Connectivity Guide

This document provides diagrams of switch interface configurations — cabling, devices, and/or network components — required to deliver switch data to an eCAS, eCAS Lite, or VeraSMART call accounting system.

It also provides connectivity and/or programming details for the following switches:

◆ 3COM NBX (network connection via 3COM NBX Protocol) *

◆ Avaya DEFINITY G3 and DEFINITY ProLogix (serial output)

◆ Avaya DEFINITY G3 rel 10, load 43 / MultiVantage or Communications Manager rel 11, load 110+ (network connection via Reliable Session Protocol) *

◆ Avaya DEFINITY One / S8100 / IP600 (network connection)

◆ Avaya IP Office 3.1 (network connection)

◆ Avaya IP Office 3.0 (network connection via Delta Server)

◆ Avaya Merlin Legend / Magix (serial output)

◆ Avaya Partner Plus / II / ACS (serial output)

◆ Cisco CallManager 3.x or 4.x (network connection via CCM Protocol) *

◆ Cisco CallManager Express (network connection via CME Protocol) *

◆ Aastra NeXspan (serial output or network connection via Direct Connect over IP) *

◆ NEC NEAX 2400 IMS / 2000 IPS / 2000 IVS (serial output)

◆ Nortel Business Communications Manager (network connection via BCM Protocol)

◆ Nortel Networks Communication Server 1000 Rel 4 / Meridian 1 / SL1 - X11 (serial output)

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* eCAS Lite does not support these collection methods.

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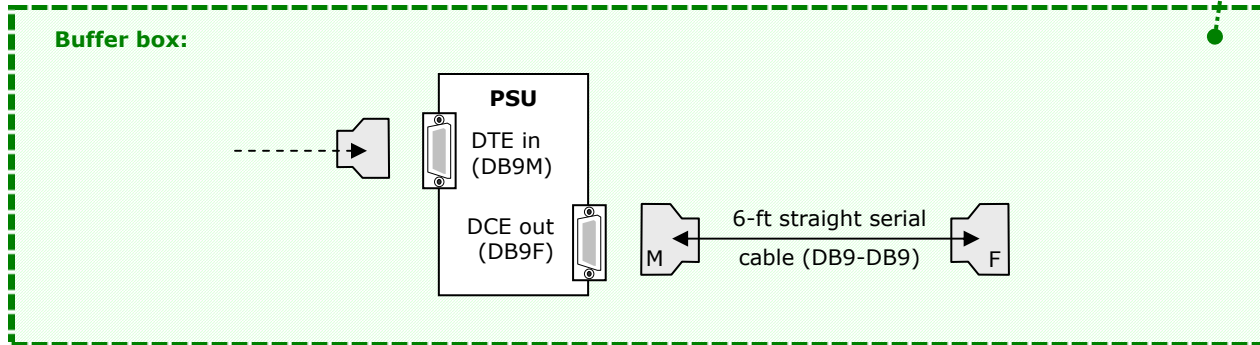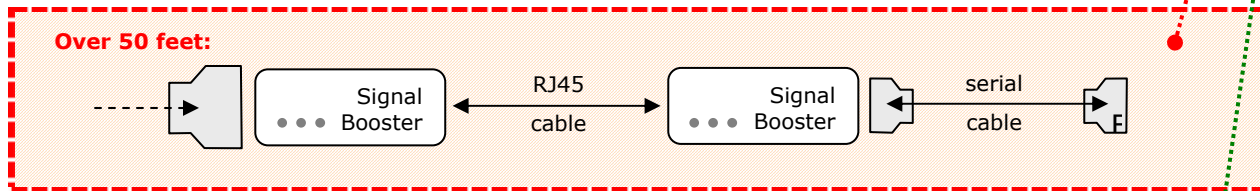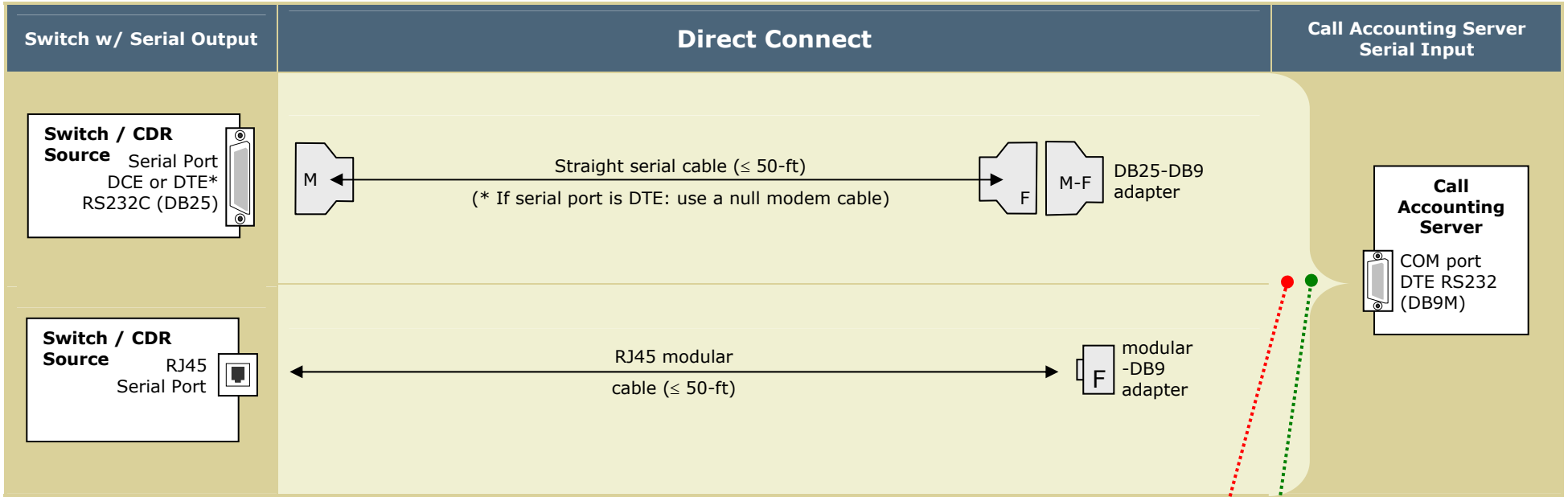Page 2 of 29

Switch Connectivity (Generic)

The diagrams in the following pages illustrate solutions for switch interfaces, whether in a single- or multi-switch environment. You can start from the type of CDR/SMDR output available from the switch, and then consider distance and possible data transfer methods.

Output	Distance	Device / Call Collection Method	
Serial	Up to 50 ft	None or PSU (as buffer box)	Direct Connect
	50 - 5000 ft	Signal boosters	
	Over 5000 ft	*Remote direct connect* [(*)]	
		Dial-up PSU	PollComm Remote
		eCAS / Lite + modem	Call Accounting System (Modem)
		PSU III — or — PSU II + MSS-100	PollComm Network
		eCAS / Lite + LAN/WAN	Call Accounting System (Network)
Network	N/A	LAN / WAN [(**)]	Collect from file (local or remote)
			Direct Connect over IP
			Other protocols: 3COM NBX, Avaya IP Office, Nortel BCM, Cisco CallManager

[(*)]   Remote direct connect is a variant of a "Direct Connect" in a multi-switch environment — where users have arranged with their Telcos and/or facility engineers to bring all switch output to an RS-232 interface within 50 ft of the eCAS Server.

[(**)]   Depends on switch tool for CDR/SMDR delivery. Supported interfaces: 3COM NBX, Avaya DEFINITY RSP, IP Office SMDR (Delta Server), DEFINITY One/IP600/S8100; Nortel BCM; Cisco CallManager; Aastra NeXspan.

Direct Connect

Switch w/ Serial Output	Direct Connect	Call Accounting Server Serial Input

Switch / CDR Source Serial Port DCE or DTE* RS232C (DB25)

Straight serial cable (≤ 50-ft)

(* If serial port is DTE: use a null modem cable)

M   F   M-F   DB25-DB9 adapter

Call Accounting Server COM port DTE RS232 (DB9M)

Switch / CDR Source RJ45 Serial Port

RJ45 modular

cable (≤ 50-ft)

F   modular -DB9 adapter

Over 50 feet:

Signal ● ● ● Booster   RJ45 cable   Signal ● ● ● Booster   serial cable   F

Buffer box:

PSU DTE in (DB9M)

DCE out (DB9F)   M   6-ft straight serial cable (DB9-DB9)   F

Switch w/ Serial Output	Remote Direct Connect	Call Accounting Server Serial Input

Switch 1

Wall field house wire

Ext. Loc.

Signal Converter

Switch 2

Wall field house wire

Ext. Loc.

Signal Converter

Call Accounting Server

Software-controlled multi-port board

Switch n
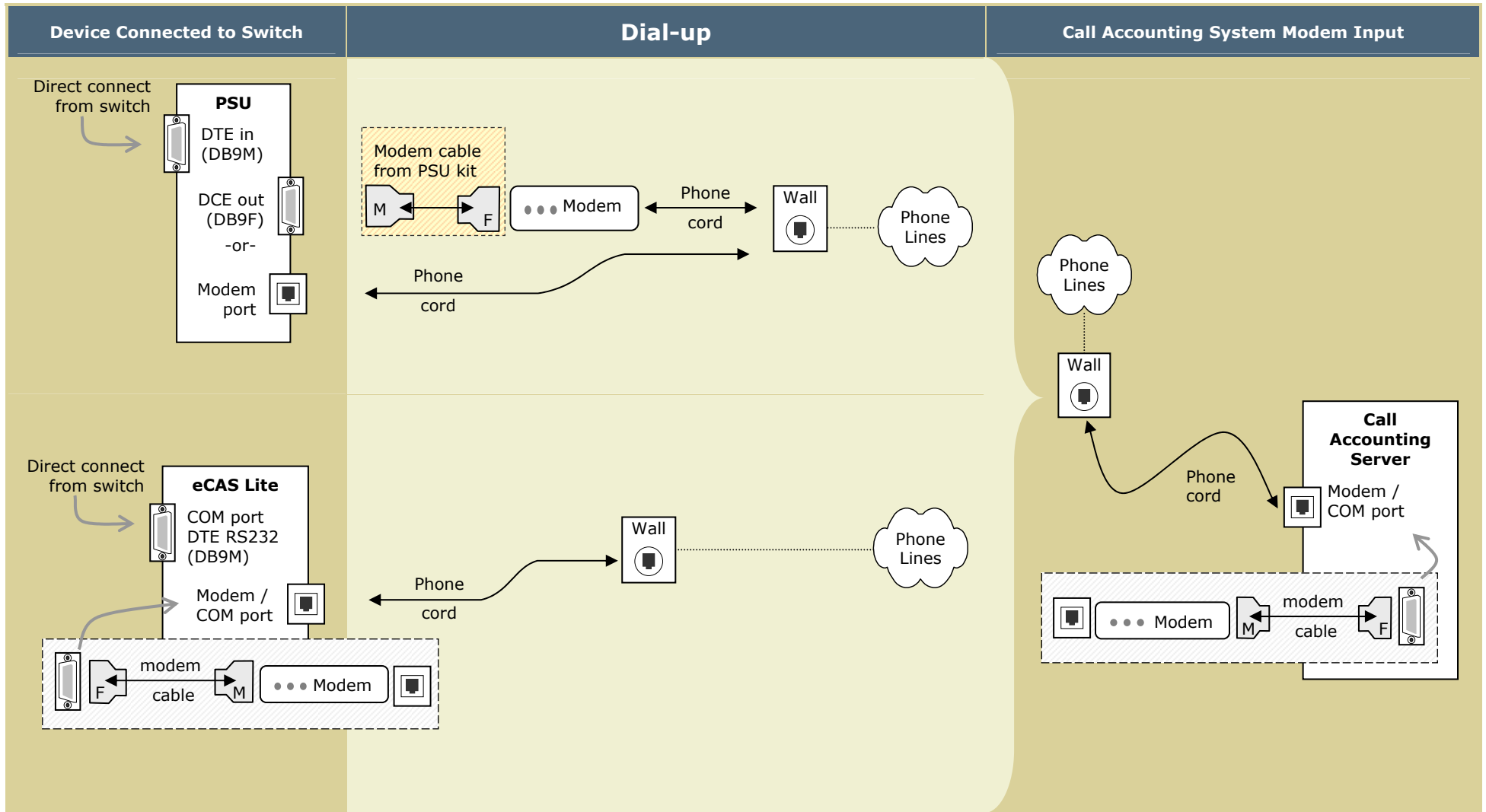
Wall field house wire
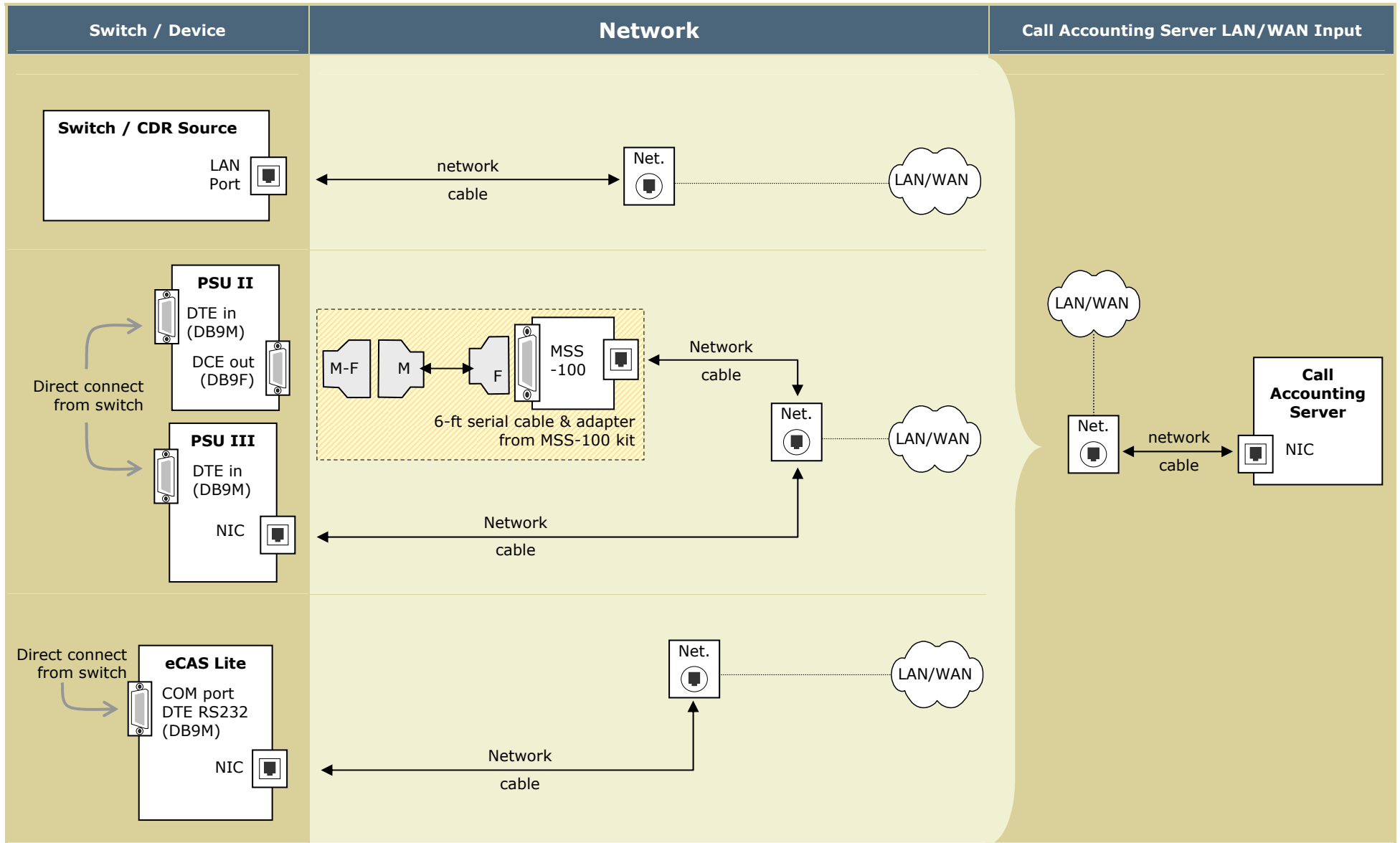
Ext. Loc.

Signal Converter

multi-port cable

It is the user's responsibility to have arranged the delivery of switch output — wiring, signal converter devices, phone lines, cables, gender changes, and/or adapters — to within 50 ft of the call accounting server. Refer to pages 10 - 13 for samples.

Dial-up Solutions

Device Connected to Switch	Dial-up	Call Accounting System Modem Input

Direct connect from switch

PSU

DTE in (DB9M)

DCE out (DB9F)

-or-

Modem port

Modem cable from PSU kit

M — F

••• Modem

Phone cord

Wall

Phone Lines

Phone cord

Phone Lines

Wall

Direct connect from switch

eCAS Lite

COM port DTE RS232 (DB9M)

Modem / COM port

modem cable

F — M

••• Modem

Phone cord

Wall

Phone Lines

Call Accounting Server

Modem / COM port

Phone cord

••• Modem

M — F

modem cable

Network Solutions

Switch / Device	Network	Call Accounting Server LAN/WAN Input

Switch / CDR Source

LAN Port — network cable ⟷ Net. ⋯ LAN/WAN

PSU II
DTE in (DB9M)
DCE out (DB9F)

Direct connect from switch

PSU III
DTE in (DB9M)
NIC

M-F — M ⟷ F — MSS-100 — Net.
6-ft serial cable & adapter from MSS-100 kit
Network cable ← Net. ⋯ LAN/WAN
Network cable

LAN/WAN
Net. — network cable ⟷ NIC

Call Accounting Server
NIC

eCAS Lite
COM port DTE RS232 (DB9M)
NIC

Direct connect from switch

Net. ⋯ LAN/WAN
Network cable

3COM NBX (Network Connection)

Connectivity

Switch ←network cable→ Net. ·········· LAN/WAN ·········· Net. ←network cable→ Call Acc. Server

Programming Notes

Set up the interface to a 3COM NBX switch via a TCP/IP network:

1. Using Internet Explorer, access the NBX server (web address = **http://server IP address**) and log in as administrator.

2. Access: **Tab to it** > **Reports** > **Call Reporting** tab, then set:

   Call Detail Reporting = **enabled** with the last **0** digits scrambled

   ☑ Export data unscrambled (You can leave all other defaults.)

3. Access: **Tab to it** > **System Configuration** > **Security** tab > **Reporting Password** button, then set the reporting password.

4. Collect required information for call accounting setup:

   ◆ NBX server fixed IP address (step 1)
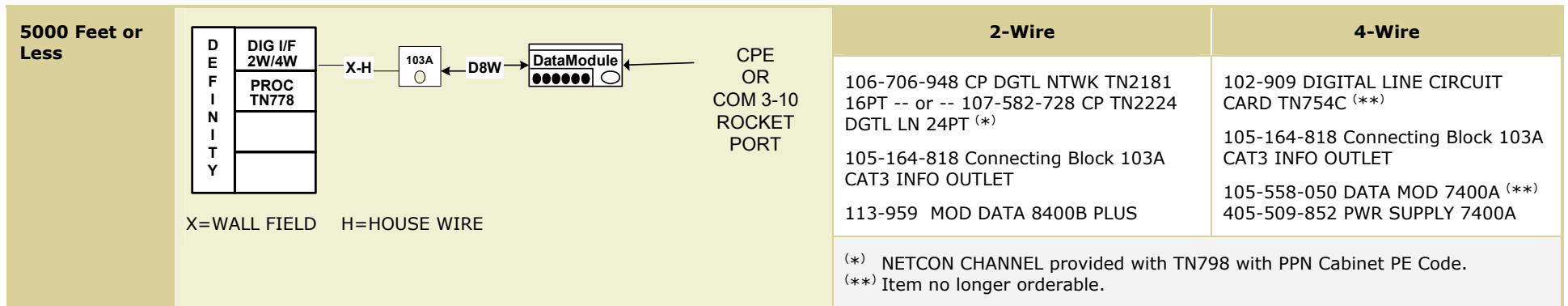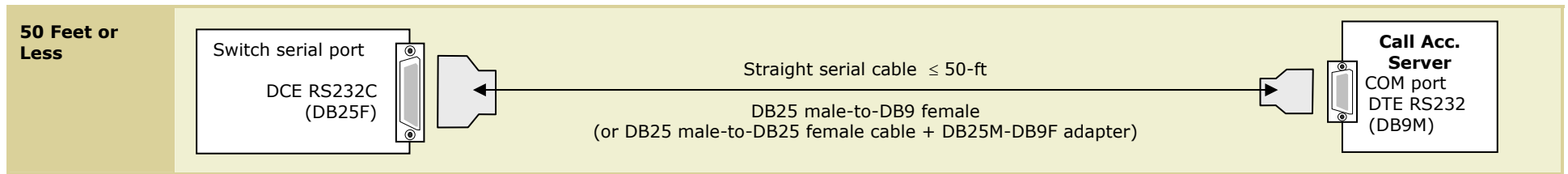   ◆ Reporting password (step 3)

3COM® NBX® 100 & SuperStack® 3 NBX

Avaya Switches

This section details connectivity and interface preparation for the following switches:

◆ DEFINITY G3 or DEFINITY ProLogix (serial output)

◆ DEFINITY G3 / MultiVantage / Communications Manager / S8300, S8500, S8700 (Reliable Session Protocol)

◆ DEFINITY One / IP600 (network connection)

◆ IP Office (network connection)

◆ Merlin Legend/Magix or Partner Plus/II/ACS (serial output)

DEFINITY G3	DEFINITY ProLogix	Partner Plus/II/ACS	Merlin Legend/Magix

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DEFINITY G3 or DEFINITY ProLogix (Serial Output - Direct Connect)

50 Feet or Less

Switch serial port
DCE RS232C (DB25F)

Straight serial cable ≤ 50-ft

DB25 male-to-DB9 female
(or DB25 male-to-DB25 female cable + DB25M-DB9F adapter)

Call Acc. Server
COM port
DTE RS232
(DB9M)

5000 Feet or Less

DEFINITY / DIG I/F 2W/4W / PROC TN778 — X-H — 103A — D8W — DataModule ← CPE OR COM 3-10 ROCKET PORT

X=WALL FIELD   H=HOUSE WIRE

2-Wire	4-Wire
106-706-948 CP DGTL NTWK TN2181 16PT -- or -- 107-582-728 CP TN2224 DGTL LN 24PT (*)	102-909 DIGITAL LINE CIRCUIT CARD TN754C (**)
105-164-818 Connecting Block 103A CAT3 INFO OUTLET	105-164-818 Connecting Block 103A CAT3 INFO OUTLET
113-959 MOD DATA 8400B PLUS	105-558-050 DATA MOD 7400A (**) 405-509-852 PWR SUPPLY 7400A

(*) NETCON CHANNEL provided with TN798 with PPN Cabinet PE Code.
(**) Item no longer orderable.

Programming Notes

1. Login into the switch via the *System Access Terminal (SAT).*

2. From the **Command:** prompt, type **Change System CDR** and press **Enter**.

3. The screen should look similar to the example on the right. Make certain to use these values:
   ◆ Primary Output Format: **UNFORMATTED**
   ◆ Primary Output Ext: **EIA** (or a **Data Extension #**)

4. Collect required information for call accounting setup (typical values in **bold**):

   Baud rate = **9600**; data bits = **8**; parity = **None**; stop bits = **1**; flow control = **DTR/RTS**


```
display system-parameters cdr                                    SPE B
                         CDR SYSTEM PARAMETERS

Node Number (Local PBX ID): 1                CDR Date Format: month/day
      Primary Output Format: UNFORMATTED    Primary Output Ext: EIA
      Secondary Output Format:
            Use ISDN Layouts? n              EIA Device Bit Rate: 9600
        Use Enhanced Formats? n

                   Record Outgoing Calls Only? n       Intra-switch CDR? n
     Suppress CDR for Ineffective Call Attempts? y        CDR Call Splitting? y
         Disconnect Information in Place of FRL? n    Attendant Call Recording? y

Force Entry of Acct Code for Calls Marked on Toll Analysis Form? n
                              Calls to Hunt Group - Record: member-ext
Record Called Vector Directory Number Instead of Group or Member? n


       Record Non-Call-Assoc TSC? n
        Record Call-Assoc TSC? n    Digits to Record for Outgoing Calls: dialed
         Privacy - Digits to Hide: 7          CDR Account Code Length: 4


Command:
```

Continued...

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Programming Notes *(continued)*

The 7400A has a small p/c board which has **DCE** printed on one side and **DTE** printed on the other. Make certain the card is inserted so the **DCE** side faces the front of the data module.

7400A Data Module *

Part number: 105-558-050
Power supply: 405-509-852

* Item no longer orderable.
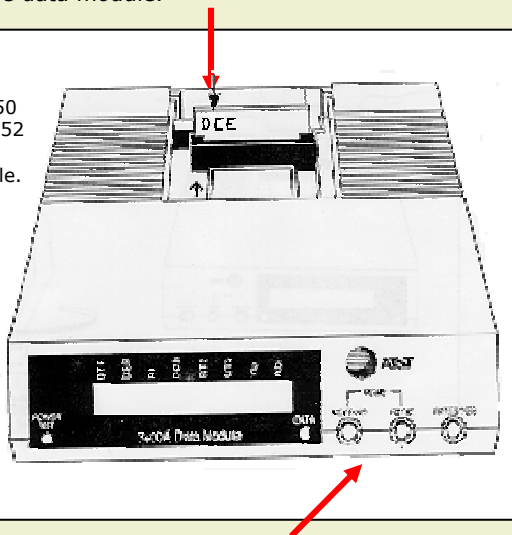
Front panel buttons (**Next/No**, **Back**, **Enter/Yes**) are used to set options. Use the **Next** and the **Back** buttons pressed simultaneously to return to the **Home Display**.
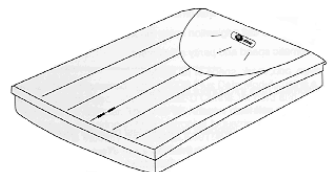
Set up the 7400A as follows:

1. Power up the 7400A. After the initial power-up self-test has passed, the **Home Display** appears on the front panel screen.

2. Set the interface mode to "answer only":

   Press the **Next** button 3 times until the display reads **Set Interface?** Press the **Yes** button, verify this is set to **Answer Only** (otherwise, press **Next** until the desired interface is displayed) and then press **Enter/Yes.** This will automatically reset the 7400A and it will perform another self-test.

3. After this self-test has passed, the 7400A returns to the **Home Display**.

   To set further options, press **Next**, wait for the display to read **Set Options?**, and then press **Yes**.

   The 7400A prompts for each option (**Set ___?**). To set that option, press **Yes**, then **Next** until the desired setting appears, and press **Enter**. The 7400A prompts (**Continue?**) to allow you to set other options. When all options have been set, press **Yes** to the **Done?** prompt. When the **Save Changes?** prompt appears, press **Yes** again.

4. After options have been saved, power off the 7400A and power it back on, so that it can read the new settings.

Continued...

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Programming Notes *(continued)*

8400B Plus Data Module
Part number: 113959
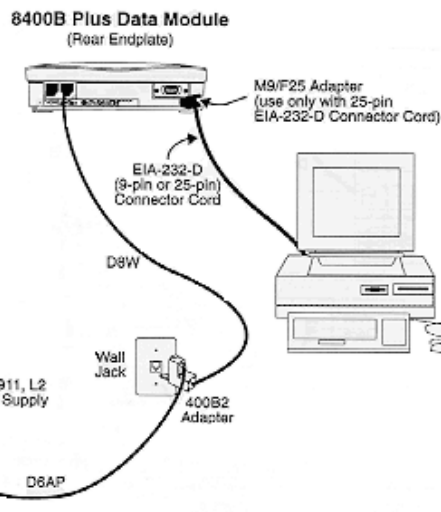
Set up the 8400B as follows:

1. Connect the 8400B to a configurator PC (COM1), as shown above. Power up the 8400B and the PC.

2. At the PC, access HyperTerminal (**Start > Programs > Accessories > HyperTerminal > HyperTerminal**).

   If you had established an 8400B session before, click on its icon and proceed to step 3; otherwise, type **8400B** for a new session, connect using **Direct to Com 1**, then click **OK** at the port settings.

3. When the HyperTerminal window appears, type **AT** and press **Enter**. The 8400B responds with **OK** (otherwise, check your power & data connections and try again).

4. One at a time, enter the following commands (each responds **OK**):

   AT&F
   ATS0=1
   ATS24=1
   AT&W0
   AT&W1
   AT&V

   Alternate entry method:

   AT&FS0S24=1&W0&W1&V

   The data reported should look like the following window. Verify the two options you just changed in all three profiles:

5. Close the HyperTerminal window, confirm that you want to disconnect and exit. If this was the first time you configured an 8400B, you will be prompted to save the session (click **Yes**). Disconnect PC.

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DEFINITY G3 / MultiVantage / Communications Manager / S8300, S8500, S8700 (Reliable Session Protocol)

Connectivity	
	Switch ↔ network cable ↔ Net. ⋯ LAN/WAN ⋯ Net. ↔ network cable ↔ Call Acc. Server

Programming Notes	NOTE: eCAS Lite does not support this collection method.

> ⚠️ **The switch software must be updated to these versions:**
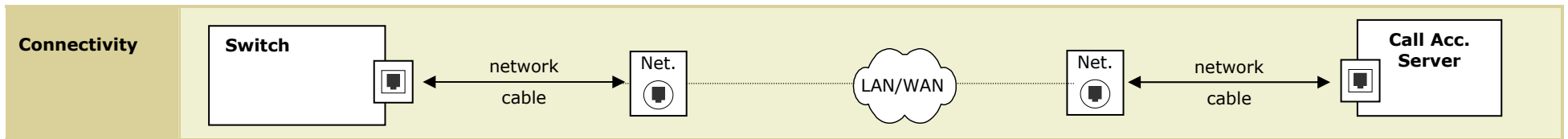> - **(MultiVantage or Communications Manager) release 11, load 110 or higher**
> - **(Other) release 10, load 43 or higher**
>
> **Contact the Avaya Hotline at 1 (800) 242-2121 if the switch does not meet these requirements.**

IP Node Names	Add node names and IP addresses for the switch (the "local" node) and the call accounting server (the "remote" node).
IP Interfaces	Set up the IP Interface: ◆ If type = **C-LAN**, add the node name for the switch, the slot where the board resides, its gateway address, and subnet mask. ◆ If type = **procr**, add the node name for the switch, its IP address, and subnet mask.
IP Services	Set up IP services for service type = CDR1: ◆ Local node = node name for the switch ◆ Remote node = node name for the eCAS server (leave remote port = **9000** — default) ◆ Reliable Protocol = **y** (leave other defaults)
CDR System Parameters	Set up the CDR System Parameters: ◆ Primary Output Format = **unformatted** ◆ Primary Output Endpoint = **CDR1** (leave other defaults)

> ✏️ At some point, verify network connectivity — i.e. the switch should be able to "ping" the eCAS server and vice-versa. This is done from a DOS command prompt or **Start** > **Run** from one machine and entering **ping xxx.xxx.xxx.xxx** (IP address of the other machine). A response verifies connectivity.

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DEFINITY One / S8100 / IP600 (Network Connection)

Connectivity	Switch		network cable	Net.	LAN/WAN	Net.	network cable	Call Acc. Server

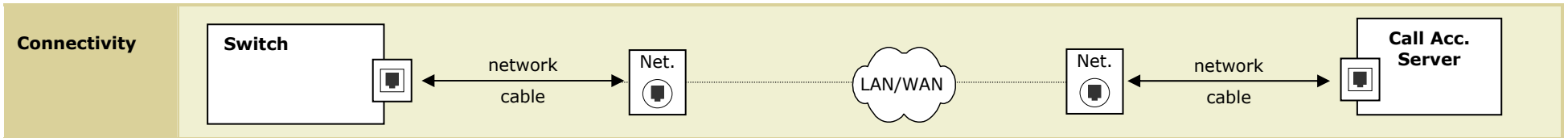### Programming Notes

Avaya IP600 Server with "Softphone"

By default, these switches have enabled CDR output to a file named "**\LucentData\CDR\cas.in**" in the switch server. Preparation involves making it accessible to the call accounting system.

1. Set up the switch and call accounting servers in the same Windows domain — or if in different domains, set up a trust relationship between the domains, then proceed as follows:

   a. Obtain a Windows domain account (for example, "**CASusr**") with a password (for example, "**CASpsw**") that never expires.

   b. At the switch server, share the folder that contains CDR data (**\LucentData\CDR**) with the above user (**CASusr**).

   For example, right-click the **\LucentData\CDR** folder, select **Sharing**. Add "**CASusr**" with full rights (you can remove "Everyone" from the list).

3. Collect information for call accounting setup:

   ◆ Domain name & user account (from step 1a)
   ◆ Collection file name & path (from step 1b — for example = ***SwitchServerName*\LucentData\CDR\cas.in**)

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IP Office 3.1 or Greater (Network Connection)

Connectivity

Switch — network cable — Net. — LAN/WAN — Net. — network cable — Call Acc. Server

---

Programming Notes

IP Office 3.1 (or greater) includes a "CDR" feature, whereby control units can be configured to send a detailed record of each completed call to the call accounting server. On the call accounting server side, a CDR collector tool sorts the output from each IP Office site into its own file, which is then processed via the "**collect from file (local)**" call collection method.
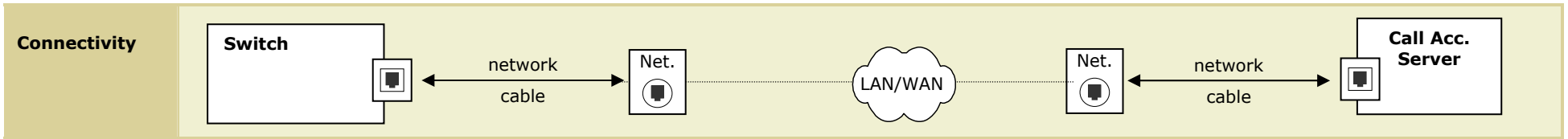
Control Unit — IP Office 3.1 & greater — CDR → Call Accounting Server — LAN/WAN — IP Office Manager PC
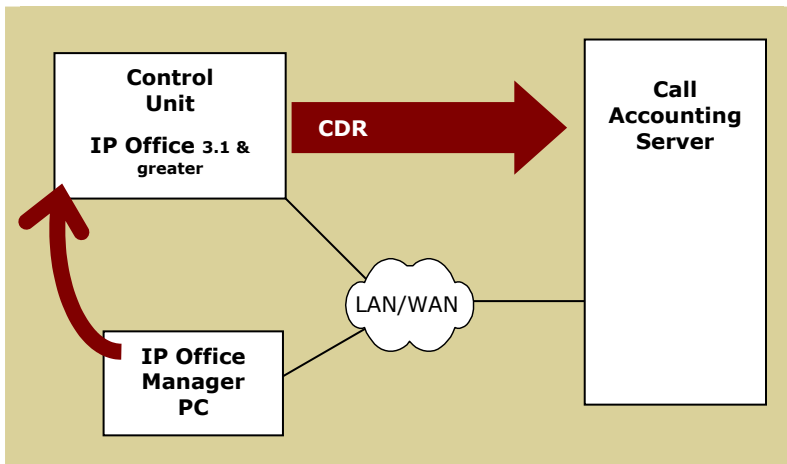
NOTE: Multiple control units from different sites can be set to output CDR to the call accounting server in this manner. The call accounting application includes an IP Office Configuration tool to receive and sort out the output from each site.

Set up the control unit from its IP Office Manager PC:

a. Access: **Programs > IP Office > Manager** (password) **> File > Open > *IP Office control unit*** (password) **> *system name***.

b. Open the **CDR** tab, set these values, and then click **OK**:

- ◆ IP Address = ***<call accounting server>***
- ◆ IP Port = **4221**
- ◆ Maximum CDRs to keep on communications failure = **500**
- ◆ Use UDP = **no** (leave box unchecked)
- ◆ Enable CDRs = **yes** (check ☑ box)
- ◆ Enable intra-switch CDRs (optional, to report internal calls)
- ◆ Record format = **Unformatted**
- ◆ Date format = **Month\Day**
- ◆ Record options = **Normal**

c. Open the **System** tab, set these values, and then click **OK**:

- ◆ Time Server IP Address = ***<IP Office Manager PC>***
- ◆ Time Offset (hours) = ± ***hours from site of control unit***

d. Access: **File > Close** and confirm saving the configuration. When prompted, select Sending Config to = **Immediately** and click **OK**

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IP Office 3.0 (Network Connection via Delta Server)

| Connectivity		
	Switch → network cable ← **Net.** ···· LAN/WAN ···· **Net.** → network cable ← **Call Acc. Server**	

Programming Notes

IP Office 3.0 must use the SMDR "call logging" functionality included in Delta Server (a separately installable application of the IP Office Administration suite). SMDR call logging involves monitoring call details from an IP Office Control Unit and then placing them into a *.CSV log (local file).

The Delta Server can be installed on any Windows-based PC; however, it can only monitor a single control unit, thus each IP Office in a network must have its own "call logging" PC.

Three scenarios are illustrated below.
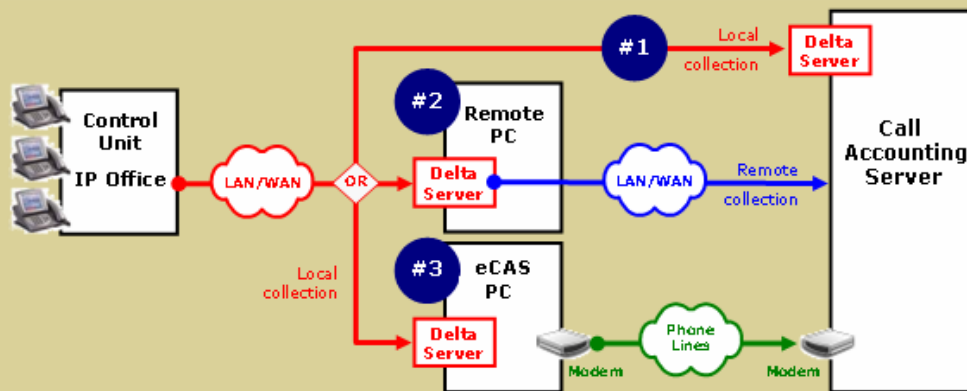
#1 and **#2** **IP Office is accessible to the call accounting server by network.**

The first site sets up SMDR "call logging" locally from the call accounting server; all others from an on-site PC. Call records are collected via the "**IP Office (Local)**" and "**IP Office (Remote)**" methods, respectively.

#3 **IP Office is not accessible to the call accounting server by network.**

Site sets up "call logging" from an eCAS/Lite PC. Call records are collected via "**IP Office (Local)**" and then saved, waiting to be polled via the "**Call Accounting System by Modem**" method.

Continued...

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Scenario #1: IP Office is network-accessible; call logging enabled in call accounting server. Call collection method = "IP Office (Local)"

1. Log into call accounting sever as a local administrator, then create a folder to collect output for this site — for example, **C:\IPoffice**.

2. Install Delta Server from the IP Office CD — browse to its **\CBC\Delta Server** folder and run **setup.exe**. Connect to the IP Office site and enable "call logging":

    a. Access: **Programs** > **CCC** > **Delta Server**. Select the control unit to be polled.

    b. Access **Event Viewer** > **SMDR**. Mark ☑ checkbox and then browse to the folder from step 1. ***Do not change the file name***.
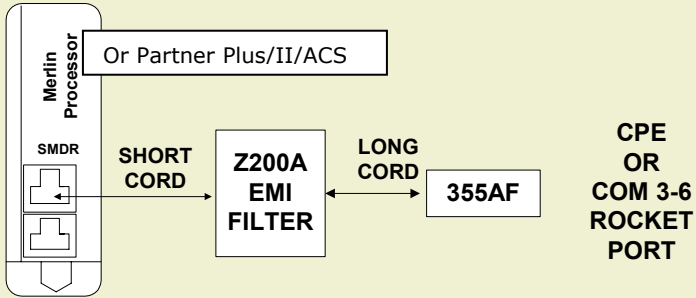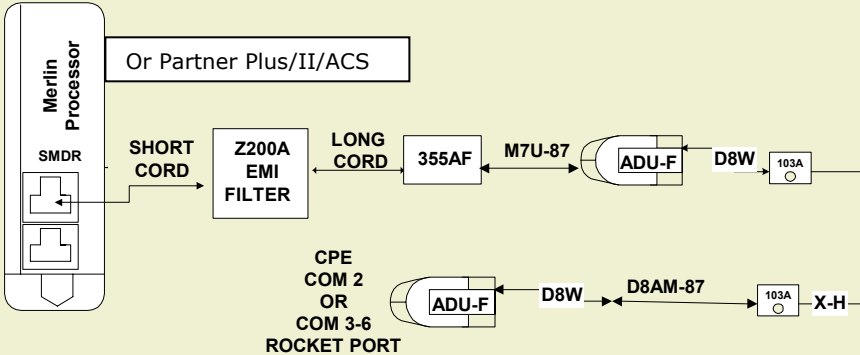
Scenario #2: IP Office is network-accessible; call logging enabled in remote PC. Call collection method = "IP Office (Remote)"

1. Make the IP Office output in the remote PC fully accessible to the call accounting. This may involve the following actions:

    a. At the remote PC, create a folder to collect output for this site — for example, **C:\IPoffice**.

    b. Obtain a Windows user account that has these features: (a) On the remote PC: give full control to the SMDR output folder and (b) on the call accounting server: add to the local '**Administrators'** group (eCAS 2.5) or to the '**VeraUsers'** group (eCAS 3.0+ / VeraSMART 2.0+).

2. Install Delta Server and set it up in the remote PC as in scenario #1.

Scenario #3: IP Office is NOT network-accessible; eCAS and Delta Server installed in remote PC, which also has installed a call sender modem. Call collection method = "Call Accounting System by Modem"

1. Install eCAS at the remote IP Office site; then install and set up Delta Server as in scenario #1.

2. At the remote eCAS PC, set up a modem for remote polling by the call accounting server:

    a. Access: **Processing** > **Switches** > *switch name* link. Enable "Save call data for sending to another call accounting system."
    b. Access: **Processing** > **Call Sender Setup**. Select modem port, its baud rate, and enable polls by another call accounting system.
    c. Connect modem to a DID line.

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Merlin Legend/Magix or Partner Plus/II/ACS (Serial Output)

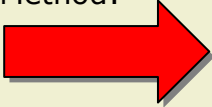|		
50 Feet or Less	Merlin Processor — Or Partner Plus/II/ACS SMDR → SHORT CORD → **Z200A EMI FILTER** → LONG CORD → **355AF** → CPE OR COM 3-6 ROCKET PORT	1-355AF ADAPTER 2-D8W-87 CORDS

2000 Feet or Less	Merlin Processor — Or Partner Plus/II/ACS
	
	SMDR → SHORT CORD → **Z200A EMI FILTER** → LONG CORD → **355AF** → M7U-87 → **ADU-F** → D8W → 103A
	
	CPE COM 2 OR COM 3-6 ROCKET PORT ← **ADU-F** ← D8W ← D8AM-87 ← 103A — X-H
		108404641 ADU INTERFACE KIT
		
		PARTS:
		    1-355AF ADAPTER
		    1-M7U-87 CROSSOVER CABLE
		    2-2169-004 FEMALE ADU
		    2-D8W-87 CORDS
		    1-D8AM-87 ADU CROSSOVER CABLE
		    1-400B2 POWER ADAPTER
		    1-D6AP-87 MODULAR POWER CORD
		    1-2012D TRANSFORMER
		    1-248B MODULAR POWER ADAPTER

Programming Notes
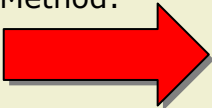
This section provides two methods of programming the Merlin Legend: the console and the PC method. It is assumed that the user is in the system programming mode. There are 7 settings to be addressed as follows:

    1st Setting: SMDR Language – Verify the setting is (English)
    2nd Setting: SMDR Call Report Format – (Basic)
    3rd Setting: SMDR Call Length – (40 seconds)
    4th Setting: SMDR Calls Recorded on Call Report – (Incoming Outgoing)
    5th Setting: SMDR Account Code Format –(Home Extension Number)
    6th Setting: SMDR UDP Calls Recorded on Call Report – (Log Incoming/Outgoing)
    7th Setting: SMDR Talk Time – (Disabled)

Continued...

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1st Setting: SMDR Language – Verify the setting is (English)

Console Method:

PC Method:

PgUp > F6 > F3 > Select Language > F10 > F5

1. **Go to the second screen of the System Programming menu and Press More**	2. **Select Language**	3. **Select SMDR**
| ```
System Programming  >
Make a selection
System         Extension
SysRenumber    Options
Operator       Tables
LinesTrunks    AuxEquip
Exit           NightSrvce
``` | ```
System Programming   >
Make a selection
Labeling       Language
Data
Print
Cntr-Prg
Exit
``` | ```
Language:
Make a selection
System Lang
Extensions
SMDR
Printer
Exit
``` |
| 4. **Specify the SMDR language** | 5. **Select Enter** | 6. **For Merlin Legend select Exit For Merlin Magix select Back** |
| ```
SMDR Languages
Select one
English
French
Spanish
Exit              Enter
``` | **Enter** | **Exit** |

2nd Setting: SMDR Call Report Format – (Basic)

Console Method:

PC Method:

F7 > F8 > F1 > F10 > F5 > F5

1. **Select the Options Menu**	2. **Select SMDR**	3. **Select Call Report Format**
| ```
System Programming  >
Make a selection
System         Extension
SysRenumber    Options
Operator       Tables
LinesTrunks    AuxEquip
Exit           NightSrvce
``` | ```
Options         >
Make a selection
Transfer       Callback
CampOn         Ext. Status
CallParkRtn    SMDR
Delay Ring     Inside Dial
Exit           Reminder Srv
``` | ```
Station Message Record
Make a selection
Format         Auth Code
Call Length    Talk Time
Call Report    UDP
New Page
Exit
``` |
| 4. **Specify Format for SMDR reports** | 5. **Select Enter** | 6. **Select Exit twice** |
| ```
SMDR Format
Select one
Basic SMDR
ISDN SMDR

Exit           Enter
``` | **Enter** | **Exit** |

Continued…

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Merlin Legend Programming Notes *(continued)*

3rd Setting: SMDR Call Length – (40 seconds)

Console Method: ➡

PC Method:

F7 > F8 > F2 > Alt + P > Verify # of Seconds > F10 > F5 > F5

1. Select the Options Menu

```
System Programming  >
Make a selection
System              Extension
SysRenumber         Options
Operator            Tables
LinesTrunks         AuxEquip
Exit                NightSrvce
```

2. Select SMDR

```
Options             >
Make a selection
Transfer            Callback
CampOn              Ext. Status
CallParkRtn         SMDR
Delay Ring          Inside Dial
Exit                Reminder Srv
```

3. Select Call Report Format

```
Station Message Record
Make a selection
Format              Auth Code
Call Length         Talk Time
Call Report         UDP
New Page
Exit
```

4. Verify setting (40)

```
SMDR minimum time

(0-255)

040
Backspace
Exit                Enter
```

5. Select Enter

```

                    Enter
```

6. Select Exit twice

```

                    Exit
```

4th Setting: SMDR Calls Recorded on Call Report – (Incoming Outgoing)

Console Method: ➡

PC Method:

F7 > F8 > F3 > F1 > F10 > F5 > F5

1. Select the Options Menu

```
System Programming  >
Make a selection
System              Extension
SysRenumber         Options
Operator            Tables
LinesTrunks         AuxEquip
Exit                NightSrvce
```

2. Select SMDR

```
Options             >
Make a selection
Transfer            Callback
CampOn              Ext. Status
CallParkRtn         SMDR
Delay Ring          Inside Dial
Exit                Reminder Srv
```

3. Select Call Report Format

```
Station Message Record
Make a selection
Format              Auth Code
Call Length         Talk Time
Call Report         UDP
New Page
Exit
```

4. Verify In/Out

```
SMDR Call Report
Select one
In/Out
Out Only

Exit                Enter
```

5. Select Enter

```

                    Enter
```

6. Select Exit twice

```

                    Exit
```

Continued...

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5th Setting: SMDR Account Code Format – (Home Extension Number)

Console Method: ➡️

PC Method:

F7 > F8 > F6 > F1 > F10 > F5 > F5

1. Select the Options Menu

```
System Programming  >
Make a selection
System              Extension
SysRenumber         Options
Operator            Tables
LinesTrunks         AuxEquip
Exit                NightSrvce
```

2. Select SMDR

```
Options             >
Make a selection
Transfer            Callback
CampOn              Ext. Status
CallParkRtn         SMDR
Delay Ring          Inside Dial
Exit                Reminder Srv
```

3. Select Call Report Format

```
Station Message Record
Make a selection
Format              Auth Code
Call Length         Talk Time
Call Report         UDP
New Page
Exit
```

4. Specify whether the home ext. or the auth code is recorded

```
Account Code Format
Select one
Home Extension Number
Authorization Code

Exit                Enter
```

5. Select Enter

```
                    Enter
```

6. Select Exit twice

```
                    Exit
```
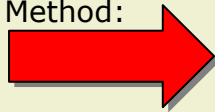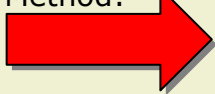
6th Setting: SMDR UDP Calls Recorded on Call Report – (Log Incoming/Outgoing)

Console Method: ➡️

PC Method:

F7 > F8 > F8 > F1 > F10 > F5 > F5

1. Select the Options Menu

```
System Programming  >
Make a selection
System              Extension
SysRenumber         Options
Operator            Tables
LinesTrunks         AuxEquip
Exit                NightSrvce
```

2. Select SMDR

```
Options             >
Make a selection
Transfer            Callback
CampOn              Ext. Status
CallParkRtn         SMDR
Delay Ring          Inside Dial
Exit                Reminder Srv
```

3. Select Call Report Format

```
Station Message Record
Make a selection
Format              Auth Code
Call Length         Talk Time
Call Report         UDP
New Page
Exit
```

4. Verify SMDR information is recorded for both incoming and outgoing UDP calls

```
SMDR Report – UDP Calls
Select one
Log Incoming/Outgoing
Log None

Exit                Enter
```

5. Select Enter

```
                    Enter
```

6. Select Exit twice

```
                    Exit
```

Continued...

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Merlin Legend Programming Notes *(continued)*

7th Setting: SMDR Talk Time – (Disabled)

Console Method:

PC Method:

F7 > F8 > F7 > F1 > F10 > F5 > F5

1. Select the Options Menu
| ```
System Programming  >
Make a selection
System            Extension
SysRenumber       Options
Operator          Tables
LinesTrunks       AuxEquip
Exit              NightSrvce
``` |

2. Select SMDR
| ```
Options           >
Make a selection
Transfer          Callback
CampOn            Ext. Status
CallParkRtn       SMDR
Delay Ring        Inside Dial
Exit              Reminder Srv
``` |

3. Select Call Report Format
| ```
Station Message Record
Make a selection
Format            Auth Code
Call Length       Talk Time
Call Report       UDP
New Page
Exit
``` |

4. Enable Talk Time
| ```
SMDR Format
Select one
Enable
Talk Time

Exit              Enter
``` |

5. Select Enter
Enter

6. Select Exit twice
Exit

Cisco Switches
CallManager 3.x or 4.x (Network Connection via CCM Protocol)

Connectivity	

Switch — network cable — **Net.** ··· **LAN/WAN** ··· **Net.** — network cable — **Call Acc. Server**

Programming Notes	NOTE: eCAS Lite does not support this collection method.

The Cisco CallManager is an application that provides basic telephony features to suitably configured network devices.

It resides on a Server PC and uses a company's computer network to provide call processing, signaling, and connection services to IP- and soft-phones, Voice-over-IP gateways, and other voice devices.

Platforms for Cisco CallManager:

Cisco ICS 7750

Cisco MCS 7800

1. Set up the CCM and call accounting servers in the same Windows domain (***CCMdomain***) — or if in different domains, set up a trust relationship between the domains, then proceed as follows: [1]

   a. Obtain a Windows ***CCMdomain*** account (**CCMuser**) and add it in the call accounting server as a user with "**Logon as a batch job**" rights.

   a. Use the SQL Server Enterprise Manager to set up the **CCMuser** with authentication type = **Windows** and access to the Cisco CallManager database (typically, "**CDR**"), with role = **db_datareader**.

2. Log into the Cisco CallManager Administration program.

   a. Access: **Service** > **Service Parameters** > [CCM server] **Services** > **Cisco CallManager**. Then set parameter CdrEnabled = **True** [2]

   b. Access: **System** > **Enterprise Parameters**. Make certain that CDR Format = **CDRs will be inserted into Database**.

---

[1] If using "Mixed Mode" authentication, simply set up a user account (***CCMuser***) via the SQL Server Enterprise Manager with authentication type = **Mixed Mode** and access to the Cisco CallManager database (typically, "**CDR**"), with role = **db_datareader**.

[2] You can also set up Call Diagnostics Enabled = **True** if you wish to report Quality of Service data using the call accounting system.

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CallManager Express (Network Connection via CCM Protocol)

Connectivity	CME Router ◄— network cable —► Net. ·········· LAN/WAN ·········· Net. ◄— network cable —► Call Acc. Server

Programming Notes — NOTE: eCAS Lite does not support this collection method.

Cisco CallManager Express (CME) is a solution embedded in Cisco IOS® software that provides call processing for Cisco IP phones.

This solution is designed for up to 240 users who need data-routing capability and want to enable telephony features, including voice mail and automated attendant on the same router.
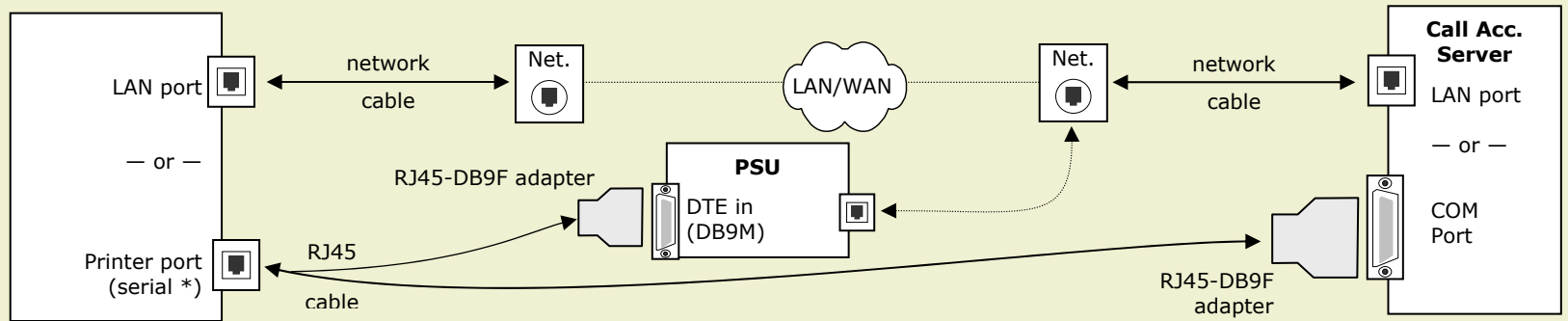
Obtain the assistance of the CME system administrator to access the CME as 'admin' — for example, through Telnet. Enter the following commands at each prompt. When complete, quit Telnet and close the Command Prompt window.

#	CME Setup Commands	Purpose
1	enable	Enters EXEC mode (enter password)
2	configure terminal	Enters global configuration mode
3	aaa new-model	Enables AAA for call collection, then exits the gateway accounting mode
4	aaa accounting connection h323 start-stop group radius	
5	gw-accounting aaa	**NOTE:** AAA = Authentication, authorization, and accounting. Network security services through which access control can be set on a Cisco router or access server.
6	no suppress	
7	exit	
8	radius-server host *<CME hostname or IP address>* auth-port *<number>* acct-port *<number>*	Specifies the CME name and ports used for collecting call data
9	radius-server vsa send accounting	Enables sending call data
10	radius-server key <password>	Sets the password to connect to the CME
11	exit	Exits configuration mode

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Aastra NeXspan (Serial or Network Connection)

Connectivity

Billing Node or Main Server

LAN port	network cable ← → Net.
— or —	LAN/WAN
Printer port (serial *)	RJ45 cable

RJ45-DB9F adapter

PSU
DTE in (DB9M)

Net. ← → network cable

Call Acc. Server
LAN port

— or —

COM Port

RJ45-DB9F adapter

* Serial connection is not recommended because NeXspan does not buffer CDRs when set for serial output (any break in transmissions could result in the loss of call records).
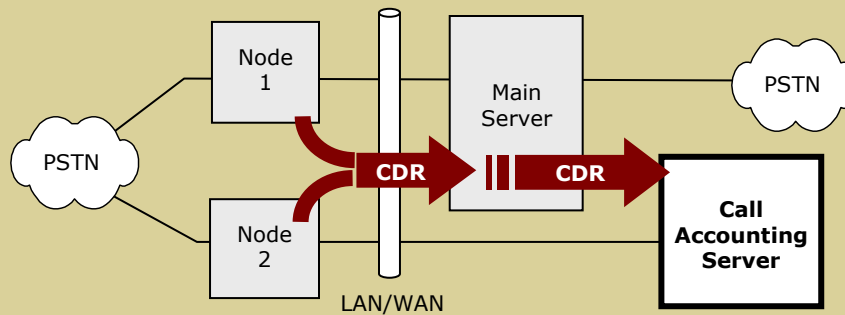
Programming Notes

NOTE: eCAS Lite does not support the network collection method.

An Aastra telecom network of NeXspan switches — a main billing server & multiple billing nodes — can be distributed over a wide area.
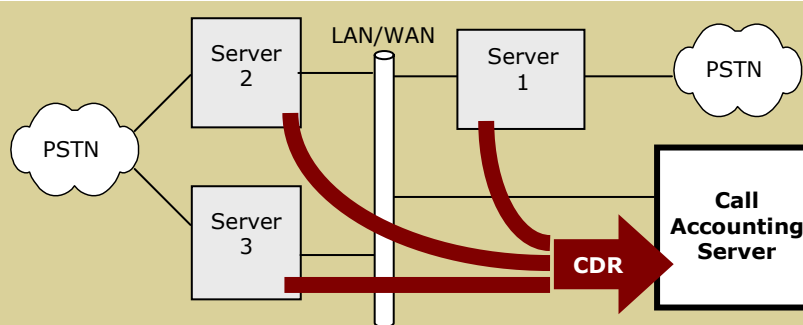
NeXspan Platforms:

NeXspan C, S, or L

Scenario #1. Distributed network, combined CDR

Networked sites; the main server polls each node & then outputs all CDR via a single network or serial connection.

PSTN — Node 1 — Main Server — PSTN

Node 2 — CDR → Call Accounting Server

LAN/WAN

Scenario #2. Non-distributed network, individual CDR

Multiple, independent sites; each one outputs CDR via a network or serial connection.

LAN/WAN

Server 2 — Server 1 — PSTN

PSTN — Server 3 — CDR → Call Accounting Server

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Obtain the assistance of the network / switch administrator for the following tasks:

1. (Scenario #1) Program the main server to poll each node for CDR.

> **TECHNICAL NOTE:** this is done by having the 'MUFACT' service at the server contact the 'KITAXE' service at each node to collect CDR.

2. (All scenarios) Program main server and nodes for CDR output.

    a. Use ADMINISTRATION PARAMETERS to set up the following:

      — STEP BY STEP DEFINITION = **PAD LINK** for a network connection or **OUTPUT CHANNEL** for a serial connection [1]
      — OUTPUT FORMAT = **EXTENDED FORMAT V3** or **V4** [2]
      — CALL TYPE = **INCOM. AND OUTGO.**
      — DELETE RECORDS WITHOUT CHARGING = **NO**

    b. Use TCP-X25 ADDRESS PORT TRANSL to select the CDR output port.

    c. Use INTEGR. BUFFER MANAGEMENT - PARAMETER MANAGEMENT to set the buffer size & management mode to **PERM. CONNECTION**.
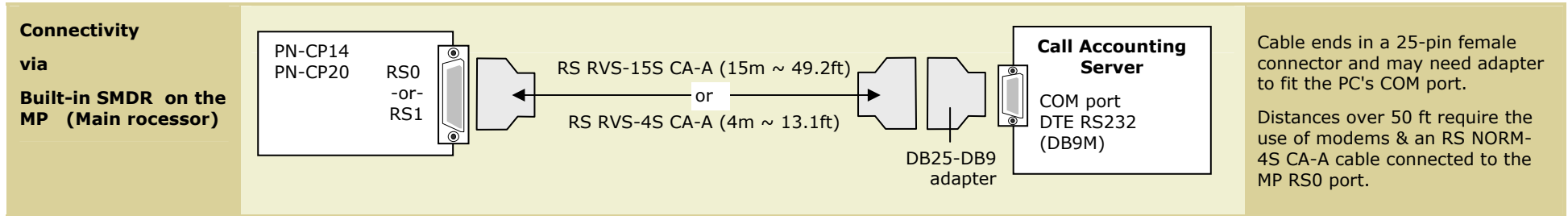
3. (All scenarios) Make the physical connections:

    ■ (Network) Add the call accounting server to the Aastra network. Verify network connectivity by "pinging" the NeXspan unit from the call accounting server (access: **Start** > **Run** > **ping** *<unit IP address>*).

    ■ (Serial) Plug an RJ45 cable to the NeXspan printer port; use an RJ45-DB9F adapter on the other end. If within 50 feet, plug the adapter into the call accounting server COM port; remote connections require an on site Pollable Storage Unit (PSU), installed as per its setup guide.

---

[1]   Network connections are recommended. If using a serial connection, skip steps 2b - 2c; instead, access TERMINAL MANAGEMENT to set PRINTER – SPEED = V24.9600.

[2]   These are the only call record formats supported in eCAS or VeraSMART.

NEC NEAX 2400 IMS / 2000 IPS / 2000 IVS (Direct Connections)

Connectivity

via

Built-in SMDR on the MP (Main rocessor)

PN-CP14
PN-CP20
RS0
-or-
RS1

RS RVS-15S CA-A (15m ~ 49.2ft)
or
RS RVS-4S CA-A (4m ~ 13.1ft)

DB25-DB9 adapter

Call Accounting Server

COM port
DTE RS232
(DB9M)

Cable ends in a 25-pin female connector and may need adapter to fit the PC's COM port.

Distances over 50 ft require the use of modems & an RS NORM-4S CA-A cable connected to the MP RS0 port.

Programming Notes (MP Built-in SMDR Programming)

This section outlines commands used through the CAT (Customer Administration Terminal).

It is assumed that the user is in the system-programming mode, the MP is on-line ("RUN" lamp is flashing), and all data related to the station, trunks, and service features (such as authorization/account codes) are already programmed.

There are 7 settings to be addressed (defaults in parentheses):

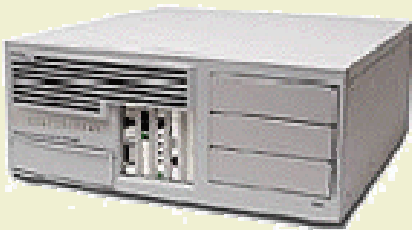|		
1st	Setting:	CM40 - Output port & attributes (9600 baud, 8 data bits, no parity, 2 stop bits, DTR/RTS flow control)
2nd	Setting:	CM13+06 - Enable SMDR for outgoing calls to required stations (enabled, must specify stations)
3rd	Setting:	CM35+14 - Enable SMDR for outgoing calls to required trunk routes (enabled, must specify trunk routes)
4th	Setting:	CM13+05 - Enable SMDR for incoming calls to required stations (disabled)
5th	Setting:	CM35+49 - Enable SMDR for incoming calls to required trunk routes (disabled)
6th	Setting:	CM08 - If SMDR for incoming calls is enabled, specify whether it applies to all incoming calls or only to those with Account Codes (Account Codes only)
7th	Setting:	CM08 - Include ANI/Caller ID for incoming calls (exclude)
		NOTE: "Include" is required to provide SMDR for incoming calls, even if this feature is enabled by CM13+05 and CM35+49.

Consult the Feature Programming and Command manuals for the specific NEAX switch for details.

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Nortel Switches

Business Communications Manager (Network Connection)

Connectivity		

Switch ←— network cable —→ **Net.** ·········· LAN/WAN ·········· **Net.** ←— network cable —→ **Call Acc. Server**

Programming Notes

BCM Server

The system uses a DCOM connection to collect calls from a Nortel BCM server. The BCM system administrator must provide the following requirements:
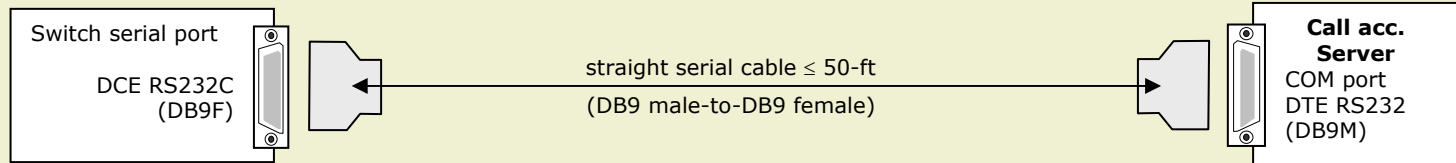
- ◆ The BCM Server is configured to (1) accept DCOM connections and (2) output CDR reports in a Norstar format.

- ◆ A Windows user account has been set up with access rights to the BCM Server for CDR collection. $^{(*)}$

Typically, you will not need to configure a DCOM connection in the call accounting server. However, if it becomes necessary, the User's Guide has detailed procedures to do so.

$^{(*)}$ This account must be added on the call accounting server as a member of the local 'Administrators' group (eCAS 2.5) or 'VeraUsers' group (eCAS 3.0 / VeraSMART 2.0).

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Commnication Server 1000 Rel 4 / Meridian 1 / SL1-X11 (Serial Connection)

Connectivity

Switch serial port

DCE RS232C
(DB9F)

straight serial cable ≤ 50-ft
(DB9 male-to-DB9 female)

Call acc.
Server
COM port
DTE RS232
(DB9M)

Programming Notes

The sections below document where to go to: (1) enable CDR, (2) set up the port, and (3) select the CDR format. Required entries are highlighted, bold; explanations appear in insert.

Enable CDR (command: LD 21)	Port Setup (command: LD 22)	CDR Format (commands: LD 22; LD 17)
| ```
>LD 21
PT1000

REQ: PRT
TYPE: CDR
TYPE CDR_DATA
CUST 0


TYPE CDR_DATA
CUST 00
CDR YES       ← enables CDR
  IMPH NO     ← cdr for incoming packet data call
  OMPH NO     ← cdr for outgoing packet data call
  AXID YES    ← auxiliary ID output in cdr record
  TRCR YES    ← carriage return after each record
  CDPR NO     ← coord. dial plan record
  ECDR YES    ← end-to-end signaling digits
  PORT 2      ← tty port used on pbx
CHLN 0        ← charge account number length
FCAF NO       ← forced charge account active?
``` | ```
>LD 22

ADAN  TTY 2        ← Port number
  CARD 00          ← card it resides on
  PORT 2           ← port on that card
  DES  2ND-FLOOR   ← label (option)
  BPS  1200        ← baud rate
  BITL 8           ← bit length
  STOP 1           ← stop bit
  PARY NONE        ← parity
  FLOW NO          ← flow control
  USER CTY         ← type of tty port for CDR
  XSM  NO          ← part of the system monitor?
``` | ```
***** the following is part System config. for cdr
      printed in LD 22; changed in LD 17.
PARM
  LPIB 125
  HPIB 50
  500B 200
  NCR  300
  MGCR NULL
  CSQI 020
  CSQO 020
  NCPU 1
  CFWS NO
  PCML MU
  ALRM YES
  ERRM ERR BUG AUD
  DTRB 100
  TMRK 128

***** start CDR section

  FCDR NEW       ← for use with CDR format #511
  PCDR NO        ← gives processor priority to cdr
  TPO  NO        ← enable traffic period option
  TSO  NO        ← enable trunk period option
  CLID NO        ← calling line ID in cdr
  DUR5 NO        ← round duration to 5 seconds

******* end cdr section
``` |