two minutes station A (DN 2020) Node 1 initiates call transfer to station B (DN 2030) on Node 1. Station B (DN 2030) on Node 1 rings for two minutes, then station A (DN 2020) on Node 1 disconnects.

3 Station B (DN 2030) on Node 1 rings for another three minutes and then answers the call.

4 Station B (DN 2030) on Node 1 is now connected to the outgoing CO trunk on Node 2. After talking to the trunk party for ten minutes station B disconnects.

Example 55
Simple Network Call Transfer case 2

```
S 050 00 T020002 T010001 02/17 01:00:00 00:04:00.0  9667610
 &               00020 000040
 &           2020XXXXXXXXXXXX
E 054 00 T020002 T010001 02/17 01:15:00 00:11:00.0
 &               00055 000110
 &           2030XXXXXXXXXXXX
```

Note: In Example 55 on page 265, the fields in the second line are output only if the CO routes is metered and the BLID field is always output as 16 characters. The field is padded to 16 characters with Xs.

Multiple Network Call Transfers case 1

The call sequence for the following samples is:

1   Station A (DN 3020) on Node 2 establishes an outgoing call on CO trunk route 10 member 1 on Node 2. CO trunk route 10 is either a metered route or has CDRX set to "YES" in its Route Data Block (LD 16).

2   After two minutes station A (DN 3020) on Node 2 initiates call transfer over an ISDN MCDN link (trunk route 20 member 2) to station B (DN 2020) on Node 1.

3   Station B (DN 2020) on Node 1 answers and talks to party on station A (DN 3020) for three minutes. Station A (DN 3020) then disconnects.

4   Station B (DN 2020) on Node 1 is now connected to the outgoing CO trunk on Node 2. After talking to the trunk party for three minutes station B (DN 2020) on Node 1 initiates call transfer to station C (DN 2030) on Node 1.

5   Station C (DN 2030) on Node 1 answers and talks to party on station B (DN 2020) on Node 1 for three minutes. Station B (DN 2020) on Node 1 then disconnects.

6   Station C (DN 2030) on Node 1 is now connected to the outgoing CO trunk on Node 2. After talking to the trunk party for two minutes station C (DN 2030) on Node 1 initiates call transfer to station D (DN 2040) on Node 1. Station C (DN 2030) on Node 1 waits for two minutes while station D (DN 2040) on Node 1 is ringing and finally disconnects.

7   Station D (DN 2040) on Node 1 rings for an additional three minutes and answers the call.

8   Station D (DN 2040) on Node 1 is now connected to the CO trunk on Node 2. After talking to the trunk party for two minutes station D (DN 2040) on Node 1 disconnects.

Note: In Example 56 on page 267, the fields in the second line are output only if the CO routes is metered and the BLID field is always output as 16 characters. The field is padded to 16 characters with Xs.

Example 56
Multiple Network Call Transfer case 1 Release 20 and later

```
S 050 00 DN3020  T010001 02/17 01:00:00 00:05:00.0  9667610
 &                00025 000075
 &
X 053 00 T020002 T010001 02/17 01:11:00 00:06:00.0
 &                00030 000090
 &            2020XXXXXXXXXXXX
X 054 00 T020002 T010001 02/17 01:15:00 00:04:00.0
 &                00020 000060
 &            2030XXXXXXXXXXXX
E 061 00 T020002 T010001 02/17 01:20:00 00:05:00.0
 &                00025 000075
 &            2040XXXXXXXXXXXX
```

Multiple Network Call Transfers case 2

The call sequence for the following samples is:

1   Station A (DN 2020) on Node 1 establishes an outgoing call on CO trunk route 10 member 1 on Node 2. CO trunk route 10 is either a metered route or has CDRX set to "YES" in its Route Data Block (LD 16). The outgoing call involves station A (DN 2020) using ISDN MCDN link (trunk route 20 member 2) to access Node 2, then from Node 2 the outgoing CO trunk route is used.

2   After two minutes station A (DN 2020) Node 1 initiates call transfer to station B (DN 2030) on Node 1.

3   Station B (DN 2030) on Node 1 answers and talks to party on station A (DN 2020) Node 1 for three minutes. Station A (DN 2020) on Node 1 disconnects.

4   Station B (DN 2030) on Node 1 is now connected to the outgoing CO trunk on Node 2. After talking to the trunk party for three minutes station B (DN 2030) on Node 1 initiates call transfer to station C (DN 2030) on Node 1.

5   Station C (DN 2040) on Node 1 answers and talks to party on station B (DN 2030) on Node 1 for three minutes. Station B (DN 2030) on Node 1 then disconnects.

6   Station C (DN 2040) on Node 1 is now connected to the outgoing CO trunk on Node 2. After talking to the trunk party for two minutes station C (DN 2040) on Node 1 initiates call transfer to station D (DN 2050) on Node 1. Station C (DN 2040) on Node 1 waits for two minutes while station D (DN 2050) on Node 1 is ringing and finally disconnects.

7   Station D (DN 2050) on Node 1 rings for an additional three minutes and answers the call.

8   Station D (DN 2050) on Node 1 is now connected to the CO trunk on Node 2. After talking to the trunk party for two minutes station D (DN 2050) on Node 1 disconnects.

Note: In Example 57 on page 269, the fields in the second line are output only if the CO routes is metered and the BLID field is always output as 16 characters. The field is padded to 16 characters with Xs.

Example 57
Multiple Network Call Transfer case 2 Release 20 and later

```
S 050 00 T020002 T010001 02/17 01:00:00 00:05:00.0  9667610
 &                00025 000075
 &          2020XXXXXXXXXXXX

X 053 00 T020002 T010001 02/17 01:11:00 00:06:00.0
 &                00030 000090
 &          2030XXXXXXXXXXXX

X 057 00 T020002 T010001 02/17 01:15:00 00:04:00.0
 &                00020 000060
 &          2040XXXXXXXXXXXX

E 061 00 T020002 T010001 02/17 01:20:00 00:05:00.0
 &                00025 000075
 &          2050XXXXXXXXXXXX
```

Multiple Network Call Transfers case 3

The call sequence for the following samples is:

1   Station A (DN 2020) on Node 1 establishes an outgoing call on CO trunk route 10 member 1 on Node 2. CO trunk route 10 is either a metered route or has CDRX set to "YES" in its Route Data Block (LD 16). The outgoing call involves station A (DN 2020) using ISDN MCDN link (trunk route 20 member 2) to access Node 2, then from Node 2 the outgoing CO trunk route is used.

2   After two minutes station A (DN 2020) Node 1 initiates call transfer to station B (DN 2030) on Node 1.

3   Station B (DN 2030) on Node 1 answers and talks to party on station A (DN 2020) Node 1 for three minutes. Station A (DN 2020) on Node 1 disconnects.

4   Station B (DN 2030) on Node 1 is now connected to the outgoing CO trunk on Node 2. After talking to the trunk party for three minutes station B (DN 2030) on Node 1 initiates call transfer to station C (DN 2030) on Node 1.

5   Station C (DN 2040) on Node 1 answers and talks to party on station B (DN 2030) on Node 1 for three minutes. Station B (DN 2030) on Node 1 then disconnects.

6 Station C (DN 2040) on Node 1 is now connected to the outgoing CO trunk on Node 2. After talking to the trunk party for two minutes station C (DN 2040) on Node 1 initiates call transfer to station D (DN 3010) on Node 2. Station C (DN 2040) on Node 1 waits for two minutes while station D (DN 3010) on Node 2 is ringing and finally disconnects.

7 Station D (DN 3010) on Node 2 rings for an additional three minutes and answers the call.

8 Station D (DN 3010) on Node 2 is now connected to the CO trunk on Node 2. After talking to the trunk party for two minutes station D (DN 3010) on Node 2 disconnects.

Example 58
Multiple Network Call Transfer case 2

```
S 050 00 T020002 T010001 02/17 01:00:00 00:05:00.0  9667610
 &               00025 000075
 &         2020XXXXXXXXXXXX

X 053 00 T020002 T010001 02/17 01:11:00 00:06:00.0
 &               00030 000090
 &         2030XXXXXXXXXXXX

X 057 00 T020002 T010001 02/17 01:15:00 00:04:00.0
 &               00020 000060
 &         2040XXXXXXXXXXXX

E 061 00 T020002 T010001 02/17 01:20:00 00:05:00.0
 &               00025 000075
 &         3010XXXXXXXXXXXX
```

Note 1: In Example 58 on page 270, the fields in the second line are output only if the CO routes are metered and the BLID field is always output as 16 characters. The field is padded to 16 characters with Xs.

Note 2: Since there is no Trunk Route Optimization (TRO) involved, the TIE trunk between Node 1 and Node 2 still remains. Therefore, the E (End) record in Example 58 on page 270 shows the originating party as the TIE route and member number.

Station Activity Record

The Station activity Call Detail Recording (SCDR) feature generates "D" records for any trunk involved in a call with a set assigned CDMA class of service.

Example 59 on page 271 is for a CDMA class of service set making an outgoing call on a route that does not generate CDR records. The call scenario is:

— Set A (DN 5404) with CDMA class of service assigned makes an outgoing call on route 64 member 15 for a duration of 22 minutes. The following record is output when the connection is released.

Example 59
Outgoing Station Activity call record

```
D 128 00 DN5404  T064015 05/22 01:00:00 00:22:00.0  8467327
  &
  &
```

Example 60 on page 271 is for a CDMA class of service set receiving an incoming trunk call from a route that does not generate CDR records. The call scenario is:

— Set A (DN 5404) with CDMA class of service assigned receives an incoming trunk call on route 72 member 32 for a duration of 7 minutes. The following record is output when the connection is released.

Example 60
Incoming Station Activity call record

```
D 049 31 T072032 DN5404  11/06 23:53:42 00:07:00.0
  &
  &
```

Public Network Feature Invocation Record

"Y" (Public Network Feature Invocation) records are generated when a Meridian 1 user accesses a Public Network feature such as "PSTN Three Party Conferencing".

Example 61 on page 272 is for a set making an outgoing call on a route that has CDRY set to "YES" and that invokes three party conference using the "PSTN Three Party Conferencing" feature of a NEAX-61. The call scenario is:

- Set A (DN 5404) makes an outgoing call on route 64 member 15, after 6 minutes set A issues a Trunk Hook-switch Flash to invoke the "PSTN Three Party Conferencing" feature and dials set B (768492). When set B answers, set A issues another Trunk Hook-switch Flash to form a three party conference. A "Y" record is produced at this point in the call.

- After conferring for 16 minutes all parties disconnect. At this point an "N" record is produced.

Example 61
Outgoing Station Activity call record

```
Y 127 00 DN5404   T064015 05/22 01:06:00 00:06:00.0  768492
  &
  &

N 128 00 DN5404   T064015 05/22 01:00:00 00:22:00.0  8467327
  &
  &
```

CDR 100 Hour Call

The Call Detail Recording 100 Hour Call feature expands the Call Detail Recording (CDR) duration measurement capability to accommodate calls with a duration greater than 99:59:59.

This feature provides a 100 Hour Duration field. This field is automatically displayed on the third line of all current Fixed Format CDR record types that have the duration field even though the call may be less than or greater than 99:59:59

The following three examples show Format CDR Records with durations less than, equal to, and greater than 100:00:00.

Example 62
CDR 100 Hour Call Field with call duration less than 100:00:00

In this example, DN 2020 made a TIE call through route 2. The duration of the call is 99:59:58, so only the Duration field in the first line is shown with the time while the 100-Hour Duration field contains zeros.

```
N 005 02 2020      T002001 04/17 19:45:54 99:59:58.0 A80023033010#

&                                                         000 000

&                 000
```

Example 63
CDR 100 Hour Call Field with call duration equal to 100:00:00

In this example, the duration of the call is 100:00:00. Hence, the Duration field on line 1 resets to 00:00:00 and the 100-Hour Duration field on line 3 contains 001, indicating 1 hundred hours.

```
N 005 02 2020     2030     04/17 19:45:54 00:00:00.0 A80023033010#

&                                                          000 000

&                  001
```

Example 64
CDR 100 Hour Call Field with call duration greater than 100:00:00

In this example, the call was established for the duration of 4724:32:20. Hence, the Duration field contains 24:32:20 and the 100-Hour Duration field contains 047, representing four thousand and seven hundred.

```
N 005 02    2020     2030   04/17 19:45:54 24:32:20.0 A80023033010#

&                                                          000 000

&                  047
```

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CDR Description and
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