Installation for Adjuncts and Peripherals for Avaya Communication Manager

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Notice

Every effort was made to ensure that the information in this document was complete and accurate at the time of printing. However, information is subject to change.

Warranty

Avaya Inc. provides a limited warranty on this product. Refer to your sales agreement to establish the terms of the limited warranty. In addition, Avaya's standard warranty language as well as information regarding support for this product, while under warranty, is available through the following Web site: http://www.avaya.com/support.

Preventing Toll Fraud

"Toll fraud" is the unauthorized use of your telecommunications system by an unauthorized party (for example, a person who is not a corporate employee, agent, subcontractor, or is not working on your company's behalf). Be aware that there may be a risk of toll fraud associated with your system and that, if toll fraud occurs, it can result in substantial additional charges for your telecommunications services.

Avaya Fraud Intervention

If you suspect that you are being victimized by toll fraud and you need technical assistance or support, in the United States and Canada, call the Technical Service Center's Toll Fraud Intervention Hotline at 1-800-643-2353.

How to Get Help

For additional support telephone numbers, go to the Avaya support Web site: http://www.avaya.com/support. If you are:

- Within the United States, click the *Escalation Management* link. Then click the appropriate link for the type of support you need.
- Outside the United States, click the *Escalation Management* link. Then click the *International Services* link that includes telephone numbers for the international Centers of Excellence.

Providing Telecommunications Security

Telecommunications security (of voice, data, and/or video communications) is the prevention of any type of intrusion to (that is, either unauthorized or malicious access to or use of) your company's telecommunications equipment by some party.

Your company's "telecommunications equipment" includes both this Avaya product and any other voice/data/video equipment that could be accessed via this Avaya product (that is, "networked equipment").

An "outside party" is anyone who is not a corporate employee, agent, subcontractor, or is not working on your company's behalf. Whereas, a "malicious party" is anyone (including someone who may be otherwise authorized) who accesses your telecommunications equipment with either malicious or mischievous intent.

Such intrusions may be either to/through synchronous (time-multiplexed and/or circuit-based) or asynchronous (character-, message-, or packet-based) equipment or interfaces for reasons of:

- Utilization (of capabilities special to the accessed equipment)
- Theft (such as, of intellectual property, financial assets, or toll facility access)
- Eavesdropping (privacy invasions to humans)
- Mischief (troubling, but apparently innocuous, tampering)
- Harm (such as harmful tampering, data loss or alteration, regardless of motive or intent)

Be aware that there may be a risk of unauthorized intrusions associated with your system and/or its networked equipment. Also realize that, if such an intrusion should occur, it could result in a variety of losses to your company (including but not limited to, human/data privacy, intellectual property, material assets, financial resources, labor costs, and/or legal costs).

Responsibility for Your Company's Telecommunications Security

The final responsibility for securing both this system and its networked equipment rests with you - Avaya's customer system administrator, your telecommunications peers, and your managers. Base the fulfillment of your responsibility on acquired knowledge and resources from a variety of sources including but not limited to:

- Installation documents
- System administration documents
- Security documents
- Hardware-/software-based security tools
- Shared information between you and your peers
- Telecommunications security experts

To prevent intrusions to your telecommunications equipment, you and your peers should carefully program and configure:

- Your Avaya-provided telecommunications systems and their interfaces
- Your Avaya-provided software applications, as well as their underlying hardware/software platforms and interfaces
- Any other equipment networked to your Avaya products

TCP/IP Facilities

Customers may experience differences in product performance, reliability and security depending upon network configurations/design and topologies, even when the product performs as warranted.

Standards Compliance

Avaya Inc. is not responsible for any radio or television interference caused by unauthorized modifications of this equipment or the substitution or attachment of connecting cables and equipment other than those specified by Avaya Inc. The correction of interference caused by such unauthorized modifications, substitution or attachment will be the responsibility of the user. Pursuant to Part 15 of the Federal Communications Commission (FCC) Rules, the user is cautioned that changes or modifications not expressly approved by Avaya Inc. could void the user's authority to operate this equipment.

Product Safety Standards

This product complies with and conforms to the following international Product Safety standards as applicable:

Safety of Information Technology Equipment, IEC 60950, 3rd Edition including all relevant national deviations as listed in Compliance with IEC for Electrical Equipment (IECEE) CB-96A.

Safety of Information Technology Equipment, CAN/CSA-C22.2 No. 60950-00 / UL 60950, 3rd Edition

Safety Requirements for Customer Equipment, ACA Technical Standard (TS) 001 - 1997

One or more of the following Mexican national standards, as applicable: NOM 001 SCFI 1993, NOM SCFI 016 1993, NOM 019 SCFI 1998

The equipment described in this document may contain Class 1 LASER Device(s). These devices comply with the following standards:

- EN 60825-1, Edition 1.1, 1998-01
- 21 CFR 1040.10 and CFR 1040.11.

The LASER devices operate within the following parameters:

- Maximum power output: -5 dBm to -8 dBm
- Center Wavelength: 1310 nm to 1360 nm

Luokan 1 Laserlaite

Klass 1 Laser Apparat

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposures. Contact your Avaya representative for more laser product information.

Electromagnetic Compatibility (EMC) Standards

This product complies with and conforms to the following international EMC standards and all relevant national deviations:

Limits and Methods of Measurement of Radio Interference of Information Technology Equipment, CISPR 22:1997 and EN55022:1998.

Information Technology Equipment – Immunity Characteristics – Limits and Methods of Measurement, CISPR 24:1997 and EN55024:1998, including:

- Electrostatic Discharge (ESD) IEC 61000-4-2
- Radiated Immunity IEC 61000-4-3
- Electrical Fast Transient IEC 61000-4-4
- Lightning Effects IEC 61000-4-5
- Conducted Immunity IEC 61000-4-6
- Mains Frequency Magnetic Field IEC 61000-4-8
- Voltage Dips and Variations IEC 61000-4-11
- Powerline Harmonics IEC 61000-3-2
- Voltage Fluctuations and Flicker IEC 61000-3-3

Federal Communications Commission Statement

Part 15:

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Part 68: Answer-Supervision Signaling

Allowing this equipment to be operated in a manner that does not provide proper answer-supervision signaling is in violation of Part 68 rules. This equipment returns answer-supervision signals to the public switched network when:

- answered by the called station,
- answered by the attendant, or
- routed to a recorded announcement that can be administered by the customer premises equipment (CPE) user.

This equipment returns answer-supervision signals on all direct inward dialed (DID) calls forwarded back to the public switched telephone network. Permissible exceptions are:

- A call is unanswered.
- A busy tone is received.
- A reorder tone is received.

Avaya attests that this registered equipment is capable of providing users access to interstate providers of operator services through the use of access codes. Modification of this equipment by call aggregators to block access dialing codes is a violation of the Telephone Operator Consumers Act of 1990.

REN Number

For MCC1, SCC1, CMC1, G600, and G650 Media Gateways:

This equipment complies with Part 68 of the FCC rules. On either the rear or inside the front cover of this equipment is a label that contains, among other information, the FCC registration number, and ringer equivalence number (REN) for this equipment. If requested, this information must be provided to the telephone company.

For G350 and G700 Media Gateways:

This equipment complies with Part 68 of the FCC rules and the requirements adopted by the ACTA. On the rear of this equipment is a label that contains, among other information, a product identifier in the format US:AAAEQ##TXXXX. The digits represented by ## are the ringer equivalence number (REN) without a decimal point (for example, 03 is a REN of 0.3). If requested, this number must be provided to the telephone company.

For all media gateways:

The REN is used to determine the quantity of devices that may be connected to the telephone line. Excessive RENs on the telephone line may result in devices not ringing in response to an incoming call. In most, but not all areas, the sum of RENs should not exceed 5.0. To be certain of the number of devices that may be connected to a line, as determined by the total RENs, contact the local telephone company.

REN is not required for some types of analog or digital facilities.

Means of Connection

Connection of this equipment to the telephone network is shown in the following tables.

For MCC1, SCC1, CMC1, G600, and G650 Media Gateways:

Manufacturer's Port Identifier	FIC Code	SOC/REN/ A.S. Code	Network Jacks
Off premises station	OL13C	9.0F	RJ2GX, RJ21X, RJ11C
DID trunk	02RV2-T	0.0B	RJ2GX, RJ21X
CO trunk	02GS2	0.3A	RJ21X
	02LS2	0.3A	RJ21X
Tie trunk	TL31M	9.0F	RJ2GX
Basic Rate Interface	02IS5	6.0F, 6.0Y	RJ49C
1.544 digital interface	04DU9-BN	6.0F	RJ48C, RJ48M
	04DU9-IKN	6.0F	RJ48C, RJ48M
	04DU9-ISN	6.0F	RJ48C, RJ48M
120A4 channel service unit	04DU9-DN	6.0Y	RJ48C

For G350 and G700 Media Gateways:

Manufacturer's Port Identifier	FIC Code	SOC/REN/ A.S. Code	Network Jacks
Ground Start CO trunk	02GS2	1.0A	RJ11C
DID trunk	02RV2-T	AS.0	RJ11C
Loop Start CO trunk	02LS2	0.5A	RJ11C
1.544 digital interface	04DU9-BN	6.0Y	RJ48C
	04DU9-DN	6.0Y	RJ48C
	04DU9-IKN	6.0Y	RJ48C
	04DU9-ISN	6.0Y	RJ48C
Basic Rate Interface	02IS5	6.0F	RJ49C

For all media gateways:

If the terminal equipment (for example, the media server or media gateway) causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice is not practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

The telephone company may make changes in its facilities, equipment, operations or procedures that could affect the operation of the equipment. If this happens, the telephone company will provide advance notice in order for you to make necessary modifications to maintain uninterrupted service.

If trouble is experienced with this equipment, for repair or warranty information, please contact the Technical Service Center at 1-800-242- 2121 or contact your local Avaya representative. If the equipment is causing harm to the telephone network, the telephone company may request that you disconnect the equipment until the problem is resolved.

A plug and jack used to connect this equipment to the premises wiring and telephone network must comply with the applicable FCC Part 68 rules and requirements adopted by the ACTA. A compliant telephone cord and modular plug is provided with this product. It is designed to be connected to a compatible modular jack that is also compliant. It is recommended that repairs be performed by Avaya certified technicians.

The equipment cannot be used on public coin phone service provided by the telephone company. Connection to party line service is subject to state tariffs. Contact the state public utility commission, public service commission or corporation commission for information.

This equipment, if it uses a telephone receiver, is hearing aid compatible.

Canadian Department of Communications (DOC) Interference Information

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

This equipment meets the applicable Industry Canada Terminal Equipment Technical Specifications. This is confirmed by the registration number. The abbreviation, IC, before the registration number signifies that registration was performed based on a Declaration of Conformity indicating that Industry Canada technical specifications were met. It does not imply that Industry Canada approved the equipment.

Declarations of Conformity

United States FCC Part 68 Supplier's Declaration of Conformity (SDoC)

Avaya Inc. in the United States of America hereby certifies that the equipment described in this document and bearing a TIA TSB-168 label identification number complies with the FCC's Rules and Regulations 47 CFR Part 68, and the Administrative Council on Terminal Attachments (ACTA) adopted technical criteria.

Avaya further asserts that Avaya handset-equipped terminal equipment described in this document complies with Paragraph 68.316 of the FCC Rules and Regulations defining Hearing Aid Compatibility and is deemed compatible with hearing aids.

Copies of SDoCs signed by the Responsible Party in the U. S. can be obtained by contacting your local sales representative and are available on the following Web site: http://www.avaya.com/support.

All Avaya media servers and media gateways are compliant with FCC Part 68, but many have been registered with the FCC before the SDoC process was available. A list of all Avaya registered products may be found at: http://www.part68.org by conducting a search using "Avaya" as manufacturer.

European Union Declarations of Conformity

CE

Avaya Inc. declares that the equipment specified in this document bearing the "CE" (*Conformité Europeénne*) mark conforms to the European Union Radio and Telecommunications Terminal Equipment Directive (1999/5/EC), including the Electromagnetic Compatibility Directive (89/336/EEC) and Low Voltage Directive (73/23/EEC). This equipment has been certified to meet CTR3 Basic Rate Interface (BRI) and CTR4 Primary Rate Interface (PRI) and subsets thereof in CTR12 and CTR13, as applicable.

Copies of these Declarations of Conformity (DoCs) can be obtained by contacting your local sales representative and are available on the following Web site: http://www.avaya.com/support.

Japan

This is a Class A product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may occur, in which case, the user may be required to take corrective actions.

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FAX 1.800.457.1764 or 1.207.626.7269

Write: Globalware Solutions
200 Ward Hill Avenue
Haverhill, MA 01835 USA
Attention: Avaya Account Management

E-mail: totalware@gwsmail.com

For the most current versions of documentation, go to the Avaya support Web site: http://www.avaya.com/support.

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About this book

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

The information in this book is intended for use by:

- Trained field installation and maintenance personnel
- Technical support personnel
- Network engineers and technicians
- Design center personnel
- Sales associates
- Business partners

Overview

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

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

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

Conventions used in this book

Become familiar with the following terms and conventions. They help you use this book with your Avaya Communication Manager.

- Commands are printed in bold face as follows: **command**.

  We show complete commands in this book, but you can usually type an abbreviated version of the command. For example, **list configuration station** can be typed as **list config sta**.

- Screen displays and names of fields are printed in constant width as follows: `screen display`.

  A screen is any form displayed on your computer or terminal monitor.

- Variables are printed in italics as follows: *variable*.
- Keys and buttons are printed as follows: KEY.
- To move to a certain field, you can use the TAB key, arrows, or the ENTER key (the ENTER key may appear as the RETURN key on your keyboard).
- If you use terminal emulation software, you need to determine what keys correspond to ENTER, RETURN, CANCEL, HELP, NEXT PAGE, etc.
- In this book we use the terms “telephone” and “voice terminal” to refer to phones.
- We show commands and screens from the newest release of Communication Manager and refer to the most current books. Please substitute the appropriate commands for your system and refer to the manuals you have available.
- If you need help constructing a command or completing a field entry, remember to use HELP.
  - — When you press HELP at any point on the command line, a list of available commands appears.
  - — When you press HELP with your cursor in a field on a screen, a list of valid entries for that field appears.
- The status line or message line can be found near the bottom of your monitor display. This is where the system displays messages for you. Check the message line to see how the system responds to your input. Write down the message if you need to call our helpline.
- When a procedure requires you to press ENTER to save your changes, the screen you were working on clears and the cursor returns to the command prompt.

  The message line shows “`command successfully completed`” to indicate that the system accepted your changes.

Systems and circuit packs

- The word “system” is a general term encompassing all references to an Avaya media server or gateway running Communication Manager.
- Circuit pack codes (for example, TN780 or TN2182B) are shown with the *minimum acceptable* alphabetic suffix (like the “B” in the code TN2182B). Generally, an alphabetic suffix higher than that shown is also acceptable. However, not every *vintage* of either the minimum suffix or a higher suffix code is necessarily acceptable. A suffix of “P” means that firmware can be downloaded to that circuit pack.
- The term “cabinet” refers to the external casing (shell) of an MCC1, SCC1, CMC1, G600, or G650 Media Gateway. Circuit packs are installed in the cabinet in a specific carrier (row) and in a specific slot within that carrier.
- The designation “***UUCSSpp***” refers to the location (address) of a circuit pack in cabinet-carrier-slot order. In this address designation, ***UU*** is the cabinet number, ***C*** is the carrier letter, ***SS*** is the slot number of a specific circuit pack, and ***pp*** (if applicable) is a specific port on the circuit pack. A sample address for port 4 on a circuit pack on an MCC1 Media Gateway might look like this: 02A0704.
- A G700 or G350 Media Gateway uses media modules instead of circuit packs. The media module address is designated as ***XXX*****V*****Spp***, where ***XXX*** is the administered number of the G700 or G350 Media Gateway, **V*****S*** is the slot number of a specific media module location on the G700 or G350 Media Gateway, and ***pp*** (if applicable) is a specific port on the media module. The **V** is not a variable and needs to be included in the command exactly where shown. A sample address for port 4 on an MM711 Media Module on a G700 Media Gateway might look like this: 002V304. An S8300 Media Server, if installed in a G700 or G350 Media Gateway, must be in location V1.

Admonishments

Admonishments in this book have the following meanings:

Tip:
Draws attention to information that you may find helpful.

NOTE:
Draws attention to information that you must heed.

CAUTION:
Denotes possible harm to software, possible loss of data, or possible service interruptions.

WARNING:
Denotes possible harm to hardware or equipment.

DANGER:
Denotes possible harm or injury to your body.

SECURITY ALERT:
Indicates when system administration may leave your system open to toll fraud.

Physical dimensions

- All physical dimensions in this book are in English units (feet [ft]) followed by metric (centimeter [cm]) in parenthesis.
- Wire gauge measurements are in AWG followed by the diameter in millimeters in parenthesis

Antistatic protection

WARNING:
To minimize electrostatic discharge (ESD), always wear an authorized wrist ground strap. Connect the strap to an approved ground, such as an unpainted metal surface, ***before*** *handling circuit packs, media modules, or any components.*

Remove/install circuit packs

CAUTION:
Do not *remove or install control circuit packs (circuit packs with white labels) when the power is on in an MCC1 Media Gateway. Damage may occur. Make sure the power is off before removing or installing control circuit packs. Port circuit packs (circuit packs with gray labels—older version circuit packs had purple labels) can be safely removed or installed when the power is on.*

Do not remove or install media modules when the power is on in a G700 or G350 Media Gateway. Damage may occur. Make sure the power is off before removing or installing a media module.

Security

To ensure the greatest security possible, Avaya offers services that can reduce toll fraud liabilities. Contact your Avaya representative for more security information.

Login security is an attribute of the Communication Manager software. Advise customers that their existing passwords expire 24 hours after the upgrade. Also explain that the new passwords must conform to strict requirements.

System administrators must keep network addresses confidential. A PPN or any endpoint masquerading as a PPN on the ATM network can seize that EPN and control it if that EPN is not already connected to its proper PPN.

Standards compliance

The equipment in this document complies with the following standards (as applicable):

- ITU-T (Formerly CCITT)
- ECMA
- ETSI
- IPNS
- DPNSS
- National ISDN-1
- National ISDN-2
- ISO-9000
- ANSI
- FCC Part 15 and Part 68
- EN55022
- EN50081
- EN50082
- UNI 3.1
- CISPR22
- Australia AS3548 (AS/NZ3548)
- Australia AS3260
- IEC 825
- IEC 950
- UL1459

- UL 1950
- CSA C222 Number 225
- TS001
- ILMI 3.1

LASER product

The Avaya Media Gateway may contain a Class 1 LASER device (IEC 825 1993) if single-mode fiber optic cable is connected to a remote expansion port network (EPN). The LASER device operates within the following parameters:

Power output	Wavelength	Mode field diameter
-5 dBm	1310 nm	8.8 mm

DANGER:

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Contact your Avaya representative for more information.

Notice on DEFINITY® Server R

The UN331C processor server circuit pack used in the DEFINITY Server R will not be sold after November 3, 2003. The UN331C processor server circuit pack cannot be upgraded to Avaya Communication Manager 2.0, but upgrades to Avaya Communication Manager 1.3.x will be sold until November, 2004. Please consult "Upgrades and Additions for Avaya DEFINITY Server R," 555-233-115, for information about upgrading to Communication Manager 1.3.

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If you have internet access, you can view and download the latest version of this book. To view the book, you must have a copy of Acrobat Reader.

To access the latest version:

1. Access the Avaya Web site at http://www.avaya.com/support/.
2. Click **Product Documentation**.
3. In the Search Product Documentation dialog box, type the ID number of this book (**555-233-116**) and click **Search**.
4. Find the latest issue number, then click the book title.
5. Download this book.

How to get help

If you need additional help, the following resources are available. You may need to purchase an extended service agreement to use some of these resources. See your Avaya representative for more information.

- If you are within the United States, go to the Avaya Web site at http://www.avaya.com/support/ for support telephone numbers. Click *Escalation Lists*, which includes escalation phone numbers within specific regions of the United States.
- For all international resources, contact your local Avaya authorized dealer for any additional help and questions.

Tell us what you think

Let us know what you like or don't like about this book. Although we can't respond personally to all your feedback, we promise we will read each response we receive.

Write to us at:	Avaya Inc. Product Documentation Group 1300 W. 120th St. Westminster, CO 80234 USA
Fax to:	303-538-1741
Send email to:	document@avaya.com

Sources of Information on Adjuncts

1

This chapter lists documents you can use for installation of some of the key adjunct systems that can connect to Avaya DEFINITY® and Media Servers.

Call Management System

For information on installing Call Management System R3V11, see the following:

- *Avaya Call Management System (CMS) R3V11 Software Installation, Maintenance, and Troubleshooting Guide*, 585-215-117
- *Avaya Call Management System (CMS) Sun® Enterprise™ 3000 and SPARCserver Computers Hardware Maintenance and Troubleshooting*, 585-214-016
- *Avaya Call Management System (CMS) Sun Enterprise 3500 Computer Hardware Installation, Maintenance, and Troubleshooting*, 585-215-873
- *Avaya Call Management System (CMS) Sun Ultra™ 5 Hardware Installation, Maintenance and Troubleshooting,* 585-215-871

INTUITY AUDIX Messaging Systems

For information on installing INTUITY™ AUDIX® Messaging systems, see one of the following:

- 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.
- For IA770 INTUITY AUDIX Messaging, see *IA 770 INTUITY AUDIX R1.1 Installation Instructions and Checklist*, 585-313-159, on the *Avaya S8300, S8500, and S8700 Media Server Library* CD-ROM, 555-233-825.

Avaya Modular Messaging System

For information on installing Avaya Modular Messaging systems, see *Modular Messaging Release 1 Documentation CD-ROM*, 585-310-819.

ASAI and DEFINITY LAN Gateway

For information on 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.

Avaya Interactive Response

For information on installing Avaya Interactive Response systems, see *Avaya Interactive Response R1.2 Install and Troubleshooting Guide*, 585-313-168 on the *Avaya Interactive Response R1.2 Documentation CD.*

Property Management Systems

For information on installing property management systems, see *Guestworks® and DEFINITY Systems Technician Handbook for Hospitality Installations*, 555-231-743.

Call Accounting Systems

For information on installing Call Accounting Systems, see one of the following:

- For INTUITY Call Accounting System, see *INTUITY AUDIX R5 Call Accounting System User Guide*, 585-310-780.
- 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 information on installing DEFINITY Wireless Business System, see *DEFINITY Wireless Business System Installation and Test*, 555-232-102.

Terminal server installation

2

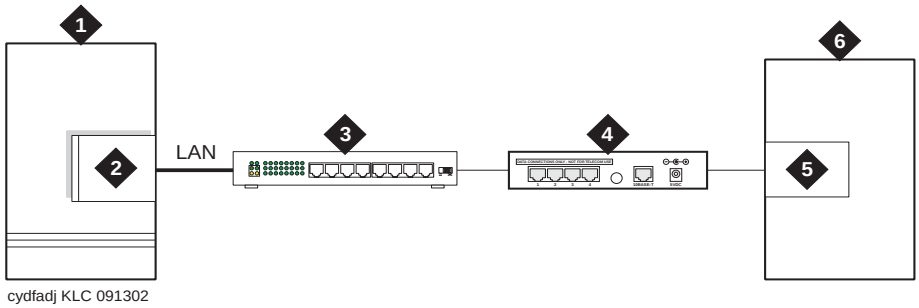
Overview

This chapter provides information on connecting adjunct equipment to the C-LAN circuit pack, or to a G700 or G350 Media Gateway with an S8300 Media Server, using a terminal server (Figure 1). 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. Property management systems (PMS), system printers, 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 1. Switch-to-adjunct LAN connectivity through a terminal server



cydfadj KLC 091302

1. switch
2. C-LAN circuit pack, or IP connection on an S8300/G700 or G350 configuration
3. 10/100Base-T Hub (optional)
4. terminal server
5. serial port
6. CDR adjunct

Installing and administering the terminal server

Make sure you have all the equipment on site before the installation. You must have the hardware listed in Table 1.

Table 1. 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
NA	RJ45 UTP Category 5 modular cords	1–2	Customer
NA	451A in-line RJ45 adapters, as needed to connect modular cords together		

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+ using a PC or laptop at the local site
- Test the connectivity back through the switch

Distance limits

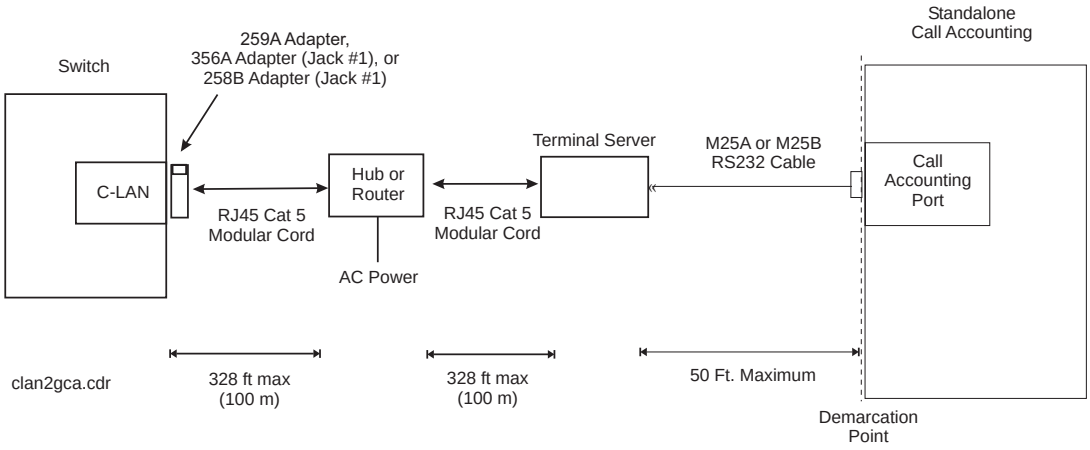
The distance limit from the switch to the LAN hub is 328 feet (100 meters). The distance limit from the LAN hub to the terminal server is 328 feet (100 meters). If installed, the limit from the terminal server to the adjunct is 50 feet (15 meters).

However, to achieve greater distance limits, the switch's LAN hub/router may be connected to a WAN and the hub/router for the terminal server also connected to the same WAN.

Cabling diagram

Figure 2 shows the connection between the terminal server port and a call accounting system.

Figure 2. Stand-alone call accounting system link using a terminal server

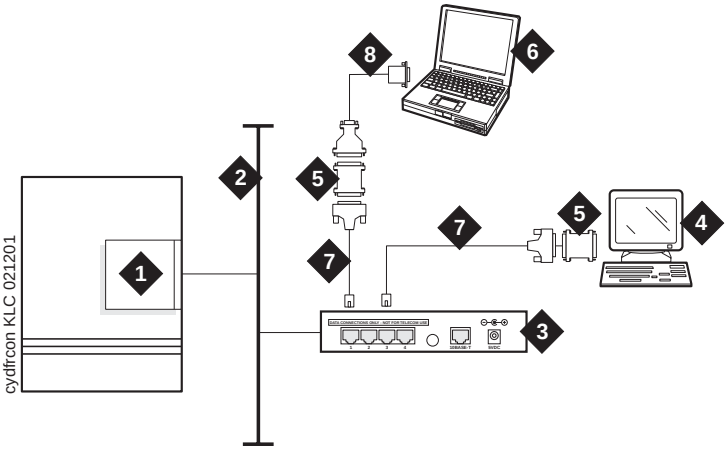


NOTE:
You can connect the C-LAN circuit pack directly to the terminal server with a data crossover cable. This connection eliminates the need for a hub or router in the middle, but the connection also allows the C-LAN circuit pack and the terminal server to communicate only with each other. With this connection, the C-LAN circuit pack and the terminal server should 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 3.

Figure 3. Connecting an adjunct to the IOLAN+



1. C-LAN circuit pack, or IP connection on an S8300/G700 or G350
2. Local area network (LAN)
3. IOLAN+ 104 terminal server
4. Adjunct (system management terminal or a system printer, for example)
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 adjunct's connections, you may not need all of 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 may 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 computer's COM port, you may not need all of 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 beginning the initial administration, make sure you have the following information:

- New IP address and subnet mask for IOLAN+
- Host name for IOLAN+
- IP address of C-LAN Ethernet interface
- Port number of C-LAN 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 on **File > Properties > Connect** tab. In the Connect using: field, select **COM *n***, where ***n*** is the communication port your computer is using.
3. Click on 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

Refer to the IOLAN+ user guide for details. In general,

- 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.

```
Name: port 2                  CONNECTIONS MENU                      Terminal: 2


                        Connection      Host

                           1            *** FREE ** === Commands ===
                           2            *** FREE ** | Telnet     ^T|
                           3            *** FREE ** | Rlogin    ^R|
                           4            *** FREE ** | Port      ^P|
                                                    | Admin mode ^A|
                                                    | CLI          |
                                                    | Lock         |
                                                    | Logout    ^D|
                                                    ================




_____________________________________________________________________________


IOLAN PLUS v4.02.00 a CDi                                             iolan
```

3. Under Connection select Port 1 (the port to which the adjunct is connected) and press ENTER to 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 re-initialize the IOLAN+ so it knows it's 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 re-initialize the IOLAN+ so it knows it's 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 (locally) to the IOLAN+ (see Figure 3).

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]

_____________________________________________________________________________
```

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 DEFINITY or 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.

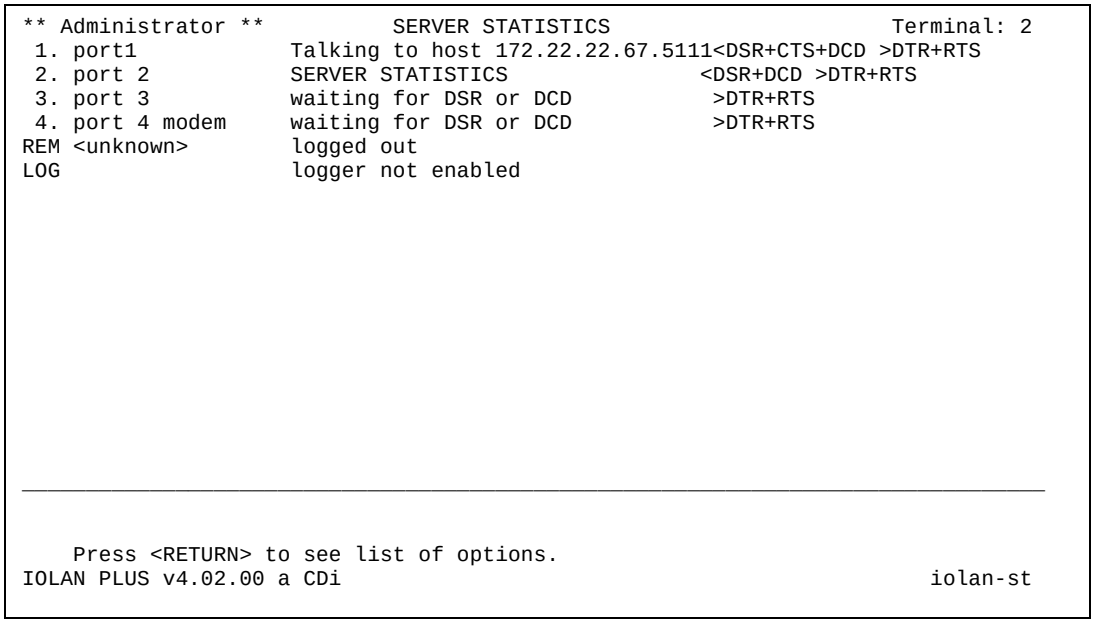
    At this point, you have established a connection path from the adjunct through the IOLAN+ to the C-LAN circuit pack.

Testing

1. On the system management terminal, press ENTER to get the login prompt to the DEFINITY or 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 appears, log back into 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 see if there is any traffic. If not, check all your connections and administration fields.



After you have successfully administered and validated the connection between the adjunct and the C-LAN circuit pack through the IOLAN+, you can 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. See ''Rebooting the IOLAN+'' on page 30 for instructions.

Administering IP node names

You must administer the IP addresses of the C-LAN board, any adjunct that connects directly to the LAN, the terminal server (if appropriate), and the PC running the Reliable Session-Layer Protocol (if appropriate). You use the Node Names screen to do this.

1. Type **change node-names ip** and press RETURN.
2. Enter the name and the IP address of the C-LAN board, as well as 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, enter **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, enter the node name for the switch. In this example, **switch-clan** is the local node. This applies to DEFINITY servers, S8500 Media Servers, and S8700 Media Servers. For an S8300 Media Server, enter **procr**.
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, enter 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, enter 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 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. Type **n** in the `Reliable Protocol` field 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)

3

This chapter provides information on connecting call detail recording (CDR) equipment to a DEFINITY Server (such as an MCC1 Media Gateway) or an S8100 Media Server, S8500 Media Server, S8700 Media Server, or S8300 Media Server.

Connecting CDR Equipment

The interface between an Avaya media server and CDR equipment may be a:

- C-LAN card (DEFINITY Server, S8500 Media Server, or S8700 Media Server)

  CDR equipment connects to the CLAN board on an MCC1 or G650 Media Gateway through a TCP/IP connection (that is, an Ethernet connection). Any CDR equipment that supports the Reliable Session Protocol will support a direct TCP/IP connection. A CDR application that supports an RS232 interface can also connect to the CLAN through a terminal server (see Chapter 2, ‘‘Terminal server installation’’ for more information on connecting through a terminal server).

- Processor Ethernet Connection (S8300 Media Server)

  CDR equipment connects to one of the two IP connections (EXT 1 or EXT 2) on the front of the G700 or G350 Media Gateway. As with C-LAN connections, the CDR adjunct may be a terminal server or a CDR application using RSP.

- Collection from file (S8100 Media Server, DEFINITY One, or IP600)

  See Chapter 3, “Set Up Call Detail Recording” in *Installation and Upgrades for the Avaya S8100 Media Server with the Avaya G600 and the Avaya CMC1 Media Gateways*, 555-233-146.

NOTE:
A printer or customer premises equipment (CPE) can also be used as the output receiving device. Please see Chapter 2, ‘‘Terminal server installation’’ of this book for instructions on using a printer.

Administering CDR Data Collection

NOTE:
To send CDR data via CLAN or a processor Ethernet interface 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 could 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 (see ‘‘Administering IP node names’’ on page 34), and do the following:

   a. Enter the CDR adjunct’s name from step 1 in the Name field.

   b. Enter the CDR adjunct’s IP address in the IP Address field.

3. Access the IP Services screen in Communication Manager (see ‘‘Administering IP services’’ on page 35), and do the following:

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

   b. In the Remote Node field, enter the node name you assigned to the CDR adjunct in step 2.

   c. In the Remote Port field, enter the port number used by the CDR adjunct determined in step 1.

   NOTE:
   Enter **procr** in the Local Node field for an S8300 Media Server. Otherwise, enter **switch-clan**.

4. Go to Page 3 and do the following:

   a. Enter **y** in the Reliable Protocol field if you have a CDR application using RSP. Enter **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 39.

Administering CDR parameters

You must administer CDR parameters to let the system know that the adjunct is connected through TCP/IP. For details on all fields on the CDR System Parameters screen, see *Administrator’s Guide for Communication Manager*, 555-233-506.

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

   The CDR System Parameters screen appears.

```
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, enter a format specific to the call accounting system, if necessary. In the example, **unformatted** is used. If you were sending data directly to a printer, you would 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's Guide for Avaya Communication Manager*.

Reliable Data Transport Tool (RDTT) Package

Avaya provides this free software application to help vendors and customers develop CDR applications that use the reliable session protocol to collect CDR data from an Avaya Media Server. The Reliable Data Transport Tool (RDTT) is a testing tool and thus is not supported by Avaya.

Contents of the RDTT

The RDTT package consists of the following:

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

  This application is designed to help you test the reliable session protocol without use of an Avaya Media Server.
- The Server application (Server.exe)

  This application is designed to help you 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 16, “Collecting Billing Information,” in *Administrator’s Guide for Avaya™ Communication Manager,* 555-233-506.
- “Call Detail Recording” in Chapter 21, “Features and Technical Reference” in *Administrator’s Guide for Avaya™ Communication Manager*.
- ‘‘Connecting printers using TCP/IP’’ on page 51.

Multimedia communications

4

This chapter provides information on connecting the following equipment to:

- Wideband endpoints
- Multimedia call handling (MMCH)

NOTE:
The information in this chapter does not apply to the G700 or G350 Media Gateway configurations.

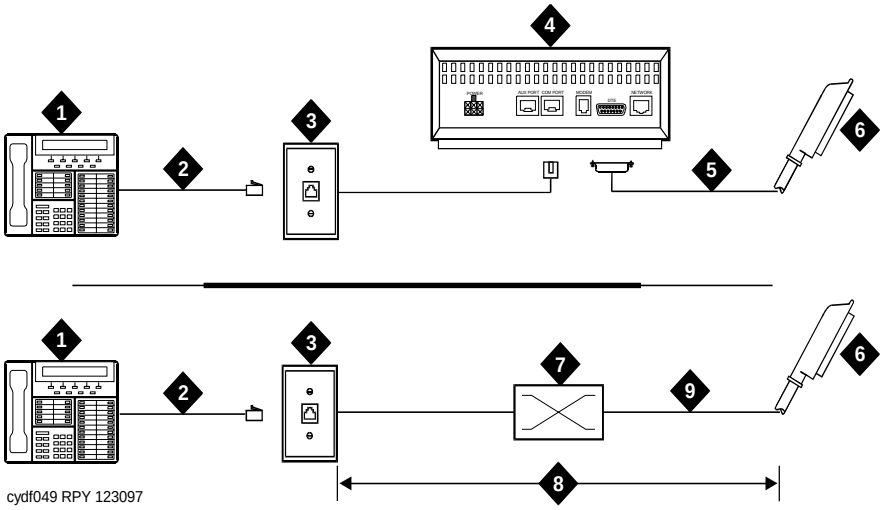
Wideband endpoints

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 may 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 4. The maximum distance depends on the type of cable and type of endpoint.

Figure 4. Typical nonsignaling wideband configuration



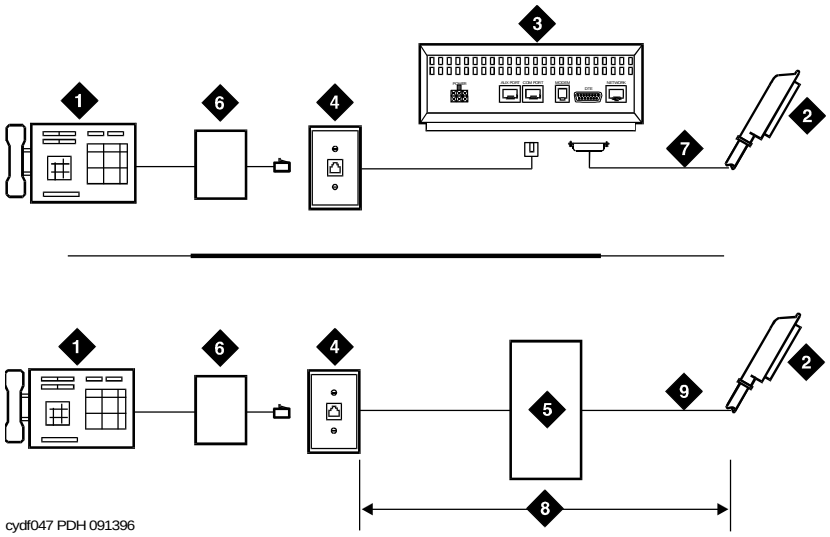
1. Wideband endpoint (wire per manufacturer)
2. Modular cord
3. 103A or modular wall jack
4. Channel service unit (CSU)
5. H600-307 cable to DTE connector on CSU
6. DS1/E1 circuit pack
7. Main distribution frame (MDF)
8. Distance limit depends on cable and endpoint type.
9. A25D 25-pair cable (male-to-male)

If using a CSU, the distance between connections may 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 5 shows connections with and without a CSU.

Figure 5. Typical signaling wideband configuration



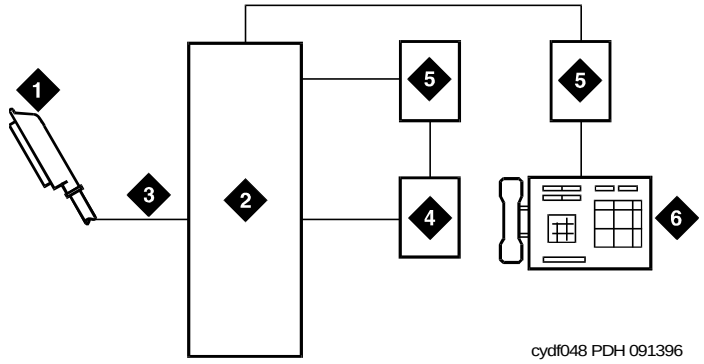
1. Wideband endpoint (wire per manufacturer)
2. To DS1/E1 circuit pack
3. Optional channel service unit (CSU)
4. 103A or modular wall jack
5. Part of main distribution frame
6. Bandwidth controller
7. H600-307 cable to DTE connector on CSU
8. Distance limit depends on cable type and bandwidth controller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

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

- For non-CSU installations, cross the transmit and receive lines so a transmit signal from the DS1/E1 circuit pack connects to the receive connection on the bandwidth controller and 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 6 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 6. Typical signaling wideband configuration with remote port module



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 so a transmit signal from the TN464F connects to the receive connection on the bandwidth controller and 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)

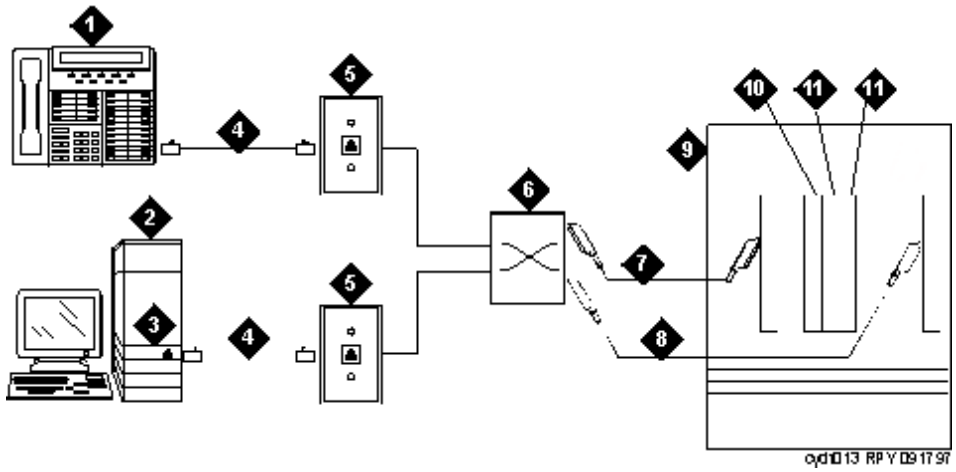
MMCH provides a single point to point conference call using voice, video, and data from one endpoint to another. The customer must have endpoints and a personal computer with H.320 desktop video installed.

Connect the endpoints

Use the following procedure and Figure 7 to connect the endpoints:

NOTE:
For a G700 or G350 Media Gateway configuration, the DCP telephones that are supported — item 1 in Figure 7 — are only 2 wire.

Figure 7. Typical multimedia call handling connections



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

NOTE:
The NT1 adapter (item #8) is not used with a MM720 BRI module. The NT1 is a 2/4 converter unit, and the MM720 currently only supports 4-wire trunking.

In items #7 and #8 above, the connection to both an MM712 DCP media module and to an MM720 BRI media module is not a 25-pair cable but rather an RJ45 cable.

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. Refer to the tables at the end of this chapter for the pinout of the digital line circuit pack.
3. Connect the PC BRI adapter to any BRI port on the Avaya Media Server. Refer to the tables at the end of this chapter for the pinout of an ISDN BRI circuit pack.

Administer the system

1. Call INADS and notify the representative that the `Multimedia Call Handling (MMCH)?` field on page 2 of the customer-options form must be changed to **y**.
2. Logoff the terminal and then log back on the terminal to see your changes.

Administer the endpoints

1. Log in and enter **add data-next** <or a valid extension number>.
2. The data module form appears. On page 1 of the form, enter the `Data Extension`: **xxxx,** `Type`: **7500**, the `Name`: user's name (such as ProShare), and enter **y** in `Multimedia?` field.
3. On page 2 of the form, enter **n** in the `XID?` field, and enter **n** in the `MIM Support?` field and press Enter.

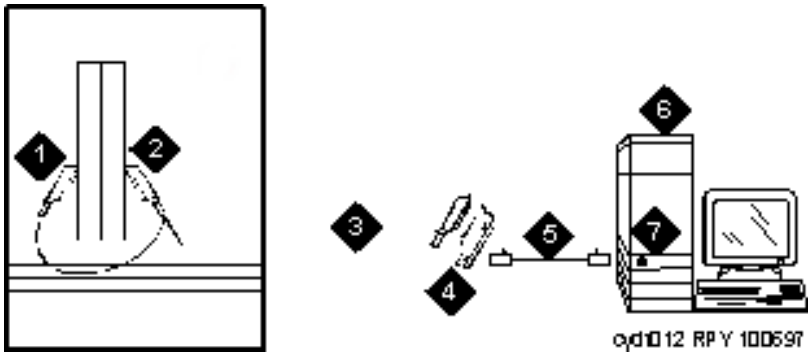
Administer one number complex

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, type the data extension number in the `MM Complex Data Ext:` field.
4. On screen 2, type **y** in the `H.320 Conversion?` field and press Enter.
5. Type **y** in the `Multimedia Early Answer field` 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 8. Typical multimedia call handling ESM connections



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 8 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

1. Enter **list configuration all,** and a list of the installed carriers, circuit packs, and ports appears.
2. Record the location (board number) of the new circuit packs and verify that all other required circuit packs (refer to ‘‘ESM installation’’) are present.
3. Enter **add DS1 xxxxx,** (where xxxxx is the location of the TN2207 PRI circuit pack recorded in step 2), and the DS1 circuit pack administration form appears.
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 must be the slot for port B of the Y-cable.
16. `The MMI Interface: field` **ESM** appears.
17. Enter **add signaling-group next** and the signaling-group form appears.
18. Change `Associated Signaling`: field to **y.**
19. Change `Primary D-Channel Port`: field to **xxxx17** (where xxxx is the address of the TN2207 PRI circuit pack, for example: 1B0517).
20. The `Max Number of NCA TSC`: default is `0.`
21. The `Max Number of GA TSC`: default is `0.`
22. `Trunk Group for NCA TSC`: ____ (leave blank)
23. `Trunk Group for Channel Selection`:____ (leave blank)
24. Logoff 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 enter the following commands from the system administration terminal:

1. **Status esm**
2. **Status signaling-group**
3. **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.

Refer to ‘‘Expansion services module’’ on page 48 for further information.

Printers

5

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

Connecting printers using TCP/IP

Printers can be connected 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) and providing the initial administration. For connecting a printer to a G700 or G350 Media Gateway, see Chapter 2, ‘‘Terminal server installation’’ for more information.

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 34.
- ‘‘Administering IP services’’ on page 35.
- ‘‘Administering adjunct parameters’’ on page 52.
- If you are using a terminal server, also complete ‘‘Installing and administering the terminal server’’ on page 24.
- If you are using a PC with the Downloadable RSP Tool, complete ‘‘Using the downloadable reliable session-layer protocol (RSP) tool’’ on page 52.

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 RETURN.

   The Feature-Related System Parameters screen appears.

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 for to find and correct problems with 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 (journal-link pms-log and wakeup-log, and sp-link) and release (journal-link pms-log and wakeup-log, and sp-link) commands.

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 may 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 to an output device that connects to the switch over an asynchronous TCP/IP link. The Downloadable RDTT tool allows you to implement this protocol on a PC that collects data records in a file. The protocol assures that the data records arrive safely at the PC. You can then send the output file to a printer. See ‘‘Reliable Data Transport Tool (RDTT) Package’’ on page 40.

DS1/T1 CPE loopback jack

6

This chapter provides information on how to install and use a DS1 loopback 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. It should always be available for remote tests of the DS1 span.

NOTE:
For G700 or G350 Media Gateway systems, the channel service unit (CSU) is integrated within the MM710 board. This means that there is no need for a separate external device. For earlier media gateway systems, the integrated channel service unit (ICSU) — also known as the 120A2 — is a separate device that plugs into the back of the media gateway.

For G700 or G350 Media Gateway systems, the loopback jack isolates the MM710 internal CSU from the DC power and properly loops the DC span power.

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.

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 as shown in Figure 9 and Figure 10.

If there is an extended demarcation point and the smart jack is not accessible, install the loopback jack as shown in Figure 11 and Figure 12.

If there is an extended demarcation point, but the smart jack is accessible, install the loopback jack as shown in Figure 13 and Figure 14.

1. To install the loopback jack, simply disconnect the RJ-48 (8-wide) connector at the appropriate interface point and connect the loopback jack in series with the DS1 span. See Figure 9 through Figure 18.
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. This is not a test tool and should always be available to remotely test a DS1 span.

Without a smart jack

Install the loopback jack at the point where the cabling 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 to provide maximum coverage for loopback jack tests. Refer to Figure 15 through Figure 18.

1. To install the loopback jack, simply disconnect the RJ-48 (8-wide) connector at the appropriate interface point and connect the loopback jack in series with the DS1 span. See Figure 9 through Figure 18.
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. This is not a test tool and should always be available to remotely test a DS1 span.

Administering the loopback jack

1. At the management terminal, enter **change ds1 *location***, where ***location*** is the DS1 interface circuit pack corresponding to the loopback jack.
2. Be sure the **near-end CSU** type is set to **integrated**.
3. On page 2 of the form, 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 and allows the technician to determine that the facility is available for remote testing.
4. Enter **save translation** 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 3 sections (see Figure 9, through Figure 14):

- From the 120A2 (or later) ICSU, or from the MM710, to the loopback jack
- From the loopback jack to the smart jack (network interface point)
- From the smart jack to the CO

The first 2 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 powers-up the loopback jack and 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 terminates the test.

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

Checking the integrity of local equipment

Before you go any further, make sure 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 ***XXX*****VS** for ***UUCSS*** in the following command, where ***XXX*** is the administered number of the G700 or G350 (for example, 002), and **V*****S*** is the slot number on the G700 or G350 of the Media Module (for example, 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. 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***, where ***UU*** is the cabinet number, ***C*** is the carrier letter, and ***SS*** is the slot number of the DS1 board.

Administering the DS1 for the test

1. At the management terminal, open the DS1 administration form. 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. Make sure that the **near-end csu type** field is set to **integrated**.
3. Change to page 2 of the DS1 administration form, 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*VS** for ***UUCSS*** in the following command, where ***XXX*** is the administered number of the G700 or G350 (for example, 002), and **V*S*** is the slot number on the G700 or G350 of the Media Module (for example, 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, enter **test ds1-loop *UUCSS* cpe-loopback-jack**, where ***UU*** is the cabinet number, ***C*** is the carrier letter, and ***SS*** is the slot number of the DS1 board.

   The loopback jack powers up. 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 may be a fault in the wiring between the ICSU and the loopback jack or the loopback jack may itself be faulty. Isolate the problem by replacing the loopback jack and repeating Step 1.

3. If **FAIL** still appears after the loopback jack has been replaced, 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 (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 ***XXX*VS** for ***UUCSS*** in the following commands, where ***XXX*** is the administered number of the G700 or G350 (for example, 002), and **V*S*** is the slot number on the G700 or G350 of the Media Module (for example, V3). The **V** is not a variable and needs to be included in the commands exactly where shown. A sample address for a DS1 circuit pack on a G700 or G350 Media Gateway might look like this: 002V3.

1. Zero out the bit-error counter. At the management terminal, enter **clear meas ds1 loop *UUCSS***, where ***UU*** is the cabinet number, ***C*** is the carrier letter, and ***SS*** is the slot number of the DS1 board.
2. Zero out the performance measurement counter. At the management terminal, enter **clear meas ds1 log *UUCSS***, where ***UU*** is the cabinet number, ***C*** is the carrier letter, and ***SS*** is the slot number of the DS1 board.
3. Zero out the ESF error count. At the management terminal, enter **clear meas ds1 esf *UUCSS***, where ***UU*** is the cabinet number, ***C*** is the carrier letter, and ***SS*** is the slot number of the DS1 board.

Running the data test

NOTE:
If you have a G700 or G350 Media Gateway, substitute ***XXX*VS** for ***UUCSS*** in the following command, where ***XXX*** is the administered number of the G700 or G350 (for example, 002), and **V*S*** is the slot number on the G700 or G350 of the Media Module (for example, 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. Display the bit error count. At the management terminal, enter **list meas ds1 sum *UUCSS***, where ***UU*** is the cabinet number, ***C*** is the carrier letter, and ***SS*** is the slot number of the DS1 board.
2. Step through Table 2 to troubleshoot.

Table 2. 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 tries.	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 each time 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 may 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 until you are certain. 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, where ***XXX*** is the administered number of the G700 or G350 (for example, 002), and **V*S*** is the slot number on the G700 or G350 of the Media Module (for example, V3). The **V** is not a variable and needs to be included in the commands exactly where shown. A sample address for a DS1 circuit pack on a G700 or G350 Media Gateway might look like this: 002V3.

3. Once you are fairly certain that the test is reporting no errors (after at least 1 error-free minute), confirm that the 3-in-24 pattern error detector is operating. Enter **test ds1-loop *UUCSS* inject-single-bit-error**, where ***UU*** is the cabinet number, ***C*** is the carrier letter, and ***SS*** is the slot number of the DS1 board.

4. Display the bit error count again. At the management terminal, enter **list meas ds1 sum *UUCSS***, where ***UU*** is the cabinet number, ***C*** is the carrier letter, and ***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. Enter **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 re-run the test.
Loopback termination still fails.	Replace the DS1 circuit pack, and repeat the test
The DS1 cannot frame on the incoming span's signal after the loopback jack power down.	There is something wrong with the receive signal into the loopback jack from the dumb block or the smart jack.
The span failed the service provider's loopback test.	The problem is in the service provider's network.

Condition	Solution
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.
You cannot locate and repair the problem in the time available and must terminate the test.	The test will not terminate normally in the absence of a good framing signal. You have to reset the circuit pack. Enter **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, where ***XXX*** is the administered number of the G700 or G350 (for example, 002), and **V*S*** is the slot number on the G700 or G350 of the Media Module (for example, 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.
The test terminated normally.	Proceed with ''Restoring DS1 administration''.

Restoring DS1 administration

NOTE:
If you have a G700 or G350 Media Gateway, substitute ***XXXVS*** for ***UUCSS*** in the following command, where ***XXX*** is the administered number of the G700 or G350 (for example, 002), and **V*S*** is the slot number on the G700 or G350 of the Media Module (for example, 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, open the DS1 administration form. Enter **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 form.
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 56.
4. Press ENTER to make the changes, CANCEL to quit without changes.

Releasing the DS1 circuit pack

NOTE:
If you have a G700 or G350 Media Gateway, substitute ***XXX*VS** for ***UUCSS*** in the following command, where ***XXX*** is the administered number of the G700 or G350 (for example, 002), and **V*S*** is the slot number on the G700 or G350 of the Media Module (for example, 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. Release the DS1 circuit pack. From the management terminal, enter **release board *UUCSS***, where ***UU*** is the cabinet number, ***C*** is the carrier letter, and ***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)

1. Have the service provider run a smart-jack loopback test against the network interface wiring that links the smart jack to the CO (section 3 in Figure 9 through Figure 14).
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 (Section 2 in the following 3 figures) using a loopback that overlaps this section of the span.

- 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 procedure below.

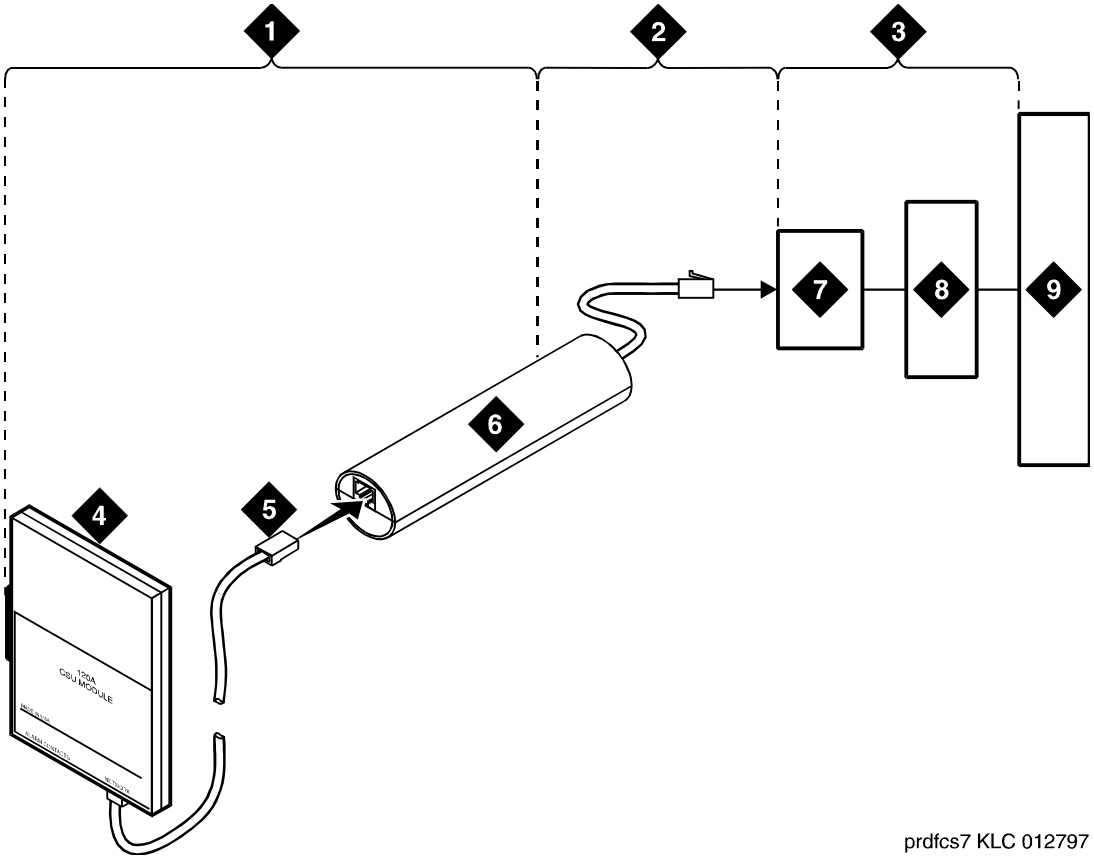
NOTE:
This test cannot isolate the problem if there are problems in the wiring between the far-end CO and the far-end ICSU. You must coordinate this test with the DS1 service provider.

NOTE:
If you have a G700 or G350 Media Gateway, substitute ***XXXVS*** for ***UUCSS*** in the following command, where ***XXX*** is the administered number of the G700 (for example, 002), and **V*S*** is the slot number on the G700 of the Media Module (for example, 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. From the management terminal, enter **test ds1-loop *UUCSS* far-csu-loopback-test-begin**, where ***UU*** is the cabinet number, ***C*** is the carrier letter, and ***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 57."
3. Terminate the test. Enter **test ds1-loop *location* end-loopback/span-test**.

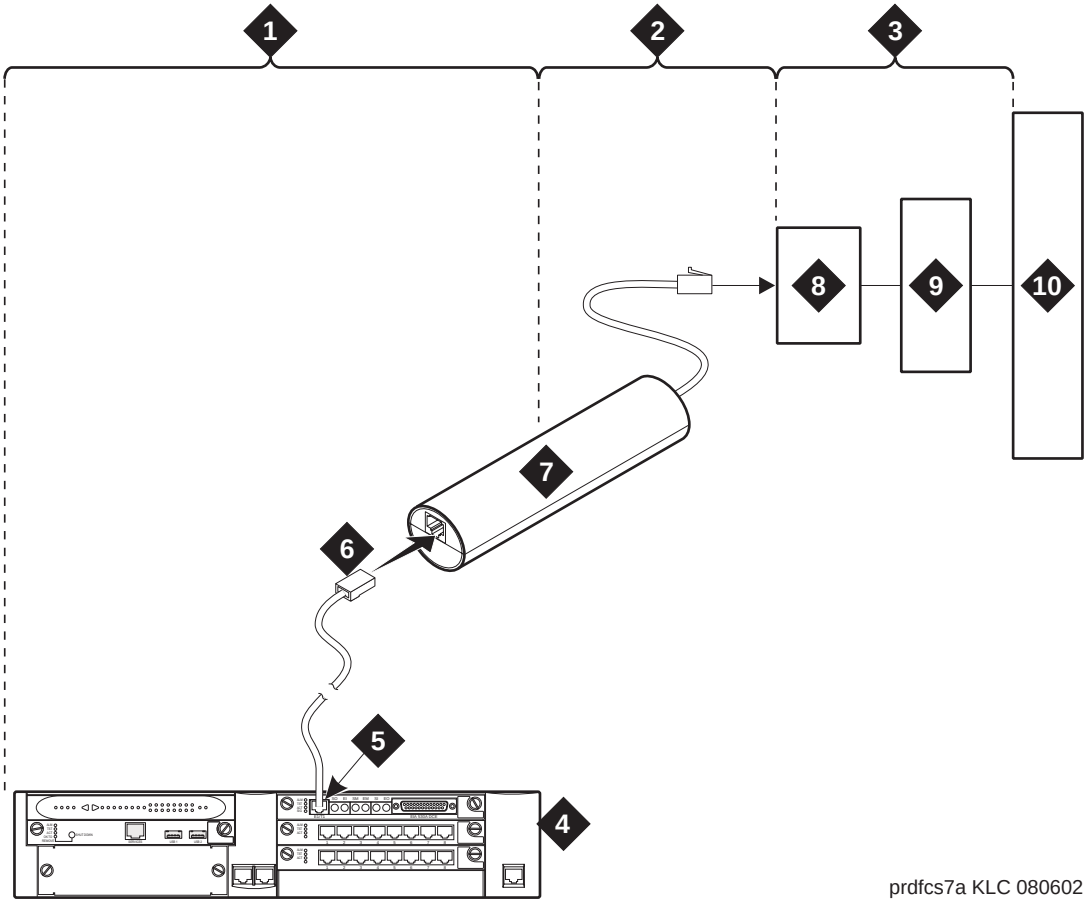
3. If the tests fails and the there were no problems ''Testing the DS1 span from the ICSU to the loopback jack'' or ''Testing the DS1 span from the smart jack to the network interface termination or fiber multiplexer (MUX)'', there is a problem between the loopback jack to the smart jack. Work with the service provider to isolate the fault.

Figure 9. Network interface at smart jack for a 120A2 (or later) ICSU



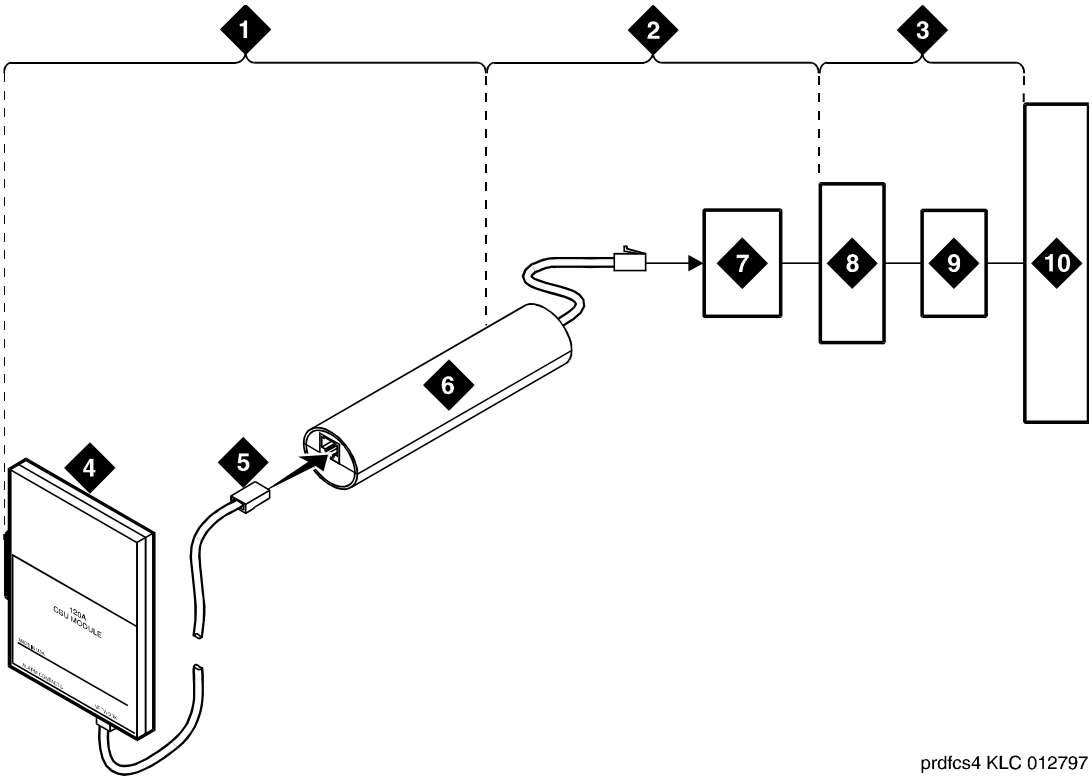
1. Span section 1
2. Span section 2
3. Span section 3
4. 120A2 (or later) ICSU
5. RJ-48 to network interface (up to 1000 ft. [305 m])
6. Loopback jack
7. Network interface smart jack
8. Interface termination or fiber multiplexer (MUX)
9. Central office

Figure 10. Network interface at smart jack for an MM710 multi-media module



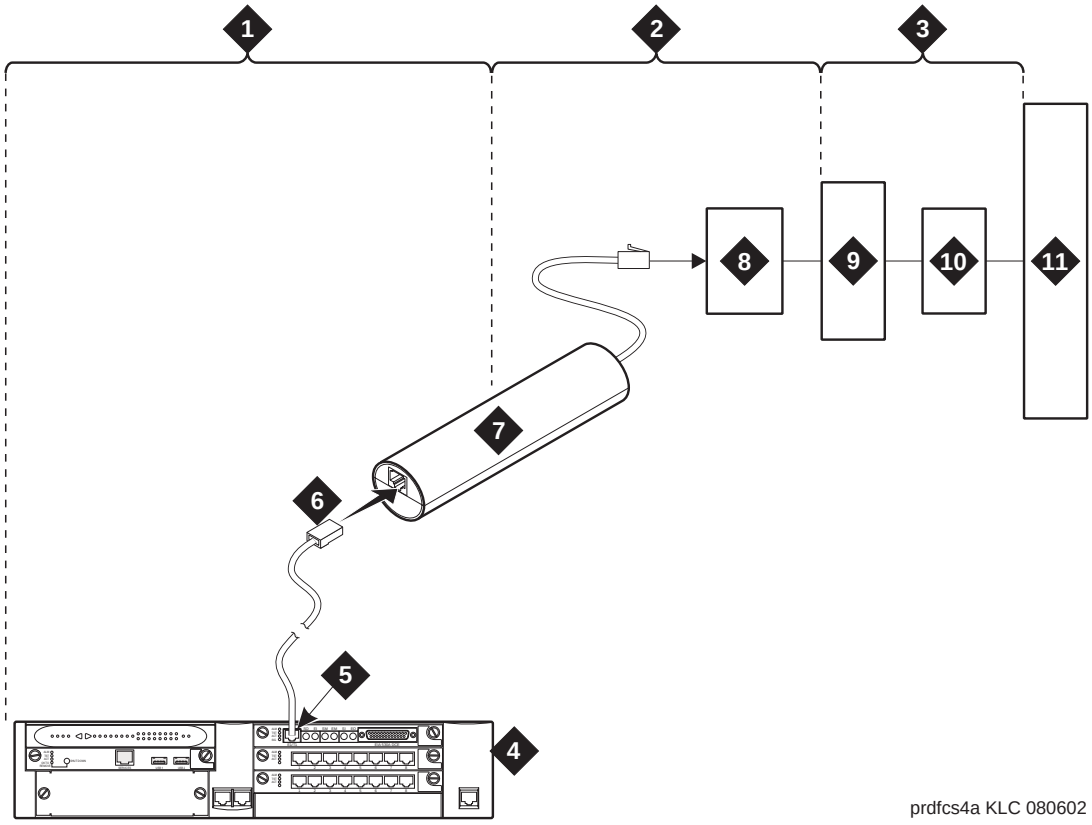
1. Span section 1
2. Span section 2
3. Span section 3
4. G700 or G350 Media Gateway
5. E1/T1 port on an MM710 multi-media module
6. RJ-48 to network interface (up to 1000 ft. [305 m])
7. Loopback jack
8. Network interface smart jack
9. Interface termination or fiber multiplexer (MUX)
10. Central office

Figure 11. Network interface at extended demarcation point (smart jack inaccessible) for a 120A2 (or later) ICSU



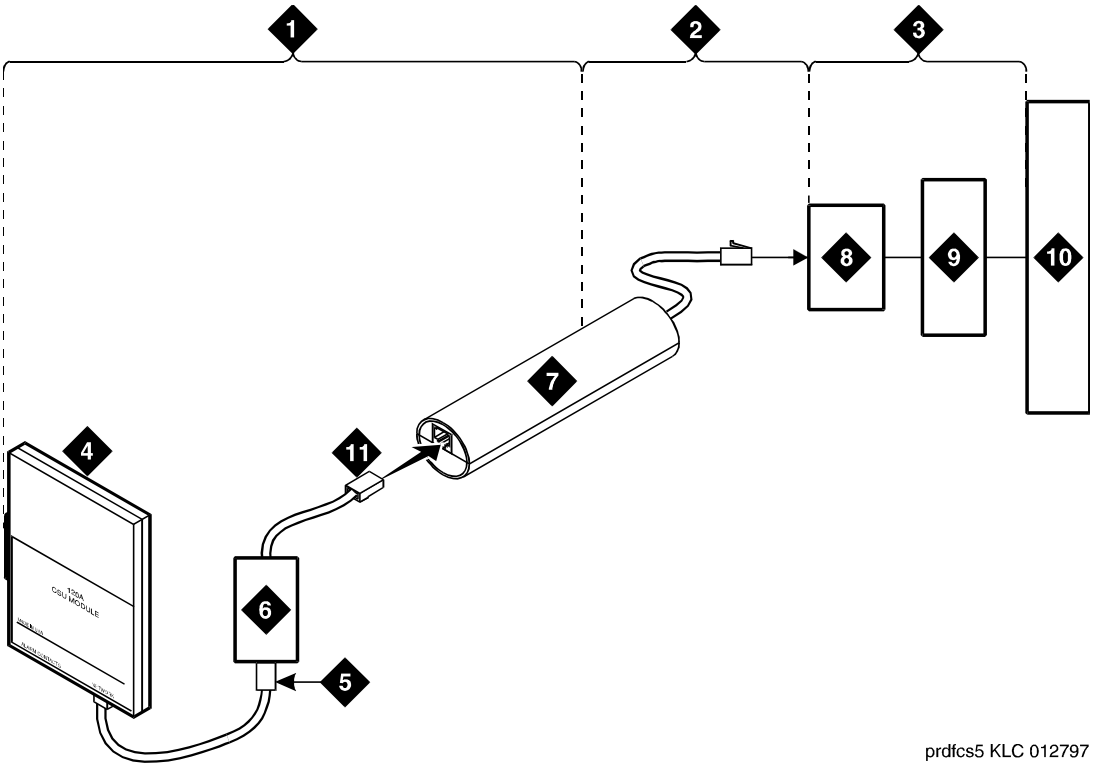
1. Span section 1
2. Span section 2
3. Span section 3
4. 120A2 (or later) ICSU
5. RJ-48 to network interface (up to 1000 ft. [305 m])
6. Loopback jack
7. Dumb block (extended demarcation)
8. Network interface smart jack
9. Interface termination or fiber multiplexer (MUX)
10. Central office

Figure 12. Network interface at extended demarcation point (smart jack inaccessible) for an MM710 multi-media module



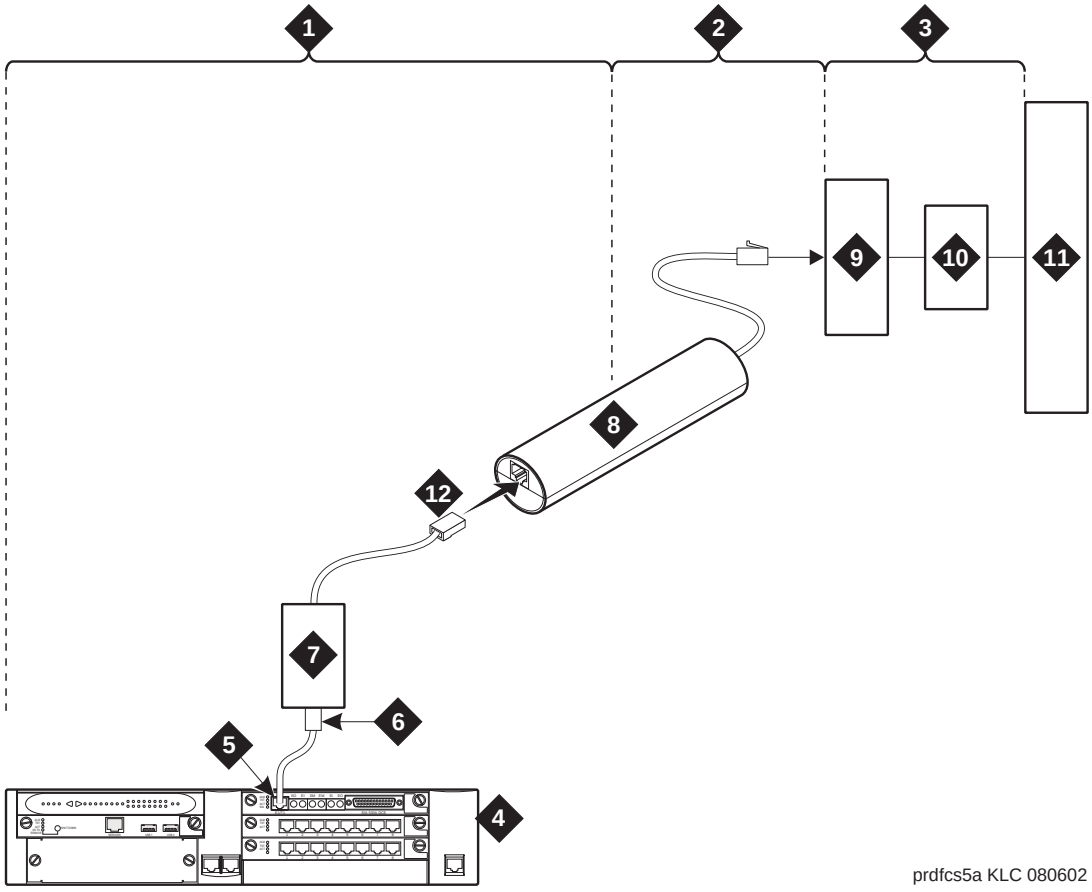
1. Span section 1
2. Span section 2
3. Span section 3
4. G700 or G350 Media Gateway
5. E1/T1 port on an MM710 multi-media module
6. RJ-48 to network interface (up to 1000 ft. [305 m])
7. Loopback jack
8. Dumb block (extended demarcation)
9. Network interface smart jack
10. Interface termination or fiber multiplexer (MUX)
11. Central office

Figure 13. Network interface at extended demarcation point (smart jack accessible) for a 120A2 (or later) ICSU



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

Figure 14. Network interface at extended demarcation point (smart jack accessible) for an MM710 multi-media module

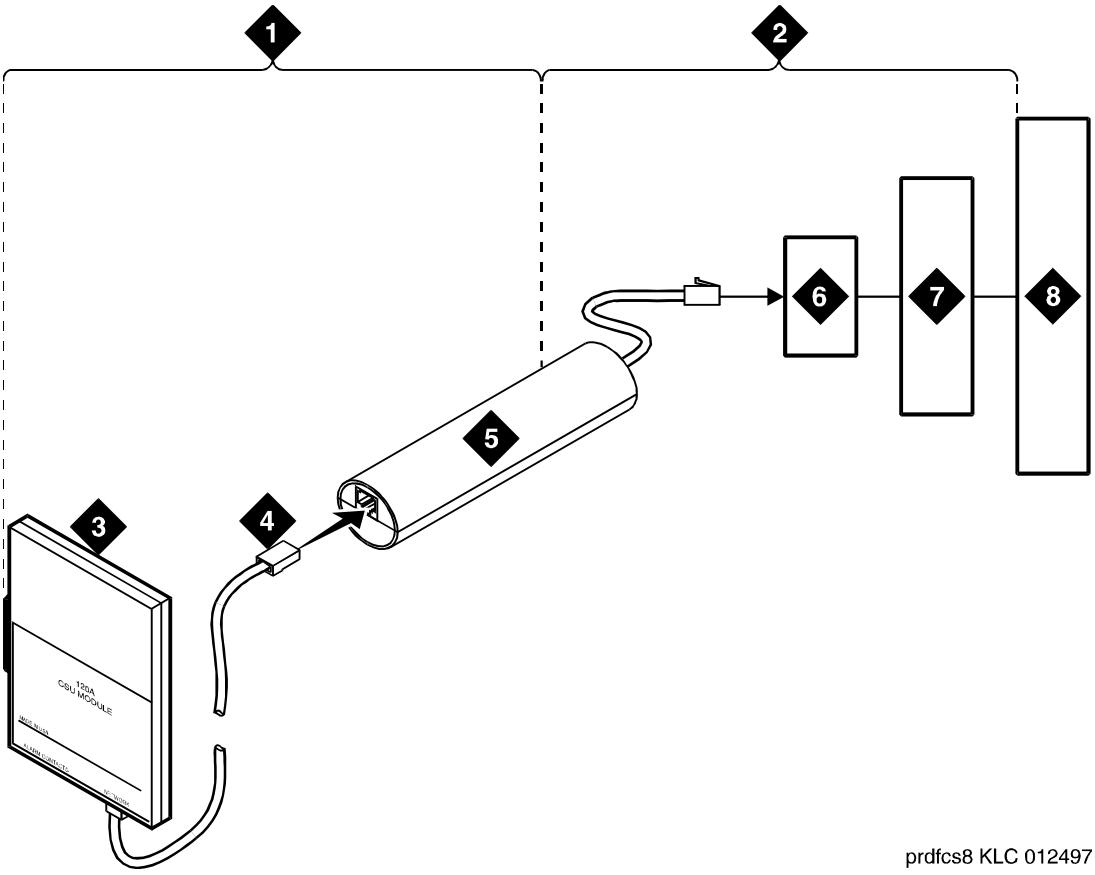


1. Span section 1
2. Span section 2
3. Span section 3
4. G700 or G350 Media Gateway
5. E1/T1 port on an MM710 multi-media module
6. RJ-48 to network interface (up to 1000 ft. [305 m])
7. Dumb block (extended demarcation)
8. Loopback jack
9. Network interface smart jack
10. Interface termination or fiber multiplexer (MUX)
11. Central office
12. Dumb block to smart jack RJ-48

Testing a loopback jack without a smart jack

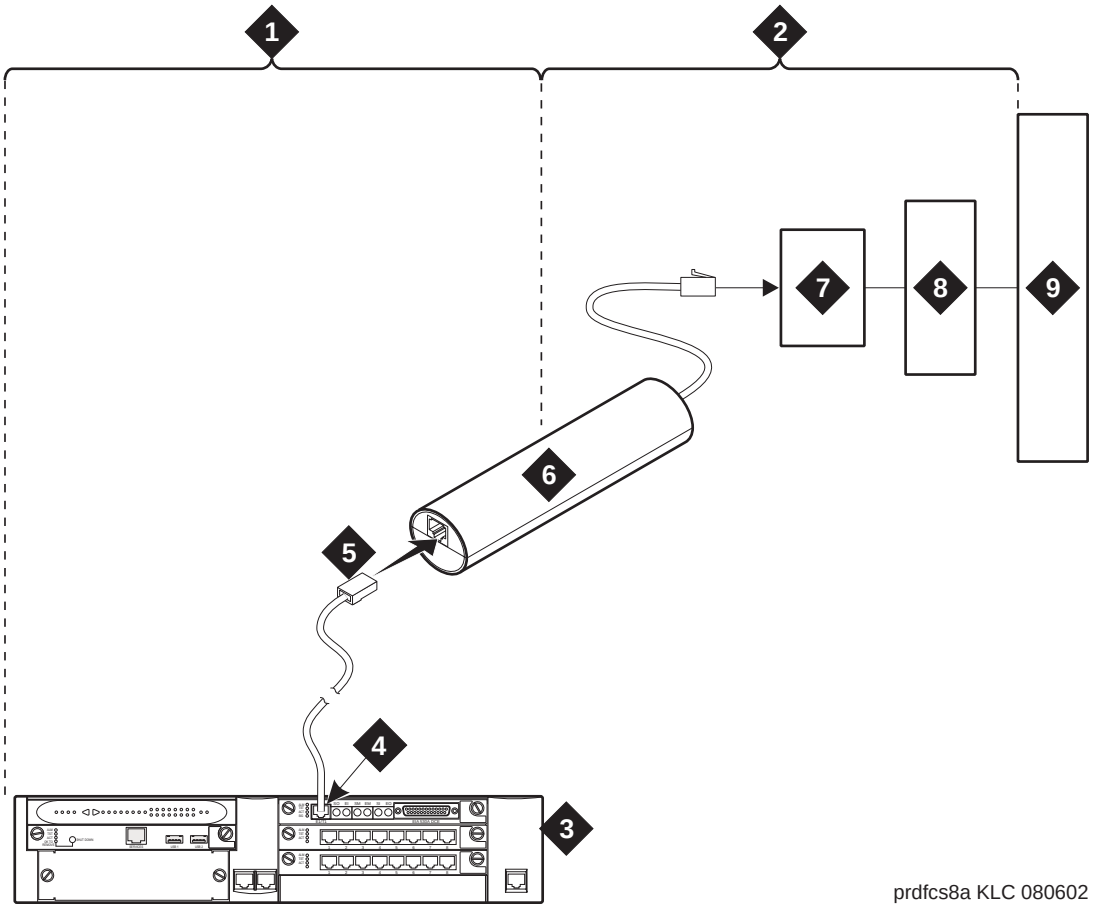
When the loopback jack is added to a span that does not contain a smart jack, the span is divided into 2 sections: from the ICSU, or from the MM710, to the loopback jack and from the loopback jack to the central office (CO). Section 2 includes the short cable from the loopback jack to the dumb block demarcation point (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 jack's loopback path. See Figure 15 through Figure 18.

Figure 15. Network interface at "dumb" block for a 120A2 (or later) ICSU



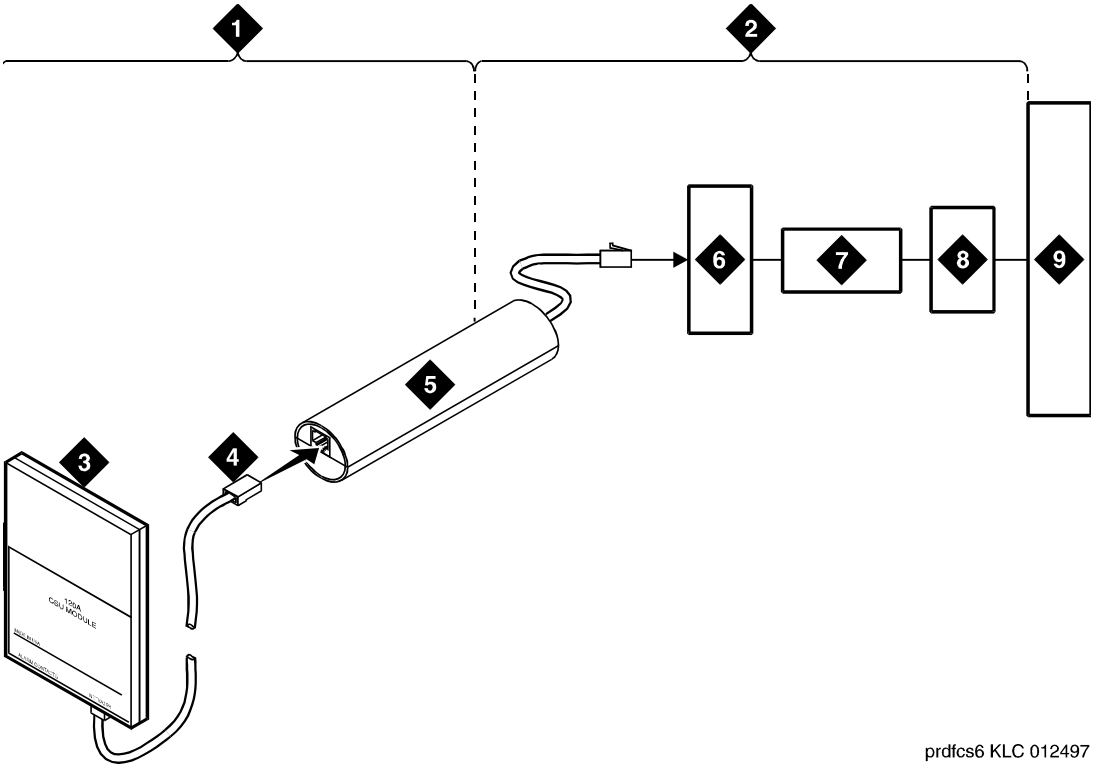
1. Span section 1
2. Span section 2
3. 120A2 (or later) ICSU
4. RJ-48 to network interface (up to 1000 ft. [305 m])
5. Loopback jack
6. Dumb block (demarcation point)
7. Interface termination or fiber multiplexer (MUX)
8. Central office

Figure 16. Network interface at "dumb" block for an MM710 multi-media module



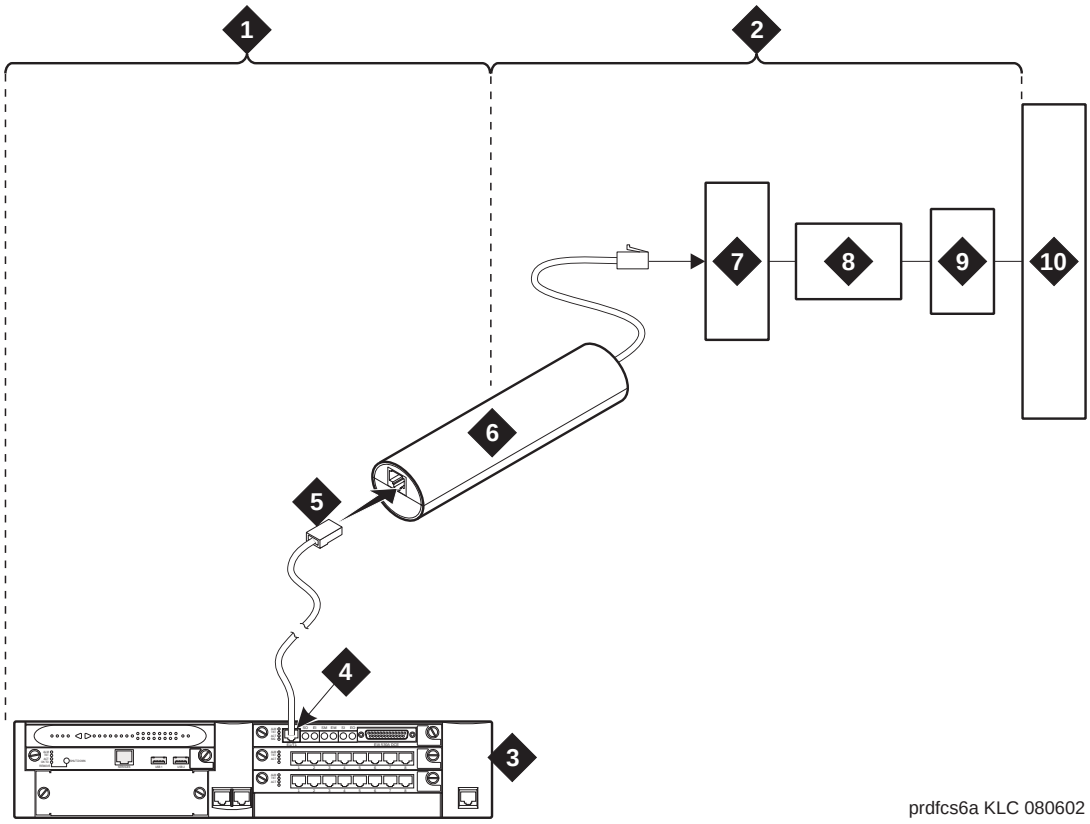
1. Span section 1
2. Span section 2
3. G700 or G350 Media Gateway
4. E1/T1 port on an MM710 multi-media module
5. RJ-48 to network interface (up to 1000 ft. [305 m])
6. Loopback jack
7. Dumb block (demarcation point)
8. Interface termination or fiber multiplexer (MUX)
9. Central office

Figure 17. Network interface at "dumb" block with repeater line to fiber MUX for a 120A2 (or later) ICSU



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

Figure 18. Network interface at "dumb" block with repeater line to fiber MUX for an MM710 multi-media module



1. Span section 1
2. Span section 2
3. G700 or G350 Media Gateway
4. E1/T1 port on an MM710 multi-media module
5. RJ-48 to network interface (up to 1000 ft. [305 m])
6. Loopback jack
7. Dumb block (demarcation point)
8. Repeater
9. Fiber multiplexer (MUX)
10. Central office

You are responsible for finding and correcting problems in the customer wiring (section 1 and the loopback cable portion of section 2). The DS1 service provider is responsible for finding and correcting problems in the majority of section 2.

Proceed as follows.

1. Test customer premises wiring from the ICSU, or from the MM710, 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 (section 2 in Figure 15 through Figure 18). This can be done using a loopback that “overlaps” the section of the span. Any of the following loopbacks can do this:
   - The local ICSU’s line loopback, which the DS1 service provider at the CO end typically activates, tests, and then deactivates.
   - The local DS1 interface’s payload loopback, which the DS1 service provider at the CO end activates and tests.
   - The far-end ICSU’s line loopback. Activate this test at the management terminal by entering **test ds1-loop *location* far-csu-loopback-test-begin**, where ***location*** is the DS1 interface circuit pack corresponding to the loopback jack. Terminate this test by entering **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 above tests (a, b, or c) indicate a problem in Section 2. This could mean bad loopback jack -to-”dumb” block cabling, but is more likely to indicate a problem somewhere between the “dumb” block and the CO. This is the responsibility of the DS1 service provider.

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

     1. Identify and contact the DS1 service provider.
     2. Inform the DS1 provider that loopback tests of the CPE wiring to the “dumb” block (section 1) showed no problems.
     3. If the far-end ICSU line loopback test failed, inform the DS1 provider.
     4. Request that the DS1 provider perform a loopback test of their portion of the Section 2 wiring by sending 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’s 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 customer premises DS1 wiring connects to an on-site fiber multiplexer (MUX) and allows wiring to the network interface point on the MUX to be remotely tested. For a G700 or G350 Media Gateway, this requires that the MM710 CSU be set so it can be used on DS1 wiring to the MUX.

Fiber MUXs can take the place of Interface termination feeds as shown in Figure 9 through Figure 16. Test these spans using the same procedures as metallic spans. Note the following points:

1. Fiber MUXs may have loopback capabilities that can the service provider can activate from the CO end. These may loop the signal back to the CO or back to the DS1 board. If the MUX provides the equivalent of a line loopback on the “problem” DS1 facility, activate it after a successful loopback jack test, and use it to isolate problems to the wiring between the loopback jack and the MUX.
2. Be aware that there are installations that use repeatered 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 0 (zero) volts DC. For pin numbers and pin designations, refer to *Integrated Channel Service Unit (ICSU) Installation and Operation*.

External modems

7

The following section assumes that you are using one of the recommended external modems. However, any locally obtained, type-approved external modem should work. Contact your Avaya representative for more information.

Recommended modems include:

- ‘‘Paradyne COMSPHERE 3810 Plus and 3811 Plus’’
- ‘‘Paradyne COMSPHERE 3910’’
- ‘‘U.S. Robotics modems’’ (various models)
- ‘‘Multi-Tech MT5634ZBA-USB-V92’’ (for an S8300. S8500, or S8700 configuration)
- ‘‘Multi-Tech MT5634ZBA-V92-GLOBAL’’ (for an S8500 or G350 configuration)

Hardware required when configuring modems

To configure many modems, you 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, you must 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.

Paradyne COMSPHERE 3810 Plus and 3811 Plus

Configuring the 3810 Plus and 3811 Plus modems

1. Install the modem as described in the vendor's documentation.
2. Attach a PC with terminal emulation software, as described in the vendor's documentation.
3. From the terminal, enter the following AT command string:

   AT&F&D2&S4\D3S2=128x7V2S7=60S85=1

4. Then enter the following command string:

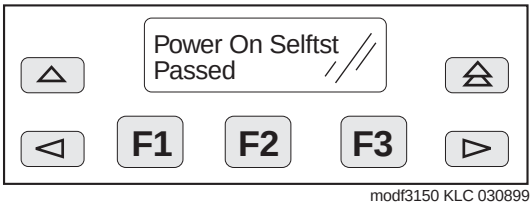
   ATY0S10=100S78=2M0E0\N1&W

   The modem is now configured.

Paradyne COMSPHERE 3910

You configure COMSPHERE 3910 modems using a front button panel (see Figure 19) or Hayes-compatible AT commands. For instructions on how to physically connect the modem and general configuration instructions, see the documentation that came with the modem. This document describes configuring the 3910 for particular, DEFINITY adjuncts.

Figure 19. COMPSPHERE 3910 modem, front panel



Configuring the 3910 for CMS

The COMSPHERE 3910 modem may be used as the Call Management System (CMS) Remote Console Modem or as a device that provides serial connectivity to CMS through the Network Terminal Server (NTS). For the instructions to set up the modem for use in CMS (other configurations may work as well), see one of the following:

- *Avaya™ Call Management System (CMS) Sun® Enterprise™ 3500 Computer Hardware Installation, Maintenance, and Troubleshootin*g, 585-215-873
- *Avaya™ Call Management System (CMS) Sun® Ultra™ 5 Computer Hardware Installation, Maintenance, and Troubleshooting*, 585-215-871

U.S. Robotics modems

Avaya recommends using the U.S. Robotics external modem for DEFINITY servers. For instructions on how to physically connect it and for general configuration instructions, see the documentation that came with the modem. This document describes configuring the modem for particular adjuncts.

Configuring U.S. Robotics modems

All configuration is done through hardware switches. Proceed as follows.

1. Set the DIP switches on the modem to match the settings listed in the table below (for switch locations, consult the documentation that came with the modem).

Table 3. U.S. Robotics External Modem Switch Settings

Switch	Setting	Function
1	OFF (Up)	DTR (Data Terminal Ready) override
2	OFF (Up)	Result codes
3	ON (Down)	Result codes
4	OFF (Up)	Keyboard command echo
5	ON (Down)	Auto answer
6	OFF (Up)	CD (Carrier Detect) override
7	OFF (Up)	Power-on and ATZ reset software defaults
8	ON (Down)	AT command recognition

Multi-Tech MT5634ZBA-USB-V92

Avaya recommends using a Multi-Tech USB modem, model MT5634ZBA-USB-V92, with an S8300/700, S8500, or S8700 configuration. This modem is used for sending alarms, as well as 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 may require settings specific to the country in which the modem will be used.

Multi-Tech MT5634ZBA-V92-GLOBAL

Avaya recommends using a Multi-Tech serial modem, model MT5634ZBA-V92-GLOBAL, with an S8500 media server or G350 media gateway.

For 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, the S8500 can be dialed up remotely to either turn power on or off. For more information, see *Installing the Avaya S8500 Media Server with an Avaya G650 Media Gateway*, 555-245-107.

For a G350, the Multi-Tech serial modem connects the G350 media gateway to an external trunk. This connection enables remote dial in capability for administration and troubleshooting. For more information, see *Installation of the Avaya G350 Media Gateway Controlled by an Avaya S8300, S8500, or S8700 Media Server*, 555-245-104.

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

You have to administer each modem that you attach to a DEFINITY server. For the S8300, S8500, and S8700 media servers, as well as the G700 and G350 media gateways, the Multi-Tech modems do not require administration if used in the United States. In non-US countries, these modems may require administration.

For the full range of modem options, see the *Administrator's Guide for Avaya Communication Manager*, 555-233-506. For DEFINITY server modem administration, see *Installation, Upgrades and Additions for Avaya CMC1 Media Gateways*, 555-233-118, or the *Made-Easy Tool for DEFINITY Server SI Upgrades and MCC1 or SCC1 Gateway Installations* on the *Avaya Communication Manager, Avaya DEFINITY® Servers and Avaya S8100 Media Server Library,* 555-245-801.

ISDN converters and adapters

8

This chapter provides information on ISDN converters and adapters that are sometimes necessary when connecting to coaxial facilities in either a multicarrier cabinet or a single carrier cabinet.

NOTE:
The information in this chapter does not apply to the G700 or G350 Media Gateway configurations.

Connections include:

- Integated 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)

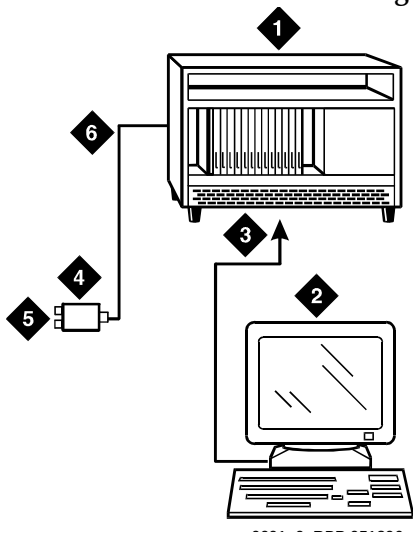
Converter circuit packs known as common channel signaling converter (CCSC), types 1 and 2.

Converters for single-carrier cabinets

PRI-to-DASS and PRI-to-DPNSS converters

Figure 20 shows typical connections from the CCSC-1 PRI-to-DASS converter or the CCSC-2 PRI-to-DPNSS converters to the coaxial facility.

Figure 20. Typical DASS or DPNSS converter cabling



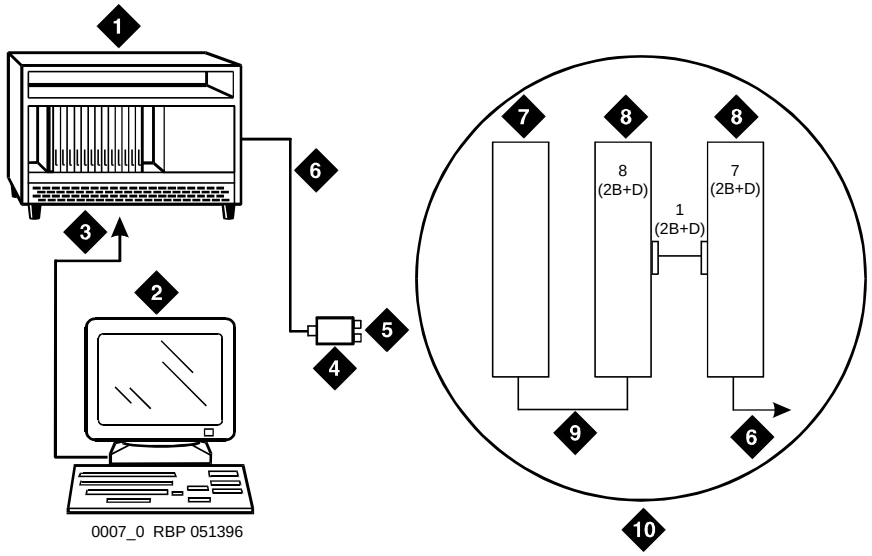
1. To TN464F DS1 circuit pack and either a CSCC-1 PRI-to-DASS converter or a CSCC-2 PRI-to-DPNSS converter circuit pack
2. Administration PC
3. RS-232 cable to front of PRI converter circuit pack
4. 888B coaxial converter
5. Coaxial connection to 2-Mbps facility
6. Coaxial cable from PRI converter circuit 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 21 shows typical connections from the PRI-to-BRI converter to the coaxial facility.

Figure 21. Typical PRI to BRI converter cabling



1. To TN464F DS1 circuit pack and PRI-to-BRI converter circuit pack
2. DEFINITY 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 DEFINITY administration PC to the RS-232 connector on the front of the PRI converter circuit pack.

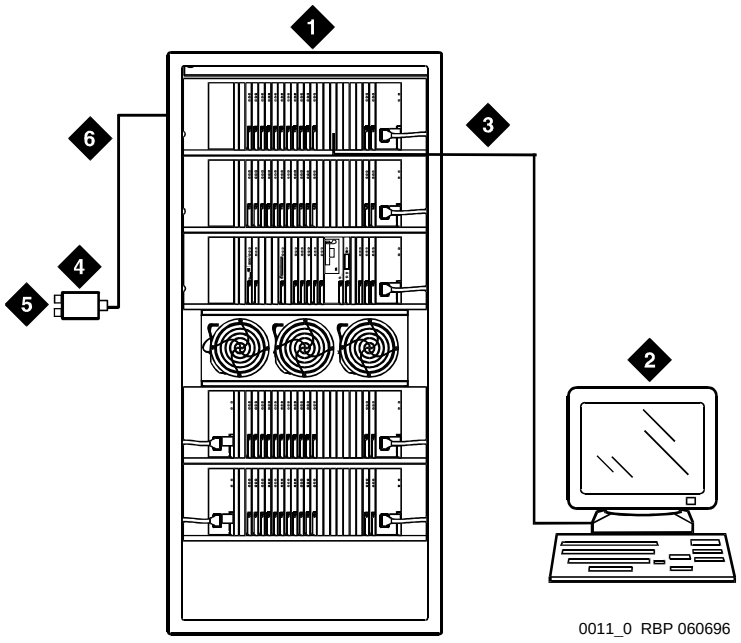
Converters for multi-carrier cabinets

PRI-to-DASS and PRI-to-DPNSS converters

1. Connect the DEFINITY administration PC to the RS-232 connector on the front of the PRI converter circuit pack.

   Figure 22 shows typical connections from the CCSC-1 PRI-to-DASS converter or the CCSC-2 PRI-to-DPNSS converters to the coaxial facility.

Figure 22. Typical DASS or DPNSS converter cabling

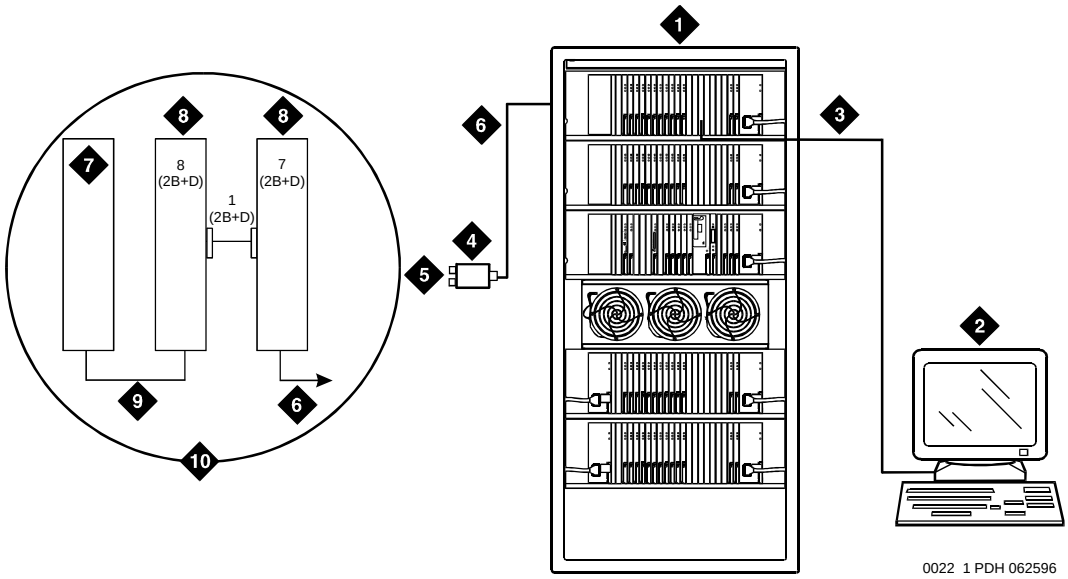


1. To TN464F DS1 circuit pack and either a CSCC-1 PRI-to-DASS converter or a CSCC-2 PRI-to-DPNSS converter circuit pack
2. DEFINITY administration PC
3. RS-232 cable to front of PRI converter circuit pack
4. 888B coaxial converter
5. Coaxial connection to 2-Mbps facility
6. Coaxial cable from PRI converter circuit pack to coaxial converter

PRI-to-BRI converter

Figure 23 shows typical connections from the PRI-to-BRI converter to the coaxial facility. The DEFINITY administration PC is connected to the RS-232 connector on the front of the PRI converter circuit pack.

Figure 23. Typical PRI to BRI converter cabling



1. TN464F DS1 circuit pack and PR-to-BRI converter circuit pack
2. DEFINITY 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.

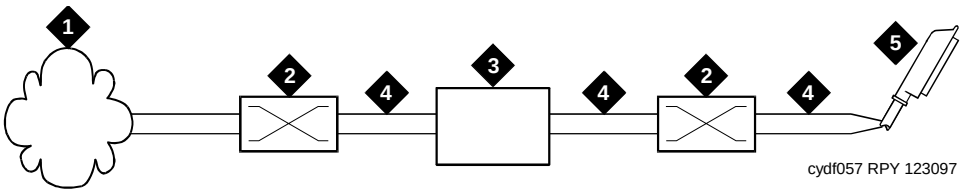
Busy tone disconnect equipment for non-U.S. installations

9

Necessary only for G700 or G350 Media Gateways, the customer-provided busy tone disconnect adjunct detects busy tone disconnects of incoming calls on loop-start, 2-wire, analog trunks. In some non-U.S. countries where a G700 or G350 Media Gateway is used, the PSTN sends busy tone as the disconnect signal. Therefore, the S8300 Media Server, G700 Media Gateway, or G350 Media Gateway requires a busy tone disconnect adjunct. Figure 24 shows typical connections.

NOTE:
DEFINITY Servers and S8500/S8700/S8100 Media Servers support the busy tone disconnect feature and do not require an adjunct. Therefore, a busy tone disconnect adjunct is recommended only for G700 and G350 Media Gateways.

Figure 24. Typical cabling for busy tone disconnect



1. Public switched telephone network
2. Main distribution frame
3. Busy tone disconnect device
4. Tip and ring wires
5. To loop-start, central-office, trunk MM711 analog media module

909A/B universal coupler

10

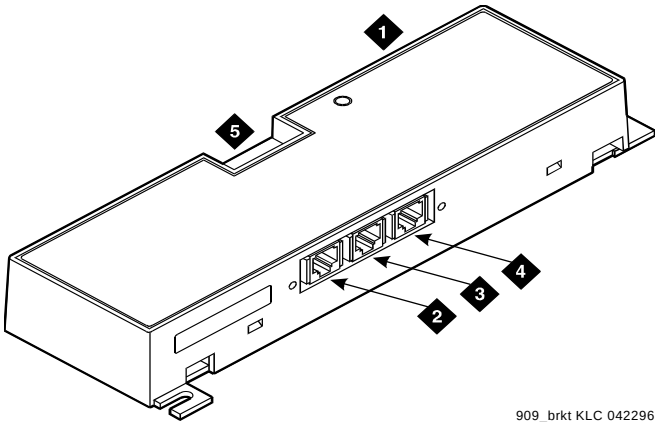
The 909A/B universal coupler is used with paging, malicious call trace, and music-on-hold equipment that is not approved for use with the public network.

NOTE:
The information in this chapter does not apply to the G700 or G350 Media Gateway configurations.

Figure 25 shows a typical 909A/B universal coupler. For additional installation and switch setting information, refer to *909A/909B Universal Coupler Installation Instructions*, which is normally shipped with the 909A/909B Universal Coupler.

NOTE:
If the music source is registered by the FCC (in the USA) or an equivalent body, the 909A/B universal coupler is not required.

Figure 25. Typical 909A/B universal coupler



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 4, Table 5, and Table 6. Refer to these tables when connecting music or paging equipment.

Table 4. 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 5. 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 busy-out control contact closure from music source
4	Blue	CR	Customer ring lead
5	White-Blue	CT	Customer tip lead
7	Green	COS2	Remote busy-out control contact closure from music source
7	White-Brown	CBS1/C1	Seizure indication provided to music source
8	Brown	CBS2/C2	Seizure indication provided to music source

CAUTION:

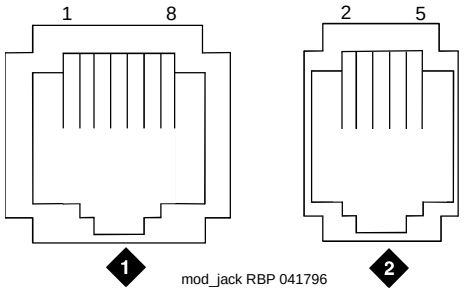
Do not *plug the cable into J3 before all cross-connects are completed. Damage to the 909A/B universal coupler may occur.*

Table 6. 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 26 shows the physical locations of the pins for J1, J2, and J3.

Figure 26. Typical modular jack pinout



1. J1 and J2 8-pin modular jacks
2. J3 7-pin modular jack

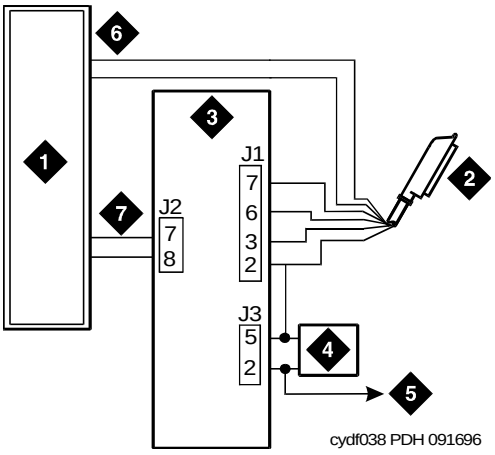
Malicious call trace

11

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 27. 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, so information in this chapter does not apply to these media gateways. But you can access MCT equipment connected to a port network.

Figure 27. Malicious call trace



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 additional installation information, refer to *909A/909B Universal Coupler Installation Instructions*, which is normally shipped with the 909A/909B Universal Coupler.

Music-on-hold

12

The music-on-hold (MOH) feature allows a caller to hear music when that caller is placed on hold. Depending on the media gateway, music-on-hold can be provided:

- through a two-wire TN2183 analog line circuit pack (or equivalent) or auxiliary trunk circuit pack to a customer-supplied music source on an MCC1, SCC1, CMC1, G600, or G650 Media Gateway.
- through a port on an MM711 Analog Media Module to a customer-supplied music source on a G700 Media Gateway.
- through a port on an MM711 Analog Media Module or MM714 Analog Media Module, or through a fixed analog port (LINE 1 or LINE 2) to a customer-supplied music source on a G350 Media Gateway.

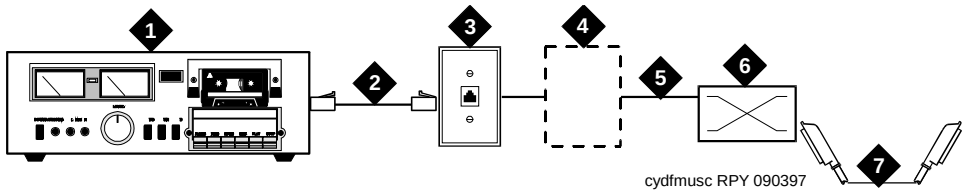
For MCC1, SCC1, CMC1, G600, and G650 Media Gateways

Figure 28 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 29 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 28. Typical registered equipment connections (auxiliary access) for an MCC1, SCC1, CMC1, G600, and G650 Media Gateway



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 Chapter 10, ‘‘909A/B universal coupler’’).

Registered music source

Refer to Figure 28 to install a registered music source.

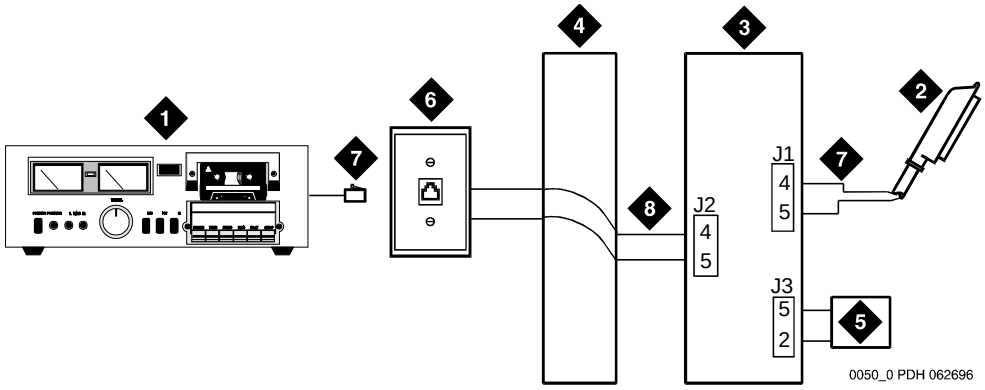
1. Determine feature port assignment from Feature-Related System Parameters form.
2. Install music source according to the manufacturer’s instructions.
3. Install patch cord/jumper wires at the main distribution frame.
4. Administer the switch for the new equipment.

Nonregistered music source

Refer to Figure 29 and Figure 30 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's instructions.
3. Connect a cable from the assigned port carrier slot to J1 on the 909A/B universal coupler (see Chapter 10, "909A/B universal coupler"). 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 may be an 1151A, 1151A2, or other approved power supply.
8. Administer the switch for the new equipment.

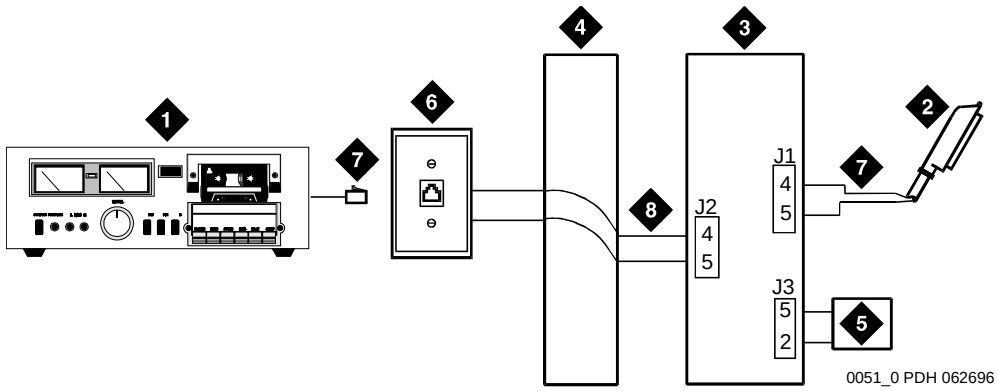
Figure 29. Typical nonregistered equipment connections (auxiliary access) for an MCC1, SCC1, CMC1, G600, or G650 Media Gateway



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 30. Connections to nonregistered music-on-hold using analog line for an MCC1, SCC1, CMC1, G600, or G650 Media Gateway



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 additional installation information, refer to *909A/909B Universal Coupler Installation Instructions*, which is normally shipped with the 909A/909B Universal Coupler.

For G700 or G350 Media Gateways

On a G700 or G350 Media Gateway, the music-on-hold feature is connected through a port on an MM711 Analog Media Module or, for a G350 Media Gateway only, an MM714 Analog Media Module or the analog LINE ports of the integrated analog media module.

The G700 or G350 Media Gateway does not support an auxiliary trunk circuit pack. Therefore, for S8300 Media Server users, the music-on-hold feature through an auxiliary trunk is not supported. However, G700 or G350 Media Gateway users with an S8500 or S8700 Media Server as primary controller can access the music-on-hold feature if their equipment is physically connected to a TN763 auxiliary trunk circuit pack in an EPN carrier of an S8500 or S8700 system.

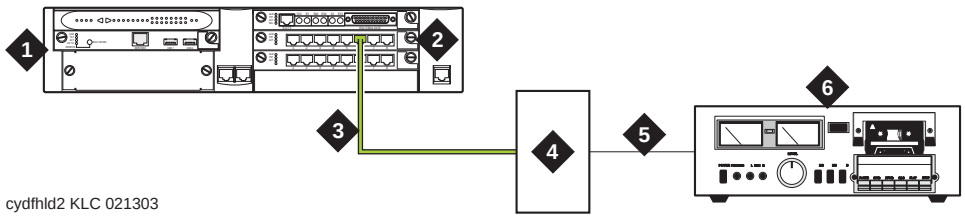
Unregistered Music Source on a G700 or G350 Media Gateway

Figure 31 and Figure 32 show the connections for the music-on-hold feature on a G700 Media Gateway for an unregistered source.

NOTE:
The G350 Media Gateway's physical connection with the MM711 Analog Media Module, MM714 Analog Media Module, or fixed analog ports (LINE 1 or 2) on the front panel is the same as the G700 Media Gateway's connection with the MM711 Analog Media Module.

NOTE:
If you want multiple music sources, you must use multiple ports on the MM711 Analog Media Module.

Figure 31. Unregistered music-on-hold equipment connecting to KS-23395-L3 for a G700 Media Gateway

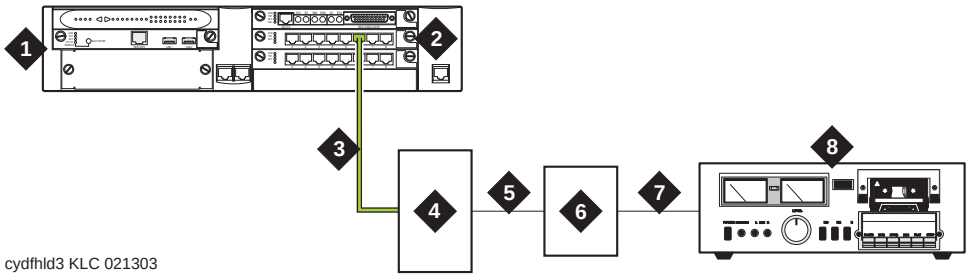


1. G700 Media Gateway
2. MM711 Analog Media Module
3. RJ-45 connection
4. KS-23395-L3 coupler
5. RCA cord
6. Music source

To hook up an unregistered music-on-hold source to a G700 or G350 Media Gateway using a KS-23395-L3 coupler:

1. Connect one end of an RJ-45 cable to a port in the MM711 Analog Media Module. Or, for a G350 Media Gateway only, connect the RJ-45 cable to a port in an MM714 Analog Media Module or a fixed analog (LINE 1 or 2) port oon the G350 front panel.
2. Connect the other end of the RJ-45 cable to a KS-23395-L3 coupler.
3. Connect the KS-23395-L3 coupler to the customer-supplied music source. Follow the manufacturer's instructions to properly connect the music source to the KS-23395-L3 coupler. Normally, you simply use an RCA cord.
4. Administer the switch for the new equipment.

Figure 32. Unregistered music-on-hold equipment connecting to KS-23395-L4 for a G700 Media Gateway



1. G700 Media Gateway
2. MM711 Analog Media Module
3. RJ-45 connection
4. KS-23395-L4 coupler
5. 8-pair modular cord
6. 909A/B universal coupler
7. 8-pair modular cord
8. Music source

To hook up an unregistered music-on-hold source to a G700 or G350 Media Gateway using a KS-23395-L4 coupler:

1. Connect one end of an RJ-45 cable to a port in the MM711 Analog Media Module. Or, for a G350 Media Gateway only, connect the RJ-45 cable to a port in an MM714 Analog Media Module or a fixed analog (LINE 1 or 2) port oon the G350 front panel.
2. Connect the other end of the RJ-45 cable to a KS-23395-L4 coupler.
3. Connect the KS-23395-L4 coupler to the 909A/B universal coupler using a 8-pair modular cord.
4. Connect the 909A/B universal coupler to the music source using a 8-pair modular cord.
5. Administer the switch for the new equipment.

NOTE:
For additional installation information, refer to *909A/909B Universal Coupler Installation Instructions*, which is normally shipped with the 909A/909B Universal Coupler.

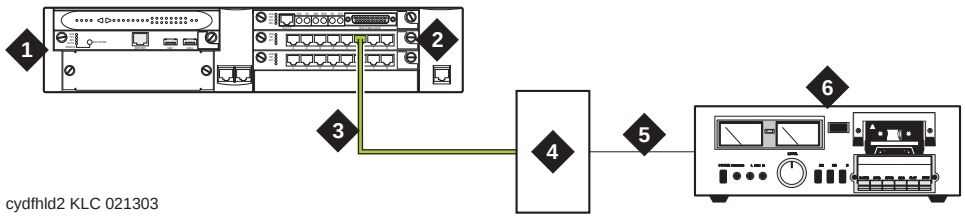
Registered Music Source on a G700 or G350 Media Gateway

Figure 33 show the connections for the music-on-hold feature on a G700 Media Gateway for an unregistered source.

NOTE:
The G350 Media Gateway's physical connection with the MM711 Analog Media Module, MM714 Analog Media Module, or fixed analog ports (LINE 1 or 2) on the front panel is the same as the G700 Media Gateway's connection with the MM711 Analog Media Module.

NOTE:
If you want multiple music sources, you must use multiple ports on the MM711 Analog Media Module.

Figure 33. Registered music-on-hold equipment connecting to KS-23395-L4 for a G700 Media Gateway



1. G700 Media Gateway
2. MM711 Analog Media Module
3. RJ-45 connection
4. KS-23395-L4 coupler
5. 8-pair modular cord
6. Music source

To hook up an registered music-on-hold source to a G700 or G350 Media Gateway using a KS-23395-L4 coupler:

1. Connect one end of an RJ-45 cable to a port in the MM711 Analog Media Module. Or, for a G350 Media Gateway only, connect the RJ-45 cable to a port in an MM714 Analog Media Module or a fixed analog (LINE 1 or 2) port oon the G350 front panel.
2. Connect the KS-23395-L4 coupler to the customer-supplied music source. Normally, you simply use a 8-pair modular cord.
3. Administer the switch for the new equipment.

Paging and announcement equipment

13

This chapter explains the most common system configurations for the paging feature of Avaya™ Communication Manager. This chapter provides information on the following features:

- ‘‘Loudspeaker paging for MCC1, SCC1, CMC1, G600, or G650 Media Gateways’’
- ‘‘ESPA radio paging’’
- ‘‘External ringing’’
- ‘‘Queue warning indicator’’
- ‘‘Loudspeaker paging for G700 or G350 Media Gateways’’

Loudspeaker paging for MCC1, SCC1, CMC1, G600, or G650 Media Gateways

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.

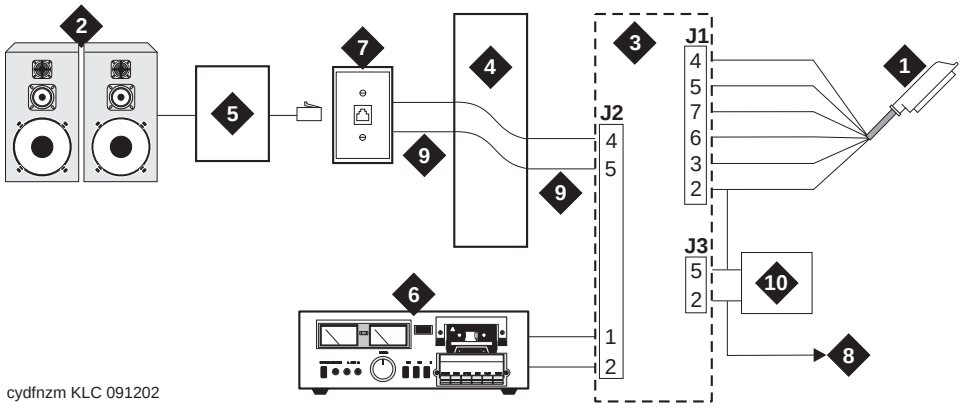
Loudspeaker paging without paging adapter

Figure 34 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 34 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 Chapter 10, ‘‘909A/B universal coupler’’).

NOTE:
If the loudspeaker paging system provides a talkback microphone at the speakers, the microphone must be FCC approved (or equivalent), or a 909A/B universal coupler is required.

Figure 34. Connections for loudspeaker paging without paging adapter for an MCC1, SCC1, CMC1, G600, or G650 Media Gateway



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

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 (modular plug at one end) from the information outlet to the paging amplifier (to the loudspeaker system).
6. Install loudspeaker equipment according to the manufacturer's 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. Chapter 10, ''909A/B universal coupler'' provides details of the connections between the 909A/B universal coupler and the wiring blocks.

CAUTION:
Damage to the 909A/B may occur if the cable is plugged into J3 ***before*** *all cross-connects are completed.*

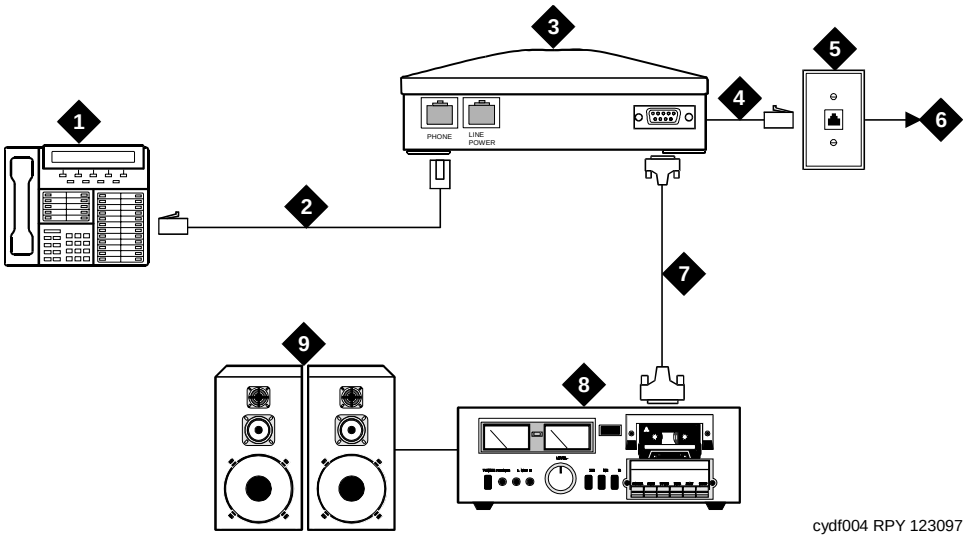
5. On the 909A/B universal coupler:
   - Connect seizure control voltage of from -9 to -70 volts to the PG2/BZ2 connection (pin 2 of J1). Switching voltage to the PG2/BZ2 connection can be from the 909's -48-volt supply.
   - Connect a -48 VDC power source to the -48 and GRD terminals on the 909A/B.
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's 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 additional installation information, refer to *909A/909B Universal Coupler Installation Instructions*, which is normally shipped with the 909A/909B Universal Coupler.

ESPA radio paging

Figure 35 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 35. Typical ESPA radio paging connections



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

NOTE:
The G700 or G350 Media Gateway does not support an auxiliary trunk media module. Therefore, the loudspeaker paging feature through an auxiliary trunk is not supported on a G700 or G350 Media Gateway.

ECC G700 or G350 Media Gateway users can access this equipment if equipment is physically connected to a TN763 auxiliary trunk circuit pack in an EPN carrier of an ECC 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 an MCC1, SCC1, CMC1, G600, or G650 Media Gateway.

NOTE:
Up to three devices can be connected to one analog line circuit pack port. This does not apply to the G700 or G350 Media Gateway.

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.

NOTE:
This does not apply to the G700 or G350 Media Gateway.

1. Wire the queue warning indicator to the information outlet.
2. Administer the switch for the new equipment.

Loudspeaker paging for G700 or G350 Media Gateways

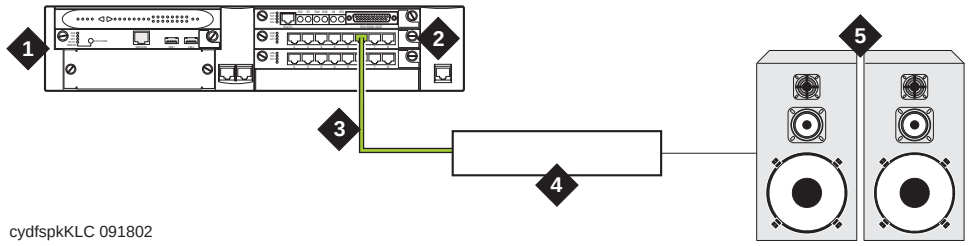
On a G700 or G350 Media Gateway, the loudspeaker paging feature is connected through a port on an MM711 Analog Media Module.

The G700 or G350 Media Gateway does not support an auxiliary trunk circuit pack. Therefore, the loudspeaker feature through an auxiliary trunk is not supported on a G700 or G350 Media Gateway.

NOTE:
Users on a G700 or G350 Media Gateway controlled by an S8700 or S8500 can also access the loudspeaker paging feature if equipment is physically connected to a TN763 auxiliary trunk circuit pack in an PN carrier of an the S8700 or S8500 system.

Figure 36 shows the connections for loudspeaker paging, dial dictation, or recorded announcement features on a G700 or G350 Media Gateway.

Figure 36. Typical loudspeaker equipment connections for a G700 or G350 Media Gateway



1. G700 or G350 Media Gateway
2. MM711 Analog Media Module
3. RJ-45 connection
4. Telephone hybrid (third party) device
5. Loudspeaker paging system

To hook up loudspeaker paging from a G700 or G350 Media Gateway:

1. Connect one end of an RJ-45 cable to a port in the MM711 Analog Media Module.
2. Connect the other end of the RJ-45 cable to a customer-supplied telephone hybrid device.
3. Follow the manufacturer's instructions to properly connect the telephone hybrid device to your loudspeaker paging system.
4. Administer the switch for the new equipment.

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