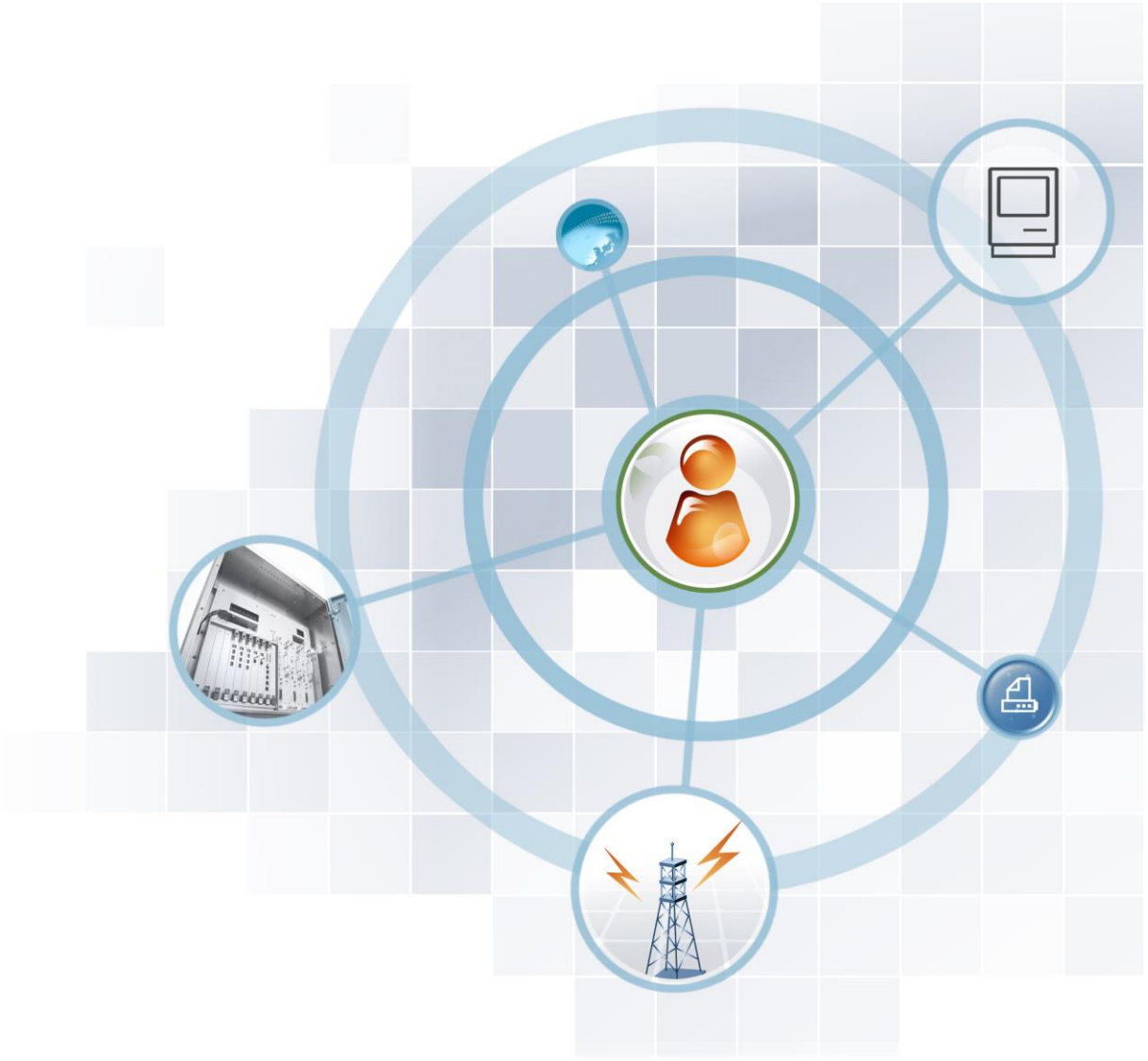
SCM Express

CDR Interoperability Guide



SAMSUNG ELECTRONICS

COPYRIGHT

TRADEMARKS

This guide should be read and used as a guideline for properly installing and operating the product.

This guide may be changed for the system improvement, standardization and other technical reasons without prior notice.

If you need updated guides or have any questions concerning the contents of the guides, contact our **Document Center** at the following address or Web site:

Address: Document Center 3rd Floor Jeong-bo-tong-sin-dong. Dong-Suwon P.O. Box 105, 416, Maetan-3dong Yeongtong-gu, Suwon-si, Gyeonggi-do, Korea 442-600

Homepage: http://www.samsungdocs.com

INTRODUCTION

Purpose

This manual describes the CDR of the SCM.

Audience

This manual provides information for an administrator who is responsible for managing CDR or Accounting Server program Engineer interworking SCM.

Document Content and Organization

This manual consists of the following parts.

CHAPTER 1. CDR Interface

This chapter describes how to configure the CDR method or protocol of SCM.

CHAPTER 2. CDR Data Description

This chapter describes the elements of the CDR data.

ANNEX A. SIP Status Code

Lists the SIP status code of CDR.

ANNEX B. Q.850 Release Cause

Lists the Q.850 release code of CDR.

ANNEX C. Internal Fail Code

Lists the internal fail code of CDR.

ABBREVIATION

Describes the acronyms used in this manual.

Conventions

The following types of paragraphs contain special information that must be carefully read and thoroughly understood. Such information may or may not be enclosed in a rectangular box, separating it from the main text, but is always preceded by an icon and/or a bold title.

WARNING

Provides information or instructions that the reader should follow in order to avoid personal injury or fatality.

CAUTION

Provides information or instructions that the reader should follow in order to avoid a service failure or damage to the system.

CHECKPOINT

Provides the operator with checkpoints for stable system operation.

NOTE

Indicates additional information as a reference.

Console Screen Output

- The lined box with '`Courier New`' font will be used to distinguish between the main content and console output screen text.
- '**`Bold Courier New`**' font will indicate the value entered by the operator on the console screen.

Revision History

VERSION	DATE OF ISSUE	REMARKS
1.0	12. 2012.	Initial edition for version 3.3.1
2.0	09. 2013.	Updated for SCM Version 4.1
3.0	05. 2014	Updated for SCM Version 5.0
3.1	07. 2014	Updated for SCM Version 5.0
3.2	08. 2014	Updated for SCM Version 5.1

TABLE OF CONTENTS

INTRODUCTION I

Purpose I
Audience I
Document Content and Organization I
Conventions II
Console Screen Output II
Revision History III

CHAPTER 1. CDR Interface 1-1

1.1 Configuration of CDRs 1-1
1.1.1 Configuration of Storage option 1-1
1.1.2 CDR Option 1-12
1.1.3 Set Billing Output 1-13
1.2 Network Interworking for CDRs 1-15
1.2.1 FTP Type 1-15
1.2.2 TCP Type 1-16
1.2.3 TCP ACK Type 1-18
1.3 CDR Directory 1-21

CHAPTER 2. CDR Data Description 2-1

2.1 CDR Data Format in FTP 2-1
2.1.1 Header 2-4
2.1.2 Number 2-5
2.1.3 Usage 2-6
2.1.4 Calling Information 2-6
2.1.5 Called Information 2-7
2.1.6 Disconnect Reason 2-7
2.1.7 Node Configuration (above V3.3.X.X only) 2-8
2.1.8 Route Type 2-8
2.1.9 Pilot Billed Number 2-8
2.1.10 Forward Type 2-8

2.1.11 Route Access Code 2-8
2.1.12 Calling Dev Type 2-8
2.1.13 Called Dev Type 2-9
2.1.14 User Digit 2-9
2.1.15 Pick up 2-9
2.1.16 Smart Routing 2-9
2.1.16 Transferor 2-9
2.1.16 Service Type 2-9

2.2 Example of CDR format 2-11

ANNEX A. SIP Status Code A-1

A.1 SIP Status Code A-1

ANNEX B. Q.850 Release Cause B-1

B.1 Q.850 Release Cause B-1

ANNEX C. Internal Fail Code C-1

C.1 Internal Fail Code C-1

ABBREVIATION 1

C 1
D 1
F 1
G 1
I 1
R 1
S 1
T 1

LIST OF FIGURES

Figure 1.1 Directory structure of CDR storage 1-21
Figure 2.1 CDR Call Type 2-11

LIST OF TABLES

Table 1.1 CDR Storage Option-Local 1-2
Table 1.2 CDR Storage Option-FTP 1-4
Table 1.3 CDR Storage Option-RADIUS 1-5
Table 1.4 CDR Storage Option-TCP 1-7
Table 1.5 CDR Storage Option-TCP (SMDR) 1-9
Table 1.6 CDR Storage Option-TCP (TCP_ACK) 1-11
Table 2.1 CDR data format 2-1
Table 2.1 CDR data format (Continued) 2-4
Table 2.2 Calling Type 2-6
Table 2.3 Called Type 2-7
Table 2.4 Calling Dev Type 2-8
Table 2.5 Called Dev Type 2-9

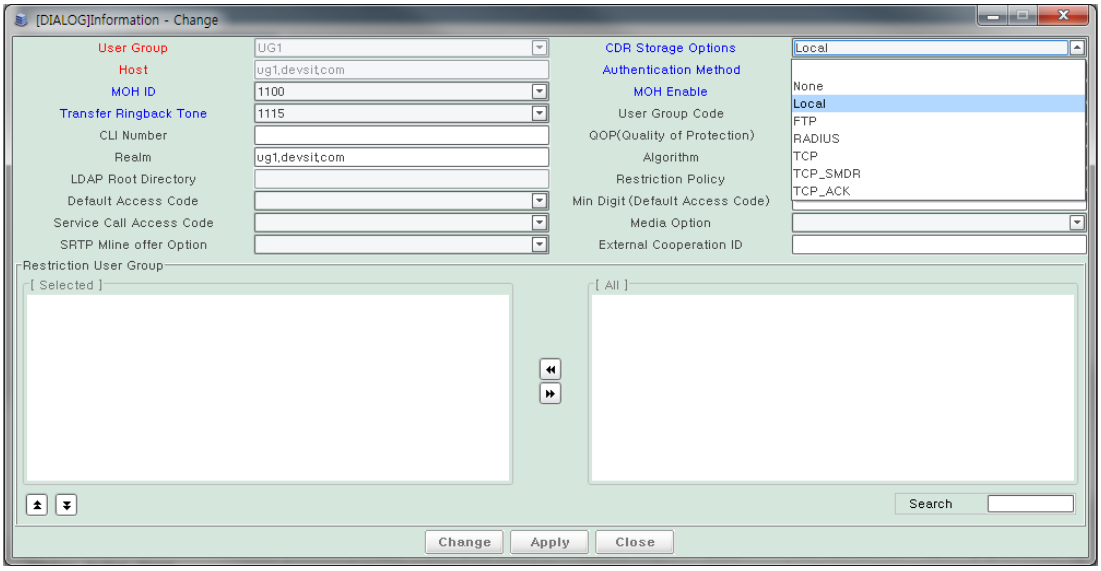
CHAPTER 1. CDR Interface

1.1 Configuration of CDRs

Whenever a call starts or ends, SCM records the call information according to the account data recording method defined for each user group.

1.1.1 Configuration of Storage option

The SCM creates and stores CDRs according to the specified configuration at CDR Storage Option in [CONFIGURATION > User Group > Change User Group > Infor mation].
There are 6 CDR Storage options as below.



NONE

The CDRs are not created.

Local

The CDRs are stored at the local disk of the SCM.
For detailed configuration for ‘Local’, configure the following item.
[MANAGEMENT > CDR Storage Options > Local]

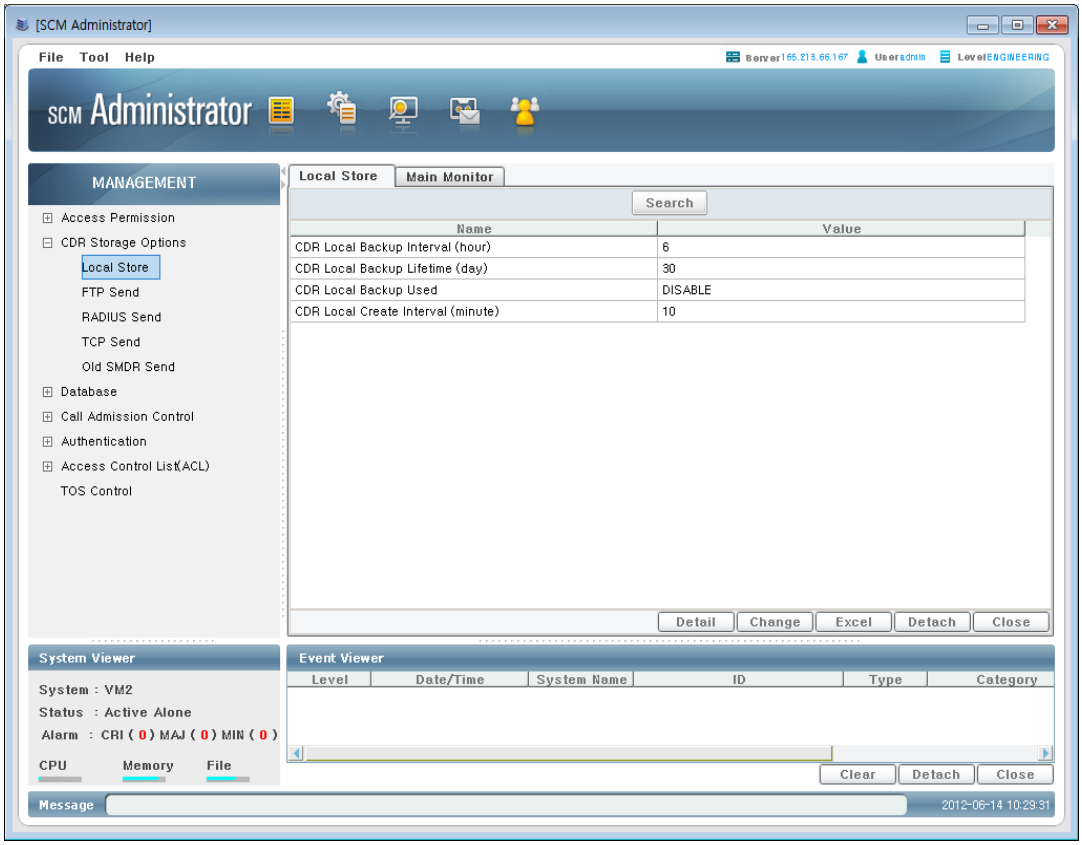


Table 1.1 CDR Storage Option-Local

Name	Description
CDR Local Backup Interval (hour)	When configuring CDR files to be backed up in the hard disk, specify the backup interval. All CDR files generated are moved to the backup directory and the files in the local directory are deleted at this interval. Only the CDR files not saved in the backup directory will be left in the local directory.
CDR Local Backup Lifetime (day)	When configuring CDR files to be backed up in the hard disk, specify the number of days for which the backed up CDR files will be kept in the hard disk. At midnight everyday, the system automatically deletes any backed up CDR files which have passed the specified date.
CDR Local Backup Used	Specify whether to back up the generated CDR files in the hard disk. If enabled, the files are backed up in the /DI/CM/data/cdr/local/Backup directory.

Table 1.1 CDR Storage Option-Local (Continued)

Name	Description
CDR Local create Interval (min)	Specify the interval in minutes at which the CDR data files will be generated. New CDR files are generated at this interval. No CDR file will be generated if there is no CDR information for this period. The CDR files generated are saved in the /DI/CM/data/ cdr/local directory.

FTP

The CDRs are sent to the CDR server via FTP.
For detailed configuration for 'FTP', configure the following item [MANAGEMENT > CDR Storage Options > FTP Send]

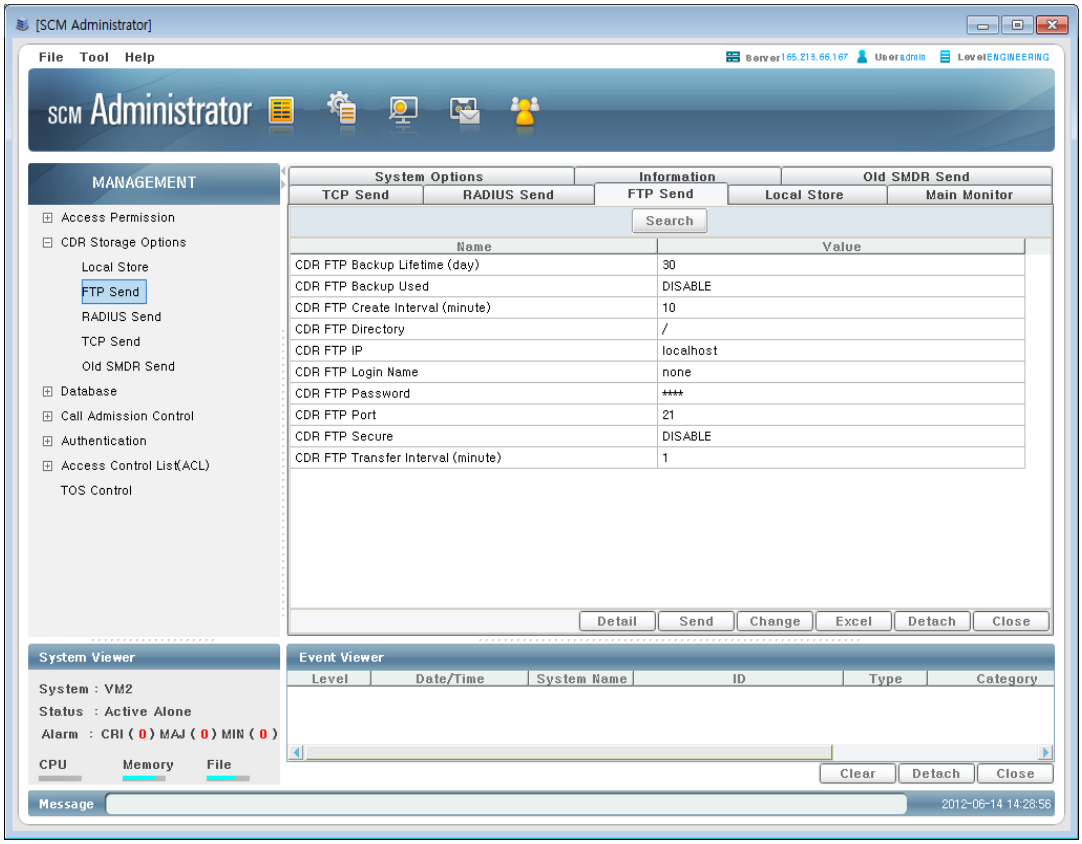


Table 1.2 CDR Storage Option-FTP

Attribute	Description
CDR FTP Backup Lifetime (day)	When interoperating with the accounting system over FTP, the CDR files generated can be backed up in SCM even after they have been transferred by FTP. Specify the number of days for which the backed up CDR files will be kept. At midnight everyday, the system automatically deletes any backed up CDR files which have passed the specified date.
CDR FTP Backup Used	When interoperating with the accounting system over FTP, the CDR files generated can be backed up in SCM even after they have been transferred by FTP. If enabled, the CDR files are backed up in the /scm_data/cdr/ftp/Backup directory in SCM.
CDR FTP Create Interval (min)	When interoperating with the accounting system over FTP, specify the interval at which the CDR files are generated. New CDR files are generated at this interval. No CDR file will be generated if there is no CDR information for this period. The CDR files generated are saved in the /DI/CM/data/cdr/ftp directory.
CDR FTP Directory	Specify the name of the directory in the FTP server where the files will be saved when transferring CDR files over FTP.
CDR FTP IP	Specify the IP address of the FTP server when transferring CDR files over FTP.
CDR FTP Login Name	Specify the login name of the FTP server when transferring CDR files over FTP.
CDR FTP Password	Specify the password of the FTP server when transferring CDR files over FTP.
CDR FTP Port	Specify the port number of the FTP server when transferring CDR files over FTP.
CDR FTP Secure	Specify whether to use Secure-FTP when transferring CDR files over FTP.
CDR FTP Transfer Interval (min)	When interoperating with the accounting system over FTP, specify the interval (in minutes) at which the CDR files are transferred. All CDR files generated are transferred over FTP and the successfully transferred files are moved to the backup directory at this interval. Only the CDR files not transferred over FTP will be left in the local directory.

RADIUS

The CDRs are sent to the CDR server via RADIUS protocol.
For detailed configuration for 'RADIUS', configure the following item [MANAGEMENT > CDR Storage Options > RADIUS Send]

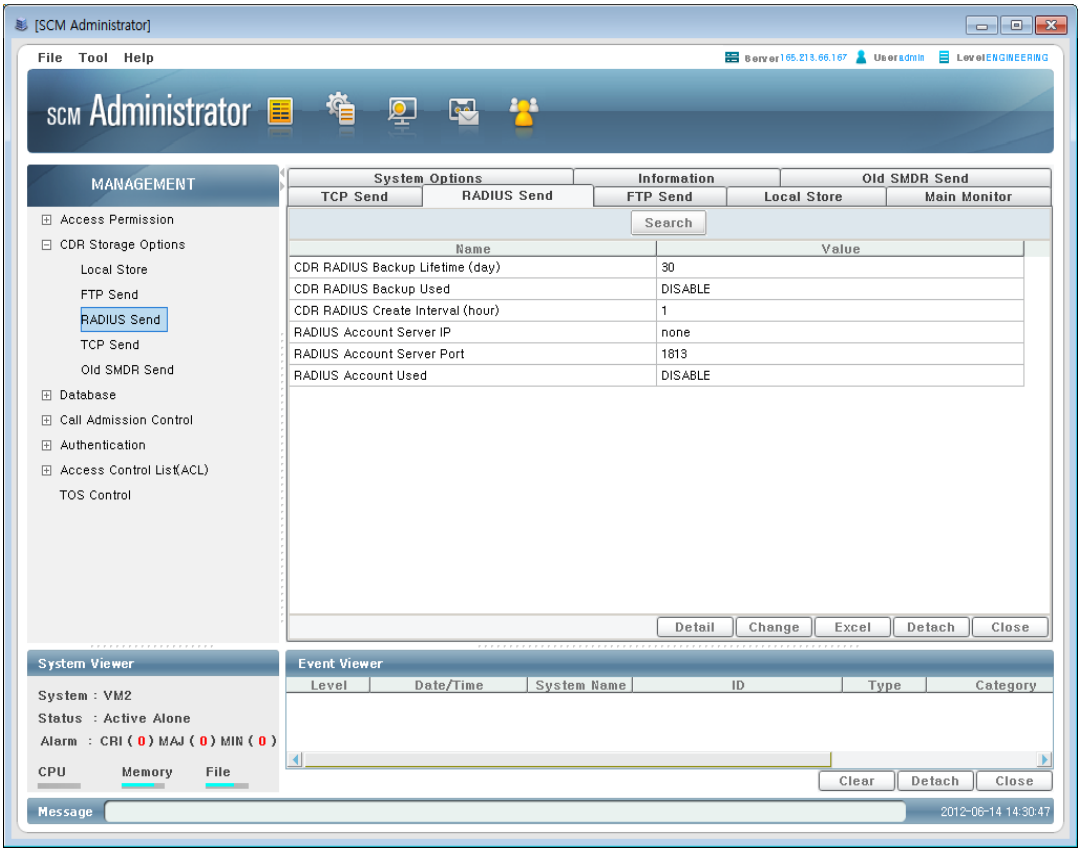


Table 1.3 CDR Storage Option-RADIUS

Attribute	Description
CDR RADIUS Backup Lifetime (day)	When interoperating with the accounting system over RADIUS and backing up CDR files in SCM, the CDR files generated can be backed up in SCM even after they have been transferred to the RADIUS server. Specify the number of days for which the backed up CDR files will be kept. At midnight everyday, the system automatically deletes any backed up CDR files which have passed the specified date.
CDR RADIUS Backup Used	When interoperating with the accounting system over RADIUS, the CDR files can be backed up in SCM even after they have been transferred to the RADIUS server. If enabled, the CDR files are backed up in the /DI/CM/data/cdr/radius/Backup directory in SCM.

Table 1.3 CDR Storage Option-RADIUS (Continued)

Attribute	Description
CDR RADIUS Create Interval (hour)	When interoperating with the accounting system over RADIUS and backing up CDR files in SCM, specify the interval (in minutes) at which the CDR files to be backed up are generated. The CDR files generated are moved to the backup directory, the files in the local directory are deleted, and CDR files with new names are generated at this interval. No CDR file will be generated if there is no CDR information for this period. The CDR files generated are saved in the /DI/CM/data/cdr/radius directory. Only the CDR files not saved in the backup directory will be left in this directory.
RADIUS Account Server IP	Specify the IP address of the RADIUS server when interoperating with the accounting system over RADIUS.
RADIUS Account Server Port	Specify the port number of the RADIUS server when interoperating with the accounting system over RADIUS.
RADIUS Account Used	Specify whether the CDR data will be sent to the RADIUS server when interoperating with the accounting system over RADIUS.

TCP

The CDRs are sent to the CDR server via TCP protocol.
For detailed configuration for 'TCP', configure the following item [MANAGEMENT > CDR Storage Options > TCP Send]

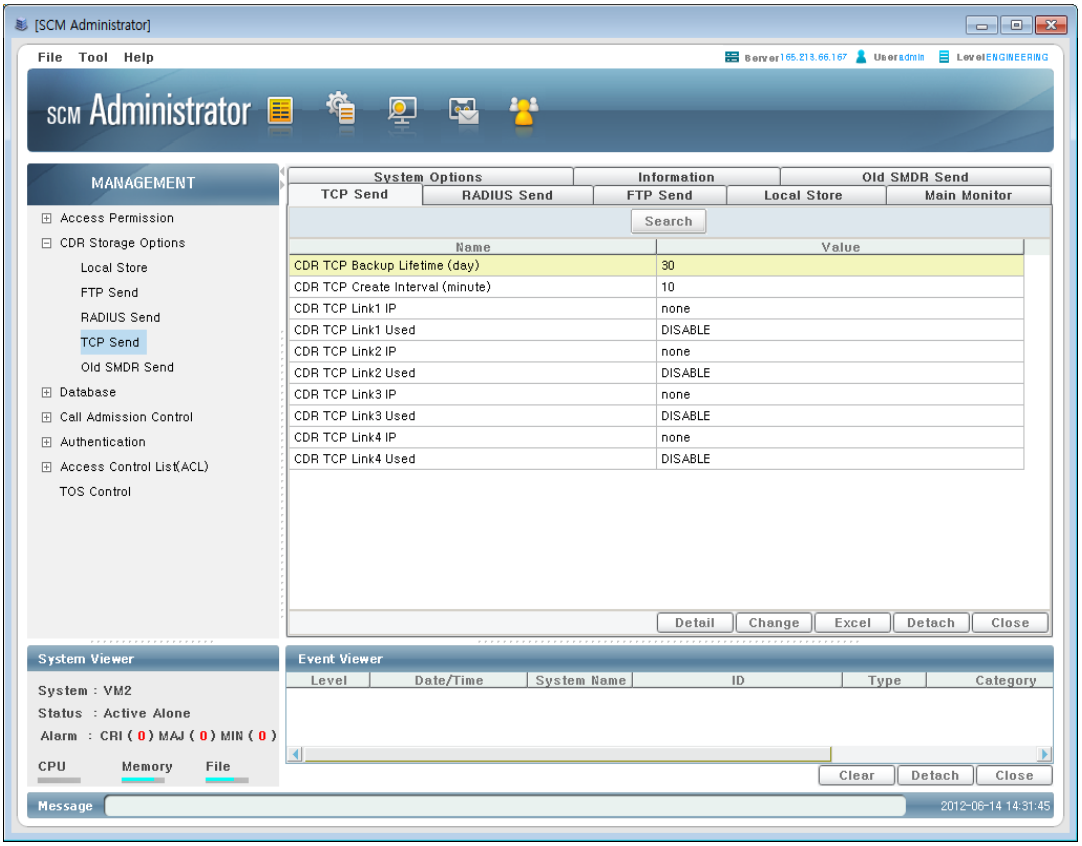


Table 1.4 CDR Storage Option-TCP

Attribute	Description
CDR TCP Backup Lifetime (day)	When interoperating with the accounting system over TCP and backing up CDR files in SCM, the number of days for which the backed up CDR files will be kept in SCM. At midnight everyday, the system automatically deletes any backed up CDR files which have passed the specified date.
CDR TCP Create Interval (min)	When interoperating with the accounting system over TCP and backing up CDR files in SCM, specify the interval (in minutes) at which the CDR files to be backed up are generated. New CDR files are generated at this interval. No CDR file will be generated if there is no CDR information for this period. The CDR files generated are saved in the /DI/CM/data/cdr/tcp directory.
CDR TCP Link1 IP	Specify the IP address of the first of the four TCP servers, to which the CDR data can be transferred when interoperating with the accounting system over TCP.

Table 1.4 CDR Storage Option-TCP (Continued)

Attribute	Description
CDR TCP Link1 Used	Specify whether to transfer the CDR data to the first of the four TCP servers, to which the CDR data can be transferred when interoperating with the accounting system over TCP.
CDR TCP Link2 IP	Specify the IP address of the second of the four TCP servers, to which the CDR data can be transferred when interoperating with the accounting system over TCP.
CDR TCP Link2 Used	Specify whether to transfer the CDR data to the second of the four TCP servers, to which the CDR data can be transferred when interoperating with the accounting system over TCP.
CDR TCP Link3 IP	Specify whether to transfer the CDR data to the third of the four TCP servers, to which the CDR data can be transferred when interoperating with the accounting system over TCP.
CDR TCP Link3 Used	Specify whether to transfer the CDR data to the third of the four TCP servers, to which the CDR data can be transferred when interoperating with the accounting system over TCP.
CDR TCP Link4 IP	Specify the IP address of the fourth of the four TCP servers, to which the CDR data can be transferred when interoperating with the accounting system over TCP.
CDR TCP Link4 Used	Specify whether to transfer the CDR data to the fourth of the four TCP servers, to which the CDR data can be transferred when interoperating with the accounting system over TCP.

TCP_SMDR (for KOREA only)

Basically same as TCP options but the data is the format of SMDR.
For detailed configuration for 'TCP_SMDR', configure the following item [MANAGEMENT > CDR Storage Options > Old SMDR Send]

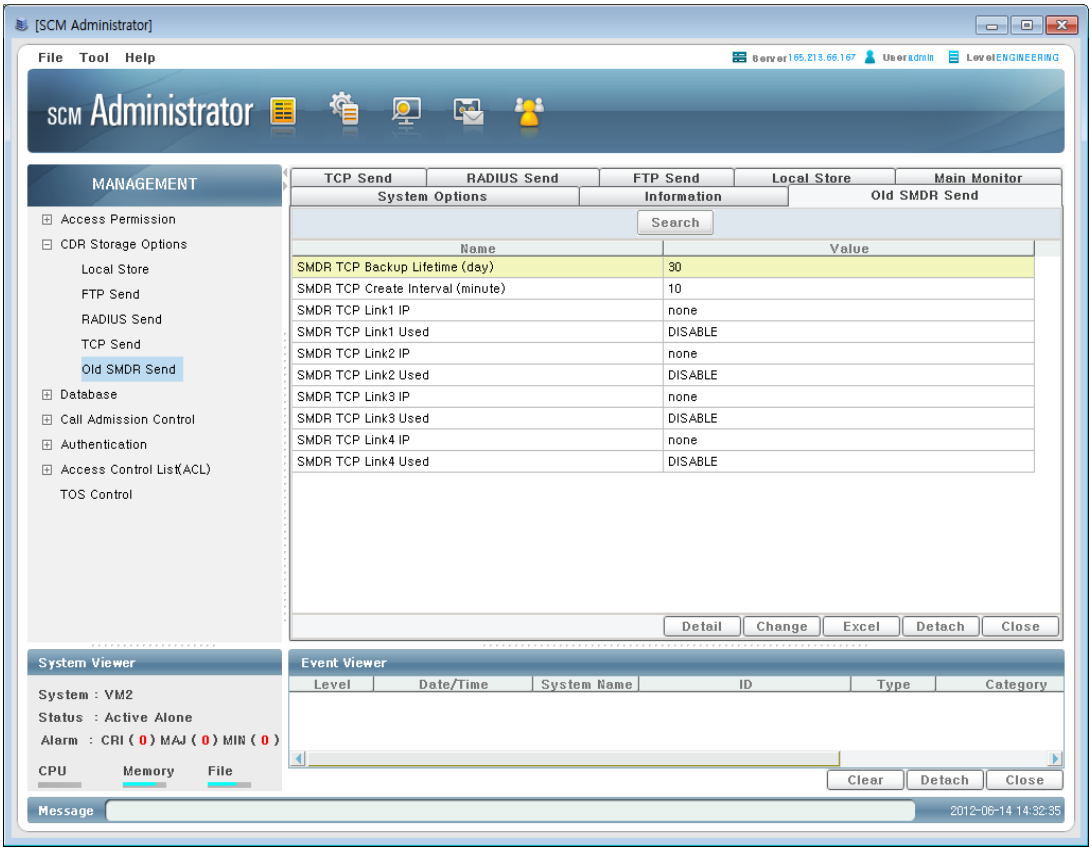


Table 1.5 CDR Storage Option-TCP (SMDR)

Attribute	Description
SMDR TCP Backup Lifetime (day)	When interoperating with the accounting system over TCP, send SMDR data and backing up CDR files in SCM, the number of days for which the backed up CDR files will be kept in SCM. At midnight everyday, the system automatically deletes any backed up CDR files which have passed the specified date.
SMDR TCP Create Interval (min)	When interoperating with the accounting system over TCP, send SMDR data and backing up CDR files in SCM, specify the interval (in minutes) at which the CDR files to be backed up are generated. New CDR files are generated at this interval. No CDR file will be generated if there is no CDR information for this period. The CDR files generated are saved in the /DI/CM/data/cdr/tcpSMDR directory.

Table 1.5 CDR Storage Option-TCP (SMDR) (Continued)

Attribute	Description
SMDR TCP Link1 IP	Specify the IP address of the first of the four TCP servers, to which the SMDR data can be transferred when interoperating with the accounting system over TCP.
SMDR TCP Link1 Used	Specify whether to transfer the SMDR data to the first of the four TCP servers, to which the SMDR data can be transferred when interoperating with the accounting system over TCP.
SMDR TCP Link2 IP	Specify the IP address of the second of the four TCP servers, to which the SMDR data can be transferred when interoperating with the accounting system over TCP.
SMDR TCP Link2 Used	Specify whether to transfer the SMDR data to the second of the four TCP servers, to which the SMDR data can be transferred when interoperating with the accounting system over TCP.
SMDR TCP Link3 IP	Specify the IP address of the third of the four TCP servers, to which the SMDR data can be transferred when interoperating with the accounting system over TCP.
SMDR TCP Link3 Used	Specify whether to transfer the SMDR data to the third of the four TCP servers, to which the SMDR data can be transferred when interoperating with the accounting system over TCP.
SMDR TCP Link4 IP	Specify the IP address of the fourth of the four TCP servers, to which the SMDR data can be transferred when interoperating with the accounting system over TCP.
SMDR TCP Link4 Used	Specify whether to transfer the SMDR data to the fourth of the four TCP servers, to which the SMDR data can be transferred when interoperating with the accounting system over TCP.

TCP_ACK

Basically same as TCP options but the CDRs are sent to the TCP_ACK CDR server via proprietary TCP protocol.
For detailed configuration for 'TCP_ACK', configure the following item [MANAGEMENT > CDR Storage Options > TCP ACK Send]

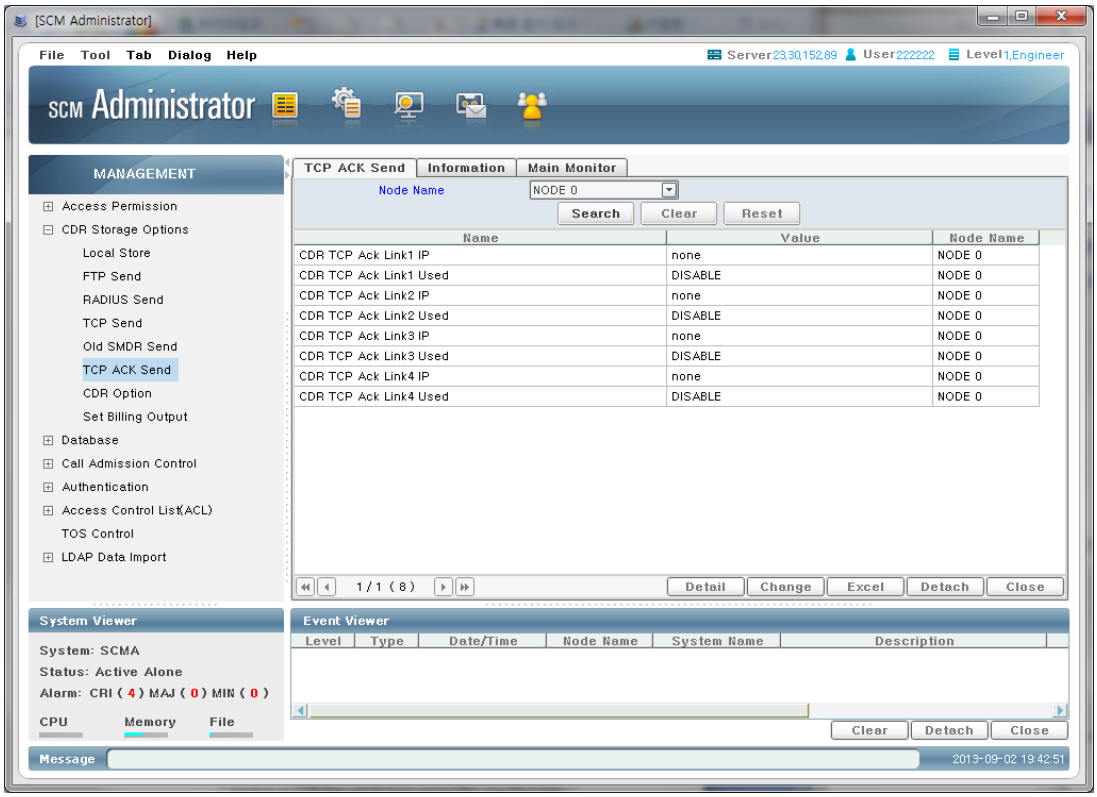


Table 1.6 CDR Storage Option-TCP (TCP_ACK)

Attribute	Description
CDR TCP Ack Link1 IP	Specify the IP address of the first of the four TCP ACK servers, to which the CDR data can be transferred when interoperating with the accounting system over TCP ACK.
CDR TCP Ack Link1 Used	Specify whether to transfer the CDR data to the first of the four TCP ACK servers, to which the CDR data can be transferred when interoperating with the accounting system over TCP ACK.
CDR TCP Ack Link2 IP	Specify the IP address of the second of the four TCP ACK servers, to which the CDR data can be transferred when interoperating with the accounting system over TCP ACK.
CDR TCP Ack Link2 Used	Specify whether to transfer the CDR data to the second of the four TCP ACK servers, to which the CDR data can be transferred when interoperating with the accounting system over TCP ACK.

Table 1.6 CDR Storage Option-TCP (TCP_ACK) (Continued)

Attribute	Description
CDR TCP Ack Link3 IP	Specify the IP address of the third of the four TCP ACK servers, to which the CDR data can be transferred when interoperating with the accounting system over TCP ACK.
CDR TCP Ack Link3 Used	Specify whether to transfer the CDR data to the third of the four TCP ACK servers, to which the CDR data can be transferred when interoperating with the accounting system over TCP ACK.
CDR TCP Ack Link4 IP	Specify the IP address of the fourth of the four TCP ACK servers, to which the CDR data can be transferred when interoperating with the accounting system over TCP ACK.
CDR TCP Ack Link4 Used	Specify whether to transfer the CDR data to the fourth of the four TCP ACK servers, to which the CDR data can be transferred when interoperating with the accounting system over TCP ACK.

1.1.2 CDR Option

You can make settings for additional options when you save the CDR data.

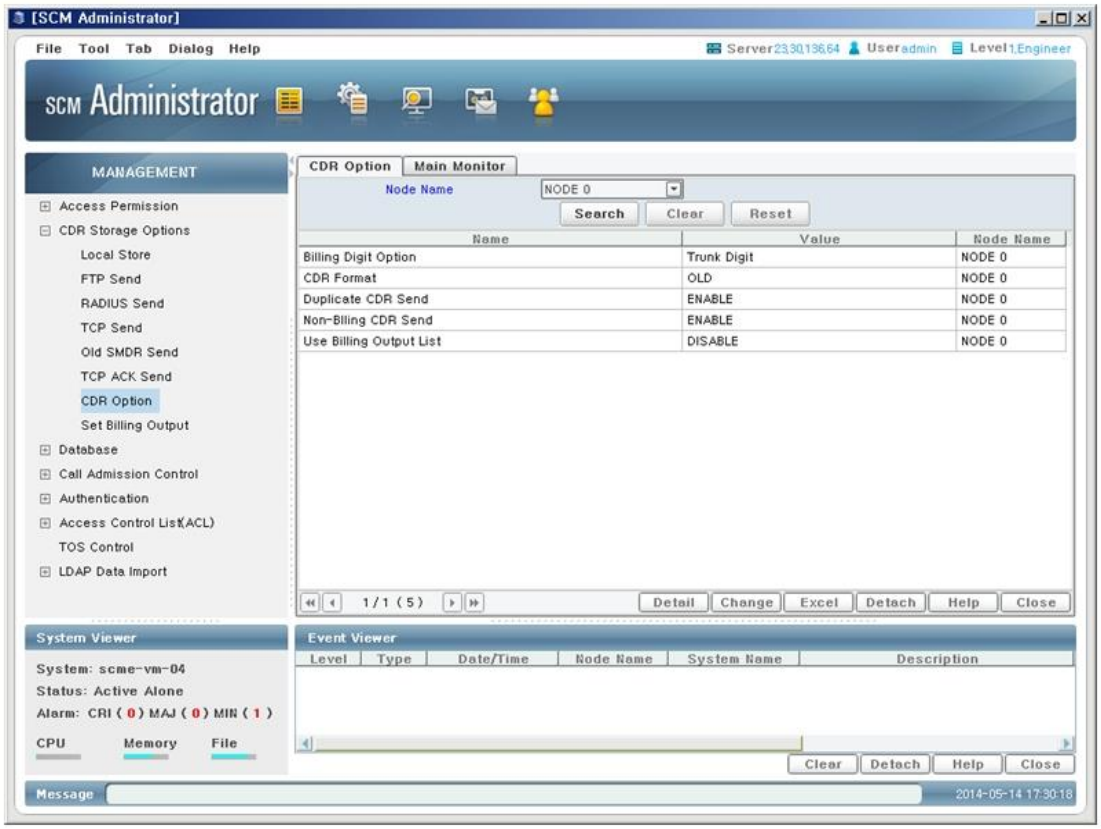


Table 1.7 CDR Storage Option-CDR Option

Attribute	Description
Billing Digit Option	Choose whether to display Trunk Digit or User Digit entered by User as a Billing Digit
CDR Format	Choose whether to use old format CDR or new format CDR . OLD/Ver2/Ver3
Duplicate CDR Send	Set whether or not to send duplicate data to the billing server at CDR data backup.
Non-Billing CDR Send	Set whether or not to send Non-Billing CDR data to the billing server.
Use Billing Output List	choose whether to generate CDR data by call type set in the ‘Sent Billing Output’ menu

1.1.3 Set Billing Output

This is a function that the CDR data is created by call types. To use this function, you should set the item whose ‘use billing output’ is ‘ENABLE ‘ in the [MANAGEMENT > CDR Storage Options > CDR Option] menu. And you should set items in this menu.

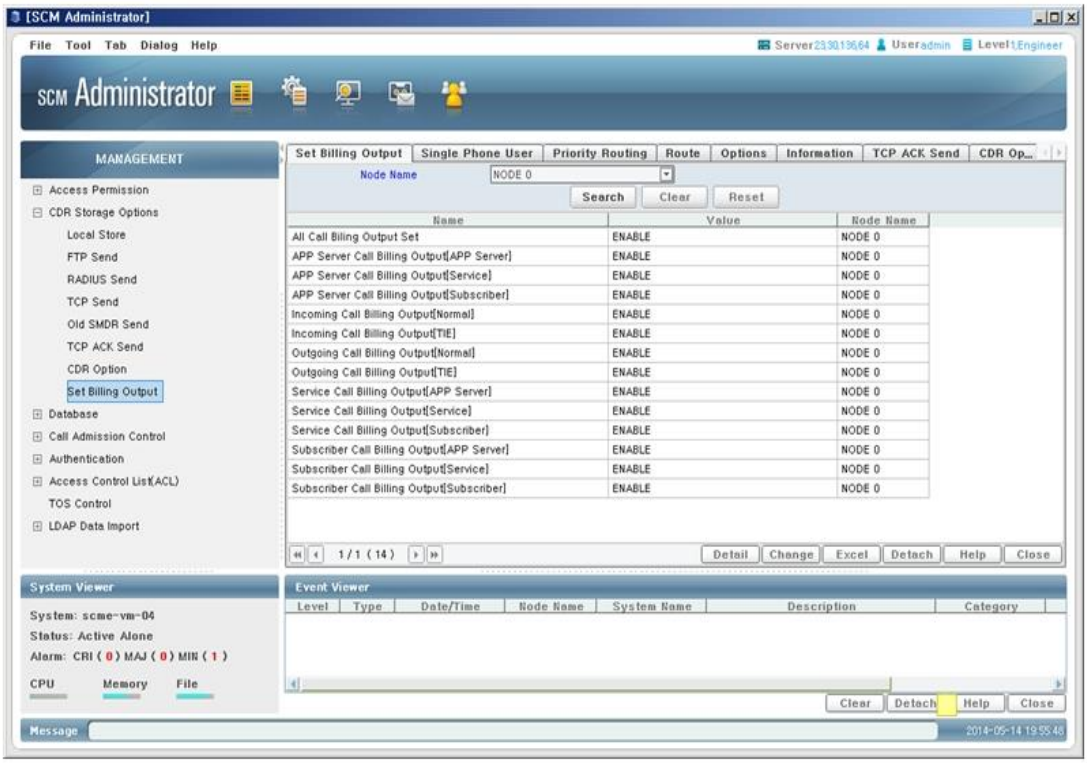


Table 1.8 CDR Storage Option-Set Billing Output

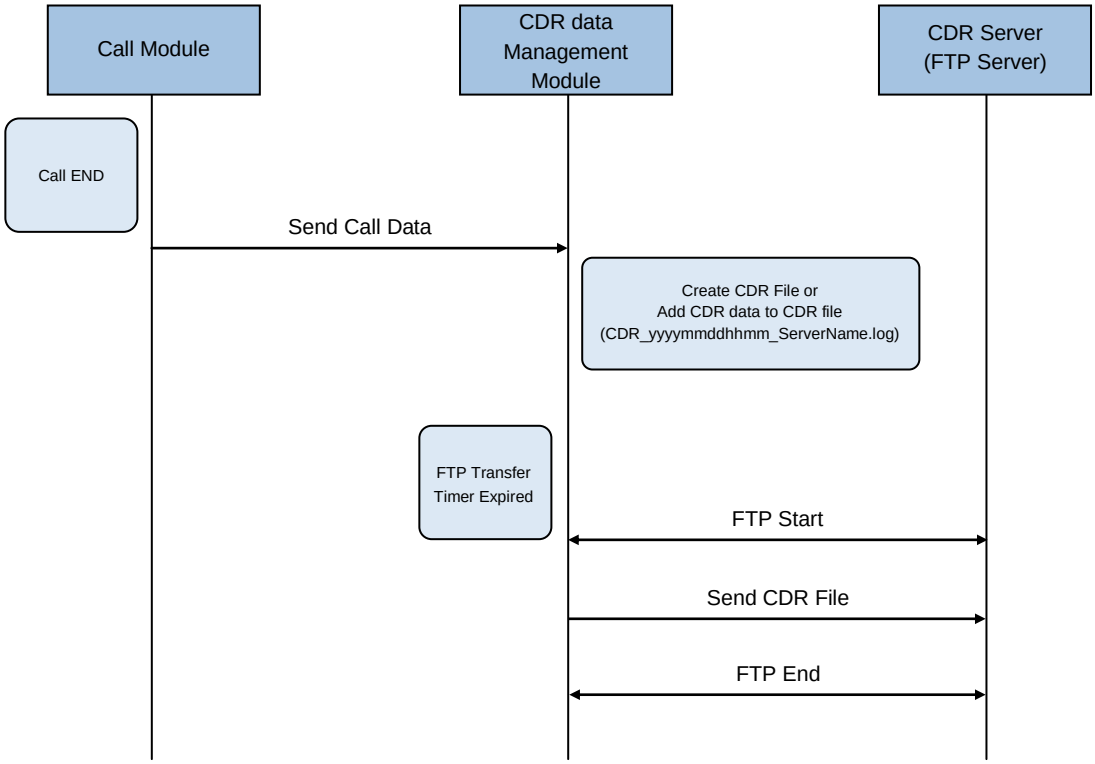
Attribute	Description
App Server Call Billing Output [App Server]	The CDR is created if Calling type(4) is application and Called Type is application(4)
App Server Call Billing Output [Service]	The CDR is created if Calling Type(4) is Application and Called Type is Service(2)
App Server Call Billing Output [Subscriber]	The CDR is created if Calling Type(4) is Application and Called Type is Subscriber(1)
All Call Billing Ouput Set	The CDR is created about all calls
Incoming Call Billing Output[Normal]	The CDR is created if the trunk is a normal type and call is a outgoing call
Incoming Call Billing Output[TIE]	The CDR is created if the trunk is a TIE type and is call is a outgoing call
Outgoing Call Billing Output[Normal]	The CDR is created if the trunk is a normal type and call is a incoming call
Outgoing Call Billing Output[TIE]	The CDR is created if the trunk is a TIE type and call is a incoming call
Service Call Billing Output[App Server]	The CDR is created if Calling Type is Service(2) and Called Type is application(4)
Service Call Billing Output[Service]	The CDR is created if Calling Type is Service(2) and Called Type is Service(2)
Service Call Billing Output[Subscriber]	The CDR is created if Calling Type is Service(2) and Called Type is Subscriber(1)
Subscriber Call Billing Output [App Server]	The CDR is created if Calling Type is Service(1) and Called Type is application(4)
Subscriber Call Billing Output [Service]	The CDR is created if Calling Type is Service(1) and Called Type is Service(2)
Subscriber Call Billing Output [Subscriber]	The CDR is created if Calling Type is Subscriber(1) and Called Type is Subscriber(1)

1.2 Network Interworking for CDRs

1.2.1 FTP Type

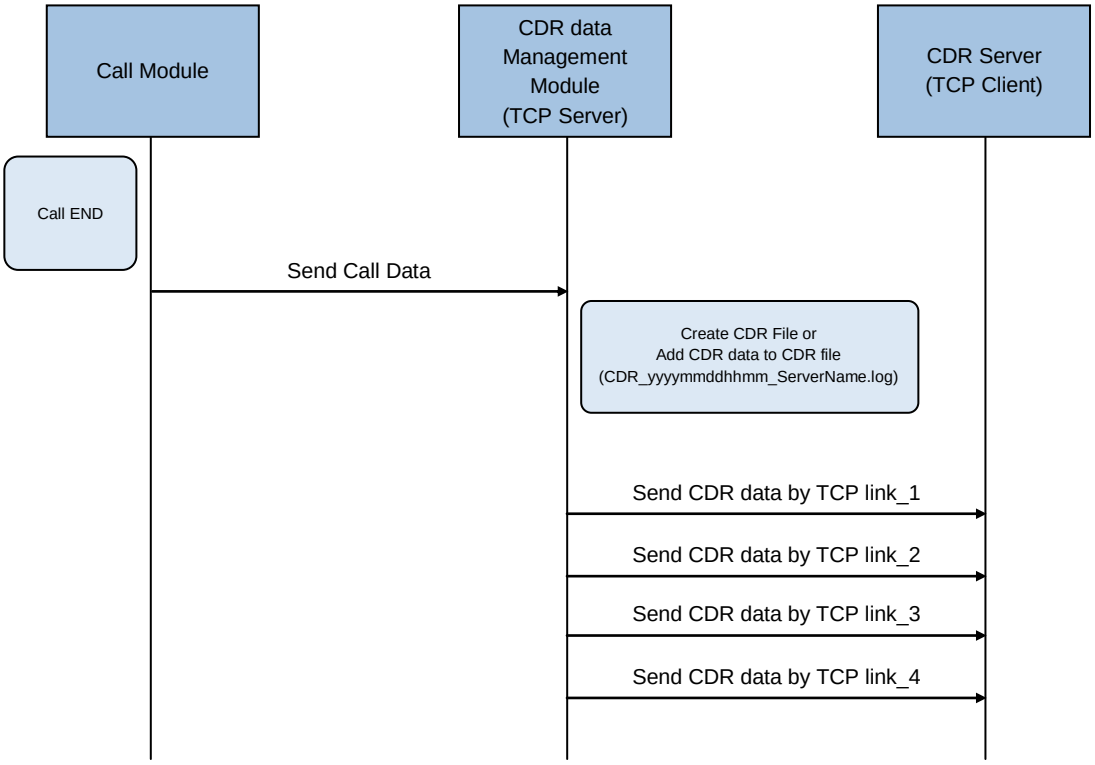
When CDR file is created, SCM send CDR file to CDR server by FTP connection periodically according to 'CDR FTP Transfer Interval'

At this time, SCM work as FTP client and CDR server work as FTP server



1.2.2 TCP Type

When CDR data is created, SCM send CDR data to CDR server by TCP connection immediately.
At this time, SCM work as TCP server and CDR server work as TCP client.
For link management SCM send heartbeat message to CDR server per 5 seconds.



TCP Port

10306

TCP Message ID

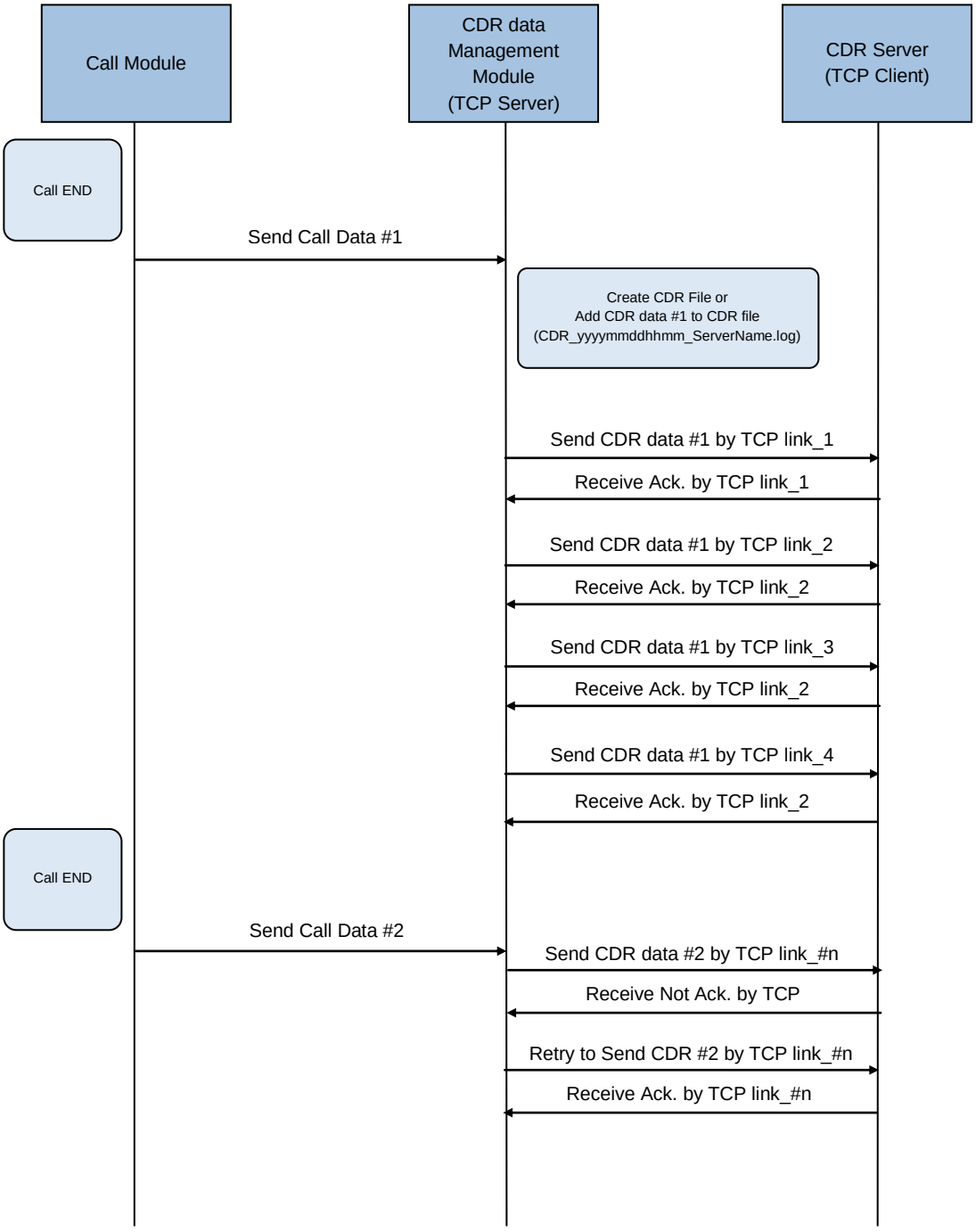
- nfCDRData (0x10000000)
  - data message includes CDR data
  - Direction: SCM → CDR server
- nfsCDRData (0x11000000)
  - response message for nfCDRDat
  - Direction: CDR server → SCM
- rqHeartbeat (0x20000000)
  - Link Alive request Message
  - Direction: SCM → CDR server
- rsHeartbeat (0x30000000)
  - Link Alive response Message
  - Direction: CDR server → SCM

TCP Message Header Format

Attribute	Type	Description
Body Length	Unsigned int (4 byte)	Body length
Message ID	Unsigned int (4 byte)	Message ID
Source ID	Unsigned int (4 byte)	Source ID (not defined)
Destination ID	Unsigned int (4 byte)	Destination ID (not defined)
Parameter 1	Unsigned int (4 byte)	Message Version (not defined)
Parameter 2	Unsigned int (4 byte)	Reservation (not defined)
BODY (CDR Data)	String	CDR data Only valid when message-id is nfCDRData Refer to ‘PART 2.CDR Data Description)

1.2.3 TCP ACK Type

When CDR data is created, SCM send CDR data to CDR server by TCP ACK con nection immediately.
At this time, SCM work as TCP ACK server and CDR server work as TCP client. For link management SCM send heartbeat message to CDR server per 5 seconds.



TCP Port

10307

TCP Message ID

- nfCDRData (0x10000000)
  - data message includes CDR data
  - Direction: SCM → TCP ACK CDR server
- rsHeartbeat (0x20000000)
  - Link Alive response Message
  - Direction: SCM → TCP ACK CDR server
- rqHeartbeat (0x30000000)
  - Link Alive request Message
  - Direction: TCP ACK CDR server → SCM
- nfAckData (0x40000000)
  - Acknowledge message for nfCDRData
  - Direction: TCP ACK CDR server → SCM
- nfNAckData (0x50000000)
  - Not Acknowledge message for nfCDRData
  - Direction: TCP ACK CDR server → SCM

TCP Message Header Format

Attribute	Type	Description
Body Length	Unsigned int (4 byte)	Body length
Message ID	Unsigned int (4 byte)	Message ID
Source ID	Unsigned int (4 byte)	Source ID (not defined)
Destination ID	Unsigned int (4 byte)	Destination ID (not defined)
Parameter 1	Unsigned int (4 byte)	Message Version (not defined)
Parameter 2	Unsigned int (4 byte)	Check Sum Value of BODY
BODY (CDR Data)	String	CDR data Only valid when message-id is nfCDRData Refer to ‘PART 2.CDR Data Description)

1.3 CDR Directory

The CDRs are created as files named CDR_yyyymmddhhmm_<server name>.log. The location of the CDRs are different according the CDR storage options. Following directory structure [figure 1.1] shows where CDR files are saved (or bac kup) in SCM's local disk

NOTE

Directory path of CDR strorage vary according to the version of SCM,
under the 3.2.X.X version: /DI/CM/data
over the 3.3.X.X version: /scm_data

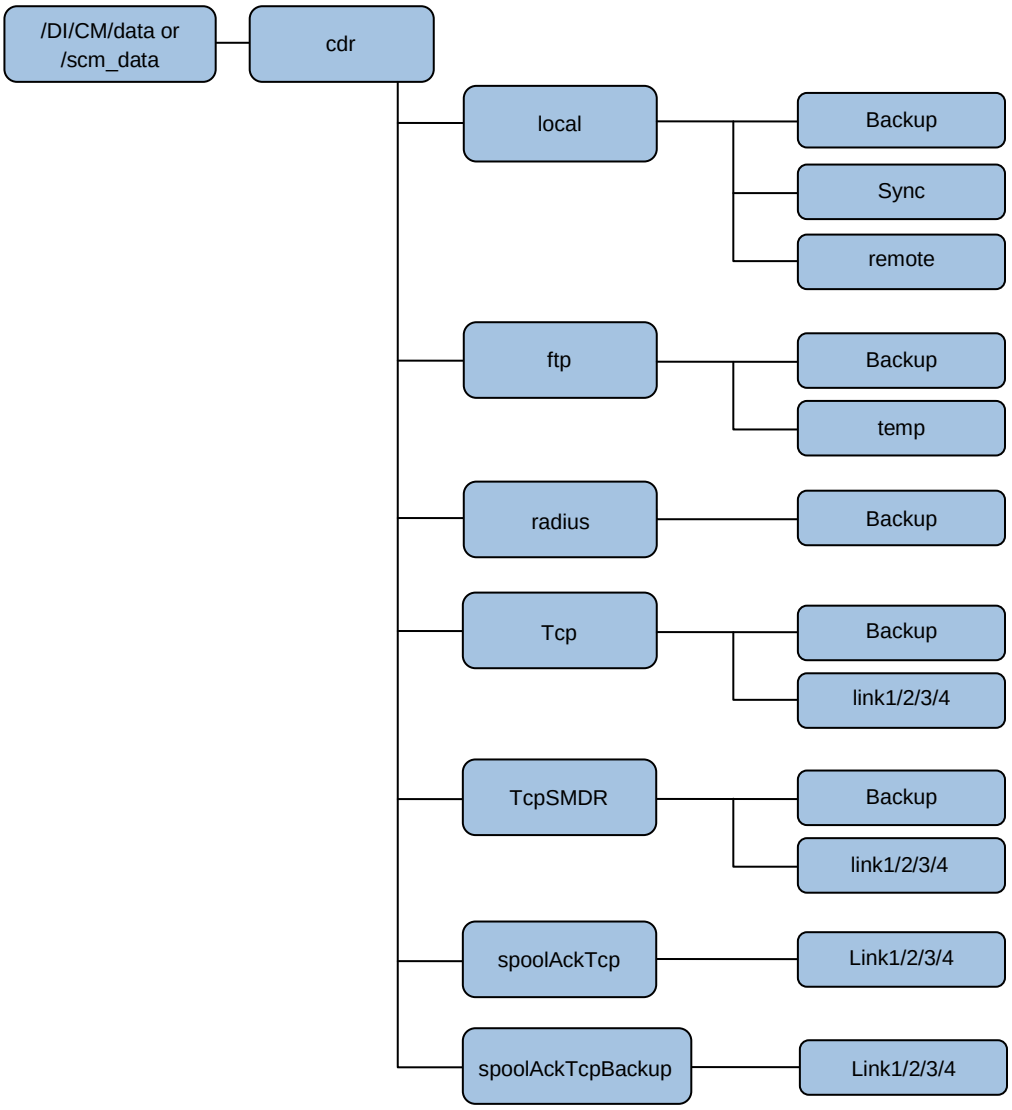


Figure 1.1 Directory structure of CDR storage

CHAPTER 2. CDR Data Description

2.1 CDR Data Format in FTP

The CDR consists of several categories. The following table is the format of the C DR data used in SCM.

Table 2.1 CDR data format

Category	No.	Parameter	Type	Limitation & Size	Description
Header	1	Sequence Number	Number	0~99999999/8 bytes	Sequence number of a call log file.
	2	Dp type	String	O/T	Call Type. O: Calling Party T: Called Party
Number	3	Calling Number	String	Special characters are allowed	Original calling number
	4	Current Calling Number	String	Special characters are allowed	Calling number of the last completed call
	5	Calling Name	String	Special characters are allowed	Calling name of the last completed call
	6	Dialed Number	String	Special characters are allowed	Original called number
	7	Connect Number	String	Special characters are allowed	Called number of the last completed call.
	8	Connect Name	String	Special characters are allowed	Called name of the last completed call.
	9	Billed Number	String	Special characters are allowed	Account code of a subscriber
Usage	10	Attempt Time	String	yyyy-mm-dd hh24:mi:ss	The time that a caller tried to make a call.
	11	Call Duration	Number	0~ 65535	Call Duration Timel (Disconnect Time-Answer Time)

Table 2.1 CDR data format (Continued)

Category	No.	Parameter	Type	Limitation & Size	Description
Usage	12	Answer Time	String	yyyy-mm-dd hh24:mi:ss	The time that a call is connected.
	13	Disconnect Time	String	yyyy-mm-dd hh24:mi:ss	The time that a call is disconnected
Calling Information	14	Calling Type	Number	0~4	Calling Party Type 0: Unknown, 1: Subscriber, 2: Service, 3: Trunk(End Point Type) 4: Application Server Type
	15	Calling IP	String	IP Address Format	Calling Party's IP Address
	16	Calling User Group	String	24 Bytes	Calling Party's User Group
	17	Incoming Route	String	24 Bytes	Incoming call's route index
Called Information	18	Called Type	Number	0~4	Called Party Type 0: Unknown, 1: Subscriber, 2: Service, 3: Trunk(End Point Type) 4: Application Server Type
	19	Called IP	String	IP Address Format	Called Party's IP Address
	20	Called User Group	String	24 Bytes	Called Party's User Group Index
	21	Outgoing Route	String	24 Bytes	Outgoing call's route index
Disconnect Reason	22	SIP Status Code	String	64 Bytes	SIP Status Code
	23	Q.850 Release Cause	String	64 Bytes	Q.850 Release Cause
	24	Internal Fail Code	Number	-	Internal Fail Code
Node Configuration (above V3.3.X.X ony)	25	System node ID	Number	0/1/255	(Above V3.3.X.X) System's Node ID 0: system Node 0 1: system Node 1 255: Not use

Table 2.1 CDR data format (Continued)

Category	No.	Parameter	Type	Limitation & Size	Description
Node Configuration (above V3.3.X.X only)	26	Inter-Node Data	Number	0/1	(Above V3.3.X.X) 0: My Node's Data 1: Peer Node's Data Peer Node's Data can be ignored.
	27	GMT offset	Number	+1200~-1100/5 byte	(Above V3.3.X.X) GMT offset Time None: Korea Ex) +0300, -0830, +0000
Route Type	28	Route Type	String	16Byte	Trunk Type Code VOIP : FF00 PSTN : 0000
Pilot Billed Number	29	Pilot Billed Number	String	/24 bytes	User Account Code
Forward Type	30	Forward Type	Number	0/1	Forward Call 0 : Non Forward Call 1: Forward Call
Route Access Code	31	Route Access Code	String	24 bytes	Route(Trunk) Access code
Calling Dev Type	32	Calling Dev Type	Number	0~7	Calling Dev Type 0 = SAMSUNG_SIP 1 = SAMSUNG_SOFT 2 = SAMSUNG_MOBILE 3 = SAMSUNG_PC_ATTCON 4 = 3RD_SIP 5 = FXS 6 = FMS
Called Dev Type	33	Called Dev Type	Number	0 ~ 7	Called Dev Type 0 = SAMSUNG_SIP 1 = SAMSUNG_SOFT 2 = SAMSUNG_MOBILE 3 = SAMSUNG_PC_ATTCON 4 = 3RD_SIP 5 = FXS 6 = FMS

Table 2.1 CDR data format (Continued)

Category	No.	Parameter	Type	Limitation & Size	Description
User Digit	34	User Digit	String	24 bytes	User Digit Number
Pick up	35	Pick up	Number	0/1	0 : Normal Call 1: Pickup Call
Smart Routing	36	Smart Routing	Number	1/2	1:internal SCM Smart Routing Call 2:inter-SCM Smart Routing Call
Transferer	37	Transferer	String	24 bytes	User Number who transfers the call
Service Type	38	Service Type	String	1~f(F)/8 bytes	Service Type which is applied to the call Refer to Details by category.
Auth Code	39	Auth Code	String	24 bytes	User authorize code
reserved	40				
reserved	41				
reserved	42				
reserved	43				
reserved	44				
reserved	45				
reserved	46				
reserved	47				
reserved	48				
reserved	49				
reserved	50				

2.1.1 Header

Sequence Number

This is the sequence number of a call log file. When generating CDRs, it is added one by one. When generating a new log file, it is reset.

DP Type

When generating CDRs, this is used to distinguish whether a call party is calling o r called.

If this is the same as ‘O’, it means calling party. And if it is ‘T’, it is called part y.

2.1.2 Number

Calling Number

Original calling party number

Current Calling Number

Calling number of the last completed call.

Calling Name

Calling name of the last completed call.

Dialed Number

Original called party number

Connect Number

Called number of the last completed call.

Connect Name

Called name of the last completed call.

Billed Number

This is an account code. It is used for tracking (billing) purpose. A caller enters th e account code during the conversation, and it shows up in the CDRs.

2.1.3 Usage

Attempt Time

This is the time that the caller tried to make a call.

Call Duration

This is Call Duration Time. It means how long a call is connected.
This is calculated by Disconnect Time minus Answer Time.

Answer Time

This is the time that a called party answers.

Disconnect Time

This is the time that a call is disconnected.

2.1.4 Calling Information

Calling Type

There are four kinds of calling types. Refer to the following tables.

Table 2.2 Calling Type

Data	Description
0	Unknown.
1	Subscriber.
2	Service
3	Trunk (End Point Type)
4	Application Server Type.

Calling IP

This is an IP address of a calling party.

Calling User Group

This is the index of user group that a calling party belongs.

Incoming Route

If a calling type is 3 (Trunk), CDRs includes the route index. It is distinguish whic h end point makes a call.

2.1.5 Called Information

Called Type

There are four kinds of called types. Refer to the following tables.

Table 2.3 Called Type

Data	Description
0	Unknown.
1	Subscriber.
2	Service
3	Trunk (End Point Type)
4	Application Server Type.

Called IP

This is an IP address of a called party.

Called User Group

This is the index of the user group that a called party belongs.

Outgoing Route

If a called type is 3 (Trunk), CDRs includes the route index. It is distinguish whic h end point is selected for outgoing.

2.1.6 Disconnect Reason

SIP Status Code

SIP Status Code (Refer to the Appendix)

Q.850 Release Cause

release cause (Refer to the Appendix)

Internal Fail Code

This code is only valid for SCM. (Refer to the Appendix)

2.1.7 Node Configuration (above V3.3.X.X only)

System node ID

In case of Active-Active mode, each server is assigned System Node ID (0 or 1). It is used to distinguish which server generates CDRs.

0: system Node 0
1: system Node 1

Inter-Node Data

If the call between nodes is completed, two CDRs are generated per server. So the CDR server receives 4 CDRs including 2 calling party and 2 called party data from each server. In this case, the CDR including peer node's data can be ignored. The CDR server can distinguish which CDR belongs to peer node through Inter-Node Data.

0: It means that this CDR belongs to my node.
1: It means that this CDR belongs to peer node. This can be ignored.

GMT offset

GMT offset Time Ex) +0300, -0830, +0000
If Timezone is not set, It is +0900 (Korea)

2.1.8 Route Type

Trunk Type Code : VoIP -> FF00, PSTN ->0000

2.1.9 Pilot Billed Number

Pilot Billed Number

2.1.10 Forward Type

Whether Forward Call or not

2.1.11 Route Access Code

Trunk Access Code for Phone call log

2.1.12 Calling Dev Type

Table 2.4 Calling Dev Type

Data	Description
0	SAMSUNG_SIP
1	SAMSUNG_SOFT
2	SAMSUNG_MOBILE
3	SAMSUNG_PC_ATTCON

4	3RD_SIP
4	FXS
4	FMS

2.1.13 Called Dev Type

Table 2.5 Called Dev Type

Data	Description
0	SAMSUNG_SIP
1	SAMSUNG_SOFT
2	SAMSUNG_MOBILE
3	SAMSUNG_PC_ATTCON
4	3RD_SIP
4	FXS
4	FMS

2.1.14 User Digit

Number that user dialed

2.1.15 Pick up

Whether Pick up call or not

2.1.16 Smart Routing

Whether Smart Routing call or not

2.1.17 Transferor

User Number who transfers the call

2.1.18 Service Type

Service Type which is applied to the call
Each service is occupied a bit position.
Service Type of 32 bit is converted to hex string with 8 digits in CDR

```
// 16~32 bit: Basic Service
CDR_PICKUP_FLAG                (0x00010000)
CDR_FORWARD_FLAG               (0x00020000)
CDR_MULTIRING_FLAG             (0x00040000)
CDR_HUNT_GROUP_CALL_FLAG       (0x00080000)
CDR_OP_GROUP_CALL_FLAG         (0x00100000)
```

```
CDR_ACD_CALL_FLAG              (0x00200000)
CDR_RECONNECT_CALL_FLAG        (0x00400000)

// 9~15 bit: FMC Serive
CDR_SMART_VCC_IN_FLAG          (0x00000100)
CDR_SMART_VCC_OUT_FLAG         (0x00000200)
CDR_MANUAL_VCC_OUT_FLAG        (0x00000800)

// 1~8 bit: Routing Service
CDR_INT_SROUTING_FLAG          (0x00000001)
CDR_EXT_SROUTING_FLAG          (0x00000002)
```

2.1.19 Auth Code

Authorize Code when user make a call using authorize code.
Authorize code can be hidden by ‘User Group CDR Option”.

2.2 Example of CDR format

The CDRs are created as files named CDR_yyyymmddhhmm_<server name>.log.
The following paragraph is the CDR format for basic call.

```
00000000/T/0315005005/0315005005/SIP5005/0315005006/0315005006/SIP5006
//2010-01-24 12:46:40/6/2010-01-24 12:46:41/2010-01-24 12:46:47/1/16
5.213.89.13/UG_1//1/10.254.168.108/UG_1//SIP_UNKNOWN/Normal
Release/0/1/0/+0900/0000/5005/0/9/0315005005/0//0/////////////////

00000001/O/0315005005/0315005005/SIP5005/0315005006/0315005006/SIP5006
//2010-01-24 12:46:40/6/2010-01-24 12:46:41/2010-01-24 12:46:47/1/16
5.213.89.13/UG_1//1/10.254.168.108/UG_1//SIP_UNKNOWN/Normal
Release/0/1/0/+0900/0000/5005/0/9/0315005005/0//0/////////////////
```

Delimiter of each field is '/'.
If there is no data on field, only delimiter is used.

SCM generate one or two lines CDR data for one Call according to configuration of SCM
Configuration is below.
[Configuration → Miscellaneous → System Options → Make CDR Call Type]

- ORIGINATE: one line is generated from caller party.
- TERMINATE: one line is generated from called party.
- BOTH: two line is generated from caller and called party.

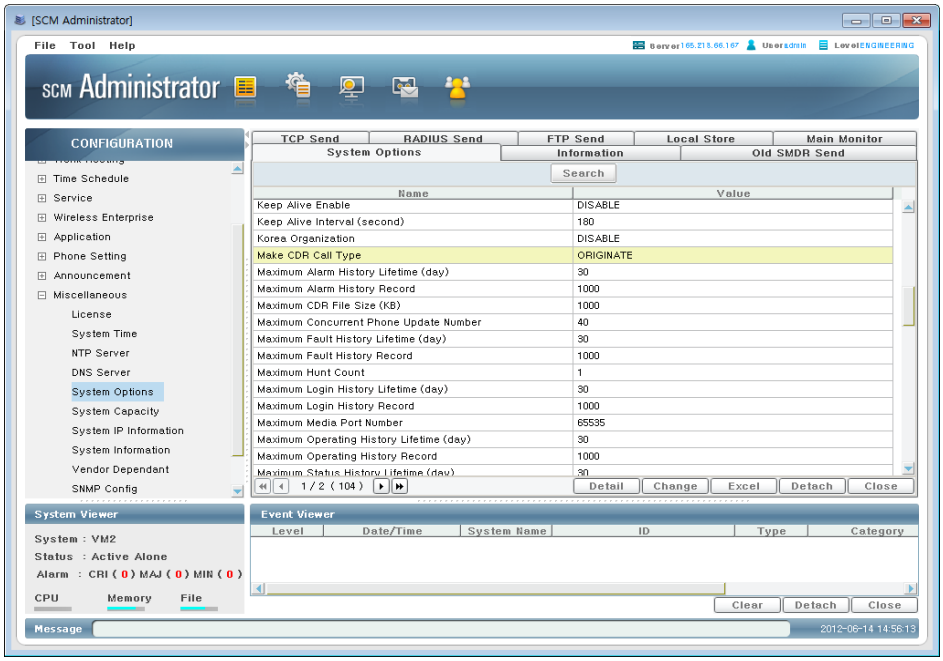


Figure 2.1 CDR Call Type

ANNEX A. SIP Status Code

A.1 SIP Status Code

SIP Status Code	Value
SIP_TRYING	100
SIP_RINGING	180
SIP_CALL_IS_BEING_FORWARDED	181
SIP_QUEUED	182
SIP_SESSION_PROGRESS	183
SIP_OK	200
SIP_ACCEPTED	202
SIP_MULTIPLE_CHOICES	300
SIP_MOVED_PERMANENTLY	301
SIP_MOVED_TEMPORARILY	302
SIP_USE_PROXY	305
SIP_ALTERNATIVE_SERVICE	380
SIP_CALL_FORWARDED	399
SIP_BAD_REQUEST	400
SIP_UNAUTHORIZED	401
SIP_PAYMENT_REQUIRED	402
SIP_FORBIDDEN	403
SIP_NOT_FOUND	404
SIP_METHOD_NOT_ALLOWED	405
SIP_NOT_ACCEPTABLE	406
SIP_PROXY_AUTHENTICATION_REQUIRED	407
SIP_REQUEST_TIMEOUT	408
SIP_GONE	410
SIP_REQUEST_ENTITY_TOO_LARGE	413
SIP_REQUEST_URI_TOO_LONG	414
SIP_UNSUPPORTED_MEDIA_TYPE	415

(Continued)

SIP Status Code	Value
SIP_UNSUPPORTED_URI_SCHEME	416
SIP_BAD_EXTENSION	420
SIP_EXTENSION_REQUIRED	421
SIP_SESSION_INTERVAL_TOO_SMALL	422
SIP_INTERVAL_TOO_BRIEF	423
SIP_TEMPORARILY_UNAVAILABLE	480
SIP_CALL_TRANSACTION_DOES_NOT_EXIST	481
SIP_LOOP_DETECTED	482
SIP_TOO_MANY_HOPS	483
SIP_ADDRESS_INCOMPLETE	484
SIP_AMBIGUOUS	485
SIP_BUSY_HERE	486
SIP_REQUEST_TERMINATED	487
SIP_NOT_ACCEPTABLE_HERE	488
SIP_BAD_EVENT	489
SIP_REQUEST_PENDING	491
SIP_UNDECIPHERABLE	493
SIP_SERVER_INTERNAL_ERROR	500
SIP_NOT_IMPLEMENTED	501
SIP_BAD_GATEWAY	502
SIP_SERVICE_UNAVAILABLE	503
SIP_SERVER_TIMEOUT	504
SIP_VERSION_NOT_SUPPORTED	505
SIP_MESSAGE_TOO_LARGE	513
SIP_BUSY_EVERYWHERE	600
SIP_DECLINE	603
SIP_DOES_NOT_EXIST_ANYWHERE	604
SIP_GLOBAL_NOT_ACCEPTABLE	606

ANNEX B. Q.850 Release Cause

B.1 Q.850 Release Cause

Q.850 Release Cause
Normal Release
Wrong Number
No Route To Transit Network
No Route To Destination
Send Special Tone
Misdialled Trunk Prefix
Preemption
Preemption Reserved Reuse
User Busy
No User Responding
No Answer From User
Subscriber Absent
Call Rejected
Number Changed
Destination Out Of Order
Invalid Number Format
Facility Rejected
Normal Or Unspecified
No Circuit Channel Available
Network Out Of Order
Temporary Failure
Switching Congestion
Access Info Discarded
Channel Not Available
Precedence Call Blocked
Resource Unavailable

(Continued)

Q.850 Release Cause
Requested Facility Not Subscribed
Outgoing Calls Barred Within CUG
Incoming Calls Barred Within CUG
Bearer Not Authorized
Bearer Not Presently Avail
Incont AccessInfo ans Subs
Service or Option Not Avail
Bearer Capability Not Implted
Requested_Facility_Not Implted
Only Restricted Digital Bearer”
Service or Option Not Implted
User_Not Memver of CUG
Incompatible Destination
Non Existent CUG
Invalid Transit Network Selection
Invalid Message Unspecified
Message Type Nonexist or not Implted”
Info Param Nonexist or Not Implted”
Recovery On Time expiry
Param Not Exist or Not Implted
Msg with Unrecognized Param
Protocol Error Unspecified
Interworking Unspecified

ANNEX C. Internal Fail Code

C.1 Internal Fail Code

Internal Fail Code	Value
FC_normal_release	0
FC_wrong_number	1000
FC_routing_fail	1001
FC_wrong_prefix	1002
FC_called_busy	1003
FC_setup_timeout	1004
FC_no_alert	1005
FC_no_answer	1006
FC_calling_barring	1007
FC_called_barring	1008
FC_dial_limit_over	1009
FC_auth_fail	1010
FC_auth_timeout	1011
FC_svc_rel_call_dnd	1012
FC_svc_rel_call_abs	1013
FC_svc_rel_call	1014
FC_svc_act_fail	1015
FC_svc_dact_fail	1016
FC_svc_relation_fail	1017
FC_svc_deny	1018
FC_svc_park_fail	1019
FC_svc_normal	1020
FC_subs_out_of_order	1021
FC_endp_not_reg	1022
FC_incomplete_number	1023
FC_invalid_digit	1024

(Continued)

Internal Fail Code	Value
FC_cld_not_reg	1025
FC_location_cac_barring	1026
FC_chan_nego_fail	1027
FC_no_circuit_available	1028
FC_media_type_mismatch	1029
FC_resource_unavailable	1030
FC_outgoing_calls_barred_within_cug	1031
FC_incoming_calls_barred_within_cug	1032
FC_service_or_option_not_avail	1033
FC_requested_facility_not_implted	1034
FC_empty_tcs_fail	1035
FC_request_mode_fail	1036
FC_invalid_message_unspecified	1037
FC_server_error	1038
FC_interworking_unspecified	1039
FC_svc_hunt_fail	1040
FC_oam_rel_call	1041
FC_clg_abandon	1042
FC_overload_st	1043
FC_call_act_fail	1044
FC_call_update_fail	1045
FC_patch_temp_fail	1046
FC_req_term_fail	1047
FC_session_timer_expired	1048
FC_session_interval_too_small	1049

ABBREVIATION

C

CDR	Call Detail Record

D

DP	Detection Point

F

FTP	File Transfer Protocol

G

GMT	Greenwich Mean Time

I

IP	Internet Protocol

R

RADIUS	Remote Access Dial-in User Service

S

SMDR	Station Message Detail Record

T

TCP	Transmission Control Protocol

SCM Express

CDR Interoperability Guide