



# Wygant Integration Guide

## SMDR and the CT Gateway



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## Overview

Wygant's *CT Gateway* software provides a common CTI interface for *Wygant Encore™*, *Encore Service Observer (ESO)*, and *SmartAnswer®* products. A general system diagram is shown below:

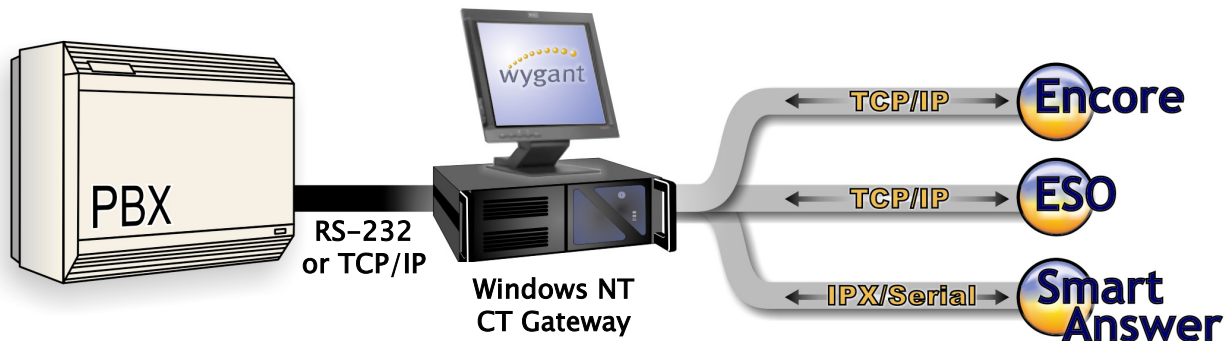


Figure 1: SMDR system diagram

## Hardware/software requirements

Most PBX's only provide call records for calls involving an external party (i.e. a trunk), but there are exceptions. The call data required by the *CT Gateway* is listed below:

Data	Description
Date/time stamp	The date and time when the call begins.
Call duration	The duration of the call.
Calling party	The phone extension for an outgoing call and the trunk number for an incoming call.
Called party	The phone extension for an incoming call and the trunk number for an outgoing call.
ANI	The caller ID for an incoming call, if available.
DNIS	The called number for an incoming call, if available.
Dial number	The dial number for an outgoing call, if available.

The requirements for the *CT Gateway* are listed below:

- CTGate.exe v6.0.1000 or later.
- CTSMDR.dll v1.45.1000 or later.
- A Windows NT® or Windows 2000 system with an available serial port and network card.

See “SMDR Formats” on page 11 for additional requirements.

## Supported features

### Encore

- Stop recording command for both trunk-side and station-side recording.
- Extension and trunk capture, if available.
- ANI and DNIS capture, if available.
- Dial number capture, if available.
- Agent ID capture, if available.
- Unless listed for the PBX in “SMDR Formats” on page 11, PBX only provides SMDR for calls involving an external party (i.e. a trunk-to-station call). Internal calls are not supported.
- *Encore* MUST be configured in a VOX start, ECAPI stop or hook-state start, ECAPI stop mode.
- Note that there is an undetermined duration (usually a few seconds, but possibly longer on a heavily-loaded PBX) between the completion of a call and the SMDR output. A small percentage of calls may be incorrectly split into multiple recordings or merged into one recording. In addition, the SMDR data (ANI, DNIS, etc.) may be incorrectly assigned to a recording.
- By default, most PBX's only provide one call record for a transferred call; the call record is usually incomplete, only containing information on the extension that initiated the transfer. Since the *CT Gateway* captures SMDR after the agent disconnects the call, transferred calls present a challenge for capturing SMDR data. For example, if the agent answers another call before the *CT Gateway* captures the SMDR data for the previous call, the *CT Gateway* assigns the SMDR data to the second call rather than the first call where it belongs. To prevent this mismatch of data, enable the PBX's optional “add-on” feature (if available) that provides two SMDR records for transferred calls; one record is sent at the time of the transfer and the other is sent at the end of the call.

### Encore Service Observer

- See the features listed in the *Encore* section above.
- Only for an AIM-based system with a fixed-seating arrangement.
- A conference-based system is not supported.

### SmartAnswer

- Not supported

## Step 1: Configure the switch

See "SMDR Formats" on page 11 for additional requirements.



*Consult your PBX expert for switch configuration details.*

## Step 2: Connect the SMDR link

The SMDR link is typically sent using a standard RS232 serial cable. It can be connected to the *CT Gateway* by dedicating the cable to the *CT Gateway*, or sharing the cable between the *CT Gateway* and other devices.

To dedicate the link to the *CT Gateway*, use a standard RS232 cable to connect the selected CTI interface hardware to an available serial port (usually COM1 or COM2) on the computer running the *CT Gateway* application. See the diagram below:

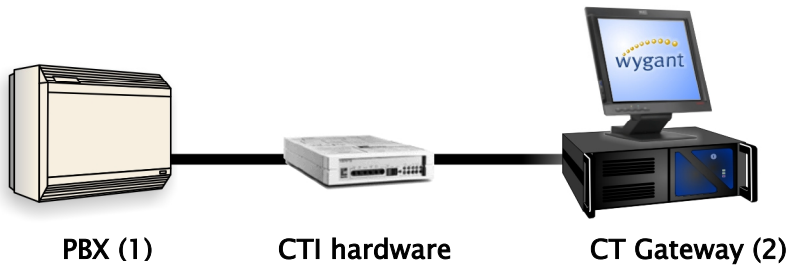


Figure 2: Dedicated SMDR link

When the SMDR link is already in use by another device, use the configuration setup shown in the next diagram. The data link may be shared using the Y-adaptor and one-way adapter included in the RS232 kit provided by Wygant.

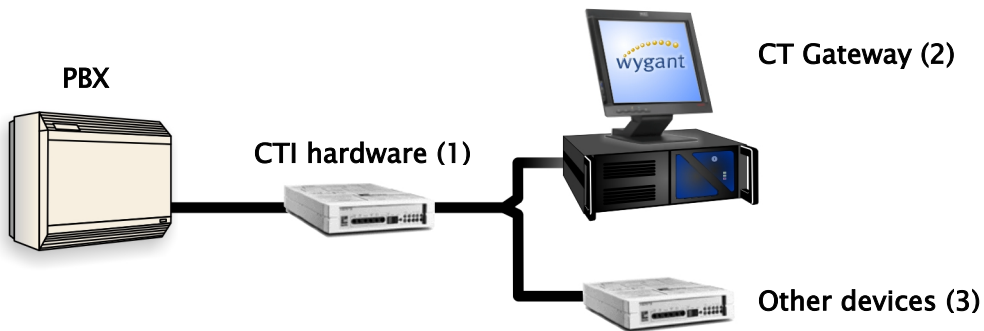


Figure 3: Shared SMDR link

Details regarding each adapter type are explained in the table below:

Adapter Type	Details
Y-adapter	<ul style="list-style-type: none"> <li>The Y-adapter consists of three RS232 connectors on a single cable. All pins are connected straight through. The serial connection between (1) and (3) must be broken at some point so that the Y-Adapter can be inserted. The cable from the CTI hardware plugs into one connector, the cable from the other device plugs into another connector, and the third connector allows the <i>CT Gateway</i> to monitor the data link.</li> <li>It is usually possible to find a convenient junction between (1) and (3) where the Y-adapter can plug in, but in some cases, it may be necessary to cut the cable. You may also build your own adapter to tap the serial channel through a nearby punch-down block.</li> <li>After installing the Y-adapter, verify that (1) and (3) are still communicating properly before proceeding.</li> </ul>
RS232 cable	<ul style="list-style-type: none"> <li>Connect one end of the RS232 cable to the available serial port (usually COM1 or COM2) on the back of the <i>CT Gateway</i> system.</li> <li>Connect the other end of the RS232 cable to the female side of the one-way adapter. The cable must be long enough to reach from the <i>CT Gateway</i> system to the Y-adapter.</li> </ul>
One-way adapter	<ul style="list-style-type: none"> <li>The one-way adapter resembles a gender changer or null modem. It only carries pins three and seven, which are Receive and Signal Ground on the <i>CT Gateway</i> COM port. It ensures that the <i>CT Gateway</i> only monitors but never interferes with the data link. Connect the free end of the one-way adapter to the unused connector on the Y-adapter. The communication software should now operate on the <i>CT Gateway</i> system and display the messages sent from (1) to (3).</li> </ul>

### Step 3: Test the data link

To test the RS232 serial connection, run a simple communication program on the *CT Gateway* system. Examples of possible communication programs to use are HyperTerminal<sup>®</sup>, PCPLUS, or any other program that you have had success communicating with (1) previously.

Run the communication program, selecting the appropriate serial port and the required Baud rate, data bits, stop bits, and parity. If data does not appear within one minute, the data link may not be functioning properly. Some possible explanations for malfunctions are:

- The port number, parity, word length, stop bits, or Baud rate are not set correctly in the communication software. Verify that the settings are correct.
- The communication software is using a type of terminal emulation that is trying to filter and interpret some of the characters sent through the link. Try several different emulations, particularly the “dumbest.”
- If the data link is shared, interrupting the link to install the Y-adapter may cause (1) to stop transmitting. If this occurs, reset the interface between (1) and (3).

## Step 4: Configure TCP/IP

Some modern PBXs provide SMDR via a TCP/IP connection instead of a serial connection. If the PBX is located far away from the *CT Gateway's* server, a serial connection to the TCP/IP converter (such as Lantronix) can be used to transport the SMDR data from the PBX to the *CT Gateway*. The *CT Gateway* can be configured as a TCP/IP server by listening on an IP port or as a TCP/IP client by connecting to the PBX's IP address and specified IP port number.

## Step 5: Install the software

Wygant recommends installing the *CT Gateway* application on the *Encore* system, but it is possible to install it on any NT system with an available serial port and on the same network as the *Encore* system.

### To install the CT Gateway:

1. Login as a user with administrative privileges.
2. Insert the *CT Gateway* CD-ROM.
3. Run the **Setup.exe** *CT Gateway* installation program from the CD-ROM.
4. Select **SMDR** at the **Select a CT integration** prompt.
5. Select the default values for all other prompts.

## Step 6: Configure the CT Gateway

Configure these four areas during the initial installation:

- PBX for the *CT Gateway*
- CT link
- *Encore* link
- *ESO* link

See below for specific configuration instructions.

### To select the PBX:

1. Open the *CT Gateway* program by selecting **Start | Programs | Wygant CTGateway | CT Gateway**.
2. Select **PBX | Select**.

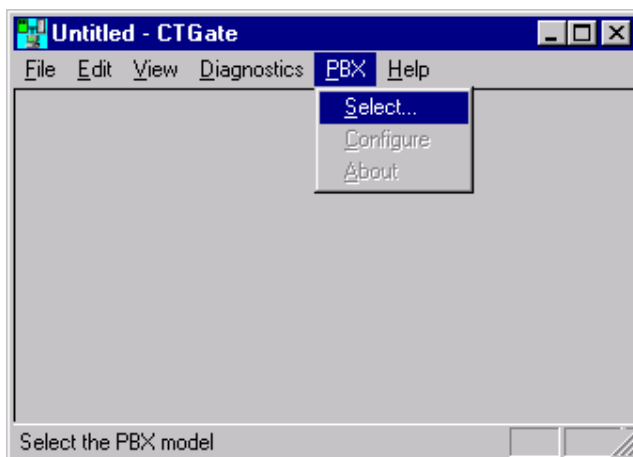


Figure 4: CT Gateway

3. Locate the **CTSMDR.dll**. The default location is **C:\Program Files\Wygant\CTGate**. If no DLL files are present, ensure Microsoft Windows Explorer is configured to display DLL files by selecting **Tools | Folder Options** in Windows Explorer. Click the **View** tab. Expand **Files and Folders**, if needed. Expand **Hidden files and folders**, if needed. Verify that the **Show hidden files and folders** option is selected. Click **Apply** and then click **OK**.
4. Select the DLL and click **OK**.
5. Close the *CT Gateway* program.

#### To configure the CT link:

1. Open the *CT Gateway* program by selecting **Start | Programs | Wygant CTGateway | CT Gateway**. Note: Do not use the shortcut in the startup group for this step.
2. Select **PBX | Configure**.

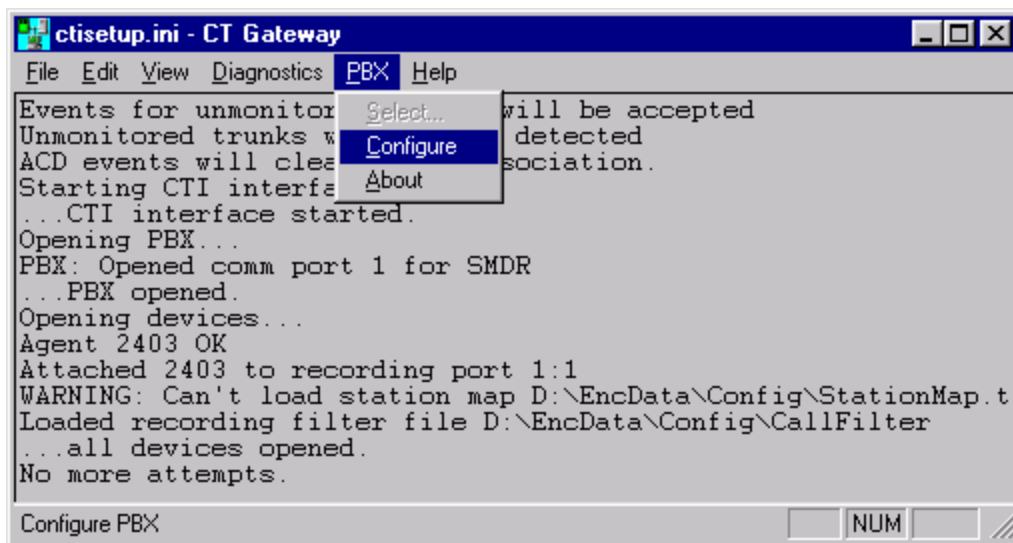


Figure 5: CTIsetup.ini file

3. Select the appropriate PBX from the **PBX** drop-down menu.

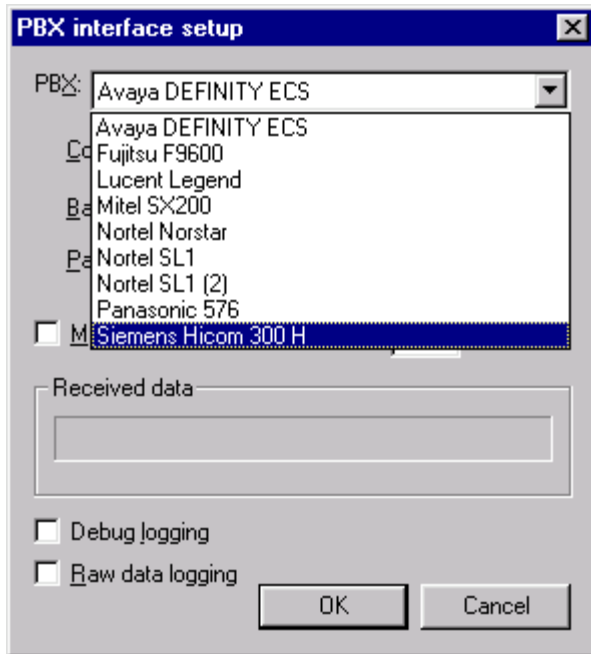


Figure 6: PBX Setup

4. For a serial configuration, set the:
  - **Comm port** field to the serial port where the SMDR RS232 cable is connected.
  - **Data bits**, **Baud**, and **Stop bits** fields to match the SMDR settings on the PBX.
  - **Char timeout** field as the number of seconds the *CT Gateway* should wait for consecutive characters within a packet. Usually the default value is adequate.
5. For TCP/IP client configuration, set the:
  - PBX's IP address and port number.
  - IP port to the port number the PBX is trying to connect to.
6. Uncheck the **Minimum call length for recording** checkbox. If enabled, an ECAPI cancel command is sent for all calls whose duration is shorter than the specified time.
7. Uncheck the **Debug logging** checkbox.
8. On some PBXs, ANI/DNIS could be greater than 16 digits, which could be longer than the database field width. Set the **Maximum # of ANI/DNIS digits** to truncate long ANI/DNIS values.
9. For a trunk-side recording system where only the extension listed in the CTISetup.ini file should be recorded, check the **Cancel recording for unknown extensions** checkbox to cancel recording of calls on extensions not set up in the CTISetup.ini file.
10. For a trunk-side recording system where all calls should be recorded, do not enter all the extensions into the CTISetup.ini file. Instead check the **Stop recording for unknown extensions** checkbox.

11. For an ISDN trunk-side recording system, use the **Auxiliary data output** feature to provide SMDR data to the D-channel CT integration. The **[ECAPI]** sections must be commented out.

The screenshot shows a dialog box titled "PBX interface setup" with a close button (X) in the top right corner. The "PBX:" dropdown menu is set to "Mitel 2000/3300 ICP". There are three radio button options for connection type: "Serial" (unselected), "TCP/IP (as client)" (unselected), and "TCP/IP (as server)" (selected). The "Serial" section includes fields for "Comm port:" (2), "Data bits:" (8), "Baud:" (9600), "Stop bits:" (1), "Parity:" (None), and "Char timeout:" (1 sec). The "TCP/IP (as client)" section includes "Connect to IP addr:" (127.0.0.1) and "Connect to IP port:" (1301). The "TCP/IP (as server)" section includes "Listen on IP port:" (9001). Below these are two checkboxes: "Minimum call length for recording:" (0 sec) and "Maximum # of ANI/DNIS digits (0 means don't limit)" (0). A "Received data" text area is empty. A list of checkboxes follows: "Cancel recording for unknown extensions" (checked), "Stop recording for unknown extensions" (unchecked), "Ignore SMDR for intermediate call segments" (checked), "Debug logging" (checked), "Siemen Hicom 300, if xfer flag is not set and DNIS= 4 digits, ignore record. Workaround for call pickup." (unchecked), and "Auxiliary data output" (unchecked). The "Auxiliary data output" section has "Address:" (127.0.0.1) and "Port:" (1557). At the bottom are "OK" and "Cancel" buttons.

Figure 7: PBX Interface Setup

### To configure the Encore link:

1. Open the **Edit CTISetup.ini** file by selecting **Start | Programs | Wygant CTGateway | Edit CTISetup.ini**. Notepad launches.
2. If you are using *Encore*, locate the following lines in the CTISetup.ini file:

```
# Encore ECAPI
#
#[ECAPI1]
#     ID=EncoreHost
#     Address=WYGSERVER1
#     Port=1502
#     Trunk-Field=fldTrunk
#     Agent-Field=fldExtension
#     ANI-Field=fldANI
#     DNIS-Field=fldDNIS
#     ID-Field=fldID
#     DATA-Field=fldData
#     ACD-Field=fldACD
#     AgentID-Field=fldAgentLoginID
```

3. Remove the **#** sign at the beginning of the **[ECAPI1]**, **ID**, **Address**, and **Port** lines.
4. Change the **Address** value to the machine's name or TCP/IP address of the *Encore* system.
5. Remove the **#** sign at the beginning of the **xxx-Field** lines.

### To configure the ESO link:

1. If you are using *ESO*, locate the following lines in the CTISetup.ini file:

```
#[ECAPI2]
#     ID=ESO
#     Address=WYGSERVER1
#     Port=1508
#     Trunk-Field=fldTrunk
#     Agent-Field=fldExtension
#     ANI-Field=fldANI
#     DNIS-Field=fldDNIS
#     ID-Field=fldID
#     DATA-Field=fldData
#     ACD-Field=fldACD
#     AgentID-Field=fldAgentLoginID
```

2. Remove the **#** character at the beginning of the **[ECAPI2]**, **ID**, **Address**, and **Port** lines.
3. If you are using *ESO* but not *Encore*, change **[ECAPI2]** to **[ECAPI1]**.
4. Change the **Address** value to the machine's name or TCP/IP address of the *ESO* server.
5. Remove the **#** sign at the beginning of the **xxx-Field** lines; typically the **DNIS-Field** and **AgentID-Field** values are mandatory.
6. Save the file and exit.

## Set options

1. Locate the following lines in the CTISetup.ini file:

```
[Options]
    IgnoreUnknownTrunks=No
    LogUnknownTrunks=No
    DelayedACDEvents=No
```

2. Set the **IgnoreUnknowTrunks** value to **No**.
3. Save the file and exit.

## Administer the system

The agent extensions, trunks, and ACD numbers may need to be modified in the future. See below for specific instructions.

### To add an agent extension:

1. Open the **Edit CTISetup.ini** file by selecting **Start | Programs | Wygant CTGateway | Edit CTISetup.ini**. Notepad launches.
2. Locate the following lines in the CTISetup.ini file:

```
#
# Agents
#
[Agent1]
ID=2403
File=C:\DFM\A2403.dfm
Signal=RING
#EncorePort=13
#ACDAgent=Yes
```
3. Change the **ID** value to the agent's phone extension.
4. The **File** and **Signal** lines are only used by *DFM*. If they are required, add the **#** sign before their entries so that these commands are ignored.
5. Remove the **#** sign in front of the **EncorePort** line if the telephone is attached to an *Encore/ESO* port. The value should match the *Encore/ESO* port number.
6. Set the **ACDAgent** value to **Yes** or remove it.
7. For additional agents, copy the **[Agent1]** through **ACDAgent** lines and repeat Steps 3 through 6.
8. Save the file and exit.
9. Restart the *CT Gateway* application for the changes to take effect.

### To add a trunk (required for trunk-side recording):

1. Open the **Edit CTISetup.ini** file by selecting **Start | Programs | Wygant CTGateway | Edit CTISetup.ini**. Notepad launches.
2. Locate the following lines in the CTISetup.ini file:
 

```
#
# Trunks
#
#[Trunk1]
#   ID=101
#   Monitor=Yes
#   EncorePort=25
```
3. Remove the **#** sign in front of the **ID** line and change the **ID** value to the trunk's ID. The PBX may also require the trunk group number. See "SMDR Formats" on page 11 for specific PBX requirements.
4. Remove the **#** sign in front of the **Monitor** line and set the **Monitor** value to **Yes**.
5. Remove the **#** sign in front of the **EncorePort** line if the trunk is attached to an *Encore/ESO* port. The value should match the *Encore/ESO* port number.
6. For additional trunks, copy the **[Trunk1], ID, Monitor,** and **EncorePort** lines and repeat Steps 3 through 5.
7. Save the file and exit.
8. Restart the *CT Gateway* application for the changes to take effect.

## SMDR Formats

The following sections list the SMDR formats currently supported by the *CT Gateway*. Due to differences between PBX versions and customized SMDR output format, Wygant strongly recommends capturing a sample SMDR output from the customer site and comparing it with the appropriate sample below before installation.

### Siemens Hicom 300 H

For the Siemens Hicom 300 H PBX, the SMDR output format is customizable. *CT Gateway* only supports Form number 2, the default output format. A sample of this output is shown below. See the *Siemens Call Details Recording Reference Guide* (Hicom 300 H version 1.0, November 2000) for details.

This sample format and output is used in the Hicom 300E communications server (CS) CDR feature for version 6.5. It applies to Release 9006i.

```

1           2           3           4           5           6           7           8
1234567890123456789012345678901234567890123456789012345678901234567890123456789
AB C----- D---- E----- FGHIJKL M----- N----- O-----

9           0           1           2           3
012345678901234567890123456789012345678901234567890
P---- Q--- R--- S----- T----- U-

02 10/01/01 18:26 00:00:19 --1--- 6364           6525208           9     0
139 00

01 10/01/01 18:25 00:00:42 -F2--- 7324160935       59008           6630
48  0     00
```

02	10/01/01	18:14	00:12:00	--1---	6644	19739043743	9	0
2		00						
01	10/01/01	18:26	00:00:53	--2---	000049	6452		
49		0	00					
02	10/01/01	18:22	00:05:11	--1---	6856	17326517626	9	0
12		00						
01	10/02/01	07:28	00:00:00	-F1T--	9086724434	6500	6581	
48		233						
01	10/02/01	07:28	00:01:00	-F1T--	9086724434	6581	6500	
48		233						
01	10/02/01	08:06	00:01:13	--2T--	2123731660	4984	6777	
48		0	00					
01	10/02/01	08:07	00:01:55	--2---	2123731660	4708		
50		0	00					

A: Service indicator, voice=0, data=2, fax=3.

B: Source device type, trunk=1, subscriber=2, night service=N, attendant=A.

C: Start of connection data, mm/dd/yy.

D: Start of connection time, hh:mm

E: Duration of call, hh:mm:ss

F: D=DISA, P=PIN

G: Call forwarding/diverting occurred, F for forwarding.

H: Destination/Answering type, 1=trunk, 2=subscriber, A=attendant, N=night service, R=ACD recorder.

I: Transfer type, Attendant transfer=A, end of long call=E, ongoing long call=G, transfer/move=T.

J: LCR path chosen, expensive=E.

K: conference call indicator, conference call=C.

L: Synchronous=S or asynchronous data indicator=A.

M: Source or calling party fully qualified number, if known, otherwise, trunk ID.

N: Destination/answering number.

O: Originally dialed/diverting number.

P: Dialed access code, trunk access code.

Q: Source trunk ID, circuit ID number.

R: Destination trunk ID, circuit ID number.

S: Account code.

T: DISA number or PIN.

U: Modem pool number.

## Panasonic 576

```
T MM/DD HH:MM:SS HH:MM:SS NNNN TTT ddddddddddddddddddddddd aaaaaaaaa vvvvv
T MM/DD HH:MM:SS HH:MM:SS NNNN TTT ddddddddddddddddddddddd ddddddddddddddd aaaaaaaaa vvvvv
ccccccc
```

T - call type: I=incoming, S=DISA incoming, D=DID incoming, O=outgoing, L=LCR outgoing, h=hold, t=transfer, f=call forward outside call, W=closed numbering call, tandem connection call.

MM/DD HH:MM:SS - Call start time: MM=01-12, DD=01-31, HH=00-23, MM=00-59, SS=00-59.

HH:MM:SS - Call duration: HH=00-23, MM=00-59, SS=00-59.

NNNN - Trunk user number (internal line 0 to 99999 or trunk number C1 to C576).

TTT - Trunk number, 1-576. Leading asterisk if trunk is disconnected while the call is on hold.

dddddddddddddddddddd - Dialed number.

aaaaaaaa - Accounting code.

vvvv - ID code, V001-V400.

dddddddddddddddd - Caller data.

ccccccc - ISDN charge data.

## Mitel SX200® and SX2000®

These formats are only supported by older PBXs.

There are three types of SMDR output for Mitel SX200 and SX2000:

- External SMDR – used for external calls only.
- Internal SMDR – includes internal calls.
- ACD SMDR – includes ACD information and replaces the extension with the Agent Login ID.

The samples below show the formats currently supported by *CT Gateway*:

### Sample 1

```
1234567891123456789212345678931234567894123456789512345678961234567897123456789
05/09 11:41P 00:00:07 T002 023 116 1*16 200 205
05/09 12:20A 00:00:13 X117 003 2363 200 204 X P002
05/09 12:20A 00:03:52 X117 002 P002 002 002 415
05/09 12:24A 00:01:12 X128 019 2*04 205
05/09 08:27A 00:00:21 427 918009004686 T007
05/09 09:28A 00:04:51 309 12014407000 A X172
05/09 10:16A 00:00:02 X126 *** E
05/09 10:14A 00:02:27 X137 011 P009 016 010 012 004 016 427
05/09 10:24A 00:00:25 T001 *008 1002 ATT1T 410
05/09 10:25A 00:00:29 X104 *** P009 016 010 012 004 P009R 422
```

### Sample 2

```
07/19 06:19 00:00:36 X125 007 202 202 257
07/19 06:26 00:00:39 X125 007 202 202 257
07/19 06:43 00:00:02 X107 *** P1510 01 I0107 257
```

```

07/19 06:43 00:00:26 X107 *** P0107 02 257
07/19 07:40 00:00:50 X125 015 234 362 257
07/19 07:38 00:09:04 298 9 18008338000 ARX148 257
07/19 08:04 00:02:10 X125 010 P0703 01 01 502 257
07/19 08:08 00:00:06 X125 019 225 362 257
07/19 08:09 00:02:44 X125 006 200 362 X 227 257
07/19 08:03 00:10:25 298 9 18008338000 ARX148 257
07/19 08:14 00:00:37 X102 010 P1510 01 01 502 257
07/19 08:15 00:02:36 X125 008 P0290 01 01 502 257
07/19 08:18 00:02:16 X126 159 P0290 01 01 502 X 234 257
07/19 08:23 00:00:17 X125 010 216 216 257
07/19 08:24 00:03:43 X103 009 P1510 01 01 502 257
07/19 08:30 00:00:01 295 9 RX148
07/19 08:33 00:00:09 X106 003 1500 363 257
07/19 08:28 00:05:19 X104 082 P1510 01 01 502 257
07/19 08:35 00:00:06 X126 006 200 362 257
07/19 08:31 00:04:24 295 9 18005610860 ARX148
07/19 08:36 00:00:25 X126 019 216 364 257
07/19 08:38 00:01:09 X126 011 P0703 01 01 502 257
07/19 08:35 00:04:29 X127 006 200 362 X 219 257
07/19 08:34 00:06:37 502 9 18007669143 ARX147T X105 257
    
```

## Mitel SX2000® and 3300 ICP

*CT Gateway* supports three types of SMDR format, 'Standard', 'Standard with extended digit length' and 'Extended reporting level 1'. If internal SMDR is enabled on PBX, records are generated for internal calls as well. If 'ACD SMDR' is enabled on PBX, the phone extension is replaced by agent login ID, station-side recording is not support in a free seating environment.

The samples below show the formats currently supported by *CT Gateway*:

### Sample 1 'Standard with extended digit length'

```

1234567891123456789212345678931234567894123456789512345678961234567897123456789
01/24 18:13 0000:00:07 X117 225 P190 101 101 S272
9568678073 1008
01/24 18:12 0000:00:48 X126 276 P190 101 101 S331
2048252182 1008
01/24 18:13 0000:00:13 X117 ***
01/24 18:15 0000:00:02 X120 *** P207 SP207 U P201
3056333461 1867
01/24 18:14 907 16085347475 X141
01/24 18:15 0000:00:04 X120 000 P201 2900 000 2901
3056333461 1867
01/24 18:14 0000:00:48 X112 140 P205 101 101 S240
6194408130 1854
01/24 18:16 0000:00:02 X101 *** P207 SP207 U P201
3056333461 1867
%01/24 18:05 0000:11:19 906 17073998772 A X146 C
    
```

### Sample 2 'Extended reporting level 1'

```

1234567891123456789212345678931234567894123456789512345678961234567897123456789
01/18 11:57 0000:01:00 2608 18002644217 A T23
001 12608 U0012599 A
    
```

```

-01/18 11:50 0000:08:17 T148 0000 2291 3157 2291
001 6122011510 2600 Q0013640 A Q0014249
01/18 11:58 0000:00:21 T128 0002 2600 6000 6015 X P001
001 6168627214 2600 Q0017928 A
01/18 11:58 0000:00:17 T101 0002 2600 6000 6018 X 3969
001 5053843103 2600 U0013979 A
01/18 12:00 0000:00:27 2222 **** 2610 I 2610
001
01/18 12:00 0000:00:05 T102 **** P001 001 P001
001 3602734508 2600 Q0017559 A U0010764

```

## Nortel SL1®

Two formats are currently supported by the *CT Gateway*: SL1 v14.43 and v16.67.

### Format 1

```

Flag=1-1,1
Calling party=10-23,8
Called party=18-31,8
Note that trunk looks like Tnnn mmm or Tnnnmmm, extension is DNxxx, so we need to strip all
white spaces.
If flag!=L and outbound call, dial number is at 50-end of line. it contains routing digits
and phone number + other.
Flag=L is internal call.
Flag=S call xfer, calling party
Flag=E call xfer, called party
Flag=N normal call record.

```

```
12345678911234567892123456789312345678941234567895123456789612345678971234567898
```

```

N 077 00 DN499 T000006 02/02 08:47 00:00:50 A 6900937029810107
N 103 00 DN146 T004 006 05/01 13:12 00:01:02 A 690413132770034
N 104 00 DN148 T004 002 05/01 13:13 00:00:10 A 690419702439303
S 105 00 T000 001 DN555 05/01 13:13 00:00:08
L 127 00 DN555 DN153 05/01 13:19 00:00:00
S 091 00 T003009 DN153 07/17 17:19 00:00:08
E 101 00 T003009 DN132 07/17 17:20 00:00:52
N 022 00 T000001 DN116 07/17 17:33 00:01:08
L 089 00 DN106 DN132 07/17 15:04 00:00:34
N 051 00 DN537 T004019 07/17 18:05 00:00:46 A 690413033071888

```

Format 2 -- Each record spans two lines and an extra field is added before the dial number.

```

N 006 00 DN299 T000 004 02/19 08:14 00:00:03 .0 A 690066232
0000 0000

N 007 00 DN299 T000 004 02/19 08:15 00:00:09 .0 A 69006623457
0000 0000

N 008 00 DN299 T000 004 02/19 08:14 00:10:47 .5 A 69006326000
0000 0000

L 009 00 DN299 DN245 02/19 08:26 00:00:20 .0 0000 0000

L 010 00 DN299 DN245 02/19 08:27 00:00:14 .0 0000 0000

```

```

L 011 00 DN299   DN245                               02/19 08:27 00:00:10 .0 0000 0000

L 012 00 DN299   DN254                               02/19 08:28 00:00:02 .0 0000 0000

N 013 00 DN299   T000 004 02/19 08:28 00:01:40 .0 A 69008574432
                0000   0000

N 014 00 DN299   T000 004 02/19 08:30 00:00:57 .5 A 69008574632
                0000   0000
    
```

### Lucent Merlin Legend®

```

12345678911234567892123456789312345678941234567895123456789612345678971234567898
DATE      TIME      CALLED NUMBER  DUR.      LINE STN.      ACCOUNT
C 01/08/01 11:50      6126729000    00:00:46   804 230
C 01/08/01 11:52      13206937359   00:01:16   832 203
C 01/08/01 11:52              IN 00:01:11   814 212
C 01/08/01 11:44      6517715911    00:10:12   803 211
C 01/08/01 11:52              IN* 00:02:59   815 7138
C 01/08/01 11:43              IN 00:13:20   802 216
C 01/08/01 11:51              IN 00:07:57   813 230
    
```

### Fujitsu F9600®

Important: If the SMDR link is dedicated to the *CT Gateway* and the *CT Gateway* program terminates, the PBX must be reset to produce SMDR data when the *CT Gateway* is restarted. To work around this issue, connect the Data Set Ready or Data Terminal Ready pin to the ground.

#### Incoming call

```

123456789112345678921234567893123456789412345678951234567896123456789712345678981234567899123
45678901234567891123456789212345678931234567894
STXAAA BCCCCC DDDDDD E FF:GG HH:II.JJ KK:LL.MM          OOOOOOOO NNNNNNNNNNNNNNNN PPPPPP
XXXXX YY.ZZ      TTTTTTTTTTTTTTTT UVV WWW YY CRLFETX
    
```

```

AAA          PBX Identifier
B            Outgoing/Incoming/Internal - data flag (Incoming=*) (Internal=#) (Call Record
Identifier)
CCCCC       Incoming Call Sequence Number
DDDDDD      Call Tracer
E            Line Flag (Link=*)
FF:GG       Call Start Time (FF=hour, GG=Minute)
HH:II.JJ    Duration of call record (HH=hour, II=Minute, JJ=Second)
KK:LL.MM    Duration of Trunk Disconnect (KK=hour, LL=minute, MM=second)
OOOOOOOO    Incoming Trunk Equipment Number (8 digits) or Trunk group number (3 digits,
right justified)
NNNNNNN...NN ISDN (ANI) (Right justified, max of 16 digits)
PPPPPP      Dialed Number (Right justified)
XXXXX       Answering station number (left justified)
YY.ZZ       Duration to answer (YY=minute, ZZ=second)
TTT...TT    Account code (Left justified)
U            Data call/Voice call Flag (Data call=*)
VV          Modem ID Number
WWW         Tenant Identifier
YY          Number of Used Channels
    
```

## Outgoing call

```
123456789112345678921234567893123456789412345678951234567896123456789712345678981234567899123
45678901234567891123456789212345678931234567894
AAA BCCCCC DDDDDD E FF:GG HH:II.JJ KK:LL.MMXNNNNNNNN OOOOOOO PPPPPPPPPPPPPPPPPPPPPPP
QQQQQQ RRRRRR S TTTTTTTTTTTTTT UVV WWW YY
```

AAA	PBX Identifier
B	Outgoing/Incoming/Internal - data flag (Out going=blank) (Call Record Identifier)
CCCCC	Outgoing Call Sequence Number
DDDDD	Call Tracer
E	Line Flag (Link=*)
FF:GG	Call Start Time (FF=hour, GG=Minute)
HH:II.JJ	Duration of call record (HH=hour, II=Minute, JJ=Second)
KK:LL.MM	Duration of Trunk Disconnect (KK=hour, LL=minute, MM=second)
X	RSA Access Flag (Access=*)
NNNNNNN	Calling number (DN:3-5 digits left justified or 3-7 digits left justified, N EN:8 digits, TGN: 3 digits right justified, AN: 4 digits left justified)
OOOOOOO	Outgoing Trunk Equipment Number (8 digits) or Trunk group number (3 digits, right justified)
PPPPPP...PP	Dialed number (right justified)
QQQQQQ	Authorization identification code (right justified)
RRRRRR	Facility Access code (left justified)
S	Answer supervision flag (Received=*) Note: An * is displayed if this service parameter is set.
TTT...TT	Account code (Left justified)
U	Data call/Voice call Flag (Data call=*)
VV	Modem ID Number
WWW	Tenant Identifier
YY	Number of Used Channels

## Avaya DEFINITY ECS

For the DEFINITY ECS PBX, there are many SMDR output formats. The *CT Gateway* only supports the “Unformatted” format and the “Customized” format. See the *DEFINITY ECS Administrator's Guide - CDR Record formats* for details.



**Station-side recording is not fully supported.** SMDR cannot be used to stop recording because the SMDR data is the same when a call is redirected to voicemail (due to busy/noanswer) or when an extension actually answered the call. When the voicemail call ends, the SMDR data from the voicemail call causes CT Gateway to stop any recording in progress at the extension. The data for the voicemail call is also attached to the recording.

It is possible to configure CT Gateway to only assign SMDR data to the recording and use VOX/hook-state to record instead; this is still not considered a best practice and is unreliable. To configure CT Gateway to only assign data, add **NoSTOP=Yes** to the **[Ecap]** section of the INI file.

**Unformatted format**

This format does not provide DNIS.

```
123456789112345678921234567893123456789412345678951234567896123456789712345678981234567899
10:35 02/01
103800067 9 82 18006886423 103 0 190 1 000
103900309 2472037534343 0 01 0 82 1 000
11010029C 9 82 6715930 118 0 194 1 000
125100049 9 82 194548433282037202223 0 01 180 82 1 000
125200039 9 82 195448624112037202223 0 01 190 82 1 000
```

- 1-2 Time of day-hours
- 3-4 Time of day-minutes
- 5 Duration-hours
- 6-7 Duration-minutes
- 8 Duration-tenths of minutes
- 9 Condition code
- 10-13 Access code dialed
- 14-17 Access code used
- 18-32 Dialed number
- 33-42 Calling number
- 43-57 Account code
- 58-64 Authorization code
- 65-66 space
- 67 FRL
- 68-70 Incoming Circuit ID (hundreds, tens, units)
- 71-73 Outgoing Circuit ID (hundreds, tens, units)
- 74 Feature flag
- 75-76 Attendant console
- 77-80 Incoming TAC
- 81-82 Node number
- 83-85 INS
- 86-66 ICX
- 89 BCC
- 90 MA-UUI
- 91 Resource flag
- 92-95 Packet count
- 96 TSC flag
- 97-100 Reserved

**Customized record format**

This format provides VDN extension number, which is equivalent to the DNIS in most configurations. To use this format, the PBX must be configured to use the exact layout below.

```
123456789112345678921234567893123456789412345678951234567896123456789712345678981234567899
10:35 02/01
110304 1245 00033 9 7946 832 832 003
110304 1311 00151 9 7656 803 803 004 2228
110304 1311 00009 7 802 16172682683 2599 012
110304 1311 00039 7 809 2867 2393 023
110304 1311 00059 7 803 12074399222 2411 029
110304 1311 00001 A 810 7429 001
110304 1311 00252 9 2442 803 803 001 2875
110304 1311 00201 9 7628 803 803 011 2228
```

```

110304 1311 02436 C 802          17816471714          2201          011
110304 1311 00030 9              2489              803 803 004      2875
110304 1311 00622 9              2386              6173994611 801 007
110304 1311 00027 9 818          4538              822 822 010 004
110304 1311 00112 9              2560              803 803 006      2494

```

```

1-6      Date
7        space
8-11    time
12       space
13-17   sec-dur
18       space
19       cond-code
20       space
21-24   code-used      (outbound access code - trunk group)
25       space
26-48   dialed-num     (outbound dialed number)
49       space
50-64   clg-num/in-tac (inbound ANI)
65       space
66-69   in-trk-code   (inbound access code - trunk group)
70       space
71-73   in-crt-id     (inbound trunk id)
74       space
75-77   out-crt-id    (outbound trunk id)
78       space
79-82   vdn
83       space
84       return
85       line-feed

```

Configuration notes for the Definity ECS PBX are listed below:

- Transferred calls—Enable the “Call Splitting” feature to provide SMDR for transferred calls.
- Date record—SMDR/CDR only sends date information once per day (at midnight) or when the device is connected.
- Trunk-ID—For trunk-side recording, the trunk's ID in the CTISetup.ini file should be formatted as, “trunk group access code-trunk number within the trunk group”. For example, if the trunk group access code is 82, and the trunk number is 05, then the trunk ID is 82-05.
- Calling number—For an outgoing call, this field contains the extension of the originating telephone user. For an incoming call, this field contains the calling number or it is blank.
- Dialed number—For an outgoing call, this field contains the number dialed by the system user. For an incoming call, this field contains the extension that was dialed or the DNIS.
- Access code dialed and Access code used—If the access code used is blank, use the access code dialed. This field is used by outgoing calls only. It contains the access code for the trunk group.
- Incoming Circuit ID—This field contains the trunk number for an incoming call only. It is blank for an outgoing call.
- Incoming TAC—This field contains the access code for an incoming trunk group.
- Outgoing Circuit ID—This field contains the trunk number for an outgoing call only. It is blank for an incoming call.
- Duration—This is the duration of the call, recorded in hours (0-9), minutes (0-59), and tenths of minutes (0-9).

- VDN—Only available on customized records. The call record contains the VDN extension number. If VDN Return Destination is active, this field contains the first VDN the caller accessed.
- The PBX can be configured to provide agent ID instead of telephone extension. Station-side recording does not support this configuration in a free-seating environment. In a fixed-seating environment, the agent ID should be entered in the **[Agent]** section and the telephone extension should not be entered in the **[Agent]** sections.

## Avaya IP Office

This PBX provides SMDR via TCP/IP; the *CT Gateway* can be configured as either TCP/IP server or TCP/IP client.

### SMDR Output Fields

Each SMDR record contains call information in a comma-separated format (CSV) that is variable-width fields with each field separated by commas. The first line in the CSV file contains the field names, i.e. headers. Depending on the activities during a call, some calls can be represented by several SMDR records. However for each call, a single call ID is included in all associated SMDR records for that call. The last record output for a call is marked as such by setting the continuation field to zero. This indicates no further records with that call ID will be output. The total duration of record is calculated as Call Duration + Ring Duration + Hold Time + Park Time.

### Standard SMDR Fields

The SMDR Delta Server output contains the following fields:

- Call Start—Call start time in the format YYYY/MM/DD HH:MM:SS. For all transferred call segment this is the time the call was initiated, so each segment of the call has the same call start time.
- Call Duration—Duration of the connected part of the call in HH:MM:SS format. This does not include ringing, held, and parked time. A lost or failed call has a duration of 00:00:00.
- Ring Duration—Duration of the ring part of the in SSSS format. This represents the interval between the call arriving at the switch and it being answered, not the time it rang at an individual extension. For outbound calls, this indicates the interval between the call being initiated and being answered at the remote end if supported by the trunk type. Analog trunks are not able to detect remote answer and therefore cannot provide a ring duration for outbound calls.
- Caller—The callers' number. If the call was originated at an extension, this is that extension number. If the call originated externally, this is the CLI of the caller if available, otherwise blank.
- Direction—Direction of the call - I for inbound, O for outbound. Internal calls are represented as O for outbound. This field can be used in conjunction with Is\_Internal below to determine if the call is internal, external outbound or external inbound.
- Called Number—This is the number called. For a call that is transferred this field shows the original called number, not the number of the party who transferred the call.
  - Internal calls: The extension or group called.
  - Inbound calls: The DDI dialed by the caller, if available.
  - Outbound calls: The dialed digits.
  - Voice Mail: Calls to a user's own voice mailbox.
- Dialed Number—For internal calls and outbound calls, this is identical to the called\_number above. For inbound calls, this is the DDI dialed by the caller.
- Account—The last account code attached to the call. Note: IP Office account codes may contain alphanumeric characters.
- Is Internal—0 or 1, denoting whether both parties on the call are internal or external (1 being an internal call). Traffic between IP Office systems and other switches (including other IP Office sites) are represented as external calls.
- Call ID—The call ID. This is a number generated by the IP Office upon creation of the call.
- Continuation— If there is a further record for this call ID, 0 otherwise.

- Party1Device—The device number - E1234 for an extension, T1234 for a trunk or V1234 for a voicemail channel for the first party on the call. Note: If an extension is involved in the call it has priority over a trunk, therefore the Party 1 device is not always the call maker.
- Party1Name—The name of the device. For an extension or agent, this is the user name. For a trunk, this is “Line XX.XX”.
- Party2Device—The device number. E1234 for an extension, T1234 for a trunk, or V1234 for a voicemail channel for the first party on the call.
- Party2Name—The name of the device. For an extension or agent, this is the user name. For a trunk, this is “Line XX.XX”.
- Hold Time—The amount of time in seconds the call has been held during this call segment.
- Park Time—The amount of time in seconds the call has been parked during this call segment.

### Example: Call Answered by Voicemail

In this example, 215 [1] made a call to 211 [2]. However the Party2Device and Party2Name [3] show that the call was answered by voicemail.

```
2004/10/20 06:43:58,00:00:10,21,215[1],O,211[2],211,,I,28,0,E215,Extn215,V9051,VM Channel
1[3],0,0
```

### Example: Call Transferred to Voicemail

In this example, the Continuation field [1] in the first record tells us that it wasn't the end of the call. The matching Call ID [2] identifies the second record as part of the same call. The change in Party 1 [3] details between the two records show that the call was transferred to voicemail.

```
2002/06/28 09:30:57,00:00:13,7,01707392200,I,299999,299999,,0,1000014160[2],1[1],E4750,John
Smith[3],T9002,LINE 1.2,11,0
2002/06/28 09:30:57,00:00:21,0,01707392200,I,299999,299999,,0,1000014160[2],0,V9502,VM
Channel 2[3],T9002,LINE 1.2,0,0
```

### Example: Internal call

The Is Internal [1] field being 1 shows this to be an internal call. The Ring Duration [2] was 4 seconds and the total Call Duration [3] was 44 seconds.

```
2002/06/26 10:27:44,00:00:44[3],4[1],4688,O,4207,4207,,1[1],1000013898,0,E4688,Joe
Bloggs,E4207,John Smith,0,0
```

### Example: Outgoing Call

The combination of the Direction [1] field being outbound and the Is Internal [2] field being 0 show that this was an outgoing external call. The line (and in this case, channel) used are indicated by the Party2 Name [3] and being a digital channel the Ring Duration [4] before the call was answered is also shown.

```
2002/06/28
08:55:02,00:08:51,9[4],4797,O[1],08000123456,08000123456,,0[2],1000014129,0,E4797,Joe
Bloggs,T9001,LINE 1.1[3],0
```

### Example: Voicemail call

The two records below show calls to voicemail. The first shows the Dialed Number [1] as \*17, the default short code for voicemail access. The second shows the Dialed Number [2] as voicemail, indicating some other method such as the Message key on a phone was used to initiate the call.

```
2002/06/28 09:06:03,00:00:19,0,4966,O,*17,*17[1],,1,1000014131,0,E4966,John Smith,V9501,VM
Channel 1,0,0
```

```
2002/06/28 09:06:03,00:00:19,0,4966,0,VoiceMail,VoiceMail[2],,1,1000014134,0,E4966,John
Smith,V9501,VM Channel 1,0,0
```

### Example: Parked Call

In this example the first record has a Park Time [1] showing that the call was parked. The Continuation [2] field indicates that the call did not end this way and there are further records. The second record has the same Call ID [3] and shows a change in the Party2Name [4], indicating that party unparked the call.

```
2004/10/20 07:18:31,0:00:12,3,215,0,210,210,,1,38[3],1[2],E215,Extn215,E210,Extn210[4],0,7[1]
2004/10/20 07:18:31,0:00:10,0,215,0,210,210,,1,38[3],0,E215,Extn215,E211,Extn211[4],0,0
2002/06/26 11:33:06,00:02:11,10,8004200,I,4688,4688,,0,1000013937,0,E4688,John
Smith,T9162,LINE 5.2,0,94
```

### Example: Incoming call with Account Code

In this example, an Account Code [1] was entered as the call was made or during the call. In this specific case it is a text account code that can be selected and entered by the user with IP Office Phone Manager.

```
2002/06/28
11:29:12,00:00:02,2,5002,I,1924,1924,Support[1],0,1000014169,0,E1924,Extn1924,T9620,LINE
8.20,0,0
```

### Example 9 Conference

The records below show extension 211 calling 215 and then using a Conference button to bring in 210 and start a conference. The Party 1 Device and Party 1 Name indicate a virtual device, in this case a conference channel.

```
2004/10/20 07:42:26,00:00:00,2,211,0,215,215,,1,45,1,E211,Extn211,E215,Extn215,1,0
2004/10/20 07:42:26,00:00:06,0,211,0,215,215,,1,45,0,V9551,CO Channel1,E211,Extn211,0,0
2004/10/20 07:42:28,00:00:10,0,210,0,215,215,,1,44,0,V9551,CO Channel1,E210,Extn210,0,0
2004/10/20 07:42:28,00:00:11,0,211,I,215,215,,0,45,0,V9551,CO Channel1,E215,Extn215,0,0
2004/10/20 07:42:40,00:00:00,0,211,I,,,,,0,100,0,V9551,CO Channel1,E210,Extn210,0,0
2004/10/20 07:42:40,00:00:00,1,211,I,,,,,0,45,0,V9551,CO Channel1,E215,Extn215,0,0
```

### Nortel Norstar®

```
12345678911234567892123456789312345678941234567895123456789612345678971234567898
S 025 00 T001311 DN2355 01/17 13:34
E 026 00 T001311 T023000 01/17 13:45
S 027 00 DN4376 T023000 01/17 13:36 16309414300
E 028 00 T023000 T001000 01/17 13:45
S 029 00 T049000 DN3300 01/17 13:46
E 030 00 T049000 DN2251 01/17 13:46
N 031 00 DN3346 T023000 01/17 13:50 00:02:02 16305724979
N 125 00 T104145 DN3340 01/17 16:19 00:01:54
```

```
Flag=1-1,1
Calling party=10-17,8
Called party=18-25,8
Note that trunk looks like Tnnnmm, extension is DNxxxx
Date - time =38-48,11
Flag=S call xfer, calling party
Flag=E call xfer, called party
Flag=N normal call record
```

## Nortel Meridian 1

```

N 004 00 A018013 DN8142          02/12 16:37 00:01:20
  8138664043XXXXXX              3027

S 005 00 DN7637  A013023          02/12 16:39 00:00:20 A 9518003616664

S 006 00 A018005 DN8122          02/12 16:38 00:01:16
  6132262385XXXXXX              4534

N 007 00 DN7412  A018069          02/12 16:39 00:00:34 A 9712107352431

N 072 00 DN299   A013022 156.0.00.00 02/12 17:23 00:00:06 A 959147600

N 074 00 DN299   A013021 156.0.00.00 02/12 17:24 00:00:02 A 959137946859

E 016 00 A013001 DN207          02/12 16:41 00:00:46
  8165258986XXXXXX              4321

```

Flag=1-1,1

Calling party=10-23,8

Called party=18-31,8

Note that trunk looks like Tnnn mmm or Tnnnmmm, extension is DNxxx So we need to strip all white spaces.

If flag!=L and outbound call, dial number is at 50-end of line. it contains routing digits and phone number + other.

Flag=L is internal call.

Flag=S call xfer, calling party

Flag=E call xfer, called party

Flag=N normal call record.

Reference: Meridian I, Call Details Recording, Description and formats. Document number:553-2631-100.

See pages 204-206 of on how to configure SMDR for ANI/DNIS.

See page 209 for details on configuring outputting an additional CR at the beginning of a packet.

We need this additional CR to determine end of previous packet. We must set the CT Gateway's "Char timeout" parameter to 1 so that we can quickly determine end of packet when we don't get two consecutive packets.

Meridian has different format depending of software version and configuration. There is a "new CDR" format, note the use of the "&" character as line continuation.

New format with auxiliary ID - this provides a unique ID (013.0.00.15) for the phone when phones are setup in a hunt-group arrangement (i.e. multiple phones sharing an extension number), where the hunt group number shows up SMDR (2200 this sample below). See page 193 for configuration of auxiliary ID. To use auxiliary ID, set the ID=<auxiliary ID> in the [agentnn] section instead of the extension number.

Outbound call

```

N 068 00 2200   A010 015 12/16 13:50:14 00:02:18 .0 A70109547911068
&                                     013.0.00.15           000 000
&                                     000

```

Inbound call

```

S 076 00 A010 003 2200   12/16 13:54:07 00:00:16 .0
&9543031990XXXXXX                                     005.0.00.10 000 000
&                                     000 01 2

```

New format without auxiliary ID

```

N 053 00 A010 001 2200   12/16 13:44:16 00:01:46 .0

```

```

&9544452849XXXXXX                                000 000
&                                                    000 01 2
N 052 00 4895    A010 007 12/16 13:44:49 00:00:40 .0 A70109544477791
&                                                    000 000
&                                                    000
    
```

### Comdial SMDR

```

1002 23    01/04/96 11:50    0.4          2547100          $ 0.00
1002 23    01/04/96 11:51    0.1          2547100          $ 0.00
1002 1     01/04/96 11:51    0.0  0.1  2546100          $ 0.00
1002 1     01/04/96 11:52    0.3  0.1  2546100          $ 0.00
    
```

Col	Value	Format	Justification
1-4	Station number	nnnn	left
6-8	Line number	nnn	right
9-12	call identifier (Note 1)	nnnn	right
13-20	Month/day/year	nn/nn/nn	right
22-26	Time all was initiated (24-hour)	nn:nn	right
29-33	Call duration (minutes and tenths or NOANS)	nnn.n	right
36-39	ring time (incoming call)	nn.n	right
43-58	digit dialed on line (max=16)	nnn..n	left
65-71	call cost (if enabled)	\$nnn.nn	left

Note 1: A=ANI,  
 D=Direct inward station dialing (DISD),  
 F=Call forward outside system (CFOS),  
 V=DISD violation  
 NT=Network call  
 TT=line to line transfer

Note 2: Carriage return and line feed immediately follow last printed character, outgoing call must be off-hook for 20 seconds minimum or no recording occurs. Any columns not used are shown as spaces.

For outbound call, the ring time will be blank.

### Comdial SMDA

```

10/07 12:22                NOANS    0.0  I  0.3  21  ID 3368612030
10/07 12:22    2959                0.2    0.0  I  0.0  21  NT 9542750909
10/07 12:22                NOANS    0.0  I  0.3  21  ID 5613578194
10/07 12:22    6114                0.9    0.0  O           4  NT 19723597259
10/07 12:23                NOANS    0.0  I  0.2  21  ID 8179460860
10/07 12:22    4917                1.3    1.2  I  0.3  23  NT 6263057673
10/07 12:22    6812                0.9    0.0  O           1  NT 16318163502
10/07 12:23                NOANS    0.0  I  0.4  20  ID 3368612030
10/07 12:30                NOANS    0.0  I  0.3  21  ID 9723981378
10/07 12:29    5027                0.9    0.0  O           3  NT 18136533488
10/07 12:30                NOANS    0.0  I  0.1  23  ID 3362742052
    
```

Col	Value	Format	Justification
1-5	month/day	nn/nn	left
7-11	time call was initiated (24-hour)	nn:nn	left
15-18	station number nnnn - right		
21-28	account code (two lines if greater than 8 digits with second line starting at column 13)	nnnnnnnn	right
30-34	call duration (minutes and tenths or NOANS)	nnn.n	right
37-43	1. SMDA hold time (if enabled)	nnnn.n	left

2. SMDA meter pulse (if enabled)	nnnnn	left
3. call cost (if enabled)	\$nnn.nn	left
46-46 call type (I = incoming, O = outgoing)	n	left
47-48 not currently used		
49-52 ring time (incoming call)	nn.n	right
54-56 line number	nnn	right
57-59 caller ID line	ID	left
61-76 digits dialed on line (maximum of 16) nnnn . . .	n	left

### Tadiran Coral

DATE	TIME	ELAP	TK-G	TK-N	MTR	ST	CODE	IN	DIAL_TO	XFR
09/10	11:28	1:31	80	7217	0	7108	---	Y		
09/10	11:31	0:55	80	7217	0	2715	---	Y		
09/10	11:26	9:08	T-1	7207	\$ 0.0	4751	---		16303697999	
09/10	11:33	2:33	80	7217	0	4749	---	Y		
09/10	11:39	0:01	80	7216	0	7108	---	Y		
09/10	11:40	0:22	7-10	7209	\$ 0.0	4724	---		2226788	
09/10	11:40	0:22	84	7108	\$ 0.0	7216	---		4757	
09/10	11:40	0:24	80	7216	0	7108	---	Y		
09/11	12:36	1:58	84	7109	\$ 0.0	4729	---		4729*	
09/11	12:46	0:07	84	7108	\$ 0.0	7217	---		X	
09/11	12:46	1:29	80	7217	0	7108	---	Y		
Samples with ANI										
11/17	15:42	1:32	82	7102	0	432	---	Y	I E4733	---
11/17	15:44	0:10	81	7145	0	2505	---	Y	N E155	---
11/17	15:44	0:05	81	7145	0	2500	---	Y	N E155	---
11/17	15:48	0:03	81	7145	0	2505	---	Y	N E156	---
11/17	15:43	5:52	82	7120	\$ 0.0	7341	---		18008708390	---
11/17	15:49	0:30	81	7145	0	461	---	Y	N E156	---
11/17	15:49	0:02	81	7144	0	2500	---	Y	N E155	---
11/17	15:50	0:08	81	7145	0	2501	---	Y	N E155	---
11/17	15:49	0:39	82	7100	0	453	---	Y	I E2486979000	---
11/17	15:50	0:06	4850	7122	\$ 0.0	414	---		2478147	---
11/17	15:49	1:35	82	7101	0	455	---	Y	I E7137718433	---
11/17	15:51	0:08	4850	7122	\$ 0.0	422	---		6011256	---
11/17	15:50	2:16	82	7102	0	422	---	Y	I E5032276901	---
11/17	15:51	0:46	4850	7121	\$ 0.0	432	---		4591465	---

### Executone

[T]ime 3:30 pm Mon 06-14-04 <sup>3</sup>[O]perators Programming

Eclipse(C) 1998 EXECUTONE INFORMATION SYSTEMS, INC. 06-14-04 15:30											
TIME	TYPE	EXT	LINE	DUR	ACCOUNT#	NUMBER	DIALED	ANS	R.DUR	SRV	COST
15:29	**		001						01:21		
15:29	IN	021	002	00:37					021	01:19	
15:29	IN	015	024	00:35					015	00:56	
15:31	IN	015	024	01:03					015	00:23	
15:29	IN	012	023	03:21					012	00:49	
15:31	IN	005	011	02:15					035	00:26	
15:33	OUT	008	006	00:10		15618098932				DDD	
15:32	IN	011	001	00:56					021	00:47	

```
|15:32| IN |034| 003|02:15|           |           |034|00:08| |   |
|15:35| IN |012| 023|00:57|           |           |015|00:03| |   |
|15:30| IN |015| 022|04:56|           |           |015|00:28| |   |
|15:34| IN |028| 011|01:48|           |           |005|00:04| |   |
|15:36| IN |015| 022|00:19|           |           |015|00:05| |   |
|15:35| IN |011| 001|01:23|           |           |021|00:35| |   |
|15:37| IN |005| 011|00:03|           |           |005|00:33| |   |
|15:37| IN |015| 022|00:09|           |           |015|00:11| |   |
```

The headers across the top and the column headers appear the first time the output is re-initialized. Re-initialization occurs when Executone has to be restarted so the header / column info has to be ignored when it re-appears.

## InterTel

```
Station Message Detailed Recording                               14:25:12 10-07-2004
TYP EXT# TRUNK DIALED DIGITS START ELAPSED COST ACCOUNT CODE
TLD 680 91622 1-909-371-7998 13:58 00:00:28 $00.11 330
TLD 665 91607 1-201-239-6456 13:59 00:00:01 $00.11 322
TLD 235 94522 1-913-352-6678 13:59 00:00:10 $00.11 330 *
CNF 161 92120 1-304-722-5291 13:50 00:08:46 $00.99 330
CNF 161 92117 1-817-288-1620 13:56 00:02:40 $00.33 330
DID 173 91618 814-382-1131 888-533-7586 13:55 00:04:16 $00.00
DID 185 92118 304-599-8297 800-638-4636 14:02 00:00:49 $00.00
LOC 638 91721 630-7795 13:57 00:05:43 $00.00
TLD 1833 92102 1-925-373-2855 14:03 00:01:26 $00.22
IN 275 91701 719-266-1480 4040 14:05 00:00:56 $00.00 *
IN 275 91702 719-266-1480 4040 14:05 00:00:47 $00.00 *
DID 1833 91610 952-473-9414 888-891-8533 14:05 00:01:05 $00.00
DID 672 91604 817-820-0220 888-433-9984 14:04 00:02:23 $00.00
```

## Toshiba Strata

Each record spans two lines, each line ends with carriage return and line feed. The second line starts with " &".

```
Line 1
Column      Name                Format
1(1)        Record Type         N/S/X/E/B/I/T/A/C/M
2(1)        Space
3-5(3)      Record Number       XXX Record Number (000 -- 127)
6(1)        Space
7-12(6)     Node number         XX 00 - 99
13(1)       Space
14-22(9)    Orig Information    DN+XXXXXX           Prime DN
                                   CF+ XXXXX           X=ID of conference
                                   T+OLG+MMM+NN       T/A:Answersupervised/Unsupervised
                                   T+ILG+MMM+NN       ILG: Incoming Line Group
                                   A+OLG+MMM+NN       OLG: Outgoing Line Group
                                   A+ILG+MMM+NN       MMM: CO number/Channel Group No.
                                   NN: ISDN-Bch if caller seizes non-ISDN
                                   trunk, then 00 is shown as NN value.
                                   (Left positioned and padded space)
23(1)       Space
24-32(9)    Term Information
33(1)       Space
34-47(14)   Time stamp          MO/DD HH:MM:SS
```

N/E Record: End of Call  
 S Record: Start of Call  
 If 911, time trunk is seized.  
 X Record: Completion of transfer  
 B Record: The call is abandoned  
 I Record: System initialized  
 T Record: Original/New system time  
 A/C/M Record: Input account code  
 MO = Month(01 -- 12)  
 DD = Day (00 -- 31)  
 HH = Hour (00 -- 23)  
 MM = Minutes 00 -- 59)  
 SS = Seconds (00 -- 59)

48(1)	Space		
49-58(10)	Call duration	HH:MM:SS.S	HH = Hour (00 -- 23) MM = Minutes (00 -- 59) SS = Seconds (00 -- 59) S = always 0
59(1)	Space		
60-91(32)	Dial information	XX...X	Dials/Account Codes (Left positioned and padded space)
Line 2			
1(1)	Spaces		
2(1)	New line	&	
3-19(17)	Caller ID	XXX...XXX	Caller ID
	CESID	C+ XXX...X	CESID (Left positioned and padded spaces)
20(1)	Spaces		
21-24(4)	DISA	DISA	
25(1)	Spaces		
26-38(13)	ANI	XXXXX...XXXX	(00 -- 99) Area Code (000 -- 999) Exchange Code (000 -- 999) Extended Exchange code (0000 -- 9999)
39(1)	Spaces		
40-46(7)	DNIS	XXXXXXXX	(0000000 -- 9999999)
47(1)	Spaces		
48-54(7)	AUXID 1	DN+XXXXX	XXXXX = Prime DN (Responsibility for outgoing)
55(1)	Spaces		
56-62(7)	AUXID 2	NN+XXXXX	NN = Node number (00 - 99) XXXXX = Prime DN

Record types

B (aBandoned) When a call is abandoned  
 N (Normal) Simple outgoing or incoming call  
 S (Start) Start of complex outgoing or incoming call or 911 call  
 X (transfer) When a call is transferred  
 E (End) This record is associated with a specific S or X records, and indicates termination of a call  
 I (Initial) When system is initialized  
 T (Time) When the system time or date is changed  
 A (Authorization) When the input Account Code is verified and the result is successful, the Account Code is defined as the Authorization Code.  
 C (Charge Account) When an Account Code is entered

M (Charge Conference) When an Account Code is entered during a conference call

The use of multiple records allows the CIX to account for multi-stage calls such as transfers and conferences. A simple outgoing or incoming call would generate a Normal record. A transferred call would generate a START record for the first segment of the call and an END record for the second segment of the call. The appropriate times would be stored in each. A detailed description of SMDR is provided in a separate manual. Several fields in the record may be displayed or masked based on system programming. They include DISA security codes, authorization codes, ANI, DNIS, and Caller ID.

```

N 089      DN213      A00300323 05/17 12:46:08 00:00:47.0 12126516429
&
N 090      DN253      A00300323 05/17 12:51:47 00:00:33.0 5155162
&
N 091      T00100120 DN231      05/17 12:52:39 00:01:52.0
&
&6216XXX
N 092      DN205      A00300323 05/17 12:56:06 00:00:18.0 7067597
&
N 093      DN213      A00300322 05/17 12:57:07 00:00:55.0 13022826446
&
N 094      DN253      A00300321 05/17 13:01:17 00:02:49.0 5155162
&
N 095      DN249      A00300309 05/17 13:02:06 00:00:07.0 16106961465
&
N 096      T00100110 DN7701     05/17 13:02:07 00:00:28.0
&7042324779XXXXXXXXX      8986XXX
N 102      T00100114 DN7703     05/17 13:06:41 00:00:55.0
&4029382050XXXXXXXXX      0220XXX
S 116      T00100120 DN219     05/17 10:47:40 00:00:25.0
&7035684782XXXXXXXXX      9094XXX

```

## SAMSUNG IDCS

Column	Name	Format
1(3)	Space	
4(1)	Tenant digit	
5(1)	Space	
6-9(4)	Extension	2-4 digits, left justified, padded with space
10(1)	Space	
11-14(4)	Authorization code	4 digits
15(1)	Space	
16-19(4)	CO line no	2-4 digits, left justified, padded with space
20(1)	Space	
21-25(5)	Date call made or rev	MM/DD
26(1)	Space	
27-34(8)	Time call made or rev	HH:MM:SS
35(1)	Space	
36-43(8)	Call duration or cost	HH:MM:SS or \$ dd.25
44(1)	Space	
45-46(2)	Call type flag	O Outgoing call I Incoming call DI DISA call in DO DISA call out FO Outgoing record of forwarded call

A Abandoned call  
 IA Incoming Ring time before being answered  
 DE DISA call with error  
 T Transferred call that was terminated  
 IT Incoming transfer  
 FI Incoming call forwarded to an external number  
 OT Outgoing transferred  
 TT Caller received a transferred call and transferred it

again  
 47(1) Space  
 48-55(18) Dial information Dialed number, left justified, padded with space  
 56(1) Spaces  
 57-69(12) Account code 1-12 digits  
 70(1) Spaces  
 71-85(15) CID/ANI ANI/CID, left justified, padded with space  
 86(1) Spaces  
 87-101(15) CID/ANI name

```
=====
====
  T EXT  AUTH TRK  MM/DD STT.TIME DURATION FG DIALED DIGIT      ACCOUNT CODE  CID/ANI NUMBER  CID/ANI
NAME
=====
====
  1 311      701  05/31 09:03:12 00:00:20 IT
  1 720      701  05/31 09:03:32 00:00:49 T
  1 701      720  05/31 09:03:23 00:00:43 O 2256358
  1 311      702  05/31 09:04:22 00:00:24 I
  1 202      720  05/31 09:10:14 00:00:05 O 18004053149
  1          702  05/31 09:16:24 00:00:01 I
  1 302      701  05/31 09:20:15 00:00:48 IT
  1 371      720  05/31 09:50:06 00:00:45 O 186422098843621
```

## Nitsuko I Series

10/11/2005 PAGE 028

CLASS	TIME	LINE	DURATION	STATION	DIALLED No./CLI	ACCOUNT
01	POT	10:57 t-1 5	00:00:32	352	7278222019	
02	POT	10:57 t-1 1	00:01:04	368	2259267010	
03	POT	10:58 t-1 5	00:00:00	318	1813628	
04	POT	10:58 t-1 1	00:00:00	318	162	
05	POT	10:56 t-1 14	00:01:49	317	16039247777	
06	POT	10:57 t-1 7	00:00:55	315	12157414200	
07	POT	10:57 t-1 2	00:01:33	316	18126638822	
08	POT	10:58 t-1 6	00:00:29	352	4084486537	
09	POT	10:56 t-1 15	00:02:36	345	16053610361	
10	POT	10:59 t-1 6	00:00:00	316	180	
11	POT	10:58 t-1 1	00:00:56	318	18136204300	
12	BFL	10:00 28903				

## NEC 2000 and 2400

CT Gateway only supports SMDR using RS232 serial connection.

Start of packet - <STX>

Station address - always 0  
 Unit address - always !  
 1 Entry index - always K  
 2 Type of record - A: outbound, 2400 IMS format  
                   E: inbound, 2400 IMS format  
                   H: outbound, Extended 2400 IMS format  
                   I: inbound, Extended 2400 IMS format  
                   B: Station to station call (2400 only)  
                   J: Station to station call (2400 only)  
 3-5 Trunk route (000-063) (blank for station to station call)  
 6-8 Trunk # (000-255) (blank for station to station call)  
 9 Calling/Called party ID  
     0=PBX/Centrex Station  
     1=Attendant (Operator)  
     2=Trunk Route Number + Trunk Number  
 10-11 Tenant no. (01-63)  
 12-17 Calling party (outbound)  
       Called party (inbound)  
       Calling station number (if byte 9=0)  
       When station number is 7 digits or more, last 6 digits are output.  
 18-19 Start month (MM)  
 20-21 Start day (DD)  
 22-23 Start hour (hh)  
 24-25 Start minute (mm)  
 26-27 Start second (ss)  
 28-29 End month (MM)  
 30-31 End day (DD)  
 32-33 End hour (hh)  
 34-35 End minute (mm)  
 36-37 End second (ss)  
 38-47 Account code  
 48-50 Tenant (outbound)  
 51-53 The Condition Code consists of three characters, indicating the  
       type of methods used for setting up a call. Individual characters  
       indicate the following information.  
       Condition Code-1 (Character 051)  
         0=Ordinarily originated call  
         1=Transferred call  
       Condition Code-2 (Character 052)  
         0=A call without Account Code or Outgoing trunk queuing.  
         1=Outgoing trunk queuing and no Account Code  
         2=Account Code has been entered but No Outgoing trunk queuing  
         3=Outgoing trunk queue and Account Code has been entered  
       Condition Code-3 (Character 053)  
       For outgoing call  
         0=Station originated call, regular outgoing or Tandem call  
         1=Attendant assisted call  
         2=Route advanced call  
         3=Route advanced and attendant operator assisted call  
         4=Least cost routing  
         5=Least cost routing and Attendant assisted call  
         6-9=not use  
       For incoming call  
         0=Directly terminated call such as DIT or DID call.  
         1=Attendant assisted call

2-9=not use  
 For station to station call, code=000.

54-56 Route number 1  
 57-59 Route number 2 (outbound)  
 60-91 Called number (outbound call)  
 blank (inbound call)  
 Station to station call  
 60-61: Tenant number  
 62-67: Called station number  
 68-70: Tenant number

92-95 Call metering  
 96-99 Calling office (outbound)  
 100-103 Billing office (outbound)  
 104-113 Authorization code (outbound)  
 96-111 ANI (inbound, for E record)  
 114-115 Start year (yy)  
 116-117 End year (yy)  
 118 Condition code (outbound)  
 0 - no charge  
 2 - charge by 1 cent  
 1 - charge by 0.1 cent  
 ? - excessive charging

119-124 Advice of charge (outbound)  
 125-128 Space

129 End of text <ETX> (for A and E records)  
 129 Data identification - always A (for H and I records)  
 130 ANI info output identification  
 0 - No ANI info is output (ANI info field are all space)  
 1 - ANI inf is output

131-162 ANI (inbound, for I record)  
 163 End of billing info - Z  
 164 End of text <ETX>

NEC 2000 sample

```
<STX>0!KE011002001511 08181216130818121657 001000011000
0000 0505 <ETX>
<STX>0!KA0110140018264 08181215370818121659 0010040110118003363333
0000 05050 <ETX>
```

NEC 2400 with station to station calls.

```
<STX>0!KB 001396 10041611321004161204 001000 01470 001
0000 0505
<STX>0!KE0110150016045 10041606201004161213 001000011000
00008139671243 0505
<STX>0!KA0130220018776 10041612231004161324 0010040130137818798
0000 05050
```

## Nortel BCM 400 (SL-1 format)

The BCM 400 can provide SMDR in Norstar and SL-1 formats. Most of the Norstar format records only provide the “Target line” (this is essentially the hunt group for the trunks) instead of the “Physical line” (the trunk number), thus a trunk-side recording system is only supported with ISDN D-channel integration and using ANI matching.

First line

Column	Name	Format	Definition
1	RecType	Y	report type
2	Blank		Blank space
3-5	RecNo	XXX	report seq number
6	Blank		Blank space
7-8	CustNo	00	Customer number
9	Blank		Blank space
10-16	OrigID	TXXXXXX	Line number
		DNXXXX	STN number
		CF00001	Conference number
17	Blank		Blank space
18-24	TerID	TXXXXXX	Line number
		DNXXXX	STN number
25-37	Blank		Blank space
38-48	TimeStamp	MM/DD HH:MM	Time stamp
49	Blank		Blank space
50-57	Duration	HH:MM:SS	Call duration
58	Blank		Blank space
59-90	Digits	XXX...X	Dialed digits
50-61	AccCode	XXX...X	Account code (C report)

## Second line

Column	Name	Format	Definition
3-18	CLID	XXX...X	CLID number
11-15	AOCE	XXXXXX.XX	Call charges
11-15	Pulse Charge	nnnnn (00000-32767)	Pulse charge for the call. Valid only for ETSI ISDN lines that support AOCE.
17-22	Currency Charge	nnnnn (000000-999999)	Currency charge for the call. Valid only for DASS2 and ETSI ISDN lines that support AOCE.

## Letter code Report option

I Initialization report  
 N Normal report  
 S Start report  
 E End report  
 A Authorization report  
 C Charge report  
 M Conference Charge report

The I (Initialization) report option contains only the report type and time stamp. The S (Start) option, E (End) option, M (Conference charge) option, and C (Charge) option reports do not contain the duration field. The E (End) option report does not contain any dialed digits.

## SL-1 Target line/Physical lines

When Target lines are used on digital trunks, reports show both the target line number and the physical line number. The following diagram shows an example of an incoming call on target line 103 and transferred to another station set. The physical line is 37.

The physical line is the actual trunk number. Target line is like a "hunt group #"

```
S 029 00 T037103 DN7499 04/04 15:02
E 030 00 T037103 DN7370 04/04 15:07
```

## Auto Attendant and Call Center station set numbers

When the Auto Attendant answers incoming calls, the station set number reports as the DN of the Auto Attendant. When Call Center answers incoming calls, the station set number reports as the Control DN (CDN) of the Skillset that answered the call.

```

N 077 00 DN2556 T112000          07/21 13:57 00:00:56 12393328869
N 078 00 DN2372 T080000          07/21 13:57 00:00:47 12022702724
S 079 00 T061276 DN2437          07/21 13:55
                                6023434249xxxxxxx
X 080 00 T061276 DN2436          07/21 13:56
                                6023434249xxxxxxx
E 081 00 T061276 DN2436          07/21 13:57
                                6023434249xxxxxxx
N 082 00 DN2259 T106000          07/21 13:57 00:01:18 19722402133
N 083 00 DN2379 T111000          07/21 13:57 00:00:48 18704285809
S 084 00 T061296 DN2409          07/21 13:57
                                6024139723xxxxxxx
X 085 00 T061296 DN2438          07/21 13:57
                                6024139723xxxxxxx
E 086 00 T061296 DN2438          07/21 13:57
                                6024139723xxxxxxx
N 087 00 DN2372 T112000          07/21 13:57 00:00:33 14194833745

```

This integration also requires the BCM400CDRClient.exe application. The CTSMDR.DLL must be configured as a TCP/IP client, connecting to the BCM400CDRClient to receive SMDR data. See the BCM400CDRClient section for details on configuring this application.

## BCM400CDRClient application

This application is required to receive SMDR data from the BCM 400 PBX. This application listens on a TCP/IP port (default is 1301) for client (*CT Gateway*) connection. On client connection, it connects to the PBX to receive SMDR and passes the SMDR packets to its client.

### Installation

To install on the Encore server:

1. If not already installed, copy **BCM400CDRClient.exe** and **CDRServer.exe** to **C:\Program files\wygant\CTGate** folder.
2. Run **CDRClient.exe -RegServer** from a command prompt to register the DCOM server.
3. Run **DCOMCNFG.exe** (this program is part of the operating system) from a command prompt. Select the **Default properties** tab and set **Default Authentication Level** to **None**.

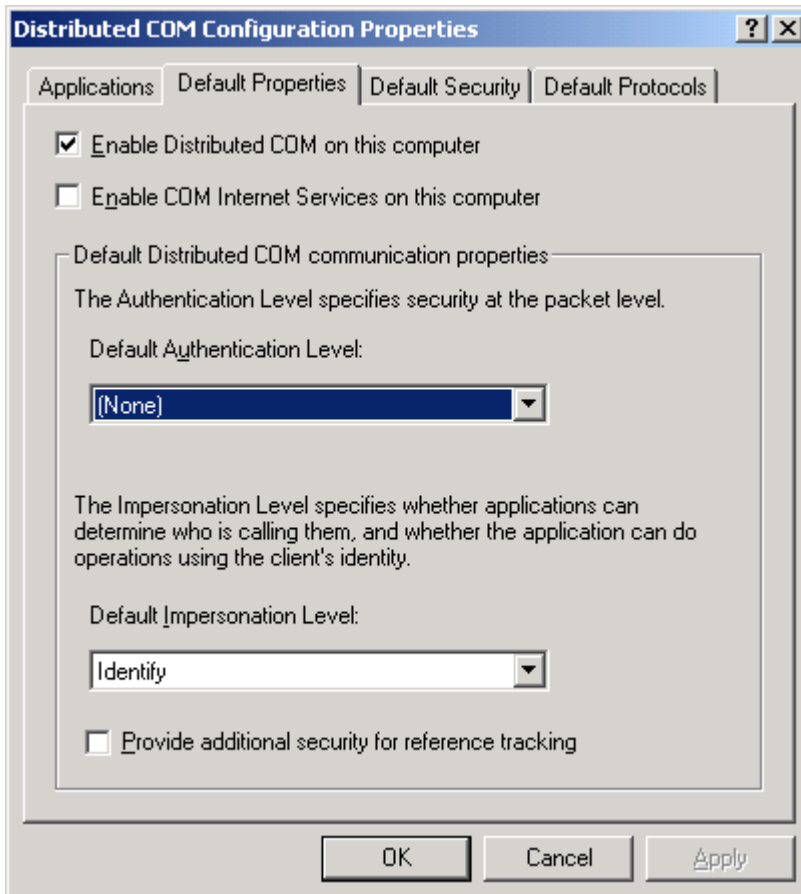


Figure 8: Distributed COM Configuration Properties

### To install on the PBX:

The user account that the *Encore* server is logged on (usually **EncoreServer**) must be added to the BCM system using the Unified Manager. This user must be a member of the **CDRUserGroup** group.

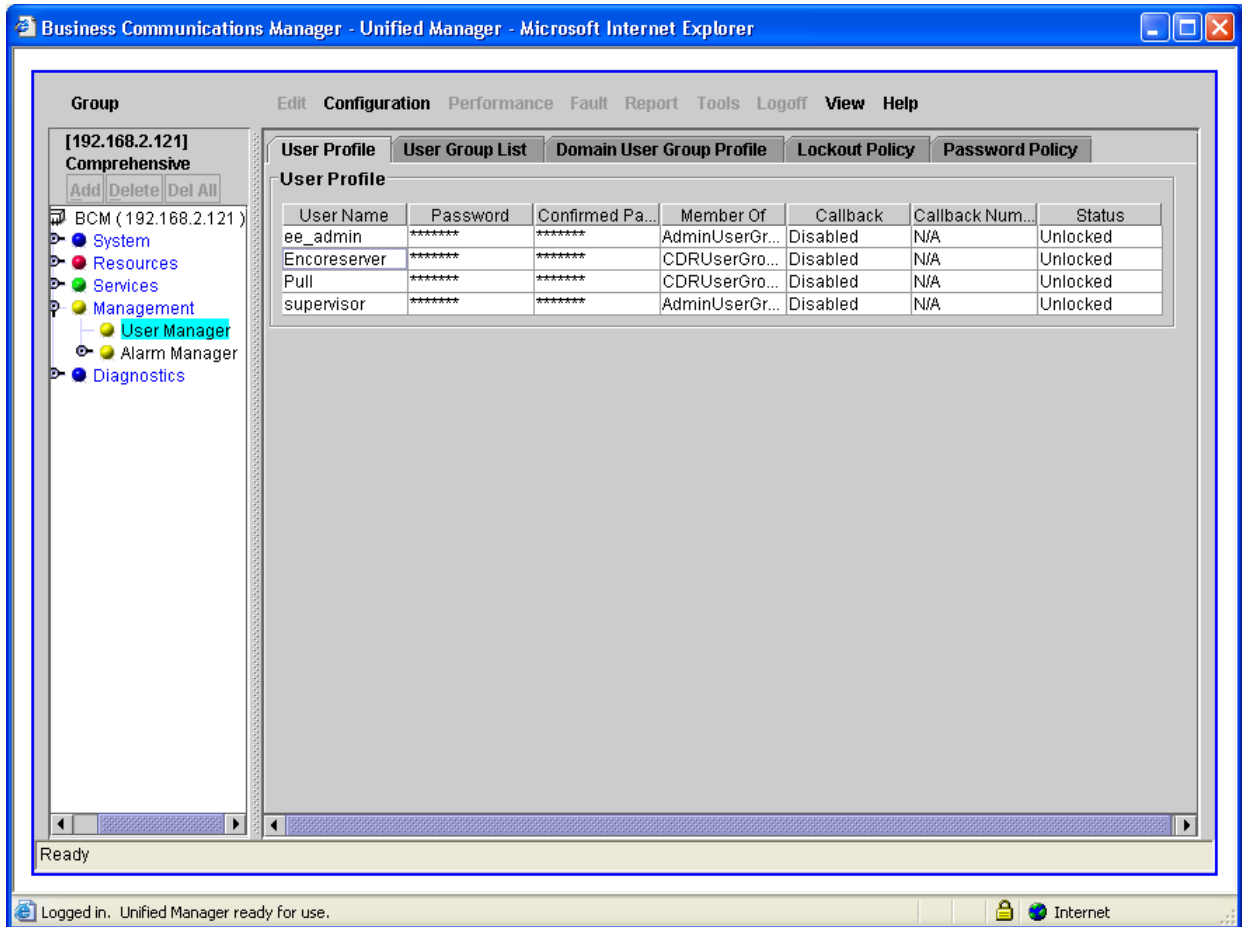


Figure 9: Unified Manager

Also use the Unified Manager to set the following CDR report parameters:

- Format = SL-1
- Report Type = SL-1 Standard or SL-1 CLID
- Select SL-1 CLID if CLID is available.

## Connecting to multiple BCM PBXs

A separate instance of BCMCRDClient must be used to connect to each BCM PBX.

For each instance, create a shortcut to the **BCMCDRClient.exe**. Add **-C:<name>** to the **Target** of the shortcut. Where name is replaced by the name of the instance.

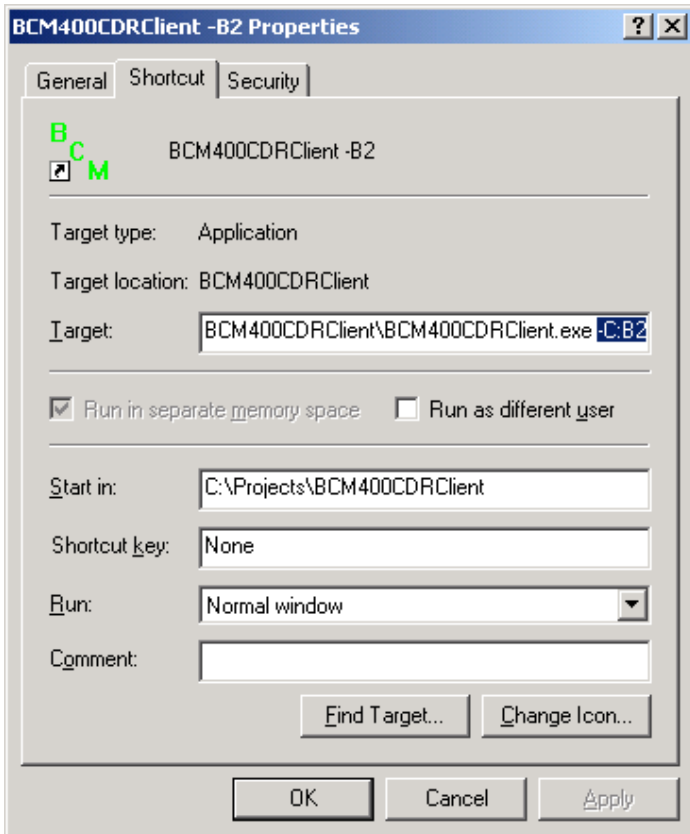


Figure 10: B2 Properties

Each instance must be configured with a different PBX IP address and TCP/IP port.

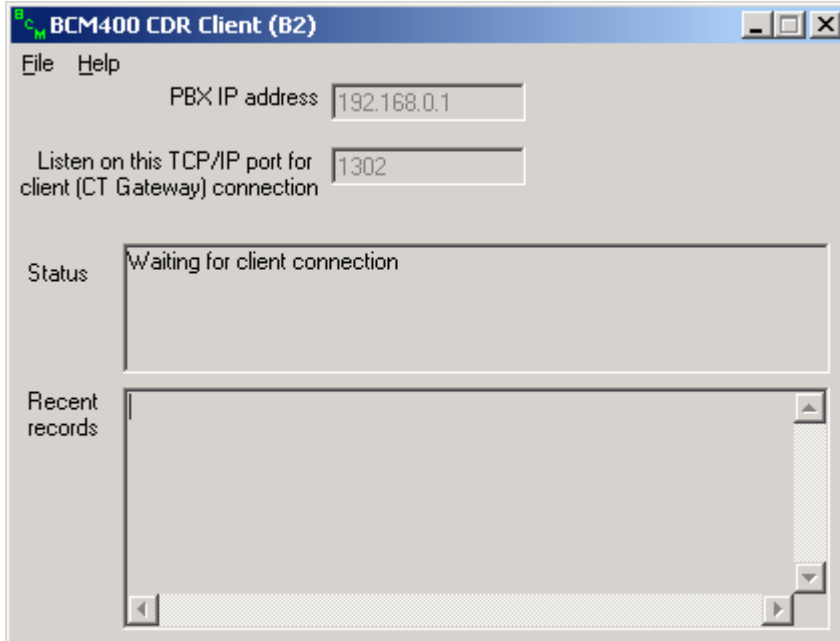


Figure 11: PBX IP address

A separate instance of *CT Gateway* is also required for each PBX. Each instance will also required a **-C:<Name>** on the shortcut target and a different INI file. Each instance of the *CT Gateway* must be configured to connect the corresponding TCP/IP port specified in the BCMCDRClient.