Adding New Hardware for Avaya Media Servers and Gateways

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About this documentation

Overview

This document provides procedures to add hardware to an existing S8500 and S8700 Series Media Server configuration.

This documentation does not contain information on all the adjuncts and peripheral equipment that an Avaya media server supports. For more information, see Related resources on page 14.

Audience

This documentation is for the following audiences:

- Technical support representatives
- Authorized Business Partners

Using this documentation

Use this documentation as a guide to install and administer the added hardware. For more information about a particular task, see the index or table of contents to locate the page number where the information is described.

The following list describes the sections in this book:

- IP connectivity hardware on page 19
- Trunks and lines on page 55
- Port networks on page 91
- Adjuncts and peripherals on page 107

Conventions

This section describes the conventions that we use in this book.

General

We show commands and screens from the newest Communication Manager and refer to the most current documentation.

Physical dimensions

All physical dimensions are in English units followed by metric units in parentheses. Wire gauge measurements are in AWG followed by the diameter in millimeters in parentheses.

Terminology

We use the following terminology in this documentation:

- *Configuration* is a general term that encompasses all references to an Avaya media server with media gateways running Communication Manager.
- *Cabinet* refers to a stack of media gateways, such as the G650, that are TDM-cabled together. A cabinet is the same as a port network. Cabinet can also refer to the Multicarrier Cabinet (MCC1).
- *UUCSS* refers to a circuit pack address in cabinet-carrier-slot order.
- *Telephone* and *voice terminal* have the same meaning.
- *ASAI* is synonymous with the newer CallVisor ASAI.

Typography

This section describes the typographical conventions for

- commands,
- keys,
- user input,
- system output, and
- field names.

Commands

Commands are in **`bold monospaced`** type.

Example

Type **`change-switch-time-zone`** and press **Enter**.

Command variables are in **`bold`** ***`italic monospaced`*** type.

Example

Type **`change machine`** ***`machine_name`***, where ***`machine_name`*** is the name of the call delivery machine.

Command options are in **bold** type inside square brackets.

Example

Type **`copybcf [-F34]`**.

Keys

The names of keys are in **bold** type.

Example

Use the **Down Arrow** key to scroll through the fields.

When you must press and hold a key and then press a second or third key, we separate the names of the keys with a plus sign (+).

Example

Press **ALT+D**.

When you must press two or more keys in sequence, we separate the names of the keys are separated with a space.

Example

Press **Escape J**.

When you must press a function key, we provide the function of the key in parentheses after the name of the key.

Example

Press **F3** (Save).

User input

User input is in **bold** type. User input includes when you must type the input, select the input from a menu, or click a button or similar element on a screen or a Web page.

Examples

- Press **Enter**.
- On the **File** menu, click **Save**.
- On the **Network Gateway** page, click **Configure** > **Hardware**.

System output and field names

System output on the screen is in **bold** type.

Example

- The system displays the following message:

  The installation is in progress.

Field names on the screen are in **bold** type.

Example

- Type **y** in the **Message Transfer?** field.

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Safety labels and security alert labels

Observe all caution, warning, and danger statements to help prevent loss of service, equipment damage, personal injury, and security problems. This documentation uses the following safety labels and security alert labels:

CAUTION:
A caution statement calls attention to a situation that can result in harm to software, loss of data, or an interruption in service.

WARNING:
A warning statement calls attention to a situation that can result in harm to hardware or equipment, including ESD damage to electronic components.

DANGER:
A danger statement calls attention to a situation that can result in harm to personnel.

SECURITY ALERT:
A security alert calls attention to a situation that can increase the potential for unauthorized access to a media server or use of a telecommunications system.

Related resources

For more information, see the other sections on the cd *Documentation for Avaya Communication Manager, Media Gateways and Servers* (03-300151).

Technical assistance

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Within the US

For help with:

- Feature administration and system applications, call the Avaya Technical Consulting and System Support (TC-SS) at 1-800-225-7585
- Maintenance and repair, call the Avaya National Customer Care Support Line at 1-800-242-2121
- Toll fraud, call Avaya Toll Fraud Intervention at 1-800-643-2353

International

For all international resources, contact your local Avaya authorized dealer for additional help.

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Chapter 1: Introduction

This book provides information on adding hardware to an existing S8500 and S8700 Series Media Server configuration. Hardware includes circuit packs for existing media gateways, new media gateways that make up new port networks, and adjunct or peripheral equipment.

This book includes the following information

- IP connectivity hardware on page 19
  - Installing the circuit packs on page 20
  - Installing and administering IP connectivity hardware on page 21
- Trunks and lines on page 55
- Port networks on page 91
- Adjuncts and peripherals on page 107

Chapter 2: IP connectivity hardware

This chapter provides procedures for:

- Installing the circuit packs on page 20
- Installing and administering IP connectivity hardware on page 21.

Note:

If a circuit pack requires a right-to-use fee for a particular feature, the customer must have a license file to enable the feature.

When installing additional features or equipment, you might need to install additional circuit packs. Use the following general procedure when adding features or equipment that require adding circuit packs.

Note:

S8700-series media servers: If an S8700-series media server, you must log into the *active* media server to access SAT commands. Use a terminal emulation application, such as Avaya Terminal Emulation, or Avaya Site Administration.

1. Log in to the media server using a services log in.
2. Install the TN circuit pack into the media gateway or carrier (if MCC1).
3. Do the minimally required administration so that Avaya Communication Manager recognizes the circuit pack.
4. Log off the media server after the addition and any required administration is complete.

For more information about further administering circuit packs and other equipment, see the *Administrator Guide for Avaya Communication Manager* (03-300509).

Installing the circuit packs

CAUTION:

When adding or replacing any hardware and associated cables and adapters, be sure to ground yourself against electrostatic discharge (ESD). Wear a grounded wrist strap.

Note:

Circuit packs are hot-swappable, so you do not need to turn off the power to the carrier or media gateway to install them.

Note:

To properly seat a circuit pack, push firmly on the front of the faceplate until the latch reaches the bottom rail of the carrier. Then close the latch until it is fully engaged.

Install a TN circuit pack with the following steps.

1. Insert the circuit pack into any port slot. If the circuit pack was assigned a slot location, put it in the assigned slot.
2. Type **`list configuration all`** and press **Enter** to verify that the system recognizes the newly installed circuit pack(s).

Installing and administering IP connectivity hardware

There are several port circuit packs that are used specifically for IP connectivity. This section provides information on installing a:

- TN799DP Control LAN on page 21
- TN2302AP IP Media Processor on page 27
- TN2501AP Voice announcements over LAN (VAL) on page 34
- TN2602AP IP Media Resource 320 on page 41

TN799DP Control LAN

The TN799DP Control LAN circuit pack serves several purposes:

- A connection for the signaling (telephone) network to the customer's data network for IP telephones.
- A source board for downloading firmware to circuit packs having the P designation.
- An IP interface for adjuncts such as Intuity Audix
- An IP interface for DCS connection with another Avaya configuration.

See the *Hardware Description and Reference for Avaya Communication Manager* (555-245-207) for more information.

Check the firmware vintage and upgrade availability for the TN799DP circuit pack on the Avaya Support Web site: http://support.avaya.com.

The following sections describe the process:

- Checking your shipment on page 22
- Installing a TN799DP C-LAN on page 22
- Installing the cables on page 23
- Installing the circuit packs on page 24
- Administering the TN799DP on page 24
- Testing the external connection to the LAN on page 27

Checking your shipment

When the order arrives at your site, check the contents (see Table 1: Required hardware on page 22).

1. Inspect the shipping carton for damage before opening it. If the box is damaged, *do not open it*. Inform the shipping company, and ask for instructions on filing a claim.
2. If the box is undamaged, check the contents against the packing slip. Check the condition of each component, and note any damage or shortages on the packing slip. The carton should contain the items in Table 1: Required hardware for each TN799DP C-LAN circuit pack ordered.
3. Read and follow any directions inserted into the package by the factory.

Table 1: Required hardware

Comcode/ Code	Description	Quantity
108525528	TN799DP Control LAN circuit pack	1 or more
848525887	IP Media Processor adapter[1]	1/C-LAN
700234032 – 700207111 – 700181118	Migration kit (PEC code 63275):[2] – Upper circuit pack slot label – Twisted pair I/O cables	 1 10

[1]The adapter has an amphenol connector on one side and an RJ45 connector on the other for connecting to the network at 100 Mbps.

[2]Only if installing in old carriers or cabinets with WP cables.

Installing a TN799DP C-LAN

Have the following equipment on site:

- An unoccupied port slot for the TN799DP.
- A 10 or 100 BaseT Ethernet connection into the customer's LAN for the TN799DP.
- One or more valid, unused IP addresses on the network (one for each TN799DP C-LAN) that can be assigned to the C-LAN circuit pack. You also need the subnet mask and default gateway.
- An Ethernet adapter for each TN799DP.
- A CAT5 (100 Mbps) cable with a DW8 connector on each end.

Installing the cables

The following steps install the cables connected to the C-LAN circuit pack.

1. Determine into which port slots you are putting the TN799DP C-LAN circuit packs.

   Note:

   If installing the TN799DP into an old carrier or cabinet, you must replace the WP cables, which connect the backplane to the rear connector panel, with Twisted Pair I/O cables to handle the 100 Mbps speed. See Replacing the I/O cables on page 52 for information on replacing the wires.

2. From the rear of the media gateway, connect the Ethernet adapter to the Amphenol connector corresponding to each TN799DP slot. See Figure 1: Cable connection for C-LAN on page 23. For a pinout of TN799DP, see Table 2: TN799DP pinout on page 24.
3. Connect one end of each CAT5 cable to each Ethernet adapter.
4. Install the other end of this cable from the media gateway to the network through a hub or 110 (purple) wall field as required.

Figure 1: Cable connection for C-LAN

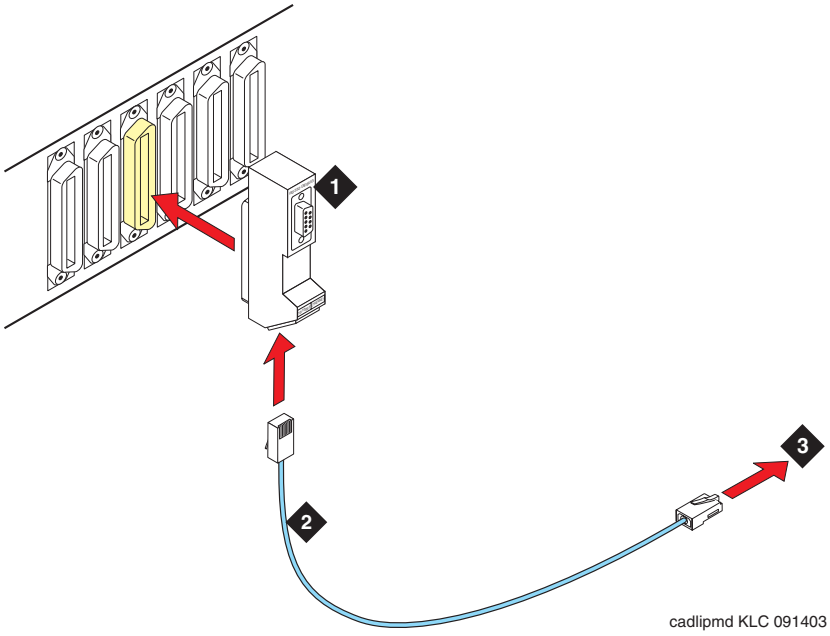

Figure notes:

1. **Ethernet adapter**
2. **CAT5 cable with DW8 connectors**
3. **To customer's network**

Table 2: TN799DP pinout

Backplane Pin	25-Pair Wire Color	Lead Name	Peripheral Connector Pin
103	White/Orange	TD+	27
003	Orange/White	TD-	2
104	White/Green	RD+	28
004	Green/White	RD-	3

Installing the circuit packs

CAUTION:

When adding or replacing any hardware, be sure to ground yourself against electrostatic discharge (ESD) by wearing a grounded wrist strap.

Note:

The TN799DP circuit packs are hot-swappable, so you do not need to power down the media gateway to install them.

Perform the following steps to install the circuit pack.

1. Insert the TN799DP circuit packs into the port slots identified earlier.
2. Push firmly on the front of the faceplate until the latch reaches the bottom rail of the carrier to properly seat the circuit pack.
3. Close the latch until it is fully engaged.

Administering the TN799DP

Use a terminal emulation application for the administration.

Note:

The customer or design team provides the actual names, IP addresses, subnet masks, and gateway addresses.

1. Log in as **craft**.
2. Type `list configuration all` and press **Enter** to verify that Communication Manager recognizes the TN799DP circuit packs.

3. Type **add node-name ip** and press **Enter**.

```
add node-names ip                                          Page   1 of   1
                                IP NODE NAMES
    Name              IP Address          Name              IP Address
clan1A10            192.168.1  .80                          .   .   .
clan1A11            172.16 .19 .220                         .   .   .
clan1A12            172.16 .19 .118                         .   .   .
                       .   .   .                            .   .   .
                       .   .   .                            .   .   .
                       .   .   .                            .   .   .
                       .   .   .                            .   .   .
( 12 of 12  administered node-names were displayed )
Use 'list node-names' command to see all the administered node-names
Use 'change node-names ip xxx' to change a node-name 'xxx' or add a node-name
```

4. Type in the node names and IP addresses for each TN799DP C-LAN circuit pack.

5. Type **display circuit-pack *cabinetnumber*** and press **Enter**, where ***cabinetnumber*** is the cabinet where the circuit packs reside to verify that the TN799DP shows up in the Code column.

6. Type **add ip-interface *UUCSS*** and press **Enter**, where ***UU*** is the cabinet, ***C*** is the carrier, and ***SS*** is the slot location of the TN799DP C-LAN circuit pack.

```
add ip-interfaces 01A03                                  Page  1 of 1

                                 IP INTERFACES

               Type: C-LAN
               Slot: 01A03
         Code/Suffix: TN799 d
           Node Name: CLAN1
          IP Address: 135.9.41.146
         Subnet Mask: 255.255.255.0                            Link: 1
     Gateway Address: 135.9.41.254
Enable Ehternet Port? y                    Allow H.323 Endpoints? y
       Nework Region: 1                     Allow H.248 Gateways? y
                VLAN: 0                       Gatekeeper Priority: 5

                Target socket load:
       Receive Buff TCP Window Size:
                                 ETHERNET OPTIONS
                  Auto? n
                 Speed: 100 Mbps
                Duplex: Full
```

7. Type in the following information:
   - The **Type**, **Slot**, **IP Address**, and **Code/Suffix** fields are populated automatically.
   - In the **Node Name** field, type the same node name entered on the **Node Name** screen.
   - In the **Subnet Mask** field, use the default setting unless you are given a different subnet mask.
   - In the **Gateway Address** field, use the address you are given or leave blank.
   - Set the **Enable Ethernet Port** field to **y**.
   - Set the **Net Region** field to **1** unless you are given a different number.
   - Set **VLAN** field to **n**.
8. Press **Enter** to save the information and effect the new settings.
9. Type **`add data-module next`** and press **Enter**.

```
add data-module next                                          Page   1 of   1
                                DATA MODULE

  Data Extension: 20010           Name:C-LAN1
            Type: ethernet
            Port: 01All
            Link:



Network uses 1's for Broadcast Addresses? y
```

10. Set the **Type** field to **ethernet**.
11. Set the **Port** field to correspond to the circuit pack location.

    The port number (final two digits) is always 17 for the TN799DP circuit pack.
12. Set the **Link** field to an unassigned or next-available link number.
13. Set the **Network uses 1's for Broadcast Address?** field according to the your network requirements.
14. Type a unique name in the **Name** field.
15. Press **Enter** to save your changes.

See the *Administration for Network Connectivity for Avaya Communication Manager* (555-233-504) for more information on these administration steps and for the steps to administer endpoints.

Testing the external connection to the LAN

To test the external IP connections, ping the gateway and a known computer connected to the network. If everything is configured correctly, you have a successful ping. If you cannot ping, verify the IP-address information and check the connectivity, including the cabling.

To test the external IP connections, ping a computer on the same subnet, the gateway, and a computer beyond the gateway. If everything is configured correctly, the **Result** column on the **Ping Results** screen reads **pass**. If it reads **abort**, verify the IP-address information and check the connectivity, including the cabling.

1. Type **ping ip-address *ipaddress* board *UUCSS*** and press **Enter**, where ***ipaddress*** is the IP address of a computer on the same subnet and ***UUCSS*** is the cabinet, carrier, and slot location of the TN799DP C-LAN circuit pack that is used to send the ping.

```
ping ip-address 192.168.10.21

                          PING RESULTS

  End-pt IP         Port       Port Type   Result     Time(ms)   Error Code

  192.168.10.21     01A13       CLAN       PASS        10
```

2. If step 1 passes, type **ping ip-address *ipaddress* board *UUCSS*** and press **Enter**, where ***ipaddress*** is the IP address of the customer's gateway and ***UUCSS*** is the cabinet, carrier, and slot location.
3. If step 2 passes, type **ping ip-address *ipaddress* board *UUCSS*** and press **Enter**, where ***ipaddress*** is the IP address of a computer beyond the gateway and ***UUCSS*** is the cabinet, carrier, and slot location.

The TN799DP C-LAN circuit pack is now installed in the media gateway and connected to the IP network.

TN2302AP IP Media Processor

The TN2302AP IP Media Processor circuit pack provides an interface between a customer's IP network and Avaya media gateways. This interface is used to transport voice and FAX between the media gateways and IP devices such as H.323 V2 compliant endpoints and other Avaya telephone systems. Each TN2302AP can support between 32 and 64 voice channels, depending on the codecs used.

Note:

The P board suffix designation means the circuit pack is firmware-downloadable.

Check the firmware vintage and upgrade availability for the TN2302AP circuit pack on the Avaya Support Web site: http://support.avaya.com.

The following sections describe the process:

- Checking your shipment on page 28
- Installing a TN2302AP IP Media Processor on page 29
- Installing the cables on page 29
- Installing the circuit packs on page 30
- Administering the IP Media Processor on page 31
- Testing the external connection to the LAN on page 33
- Verifying active call status on page 34

For further administration, see the *Administration for Network Connectivity for Avaya Communication Manager* (555-233-504).

Checking your shipment

When the order arrives at your site, check the contents (see Table 3: Required Hardware on page 28).

1. Inspect the shipping carton for damage before opening it. If the box is damaged, *do not open it*. Inform the shipping company, and ask for instructions on filing a claim.
2. If the box is undamaged, check the contents against the packing slip. Check the condition of each component, and note any damage or shortages on the packing slip. The carton should contain the items in Table 3: Required Hardware for each TN2302AP IP Media Processor circuit pack ordered.
3. Read and follow any directions inserted into the package by the factory.

Table 3: Required Hardware

Comcode/Code	Description	Quantity
108774696	TN2302AP IP Media Processor (MedPro)	1 or more
848525887	TN2302AP Amphenol Adapter[1]	1/MedPro
700234032 – 700207111 – 700181118	Migration kit (PEC code 63275):[2] – Upper circuit pack slot label – Twisted pair I/O cables	 1 10

[1]The adapter has an amphenol connector on one side and an RJ45 connector on the other for connecting to the network. See TN2302AP Amphenol Adapter on page 30.

[2]Only if installing in old carriers or cabinets with WP cables.

Note:

The customer must provide one CAT5 or better cable for each TN2302AP.

Installing a TN2302AP IP Media Processor

The TN2302AP consumes 16 watts of power and the power budget is 15 watts per slot. Do not fill every available slot in a given media gateway (G650) or carrier (MCC1) with these circuit packs. Use the following guidelines:

- G650—5 per media gateway
- MCC1—18 per carrier
- SCC1—16 per media gateway
- G600—5 per media gateway

Have the following equipment on site before your shipment arrives:

- An unoccupied port slot in the media gateway for each TN2302AP IP Media Processor
- A 10 BaseT or 10/100 BaseT Ethernet connection into your local area network (LAN)
- One or more valid, unused IP addresses on the network that can be assigned to the IP Media Processor server. You also need the subnet mask and default gateway.

  Note:

  Get this information from the project manager or the customer's network administrator.

In addition to the TN2302AP IP Media Processor, you also must install and administer a TN799CP C-LAN circuit pack. For C-LAN installation and administration, see TN799DP Control LAN on page 21.

Installing the cables

The following steps install the cable for the IP Media Processor circuit pack.

1. Determine into which port slots you are putting the TN2302AP IP Media Processor circuit packs.

From the rear of the media gateway:

Note:

If installing the TN2302AP into an old carrier or cabinet, you must replace the WP cables, which connect the backplane to the rear connector panel, with Twisted Pair I/O cables to handle the 100 Mbps speed. See Replacing the I/O cables on page 52 for information on replacing the wires.

2. Connect the amphenol connector on the adapter to the Amphenol connector corresponding to each TN2302AP slot. See Figure 2: TN2302AP Amphenol Adapter on page 30.

Figure 2: TN2302AP Amphenol Adapter

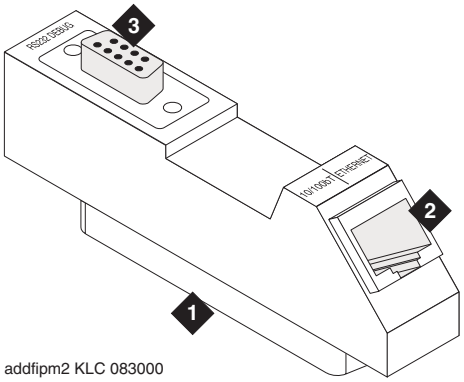

Figure notes:

1. **Amphenol connector to backplane connector corresponding to TN2302AP slot**
2. **RJ45 LAN cable connection**
   - 10 Mbps uses CAT3 cable
   - 100 Mbps uses CAT5 cable
3. **9-pin connector for maintenance**

Note:

You need a CAT5 or better cable for 100-Mbps operation.

3. Connect the network cable(s) to the ETHERNET connector on the TN2302AP backplane adapter(s).

Installing the circuit packs

CAUTION:

When adding or replacing any hardware, be sure to ground yourself against electrostatic discharge (ESD) by wearing a grounded wrist strap.

Note:

The TN2302AP circuit packs are hot-swappable, so you do not need to power down the media gateway to install them.

Note:

To properly seat the circuit pack, push firmly on the front of the faceplate until the latch reaches the bottom rail of the carrier. Then close the latch until it is fully engaged.

The following step installs the circuit pack.

1. Insert the TN2302AP IP Media Processor into the port slot you reserved for it and seat it properly.

   When you plug in the TN2302AP IP Media Processor, the circuit pack starts to boot. The RED LED stays on until an IP address is assigned to the circuit pack.

Administering the IP Media Processor

Use a terminal emulation application for the administration.

1. Log in as **craft**.
2. Type **list configuration all** and press **Enter** to verify that Communication Manager recognizes the TN2302AP circuit packs.
3. Type **add node-names** and press **Enter**.
4. On page 2, type in the node names and IP addresses for the TN2302AP.

```
add node-names ip                                          Page   1 of   1
                              IP NODE NAMES
    Name               IP Address           Name               IP Address
medpro01A09             172.16 .19 .2                           .   .   .
medpro01A10             0  .0  .0  .0                          .   .   .
medpro01A11             192.168.1  .82                          .   .   .
medpro01A12             192.168.1  .83                          .   .   .
medpro02A09             172.16 .19 .221                         .   .   .
medpro02A10             172.16 .19 .222                         .   .   .
medpro02A11             172.16 .19 .223                         .   .   .
medpro02A12             172.16 .19 .224                         .   .   .
medpro03A09             172.16 .19 .225                         .   .   .
medpro03A10             192.168.1  .80                          .   .   .
medpro03A11             172.16 .19 .220                         .   .   .
medpro03A12             172.16 .19 .118                         .   .   .


( 12 of 12  administered node-names were displayed )
Use 'list node-names' command to see all the administered node-names
```

5. Type **display circuit-pack** and press **Enter**. Verify that the TN2302AP shows up in the **Code** column.

6. Type **add ip-interface *UUCSS*** and press **Enter**, where ***UUCSS*** is the cabinet, carrier, and slot location.

```
add ip-interface 02A12                                    Page   1 of   1

                                IP INTERFACES



                 Type: MEDPRO
                 Slot: 02A12
           Code/Suffix: TN2302
             Node Name: medpro0A12
            IP Address: 172.16 .19 .224
           Subnet Mask: 255.255.255.0
       Gateway Address: 172.16 .23 .254
  Enable Ethernet Port? y
        Network Region: 8
                 VLAN: n
```

7. Type in the following information:
   - The **Type**, **Slot**, **IP Address**, and **Code/Suffix** fields are populated automatically.
   - In the **Node Name** field, type the same node name entered on the **Node Name** screen.
   - In the **Subnet Mask** field, use the default setting unless you are given a different subnet mask.
   - In the **Gateway Address** field, use the address you are given or leave blank.
   - Set the **Enable Ethernet Port** field to **y**.
   - Set the **Net Region** field to **1** unless you are given a different number.
   - Set **VLAN** to **n**.
8. Press **Enter** to save the information and effect the new settings.

Testing the external connection to the LAN

To test the external IP connections, ping a computer on the same subnet, the gateway, and a computer beyond the gateway. If everything is configured correctly, the `Result` column on the **Ping Results** screen reads **pass**. If it reads **abort**, verify the IP-address information and check the connectivity, including the cabling.

1. Type **ping ip-address *ipaddress* board *UUCSS*** and press **Enter**, where ***ipaddress*** is the IP address of a computer on the same subnet and ***UUCSS*** is the cabinet, carrier, and slot location of the TN2302AP IP Media Processor.

```
ping ip-address 192.168.10.21

                          PING RESULTS

  End-pt IP         Port       Port Type  Result    Time(ms)   Error Code

  192.168.10.21     01A13       MEDPRO   PASS       10
```

2. If step 1 passes, type **ping ip-address *ipaddress* board *UUCSS*** and press **Enter**, where ***ipaddress*** is the IP address of the customer's gateway and ***UUCSS*** is the cabinet, carrier, and slot location.
3. If step 2 passes, type **ping ip-address *ipaddress* board *UUCSS*** and press **Enter**, where ***ipaddress*** is the IP address of a computer beyond the gateway and ***UUCSS*** is the cabinet, carrier, and slot location.

The TN2302AP IP Media Processor circuit pack is now installed in the media gateway and connected to the IP network.

Verifying active call status

To verify that calls are being processed:

1. Type **status media processor board *UUCSS***.

```
status media-processor board 1c03                                Page 1 of 1

                            MEDIA-PROCESSOR STATUS



       Link Status: connected
    Network Region: 1
 Source IP Address: 192.168.22.11
         Node Name: medpro01c03
       Subnet Mask: 255.255.0.0
   Gateway Address: 192.168.22.255
       MAC Address: 00:04:0d:4a:59:cf
  Ethernet Enabled? yes



                            DSP Channel Status

 DSP 1: in-service/idle                 DSP 5: in-service/idle
 DSP 2: in-service/idle                 DSP 6: in-service/idle
 DSP 3: in-service/idle                 DSP 7: in-service/idle
 DSP 4: in-service/idle                 DSP 8: in-service/idle
```

2. Look at the LINKS and DSP CHANNEL STATUS categories to determine whether calls are being processed.

See the *Administration for Network Connectivity for Avaya Communication Manager* (555-233-504) for more information on these administration steps and for the steps to administer endpoints.

TN2501AP Voice announcements over LAN (VAL)

The TN2501AP voice announcements over LAN (VAL) circuit pack is an integrated announcement circuit pack that uses *.wav files for announcements and plays them over the TDM bus. It can store up to 1 hour of announcement storage capacity.

Installing a TN2501AP VAL

Note:

The P board suffix designation means the circuit pack is firmware-downloadable.

Note:

To install a TN2501AP, make sure that the system is enabled for TN2501AP (VAL) circuit packs. If the **Maximum VAL boards** field on the **System Parameters Customer Options** screen is set to **0**, then you need to obtain and install a new license file before you can install the card.

Check the firmware vintage and upgrade availability for the TN2501AP circuit pack on the Avaya Support Web site: http://support.avaya.com.

Installing the pack includes:

- Verifying the required hardware on page 35
- Installing the circuit packs on page 36
- Administering the TN2501AP on page 37

Verifying the required hardware

Make sure that you have the required hardware:

- TN2501AP VAL circuit pack (108772583).
- 10/100BaseT backplane adapter (848525887—same one used for the IP Media Processor). See Figure 3: Backplane adapter on page 36.
- Tight-twisted I/O cable kit (700234032) only if installing in old carriers or cabinets with WP cables.
- LAN cable with RJ45 connectors (customer supplied).

Figure 3: Backplane adapter

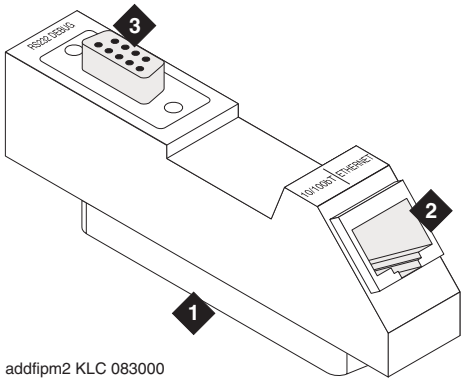

Figure notes:

1. **Amphenol connector to backplane connector corresponding to TN2501AP slot**
2. **RJ45 LAN cable connection**
   - 10 Mbps uses CAT3 cable
   - 100 Mbps uses CAT5 cable
3. **This connector is not used for VAL**

Installing the circuit packs

WARNING:

To prevent electrostatic discharge (ESD), be sure to wear a grounding strap while handling the circuit pack.

1. Insert the circuit pack into any port slot and close the latch securely.

   At first, the red and green LEDs are on steady, then the green LED flashes. If there are announcements on the circuit pack, the amber LED flashes while the announcements are copied from FLASH to RAM. After about 3-5 minutes, all of the top 3 LEDs go out, although the time is longer if there are announcements already recorded on the circuit pack.

   Note:

   If the TN2501AP circuit packs are at the Communication Manager limit and you insert a VAL circuit pack, the red LED on that circuit pack stays on, indicating that Communication Manager does not accept it.

   Note:

   If installing the TN2501AP into an old carrier or cabinet, you must replace the WP cables, which connect the backplane to the rear connector panel, with Twisted Pair I/O cables to handle the 100 Mbps speed. See Replacing the I/O cables on page 52 for information on replacing the wires.

2. Connect the backplane adapter to the Amphenol connector on the back of the media gateway corresponding to the TN2501AP circuit pack slot.
3. Connect the LAN CAT5 cable to the RJ45 connector on the backplane adapter.

Administering the TN2501AP

After you have installed the hardware, to support an FTP session you must administer and test the installation.

Use a terminal emulation application or Avaya Site Administration for this administration.

1. Type **`list configuration board`** ***`board-location`*** and press **Enter**.

   The System Configuration report appears. Use this report to ensure that the Communication Manager recognizes the TN2501AP circuit pack after it is latched in the carrier slot.

```
list configuration board 1c08                                          page 1

                              SYSTEM CONFIGURATION

Board                                                    Assigned Ports
Number   Board Type              Code     Vintage    u=unassigned t=tti p=psa

01C08    VAL-ANNOUNCEMENT        TN2501AP HW00 FW007 01 02 03 04 05 06 07 08
                                                     09 10 11 12 13 14 15 16
                                                     17 18 19 20 21 22 23 24
                                                     25 26 27 28 29 30 31 32
                                                     U



Command successfully completed
```

2. Verify the following field values:
   - **Board Type** shows **VAL-ANNOUNCEMENT**
   - **Code** is **TN2501AP**

3. Type **add node-names ip** and press **Enter**.

```
add node-names ip                                    Page   1 of   1
                              IP NODE NAMES
    Name               IP Address           Name               IP Address
val01C08               172.22 .22 .79                             .   .   .
val01C09               192.168.22 .63                             .   .   .
val01C10               0  .0  .0  .0                             .   .   .
val05A08               172.22 .22 .68                             .   .   .
val05A09               172.22 .22 .71                             .   .   .
val05A10               172.22 .22 .77                             .   .   .
val05B08               172.22 .22 .20                             .   .   .
val05B09               172.31 .5  .49                             .   .   .
val05B10               172.23 .23 .40                             .   .   .
val05B11               192.168.22 .21                             .   .   .
val07B08               172.22 .22 .67                             .   .   .
val07B09               172.22 .22 .75                             .   .   .
val07B10               172.22 .22 .120                            .   .   .


( 12 of 12  administered node-names are displayed)
Use 'list node-names' command to see all the administered node-names
Use 'change node-names ip xxx' to change a node-name 'xxx' or add a node-name
```

4. In the **Name** field, type a unique name.

   This name is recognized only within the Communication Manager and does not need to match the node name on your network.

5. Type the **IP Address**.

   Get this information from the project manager or the customer's network administrator.

6. Press **Enter** to save the changes.

7. Type **add ip-interface** ***UUCSS*** and press **Enter**, where ***UUCSS*** is the cabinet, carrier, and slot location.

```
add ip-interface 07B09                                    Page   1 of   1

                                  IP INTERFACES



                  Type: VAL
                  Slot: 07B09
           Code/Suffix: TN2501
             Node Name: VAL#1
            IP Address: 172.22 .22 .75
           Subnet Mask: 255.255.255.0
       Gateway Address: 172.16 .23 .254
  Enable Ethernet Port? y
        Network Region: 8
                  VLAN: n
```

8. Type in the following information:
   - The **Type**, **Slot**, **IP Address**, and **Code/Suffix** fields are populated automatically.
   - In the **Node Name** field, type the same node name entered on the **Node Name** screen.
   - In the **Subnet Mask** field, use the default setting unless you are given a different subnet mask.
   - In the **Gateway Address** field, use the address you are given or leave blank.
   - Set the **Enable Ethernet Port** field to **y**.
   - Set the **Net Region** field to **1** unless you are given a different number.
   - Set **VLAN** to **n**.
9. Press **Enter** to save the changes.

10. Type **add data-module *extension*** and press **Enter**.

```
add data-module next                                          Page   1 of   1
                                DATA MODULE

  Data Extension: 20010           Name:VAL1
            Type: ethernet
            Port: 01Al2
            Link:



Network uses 1's for Broadcast Addresses? y
```

11. Set the **Type** field to **ethernet**.
12. Set the **Port** field to correspond to the circuit pack location.

    The port number (final two digits) is always **33** for the TN2501AP circuit pack.
13. Set the **Link** field to an unassigned or next-available link number.
14. Set the **Network uses 1's for Broadcast Address?** field according to the your network requirements.
15. In the **Name** field, type a unique name.
16. Press **Enter** to save your changes.
17. Type **add ip-route** and press **Enter**.
18. Administer IP routes to the TN2501AP circuit pack.
19. Press **Enter** to effect the changes.

Testing the external connection to the LAN

The following steps test the connection to the LAN.

1. Click **Start > Run** to open the Run dialog box.
2. Type **command** and press **Enter** to open an MS-DOS command window.
3. Type **ping *ipaddress***, where ***ipaddress*** is a known computer on the network and press **Enter** to verify connectivity.
4. Type **status link** to test the new IP connections that you have administered.

TN2602AP IP Media Resource 320

The TN2602AP IP Media Resource 320 provides high-capacity voice over Internet protocol (VoIP) audio access to the switch for local stations and outside trunks. The IP Media Resource 320 provides audio processing for the following types of calls:

- TDM-to-IP and IP-to-TDM — for example, a call from a 4602 IP telephone to a 6402 DCP telephone
- IP-to-IP — for example, a non-shuffled conference call

The TN2602AP IP Media Resource 320 circuit pack has two capacity options, both of which are determined by the license file installed on Communication Manager:

- 320 voice channels, considered the standard IP Media Resource 320
- 80 voice channels, considered the low-density IP Media Resource 320

Only two TN2602AP circuit packs are allowed per port network.

Note:

The TN2602AP IP Media Resource 320 is not supported in CMC1 and G600 Media Gateways.

Up to two TN2602AP circuit packs may be installed in a single port network for load balancing The TN2602AP circuit pack is also compatible with and can share load balancing with the TN2302 and TN802B IP Media Processor circuit packs. Actual capacity may be affected by a variety of factors, including the codec used for a call and fax support.

Note:

When two TN2602AP circuit packs, each with 320 voice channels, are used for load balancing within a port network, the total number of voice channels available is 484, because 484 is the maximum number of time slots available for a port network.

Two TN2602AP circuit packs may be installed in a single port network (PN) for bearer duplication. In this configuration, one TN2602AP is an active IP media processor and one is a standby IP media processor. If the active media processor, or connections to it, fail, active connections failover to the standby media processor and remain active. This duplication prevents active calls in progress from being dropped in case of failure. The interchange between duplicated circuit packs affects only the PN in which the circuit packs reside.

Note:

The 4606, 4612, and 4624 telephones do not support the bearer duplication feature of the TN2602AP circuit pack. If these telephones are used while an interchange from active to standby media processor is in process, calls may be dropped.

The Communication Manager license file must have entries for each circuit pack, with the entries having identical voice channels enabled. In addition, both circuit packs must have the latest firmware that supports bearer duplication.

Duplicated TN2602AP circuit packs must be in the same subnet. In addition, the Ethernet switch or switches that the circuit packs connect to must also be in the same subnet. This shared subnet allows the Ethernet switches to use signals from the TN2602AP firmware to identify the MAC address of the active circuit pack. This identification process provides a consistent virtual interface for calls.

A single port network can up to two TN2602AP circuit packs only. As result, the port network can have either two duplicated TN2602AP circuit packs or two load balancing TN2602AP circuit packs, but not both a duplicated pair and a load-balancing pair. However, in a Communication Manager configuration, some port networks can have a duplicated pair of TN2602AP circuit packs and other port networks can have a load-balancing pair of TN2602AP circuit packs. Some port networks can also have single or no TN2602AP circuit packs.

Note:

If a pair of TN2602AP circuit packs previously used for load balancing are re-administered to be used for bearer duplication, only the voice channels of whichever circuit pack is active can be used. For example, If you have two TN2602 AP circuit packs in a load balancing configuration, each with 80 voice channels, and you re-administer the circuit packs to be in bearer duplication mode, you will have 80 (rather than 160) channels available. If you have two TN2602 AP circuit packs in a load balancing configuration, each with 320 voice channels, and you re-administer the circuit packs to be in bearer duplication mode, you will have 320 (rather than 484) channels available.

Installing the TN2602AP Media Resource 320

The following sections describe the installation process:

- Checking your shipment on page 43
- Installing a TN2602AP IP Media Resource 320 on page 43
- Installing the cables on page 44
- Installing the circuit packs on page 45
- Verifying installation and voice channels on page 46
- Administering the TN2602AP circuit pack on page 46
- Testing the external connection to the LAN on page 50
- Verifying active call status on page 50
- Upgrading firmware (if necessary) on page 52

For further administration, see the *Administration for Network Connectivity for Avaya Communication Manager* (555-233-504).

Checking your shipment

When the order arrives at your site, check the contents (see Table 4: Required Hardware on page 43).

1. Inspect the shipping carton for damage before opening it. If the box is damaged, *do not open it*. Inform the shipping company, and ask for instructions on filing a claim.
2. If the box is undamaged, check the contents against the packing slip. Check the condition of each component, and note any damage or shortages on the packing slip. The carton should contain the items in Table 4: Required Hardware on page 43 for each TN2602AP IP Media Resource 320 circuit pack ordered.
3. Read and follow any directions inserted into the package by the factory.

Table 4: Required Hardware

Comcode/ Code	Description	Quantity
108566381	TN2602AP IP Media Resource 320 (MedPro)	1 or 2/PN
700283690	Media Resource 320 Adapter[1] with retainer clip	1/MedRes
700234032 – 700207111 – 700181118	Migration kit (PEC code 63275):[2] – Upper circuit pack slot label – Twisted pair I/O cables	 1 10

[1]The adapter has an amphenol connector on one side, an RJ45 connector and 2 Ethernet ports on the other for connecting to the network. See Media Resource 320 Adapter on page 45.

[2]Only if installing in old carriers or cabinets with WP cables.

Note:

The customer must provide one CAT5 or better cable for each TN2602AP.

Installing a TN2602AP IP Media Resource 320

Note:

Only two TN2602AP circuit packs are allowed per port network.

Have the following equipment and information on site before your shipment arrives:

Note:

If used in place of an Expansion Interface circuit pack in a mixed port network configuration, we recommend that the TN2602AP circuit pack be installed in the A01 slot.

- One or two unoccupied port slots in the media gateway for the TN2602AP circuit pack(s).
- One or two 10/100 BaseT Ethernet connections into the customer's local area network (LAN)
- One or two valid, unused IP addresses on the network that can be assigned to the IP Media Resource 320 server. You also need the subnet mask, which should be the same for each of the TN2602AP circuit packs installed on the same port network. You may need the default gateway if the circuit pack handles off-subnet calls.

Note:

Get this information from the project manager or the customer's network administrator.

Installing the cables

The following steps install the cable for the IP Media Resource 320 circuit pack.

Note:

If used in place of an Expansion Interface circuit pack in a mixed port network configuration, we recommend that the TN2602AP circuit pack be installed in the A01 slot.

1. Determine into which port slot(s) you are putting the TN2602AP circuit pack(s).

From the rear of the media gateway:

Note:

If installing the TN2602AP into an old carrier or cabinet, you must replace the WP cables, which connect the backplane to the rear connector panel, with Twisted Pair I/O cables to handle the 100 Mbps speed. See Replacing the WP cables on page 40 for information on replacing the wires.

2. Connect the amphenol connector on the adapter to the Amphenol connector corresponding to each TN2602AP slot. See Figure 4: Media Resource 320 Adapter.

Figure 4: Media Resource 320 Adapter

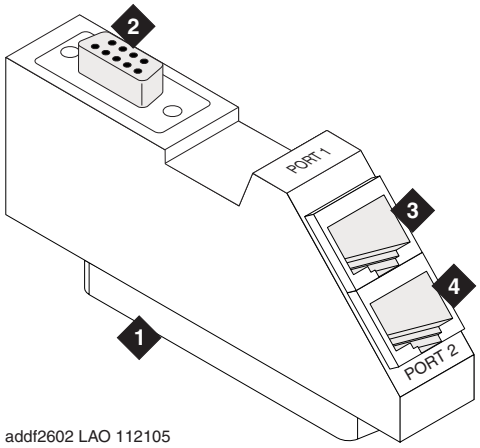

Figure notes:

1. **Amphenol connector to backplane connector corresponding to TN2602AP slot**
2. **RS-232 connector for services**
3. **Port 1: RJ45 LAN cable connection for 100 Mbps CAT5 cable**
4. **Port 2: RJ45 LAN connection (not used)**

Important:

Plug the CAT5 cable into the top port labeled Port 1. Do not plug it into the second port.

3. Connect the network cable(s) to the Port 1 ETHERNET connector on the Media Resource 320 adapter(s) on the backplane.
4. Snap the retainer clip(s) over the adapter(s) to hold them in place.

Installing the circuit packs

CAUTION:

When adding or replacing any hardware, be sure to ground yourself against electrostatic discharge (ESD) by wearing a grounded wrist strap.

Note:

The TN2602AP circuit packs are hot-swappable, so you do not need to power down the media gateway to install them.

Note:

To properly seat the circuit pack, push firmly on the front of the faceplate until the latch reaches the bottom rail of the carrier. Then close the latch until it is fully engaged.

The following step installs the circuit pack.

1. Insert the TN2602AP circuit pack into the port slot you reserved for it and seat it properly.

   When you plug in the TN2602AP circuit pack, it starts to boot. The RED LED stays on until the onboard firmware is operational.

Verifying installation and voice channels

To verify the installation:

1. Type **`list configuration board`** ***`UUCSS`*** and press **Enter**, where ***`UUCSS`*** is the cabinet, carrier, and slot location of the TN2602AP.
2. Verify that TN2602AP shows in the slot location.
3. Look under the Vintage column and note the firmware version. If the firmware version is lower than the one on the Avaya Support Web site, you must upgrade the firmware on the circuit pack. See the Firmware Download Procedure document, which is posted on the Avaya Download Web site.
4. Type **`display system-parameters customer-options`** and press **Enter**.
5. Find the **Maximum TN2602 VoIP Channels**: field. Look at the Used column next to the field to see the maximum number of voice channels available.

Administering the TN2602AP circuit pack

To administer the circuit pack:

1. Type **`change node-names ip`** and press **Enter**.
2. Type in the node names and IP addresses for the TN2602AP.

```
change node-names ip                                          Page   1 of   1
                                  IP NODE NAMES
    Name               IP Address           Name               IP Address
cognac              172.16 .19 .2                               .   .   .
default             0  .0  .0  .0                              .   .   .
medres03a01         192.168.1  .82                              .   .   .
medpro02b04         192.168.1  .83                              .   .   .
medpro02b05         172.16 .19 .222                             .   .   .
clan03a04           192.168.1  .80                              .   .   .
clan03a05           172.16 .19 .220                             .   .   .
clan04b04           172.16 .19 .118                             .   .   .
                       .   .   .                                .   .   .
                       .   .   .                                .   .   .
                       .   .   .                                .   .   .
                       .   .   .                                .   .   .
( 12 of 12  administered node-names were displayed )
Use 'list node-names' command to see all the administered node-names
```

3. Type **display circuit-packs** and press **Enter**. Verify that the TN2602AP shows up in the **Code** column.
4. Type **add ip-interface *uucss*** and press **Enter**, where ***uucss*** is the cabinet, carrier, and slot location.

```
add ip-interface 1a03                                          Page 1 of 1
                                  IP INTERFACES

                              Critical Reliable Bearer? n
                     Type: MEDPRO
                     Slot: 01A03
               Code/Suffix: TN2602
                 Node Name: medres03a01
                IP Address: 192.168.1.82
               Subnet Mask: 255.255.255.0
          Gateway Address: . . .
    Enable Ethernet Port? y
          Network Region: 1
                     VLAN: n


                                  ETHERNET OPTIONS
                     Auto? n
                    Speed: 100 Mbps
                   Duplex: Full
```

5. Type in the following information:
   - If administering two circuit packs as duplicated, in the **Critical Reliable Bearer?** field, type **y**.

Note:

If **Critical Reliable Bearer?** is yes, a second column of information displays. Fill in information for both circuit packs.

```
add ip-interface 1a03                                        Page 1 of 1
                                  IP INTERFACES

                            Critical Reliable Bearer? y
                    Type: MEDPRO
                    Slot: 01A03                          Slot:
             Code/Suffix: TN2602                 Code/Suffix:
               Node Name: medpro03a01              Node Name:
              IP Address: 192.168.1.82            IP Address:
             Subnet Mask: 255.255.255.0
          Gateway Address: 192.168.1.70
    Enable Ethernet Port? y              Enable Ethernet Port? y
          Network Region: 1
                    VLAN: n                              VLAN: n
           VOIP Channels: xxx
  Shared Virtual Address: 192.168.1.200
       Virtual MAC Table:                 Virtual MAC Address:
                                    ETHERNET OPTIONS
                    Auto? n                              Auto? n
                   Speed: 100 Mbps                      Speed: 100 Mbps
                  Duplex: Full                         Duplex: Full
```

- The **Type**, **Slot**, **IP Address**, and **Code/Suffix** fields are populated automatically.
- In the **Node Name** field, type the same node name entered on the **Node Name** screen.
- In the **Subnet Mask** field, enter the subnet mask determined by the LAN administrator. This setting also applies to the second TN2602AP circuit pack when Critical Reliable Bearer is **y**.
- In the **Gateway Address** field, use the address determined by the LAN administrator. This setting also applies to the second TN2602AP circuit pack when Critical Reliable Bearer is **y**.
- Set the **Enable Ethernet Port** field to **y**.
- Set the **Net Region** field to **1** or another number determined by the LAN administrator. This setting also applies to the second TN2602AP circuit pack when Critical Reliable Bearer is **y**.
- Set **VLAN** to **n**.
- Set the **VOIP Channel** field to **80** or **320**, depending on the number of circuit packs that are licensed for each, and the capacity the customer needs for this port network. This setting also applies to the second TN2602AP circuit pack when Critical Reliable Bearer is **y**.
- Set the **Shared Virtual Address** field to the virtual IP address shared by the two TN2602AP circuit packs.

- Set the **Virtual MAC Table** field to a number from **1** to **4**. Normally, you can enter **1**. However, you might choose a different table number if all of the following conditions exist:
  - A port network under the control of a different Communication Manager main server has duplicated TN2602AP circuit packs.
  - That port network controlled by a different main server has the same number as the port network in which you are administering the TN2602AP circuit packs.
  - The port network or its main server connects to the same Ethernet switch as the port network in which you are administering the TN2602AP circuit packs.

  Selecting a different Virtual MAC Table from that chosen for a port network that has the previously-listed conditions helps prevent the possibility that two TN2602AP circuit packs within the customer's network will have the same virtual MAC address.
- The **Virtual MAC Address** field is populated automatically with a MAC address from the Virtual MAC Table you select.
- Set Ethernet Options to match the customers network. The recommended settings are
  - **Auto: y** (default)

  If you enter n, also complete the following fields. The recommended values are displayed.
  - **Speed: 100 Mbps**
  - **Duplex: Full**

6. Press **Enter** to save the information and effect the new settings.

Testing the external connection to the LAN

To test the external IP connections, ping a computer on the same subnet, the gateway, and a computer beyond the gateway. If everything is configured correctly, the `Result` column on the **Ping Results** screen reads **pass**. If it reads **abort**, verify the IP-address information and check the connectivity, including the cabling.

1. Type **`ping ip-address`** ***`ipaddress`*** **`board`** ***`UUCSS`*** and press **Enter**, where ***`ipaddress`*** is the IP address of the TN2602AP IP Media Resource 320 and ***`UUCSS`*** is the cabinet, carrier, and slot location of a C-LAN circuit pack or another media processor circuit pack within the subnet.

```
ping ip-address 192.168.10.38 board 02B05

                          PING RESULTS

  End-pt IP         Port       Port Type   Result     Time(ms)   Error Code

  192.168.10.21     01A13       MEDRES     PASS        10
```

2. If step 1 passes, type **`ping ip-address`** ***`ipaddress`*** **`board`** ***`UUCSS`*** and press **Enter**, where ***`ipaddress`*** is the IP address of an endpoint on the customer's gateway and ***`UUCSS`*** is the cabinet, carrier, and slot location of the TN2602AP circuit pack you are testing.
3. If step 2 passes, type **`ping ip-address`** ***`ipaddress`*** **`board`** ***`UUCSS`*** and press **Enter**, where ***`ipaddress`*** is the IP address of an endpoint beyond the gateway and ***`UUCSS`*** is the cabinet, carrier, and slot location of the TN2602AP circuit pack you are testing.

Verifying active call status

To verify that calls are being processed:

1. Type **`status media processor board`** ***`UUCSS`***.

   The Media Processor Status screen appears.

Figure 5: Media Processor Status screen (load-balancing TN2602AP circuit pack)

```
status media-processor board 1c03                                  Page 1 of 1

                            MEDIA-PROCESSOR STATUS

  Source IP Address: 192.168.22.11
          Node Name: medres1c03
        Subnet Mask: 255.255.0.0
    Gateway Address: 192.168.22.255
        MAC Address: 00:04:0d:4a:59:cf
   Ethernet Enabled? yes

     Links
    mpcl: up
     eth: up

                            DSP Channel Status

  DSP 1: in-service/idle                 DSP 3: in-service/idle
  DSP 2: in-service/idle                 DSP 4: in-service/idle
```

Figure 6: Media Processor Status screen (duplicated TN2602AP circuit pack)

```
status media-processor board 1c03                                  Page 1 of 1

                            MEDIA-PROCESSOR STATUS

Duplication State: active                Duplication State: standby
   Board Location: 1c03                    Board Locations: 1c07
Source IP Address: 192.168.22.11        Source IP Address: 192.168.22.51
        Node Name: medpro1                      Node Name: medpro2
      Subnet Mask: 255.255.255.0              Subnet Mask: 255.255.255.0
  Gateway Address: 192.168.22.255         Gateway Address: 192.168.22.255
      MAC Address: 00:00:04:0d:05:03          MAC Address:
00:00:04:0d:05:07
 Ethernet Enabled? yes                    Ethernet Enabled? yes

                          COMMON DUPLICATED VALUES

   Links   Alarms     Standby Refreshed: yes     Locked? no   Links   Alarms
  mpcl: up mj: 0         Network Region: 1                  mpcl: up mj: 0
   eth: up mn: 0      Shared IP Address: 135.9.72.52          eth: up mn: 0
  peer: up wn: 0        Shared Virt-MAC: 00:00:04:0d:05:18   peer: up wn: 0

                            DSP CHANNEL STATUS

DSP 1: in-service/active, 60 calls       DSP 1: in-service/standby
DSP 2: in-service/active, 50 calls       DSP 2: in-service/standby
DSP 3: in-service/active, 57 calls       DSP 3: in-service/standby
DSP 4: in-service/active, 47 calls       DSP 4: in-service/standby
```

2. Look at the LINKS and DSP CHANNEL STATUS categories to determine whether calls are being processed.

Testing the circuit pack

Test the TN2602AP circuit pack with the command **`test board uucss.`** For more information, see the *Maintenance Commands for Avaya Communication Manager R3.1 Media Gateways and Servers*, 03-300431.

Upgrading firmware (if necessary)

If you determined that you must upgrade the firmware, do so now. See *Upgrading, Migrating, and Converting Media Servers and Gateways* (03-300412), "Chapter 4: Upgrading Firmware on TN Circuit Packs and Media Modules."

Firmware upgrades

Firmware is upgraded the same way as the TN799DP C-LAN and TN2501AP VAL circuit packs. Resetting the circuit pack as part of the process affects the bearer traffic.

Replacing the I/O cables

Note:

You only need to replace the I/O cables for the TN2602AP circuit packs you are installing.

On older MCC1, SCC1, and G600 media gateways (cabinets) you must replace the existing I/O cables (WP-90753, LI) with twisted pair I/O cables. These I/O cables connect the backplane to the rear connector panel.

The existing I/O cables have straight, not twisted, wires. These cables can be mostly white with two red or multicolored. If the cables have multicolored, tightly twisted wires, no replacement is necessary.

To order the DEFINITY kit with twisted pair I/O cables, use comcode 700234032.

CAUTION:

Turn off power to the carrier or the media gateway before you replace the cables.

CAUTION:

When you add or replace any hardware and associated cables and adapters, ground yourself against electrostatic discharge (ESD). Always wear a grounded wrist strap.

To replace the existing I/O cables:

1. Perform one of the following actions:
   - If the configuration includes an MCC1 or an SCC1 Media Gateway, continue with step 2.
   - If the configuration includes a G600 Media Gateway, you must remove the fan assembly to access the cables. Loosen the thumb screws on the fan assembly and pull it straight out (G600 Media Gateway fan assembly removal on page 54). Leave the fan assembly off until you install all the wires.
2. Note the orientation of the existing 10 cables. The existing I/O cables can be white and red or multicolored. These cables are not twisted.
3. Remove the I/O cables that you want to replace from the backplane and the connector panel slots.
4. Install the twisted pair I/O cables onto the backplane in the place of the cables you just removed. Use the correct orientation (Proper orientation for the twisted pair I/O cables on page 54). Observe the white outline that is printed on the backplane for the location of each connector.
5. View the cables from the "wiring" side of the twin connectors. That is, view the cables while you plug the cables into the backplane. Connectors oriented correctly for plug-in look like the cables in Proper orientation for the twisted pair I/O cables on page 54.

   The circled pin locations are “No-Connects." At the top there is an orange-black pair on the right and a violet-brown pair on the left. Do not install wires in these locations.

   If you are replacing I/O cables for all slot positions, plug all cables into the backplane before you match the "D" connector on each cable to the carrier frame.

   You must install the 50-position metal shell "D" connectors into the carrier frame. Make sure that the longer side of the "D" connector (pins 1 to 25) is toward the right when you view the pins from the rear of the media gateway.
6. Apply the 10/100 mbps label to the front of the carrier slot. Apply the label over the slot label that corresponds to the slot where you installed the twisted pair I/O cable.
7. For the G600 Media Gateway, replace the fan unit if you are not adding any media gateways. If you are adding more media gateways to the rack, leave the fan units off until you install all the TDM cables.

Figure 7: G600 Media Gateway fan assembly removal

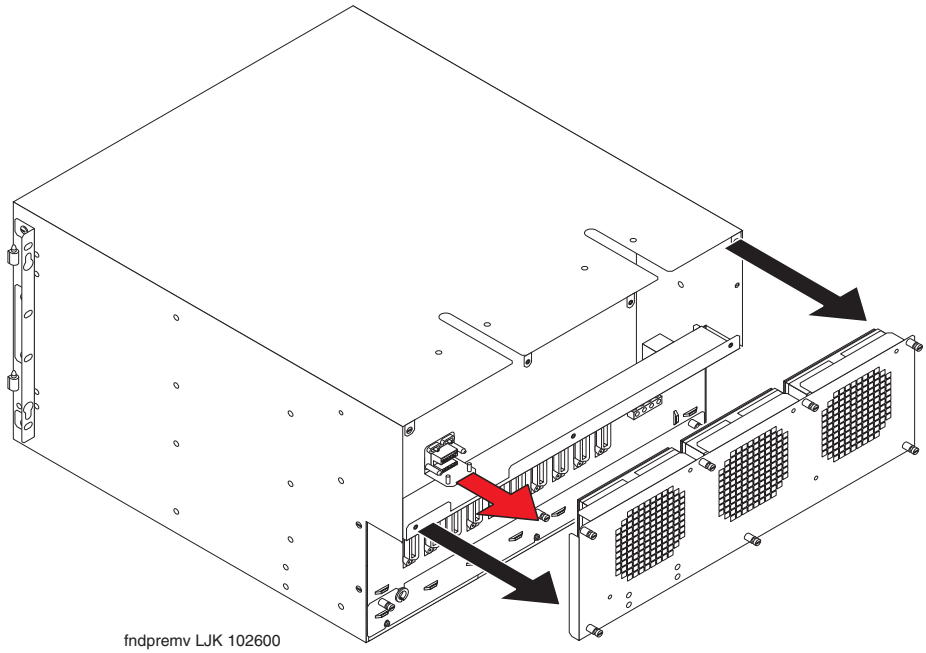

Figure 8: Proper orientation for the twisted pair I/O cables

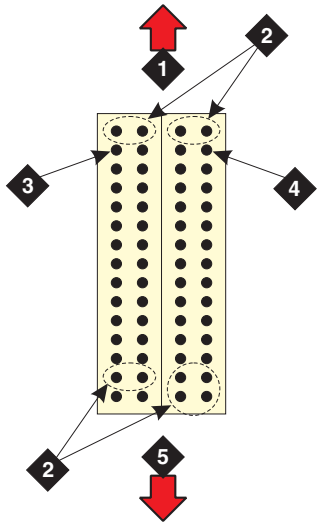

Figure notes:

1. **Top**
2. **No connects, no wires**
3. **Violet-brown**
4. **Orange-black**
5. **Bottom**

Chapter 3: Trunks and lines

This chapter provides procedures for adding analog and digital trunks and lines to an existing media gateway. These procedures are examples only. Actual wiring procedures might vary at each site.

List of analog and digital trunk and line circuit packs

Table 5: Analog and digital trunk and line circuit packs lists the circuit packs sorted by apparatus code, including those used in non-United States installations.

Table 5: Analog and digital trunk and line circuit packs

Apparatus Code	Name
TN1654	DS1 Converter—T1, 24 Channel/E1, 32 Channel (S8700 Multi-Connect configuration only)
TN2139	Direct Inward Dialing (DID) Trunk—Italy, 8 ports
TN2140B	Tie Trunk—Hungary, Italy, 4-wire, 4 ports
TN2146	Direct Inward Dialing Trunk—Belgium, the Netherlands, 8 ports
TN2147C	Central Office Trunk—multiple countries, 8 ports
TN2181	DCP Digital Line, 2-Wire, 16 ports
TN2183	Analog Line—multiple countries, 16 ports
TN2184	Direct Inward/Outward Dialing (DIOD) Trunk—Germany, 4 ports
TN2198B	ISDN-BRI 2-Wire U Interface, 2-wire, 12 ports
TN2199	Central Office Trunk—Russia, 3-wire, 4 ports
TN2224CP	DCP Digital Line, 2-wire, 24 ports, Firmware Download Enabled
TN2313AP	DS1 Interface Trunk, 24 channels; Firmware Download Enabled
TN429D	Direct Inward/Outward Dialing (DIOD) or CO Trunk, 8 ports
TN436B	Direct Inward Dialing (DID) Trunk—Australia, 8 ports

1 of 2

Table 5: Analog and digital trunk and line circuit packs (continued)

Apparatus Code	Name
TN459B	Direct Inward Dialing (DID) Trunk—United Kingdom, 8 ports
TN464HP/ TN2464CP	DS1 Interface Trunk—T1, 24 Channel; E1, 32 Channel; Firmware Download Enabled
TN465C	Analog Central Office Trunk—mult-country, 8 ports
TN479	Analog Line, 16 ports
TN497	Tie Trunk—Italy, 4 ports
TN556D	ISDN-BRI, S/T-NT Interface, 4-wire, 12 ports
TN570D	Expansion Interface
TN726B	Data Line, 8 ports
TN746B	Analog Line, 16 ports
TN747B	Central Office Trunk, 8 ports
TN753B	Direct Inward Dialing (DID) Trunk, 8 ports
TN754C	DCP Digital Line, 4-wire, 8 ports
TN760E	Tie Trunk, 4-wire, 4 ports
TN762B	Hybrid Line, 8 ports
TN763D	Auxiliary Trunk, 4 ports
TN767E	DS1 Interface Trunk—T1, 24 Channel
TN769	Analog Line, 8 ports
TN793CP	Analog Line with Caller ID, 24 ports
TN797	Analog CO Trunk or Line Combo—US, Canada, 8 ports
	2 of 2

The following list provides information on installing analog and digital trunk and line circuit packs:

- Adding TN464HP/TN2464CP with echo cancellation on page 57
- Adding CO, FX, WATS, and PCOL on page 60
- Adding DID trunks on page 61
- Adding Analog Tie trunks on page 62

- Adding digital DS1 Tie trunks and OPS on page 64
- Adding TTC Japan 2-Mbit trunk on page 65
- Adding CAMA/E911 trunk on page 66
- Adding ISDN—PRI on page 76
- S8700: Adding TN1654 DS1 Converter on page 79

Adding TN464HP/TN2464CP with echo cancellation

The TN464HP and TN2464CP circuit packs with echo cancellation are intended for customers who are likely to encounter echo over circuits connected to the Direct Distance Dialing (DDD) network. These circuit packs are intended for channels supporting voice. Therefore, they support the following trunks: CAS, CO, DID, DIOD, DMI, FX, Tie, and WATS. They do not support any data trunk groups.

Note:

The P suffix designation means the circuit pack is programmable. New firmware can be downloaded to the circuit pack.

The TN464HP and TN2464CP circuit packs are backwards compatible. However, the echo cancellation feature can be used only with Release 1.1 or later of Communication Manager and after the feature is enabled.

The echo cancellation feature cancels echoes with delays up to 96 milliseconds. Echo cancellation disables automatically when the circuit pack detects a 2100-hertz *phase-reversed* tone put out by high-speed modems (56 kilobaud). Echo cancellation does not disable when the circuit pack detects a 2100-hertz *straight* tone generated by low-speed modems (9.6 kilobaud).

For more information about installing port circuit packs, see Installing the circuit packs on page 20. For more information about setting the option switches, see the job aid titled *Option Switch Settings* (555-245-774). For more information about circuit pack administration, see *Administrator Guide for Avaya Communication Manager* (03-300509).

Echo cancellation must first be purchased then activated by the license file. See *Administrator Guide for Avaya Communication Manager* (03-300509).

Use the following procedure to modify the settings:

Note:

You do not need to busyout the circuit packs to modify the settings. But the modified settings do not take effect until either the port is busied out or the scheduled maintenance runs.

1. Type **display system-parameters customer-options** and press **Enter**. On screen 2 verify that the DS1 Echo Cancellation? field is set to **y**. If not, contact your Avaya representative because the license file determines this setting.

```
display system-parameters customer-options                    Page   2 of  10
                               OPTIONAL FEATURES

    Abbreviated Dialing Enhanced List? y          Audible Message Waiting? y
        Access Security Gateway (ASG)? n              Authorization Codes? y
       Analog Trunk Incoming Call ID? y                        CAS Branch? n
 A/D Grp/Sys List Dialing Start at 01? y                         CAS Main? n
Answer Supervision by Call Classifier? y                 Change COR by FAC? n
                                ARS? y Computer Telephony Adjunct Links? n
                ARS/AAR Partitioning? y      Co-Res DEFINITY LAN Gateway? y
          ARS/AAR Dialing without FAC? y  Cvg Of Calls Redirected Off-net? y
          ASAI Link Core Capabilities? y                       DCS (Basic)? y
          ASAI Link Plus Capabilities? y                DCS Call Coverage? y
       Async. Transfer Mode (ATM) PNC? n                DCS with Rerouting? y
  Async. Transfer Mode (ATM) Trunking? n
              ATM WAN Spare Processor? n   Digital Loss Plan Modification? n
                                ATMS? n                            DS1 MSP? y
                  Attendant Vectoring? y            DS1 Echo Cancellation? y
```

2. Type **add ds1** ***UUCSS***, where ***UUCSS*** and press **Enter**, where ***UUCSS*** is the cabinet, carrier, and slot location.

```
add ds1 01a06
                               DS1 CIRCUIT PACK

            Location: 01A06                          Name: ds1 1a06 F 18
            Bit Rate: 2.048                   Line Coding: hdb3

      Signaling Mode: isdn-pri
             Connect: network
   TN-C7 Long Timers? n                   Country Protocol: 1
Interworking Message: PROGress            Protocol Version: a
Interface Companding: mulaw                           CRC? n
           Idle Code: 11111111
                             DCP/Analog Bearer Capability: 3.1kHz


      Slip Detection? n                Near-end CSU Type: other

   Echo Cancellation? y
        EC Direction: inward
    EC Configuration: 4
```

3. On the **DS1 Circuit Pack** screen, set the **Echo Cancellation?** field to **y**.

   When set to **y**, the system displays two new fields: **EC Direction:** and **EC Configuration:**.

   - If you know the echo is coming into the system, keep the default setting for the **EC Direction:** field of **inward**.
   - If the distant party is hearing echo that originates in either the system, the line side stations, or system equipment, set the **EC Direction:** field to **outward**.
   - Keep the default setting for the **EC Configuration:** field.

4. Type **`add trunk-group next`** and press **Enter**.

```
add trunk-group next                                          Page   2 of  20
                              TRUNK FEATURES
          ACA Assignment? n            Measured: none
                                                      Maintenance Tests? y
                               Data Restriction? n

   Abandoned Call Search? n
   Suppress # Outpulsing? n

       Charge Conversion: 1
           Decimal Point: none
         Currency Symbol:
             Charge Type: units       Receive Analog Incoming Call ID: disabled
                                              Per Call CPN Blocking Code:
                                            Per Call CPN Unblocking Code:

            Outgoing ANI:                          Ds1 Echo Cancellation? y
```

5. On **Trunk Features**, screen 2, set the **DS1 Echo Cancellation?** field to **y**.
6. Test the voice quality on a telephone connected through the TN464HP or TN2464CP circuit packs and known to have echo to determine if the echo was eliminated.
7. If the echo still exists, reset the **EC Configuration:** field and test the voice quality. These settings provide help for the following scenarios:
   - Setting 1 rapidly minimizes echo when first detected, regardless of how loud the speaker talks. Settings 1 and 4 have the same EC settings except that Setting 1 introduces 6 dB of loss.
   - Setting 2 minimizes speech clipping, but it takes a fraction of a second longer for the echo to fade.
   - Setting 3 eliminates speech clipping, but a strong echo might take 2 or 3 seconds to fade.
   - Setting 4 minimizes strong echo, hot signals, or excessive clipping or breakup of speech from a distant party. It reduces speech clipping but might allow slight residual echo or more background noise.
8. If the echo still exists after you try all these settings, contact technical support.

Adding CO, FX, WATS, and PCOL

Each of the following trunks connects to one port of an 8-port TN747B Central Office trunk or to one of an assortment of North American Central Office trunk circuit packs:

- Central Office (**CO**) trunk
- Foreign Exchange (**FX**) trunk
- Personal Central Office Line (**PCOL**)
- Wide Area Telecommunications Service (**WATS**) trunk

Before physically installing the circuit pack, you need the assigned slot location (UUCSS). UU is the media gateway (MCC1) or port network number (G650). C is the media gateway (G650) or carrier (MCC1). SS is the slot location. This information is available from the person who administered the translations, most likely the software specialist. If the information is not available, you can find the information on the **Trunk Group Status** screen.

1. Get the trunk group number from the administrator.
2. Type **`status trunk-group`** ***`number`*** and press **Enter**.

```
 status trunk 1

                            TRUNK GROUP STATUS

Member    Port      Service State       Mtce Connected Ports
                                        Busy

0001/001 13A0701  in-service/idle     no
0001/002 13A0702  in-service/idle     no
0001/003 13A0703  in-service/idle     no
0001/004 13A0704  in-service/idle     no
0001/005 13A0705  in-service/idle     no
0001/006 13A0706  in-service/idle     no
0001/007 13A0707  in-service/idle     no
0001/008 13A0708  in-service/idle     no
0001/009 13A0801  out-of-service
0001/010 13A0802  out-of-service
0001/011 13A0803  out-of-service
0001/012 13A0804  out-of-service
0001/013 13A0805  out-of-service
0001/014 13A0806  out-of-service
```

3. Install the CO trunk circuit pack in the assigned carrier slot.

   Use the correct type of **t**runk circuit pack with enough ports to handle the number of trunks you need. For more information about how to find out how many circuit packs you need, see the *Hardware Description and Reference for Avaya Communication Manager* (555-245-207).

4. Administer the screens listed under Adding a **CO**, **FX**, or **WATS** Trunk Group and Adding a PCOL Trunk Group in the *Administrator Guide for Avaya Communication Manager* (03-300509).

Adding DID trunks

Each Direct Inward Dial (**DID**) trunk connects to either:

- one port of a DID Trunk circuit pack

  or

- one port of an assortment of global **DID/DIOD** trunk circuit packs.

Before physically installing the circuit pack, you need the assigned slot location (UUCSS). UU is the media gateway (MCC1) or port network number (G650). C is the media gateway (G650) or carrier (MCC1). SS is the slot location. The information is available from the person who administered the translations, most likely the software specialist. If the information is not available, you can find the information on the **Trunk Group Status** screen.

1. Get the trunk group number from the administrator.
2. Type **`status trunk-group`** ***`number`*** and press **Enter**.

```
 status trunk 1

                            TRUNK GROUP STATUS

Member   Port     Service State      Mtce Connected Ports
                                    Busy

0001/001 13A0701  in-service/idle    no
0001/002 13A0702  in-service/idle    no
0001/003 13A0703  in-service/idle    no
0001/004 13A0704  in-service/idle    no
0001/005 13A0705  in-service/idle    no
0001/006 13A0706  in-service/idle    no
0001/007 13A0707  in-service/idle    no
0001/008 13A0708  in-service/idle    no
0001/009 13A0801  out-of-service
0001/010 13A0802  out-of-service
0001/011 13A0803  out-of-service
0001/012 13A0804  out-of-service
0001/013 13A0805  out-of-service
0001/014 13A0806  out-of-service
```

3. Install a **DID/DIOD** trunk circuit pack in the assigned carrier slot.
4. Administer the screens listed under Adding a **DID** Trunk Group in the *Administrator Guide for Avaya Communication Manager* (03-300509).

Adding Analog Tie trunks

Each analog tie trunk connects to 1 port of a 4-port tie trunk circuit pack or to an assortment of global tie trunk circuit packs.

Before physically installing the circuit pack, you need the assigned slot location (UUCSS). UU is the media gateway (MCC1) or port network number (G650). C is the media gateway (G650) or carrier (MCC1). SS is the slot location. The information is available from the person who administered the translations, most likely the software specialist. If this information is not available, you can find the information on the **Trunk Group Status** screen.

1. Get the trunk group number from the administrator.
2. Type **`status trunk-group`** ***`number`*** and press **Enter**.

```
 status trunk 1

                              TRUNK GROUP STATUS

Member    Port      Service State       Mtce Connected Ports
                                        Busy

0001/001 13A0701  in-service/idle     no
0001/002 13A0702  in-service/idle     no
0001/003 13A0703  in-service/idle     no
0001/004 13A0704  in-service/idle     no
0001/005 13A0705  in-service/idle     no
0001/006 13A0706  in-service/idle     no
0001/007 13A0707  in-service/idle     no
0001/008 13A0708  in-service/idle     no
0001/009 13A0801  out-of-service
0001/010 13A0802  out-of-service
0001/011 13A0803  out-of-service
0001/012 13A0804  out-of-service
0001/013 13A0805  out-of-service
0001/014 13A0806  out-of-service
```

3. Install the analog or global tie trunk circuit pack in the assigned slot.

4. Obtain information on setting the option switches and administering the port for customer-owned tie-trunk facilities. An example of a customer-owned, not leased, tie-trunk facilities is a campus environment. WIth customer-owned tie-trunks, the TN760E tie trunk circuit pack provides signaling capabilities beyond those specified by the industry-wide **E&M** standard.

   For more information about setting the option switches and administering the port, see Figure 9: TN760E Tie Trunk circuit pack option switches (component side) on page 63 and Table 6: TN760E Analog Tie Trunk circuit pack option switch settings and administration on page 64.

5. Administer the screens listed under Adding a Tie Trunk Group in the *Administrator Guide for Avaya Communication Manager* (03-300509).

Figure 9: TN760E Tie Trunk circuit pack option switches (component side)

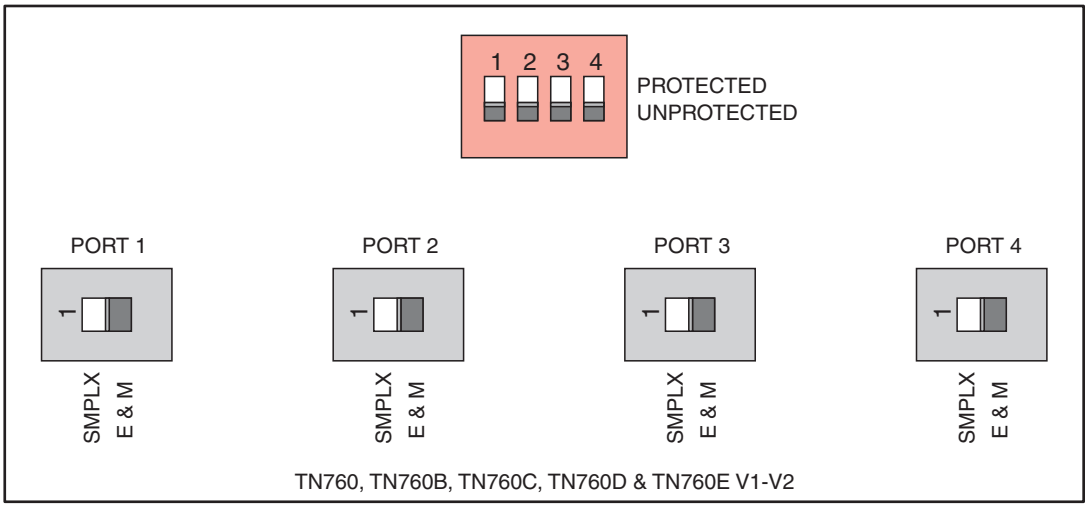

Table 6: TN760E Analog Tie Trunk circuit pack option switch settings and administration

Installation Situation		Preferred Signaling Format		E&M/ SMPLX Option Switch	Set Prot/ Unprot Option Switch	Administered Port*
Circumstance	To	System	Far-End			
Collocated	Media Gateway	E&M Type 1 Compatible	E&M Type 1 Standard	E&M	Unprotected	Type 1 Compatible
Inter-Building	Media Gateway	Protected Type 1 Compatible	Protected Type 1 Standard Plus Protection Unit	E&M	Protected	Type 1 Compatible
Collocated	Net Integrated	E&M Type 1 Standard	Any system	E&M	Unprotected	Type 1

*. Administer the items in this column on the ***Trunk Group*** screen.

Adding digital DS1 Tie trunks and OPS

The following circuit packs provide connections to a 1.544-Mbps **DS1** facility (T1) as 24 independent 64-kbps trunks and a 2.048-Mbps **DS1** facility (E1) as 32 independent 64-kbps trunks:

- TN2313 DS1 Tie Trunk
- TN767B (or later) DS1 Interface
- TN464HP (or later) DS1 Interface

Note:

Because adding **DS1** tie-trunk service might require a service interruption, notify the customer in advance as to when you will be adding the circuit pack(s).

For more information about administering DS1 Tie Trunks, see the *Administrator Guide for Avaya Communication Manager* (03-300509).

Adding TTC Japan 2-Mbit trunk

The TN2242 Japan 2-Mbit trunk connects the media gateway to other vendor equipment in Japan and to other MultiVantage configurations through the Time Division Multiplexor (TDM).

Before physically installing the circuit pack, you need the assigned slot location (UUCSS). UU is the media gateway (MCC1) or port network number (G650). C is the media gateway (G650) or carrier (MCC1). SS is the slot location. The information is available from the person who administered the translations, most likely the software specialist. If the information is not available, you can find the information on the **Trunk Group Status** screen.

1. Get the trunk group number from the administrator.
2. Type **`status trunk-group`** ***`number`*** and press **Enter**.

```
 status trunk 1

                            TRUNK GROUP STATUS

Member   Port     Service State      Mtce Connected Ports
                                    Busy

0001/001 13A0701  in-service/idle    no
0001/002 13A0702  in-service/idle    no
0001/003 13A0703  in-service/idle    no
0001/004 13A0704  in-service/idle    no
0001/005 13A0705  in-service/idle    no
0001/006 13A0706  in-service/idle    no
0001/007 13A0707  in-service/idle    no
0001/008 13A0708  in-service/idle    no
0001/009 13A0801  out-of-service
0001/010 13A0802  out-of-service
0001/011 13A0803  out-of-service
0001/012 13A0804  out-of-service
0001/013 13A0805  out-of-service
0001/014 13A0806  out-of-service
```

3. Install a TN2242 trunk circuit pack in the assigned slot.
4. Connect the H600-513 cable from the media gateway to the Time Division Multiplexor device.
5. To administer screens, see the *Administrator Guide for Avaya Communication Manager* (03-300509)*:*
   - For ISDN applications, see ISDN Service.
   - For non-ISDN applications, see Managing Trunks.

Adding CAMA/E911 trunk

The Centralized Automatic Message Accounting (CAMA)/E911 feature requires the TN429C/D (or later) CO Trunk circuit pack.

Port networks in which TN429C/D circuit packs connect to CAMA trunks require some Call Progress Tone Receiver (CPTR) resources to be either TN744D V2 or TN2182B circuit packs. These resources are required because Touch Tone Receiver (TTR)/CPTR or General Purpose Tone Receiver (GPTR) resources are selected from the available pool in the port network when needed.

Table 7: Compatibility Tone Clock, TTR/CPTR, and GPTR circuit packs on page 66 denotes which of these circuit packs are compatible and which are not affected.

Do the following tasks when adding CAMA/E911 trunks:

- Installing the circuit pack on page 67
- Adding the trunks on page 68
- Changing the feature access code on page 70
- Changing the ARS digit analysis on page 71
- Changing the route patterns on page 72
- Changing the CAMA numbering and class of restriction on page 74

Table 7: Compatibility Tone Clock, TTR/CPTR, and GPTR circuit packs

Circuit Pack	Description	Compatibility with CAMA Trunks in Same PN	Application	Notes
TN744D,V2 TN744E,V1	Call Classifier - Detector	Not Compatible	Used globally	8 GPTR/call classification ports. Use TN744D, V2 (or later) if CAMA feature is to be supported.
TN744D,V2 TN744E,V1	Call Classifier - Detector	Compatible	Used globally	8 GPTR/call classification ports. Required in PN supporting CAMA trunks if GPTR resources are required in excess of those on the TN2182BV2 (or later). Also required, if the TN768 or TN780 tone clocks are used, in place of TN748.

1 of 2

Table 7: Compatibility Tone Clock, TTR/CPTR, and GPTR circuit packs (continued)

Circuit Pack	Description	Compatibility with CAMA Trunks in Same PN	Application	Notes
TN748C/D	Touchtone Detector / Call Progress Tone Detector	Not Compatible	Used in the U.S. and a few other countries	4 TTR and 2 CPTR ports. Use TN744D, V2 or later if CAMA feature is to be supported.
TN780	Tone Clock	Not Affected	Used in the U.S. (infrequently) for Stratum 3 clocking and used in many other countries	Tone clock only, no TTR/CPTR functionality. Usually found with TN748 circuit packs in the U.S. Use TN744D, V2 or later if CAMA feature is to be supported.
TN2182B/C	Tone Detector/ Tone Generator/ Call Classifier	Compatible	Used globally	Tone clock plus 8 GPTR/call classification ports. Use TN2182B if CAMA feature is to be supported.

2 of 2

Installing the circuit pack

The following steps install the circuit pack.

1. Insert the TN429C or later CO Trunk circuit pack in any available port slot. Ensure that the TN744D Call Classifier/Detector circuit pack is Vintage 2 or later or use the TN744E.
2. Connect the CAMA trunk to the Main Distribution Field, the trunk from the CO. For more information, see the Circuit Pack and Auxiliary Equipment Leads (Pinout Charts) in the job aid titled *Connector and Cable Diagrams (Pinout Charts)* (555-245-773).

Adding the trunks

The following steps add trunks to a group.

Note:

So that this trunk group does not get buried within the other trunk groups, use a distinctive trunk group number such as 99.

1. Type **add trunk 99** and press **Enter**.

```
add trunk 99                                              Page 1 of 11

                                TRUNK GROUP

Group Number: 1                   Group Type: cama       CDR Reports: y
  Group Name:  cama Trunk Group - E911  COR: 1     TN: 1       TAC: 701
   Direction: outgoing     Outgoing Display? y CESID I Digits Sent: 0
                             Busy Threshold: 99

ESID I Digits Sent: 0
                             Busy Threshold: 99

TRUNK PARAMETERS
         Trunk Type: wink-start
 Outgoing Dial Type: r1mf
  Trunk Termination: rc
```

2. In the **Group Type** field, type **cama**.
3. In the **Group Name** field, type the desired name.
4. In the **TAC** field, type the desired trunk access code.
5. In the **Outgoing Display** field, type **y**.
6. In the **CESID I Digits Sent** field, type the number directed by the Central Office (CO) or the Public Safety Answering Point (PSAP).

7. Go to the **Administrable Timers** screen. You might need to adjust these fields according to your CO.

```
add trunk 99                                                Page 3of 11


                              TRUNK GROUP

ADMINISTRABLE TIMERS

                                     Outgoing Disconnect (msec): 400
                                Cama Outgoing Dial Guard (msec): 75
                                    Outgoing Glare Guard (msec): 1000

                                    Cama Wink Start Time (msec): 5000
 Outgoing End of Dial (sec): 1    Outgoing Seizure Response (sec): 4
                                    Disconnect Signal Error (sec): 30
```

8. Go to the **Group Member Assignments** screen.

```
add trunk 99                                                Page 5of 11

TRUNK GROUP

                                        Administered Members (min/max):  1/2
GROUP MEMBER ASSIGNMENTS                    Total Administered Members:  2
     Port    Code    Sfx  Name

 1: 01C0401 TN429   C
 2: 01C0402 TN429   C
 3:
 4:
 5:
 6:
```

9. In the **Port** field, add the trunk members.
10. Press **F3** when finished to submit the form and effect the changes.

Changing the feature access code

The following steps change the feature access code.

1. Type **`change feature-access-code`** and press **Enter**.

```
change feature-access-code                                    Page 1 of 5

                                  FEATURE ACCESS CODE (FAC)
           Abbreviated Dialing List1 Access Code: ____
           Abbreviated Dialing List2 Access Code: ____
           Abbreviated Dialing List3 Access Code: ____
  Abbreviated Dial - Prgm Group List Access Code: ____
                       Announcement Access Code: ____
                        Answer Back Access Code: ____
       Auto Alternate Routing (AAR) Access Code: ____
       Auto Route Selection (ARS) Access Code 1: 9___  Access Code 2:
                  Automatic Callback Activation: ____  Deactivation:
   Call Forwarding Activation Busy/DA: ____  All: ____  Deactivation:
                          Call Park Access Code: ____
                        Call Pickup Access Code: ____
  CAS Remote Hold/Answer Hold-Unhold Access Code: ____
                    CDR Account Code Access Code: ____
                                 Change Coverage: ____
                    Data Origination Access Code: ____
                        Data Privacy Access Code: ____
               Directed Call Pickup Access Code: ____
      Emergency Access To Attendant Access Code: ____
            Extended Call Fwd Activate Busy D/A: ____  All: ____
Deactivation:
                Facility Test Calls Access Code: ____
                              Flash Access Code: ____
```

2. In the **Auto Route Selection (ARS) Access Code 1:** field, administer the ARS access code and press **Enter**. In the example above, it is **9**. The ARS access code must match the dial plan.

Changing the ARS digit analysis

The following steps change the ARS digit analysis.

1. Type **change ars analysis *number*** and press **Enter**. The example uses the number 9.

```
change ars analysis 9                                          Page 1 of 1

                            ARS DIGIT ANALYSIS TABLE
                          Partitioned Group Number:  _     Percent Full:    ___


     Dialed      Total  Rte Call Nd  ANI      Dialed      Total  Rte Call Nd ANI
     String      Mn Mx  Pat Type Num  Rq       String      Mn Mx  Pat Type Num Rq
9_________________ 7_ 7_  2__ hnpa ___ n _____________________ __ __ ___ ____ ___ _
976_______________ 7_ 7_  den hnpa ___ n _____________________ __ __ ___ ____ ___ _
11________________ 2_ 2_  11_ emer ___ n _____________________ __ __ ___ ____ ___ _
911_______________ 3_ 3_  12_ emer ___ n _____________________ __ __ ___ ____ ___ _
_________________ __ __  ___ ____ ___ _ _____________________ __ __ ___ ____ ___ _
_________________ __ __  ___ ____ ___ _ _____________________ __ __ ___ ____ ___ _
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_________________ __ __  ___ ____ ___ _ _____________________ __ __ ___ ____ ___ _
_________________ __ __  ___ ____ ___ _ _____________________ __ __ ___ ____ ___ _
```

2. In the **Dialed String** field, in the first empty row, type **11**.
3. In the **Total Mn** field, type **2**.
4. In the **Total Mx** field, type **2**.
5. In the **Rte Pat** field, type the desired Route Pattern. In the example, the route pattern is 11.

   Note:

   For the following step, if you are using the Attendant Crisis Alerting feature, type **alrt** instead of **emer**.

6. In **Call Type** field, type **emer**.
7. On the next empty row, in the **Dialed String** field, type **911**.
8. In the **Total Mn** field, type **3**.
9. In the **Total Mx** field, type **3**.

10. In the **Rte Pat** field, type the desired Route Pattern. In the example, the route pattern is 12.

    Note:

    For the following step, if you are using the Attendant Crisis Alerting feature, type **alrt** instead of emer.

11. In the **Call Type** field, type **emer** and press **Enter**.
12. Press **F3** to submit the screen and effect the changes.

Changing the route patterns

The following steps change the route patterns.

1. Type **change route-pattern *number*,** the route pattern to be changed, and press **Enter**. In the example, the route pattern is 11.

```
change route-pattern 11                                        Page 1 of X
                              Pattern Number: 11

    Grp.  FRL NPA Pfx Hop Toll No. Del Inserted                          IXC
    No.           Mrk Lmt List Digits  Digits
 1: 99_   0  ___  _  __   __    __    _9_____________________________________ user
 2: ___   _  ___  _  __   __    __    _____________________________________ user
 3: ___   _  ___  _  __   __    __    _____________________________________ user
 4: ___   _  ___  _  __   __    __    _____________________________________ user
 5: ___   _  ___  _  __   __    __    _____________________________________ user
 6: ___   _  ___  _  __   __    __    _____________________________________ user

      BCC VALUE  TSC CA-TSC   ITC  BCIE Service/Feature           Numbering LAR
     0 1 2 3 4 W    Request                                      Format
 1: y y y y y n  y none_____ both ept  outwats-bnd____ BAND: ___ _________  none
 2: y y y y y n  n          rest      _________________           _________  next
 3: y y y y y n  n          rest      _________________           _________  rehu
 4: y y y y y n  n          rest      _________________           _________  none
 5: y y y y y n  n          rest      _________________           _________  none
 6: y y y y y n  n          rest      _________________           _________  none
```

2. In the **Grp. No.** field, type the CAMA trunk group number.
3. In the **FRL** field, type `0`.

   Note:

   For the following step, if the service provider Central Office (CO) wants KP11ST as the dialed digit string, leave it blank. If the CO wants KP911ST, type `9` in the **Inserted Digits** field.

4. Administer the **Inserted Digits** field if needed and press **Enter**.

5. Type **change route-pattern *number***, the route pattern to be changed, and press **Enter**. In the example, the route pattern is 12.

```
change route-pattern 12                                          Page 1 of X
                              Pattern Number: 12

    Grp.  FRL NPA Pfx Hop Toll No. Del Inserted                          IXC
    No.           Mrk Lmt List Digits  Digits
 1: 99_   0  ___  _  __   __    1_    ____________________________________ user
 2: ___   _  ___  _  __   __    __    ____________________________________ user
 3: ___   _  ___  _  __   __    __    ____________________________________ user
 4: ___   _  ___  _  __   __    __    ____________________________________ user
 5: ___   _  ___  _  __   __    __    ____________________________________ user
 6: ___   _  ___  _  __   __    __    ____________________________________ user

     BCC VALUE  TSC CA-TSC   ITC  BCIE Service/Feature           Numbering LAR
     0 1 2 3 4 W    Request                                      Format
 1: y y y y y n  y none_____ both ept  outwats-bnd____ BAND: ___ _________  none
 2: y y y y y n  n           rest      ________________           _________  next
 3: y y y y y n  n           rest      ________________           _________  rehu
 4: y y y y y n  n           rest      ________________           _________  none
 5: y y y y y n  n           rest      ________________           _________  none
 6: y y y y y n  n           rest      ________________           _________  none
```

6. In **Grp. No.** field, type the CAMA trunk group number.
7. In the **FRL** field, type `0`.

   Note:

   For the following step, if the service provider Central Office (CO) wants KP911ST as the dialed digit string, leave blank. If the CO wants KP11ST, delete one digit.

8. Administer **No. Del Digits** field, if needed.
9. Press **F3** to submit the screen and effect the changes.

Changing the CAMA numbering and class of restriction

The following steps change the CAMA numbering and class of restriction.

1. Type **change cama-numbering** and press **Enter**.

```
 change cama-numbering                                          Page 1 of 3
                        CAMA NUMBERING - E911 FORMAT

System CESID Default: 5241100______

Ext  Ext                    Total         Ext  Ext                    Total
Len  Code      CESID       Length         Len  Code      CESID       Length
 4_  101__  5381234_____     7_             __  _____  __________     __
 4_  1____  555_________     7_             __  _____  ___________    __
  __  _____  ____________     __              __  ______ ___________    __
 __  _____  ____________     __             __  ______ ___________    __
 __  _____  ____________     __             __  ______ ___________    __
 __  _____  ____________     __             __  ______ ___________    __
 __  _____  ____________     __             __  ______ ___________    __
```

2. In the **System CESID Default** field, type in your own system default.

   This system default is the number that the 911 operator sees when the extension code is not found in the CAMA Numbering table.

3. In the **Ext Len**, **Ext Code**, **CESID**, and **Total Length** fields, fill out to your own CAMA numbering plan. Be sure to cover all extensions.

4. Press **F3** to submit the screen and effect the changes.

5. Type **change cor *number*** which is the class of restriction (COR) to be changed and press **Enter**.

```
change cor 10                                          Page 1 of 3
                      CLASS OF RESTRICTION

               COR Number: 10
          COR Description: supervisor

                      FRL: 0                                APLT? y
  Can Be Service Observed? n          Calling Party Restriction: none
Can Be A Service Observer? n           Called Party Restriction: none
        Time of Day Chart: 1       Forced Entry of Account Codes? n
         Priority Queuing? n               Direct Agent Calling? n
     Restriction Override: none       Facility Access Trunk Test? n
     Restricted Call List? n                 Can Change Coverage? n
   Unrestricted Call List?
           Access to MCT? y            Fully Restricted Service? n
  Category For MFC ANI:    7            Hear VDN of Origin Annc.? n
        Send ANI for MFE? n_            Add/Remove Agent Skills? n
Hear System Music on Hold? y   PASTE (Display PBX Data on Phone)? n
 Automatic Charge Display? n
                        Can Be Picked Up By Directed Call Pickup? n
                                    Can Use Directed Call Pickup? n
```

6. Change all CORs that are defined for stations to remove any calling party restrictions for 911 calls.
7. In the **Calling Party Restriction:** field, type **none**.
8. Press **F3** to submit the screen and effect the changes.
9. Type **save translations** and press **Enter**. This command takes all translation information in memory and writes it to the hard disk drive.

Adding ISDN—PRI

North American

The following steps add ISDN-PRI.

1. Install a TN767E (or later) DS1 or a TN464HP DS1/E1 circuit pack for a signaling link and up to 23 **ISDN—PRI** Trunk Group members.
2. If the port network does not have a TN2312AP IPSI circuit pack, install a TN2182 Tone-Clock circuit pack. The Tone-Clock circuit pack provides synchronization for the **DS1** circuit pack.

International

The following steps add ISDN-PRI.

1. Install a TN464HP DS1/E1 circuit pack for the assignment of the 2 signaling channels and up to 30 **ISDN** — **PRI** Trunk Group members. Each E1 span provides 32 ports.
2. If the port network does not have a TN2312AP IPSI circuit pack, install a TN2182 Tone-Clock circuit pack. The Tone-Clock circuit pack provides synchronization for the DS1/E1 circuit pack.

Adding circuit packs

Before physically installing the circuit pack, you need the assigned slot location (UUCSS). UU is the media gateway (MCC1, SCC1) or port network number. C is the media gateway or carrier (MCC1). SS is the slot location. The information is available from the person who administered the translations, most likely the software specialist. If the information is not available, you can find the information on the **Trunk Group Status** screen.

1. Get the trunk group number from the administrator.

2. Type **status trunk-group *number*** and press **Enter**.

```
 status trunk 1

                              TRUNK GROUP STATUS

Member    Port      Service State       Mtce Connected Ports
                                        Busy

0001/001 13A0701  in-service/idle     no
0001/002 13A0702  in-service/idle     no
0001/003 13A0703  in-service/idle     no
0001/004 13A0704  in-service/idle     no
0001/005 13A0705  in-service/idle     no
0001/006 13A0706  in-service/idle     no
0001/007 13A0707  in-service/idle     no
0001/008 13A0708  in-service/idle     no
0001/009 13A0801  out-of-service
0001/010 13A0802  out-of-service
0001/011 13A0803  out-of-service
0001/012 13A0804  out-of-service
0001/013 13A0805  out-of-service
0001/014 13A0806  out-of-service
```

3. Install the DS1 Interface circuit pack in the assigned slot.
4. Install a Tone Detector circuit pack, if required.

Connecting cables

The following step connects the cables to the MDF.

1. Install and connect cables from the TN464HP to the Main Distribution Field as required.

Administering the circuit pack

The following step administers the circuit pack.

1. Administer the screens listed under ISDN Trunk Group and Trunk Group screens in the *Administrator Guide for Avaya Communication Manager* (03-300509). These screens are described in the Screen Reference chapter.

Resolving alarms

The following steps display the alarms.

1. Type **`display alarms`** and press **Enter**.
2. Examine the alarm log. Resolve any alarms that might exist using the appropriate maintenance documentation.

Saving translations

The following step saves translations.

1. Type **`save translation`** and press **Enter**. This command takes all translation information in memory and writes it to the hard disk drive.

Adding TN1654 DS1 Converter

The TN1654 DS1 Converter circuit pack is used to connect a remote port network (PN) to a central port network connected to a center stage switch (CSS). You must install a DS1 converter in both the central and remote PN. The central PN must be an MCC1 media gateway; however, the remote PN may be a stack of SCC Media Gateways or rack of G650 Media Gateways.

The TN1654 DS1 Converter circuit pack supports from 1 to 4 T1 (24 channel) or E1 (32 channel) facilities.

Do the following tasks when adding a TN1654 DS1 converter:

- Setting circuit pack switches on page 79
- Installing and cabling the TN1654 circuit pack (T1 only) on page 82
- Installing a 75-ohm E1 interface adapter on page 87

Setting circuit pack switches

The configuration switches on the TN1654 must be set before the circuit pack is installed. The TN1654 can be configured for either T1 or E1 operation. All 4 facilities on the circuit pack are configured as a group. It is not possible to have T1 and E1 facilities supported on the same circuit pack at the same time.

The T1 line impedance is fixed at 100 ohms, and the T1 framing is selectable for ESF (Extended Super Frame) or D4 for each facility. The E1 facility line supports termination impedances of 120 ohms for twisted-pair and 75 ohms for coax wiring.

Figure 10: TN1654 DS1 Converter circuit pack switches on page 80 shows the location of the switches. Table 8: TN1654 DS1 Converter circuit pack switch functions on page 80 and Table 9: TN1654 DS1 Converter circuit pack switch settings on page 81 show the switch-setting functions and positions, respectively.

Figure 10: TN1654 DS1 Converter circuit pack switches

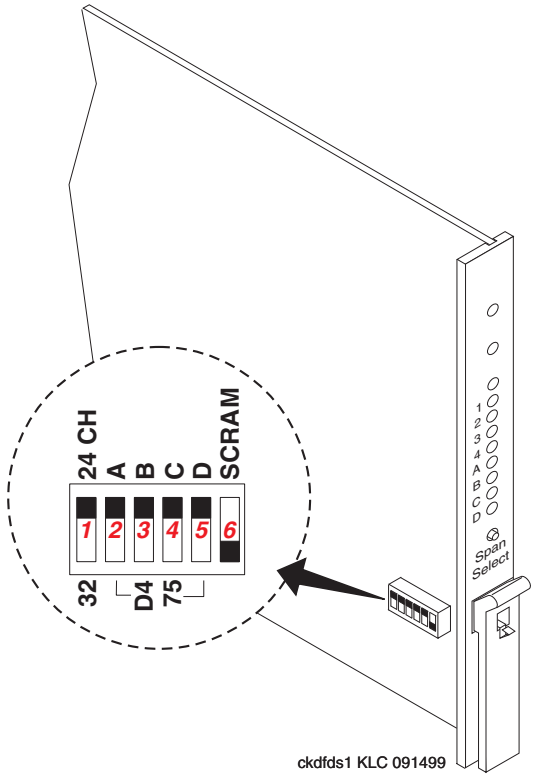


Table 8: TN1654 DS1 Converter circuit pack switch functions

Switch	Function
1	Type of Facility
2	Span A Line Impedance (E1 Only) Span A Framing (T1 Only)
3	Span B Line Impedance (E1 Only) Span B Framing (T1 Only)
4	Span C Line Impedance (E1 Only) Span C Framing (T1 Only)
5	Span D Line Impedance (E1 Only) Span D Framing (T1 Only)
6	Force Fiber Data-Stream Scrambling

Table 9: TN1654 DS1 Converter circuit pack switch settings

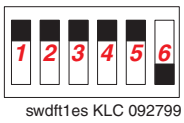
	1	2	3	4	5	6
up	T1	120 ohms ESF	120 ohms ESF	120 ohms ESF	120 ohms ESF	Enabled
down	E1*	75 ohms D4	75 ohms D4	75 ohms D4	75 ohms D4	Disabled

*. Although the TN1654 circuit pack supports 75 ohms, use the 127A BALUN to convert the 120 ohms to 75 ohms rather than the switch settings.

To set the circuit pack switches:

1. Set the configuration switches on the TN1654 as required per site.
2. Set Switch 6 down (disabled).
3. Switch 6 may not be present (or active) on all TN1654 DS1 Converter circuit packs.
4. Set Switch 1 up for T1 facilities.
5. All subsequent facility switch settings (Switches 2-5) reflect T1 framing on each of the 4 facilities. See Table 10: Examples of typical settings on page 81.
6. Set Switch 1 down for E1 facilities.
7. All subsequent facility switch settings (Switches 2-5) reflect E1 impedance on each of the 4 facilities. See Table 10: Examples of typical settings for examples.

Table 10: Examples of typical settings

Switch settings	Description
 swdft1es KLC 092799	T1 ESF Span A through D framing set for ESF
swdft1d4 KLC 092799	T1 D4 Span A through D framing set for D4
swdfe1es KLC 092799	E1 120 ohms ESF Span A through D line impedance set for ESF

Installing and cabling the TN1654 circuit pack (T1 only)

The TN1654 circuit pack are normally installed in the Switch Node Carrier on the central port network (PN), which is in an MCC1 media gateway. However, if you have more than 2 remote PNs or you are installing the circuit pack in the remote PN, then you install them in a port carrier in the media gateway. The remote PNs can be SCC1 media gateways.

The installation instructions are provided as examples only.

Note:

Be sure to label all of the cables as they are installed.

Installing the circuit pack(s) in a Switch Node Carrier

You can install up to 2 TN1654 circuit packs in a Switch Node Carrier. If you need to install more than 2, install them in a port carrier.

CAUTION:

When adding or replacing any hardware and associated cables and adapters, be sure to ground yourself against electrostatic discharge (ESD) by wearing a grounded wrist strap.

CAUTION:

Install the TN1654 circuit pack in either slot 1 or slot 21. Installing it in any other slots can damage the circuit pack and the media gateway. Do *not* do it.

1. Install the TN1654 circuit pack in either slot 1 or 21 of the Switch Node Carrier close to a TN573B SNI circuit pack.
2. On the backplane, connect a 14-inch (36-centimeter) Y cable from the TN1654 circuit pack to the TN573B circuit pack. For a connectivity diagram, see Figure 11: TN1654 DS1 Converter circuit pack connections—part 1 on page 83.

   Note:

   The Y cable used with the TN1654 circuit pack is different than the Y cable used with the old TN574 DS1 converter circuit pack. These cables are NOT interchangeable.
3. Connect an H600-348 Quad cable to the other side of the Y cable.

If you go through a T1 line and out through the public network to a remote PN, FCC rules require that you install a Channel Service Unit (CSU). Go to Connecting through a Channel Service Unit on page 84.

Figure 11: TN1654 DS1 Converter circuit pack connections—part 1

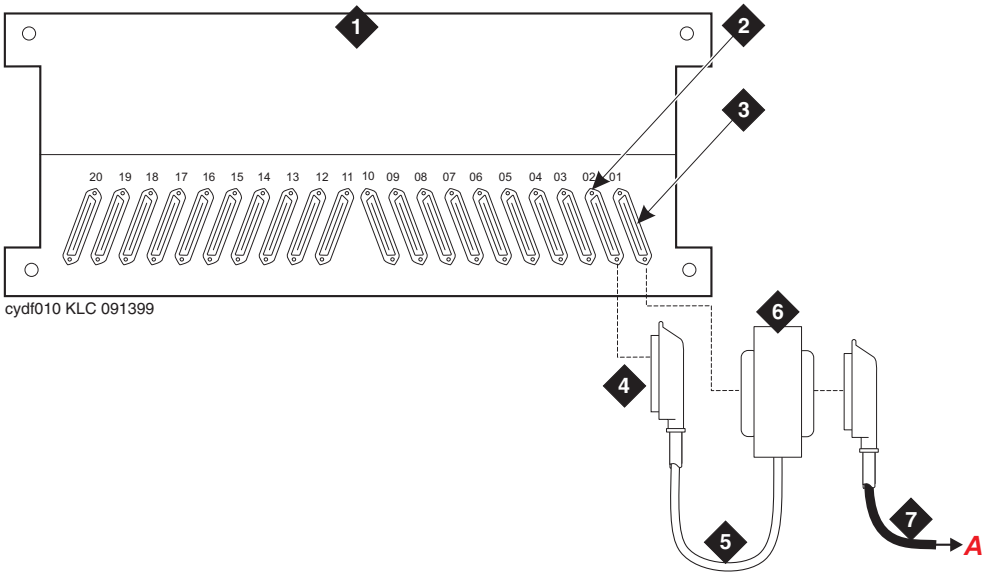


Figure notes:

1. **Port carrier/media gateway**
2. **Backplane connector for TN570D EI**
3. **Backplane connector for TN1654 DS1 Converter**
4. **50-pair female connector to EI connector**
5. **14-in. (35.6-cm) Y cable**
6. **50-pin male/50-pin female double-headed connector**
7. **H600-348 quad cable (with 50-pin male connector), which connects the Y cable to the 4 CSUs, if used.**

Installing the circuit pack(s) in a port carrier

You install the TN1654 circuit packs in a port carrier in either an MCC1 or SCC1 media gateway in the remote PN or in the central PN if the 2 slots in SNI are already used.

CAUTION:

When adding or replacing any hardware and associated cables and adapters, be sure to ground yourself against electrostatic discharge (ESD) by wearing a grounded wrist strap.

1. Install the TN1654 circuit pack in any slot in a port carrier close to a TN570D Expansion Interface circuit pack.
2. On the backplane, connect a 14-inch (35.56 cm) Y cable from the TN1654 circuit pack to the TN570D circuit pack. See Figure 11: TN1654 DS1 Converter circuit pack connections—part 1 on page 83.

Note:

The Y cable used with the TN1654 circuit pack is different than the Y cable used with the old TN574 DS1 converter circuit pack. These cables are NOT interchangeable.

3. Connect an H600-348 Quad cable to the other side of the double-headed Y cable.

If you go through a T1 line and out through the public network to a remote PN, FCC rules require that you install a Channel Service Unit (CSU). Go to Connecting through a Channel Service Unit on page 84.

Connecting a port carrier to a Switch Node Carrier

When the TN1654 circuit pack is in a port carrier and the TN573B Switch Node Interface circuit pack is in the Switch Node Carrier, connect the two circuit packs with a 70-inch (178 centimeter) Y Cable.

Note:

The Y cable used with the TN1654 circuit pack is different than the Y cable used with the TN574 circuit pack. These cables are NOT interchangeable.

1. Connect an H600-348 quad cable to the other side of the Y cable.

Connecting through a Channel Service Unit

FCC rules require that you install a Channel Service Unit (CSU) at both ends if you go through a T1 line and out through the public network to a remote PN. You need 1 CSU for each T1 or E1 facility up to 4.

Figure 12: TN1654 DS1 Converter circuit pack connections for T1 service—part 2 on page 85 shows a typical connection for a T1 line, and Figure 13: TN1654 DS1 Converter circuit pack connections for 120-ohm E1 service—part 2 on page 86 shows a typical connection for an E1 line.

Note:

You may need an adapter cable to connect the H600-348 cable to the CSU (see Table 11: Adapter descriptions on page 86).

To connect through a CSU:

1. Connect the H600-348 quad cable to the DTE jacks on each **CSU.**
2. Connect one end of the H600-383 cable to the network jack on the CSU and the other end to the smart jack.

Figure 12: TN1654 DS1 Converter circuit pack connections for T1 service—part 2

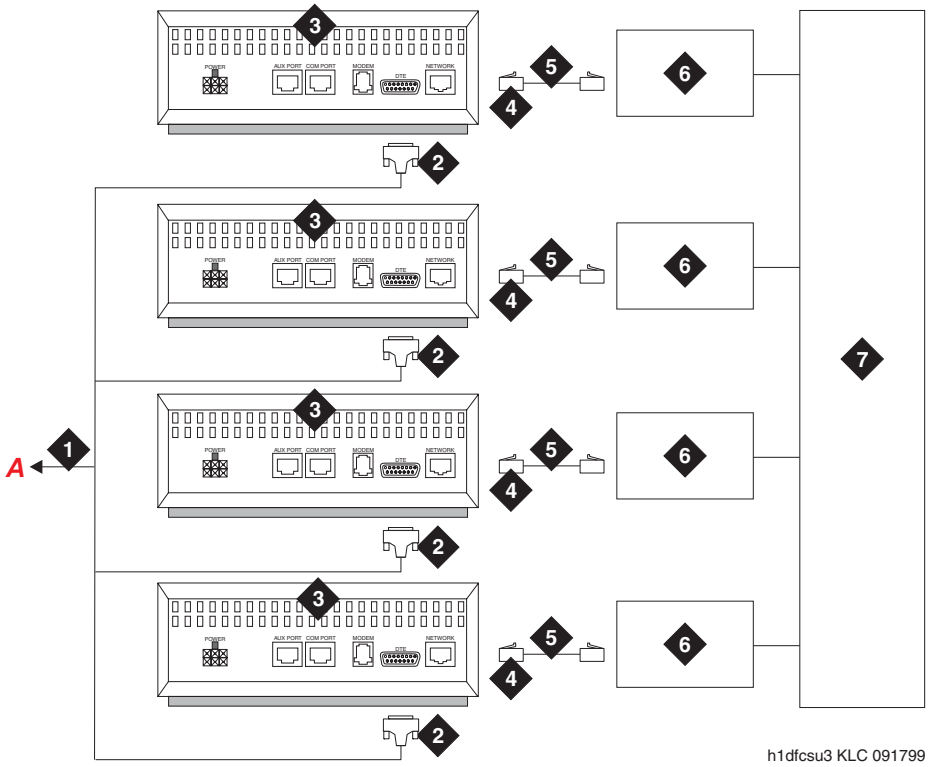


Figure notes:

1. H600-348 quad cable
2. 15-pin male D connectors (to DTE Jacks on CSU)
3. Channel Service Unit (CSU)
4. H600-383 cable connector (RJ-48C to RJ-48C)
5. Network interface cable
6. 700A loopback jack
7. Cables

Figure 13: TN1654 DS1 Converter circuit pack connections for 120-ohm E1 service—part 2

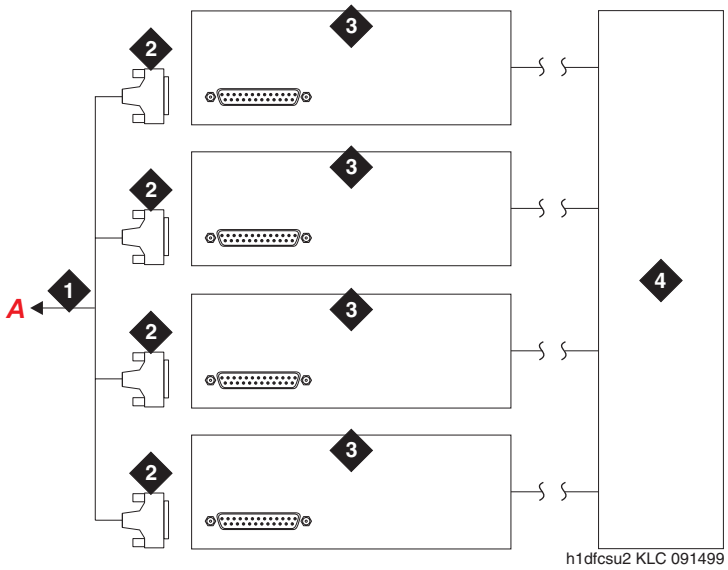


Figure notes:

1. **H600-348 quad cable**
2. **15-pin male D connectors (to DTE jacks on customer-provided network-interface equipment)**
3. **Customer-provided network-interface equipment**
4. **Network interface cable**

Table 11: Adapter descriptions

Type	Color	Description
Straight through	Black	Cable with a DB15 connector on one end and an RJ48 connector on the other
Rollover	Gray	Cable with a DB15 connector on one end and an RJ48 connector on the other
Null	Black	A DB15M to DB15F rollover/null adapter.

Connection to the remote PN is the same as that shown in Figure 11: TN1654 DS1 Converter circuit pack connections—part 1 on page 83 and Figure 12: TN1654 DS1 Converter circuit pack connections for T1 service—part 2 on page 85.

Table 12: Y-cable lengths on page 87 shows the Y cable lengths.

Table 12: Y-cable lengths

Length	Description
14 in. (35.6 cm)	TN1654 circuit pack to adjacent EI circuit pack or TN573B SNI circuit pack in same carrier
70 in. (178 cm)	TN1654 circuit pack to EI circuit pack or SNI circuit pack in another carrier
14 in. (35.6 cm)	TN1654 circuit pack to fiber optic transceiver (DC-powered cabinets only). This cable is for intercabinet cabling only.

Note:

The distinction between facility types is important when using TN1654 circuit packs. The facility used to carry control channel messages between the pair of DS1 converter circuit packs and all packet traffic is known as the primary facility. The facility used to backup and takeover for the primary facility in the event of primary facility failure is known as the secondary facility. The TN1654 allows either facility, A or B, to be a primary channel. The control channel is restricted to only the A or B facilities. This permits full 24-channel access (T1) or 31-channel access (E1) for facilities C and D to support user traffic.

Installing a 75-ohm E1 interface adapter

For certain markets with 75-ohm E1 service, the TN1654 DS1 converter requires an adapter to convert the 120 ohms to 75 ohms. See Figure 14: 127A BALUN coaxial adapter on page 88.

Note:

Although the TN1654 DS1 converter supports 75 ohms, use the 127A BALUN to convert the 120 ohms to 75 ohms rather than the switch settings.

Figure 15: TN1654 DS1 Converter circuit pack connections for E1 75-ohm service—part 2 on page 89 shows a typical connection.

Figure 14: 127A BALUN coaxial adapter

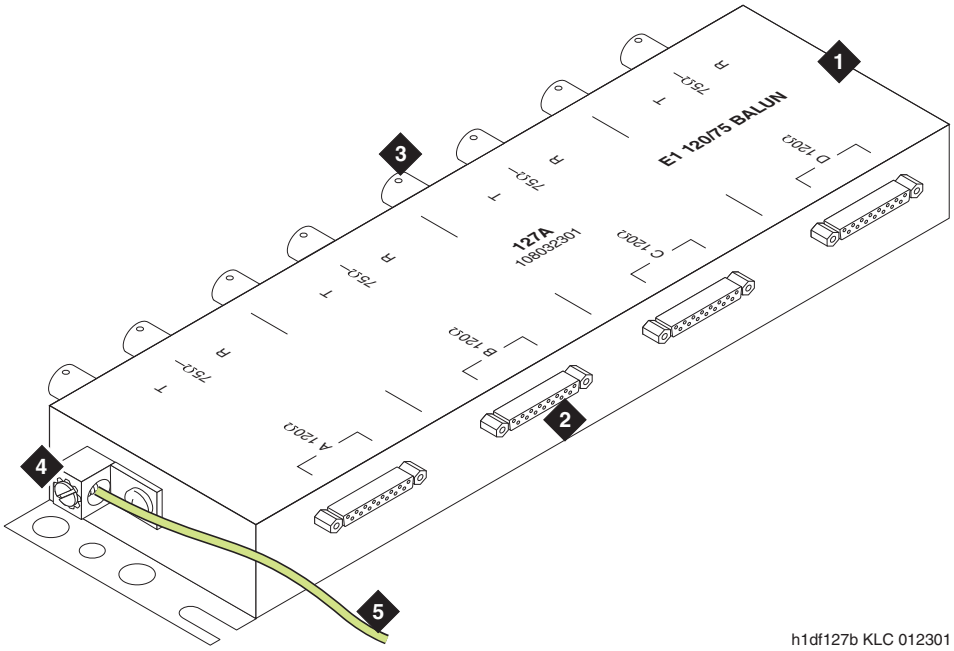


Figure notes:

1. **127A BALUN coaxial adapter**
2. **Connect to quad cable (H600-348 or similar)**
3. **BCN connections to E1 network equipment**
4. **Single-point ground connection**
5. **18 AWG (0.75 mm^2) ground wire to ground terminal at MDF**

Figure 15: TN1654 DS1 Converter circuit pack connections for E1 75-ohm service—part 2

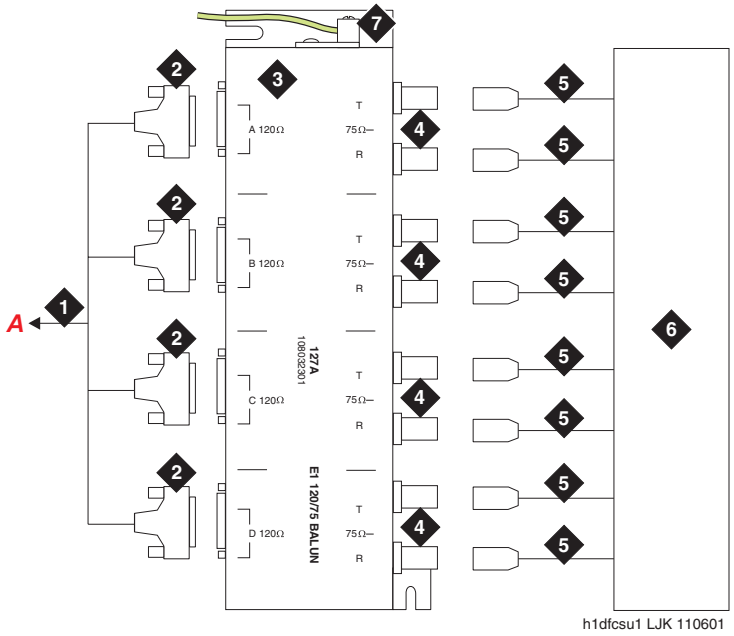


Figure notes:

1. **H600-348 quad cable**
2. **15-pin male D connectors**
3. **127A BALUN coaxial adapter**
4. **BNC connectors (transmit/receive) corresponding to each facility**
5. **E1 network connection**
6. **Network interface**
7. **18 AWG (0.75 mm^2) ground wire to ground terminal at MDF**

Mounting the 127A (TN1654 DS1 Converter)

Note:

In Norway, Sweden, Denmark, and Finland, the 127A can be used only with MCCs or DC-powered SCCs.

To mount the 127A:

1. Mount the 127A vertically near the main distribution frame (MDF). The 127A case has tabs for screw-mounting and cutouts for snap-mounting the unit in a 89-type mounting bracket.
2. Attach a ground wire (required) between the 127A and the MDF ground terminal bar. The wire must be green/yellow and no smaller than 0.75 mm^2 (18 AWG).
3. Strip both ends of an appropriate length of wire.
4. Insert one end of the wire into the MDF ground bar and secure.
5. Insert the other end into the screw-connection in the end of the 127A and secure. See Figure 14: 127A BALUN coaxial adapter on page 88.
6. Connect the H600-348 quad cable to the 4 DB-15 connectors provided on the 127A adapter.
7. Connect the transmit connectors to the connectors marked T and the receiver connectors to the connectors marked R.
8. Connect the other end of the cables to whatever connects to the network.

Chapter 4: Port networks

This chapter contains information and procedures for adding a port network to an existing system. The new port network consists of 1 to 5 TDM-cabled G650 Media Gateways.

To add a port network complete the following tasks:

- Installing a G650 Media Gateway on page 91
- Installing the IPSI circuit pack on page 92
- Assigning IP addresses to the IPSI circuit packs on page 92
- Administering the port network on page 100
- Installing additional circuit packs on page 105

You can add a fiber-connected port network (PN) to a fiber-connected system or an IP-connected PN to an IP-connected system. Fiber-connected PNs include direct-connected PNs, Center Stage Switch (CSS)-connected PNs or Asynchronous Transfer Mode (ATM)-connected PNs.

In addition, starting with Avaya Communication Manager Release 3.0, you can combine IP-connected PNs with fiber-connected PNs. The S8700-series, S8500, and S8500B Media Servers support configurations that combine IP-connected PNs with fiber-connected systems. Additionally, the media servers can support configurations that contain

- single control networks,
- duplicated control networks,
- single IP-connect bearer networks
- duplicated fiber-connected bearer networks, and
- IP-connect networks with duplicated control and duplicated bearer.

Note:

If you are adding an IP-connected G650 Media Gateway to a system with fiber-connected PNs, you need either a TN2302AP Media Processor or TN2602AP Media Resource 320 circuit pack. The port network with the IPSI circuit pack in a fiber-connected portion of the system must contain the TN2302AP Media Processor or TN2602AP Media Resource 320 circuit pack.

Installing a G650 Media Gateway

For more information about physically installing the G650 Media Gateway(s) and connecting it to the MDF or patch panels, see *Installing the Avaya G650 Media Gateway* (03-300144).

Installing the IPSI circuit pack

Once you have installed all the media gateways, install the TN2312BP IP Server Interface (IPSI) circuit pack in the media gateway. Install this circuit pack in the A position, slot A01.

S8700/S8710: If you have a duplicated control network, then install a second IPSI in the media gateway in the B position, slot B01.

1. Install the IPSI adapter to the connector associated with slot 1 on the backplane.
2. Insert the TN2312BP IP Server Interface circuit pack into slot 1.
3. Connect a CAT5 cable to the RJ45 connector on the IPSI adapter.
4. If not already connected, connect the other end of the CAT5 cable to the next available port on the Ethernet switch.
5. If customer is using one, connect one end of the serial maintenance cable to the 9-pin serial port connector on the IPSI adapter.

Assigning IP addresses to the IPSI circuit packs

Once the IPSI is installed, you must assign an IP address to it.

IP server interface circuit packs get IP addresses in one of two ways:

- Using dynamic host configuration protocol (DHCP)
- Using static IP addressing

The IPSI circuit packs associated with a dedicated control network use the DHCP method. In rare cases they might use the static addressing method.

The IPSI circuit packs associated with a nondedicated control network use the static addressing method. In rare cases they might use the DHCP addressing method.

Using DHCP addressing

So that the TN2312BP IPSI circuit packs can receive IP addresses dynamically, you must assign the switch ID and the cabinet number to each IPSI circuit pack. The switch ID is A through J. The cabinet number is 01 through 64. For G650 Media Gateways, a cabinet is defined as one or more media gateways connected by TDM cable. This cabinet configuration is called a G650 rack mount stack.

Administering the location assignment

To administer the location assignment:

1. Fully insert the TN2312BP IPSI circuit pack. If necessary, reseat the circuit pack to start the programming sequence.

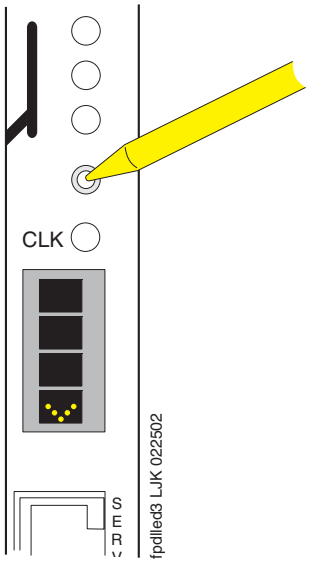
   Note:

   You must start the following steps within 5 seconds after you insert the circuit pack.

   Note:

   For the following step, do not use a graphite pencil.

2. Insert the point of a ballpoint pen, golf tee, or a similar object into the recessed push button switch.



   Note:

   If you pass up the letter or the number that you want, you can either (1) cycle through all the letters or numbers to get to the one you want, or (2) reinsert, or reseat, the circuit pack and start again.

Setting the switch ID

If you have only one system, the default switch ID is A. The second system is B, and so on. The switch ID is *not* the letter that designates the media gateway or the carrier.

To set the switch ID:

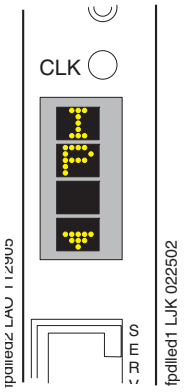
1. While the display characters are flashing, press the button until the switch ID, A through J, shows on the top character of the LED display. When the correct letter shows, stop. The letter flashes a few times and then stops. The next character down starts to flash.

Setting the cabinet number

Make sure that you program the cabinet number and *not* the port network number. If you have more than one IPSI in a cabinet, all IPSIs have the same cabinet number.

To set the cabinet numbers:

1. While the first digit of the number is flashing, press the button until the correct tens digit, 0 through 6, shows on the display. When the correct digit shows, stop. The digit flashes a few times and then stops. The second digit starts to flash.
2. While the second digit is flashing, press the button until the correct units digit, 0 through 9, shows on the display. When the correct digit shows, stop. The digit flashes a few times and then stops.
3. All segments of the display go dark for one second. Then the Switch ID and media gateway stack number are shown in the top three characters of the LED display. The letter "V" is shown in the fourth or bottom character. When the DHCP server assigns an address to the IPSI, the center of the "V" fills in. The filled-in "V" looks like the bottom half of a diamond.



For a duplicated control network, repeat these Steps 1 through 3 for the second IPSI in the cabinet.

Using static addressing

You can administer static IP addresses for the IPSI circuit packs. You administer the addresses directly through the Ethernet port connection on the IPSI faceplate switch which is the top port (Figure 16: Connecting directly to the IPSI).

Figure 16: Connecting directly to the IPSI

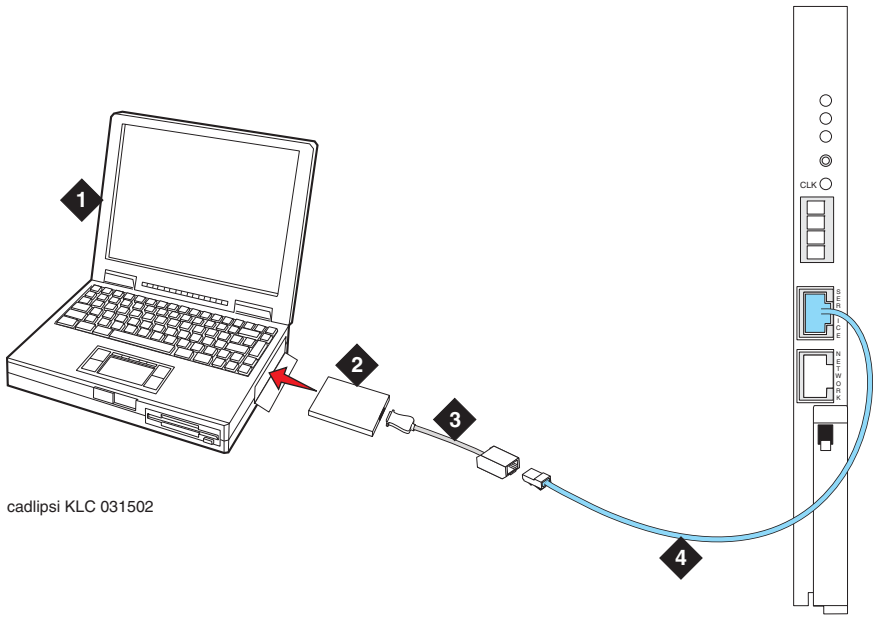


Figure notes:

1. **Services laptop**
2. **PCMCIA Network Interface Card (NIC)**
3. **NIC adapter cable (if necessary)**
4. **CAT5 cross-over cable to IPSI**

Note:

Ensure that you have the password before you continue.

Clearing the ARP cache on the laptop

Depending on the operating system on your laptop computer, you might need to clear the Address Resolution Protocol (ARP) cache before you enter a new IP address. If you enter an IP address and your computer cannot connect, you might need to clear the cache.

To clear the ARP cache on the laptop:

1. Click **Start** > **Run** to open the Run dialog box.

2. To open a MS-DOS command line window, tpe **command** and press **Enter**.
3. Type **arp -d 192.11.13.6** and press **Enter**. This command produces one of the following responses:
   - The command line prompt when the cache is cleared.
   - The message: **The specified entry was not found** when the specified IP address does not currently appear in the ARP cache.
4. To access the media server, type **ping -t 192.11.13.6**. The **-t** causes the ping to repeat until you get a response. When you get a response, in about 3 minutes, wait an additional 30 seconds before going back to the Web interface.
5. To stop the ping, type **ctrl c**.
6. Close the MS-DOS window.

Logging into the IPSI

To log into the IPSI:

1. To open the Telnet window and connect to the IPSI, type **telnet 192.11.13.6** and press **Enter**

   Prompt = [IPSI]:

   Note:

   Most commands have abbreviations. For more help while you are connected to the IPSI, you can type **help** or **?**.

2. Type **ipsilogin** and press **Enter**. The abbreviated command is **il**.

   Note:

   The *craft* login that you use on the IPSI has a different password than the *craft* login used on the media servers.

3. Log in as **craft**.

   Prompt = [IPADMIN]:

Setting the control interface

To set the control interface:

1. Type **show control interface** and press **Enter**.

2. To see the current settings, type **show port 1** and press **Enter**.
3. Type **set control interface *ipaddr netmask***, where ***ipaddr*** is the customer-provided IP address and ***netmask*** is the customer provided subnetmask and press **Enter**.

```
TN2312 IPSI IP Admin Utility
Copyright Avaya Inc, 2000, 2001, All Rights Reserved

[IPSI]: ipsilogin

Login: craft
Password:

[IPADMIN]: set control interface 135.9.70.77 255.255.255.0

WARNING!! The control network interface will change upon exiting IPADMIN


[IPADMIN]: show control interface

Control Network IP Address = 135.9.70.77
Control Network Subnetmask = 255.255.255.0
Control Network Default Gateway = None
IPSI is not configured for DHCP IP address administration

[IPADMIN]:
```

4. To save the changes and exit the IPSI session, type **quit** and press **Enter**.
5. Telnet to **192.11.13.6** and log in.
6. Type **show control interface** and press **Enter**.
   The system displays the IP address, the subnetmask, and the default gateway information.
7. Verify that the correct information was entered.
8. If a default gateway is used, enter the gateway IP address.
   Type **set control gateway *gatewayaddr***, where ***gatewayaddr*** is the customer-provided IP address for their gateway and press **Enter**.
9. To save the changes and exit the IPSI session, type **quit** and press **Enter**.
10. Telnet to **192.11.13.6** and log in.
11. To verify the administration, type **show control interface** and press **Enter**.
12. To see the changes, type **exit** and press **Enter**.

Setting the VLAN and diffserv parameters

To set the VLAN parameters and the diffserver parameters:

1. Log back in as **craft**.
2. To display the quality of service values, type **show qos** and press **Enter**.
3. If necessary, use the following commands to set the VLAN and diffserv parameters to the recommended values shown.

   Note:

   Use **Help** to obtain syntax guidelines for these commands.

   - Type **set vlan priority 6**
   - Type **set diffserv 46**
   - Type **set vlan tag on**
   - Type **set port negotiation 1 disable**
   - Type **set port duplex 1 full**
   - Type **set port speed 1 100**
4. To check the administered values, type **show qos** and press **Enter**.
5. To exit, type **quit** and press **Enter**.

   Important:

   Ensure that the port settings on the Ethernet switches are set to the same values as shown in the **set port** commands in step 3.

Resetting the IPSI

To reset the IPSI:

1. Type **reset** and press **Enter**
   Answer **Y** to the warning.

   Note:

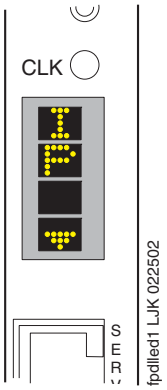
   Resetting the IPSI terminates the administration session. If further administration is required, start a new telnet session to the IPSI.

   Note:

   The IP address, subnet mask, and gateway control network settings become effective when you exit the IPADMIN session.

2. Disconnect the laptop computer from the faceplate.
3. Check the LCD. Verify that the display shows the letters I and P and a filled-in V that shows at the bottom (Figure 17: LED display that shows that the IPSI has a static IP address).

Figure 17: LED display that shows that the IPSI has a static IP address



Note:

Clear the ARP cache on the laptop before you connect to another IPSI. If you do not clear the cache, the laptop appears to stop and does not connect to the next IPSI. For more information, see Clearing the ARP cache on the laptop on page 95.

4. Repeat steps 1 through 3 for each IPSI circuit pack.

Administering the port network

Once the port network is installed, you must add translation information to the media server.

1. Use Native Configuration Manager or Avaya Site Administration to use SAT commands.

   Note:

   For port networks using G650 Media Gateways, a cabinet is defined as up to 5 G650 Media Gateways mounted in a rack and TDM-connected.

2. Type **add cabinet** ***number*** where ***number*** is the next available number, up to 64, and press **Enter**.

   Note:

   When you install a G650 Media Gateway that is IP-connected into a fiber-connected port network the **IP-PNC?** field on the **Customer Options** screen must be set to **n**. The customer license file determines this setting. With this field set to **n**, the maximum number of port networks in the system can be 64. This maximum is possible even if direct-, ATM- or CSS-connected port networks exist in the configuration.

3. Fill in the location and carrier type for media gateways 2, 3, 4, and 5.
4. Repeat steps 1 through 3 for each G650 media gateway stack controlled by one TN2312BP IPSI circuit pack.

```
add cabinet 1                                                  Page   1 of   1
                                    CABINET
 CABINET DESCRIPTION
                  Cabinet: 9
           Cabinet Layout: G650-rack-mount-stack
             Cabinet Type: expansion-portnetwork


                 Location: 1

 Rack:               Room:              Floor:             Building:

 CARRIER DESCRIPTION
   Carrier       Carrier Type        Number

      E        not-used             PN  09
      D        not-used             PN  09
      C        not-used             PN  09
      B        G650-port            PN  09
      A        G650-port            PN  09
```

Adding IPSI translations to Communication Manager

The following steps add IPSI translations to Communication Manager.

1. Type **`add ipserver-interface`** ***`PN`*** where ***`PN`*** is the port network 1-64 and press **Enter** to add the IPSI circuit pack information.
2. When using a DHCP server, verify that the fields associated with the Primary IPSI and Secondary IPSI, if equipped, are populated with default data. Set the **Host:** and **DHCP ID:** fields through the DHCP server.

```
add ipserver-interface 4                                        Page   1 of   1
          IP SERVER INTERFACE (IPSI) ADMINISTRATION - PORT NETWORK 4

IP Control? y                                          Socket Encryption? n
Ignore Connectivity in Server Arbritration? y                 Enable QoS? n
                           Administer secondary IP server interface board?
Primary IPSI                                             Qos Paramaters
------------                                             --------------
Location:  9A01                                        Call Control 802.1p: 4
      Host: ipsi-A09a                                 Call Control DiffServ: 42
   DHCP ID: ipsi-A09a


 Secondary IPSI
 --------------
  Location:  9B01
      Host: ipsi-A09b
   DHCP ID: ipsi-A09b
```

3. When using static addressing, in the **Host:** field, type in the IP address for the IPSI. This IPSI is located in the port network and is listed in the **Location:** field.

```
add ipserver-interface 8
          IP SERVER INTERFACE (IPSI) ADMINISTRATION - PORT NETWORK 8
IP Control? y                                          Socket Encryption? y

Ignore Connectivity in Server Arbritration? y                 Enable QoS? y
                          Administer secondary IP server interface board?
 Primary IPSI                                                  QoS Parameters
 ------------                                                  --------------
  Location:  1A01                                           Call Control 802.1p: 6
      Host: 172.22.22.174                                  Call Control DiffServ: 46
   DHCP ID: ipsi-A01a


 Secondary IPSI
 --------------
  Location:  1B01
      Host: 172.22.22.175
   DHCP ID: ipsi-A01b
```

4. If the port network is IP-connected, set the **IP Control?** field to **y**. Then, an IP-connected port network can be synchronized with fiber-connected port networks.

   or

   If the port network is fiber-connected only, with no IP-connected port networks in the system, set the **IP Control?** field to **n**. You cannot type **n** in this field unless one or more fiber links have been administered in the media gateway that houses the IPSI circuit pack.

5. Verify that all the other fields are populated.
6. Press **Enter** to effect the changes.
7. Repeat steps 1 through 6 for each port network.

Set IPSI duplication (duplicated control network only)

Perform the following tasks if you are adding a duplicated control PN to an existing port network system. These PNs can be fiber-connected or IP-connected.

Starting with Avaya Communication Manager Release 3.0, you can combine fiber-connected and IP-connected duplicate control PNs. For example, you can combine a duplicated control fiber-connected PN with an existing single-control IP-connected system.

Note:

If you set IPSI duplication in a system with both fiber-connected PNs and IP-connected PNs, you may need to perform further administration to configure the control networks. For more information, see *Administration for Network Connectivity for Avaya Communication Manager* (555-233-504).

The following steps enable IPSI duplication in a duplicated control network.

1. Type **change system-parameters duplication** and press **Enter.**

   The system displays the following screen when the **IP-PNC?** field on the **Customer Options** screen is set to **n**. Set the **IP-PNC?** field to **n** if either of the following conditions are true:

   - any of the port networks in your system are fiber-connected

   or

   - you anticipate that you will add fiber-connected port networks in the future

S8700 fiber-connected (multi-connect):

```
change system-parameters duplication                          Page   1 of   1
                  DUPLICATION RELATED SYSTEM PARAMETERS




      Enable Operation of PNC Duplication? y

     Enable Operation of IPSI Duplication? y
```

   The system displays the following screen when the **IP-PNC?** field on the **Customer Options** screen is set to **y**. In this case, all port networks in the system are IP-connected only.

S8700 IP-connected:

```
change system-parameters duplication                          Page   1 of   1
                  DUPLICATION RELATED SYSTEM PARAMETERS




     Enable Operation of IPSI Duplication? y
```

2. Set the **Enable Operation of IPSI Duplication?** field to **y**.
3. Press **Enter** to effect the changes.

Setting alarm activation level

The following steps set the alarm activation level.

1. Type **`change system-parameters maintenance`** and press **Enter**.

```
change system-parameters
maintenance                                        Page 1 of 3

                    MAINTENANCE-RELATED SYSTEM PARAMETERS

OPERATIONS SUPPORT PARAMETERS
     CPE Alarm Activation Level: none

SCHEDULED MAINTENANCE
                             Start Time: 22 : 00
                              Stop Time: 06 : 00
                       Save Translation: daily
 Update LSPs When Saving Translations: y
             Command Time-out (hours): 2
          Control Channel Interchange: no
       System Clocks/IPSI Interchange: no
```

2. In the **CPE Alarm Activation Level** field, select **none** (default), **warning**, **minor**, or **major**, depending on the level the customer wants.

Verifying IPSI translations

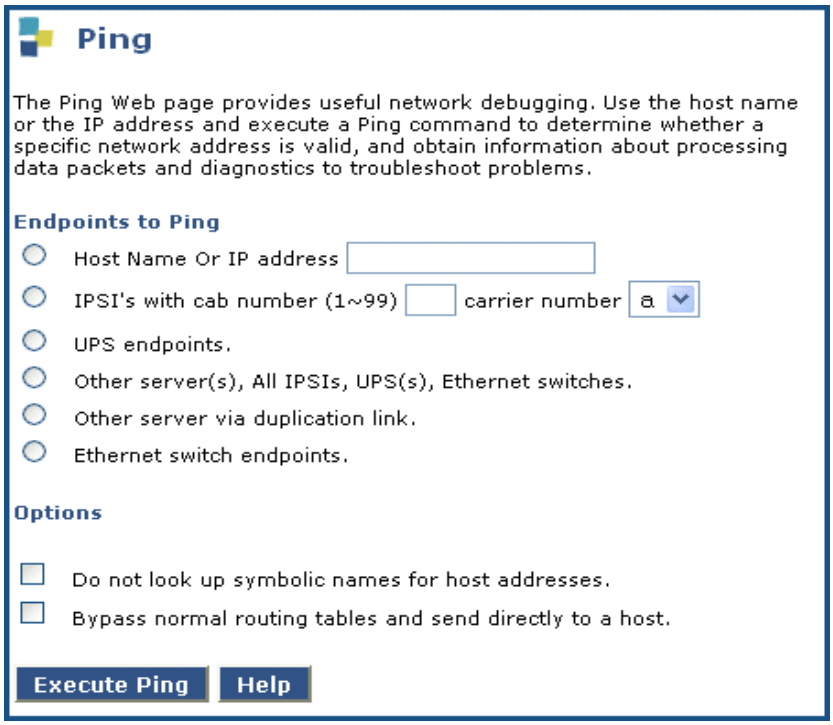
The following steps verify that the IPSI recognized by Communication Manager.

1. Type **`list ipserver-interface`** and press **Enter**.
2. Verify that the ISPI circuit pack(s) is translated.

Verifying IPSI connectivity

The following steps verify that the IPSI is connected to the network.

1. Under Diagnostics, click **Ping**.



2. Select **IPSIs with cab number (1–99)** ___ **carrier number** ___. Fill in the blanks with the correct cabinet and carrier numbers.
3. Click **Execute Ping**.
4. Verify that the endpoints respond correctly.

Installing additional circuit packs

If the customer is adding circuit packs, install them now. For more information about installing and administering various circuit packs, see Chapter 2: IP connectivity hardware on page 19.

Chapter 5: Adjuncts and peripherals

This chapter provides procedures for installing software (adjuncts) and equipment (peripherals) to Avaya media servers and media gateways. Not all adjuncts and peripherals are addressed here. For more information about the adjuncts and peripherals not addressed in this document, we are supplying other resources for the information.

Avaya media servers and media gateways can work with a wide range of external equipment, applications, and peripherals. For the purpose of this chapter, we define the terms as follows:

- Adjuncts are software products that work with the various Avaya media servers or media gateways.
- Peripherals are hardware products that connect directly or remotely to Avaya media servers or media gateways.

Be aware that some equipment and software work only with certain releases. See your Avaya representative for the most current compatibility information.

Terminal server installation

This section provides information about connecting adjunct equipment to the C-LAN circuit pack using a terminal server (Figure 18: Switch-to-adjunct LAN connectivity through a terminal server on page 108). Avaya supports the IOLAN+ 104 terminal server.

Any device that does not support a direct TCP/IP connection, but that does support an RS232 interface, can connect through a terminal server. System printers, property management systems (PMS), and some CDR devices use RS232 connections and can connect through a terminal server.

You can connect up to four adjuncts through one terminal server.

Figure 18: Switch-to-adjunct LAN connectivity through a terminal server

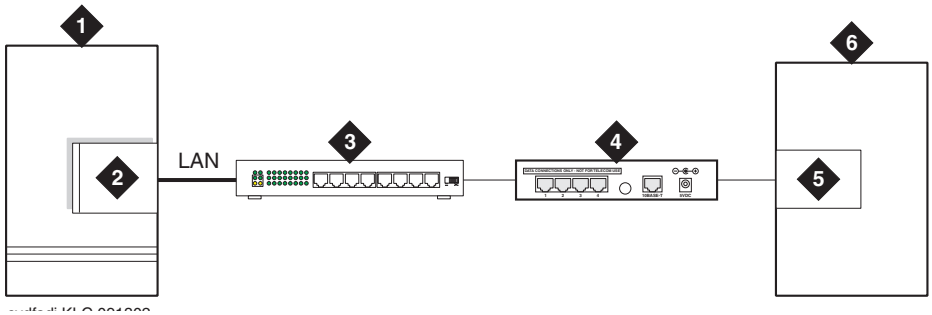


Figure notes:

1. **switch**
2. **C-LAN circuit pack**
3. **10/100Base-T Hub (optional)**
4. **terminal server**
5. **serial port**
6. **CDR adjunct**

Installing and administering the terminal server

Ensure that you have all the equipment on site before the installation. You must have the hardware listed in Table 13: Required equipment on page 108.

Table 13: Required equipment

Comcode	Description	Qty	Supplier
700015084	IOLAN+ 104 communications server	1	Avaya
NA	RJ45-to-DB25 connector for IOLAN+ (supplied with 700015084)	4	Avaya
NA	DB25-to-DB9 connector for PC COM port	1	Avaya
NA	RS232 Null modem (if needed for PC or printer connectivity)	1 or more	Avaya
405369042	Male/female adapter (if necessary)	1 or more	Avaya
846943306 or 104154414	6-inch RJ45 crossover cord, or	1	Avaya
NA	10/100Base-T auto-sensing LAN hub or router	1	Customer
102631413	259A adapter, or	1	Avaya
NA	CAT5 cross connect hardware and connecting blocks		Customer

1 of 2

Table 13: Required equipment (continued)

Comcode	Description	Qty	Supplier
NA	RJ45 UTP Category 5 modular cords	1–2	Customer
NA	451A in-line RJ45 adapters, as needed to connect modular cords together		
			2 of 2

You also need a computer (laptop) with the HyperTerminal software program for the initial administration of the IOLAN+ and to set up the ports.

The general process is to

- Connect the IOLAN+ to the adjunct and the LAN
- Administer the ports on the IOLAN+ with a PC or laptop at the local site
- Test the connectivity back through the switch

Distance limits

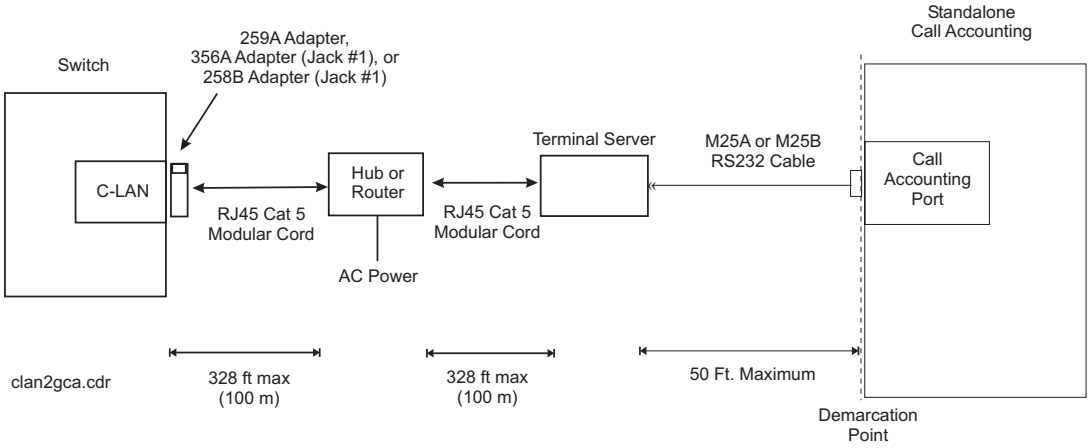
The distance limit from the switch to the LAN hub is 328 feet (100 meters). The distance limit from the LAN hub to the terminal server is 328 feet (100 meters). If installed, the limit from the terminal server to the adjunct is 50 feet (15 meters).

However, to achieve greater distance limits, the LAN hub/router of the switch might be connected to a WAN. In addition, the hub/router for the terminal server might also connect to the same WAN.

Cable connection diagram

Figure 19: Stand-alone call accounting system link with a terminal server shows the connection between the terminal server port and a call accounting system.

Figure 19: Stand-alone call accounting system link with a terminal server



Note:

You can connect the C-LAN circuit pack directly to the terminal server with a data crossover cable. This connection eliminates the need for a hub or router in the middle. This connection also allows the C-LAN circuit pack and the terminal server to communicate only with each other. With this connection, the C-LAN circuit pack and the terminal server must be configured with the same subnet.

Making the connections

Connect the adjunct to the IOLAN+, using the RJ45-to-DB25 cable and the null modem. You can use a male/female adapter. See Figure 20: Connecting an adjunct to the IOLAN+.

Figure 20: Connecting an adjunct to the IOLAN+

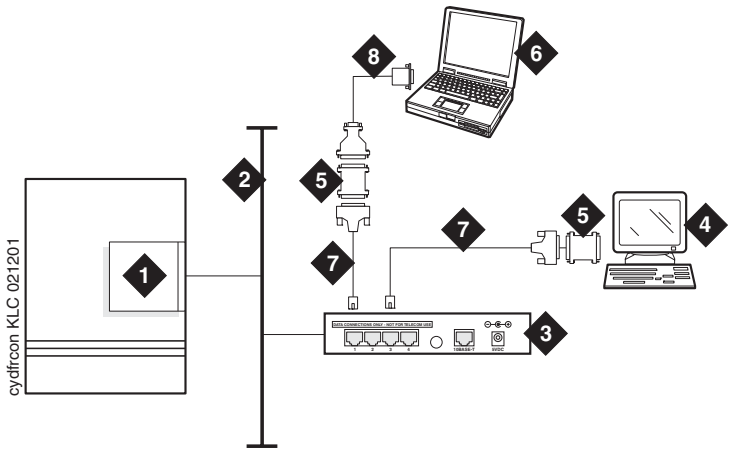


Figure notes:

1. **C-LAN circuit pack**
2. **Local area network (LAN)**
3. **IOLAN+ 104 terminal server**
4. **Adjunct, for example system management terminal or a system printer**
5. **Null modem**
6. **PC or laptop for initial administration**
7. **DB25-to-RJ45 cable**
8. **DB25-to-DB9 cable**

Follow these typical steps:

Note:

Depending on the connections for the adjunct, you might not need all these pieces.

1. Connect the null modem adapter to COM1 port on the adjunct.

   Note:

   The null modem is an important element in this setup. Without it, data might not transfer correctly.

2. Connect the other end of the null modem adapter to the DB25 to RJ45 cable.
3. Connect the RJ45 end to any port on the IOLAN+.

Administering the IOLAN+

To administer the IOLAN+ the first time, you must connect a PC or laptop to the RS232 Port 1 on the IOLAN+ terminal server. Follow these typical steps:

Note:

Depending on the COM port of the computer, you might not need all these pieces.

1. Connect the DB9 end of the DB9-to-DB25 cable to the COM port on the PC or laptop.
2. Connect the DB25 end to the null modem adapter.
3. Connect the other end of the null modem adapter to the DB25 to RJ45 cable.
4. Connect the RJ45 end to Port 1 of the IOLAN+.

Before starting the initial administration, ensure that you have the following information:

- New IP address and subnet mask for IOLAN+
- Host name for IOLAN+
- IP address of C-LAN circuit pack Ethernet interface
- Port number of C-LAN circuit pack Ethernet interface where adjunct connects.

Setting up HyperTerminal on the computer

Use the HyperTerminal software program that comes with Windows 95/98/NT/2000 to administer the IOLAN+.

1. Open HyperTerminal.
2. Click **File > Properties > Connect** tab. In the **Connect using**: field, select **COM *n***, where ***n*** is the communication port your computer is using.
3. Click **CONFIGURE** and set the **bits per second** field to **9600** and the **Flow control** field to **Hardware**.
4. Click **OK**.
5. Press **Enter** to get the login prompt.

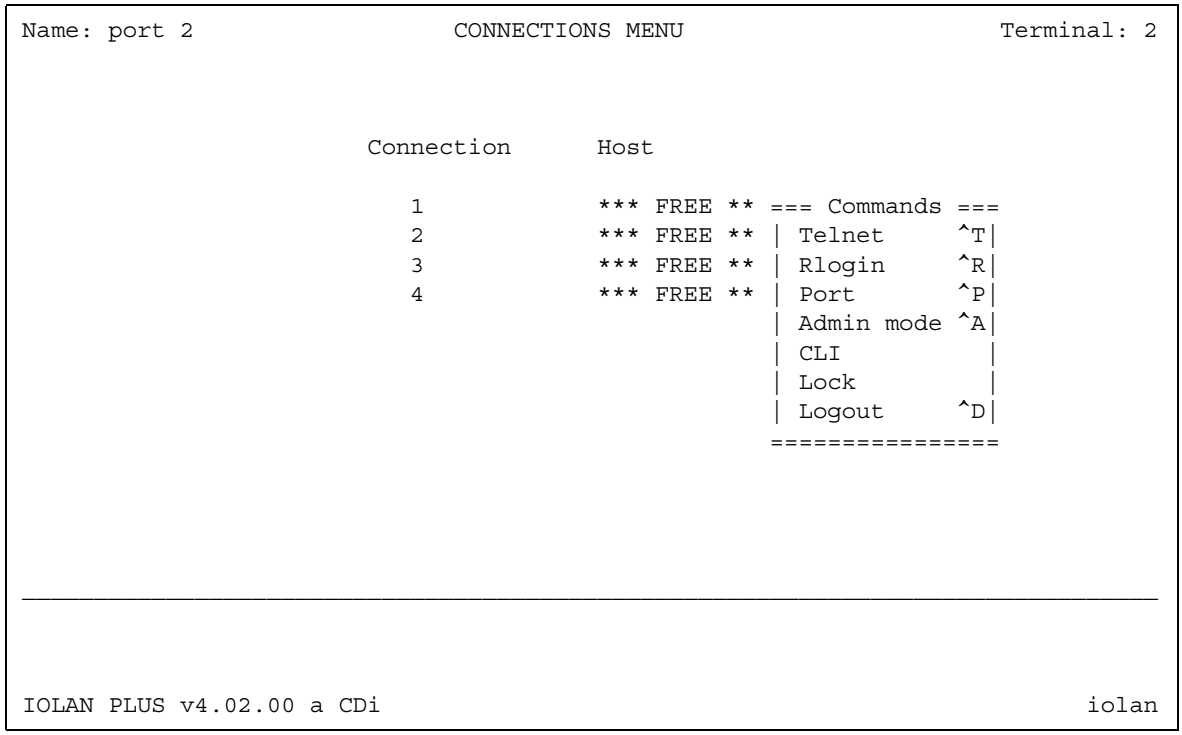
Navigating the IOLAN+ terminal server

For more information, see the IOLAN+ user guide. Usually, you follow these steps:

- Use the arrow keys to move to a menu item
- Use the **TAB** key to move from field to field horizontally.
- Use the **Enter** key to choose an item.

Administering the IOLAN+ the first time

1. At the login prompt, type **`any text`** and press **Enter**.
2. At the second prompt, type **`set term ansi`** and press **Enter** to view the Connections menu.



3. Under Connection, select **Port 1** which is the port to which the adjunct is connected and press **Enter**. You can now access the Commands menu.

4. Select **Admin mode > Password** and press **Enter**.

```
Name: port 2                ADMINISTRATION MENU                    Terminal: 2


    gateway     Examine/modify gateway table.
    host        Examine/modify host table.
    line        Terminal configuration organised by line.
    password    Specify password to allow modification of menu items.
    port        Terminal configuration organised by port.
    quit        Return to connections menu.
    server      Examine/modify Server parameters.
    stats       Examine Server statistics.




    Password          [          ]


_____________________________________________________________________________



IOLAN PLUS v4.02.00 a CDi                                          iolan-st
```

5. Type **iolan**, the default password, and press **Enter**.

   The Administration Menu changes, offering more options.

6. Select **server** and press **Enter** to view the Server Configuration menu.

```
** Administrator **         SERVER CONFIGURATION                    Terminal: 2

  Name               [iolan      ]                Debug mode      [0     ]
  IP address         [123.45.67.89 ]
  Subnet mask        [222.222.0.0        ]
  Ethernet address   [00:80:d4:03:11:cd]          Ethernet interface [AUTO   ]
  Language           [English  ]
  Identification     [                                    ]
  Lock               [Disabled]
  Password limit     [5     ]
  CR to initiate     [No  ]
  SNAP encoding      [Disabled]
  Boot host          [                   ]  Boot diagnostics [Enabled ]
  Boot file          [                                                 ]
  Init file          [                                                 ]
  MOTD file          [                                                 ]
  Domain name        [                                ]
  Name server        [                   ]           NS Port   [53    ]
  WINS server        [                   ]
_____________________________________________________________________________

    Name used for prompts and message on bottom right of screen.

IOLAN PLUS v4.02.00 a CDi                                                iolan
```

7. Fill in the following fields with information appropriate to your network. Leave the default settings for the other fields.
   - **Name:**
   - **IP address:** (for IOLAN+)
   - **Subnet mask:**
8. Press **Enter** and select **Save & Exit** to effect the changes.

Rebooting the IOLAN+

You must reboot the server any time you change an IP address or Local Port value.

1. Press **Enter** to view the Administration Menu.

```
** Administrator **         ADMINISTRATION MENU                    Terminal: 2


    access      Remote System Access (PPP).
    change      Change login and/or admin password.
    gateway     Examine/modify gateway table.
    host        Examine/modify host table.
    kill        Kill TCP connections on serial line.
    line        Terminal configuration organised by line.
    port        Terminal configuration organised by port.
    quit        Return to connections menu.
    reboot      Reboot Server.
    server      Examine/modify Server parameters.
    stats       Examine Server statistics.
    trap        Examine/modify SNMP Trap parameters.


    Port                      [2  ]

_____________________________________________________________________________



IOLAN PLUS v4.02.00 a CDi                                              iolan
```

Note:

The following steps reinitialize the IOLAN+ so the IOLAN+ knows that it is connected to the LAN through its IP address.

2. Select **reboot** and press **Enter**.
3. Press the space bar to restart the IOLAN+.

Administering the gateway

Note:

If the C-LAN circuit pack and IOLAN+ are in the same subnet, skip this step.

1. Select **Admin mode > Password** and press **Enter**.
2. Type **iolan** and press **Enter**.
3. Select **gateway** to access the Gateway menu.

4. Fill in the following fields for Entry 1:
   - **Destination**: C-LAN IP address
   - **Gateway**: Gateway address
   - **Netmask**: Subnet mask

   Note:

   The following steps reinitialize the IOLAN+ so the IOLAN+ knows it is connected to the LAN through your gateway.
5. Select **reboot** and press **Enter**.
6. Press the space bar to restart the IOLAN+.

Administering an IOLAN+ port

Use this procedure when connecting an adjunct or serial COM port on a PC directly to the IOLAN+ (see Figure 20: Connecting an adjunct to the IOLAN+ on page 111).

1. Select **Admin mode > Password** and press **Enter**.
2. Type **`iolan`** and press **Enter**.
3. Select **port** and press **Enter**.
4. Type ***`port number`***, where ***`port number`*** is the port that the adjunct connects to, and press **Enter** to view the Port Setup Menu.

```
** Administrator **          PORT SETUP MENU                    Terminal: 2
Hardware                     Flow ctrl                  Keys
   Speed          [9600  ]    Flow ctrl    [xon/xoff]    Hot    [^]]    Intr   [^C]
   Parity           [None]    Input Flow   [Enabled ]    Quit   [^@]    Kill   [^U]
   Bit                 [8]    Output Flow  [Enabled ]    Del    [^@]    Sess   [^@]
   Stop              [1  ]                               Echo   [^@]
   Break        [Disabled]  IP Addresses
   Monitor DSR      [Yes ]    Src    [               ]   Mask  [               ]
   Monitor DCD       [No ]    Dst    [               ]

   User                       Options                    Access
   Name    [port 2        ]   Keepalive        [No  ]    Access        [Remote ]
   Terminal type  [undef ]    Rlogin/Telnet  [Telnet]    Authentication  [None ]
   TERM         [         ]   Debug options    [No  ]    Mode          [Raw    ]
   Video pages        [0]     Map CR to CR LF  [No  ]    Connection  [None     ]
   CLI/Menu          [CLI]    Hex data         [No  ]    Host  [               ]
   Reset Term        [No  ]   Secure           [No  ]    Remote Port     [0    ]
                              MOTD             [No  ]    Local Port      [5101]


_____________________________________________________________________________



IOLAN PLUS v4.02.00 a CDi                                                iolan
```

5. Fill in the following fields. Leave the default settings for the other fields.
   - **Speed**: **9600**
   - **Monitor DSR**: **Yes**
   - **Monitor DCD**: **No**
   - **Name**: *port number or other descriptive name*
   - **Terminal type**: **undef**
   - **CLI/Menu**: **CLI**
   - **Reset Term**: **No**
   - **Flow ctrl**: **xon/xoff**
   - **IP addresses**: *leave blank*
   - **Mask**: *leave blank*
   - **Access**: **Remote**
   - **Authentication**: **None**
   - **Mode**: **Raw**
   - **Connection**: **None**
   - **Host**: leave blank or enter *C-LAN IP Address*
   - **Remote Port**: **0**
   - **Local Port**: *must match the value of* **Remote Port on the IP Services** *screen of the Communication Manager software*
6. Press **Enter** and select **Save & Exit** to effect the changes.
7. Press **Enter** again to view the Administration Menu.
8. Select **kill** to disable the port connection.
9. Repeat the steps for each additional port you want to administer.
10. When administration is complete, from the Connections Menu, select **logout** or press **Ctrl D**.
11. Close HyperTerminal.

    At this point, you have established a connection path from the adjunct through the IOLAN+ to the C-LAN circuit pack.

Testing

1. On the system management terminal, press **Enter** to get the login prompt to the Communication Manager switch.

   Note:

   If you get garbled text, check the baud rate setting on the Port Setup Menu. You can adjust it up or down.

2. If no login prompt displays, log back in to the IOLAN+ through HyperTerminal.
3. Select **Admin mode > stats** and press **Enter** twice.
4. Select **users** and press **Enter**.
5. Look at the port that the adjunct is connected to and determine if there is any traffic. If not, check all your connections and administration fields.

```
** Administrator **          SERVER STATISTICS                      Terminal: 2
 1. port1            Talking to host 172.22.22.67.5111<DSR+CTS+DCD >DTR+RTS
 2. port 2           SERVER STATISTICS               <DSR+DCD >DTR+RTS
 3. port 3           waiting for DSR or DCD           >DTR+RTS
 4. port 4 modem     waiting for DSR or DCD           >DTR+RTS
REM <unknown>        logged out
LOG                  logger not enabled









_____________________________________________________________________________


    Press <RETURN> to see list of options.
IOLAN PLUS v4.02.00 a CDi                                              iolan-st
```

You have now successfully administered and validated the connection between the adjunct and the C-LAN circuit pack through the IOLAN+. Disconnect the laptop or other PC from the IOLAN+. No further IOLAN+ administration is required.

Potential failure scenarios and repair actions

If a link goes down between the terminal server and the switch, you must reboot the terminal server for the link come back up. If you are performing a software upgrade or if a system reset occurs, you must reboot the terminal server to restore the link. For more information, see Rebooting the IOLAN+ on page 116.

Administering IP node names

You must administer the IP addresses of all of the following components:

- the C-LAN board,
- any adjunct that connects directly to the LAN,
- the terminal server, if appropriate, and
- the PC that runs the Reliable Session-Layer Protocol, if appropriate.

Use the **Node Names** screen to administer the IP addresses.

1. Type **`change node-names ip`** and press **RETURN**.
2. Type the name and the IP address of the C-LAN board and any adjunct, terminal server or PC you need to administer.

```
change node-names ip                                          Page 1 of 1

                          NODE NAMES

Name              IP Address    Name              IP Address
 1. switch-clan___     123.456.7  .89   17. _______________     ___.___.___.___
 2. callacctg_____     123.456.9  .00   18. _______________     ___.___.___.___
 3. termserver____     123.456.11 .00   19. _______________     ___.___.___.___
 4. pmslogpc______     123.456.78 .00   20. _______________     ___.___.___.___
 5. _______________    ___.___.___.___  21. _______________     ___.___.___.___
 6. _______________    ___.___.___.___  22. _______________     ___.___.___.___
 7. _______________    ___.___.___.___  23. _______________     ___.___.___.___
 8. _______________    ___.___.___.___  24. _______________     ___.___.___.___
 9. _______________    ___.___.___.___  25. _______________     ___.___.___.___
10. _______________    ___.___.___.___  26. _______________     ___.___.___.___
11. _______________    ___.___.___.___  27. _______________     ___.___.___.___
12. _______________    ___.___.___.___  28. _______________     ___.___.___.___
13. _______________    ___.___.___.___  29. _______________     ___.___.___.___
14. _______________    ___.___.___.___  30. _______________     ___.___.___.___
15. _______________    ___.___.___.___  31. _______________     ___.___.___.___
16. _______________    ___.___.___.___  32. _______________     ___.___.___.___
```

3. Print a copy of this screen, or write down the node names you entered. You need this information for the next administration task.
4. Press **Enter** to save your changes.

Administering IP services

For each adjunct that you connect using TCP/IP, you need to administer IP services to establish the IP address/TCP port pairing. The IP address is associated with the node name that you just administered. In this example, we are administering the primary CDR connection as end-to-end TCP/IP, and the PMS connection through a terminal server.

1. Type **change ip-services** and press **RETURN** to assign the CDR endpoint.
2. In the **Service Type** field, type **CDR1** for the call accounting link, and **PMS** for the property management system.

```
change ip-services                                          Page   1 of   3

                                  IP SERVICES
   Service   Enabled   Local           Local   Remote           Remote
    Type               Node            Port    Node             Port
   CDR1                switch-clan     0       callacctg        5101
   PMS                 switch-clan     0       termserver       5103
```

3. In the **Local Node** field, type the node name for the switch. In this example, **switch-clan** is the local node.
4. The **Local Port** field defaults to **0** for all client applications. You cannot make an entry in this field.
5. In the **Remote Node** field, type the node name for the adjunct, as administered on the **Node Names** screen. For the call accounting application, type **callacctg**. Since the PMS application routes through the terminal server, **termserver** is the remote node for this service type.
6. In the **Remote Port** field, type the TCP listen port assigned to the adjunct. The recommended value for CDR1 is **5101**, and the recommended value for PMS is **5103**.

   Note:

   This number must match the port administered on the end device. If you are using the Downloadable Reliable Session-Layer Protocol tool, this number must match the port administered in the Server application. If you are using a terminal server, this number must match the Local Port number on the Port Setup menu. Consult the documentation for your Call Accounting system to determine the appropriate port for the CDR device.

7. Move to Page 3. In the **Reliable Protocol** field, type **n** for the CDR Service Type. You do not use RSP with a terminal server.

```
change ip-services                                          Page   3 of   3

                                SESSION LAYER TIMERS
Service    Reliable    Packet Resp     Session Connect     SPDU     Connectivity
 Type      Protocol       Timer          Message Cntr      Cntr        Timer
CDR1          n           3                    1             1           1
```

8. Press **Enter** to save your changes.

Call detail recording (CDR)

This section provides information on connecting call detail recording (CDR) equipment.

Connecting CDR Equipment

The interface between an Avaya media server and CDR equipment is a C-LAN card.

CDR equipment connects to the CLAN board on an MCC1 or G650 Media Gateway through a TCP/IP connection which is an Ethernet connection. Any CDR equipment that supports the Reliable Session Protocol supports a direct TCP/IP connection. A CDR application that supports an RS232 interface can also connect to the CLAN through a terminal server. For more information about connecting through a terminal server, see Terminal server installation on page 107.

Note:

A printer or customer premises equipment (CPE) can also be used as the output receiving device. For more information about using a printer, see Terminal server installation on page 107.

Administering CDR data collection

The following steps administer the CDR data collection.

Note:

To send CDR data through the CLAN to a device on the LAN/WAN, you have the option to enable/disable RSP.

1. Setup the CDR adjunct to be ready to collect CDR data. Record the IP address and the port number of the CDR adjunct, which can be a terminal server or a CDR application that uses RSP.

   If the CDR adjunct is an application that uses RSP, start the application to listen for a client connection at the port.

2. Access the **Node Names** screen in Communication Manager. For more information, see Administering IP node names on page 120. Perform the following steps:

   a. In the **Name** field, type the name of the CDR adjunct from step 1.

   b. In the **Address** field, type the IP address of the CDR adjunct.

3. Access the **IP Services** screen in Communication Manager. For more information, see Administering IP services on page 121. Perform the following steps:

   a. In the **Service Type** field, type **CDR1** or **CDR2**.

   b. In the **Local Node** field, type **switch-clan**

   c. The **Local Port** field defaults to **0** for all client applications. You cannot make an entry in this field.

   d. In the **Remote Node** field, type the node name you assigned to the CDR adjunct in step 2.

   e. In the **Remote Port** field, type the port number used by the CDR adjunct determined in step 1.

4. Go to Page 3 and perform the following steps:

   a. In the **Reliable Protocol** field, type **y** if you have a CDR application using RSP. Type **n** if the CDR adjunct is connected through a terminal server.

   b. If RSP is being used, complete the **Packet Resp Timer** and **Connectivity Timer** fields with some reasonable value that matches the network condition. The recommended values are **30** and **60** seconds, respectively.

   c. Leave the defaults in the other fields.

5. Administer CDR parameters as described in Administering CDR parameters on page 124.

Administering CDR parameters

You must administer CDR parameters to let the system know that the adjunct is connected through TCP/IP. For more information about all fields on the **CDR System Parameters** screen, see *Administrator Guide for Avaya Communication Manager* (03-300509).

1. Type **change system-parameters cdr** and press **RETURN**.

   The system displays the **CDR System Parameters** screen.

```
change system-parameters cdr                                    Page   1 of   1
                            CDR SYSTEM PARAMETERS

 Node Number (Local PBX ID):                        CDR Date Format: month/day
      Primary Output Format: unformatted   Primary Output Endpoint: CDR1
    Secondary Output Format: unformatted Secondary Output Endpoint: CDR2
           Use ISDN Layouts? n                          EIA Device Bit Rate: 9600
       Use Enhanced Formats? n      Condition Code 'T' for Redirected Calls? n
Modified Circuit ID Display? n                  Remove # From Called Number? n
                  Record Outgoing Calls Only? y            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
                                                     Interworking Feat-flag? n
 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 Called Agent Login ID Instead of Group or Member? n
     Inc Trk Call Splitting? n
  Record Non-Call-Assoc TSC? n
      Record Call-Assoc TSC? n   Digits to Record for Outgoing Calls: dialed
   Privacy - Digits to Hide: 0               CDR Account Code Length: 4
```

2. In the **Primary Output Format** field, type a format specific to the call accounting system, if necessary. In the example, **unformatted** is used. If you are sending data directly to a printer, you use **printer**.
3. In the **Primary Output Endpoint** field, type **CDR1**.
4. If you use a secondary output device, and that device is also connected through TCP/IP, complete the **Secondary Output Format** field. Also, type **CDR2** in the **Secondary Output Endpoint** field.
5. Press **Enter** to save your changes.

Testing the switch-to-adjunct link

You can use the test, status, busyout and release commands to find and correct problems with CDR links. For more information about these commands, see the Maintenance manual for your switch.

```
status cdr-link
                              CDR LINK STATUS
                Primary                         Secondary

       Link State: up                           extension not administered

 Maintenance Busy? no
```

Work with the vendor to test the link from the call accounting adjunct.

If a link does not come up immediately, use the **busyout cdr-link** and **release cdr-link** commands to bring up the link.

Additional administration procedures for CDR equipment are provided in the *Administrator Guide for Avaya Communication Manager* (03-300509).

Reliable Data Transport Tool (RDTT) Package

Avaya provides this free software application to help vendors and customers develop CDR applications. These applications use the reliable session protocol to collect CDR data from an Avaya media server. The Reliable Data Transport Tool (RDTT) is a testing tool. Therefore, Avaya does not support the RDTT.

Contents of the RDTT

The RDTT package consists of the following components:

- Specifications for the Reliable Session Protocol
- The Client application (Client.exe)

  With this application, you can test the reliable session protocol without use of an Avaya media server.
- The Server application (Server.exe)

  With this application, you can understand the reliable session protocol and to start building your products to work with the Avaya media server.
- User Guide

  This document contains information about the client and server applications.

Downloading the tool

The RDTT tool is available from the Avaya support Web site as a self-extracting executable. To download the RDTT:

1. Go to the Avaya Customer Support Web site at http://avaya.com/support.
2. In the **Search For** text box, type `reliable` and click **Go**.
3. Select **Reliable Data Transport Client/Server Tool** from the list of found links.
4. When asked, save the **RDTT.exe** file to a temporary folder on your computer. It is approximately 1.6 to 2.0-MB.

Installing RDTT

To install the RDTT:

1. Double-click the **RDTT.exe** file.

   The Install Shield Wizard steps you through the installation.
2. When prompted to select Client or Server, select both programs.
3. Continue with the installation. Use the default destination folder and program folder.

Administering RDTT

See the instructions in the user_guide.doc file to administer the RDTT tool on a PC.

Related Topics

See the following topics related to CDR:

- Chapter 17, “Collecting Billing Information,” in *Administrator Guide for Avaya Communication Manager (*03-300509).
- “Call Detail Recording” in *Feature Description and Implementation for Avaya Communication Manager* (555-245-205).
- Connecting printers using TCP/IP on page 135.

Wideband endpoints

Wideband endpoints include video equipment or bridges/routers for LANs. Use the running list that accompanies the system to make cable connections.

Nonsignaling configuration

A nonsignaling connection to a wideband endpoint might connect to a channel service unit (**CSU**). If *not* using a **CSU**, the distance between the system and the endpoint is limited to a few hundred feet. See Figure 21: Typical nonsignaling wideband configuration. The maximum distance depends on the type of cable and type of endpoint.

Figure 21: Typical nonsignaling wideband configuration

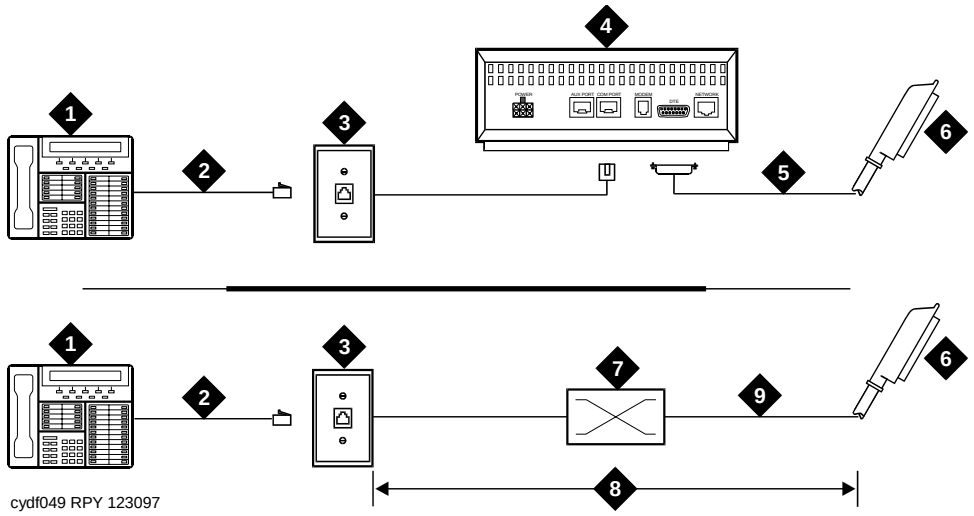


Figure notes:

1. **Wideband endpoint (wire per manufacturer)**
2. **Modular cord**
3. **103A or modular wall jack**
4. **Channel service unit (CSU)**
5. **H600-307 cable to DTE connector on CSU**
6. **DS1/E1 circuit pack**
7. **Main distribution frame (MDF)**
8. **Distance limit depends on cable and endpoint type.**
9. **A25D 25-pair cable (male-to-male)**

If using a **CSU**, the distance between connections can be up to 1300 ft. (397.2 m). The maximum distance to the endpoint depends on the type of cable and the specifications of the endpoint.

Signaling configuration

A signaling connection from the system to a wideband endpoint passes through a bandwidth controller. The distance between the system and the bandwidth controller depends on the type of cable and controller. Figure 22: Typical signaling wideband configuration shows connections with and without a CSU.

Figure 22: Typical signaling wideband configuration

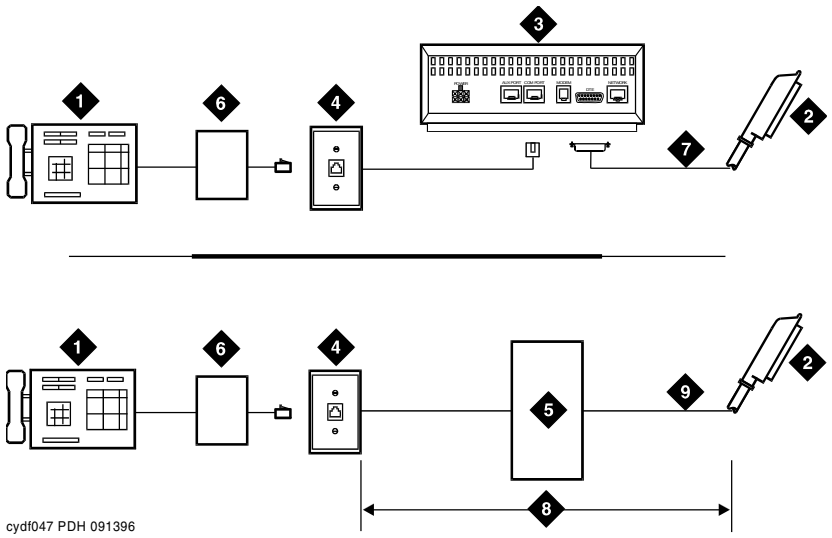


Figure notes:

1. **Wideband endpoint (wire per manufacturer)**
2. **To DS1/E1 circuit pack**
3. **Optional channel service unit (CSU)**
4. **103A or modular wall jack**
5. **Part of main distribution frame**
6. **Bandwidth controller**
7. **H600-307 cable to DTE connector on CSU**
8. **Distance limit depends on cable type and bandwidth controller type**
9. **A25D 25-pair cable (male-to-male)**

The bandwidth controller connects directly to the wideband endpoint. The controller usually installs near the endpoint where they directly connect which is usually within a few feet of each other.

- For non-CSU installations, cross the transmit and receive lines. Through these crossed lines, a transmit signal from the DS1/E1 circuit pack connects to the receive connection on the bandwidth controller. In addition, a transmit signal from the bandwidth controller connects to the receive connection on the DS1/E1 circuit pack.
- For CSU installations, cross the transmit and receive lines between the CSU and the bandwidth controller.

Figure 23: Typical signaling wideband configuration with remote port module shows a remote port module. In this configuration, there can be considerable distance between the bandwidth controller and the wideband endpoint. The maximum distance between elements depends on the quality of the cables and on the specifications of the wideband equipment.

Figure 23: Typical signaling wideband configuration with remote port module

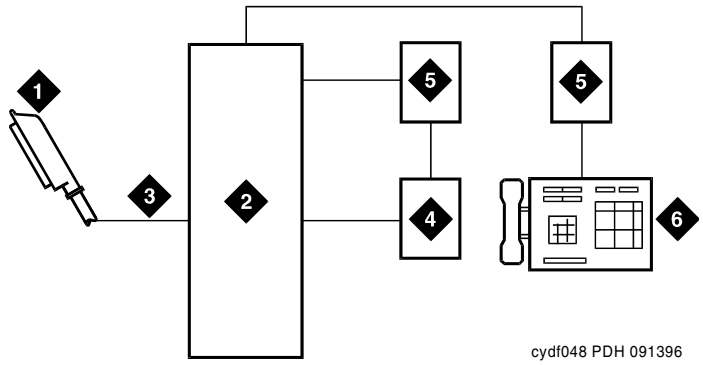


Figure notes:

1. **To TN464F DS1/E1 circuit pack**
2. **Part of main distribution frame (MDF)**
3. **H600-307 cable**
4. **Bandwidth controller**
5. **Remote port module**
6. **Wideband endpoint (wire per manufacturer)**

1. For non-CSU installations, cross the transmit and receive lines. Through these crossed lines, a transmit signal from the TN464F connects to the receive connection on the bandwidth controller. In addition, a transmit signal from the bandwidth controller connects to the receive connection on the TN464F.
2. For CSU installations, cross the transmit and receive lines between the CSU and the bandwidth controller.

Multimedia call handling (MMCH)

MMCH provides a single point to point conference call using voice, video, and data from one endpoint to another. The customer must have endpoints and a personal computer with H.320 desktop video installed.

Connecting the endpoints

Use the following procedure and Figure 24: Typical multimedia call handling connections to connect the endpoints:

Figure 24: Typical multimedia call handling connections

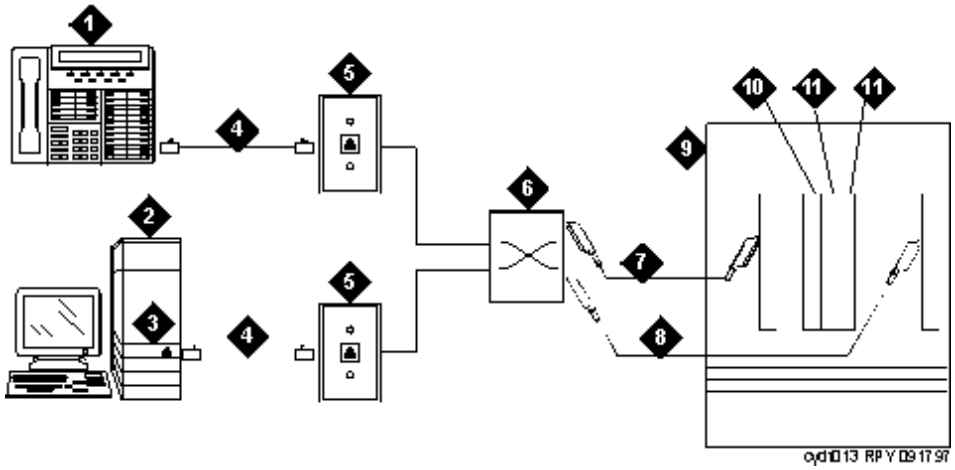


Figure notes:

1. **DCP telephone, 2 or 4 wire to match type of circuit pack**
2. **Personal computer**
3. **BRI adapter**
4. **D8W cord**
5. **103A or modular wall jack**
6. **Main distribution frame**
7. **25-pair cable to digital line circuit pack**
8. **25-pair cable to BRI circuit pack or NT1, 4-to-2 wire adapter**
9. **Avaya media server**
10. **Multimedia interface circuit pack**
11. **Voice conditioner circuit pack**

1. Each PC MMCH endpoint must contain a BRI adapter.
2. Connect a DCP telephone to a digital line circuit pack. The DCP telephone must be used in conjunction with the PC. For more information on the pinout of the digital line circuit pack, see the tables at the end of this chapter.
3. Connect the PC BRI adapter to any BRI port on the Avaya media server. For the pinout of an ISDN BRI circuit pack, see the tables at the end of this chapter.

Administering the system

The following steps administer the system.

1. Call INADS and notify the representative that the **Multimedia Call Handling (MMCH)?** field on page 2 of the **System-Parameters Customer-Options** screen must be changed to **y**.
2. Logoff the terminal and then log back on the terminal to see your changes.

Administering the endpoints

The following steps administer the endpoints.

1. Log in and type **`add data-next`** <or a valid extension number>.
2. The system displays the **Data Module** screen. On page 1:
   - In the **Data Extension:** field, type **`xxxx`**.
   - In the **Type:** field, type **`7500`**.
   - In the **Name:** field, type the user name, such as ProShare.
   - In **Multimedia?** field, type **`y`**.
3. On page 2:
   - In the **XID?** field, type **`n`**.
   - In the **MIM Support?** field, type **`n`** and press **Enter**.

Administering one number complex

The following steps administer the one number complex.

1. Identify the voice telephone (DCP set) to associate with the data endpoint. The station record for this voice station must be changed.
2. Type **`change station`** ***`station number`*** and press **Enter**.
3. On screen 1, in the **MM Complex Data Ext:** field, type the data extension number.
4. On screen 2, in the **H.320 Conversion?** field, type **`y`** and press **Enter**.
5. In the **Multimedia Early Answer** field, type **`y`** and press **Enter**.

Expansion services module

The Expansion Services Module (ESM) provides T.120 data sharing capability on a MMCH multipoint H.320 video conference. Each person in the conference must have endpoints and a personal computer with the H.320 video application installed. The Avaya media server must have the expansion service module installed.

Figure 25: Typical multimedia call handling ESM connections

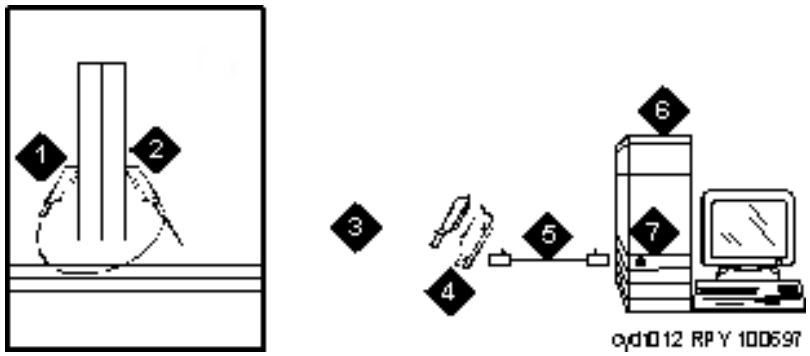


Figure notes:

1. **Port B Y-cable connector to a TN787 multimedia interface (MMI) circuit pack**
2. **Port A Y-cable connector to a TN2207 PRI circuit pack**
3. **25-pair Y-cable**
4. **357A adapter**
5. **D8W cord connected to 357A adapter S/B port 8**
6. **Expansion service module (ESM)**
7. **Port B on compatible primary rate interface (PRI) card**

ESM installation

Use the following procedure and Figure 25: Typical multimedia call handling ESM connections on page 132 to connect to the ESM equipment:

1. Install the TN2207 primary rate interface (PRI) circuit pack and the TN787F/G/H/J/K multimedia interface (MMI) circuit pack in the port carrier.
2. Record the circuit pack locations.
3. Connect the ESM Y-cable as shown.

Administration

The following steps administer the DS1 circuit packs.

1. Type **`list configuration all`** and press **Enter**.

   The system displays a list of the installed carriers, circuit packs, and ports.

2. Record the board number location of the new circuit packs and verify that all other required circuit packs are present. For more information on this procedure, see ESM installation on page 132.

3. Type **`add DS1 xxxxx`** where ***xxxxx*** is the location of the TN2207 PRI circuit pack recorded in step 2 and press **Enter**.

   The system displays the DS1 circuit pack administration form.

4. Set the **Name:** field to **ESM DS1**.

5. Set the **Bit Rate:** field to **2.048**.

6. Set the **Line Coding:** field to **hdb3**.

7. Set the **Signaling Mode:** field to **isdn-pri**.

8. Set the **Connect:** field to **pbx**.

9. Set the **Interface:** field to **network**.

10. Set the **Country Protocol:**field to **1**.

11. Set the **Protocol Version:**field to **a**.

12. Set the **CRC?:**field to **y**.

13. The Idle Code default is 11111111.

14. The DCP/Analog Bearer Capability default is 3.1 kHz.

15. Set the **MMI Cabling Board:** field to ***xxxxx*** where ***xxxxx*** is the location of the TN787F/H/J/K MMI circuit pack recorded in step 2. This location must be the slot for port B of the Y-cable.

    The system displays the **MMI Interface:** field **ESM**.

16. Type **`add signaling-group next.`**

    The system displays the signaling-group form.

17. Change **Associated Signaling:** field to **y**.

18. Change **Primary D-Channel Port:** field to ***xxxx17*** where ***xxxx*** is the address of the TN2207 PRI circuit pack. An example address is B0517.

19. The **Max Number of NCA TSC:** default is 0.

20. The **Max Number of GA TSC:** default is 0.

21. **Trunk Group for NCA TSC:** ____ (leave blank).

22. **Trunk Group for Channel Selection:____** (leave blank).
23. Log off the terminal and then log back on the terminal to view your changes.

Place test call

Place multimedia data-conference call to an endpoint with known video capability to test the esm function.

Troubleshooting

To determine ESM link status type the following commands from the system administration terminal:

- **`Status esm`**
- **`Status signaling-group`**
- **`List MMI`**

Note:

When you move ESM circuit packs, you must remove the DS1 and signaling group translations. You cannot use the **`change circuit pack`** command.

For more information, see Expansion services module on page 132.

Printers

This section provides information on connecting and configuring printers that work with your system and Avaya Communication Manager.

Connecting printers using TCP/IP

You can connect printers to the switch using asynchronous TCP/IP links and a terminal server. This section provides information on connecting adjuncts to the C-LAN (for MCC1, SCC1, CMC1, G600, and G650 Media Gateways). This section also provides the initial administration for these connections.

Task list

Whether you use an end-to-end TCP/IP configuration, a terminal server or a PC running RSP, you must complete the following tasks:

- Administering IP node names on page 120.
- Administering IP services on page 121.
- Administering adjunct parameters on page 135.
- If you are using a terminal server, also complete Installing and administering the terminal server on page 108.
- If you are using a PC with the Downloadable RSP Tool, complete Using the downloadable reliable session-layer protocol (RSP) tool on page 136.

Administering adjunct parameters

You must administer adjunct parameters to let the system know that the adjunct is connected through TCP/IP.

PMS journal and PMS log printers

See *Guestworks and DEFINITY Systems Technician Handbook for Hospitality Installations* (555-231-743).

System printer

1. Type **`change system-parameters features`** and press **Enter**.

   The system displays the **Feature-Related System Parameters** screen.
2. Move to Page 4.
3. In the **System Printer Endpoint** field, type **`SYS_PRNT`**.
4. Press **Enter** to save your changes.

Testing the switch-to-adjunct link

You can use the test, status, busyout and release commands to find and correct problems with a system printer, PMS log printer, or PMS journal printer. For more information about these commands, see the Maintenance manual for your switch.

If a link does not come up immediately, try using the busyout and release commands. The busyout commands are journal-link pms-log and wakeup-log, and sp-link. The release commands are journal-link pms-log and wakeup-log, and sp-link.

Note:

Status sp-link can show a system printer link as down, when it is actually properly connected. If no data is being transmitted, the switch might not see this link as active.

Using the downloadable reliable session-layer protocol (RSP) tool

The intent of the Reliable Session-Layer Protocol (RSP) is to guarantee delivery of data records from the switch. The protocol delivers the records to an output device that connects to the switch over an asynchronous TCP/IP link. With the Downloadable RDTT tool, you can implement this protocol on a PC that collects data records in a file. The protocol ensures that the data records arrive safely at the PC. You can then send the output file to a printer. For more information, see Reliable Data Transport Tool (RDTT) Package on page 125.

DS1/T1 CPE loopback jack

This section provides information on how to install and use a DS1 loopback jack. You can use the jack to test the DS1 span between the Avaya media server or gateway and the network interface point. The loopback jack is required when DC power is at the interface to the integrated channel service unit (ICSU).

Note:

Do not remove the loopback jack after installation. The jack must always be available for remote tests of the DS1 span.

Note:

For earlier media gateway systems, the integrated channel service unit (ICSU), also known as the 120A2, is a separate device. The ICSU plugs into the back of the media gateway.

Installing a loopback jack

You can install a loopback jack with or without a smart jack.

With a smart jack

Install the loopback jack at the interface to the smart jack, if possible. This position provides maximum coverage of CPE wiring when remote loopback tests are run. The installation method depends on whether the smart jack is accessible and whether there is an extended demarcation point. The following installation scenarios are possible.

- If the smart jack is not accessible, install the loopback jack at the extended demarcation point.
- If there is no extended demarcation point, install the loopback jack directly at the network interface point. An example of this installation is in Figure 26: Network interface at smart jack for a 120A2 (or later) ICSU on page 147.
- If there is an extended demarcation point and the smart jack is not accessible, install the loopback jack as shown in Figure 27: Network interface at extended demarcation point (smart jack inaccessible) for a 120A2 (or later) ICSU on page 148.
- If there is an extended demarcation point, but the smart jack is accessible, install the loopback jack as shown in Figure 28: Network interface at extended demarcation point (smart jack accessible) for a 120A2 (or later) ICSU on page 149.

To install the loopback jack:

1. Disconnect the RJ-48 (8-wide) connector at the appropriate interface point and connect the loopback jack in series with the DS1 span. For examples, see Figure 26: Network interface at smart jack for a 120A2 (or later) ICSU on page 147 through Figure 30: Network interface at “dumb” block with repeater line to fiber MUX for a 120A2 (or later) ICSU on page 151.
2. Plug the H600-383 cable from the ICSU into the female connector on the loopback jack.
3. Plug the male connector on the loopback jack cable into the network interface point.

Note:

Do not remove the loopback jack after installation. The jack is not a test tool and must always be available to remotely test a DS1 span.

Without a smart jack

Install the loopback jack at the point where the cable connections from the ICSU plugs into the *dumb* block. If there is more than one *dumb* block, choose the one that is closest to the Interface Termination feed or the fiber MUX. This choice provides maximum coverage for loopback jack tests. See Figure 29: Network interface at “dumb” block for a 120A2 (or later) ICSU on page 150 and Figure 30: Network interface at “dumb” block with repeater line to fiber MUX for a 120A2 (or later) ICSU on page 151.

To install the loopback jack:

1. Disconnect the RJ-48 (8-wide) connector at the appropriate interface point and connect the loopback jack in series with the DS1 span. For examples, see Figure 26: Network interface at smart jack for a 120A2 (or later) ICSU on page 147 through Figure 30: Network interface at “dumb” block with repeater line to fiber MUX for a 120A2 (or later) ICSU on page 151.
2. Plug the H600-383 cable from the ICSU, or from the MM710, into the female connector on the loopback jack.
3. Plug the male connector on the loopback jack cable into the network interface point.

   Note:

   Do not remove the loopback jack after installation. The jack is not a test tool and must always be available to remotely test a DS1 span.

Administering the loopback jack

The following steps administer the loopback jack.

1. At the management terminal, type **`change ds1 location`** where ***location*** is the DS1 interface circuit pack that corresponds to the loopback jack. Press **Enter**,
2. Verify that the **near-end CSU** type is set to **integrated**.
3. Page down to Page 2 of the screen. Change the **supply CPE loopback jack power** field to **y**.

   Setting this field to **y** informs the technician that a loopback jack is present on the facility. The technician can determine whether the facility is available for remote testing.
4. Type **`save translation`** and press **Enter** to save the new information.

Loopback testing with a smart jack

The loopback jack and smart jack isolate faults by dividing the DS1 span into three sections. For more information, see Figure 26: Network interface at smart jack for a 120A2 (or later) ICSU on page 147 through Figure 28: Network interface at extended demarcation point (smart jack accessible) for a 120A2 (or later) ICSU on page 149:

The three sections are:

- From the 120A2, or later, ICSU to the loopback jack
- From the loopback jack to the smart jack, which is the network interface point
- From the smart jack to the CO

The first two sections are your responsibility. The last is the responsibility of the DS1 service provider.

Testing the DS1 span from the ICSU to the loopback jack

The DS1 span test has 2 parts.

- Checking for circuit connectivity

  The first part of the test turns on power to the loopback jack. The test sends a signal from the DS1 circuit pack, through the wiring, to the loopback jack. The test allows about 10 seconds for the signal to loop around the loopback jack and return to the DS1 circuit pack. Then it sends the results to the management terminal and proceeds to the second part of the test.

- The second part of the test sends the standard, 3-in-24 DS1 stress-testing pattern from the DS1 board, through the loopback jack, and back to a bit error detector and counter on the DS1 board. A bit-error rate counter displays the results on the management terminal until you terminate the test.

Always perform both parts of the test. Proceed as follows.

Checking the integrity of local equipment

Before you go any further, ensure that the problem is actually on the DS1 span by testing the equipment that connects to the span at the near end. Test the DS1 circuit pack, and perform any needed maintenance or repairs.

Busying out the DS1 circuit pack

Now take the DS1 circuit out of service.

Note:

If you have a G700 or G350 Media Gateway, substitute ***xxxvs*** for ***uucss*** in the following command. ***xxx*** is the administered number of the G700 or G350, such as 002. ***vs*** is the slot number on the G700 or G350 of the Media Module, such as V3. The ***v*** is not a variable and must be included in the command exactly where shown. A sample address for a DS1 circuit pack on a G700 or G350 Media Gateway is 002V3.

1. Once you are sure that the DS1 circuit pack and ICSU are functioning correctly, go to the management terminal and busy out the DS1 circuit pack by typing **busyout board** ***uucss***. ***uu*** is the cabinet number. ***c*** is the carrier letter. ***ss*** is the slot number of the DS1 board.

Administering the DS1 for the test

1. At the management terminal, open the **DS1 Administration** screen. Type **change ds1** ***uucss*****,** where ***UU*** is the cabinet number, ***C*** is the carrier letter, and ***SS*** is the slot number of the DS1 board.
2. Ensure that the **near-end csu type** field is set to **integrated**.
3. Change to page 2 of the **DS1 administration** screen, and confirm that the value of the **TX LBO** field is **0dB**.
4. If the value of the **TX LBO** field is not **0dB**, record the current value. Then set the **TX LBO** field to **0dB** for testing.
5. Press **Enter** to make the changes, **Cancel** to quit without changes.

Testing the integrity of the loopback circuit

Now perform the first part of the actual loopback test.

Note:

If you have a G700 or G350 Media Gateway, substitute ***xxx*****v***s* for ***uucss*** in the following command. ***xxx*** is the administered number of the G700 or G350, such as 002. **v*****s*** is the slot number on the G700 or G350 of the Media Module, such as V3. The **v** is not a variable and needs to be included in the command exactly where shown. A sample address for a DS1 circuit pack on a G700 or G350 Media Gateway might look like this: 002V3.

1. At the management terminal, type **test ds1-loop** ***uucss*** **cpe-loopback-jack.** ***uu*** is the cabinet number. ***c*** is the carrier letter. ***ss*** is the slot number of the DS1 board.

   The loopback jack turns on. Active, DS1 facility alarms (if any) clear. After about 20 seconds, the first set of results appears on the terminal.

2. If **FAIL** appears on the terminal display, there might be a fault in the wiring between the ICSU and the loopback jack. Or, the loopback jack might be faulty. Isolate the problem by replacing the loopback jack and repeating step 1.
3. If **FAIL** still appears after you replaced the loopback jack, suspect a wiring problem. Replace the cable between the ICSU and the loopback jack. Then repeat step 1.
4. When **PASS** appears on the terminal, proceed with the second part of the test, checking the integrity of transmitted data.

Testing the integrity of data sent over the loop

Now perform the second part of the test, checking for data errors.

Note:

The loss of signal (LOS) alarm in demand test #138 is not processed during this test while the 3-in-24 pattern is active.

Clearing the results of previous tests

Note:

If you have a G700 or G350 Media Gateway, substitute ***xxxvs*** for ***uucss*** in the following commands. ***xxx*** is the administered number of the G700 or G350, such as 002. ***vs*** is the slot number on the G700 or G350 of the Media Module, such as V3. The ***v*** is not a variable and needs to be included in the command exactly where shown. A sample address for a DS1 circuit pack on a G700 or G350 Media Gateway is 002V3.

1. Zero out the bit-error counter. At the management terminal, type **clear meas ds1 loop** ***uucss.*** ***uu*** is the cabinet number. ***c*** is the carrier letter. ***ss*** is the slot number of the DS1 board.
2. Zero out the performance measurement counter. At the management terminal, type **clear meas ds1 log** ***uucss***. ***uu*** is the cabinet number. ***c*** is the carrier letter. ***ss*** is the slot number of the DS1 board.
3. Zero out the ESF error count. At the management terminal, type **clear meas ds1 esf** ***uucss***. ***uu*** is the cabinet number. ***c*** is the carrier letter. ***ss*** is the slot number of the DS1 board.

Running the data test

Note:

If you have a G700 or G350 Media Gateway, substitute ***xxxvs*** for ***uucss*** in the following command. ***xxx*** is the administered number of the G700 or G350, such as 002. ***vs*** is the slot number on the G700 or G350 of the Media Module, such as V3. The ***v*** is not a variable and needs to be included in the command exactly where shown. A sample address for a DS1 circuit pack on a G700 or G350 Media Gateway is 002V3.

1. Display the bit error count. At the management terminal, type **list meas ds1 sum** *uucss*. *uu* is the cabinet number. *c* is the carrier letter. *ss* is the slot number of the DS1 board.
2. Step through Table 14: DS1 Troubleshooting on page 142 to troubleshoot.

Table 14: DS1 Troubleshooting

Condition	Solution
The value of the **Test: cpe-loopback-jack** field is **Pattern 3-in-24**	The loopback jack test is active.
The value of the **Synchronized** field is **N**	Retry the test 5 times.
The value of the **Synchronized** field remains **N** after 5 attempts.	Excessive bit errors are likely. Check for intermittent connections or broken wires in an SPE receive or transmit pair, and repair as necessary. Then repeat step 1.
The value of the **Bit-error count** field is ***non-zero***	Repeat step 1 several times.
The value of the **Synchronized** is **Y**	The DS1 circuit pack has synchronized to the looped 3-in-24 pattern and is counting bit errors in the pattern.
The value of the **Bit-error count** field pegs at **75535** or increments by 100s or 1000s whenever you repeat step 1.	Suspect loose or corroded connections, severe crosstalk, or impedance imbalances between the two conductors of the receive or transmit pair. Wiring might need replacement.
The value of the **Bit-error count** field is **0**	There are no obvious wiring problems. Verify this by repeating step 1 at 1-minute to 10-minute intervals. If the test reports no errors for 1 minute, the error rate is less than 1 in 10^8. If the test reports no errors for 10 minutes, the error rate is less than 1 in 10^9.

Note:

If you have a G700 or G350 Media Gateway, substitute *xxxvs* for *uucss* in the following commands. *xxx* is the administered number of the G700 or G350, such as 002. *vs* is the slot number on the G700 or G350 of the Media Module, such as V3. The *v* is not a variable and needs to be included in the command exactly where shown. A sample address for a DS1 circuit pack on a G700 or G350 Media Gateway is 002V3.

3. You can be fairly certain that the test is reporting no errors after at least 1 error-free minute. Then, confirm that the 3-in-24 pattern error detector is operating. Type **test ds1-loop** *UUCSS* **inject-single-bit-error.** *UU* is the cabinet number. *C* is the carrier letter. *SS* is the slot number of the DS1 board.
4. Display the bit error count again. At the management terminal, type **list meas ds1 sum** *UUCSS*. *UU* is the cabinet number. *C* is the carrier letter. *SS* is the slot number of the DS1 board.

Condition	Solution
The value of the **Bit-error count** field is greater than **1**	Replace the ICSU, and retest.
The value of the **Bit-error count** field is still greater than **1** after you replace the ICSU.	Replace the DS1 circuit pack, and retest.
The value of the **Bit-error count** field is **1**	The test passed.

5. End the test. Type **test ds1-loop** *location* **end cpe-loopback-jack-test.**
6. Wait about 30 seconds for the DS1 to reframe on the incoming signal and clear DS1 facility alarms.

Condition	Solution
Loopback termination fails with an error code of 1313.	The span is still looped somewhere, possibly at the loopback jack, at the ICSU, or somewhere in the network.
The red LED on the loopback jack is on.	Replace the ICSU, and rerun the test.
Loopback termination still fails.	Replace the DS1 circuit pack, and repeat the test
The DS1 cannot frame on the incoming span signal after the loopback jack turn off.	There is something wrong with the receive signal into the loopback jack from the dumb block or the smart jack.
The span failed the loopback test for the service provider.	The problem is in the service provider network.
The service provider successfully loop tested the span, up to the smart jack.	The wiring between the loopback jack and the smart jack is suspect. Test, and make repairs, as needed.

Condition	Solution
You cannot locate and repair the problem in the time available and must terminate the test.	The test does not terminate normally in the absence of a good framing signal. You have to reset the circuit pack. Type **reset board *uucss***, where ***UU*** is the cabinet number, ***C*** is the carrier letter, and ***SS*** is the slot number of the DS1 board. **Note:** If you have a G700 or G350 Media Gateway, substitute ***xxxvs*** for ***uucss*** in the above command. ***xxx*** is the administered number of the G700 or G350, such as 002. ***vs*** is the slot number on the G700 or G350 of the Media Module, such as V3. The ***v*** is not a variable and needs to be included in the command exactly where shown. A sample address for a DS1 circuit pack on a G700 or G350 Media Gateway is 002V3.
The test terminated normally.	Proceed with Restoring DS1 administration.

Restoring DS1 administration

The following steps restore DS1 administration.

Note:

If you have a G700 or G350 Media Gateway, substitute ***xxxvs*** for ***uucss*** in the following command. ***xxx*** is the administered number of the G700 or G350, such as 002. ***vs*** is the slot number on the G700 or G350 of the Media Module, such as V3. The ***v*** is not a variable and needs to be included in the command exactly where shown. A sample address for a DS1 circuit pack on a G700 or G350 Media Gateway is 002V3.

1. At the management terminal, open the **DS1 Administration** screen. Type **change ds1 *uucss***, where ***uu*** is the cabinet number, ***c*** is the carrier letter, and ***ss*** is the slot number of the DS1 board.
2. Change to page 2 of the **DS1 Administration** screen.
3. Change the value of the **TX LBO** field to the original value that you wrote down when you were Administering the DS1 for the test on page 140.
4. Press **Enter** to make the changes, **Cancel** to quit without changes.

Releasing the DS1 circuit pack

The following steps release the DS1 circuit pack.

Note:

If you have a G700 or G350 Media Gateway, substitute ***xxxvs*** for ***uucss*** in the following command. ***xxx*** is the administered number of the G700 or G350, such as 002. ***vs*** is the slot number on the G700 or G350 of the Media Module, such as V3. The ***v*** is not a variable and needs to be included in the command exactly where shown. A sample address for a DS1 circuit pack on a G700 or G350 Media Gateway is 002V3.

1. Release the DS1 circuit pack. From the management terminal, type **`release board`** ***uucss.*** ***uu*** is the cabinet number. ***c*** is the carrier letter. ***ss*** is the slot number of the DS1 board.
2. Leave the loopback jack in place.

Testing the DS1 span from the smart jack to the network interface termination or fiber multiplexer (MUX)

The following steps test the DS1 span.

1. Have the service provider run a smart-jack loopback test against the network interface wiring that links the smart jack to the CO. For more information, see section 3 in Figure 26: Network interface at smart jack for a 120A2 (or later) ICSU on page 147 through Figure 28: Network interface at extended demarcation point (smart jack accessible) for a 120A2 (or later) ICSU on page 149.
2. If the tests fails, there is a problem on the network side. Have the service provider correct it.

Testing the DS1 span from the loopback jack to the smart jack

Test the short length of customer premises wiring between the loopback jack and the smart jack. Use a loopback that overlaps this section of the span. For more information, see section 2 in the following 3 figures.

- Have the DS1 service provider at the CO end run a local ICSU line loopback test.
- Have the DS1 service provider at the CO end run a local DS1 payload loopback test.
- Run a far-end ICSU line loopback, using the following procedure.

Note:

This test cannot isolate the problem if there are problems in the wiring between the far-end CO and the far-end ICSU. You must coordinate this test with the DS1 service provider.

Note:

If you have a G700 or G350 Media Gateway, substitute ***xxxvs*** for ***uucss*** in the following command. ***xxx*** is the administered number of the G700 or G350, such as 002. ***vs*** is the slot number on the G700 or G350 of the Media Module, such as V3. The ***v*** is not a variable and needs to be included in the command exactly where shown. A sample address for a DS1 circuit pack on a G700 or G350 Media Gateway is 002V3.

1. From the management terminal, type **`test ds1-loop`** ***uucss*** **`far-csu-loopback-test-begin`**. ***uu*** is the cabinet number. ***c*** is the carrier letter. ***ss*** is the slot number of the DS1 board.
2. Examine the bit-error counts, as in Testing the integrity of data sent over the loop on page 141.
3. Terminate the test. Type **`test ds1-loop location end-loopback/span-test`**.
4. If the tests fails and no problems develop when you follow the procedures in Testing the DS1 span from the ICSU to the loopback jack on page 139 or Testing the DS1 span from the smart jack to the network interface termination or fiber multiplexer (MUX) on page 145, there is a problem between the loopback jack to the smart jack. Work with the service provider to isolate the fault.

Figure 26: Network interface at smart jack for a 120A2 (or later) ICSU

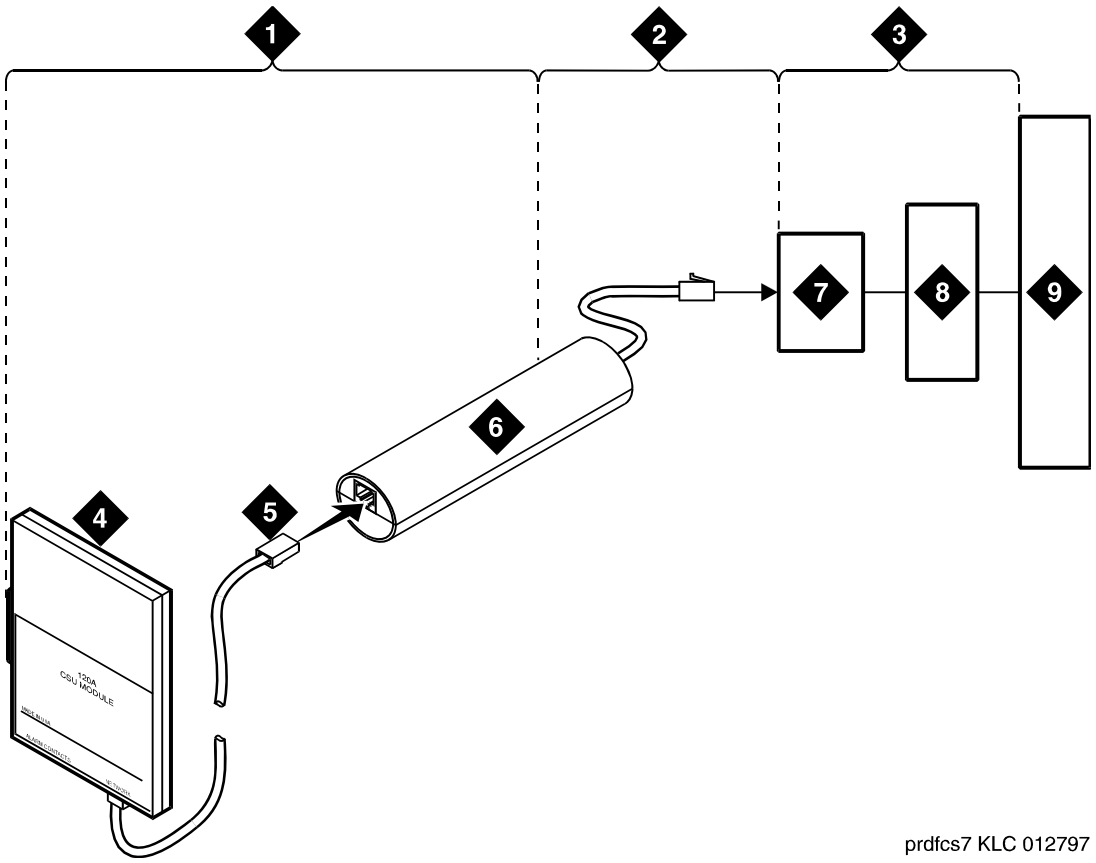


Figure notes:

1. **Span section 1**
2. **Span section 2**
3. **Span section 3**
4. **120A2 (or later) ICSU**
5. **RJ-48 to network interface (up to 1000 ft. [305 m])**
6. **Loopback jack**
7. **Network interface smart jack**
8. **Interface termination or fiber multiplexer (MUX)**
9. **Central office**

Figure 27: Network interface at extended demarcation point (smart jack inaccessible) for a 120A2 (or later) ICSU

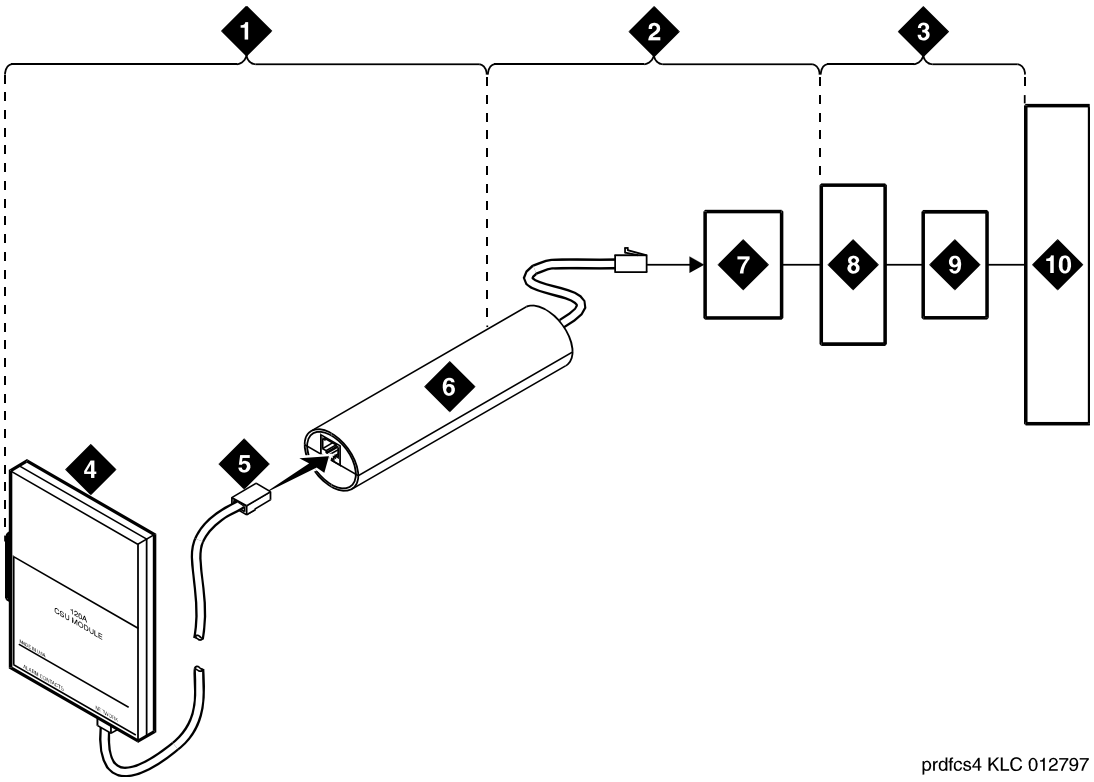


Figure notes:

1. **Span section 1**
2. **Span section 2**
3. **Span section 3**
4. **120A2 (or later) ICSU**
5. **RJ-48 to network interface (up to 1000 ft. [305 m])**
6. **Loopback jack**
7. **Dumb block (extended demarcation)**
8. **Network interface smart jack**
9. **Interface termination or fiber multiplexer (MUX)**
10. **Central office**

Figure 28: Network interface at extended demarcation point (smart jack accessible) for a 120A2 (or later) ICSU

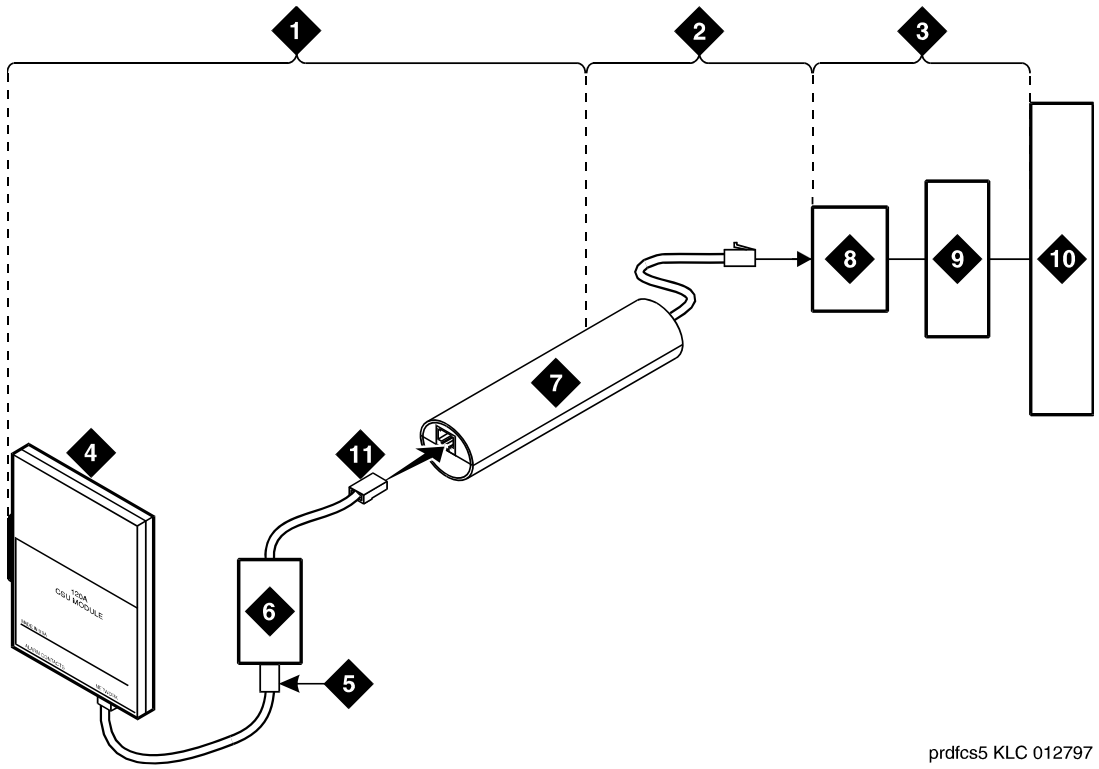


Figure notes:

1. **Span section 1**
2. **Span section 2**
3. **Span section 3**
4. **120A2 (or later) ICSU**
5. **RJ-48 to network interface up to 1000 ft. (305 m)**
6. **Dumb block (extended demarcation)**
7. **Loopback jack**
8. **Network interface smart jack**
9. **Interface termination or fiber multiplexer (MUX)**
10. **Central office**
11. **Dumb block to smart jack RJ-48**

Testing a loopback jack without a smart jack

When the loopback jack is added to a span that does not contain a smart jack, the span is divided into 2 sections: from the ICSU to the loopback jack and from the loopback jack to the central office (CO). Section 2 includes the short cable from the loopback jack to the dumb block demarcation point which is a part of the loopback jack. This cable is the only part of Section 2 that is part of customer premises wiring. It is not covered in the loopback path of the loopback jack. For more information, see Figure 29: Network interface at “dumb” block for a 120A2 (or later) ICSU on page 150 through Figure 30: Network interface at “dumb” block with repeater line to fiber MUX for a 120A2 (or later) ICSU on page 151.

Figure 29: Network interface at “dumb” block for a 120A2 (or later) ICSU

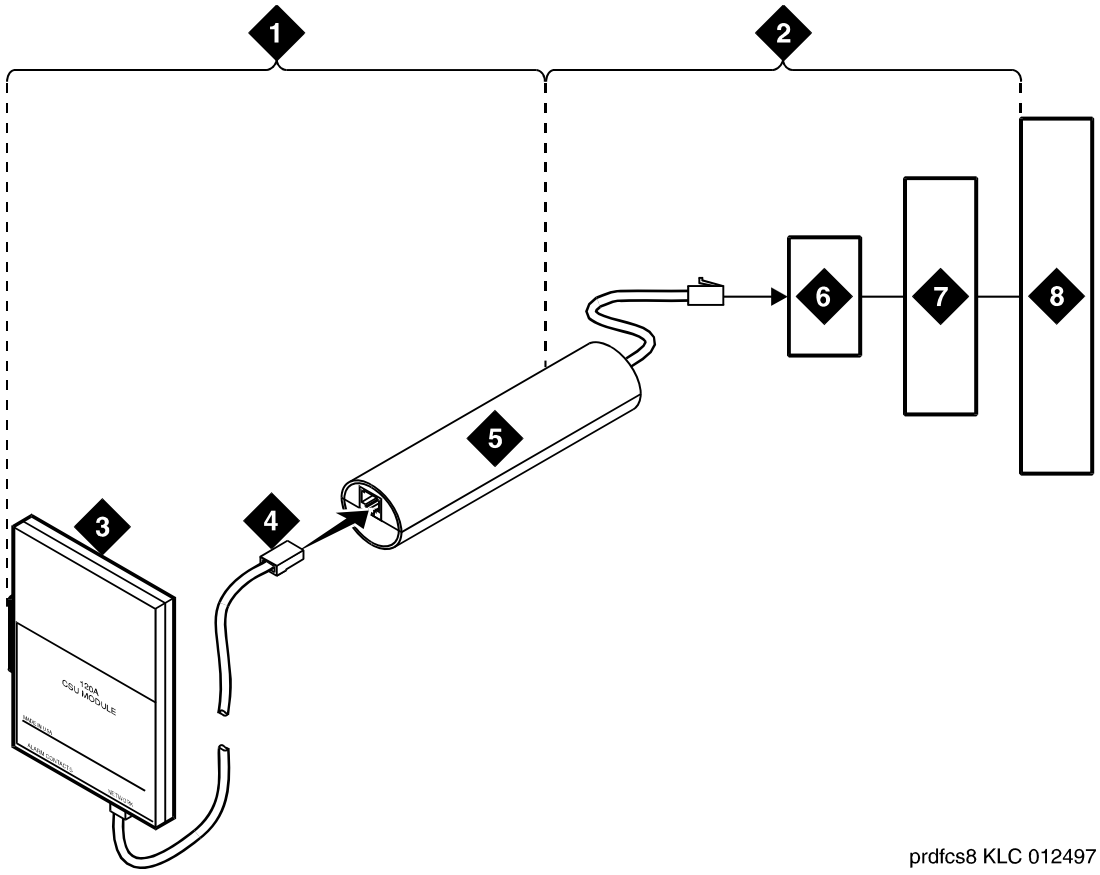


Figure notes:

1. **Span section 1**
2. **Span section 2**
3. **120A2 (or later) ICSU**
4. **RJ-48 to network interface (up to 1000 ft. [305 m])**
5. **Loopback jack**
6. **Dumb block (demarcation point)**
7. **Interface termination or fiber multiplexer (MUX)**
8. **Central office**

Figure 30: Network interface at “dumb” block with repeater line to fiber MUX for a 120A2 (or later) ICSU

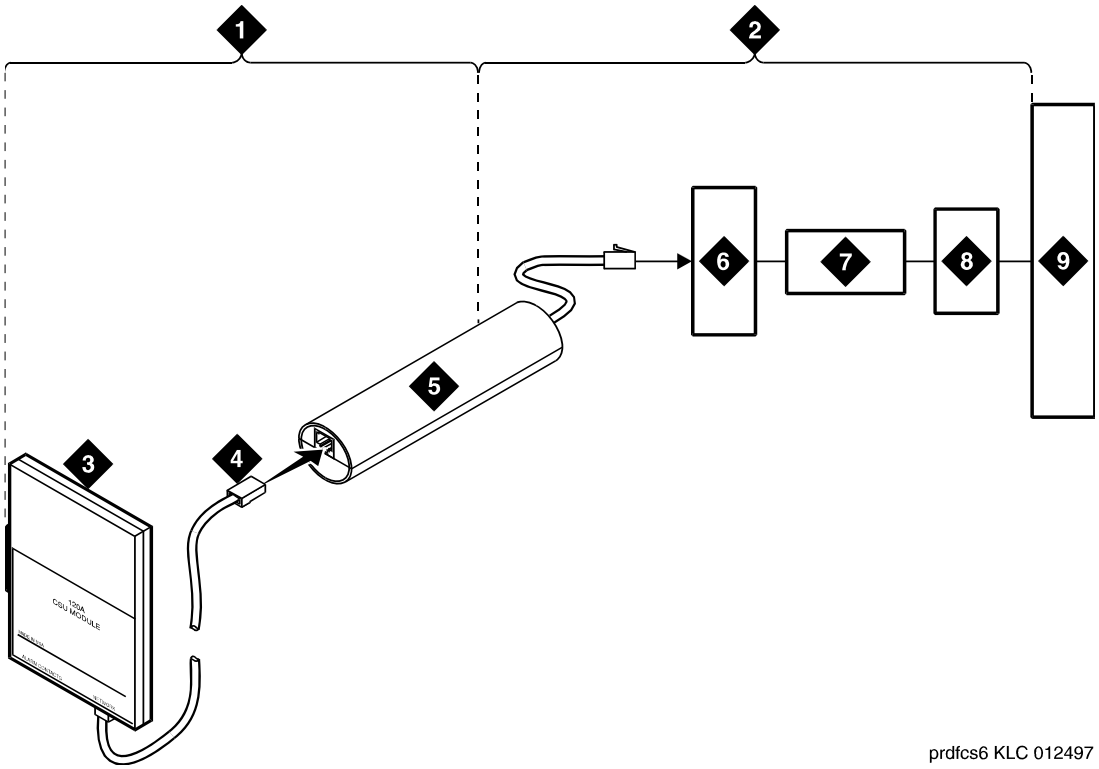


Figure notes:

1. **Span section 1**
2. **Span section 2**
3. **120A2 (or later) ICSU**
4. **RJ-48 to network interface (up to 1000 ft. [305 m])**
5. **Loopback jack**
6. **Dumb block (demarcation point)**
7. **Repeater**
8. **Fiber multiplexer (MUX)**
9. **Central office**

Proceed as follows.

1. Test customer premises wiring from the ICSU to the loopback jack, as described in the “DS1 Span Test” section.
2. Test the loopback jack-to-*dumb* block and *dumb* block-to-CO wiring. For more information, see section 2 in Figure 29: Network interface at “dumb” block for a 120A2 (or later) ICSU on page 150 through Figure 30: Network interface at “dumb” block with repeater line to fiber MUX for a 120A2 (or later) ICSU on page 151). This test can be done using a loopback that “overlaps” the section of the span. Use any of the following loopbacks:
   - The line loopback of the local ICSU. The DS1 service provider at the CO end typically activates, tests, and then deactivates this loopback.
   - The payload loopback. of the local DS1 interface. The DS1 service provider at the CO end activates and tests this loopback.

- The line loopback of the far-end ICSU. Activate this test at the management terminal by typing **`test ds1-loop`** ***`location`*** **`far-csu-loopback-test-begin`**, where ***location*** is the DS1 interface circuit pack corresponding to the loopback jack. To terminate this test, type **`test ds1-loop`** ***`location`*** **`end-loopback/span-test`**, where ***location*** is the DS1 interface circuit pack corresponding to the loopback jack.

  Bit error counts are examined as described in the “DS1 Span Test” section. This test only isolates problems to Section 2 wiring if there are no problems in the wiring between the far-end CO and the far-end ICSU. Coordinate this test with the DS1 service provider.

  Failure of any of the previous tests indicate a problem in Section 2. This problem could be bad loopback jack -to-”dumb” block cabling. However, it more likely indicates a problem somewhere between the “dumb” block and the CO. This problem is the responsibility of the DS1 service provider.

  If the DS1 Span Test confirms that there are no problems in Section 1, proceed as follows to avoid unnecessary dispatch.

a. Identify and contact the DS1 service provider.

b. Inform the DS1 provider that loopback tests of the CPE wiring to the “dumb” block (section 1) showed no problems.

c. If the far-end ICSU line loopback test failed, inform the DS1 provider.

d. Request that the DS1 provider perform a loopback test of their portion of the Section 2 wiring. The DS1 provider must send someone out to loop Section 2 back to the CO at the “dumb” block.

   If this test fails, the problem is in the service provider wiring.

   If the test passes, the problem is in the cable between the loopback jack and the “dumb” block. Replace the loopback jack.

Configurations using fiber multiplexers

Use the loopback jack when the customer premises DS1 wiring:

- connects to an on-site fiber multiplexer (MUX)

  and

- allows remote tests of the wiring to the network interface point on the MUX.

Fiber MUXs can take the place of Interface termination feeds as shown in Figure 26: Network interface at smart jack for a 120A2 (or later) ICSU on page 147 through Figure 29: Network interface at “dumb” block for a 120A2 (or later) ICSU on page 150. Test these spans with the same procedures as metallic spans. Note the following points:

1. Fiber MUXs might have loopback capabilities that the service provider can activate from the CO end. These capabilities might loop the signal back to the CO or back to the DS1 circuit pack. If the MUX provides the equivalent of a line loopback on the “problem” DS1 facility, activate the MUX after a successful loopback jack test. Then use the MUX to isolate problems to the wiring between the loopback jack and the MUX.
2. Be aware that there are installations that use repeater metallic lines between the MUX and the “dumb” block. These lines require DC power for the repeaters and this DC power is present at the “dumb” block interface to the CPE equipment. *A loopback jack is required in this configuration to properly isolate and terminate the DC power*.

To check for the presence of DC, make the following 4 measurements at the network interface jack:

1. From transmit tip (T, Pin 5) to receive tip (T1, Pin 2)
2. From transmit ring (R, Pin 4) to receive ring (R1, Pin 1)
3. From transmit tip (T, Pin 5) to transmit ring (R, Pin 4)
4. From receive tip (T1, Pin 2) to receive ring (R1, Pin 1)

All measurements should read zero (0) volts DC. For more information about pin numbers and pin designations, see *Integrated CSU Module Installation and Operation 555-230-193*.

External modems

The following section assumes that you are using one of the recommended external modems. However, any locally obtained, type-approved external modem work. Contact your Avaya representative for more information.

Recommended modems include:

- Multi-Tech MT5634ZBA-USB-V92
- Multi-Tech MT5634ZBA-V92-GLOBAL

Hardware required when configuring modems

To configure many modems, use the Hayes-compatible AT command set.

Note:

If your modem uses a USB connection, use the USB ports instead of the serial port. Also, AT commands are not required, so you can skip this section. Use the factory defaults.

Before you can enter AT configuration commands, first connect a terminal or a PC with a keyboard, monitor, and terminal-emulation software to the modem.

Proceed as follows:

1. Connect one end of an RS-232 cable to an RS-232, serial-communications port, often called a COM port, on the terminal or PC.
2. Connect the other end of the RS-232 cable to the modem.
3. If you are using a PC, start your terminal emulation software.

Multi-Tech MT5634ZBA-USB-V92

Avaya recommends using a Multi-Tech USB modem, model MT5634ZBA-USB-V92, with any of the following configurations:

- S8300/700
- S8500
- S8700
- S8710

This modem is used for sending alarms, and for remote dial up to the server for maintenance and administration.

Configuring the MT5634ZBA-USB-V92 modem

In the United States, the Multi-Tech MT5634ZBA-US-V92 modem gets configured automatically through the USB port with the factory defaults. No special configuration is necessary. In a non-US country, the modem might require settings specific to the country in which the modem is used.

Multi-Tech MT5634ZBA-V92-GLOBAL

Avaya recommends using a Multi-Tech serial modem, model MT5634ZBA-V92-GLOBAL, with an S8500 Media Server.

The Multi-Tech serial modem connects the Remote Supervisor Adapter (RSA) to an external trunk. The RSA, which monitors S8500 components and software, can then send alarms to the services support group. Additionally, you can dial the S8500 remotely to either turn power on or off. For more information, see *Installing and Configuring the Avaya S8500 Media Server* (03-300143).

Note:

The Multi-Tech serial modem, which requires its own power, comes with a DC adapter and a separately shipped power cord and modular cord.

Administration

The Multi-Tech modems do not require administration if used in the United States. In non-US countries, these modems might require administration.

For the full range of modem options, see the *Administrator Guide for Avaya Communication Manager* (03-300509).

ISDN converters and adapters

This section provides information on ISDN converters and adapters. These converters and adapters are sometimes necessary when connecting to coaxial facilities in either a multicarrier cabinet or a single carrier cabinet.

Connections include:

- Integrated Services Data Network Primary Rate Interface (ISDN-PRI) to Direct Access Secondary Storage (DASS)
- PRI to Digital Private Network Signaling System (DPNSS)
- PRI to ISDN Basic Rate Interface (ISDN-BRI)

Converter circuit packs known as common channel signaling converter (CCSC), types 1 and 2.

Converters for single-carrier cabinets

PRI-to-DASS and PRI-to-DPNSS converters

Figure 31: Typical DASS or DPNSS converter cable connections shows typical connections from the CCSC-1 PRI-to-DASS converter or the CCSC-2 PRI-to-DPNSS converters to the coaxial facility.

Figure 31: Typical DASS or DPNSS converter cable connections

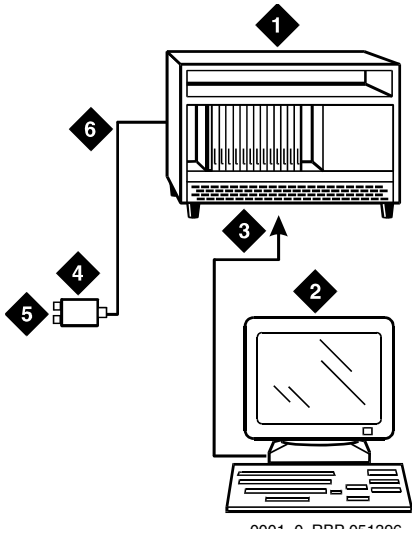


Figure notes:

1. **To TN464F DS1 circuit pack and either a CSCC-1 PRI-to-DASS converter or a CSCC-2 PRI-to-DPNSS converter circuit pack**
2. **Communication Manager administration PC**
3. **RS-232 cable to front of PRI converter circuit pack**
4. **888B coaxial converter**
5. **Coaxial connection to 2-Mbps facility**
6. **Coaxial cable from PRI converter circuit pack to coaxial converter**

1. Plug the PC into the RS-232 connector on the front of the PRI converter circuit pack.
2. Connect the coaxial Y-cable from the TN464F to the PRI converter circuit pack.
3. Connect the opposite end of the Y-cable to the 888B coaxial converter.

PRI-to-BRI converter

Figure 32: Typical PRI to BRI converter cable connections shows typical connections from the PRI-to-BRI converter to the coaxial facility.

Figure 32: Typical PRI to BRI converter cable connections

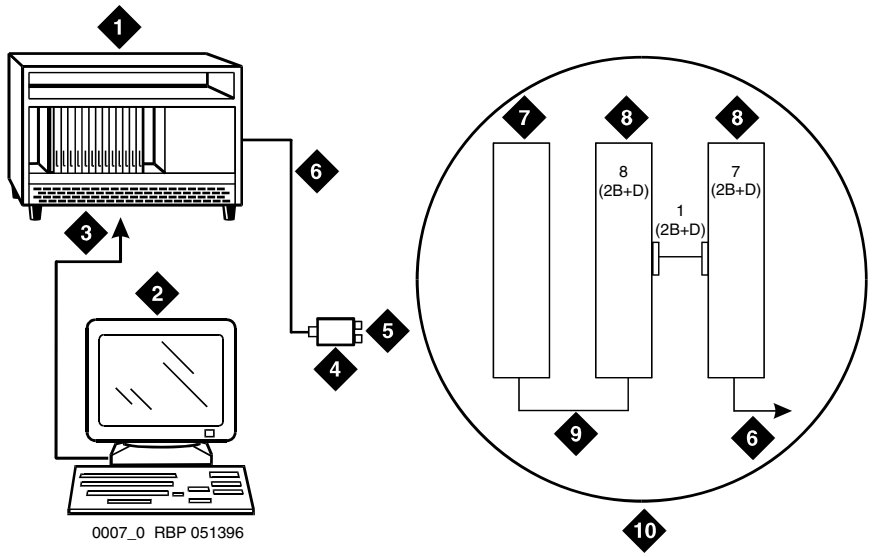


Figure notes:

1. **To TN464F DS1 circuit pack and PRI-to-BRI converter circuit pack**
2. **Communication Manager administration PC**
3. **RS-232 cable to front of converter circuit pack**
4. **888B coaxial converter**
5. **Coaxial connection to 2-Mbps facility**
6. **Coaxial cable from PRI converter circuit pack to coaxial converter**
7. **TN464F circuit pack**
8. **PRI-to-BRI converter circuit pack**
9. **Jumper coaxial cable**
10. **Inset showing connections on rear of carrier**

Note:

The inset shows details of the cable connections between the circuit packs. Connect the Communication Manager administration PC to the RS-232 connector on the front of the PRI converter circuit pack.

Converters for multicarrier cabinets

PRI-to-DASS and PRI-to-DPNSS converters

The following steps connect the administration PC to the PRI converter.

1. Connect the Communication Manager administration PC to the RS-232 connector on the front of the PRI converter circuit pack.

   Figure 33: Typical DASS or DPNSS converter cable connections shows typical connections from the CCSC-1 PRI-to-DASS converter or the CCSC-2 PRI-to-DPNSS converters to the coaxial facility.

Figure 33: Typical DASS or DPNSS converter cable connections

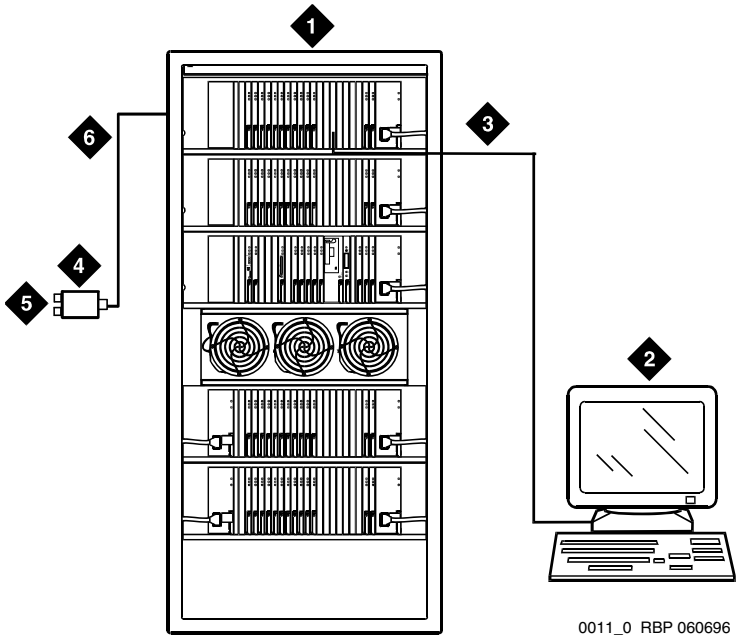


Figure notes:

1. **To TN464F DS1 circuit pack and either a CSCC-1 PRI-to-DASS converter or a CSCC-2 PRI-to-DPNSS converter circuit pack**
2. **Communication Manager administration PC**
3. **RS-232 cable to front of PRI converter circuit pack**
4. **888B coaxial converter**
5. **Coaxial connection to 2-Mbps facility**
6. **Coaxial cable from PRI converter circuit pack to coaxial converter**

PRI-to-BRI converter

Figure 34: Typical PRI to BRI converter cable connections shows typical connections from the PRI-to-BRI converter to the coaxial facility. The Communication Manager administration PC is connected to the RS-232 connector on the front of the PRI converter circuit pack.

Figure 34: Typical PRI to BRI converter cable connections

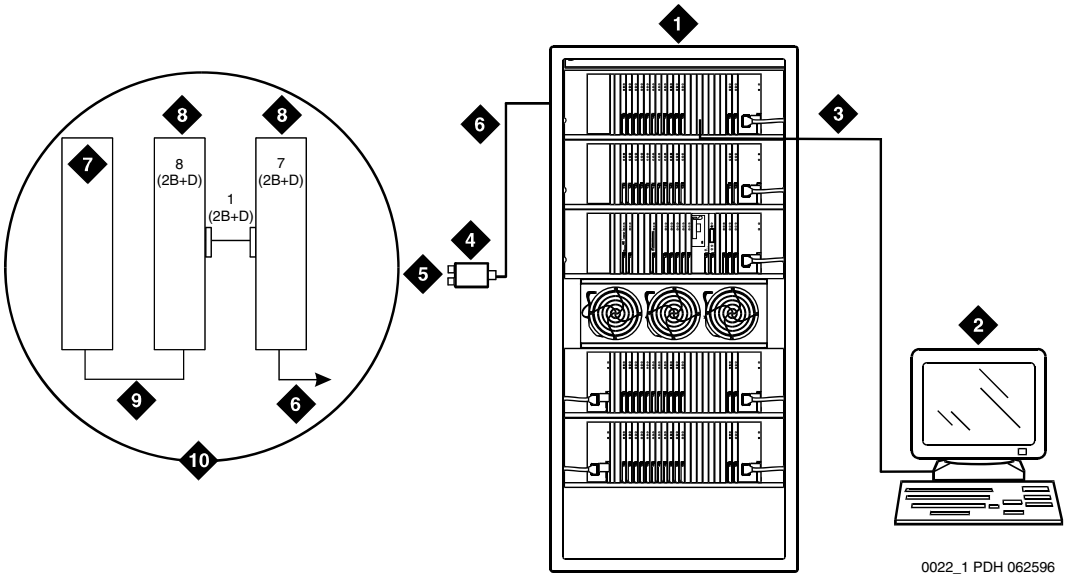


Figure notes:

1. **TN464F DS1 circuit pack and PR-to-BRI converter circuit pack**
2. **Communication Manager administration PC**
3. **RS-232 cable to front of converter circuit pack**
4. **888B 75-ohm coaxial converter**
5. **Coaxial connection to 2-Mbps facility**
6. **Coaxial cable from PRI converter circuit pack to coaxial converter**
7. **TN464F circuit pack**
8. **PRI-to-BRI converter circuit pack**
9. **Jumper coaxial cable**
10. **Inset showing connections on rear of carrier**

Note:

The inset shows details of the cable connections between the circuit packs.

909A/B universal coupler

The 909A/B universal coupler is used with paging, malicious call trace, and music-on-hold equipment that is not approved for use with the public network.

Figure 35: Typical 909A/B universal coupler on page 160 shows a typical 909A/B universal coupler. For additional installation and switch setting information, see *909A/909B Universal Coupler Installation Instructions*, which is usually shipped with the 909A/909B Universal Coupler.

Note:

If the music source is registered by the FCC in the USA or an equivalent body, you do not require the 909A/B universal coupler.

Figure 35: Typical 909A/B universal coupler

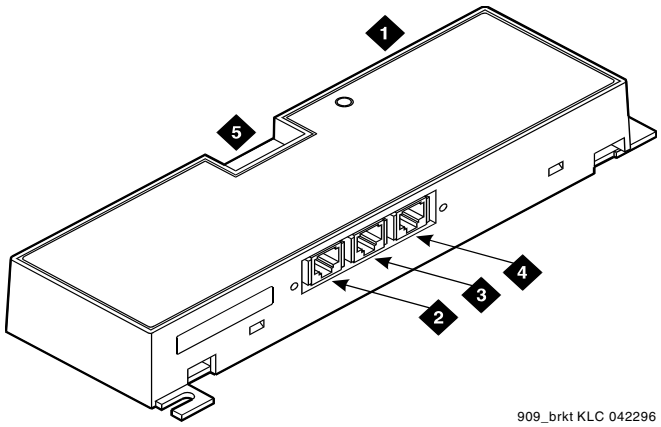


Figure notes:

1. **909A/B universal coupler**
2. **J1 8-pin modular jack**
3. **J2 8-pin modular jack**
4. **J3 7-pin modular jack**
5. **DIP switch location**

The 909A is the direct current (DC) version of the coupler, and cabinet power supplies -48 VDC power. The 909B is the alternating current (AC) version, and power is supplied from a separate power supply such as the KS-22911L2.

The DIP switches on the unit set:

- Protection/Paging selection: For AUX trunk paging and malicious call trace, set to C2. Set the switch to C1 for all other applications.
- Output attenuation (-9 or -15 dBm): Setting depends on output level of music source.
- Output impedance (8 ohms, 1.5 kΩ, and 50 kΩ). This switch only requires setting if the Protection/Paging switch is set to C2 and the coupler is supplying background music to a customer-supplied paging amplifier.

The pinouts for J1, J2, and J3 are provided in Table 15: J1 Pin Assignments (System Connections) on page 161, Table 16: J2 Pin Assignments (Accessory Connections) on page 161, and Table 17: J3 Pin Assignments (Power Connections) on page 162. Use these tables when connecting music or paging equipment.

Table 15: J1 Pin Assignments (System Connections)

Pin	Color	Designation	Description
1	White-Orange	—	Not Used
2	Orange	PG2/BZ2	Seizure control lead, connected to -48 VDC from the system or from the 909A/B when the protection paging switch is set to C2, or to -48 VDC on the 909A/B when protection/paging switch is set to C1
3	White-Green	PG1/BZ1	Seizure control lead, connected to SZ lead from the AUX trunk when the protection/paging switch is set to C2, or to -48 VDC on the 909A/B when the protection/paging switch is set to C1
4	Blue	R	Ring lead
5	White-Blue	T	Tip lead
7	Green	BSY2/BY2	Busy/busy-out lead, connected to S1 lead from the AUX trunk
7	White-Brown	BSY1/BY1	Busy/busy-out lead, connected to S lead from the AUX trunk
8	Brown	—	Not Used

Table 16: J2 Pin Assignments (Accessory Connections)

Pin	Color	Designation	Description
1	White-Orange	CMS1/M1	Customer-supplied music source
2	Orange	CMS2/M2	Customer-supplied music source
3	White-Green	COS1	Remote busyout control contact closure from music source
4	Blue	CR	Customer ring lead
5	White-Blue	CT	Customer tip lead
7	Green	COS2	Remote busyout control contact closure from music source

1 of 2

Table 16: J2 Pin Assignments (Accessory Connections) (continued)

Pin	Color	Designation	Description
7	White-Brown	CBS1/C1	Seizure indication provided to music source
8	Brown	CBS2/C2	Seizure indication provided to music source
			2 of 2

CAUTION:

Do not plug the cable into J3 before all cross-connects are completed. Damage to the 909A/B universal coupler can occur.

Table 17: J3 Pin Assignments (Power Connections)

Pin	Color	Designation	Description
1, 3, 4, & 7	—	—	Not used
2	Black	GRD	-48 RET or ground lead from system or from positive lead of power supply
5	Yellow	-48 VDC	-48 VDC from system or from negative lead of power supply

Figure 36: Typical modular jack pinout shows the physical locations of the pins for J1, J2, and J3.

Figure 36: Typical modular jack pinout

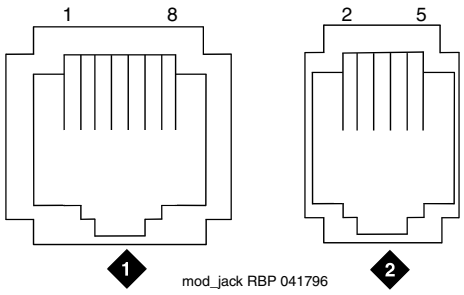


Figure notes:

1. **J1 and J2 8-pin modular jacks**
2. **J3 7-pin modular jack**

Malicious call trace

The malicious call trace (MCT) voice recorder connects directly to the tip and ring connections of a TN763/D auxiliary trunk circuit pack. See Figure 37: Malicious call trace. The 909A/B universal coupler provides seizure control to the recorder.

Note:

There is no auxiliary trunk circuit pack for the G700 or G350 Media Gateway. Therefore, information in this chapter does not apply to these media gateways. But you can access MCT equipment connected to a port network.

Figure 37: Malicious call trace

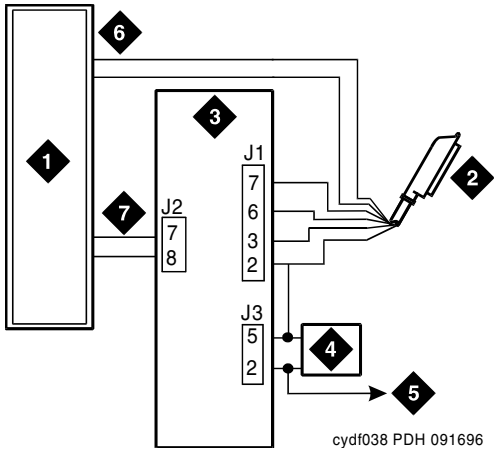


Figure notes:

1. **Malicious call trace voice recorder**
2. **25-pair cable (T, R, S, S1, Sz, SZ1) to TN763/D auxiliary trunk circuit pack**
3. **909A/B universal coupler**
4. **Power supply for universal coupler**
5. **To SZ1 on TN763/D connector**
6. **Tip and ring wires**
7. **CBS1/C1 and CBS2/C2**

Note:

A wiring block must be locally engineered.

Note:

909A couplers ships with one DW4B-DE cable and two DW8B-SE cables. The 909B ships with one KS-22911L2 power supply, one DW4B-DE cable, and two DW8B-SE cables.

1. Determine the port assignment of the recorder from the malicious call tracing form.
2. Install the 909A/B universal coupler on a vertical surface.

3. Connect the SZ, SZ1, S, and S1 leads from the 909A/B to an auxiliary trunk circuit pack.
   a. Tip and ring connect from the voice recorder to the auxiliary trunk circuit pack (J1 on the 909A/B).
   b. CBS1/C1 and CBS2/C2 connect from the voice recorder to J2 on the 909A/B.
4. On the 909A/B universal coupler:
   a. Connect seizure control voltage of from -9 to -70 Volts to the PG2/BZ2 connection (pin 2 of J1). Switching voltage to the PG2/BZ2 connection can be from the 909A/B -48 VDC supply.
   b. Connect SZ1 to the ground lead of the DC power source used for PG2/BZ2.
   c. Set S1 to the “C2” position. Set S2 position 7 to “OPEN”.
   d. Connect an approved -48 VDC power source to the **-48** and **GRD** terminals (pins 5 and 2, respectively, of J3 on the 909A/B).
5. Administer the switch for the call trace device.

Note:

For more information about installation, see *909A/909B Universal Coupler Installation Instructions*, which is usually shipped with the 909A/909B Universal Coupler.

Music-on-hold

With the music-on-hold (MOH) feature, a caller hears music when that caller is placed on hold. Music-on-hold can be provided through either

- a two-wire TN2183 analog line circuit pack, or equivalent,

  or

- auxiliary trunk circuit pack to a customer-supplied music source.

Music-on-hold is available on the following media gateways:

- MCC1
- SCC1
- CMC1
- G600
- G650

Figure 38: Typical registered equipment connections (auxiliary access) for an MCC1, SCC1, or CMC1, G600, and G650 Media Gateway on page 165 shows the connections for music-on-hold, dial dictation, or recorded announcement features when the music source is Federal Communications Commission (FCC) registered (or equivalent). Figure 39: Typical nonregistered equipment connections (auxiliary access) for an MCC1, SCC1, CMC1, G600, or G650 Media Gateway on page 167 shows the connections when the music source is not **FCC**-registered (or equivalent).

Local music-on-hold allows one music source. However, if you purchase the multiple music-on-hold (tenant partitioning) feature, you can have up to 100 music sources.

Note:

Use the following connection instructions when the music source is not located in the equipment room. If the music source is located in the equipment room, do not route the connections through the information outlet.

Figure 38: Typical registered equipment connections (auxiliary access) for an MCC1, SCC1, or CMC1, G600, and G650 Media Gateway

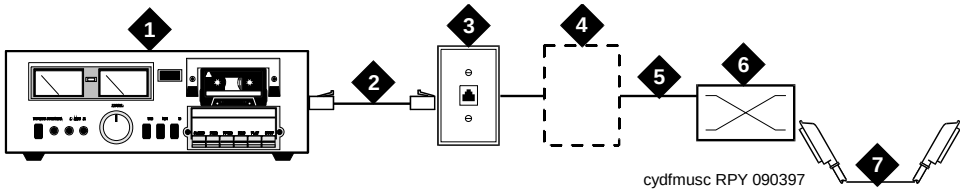


Figure notes:

1. **Music source**
2. **4-pair modular cord**
3. **103A or modular wall jack**
4. **122A music adapter (if required—primarily required in France)**
5. **Tip (green) and ring (red)**
6. **Part of main distribution frame**
7. **A25D 25 pair cable (male-to-male) to auxiliary trunk circuit pack**

1. If the music source is registered, the system side of the MDF connects directly to the system.
2. If the music source is not registered, the system side of the MDF connects to a 909A/B universal coupler (see 909A/B universal coupler on page 160).

Registered music source

See Figure 38: Typical registered equipment connections (auxiliary access) for an MCC1, SCC1, or CMC1, G600, and G650 Media Gateway on page 165 to install a registered music source.

1. Determine feature port assignment from Feature-Related System Parameters form.
2. Install music source according to the manufacturer instructions.
3. Install patch cord/jumper wires at the main distribution frame.
4. Administer the switch for the new equipment.

Nonregistered music source

See Figure 39: Typical nonregistered equipment connections (auxiliary access) for an MCC1, SCC1, CMC1, G600, or G650 Media Gateway on page 167 and Figure 40: Connections to nonregistered music-on-hold using analog line for an MCC1, SCC1, CMC1, G600, or G650 Media Gateway on page 168 when installing a nonregistered music source.

1. Determine feature port assignment from Feature-Related System Parameters Form.
2. Install the music source according to the manufacturer instructions.
3. Connect a cable from the assigned port carrier slot to J1 on the 909A/B universal coupler. For more information, see 909A/B universal coupler on page 160. A wiring block must be locally engineered.
   a. Connect the T-lead at pin 5 and the R-lead at pin 4 of J1 on the 909A/B universal coupler to the corresponding leads from the TN2183.
   b. Connect the CT-lead at pin 5 and the CR-lead at pin 4 of J2 on the 909A/B universal coupler to the MDF.
4. Install patch cord/jumper wires at the MDF to connect tip and ring to the information outlet at the music source.
5. Set the Protection/Paging switch to C1.
6. Connect a modular cord from the information outlet to the music source.
7. Connect -48V to pin 5 and -48V RET to pin 2 of J3 on the 909A/B. The power source can be an 1151A, 1151A2, or other approved power supply.
8. Administer the switch for the new equipment.

Figure 39: Typical nonregistered equipment connections (auxiliary access) for an MCC1, SCC1, CMC1, G600, or G650 Media Gateway

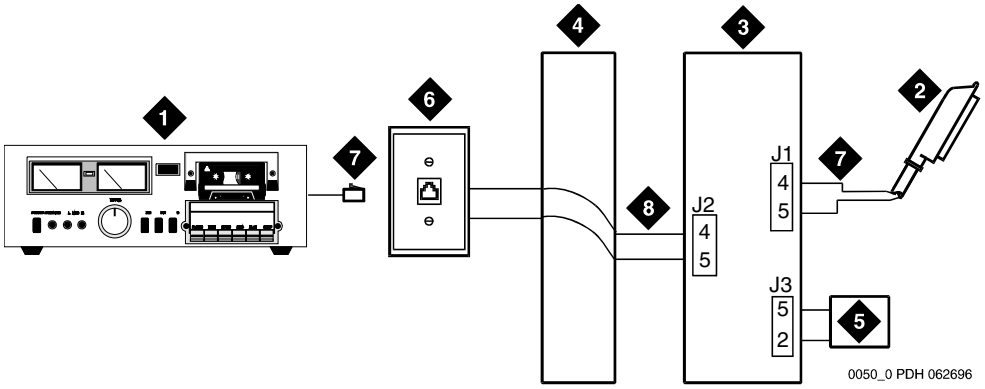


Figure notes:

1. **Customer-supplied music source**
2. **A25D 25-pair cable to auxiliary trunk circuit pack**
3. **909A/B universal coupler**
4. **Part of main distribution frame**
5. **Power supply for universal coupler**
6. **103A or modular wall jack**
7. **4-pair modular cord**
8. **Tip and ring wires**

Note:

A wiring block must be locally engineered.

Figure 40: Connections to nonregistered music-on-hold using analog line for an MCC1, SCC1, CMC1, G600, or G650 Media Gateway

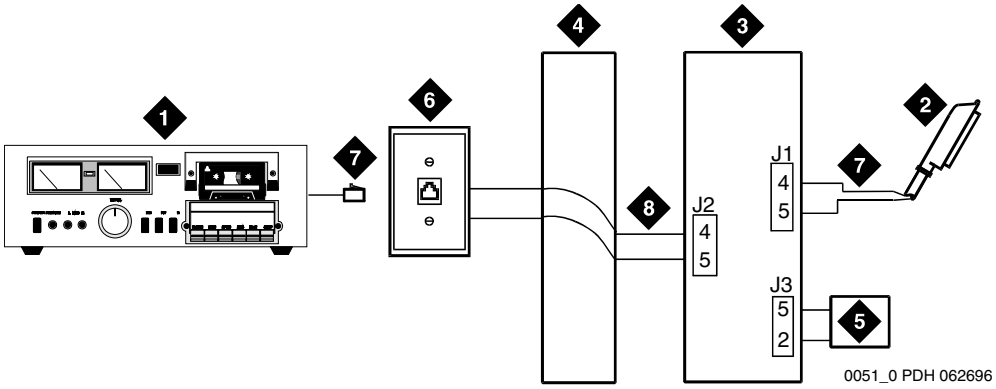


Figure notes:

1. **Customer-supplied music source**
2. **25-pair cable to analog line circuit pack**
3. **909A/B universal coupler**
4. **Part of main distribution frame**
5. **Power supply for universal coupler**
6. **103A or modular wall jack**
7. **4-pair modular cord**
8. **Tip and ring wires**

Note:

A wiring block must be locally engineered.

Note:

For more information about installation, see *909A/909B Universal Coupler Installation Instructions*, which is usually shipped with the 909A/909B Universal Coupler.

Paging and announcement equipment

This section explains the most common system configurations for the paging feature of Avaya Communication Manager. This chapter provides information on the following features:

- Loudspeaker paging
- ESPA radio paging
- External ringing
- Queue warning indicator

Loudspeaker paging

In an MCC1, SCC1, CMC1, G600, or G650 Media Gateway, the loudspeaker paging feature provides a connection from a TN763B/C/D auxiliary trunk circuit pack (or equivalent) to a customer-supplied paging amplifier.

Loudspeaker paging without paging adapter

Figure 41: Connections for loudspeaker paging without paging adapter for an MCC1, SCC1, CMC1, G600, or G650 Media Gateway on page 170 shows the connections for the loudspeaker paging feature. These connections are used when the loudspeaker interface equipment is not located in the equipment room. If the equipment is located in the equipment room, the information outlet is not required. The connections shown are for one zone.

Figure 41: Connections for loudspeaker paging without paging adapter for an MCC1, SCC1, CMC1, G600, or G650 Media Gateway on page 170 also shows connections from an optional customer-supplied music source to the loudspeaker system through a paging amplifier, as well as connections to the loudspeaker system through a 909A/B universal coupler (see 909A/B universal coupler on page 160).

Note:

If the loudspeaker paging system provides a talkback microphone at the speakers, either

- the microphone must be FCC approved (or equivalent),

  or

- a 909A/B universal coupler is required.

Figure 41: Connections for loudspeaker paging without paging adapter for an MCC1, SCC1, CMC1, G600, or G650 Media Gateway

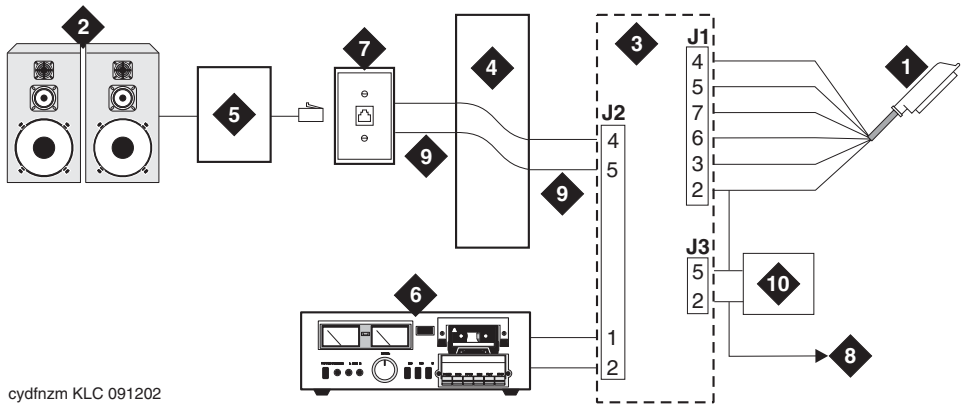


Figure notes:

1. **25-pair cable to TN763B/C/D auxiliary trunk circuit pack**
2. **Loudspeaker paging system**
3. **909A/B universal coupler (if required)**
4. **Part of main distribution frame (MDF) circuits 1-16**
5. **Paging amplifier**
6. **Music source for background music over loudspeakers (optional)**
7. **103A or modular wall jack**
8. **To SZ1 on TN763 connector**
9. **Tip and ring wires**
10. **-48 VDC power supply for 909B**

Note:

On the 25-pair cable to TN763B/C/D auxiliary trunk circuit pack, SZ1 connects to GRD on key 10. The 50 points amphenol is connected to the back of a G600 or G650 Media Gateway.

Loudspeaker paging access without universal coupler

The following steps install the loudspeaker equipment.

1. Determine port assignment of paging zone(s) from loudspeaker paging form.
2. At the main distribution frame, locate the connecting block and terminals assigned to the selected port.
3. On the locally engineered wiring block, place a strap between terminals S and SZ. Place a strap between terminals S1 and SZ1.
4. Install patch cord/jumper wires at the main distribution frame.
5. Connect a 2-pair line cord, with a modular plug at one end, from the information outlet to the paging amplifier of the loudspeaker system.
6. Install loudspeaker equipment according to the manufacturer instructions.
7. Administer the switch for the new equipment.

Loudspeaker paging with universal coupler

An information outlet provides access to loudspeaker paging. The system side of the main distribution frame connects to a 909A/B universal coupler. Make provisions for the **DC** power that the 909A/B universal coupler requires, such as a 1151A, 1151A2, or other approved -48VDC power supply.

Six leads (T, R, SZ, SZ1, S, and S1) connect the adapter to an auxiliary trunk circuit pack located in a port carrier.

1. Determine port assignment of paging zone(s) from loudspeaker Paging form.
2. Identify carrier slot and label both ends of an A25D (male to male) cable.
3. Connect a cable from the 909A/B to the system side of the main distribution frame. A wiring block must be locally engineered.
4. 909A/B universal coupler on page 160 provides details of the connections between the 909A/B universal coupler and the wiring blocks.

   CAUTION:

   Damage to the 909A/B might occur if the cable is plugged into J3 ***before*** all cross-connects are completed.

5. On the 909A/B universal coupler:
   - Connect seizure control voltage of from -9 to -70 volts to the PG2/BZ2 connection (pin 2 of J1). Switching voltage to the PG2/BZ2 connection can be from the 909-48-volt supply.
   - Connect a -48 VDC power source to the -48 and GRD terminals on the 909A/B.
6. Install patch cord/jumper wires at the main distribution frame.
7. Connect a 2-pair line cord (modular plug at one end) from the information outlet to the loudspeaker system.
8. Install loudspeaker equipment according to the manufacturer instructions.
9. Connect an approved -48 VDC power source to the **-48** and **GRD** terminals (pins 5 and 2, respectively, of J3).
10. Administer the switch for the new equipment.

Note:

For more information about installation, see *909A/909B Universal Coupler Installation Instructions*, which is usually shipped with the 909A/909B Universal Coupler.

ESPA radio paging

Figure 42: Typical ESPA radio paging connections shows typical connections to European Standard Paging Access (ESPA) equipment. Connect the LINE jack on the PassageWay interface to a digital line 4-wire DCP circuit pack through the MDF.

Figure 42: Typical ESPA radio paging connections

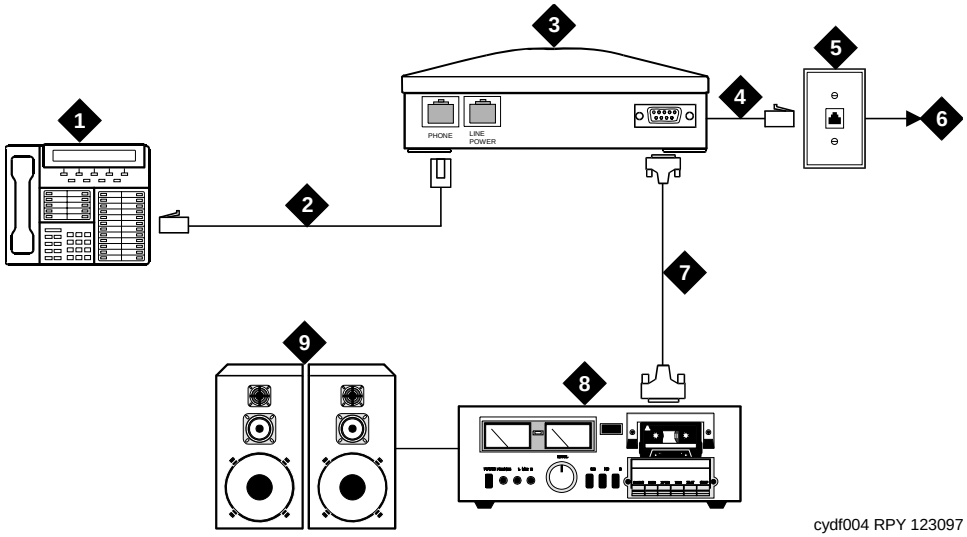


Figure notes:

1. **DCP telephone**
2. **4-pair modular cord**
3. **PassageWay interface**
4. **4-pair modular cord**
5. **103A or modular wall jack**
6. **To digital line circuit pack**
7. **RS-232 connector**
8. **ESPA radio paging equipment**
9. **Loudspeaker paging system**

External ringing

Connections for external ringing are at an information outlet. The system side of the main distribution frame (MDF) is connected to a TN2183 (or equivalent) analog line circuit pack in any of the following gateways:

- MCC1
- SCC1
- CMC1

- G600,
- G650

Note:

Up to three devices can be connected to one analog line circuit pack port.

1. Wire the ringing device to the information outlet.
2. Administer the switch for the new equipment.

Queue warning indicator

The connections for the queue warning indicator are the same as external ringing. An AC indicator (light) such as a 21C49 can be used in a Uniform Call Distribution/Direct Departmental Calling (UCD/**DDC**) queue. The light is connected to an information outlet. The system side of the MDF is connected to an analog line circuit pack located in a port carrier.

1. Wire the queue warning indicator to the information outlet.
2. Administer the switch for the new equipment.

Adjunct Information Sources

This section lists documents you can use for installation of some of the key adjunct systems that you can connect.

You can access or download the latest version of documentation from the Avaya Support Web site at http:/avaya.com/support. You must have access to the Internet and a copy of Adobe Reader installed on your personal computer.

To download the latest version of this documentation:

1. Access the Avaya Support Web site at http://support.avaya.com.
2. At the top of the page, click in the **Search** text box.
3. Type the documentation number and click the arrow button.

   The system displays the list of documentation issues. Click the latest version of the documentation.

Call Management System

For more information about installing Call Management System, see the following documents:

- *Avaya Call Management System (CMS) Release 13 Software Installation, Maintenance, and Troubleshooting Guide* (07-300738)
- *Avaya Call Management System Sun Fire V880/V890 Computer Hardware Installation, Maintenance, and Troubleshooting* (585-215-116)
- *Avaya Call Management System Sun Blade 100/150 Workstation Hardware Installation, Maintenance, and Troubleshooting* (585-310-783)

INTUITY AUDIX Messaging Systems

For more information about installing INTUITY AUDIX Messaging systems, see the following documents:

- For INTUITY AUDIX Release 5.1 Messaging, see *INTUITY Messaging Solutions Release 5 Installation for New Systems* on the *INTUITY Messaging Solutions Release 5 Documentation CD-ROM* (585-313-803)
- For INTUITY AUDIX LX Messaging, see *INTUITY AUDIX LX Installation Checklist* on the *INTUITY AUDIX LX Release 1 Documentation CD-ROM* (585-313-818)

Avaya Modular Messaging System

For more information about installing Avaya Modular Messaging systems, see *Modular Messaging Release 3 Documentation CD-ROM* (700376627).

ASAI and DEFINITY LAN Gateway

For more information about installing ASAI systems and DEFINITY LAN Gateway, see Avaya *MultiVantage ASAI Applications over MAPD* (555-230-136) and *Avaya Communication Manager Release 2.0 ASAI Technical Reference* (555-230-220) on the *Avaya Communication Manager Release 2.0 ASAI Documents* CD-ROM (585-246-801).

Another document related to ASAI is *Avaya CVLAN Server 9.0 for Linux Installation and Basic Administration*, which is available at http://avaya.com/support. Click the following links: **Support>Technical Database>Contact Centers/CRM>CTI>CVLAN Server for Linux R9**.

Avaya Interactive Response

For more information about installing Avaya Interactive Response systems, see *Avaya Interactive Response R1.2.1 Install and Troubleshooting Guide* (07-300180) on the Avaya Interactive Response R1.2.1 Documentation CD (07-300181).

Avaya Extension to Cellular

For more information about installing Avaya Extension to Cellular systems, see the *Avaya Extension to Cellular User's Guide* (210-100-700).

Property Management Systems

For more information about installing property management systems, see *Guestworks and DEFINITY Systems Technician Handbook for Hospitality Installations* (555-231-743*).*

Call Accounting Systems

For more information about installing Call Accounting Systems, see one of the following documents:

- The online help or documentation included with the eCAS software CD-ROM
- For Guestworks Server INTUITY Lodging Call Accounting System, see *GuestWorks and DEFINITY Systems Technician Handbook for Hospitality Installations* (555-231-743).

DEFINITY Wireless Business System

For more information about installing DEFINITY Wireless Business System, see *DEFINITY Wireless Business System Installation and Test* (555-232-102).

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