# AVAYA

# Installation for Adjuncts and Peripherals for Avaya MultiVantage™ Software

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

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

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.

**For the G700 Media Gateway:**

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. 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. However, there is no guarantee that radio interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
- **Reorient or relocate the receiving antenna.**
- **Increase the separation between the equipment and receiver.**
- **Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.**
- **Consult the dealer or an experienced radio/TV technician for help.**

**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.

**For MCC1, SCC1, G600, and CMC1 Media Gateways:**
This equipment complies with Part 68 of the FCC rules. On the rear 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 the G700 Media Gateway:**
This equipment complies with Part 68 of the FCC rules and the requirements adopted by the ACTA. Located prominently on 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.

The REN is used to determine the quantity of devices which 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, G600, and CMC1 Media Gateways:**

| Manufacturer's Port Identifier | FIC Code | SOC/REN/ A.S. Code | Network Jacks |
|---|---|---|---|
| Off/On 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 |
| 120A3 channel service unit | 04DU9-DN | 6.0Y | RJ48C |

**For the G700 Media Gateway:**

| Manufacturer's Port Identifier | FIC Code | SOC/REN/ A.S. Code | Network Jacks |
|---|---|---|---|
| Ground Start CO trunk | 02GS2 | 0.5A | 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 |

If the terminal equipment (for example, the MultiVantage™ Solution equipment) 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**

**For MCC1, SCC1, G600, and CMC1 Media Gateways:**
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.

**For the G700 Media Gateway:**
This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B 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 MultiVantage™ system products 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 Européenne*) 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**

**For MCC1, SCC1, G600, and CMC1 Media Gateways:**
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.

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＡ情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

**For the G700 Media Gateway:**
This is a Class B 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.

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＢ情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。取 扱説明書に従って正しい取り扱いをして下さい。

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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.

Table 1 provides a list of current adjuncts and peripherals, and where installation information exists.

**Table 1.    Adjuncts and peripherals resource list**

| Adjunct/Peripheral | Resource |
| --- | --- |
| 909A/B Universal Coupler | Chapter 1 |
| AUDIX | *AUDIX Installation*<br>*AUDIX Voice Power Installation and Maintenance Guide* |
| Auxiliary Power Supplies | Chapter 2 |
| Basic Call Management System (BCMS) View | *Basic Call Management System (BCMS) Operations* |
| Busy Tone Disconnect Equipment for Non-U.S. Installations | Chapter 12 |
| Call Detail Recording (CDR) Option Settings | Chapter 13 |
| CallVisor ASAI LAN Gateway | *CallVisor ASAI DEFINITY LAN Gateway over MAPD Installation, Administration, and Maintenance* |
| CentreVu Agent | *CentreVu Agent Installation and Administration* |
| CentreVu Call Management System (CMS) | *CentreVu Call Management System Software Installation and Setup* |
| CentreVu Explorer | *CentreVu Explorer User Guide* |
| CentreVu Supervisor | *CentreVu Supervisor —Installation and Getting Started* |
| Conversant | *INTUITY CONVERSANT System Customer Assist Technical Operations* |
| Data Modules and ADUs | Chapter 4 |
| DCS Connections | Chapter 9 |
| DEFINITY INADS | Chapter 14 |
| DEFINITY LAN Gateway System | Chapter 7 |
| DEFINITY Wireless Personal Comm Mgr. | *Interface for the DEFINITY Wireless Business System Guide* |
| DS1/T1 CPE Loopback Jack | Chapter 9 |
| Expansion Services Module (ESM) | Chapter 18 |

**Table 1.    Adjuncts and peripherals resource list**

| Adjunct/Peripheral | Resource |
| --- | --- |
| External Alerting Equipment | Chapter 16 |
| Internet Call Center | *CentreVu Internet Solutions Documentation CD-ROM Internet Call Center Solution Guide* |
| Internet Telephony Gateway | *Internet Telephony Server-Enterprise Hardware Installation Quick Reference* |
| Intuity AUDIX | *Internet Messaging for the Intuity AUDIX Multimedia Messaging System, Installation* |
| Intuity Interchange | *INTUITY Interchange System Supporting Documentation* |
| ISDN Converters and Adapters | Chapter 10 |
| Loudspeaker Paging | Chapter 17 |
| Malicious Call Trace | Chapter 15 |
| Modems, external | Chapter 5 |
| Multimedia Call Exchange MMCX | Chapter 18 |
| Multimedia Call Handling (MMCH) | Chapter 18 |
| Multipoint Control Unit (MCU)/CRS | *MultiPoint Conferencing Unit Installation and Test* |
| Music-on-hold | Chapter 16 |
| Paging and Announcement Equipment | Chapter 17 |
| Pollable Storage Unit (PSU) | *Pollable Storage Unit Installation* |
| Printers | Chapter 6 |
| Property Management System | Chapter 19 |
| Stratum 3 Clock | Chapter 11 |
| Voice and Data Terminals | Chapter 3 |

# Conventions used in this book

Become familiar with the following terms and conventions. They help you use this book with your Avaya MultiVantage™ Software.

- 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 MultiVantage Software 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 MultiVantage Software.

- The term "ASAI" is synonymous with the newer CallVisor ASAI.

- 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, or G600 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 Media Gateway uses media modules instead of circuit packs. The media module address is designated as ***XXXVSpp***, where ***XXX*** is the administered number of the G700 Media Gateway, ***VS*** is the slot number of a specific media module location on the G700 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 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 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 MultiVantage 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.

## Trademarks

All trademarks identified by ® or ™ are registered trademarks or trademarks, respectively, of Avaya, Inc.  All other trademarks are the property of their respective owners.

## How to get this book on the Web

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.

| | |
|---|---|
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| Fax to: | 303-538-1741 |
| Send email to: | document@avaya.com |

# 909A/B universal coupler

# 1

The 909A/B universal coupler is used with paging 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 Media Gateway configurations.

Figure 1 shows a typical 909A/B universal coupler. For additional installation and switch setting information, refer to *909A/909B Universal Coupler Installation Instructions*.

> **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.
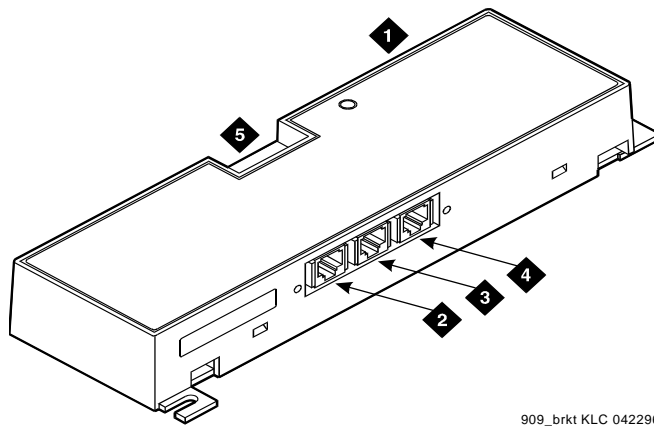
909_brkt KLC 042296

1. 909A/B universal coupler      4. J3 7-pin modular jack
2. J1 8-pin modular jack      5. DIP switch location
3. J2 8-pin modular jack

**Figure 1.   Typical 909A/B universal coupler**

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 2, Table 3, and Table 4. Refer to these tables when connecting music or paging equipment.

**Table 2.    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 3.    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 4.   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 2 shows the physical locations of the pins for J1, J2, and J3.



mod_jack RBP 041796
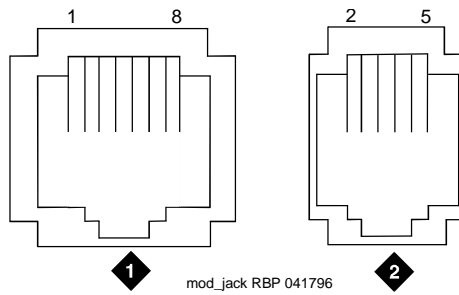
1. J1 and J2 8-pin modular jacks          2.  J3 7-pin modular jack

**Figure 2.    Typical modular jack pinout**

# Auxiliary power supplies

# 2

Nonessential features of the attendant console, such as the optional 27B1 selector console as well as DCP terminals, derive their power from an auxiliary power source. One console can connect to an Avaya DEFINITY® Server CSI, and three consoles can connect to each cabinet stack on an Avaya DEFINITY® Server R.

Each cabinet can derive auxiliary power from the system and through the auxiliary cable located in the trunk/auxiliary field. Auxiliary power for a primary attendant console should be provided through this cable so the console remains fully operational during short power outages.

## ➡ NOTE:

The information in the first part of this chapter concerning auxiliary power supplies for the gateway itself () does not apply to the G700 Media Gateway.

Information beginning on , ''1151A and 1151A2 power supplies'', *does* apply to a G700 Media Gateway under the following conditions:

- if a particular endpoint or adjunct uses a 1151A or 1151A2 power supply, *and*

- if that endpoint or adjunct is supported on an S8300/G700.

Please see your Avaya representative for more information.

# Local auxiliary power supply

Consoles can use either local or phantom power, depending on the distance between the console and the cabinet. Over short distances, phantom power is attractive because no additional hardware is necessary—power is supplied using the telephone circuit itself. For longer distances, you need a local power supply. Table 5 shows cabling distances for the 302 attendant console.

**Table 5.  302C1 Attendant Console Cabling Distances**

|  | 24 AWG Wire (0.27 mm$^2$) | | 27 AWG Wire (0.14 mm$^2$) | |
|---|---|---|---|---|
|  | feet | meters | feet | meters |
| **With selector console:** | | | | |
| Phantom-powered | 800 | 244 | 500 | 152 |
| Locally powered | 5000 | 1524 | 3400 | 1037 |
| **Without selector console:** | | | | |
| Phantom powered | 1400 | 427 | 900 | 274 |
| Locally powered | 5000 | 1524 | 3400 | 1037 |

# Applications that require auxiliary power

Auxiliary power (local or bulk) is always required for the following:

- Any 8520 telephone
- 302-series attendant console
- PassageWay adapter interface
- Any 7500-series telephone whether in passive bus, or point to point (one per BRI port)
- Any 7500- or 8500-series telephone with an asynchronous data module
- Any 8510 telephone in passive bus or with an asynchronous data module (unless the 8510 will not be used to support data or video)
- Any 7400-series telephone with XM24 expansion module
- Any 7400-series telephone with adjuncts 7407, 7434 or 7444
- Any 8400-series telephone with adjuncts 8411 or 8434
- Any 4600-series IP telephone
- IP console

The 1145B power supply is required for all installations outside the United States.

# Sources of auxiliary local power

An attendant console can derive auxiliary power from:

- A bulk power supply, such as the 1145B

  A console's maximum distance from its 1145B auxiliary power source is 800 ft. (244 m) for a 302A1 or 350 ft. (107 m) for a 301B1 and 302C1.

- 1151A1 or 1151A2 power supply

# Required safety precautions

⚠ **DANGER:**

*When operating power-supply equipment, you must follow basic safety precautions to reduce the risk of fire, electric shock, and personal injury. Read and understand all instructions. Follow all warnings and instructions marked on the products. Follow all the installation instructions when mounting the product.*

*Never use a power unit with a power source other than that specified on the product labels.*

*Do not try to plug the 3-wire grounding plug into a nongrounding power outlet. This plug only fits into a grounding power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, have an electrician replace the outlet. Do not defeat the safety purpose of the grounding plug.*

*Do not attach the power supply cord to building surfaces.*

*Do not overload power outlets.*

*Do not use this product near water. Do not let anything spill on or into the unit. Clean only with a dry rag.*

*Never push objects through openings in the case.*

*Do not try to disassemble the unit. Return it for repair. Opening or removing covers may expose you to dangerous voltages. Incorrect reassembly may cause electric shock when the products are subsequently used.*

*Power down the unit and refer servicing immediately if the unit is exposed to water or other liquids, if the unit is dropped or damaged, or if the unit fails to operate normally.*

*Never let the operating temperature of the unit exceed the recommended maximum.*

⚠ **DANGER:**

*Do not block or cover the ventilation openings in the case.*

*Do not let anything rest on the unit.*

*Do not attempt to recharge batteries. The power unit recharges the batteries itself. Any other recharging method may cause leaks of corrosive electrolyte or explosion. Discard discharged batteries as soon as possible. Discharged batteries are more likely to leak.*

*Do not store batteries in high temperature areas. Batteries stored in a cold environment should be protected from condensation during storage and warming. Batteries should be stabilized at room temperature prior to use after cold storage. Do not install batteries if the manufacturing date on the label indicates that the batteries are more than six months old.*

# 1145B power supply

The 1145B power supply powers ISDN/DCP, terminal equipment, adjuncts, and other customer-supplied external equipment. It supplies -48V, 200 W total and supports 32 outputs. You can install one ISDN terminal or DCP adjunct per output.

A manual switch on the distribution unit lets the user redirect reserve power to outputs 1 to 32 so that all outputs get battery reserve power.

An optional 1149 battery and 1146 distribution unit provides uninterruptible -48 VDC power.

⚠ **DANGER:**

*When operating power-supply equipment, you must follow basic safety precautions to reduce the risk of fire, electric shock and personal injury. Read, understand, and follow all warnings and instructions. See "Required safety precautions" on page 31.*

## Circuit protection

A thermistor current-limits the maximum output of each output to 12 W, but the average power per output cannot exceed 7.25 W (200/32 = 7.25). An LED indicates the status of the thermistor. When the LED is ON, there is a short on the power pair.

## Mountings

The back-up battery mounts on a top plate. The power supply and distribution units mount on a bottom plate. The plates are normally wall-mounted.

## Installing the wall mounting

See Figure 3.

1. Locate one plate directly below the other with the raised letters right side up. Be sure that the AC power cord can reach the electrical outlet from the bottom plate. The power cord is about 7.5 ft. (2 m) long.

   ⇒ **NOTE:**
   Up to 4 power supplies can draw current from one 110- or 230-VAC, 20- or 15-A feeder. Use only unswitched receptacles that are not shared with other equipment.

2. Secure the wall mounting plates to a 3/4-in. (2-cm) plywood mounting board using the four 1/2-in. #10 wood screws supplied with the plates.

3. Snap the 1145B power supply onto the bottom wall-mounting plate (no tools are needed).

4. Connect an insulated 17-AWG #12 (1.2-mm) ground wire (or better) between the ground lug on the power-supply frame  and an approved ground.

   The frame ground screw is located next to the AC receptacle, to the left of the unit.

5. Write the unit number and connectivity information on the front label, next to the LEDs.

1149 Battery

2

1

3

1145 Power Unit

○ On Battery Reserve
○ Charging Battery
○ Output Power On

4

1146 Power Distribution Unit

1-8

1-32

7

5

6

pcdf1145  KLC 030100
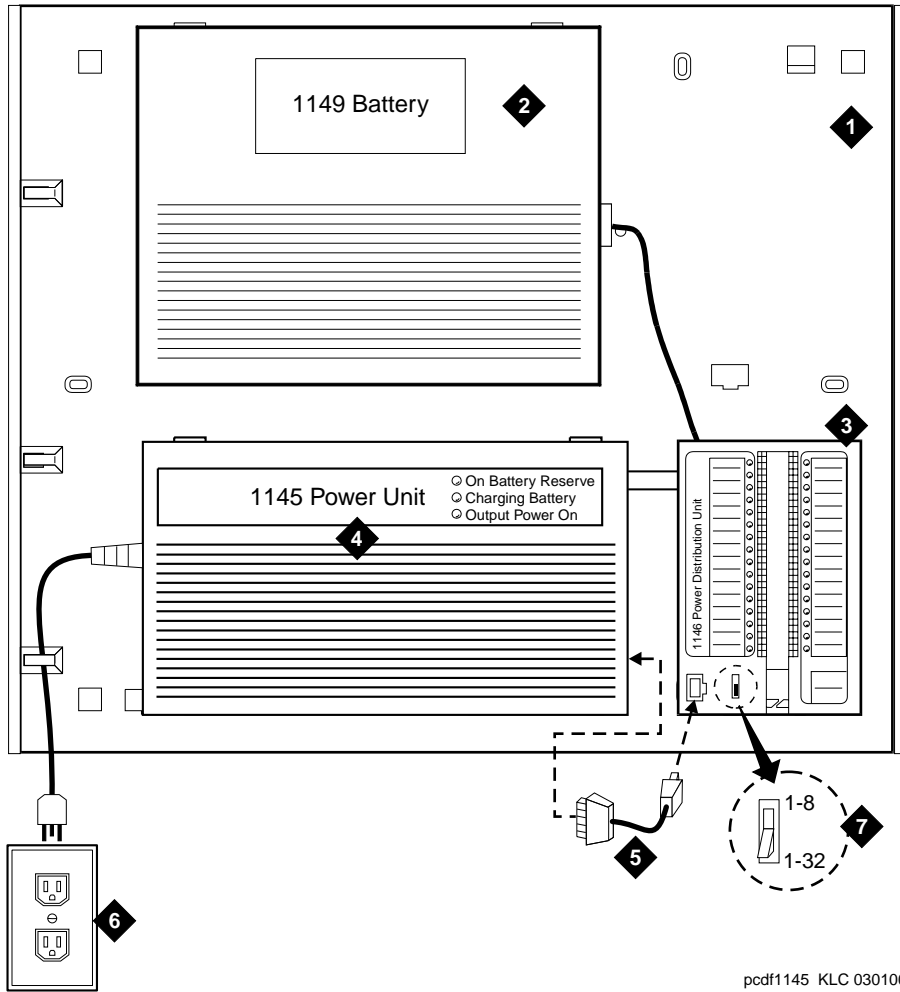
1. Wall mounting plate
2. Optional battery (1149B shown)
3. 1146 power distribution unit
4. 1145B power unit

5. Power cable
6. Unswitched outlet (120 VAC, 20 A or 230 VAC, 15 A)
7. Battery backup switch setting

**Figure 3.   1145B/1146 mounting arrangement**

## Installing the 1146 power distribution unit

1. Insert and securely tighten the two supplied #8-32 x 1/2-in. shoulder screws (they have an unthreaded section at the top) into the top holes designated for 1146 Power Distribution Unit on the bottom plate. Mount the unit on these two shoulder screws, using the key holes on the back of the unit.

2. Secure the unit by inserting the #8-32 x 1 in. screw through the bottom of the unit (just above the wire clips) into the plate and tighten.

3. Set the battery back-up switch option to the 1-32 (down) position to provide battery back-up to all outputs.

4. Connect the power distribution unit to the power supply with the power cable. Refer to the power supply's right-side label to locate the output power connection.

## Installing and wiring the battery

Two types of backup batteries can be used:

**Table 6.   Back-Up Batteries**

| Battery | Rating |
|---------|--------|
| 1148B | 2.5 amp-hours |
| 1149B | 5 amp-hours |

To install the battery, proceed as follows.

1. Loosely insert two #10-32 x 1/2-in. shoulder screws in the battery-mounting holes at the top of the wall mounting plate.

2. Place the keyhole slots in the battery bracket on these two screws. Make sure the label on the battery is visible.

   The battery cord exits from the right side of the bracket.

3. Tighten the screws securely.

4. Plug the battery cord into the right rear receptacle on the power supply. The right-side label indicates the rear receptacle.

## Installing the expanded power distribution unit

You can install a second power-distribution unit for additional 8400- and 8500-series terminals.

### ⚠ CAUTION:

*Total power cannot exceed 200 W. Consult the chart below for permissible terminal installations.*

Table 7.    Permissible terminal installations (total power < 200 W)

| Terminal mix | Maximum numbers | Notes |
|---|---|---|
| 7500-series + 8500-series ISDN | 24 + 24 | |
| 7400-series + 8400-series DCP | 24 + 24 | |
| 8400-series DCP | 74 | |
| 7400-series DCP | 74 | Average power per terminal must be less than 3.126 W |

Each expanded power distribution unit kit supplies the following items:

- One power distribution unit
- One T-cable
- Two #8-32 x 1/2-in. shoulder screws
- One #8-32 x 1 in. screw
- One spacer bracket

See Figure 4 while installing the power distribution unit:

1. Fasten the spacer bracket to the mounting plate with the #8-32 x 1/2-in. shoulder screws.

   The spacer bracket is not shown in the figure. It is behind the top power distribution unit.

2. Slide the keyhole slots in the power distribution unit over the shoulder screws.

3. Insert the #8-32 x 1 in. screw through the distribution unit, through the spacer bracket, and into the plate. Tighten the screw.

   The mounting hole is located just above the wire clip.

4. Set the battery back-up switch to the 1-32 (down) position.

5. Power-down the 1145B as described on the label on the side of the unit.

6. Remove the output power cable between the 1145B and the 1147B units. The cable will not be reused.

7. Connect the P1 connector end of the T-cable to the bottom power distribution unit.

8. Connect the P2 connector to the top distribution unit.

9. Connect the P3 connector to the 1145B.

10. Power-up the 1145B as described on the label on the side of the unit.
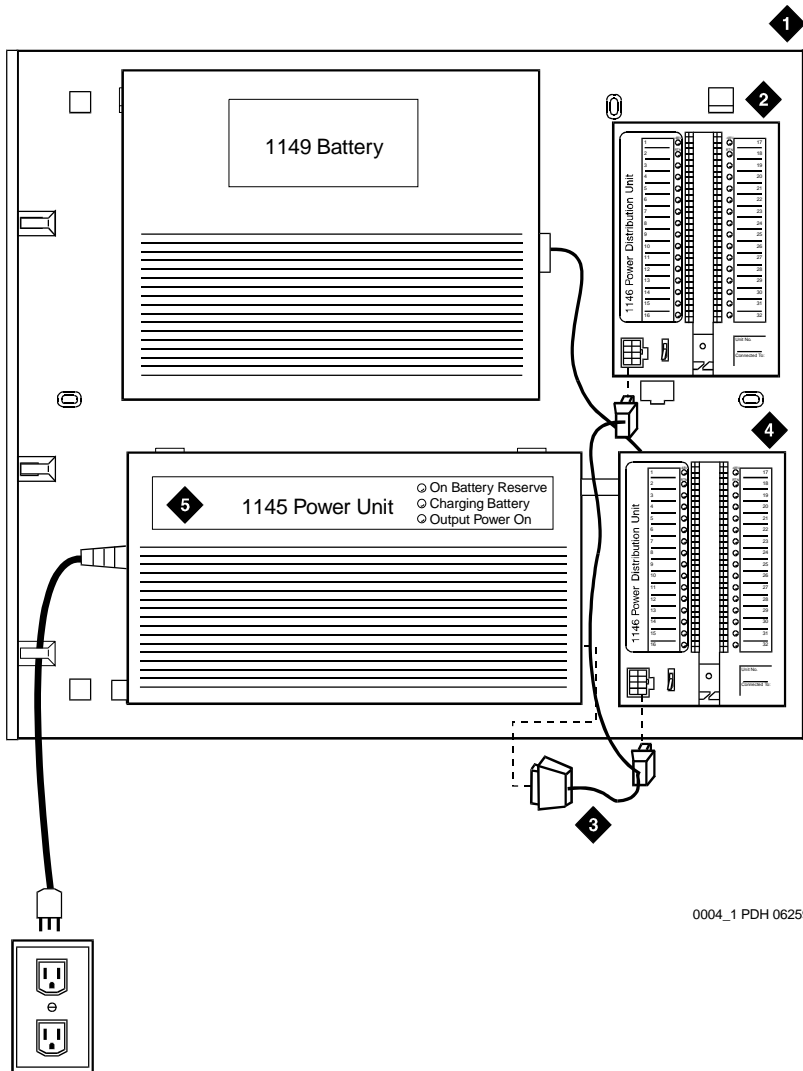


1. Wall-mounting plate
2. Optional 1146 power distribution unit
3. T cable (H600-347-G7)
4. Standard 1146 power distribution unit
5. 1145B power unit

**Figure 4.   Expanded power distribution unit**

## Powering up and testing AC and DC power

When you power up the unit or interrupt power to a unit, the unit runs an AC or DC self test. LEDs on the front panel indicate the status of the power supply. The following table lists the LEDs.

**Table 8.    Power-supply LEDs**

| LED Color | Meaning |
|-----------|---------|
| GREEN | Power supply is providing power |
| YELLOW | Battery is charging (after at most 20 hours, when the battery has reached full charge, the YELLOW LED should go out) |
| RED | Power supply is on battery reserve |

1. Connect the AC power cord to the power supply, and route the cord to an appropriate AC outlet using the clips provided on the unit.

   ⇒ **NOTE:**
   A maximum of four power supplies can be powered from one dedicated 110 VAC, 20-A feeder. Use only unswitched receptacles.

2. Start the AC test by plugging the cord into the outlet.

   This powers up the power supply.

3. Check AC operation of the 1145B power supply by monitoring the LEDs:

   **PASS**: GREEN and YELLOW are both lit.

   **FAIL**: either GREEN or YELLOW LED is not lit.

4. If the AC test failed, test the AC outlet, power cord, and connections.

5. If the AC test failed, but power is available and the AC power cord and connections are good, replace the power unit.

6. Once the AC test passes, activate the DC battery-backup supply by disconnecting the AC plug.

7. Check DC (battery back-up) operation by monitoring the LEDs.

   **PASS**: RED and GREEN are both lit.

   **FAIL**: either RED or GREEN is not lit.

8. If the DC test fails, check the connections.

9. If the DC test fails but the connections are good, replace the batteries and retest.

10. If the DC test fails after you replace the batteries, replace the power supply.

11. Once the DC test passes, reconnect AC power to the power supply.

## Wire the 1146 power distribution unit

Wire endpoints to the 1146 while power from the 1145B is on.

1. Install cross-connect jumpers (the label shows polarity) to Pins 7 and 8 of the appropriate information outlet. Route the wires through the clip provided on the unit. If a red LED is on, see *"Repairing short circuits and resetting red LEDs" on page 40*. Figure 5 shows the connections.

   A red LED lights if the associated circuit is connected to shorted wiring or a shorted terminal.



1. Power supply kit
2. 2.5, 5.0, or 8.0 A hour battery
3. 1146 power distribution unit
4. 1145B power supply
5. Circuits 1-17
6. Circuits 17-32
7. Port circuit
8. Main distribution frame
9. Modular cord
10. AC input
11. Ground wire
12. ISDN/ display system protocol terminal
13. Circuits 1-32
14. Pins 7 and 8 (display terminal power)
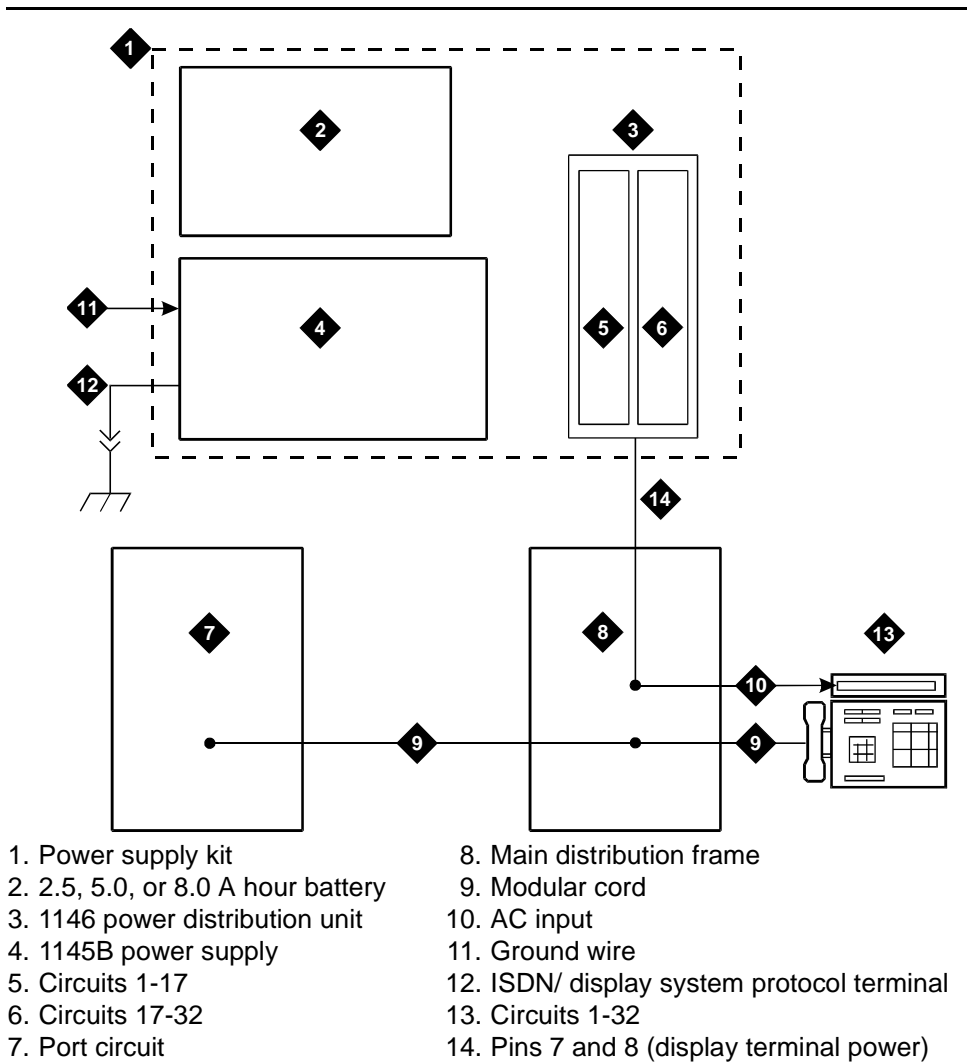
**Figure 5.   Typical wiring to a terminal**

2. Mark lead destinations, unit number, and connectivity information on the label next to each connector.

### Replacing the batteries

To maintain back-up protection and battery reliability, replace batteries every four years.

### Storing the batteries in inactive units

To prevent leakage when the power unit is not in use for several months or more, remove the batteries and store them separately.

### Repairing short circuits and resetting red LEDs

A red LED next to any of the 32 power output connectors indicates a short circuit in the building wiring or the terminal equipment. To reset the LED:

1. Disconnect the terminal equipment from the wall jack.

2. If the LED goes off, the terminal equipment is faulty. Replace it.

3. If the LED is still lit, find and repair the short circuit in the building wiring.

4. Reconnect the terminal equipment to the wall jack, and re-test.

## 1151A and 1151A2 power supplies

The 1151A is a standard (no battery backup) power supply unit. The 1151A2 is a battery backup version of the 1151A. Either power supply can support one telephone with or without an adjunct.

The 1151A and 1151A2 power supplies can supply local power to ISDN-T 7400-, 7500-, 8400-, and 8500-series voice terminals connected to a system, and to the DCP 7444 voice terminal or 302C attendant console that need auxiliary power for its display. The unit can supply power to adjunct equipment such as S201A and CS201A speakerphones, or a 500A headset adapter attached to any currently manufactured analog, DCP, or ISDN-T voice terminal equipped with an adjunct jack.

The power supply has the following specifications:

- A single output of -48 VDC, 0.4 A.

- Either a 120 VAC 60-Hz power source (105 to 129 VAC) or a 220/230/240 VAC 50-Hz power source (198 to 274 VAC).

- Automatic input voltage selection.

- Output capacity of19.2 W.

- Maximum loop range of 250 ft. (77 m).

- Use of 2 modular jacks. PHONE jack pins 7 and 8 (- and +, respectively) provide power.

The PHONE and LINE jacks are 8-pin female nonkeyed 757-type jacks that can accept D4, D7, and D8 modular plug cables. Figure 6 shows a 1151A power supply. The 1151A2 looks similar.

## ⚠ DANGER:

*When operating power-supply equipment, you must follow basic safety precautions to reduce the risk of fire, electric shock and personal injury. Read, understand, and follow all warnings and instructions. See "Required safety precautions" on page 31.*

## ⚠ CAUTION:

*Do not locate the unit within 7 in. (15.25 cm) of the floor.*

*Use the power supply **only** with telecommunications equipment, indoors, and in a controlled environment.*



pwr_sup1 CJL 051496
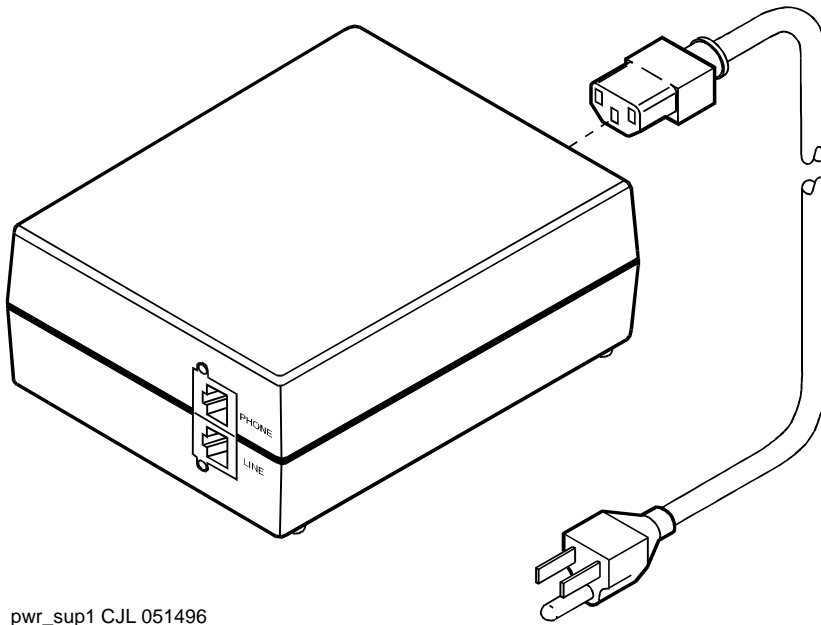
**Figure 6.    Typical 1151A power supply (front)**

## Desk mounting

1. Place the power supply on a flat surface such as a desk.

## Wall mounting

1. For wall-mounting, use the keyhole slots on the bottom of the chassis.

## Standards compliance

The 1151A and 1151A2 power supplies comply with the UL Standard UL 1459, second edition.

**Table 9.  Standards compliance**

| Complies | UL 1459 |
|----------|---------|
| Certified | CSA 22.2 |
| Approved | EN7950 |
| Approved | CE |

# Extenders for 2-wire DCP endpoints

# 3

This chapter provides information on 2-wire voice and data terminals and digital communications protocol (DCP) extenders. Extenders provide off-site employees with the full feature set of the PBX.

## 2-wire DCP endpoints

Wire the tip and ring connections of 2-wire DCP endpoints to a TN2224B digital line 2-wire circuit pack (or equivalent), similar to the 2-wire analog endpoints for a TN747B analog line circuit pack.

The TN2224B supports 2-wire DCP sets only (not 4-wire).

The MM712 media module for the G700 Media Gateway is a 2-wire DCP interface. The G700 Media Gateway supports 2-wire DCP sets only (not 4-wire).

## ⚠ CAUTION:

*Except for auxiliary power, if necessary, these should be the **only** connections to the modular wall jack. Do not bridge or parallel these telephones.*

Table 10 provides the pin-out configuration for 2-wire endpoints.

**Table 10.    Pin-out for 2-wire DCP endpoints**

| Pin Number | Function |
| --- | --- |
| 1 | not used by 2-wire DCP endpoints |
| 2 | not used by 2-wire DCP endpoints |
| 3 | not used by 2-wire DCP endpoints |
| 4 | DCP signal transmission |
| 5 | DCP signal transmission |
| 6 | not used by 2-wire DCP endpoints |
| 7 | auxiliary power -48 VDC (if needed) |
| 8 | auxiliary power ground (if needed) |

Figure 7 shows a workstation connecting to a data adapter. The line side of the adapter connects to the TN2181 digital line 2-wire circuit pack through the main distribution frame (MDF) (to the system cabinet).

itdata RBP 032896
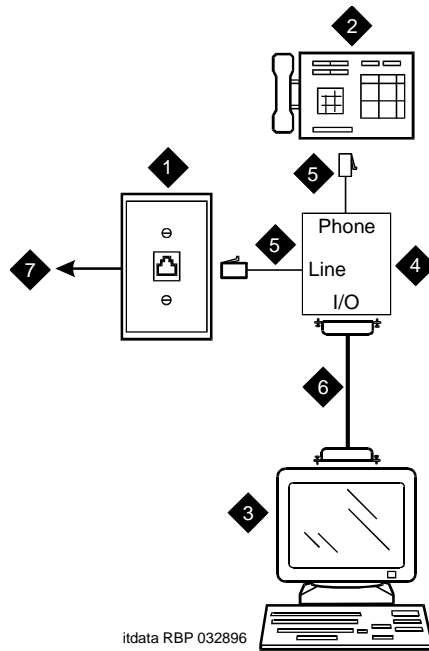
1. 103A or modular wall jack
2. 2-wire endpoint
3. Data terminal (serial data)
4. Data adapter (such as an 8400B+)

5. 4-wire modular cord
6. Serial data cable
7. To TN2181 digital line circuit pack

**Figure 7.    Typical connections to a 2-wire DCP workstation**

Wire the circuit pack to the MDF with a 25-pair cable:

1. Wire to the data adapter per local standards.

2. Wire the data terminal and telephone as instructed in the document accompanying the data adapter.

# DCP extender, stand alone

The stand alone extender installs at the work location. See Appendix A, Table 33, "DCP extender 25-pair cable pinout" for cabling information and pin assignments.

⊳ **NOTE:**
2-wire DCP extenders are not currently supported on G700 Media Gateway configurations.

Figure 8 shows a typical connection from a digital line 2-wire DCP circuit pack through two DCP extender devices. The *DEFINITY Extender Switch Module System Administrator's Guide* contains additional information.
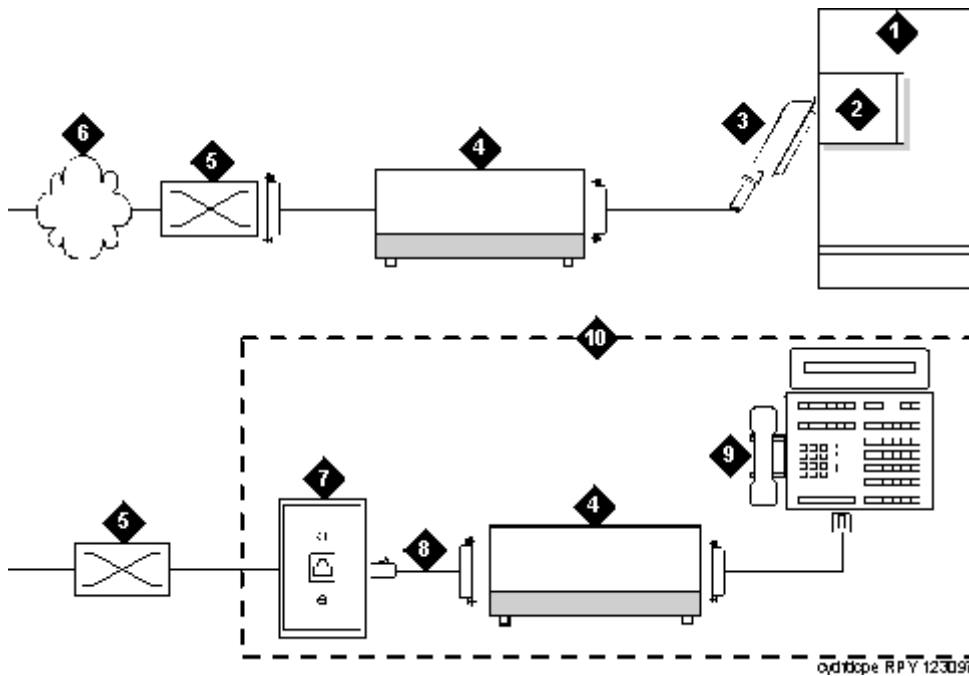
1. Avaya™ Media Server/Gateway
2. TN2181 or TN2224B circuit pack
3. 25-pair cable
4. DCP extender
5. Main distribution frame (MDF)
6. Public switched telephone network (PSTN)

7. 103A or modular wall jack
8. Modular line cord
9. DCP telephone (Such as 8410D, 8405, or 8434)
10. Remote work location

**Figure 8.   Typical DCP extender connections**

# DCP extender, rack mount

Figure 9 shows a typical rack mount (multi-mount) DCP extender. Connections from either a digital line 17-port 2-wire DCP circuit pack or a digital line 24-port 2-wire DCP circuit pack, are made through two DCP extender devices.

### ⇒ NOTE:
2-wire DCP extenders are not currently supported on G700 Media Gateway configurations.



h2dferm PDH 100796
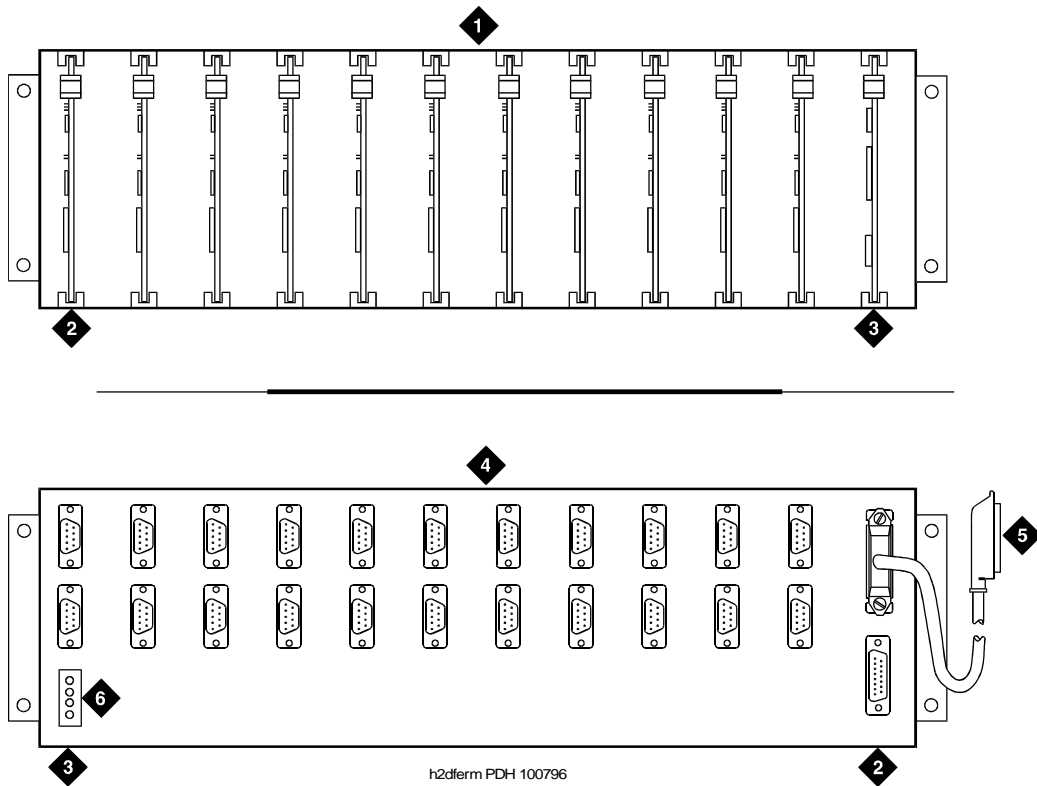
1. Front of rack mount assembly
2. First circuit pack in slot 1 ("A")
3. Slot 12 ("L")

4. Rear of rack mount assembly
5. 25-pair connector to the MDF and the digital line circuit packs
6. Power connector

**Figure 9. Typical DCP extender connections**

# Data modules and asynchronous data units

**4**

Data modules connect peripheral equipment to the Avaya Media Server or Gateway or the Avaya S8100 Media Server with a CMC1 Media Gateway (DEFINITY ONE). Data modules convert between the RS-232 communications protocol used by peripherals and the digital communications protocol (DCP).

Possible peripherals include AUDIX adjunct equipment and terminals, serial printers, customer-supplied terminals and host computers, call detail recording (CDR) devices, and pooled modems.

⇒ **NOTE:**
Data modules, PGATE boards, printers connected through data modules, SATs connected through data modules, and anything related to the X.25 connectivity protocol are not supported on the S8300 or S8700 Media Server platforms.

The following data modules are described in this chapter, and Figure 10 shows typical data-module connections.

- 7400A/B/C/D

- 8400B

- ExpressRoute 1000

- Asynchronous data units (ADU).

⇒ **NOTE:**
**ISDN data modules**, such as the 7500B, are not covered in this book. Refer to *Integrated Services Digital Network (ISDN) 7500B Data Module User's Manual*, for detailed procedures. ISDN data modules connects DTE and DCE equipment to the ISDN network using an RS-232 or V.35 interface and an RS-377 automatic calling unit.

# Understanding RS-232 communications

To install a data module, you have to set up the device to work with RS-232 devices.

> ➡ **NOTE:**
> Data modules, PGATE boards, printers connected through data modules, SATs connected through data modules, and anything related to the X.25 connectivity protocol are not supported on the S8300 or S8700 Media Server platforms.

The RS-232 communications protocol defines a communications link as a Data Communications Equipment (DCE) device and a Data Terminal Equipment (DTE) device connected by an RS-232 cable. The send and receive pins on DCE equipment (pins 2 and 3) are reversed on DTE equipment, so that the DCE transmit pin connects to the receive pin of the DTE and vice versa.

Generally, the term DCE is applied to devices that mediate between customer equipment and the carrier or network. Such devices include modems, data modules, and data units. DTE describes devices that provide a user interface for data communications, such as dumb terminals and PCs. When configured as DTE, data modules are used for asynchronous modem pooling. When configured as DCE, data modules are analogous to modems in that they link a device such as a terminal or PC (DTE) to DEFINITY.

To install a data module correctly, you identify the connected equipment as DCE or DTE and do one of the following:

- Configure the modem for a DTE or DCE connection
- Install a null-modem converter

Detailed instructions are provided for each modem type, beginning on .
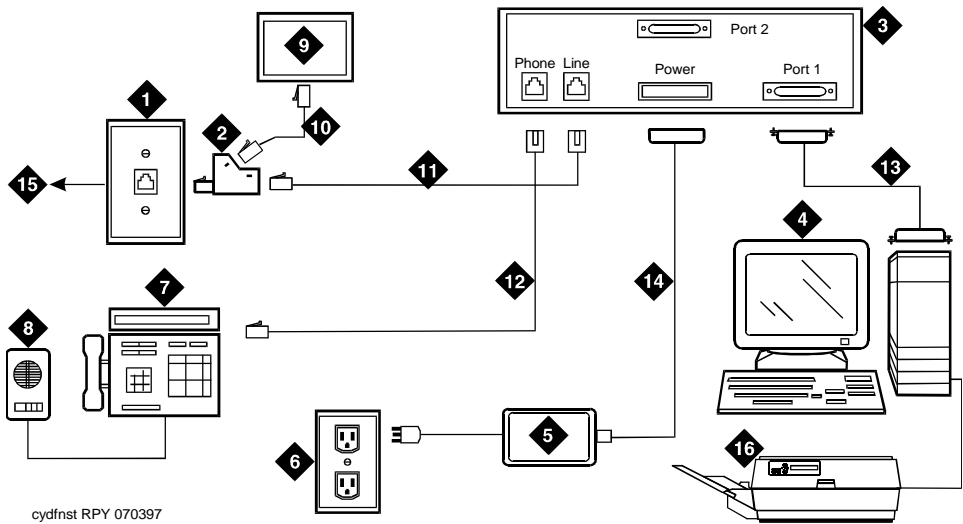
1. 103A connector or modular wall jack
2. 400B2 adapter
3. Rear of data module (7400B Shown)
4. Host computer
5. Data module power supply
6. Electrical outlet
7. Display telephone
8. S101A speakerphone
9. Auxiliary power supply for telephone
10. D7AP cord
11. D8W cord
12. Line to display telephone (D8W cord)
13. Data cable (EIA/RS-232)
14. Data-module power cable
15. To MDF and system cabinet
16. Printer

**Figure 10.   Typical connections to a data module**

## Installation procedure

To install a typical data module, you perform the following tasks:

1. Obtain required equipment

2. Set hardware options (must be completed before you administer or physically connect the data module)

3. Connect data modules

4. Administer the data modules (can be completed either before or after you physically connect the data module)

# Obtain required equipment

To physically connect a data module to the system, you need the following parts.

- 105C/D Isolating Data Interface (if connecting to a DC cabinet).

- EIA-232-D (RS-232-C) cable with a male connector (for the data module) and the correct connector for the peripheral equipment.

  The cable connects the PC to the data module.

- Null-modem converter (optional).

- V.35 cable with correct connectors (not required by all systems).

- D8W telephone cord.

  The cord connects the data module's LINE jack to the DEFINITY wall jack.

- DCP telephone and D8W cord (optional).

  The D8W cord connects the telephone to the data module's PHONE jack.

- Suitable auxiliary power supply if the optional telephone is installed (D7AP power cord and 400B2 adapter in the US, international power supply, such as the MSP-1, elsewhere).

You must have access to the administration console of the DEFINITY, either through a terminal and keyboard or through a PC.

A breakout box for RS-232 interfaces may prove helpful in some cases. The RS-232 breakout box helps you to identify the pin configuration of the RS-232 interface on the equipment you are trying to connect.

# Set hardware options

Depending on the data module, you may have to set various configuration options using hardware switches, software commands, or both. *You must set the hardware options before you administer or physically install the data module.*

### Setting 7400A data module hardware options

Most configuration options are controlled by commands entered on the front panel of the 7400A. But you have to make hardware changes when you want to set up the 7400A data-module for use in a modem pool or as a piece of data communications equipment. In a modem-pool, the data module operates as data-terminal equipment (DTE). In most other applications, it functions as data communications equipment (DCE). You have to set the correct operating mode for the data module before you can access the menus for the remaining configuration tasks.

To change the operating mode of the 7400A from DCE to DTE (or vice versa), you change the position of a small circuit board (the Electronic Industries Association connector board) inside the case. See Figure 11 and proceed as follows.

## ⚠ **WARNING:**

*Electrostatic discharge can severely damage sensitive electronic circuits. Before handling any electronic hardware, be sure to wear a grounding wrist strap or other static-dissipating device. Do not touch exposed circuitry or semiconductor chips.*

1. Unplug the data module from the power receptacle.

2. Remove the access panel on the top of the case by grasping the rear lip of the panel and pulling sharply upward.

3. While facing the front of the data module, locate the small EIA connector circuit board. It sticks up vertically, and a large, silver arrow on the main circuit board points to it.



7400atop KLC 053096
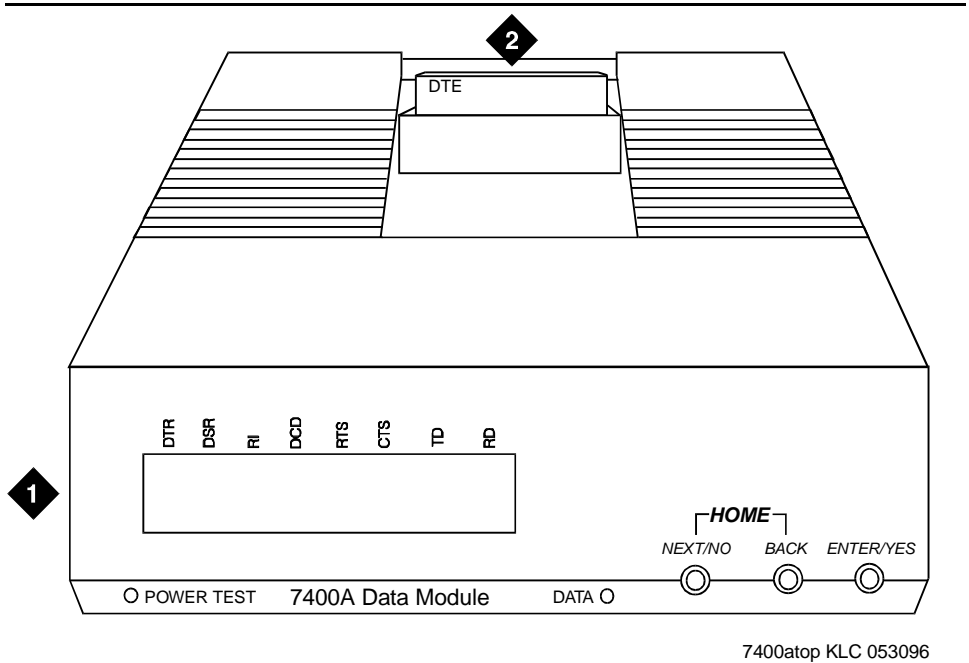
1. 7400A data module    2. EIA connector board (shown in DTE mode)

**Figure 11.    Data module mode selector**

4. Note the three letters engraved in the upper lefthand corner of the EIA connector board. Data modules ship from the factory with board inserted with  "DCE" in the upper left corner.

5. Use the DCE position to connect to DTE equipment.  Use the DTE position to connect to DCE equipment. To change the mode, remove the board by grasping it and pulling it gently upward. Flip the board around, left to right, and reinsert it in the socket so that the correct operating mode, DCE or DTE, appears in the upper lefthand corner.

6. Snap the top cover onto the unit.

## Setting 7400B data module hardware options

You configure the 7400B data module using DIP switches on the circuit card inside the case. Figure 12 shows the front and rear of a 7400B data module.



7400b RBP 032596
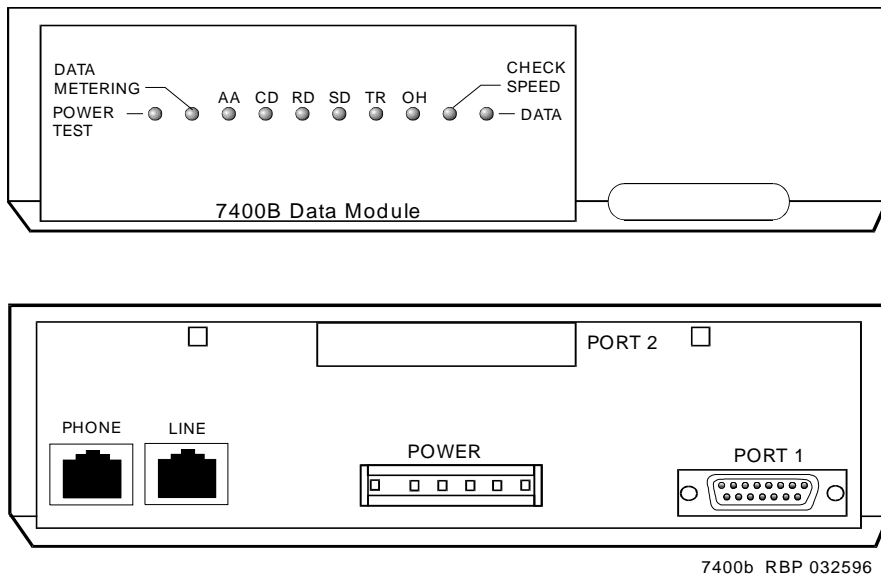
**Figure 12.    7400B data module**

To configure the 7400B data module, proceed as follows.

## ⚠ WARNING:

*Electrostatic discharge can severely damage sensitive electronic circuits. Before handling any electronic hardware, be sure to wear a grounding wrist strap or other static-dissipating device. Do not touch exposed circuitry or semiconductor chips.*

1. If you are not attaching a telephone to the data module, activating data metering, or enabling busyout on the local loop, you can use the factory default settings. The 7400B data module is already configured for your use. Stop now.

2. Otherwise, remove the access panel on the top of the case by grasping the rear lip of the panel and pulling sharply upward.

3. Locate the DIP switch block, a bank of tiny switches on the circuit board, in the center of the opening.

   DIP switches 1, 5, and 8 control the attached telephone (if any), data metering, and loopback on local loop.

4. Set the switches for the combination of options that you need to enable, using the chart below as a guide.

**No telephone attached, data metering OFF, busyout on local loop OFF (factory default settings)**
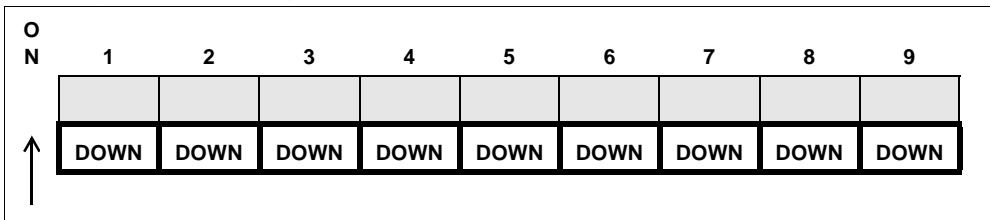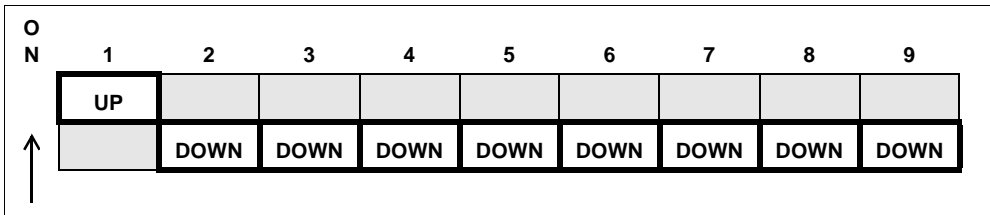
| ON | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|----|------|------|------|------|------|------|------|------|------|
| ↑ | DOWN | DOWN | DOWN | DOWN | DOWN | DOWN | DOWN | DOWN | DOWN |

**Telephone attached, data metering OFF, busyout on local loop OFF**

| ON | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|----|------|------|------|------|------|------|------|------|------|
| | UP | | | | | | | | |
| ↑ | | DOWN | DOWN | DOWN | DOWN | DOWN | DOWN | DOWN | DOWN |

**No telephone attached, data metering ON, busyout on local loop OFF**

| ON | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|----|------|------|------|------|------|------|------|------|------|
| | | | | | UP | | | | |
| ↑ | DOWN | DOWN | DOWN | DOWN | | DOWN | DOWN | DOWN | DOWN |

**No telephone attached, data metering OFF, busyout on local loop ON**

| ON | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|----|------|------|------|------|------|------|------|------|------|
| | | | | | | | | UP | |
| ↑ | DOWN | DOWN | DOWN | DOWN | DOWN | DOWN | DOWN | | DOWN |

**No telephone attached, data metering ON, busyout on local loop ON**

| ON | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|----|---|---|---|---|----|---|---|----|---|
| ↑ (UP) |  |  |  |  | UP |  |  | UP |  |
| (DOWN) | DOWN | DOWN | DOWN | DOWN |  | DOWN | DOWN |  | DOWN |

**Telephone attached, data metering ON, busyout on local loop OFF**

| ON | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|----|----|---|---|---|----|---|---|---|---|
| ↑ (UP) | UP |  |  |  | UP |  |  |  |  |
| (DOWN) |  | DOWN | DOWN | DOWN |  | DOWN | DOWN | DOWN | DOWN |

**Telephone attached, data metering OFF, busyout on local loop ON**

| ON | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|----|----|---|---|---|---|---|---|----|---|
| ↑ (UP) | UP |  |  |  |  |  |  | UP |  |
| (DOWN) |  | DOWN | DOWN | DOWN | DOWN | DOWN | DOWN |  | DOWN |
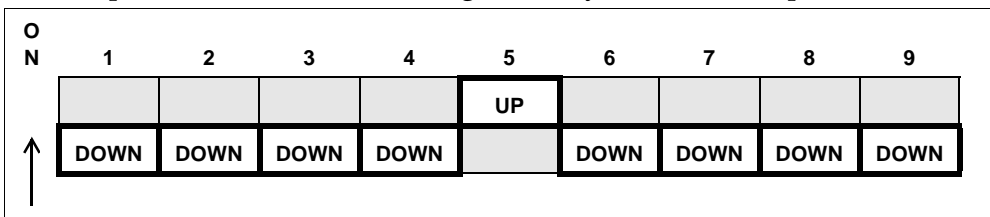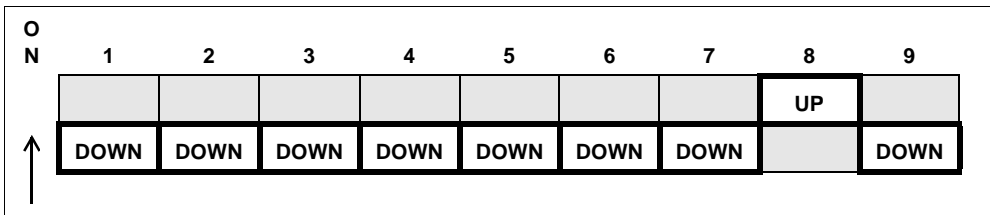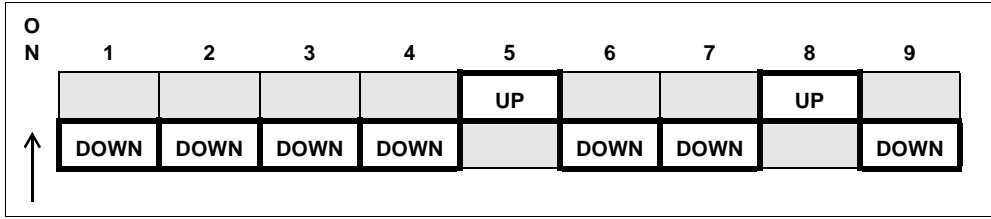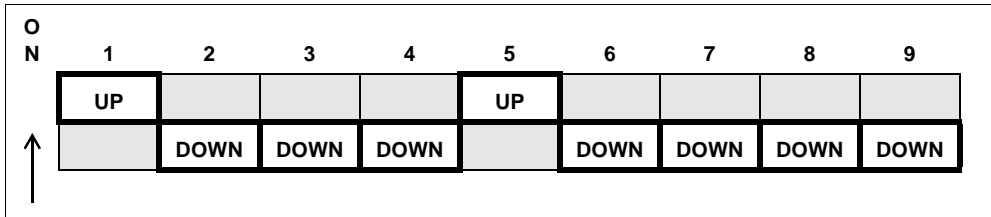
**Telephone attached, data metering ON, busyout on local loop ON**
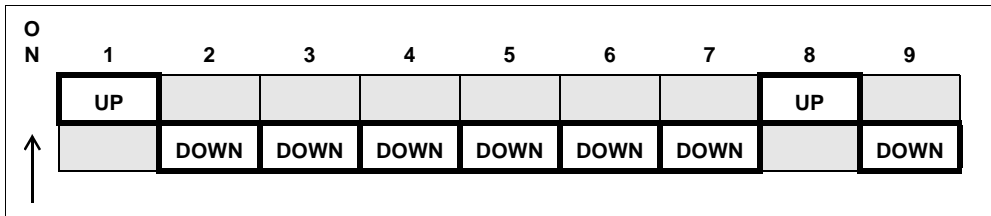
| ON | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|----|----|---|---|---|----|---|---|----|---|
| ↑ (UP) | UP |  |  |  | UP |  |  | UP |  |
| (DOWN) |  | DOWN | DOWN | DOWN |  | DOWN | DOWN |  | DOWN |
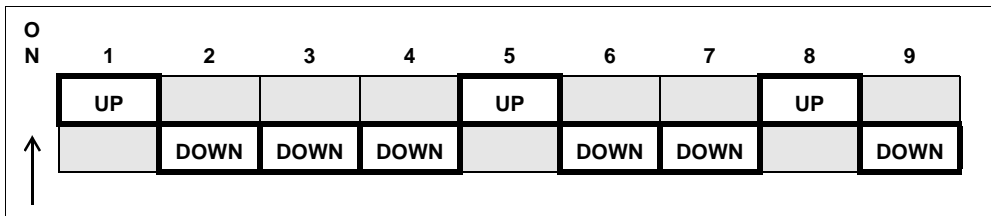
5. Replace the cover on the data module.

# Connect data modules

To connect a single data module, follow the procedure in following section. To connect multiple data modules, see Connecting multiple data modules to the system.

## Connecting a single data module

**⚠ CAUTION:**
*You must install a 105D or 105C isolating data interface adapter when connecting data modules to equipment in DC-powered cabinets.*

Connect the data module to your house wiring or DEFINITY as follows.

1. Attach a D8W cable to the **LINE** port of the data module.

2. If you are going to attach a telephone to the data module

   a. Attach a 400B2 adapter to the other end of the D8W cable.

   b. Plug the adapter into a modular wall jack or 103A connector.

   c. Plug a D7AP cord into the 400B2 adapter.

   d. Plug the other end of the D7AP cord into the auxiliary power supply for the telephone.

      You must have a separate power supply for the telephone and for the data module.

   e. Attach a D8W cable to the **PHONE** port of the data module.

3. If you are not attaching a telephone, attach the D8W cable from the Line port of the data module to a modular wall jack or 103A connector.

4. Attach the data-module power supply to the power connector on the back of the data module, and plug the power supply into an AC electrical outlet.

5. Connect an RS-232 cable to the **PORT 1** connector on the back of the data module.

6. If the equipment includes a V.35 interface, plug a V.35 cable into the **V.35** connector on the data module.

7. If the data module is a 7400B DCE-only device and if the other end of the cable is connected to another DCE device, insert a null-modem adapter between the data module and the RS-232 cable.

8. Connect the other end of the RS-232 cable to a serial (COM) port connection on the data device (host computer, serial printer, modem, etc.).

9. Go to the configuration procedure for the data module you are using:

   - Installation procedure

   - Configuring the 7400B Data Module

   - Configuring the 7400C HSL (high- speed link) data module

   - Configuring the 7400D data module

   - Configuring the 8400B Plus data module

   - Configuring the ExpressRoute 1000 data module

## Connecting multiple data modules to the system

⚠️ **CAUTION:**
> *You must install a 105D or 105C isolating data interface adapter when connecting data modules to equipment in DC-powered cabinets.*

You install multiple data modules in a data mounting on the DEFINITY. A Z77A data mounting can take up to 8 data modules. See Figure 13.
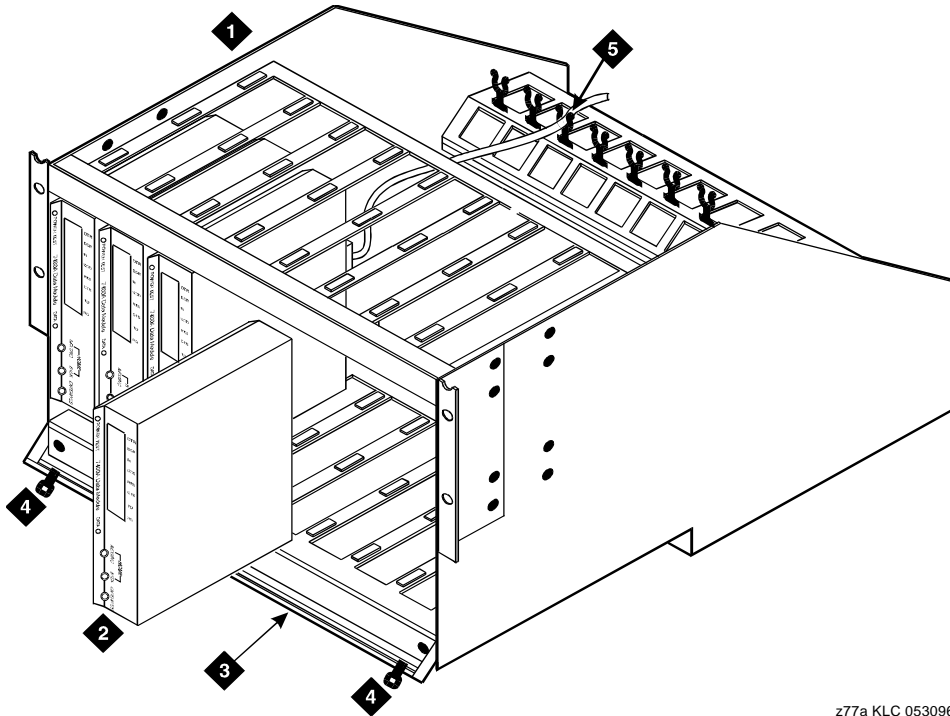


z77a KLC 053096

1. Z77A data mounting
2. Data module (7400A shown)
3. Retaining bar
4. Retaining bar plunger
5. Twist-lock cable retainers

**Figure 13.    Z77A data mounting**

Proceed as follows.

1. Set data-module hardware options before installing the hardware in the mounting.

2. Release the horizontal retaining bar at the front of the data mounting by pulling out the plungers at the left and right sides of the bar.

3. Pull the retaining bar out and down.

4. Connect the a 25-pin RS-232 cable to the 25-pin connector on the rear of the data module.

5. Route the cable through the data mounting and through the twist-lock cable retainer on the top of the data mounting.

6. Attach the other end of the RS-232 cable to DTE or DCE.

7. Insert the data module vertically into the data mounting. Be sure the display is to the top of the data mounting.

8. Repeat steps 2 through 5 for each data module.

9. Return the horizontal retaining bar to its original position to secure the data modules inside the data mounting.

10. Go to the configuration procedure for the data module you are using:

   ■ Configuring the 7400A data module

   ■ Configuring the 7400B Data Module

   ■ Configuring the 7400C HSL (high- speed link) data module

   ■ Configuring the 7400D data module

   ■ Configuring the 8400B Plus data module

## Configuring the 7400A data module

The 7400A is a full-duplex, asynchronous data module for use with Digital Communications Protocol (DCP). It is designed for applications that do not require integration of voice and data. It supports asynchronous connections at speeds up to 19.2 Kbps through an EIA-232-D interface. Figure 14 represents the front and back of the 7400A data module.

7400a  RBP 032596
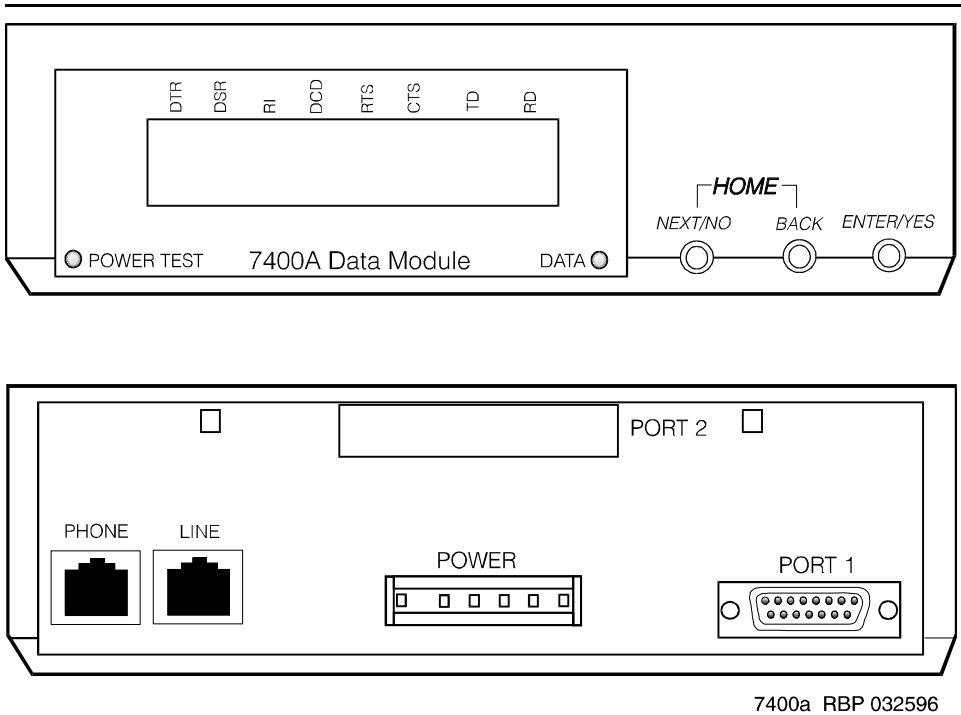
**Figure 14.    7400A asynchronous data module**

## Using the 7400A menu system

On the 7400A, you select communications settings using the controls on the front panel of the device. An LCD displays the configuration menus.  You use the **NEXT/NO** and **BACK** buttons to navigate through the menus and the **ENTER/ YES** button to select values.

### Powering up the 7400A

When you power up the 7400A, the **POWER TEST** and **DATA** LEDs light up, and the 7400A data module displays the HOME screen on the LCD. The figure below represents a typical home screen. Dashes indicate a lead that is connected, ovals a lead that is not.
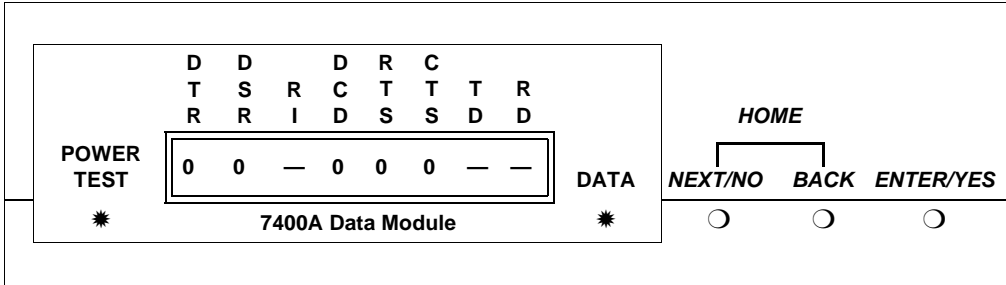
**Adjusting the control-panel display on the 7400A**

1. Adjust the contrast of the display so that you can see it comfortably. Press the **ENTER/YES** button. This steps you through the available contrast settings.



*Push the button indicated by the arrow (➜)*

**7400A data module, EIA RS-232 interface circuits**

The data module communicates with other equipment through a configurable, 25-pin RS-232 serial interface. DCE and DTE operation use different sets of pins and assign different functions to some of the same pins. To avoid confusion later on, please take a moment to review the differences. See the table below (the pins most discussed in subsequent sections have been emphasized).

| Pin | Name | Function | DCE | DTE |
|-----|------|----------|-----|-----|
| 1 | — | Not used | — | — |
| 2 | BA (TD) | Transmitted Data | Input | Output |
| 3 | BB (RD) | Received Data | Output | Input |
| 4 | CA (RTS) | Request to Send | Input | Output |
| 5 | CB (CTS) | Clear to Send | Output | Input |
| 6 | CC (DSR) | Data Communication Equipment Ready | Output | Input |
| 7 | AB (SG) | Signal Ground | Common | Common |
| 8 | CF (RLSD) | Received Line Signal Detector | Output | Input |

| Pin | Name | Function | DCE | DTE |
|---|---|---|---|---|
| 9 | — | Reserved for Testing | +12 volts | — |
| 10 | — | Reserved for Testing | -12 volts | — |
| 11 | — | Not used | — | — |
| 12 | CI | Data Signal Rate Select (DCE Source) | Output | Input |
| **13** | **CI2** | **Data Signal Rate Select 2 (DCE Source)** | **—** | **Input** |
| 14 | — | Not used | — | — |
| 15 | DB* | Transmitter Signal Element Timing (DCE Source) | Output | Input |
| 16 | — | Not used | — | — |
| 17 | DD* | Receiver Signal Element Timing (DCE Source) | Output | Input |
| 18 | LL | Local Loopback | Input | Output |
| 19 | CH2 | Data Signal Rate Select 2 (DTE Source) | — | Output |
| 20 | CD (DTR) | Data Terminal Equipment Ready | Input | Output |
| 21 | RL | Remove Loopback | Input | Output |
| 22 | CE (RI) | Ring Indicator | Output | Input |
| 23 | CH | Data Signal Rate Select (DTE Source) | Input | Output |
| 24 | DA* | Transmit Signal Element Timing (DTE Source) | Input | Output |
| 25 | TM | Test Mode | Output | Input |

* Circuits are not used for asynchronous operation. Outputs are clamped OFF and inputs are ignored.

## Configuring the 7400A for data communications equipment (DCE) applications

If you are not going to use the 7400A data module in a modem pool, proceed as follows.

### Setting interface options on 7400A DCE

1. To access the menus, press the **NEXT/NO** button.

| | | | |
|---|---|---|---|
| 0   0  —  0   0   0  —  — | | | |

         **DATA**    *NEXT/NO*   **BACK**   *ENTER/YES*

         ●         ○       ○     ➜ ●

*Push the button indicated by the arrow* (➜)

2. When the **SET OPTIONS?** prompt appears on the LCD. Press the **NEXT/NO** button.

| |
|---|
| SET OPTIONS? |

         **DATA**    *NEXT/NO*   **BACK**   *ENTER/YES*

         ●    ➜ ●      ○       ○

*Push the button indicated by the arrow* (➜)

3. The **VIEW OPTIONS?** prompt appears. Press the **NEXT/NO** button.

| |
|---|
| VIEW OPTIONS? |

         **DATA**    *NEXT/NO*   **BACK**   *ENTER/YES*

         ●    ➜ ●      ○       ○

*Push the button indicated by the arrow* (➜)

You will return to the options menus in a minute. But first you must select a command interface for the data module.

4. The **SET INTERFACE?** prompt appears. Press the **ENTER/YES** button.

| |
|---|
| SET INTERFACE? |

         **DATA**    *NEXT/NO*   **BACK**   *ENTER/YES*

         ●         ○      ○     ➜ ●

*Push the button indicated by the arrow* (➜)

A series of **INT = *InterfaceType*?** prompts appears.

5. For each prompt, if you want to select the interface, press the **ENTER/YES** button or, if you want a different interface, press the **NEXT/NO** button.

   a. Enable the answer-only interface if the data module must operate without any kind of external control:

   ```
   INT=ANS ONLY?
   ```
   DATA   NEXT/NO   BACK   ENTER/YES
   ●        ○         ○        ○

   *Select an option (NEXT/NO or ENTER/YES)*

   b. Enable the AT-command interface if users need to control the data module remotely, using a dial-up connection and Hayes-compatible modem commands:

   ```
   INT = AT COM?
   ```
   DATA   NEXT/NO   BACK   ENTER/YES
   ●        ○         ○        ○

   *Select an option (NEXT/NO or ENTER/YES)*

   c. Enable the keyboard-dial interface if  users need to control the data module interactively, from a  terminal:

   ```
   INT = KYBD DIAL?
   ```
   DATA   NEXT/NO   BACK   ENTER/YES
   ●        ○         ○        ○

   *Select an option (NEXT/NO or ENTER/YES)*

After you select an interface, the data module runs a self-test and returns to the HOME screen.

| | D | D | | D | R | C | | |
|---|---|---|---|---|---|---|---|---|
| | T | S | R | C | T | T | T | R |
| | R | R | I | D | S | S | D | D |
| POWER TEST | 0 | 0 | — | 0 | 0 | 0 | — | — |

HOME

POWER TEST
☀         7400A Data Module         ☀

DATA   NEXT/NO   BACK   ENTER/YES
              ○         ○        ○
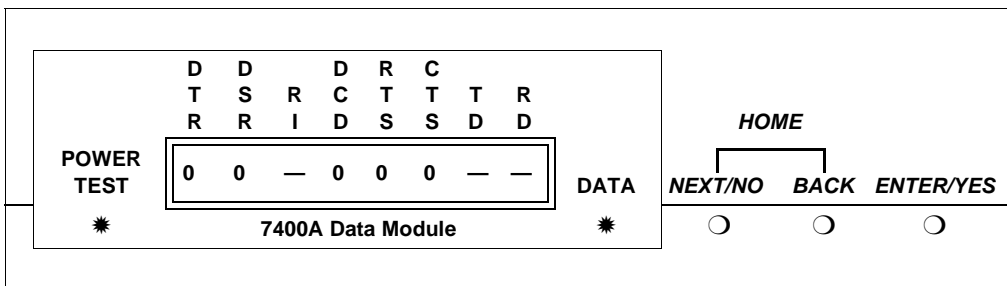
**Setting speed options on 7400A DCE**

1. Press the **NEXT/NO** button to continue with the setup procedure.

```
0   0   —   0   0   0   —   —
```
DATA   *NEXT/NO*   *BACK*   *ENTER/YES*
●        → ●         ❍          ❍

*Push the button indicated by the arrow* (➜)

2. The **SET OPTIONS?** prompt appears on the LCD. Press the **ENTER/YES** button.

```
SET OPTIONS?
```
DATA   *NEXT/NO*   *BACK*   *ENTER/YES*
●        ❍          ❍         → ●

*Push the button indicated by the arrow* (➜)

A series of **SET *number* SPEED?** prompts appears.

3. Press the **NEXT/NO** button until you see the **SET 9600 SPEED?** prompt. Then press the **ENTER/YES** button.

```
SET 9600 SPEED?
```
DATA   *NEXT/NO*   *BACK*   *ENTER/YES*
●        ❍          ❍         → ●

*Push the button indicated by the arrow* (➜)

Most DEFINITY connections operate at the 9600 speed.

4. The **9600 = ON?** prompt appears. Press the **ENTER/YES** button.

```
9600=ON?
```
DATA   *NEXT/NO*   *BACK*   *ENTER/YES*
●        ❍          ❍         → ●

*Push the button indicated by the arrow* (➜)

5. The **CONTINUE?** prompt appears. Press the **ENTER/YES** button.

```
CONTINUE?
```
DATA   *NEXT/NO*   *BACK*   *ENTER/YES*
●        ❍          ❍         → ●

*Push the button indicated by the arrow* (➜)

6.  The **SET 19200 SPEED?** prompt appears. Press the **NEXT/NO** button.

| SET 19200 SPEED? | DATA | NEXT/NO | BACK | ENTER/YES |
|---|---|---|---|---|
| | ● | ➜ ● | ○ | ○ |

*Push the button indicated by the arrow (➜)*

7.  If you selected the AT-command interface in the section "Setting interface options on 7400A DCE", you are finished configuring the 7400A data module.

### Setting the automatic-answer feature on 7400A DCE

You can set up the 7400A data module to automatically answer calls or you can have it ignore calls until an operator answers manually. Set up the data module for automatic answering unless specifically directed to otherwise.

1.  When the **SET ANSWER?** prompt appears, press the **ENTER/YES** button.

| SET ANSWER? | DATA | NEXT/NO | BACK | ENTER/YES |
|---|---|---|---|---|
| | ● | ○ | ○ | ➜ ● |

*Push the button indicated by the arrow (➜)*

2.  When the **ANS = AUTO?** prompt appears, if you want to enable automatic answering, press the **ENTER/YES** button. Otherwise, press the **NEXT/NO** button.

| ANS = AUTO? | DATA | NEXT/NO | BACK | ENTER/YES |
|---|---|---|---|---|
| | ● | ○ | ○ | ○ |

*Select an option (NEXT/NO or ENTER/YES)*

3.  If you pressed **NEXT/NO** in the preceding step, the **ANS —> MANUAL?** prompt appears. If you want to disable automatic answering, press the **ENTER/YES** button. Otherwise, press the **NEXT/NO** button.

| ANS —> MANUAL? | DATA | NEXT/NO | BACK | ENTER/YES |
|---|---|---|---|---|
| | ● | ○ | ○ | ○ |

*Select an option (NEXT/NO or ENTER/YES)*

4. The **CONTINUE?** prompt appears. Press the **ENTER/YES** button.

| CONTINUE? | DATA | *NEXT/NO* | *BACK* | *ENTER/YES* |
|---|---|---|---|---|
| | ● | ○ | ○ | ➜ ● |

*Push the button indicated by the arrow* (➜)

### Setting the break-disconnect option on 7400A DCE

This setting specifies the length of the BREAK signal, a string of 10 or more spaces that tells the host that the user needs to interrupt operations. There are three options: TRIPLE, LONG (the default), and NONE. Accept the default values, unless otherwise instructed.

1. When the **SET BREAK DISC?** prompt appears, press the NEXT/NO button to keep the default.

| SET BREAK DISC? | DATA | *NEXT/NO* | *BACK* | *ENTER/YES* |
|---|---|---|---|---|
| | ● | ➜ ● | ○ | ○ |

*Push the button indicated by the arrow* (➜)

### Configuring the RS-232 interface on 7400A DCE

You can set each pin of the RS-232 cable to meet the needs of specific applications or connected equipment. however, in most cases, you can use the defaults.

To set the EIA leads, proceed as follows:

1. When the **SET *LeadName* LEAD?** prompt appears, press the **NEXT/NO** button to keep the default or the **ENTER/YES** button to make a change.

| SET *LeadName* LEAD? | DATA | *NEXT/NO* | *BACK* | *ENTER/YES* |
|---|---|---|---|---|
| | ● | ➜ ● | ○ | ○ |

*Push the button indicated by the arrow* (➜)

2. If you pressed the **ENTER/YES** button at the **SET *LeadName* LEAD?** prompt**,** the ***LeadName* -> ON?** prompt appears. Press the **ENTER/YES** button.

| | DATA | NEXT/NO | BACK | ENTER/YES |
|---|---|---|---|---|
| *LeadName* -> ON? | ● | ○ | ○ | ➜ ● |

*Push the button indicated by the arrow* (➜)

3. Repeat until all leads have been set.

### Setting parity on 7400A DCE

Next you need to identify the type of parity coding that the data module should expect. Parity is an error-detection scheme that is based on the value of a parity bit in each unit of information. Four coding schemes are used: **ODD**, **EVEN**, **MARK**, and **SPACE**. In odd-parity coding, the parity bit is set to 0 if the number of 1s in the information is odd, 1 if it is even. In even-parity coding, the parity bit is set to 0 if the number of 1s in the information is even, 1 if it is odd. Mark-parity coding always sets the parity bit to 1. Space-parity coding always sets the parity bit to 0.

1. Accept the default value, unless otherwise instructed. When the **SET PARITY?** prompt appears, press the NEXT/NO button to keep the default, **SPACE**.

| | DATA | NEXT/NO | BACK | ENTER/YES |
|---|---|---|---|---|
| SET  PARITY? | ● | ➜ ● | ○ | ○ |

*Push the button indicated by the arrow* (➜)

### Enabling remote loopback testing on 7400A DCE

You can set the remote loopback option to **GRANT** or **DENY**.

1. Accept the default value, unless otherwise instructed. When the **SET REMOTE LOOP?** prompt appears, press the NEXT/NO button to keep the default, **GRANT**.

| | DATA | NEXT/NO | BACK | ENTER/YES |
|---|---|---|---|---|
| SET  REMOTE LOOP? | ● | ➜ ● | ○ | ○ |

*Push the button indicated by the arrow* (➜)

### Configuring the ring indicator on 7400A DCE

The ring-indicator (pin 22) setting can have either of two values: **CYCLE** or **ON** (the default).

1. Accept the default values, unless otherwise instructed. When the **SET RI LEAD?** prompt appears, press the NEXT/NO button to keep the default, ON.

| | DATA | *NEXT/NO* | *BACK* | *ENTER/YES* |
|---|---|---|---|---|
| SET RI LEAD? | ● | ➜ ● | ○ | ○ |

*Push the button indicated by the arrow (➜)*

### Enabling remote loopback on 7400A DCE

The remote-loopback setting (pin 21) can have either of two values: **ON** or **OFF** (the default).

1. Accept the default values, unless otherwise instructed. When the **SET RL LEAD?** prompt appears, press the **NEXT/NO** button to keep the default, **ON**.

| | DATA | *NEXT/NO* | *BACK* | *ENTER/YES* |
|---|---|---|---|---|
| SET RL LEAD? | ● | ➜ ● | ○ | ○ |

*Push the button indicated by the arrow (➜)*

### Setting the signals-disconnect (SIGLS DISC) option on 7400A DCE

The settings can have either of two values: **ON** (the default) or **OFF**.

Accept the default values, unless otherwise instructed.

1. When the **SET SIGLS DISC?** prompt appears, press the **NEXT/NO** button to keep the default, **ON**.

| | DATA | *NEXT/NO* | *BACK* | *ENTER/YES* |
|---|---|---|---|---|
| SET SIGLS DISC? | ● | ➜ ● | ○ | ○ |

*Push the button indicated by the arrow (➜)*

### Enabling test mode on 7400A DCE

The test-mode (pin 25) setting can have either of two values: **ON** or **OFF** (the default).

1. Accept the default values, unless otherwise instructed. When the **SET TM LEAD?** prompt appears, press the **NEXT/NO** button to keep the default, **ON**.

| | | | |
|---|---|---|---|
| SET TM LEAD? | | | |

| DATA | NEXT/NO | BACK | ENTER/YES |
|---|---|---|---|
| ● | ➜ ● | ❍ | ❍ |

*Push the button indicated by the arrow* (➜)
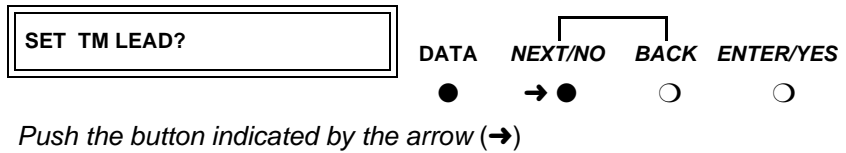
### Exiting menus and saving changes on 7400A DCE

1. When the **DONE?** prompt appears, press the **ENTER/YES** button.
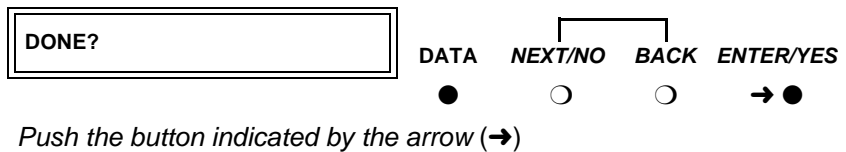
| | | | |
|---|---|---|---|
| DONE? | | | |

| DATA | NEXT/NO | BACK | ENTER/YES |
|---|---|---|---|
| ● | ❍ | ❍ | ➜ ● |

*Push the button indicated by the arrow* (➜)

2. When the SAVE CHANGES? prompt appears, press the **ENTER/YES** button.

| | | | |
|---|---|---|---|
| SAVE CHANGES? | | | |

| DATA | NEXT/NO | BACK | ENTER/YES |
|---|---|---|---|
| ● | ❍ | ❍ | ➜ ● |

*Push the button indicated by the arrow* (➜)

Your changes are saved.

| | | | |
|---|---|---|---|
| CHANGES SAVED | | | |

| DATA | NEXT/NO | BACK | ENTER/YES |
|---|---|---|---|
| ● | ❍ | ❍ | ➜ ● |

*Push the button indicated by the arrow* (➜)
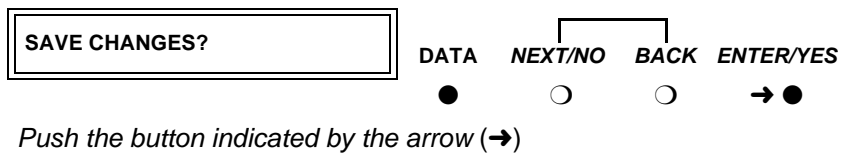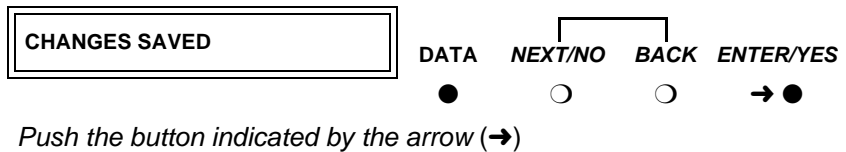
You return HOME.
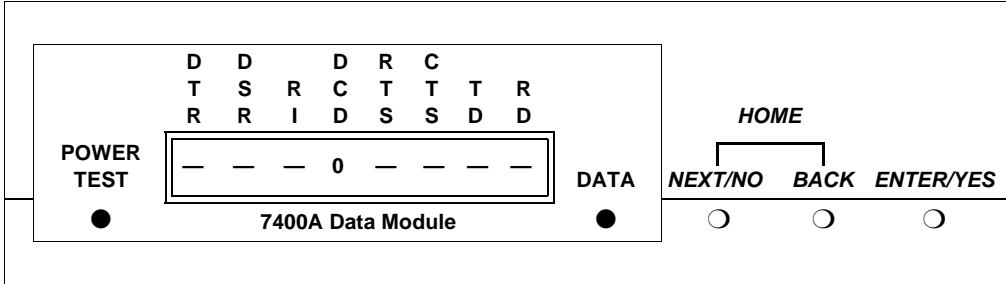


### Checking DEFINITY administration on 7400A DCE

Check that the DEFINITY is administered to support the 7400A data module in the DCE application as follows:

1. If necessary, return to the HOME display on the 7400A by pressing the **NEXT/NO** and **BACK** buttons at the same time.

2. From the HOME display, press **NEXT/NO** until **ANS/ORIG CALL?** is displayed, then press the **ENTER/YES** button.

3. If you see the message **WAITING** ... **DISCONNECTED**, the switch has not been administered correctly.

4. If you see the message **DIAL TONE** followed by **DISCONNECT CALL?**, the DEFINITY is correctly administered for the 7400A data module. Press the **ENTER/YES** button to return to the menu.

   The 7400A replies **WAITING** ... **DISCONNECTED** and returns to the **ANS/ORIG CALL?** menu.

5. Return to the HOME display by pressing the **NEXT/NO** and **BACK** buttons at the same time.

### Configuring the 7400A for modem pooling (DTE) applications

From the HOME screen, proceed as follows.

**Setting speed options on 7400A DTE**

1. To access the menus, press the **NEXT/NO** button.

2. When the **SET OPTIONS?** prompt appears on the LCD, press the **ENTER/YES** button.
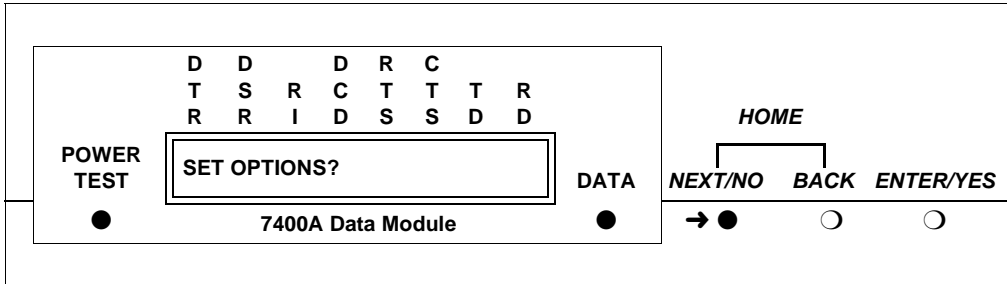
```
        D   D       D   R   C
        T   S   R   C   T   T   T   R
        R   R   I   D   S   S   D   D
                                              HOME
POWER                                         ┌──────┐
TEST    SET OPTIONS?                DATA   NEXT/NO  BACK  ENTER/YES
 ●          7400A Data Module        ●      → ●      ○        ○
```

*Push the button indicated by the arrow* (➜)

A series of **SET *number* SPEED?** prompts appears.

3. Press the **NEXT/NO** button until you see the **SET 9600 SPEED?** prompt. Then press the **ENTER/YES** button.

```
                                              ┌──────┐
SET 9600 SPEED?             DATA   NEXT/NO  BACK  ENTER/YES
                             ●       ○       ○      → ●
```

*Push the button indicated by the arrow* (➜)

Most DEFINITY connections operate at the 9600 speed.

4. The **9600 = OFF?** prompt appears. Press the **NEXT/NO** button.

```
                                              ┌──────┐
9600=OFF?                   DATA   NEXT/NO  BACK  ENTER/YES
                             ●      → ●      ○       ○
```

*Push the button indicated by the arrow* (➜)

5. The **9600 —> ON?** prompt appears. Press the **ENTER/YES** button.

```
                                              ┌──────┐
9600 —> ON?                 DATA   NEXT/NO  BACK  ENTER/YES
                             ●       ○       ○      → ●
```

*Push the button indicated by the arrow* (➜)

6. The **CONTINUE?** prompt appears. Press the **ENTER/YES** button.

```
┌──────────────────────────┐              ┌──────┐
│ CONTINUE?                │    DATA   NEXT/NO   BACK   ENTER/YES
└──────────────────────────┘     ●        ○        ○       ➜ ●
```

*Push the button indicated by the arrow* (➜)

7. The **SET 19200 SPEED?** prompt appears. Press the **NEXT/NO** button to keep the default.

```
┌──────────────────────────┐              ┌──────┐
│ SET 19200 SPEED?         │    DATA   NEXT/NO   BACK   ENTER/YES
└──────────────────────────┘     ●      ➜ ●       ○        ○
```

*Push the button indicated by the arrow* (➜)

8. The **SET AT CONTROL?** prompt appears. Press the **ENTER/YES** button to enable Hayes-compatible modem commands. Press the **NEXT/NO** button to accept the default (OFF).

```
┌──────────────────────────┐              ┌──────┐
│ SET AT CONTROL?          │    DATA   NEXT/NO   BACK   ENTER/YES
└──────────────────────────┘     ●        ○        ○        ○
```

*Select an option (NEXT/NO or ENTER/YES)*

Use the AT CONTROL setting to let users control the data module remotely, using a dial-up connection.

9. If you enabled AT commands, the **AT = OFF?** prompt appears. Press the **NEXT/NO** button.

```
┌──────────────────────────┐              ┌──────┐
│ AT=OFF?                  │    DATA   NEXT/NO   BACK   ENTER/YES
└──────────────────────────┘     ●      ➜ ●       ○        ○
```

*Push the button indicated by the arrow* (➜)

10. If you enabled AT commands, the **AT —> ON?** prompt appears. Press the **ENTER/YES** button.

```
┌─────────────────────────┐
│ AT —> ON?               │     DATA    NEXT/NO    BACK   ENTER/YES
└─────────────────────────┘      ●         ❍         ❍      ➜ ●
```

*Push the button indicated by the arrow (➜)*

11. If you enabled AT commands, the **CONTINUE?** prompt appears. Press the **ENTER/YES** button.

```
┌─────────────────────────┐
│ CONTINUE?               │     DATA    NEXT/NO    BACK   ENTER/YES
└─────────────────────────┘      ●         ❍         ❍      ➜ ●
```

*Push the button indicated by the arrow (➜)*

### Configuring the RS-232 interface on 7400A DTE

You can set each pin of the RS-232 cable to meet the needs of specific applications, though in most cases, the defaults should work. For a list of pins and leads, see Table 11 on page 73.

The Data Signal-Rate Select EIA leads—**CI**, **CI2**, **CH**, and **CH2**—of the RS-232 cable indicate the receive/transmit speeds that the data module can use. To set the EIA signal-rate leads, proceed as follows:

1. From the HOME display, press **NEXT/NO** until **SET OPTIONS?** appears. Then press the **ENTER/YES** button.

```
┌─────────────────────────┐
│ SET OPTIONS?            │     DATA    NEXT/NO    BACK   ENTER/YES
└─────────────────────────┘      ●         ❍         ❍      ➜ ●
```

*Push the button indicated by the arrow (➜)*

2. When the **SET 300 SPEED?** prompt appears, press **NEXT/NO** until **SET CI LEAD?** appears. Then, using the table and instructions below as a guide, start setting the leads.

```
┌─────────────────────────┐
│ SET CI LEAD?            │     DATA    NEXT/NO    BACK   ENTER/YES
└─────────────────────────┘      ●         ❍         ❍      ➜ ●
```

*Push the button indicated by the arrow (➜)*

**Table 11.    DTE-mode RS-232 signal-rate lead settings for the 7400A**

|  | CI | CH | CI2 | CH2 |
|---|---|---|---|---|
| If you selected AT control  in an earlier step, set | OFF | OFF | OFF | OFF |
| You want only 1 data speed. | OFF | OFF | OFF | OFF |
| You want 2 data speeds. | ON | ON | OFF | OFF |
| You want only 3 or 4 data speeds. | ON | ON | ON | ON |

3. When the **SET CI LEAD?** prompt appears, press the **NEXT/NO** button to keep the default (OFF) or the **ENTER/YES** button to make a change.

```
SET  CI LEAD?
```
DATA    *NEXT/NO*    *BACK*    *ENTER/YES*
●          ● **?**           ❍          ● **?**

*Choose a button indicated by the question mark* (**?**)

4. If you pressed **ENTER/YES** in the preceding step and the **CI LEAD = ON?** prompt appears, press the **ENTER/YES** button again to confirm your selection.

```
CI LEAD=ON?
```
DATA    *NEXT/NO*    *BACK*    *ENTER/YES*
●          ❍          ❍          ➜ ●

*Push the button indicated by the arrow* (➜)

5. When the **SET CI2 LEAD?** prompt appears, press the **NEXT/NO** button to keep the default (OFF) or the **ENTER/YES** button to make a change.

```
SET  CI2 LEAD?
```
DATA    *NEXT/NO*    *BACK*    *ENTER/YES*
●          ● **?**           ❍          ● **?**

*Choose a button indicated by the question mark* (**?**)

6. If you pressed **ENTER/YES** in the preceding step and the
   **CI2 LEAD = ON?** prompt appears press the **ENTER/YES** button again to
   confirm your selection.

| CI2 LEAD=ON? | | | | |
|---|---|---|---|---|
| | **DATA** | *NEXT/NO* | *BACK* | *ENTER/YES* |
| | ● | ○ | ○ | ➜ ● |

*Push the button indicated by the arrow* (➜)

7. When the **SET CH LEAD?** prompt appears, press the **NEXT/NO** button to
   keep the default (OFF) or the **ENTER/YES** button to make a change.

| SET  CH LEAD? | | | | |
|---|---|---|---|---|
| | **DATA** | *NEXT/NO* | *BACK* | *ENTER/YES* |
| | ● | ● **?** | ○ | ● **?** |

*Choose a button indicated by the question mark* (**?**)
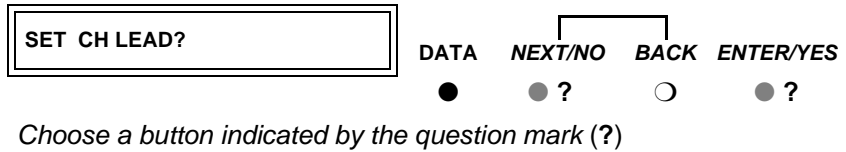
8. If you pressed **ENTER/YES** in the preceding step and the **CH LEAD = ON?**
   prompt appears, press the **ENTER/YES** button again to confirm your
   selection.

| CH LEAD=ON? | | | | |
|---|---|---|---|---|
| | **DATA** | *NEXT/NO* | *BACK* | *ENTER/YES* |
| | ● | ○ | ○ | ➜ ● |

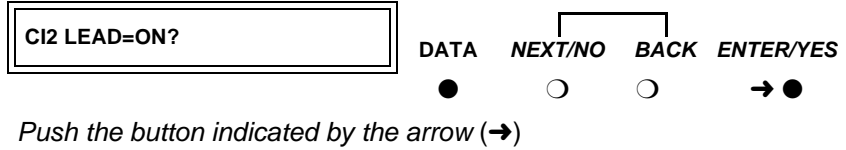*Push the button indicated by the arrow* (➜)
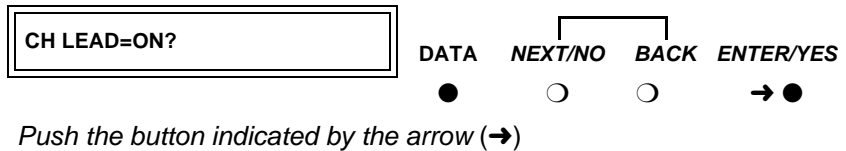
9. If the **SET CH2 LEAD?** prompt appears, press the **NEXT/NO** button to
   keep the default  (OFF) or the **ENTER/YES** button to make a change.

| SET  CH2 LEAD? | | | | |
|---|---|---|---|---|
| | **DATA** | *NEXT/NO* | *BACK* | *ENTER/YES* |
| | ● | ● **?** | ○ | ● **?** |

*Choose a button indicated by the question mark* (**?**)
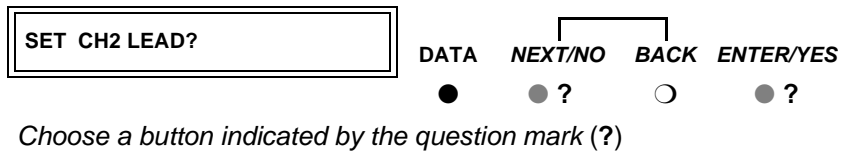
10. The maintenance-option EIA leads configure loopback testing for the data module. You do not need to set any specific options. So, when the **SET LL LEAD?** prompt appears, press the **NEXT/NO** and **BACK** buttons together to return HOME.

```
┌─────────────────────────┐
│ SET  LL LEAD?           │        ┌─────────┐
│                         │   DATA  NEXT/NO  BACK  ENTER/YES
└─────────────────────────┘    ●     ➜ ●    ➜ ●       ○
```

*Push the button indicated by the arrow* (➜)

11. When the **SAVE CHANGES?** prompt appears, press the **ENTER/YES** button.

```
┌─────────────────────────┐
│ SAVE CHANGES?           │        ┌─────────┐
│                         │   DATA  NEXT/NO  BACK  ENTER/YES
└─────────────────────────┘    ●     ○        ○      ➜ ●
```

*Push the button indicated by the arrow* (➜)

The **CHANGES SAVED** message flashes on screen, and you return to the HOME screen. The data module is now configured.

### Restoring factory defaults on 7400A DTE

If necessary, you can always revert to the factory default settings. From the HOME screen, proceed as follows.

1. To access the menus, press the **NEXT/NO** button.

```
┌─────────────────────────┐
│ 0   0  —  0  0  0  — —   │        ┌─────────┐
│                         │   DATA  NEXT/NO  BACK  ENTER/YES
└─────────────────────────┘    ●     ➜ ●      ○       ○
```

*Push the button indicated by the arrow* (➜)

2. When the **SET OPTIONS?** prompt appears on the LCD, press the **NEXT/NO** button.

```
┌─────────────────────────┐
│ SET  OPTIONS?           │        ┌─────────┐
│                         │   DATA  NEXT/NO  BACK  ENTER/YES
└─────────────────────────┘    ●     ➜ ●      ○       ○
```

*Push the button indicated by the arrow* (➜)

3. When the **VIEW OPTIONS?** prompt appears on the LCD, press the **NEXT/ NO** button.

| VIEW OPTIONS? | | DATA | *NEXT/NO* | *BACK* | *ENTER/YES* |
|---|---|---|---|---|---|
| | | ● | ➜ ● | ❍ | ❍ |

*Push the button indicated by the arrow* (➜)

4. When the **TEST - RESET?** prompt appears on the LCD, press the **ENTER/ YES** button.

| TEST - RESET? | | DATA | *NEXT/NO* | *BACK* | *ENTER/YES* |
|---|---|---|---|---|---|
| | | ● | ❍ | ❍ | ➜ ● |

*Push the button indicated by the arrow* (➜)

5. When the **DATA LOOPBACK?** prompt appears on the LCD, press the **NEXT/NO** button.

| DATA LOOPBACK? | | DATA | *NEXT/NO* | *BACK* | *ENTER/YES* |
|---|---|---|---|---|---|
| | | ● | ➜ ● | ❍ | ❍ |

*Push the button indicated by the arrow* (➜)

6. When the **SELF-TEST?** prompt appears on the LCD, press the **NEXT/NO** button.

| SELF - TEST? | | DATA | *NEXT/NO* | *BACK* | *ENTER/YES* |
|---|---|---|---|---|---|
| | | ● | ➜ ● | ❍ | ❍ |

*Push the button indicated by the arrow* (➜)

7. When the **LOCAL LOOPBACK?** prompt appears on the LCD, press the **NEXT/NO** button.

| LOCAL LOOPBACK? | | DATA | *NEXT/NO* | *BACK* | *ENTER/YES* |
|---|---|---|---|---|---|
| | | ● | ➜ ● | ❍ | ❍ |

*Push the button indicated by the arrow* (➜)

8. When the **LOCAL LOOP/ST?** prompt appears on the LCD, press the **NEXT/NO** button.

| LOCAL LOOP/ST? | DATA | NEXT/NO | BACK | ENTER/YES |
|---|---|---|---|---|
| | ● | ➜ ● | ○ | ○ |

*Push the button indicated by the arrow (➜)*

9. When the **REMOTE LOOPBACK?** prompt appears on the LCD, press the **NEXT/NO** button.

| REMOTE LOOPBACK? | DATA | NEXT/NO | BACK | ENTER/YES |
|---|---|---|---|---|
| | ● | ➜ ● | ○ | ○ |

*Push the button indicated by the arrow (➜)*

10. When the **RESET OPTIONS?** prompt appears on the LCD, press the **ENTER/YES** button.

| RESET OPTIONS? | DATA | NEXT/NO | BACK | ENTER/YES |
|---|---|---|---|---|
| | ● | ○ | ○ | ➜ ● |

*Push the button indicated by the arrow (➜)*

The factory options are restored, and you return to the HOME screen.

| | | | D | D | | D | R | C | | | | | | HOME | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | T | S | R | C | T | T | T | R | | | | | |
| | | | R | R | I | D | S | S | D | D | | | | | |
| POWER TEST | 0 | 0 | — | 0 | 0 | 0 | — | — | | DATA | NEXT/NO | BACK | ENTER/YES |
| ● | | | 7400A Data Module | | | | | | | ● | ○ | ○ | ○ |
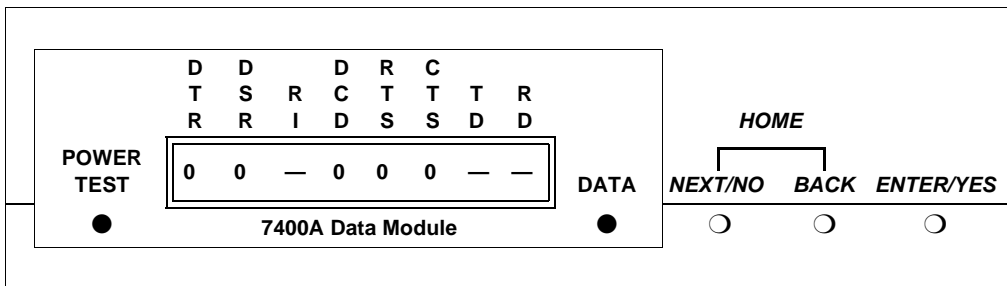
## Configuring the 7400B Data Module

The factory default settings for the7400B data module are generally satisfactory. But if you need to change them, you use a terminal device and the AT command language commonly used by Hayes-compatible modems (7400B data modules have no control buttons). While a full explanation of the Hayes command set is beyond the scope of this book, the following sections sketch the basic processes involved in changing the factory settings.

### Installing required configuration equipment for the 7400B

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 data module. 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 Port 1 of the data module

3. If you are using a PC, start your terminal  emulation software.

### Selecting command mode on the 7400B

When it is transmitting and receiving data, the 7400B data module is online, in data mode. To configure the 7400B, you have to switch it to command mode. Proceed as follows.

1. From the terminal keyboard, enter the escape sequence: **+++**

   The data module enters command mode and displays the **OK** result code.

### Displaying the current configuration on the 7400B

1. Enter **at&v**

### Enabling automatic answering on the 7400B

1. Enter **ats0=***nnn*

   where ***nnn*** is a decimal number in the range **1**-**255**.

### Enabling remote operation on the 7400B

The exact configuration of any particular 7400B data module depends on what it is being used for. Consult a list of Hayes-compatible AT commands to see what is possible. The following is an example of a typical, custom configuration.

The 7400B data module can be used at a remote site as a dedicated service device to answer incoming data calls, send data to a remote end device, and then hang up. For example, you might wish to provide access to a printer from a remote site. The following is a typical command line you might use for setting up this operation (spaces are used here for readability, but are not required):

1. **at &c1 &d2 q1 s0=1 &w0 &y0**

   where:

   - **at** puts the modem in command mode
   - **&C1** sets the Data Carrier Detect (DCD) circuit of the data module to operate according to the EIA standard
   - **&D2** sets the data module to go on hook when an on-to-off transition is detected on the Data Terminal Ready (DTR) input, disconnecting the call
   - **Q1** turns off the result codes that would be the normal responses of the data module to commands that it receives.
   - **S0=1** turns on the automatic answer feature and causes the data module to answer an incoming data call on the first ring
   - **&W0** causes the current configuration to be stored in profile **0**
   - **&Y0** selects the configuration stored in profile **0** to become the current configuration each time the data module is powered on

## Configuring the 7400B for remote administration

1. At the command prompt of your terminal-emulation software or terminal, enter **at&c1&d2&s1s0=1&w0&w1&y0**

   where:

   - **at** puts the modem in command mode
   - **&c1** tells the modem to respond to DCD
   - **&d2** tells the modem to respond to DTR
   - **&s1** tells the modem to respond to DSR
   - **s0=1** tells the modem to auto answer on the first ring
   - **&w0** tells the modem to save changes in profile **0**
   - **&w1** tells the modem to save changes in profile **1**
   - **&y0** tells the modem to use profile0 after a power failure

## Restoring factory defaults for the 7400B

1. Enter **at&F**

### Exiting command mode on the 7400B

After configuring the 7400B, exit command mode, and put the data module back online.

1. Enter **O** (capital O).

## Configuring the 7400C HSL (high-speed link) data module

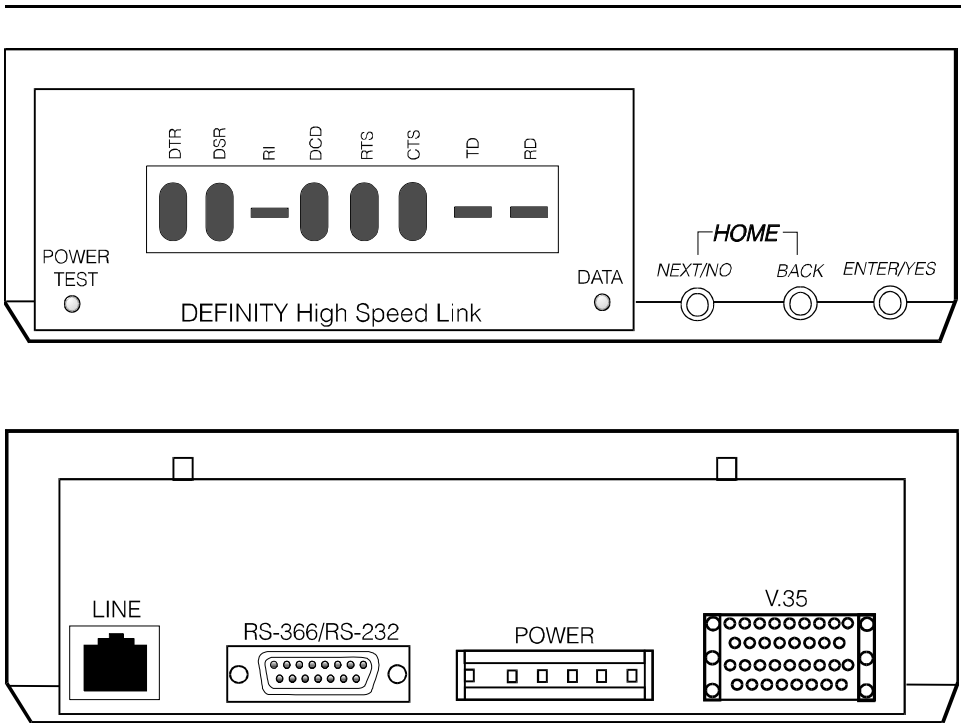Figure 15 shows the front and rear of a 7400C synchronous data module.



**Figure 15.    7400C data module (high speed link)**

### Setting the data speed for the 7400C

Proceed as follows.

1. From the HOME screen, press the **NEXT/NO** button until **SET DATA OPTS?** appears. Then press the **ENTER/YES** button.



*Push the button indicated by the arrow (➜)*

2.  When **SET SPEED?** appears, press the **ENTER/YES** button.

| SET SPEED? | | **DATA** | **NEXT/NO** | **BACK** | **ENTER/YES** |
|---|---|---|---|---|---|
| | | ● | ❍ | ❍ | ➜ ● |

*Push the button indicated by the arrow* (➜)

The current transmission speed appears: **SPEED = 56KBPS?** (the default) or **SPEED = 64KBPS?**

3.  To keep the existing speed, press the **ENTER/YES** button.

| SPEED = 56 KBPS? | | **DATA** | **NEXT/NO** | **BACK** | **ENTER/YES** |
|---|---|---|---|---|---|
| | | ● | ❍ | ❍ | ➜ ● |

*Push the button indicated by the arrow* (➜)

4.  To change the existing speed, press **NEXT/NO**.

| SPEED = 56 KBPS? | | **DATA** | **NEXT/NO** | **BACK** | **ENTER/YES** |
|---|---|---|---|---|---|
| | | ● | ➜ ● | ❍ | ❍ |

*Push the button indicated by the arrow* (➜)

When the **SPEED ->*NewSpeed*?** prompt appears, press the **ENTER/YES** button.

| SPEED -> 64 KBPS? | | **DATA** | **NEXT/NO** | **BACK** | **ENTER/YES** |
|---|---|---|---|---|---|
| | | ● | ❍ | ❍ | ➜ ● |

*Push the button indicated by the arrow* (➜)

5.  The **CONTINUE?** prompt appears. Press the **ENTER/YES** button.

| CONTINUE? | | **DATA** | **NEXT/NO** | **BACK** | **ENTER/YES** |
|---|---|---|---|---|---|
| | | ● | ❍ | ❍ | ➜ ● |

*Push the button indicated by the arrow* (➜)

6.  If you want to set any other options, skip to the following section.

7. Otherwise, if you want to quit now, press **NEXT/NO** until **DONE?** appears. Then press the **ENTER/YES** button.

| DONE? | | | | |
|---|---|---|---|---|
| | **DATA** | **NEXT/NO** | **BACK** | **ENTER/YES** |
| | ● | ○ | ○ | ➜ ● |

*Push the button indicated by the arrow* (➜)
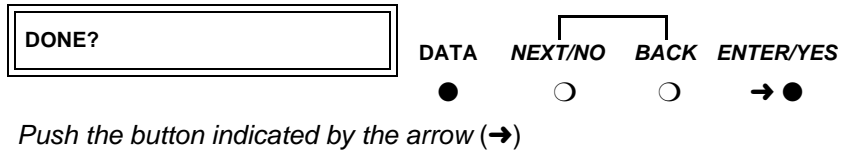
8. When **SAVE CHANGES?** appears, press the **ENTER/YES** button again.

| SAVE CHANGES? | | | | |
|---|---|---|---|---|
| | **DATA** | **NEXT/NO** | **BACK** | **ENTER/YES** |
| | ● | ○ | ○ | ➜ ● |

*Push the button indicated by the arrow* (➜)
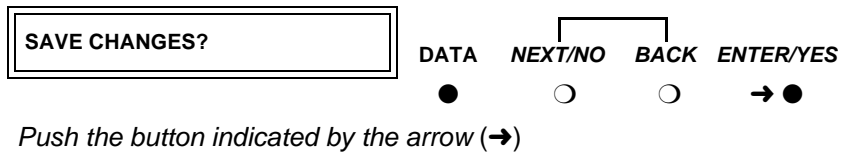
**CHANGES SAVED** appears, and the data module returns to the HOME screen.

### Setting other data options for the 7400C

You can usually use the default settings for all other options. However, two exceptions are discussed below.

### Selecting data inversion for 64-kbps, HDLC transmissions on restricted facilities

Data inversion is available when you are transmitting at 64 kbps over restricted facilities using HDLC-based protocols. Proceed as follows.

1. If you need compatibility with an ACCUNET MPDM, set **DATA INVERSION** to **ON** using the menus and controls as described above, in "Setting the data speed for the 7400C".

2. Otherwise, set **DATA INVERSION** to **OFF**.

3. Exit and save changes, as described above, in "Setting the data speed for the 7400C".

### Configuring the 7400C for a dedicated private line

The factory default settings assume that the data module connects to a switched, dial-up line. Private lines are permanent, unswitched connections, so they have to be specially configured. Proceed as follows.

1. Set the dialing method to **MANUAL**, using the menus and controls as described above, in "Setting the data speed for the 7400C".

2. Set the answering mode (**ANS**) to **AUTO**.

3. Set the **DTR** lead to **IGNORE**.

4.  Set the **DSR** lead to **ON**.

5.  Set **PERMANENT CONNECTION** to **YES**.

6.  Exit and save changes, as described above, in "Setting the data speed for the 7400C".

## Configuring the 7400D data module

The 7400D data module is a converted 7400A used for synchronous data transmission (see Figure 16). It is a direct replacement for the MPDM. You configure the 7400D just as you would a 7400A, except that there is no SET INTERFACE option (the 7400D is an answer-only device that cannot originate calls). It supports DCE mode only. DTE modem-pooling is not supported. The PHONE and PORT2 connectors are not used.

The following table lists recommended settings for a typical installation. For the configuration procedure, see the subsequent sections.

### Recommended settings for typical  configurations

The table below summarizes the recommended configuration values for the 7400D data module. The procedures for setting these values follow.

| Options | CMS settings | DCS settings |
|---|---|---|
| **300** | **OFF** | **OFF** |
| **1200** | **OFF** | **OFF** |
| **2400** | **OFF** | **OFF** |
| **4800** | **OFF** | **OFF** |
| **9600** | **ON (OFF for R8r)** | **ON** |
| **19200** | **OFF (ON for R8r)** | **OFF** |
| **ANSWER** | **AUTO** | **AUTO** |
| **CI** | **OFF** | **ON** |
| **CH LEAD** | **OFF** | **OFF** |
| **CTS LEAD** | **NORMAL** | **NORMAL** |
| **DCD LEAD** | **NORMAL** | **ON** |
| **DSR LEAD** | **NORMAL** | **ON** |
| **DTR DETECT** | **50 MSEC** | **50 MSEC** |
| **DTR LEAD** | **FOLLOW** | **IGNORE** |

*Continued on next page*

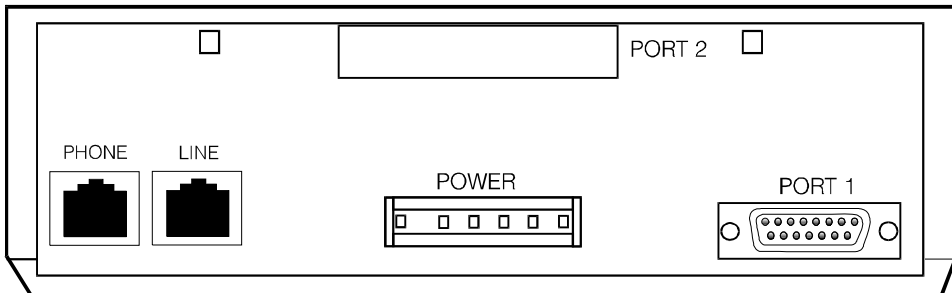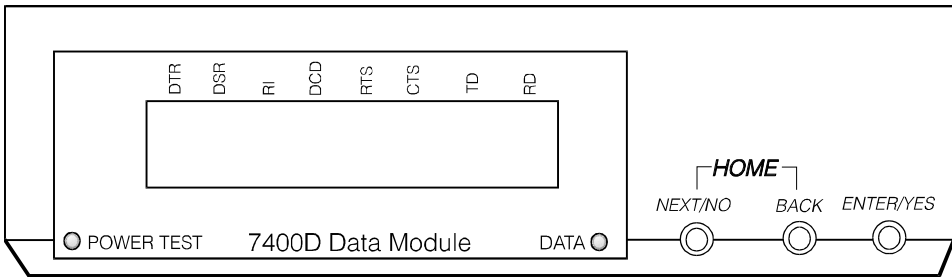| Options | CMS settings | DCS settings |
|---------|--------------|--------------|
| **RI LEAD** | **ON** | **ON** |
| **SIGLS DISC** | **ON** | **ON** |
| **TM LEAD** | **OFF** | **OFF** |

**Figure 16.    7400D data module**

### Accessing the menus of the 7400D

You configure the 7400D from a set of menus.

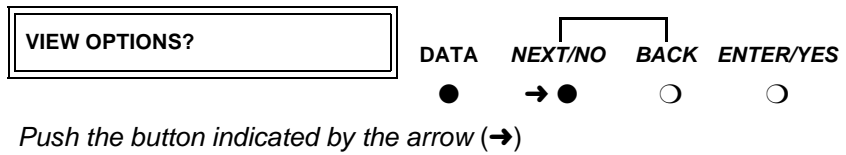1.  To access the menus, press the **NEXT/NO** button.

*Push the button indicated by the arrow (➜)*

2. When the **SET OPTIONS?** prompt appears on the LCD. Press the **NEXT/NO** button.
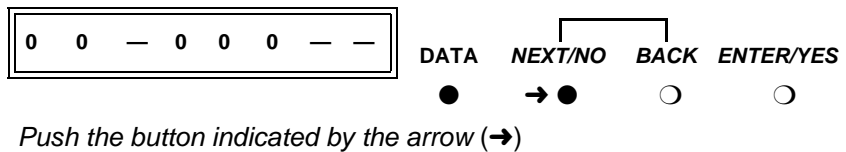
| | DATA | *NEXT/NO* | *BACK* | *ENTER/YES* |
|---|---|---|---|---|
| **SET OPTIONS?** | ● | → ● | ❍ | ❍ |

*Push the button indicated by the arrow* (➜)

3. The **VIEW OPTIONS?** prompt appears. Press the **NEXT/NO** button.

| | DATA | *NEXT/NO* | *BACK* | *ENTER/YES* |
|---|---|---|---|---|
| **VIEW OPTIONS?** | ● | → ● | ❍ | ❍ |

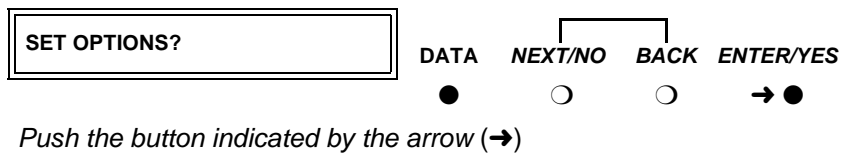*Push the button indicated by the arrow* (➜)
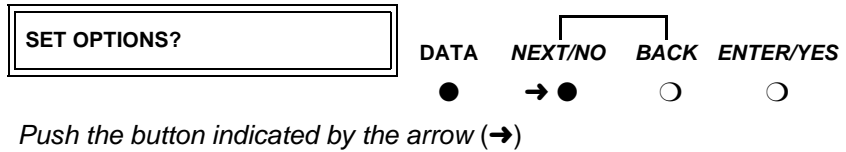
## Setting speed options for the 7400D

The data speed depends on the exact application, but most require 9600 bps or, less commonly, 19200.

1. Press the **NEXT/NO** button to continue with the setup procedure.

| | DATA | *NEXT/NO* | *BACK* | *ENTER/YES* |
|---|---|---|---|---|
| **0  0  —  0  0  0  —  —** | ● | → ● | ❍ | ❍ |

*Push the button indicated by the arrow* (➜)

2. The **SET OPTIONS?** prompt appears on the LCD. Press the **ENTER/YES** button.

| | DATA | *NEXT/NO* | *BACK* | *ENTER/YES* |
|---|---|---|---|---|
| **SET OPTIONS?** | ● | ❍ | ❍ | → ● |

*Push the button indicated by the arrow* (➜)

A series of **SET *number* SPEED?** prompts appears.

3. Press the **NEXT/NO** button until you see the **SET *yourSpeed* SPEED?** prompt. Then press the **ENTER/YES** button.

| SET *yourSpeed* SPEED? | DATA | NEXT/NO | BACK | ENTER/YES |
|---|---|---|---|---|
| | ● | ○ | ○ | ➔ ● |

*Push the button indicated by the arrow* (➔)

4. Press the **NEXT/NO** button until you see the ***yourSpeed*=ON?** prompt. Then press the **ENTER/YES** button.

| *yourSpeed*=ON? | DATA | NEXT/NO | BACK | ENTER/YES |
|---|---|---|---|---|
| | ● | ○ | ○ | ➔ ● |

*Push the button indicated by the arrow* (➔)

5. If the **CONTINUE?** prompt appears, press the **ENTER/YES** button.

| CONTINUE? | DATA | NEXT/NO | BACK | ENTER/YES |
|---|---|---|---|---|
| | ● | ○ | ○ | ➔ ● |

*Push the button indicated by the arrow* (➔)

### Setting the automatic-answer feature on the 7400D

You can set up the 7400D data module to automatically answer calls, or you can have it ignore calls until an operator answers manually. Set up the data module for automatic answering unless specifically directed to otherwise.

1. When the **SET ANSWER?** prompt appears, press the **ENTER/YES** button.

| SET ANSWER? | DATA | NEXT/NO | BACK | ENTER/YES |
|---|---|---|---|---|
| | ● | ○ | ○ | ➔ ● |

*Push the button indicated by the arrow* (➔)

2. When the **ANS = AUTO?** prompt appears, press the **ENTER/YES** button for most applications.

| ANS = AUTO? | DATA | *NEXT/NO* | *BACK* | *ENTER/YES* |
|---|---|---|---|---|
| | ● | ○ | ○ | ➔ ● |

*Push the button indicated by the arrow* (➔)

### Configuring the RS-232 interface of the 7400D

From the front panel, you can set each pin of the RS-232 cable to meet the needs of specific applications, though in most cases, the settings below should work.

1. When the **SET CI LEAD?** prompt appears, press the **ENTER/YES** button.

| SET CI LEAD? | DATA | *NEXT/NO* | *BACK* | *ENTER/YES* |
|---|---|---|---|---|
| | ● | ○ | ○ | ➔ ● |

*Push the button indicated by the arrow* (➔)

2. Press the **NEXT/NO** button until you see the **CI = *correctSetting*?** or **CI -> *correctSetting*?** prompt. Then press the **ENTER/YES** button.

| CI = *correctSetting*? | DATA | *NEXT/NO* | *BACK* | *ENTER/YES* |
|---|---|---|---|---|
| | ● | ○ | ○ | ➔ ● |

*Push the button indicated by the arrow* (➔)

3. When the **CONTINUE?** prompt appears, press the **ENTER/YES** button.

| CONTINUE? | DATA | *NEXT/NO* | *BACK* | *ENTER/YES* |
|---|---|---|---|---|
| | ● | ○ | ○ | ➔ ● |

*Push the button indicated by the arrow* (➔)

4. When the **SET CH LEAD?** prompt appears, press the **ENTER/YES** button.

| SET CH LEAD? | DATA | *NEXT/NO* | *BACK* | *ENTER/YES* |
|---|---|---|---|---|
| | ● | ○ | ○ | ➔ ● |

*Push the button indicated by the arrow* (➔)

5. Press the **NEXT/NO** button until you see the **CH = *correctSetting*?** or **CH -> *correctSetting*?** prompt. Then press the **ENTER/YES** button.

| **CH = *correctSetting*?** |
|---|

**DATA**    *NEXT/NO*    *BACK*    *ENTER/YES*

●     ❍     ❍     ➔ ●

*Push the button indicated by the arrow* (➔)

6. When the **CONTINUE?** prompt appears, press the **ENTER/YES** button.

7. When the **SET CTS LEAD?** prompt appears, press the **ENTER/YES** button.

| **SET  CTS LEAD?** |
|---|

**DATA**    *NEXT/NO*    *BACK*    *ENTER/YES*

●     ❍     ❍     ➔ ●

*Push the button indicated by the arrow* (➔)

8. Press the **NEXT/NO** button until you see the **CTS = *correctValue*?** or **CTS -> *correctValue*?** prompt. Then press the **ENTER/YES** button.
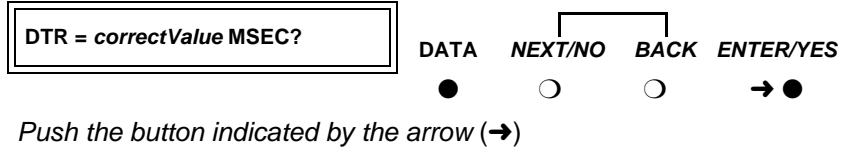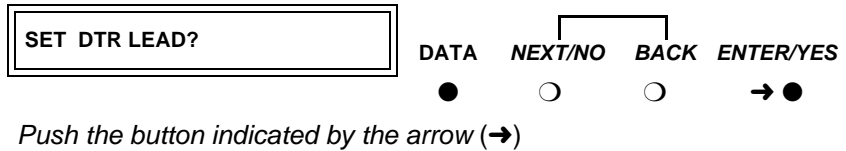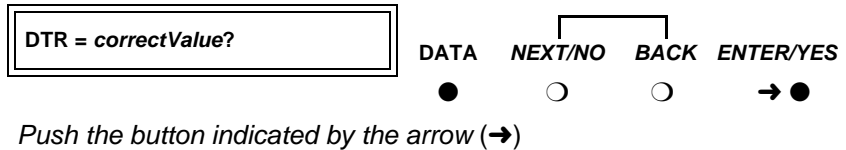
| **CTS ->  *correctValue*?** |
|---|

**DATA**    *NEXT/NO*    *BACK*    *ENTER/YES*

●     ❍     ❍     ➔ ●

*Push the button indicated by the arrow* (➔)

9. When the **CONTINUE?** prompt appears, press the **ENTER/YES** button.

10. When the **SET DCD LEAD?** prompt appears, press the **ENTER/YES** button.

| **SET  DCD LEAD?** |
|---|

**DATA**    *NEXT/NO*    *BACK*    *ENTER/YES*

●     ❍     ❍     ➔ ●

*Push the button indicated by the arrow* (➔)

11. Press the **NEXT/NO** button until you see the **DCD = *correctValue*?** or **DCD -> *correctValue*?** prompt. Then press the **ENTER/YES** button.

```
┌──────────────────────────────┐
│  DCD = correctValue?         │     DATA   NEXT/NO   BACK   ENTER/YES
└──────────────────────────────┘      ●        ○        ○       ➜ ●
```

*Push the button indicated by the arrow* (➜)

12. When the **CONTINUE?** prompt appears, press the **ENTER/YES** button.

13. When the **SET DSR LEAD?** prompt appears, press the **ENTER/YES** button.

```
┌──────────────────────────────┐
│  SET  DSR LEAD?              │     DATA   NEXT/NO   BACK   ENTER/YES
└──────────────────────────────┘      ●        ○        ○       ➜ ●
```

*Push the button indicated by the arrow* (➜)

14. Press the **NEXT/NO** button until you see the **DSR = *correctValue*?** or **DSR -> *correctValue*?** prompt. Then press the **ENTER/YES** button.

```
┌──────────────────────────────┐
│  DSR -> correctValue?        │     DATA   NEXT/NO   BACK   ENTER/YES
└──────────────────────────────┘      ●        ○        ○       ➜ ●
```

*Push the button indicated by the arrow* (➜)

15. When the **CONTINUE?** prompt appears, press the **ENTER/YES** button.

16. When the **SET DTR DETECT?** prompt appears, press the **ENTER/YES** button.

```
┌──────────────────────────────┐
│  SET  DTR DETECT?           │     DATA   NEXT/NO   BACK   ENTER/YES
└──────────────────────────────┘      ●        ○        ○       ➜ ●
```
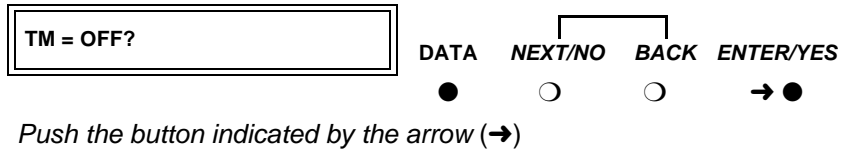
*Push the button indicated by the arrow* (➜)

17. Press the **NEXT/NO** button until you see the **DTR = *correctValue* MSEC?** or **DTR -> *correctValue* MSEC?** prompt. Then press the **ENTER/YES** button.

| DTR = *correctValue* MSEC? | DATA | NEXT/NO | BACK | ENTER/YES |
|---|---|---|---|---|
|  | ● | ○ | ○ | → ● |

*Push the button indicated by the arrow* (➔)

18. When the **CONTINUE?** prompt appears, press the **ENTER/YES** button.

19. When you see the **SET DTR LEAD?** prompt, press the **ENTER/YES** button.

| SET  DTR LEAD? | DATA | NEXT/NO | BACK | ENTER/YES |
|---|---|---|---|---|
|  | ● | ○ | ○ | → ● |

*Push the button indicated by the arrow* (➔)

20. Press the **NEXT/NO** button until the **DTR = *correctValue*?** or **DTR -> *correctValue*?** prompt appears. Then  press the **ENTER/YES** button.

| DTR = *correctValue*? | DATA | NEXT/NO | BACK | ENTER/YES |
|---|---|---|---|---|
|  | ● | ○ | ○ | → ● |

*Push the button indicated by the arrow* (➔)

21. When the **CONTINUE?** prompt appears, press the **ENTER/YES** button.

22. When the **SET LL LEAD?** prompt appears, press the **NEXT/NO** button to skip this setting.

| SET  LL LEAD? | DATA | NEXT/NO | BACK | ENTER/YES |
|---|---|---|---|---|
|  | ● | → ● | ○ | ○ |

*Push the button indicated by the arrow* (➔)
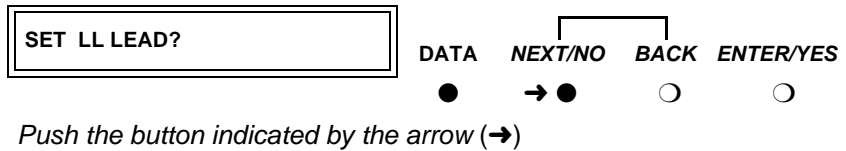
23. When the **SET LL DETECT?** prompt appears, press the **NEXT/NO** button to skip this setting.

| | DATA | *NEXT/NO* | *BACK* | *ENTER/YES* |
|---|---|---|---|---|
| **SET LL DETECT?** | ● | ➜ ● | ❍ | ❍ |

*Push the button indicated by the arrow* (➜)

24. When the **SET RI LEAD?** prompt appears, press the **ENTER/YES** button.

| | DATA | *NEXT/NO* | *BACK* | *ENTER/YES* |
|---|---|---|---|---|
| **SET RI LEAD?** | ● | ❍ | ❍ | ➜ ● |

*Push the button indicated by the arrow* (➜)

25. Press the **NEXT/NO** button until the **RI = *correctValue*?** or **RI -> *correctValue*?** prompt appears. Then press the **ENTER/YES** button.

| | DATA | *NEXT/NO* | *BACK* | *ENTER/YES* |
|---|---|---|---|---|
| **SET RI = ON?** | ● | ❍ | ❍ | ➜ ● |

*Push the button indicated by the arrow* (➜)

26. When the **CONTINUE?** prompt appears, press the **ENTER/YES** button.

27. When the **SET RL LEAD?** prompt appears, press the **NEXT/NO** button to skip this setting.

| | DATA | *NEXT/NO* | *BACK* | *ENTER/YES* |
|---|---|---|---|---|
| **SET RL LEAD?** | ● | ➜ ● | ❍ | ❍ |

*Push the button indicated by the arrow* (➜)

28. When the **SET SIGLS DISC?** prompt appears, press the **ENTER/YES** button.

| | DATA | *NEXT/NO* | *BACK* | *ENTER/YES* |
|---|---|---|---|---|
| **SET SIGLS DISC?** | ● | ❍ | ❍ | ➜ ● |

*Push the button indicated by the arrow* (➜)

29. Press the **NEXT/NO** button until the **SIGLS DISC =** *correctValue***?** or **SIGLS DISC -> *correctValue*?** prompt appears. Then press the **ENTER/ YES** button.

| | SIGLS DISC = ON? | | DATA | NEXT/NO | BACK | ENTER/YES |
|---|---|---|---|---|---|---|
| | | | ● | ○ | ○ | ➜ ● |

*Push the button indicated by the arrow* (➜)
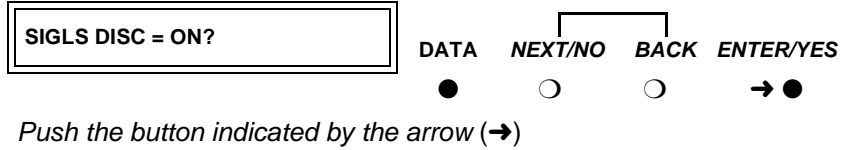
30. When the **CONTINUE?** prompt appears, press the **ENTER/YES** button.

31. When the **SET TM LEAD?** prompt appears, press the **ENTER/YES** button.

| | SET TM LEAD? | | DATA | NEXT/NO | BACK | ENTER/YES |
|---|---|---|---|---|---|---|
| | | | ● | ○ | ○ | ➜ ● |

*Push the button indicated by the arrow* (➜)
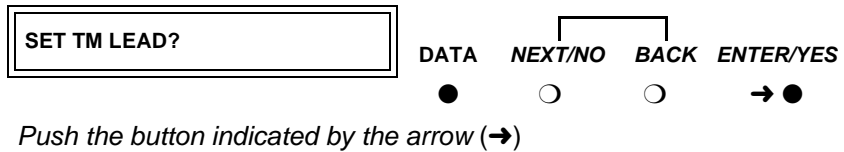
32. Press the **NEXT/NO** button until the **TM = OFF?** or **TM -> OFF?** prompt appears, then press the **ENTER/YES** button.

| | TM = OFF? | | DATA | NEXT/NO | BACK | ENTER/YES |
|---|---|---|---|---|---|---|
| | | | ● | ○ | ○ | ➜ ● |

*Push the button indicated by the arrow* (➜)

33. When the **DONE?** prompt appears, press the **ENTER/YES** button.

| | DONE? | | DATA | NEXT/NO | BACK | ENTER/YES |
|---|---|---|---|---|---|---|
| | | | ● | ○ | ○ | ➜ ● |

*Push the button indicated by the arrow* (➜)

34. When the **SAVE CHANGES?** prompt appears, press the **ENTER/YES** button.

| | SAVE CHANGES? | | DATA | NEXT/NO | BACK | ENTER/YES |
|---|---|---|---|---|---|---|
| | | | ● | ○ | ○ | ➜ ● |

*Push the button indicated by the arrow* (➜)
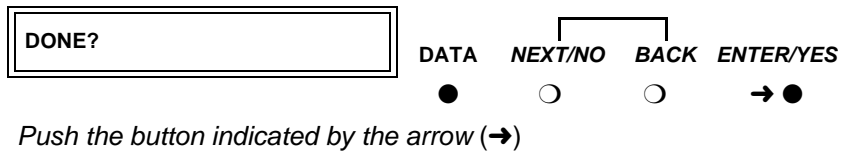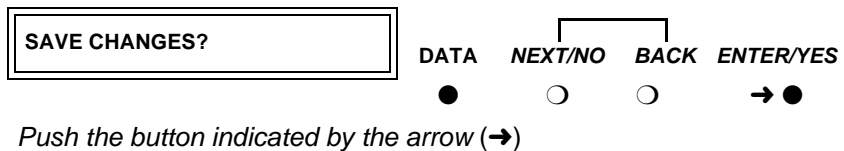
The **CHANGES SAVED** message flashes on screen, and you return to the HOME screen. The data module is now configured.

**Configuring the 8400B Plus data module**

Figure 17 shows the rear of a 8400B Plus asynchronous data module. The unit provides integrated voice and data communications over standard, 2-wire, twisted-pair circuits within 2000 ft. of an DEFINITY. The unit can emulate a Hayes-compatible interface for standard personal computer (PC) communication. The options for the 8400B Plus are set from the rear panel interface.
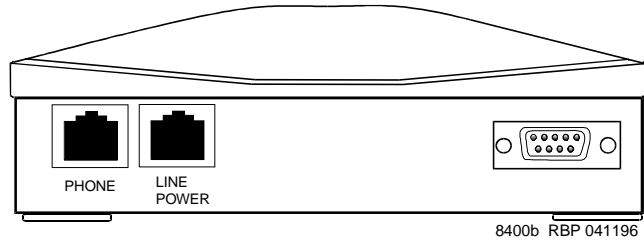


**Figure 17.    8400B Plus data module**

**Installing required configuration equipment for the 8400B**

Before you can enter configuration commands, you must first connect a terminal or a PC with a keyboard, monitor, and terminal-emulation software to the data module. 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 Port 1 of the data module

3. If you are using a PC, start your terminal  emulation software.

**Selecting 8400B options**

On the 8400B data module, all configuration options are enabled by default. You configure the 8400B by disabling options with a code that you enter in a memory register (S24) in the data module. Consult the table below, and perform the steps that follow.

**Table 12.    Codes for disabling default settings of the 8400B data module**

| Default setting | Disabling code |
|---|---|
| With Telephone | **1** |
| US Companding | **2** |
| Telephone Provides Dialing | **4** |

*Continued on next page*

**Table 12.   Codes for disabling default settings of the 8400B data module**

| Default setting | Disabling code |
|---|---|
| Disable Data Metering Feature | **16** |
| Immediate Speakerphone Activation | **32** |
| Automatic Speakerphone Activation | **64** |
| Disable Busyout During Local Loopback Test | **128** |

Proceed as follows.

1. Calculate an option-selection value using Table 12, "Codes for disabling default settings of the 8400B data module". Add up the disabling codes for all options that you wish to disable.

   For example, if you turned off **With Telephone**, **US Companding**, **Disable Data Metering Feature**, the selection code would be:

   **1 + 2 + 16 = 19**

2. Check the current data-module setting by entering **ATS24?**.

3. If the current value does not match the selection value you calculated, enter **ATS24=*nnn***, where ***nnn*** is the selection value you calculated.

## Configuring the ExpressRoute 1000 data module

You can substitute an ExpressRoute 1000 data module for the 8400B data module. Both DCP and ISDN-BRI connections are possible. Figure 18 shows typical connections.

### ⚠ CAUTION:

*In DC-powered cabinet installations, a 105C Isolator adapter is required when connecting equipment to a data module.*
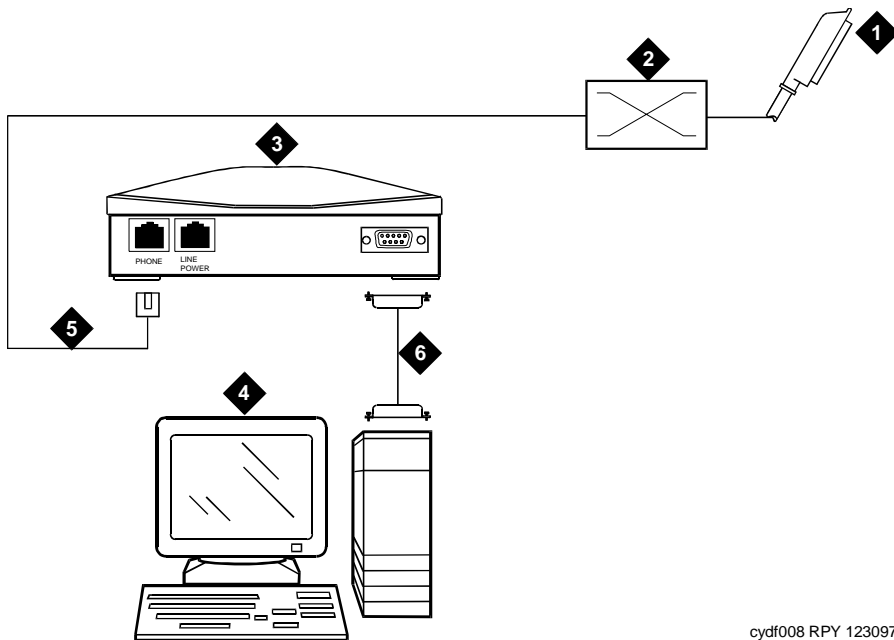
cydf008 RPY 123097

1. To BRI circuit pack or DCP digital line circuit pack
2. Main distribution frame (MDF)
3. ExpressRoute 1000 data module
4. PC administration terminal
5. Modular line cord
6. M25B (25-Pin RS-232) cable

**Figure 18. Typical ExpressRoute 1000 data module connections**

## Administer the data modules

You have to administer each data module that you attach to the system.

➡ **NOTE:**
Only the basic procedure is covered here. For the full range of options, see the *Administrator's Guide for Avaya MultiVantage Software*.

➡ **NOTE:**
Data modules, PGATE boards, printers connected through data modules, SATs connected through data modules, and anything related to the X.25 connectivity protocol are not supported on the S8300 or S8700 Media Server platforms.

1. Locate an available port. At the SAT, enter

   **list config port**

```
list configuration port-network                                  Page   1

                          SYSTEM CONFIGURATION

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

01A01    POOLED MODEM          TN758     000002     u   u   u   u
01A02    DATA LINE             TN726B    000002     u   u   u   u   u   u   u   u
01A03    AUXILIARY TRUNK       TN763D    000005     01  02  u   u
01A04    ANNOUNCEMENT          TN750C    000006     01  02  03  04  05  06  07  08
                                                    09  10  11  12  13  14  15  16
                                                    u
01A05    DIGITAL LINE          TN2181    000007     01  02  u   u   u   u   u   u
                                                    u   u   u   u   u   u   u   u
01A07    CO TRUNK              TN2138    000001     u   u   u   u   u   u   u   u
01A08    DIGITAL LINE          TN754B    000002     01  02  03  04  05  06  07  08
01A09    CONTROL-LAN           TN799     000001     01  02  u   u   u   u   u   u

         press CANCEL to quit --  press NEXT PAGE to continue
```

**Screen 1.   Typical system-configuration listing**

2. Locate an unassigned port on a suitable circuit pack, and make a note of the corresponding port number.

   The port number is the **Board Number**, *UUCSS* (where *UU* is the 2-digit cabinet number, *C* is the single-character carrier identifier, and *SS* is the 2-digit slot number) followed by the next 2-digit number, *PP*, in the sequence in the **Assigned Ports** fields at the right side of the form: *UUCSSPP*.

   For example, in the listing above, the next available port address for the TN2181 digital line circuit pack would be **01A0503**.

3. From the DEFINITY administration console, open a new data-module form by typing

   **add data-module next**

   The system automatically assigns the next available  extension number to the data module.

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

   Data Extension: 2002           Name: _____   BCC: 2
             Type: pdm            COS: 1_       Remote Loop-Around Test? n
             Port: █_____        COR: 1_          Secondary data module? n
              ITC: restricted_     TN: 1__                  Connected To: dte


ABBREVIATED DIALING
   List1: _____

SPECIAL DIALING OPTION: _____

ASSIGNED MEMBER ( Station with a data extension button for this data module )

        Ext     Name
     1:
```

**Screen 2.   Typical data-module form**

4.  In the **Port** field, enter the seven-digit port address that you wrote down in step 2, above.

5.  If you installed a telephone on the data module, enter the extension number and station name for this telephone in the **ASSIGNED MEMBER** part of the form.

6.  Press the F3 key to close the form and save the changes.

# Asynchronous data units (ADU)

ADUs are used with Data Line circuit packs to connect peripherals, such as printers, data terminals, fax equipment, and call-detail recording equipment to the DEFINITY. Figure 19 shows a typical Z3A2 ADU assembly (without a cable).

➡ **NOTE:**
Data modules, PGATE boards, printers connected through data modules, SATs connected through data modules, and anything related to the X.25 connectivity protocol are not supported on the S8300 or S8700 Media Server platforms.

- Add a female-to-male EIA-232 cable (shown) to make a Z3A1 ADU assembly.

- Add a female-to-female EIA-232 cable (not shown) to make a Z3A4 ADU assembly.



adu KLC 053196

1. Z3A2 ADU
2. 25-pin male D-connector (EIA-232-D) to DTE
3. Wall jack connector (to data line circuit pack or analog line circuit pack or equivalent)
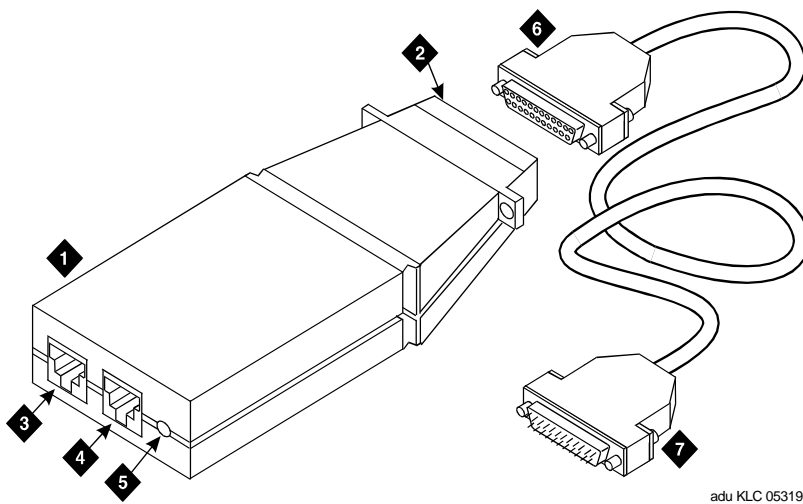
4. Telephone jack (to analog telephone)
5. Originate/disconnect jack
6. Female connector on EIA-232-D cable
7. Male connector on EIA-232-D cable

**Figure 19.    Z3A2 Asynchronous Data Unit (ADU)**

Refer to the tables in Appendix A, "Connector and cable pinout charts", for the pinouts of the TN726B data line circuit pack and TN2183 analog line circuit pack (or equivalents) in the cabinet.

# External modems

# 5

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 3715''
- ''Paradyne COMSPHERE 3810 Plus and 3811 Plus''
- ''Paradyne COMSPHERE 3910''
- ''U.S. Robotics modems'' (various models)
- ''Multi-Tech MT5634ZBA-USB'' (for an S8300/G700 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 3715

You configure COMSPHERE 3715 modems using the Hayes-compatible AT commands common to many modems. For instructions on how to physically connect the modem and enter the commands listed in the instructions below, see the documentation that came with the modem.

## Configuring the 3715 for CMS

The instructions below set up the modem for use in a Call Management System (other configurations may work as well).

1. From the command line prompt of your terminal emulation software or terminal, enter **at&f**.

   This loads factory default configuration options into active memory. If all is well, the modem replies **OK**.

2. Enter **at%b9600**.

   This sets the data speed to 9600 kbps. If all is well, the modem replies **OK**.

3. Enter **atq1&r0&S1\d1&w0**.

   This disables result codes, sets the RTS (Request To Send), DSR (Data Set Ready), CTS (Clear To Send) signals action to standard RS-232 operation, and saves the changes to profile **0**. If all is well, the modem replies **OK**.

## Configuring the 3715 for modem pooling

The instructions below set up the modem for use in a modem pool (other configurations may work as well).

1. From the command line prompt of your terminal emulation software or terminal, enter **at &f**.

   This loads factory default configuration options into active memory. If all is well, the modem replies **OK**.

2. Enter **at m0 x7 y0 &s1 /d1**.

   If all is well, the modem replies **OK**.

3. Enter **at e0 v0 c2=128 s7=60 f10=100 &w0 &y0**.

   If all is well, the modem replies **OK**.

# 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 20) 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.
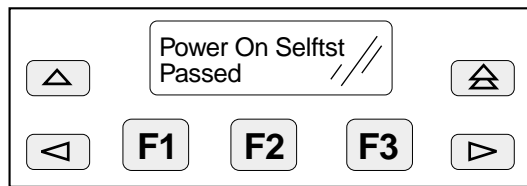
modf3150 KLC 030899

**Figure 20.   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). The instructions below set up the modem for use in CMS (other configurations may work as well).

## Understanding the modem controls and displays

You control the modem by using the buttons on the front panel of the modem to change menus and select menu items displayed on a small LCD screen. The buttons do the following:

> **NOTE:**
> The arrow and function buttons described in this section are located on the front panel of the modem, not on a PC keyboard or terminal.

- **Single Up Arrow** moves up one level in the menu tree.
- **Double Up Arrow** moves to the top level of the menu tree.
- **Left Arrow** moves to the previous choice at the current level of the menu tree.
- **Right Arrow** moves to next choice at the current level of the menu tree.
- **F1** selects the choice displayed above **F1**.
- **F2** selects the choice displayed above **F2**.
- **F3** selects the choice displayed above **F3**.

For our purposes, the on-screen prompt *strap group* indicates a collection of related configuration settings.

Modem menus can be confusing because you only get to see one or two headings or items at a time. The modem also has a limited set of command words, so many of them have to be used more than once, and commands seem to be repeating themselves. This can be confusing. To avoid missing a step, check the values on the display after you enter a command, and make sure the result agrees with that listed in the corresponding step in the instructions.

### Creating an editable configuration set

It is generally easiest to configure the modem by starting from the default, factory configuration. You then change only those settings that are different for a DEFINITY installation.

#### Copying factory default settings

Make a copy of the default, factory configuration using the following procedure.

1. On the front panel of the COMSPHERE 3910, press the **F2** button to select **Configure**.

   The **Ld EditArea frm >** prompt appears.

2. Press the right-arrow button four times.

   The **Factory** menu item appears.

3. Press the **F1** button to select **Factory**.

   The **Ld Fact Preset: >** prompt appears.

4. Press the right-arrow button.

5. Press **F2** to select **Async_Dial**.

6. Press **F3** to select **Save**.

   The **Sav EditArea to >** prompt appears.

7. Press **F1** to save configuration changes to the **Active(Saved)** storage area.

   Since you are changing the active area to a new set of options— **Factory/ Async_Dial**—the modem automatically runs a power-on self-test. The **Idle:19.2** and **Status Configure** messages appear.

8. To return to the top-level menu at any time, press the double up-arrow button.

#### Loading the copied default settings

Load the default settings so that you can edit them for use with CMS. Proceed as follows.

1. On the front panel of the COMSPHERE 3910, press **F2** to select **Configure**.

   The **Ld EditArea frm >** prompt appears.

2. Press the right-arrow button once.

   The **Active(Saved)** prompt appears.

3. Press **F1** to select **Choose Function**.

4. Press **F1** to select **Edit**.

   The **Edit StrapGroup >** prompt appears.

## Configuring the DTE interface

Set the data speed and enable standard, RS-232 communications settings. Proceed as follows.

### Configuring basic, RS-232 handshaking

Start by selecting values for the basic parameters of serial data communications, mode, speed/rate, framing, and error correction (parity). The modem uses these parameters when it negotiates a connection with another RS-232 device, a process called *handshaking*.

1. From the **Edit StrapGroup >** prompt, press **F1** to select **DTE_Interface**.

   The **Async/Sync Mode** menu heading appears.

2. Press **F1** to select **Nxt**.

   The **Async DTE Rate** menu heading appears.

3. Press the right-arrow button five times.

   The **9600** menu item appears.

4. Press **F2** to select **9600**.

5. Press **F1** to select **Nxt**.

   The **Asyn #Data Bits (8)** menu heading appears.

6. Press **F1** to select **Nxt**.

   The **Asyn Parity Bit (None)** menu heading appears.

7. Press **F1** to select **Nxt**.

   The **Asyn #Stop Bits (1)** menu heading appears.

8. Press **F1** to select **Nxt**.

   The **DTR Action** menu heading appears.

### Configuring the RS-232 DTR and DSR ready signals

Next, configure the Data Terminal Ready and Data Set Ready leads of the RS-232 interface.

1. From the **DTR Action** menu heading, press the right-arrow button once.

   The **Stndrd_RS232** menu item appears.

2. Press **F2** to select **Stndrd_RS232**.

3. Press **F1** to select **Nxt**.

   The **DSR Control** menu heading appears.

4. Press the right-arrow button once.

   The **Stndrd_RS232** menu item appears.

5. Press **F2** to select **Stndrd_RS232**.

6. Press **F1** to select **Nxt**.

   The **RTS Action** menu heading appears.

### Configuring RS-232 RTS and CTS send signals

Next you set the parameters that the modem uses to offer and accept data, Request To Send (RTS) and Clear To Send (CTS).

1. From the **RTS Action** menu heading, press the right-arrow button once.

   The **Stndrd_RS232** menu item appears.

2. Press **F2** to select **Stndrd_RS232**.

3. Press **F1** to select **Nxt**.

   The **CTS Control** menu heading appears.

4. Press the right-arrow button once.

   The **Stndrd_RS232** menu item appears.

5. Press **F2** to select **Stndrd_RS232**.

6. Press **F1** to select **Nxt**.

   The **RTS/CTS Delay (0 msec)** menu heading appears.

### Configuring various control features

Now set the Line Signal Detect (LSD, also known as DCD or Data Carrier Detect) control  and rate controls.

1. Press **F1** to select **Nxt**.

   The **LSD Control (Stndrd_RS232)** menu heading appears.

2. Press **F1** to select **Nxt**.

   The **CT111_Rate Cntl (Disable)** menu heading appears.

3. Press **F1** to select **Nxt**.

   The **DTE_Rate=VF (Disable)** menu heading appears.

4. Press **F1** to select **Nxt**.

   The **Extend Main Ch. (Disable)** menu heading appears.

### Finishing configuration of the DTE interface

1. Press **F1** select **End**.

   The **Edit StrapGroup >** prompt appears.

## Configuring the DTE dialer

Now define the command interface that the modem should use when dialing. The RS-232 interface uses  control characters to pass communications commands and control the transmission. These are user-configurable. We need to disable the result-code options while retaining the default values for the other control characters. Proceed as follows.

### Opening the DTE Dialer menus

1. From the **Edit StrapGroup >** prompt, press the right-arrow button once.

   The **DTE Dialer** menu heading appears.

2. Press **F1** to select **DTE_Dialer**.

   The **DTE Dialer Type (AT)** menu heading appears.

### Skipping to the result-code options

To reach the options we need to set, we have to skip over a number of other options without making changes. Proceed as follows.

1. From the **DTE Dialer Type (AT)** menu heading, press **F1** to select **Nxt**.

   The **AT Escape Char** menu heading appears.

2. Press **F1** to select **Nxt**.

   The **Escape GuardTim** menu heading appears.

3. Press **F1** to select **Nxt**.

   The **BreakForceEscap** menu heading appears.

4. Press **F1** to select **Nxt**.

   The **CommandCharEcho** menu heading appears.

5. Press **F1** to select **Nxt**.

   The **CarriageRtn Char** menu heading appears.

6. Press **F1** to select **Nxt**.

   The **Backspace Char** menu heading appears.

7. Press **F1** to select **Nxt**.

   The **Linefeed Char** menu heading appears.

8. Press **F1** to select **Nxt**.

   The **ResultCodes (Enable)** menu heading appears.

### Disabling result codes

We have reached the options that we need to change. Proceed as follows.

1. From the **ResultCodes (Enable)** menu heading, press the right-arrow button once.

   The **Disable** menu item appears.

2. Press **F2** to select **Disable**.

3. Press **F1** to select **Nxt**.

   The **ExtendResltCode (Enable)** menu heading appears.

4. Press the right-arrow button once.

   The **Disable** menu item appears.

5. Press **F2** to select **Disable**.

### Exiting the DTE Dialer menu

Skip over the remaining menu headings. Proceed as follows.

1. Press **F1** to select **Nxt**.

   The **ResultCode Form** menu heading appears.

2. Press **F1** to select **Nxt**.

   The **AT Cmnd Mode** menu heading appears.

3. Press **F1** to select **End**.

   The **Edit StrapGroup >** menu heading appears.

## Configuring the data line

Set the line speed and accept the default values for the other settings. Proceed as follows.

### Opening the dial line menu

1. From the **Edit StrapGroup >** menu heading, press the right-arrow button twice.

   The **Dial_Line** menu item appears.

2. Press **F1** to select the **Dial_Line** menu heading.

   The **Dial Line Rate** menu heading appears.

### Setting the line rate

1. From the **Dial Line Rate** menu heading, press the right-arrow button four times.

   The **9600(V32b)** menu item appears.

2. Press **F2** to select **9600(V32b)**.

### Exiting the dial line menu

Skip over the remaining menu headings. Proceed as follows.

1. Press **F1** to select **Nxt**.

   The **V32bis Automode (Enable)** menu heading appears.

2. Press **F1** to select **Nxt**.

   The **V32bis Autorate (Enable)** menu heading appears.

3. Press **F1** to select **Nxt**.

   The **Dial Tx Level (Permissv (-9))** menu heading appears.

4. Press **F1** to select **Nxt**.

   The **V22b Guard Tone (Disable)** menu heading appears.

5. Press **F1** to select **Nxt**.

   The **V32bis Train (Long)** menu heading appears.

6. Press **F1** to select **End**.

   The **Edit StrapGroup >** prompt appears.

## Saving the new configuration

You must save the configuration changes you have made before you can use them.

1. From the **Edit StrapGroup >** prompt, press the single up-arrow button once.

   The **Choose Function**, **Edit**, and **Save** menu headings appear.

2. Press **F3** to select **Save**.

   The **Save EditArea to >** prompt appears.

3. Press **F1** to select **Active(Saved)**.

   The **Command Complete** message appears.

4. Press the single up-arrow button again.

   The **Save EditArea to >** prompt appears.

5. Press the right-arrow button once to select **Customer 1**.

6. Press **F1** to save changes to the **Customer 1** storage area.

   The **Command Complete** message appears.

7. Press the double up-arrow button once.

   The **Idle:9600** and **Status Configure** messages appear. When you power off the modem, it should return to this state.

**Checking the status of the COMSPHERE 3910 modem**

To check the status of the COMSPHERE 3910 modem at any time, proceed as follows.

1. From the topmost menu, select the **Status** menu item.

# U.S. Robotics modems

Avaya recommends using the U.S. Robotics external modem. 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 13.    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

Avaya recommends using a Multi-Tech modem, model MT5634ZBA-USB, for use with an S8300/G700 configuration.

To connect a Multi-Tech modem for a G700 Media Gateway/S8300 Media Server configuration:

- Plug the USB connector of the Multi-Tech modem into one of the two USB ports on the front of an S8300 Media Server.

- Connect the phone cable to the modem.

⇒ **NOTE:**
The Multi-Tech modem, model MT5634ZBA-USB, is also used for the S8700 Media Server.

### Configuring the MT5634ZBA-USB modem

The Multi-Tech MT5634ZBA-USB modem either gets configured automatically through the USB port with the factory defaults. No special configuration is necessary.

# Administration

You have to administer each modem that you attach to the system.

⇒ **NOTE:**
Only the basic procedure is covered here. For the full range of options, see the *Administrator's Guide for Avaya MultiVantage Software*, 555-233-506.

### Accessing the administration form

1. Open the modem-administration form. At the management terminal, enter **change system-parameters maintenance**.

2. Scroll to page 3 of the form.

### Identifying the modem

1. On the modem-administration form, set the **Modem Connection:** field to **external** (it should be set to **none** if no modem is installed).

   This field generates alarms if it is not administered correctly. It cannot be set to **none** if **Alarm Origination** is activated.

2. Set the **Modem Name:** field to a unique, 20-character, alphanumeric identifier.

## Setting data-transmission parameters

1. On the modem-administration form, set the **Data Bits:** field to **8** (the default).

2. Set the **Parity:** field to **none** (the default).

3. Set the **RTS/CTS Enabled:** field to **&H1** (unless you have an Intel modem, in which case set it to **\Q3**).

   This enables flow-control.

4. Set the **Asynchronous Data Mode:** field to **&M0**, the default (unless you have an Intel modem, in which case set it to **\J1**).

5. Set the **DTE Auto-Data Speed:** field to **S90=1** (unless you have an Intel modem, in which case set it to **&M0&Q0**).

   This lets the modem automatically adjust the data speed to match the requirements of the remote equipment.

6. Set the **Disable Data Compression:** field to **%C0** (unless you have an Intel modem, in which case set it to **H0%C0**, or a U.S. Robotics 839, in which case the option is not available).

   This disables V.42bis and MNP Class-5 data compression.

7. Set the **Enable Error Control:** field to **\N5** (unless you have an Intel modem, in which case set it to **\N3**).

   This enables LAPM and MNP error control.

## Setting dialing parameters

1. Set the **Auto-Answer Ring Number:** field to **S0=10**.

   This specifies the number of rings that the modem waits before answering an incoming call.

2. Set the **Dial Type:** field to **T** for tone dialing (the default) or **P** for pulse dialing.

3. Set the **Adjustable Make/Break Ratio:** field to **&P0** for the United States and Canada, **&P1** for the United Kingdom and Hong Kong.

   Controls the make/break ratios of pulses and DTMF dialing. The United States and Canada use 39% make and 61% break. The United Kingdom and Hong Kong use 33% make and 67% break.

4. Set the **Dial Command:** field to **D**.

   Specifies standard dialing command.

## Setting additional, modem-specific parameters

1. Put any remaining AT configuration commands required by your modem in the **Misc. Init. Param:** field.

## Exiting the form and saving the changes

1. When you are finished, press ENTER.

# Printers

# 6

This chapter provides information on connecting and configuring printers that work with your system and MultiVantage Software.

## 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, and G600 Media Gateways) and providing the initial administration. For connecting a printer to a G700 Media Gateway, see Chapter 8, "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 131.

- "Administering IP services" on page 132.

- "Administering adjunct parameters" on page 114.

- If you are using a terminal server, also complete "Installing and administering the terminal server" on page 122.

- If you are using a PC with the Downloadable RSP Tool, complete "Using the downloadable reliable session-layer protocol (RSP) tool" on page 115.

### 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

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

   The Hospitality screen appears.

2. On this screen, you can administer the PMS Log Endpoint (PMS_LOG) or PMS Journal Endpoint (PMS_JOURNAL) for whichever of these is connected through TCP/IP.

3. In the PMS Log Endpoint field, type **CDR1**. If you use a secondary output device, and that device is also connected through TCP/IP, type **CDR2** in the Secondary Output Endpoint field.

4. Press ENTER to save your changes.

### 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 RSP 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.

### Setting up an RSP configuration

To set up an RSP configuration:

- Administer the PC as a client application on the switch.

- Download, install, and administer the RSP for the PC

### Setting up the switch

To set up the server application on the switch:

- "Administering IP node names" on page 131

  Give the PC a node name. The IP address is the IP address of the PC that is running the RSP tool.

- "Administering IP services" on page 132

  The service type = SYS_PRNT, the Remote Node = the node name assigned to the PC. Remote port is the port assigned as the listen port on the PC. You can figure out what this is by starting the RSP Server application, clicking on Start, and checking in the output window to see what port the server is listening on.

### Setting up the PC

To set up the client application on the PC:

- Download RSP

- Install RSP

- Administer RSP

### Downloading RSP

The RSP is available from the Avaya support web site as a self-extracting executable. To download the RSP:

1. Browse to the Avaya Customer Support web site:

   http://support.avaya.com/sd.jhtml

2. Select the RSP tool from the web site.

3. When queried, save the setup.exe file to a temporary folder on your computer. It is approximately 1.4-MB.

### Installing RSP

To install the RSP:

1. Double-click the **setup.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.

4. You can view the readme file now or later. The following files are installed on the PC in the folder \\Program Files\Avaya\DEFINITY Data Transport Tool:

   - client.exe (the client tool)
   - server.exe (the server tool)
   - user guide.doc (same as the readme file)
   - spl_design_doc.doc (the RSP design document)
   - splserver.ini
   - ddt_log.txt (installation log file)
   - spl.dll

### Administering RSP

See the instructions in the user guide.doc file to administer the Reliable Session-layer Protocol on a PC.

# DEFINITY LAN gateway system

**7**

## What is the DEFINITY LAN gateway?

In simplest terms, the DEFINITY® LAN gateway (DLG) is an application that enables communications between TCP/IP clients and Avaya MultiVantage™ Software call processing. In more technical terms, the DLG application is software that both routes internetwork messages from one protocol to another (ISDN to TCP/IP) and bridges all ASAI message traffic (by way of a TCP/IP tunnel protocol).

### ⟹ NOTE:
The term "DLG application" is neutral. That is, it does not carry any platform connotations. The terms "MAPD DLG" and "co-resident DLG," which are introduced later, *are* platform specific.

### How the DLG application works

Here is a high level description of how the DLG application works.

- The DLG listens for client connections (a specific IP Address) over a well-known TCP port (5678).

- The client accesses the DLG services by connecting to TCP port 5678 at the IP address of the DLG Ethernet interface (or the S8300 ethernet interface), which can be a MAPD (TN801B), a processor (TN2314), or a C-LAN (TN799).

- The client then exchanges TCP tunnel protocol messages with the DLG to request a connection to a specific CTI link.

- The DLG authenticates the client based on its administration and then establishes or refuses the connection.

- Once a connection is established, the ASAI layer 3 messages are transparently passed through the DLG (that is, the DLG does not process any message content). Each TCP connection to the DLG has a one-to-one correspondence with a CTI link.

For more information about the TCP tunnel protocol, see Chapter 7, "TCP Tunnel Protocol," in the *Avaya MultiVantage CallVisor ASAI Protocol Reference*, 555-230-221.

## How is the DLG application is packaged

The DLG application is packaged either **externally** on a separate circuit pack (the TN801 MAPD circuit pack), or **internally** where it co-resides with MultiVantage Software. The externally packaged DLG is referred to as the **MAPD DLG**. The internally packaged DLG is referred to as the **co-resident DLG**.

The co-resident DLG and the MAPD DLG accomplish the same basic function (ASAI to ethernet transport).

## The MAPD DLG

As the term MAPD DLG implies, the hardware platform (MAPD) and the software application (DLG) are tightly coupled. The MAPD is essentially a PC that is attached to the switch, and the DLG is an application that is installed on this dedicated PC. The MAPD consists of the following components:

- processor

- disk drive (where the DLG application is installed)

- ethernet

- serial ports

As an application residing externally (in the sense that it is on a separate platform, the TN801 circuit pack), the MAPD DLG must be administered in terms of the MAPD.

Because the MAPD DLG requires installation and has its own administrative interface, it is documented separately. For more information, see the *DEFINITY Enterprise Communications Server CallVisor ASAI Applications Over MAPD*, 555-230-136.

## The co-resident DLG

In terms of product evolution and architecture, the co-resident DLG represents the next step toward delivering voice and data capabilities over an IP network using a common interface. The co-resident DLG is application software that co-resides with the MultiVantage Software on the server. No physical installation or MAPD specific administration is required for the co-resident DLG.

## Switch-based connectivity — co-resident DLG

In terms of switch-based connectivity, the co-resident DLG is supported by the following platforms.

- Avaya MultiVantage Software S8100 Media Server configurations (formerly DEFINITY ONE and IP 600)
- Avaya S8300 Media Server with Avaya G700 Media Gateway DEFINITY LAN gateway and ASAI-ethernet

For more information on co-resident DLG and the G700 Media Gateway, see Chapter 13, "DEFINITY LAN Gateway and ASAI-Ethernet," and Chapter 14, "Installation and Test for CallVisor ASAI," in the *Avaya MultiVantage CallVisor ASAI Technical Reference*, 555-230-220.

For more information, also refer to the *DEFINITY Enterprise Communications Server CallVisor ASAI Applications Over MAPD*, 555-230-136.

# Terminal server installation

# 8

## Overview

This chapter provides information on connecting adjunct equipment to the C-LAN circuit pack, or to a G700 Media Gateway with an S8300 Media Server, using a terminal server (Figure 21). 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.



cydfadj KLC 091302
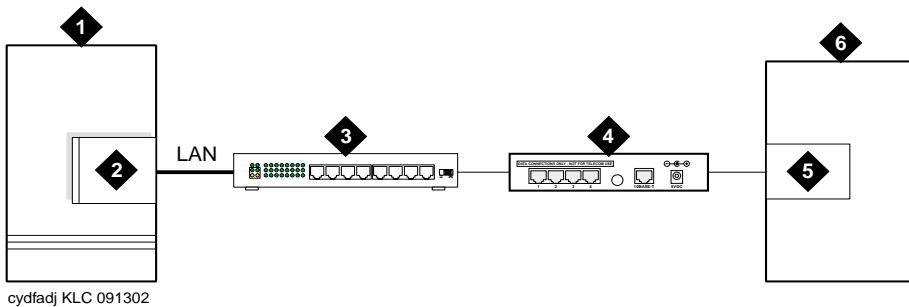
1. switch
2. C-LAN circuit pack, or IP connection on an S8300/G700 configuration
3. 10/100Base-T Hub (optional)
4. terminal server
5. serial port
6. CDR

**Figure 21.    Switch-to-adjunct LAN connectivity through a terminal server**

# 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 14.

**Table 14. 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).

## Cabling diagram

Figure 22 shows the connection between the terminal server port and a call accounting system.
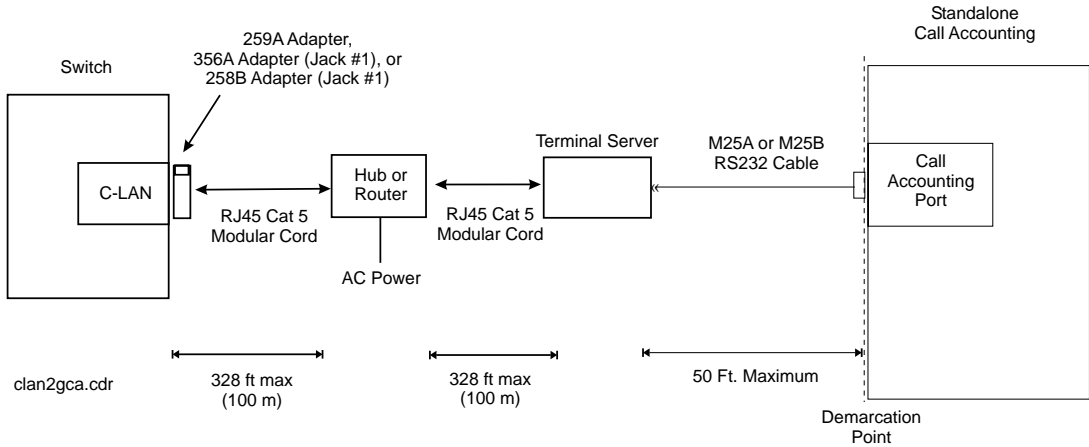


**Figure 22.    Stand-alone call accounting system link using a terminal server**

## 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 23.
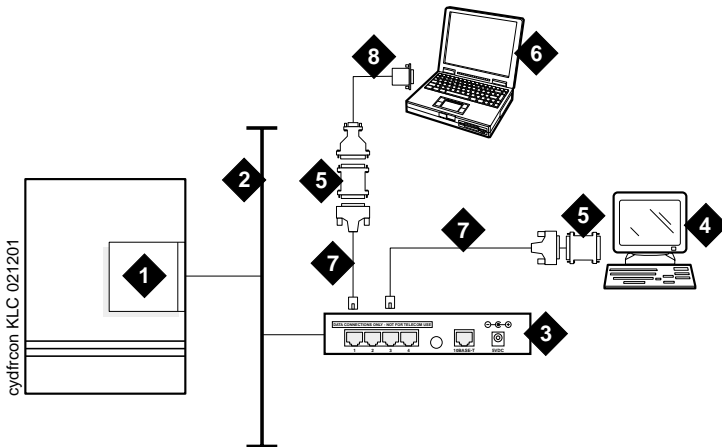


1. C-LAN circuit pack, or IP connection on an S8300/G700
2. Local area network (LAN)
3. IOLAN+ 104 terminal server
4. Adjunct (system management terminal or a system printer, for example)
5. Null modem
6. PC or laptop (for initial administration)
7. DB25-to-RJ45 cable
8. DB25-to-DB9 cable

**Figure 23.    Connecting an adjunct to the IOLAN+**

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 23).

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          [19200 ]     Flow ctrl    [Hardware]     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         [Local  ]
  Terminal type  [undef ]     Rlogin/Telnet  [Telnet]     Authentication [None  ]
  TERM      [       ]         Debug options    [No  ]     Mode           [Telnet ]
  Video pages        [0]      Map CR to CR LF  [No  ]     Connection  [initiated]
  CLI/Menu       [CLI]        Hex data         [No  ]     Host  [              ]
  Reset Term     [No  ]       Secure           [No  ]     Remote Port      [9001 ]
                              MOTD             [No  ]     Local Port      [10002]

  _____


```

5.  Fill in the following fields. Leave the default settings for the other fields.

-   Speed: 19200

-   Monitor DSR: Yes

-   Monitor DCD: No

-   Name: *port number or other descriptive name*

-   Terminal type: undef

-   CLI/Menu: CLI

-   Reset Term: No

-   Flow ctrl: Both

    ➡ **NOTE:**
    *This is very important! If the link goes down between the terminal server and the adjunct, the terminal server buffers the data and notifies the switch. Once the terminal server buffer fills up, the switch buffers the data. The switch raises an alarm once the switch buffer is full.*

-   IP addresses: *leave blank*

-   Mask: *leave blank*

-   Access: Local

-   Authentication: None

-   Mode: Telnet

-   Connection: Initiated

- Host: *C-LAN IP Address*

- Remote Port: *C-LAN Ethernet port where IP adjunct service is offered*

- Local Port: *must match the value of Remote Port on the DEFINTY IP Services screen*

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 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.

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




_____


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

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 127 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_____     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         0       callacctg      5101
    PMS                 switch         0       termserver     5103
```

3. In the Local Node field, enter the node name for the switch. In this example, **switch** is the local node.

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

5. In the `Remote Node` field, 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 **y** in the `Reliable Protocol` field for the CDR Service Type.

```
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          y            3                1             1            1
```

8. Press ENTER to save your changes.

# DS1/T1 CPE loopback jack

# 9

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 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 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 24 and Figure 25.

If there is an extended demarcation point and the smart jack is not accessible, install the loopback jack as shown in Figure 26 and Figure 27.

If there is an extended demarcation point, but the smart jack is accessible, install the loopback jack as shown in Figure 28 and Figure 29.

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 24 through Figure 33.

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 30 through Figure 33.

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 24 through Figure 33.

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 24, through Figure 29):

■ 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 Media Gateway, substitute **XXXVS** for **UUCSS** in the following command, where **XXX** is the administered number of the G700 (for example, 002), and **VS** 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 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 Media Gateway, substitute **XXXVS** for **UUCSS** in the following command, where **XXX** is the administered number of the G700 (for example, 002), and **VS** 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 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.
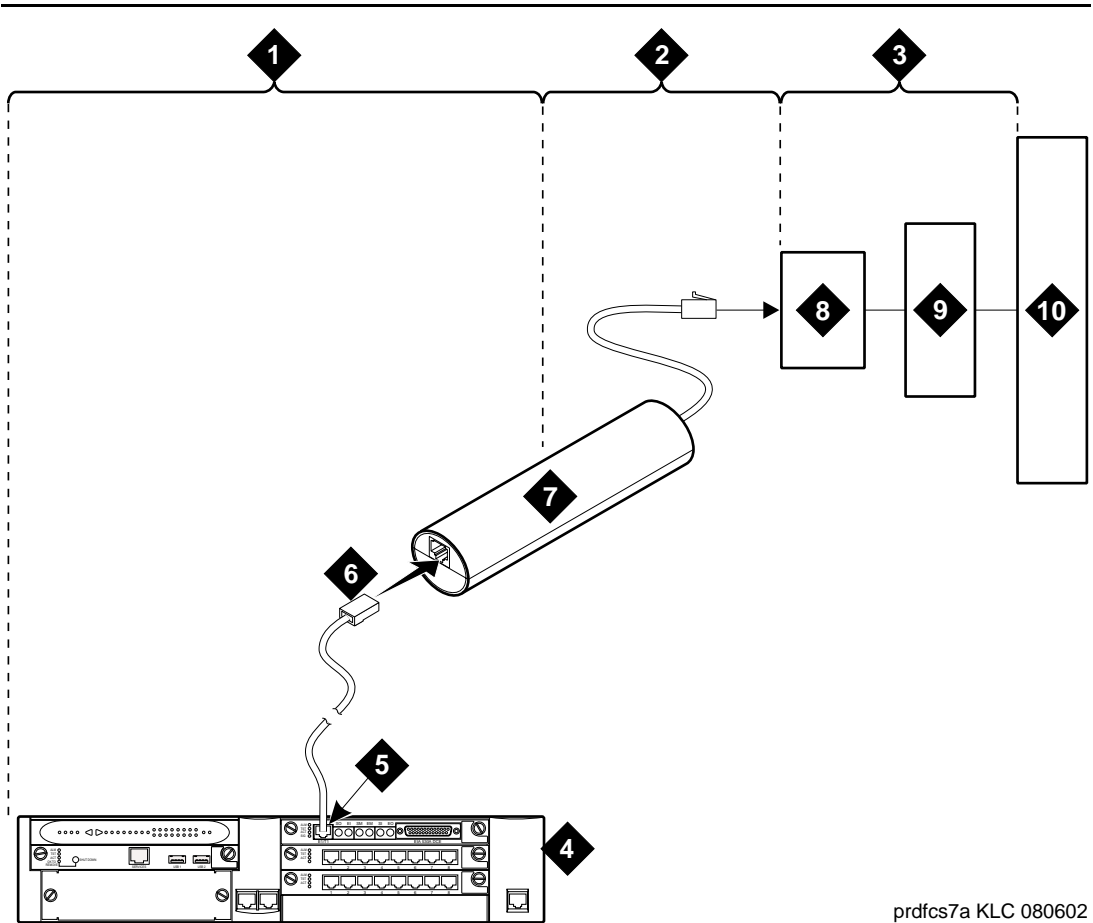
### Clearing the results of previous tests

> **NOTE:**
> If you have a G700 Media Gateway, substitute *XXXVS* for *UUCSS* in the following commands, where *XXX* is the administered number of the G700 (for example, 002), and *VS* 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 commands exactly where shown. A sample address for a DS1 circuit pack on a G700 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

$\Rightarrow$ **NOTE:**

If you have a G700 Media Gateway, substitute **XXXVS** for **UUCSS** in the following command, where **XXX** is the administered number of the G700 (for example, 002), and **VS** 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 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 15 to troubleshoot.

**Table 15.   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 Media Gateway, substitute **XXXVS** for **UUCSS** in the
>     following commands, where **XXX** is the administered number of the G700
>     (for example, 002), and **VS** 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 commands exactly where shown. A sample address for a DS1 circuit
>     pack on a G700 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.<br><br>⇒ **NOTE:**<br>If you have a G700 Media Gateway, substitute ***XXXVS*** for ***UUCSS*** in the above command, where ***XXX*** is the administered number of the G700 (for example, 002), and **VS** 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 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 Media Gateway, substitute ***XXXVS*** for ***UUCSS*** in the following command, where ***XXX*** is the administered number of the G700 (for example, 002), and **VS** 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 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 138.

4. Press ENTER to make the changes, CANCEL to quit without changes.

### Releasing the DS1 circuit pack

> **⇒ NOTE:**
> If you have a G700 Media Gateway, substitute **XXXVS** for **UUCSS** in the
> following command, where **XXX** is the administered number of the G700 (for
> example, 002), and **VS** 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 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 24 through Figure 29).

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 Media Gateway, substitute ***XXX*V*S*** 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 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 139."

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.
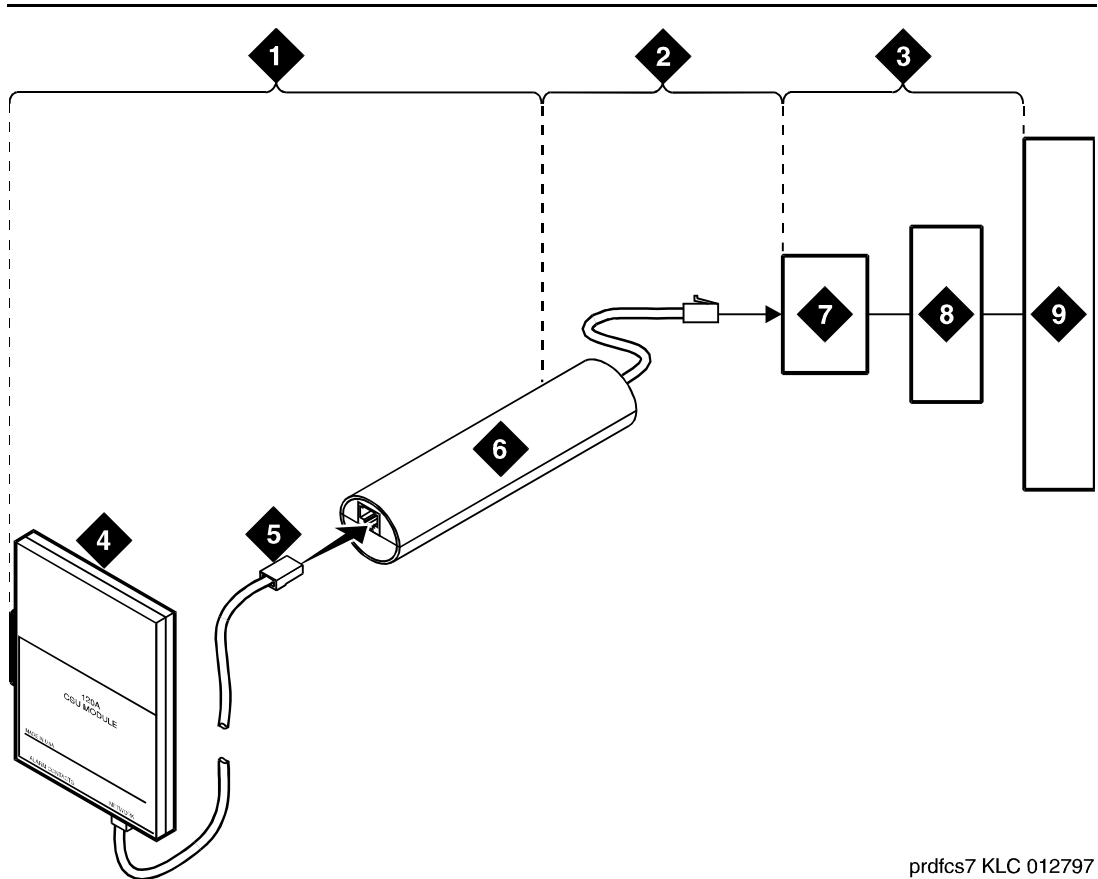
prdfcs7 KLC 012797

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 24.    Network interface at smart jack for a 120A2 (or later) ICSU**

prdfcs7a KLC 080602

1. Span section 1
2. Span section 2
3. Span section 3
4. G700 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 25.    Network interface at smart jack for an MM710 multi-media module**
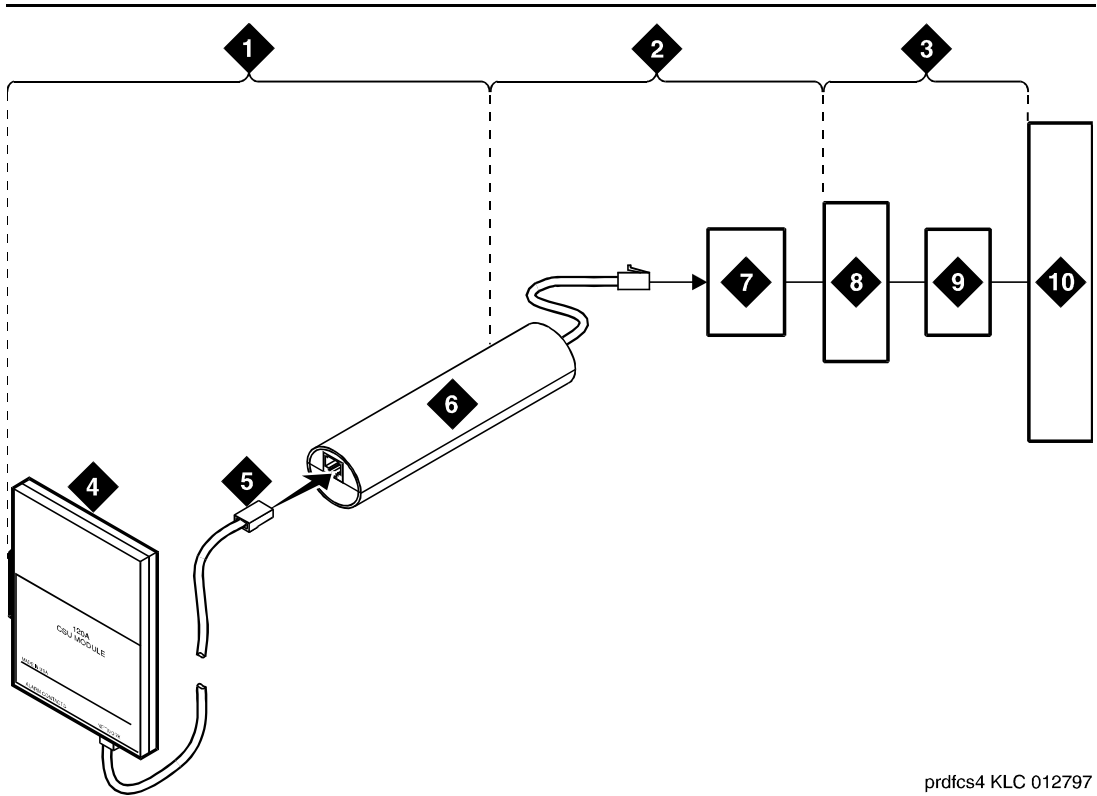
prdfcs4 KLC 012797

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 26.    Network interface at extended demarcation point (smart jack inaccessible) for
a 120A2 (or later) ICSU**
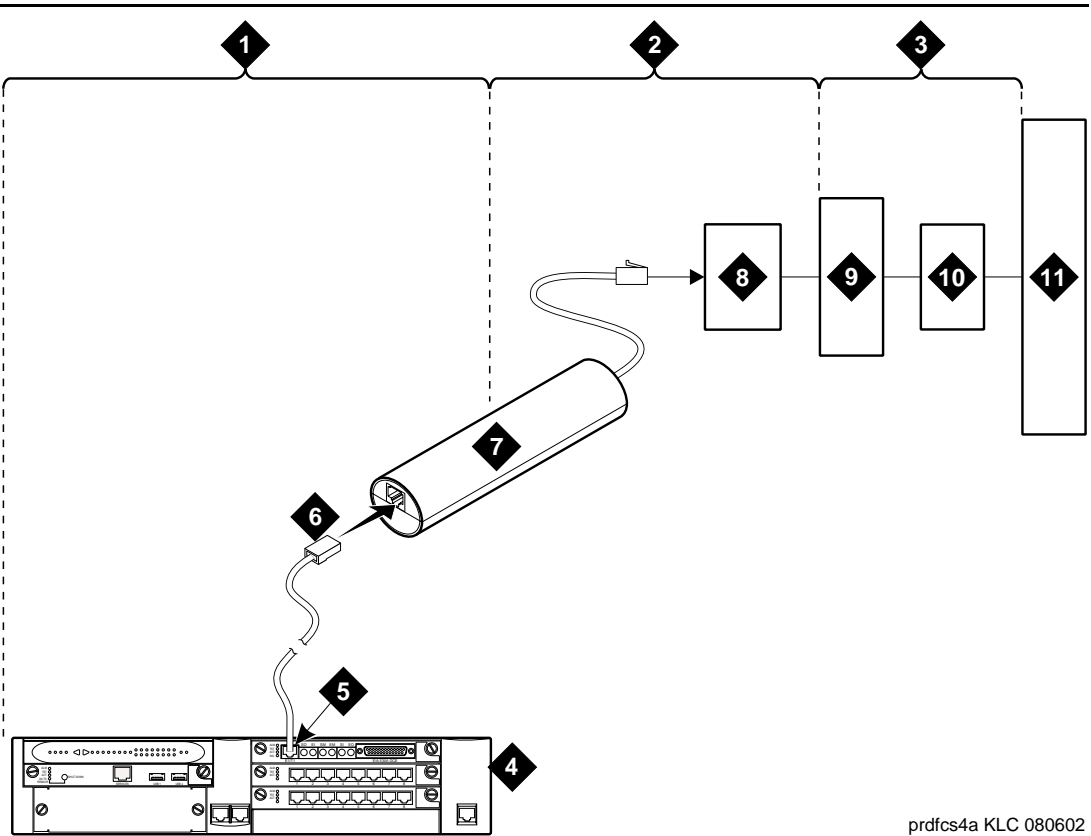
prdfcs4a KLC 080602

1. Span section 1
2. Span section 2
3. Span section 3
4. G700 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 27.  Network interface at extended demarcation point (smart jack inaccessible) for an MM710 multi-media module**
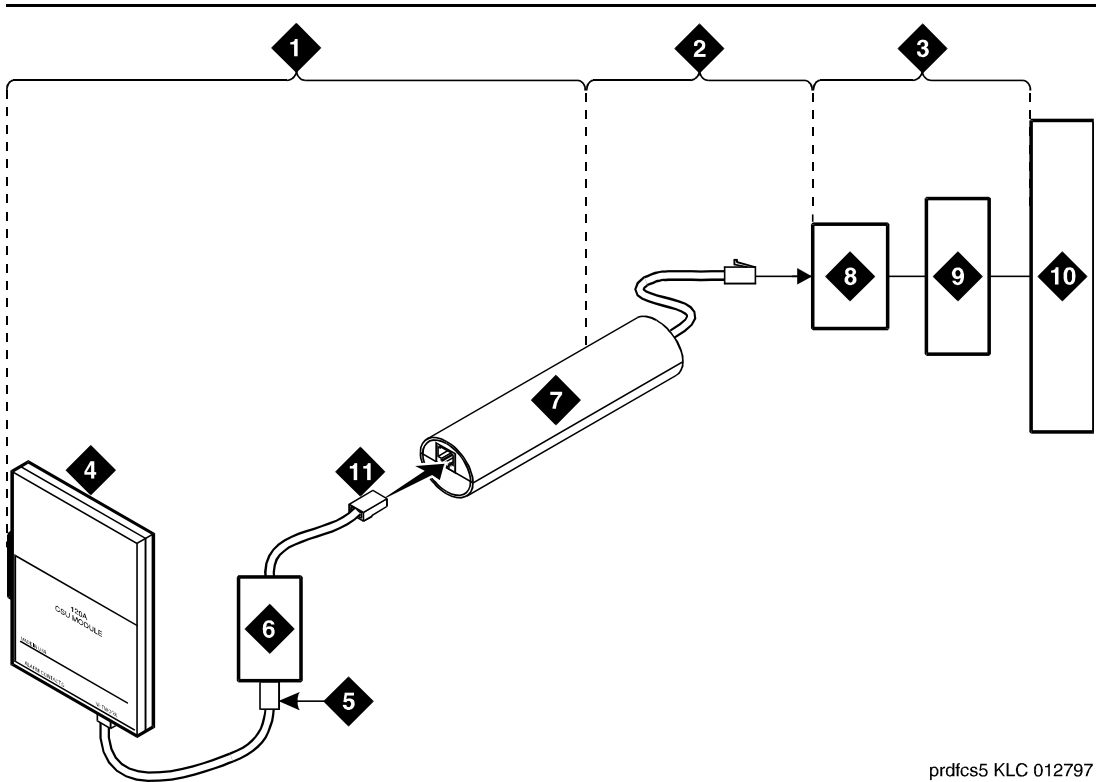
prdfcs5 KLC 012797

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 28.    Network interface at extended demarcation point (smart jack accessible) for a 120A2 (or later) ICSU**
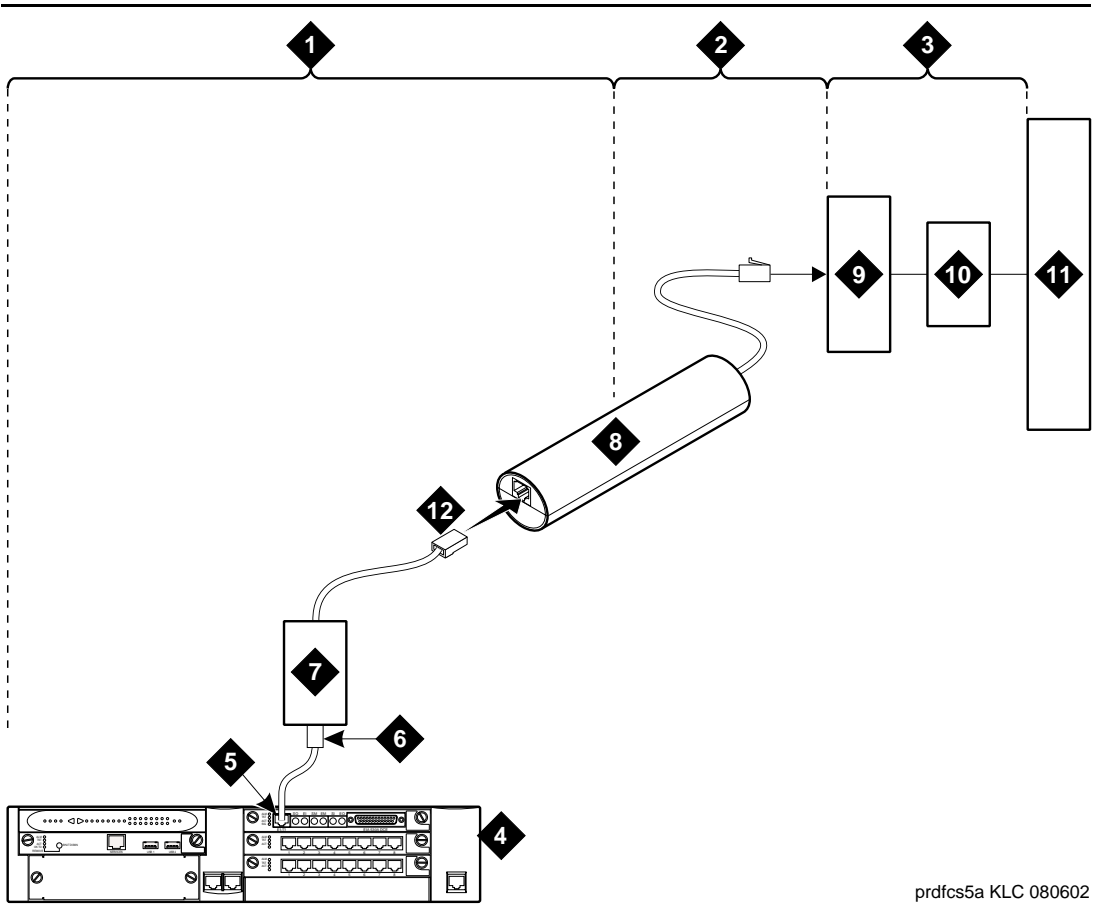
prdfcs5a KLC 080602

1. Span section 1
2. Span section 2
3. Span section 3
4. G700 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

**Figure 29.    Network interface at extended demarcation point (smart jack accessible) for an MM710 multi-media module**

# 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 30 through Figure 33.
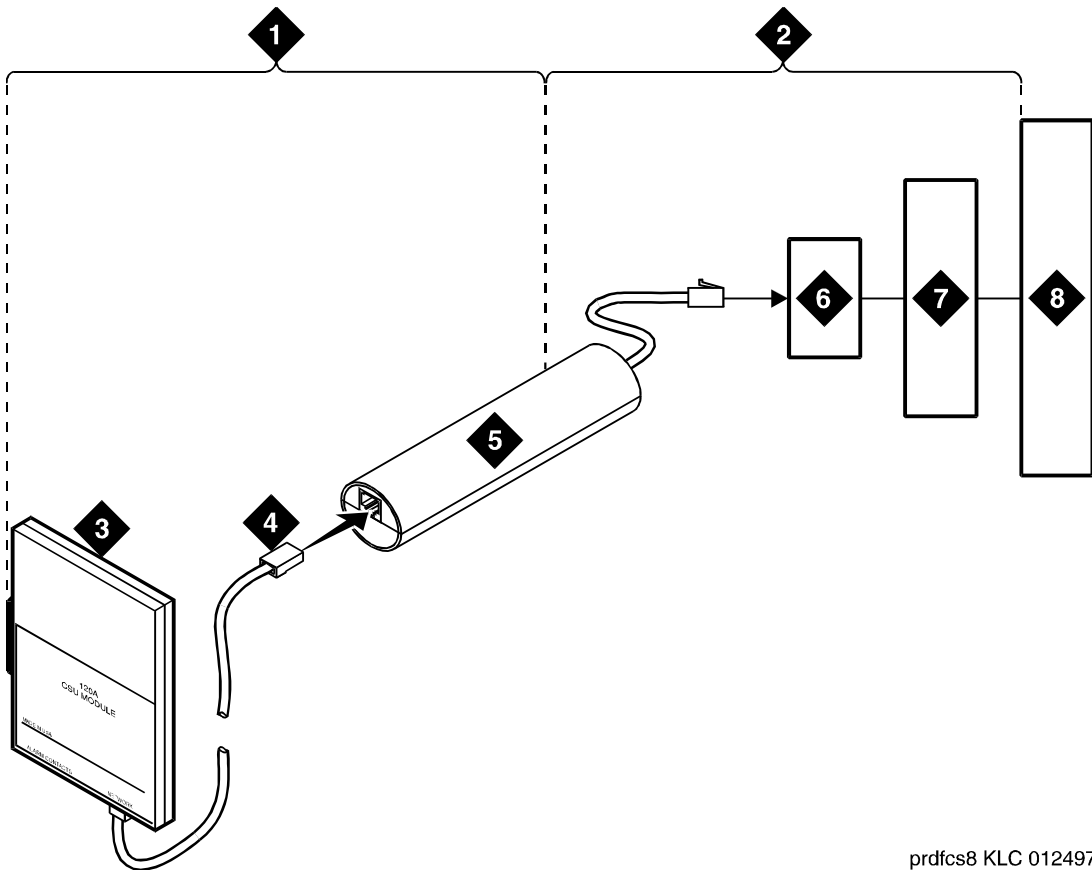


prdfcs8 KLC 012497

1. Span section 1
2. Span section 2
3. 120A2 (or later) ICSU
4. RJ-48 to network interface
   (up to 1000 ft. [305 m])

5. Loopback jack
6. Dumb block (demarcation point)
7. Interface termination or fiber multiplexer (MUX)
8. Central office

**Figure 30.  Network interface at "dumb" block for a 120A2 (or later) ICSU**
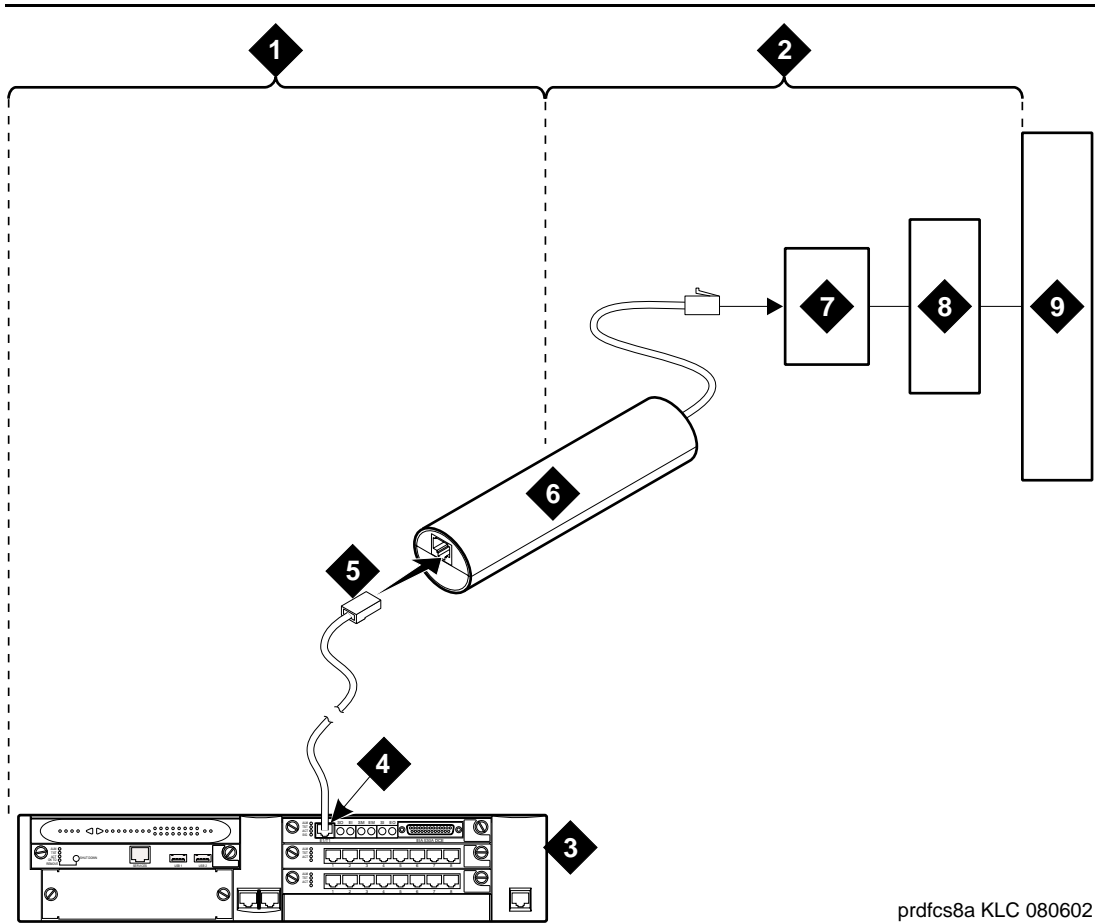
prdfcs8a KLC 080602

1. Span section 1
2. Span section 2
3. G700 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 31.   Network interface at "dumb" block for an MM710 multi-media module**
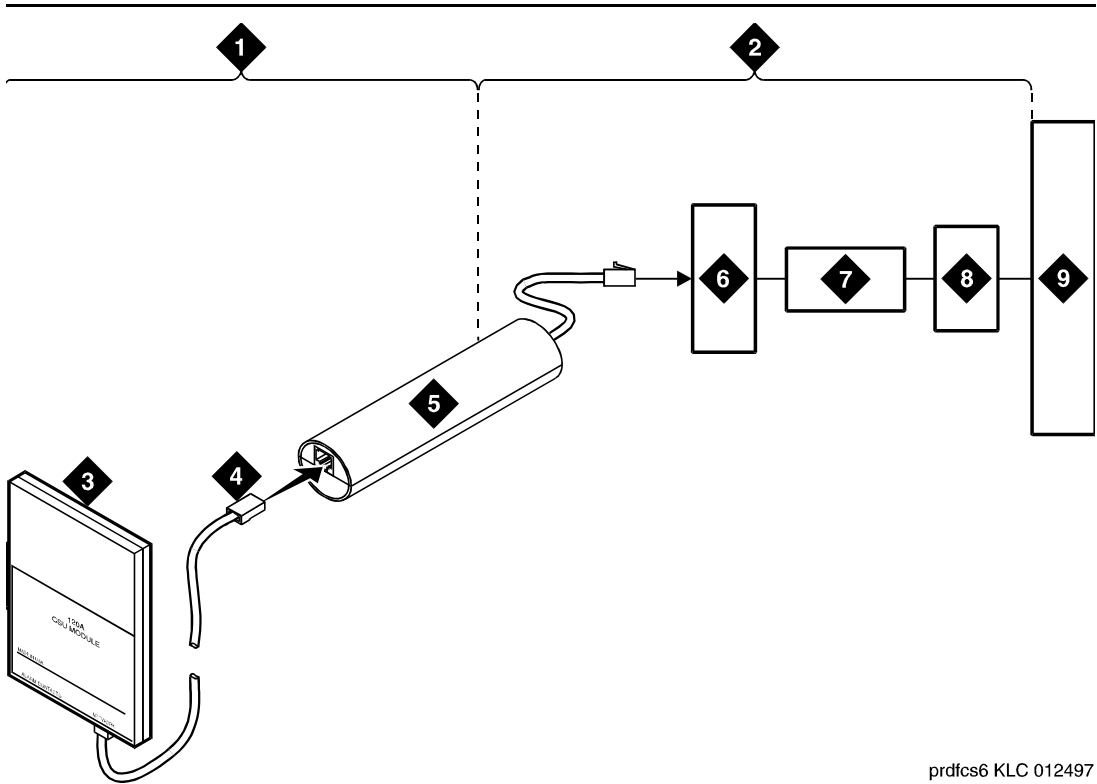
prdfcs6 KLC 012497

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 32.    Network interface at "dumb" block with repeater line to fiber MUX for a 120A2 (or later) ICSU**
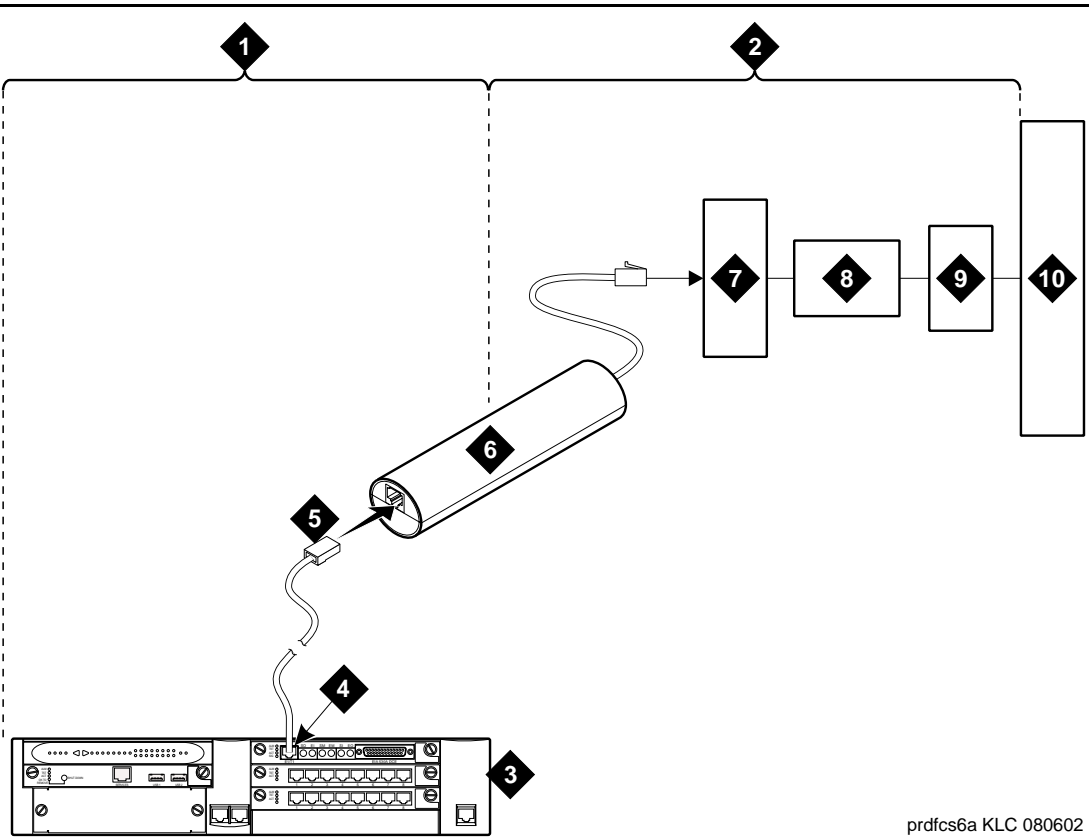
prdfcs6a KLC 080602

1. Span section 1
2. Span section 2
3. G700 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

**Figure 33.    Network interface at "dumb" block with repeater line to fiber MUX for an
              MM710 multi-media module**

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 30 through Figure 33). 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 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 24 through Figure 31. 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*.

# ISDN converters and adapters

# 10

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



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
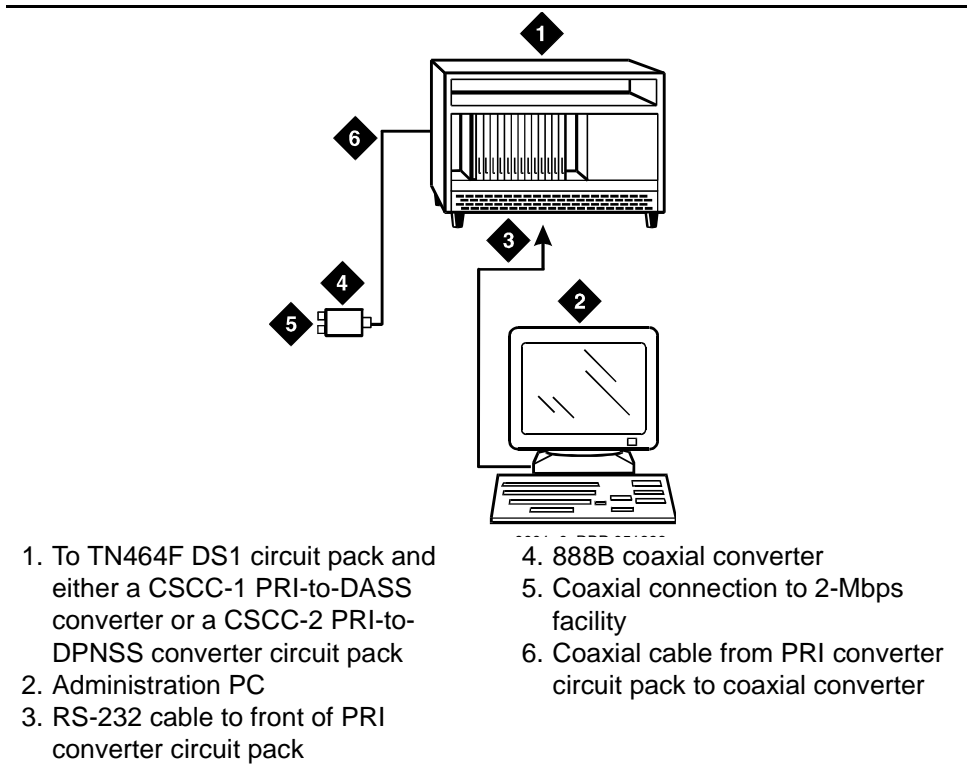
**Figure 34.   Typical DASS or DPNSS converter cabling**

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 35 shows typical connections from the PRI-to-BRI converter to the coaxial facility.



0007_0 RBP 051396

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
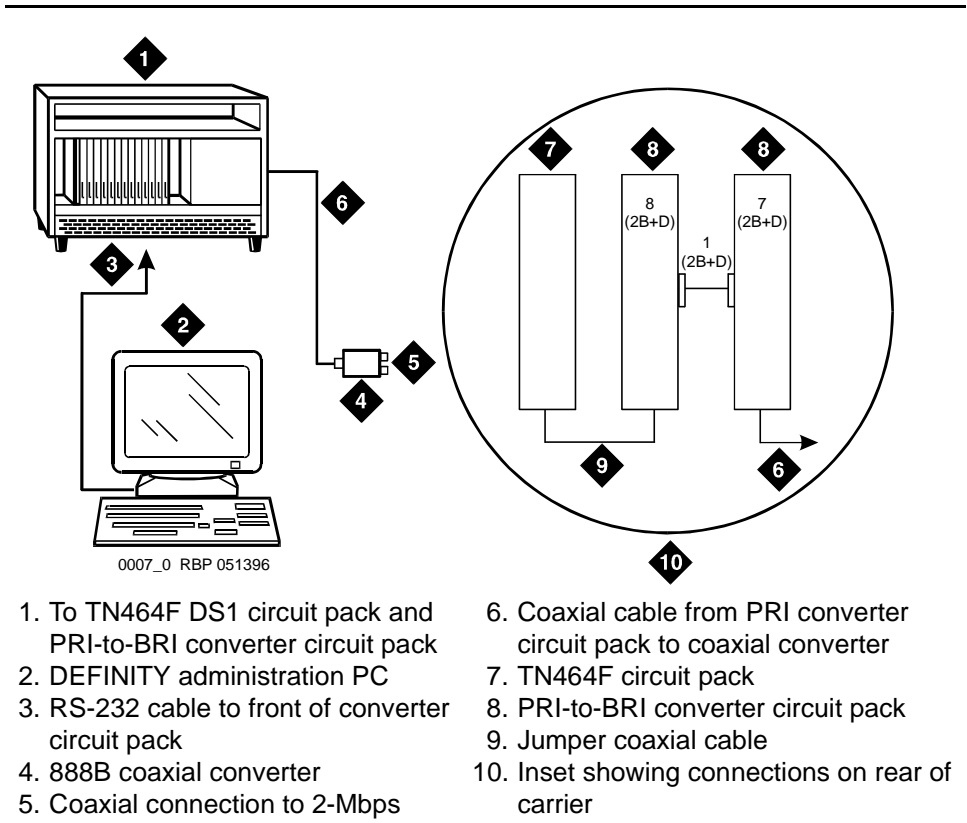
**Figure 35.    Typical PRI to BRI converter cabling**

$\Longrightarrow$ **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 36 shows typical connections from the CCSC-1 PRI-to-DASS converter or the CCSC-2 PRI-to-DPNSS converters to the coaxial facility.



0011_0  RBP 060696

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

**Figure 36.   Typical DASS or DPNSS converter cabling**

## PRI-to-BRI converter

Figure 37 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.
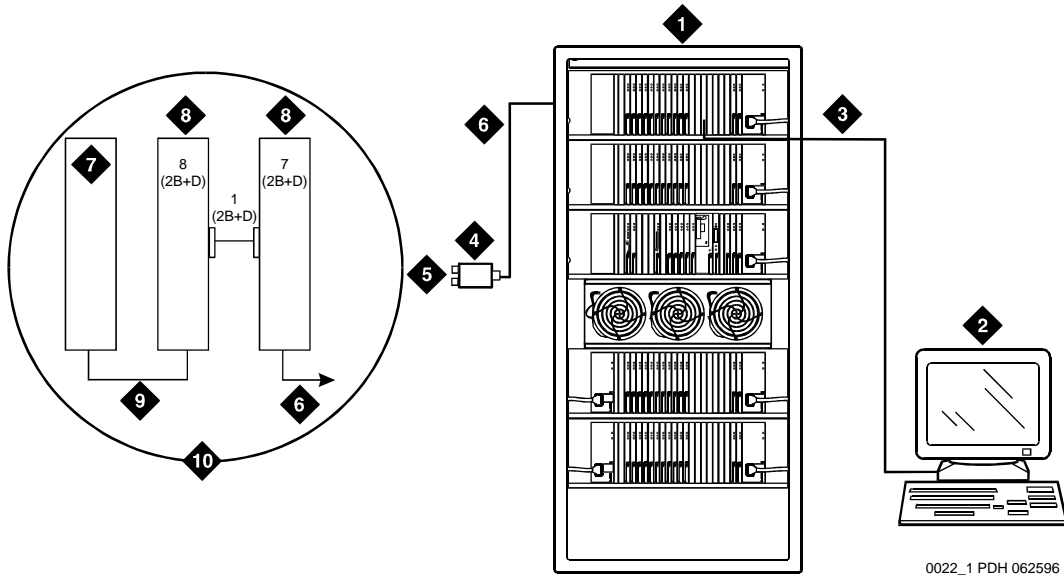


0022_1 PDH 062596

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

**Figure 37.   Typical PRI to BRI converter cabling**

### NOTE:
The inset shows details of the cable connections between the circuit packs.

# Stratum 3 clock

# 11

The Stratum 3 clock is an optional feature for digital frame timing that couples the clock output to local clocks. This chapter provide information on setting the option switches on the clock. For installation information refer to the appropriate installation or upgrade book for your system.

$\Longrightarrow$ **NOTE:**

The information in this chapter does not apply to the G700 Media Gateway configurations. There is no way to physically connect the G700 tone clock (resident on the motherboard) to an external Stratum 3 clock source.

## Set clock options

There are four sets of option switches on the clock. Proceed as follows.

1. Set the options on the clock input board (CI) per Table 16.

**Table 16.   CI Option Switch Settings**

| Switch | Function | Position |
|--------|----------|----------|
| 1 | T1 select | OFF = enable (default) <br> ON = disable |
| 2 | CC select | OFF = enable <br> ON = disable (default) |
| 3 | Framing select | OFF = ESF <br> ON = D4 (default) |
| 4 | BX.25 | OFF = enable <br> ON = disable (default) |

2. Set the options on the Stratum 3 (ST3) clock board (see Table 17).

**Table 17.   ST3 clock board option switch settings**

| Switch | Status/Results |
|---|---|
| SW1 Minor alarm control | OFF = minor alarm never output<br><br>ON = minor alarm is output if holdover occurs |
| SW2 Major Alarm Control | OFF = major alarm is output and fail lamp lights if 5 VDC power is lost and 4 kHz output is lost<br><br>ON = major alarm is output and fail lamp lights if 5 VDC power is lost and 4 kHz output is lost and holdover occurs |

**➤ NOTE:**
Only SW 1 and SW2 are used. SW1 controls the output of alarm signals from the Stratum 3 clock board.

3. Set the options on the composite clock timing output board (TOCA) per Table 18.

4. Set the Stratum 2/Stratum 3 switch to the STRATUM 3 position.

**Table 18.   Composite clock timing output board (TOCA)**

| Switch | | Range in feet (meters) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 500 | 1000 | 1.0 (0.3) | 500 (152) | 1000 (305) | 1500 (457) | 2000 (710) | 2500 (772) | 3000 (914) |
| OFF | OFF | ■ | ■ | ■ | ■ | | | |
| ON | OFF | | ■ | ■ | ■ | ■ | | |
| OFF | ON | | | ■ | ■ | ■ | ■ | |
| ON | ON | | | | ■ | ■ | ■ | ■ |

**➤ NOTE:**
Set switches 1 and 2 according to the distance from the Stratum 3 clock to the DEFINITY system. Set switch 3 to ON. Set switch 4 to OFF.

## Cabling the Stratum 3 clock

Figure 38 shows typical connections to a Stratum 3 clock cabinet. Connections are made through the yellow field cross-connect. A custom Y-cable (H600-274) connects the CSU to the DS1 circuit pack and taps off the input for the Stratum 3 clock. A resistor built into the cable to provides the necessary isolation between the system and the clock. The Y-cable plugs directly into the CSU and connects to standard cables for interface to the system and the yellow field on the MDF.

The H600-307 cable connects the system end of the Y-cable to a DS1 circuit pack (shown as TN464F or TN767E). The B25A cable connects the clock end of the Y-cable to the yellow field on the MDF.
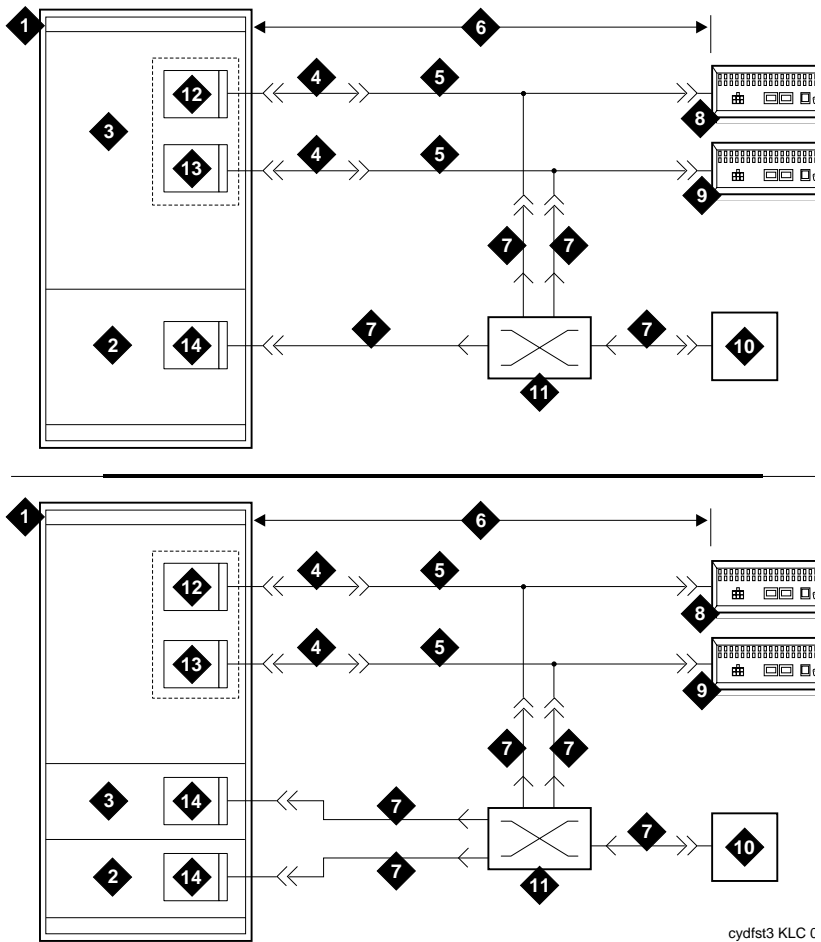
1. PPN cabinet
2. "A" position
3. "B" position
4. H600-307 cable
5. H600-274, G2 cable
6. 1300 ft. (397 m)
7. B25A male to female cables

8. Secondary CSU
9. Primary CSU
10. Stratum 3 Clock
11. MDC
12. TN464F DS1/E1 interface circuit pack
13. TN767E DS1 circuit pack
14. TN780 tone-clock circuit pack

**Figure 38.    Typical connections to Stratum 3 clock**

The H600-307 cable connects the system end of the Y-cable to a DS1 circuit pack (shown as TN464 or TN767E). The B25A cable connects the clock end of the Y-cable to the yellow field cross-connect.

## Stratum 3 clock wiring installation procedure

1. Connect the B25A cables from the TN780 connector panel slot on the system cabinet and the Stratum 3 Clock to the cross-connect module in the yellow field.

2. Connect the CSU plug end of the H-600-274 Y-cable to the primary CSU. Route an H600-307 cable from the DS1 connector panel slot on the system cabinet to the connector on the "SYSTEM" end of the Y-cable.

3. Route a B25A cable from the "CLOCK" end of the Y-cable to the cross-connect module in the yellow field.

4. Repeat steps 2 and 3 for the secondary CSU. The maximum allowable cabling distance between the Stratum 3 clock and the CSU is shown in the table below.

**Table 19.   Maximum cabling distance for different CSUs**

| Channel Service Unit (CSU) | Maximum Cabling Distance |
|---|---|
| 551A | 85 feet (27 m) |
| 551V | 85 feet (27 m) |
| 551V EFS/R | 755 feet (199.7 m) |
| EFS T1 | 755 feet (199.7 m) |

5. For standard reliability systems, refer to Y-cable to cross-connect the TN780 and "CLOCK" end connections to the Stratum 3 clock connections on the cross-connect module.

6. For high or critical reliability systems, refer to table below to cross-connect the TN780 and "CLOCK" end connections to the Stratum 3 clock connections on the cross-connect module.

**Table 20.   Y-cable clock-end cross-connects for reliability**

| From Stratum 3 Clock | | To Y-cable clock end (primary) | | To Y-cable clock end (secondary) | |
|---|---|---|---|---|---|
| Lead Name | Lead Color/ Terminal | Lead Name | Lead Color/ Terminal | Lead Name | Lead Color/ Terminal |
| RREF1 | W-BL/1 | | V-O/43 | | |
| TREF1 | BL-W/2 | | O-V/44 | | |
| RREF2 | W-O/3 | | | | V-O/43 |
| TREF2 | O-W/4 | | | | O-V/44 |

**Table 21.    TN780-carrier cross-connects for standard reliability**

| From Stratum 3 Clock | | To TN780 carrier A | | To TN780 carrier B | |
|---|---|---|---|---|---|
| Lead Name | Lead Color/ Terminal | Lead Name | Lead Color/ Terminal | Lead Name | Lead Color/ Terminal |
| BCLKRTN | R-O/13 | ALRM5B | V-G/45 | | |
| BCLKLST | O-R/14 | ALRM5A | G-V/47 | | |
| BPWRRTN | R-BR/17 | ALRM4B | BK-BL/21 | | |
| BPWRLST | BR-R/18 | ALRM4A | BL-BK/22 | | |
| REF2RTN | W-BR/7 | ALRM3B | R-BR/17 | | |
| REF2LST | BR-W/8 | ALRM3A | BR-R/18 | | |
| SCLKRTN | R-BL/11 | ALRM2B | R-BL/11 | | |
| SCLKLST | BL-R/12 | ALRM2A | BL-R/12 | | |
| SPWRRTN | R-G/15 | ALRM1B | Y-BL/31 | | |
| SPWRLST | G-R/17 | ALRM1A | BL-Y/32 | | |
| BCLKRTN | R-O/13 | ALRM5B | V-G/45 | | |
| REF1RTN | W-G/5 | ALRM0B | W-BR/7 | | |
| REF1LST | G-W/7 | ALRM0A | BR-W/8 | | |
| CCA01R | R-S/19 | EXTSYN0T | V-BL/41 | | |
| CCA01T | S-R/20 | EXTSYN0R | BL-V/42 | | |
| CCB01R | BK-BL/21 | EXTSYN1T | Y-G/35 | | |
| CCB01T | BL-BK/22 | EXTSYN1R | G-Y/37 | | |

**Table 22. Y-cable clock-end cross-connects for high or critical reliability**

| From Stratum 3 Clock | | To Y-cable clock end (primary) | | To Y-cable clock end (secondary) | |
|---|---|---|---|---|---|
| Lead Name | Lead Color/ Terminal | Lead Name | Lead Color/ Terminal | Lead Name | Lead Color/ Terminal |
| RREF1 | W-BL/1 | | V-O/43 | | |
| TREF1 | BL-W/2 | | O-V/44 | | |
| RREF2 | W-O/3 | | | | V-O/43 |
| TREF2 | O-W/4 | | | | O-V/44 |

**Table 23. Circuit-pack cross-connects for high or critical reliability**

| From Stratum 3 Clock | | To TN780 carrier A | | To TN780 carrier B | |
|---|---|---|---|---|---|
| Lead Name | Lead Color/ Terminal | Lead Name | Lead Color/ Terminal | Lead Name | Lead Color/ Terminal |
| BCLKRTN | R-O/13 | ALRM5B | V-G/45 | ALRM5B | V-G/45 |
| BCLKLST | O-R/14 | ALRM5A | G-V/47 | ALRM5A | G-V/47 |
| BPWRRTN | R-BR/17 | ALRM4B | BK-BL/21 | ALRM4B | BK-BL/21 |
| BPWRLST | BR-R/18 | ALRM4A | BL-BK/22 | ALRM4A | BL-BK /22 |
| REF2RTN | W-BR/7 | ALRM3B | R-BR/17 | ALRM3B | R-BR/17 |
| REF2LST | BR-W/8 | ALRM3A | BR-R/18 | ALRM3A | BR-R/18 |
| SCLKRTN | R-BL/11 | ALRM2B | R-BL/11 | ALRM2B | R-BL/11 |
| SCLKLST | BL-R/12 | ALRM2A | BL-R/12 | ALRM2A | BL-R/12 |
| SPWRRTN | R-G/15 | ALRM1B | Y-BL/31 | ALRM1B | Y-BL/31 |
| SPWRLST | G-R/17 | ALRM1A | BL-Y/32 | ALRM1A | BL-Y/32 |
| REF1RTN | W-G/5 | ALRM0B | W-BR/7 | ALRM0B | W-BR/7 |
| REF1LST | G-W/7 | ALRM0A | BR-W/8 | ALRM0A | BR-W/8 |
| CCA01R | R-S/19 | EXTSYN0T | V-BL/41 | | |
| CCA01T | S-R/20 | EXTSYN0R | BL-V/42 | | |

*Continued on next page*

**Table 23.    Circuit-pack cross-connects for high or critical reliability  — *Continued***

| From Stratum 3 Clock | | To TN780 carrier A | | To TN780 carrier B | |
|---|---|---|---|---|---|
| Lead Name | Lead Color/ Terminal | Lead Name | Lead Color/ Terminal | Lead Name | Lead Color/ Terminal |
| CCB01R | BK-BL/21 | EXTSYN1T | Y-G/35 | | |
| CCB01T | BL-BK/22 | EXTSYN1R | G-Y/37 | | |
| CCA02R | BK-O/23 | | | EXTSYN0T | V-BL/41 |
| CCA02T | O-BK/24 | | | EXTSYN0R | BL-V/42 |
| CCB02R | BK-G/25 | | | EXTSYN1T | Y-G/35 |
| CCB02T | G-BK/26 | | | EXTSYN1R | G-Y/37 |

7.  Bridge the jumper wires to cross-connect from the TN780 in A and B carriers to the Stratum 3 clock.

8.  Dress the cables down sides of the cabinet and run through the cable Slack Manager, if provided.

9.  Administer the switch for the clock.

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

# 12

The customer-provided busy tone disconnect adjunct detects disconnects of incoming calls on loop-start, 2-wire, analog trunks. In some countries outside the United States, the PSTN sends tones in the voice band instead of line disconnect signals. Figure 39 shows typical connections.

➡ **NOTE:**
The busy tone disconnect feature is not currently supported on a G700 Media Gateway.



cydf057 RPY 123097
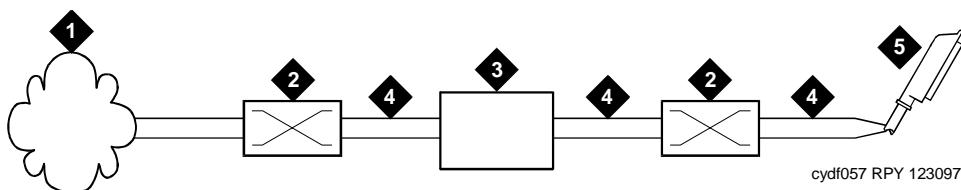
1. Public switched telephone network
2. Main distribution frame
3. Busy tone disconnect device
4. Tip and ring wires
5. To loop-start, central-office, trunk circuit pack such as a TN747B

**Figure 39.   Typical cabling for busy tone disconnect**

# Call detail recording (CDR) option settings

# 13

This chapter provides information on connecting call detail recording (CDR) equipment to a DEFINITY Server (such as an MCC1 Media Gateway), and to a G700 Media Gateway.

## Connecting CDR equipment

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

- Data module (see Chapter 4, "Data modules and asynchronous data units", for recommended settings).

- Modem (see Chapter 5, "External modems", and the modem vendor's documentation for recommended settings).

- TN726 data line circuit pack and an asynchronous data unit.

   **NOTE:**
   The TN726 data line circuit pack is not supported in either multi-connect or IP-connect implementations of the S8700 Media Server. TN726 data line circuit packs are only supported on DEFINITY G3r and earlier platforms.

- TCP/IP connection to the C-LAN board on an MCC1 Media Gateway, or to the IP connection on an G700/S8300 server configuration, either directly or through a terminal server (see Chapter 8, "Terminal server installation" for more information on connecting through a terminal server).

CDR equipment can connect directly to the DCE connector — the Electronic Industries Association (EIA) port — on the rear of the control carrier in all systems except G3csi. Data modules or modems are not required. In the G3csi, CDR equipment connects to the DCE (J2) connector on the processor interface cable.

On a G700/S8300 server configuration, CDR equipment can connect to one of the two IP connections (EXT 1 or EXT 2) on the front of the G700 Media Gateway.

> **NOTE:**
> You can also use any of the ports on an optional 16-port module, if your G700 Media Gateway is so equipped.

# Using other equipment as the CDR output devices

A printer, a 94A local storage unit (LSU), or customer premises equipment (CPE) can be used as the output receiving device.

# Sources of administration information

Administration procedures for CDR equipment are provided in *Administrator's Guide for Avaya MultiVantage Software*.

# Connecting a CDR device

This section provides information on connecting adjuncts to the media server, and providing the initial administration.

## 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 131
- "Administering IP services" on page 132
- "Administering CDR parameters" on page 174
- If you are using a terminal server, also complete "Installing and administering the terminal server" on page 122
- If you are using a PC with the Downloadable RSP Tool, complete "Using the downloadable reliable session-layer protocol (RSP) tool" on page 176

## Administering CDR parameters

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

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: printer       Primary Output Endpoint: CDR1
   Secondary Output Format:
           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 Endpoint` field, type **CDR1**. If you use a secondary output device, and that device is also connected through TCP/IP, type **CDR2** in the `Secondary Output Endpoint` field.

3. 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 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
```

You should also work with the vendor to test the link from the call accounting end. If you are installing the INTUITY Lodging Call Accounting, work with the Homisco technician to test the link.

If a link does not come up immediately, try using the busyout cdr-link and release cdr-link commands.

# 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. You can download the RSP tool from the Avaya Web site. The RSP 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.

## Setting up an RSP configuration

To set up an RSP configuration:

- Administer the PC as a client application on the switch.
- Download, install, and administer the RSP for the PC.

## Setting up the switch

To set up the server application on the switch, complete the following tasks:

- "Administering IP node names" on page 131

  Give the PC a node name. The IP address is the IP address of the PC that is running the RSP tool.

- "Administering IP services" on page 132

  The service type = SYS_PRNT, the Remote Node = the node name assigned to the PC. Remote port is the port assigned as the listen port on the PC. You can determine the listen port by starting the RSP Server application, clicking on Start, and checking in the output window to see what port the server is listening on.

## Setting up the PC

To set up the client application on the PC you will be:

- "Downloading RSP"
- "Installing RSP"
- "Administering RSP"

### Downloading RSP

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

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 the RSP tool from the Web site.

4. When asked, save the setup.exe file to a temporary folder on your computer. It is approximately 1.4-MB.

### Installing RSP

To install the RSP:

1. Double-click the **setup.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 RSP

See the instructions in the user guide.doc file to administer the reliable session-layer protocol (RSP) on a PC.

# DEFINITY INADS

# 14

The DEFINITY® initialization and administration system (INADS) provides analog loopback connections and PARTNER connections for remote alarming and maintenance when direct connection to the public network is not possible.

> **NOTE:**
> These instructions are for Avaya Media Server or Gateway systems using the TN1648/B system access/maintenance (SYSAM) circuit pack. ISDN is required. These instructions do not apply to the S8300 or the S8700 Media Servers in a G700 Media Gateway configuration.

## Analog loopback

Analog loopback connects the INADS port to an analog station port. It switches the call through the AUX connector on the processor carrier, across an analog line circuit pack, and out to the public network. Direct Inward Dialing (DID) is optional.

## Installing INADS analog loopback on a standard-reliability system

1. Connect the INADS tip and ring port from the AUX connector to an analog station port through the MDF. See Figure 40. Use wire pair 50 and 25.

2. If you are using power fail transfer, connect the 808A2 transfer panel between the *INADS connection to the station* and the *INADS connection to the loop-start trunk*.

> **NOTE:**
> The 808A power fail transfer unit is not supported on the G700 Media Gateway.

1. Avaya Media Server or Gateway PPN
2. AUX connector on processor carrier
   (use wire pair 50 and 25, tip and ring)
3. Port carrier (with analog line circuit pack)
4. B25A 25-pair cable to AUX
5. Main distribution frame (MDF)
6. B25A 25-pair cable to circuit pack
7. PSTN or extension

**Figure 40.    Analog loopback connections**

### Installing INADS analog loopback on a high-reliability system

Be sure to place the TN1648B SYSAM circuit packs in different cabinets or processor carriers. Also be sure to place the analog line circuit packs in the same cabinets or carriers as the TN1648 circuit packs.

1. Connect each INADS tip/ring port to an analog station port through the MDF. See Figure 40.

2. Connect each tip/ring port to a separate analog line circuit pack.

## Administration

> **NOTE:**
> Add 2 pauses in front of the dial string when using cut-through trunks.
> Pauses are not required if using ARS.

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

2. For high reliability systems, in the `see interchange:` field, type **daily** and press Enter. This is done in case 1 of the connections between the 2 TN1648B circuit packs is down. This assures that within 24 hours the working connection is available to report alarms.

3. Type **add station** *number* or **next** and press Enter.

4. In the `Type` field, enter **500** (rotary analog telephone).

5. In the `Port` field, enter the port number for this line.

6. For high reliability systems, repeat the above steps for the second analog line. Administer the 2 stations as part of a TEG (terminating extension group).

   a. Type **add term-ext-group** *number* or **next** and press Enter.

   b. In the `Group Extension` field, enter the TEG extension number.

   c. In the `Coverage Path` field, enter the coverage path number.

   d. Enter the Group Member Assignment station numbers.

   e. Press Enter when finished.

## Partner installation

The PARTNER system connects the INADS port to an outgoing central office (CO) line and is programmed to seize the outside line when INADS seizes an inside PARTNER station line.

There are 2 types of PARTNER platforms:

- PARTNER Atlas platforms with U.S. firmware and a wide input power supply (WIPS) that allows a universal power supply. The Spain platform conforms to the United States/Atlas platform

- European platforms that focus on eastern Europe and the United Kingdom

The installation procedure describes the 2 types of PARTNER platforms with or without power fail transfer.

## INADS connection with power fail transfer

> **⚠ CAUTION:**
> *Check local regulations regarding this connection method.*

In this configuration, the INADS line and the emergency telephone extension are bridged together. Figure 41 shows the U.S./Atlas platform. Figure 42 shows the European platform.



cvdf206 RPY 021998

1. PARTNER System
2. MLS12D telephone for programming
3. Internal connection during power failure, from CO line port 1 to station port 10
4. 258A adapter (bridged connection)
5. Standard RJ-45 telephone cord
6. 103A or modular wall jack
7. Dial tone from CO or DEFINITY extension
8. Main distribution frame
9. PSTN or DEFINITY extension
10. B25A 25-pair cable to AUX
11. AUX connector (use wire pair 50 and 25, tip and ring)
12. Avaya Media Server or Gateway PPN

**Figure 41. INADS connection (US/Atlas platform)**

cydf206a RPY 021998

1. PARTNER System
2. MLS12D telephone for programming
3. Standard RJ-45 telephone cord
4. 103A or modular wall jack
5. Pins 2,3 on cable 5 bridge to pins 1,4 of cable 7 inside MDF
6. Dial tone from the CO or extension on pins 2,3; with return dial tone to the INADS port on pins 1,4 during power failure

7. Main distribution frame (MDF)
8. PSTN or switch extension
9. B25A 25-pair cable to AUX
10. AUX connector (use wire pair 50,25, tip and ring)
11. Avaya Media Server or Gateway PPN
12. Standard RJ-45 connector (pins 2,3, tip and ring, connect to pins 1,4, tip and ring, when the internal contacts close during power failure)

**Figure 42.   INADS connection (European platform)**

**Standard reliability**

- **Normal connection**: Connect the INADS tip and ring port from the AUX connector (wire pair 50 and 25) to the tip/ring pair of CO line port 1 on the PARTNER system.

- **US/Atlas/Spain platform connection**: Connect station 10 to the INADS port.

- **European platform connection**: Bridge the outside pair of CO line port 1 to the INADS port. A 258A adapter may be used.

## High reliability

Be sure that the TN1648B SYSAM circuit packs are located in different DEFINITY cabinets or processor carriers.

1. Bridge the 2 INADS tip/ring ports. A 258A adapter may be used.

2. Connect the bridged INADS tip/ring port to a PARTNER station port.

## INADS connection without power fail transfer

### ⚠ CAUTION:

*Check local regulations regarding this connection method.*

In this configuration (Figure 43), the INADS line and the emergency telephone extension are bridged together. If this connection method is not allowed, do not connect the INADS port to station 10.



cydf206b RPY 021998

1. PARTNER system
2. MLS12D telephone for programming
3. Standard RJ-45 telephone cord
4. 103A or modular wall jack
5. Dial tone from the CO or a switch extension

6. Main distribution frame
7. PSTN
8. B25A 25-pair cable
9. AUX connector (use wire pair 50,25, tip and ring)
10. Avaya Media Server or Gateway PPN

**Figure 43. INADS connection (all platforms)**

## Standard reliability

### Normal connection:

1. Connect a system telephone to station 10 on the PARTNER system.

2. Connect a standard RJ-11 telephone line cord from the PARTNER CO line to the CO line protector.

3. Connect the INADS tip and ring port from the AUX connector to the tip/ring pair of CO line port 1 on the PARTNER through the MDF. See Figure 43. Use wire pair 50 and 25 on the MDF.

### U.S./Atlas/Spain platform connection:

1. Select station 11-15 as the INADS port connection.

### European platform connection:

1. Bridge the outside pair of CO line port 1 to the INADS port. A 258A adapter may be used.

## High reliability

Be sure that the TN1648B SYSAM circuit packs are located in different cabinets or processor carriers.

1. Bridge the 2 INADS tip/ring ports. A 258A adapter may be used. See Figure 43.

2. Connect the bridged INADS tip/ring port to a station port.

## PARTNER administration

## Set standard telephone station (European platforms only)

> **NOTE:**
> Do not exit from the programming mode until instructed to do so.

1. Connect the PARTNER programming telephone (MLS12) to station 10.

2. Press **Feature**, followed by **0 0**.

3. Press the left intercom (System Program) button twice.

4. Enter the password. The default password is **7777**. The green LED next to the left intercom button must be steady on.

5. Enter **# 3 0 8**.

6. Enter **1 0** (if station 10 is connected to the INADS port) or the station number connected to the INADS port.

7. Enter **2** to set the station port to analog rotary. Enter **1** if an analog DTMF telephone or PARTNER system telephone is connected.

8. Enter **#** to return to the start of the programming mode.

## Set PARTNER CO line port (all platforms)

1. Enter **# 2 0 1**.

2. Press **1** for tone or **2** for pulse mode.

3. Enter **#** to return to the start of the programming mode.

## Set automatic line selection — outgoing trunk (all platforms)

1. Press the right intercom (Central Tel Program) button.

2. Enter **1 5** (if INADS is connected to station 15) or enter the station number connected to the INADS port.

3. Enter **\* \***.

4. Press the line 1 button (above left intercom). If the 2 lines are connected to the PARTNER for added reliability or security, press Next Procedure.

5. Enter **\* \***.

6. Enter **#** to return to the start of the programming mode.

## Set incoming line ringing (all platforms)

1. Press the right intercom (Central Tel Program) button.

2. Enter **1 5** (if INADS is connected to station 15) or enter the station number connected to the INADS port.

3. Press the line 1 button (above left intercom) until the LED changes to a steady green. This allows incoming calls to ring on line 1.

4. If AUDIX is installed, press the line 2 button until the LED changes to a steady green. This allows incoming calls to ring on line 2.

5. Enter **#** to return to the start of the programming mode.

6. Press Feature, followed by 0 0 to exit the programming mode.

## DEFINITY ECS administration

By default, the INADS port automatically seizes an outgoing trunk on the PARTNER system. Therefore, a "9" is not required in the switch dial string.

## Installation test (all installations)

These tests confirm that the hardware and administration are correct.

1. Place an outgoing call from the INADS port. Check for normal talk path.

2. Place an incoming call to the INADS port. Check for normal talk path.

3. Place an outgoing data from the INADS port to verify connection.

A failure in the link between the remote service center and the TN1648Bs INADS port can be detected automatically.

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

2. Set the `Test Remote Access Port` field to **y** and press Enter.

# Connectivity for INADS on S8700 and S8300 media servers

Prior to visiting the customer premises, technicians and/or customer account teams should retrieve from the auto registration tool (ART) a script for each server being registered — two for S8700 and one for S8300. Each script contains the steps that need to be executed to turn on dial out alarming, as well as the RAS IP address to be administered for each modem.

Once on site, to enable dial out alarming on the S8700/S8300 platforms, use the sequence of commands exactly as entered in the script. The RAS IP addresses for the modems should be administered through the "Configure Server" option on the Web interface.

➡️ **NOTE:**
You must administer the RAS IP address and dial out information on each server.

## Example of an ART script file

| | |
|---|---|
| productid -p 100003151 | The product id will be different for each server. |
| almenable -d f | This command enables dial out on the first phone number administered. |
| almcall -f 18005353573 | This command administers the phone number. |

➡️ **NOTE:**
RAS IP address: 10.1.1.27.
Enter the IP address through the Web user interface.

For more information, see *Installation and Upgrades for the Avaya G700 Media Gateway controlled by an Avaya S8300 Media Server or an Avaya S8700 Media Server*, 555-234-100.

# Malicious call trace

# 15

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 44. The 909A/B universal coupler provides seizure control to the recorder.

## ➡ NOTE:
There is no auxiliary trunk circuit pack for the G700 Media Gateway, so information in this chapter does not apply to the G700 Media Gateway. However, you can access MCT equipment connected to a port network.

cydf038 PDH 091696
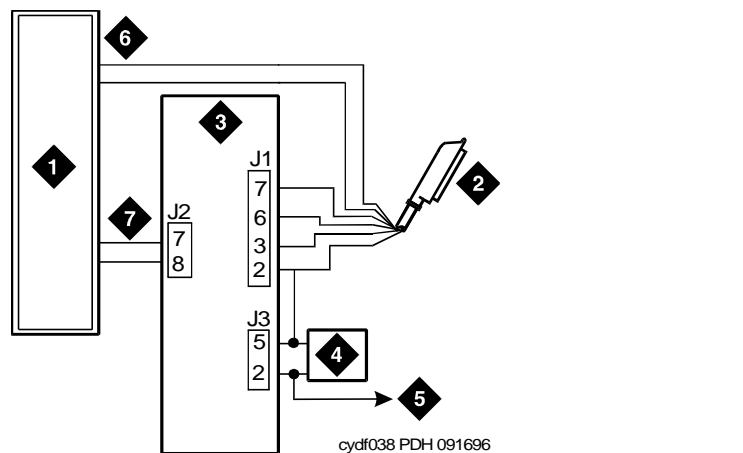
1. Malicious call trace voice recorder
2. 25-pair cable (T, R, S, S1, Sz, SZ1) to TN763/D auxiliary trunk circuit pack
3. 909A/B universal coupler
4. Power supply for universal coupler
5. To SZ1 on TN763/D connector
6. Tip and ring wires
7. CBS1/C1 and CBS2/C2

**Figure 44.  Malicious call trace**

> ➡ **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.

# Music-on-hold

# 16

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, or G600 Media Gateway.

- through a port on an MM711 Analog Media Module to a customer-supplied music source on a G700 Media Gateway.

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

Figure 45 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 46 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.

cydfmusc RPY 090397
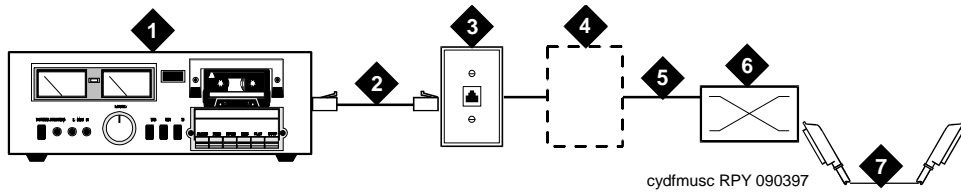
1. Music source
2. 4-pair modular cord
3. 103A or modular wall jack
4. 122A music adapter (if required—primarily required in France)

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

**Figure 45.  Typical registered equipment connections (auxiliary access) for an MCC1, SCC1, CMC1, or G600 Media Gateway**

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 1, ''909A/B universal coupler'').

## Registered music source

Refer to Figure 45 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 46 and Figure 47 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 1, ''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.



0050_0 PDH 062696

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

**Figure 46.    Typical nonregistered equipment connections (auxiliary access) for an MCC1, SCC1, CMC1, or G600 Media Gateway**

⟹ **NOTE:**
    A wiring block must be locally engineered.
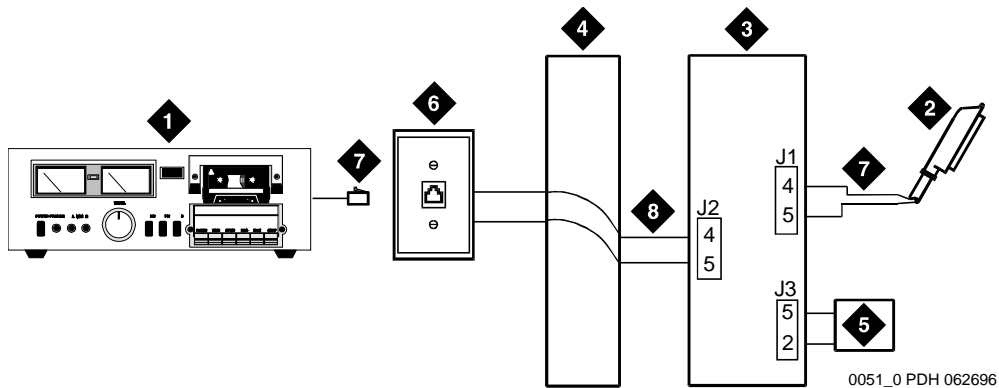
1. Customer-supplied music source
2. 25-pair cable to analog line circuit pack
3. 909A/B universal coupler
4. Part of main distribution frame
5. Power supply for universal coupler
6. 103A or modular wall jack
7. 4-pair modular cord
8. Tip and ring wires

**Figure 47.  Connections to nonregistered music-on-hold using analog line for an MCC1, SCC1, CMC1, or G600 Media Gateway**

⇒ **NOTE:**
A wiring block must be locally engineered.

## For G700 Media Gateways

On a G700 Media Gateway, the music-on-hold feature is connected through a port on an MM711 Analog Media Module.

The G700 Media Gateway does not support an auxiliary trunk circuit pack. Therefore, for internal communications controller (ICC) G700 Media Gateway users, the music-on-hold feature through an auxiliary trunk is not supported. However, external communications controller (ECC) G700 Media Gateway users 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 ECC system.

⇒ **NOTE:**
ICC refers to MultiVantage Software running on an S8300 Media Server installed in, and acting as the primary controller for, a G700 Media Gateway.

ECC refers to MultiVantage Software running on an external S8700 Media Server within a G700 Media Gateway environment.

Figure 48 shows the connections for the music-on-hold feature on a G700 Media Gateway.

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



cydfholdKLC 091802
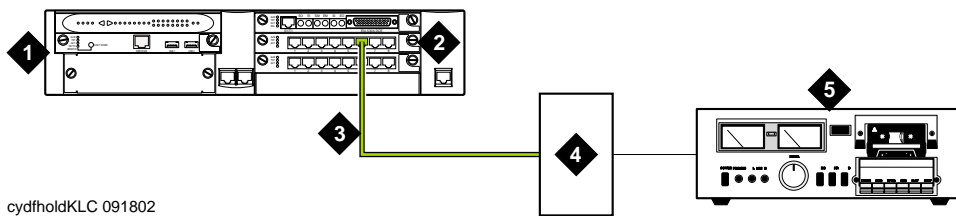
1. G700 Media Gateway
2. MM711 Analog Media Module
3. RJ-45 connection

4. KS-23395-L3 coupler
5. Music source

**Figure 48.  Typical music-on-hold equipment connections for a G700 Media Gateway**

To hook up music-on-hold from a G700 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 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.

4. Administer the switch for the new equipment.

# Paging and announcement equipment

# 17

This chapter explains the most common system configurations for the paging feature of the MultiVantage Software. This chapter provides information on the following features:

- ''Loudspeaker paging for MCC1, SCC1, CMC1, or G600 Media Gateways''

- ''ESPA radio paging''

- ''External ringing''

- ''Queue warning indicator''

- ''Loudspeaker paging for G700 Media Gateways''

## Background information

The following background information outlines four configurations that are related to setting up paging and announcement equipment. The four configurations are:

- ''IP configurations''

- ''Configuration using the S8700 Media Server in a multi-connect configuration controlling a G700 Media Gateway''

- ''S8700 Media Server in a multi-connect configuration networked with a S8300 Media Server in a G700 Media Gateway and a DEFINITY CSI''

- ''Configuration using the S8700 Media Server with IP connect''

## IP configurations

IP is implemented using the TN2302AP, which is an IP Media Processor circuit pack inside the Media Server/Media Gateway. The TN2302AP IP Media Processor provides H.323 trunk connections and H.323 voice processing for IP phones. The features that use the TN2302AP also require the TN799 C-LAN circuit pack.

## H.323 IP trunk (IP solutions mode)

The IP Media Processor circuit pack (either the TN2302AP or the TN802B) supports the H.323 version 2 protocol, and operates with H.323 version 2 endpoints, including stations, trunks, and gateways. An IP Media Processor circuit pack enables H.323 trunk service using IP connectivity between two Avaya MultiVantage Software systems.

H.323 trunk groups can be configured as:

- MultiVantage Software-specific tie trunks supporting ISDN trunk features, such as DCS+ and QSIG

- Generic tie trunks permitting interconnection with other vendors' H.323 v2-compliant switches

- Direct-inward-dial (DID) type of "public" trunks providing access to the switch for unregistered users

The TN2302AP requires the TN799 for signaling. The TN2302AP IP Media Processor is also used for H.323 VoIP applications.

## Configuration using the S8700 Media Server in a multi-connect configuration controlling a G700 Media Gateway

**➡️ NOTE:**
The Avaya™ S8700 Media Server with an MCC1 or SCC1 Media Gateway is called a "multi-connect" configuration.

The S8300 Media Server in a Local Survivable Processor (LSP) configuration (shown in Figure 49) is located in the G700 Media Gateway. In the event of a loss in communication between the S8700 and the G700, the LSP provides call processing for the endpoints that register with it.

cydcrbro KLC 080202
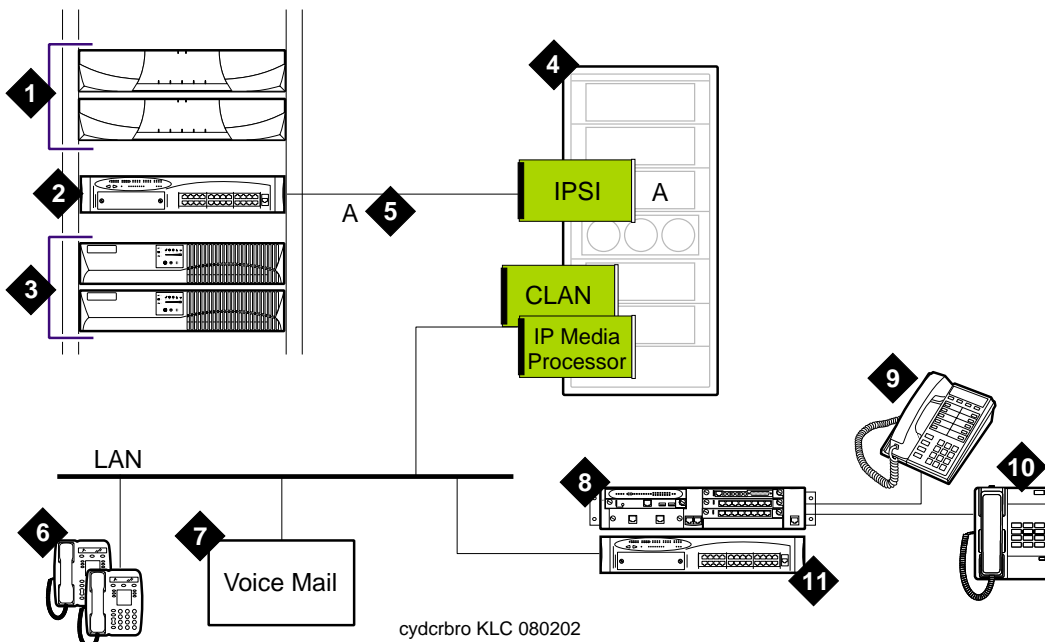
1. S8700 Media Servers in a multi-connect configuration
2. Ethernet switch
3. Uninterrupted Power Supply (UPS) units, one for each server
4. MCCI Media Gateway (containing the paging circuit packs)
5. Dedicated LAN connectivity to the IPSI board in the MCCI Media Gateway
6. IP phones connected to or running off of the customer's LAN
7. INTUITY Audix connected through an IP
8. G700 Media Gateway, with LSP S8300 Media Server
9. Multi-function digital phones
10. Analog phones
11. Ethernet switch

**Figure 49.    S8700 Media Server in a multi-connect configuration controlling a G700 Media Gateway**

## S8700 Media Server in a multi-connect configuration networked with a S8300 Media Server in a G700 Media Gateway and a DEFINITY CSI

For the S8700 Media Server in a multi-connect configuration, networked with a S8300 Media Server in a G700 Media Gateway, and a DEFINITY CSI (shown in Figure 50) — known as the "multi-site" configuration — the paging feature has to be administered locally in each system and cannot be administered across systems.
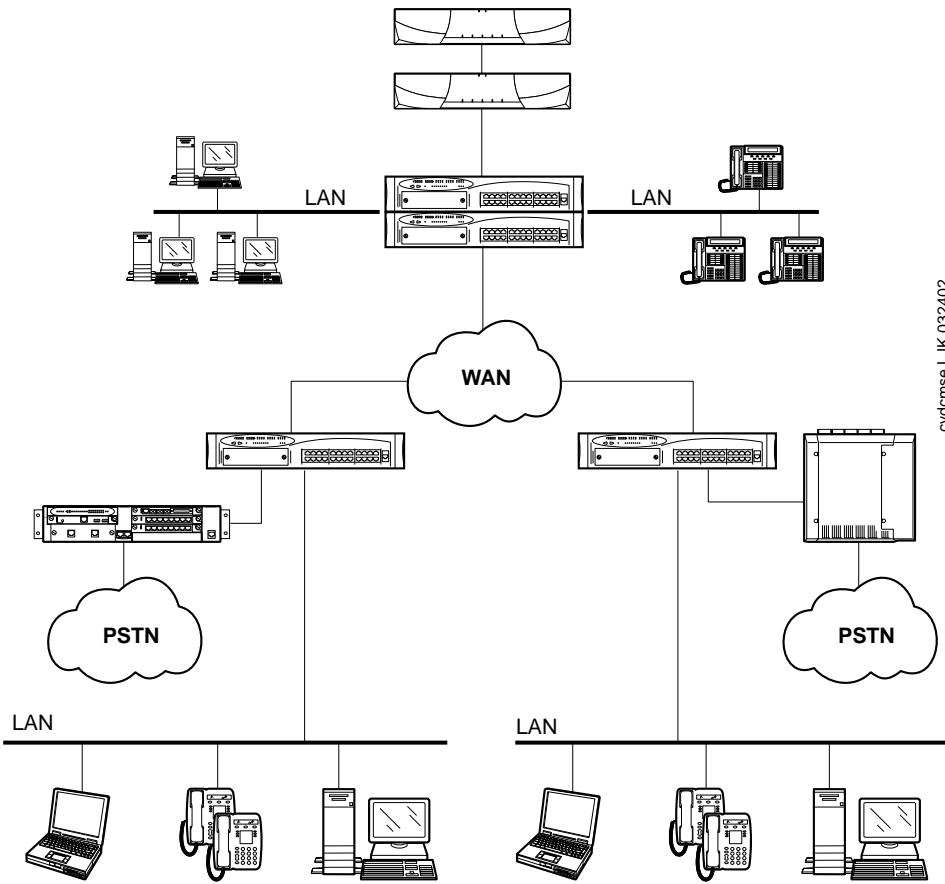
**Figure 50.   Multi-site environment**

In Figure 50, an S8700 Media Server in a multi-connect configuration (top middle) is networked with an S8300 Media Server in a G700 Media Gateway (bottom left) and a DEFINITY CSI (bottom right).

In this multi-site environment, there are a number of standalone solutions networked together using protocols such as QSIG or DCS. Each location has its own processing capability and separate managed configurations. These configurations can be a mix of different solutions. This configuration can also support video, modem, and other non-audio functionalities.

## Configuration using the S8700 Media Server with IP connect

**⟹ NOTE:**
The S8700 Media Server with a G600 Media Gateway is called an "IP connect" configuration.

This configuration (Figure 51) has all IP trunks. At this time, IP trunks support audio-only functionalities. Therefore, this configuration supports audio-only functionalities over these IP trunks.



cydcg600 LJK 032402

1. S8700 Media Servers
2. Ethernet switch
3. Uninterrupted Power Supply (UPS) units
4. G600 Media Gateway
5. DCP phones
6. IP phones
7. Analog phones
8. T1/E1 connectivity
9. Wireless phones
10. INTUITY Audix connected through an IP
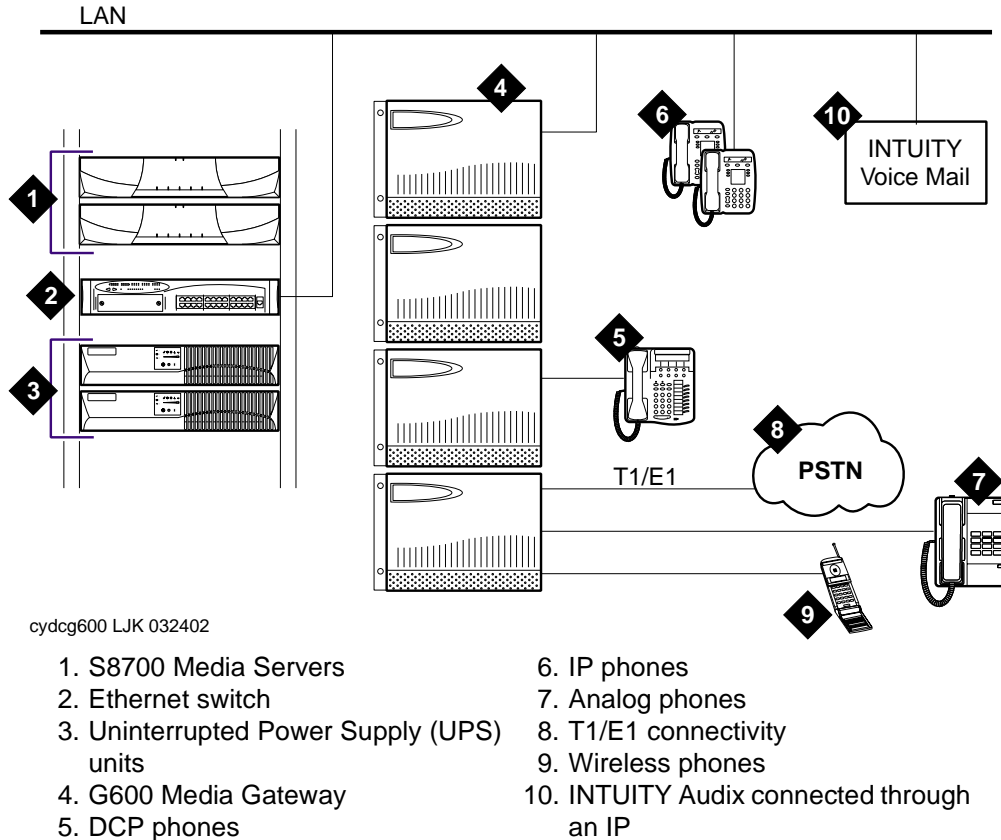
**Figure 51.    S8700 Media Server with IP connect**

The G600 Media Gateway, connected to the S8700 Media Server by IP, is the only supported connectivity in the IP connect configuration. The G600 contains 10 slots and can use traditional DEFINITY circuit packs.

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

In an MCC1, SCC1, CMC1, or G600 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 52 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 52 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 1, "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.
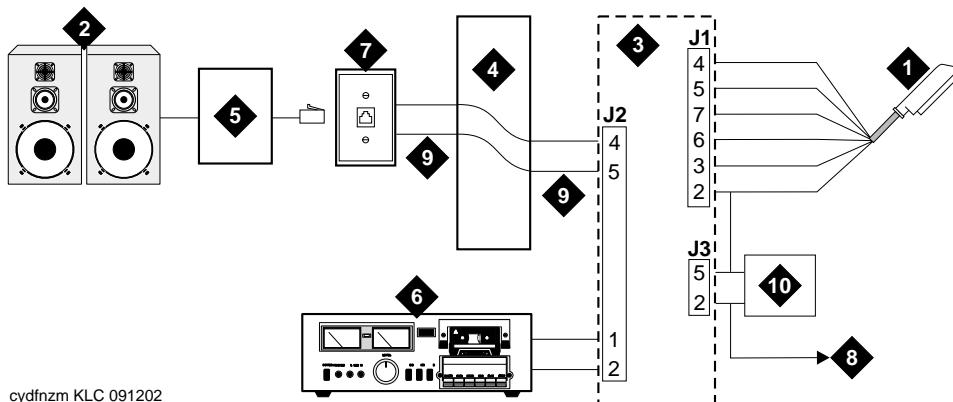


cydfnzm KLC 091202

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

**Figure 52. Connections for loudspeaker paging without paging adapter for an MCC1, SCC1, CMC1, or G600 Media Gateway**

**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 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 1, ''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.

# ESPA radio paging

Figure 53 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.
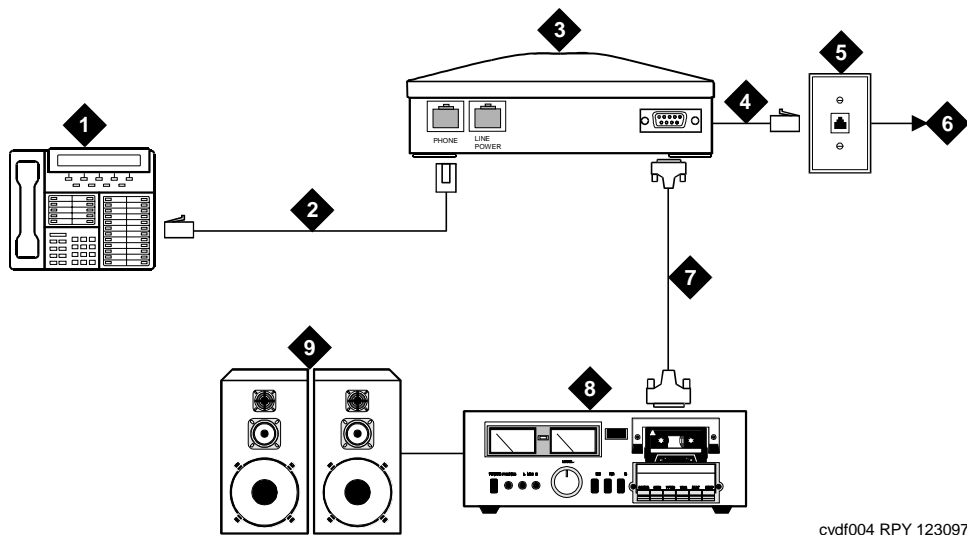


cydf004 RPY 123097

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

**Figure 53.   Typical ESPA radio paging connections**

➡ **NOTE:**
The G700 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 Media Gateway.

ECC G700 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, or G600 Media Gateway.

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

1. Wire the queue warning indicator to the information outlet.

2. Administer the switch for the new equipment.

# Loudspeaker paging for G700 Media Gateways

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

The G700 Media Gateway does not support an auxiliary trunk circuit pack. Therefore, the loudspeaker feature through an auxiliary trunk is not supported on a G700 Media Gateway. However, ECC G700 Media Gateway users can access the loudspeaker paging feature if equipment is physically connected to a TN763 auxiliary trunk circuit pack in an EPN carrier of an ECC system.

Figure 54 shows the connections for loudspeaker paging, dial dictation, or recorded announcement features on a G700 Media Gateway.



cydfspkKLC 091802

1. G700 Media Gateway
2. MM711 Analog Media Module
3. RJ-45 connection
4. Telephone hybrid (third party) device
5. Loudspeaker paging system
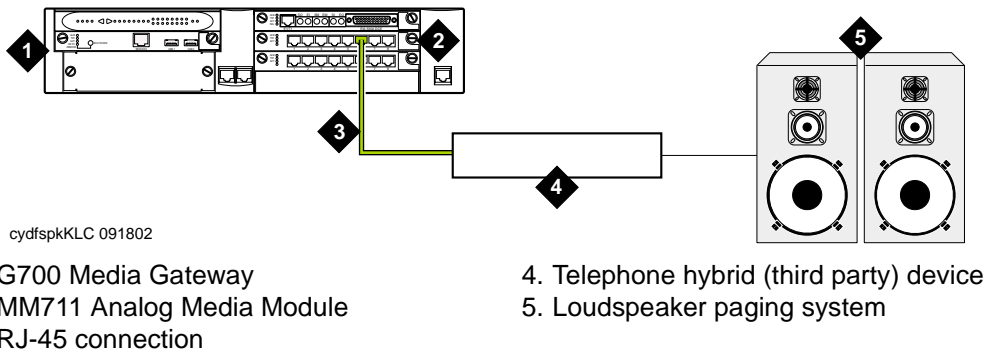
**Figure 54.    Typical loudspeaker equipment connections for a G700 Media Gateway**

To hook up loudspeaker paging from a G700 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.

# Multimedia communications products: MMCX, MMCH, ESM

# 18

This chapter provides information on connecting the following equipment to:

- MASI for MMCX
- Wideband endpoints
- Multimedia call handling (MMCH)

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

## MASI for MMCX

The multimedia application server interface (MASI) enables the DEFINITY ECS to provide calling features to the MultiMedia Communications eXchange (MMCX). The MMCX server connects to the Avaya Media Server through a D8W cable. See Table 24 for pin assignments and Figure 55 for pin locations.

**Table 24. D8W cable modular pin assignments**

| Pin | Signal | Pin | Signal |
| --- | --- | --- | --- |
| 1 | Receive ring | 5 | Transmit Tip |
| 2 | Receive tip | 7 | No connection |
| 3 | No connection | 7 | No connection |
| 4 | Transmit ring | 8 | No connection |

plmxmod PDH 051397
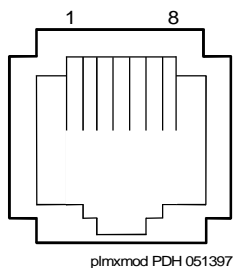
**Figure 55.     Modular jack pin assignment**

You can connect the MMCX server to the Avaya Media Server by either of two methods: directly or through the main distribution frame.

## Direction connection

Figure 56 illustrates the direct method, which connects an Avaya Media Server DS1 interface circuit pack to a customer-supplied digital line PC board in the MMCX, through a D8W cable.



cydfm cx1 LJK 060297

1. Avaya Media Server
2. TN464F DS1 interface circuit pack
3. 357A adapter

4. D8W 4-pair modular cord
5. MMCX server
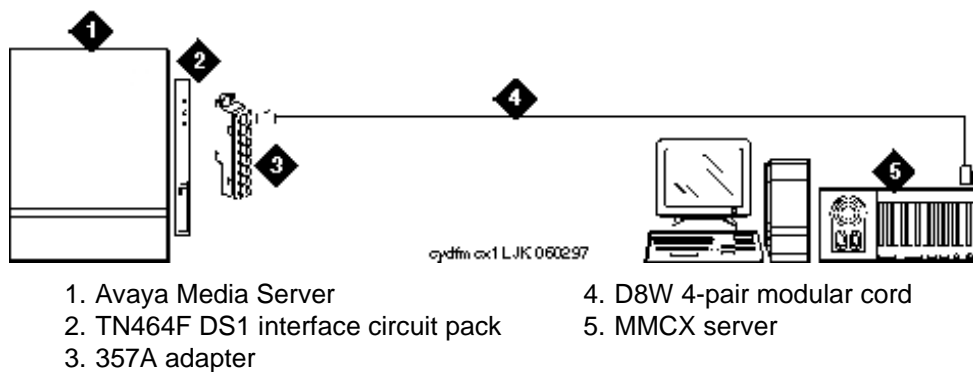
**Figure 56.     MMCX connected directly to an Avaya Media Server**

## Main distribution frame connection

Figure 57 illustrates the main distribution frame method which connects a Avaya Media Server DS1 interface circuit pack, with a 25-pair cable to the MDF, to the customer-supplied digital line PC board in the MMCX, through a D8W cable.



cydfmcx2LJK 060297

1. Avaya Media Server
2. DS1 interface circuit pack
3. 25-pair cable
4. Main distribution frame (MDF)
5. Public telephone network
6. 103A or modular wall jack
7. D8W 4-pair modular cord
8. MMCX server
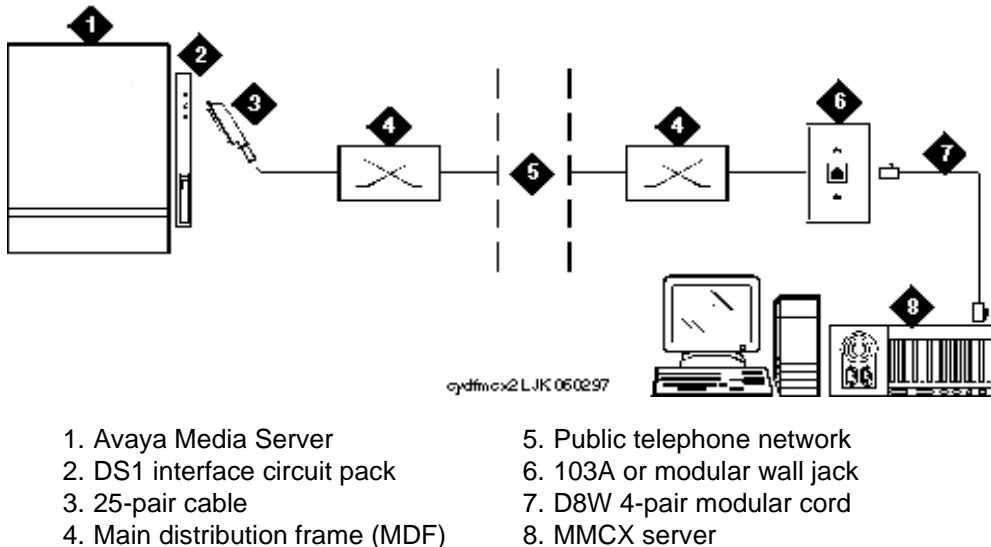
**Figure 57.   MMCX connected to an Avaya Media Server through the MDF**

# 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 58. The maximum distance depends on the type of cable and type of endpoint.

### ⇒ NOTE:
The MM710 media module (for the G700 Media Server) has a built-in channel service unit (CSU). Therefore, the CSU in Figure 58 and Figure 59, plus the references in the accompanying text about distance limitations when working without a CSU, do not apply to a G700 Media Gateway configuration.

cydf049 RPY 123097
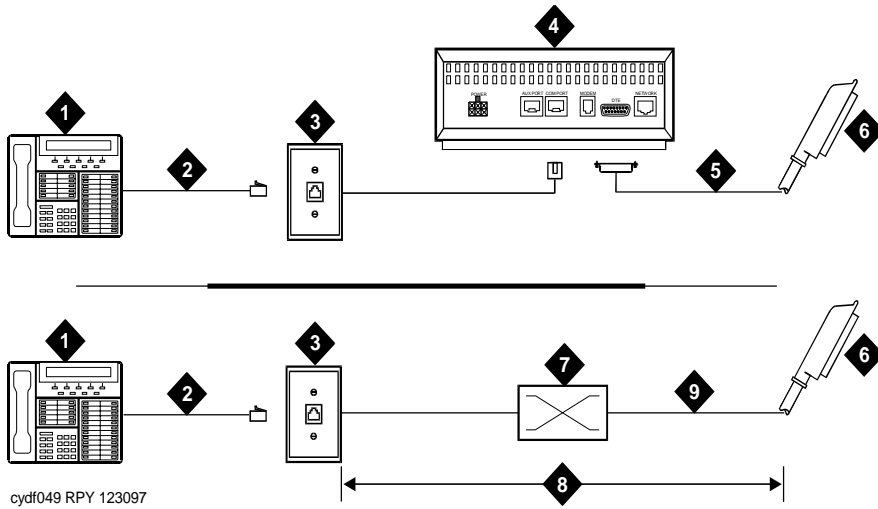
1. Wideband endpoint (wire per manufacturer)
2. Modular cord
3. 103A or modular wall jack
4. Channel service unit (CSU)
5. H600-307 cable to DTE connector on CSU

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)

**Figure 58.    Typical nonsignaling wideband configuration**

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 59 shows
connections with and without a CSU.

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)

**Figure 59.  Typical signaling wideband configuration**

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 60 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.

cydf048 PDH 091396
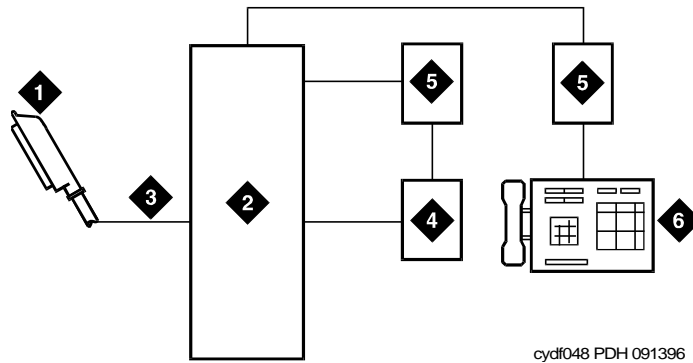
1. To TN464F DS1/E1 circuit pack
2. Part of main distribution frame (MDF)
3. H600-307 cable
4. Bandwidth controller
5. Remote port module
6. Wideband endpoint (wire per manufacturer)

**Figure 60.  Typical signaling wideband configuration with remote port module**

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 61 to connect the endpoints:

⇒ **NOTE:**
For a G700 Media Gateway configuration, the DCP telephones that are supported — item 1 in Figure 61 — are only 2 wire.

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

**Figure 61.    Typical multimedia call handling connections**

⟹ **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.

## Setup and test the MMCH installation

This section provides general setup and testing procedures for the PictureTel, ProShare, Vistium, and Zydacron multimedia endpoints. Use the documentation that accompanies the endpoint equipment for more details.

## Configuring the PictureTel
## PCS50 (Live 50) and PCS100

**Table 25.  Minimum system requirements**

| | |
|---|---|
| **Version:** | Live 50 version 1.7 or higher |
| **Minimum Processor Speed:** | 487/33 MHz, DX2/77 |
| **Disk Space:** | 20 MB |
| **Memory:** | 8 MB RAM, 17 MB recommended |
| **ISA Expansion Slots (17-bit):** | 2 slots |
| **Monitor:** | VGA, SVGA |
| **Operating System:** | Windows™ 3.1x or Windows™ 95 |

These endpoints do not need any special configuration settings. The standard PictureTel configuration is as follows:

1. Load the LiveShare Plus software first.

2. Enter the user name and company name. Use default values for subsequent prompts.

3. Enter a site name.

4. Select Restart Windows and FINISH.

5. Load the Live 50 VAFC drivers.

6. Load the Picture Tel Live 50 software.

7. Open the *PictureTel Live* program group from the Windows™ Program Manager screen.

8. Double click on the **PictureTel Live Configure** icon.

9. At the **Welcome** screen, click on **continue**.

10. Go to the **registration confirmation** screen and click on **continue**.

11. Enter the **Network Interface Settings**. Be sure that "ISDN" has an "x" in the box. Click on **continue**.

12. At the **ISDN Parameters** screen, set the signaling protocol to **USA Canada: 5ESS Custom Point-to-Point**. Click on **continue**.

13. At the **Hardware Settings** screen, set the following: Interrupt (IRQ) to 11, Base I/O Port=280, and Base Memory=D000. Under the Video Input section, select the NTSC circle. Click on **continue**.

14. At the Audio Device screen, enter the necessary information.

15. At the **Node Name** screen, enter a name for the PC using the application software package.

16. At the **Modify config.sys** screen, click the **SAVE** button.

17. The remainder of the software loads automatically.

18. When the load is finished, reboot the PC.

19. Open the *PictureTel Live* program group from the Windows™ Program Manager screen.

20. Double click on the **PictureTel Live** icon. The program takes about 1 minute to open.

## How to place a PictureTel video call

1. Turn on the video camera. Be sure the green LED is on.

   ➡ **NOTE:**
   A problem may be encountered when trying to open the PictureTel application software. If the application seems to freeze during initialization (no response for several minutes) then there may be a conflict with the interrupt (IRQ) port setting. Check the PictureTel configuration to make sure that the IRQ port is set to 11. If initialization is still a problem, contact a PictureTel representative.

2. Open the PictureTel application program.

3. Two windows should appear: one local video and one remote video.

4. Go to the remote video window (the one without the local video image inside it).

5. Click on the **blue phone** icon at the top left of the window.

6. A **DIAL PAD** window opens. Use the keyboard, or mouse and dial pad, to enter the *DATA* extension of another multimedia endpoint. If you are dialing another PictureTel, you can place a 1B (one 74 Kb channel) call by only filling in the first telephone extension box on the **DIAL PAD** window. To make a 2B (two 74 Kb channels) call, you must put the same called party extension in the second telephone extension box on the **DIAL PAD** window.

7. To initiate a call, click on the **VIDEO CALL** button on the top right of the **DIAL PAD** window.

8. The dial pad disappears and you see a status window that shows "ringing."

9. When the connection is made, the status window disappears and you can see the connection status on the bottom bar of the remote video window.

## Troubleshooting PictureTel

**Symptom**: A conference call between a PictureTel and a ProShare has problems with the video connection or with video switching.

**Solution**: Be sure the PictureTel is version 1.7 or higher and the ProShare is version 2.0 or higher.

## ProShare configuration

**Table 26.   Minimum system requirements**

| | |
|---|---|
| **Version:** | 2.0 or higher |
| **Minimum Processor Speed:** | 487/33 MHz, DX2/77 |
| **Disk Space:** | 7 MB |
| **Memory:** | 12 MB RAM, 17 MB recommended |
| **ISA Expansion Slots (17-bit):** | 2 slots |
| **Monitor:** | 740x480, 257-color, VGA, SVGA |
| **Operating System:** | Windows™ 3.1x or Windows™ 95 |

The ProShare system must be set up so that it does not look for a Service Profile Identifier (SPID) when connecting to the Avaya Media Server. This is important because you administer the ProShare as a single 7500 data set and the telephone extension associated with that data set applies to both BRI channels.

1. Load the ProShare software onto the PC using the default values.

2. Enter the company name and serial number of the software.

3. Select the default directory location and install all files.

4. Answer NO to modem Setup.

5. Scroll through the list of countries and select the country in which the PC is installed.

6. At the **Protocol and Switch Mfg** window, click on **Custom**. Click on **AT&T** and click on **Accept**.

7. At the next window, choose **PBX** for Exchange Switch, and choose **G3r** (for Release 8r) or **G3i** (for Release 8si) (as appropriate) as the PBX type. Click on **Accept**.

8. Select yes or no for Phone Call Support.

9. A window with **#Phone Numbers** and **#SPIDS** appears. Set **#Phone Numbers** to **1** and set **#SPIDS** to **0**.

10. Click on the **Aliases** button and enter the last 5 digits of the data extension number and an external alias.

11. Leave the telephone number at default and click on **Accept**.

12. Select **restart windows**.

## How to place a ProShare video call

1. Boot the ProShare computer.

2. Open the camera lens. Be sure the green LED is on.

3. Open **ProShare Personal Conferencing** program group from the Windows™ Program Manager screen.

4. Double click on the **ProShare Conferencing** icon.

5. If this is a first time install, click on OK for the camera test. This test can take several minutes to complete.

6. After the tutorial runs (if desired) and the product is registered, the ProShare application opens with 2 video windows.

7. Click on the Call button. A telephone dial pad appears. Use the dial pad to enter the telephone number of the desired extension to place a test call *to*. The ProShare only makes 2 B calls. The telephone number entered is used to place both calls. To place a 2B (two 74 kB channels) call to 2 different telephone extensions, separate them with a colon "**:**". To place a 57 kB call instead of a 74 kB call, enter a pound "**#**" sign to the end of the called party extension.

8. To initiate the call, click on the **DIAL** button on the handset window. The dialing status displays where the extension was entered. When the connection is made, remote video appears.

## Troubleshooting ProShare

**Symptom**: Any attempt to place a data call to the complex's voice station is denied by the ProShare.

**Solution**: When configuring the ProShare, you entered the voice extension of the complex. You need to enter the data extension (Step G, below). To do this:

a. Go to the ProShare directory and run the Diagnostics and Utilities program.

b. Double click on the **Hardware and ISDN Configuration** utility.

c. Choose **ISDN Line Configuration**.

d. Set **Protocol = custom** and **Manufacturer = AT&T (5ESS)**. Click on the **Accept** button.

e. Set **Switch = PBX**, **PBX Type = G3r** or **G3i** (for G3si). Click on the **Accept** button.

f. Set **Phone Call Support = No** and click on the **Accept** button.

g. Set **#Phone Numbers = 1**, **#SPIDs = 0**, and **Phone Number** to the data endpoint extension. Click on the **Accept** button.

**Symptom**: Cannot accept a multimedia telephone call from off-premises to the single number.

**Solution**: Under "Aliasing," enter the data extension number. To do this:

   a. Go to the ProShare directory and run the Diagnostics and Utilities program.

   b. Double click on the **Hardware and ISDN Configuration** utility.

   c. Choose **ISDN Line Configuration**.

   d. Set **Protocol = custom** and **Manufacturer = AT&T (5ESS)**. Click on the **Accept** button.

   e. Set **Switch = PBX**, **PBX Type = G3r** or **G3i** (for G3si). Click on the **Accept** button.

   f. Set **Phone Call Support = No** and click on the **Accept** button.

   g. Set **#Phone Numbers = 1**, **#SPIDs = 0**, and **Phone Number** to the data endpoint extension.

   h. Click on the **Aliasing** button.

   i. In the **Alias** box, enter the data extension number, choose **External**, click the **Add** button, click the **OK** button, and click the **Accept** button.

**Symptom**: Get a short break in audio path during first few seconds of a call. This is most noticeable when covering to AUDIX/Voice mail.

**Solution**: ProShare mutes the audio path when it does a "capabilities exchange" in H.320. This problem is being addressed in later versions of the ProShare software. Contact your Avaya representative for more information.

## Vistium configuration

**Table 27.    Minimum system requirements**

| | |
|---|---|
| **Version:** | 1.03.10 or higher |
| **Minimum Processor Speed:** | 487/33 MHz, DX2/77 |
| **Disk Space:** | 10 MB |
| **Memory:** | 8 MB RAM, 17 MB recommended |
| **ISA Expansion Slots (17-bit):** | 1 slot |
| **Monitor:** | VGA, SVGA |
| **Operating System:** | Windows™ 3.1x or Windows™ 95 |

## Zydacron configuration

**Table 28.   Minimum system requirements**

| | |
|---|---|
| **Version:** | Z250 v. 1.0 or ZydApp2 v. 1.3 |
| **Minimum Processor Speed:** | 487/33 MHz, DX2/77 |
| **Disk Space:** | 5 MB |
| **Memory:** | 4 MB RAM, 8 MB recommended |
| **ISA Expansion Slots (17-bit):** | 1 slot |
| **Monitor:** | VGA, SVGA |
| **Operating System:** | Windows™ 3.1x or Windows™ 95 |

These endpoints do not need any special configuration settings. The standard configuration for a Avaya Media Server is as follows. Use the documentation that accompanies the Zydacron equipment for more details.

1. Open Windows and load the software application.

2. Select Full Installation.

3. Click on OK for the default location of the application directory (c:\ZYDAPP2).

4. Select Yes to reset the video drivers (if desired).

5. View or close the READZA2.txt file as desired.

6. When the Collaboration Software dialog box opens, select Yes if another vendor's video conferencing application is being loaded. Select No if only Zydacron software is being loaded.

7. The software continues to load automatically. When finished, the application icons appear in the program group.

## How to place a Zydacron video call

1. Turn on the video camera. Be sure the green LED is on.

2. Double click on the **Zydacron** icon to start the program. The program may take about 30 seconds to open.

3. Two local video windows should appear.

4. Click the Dial icon from the Main toolbar.

5. Use the keypad or the computer keyboard to enter the telephone number of the test endpoint or telephone.

6. To initiate the call, click on the **CALL** button. The Incoming Call screen appears on the test endpoint (or the test telephone rings).

7.  Select ANSWER on the test endpoint or pick up the test telephone handset.

8.  Remote video appears on the local screen and a talk path is opened on the headset. For a test telephone, a talk path is opened.

## Troubleshooting Zydacron

**Symptom**: After each PC reboot, the first time you bring up the Zydacron application and receive a telephone call, if you do not answer the data call, the answer screen stays frozen in the window.

**Solution**: Restart the Zydacron application. Press the Ctrl, Alt, and Del keys at the same time. This brings up a window that allows you to select a task. Select the **Zydacron** application and click on the **end task** button.

**Symptom**: Cannot make an outgoing call. Get a Message Interrupt.

**Solution**: The interrupt (IRQ) setting is incorrect. Contact your Zydacron representative for the recommended IRQ settings.

## Place conversion test call

### ⇒ NOTE:
The `H.320 Conversion?:` field must be set to **y** on page 2 of the Station Form.

Place a conversion test call to an endpoint with a known video capability (for example: call your voice station from your PC).

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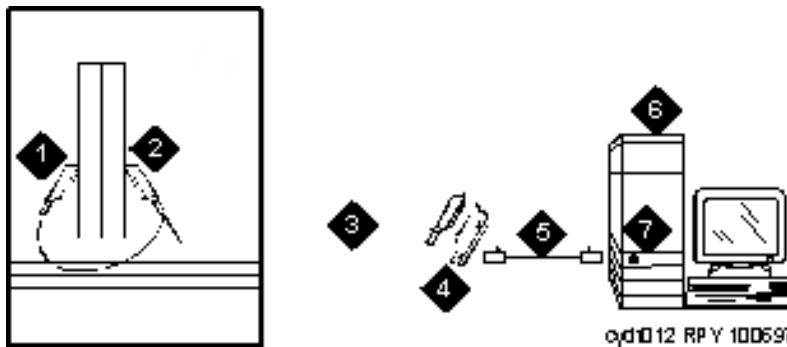
1. Port B Y-cable connector to a TN787 multimedia interface (MMI) circuit pack
2. Port A Y-cable connector to a TN2207 PRI circuit pack
3. 25-pair Y-cable
4. 357A adapter
5. D8W cord connected to 357A adapter S/B port 8
6. Expansion service module (ESM)
7. Port B on compatible primary rate interface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

**Figure 62.   Typical multimedia call handling ESM connections**

## ESM installation

Use the following procedure and Figure 62 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 ''Setup and test the MMCH installation'' on page 214 for further information.

# Property management system (PMS)

# 19

This chapter provides information on connecting the property management system (PMS) and a terminal, journal printer, or both.

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

## Connecting the property management system (PMS)

A data module and an asynchronous data unit form the interface between the DEFINITY and the property management system (PMS). See Figure 63 and Chapter 4, "Data modules and asynchronous data units", for connection and configuration information.
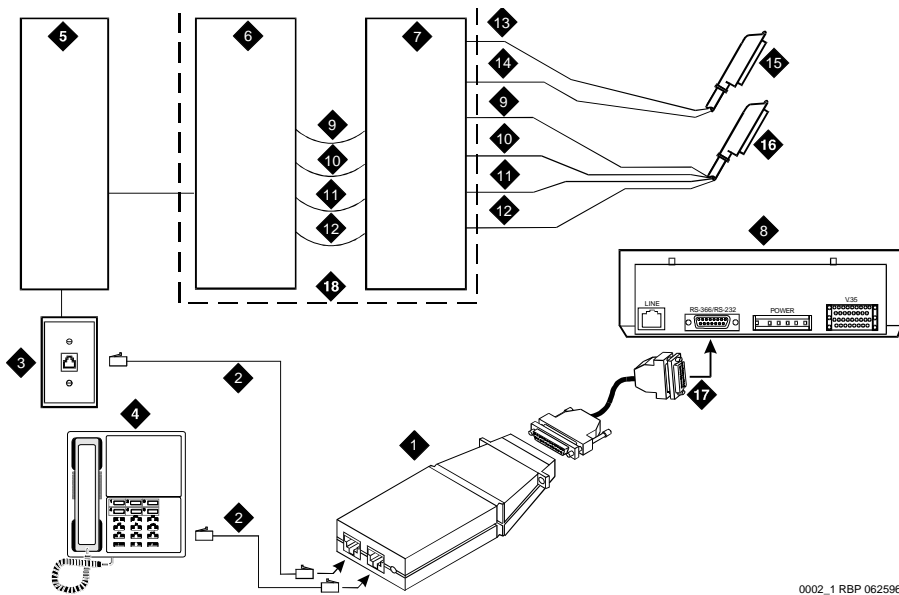
1. Z3A1 or Z3A2 ADU
2. 4-pair line cord
3. 103A or modular wall jack
4. Analog telephone
5. Satellite site or adapter location
6. Station side blue or white field
7. System side
8. Data module
9. TXT

10. TXR
11. PXT
12. PXR
13. Tip
14. Ring
15. To analog line circuit pack
16. To data line circuit pack
17. 25-pin RS-232-D connector (male)
18. Main distribution frame

**Figure 63. Connections to an asynchronous data unit**

# Connecting a terminal and/or journal printer

You can connect customer data terminals, host computers, and/or an optional journal printer in either of two ways.

## Using data modules

1. Configure printer or terminal in accordance with the recommendations in the vendor's documentation.

2. Configure the data module for the printer or terminal, using the instructions in Chapter 4, ''Data modules and asynchronous data units''.

3. Identify the port associated with the data unit or data module using the Data Module Form (see ''Administer the data modules'' on page 95).

4. Establish a physical connection from the data port on the circuit pack, through the MDF, to the wall jack where the data unit is installed.

5. Connect the data modules to the equipment.

## Using an asynchronous data unit (ADU) and a data line circuit pack

You connect an asynchronous data terminal through an ADU to a data line circuit pack. Normally, the connected data terminal powers the data unit. The data unit can also be remotely or locally powered using a 2012D transformer with a 248B adapter. Data units connected to receive-only printers require external power.

1. Configure printer or terminal in accordance with the recommendations in the vendor's documentation.

2. Identify the port associated with the data unit or data module using the Data Module Form (see ''Administer the data modules'' on page 95).

3. Establish a physical connection from the data port on the circuit pack, through the MDF, to the wall jack where the data unit is installed.

4. Connect the information outlet to the ADU.

5. Connect the RS-232 plug on the ADU or data module to the data terminal.

6. Connect the printer to the ADU using a modem or data module, following the instructions in Chapter 4, ''Data modules and asynchronous data units'', and Chapter 5, ''External modems''.

# Connecting PMS and printers using TCP/IP

Property management systems (PMS) and printers can be connected to the switch using asynchronous TCP/IP links. This section provides information on connecting these adjuncts to the C-LAN and performing the initial administration.

## 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 131.

- ''Administering IP services'' on page 132.

- ''Administering adjunct parameters'' on page 228.

- If you are using a terminal server, also complete ''Installing and administering the terminal server'' on page 122.

- If you are using a PC with the Downloadable RSP Tool, complete ''Using the downloadable reliable session-layer protocol tool'' on page 229.

## Administering adjunct parameters

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

## PMS, PMS journal, and PMS log printers

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

   The Hospitality screen appears.

2. On this screen, you can administer the PMS Log Endpoint (PMS_LOG), the PMS Journal Endpoint (PMS_JOURNAL), the PMS Endpoint (PMS), for whichever of these is connected through TCP/IP.

3. In the PMS Log Endpoint field, type **CDR1**. If you use a secondary output device, and that device is also connected through TCP/IP, type **CDR2** in the Secondary Output Endpoint field.

4. Press ENTER to save your changes.

## 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, PMS journal and PMS links. 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 (pms-link, journal-link pms-log and wakeup-log) and release (pms-link, journal-link pms-log and wakeup-log) commands.

## Using the downloadable reliable session-layer protocol 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 RSP 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.

### Setting up an RSP configuration

To set up an RSP configuration:

- Administer the PC as a client application on the switch.
- Download, install, and administer the RSP for the PC

### Setting up the switch

To set up the server application on the switch:

- "Administering IP node names" on page 131

  Give the PC a node name. The IP address is the IP address of the PC that is running the RSP tool.

- "Administering IP services" on page 132

  The service type = SYS_PRNT, the Remote Node = the node name assigned to the PC. Remote port is the port assigned as the listen port on the PC. You can figure out what this is by starting the RSP Server application, clicking on Start, and checking in the output window to see what port the server is listening on.

### Setting up the PC

To set up the client application on the PC you will be:

- "Downloading RSP"
- "Installing RSP"
- "Administering RSP"

### Downloading RSP

The RSP is available from the Avaya support web site as a self-extracting executable. To download the RSP:

1. Browse to the Avaya Customer Support web site:

   http://support.avaya.com/sd.jhtml

2. Select the RSP tool from the web site.

3. When queried, save the setup.exe file to a temporary folder on your computer. It is approximately 1.4-MB.

### Installing RSP

To install the RSP:

1. Double-click the **setup.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 RSP

See the instructions in the user guide.doc file to administer the Reliable Session-layer Protocol on a PC.

# Connector and cable pinout charts

<div style="text-align: right;">

# A

</div>

**Table 29.   Lead and color designations**

| Cross-Connect Pin | Color | Amphenol Pin | Backplane Pin |
|---|---|---|---|
| 1 | W-BL | 27 | 102 |
| 2 | BL-W | 01 | 002 |
| 3 | W-O | 27 | 103 |
| 4 | O-W | 02 | 003 |
| 5 | W-G | 28 | 104 |
| 7 | G-W | 03 | 004 |
| 7 | W-BR | 29 | 105 |
| 8 | BR-W | 04 | 005 |
| 9 | W-SL | 30 | 107 |
| 10 | SL-W | 05 | 007 |
| 11 | R-BL | 31 | 107 |
| 12 | BL-R | 07 | 007 |
| 13 | R-O | 32 | 108 |
| 14 | O-R | 07 | 008 |
| 15 | R-G | 33 | 109 |
| 17 | G-R | 08 | 009 |

**Table 29. Lead and color designations** — *Continued*

| Cross-Connect Pin | Color | Amphenol Pin | Backplane Pin |
|---|---|---|---|
| 17 | R-BR | 34 | 110 |
| 18 | BR-R | 09 | 010 |
| 19 | R-SL | 35 | 111 |
| 20 | SL-R | 10 | 011 |
| 21 | BK-BL | 37 | 112 |
| 22 | BL-BK | 11 | 012 |
| 23 | BK-O | 37 | 113 |
| 24 | O-BK | 12 | 013 |
| 25 | BK-G | 38 | 302 |
| 27 | G-BK | 13 | 202 |
| 27 | BK-BR | 39 | 303 |
| 28 | BR-BK | 14 | 203 |
| 29 | BK-SL | 40 | 304 |
| 30 | SL-BK | 15 | 204 |
| 31 | Y-BL | 41 | 305 |
| 32 | BL-Y | 17 | 205 |
| 33 | Y-O | 42 | 307 |
| 34 | O-Y | 17 | 207 |
| 35 | Y-G | 43 | 307 |
| 37 | G-Y | 18 | 207 |
| 37 | Y-BR | 44 | 308 |
| 38 | BR-Y | 19 | 208 |
| 39 | Y-SL | 45 | 309 |
| 40 | SL-Y | 20 | 209 |
| 41 | V-BL | 47 | 310 |
| 42 | BL-V | 21 | 210 |
| 43 | V-O | 47 | 311 |
| 44 | O-V | 22 | 211 |

**Table 29. Lead and color designations — *Continued***

| Cross-Connect Pin | Color | Amphenol Pin | Backplane Pin |
|---|---|---|---|
| 45 | V-G | 48 | 312 |
| 47 | G-V | 23 | 212 |
| 47 | V-BR | 49 | 313 |
| 48 | BR-V | 24 | 213 |
| 49 | V-SL | 50 | 300 |
| 50 | SL-V | 25 | 200 |

**Table 30. DS1 interface cable H600-348**

| 50-Pin | | | 15-Pin | | |
|---|---|---|---|---|---|
| Pin | Color | Designation | Pin | Color | Designation |
| | | | **Plug 04** | | |
| 38 | W-BL | LI (High) | 11 | W-BL | LI (High) |
| 13 | BL-W | LI | 03 | BL-W | LI |
| 39 | W-O | LO | 09 | W-O | LO |
| 14 | O-W | LO (High) | 01 | O-W | LO (High) |
| | | | **Plug 03** | | |
| 41 | W-G | LI (High) | 11 | W-G | LI (High) |
| 17 | G-W | LI | 03 | G-W | LI |
| 42 | W-BR | LO | 09 | W-BR | LO |
| 17 | BR-W | LO (High) | 01 | BR-W | LO (High) |
| | | | **Plug 02** | | |
| 44 | W-SL | LI (High) | 11 | W-SL | LI (High) |
| 19 | SL-W | LI | 03 | SL-W | LI |
| 45 | R-BL | LO | 09 | R-BL | LO |
| 20 | BL-R | LO (High) | 01 | BL-R | LO (High) |

*Continued on next page*

**Table 30.    DS1 interface cable H600-348  — *Continued***

| 50-Pin | | | 15-Pin | | |
|---|---|---|---|---|---|
| **Pin** | **Color** | **Designation** | **Pin** | **Color** | **Designation** |
| | | | **Plug 01** | | |
| 47 | R-O | LI (High) | 11 | R-O | LI (High) |
| 22 | O-R | LI | 03 | O-R | LI |
| 48 | R-G | LO | 09 | R-G | LO |
| 23 | G-R | LO (High) | 01 | G-R | LO (High) |

**Table 31.    DS1 interface Cable H600-307**

| 50-Pin | | | 15-Pin | | |
|---|---|---|---|---|---|
| **Pin** | **Color** | **Designation** | **Pin** | **Color** | **Designation** |
| 02 | W-BL | | | | |
| 03 | BL-W | | | | |
| 47 | W-G | LI (High) | 11 | W-G | LI (High) |
| 22 | G-W | LI | 03 | G-W | LI |
| 48 | W-BR | LO | 09 | W-BR | LO |
| 23 | BR-W | LO (High) | 01 | BR | LO (High) |
| 49 | W-SL | LOOP2 | 07 | W-SL | LOOP2 |
| 24 | SL-W | LOOP1 | 05 | SL-W | LOOP1 |

All other pins empty.

**Table 32.    TN2185B ISDN-BRI — 4-wire S interface pinout**

| Port | Signal | Cross-Connect Pin | Color | Amphenol Pin | Backplane Pin |
|------|--------|-------------------|-------|--------------|---------------|
| 1 | TXT.1 | 1 | W-BL | 27 | 102 |
| | TXR.1 | 2 | BL-W | 01 | 002 |
| | PXT.1 | 3 | W-O | 27 | 103 |
| | PXR.1 | 4 | O-W | 02 | 003 |
| 2 | TXT.2 | 5 | W-G | 28 | 104 |
| | TXR.2 | 7 | G-W | 03 | 004 |
| | PXT.2 | 7 | W-BR | 29 | 105 |
| | PXR.2 | 8 | BR-W | 04 | 005 |
| 3 | TXT.3 | 9 | W-SL | 30 | 107 |
| | TXR.3 | 10 | SL-W | 05 | 007 |
| | PXT.3 | 11 | R-BL | 31 | 107 |
| | PXR.3 | 12 | BL-R | 07 | 007 |
| 4 | TXT.4 | 13 | R-O | 32 | 108 |
| | TXR.4 | 14 | O-R | 07 | 008 |
| | PXT.4 | 15 | R-G | 33 | 109 |
| | PXR.4 | 17 | G-R | 08 | 009 |
| 5 | TXT.5 | 17 | R-BR | 34 | 110 |
| | TXR.5 | 18 | BR-R | 09 | 010 |
| | PXT.5 | 19 | R-SL | 35 | 111 |
| | PXR.5 | 20 | SL-R | 10 | 011 |
| 7 | TXT.7 | 21 | BK-BL | 37 | 112 |
| | TXR.7 | 22 | BL-BK | 11 | 012 |
| | PXT.7 | 23 | BK-O | 37 | 113 |
| | PXR.7 | 24 | O-BK | 12 | 013 |
| 7 | TXT.7 | 25 | BK-G | 38 | 302 |
| | TXR.7 | 27 | G-BK | 13 | 202 |
| | PXT.7 | 27 | BK-BR | 39 | 303 |

Table 32.    TN2185B ISDN-BRI — 4-wire S interface pinout  — *Continued*

| Port | Signal | Cross-Connect Pin | Color | Amphenol Pin | Backplane Pin |
|------|--------|-------------------|-------|--------------|---------------|
|      | PXR.7  | 28                | BR-BK | 14           | 203           |
| 8    | TXT.8  | 29                | BK-SL | 40           | 304           |
|      | TXR.8  | 30                | SL-BK | 15           | 204           |
|      | PXT.8  | 31                | Y-BL  | 41           | 305           |
|      | PXR.8  | 32                | BL-Y  | 17           | 205           |

Table 33.    DCP extender 25-pair cable pinout

| Cross-Connect Pin | Wire Color | Amphenol Pin | Backplane Pin |
|-------------------|------------|--------------|---------------|
| 1                 | W-BL       | 27           | 102           |
| 2                 | BL-W       | 01           | 002           |
| 3                 | W-O        | 27           | 103           |
| 4                 | O-W        | 02           | 003           |
| 5                 | W-G        | 28           | 104           |
| 7                 | G-W        | 03           | 004           |
| 7                 | W-BR       | 29           | 105           |
| 8                 | BR-W       | 04           | 005           |
| 9                 | W-SL       | 30           | 107           |
| 10                | SL-W       | 05           | 007           |
| 11                | R-BL       | 31           | 107           |
| 12                | BL-R       | 07           | 007           |
| 13                | R-O        | 32           | 108           |
| 14                | O-R        | 07           | 008           |
| 15                | R-G        | 33           | 109           |
| 17                | G-R        | 08           | 009           |
| 17                | R-BR       | 34           | 110           |
| 18                | BR-R       | 09           | 010           |

*Continued on next page*

Table 33.   DCP extender 25-pair cable pinout  — *Continued*

| Cross-Connect Pin | Wire Color | Amphenol Pin | Backplane Pin |
|---|---|---|---|
| 19 | R-SL | 35 | 111 |
| 20 | SL-R | 10 | 011 |
| 21 | BK-BL | 37 | 112 |
| 22 | BL-BK | 11 | 012 |
| 23 | BK-O | 37 | 113 |
| 24 | O-BK | 12 | 013 |
| 25 | BK-G | 38 | 302 |
| 27 | G-BK | 13 | 202 |
| 27 | BK-BR | 39 | 303 |
| 28 | BR-BK | 14 | 203 |
| 29 | BK-SL | 40 | 304 |
| 30 | SL-BK | 15 | 204 |
| 31 | Y-BL | 41 | 305 |
| 32 | BL-Y | 17 | 205 |
| 33 | Y-O | 42 | 307 |
| 34 | O-Y | 17 | 207 |
| 35 | Y-G | 43 | 307 |
| 37 | G-Y | 18 | 207 |
| 37 | Y-BR | 44 | 308 |
| 38 | BR-Y | 19 | 208 |
| 39 | Y-SL | 45 | 309 |
| 40 | SL-Y | 20 | 209 |
| 41 | V-BL | 47 | 310 |
| 42 | BL-V | 21 | 210 |
| 43 | V-O | 47 | 311 |
| 44 | O-V | 22 | 211 |
| 45 | V-G | 48 | 312 |
| 47 | G-V | 23 | 212 |
| 47 | V-BR | 49 | 313 |

**Table 33. DCP extender 25-pair cable pinout** — *Continued*

| Cross-Connect Pin | Wire Color | Amphenol Pin | Backplane Pin |
|---|---|---|---|
| 48 | BR-V | 24 | 213 |
| 49 | V-SL | 50 | 300 |
| 50 | SL-V | 25 | 200 |

**Table 34.  Cross-connect pinouts**

| Cross-Connect Pin | TN746B TN747B TN753/B TN769 | TN754B/C TN727 | TN760D/E | TN792 | TN763B/C/D | TN735 | TN794 TN464C/D/E | TN747B TN2183 | TN2224B |
|---|---|---|---|---|---|---|---|---|---|
| 1 | T.1 | | T.1 | T.1 | T.1 | T.1 | C_5V | T.1 | T.1 |
| 2 | R.1 | | R.1 | R.1 | R.1 | R.1 | | R.1 | R.1 |
| 3 | | TXT.1 | T1.1 | TXT.1 | SZ.1 | BT.1 | C_ENAB | T.2 | T.2 |
| 4 | | TXR.1 | R1.1 | TXR.1 | SZ1.1 | BR.1 | | R.2 | R.2 |
| 5 | | PXT.1 | E.1 | PXT.1 | S.1 | LT.1 | C_SYNC* | T.3 | T.3 |
| 7 | | PXR.1 | M.1 | PXR.1 | S1.1 | LR.1 | | R.3 | R.3 |
| 7 | T.2 | | T.2 | T.2 | T.2 | T.2 | C2D-DATA | T.4 | T.4 |
| 8 | R.2 | | R.2 | R.2 | R.2 | R.2 | RDATA* | R.4 | R.4 |
| 9 | | TXT.2 | T1.2 | TXT.2 | SZ.2 | BT.2 | TDATA* | | T.5 |
| 10 | | TXR.2 | R1.2 | TXR.2 | SZ1.2 | BR.2 | TRSYNC* | | R.5 |
| 11 | | PXT.2 | E.2 | PXT.2 | S.2 | LT.2 | GRD | | T.7 |
| 12 | | PXR.2 | M.2 | PXR.2 | S1.2 | LR.2 | SCLK* | | R.7 |
| 13 | T.3 | | T.3 | T.3 | T.3 | T.3 | | | T.7 |
| 14 | R.3 | | R.3 | R.3 | R.3 | R.3 | | | R.7 |
| 15 | | TXT.3 | T1.3 | TXT.3 | SZ.3 | BT.3 | | | T.8 |
| 17 | | TXR.3 | R1.3 | TXR.3 | SZ1.3 | BR.3 | PAHER* | | R.8 |
| 17 | | PXT.3 | E.3 | PXT.3 | S.3 | LT.3 | | T.5 | T.9 |
| 18 | | PXR.3 | M.3 | PXR.3 | S1.3 | LR.3 | C_48V | R.5 | R.9 |

*Continued on next page*

**Table 34. Cross-connect pinouts — *Continued***

| Cross-Connect Pin | TN746B TN747B TN753/B TN769 | TN754B/C TN727 | TN760D/E | TN792 | TN763B/C/D | TN735 | TN794 TN464C/D/E | TN747B TN2183 | TN2224B |
|---|---|---|---|---|---|---|---|---|---|
| 19 | T.4 | | T.4 | T.4 | T.4 | T.4 | | T.7 | T.10 |
| 20 | R.4 | | R.4 | R.4 | R.4 | R.4 | | R.7 | R.10 |
| 21 | | TXT.4 | T1.4 | TXT.4 | SZ.4 | BT.4 | C_P2SCLK | T.7 | T.11 |
| 22 | | TXR.4 | R1.4 | TXR.4 | SZ1.4 | BR.4 | LI (RX) | R.7 | R.11 |
| 23 | | PXT.4 | E.4 | PXT.4 | S.4 | LT.4 | LO* (TX) | T.8 | T.12 |
| 24 | | PXR.4 | M.4 | PX4.4 | S1.4 | LR.4 | LBACK1 | R.8 | R.12 |
| 25 | T.5 | | T.5 | T.5 | T.5 | T.5 | GND | T.9 | T.13 |
| 27 | R.5 | | R.5 | R.5 | R.5 | R.5 | C_5V | R.9 | R.13 |
| 27 | | TXT.5 | T1.5 | TXT.5 | SZ.5 | BT.5 | | T.10 | T.14 |
| 28 | | TXR.5 | R1.5 | TXR.5 | SZ1.5 | BR.5 | | R.10 | R.14 |
| 29 | | PXT.5 | E.5 | PXT.5 | S.5 | LT.5 | | T.11 | T.15 |
| 30 | | PXR.5 | M.5 | PXR.5 | S1.5 | LR.5 | C_RST | R.11 | R.15 |
| 31 | T.7 | | T.7 | T.7 | T.7 | T.7 | | T.12 | T.17 |
| 32 | R.7 | | R.7 | R.7 | R.7 | R.7 | | R.12 | R.17 |
| 33 | | TXT.7 | T1.7 | TXT.7 | SZ.7 | BT.7 | RDATA | | T.17 |
| 34 | | TXR.7 | R1.7 | TXR.7 | SZ1.7 | BR.7 | TDATA | | R.17 |
| 35 | | PXT.7 | E.7 | PXT.7 | S.7 | LT.7 | TRSYNC | | T.18 |
| 37 | | PXR.7 | M.7 | PXR.7 | S1.7 | LR.7 | GRD | | R.18 |

**Table 34. Cross-connect pinouts — *Continued***

| Cross-Connect Pin | TN746B TN747B TN753/B TN769 | TN754B/C TN727 | TN760D/E | TN792 | TN763B/C/D | TN735 | TN794 TN464C/D/E | TN747B TN2183 | TN2224B |
|---|---|---|---|---|---|---|---|---|---|
| 37 | T.7 | | T.7 | T.7 | T.7 | T.7 | SCLK | | T.19 |
| 38 | R.7 | | R.7 | R.7 | R.7 | R.7 | | | R.19 |
| 39 | | TXT.7 | T1.7 | TXT.7 | SZ.7 | BT.7 | | | T.20 |
| 40 | | TXR.7 | R1.7 | TXR.7 | SZ1.7 | BR.7 | | | R.20 |
| 41 | | PXT.7 | E.7 | PXT.7 | S.7 | LT.7 | GRD | T.13 | T.21 |
| 42 | | PXR.7 | M.7 | PXR.7 | S1.7 | LR.7 | | R.13 | R.21 |
| 43 | T.8 | | T.8 | T.8 | T.8 | T.8 | C_PRES* | T.14 | T.22 |
| 44 | R.8 | | R.8 | R.8 | R.8 | R.8 | | R.14 | R.22 |
| 45 | | TXT.8 | T1.8 | TXT.8 | SZ.8 | BT.8 | | T.15 | T.23 |
| 47 | | TXR.8 | R1.8 | TXR.8 | SZ1.8 | BR.8 | DC2_DATA | R.15 | R.23 |
| 47 | | PXT.8 | E.8 | PXT.8 | S.8 | LT.8 | LI* (RX) | T.17 | T.24 |
| 48 | | PXR.8 | M.8 | PXR.8 | S1.8 | LR.8 | LO (TX) | R.17 | R.24 |
| 49 | GRD | GRD | GRD | GRD | GRD | GRD | LBACK2 | GRD | GRD |
| 50 | GRD | GRD | GRD | GRD | GRD | GRD | GND | GRD | GRD |

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