

OVERVIEW

This feature outputs the records of outgoing and incoming trunk calls (SMDR records) to an external device.

Note: This feature is not supported in VIPedge at this time.

SMDR records provide basic information such as the station prime DN that uses the trunk, the CGN number to identify each trunk group, the duration and end time, as well as dynamic information such as the account code and the dialed digits. The station prime DN is the party who talks on the trunk. On the other hand, in case of outgoing call as the result of Call Forward or Ring Transfer, the transferring party does not use the trunk, however, the transferring party is responsible for the outgoing call. These parties are shown on the AUXID1 field.

When a trunk outgoing/incoming call, a conference call containing a trunk as a conference member, or a trunk-to-trunk call originates and connects, this feature outputs the SMDR records when the call finishes or the party using the trunk changes. A station-to-station call is not included in SMDR records. An incoming or outgoing call, that is abandoned halfway can also be outputted by setting the programming.

Types of SMDR Records

The SMDR records contain the record type on the first column of the first line, where by the field contents can be interpreted and the trunk user can be replaced. The record type is as follows.

Record Type	Notes
B (aBandoned)	When a call is abandoned.
N (Normal)	Simple outgoing or Incoming call.
S (Start)	When a call is modified by certain features. Call Transfer, Conference, etc
X (Transfer)	When a call is transferred more than two times.
E (End)	This record is associated with specific S or X records, and indicates termination of a call.
I (Initial)	When the system is initialized.
T (Time)	When the system time or date is changed.
A (Authorization)	When entering an Account code results in change of Class of service.
C (Charge Account)	Account code
M (Charge Conference)	Account code during conference.

Emergency Call to Outside

For a call handled as an emergency call (defined in the specification Enhanced 911), the SMDR records are outputted when seizing a trunk

	and at the end of call. The start and end of a call are recorded as an SMDR record regardless of whether the emergency call connects or not.
	CESID (for details refer to Enhanced 911) of the party is shown on the SMDR Record.
Output Control	The Programming contents control the output.
Account Code	The account code is indicated by the record type C, M or A: <ul style="list-style-type: none"> • C record - used for the input from the usual 2-party talking state • M record - used for the input during a conference • A record - will be described below
Authorization Code	When the input account code is verified and the verification is successful, the input account code becomes the authorization code and is discriminated from other ordinary account codes (A record).
Action Taken for Buffer Overflowing	<p>The SMDR records contain a buffer in the IPedge server. If the power for the external device is temporarily off, the system detects it and stores the records. The stored records are sequentially swept out by the restoration of communication with the external device.</p> <p>When the buffer overflows, the latest (newest) stored record is discarded first and the other records stored in the buffer are saved.</p>
Time Change	When the time is changed by an administration command, the output "call duration" is kept. This is the same time as when the actual call is recorded.
CLID (Calling Line Identification)	When CLID received from a line is indicated, the feature defined in the CLI Numbering plan is applied.
SMDR for Abandoned Call	<p>SMDR for an abandoned call is a function that outputs the ringing duration record (from starting termination to answering the call, or stopping the termination because the originator abandoned) to an SMDR record, when an incoming trunk call occurs.</p> <p>The output of ringing duration record for an incoming trunk call depends on a system program.</p> <p>The ringing duration record is outputted to 64 -68 column of the 2nd line by XX:YY (XX: minutes, YY: seconds) in N, B and S record. It is outputted when the call is cleared, abandoned, transferred, or starts the conference.</p> <p>See table below for Existence of a Ringing Duration output.</p>

Existence of a Ringing Duration output		
Record Type	Notes	Output
B (aBandoned)	When a call is abandoned.	Yes
N (Normal)	Simple outgoing or incoming call.	Yes
S (Start)	When a call is modified by a certain feature. Call Transfer, Conference, etc.	Yes
X (transfer)	When a call is transferred more than two times.	No
E (End)	This record is associated with specific S or X records, and indicates termination of a call.	No
I (Initial)	When system is initialized.	No
T (Time)	When the system time or date is changed.	No
A (Authorization)	When the input ACC is verified and the result is successful, the ACC is shown as an "A" record.	No
C (Charge Account)	Account code	No
M (Charge Conference)	Account code during conference.	No

Examples of SMDR for abandoned call records are shown below.

Incoming Call: Terminating Station Answers


1. Incoming from ILG3, CGN16 (SIP trunk), DN1234 rings.
2. There is CLID (098-765-4321).
3. DN1234 rings for 15 seconds prior to answering.
4. After talking (DN1234 and outside party 8 minutes and 15 seconds) the call terminates.

-> N Record outputs

Node 10

```

1      2      3      4      5      6      7      8
1234567890123456789012345678901234567890123456789012345678901234567890123456789012345
N 001      T003016 DN1234 06/28 12:08:30 00:08:15.0
&098765432100000000                                00:15
    
```

Ringing Duration 

Ringing Duration field is column 64 ~ 68 on line 2.

Terminating station does not answer

1. Incoming from ILG3, CGN16 (SIP trunk), DN1234 rings.
2. There is CLID (098-765-4321).
3. DN1234 rings for 15 seconds prior to disconnecting.

-> B Record outputs

```

      1           2           3           4           5           6           7           8
123456789012345678901234567890123456789012345678901234567890123456789012345
B 001          T03016 DN1234 06/28 12:00:15
&0987654321XXXXXXXXX                                00:15
                                                    Ringing Duration/
  
```

B. Record outputs when incoming call abandoned.

Ringing Duration field is column 64-68 on line 2.

Call Transfer of Incoming
Call

1. Incoming from ILG2, CO6, DN 1234 rings.
2. There are MFCCNI (111-222-3344)
3. DN1234 rings for 20 seconds prior to answering.
4. After talking DN1234 and the outside party 2 minutes 30 seconds, DN1234 transfers the call to DN5678.
5. DN5678 rings for 30 seconds prior to answering.
6. After talking DN1234 and DN5678 45 seconds, DN1234 disconnects.

-> S Record outputs

7. After talking DN5678 and the outside party 3 minutes 45 seconds, the call terminates.

-> E Record outputs

```

      1           2           3           4           5           6           7           8
123456789012345678901234567890123456789012345678901234567890123456789012345
S 001          T002006 06/20 12:07:50 00:00:45.0
&1112223344XXXXXXXXX                                00:20
                                                    Ringing Duration/
E 002 DN5670 T00200606/20 12:07:50 00:00:45.0
&
  
```

S and E Records are output when the call transfer occurs.

The Ringing Duration of S record is field 64-68 on line 2).

The Ringing Duration of E record is always blank.

B Channel Information When a user makes a trunk call by SIP trunk, 3 digits of the seized B channel numbers (001-440) go to the SMDR record. However, the "B channel number" is from an internal number where IPedge treats the SIP trunk as an ISDN trunk because of its architecture. The relationship between the URI used and the B channel number changes dynamically.

SMDR Record Format

Line	Column	Field Name	Format	Notes
1	1 (1)	Record type	"N" / "S" / "X" / "E" / "B" / "I" / "T" / "A" / "C" / "M"	
	2 (1)	Space		
	3~5 (3)	Record Number	XXX	XXX = 0~127
	6 (1)	Space		
	7~12 (6)	Node ID	XXXXXX	XXXXXX = 0 ~ 999999 (Left positioned and padding by space)
	13 (1)	Space		
	14~23 (10)	Originate Party ID	"DN" PDN "CF" Conf. No. "T" OLG+CGN+CHN "T" ILG+CGN+CHN "A" OLG+CGN+CHN: "A" ILG+CGN+CHN	PDN (3) Conf No (3) T=Answered Supervised A=Answer Unsupervised CGN: Channel Group Number (3) CHN: Channel Number (3) (Left positioned and padding by space)
	24 (1)	Space		
	25~34 (10)	Terminate Party ID	Same as Originate	Same as Originate
	35 (1)	Space		
	36~49(1 4)	Time stamp	MO/DD HH:MI:SS MO = Month (01 - 12) DD = Day (00 - 31) HH: Hour (00 - 23) MI = Minute (00 - 59) SS = Second (00 - 59)	N/E Record: End of call S Record: Start of call, if 911; time trunk is seized X Record: Completion of transfer B Record: Abandoned Call I Record: System initialized T Record: Original/New system time A/C/M Record: Account Code Input
	50 (1)	Space		
	51~60 (10)	Call Duration	HH:MI:SS HH: Hour (00 - 23) MI = Minute (00 - 59) SS = Second (00 - 59)	
	61 (1)	Space		
62~93 (32)	Dial Number	XXXXX - - - XXXX	Dialed digits and Account codes Left positioned and padding by space	

(Sheet 1 of 2)

Line	Column	Field Name	Format	Notes
2	1 (1)	Space		
	2 (1)	Second line ID	"&"	
	3~19 (17)	Caller ID / CESID	XXX	XXX Caller ID (Left positioned and padding by space) "C" + XX. . . .X indicates emergency call originator's CESID
	20 (1)	Space		
	21~24 (4)	DISA	XXXX	Not used
	25 (1)	Space		
	26~38 (13)	ANI	XXX. . . .XXX	Area Code: 000~999 Exchange Code: 000~999 Extended Exchange Code: 0000~9999
	39 (1)	Space		
	40~46 (7)	DNIS	DNIS XXXXXXXX	0000000~9999999 (Left positioned and padding by space)
	47 (1)	Space		
	48~54 (7)	AUXID 1	"DN" + XXXXXXXX	Responsibility for outgoing call by Call Forwarding or Transfer (Left positioned and padding by space)
	55 (1)	Space		
	56~62 (7)	AUXID2	NN+XXXXX NN=Node No. (00~99) XXXXX=PDN	(Left positioned and padding by space)
	63 (1)	Space		
	64~68 (5)	Ringing Time	MI:SS	MI = Minutes (00~99) SS = Seconds (00~59)
	69 (1)	Space		
	70~84 (15)	Multi-Node Call ID	ZXXXXXXXXYYYYYY	Z: Direction (S/D/L) S = Source Node D = Destination Node L = Single Node X....X = Node ID Y = Called Number (8 Digits)
(Sheet 2 of 2)				

Variety of Call Examples

1. Outgoing and incoming call in single node system.
 - Outgoing call
2. DN1234 in node 10 dials "123-456-7890," then the call originates from SIP trunk (OLG-10, Channel Group-001, Channel Number-005).
3. The far end party answers the terminating call after the call rings for 20 seconds.
4. The far end party hangs up the call after talking for 10 minutes and 30 seconds.
 - > SMDR generates N record.

```

      1           2           3           4           5           6           7           8
1234567890123456789012345678901234567890123456789012345678901234567890123456789012345
N C01 10      DN1234 T010001005 04/07 12:10:50 00:10:30.0 1234567890
&
                                     L00000A00000001
                                     ^         ^
                                     "L" = system is single node
                                     In multi-node Call ID shows "A"

```

- Incoming call
1. Incoming call comes in from SIP trunk (ILG-010, Channel Group-001, Channel Number-100) and it rings the terminal at DN 1234.
 - The incoming call has caller id "098-765-4321."
 2. DN 1234 answers the call after the call rings 15 seconds.
 3. DN 1234 hangs up the call after talking for 8 minutes and 15 seconds.
 - > SMDR generates N record.

```

      1           2           3           4           5           6           7           8
1234567890123456789012345678901234567890123456789012345678901234567890123456789012345
N 001 10      T010001100 DN1234 06/26 12:08:30 00:08:15.0
&0987654321XXXXXXX                                     00:15 L00000A00000002

```

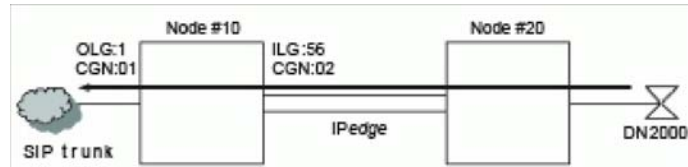
Abandoned call

1. An incoming call comes in from a SIP trunk (ILG-010, Channel Group-001, Channel Number-100) and it rings the terminal at DN 1234.
 - The incoming call has caller id "098-765-4321."
2. The originator (the far-end party) hangs up the call after the call rings for 15 seconds.
 - > SMDR generates B record.


```

1          2          3          4          5          6          7          8
1234567890123456789012345678901234567890123456789012345678901234567890123456789012345
B 001 10      T010001100 DN1234 06/28 12:00:15
&0987654321XXXXXX                                00:15 L00000A00000003
    
```

1. Outgoing and incoming calls in a multiple node system.
 - Outgoing call to SIP trunk across IPedge.



2. The DN 2000 station in node 20 dials "10" trunk access code and "111-222-3344."
 3. The call goes to SIP trunk with OLG-01, Channel Group-01 in node 10 across IPedge.
 4. The far-end party answers after the call rings for 15 seconds.
 5. Station DN 2000 hangs up after talking for 3 minutes and 30 seconds.
- > In node 10, SMDR generates N record.

Node 10

```

1          2          3          4          5          6          7          8
1234567890123456789012345678901234567890123456789012345678901234567890123456789012345
N 001 10      T05606001 T001001005 04/07 12:03:45 00:03:30.0 1112223344
&                                                    202000 00:15 D00001400000001
    
```

D = Destination node

-> In node 20, SMDR generates N record.

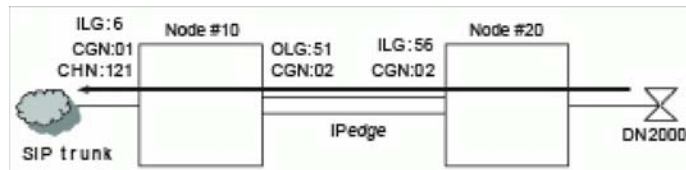
Node 20

```

1          2          3          4          5          6          7          8
1234567890123456789012345678901234567890123456789012345678901234567890123456789012345
N 001 10      T06606001 T001001005 04/07 12:03:45 00:03:30.0 1112223344
&                                                    S00001400000001
    
```

S = Origination node

1. Outgoing and incoming calls in a multiple node system.
 - Incoming call from SIP trunk across IPedge.



2. An Incoming call comes in from SIP trunk (ILG-6, Channel Group-01, Channel Number-121) in Node 10, and it rings the terminal at DN 2000 in node 20 across IPedge. (The incoming call has DID number "2000" and caller ID "123-456-7890".)
 3. DN 2000 answers the call after the call rings for 15 seconds.
 4. DN 2000 hangs up after talking for 3 minutes and 30 seconds.
- > In node 10, SMDR generates N record.

Node 10

```

1      2      3      4      5      6      7      8
1234567890123456789012345678901234567890123456789012345678901234567890123456789012345
N 001 10      T006001121 T051002110 03/14 12:03:45 00:03:30.0 22000
&1234567890XXXXXXX                                202000 00:15 S00000A00000004
    
```

S = Originate node

-> In node 20, SMDR generates N record

Node 20

```

1      2      3      4      5      6      7      8
1234567890123456789012345678901234567890123456789012345678901234567890123456789012345
N 001 20      T056002150 DN2000 03/14 12:03:45 00:03:30.0
&1234567890XXXXXXX                                00:15      D00000A00000004
    
```

D = Destination node

Centralized SMDR Account code

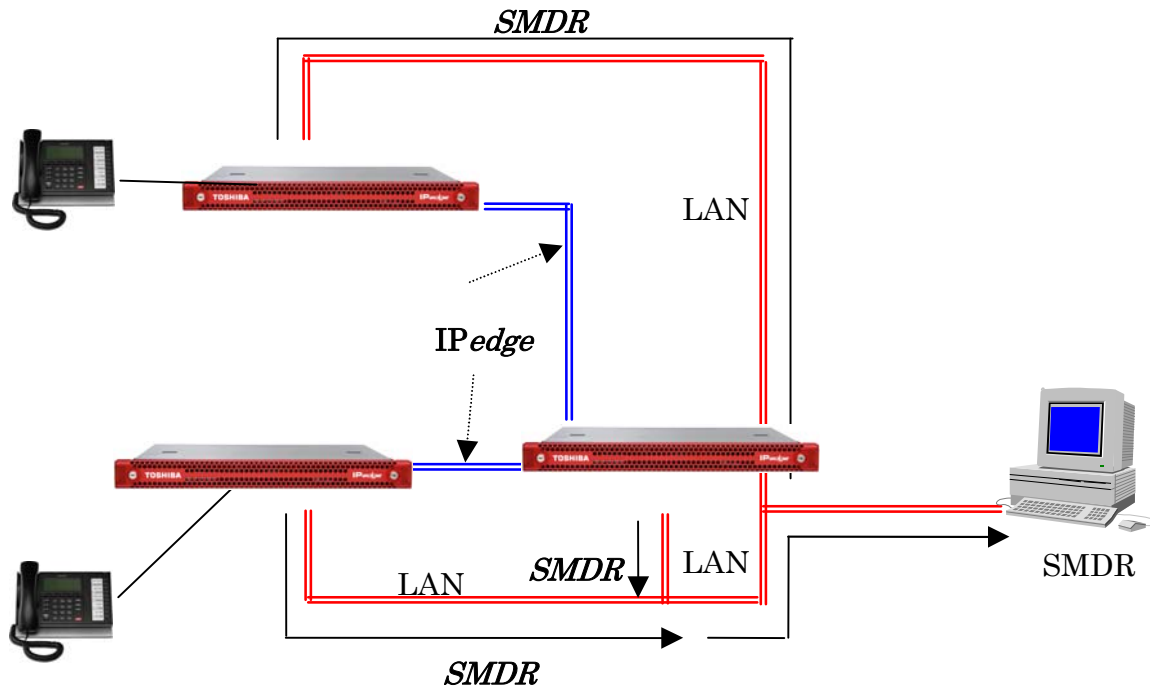
1. If a forced account code is requested at the remote node while making an outgoing call through the remote gateway, the remote node collects the account code and outputs the account code record to the SMDR. The local node and the transit nodes will not generate the account code record.
2. If a forced account code is requested at the local node or if a voluntary account code is entered on making an outgoing call through the remote gateway, the local node collects the account code and outputs the account code record to the SMDR. The remote node and the transit nodes will not generate the account code record.

Network SMDR Network SMDR can use the LAN port of the IPedge server and can make the SMDR record of each node output to the SMDR device connected to LAN.

It is not necessary to connect an SMDR device to each node, and it becomes possible to total the SMDR record of each node with the one SMDR device. In order to treat the calls of multiple nodes, VM-Callid (Global Call Number) (15-digit hexadecimal character) is outputted to 70 - 84 column of the 2nd line by ZXXXXXXYYYYYYYY (Z: Direction (S: Originate Node D: Destination Node L: Single Node) X: Node Id (6-digit hexadecimal character), Y: Call Number (8-digit hexadecimal character)). The existence of the output of VM-Callid (Global Call Number) depends on system programming.

Regardless of the existence of the output of VM-Callid (Global Call Number), the output of the SMDR record from a LAN port is possible.

Connection example



Existence of Centralized SMDR output		
Record Type	Notes	Output
B (aBandoned)	When a call is abandoned.	Yes
N (Normal)	Simple outgoing or incoming call.	Yes
S (Start)	When a call is modified by a certain feature. Call Transfer, Conference, etc.	Yes
X (transfer)	When a call is transferred more than two times.	Yes
E (End)	This record is associated with specific S or X records, and Indicates termination of a call.	Yes
I (Initial)	When system is initialized.	No
T (Time)	When the system time or date is changed.	No
A (Authorization)	When the input ACC is verified and the result is successful, the ACC is shown as "A" record.	Yes
C (Charge Account)	Account code	Yes
M (Charge Conference)	Account code during conference.	Yes

About VM-Callid (Global Call Number)

1. VM-Callid (Global Call Number) contains 6 digits of the Node ID and 8 digits of the Call Number. The node where the call is created generates both the Node ID and the Call Number.
2. The Node ID is set by Programming 656. The Call Number is set from the integers from 0x00000000 to 0xffffffff, incrementing and using cyclically.
3. All records to be output for the trunks store the Call Number in hexadecimal.

All transferring records are output if trunks are output in plural records by the transferring record.

4. The same VM-Callid (Global Call Number) is used if the one call uses plural trunks because VM-Callid (Global Call Number) is managed by each call.
5. The Direction Field is set ahead of VM-Callid (Global Call Number) and distinguishes the originating node to the destination node. The originating node sets "S" and the destination node sets "D" ahead of VM-Callid (Global Call Number). "L" is set ahead of VM-Callid (Global Call Number) if the system is running as a single node or the private line isn't established by IPedge.

**Station Message Detail
Recording (SMDR)**

For each incoming, outgoing or tandem call, the IPedge system can generate a record that includes details of the call, including the originating station or trunk, the start time of the call, its duration, authorization codes, etc. If a station user dials "911," the IPedge system will also generate a record at the beginning of the call as part of its internal notification that an emergency call is in progress. SMDR requires a connected Call Accounting system connected by TCP.

**Station Message Detail
Recording (SMDR)**

N/A

PROGRAMMING

Set the IP address of the SMDR application client:

- | | |
|--------------------------------------|---|
| I/O Client | <ol style="list-style-type: none">1. Click on System > System Data.2. Select the Server.3. Select the Server from the drop-down.4. Select SMDR in the Local Device No. field.5. LAN Port Index No.6. Data Flow7. Client IP: Enter the IP address of the SMDR client system.8. Protocol9. Application type: Select Client10. Server Port No. Enter a port number that is not used for anything else on the network.11. Client Port No. For single node systems or multiple node systems with centralized SMDR enter a port number that is not used for anything else on the network. Typically port 7100.
For multiple node systems with more than one SMDR client enter the port number for the client this server is using.12. Read Retry No.: Typically leave at default.13. Write Retry No.: Typically leave at default.14. CallerName Set To CSTA: Select No.15. Click on Save icon. |
| System Timer | <ol style="list-style-type: none">1. Click on System > System Timer.2. Select the Server from the dropdown.3. Assign the SMDR Valid Call Timer value (1-180 seconds).4. Click on Save icon or select Apply To to assign the parameter to multiple servers. |
| Assign SMDR for System Wide Settings | <ol style="list-style-type: none">1. Click on System > SMDR.2. Select the Server that will send SMDR information.3. Enable or Disable options as required.4. Click on Save icon. |
| Assign SMDR for an ILG | <ol style="list-style-type: none">1. Click on System > SMDR.2. Select the Server that will send SMDR information.3. Select the ILG tab Enable or Disable options as required.4. Left Click on the ILG to be programmed.5. Enable or Disable options as required.6. Click on Save icon. |
| Assign SMDR for an OLG | <ol style="list-style-type: none">1. Click on System > SMDR. |

2. Select the Server that will send SMDR information.
3. Select the OLG tab.
4. Left-Click on the OLG to be programmed.
5. Enable or Disable options as required.
6. Click on **Save** icon.

Assign an I/O device for SMDR

1. Click on **System > I/O Device**.
2. Select the Server that will send SMDR information.
3. Select Logical Device No: SMDR.
4. Select a LAN Port Index Number.
5. Set Data Flow to Asynchronization.
6. Set protocol to TCP.
7. Set Client IP to the IP address of the device which is to receive SMDR records.
8. Set Application Type to Client.
9. Leave Server port as 0.
10. Set the Client Port to the TCP port to match the port of the SMDR receiver.
11. Leave Read and Write Retry as 1.
12. Leave Caller Name Set for CSTA (No. SMDR is not a CSTA device).
13. Click on **Save** icon.

Assign SMDR for Abandoned Calls

1. Click on **System > SMDR**.
2. Select the Server that will send SMDR information.
3. Enable or Disable SMDR Record For Abandoned Call. Default is Disabled.
4. Click on **Save** icon.

CAPACITY

The maximum number for storing SMDR buffer is 3000.

The SMDR output port per each node is 1.

AVAILABILITY

All IPedge servers.

RESTRICTION

1. The SMDR record buffer is cleared at power off or system restart.
2. Action taken for Buffer Overflow.
 - The SMDR records contain a buffer in the IPedge server. In case an external device temporary power is detected, the system stores the records. The stored records are sequentially swept out and communication with the external device is restored. When the buffer overflows, the latest (newest) stored record is discarded first and the other records stored in the buffer are saved.
3. The SMDR device must recognize that the calls of each node are the same call from the same VM-Callid (Global Call Number).
4. The VM-Callid (Global Call Number) is cleared on the power off or the system restart.
5. The SMDR Record time is generated by the node and isn't converted to the time zone where the SMDR device is connected.
6. The output node time is outputted to the SMDR equipment.
7. The VM-Callid (Global Call Number) is taken over to remote nodes only when IPedge is used.
8. At the transit node, the connection mode is a tie-to-tie connection, and is unnecessary information from the SMDR viewpoint. So the SMDR records are not output from the transit node.
9. The direction Field shows "L" when the private network is not IPedge.

HARDWARE

No additional hardware is necessary for this feature.

FEATURE INTERACTION

Account Codes	See SMDR output examples for the details on account codes output. Depending on the SMDR specifications, account codes may or may not be output.
Basic Survivability	There is no assurance an SMDR message will be sent correctly if IPT detects link down during talking.
Call Pickup	Using call pick up to answer the call is treated by SMDR the same as the original call.
Call Transfer Immediate/Call Transfer With Camp On/Call Transfer/Ring Transfer	The transferring party DN is output as the supplemental information.
Calling Number Identification	The Number Delivery caller number is used for the SMDR caller number when the call terminates from the public network.
Conferencing	SMDR records the call information if the conference call includes public trunks.
Enhanced 911 (E911 Interface)	<p>An SMDR record of an E911 call is output regardless of any programmed output control.</p> <p>This provides SMDR with the station information such as the originator's name and other information (CESID) when dialing E911, regardless of whether the call succeeds or not. (For details, refer to the SMDR specifications.)</p>
External ACD	The SMDR record can be generated for an ACD terminating call.
Least Cost Routing (LCR)	When an Authorization Code is sent, the SMDR Dial information output record is "A01" - "A08." The contents of the Code are not indicated.
Local Date and Time	Call duration that is output maintains a correct value even when the local date and time are set and is irrelevant to the date and time displayed on LCDs of stations that are set to local time.
Multiple Calling	In the SMDR output for an abandoned external call, an MCP No. is displayed as an incoming station No.

Numbering plan on CLI	When CLID is referred, the feature defined in the Numbering plan on CLI is applied.
PC Attendant	An outgoing call is treated the same as IPT. For an incoming call, the attendant individual DN is used for talking even if the call terminates on the attendant group.
Private Networking Over IP	A call via a tie line generates SMDR at each node.
SIP Extension	When a SIP extension makes a call to a trunk, using a SIP inband tone, that provides in-channel information, the elapsed time displayed on the SIP extension's LCD (A) is longer than the time recorded on the IPedge memory by the SMDR Feature (B), i.e. A>B. This is because the timing of state transition to Talking state of SIP extensions is earlier than that of the IPedge system.
SIP Trunking	Provided.
Specified Caller Identification	A Specified caller number is not left as SMDR information. When the uMobility server makes a call to a station in the IPedge system, SMDR information is not left. When the uMobility server makes a call to a trunk via IPedge, the uMobility connection port information is left as the SMDR calling information.
Station Hunting	A Called party number in the SMDR record displays Station Hunting pilot DN if the call to the Station Hunting pilot DN is abandoned.