

**Lucent Technologies**  
Bell Labs Innovations



**DEFINITY**  
**Enterprise Communications Server**  
**Release 5**  
Installation and Test for Multi-Carrier Cabinets

555-230-112  
Comcode 107955155  
Issue 2  
April 1997

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#### **Notice**

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

#### **Your Responsibility for Your System's Security**

Toll fraud is the unauthorized use of your telecommunications system by an unauthorized party, for example, persons other than your company's employees, agents, subcontractors, or persons working on your company's behalf. Note that there may be a risk of toll fraud associated with your telecommunications system and, if toll fraud occurs, it can result in substantial additional charges for your telecommunications services.

You and your system manager are responsible for the security of your system, such as programming and configuring your equipment to prevent unauthorized use. The system manager is also responsible for reading all installation, instruction, and system administration documents provided with this product in order to fully understand the features that can introduce risk of toll fraud and the steps that can be taken to reduce that risk. Lucent Technologies does not warrant that this product is immune from or will prevent unauthorized use of common-carrier telecommunication services or facilities accessed through or connected to it. Lucent Technologies will not be responsible for any charges that result from such unauthorized use.

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**Part 15: Class A Statement.** 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 instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

**Part 68: Network Registration Number.** This equipment is registered with the FCC in accordance with Part 68 of the FCC Rules. It is identified by FCC registration number AS593M-13283-MF-E. Refer to "Federal Communications Commission Statement" in "About This Book" for more information regarding Part 68.

#### **Canadian Department of Communications (DOC)**

##### **Interference Information**

This digital apparatus does not exceed the Class A limits for radio noise emissions set out in the radio interference regulations of the Canadian Department of Communications.

Le Présent Appareil Numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la class A prescrites dans le règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

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#### **European Union Declaration of Conformity**

The "CE" mark affixed to the DEFINITY® equipment described in this book indicates that the equipment conforms to the following European Union (EU) Directives:

- Electromagnetic Compatibility (89/336/EEC)
- Low Voltage (73/23/EEC)
- Telecommunications Terminal Equipment (TTE) i-CTR3 BRI and i-CTR4 PRI

For more information on standards compliance, contact your local distributor.

#### **Comments**

To comment on this document, return the comment card at the front of the document.

#### **Acknowledgment**

This document was prepared by Product Documentation Development, Lucent Technologies, Denver, CO.

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## About This Book

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This book provides procedures and information for installing and initially testing the DEFINITY<sup>®</sup> Enterprise Communications Server Multi-Carrier Cabinets.

This document covers information related to DEFINITY ECS Release 5, and includes all incremental releases up to and including Release 5.4. For details about changes for Release 5.4, refer to *DEFINITY Enterprise Communications Server Release 5.4.0, Change Description*.

The following conventions describe the systems referred to in this book.

- The word *system*, is a general term and includes references to the DEFINITY Enterprise Communications Server
- DEFINITY Systems are called: G3V4, G3rV4, Release 5; and Release 5r
- All occurrences of G3rV4 and Release 5r are called Release 5r unless a specific configuration is required to differentiate between product offerings
- Information in this book is applicable for G3V4 through Release 5 unless otherwise specified
- DEFINITY Enterprise Communications Server is abbreviated DEFINITY ECS

This book describes installation and wiring including:

1. Placing and interconnecting the various cabinets and adjuncts.
2. Wiring from the telephone network interface to and including the 25-pair cables that connect directly to the system.
3. The main equipment room MDF and the associated cabling to the system and/or 8-pin information outlets (modular wall jacks).
4. Testing of the completed installation.

This issue replaces all previous issues of *DEFINITY Communications System Generic 1 and Generic 3 Installation and Test*, 555-204-104.

 **NOTE:**

This book is being modified for international translation. This means some illustrations contain numbers instead of descriptive text. In the future, all illustrations will contain numbers.

## **Organization**

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This book contains the following chapters:

Chapter 1, "Install and Connect Cabinets" — How to unpack the cabinets and inspect for damage. Also, how to install the cabinets, connect power, and connect the cabinets together.

Chapter 2, "Install Telecommunications Cabling" — How to install cabling between the system and the Main Distribution Frame.

Chapter 3, "Install Management Terminal and Activate System" — How to install the management terminal and how to activate and initialize the system.

Chapter 4, "Test the System" — How to initially test the system.

Chapter 5, "Install and Wire Telephones and Other Equipment"— How to install and wire telephones and other equipment to the system.

Chapter 6, "Test Telephones and Other Equipment" — How to test the equipment installed in Chapter 5.

## **How to Comment on This Book**

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Lucent Technologies welcomes your feedback. Please fill out the reader comment card at the front of this book and return it. Your comments are of great value and help improve our documentation.

If the reader comment card is missing, FAX your comments to 1-303-538-1741 or to your Lucent Technologies representative, and mention this document's name and number, *DEFINITY Enterprise Communication Server Release 5 Installation and Test for Multi-Carrier Cabinets*, 555-230-112.

## **Related Books**

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The following books are useful for system-related information:

- *DEFINITY Enterprise Communications Server Release 5 System Description Pocket Reference*, 555-230-207
- *DEFINITY Enterprise Communications Server Release 5 Maintenance for R5r*, 555-230-122
- *DEFINITY Enterprise Communications Server Release 5 Maintenance for R5vs/sj*, 555-230-123
- *AT&T Network and Data Connectivity Reference*, 555-025-201
- *BCS Products Security Handbook*, 555-025-600
- *DEFINITY Wireless Business System Users Guide*, 555-232-105
- *DEFINITY Wireless Business System Installation and Test Guide*, 555-232-102
- *DEFINITY Wireless Business Systems System Interface*, 555-232-108
- *DEFINITY Enterprise Communications Server Release 5 Installation and Test for Single-Carrier Cabinets*, 555-230-894
- *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*, 555-230-522
- *DEFINITY Enterprise Communications Server Release 5 Upgrades and Additions for R5vs/sj*, 555-230-120
- *DEFINITY Enterprise Communications Server Release 5 Upgrades and Additions for R5r*, 555-230-121

## **How to Order Books**

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In addition to this book, other description, installation and test, maintenance, and administration books are available. A complete list of DEFINITY books is provided in the *Business Communications System Publications Catalog*, 555-000-010.

This book and any other DEFINITY books can be ordered directly from the Lucent Technologies Business Communications System Publications Fulfillment Center at 1-317-361-5353 or toll free at 1-800-457-1235.

## Trademarks

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This document contains references to the following Lucent Technologies trademarked products:

- ACCUNET®
- AUDIX®
- Callmaster®
- CallVisor®
- CONVERSANT®
- DEFINITY®
- FORUM™
- MEGACOM®
- SYSTIMAX®
- TRANSTALK™

The following products are trademarked by their appropriate vendor:

- Audichron® is a registered trademark of Audichron Company
- Music Mate® is a registered trademark of Harris Corporation
- PagePac® is a registered trademark of Harris Corporation, Dracon Division
- PORTA™ Systems is a trademark of PORTA Systems Corporation
- SHOCKWATCH® is a registered trademark of Media Recovery, Incorporated
- Styrofoam® is a registered trademark of Styrofoam Corporation
- TILTWATCH® is a registered trademark of Media Recovery, Incorporated
- VELCRO® is a registered trademark of VELCRO U.S.A. Incorporated
- Zone Mate® is a registered trademark of Harris Corporation

## **Standards Compliance**

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The equipment presented in this book complies with the following (as appropriate):

- 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
- CISPR22
- Australia AS3548 (AS/NZ3548)
- Australia AS3260
- IEC 825
- IEC 950
- UL 1459
- UL1950
- CSA C222 Number 225
- TS001

Contact your Lucent Technologies representative for more information.

## **LASER Product**

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The DEFINITY ECS may contain a Class 1 LASER device 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: -5 dBm  
Wavelength: 1310 nm  
Mode Field Diameter: 8.8 microns  
**CLASS 1 LASER PRODUCT**  
**IEC 825 1993**

 **CAUTION:**

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

Contact your Lucent Technologies representative for more information.

## **Electromagnetic Compatibility Standards**

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This product complies with and conforms to the following:

- Limits and Methods of Measurements of Radio Interference Characteristics of Information Technology Equipment, EN55022 (CISPR22), 1993
- EN50082-1, European Generic Immunity Standard
- FCC Parts 15 and 68
- Australia AS3548

 **NOTE:**

The system conforms to Class A (industrial) equipment. Voice terminals meet Class B requirements.

- Electrostatic Discharge (ESD) IEC 1000-4-2
- Radiated radio frequency field IEC 1000-4-3
- Electrical Fast Transient IEC 1000-4-4
- Lightning effects IEC 1000-4-5
- Conducted radio frequency IEC 1000-4-6
- Mains frequency magnetic field IEC 1000-4-8
- Low frequency mains disturbance

The system conforms to the following:

- Electromagnetic compatibility General Immunity Standard, part 1; residential, commercial, light industry, EN50082-1, CENELEC, 1991
- Issue 1 (1984) and Issue 2 (1992), Electrostatic discharge immunity requirements (EN55024, Part 2) IEC 1000-4-2
- Radiated radio frequency field immunity requirements IEC 1000-4-3
- Electrical fast transient/burst immunity requirements IEC 1000-4-4

### **European Union Standards**

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Lucent Technologies Business Communications Systems declares that the DEFINITY equipment specified in this book bearing the Conformité Européenne (CE) mark conforms to the European Union Electromagnetic Compatibility Directives.

The CE mark indicates conformance to the European Union Electromagnetic Compatibility Directive (89/336/EEC) Low Voltage Directive (73/23/EEC) and Telecommunication Terminal Equipment (TTE) Directive (91/263/EEC) and with i-CTR3 Basic Rate Interface (BRI) and i-CTR4 Primary Rate Interface (PRI) as applicable. The CE mark is applied to the following Release 5 products:

- Global AC powered Multi-Carrier Cabinet (MCC)
- DC powered Multi-Carrier Cabinet (MCC) with 25 Hz ring generator
- AC powered Single-Carrier Cabinet (SCC) with 25 Hz ring generator
- AC powered Compact Single-Carrier Cabinet (CSCC) with 25 Hz ring generator
- Enhanced DC Power System

## **Where to Call for Technical Support**

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Use the following telephone numbers for the region in which the system is being installed:

<b>Region</b>	<b>Phone Number</b>
Streamlined Implementation (for missing equipment)	1-800-772-5409
USA/Canada Technical Service Center	1-800-248-1234
Technical Service Center (INADS Database Administration)	1-800-248-1111
Asia/Pacific Regional Support Center	65-872-8686
Western Europe/South Africa/Middle East	441-252-391-889
Business Communications Europe	441-252-391-789
Eastern/Central Europe	361-270-5160
Latin/Central America & Caribbean - ITAC	1-303-538-4666
DEFINITY Helpline	1-800-225-7585
Lucent Technologies Toll Fraud Intervention	1-800-643-2353
Lucent Technologies Technical Service Center	1-800-242-2121
Lucent Technologies Corporate Security	1-800-822-9009

## **Anti-Static Protection**

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### **CAUTION:**

*When handling circuit packs or any components of a DEFINITY System, always wear an authorized wrist ground strap. Connect the strap to an approved ground such as an unpainted metal surface on the DEFINITY System.*

## **Security Issues**

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

Login security is an attribute of the DEFINITY Enterprise Communications Server (ECS) software. Advise customers that their existing passwords expire 24 hours after the upgrade. Also explain that the new passwords must conform to strict requirements.

## **Federal Communications Commission Statement**

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### **Part 68: Statement**

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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
- Routed to a recorded announcement that can be administered by the CPE user

This equipment returns answer-supervision signals on all 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

This 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.

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.

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.

**⇒ NOTE:**

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 table.

<b>Manufacturer's Port Identifier</b>	<b>FIC Code</b>	<b>SOC/REN/ A.S. Code</b>	<b>Network Jacks</b>
Off/On Premises Station	OL13C	9.0F	RJ2GX, RJ21X, RJ11C
DID Trunk	02RV2-T	0.0B	RJ2GX, RJ21X
CO Trunk	02GS2	0.3A	RJ21X
CO Trunk	02LS2	0.3A	RJ21X
Tie Trunk	TL31M	9.0F	RJ2GX
1.544 Digital Interface	04DU9-B,C	6.0P	RJ48C, RJ48M
1.544 Digital Interface	04DU9-BN,KN	6.0P	RJ48C, RJ48M
120A2 Channel Service Unit	04DU9-DN	6.0P	RJ48C

If the terminal equipment (DEFINITY® System) 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 1-800-248-1234. 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.

It is recommended that repairs be performed by Lucent Technologies 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.

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## Install and Connect Cabinets

# 1

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This chapter discusses installation of Multi-Carrier Cabinets only. For information on Single-Carrier Cabinets, refer to *DEFINITY Enterprise Communications Server Release 5 Installation and Test for Single-Carrier Cabinets*.

Floor plans and equipment layouts for typical system installations are provided in *DEFINITY Enterprise Communications Server Release 5 System Description Pocket Reference*.

## Unpack and Inspect Cabinets

A cabinet is shipped in a polyethylene bag packed in a cardboard container and is fastened to a pallet with 4 carriage bolts. The cardboard container is strapped to the pallet with 2 metal bands.

 **DANGER:**

*A cabinet may weigh as much as 800 pounds (363 kg) and may be top heavy. Use extreme caution.*

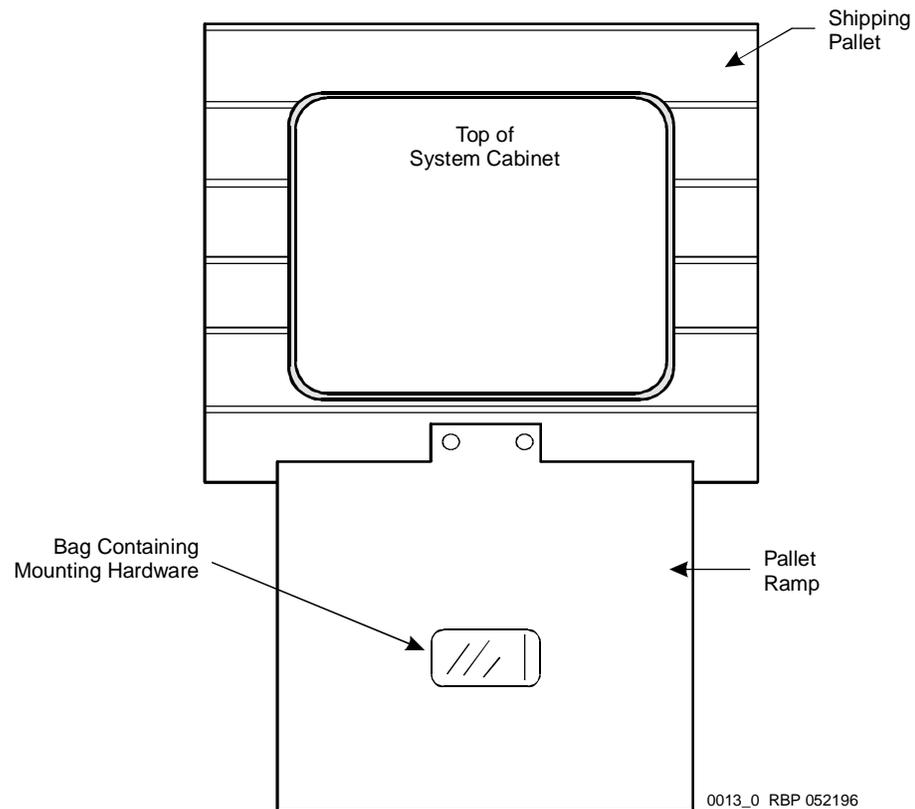
1. Check the status of the SHOCKWATCH and/or TILTWATCH indicators on the container. If the container has been shaken or tilted beyond specifications, the indicators are red, indicating potential damage. Report any damage according to local shipping instructions.

 **DANGER:**

*Take care to avoid injury while cutting and removing the two metal bands.*

2. Using tin snips, cut and remove the two metal bands.

3. Open the carton containing the "Ramp Enclosed" label.
4. Carefully cut the tape holding the container together.
5. Remove all cardboard, tape, and plastic from the outside of the cabinet.
6. To open the cabinet doors, use a #2 flat blade screwdriver to turn the screws located on the front and rear doors to release the door latches. Turn the screws clockwise to loosen.
7. Lift off the front and rear doors. Do not remove the screws from the door hinges.
8. Remove all packing material from inside the cabinet.
9. Inspect cabinet for any damage caused during shipping. Report any damages per local instructions.
10. Use an adjustable wrench to remove the carriage bolts located at each bottom corner of the cabinet. Drive the carriage bolts downward until they clear the cabinet.
11. Remove the ramp from the side of the cabinet carton. See Figure 1-1.
12. Remove the power cord stored under or inside the cabinet of AC-powered systems and lay it over the top of cabinet.
13. Remove the supporting block of wood by raising the rear corner of the cabinet using a pry bar (if necessary). Repeat for the other rear corner.
14. Screw the cabinet stabilizing bolts all the way up to provide clearance between the cabinet and the pallet when the cabinet is rolled down the ramp.
15. Place the ramp as shown in Figure 1-1. Bolt the ramp into position using the bolts provided in the plastic bag attached to the ramp.
16. Hold both sides of the rear of the cabinet. It is recommended that 2 people move the cabinet.
17. Roll the cabinet off the ramp, to the floor, and into position at the designated location.
18. When all cabinets are in place, adjust the leveling legs until the cabinets are level.



**Figure 1-1. Ramps Installed on Pallet**

### **Unpack and Inspect Auxiliary Cabinet**

The Auxiliary cabinet is normally positioned adjacent to the PPN cabinet or the EPN cabinet, if provided. The cabinet is shipped in a polyethylene bag packed in a cardboard container. The cabinet is fastened to a pallet by 4 carriage bolts. The cardboard container is strapped to the pallet by two metal bands.

To unpack the cabinet, perform the steps as detailed in "Unpack and Inspect Cabinets".

1. Remove the lower rear panel from the Auxiliary cabinet.
2. Roll the cabinet off the ramp, onto the floor, and into position at the designated location.
3. With the cabinet in place, adjust the leveling legs until the cabinet is level.
4. Re-install the lower rear panel when the installation is completed.

### **Unpack and Inspect Stratum 3 Clock Cabinet**

1. Check the status of the SHOCKWATCH and/or TILTWATCH indicators on the cardboard container. The indicators are normally white. If the container has been jarred or tilted beyond specifications, the indicators are red, indicating possible damage.
2. Remove the cabinet from the cardboard container.
3. Remove all cardboard, tape, and plastic.
4. Open and remove front door and rear screw-on panels from cabinet.
5. Remove all packing material from inside cabinet.
6. Inspect cabinet for damage. Report any damage per local instructions.
7. Position cabinet into the designated location and adjust the leveling legs until the cabinet is level.

### **Check Circuit Packs**

---

Ensure all circuit packs are fully inserted into the proper slots according to the Customer Service Document (CSD). Report any discrepancies in circuit pack type or quantity to your Lucent Technologies representative. For detailed circuit pack descriptions, refer to *DEFINITY Enterprise Communications Server Release 5 System Description Pocket Reference*.

### **Check Customer's Order**

---

Check the customer's order and the shipping packing lists to confirm all equipment is present. If any equipment is missing, report the information to your Lucent Technologies representative. Check the system adjuncts for damage and report all damage according to local shipping instructions.

### **How to Correct Shipping Errors**

---

For a new installation, defective equipment and over-shipped equipment must be red-tagged and returned per the nearest Material Stocking Location (MSL) instructions.

Short-shipped reports must also be directed to the nearest Material Stocking Location (MSL). Contact the appropriate location for specific instructions. For Streamlined Implementation in the United States, call 1-800-772-5409.

## **Install System Cabinets**

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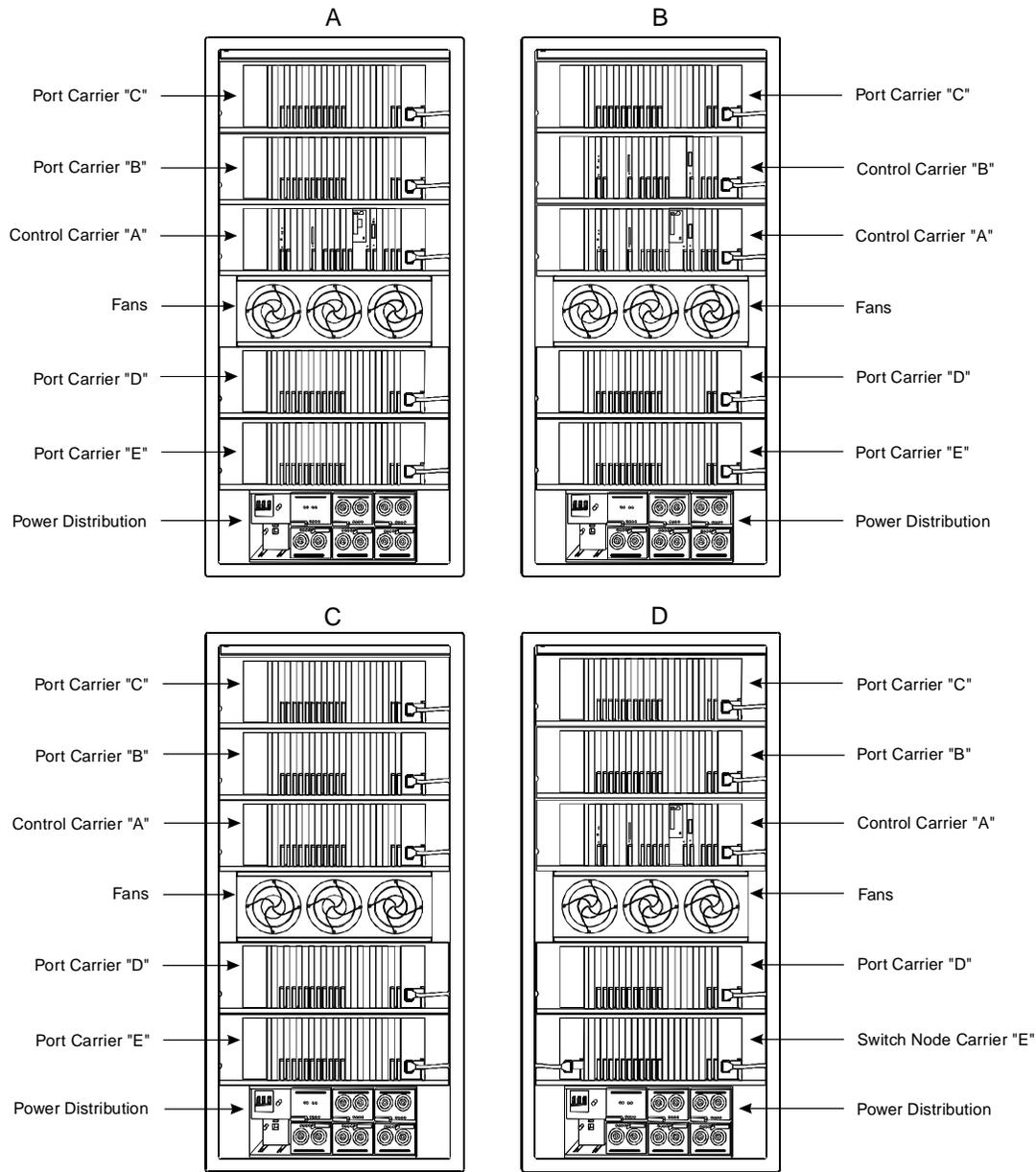
Check the location of the AC power receptacle in the equipment room. The receptacle must be on a separately fused circuit not controlled by a wall switch. It must be located within 10 feet (3 m) of the cabinet and outside the Main Distribution Frame (MDF) area.

Multi-Carrier Cabinets offer a variety of configurations. Figure 1-2 shows four typical Processor Port Network (PPN) and Expansion Port Network (EPN) cabinets.

**⇒ NOTE:**

Several cabinet configurations are possible that are not shown in Figure 1-2. Other configurations are presented later in this chapter.

## Install Processor Port Network Cabinet



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Figure 1-2. Typical Multi-Carrier Cabinet Configurations

### Typical Configurations

The following cabinet configurations are shown in Figure 1-2.

- Cabinet "A" is a standard reliability PPN cabinet
- Cabinet "B" is a high or critical reliability PPN cabinet
- Cabinet "C" is an EPN (any reliability option) cabinet
- Cabinet "D" is a standard reliability PPN cabinet with a Switch Node carrier (Release 5r only)

### Position the PPN Cabinet

1. If the system is supplied with cable ductwork, space the cabinets on 32 inch (81.3 cm) centers  $\pm 1/8$  inch (0.3 cm), they must be level, and must be square with respect to each other.
2. If the system is supplied with Cable Slack Managers, place the cabinets far enough from the connection field to lay down the 32 inch (81.3 cm) slack managers and to provide a little extra room for the cables to access the Cable Slack Managers.
3. If earthquake protection is required, refer to "Earthquake Protection Installation" on page 1-11.
4. After leveling the cabinets, adjust and lock the cabinet stabilizing bolts to keep the cabinets from moving.
5. At the bottom of the cabinets, install hole plugs (provided with cabinet) in the holes previously occupied by the four carriage bolts.

### Install and Position an EPN Cabinet

---

Each EPN cabinet is normally positioned adjacent to the PPN cabinet but may be located remotely in a different room or a different building.

1. The procedure for installing an EPN cabinet in a *new* installation is the same as for the PPN cabinet.
2. To install a new EPN cabinet in an *existing* system, skip to "Install a New EPN Cabinet in an Existing System" on page 1-38.

## **Install Auxiliary Cabinet (Optional)**

The Auxiliary cabinet is normally positioned adjacent to the PPN cabinet or the EPN cabinet. The location of equipment inside the Auxiliary cabinet is specified in the Customer Service Document (CSD).

The Auxiliary cabinet ships in a polyethylene bag packed in a cardboard container. The cabinet is fastened to a pallet by four carriage bolts. The cardboard container is strapped to the pallet by two metal bands.

To install the Auxiliary cabinet, perform the steps in "Install Processor Port Network Cabinet". If earthquake protection is required, refer to "Earthquake Protection Installation" on page 1-11.

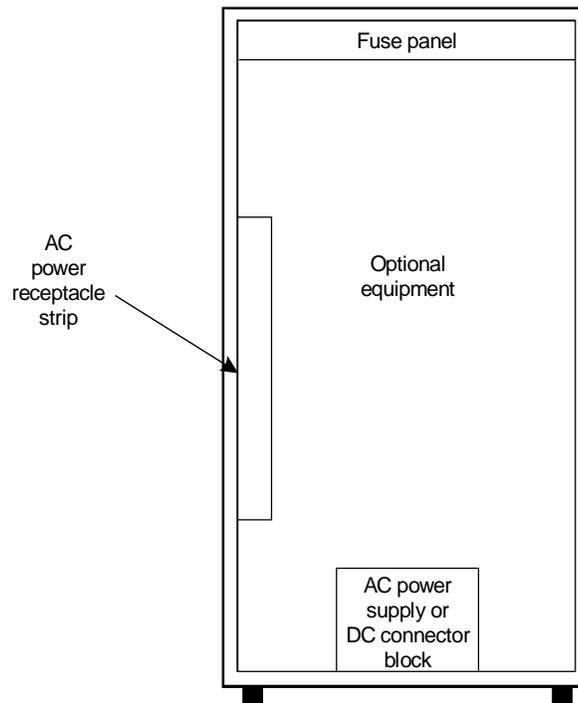
### **⇒ NOTE:**

Check the location of the AC power receptacle. Wire the receptacle to a separately fused circuit that is not controlled by a wall switch. Locate the receptacle within 10 feet (3 m) of the cabinet and outside the Main Distribution Frame (MDF) area.

## **Install Auxiliary Cabinet Equipment**

The cabinet allows for carrier, 23 inch (58.4 cm) rack, or panel mounting of hardware. The following equipment is furnished with the cabinet. See Figure 1-3.

- Fuse panel — Distributes -48 VDC power to fused cabinet circuits
- Power receptacle strip — Provides switched and unswitched 120 VAC receptacles
- DC connector block — Required when Auxiliary cabinet is powered by an external DC source
- AC to DC power supply — Converts AC power provided by the AC power strip switched outlet to the required DC voltage



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**Figure 1-3. Auxiliary Cabinet**

Install equipment inside the cabinet as specified in the CSD. The following optional equipment can be installed:

- Audichron H9040 Wake-Up Announcement System
- 909A/B Universal Coupler
- 7400 Series Data Modules
- Z77A Multiple Data Mounting
- Fan Assembly — Requires 120 volt AC power
- COMSPHERE 3000
- Channel Service Unit (CSU) — One is required for each T1 carrier link
- PagePac Paging System — Three models are available:
  - PagePac 20
  - PagePac VS
  - PagePac 50/100/200

All PagePac models require 120 VAC power.

- Model 15A Announcement System — See Table 1-1 for PEC codes.

**Table 1-1. Model 15A Announcement Equipment**

<b>PEC Code</b>	<b>Description</b>
PEC 63240	1 chassis and 1 BLD1 circuit pack
PEC 63241	1 BLD1 circuit pack
PEC 63242	1 chassis and 1 BLD2 circuit pack
PEC 63243	1 BLD2 circuit pack
PEC 63246	1 remote record module

The BLD1 circuit pack provides 8 channels with up to 20 seconds of recording time on each channel. The BLD2 circuit pack provides 8 channels with up to 40 seconds of recording time on each channel. Each chassis can be populated with any combination of two BLD circuit packs.

The Model 15A Announcement System is FCC registered and does not require a voice coupler.

## **Install and Position Stratum 3 Clock Cabinet**

---

Position the cabinet in the designated location. Check the location of the AC power receptacle. The receptacle must be on a separately fused circuit that is not controlled by a wall switch. It must be located within 10 feet (3 m) of the cabinet and should be located outside the Main Distribution Frame (MDF) area.

## **Earthquake Protection Installation**

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### **Install Concrete Floor Mounting**

---

1. Position the cabinet in the exact position it is to occupy when the installation is complete.
2. Insert a pencil or marker through the holes previously occupied by the carriage bolts (front and rear) in the bottom of the cabinet and mark the floor directly beneath each hole.
3. Roll the cabinet out of the way and drill four 1/2-inch (1.27 cm) diameter holes about 1.5 inches (3.8 cm) deep at the locations marked in Step 2.
4. Insert concrete floor anchors (STARR part number 3425) into the holes.
5. Roll the cabinet back into place and align the cabinet holes over the concrete floor anchors.
6. Adjust the leveling legs until the cabinet is level. See Figure 1-4.



**NOTE:**

If the system is supplied with cable ductwork, the cabinets must be level from front to rear and from side to side. They must be square with respect to each other to within  $\pm 1/8$ -inch (0.3 cm).

7. Secure the cabinet to the floor with four supplied 3/8-16 x 4.5-inch (0.95 cm wide-6.3 turns/cm x 11.43 cm) bolts and four 3/8-inch flat washers.
8. Repeat this procedure for each cabinet to be installed.

### **Install Raised Computer Floor Mounting**

---

1. Position the cabinet in the exact position it is to occupy when the installation is complete.
2. Insert a pencil or marker through the holes previously occupied by the carriage bolts (front and rear) in the bottom of the cabinets and mark the raised floor panels directly beneath each hole.
3. Roll the cabinet out of the way and drill four holes 5/8-inch (1.6 cm) in diameter through the raised floor panels marked in Step 2.

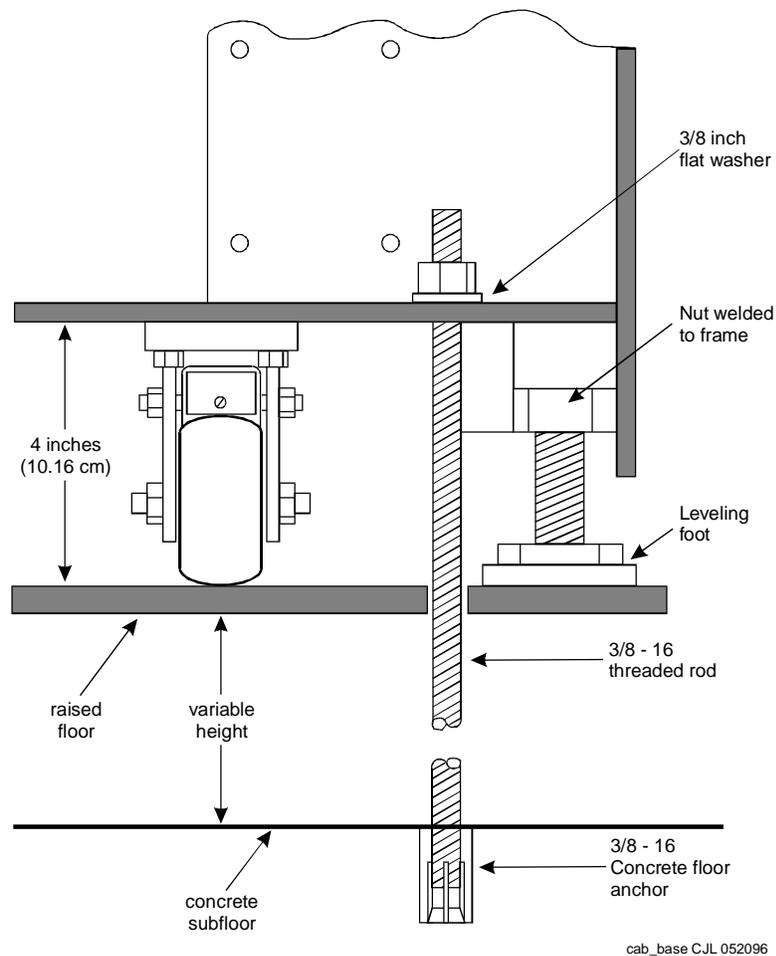


**CAUTION:**

*Take care while drilling the holes through the raised floor that the drill bit does not penetrate any cables below the floor that could cause damage to the cable or injury to the installer.*

4. Insert a long punch through the holes drilled in Step 3 and mark the concrete floor beneath the raised floor panels.

5. Remove the raised floor panels in which the holes were drilled.
  6. Using 1/2-inch (1.3 cm) anchor bits, drill a hole at each of the locations marked in Step 4. Stop drilling when the mark on the side of the bit reaches the floor level.
  7. Insert a concrete floor anchor (STARR part number 3425) into the hole until the mark on the bit reaches floor level again. Snap the top of the anchor bit off. Repeat for the remaining holes.
- 



---

**Figure 1-4. Earthquake Mounting — Raised Computer Floor**

8. A 3/8-16 threaded rod (part number 845557073) is used to secure the cabinet to each concrete floor anchor. See Figure 1-4.

Measure the distance from one of the anchors to the bottom of the cabinet. Add 1/2-inch (1.3 cm) to this measurement to allow the rod to be threaded into the floor anchor. Add an additional 1/2-inch (1.3 cm) to allow the rod to protrude up through the bottom of the cabinet. For example: if the distance from the floor anchor to the bottom of the cabinet is 10 inches (25 cm), cut the threaded rod 11 inches (27.9 cm) long.

9. When all four threaded rods are cut, replace the raised floor panels removed in Step 5.
10. Position the cabinet over the holes and adjust the leveling legs until the cabinet is level.

 **NOTE:**

If the system is supplied with cable ductwork, the cabinets must be level from front to rear and from side to side. They must be square with respect to each other to within +/-1/8-inch (0.3 cm).

11. Insert the threaded rods through the cabinet bottom and thread into the concrete floor anchors.
12. Place a 3/8-inch flat washer onto each rod. Thread a 3/8-16 hex nut onto each rod and tighten securely.
13. Repeat this procedure for each cabinet to be installed (including the Auxiliary Cabinet and the Stratum 3 Clock Cabinet).

## Connect AC Power and Ground

### J58890CE-1, J58890CE-2, and J58890CH-1

The following procedures apply to the AC-powered PPN and EPN cabinets. Either of the following power sources can supply 60 Hz power to the AC load in Release 5 systems and in later G3V4 systems:

- Single-phase, 4-wire, 120/240 VAC supplying 240 VAC. This source has three hot wires plus a ground wire (J58890CE).
- Three-phase, 4-wire, 120/208 VAC supplying 208 VAC. This source has two hot wires, one ground wire, and one neutral wire (J58890CE).
- Single-phase, 3-wire, 208 or 240 VAC. This source has two hot wires and one ground wire (J58890CH-1).

Either of the following power sources can supply 50 Hz power to the AC load in Release 5 systems:

- International 4-wire, Y, 220/380 VAC. This source has three hot wires, one neutral wire, and one ground wire.
- International Delta, 3-wire, 220 or 240 VAC. This source has three wires.

Table 1-2 describes the power sources and required AC input power.

**Table 1-2. AC Power Sources and Plug Type**

Power Distribution Unit	Power Sources	Power Input
AC power distribution (J58890CE-1 and J58890CE-2) Multi-Carrier Cabinet	Single phase 120 VAC with neutral	120 VAC, 60 Hz NEMA 5-50R
	Single phase 240 VAC with neutral, or single phase of 3-phase, 208 VAC with neutral	208/240 VAC, 60 Hz NEMA L14-30R
AC power distribution (J58890CH-1) Multi-Carrier Cabinet	Single Phase 176-264 VAC	200-240 Volts, 50-60 Hz NEMA L6-30R. Installations outside the United States require a receptacle suitable for use in the country of installation.

**NOTE:**

The type of power required is shown on the cabinet's rear door.

 **CAUTION:**

*The equipment room AC power and ground wiring must be performed by a qualified electrician. Refer to DEFINITY Enterprise Communications Server Release 5 System Description Pocket Reference, for site requirement information.*

 **CAUTION:**

*The power circuit must be dedicated to the system and must not be shared with other equipment and must not be controlled by a wall switch. The AC receptacle should not be located under the Main Distribution Frame.*

 **CAUTION:**

*System grounding must comply with the general rules for grounding contained in Article 250 of the National Electrical Code (NEC), National Fire Protection Agency (NFPA) 70, or the applicable electric code in the country containing the equipment. For more information, refer to "Approved Grounds" later in this chapter.*

### **Connect Ground to AC-Powered System (J58890CE)**

---

Grounding is relatively simple for an AC-powered system. Basically, the cabinets connect to the single-point ground terminal block at the AC load center (or optional AC protector cabinet). The ground terminal block connects to an approved ground using a 6 AWG (#40) (4.115 mm) wire.

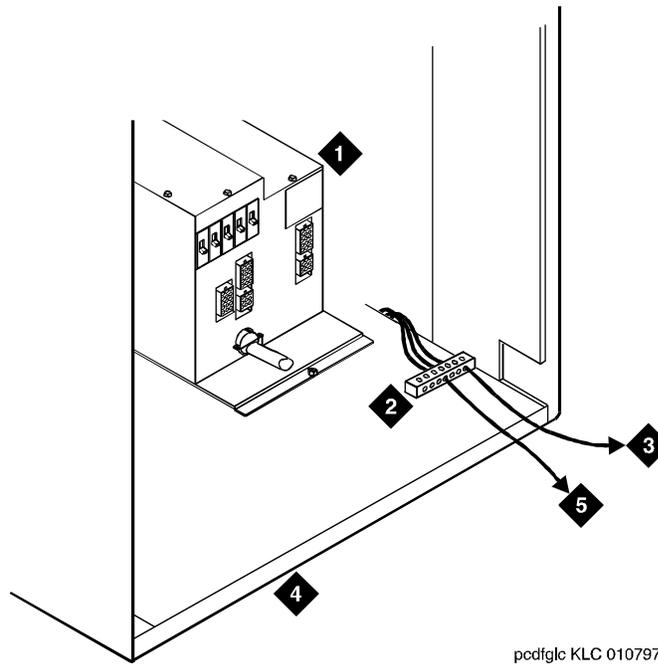
 **NOTE:**

Bond all approved grounds at the single-point ground to form a single grounding electrode system.

1. At the lower right rear of the PPN cabinet, connect a 6 AWG (#40) (4.115 mm) ground wire to the cabinet ground terminal block. See Figure 1-5.
2. Route the ground wire to the single-point ground block at the AC load center. Connect the wire to the ground block.
3. At the first EPN cabinet (if provided), connect a 6 AWG (#40) (4.115 mm) ground wire to the cabinet ground terminal block.
4. Route the ground wire to the single-point ground block at the AC load center. Connect the wire to the ground block.

 **NOTE:**

If the EPN cabinet is located remote from the PPN cabinet (in a separate room or building), route the EPN cabinet ground wire to an approved ground.



**Figure Notes**

- |  |                       |
|--|-----------------------|
| 1. Power Distribution Unit                     | 4. Rear of Cabinet    |
| 2. Ground Terminal Block                       | 5. To Approved Ground |
| 3. To AC Load Center Single-Point Ground Block |                       |

---

**Figure 1-5. Typical Cabinet Ground Location**

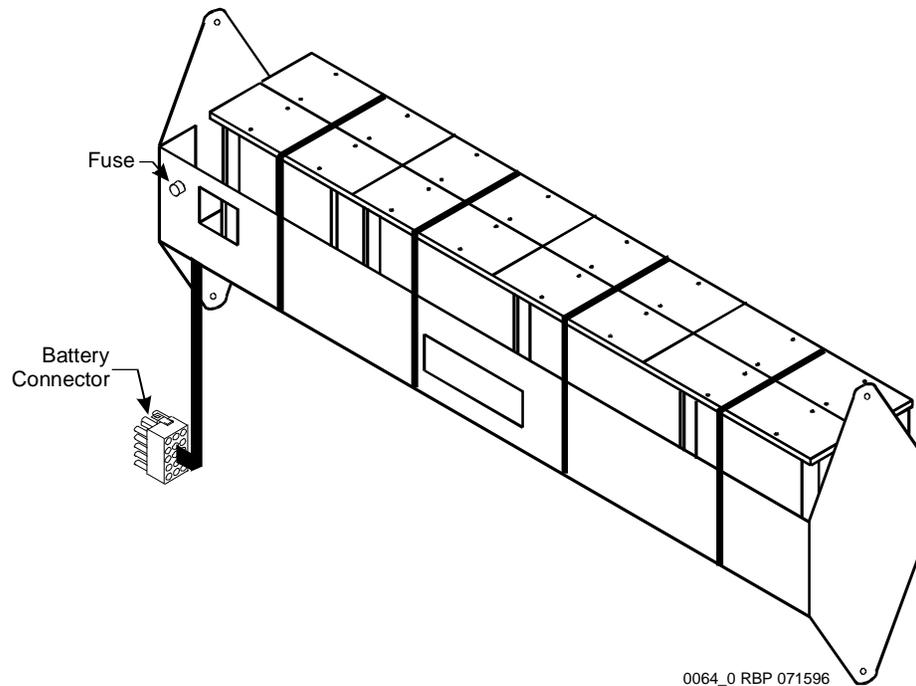
5. At the second EPN cabinet (if provided), connect a 6 AWG (#40) (4.115 mm) ground wire to the cabinet ground terminal block.
6. Route the ground wire to the single-point ground block. Connect the wire to the ground block.
7. Repeat connecting each EPN cabinet to the single-point ground block.
8. At the AC load center, connect a 10 AWG (#25) (2.588 mm) wire to the single-point ground block. This ground wire will later be tie-wrapped to the trunk cables and connected to the Coupled Bonding Conductor (CBC) ground block at the MDF.

### **Connect Battery Leads (J58890CH-1)**

---

Figure 1-6 shows a typical optional small battery holdover assembly. These assemblies may ship with the battery leads disconnected to prevent the batteries from discharging.

1. Plug the battery connector into the -48 VDC Batteries connector on the rear of the J58890CH-1 Power Distribution Unit.

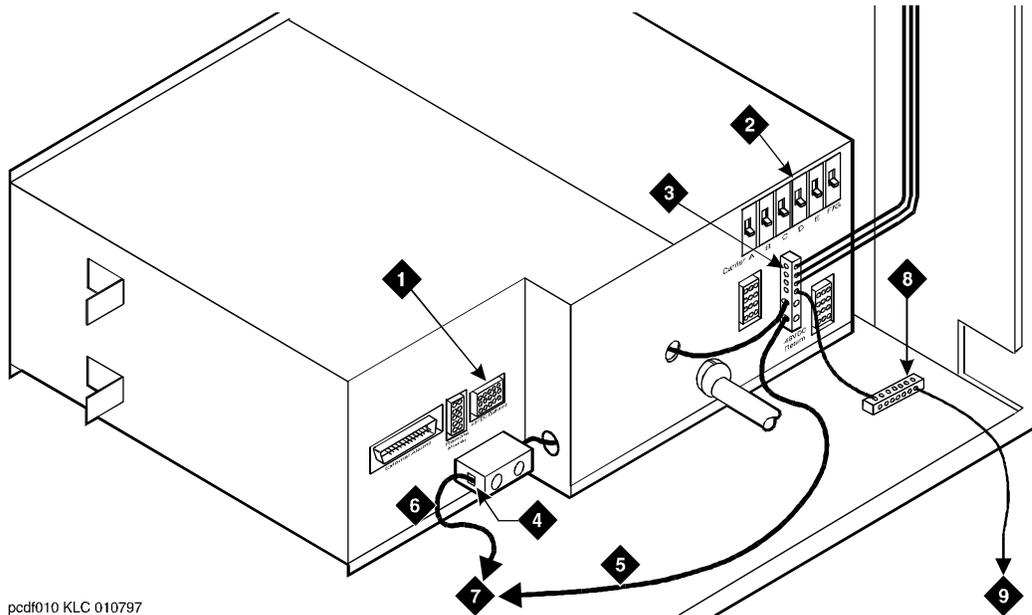


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**Figure 1-6. Typical Small Battery Assembly**

**⚠ CAUTION:**

*Power is present in the cabinet even if the AC power cable is unplugged. Turn off the main circuit breaker on the front of the power distribution unit when procedures require ALL power to be removed from the cabinet.*



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### Figure Notes

- |   |  |
|---|--|
| 1. Connect Small Battery Holdover Cable (or Temperature Sensor Cable from Large Battery Cabinet) to J20 | 6. -48 VDC                                     |
| 2. Carrier Circuit Breakers   | 7. To Large Battery Cabinet                    |
| 3. Ground Terminal Block  | 8. Ground Terminal Block                       |
| 4. Connect Large Battery Holdover Cable Here  | 9. To AC Load Center Single-Point Ground Block |
| 5. -48 VDC Return   |  |

### Figure 1-7. Power Distribution Unit (J58890CH)

2. Be sure the main power to the power distribution unit is OFF.
3. At the power distribution unit, set all carrier circuit breakers OFF.

### Small Battery Holdover

Connect the small battery holdover cable to J20. See Figure 1-7.

### Large Battery Holdover

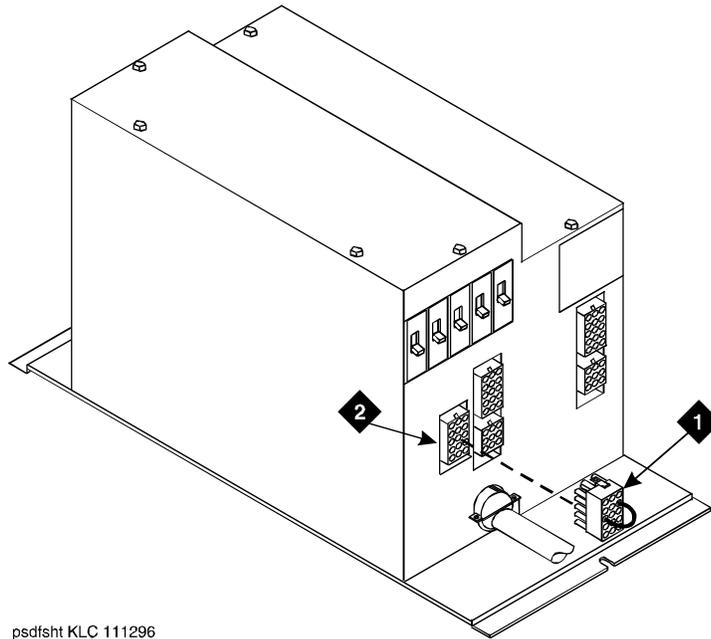
1. Connect the -48 VDC cable to the large battery connector. See Figure 1-7.
2. Connect the -48 VDC RETURN cable to the ground terminal block.
3. Connect the temperature sensor cable from the battery cabinet to J20.

### **Connect Shorting Cable to J58890CE-2**

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Some cabinets contain a J58890CE-2 AC Power Distribution Unit without an optional battery charger. Install the shorting cable only when a battery charger is *not* installed.

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#### **Figure Notes**

1. Shorting Cable (H600-442-G1) (If Battery Charger is Not Installed)
2. J11

---

#### **Figure 1-8. Shorting Cable Installation**

1. Set the circuit breakers on the power distribution unit OFF. See Figure 1-8.
2. At the rear of the cabinet, insert the shorting cable (H600-442-G1) into J11. The cable is keyed so it can fit only one way.

---

### **Connect AC Power**

1. Set the main circuit breakers on the power distribution unit OFF.
2. Connect cabinet AC line cords to the AC power receptacles.
3. Do not power up the system at this time.

## **Connect DC Power and Ground**

---

### **Power Distribution Unit (J58890CH-1 Only)**

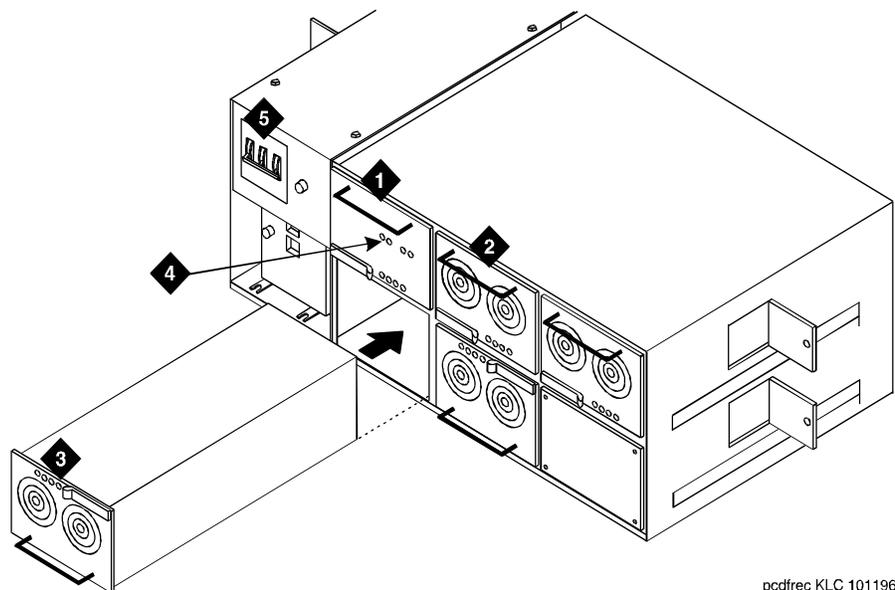
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#### **Rectifier Modules and Battery Interface Unit**

Each rectifier module operates as an integral part of a complete power system with battery backup. The modules operate in a redundant, high reliability mode to provide -48 VDC at 850 Watts to a common power bus.

The Battery Interface Unit (BIU) controls the rectifier modules, manages the batteries, and reports the status of system power. The BIU provides the Remote Power Off (RPO) option and battery alarm interfaces for internal and external alarms.

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#### **Figure Notes**

- |   |                          |
|---|--------------------------|
| 1. Install Battery Interface Unit into Slot 1 | 4. Test Points           |
| 2. Install Rectifier Modules into Slots 2-5   | 5. Main Circuit Breakers |
| 3. Rectifier Module 3 (in Slot 4)             |                          |

---

**Figure 1-9. Rectifier Module Installation**

1. Install the BU3200A Battery Interface Unit (comcode 107781502) or BU3200B Battery Interface Unit in the first slot of the power distribution unit. See Figure 1-9.
2. Install the first two RM0850HA100 Rectifier Modules (comcode 107793796) into the second and third slots of the power distribution unit.
3. If two to three carriers are installed in the system, install a third rectifier module (N+1).
4. If four to five carriers are installed in the system, install a fourth rectifier module.
5. The fifth rectifier module slot is reserved for future system growth.

 **NOTE:**

The BIU and the rectifier modules are keyed and can only install one way.

### Connect Power

Have a qualified electrician connect and route wires from the AC load center to the dedicated electrical outlet for the power distribution unit. Refer to *DEFINITY Enterprise Communications Server Release 5 System Description Pocket Reference*, for power requirements.

### Connect PPN Cabinet Ground

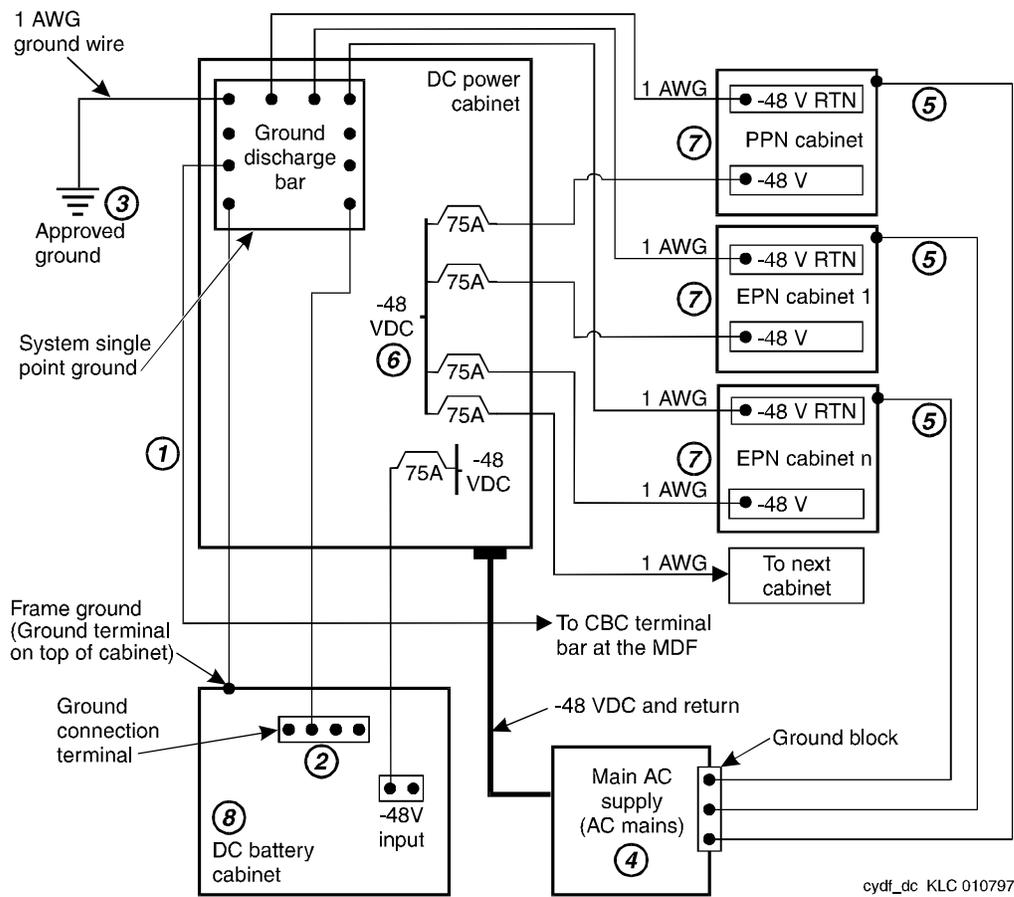
1. Connect one end of a 10 AWG (#25) (2.588 mm) wire to the ground terminal block on the rear of the cabinet. See Figure 1-7.
2. Route the wire to the Coupled Bonding Conductor (CBC), or to an approved ground, and connect.
3. Connect one end of a 6 AWG (#40) (4.115 mm) wire to the ground terminal block at the rear of the cabinet.
4. Route the wire to the AC load center single-point ground block and connect.

### Connect EPN Cabinet Ground(s)

1. Connect one end of a 10 AWG (#25) (2.588 mm) wire to the ground terminal block at the rear of the PPN cabinet. See Figure 1-7.
2. Route the wire to the EPN cabinet and connect to the ground terminal block.
3. Connect one end of a 10 AWG (#25) (2.588 mm) wire to the ground terminal block at the rear of the first EPN cabinet.
4. Route the wire to the next EPN cabinet (if installed) and connect to the ground terminal block.
5. Serially connect each remaining EPN cabinet to the previous EPN cabinet.

**DC Power and Ground (J58890CF Only)**

Figure 1-10 shows a typical power and ground layout for a DC-powered cabinet. The size of the wire required for the -48 volt DC and -48 volt return must ensure the -48 volt DC supplied by the battery plant is maintained between -42.5 and -54.2 volts DC at all times for proper operation and to prevent hardware damage. This procedure applies to both PPN and EPN cabinets.



**Figure 1-10. Typical Power and Ground for a DC-Powered Cabinet**

## **Connect DC Power and Ground**

---

The grounding methods for the DC-powered system are more complex than that of an AC-powered system. The following installation procedures refer to Figure 1-10. The numbers 1-8 in Figure 1-10 match the following subsections 1-8. Other figures may be referenced as required.



### **CAUTION:**

*Grounding of the system shall comply with the general rules for grounding contained in Article 250 of the National Electrical Code, NFPA 70. For more information, refer to "Approved Grounds" later in this chapter.*

### **1. Install Coupled Bonding Conductor Wires**

This is a conductor that is connected to the single-point ground terminal bar and run adjacent to pairs in an associated cable. The mutual coupling between the CBC and the pairs reduces potential differences in terminating equipment. The conductor consists of a 10 AWG (2.588 mm) wire terminated at the CBC ground terminal bar at the Main Distribution Frame (MDF).

1. At the DC Power Cabinet, connect a 10 AWG (2.588 mm) ground wire to the Ground Discharge Bar. See Figure 1-10.
2. Route the 10 AWG (2.588 mm) ground wire to the CBC ground terminal bar at the MDF. Be sure a minimum of 12 inches (30.5 cm) spacing is maintained between the CBC and other power and ground leads.
3. Tie wrap the ground wire to the inside wiring cable.



### **NOTE:**

The ground wires are connected to the CBC as instructed in Chapter 2, "Install Telecommunications Cabling".

### **2. Connect DC Battery and Power Cabinet Grounds**

1. Measure and cut a 6 AWG (#40) (4.115 mm) wire (comcode 846110971) long enough to reach between the ground connection terminal in the DC Battery Cabinet and the Ground Discharge Bar in the DC Power Cabinet. See Figure 1-10.
2. Crimp terminal lugs on each end of the wire. Terminal lugs are furnished as part of D-181895, Kit of Parts (comcode 105434559).
3. At the DC Power Cabinet, connect the wire to the Ground Discharge Bar.
4. Route the wire through one of the holes in the side of the cabinets and terminate it on the Ground Connection Terminal in the DC Battery Cabinet.

### 3. DC Power Cabinet Approved Ground

1. At the DC Power Cabinet, connect a 1 AWG (#70) (7.348 mm) ground wire to the Ground Discharge Bar. See Figure 1-10.
2. Route the ground wire out of the cabinet and terminate it on the approved ground. The approved ground must be identified with a grounding tag (FORM 15657NR or equivalent). See "Approved Grounds" on page 1-27.

### 4. Connect Main AC Supply to DC Power Cabinet

1. Have a qualified electrician connect AC power leads to the rectifiers in the DC Power Cabinet. Each rectifier should have its own branch circuit. Terminate the leads on the AC INPUT terminal block of each rectifier.
2. Ensure the associated circuit breakers at the AC power panel are OFF.

### 5. Connect Ground Wires for DC-Powered Systems



#### **CAUTION:**

*Do not connect any ground wires from an EPN cabinet to another EPN cabinet or to a PPN cabinet. All ground wires must be terminated at the single-point ground block at the main AC supply (AC mains).*

1. Connect a 6 AWG (#40) (4.115 mm) wire to the PPN cabinet ground terminal block.
2. Route the wire to the AC mains single-point ground block and connect.
3. Connect a 6 AWG (#40) (4.115 mm) wire to each EPN's cabinet ground terminal block.
4. Route the wire(s) to the AC mains single-point ground block and connect.

### 6. Turn Circuit Breakers Off

The main circuit breaker on a DC-powered PPN/EPN cabinet is located on the front of the power distribution unit. The circuit breakers on the rear of the power distribution unit control the individual carriers. See Figure 1-7 for the location of the carrier breakers.

1. Set the main circuit breaker to OFF.
2. Set the carrier circuit breakers to OFF.

### **7. Connect DC Power to PPN and EPN Cabinets**

1. Be sure the main circuit breaker is OFF.
2. Measure and cut a piece of 6 AWG (#40) (4.115 mm) wire long enough to reach from the DC Power Cabinet to the PPN cabinet.
3. At the DC Power Cabinet, connect the -48 volt DC wire to the DC OUTPUT circuit breaker. See Figure 1-10. Connect the -48 volt RTN (return) wire to the ground discharge bar.
4. Route the wires out of the cabinet, through the hole in the lower rear cover, and to the PPN cabinet.
5. Connect the -48 volt DC wire to the -48VDC terminal on the J58890CF Power Distribution Unit.
6. Connect the -48 volt RTN wire to the -48RTN terminal on the J58890CF Power Distribution Unit terminal block.
7. Repeat Steps 2 through 6 for each EPN and Auxiliary cabinet in the system.

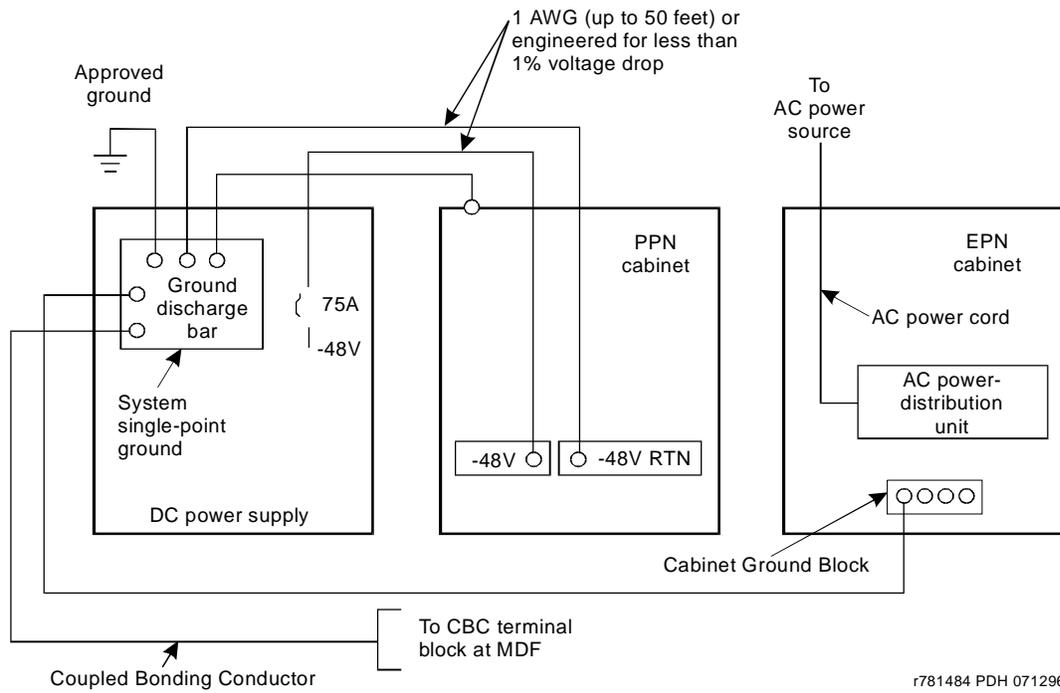
### **8. Connect DC Battery Cabinet to DC Power Cabinet**

1. Set the main circuit breaker on the DC Battery Cabinet and the DC Power Cabinet to OFF.
2. Measure and cut a 6 AWG (#40) (4.115 mm) wire long enough to reach from the DC Battery Cabinet's -48 Volt DC terminal to a DC OUTPUT circuit breaker on the DC Power Cabinet.
3. At the DC Battery Cabinet, connect the -48 volt DC wire to the -48 VDC connector. Connect the -48 volt RTN wire to the ground connection terminal.
4. Route the wires out of the cabinet through the hole in the lower rear cover and to the DC Power Cabinet.
5. At the DC Power Cabinet, terminate the -48 volt DC wire on a DC OUTPUT circuit breaker. Terminate the -48 volt RTN (return) wire on the ground discharge bar.

### **Mixed AC/DC Power and Ground**

---

Figure 1-11 shows a power and ground layout for a mixed AC/DC-powered cabinet configuration in the same equipment room with the PPN being DC powered and the EPN being AC powered. If a second EPN is part of the system, use the same basic connections shown in Figure 1-11.



**Figure 1-11. Typical Power and Ground for a Mixed AC/DC-Powered Cabinet**

## **Approved Grounds**

---

An approved ground is the closest acceptable medium for grounding the building entrance protector, entrance cable shield, or single-point ground of electronic telephony equipment. If more than one type of approved ground is available on the premises, the grounds must be bonded together as required in Section 250-81 of the National Electrical Code.

**Grounded Building Steel** — The metal frame of the building where it is effectively grounded by one of the following grounds: acceptable metallic water pipe, concrete encased ground, or a ground ring.

**Acceptable Water Pipe** — A metal underground water pipe, at least 1/2-inch (1.27 cm) in diameter, in direct contact with the earth for at least 10 feet (3 m). The pipe must be electrically continuous (or made electrically continuous by bonding around insulated joints, plastic pipe, or plastic water meters) to the point where the protector ground wire is connected. A metallic underground water pipe must be supplemented by the metal frame of the building, a concrete encased ground, or a ground ring. If these grounds are not available, the water pipe ground can be supplemented by one of the following types of grounds:

- Other local metal underground systems or structures — Local underground structures such as tanks and piping systems
- Rod and pipe electrodes — A 5/8-inch (1.58 cm) solid rod or 3/4-inch (1.9 cm) conduit or pipe electrode driven to a minimum depth of eight feet (2.43 m)
- Plate electrodes — Must have a minimum of 2 square feet (0.186 square m) of metallic surface exposed to the exterior soil

**Concrete Encased Ground** — An electrode encased by at least 2 inches (5.08 cm) of concrete and located within and near the bottom of a concrete foundation or footing in direct contact with the earth. The electrode must be at least 20 feet (6.1 m) of one or more steel reinforcing bars or rods 1/2-inch (1.27 cm) in diameter, or at least 20 feet (6.1 m) of bare, solid copper, 4 AWG (5.189 mm) wire.

**Ground Ring** — A buried ground that encircles a building or structure at a depth of at least 2.5 feet (0.76 m) below the earth's surface. The ground ring must be at least 20 feet (6.1 m) of 2 AWG (6.543 mm), bare, copper wire.

## **Approved Floor Grounds**

---

Approved floor grounds are those grounds on each floor of a high-rise building suitable for connection to the ground terminal in the riser closet and to the cabinet equipment single-point ground terminal. Approved floor grounds may include the following:

- Building steel
- The grounding conductor for the secondary side of the power transformer feeding the floor
- Metallic water pipes
- Power feed metallic conduit supplying panel boards on the floor
- A grounding point specifically provided in the building for the purpose



### **WARNING:**

*If the approved ground or approved floor ground can only be accessed inside a dedicated power equipment room, then connections to this ground should be made by a licensed electrician.*

## Connect Remote Power Off Cable and External Alarm Cable

Figure 1-12 shows the location of the Remote Power Off (RPO) cable. The opposite end of the cable connects to the Emergency Power Off (EPO) switch located outside of the equipment room.

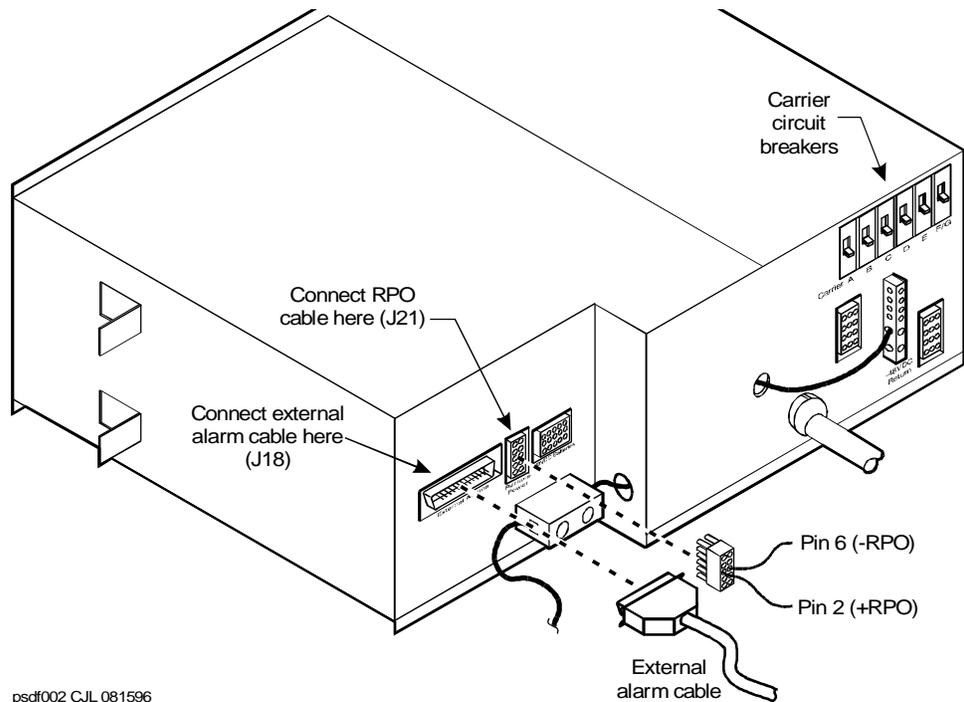


Figure 1-12. Remote Power Off Cable Connections — Part 1

Even though the equipment room EPO switch disconnects main AC power to the equipment room, it cannot disconnect the battery power from the J58890CH. An auxiliary set of contacts inside the EPO are used for this function.

1. Plug the RPO cable into the connector shown in Figure 1-12.
2. Route the opposite end of the wires to the EPO switch. The opposite end of the RPO cable connects to the internal relay.



**NOTE:**

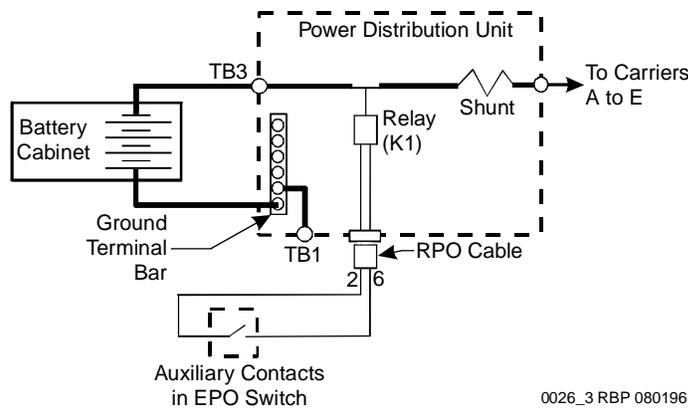
The EPO switch and the auxiliary contacts (inside the EPO switch assembly) are customer-provided.



**CAUTION:**

*The auxiliary contacts inside the EPO switch assembly must **close** when the switch is pressed. This contact closure energizes the relay inside the power distribution unit, causing the connection to the battery holdover assembly to open.*

Figure 1-13 shows the cabling from the auxiliary contacts inside the EPO switch assembly and how they connect to the internal relay.



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**Figure 1-13. Remote Power Off Cable Connections — Part 2**

1. Connect the RPO wires to the auxiliary contacts on the EPO switch. See Figure 1-13.



**NOTE:**

The EPO switch and the auxiliary contacts for the RPO connection are customer-supplied.

## **Connect External Alarm Cable**

1. Plug the external alarm cable into the connector shown in Figure 1-12.
2. Route the opposite end of the cable to the MDF. The alarm cable is connected to the MDF in Chapter 5, "Install and Wire Telephones and Other Equipment".

## **Connect AC Power to Stratum 3 Clock Cabinet**

The clock cabinet requires a 120 VAC, 15 Amp receptacle. The green wire ground provided by the receptacle is sufficient. The clock cabinet does not require a ground connection back to the single-point ground.

## **Check Commercial Power and Connect AC Power**

Before powering up the system, check the AC power using a KS-20599 digital voltmeter (DVM) (or equivalent).

1. Set the DVM to the 250 volt range.
2. Carefully measure the voltage between the hot and neutral side of the receptacle. The neutral wire is white, the hot wire is black.
3. Verify the meter reads 106 to 128 VAC. If not, have a qualified electrician correct the problem.
4. Measure the voltage between the neutral and ground side of the receptacle. The ground wire is green.
5. Verify the meter reads 0 VAC. If not, have a qualified electrician correct the problem.
6. Set all cabinet power modules OFF. Plug the AC power cable into the receptacle.

## **Connect DC Power and Ground to Stratum 3 Clock Cabinet**

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1. Provide power for the clock cabinet from the same DC Power Plant as the DEFINITY System.
2. Ground the clock cabinet to the DC Power Plant.

### **Connect Clock Cabinet Grounding**

---

1. Measure and cut a 6 AWG (#40) (4.115 mm) wire long enough to reach from the clock cabinet to the ground discharge bar in the DC Power Plant.
2. Insert one end of the wire into the ground lug on the clock cabinet and tighten the screw.
3. Attach the lug to the receptacle cover. Be sure the lug and cabinet ground wires are connected to separate screws on the receptacle cover.
4. Route the ground wire to the DC Power Plant and connect to DISCH GRD inside the cabinet.

### **Connect Stratum 3 Clock DC Power**

---

1. Set the clock cabinet circuit breaker at the DC Power Plant OFF.
2. At the clock cabinet, connect a 6 AWG (#40) (4.115 mm) ground wire to the -48V terminal on the terminal strip.
3. At the clock cabinet, connect a 6 AWG (#40) (4.115 mm) wire to the -48VRTN terminal on the terminal strip.
4. Route the wires out of the cabinet and to the DC Power Plant.
5. At the DC Power Plant, connect the -48V wire to the DC OUTPUT circuit breaker.
6. At the DC Power Plant, connect the -48VRTN wire to the DISCH GRD bar.

## **Interconnect Cabling**

---

The fiber optic cables are connected to the MDF in Chapter 2, "Install Telecommunications Cabling". Refer to Appendix C, "Connecting and Handling Fiber Optic Cables" for information about connecting to optical cross-connect hardware and routing through lightguide equipment.

The DEFINITY ECS may contain a Class 1 LASER device 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: -5 dBm  
Wavelength: 1310 nm  
Mode Field Diameter: 8.8 microns  
**CLASS 1 LASER PRODUCT**  
**IEC 825 1993**



### **CAUTION:**

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

Contact your Lucent Technologies representative for more information.

## **Connect Fiber Optic Cables**

---



### **NOTE:**

Always use the Cable Running List that accompanies the system when installing fiber optic cables. The following procedure is a *typical* example of how to cable a system.

If the cabinets are close together, the signal may go through a single, directly-connected fiber optic cable. If the cabinets are far apart, it may be easier to connect the cabinets through the fiber optic cross-connect field.

For each fiber indicated in the fiber optic Cable Running List:

1. Install a lightwave transceiver on the cabinet connector at the position in the FROM column in the running list.
2. Select a cable indicated by the CABLE CODE and LENGTH in the running list. Connect one of the fibers to each connector on the lightwave transceivers just installed. The fiber is numbered 1 or 2. The connector on the transceiver is labeled TX or RX. Keep track of which fiber connects to which transceiver connector. Label both ends of these cables.
3. Route the fiber optic cables from the transceiver out of the cabinet. Secure the cables to the cable-tie rack. Keep the fiber optic cables clear of the heavier B25A cables.

4. If the cabinet in the TO column in the running list is located remotely from the FROM cabinet, connect to the TO cabinet by way of the fiber optic cross-connect field.
5. Install a lightwave transceiver on the cabinet connector at the position in the TO column in the running list.
6. Route the cables from the FROM cabinet down into the cable trays of each EPN cabinet. Connect the cables to the lightwave transceiver just installed on the TO cabinet.
7. Connect the fiber that comes from the TX connector of the FROM transceiver to the RX connector of the TO transceiver and vice versa.
8. Route the cables through the cabinet and through cable organizers and cross-connects as provided. Secure the cables to the cable-tie rack.

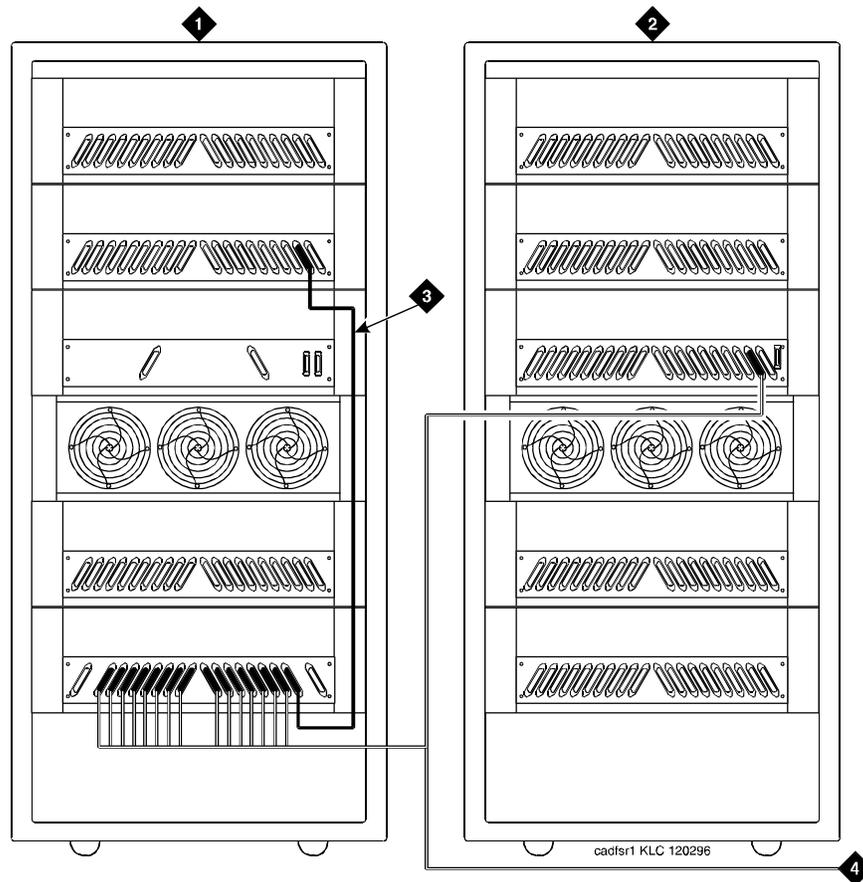
### **Release 5r CSS-Connected Systems**

In all cases, use the running list to determine actual cable connections.

#### **Standard-Reliability**

Figure 1-14 shows a typical example of fiber optic cabling between cabinets in standard reliability CSS-connected systems with one Switch Node carrier. Included in Figure 1-14 are carrier positions, types of carriers, and Expansion Interface (EI) circuit packs and Switch Node Interface (SNI) port slots. The cable between the EI and SNI on the PPN cabinet is a pre-installed metallic cable (H600-278).

1. If no running list is available, use the outer slots first in alternating order. For example, connect the first two SNI slots to 3 and 20 (the leftmost and rightmost of the unused slots). Next, use 4 and 19, and so forth.
2. Add links to the EPNs in alternating order. For example: 20, 3, 19, 4, 18, 5, and so forth.



**Figure Notes**

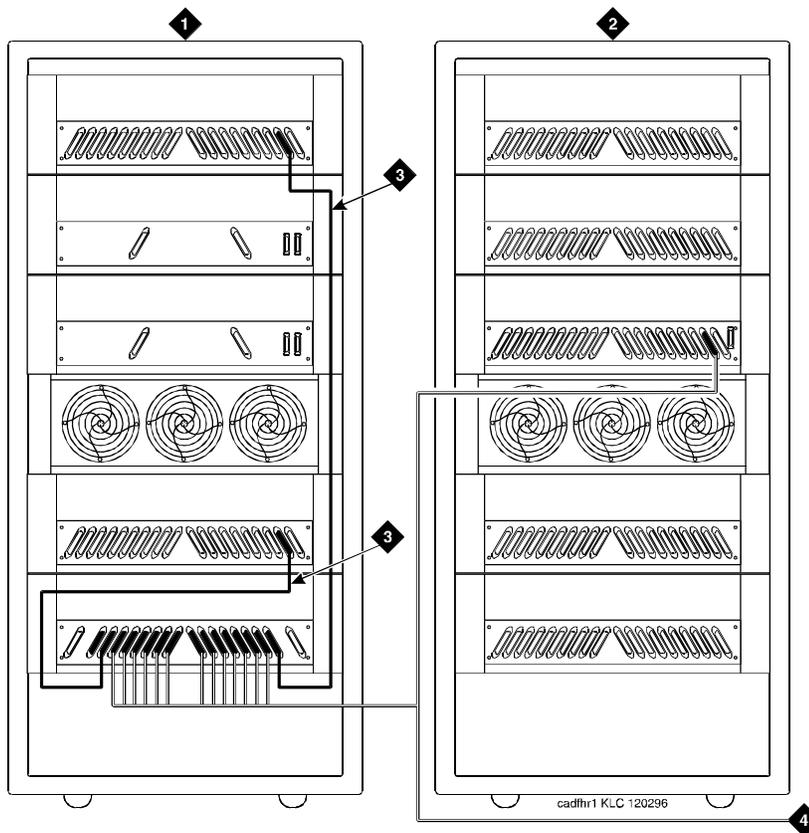
- |  |                            |
|--|----------------------------|
| 1. Cabinet 1 (PPN with One Switch Node | 3. H600-278 Metallic Cable |
| 2. Cabinet 2 through 16 (EPN)          | 4. To Other EPNs           |

**Figure 1-14. Standard Reliability CSS-Connected Release 5r with One Switch Node**

### High-Reliability, CSS-Connected, with One Switch Node

Figure 1-15 shows typical fiber optic cabling between cabinets in high-reliability CSS-connected systems with one Switch Node carrier. The cable between the EI and SNI on the PPN cabinet is a pre-installed metallic cable (H600-278).

The cables are connected between the PPN cabinet and each EPN cabinet in an alternating port slot order: 3, 19; 4, 18; 5, 17; and so forth. Cabinet 1 is a Release 5r PPN with one Switch Node.



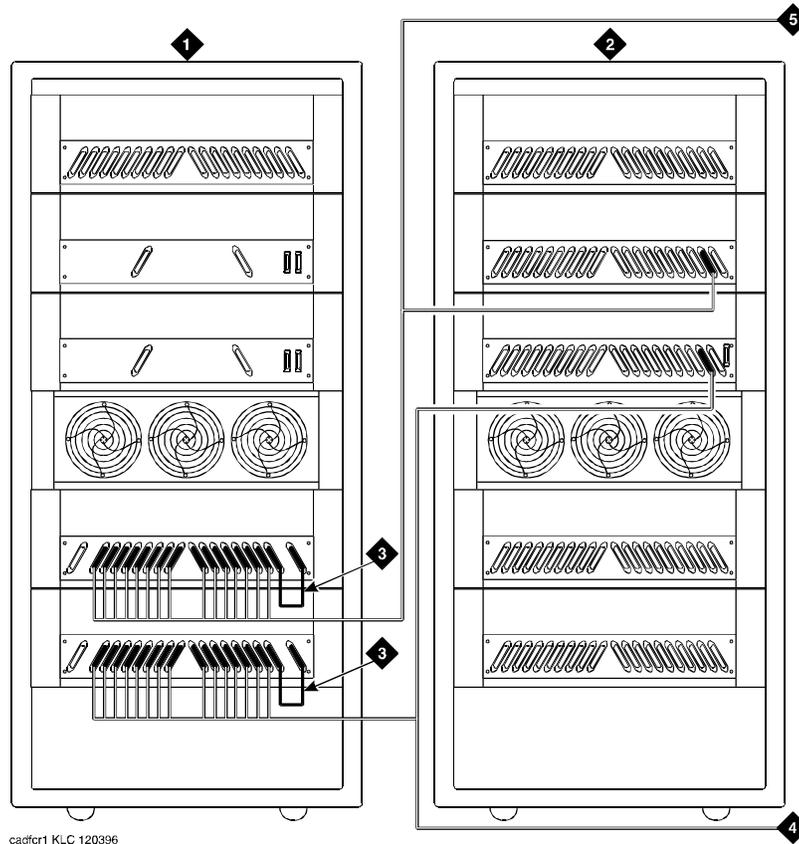
#### Figure Notes

- |   |                            |
|---|----------------------------|
| 1. Cabinet 1 (PPN with One Switch Node) | 3. H600-278 Metallic Cable |
| 2. Cabinet 2 three 15 (EPN)             | 4. To Other EPNs           |

Figure 1-15. High-Reliability CSS-Connected with One Switch Node

### Critical Reliability, CSS-Connected, with One Switch Node

Figure 1-16 shows typical fiber optic cabling between cabinets in CSS-connected systems with one duplex switch node. The cable between port slots 1 and 2 on each switch node is a shielded metallic cable (H600-278). The two groups of 1 to 15 cables connect between the PPN cabinet and each EPN cabinet in an alternating port slot order: 20, 3; 19, 4; 18, 5; and so forth.



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#### Figure Notes

- |  |                            |
|--|----------------------------|
| 1. Cabinet 1 (PPN with One Duplex Switch Node) | 3. H600-278 Metallic Cable |
| 2. Cabinet 2 through 16 (EPN)                  | 4. To other EPNs           |

**Figure 1-16. Critical-Reliability CSS-Connected with One Switch Node**

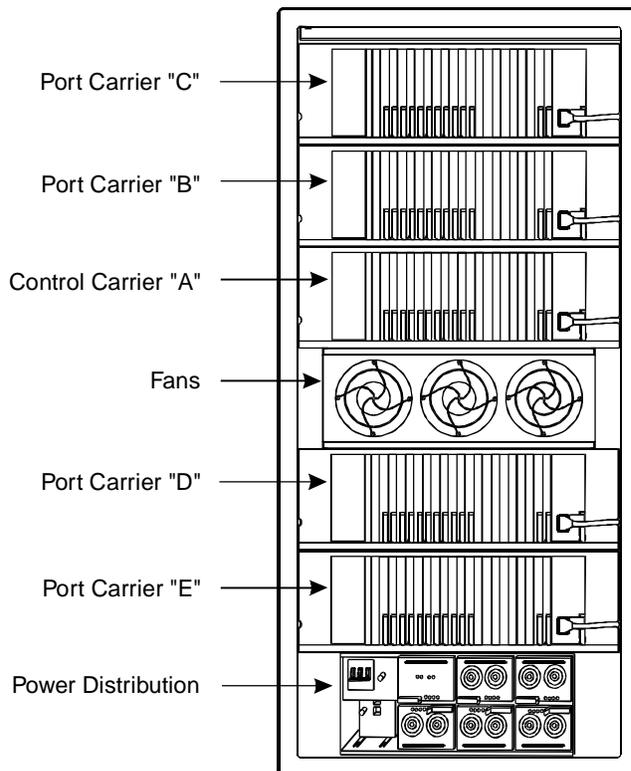
Both connections from each EPN must go to the same slot number. For example: EPN cabinet 2, 2A1 to 1E3 and cabinet 2, 2B2 to 1D3.

## **Install a New EPN Cabinet in an Existing System**

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Figure 1-17 shows a typical Multi-Carrier EPN cabinet. Each EPN cabinet is normally positioned adjacent to the PPN cabinet but may be located remotely in a different room or a different building.

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**Figure 1-17. Typical Multi-Carrier EPN Cabinet**

1. Uncrate and position the cabinet as instructed on page 1-1 to page 1-7.
2. Install earthquake protection as instructed on page 1-11.

## Connect Power

1. For an AC-powered system, connect AC power and ground to the cabinet as instructed on page 1-14 to page 1-19.
2. For a DC-powered system, connect DC power and ground as instructed on page 1-20 to page 1-32.

**⇒ NOTE:**

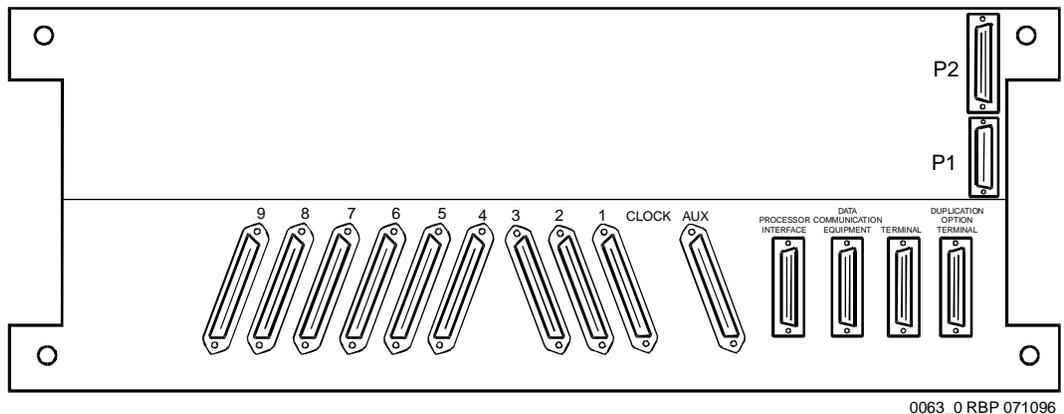
Do not power up the system until all installation procedures are completed.

## Interconnect Cabling Release 5si + Memory

For fiber optic cabling information, refer to Appendix C, "Connecting and Handling Fiber Optic Cables". The fiber connections installed in this section are later administered using *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*.

## Direct-Connect New EPN to Existing PPN (Standard Reliability)

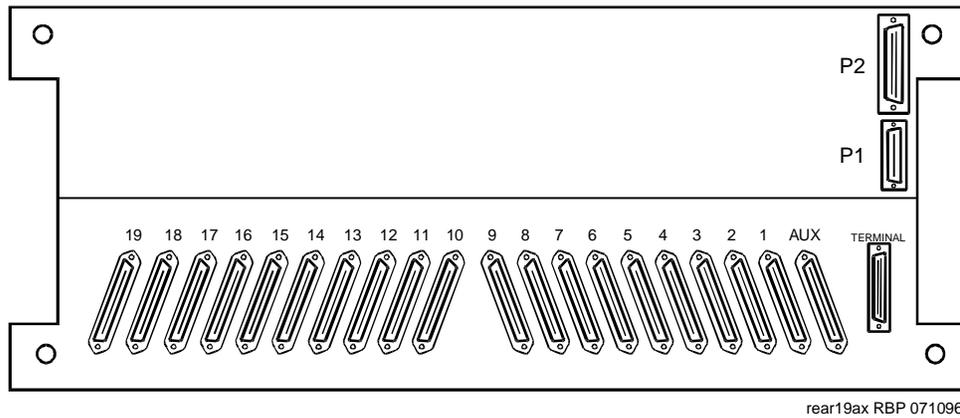
For a standard reliability Release 5si + Memory, perform the following:



**Figure 1-18. Rear of J58890AH Control Carrier (PPN)**

1. Install a 9823A (comcode 106455348) lightwave transceiver on to Slot 1 on the rear of the PPN Control Carrier. See Figure 1-18.
2. Connect a 20 foot fiber optic cable (comcode 407439975) to the TX and RX connectors on the transceiver. Label the cable to make the connections to the EPN cabinet easier. Refer to Appendix C, "Connecting and Handling Fiber Optic Cables" for more information.

3. Route the fiber cable to the J58890AF Expansion Control Carrier in the EPN cabinet.
4. On the rear of the EPN Expansion Control Carrier, install a 9823A lightwave transceiver onto Slot 2. See Figure 1-19.



**Figure 1-19. Rear of J58890AF Expansion Control Carrier (EPN)**

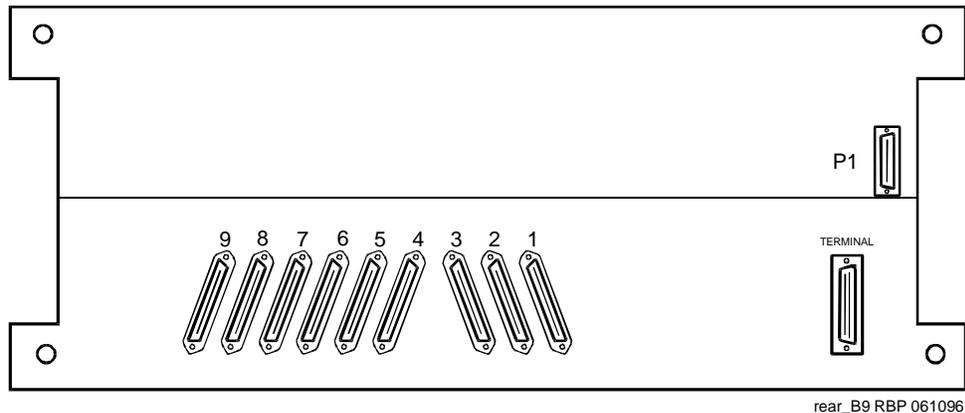
5. Connect the 20 foot fiber optic cable from the PPN Control Carrier to the TX and RX connectors on the transceiver on the EPN Expansion Control Carrier. Be sure the cable connected to the TX connector on the PPN transceiver is connected to the RX connector on the EPN transceiver and vice versa.

### **Direct-Connect New EPN to Existing PPN (High or Critical Reliability)**

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For a high or critical reliability Release 5si + Memory, perform the following:

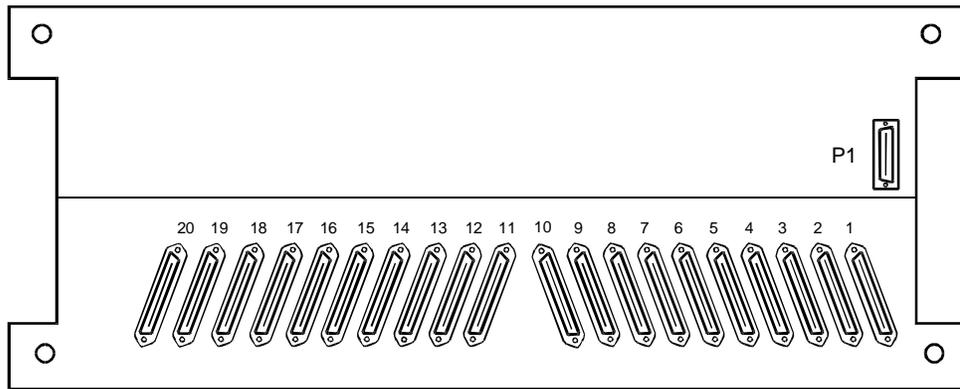
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**Figure 1-20. J58890AJ Duplicated Control Carrier (PPN)**

1. On the rear of the Duplicated Control Carrier, install a 9823A lightwave transceiver onto Slot 1. See Figure 1-20.
2. Connect a 20 foot fiber optic cable (comcode 407439975) to the TX and RX connectors on the transceiver. Label the cable to make the connections to the EPN cabinet easier. Refer to Appendix C, "Connecting and Handling Fiber Optic Cables" for more information.
3. Route the fiber cable to the J58890BB Port Carrier in position C in the EPN cabinet.



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**Figure 1-21. Typical J58890BB Port Carrier (EPN)**

4. On the rear of the Port Carrier, install a 9823A lightwave transceiver onto Slot 2. See Figure 1-21.
5. Connect the 20 foot fiber optic cable from the PPN Duplicated Control Carrier to the TX and RX connectors on the transceiver on the EPN Port Carrier. Be sure the cable connected to the TX connector on the PPN transceiver is connected to the RX connector on the EPN transceiver and vice versa.

### **Direct-Connect New EPN to Existing PPN and EPN (Standard Reliability)**

For a standard reliability Release 5si + Memory, perform the following. For the following connection example, the PPN cabinet is called Cabinet 1, the first EPN cabinet (next to the PPN cabinet) is called Cabinet 2, and the last EPN cabinet is called Cabinet 3.

1. At the rear of the Port Carrier in position C in Cabinet 1, install a 9823A lightwave transceiver onto Slot 2.
2. Connect a 20 foot fiber optic cable (comcode 407439975) to the TX and RX connectors on the transceiver. Label the cable to make the connections to Cabinet 3 easier.
3. Route the fiber cable to the Expansion Control Carrier in Cabinet 3.
4. At the rear of the Expansion Control Carrier in Cabinet 3, install a 9823A lightwave transceiver onto Slot 1.
5. Connect the 20 foot fiber optic cable from the Port Carrier in Cabinet 1 to the TX and RX connectors on the transceiver on the Expansion Control Carrier in Cabinet 3. Be sure the cable connected to the TX connector on one transceiver is connected to the RX connector on the other transceiver and vice versa.
6. At the rear of the Expansion Control Carrier in Cabinet 3, install a 9823A lightwave transceiver onto Slot 2.
7. Connect a 20 foot fiber optic cable (comcode 407439975) to the TX and RX connectors on the transceiver. Be sure to label the cable.
8. At the rear of the Expansion Control Carrier in Cabinet 2, install a 9823A lightwave transceiver onto Slot 2.
9. Connect the 20 foot fiber optic cable from Cabinet 2 to the TX and RX connectors on the transceiver on the Expansion Control Carrier in Cabinet 3. Be sure the cable connected to the TX connector on one transceiver is connected to the RX connector on the other transceiver and vice versa.
10. At the rear of the Expansion Control Carrier in Cabinet 2, install a 9823A lightwave transceiver onto Slot 1.
11. Connect a 20 foot fiber optic cable (comcode 407439975) to the TX and RX connectors on the transceiver on the Expansion Control Carrier in Cabinet 2.
12. Route the fiber cable to the Port Carrier in position B in Cabinet 1.
13. Install a 9823A lightwave transceiver onto Slot 2 on the Port Carrier in position D in Cabinet 1.
14. Connect the 20 foot fiber optic cable from Cabinet 2 to the TX and RX connectors on the transceiver on the Port Carrier in Cabinet 1. Be sure the cable connected to the TX connector on one transceiver is connected to the RX connector on the other transceiver and vice versa.

### **Direct-Connect New EPN to Existing PPN and EPN (High or Critical Reliability)**

For a high or critical reliability Release 5si + Memory, perform the following. For the following connection example, the PPN cabinet is called Cabinet 1, the first EPN cabinet (next to the PPN cabinet) is called Cabinet 2, and the last EPN cabinet is called Cabinet 3.

1. At the rear of the Port Carrier in position C in Cabinet 1, install a 9823A lightwave transceiver onto Slot 2.
2. Connect a 20 foot fiber optic cable (comcode 407439975) to the TX and RX connectors on the transceiver. Label the cable to make the connections to Cabinet 2 easier.
3. Route the fiber cable to the Expansion Control Carrier in Cabinet 2.
4. At the rear of the Expansion Control Carrier in Cabinet 2, install a 9823A lightwave transceiver onto Slot 1.
5. Connect the 20 foot fiber optic cable from the Port Carrier in Cabinet 1 to the TX and RX connectors on the transceiver on the Expansion Control Carrier in Cabinet 2. Be sure the cable connected to the TX connector on one transceiver is connected to the RX connector on the other transceiver and vice versa.
6. At the rear of the Expansion Control Carrier in Cabinet 2, install a 9823A lightwave transceiver onto Slot 2.
7. Connect a 20 foot fiber optic cable (comcode 407439975) to the TX and RX connectors on the transceiver. Be sure to label the cable.
8. At the rear of the Expansion Control Carrier in Cabinet 3, install a 9823A lightwave transceiver onto Slot 2.
9. Connect the 20 foot fiber optic cable from Cabinet 2 to the TX and RX connectors on the transceiver on the Expansion Control Carrier in Cabinet 3. Be sure the cable connected to the TX connector on one transceiver is connected to the RX connector on the other transceiver and vice versa.
10. At the rear of the Expansion Control Carrier in Cabinet 3, install a 9823A lightwave transceiver onto Slot 1.
11. Connect a 20 foot fiber optic cable (comcode 407439975) to the TX and RX connectors on the transceiver on the Expansion Control Carrier in Cabinet 3.
12. Route the fiber cable to the Port Carrier in position D in Cabinet 1.
13. At the rear of the Port Carrier in position D in Cabinet 1, install a 9823A lightwave transceiver onto Slot 2.
14. Connect the 20 foot fiber optic cable from Cabinet 3 to the TX and RX connectors on the transceiver on the Port Carrier in Cabinet 1. Be sure the cable connected to the TX connector on one transceiver is connected to the RX connector on the other transceiver and vice versa.

## **Interconnect Cabling Release 5r**

---

For more fiber optic cabling information, refer to Chapter C, "Connecting and Handling Fiber Optic Cables".

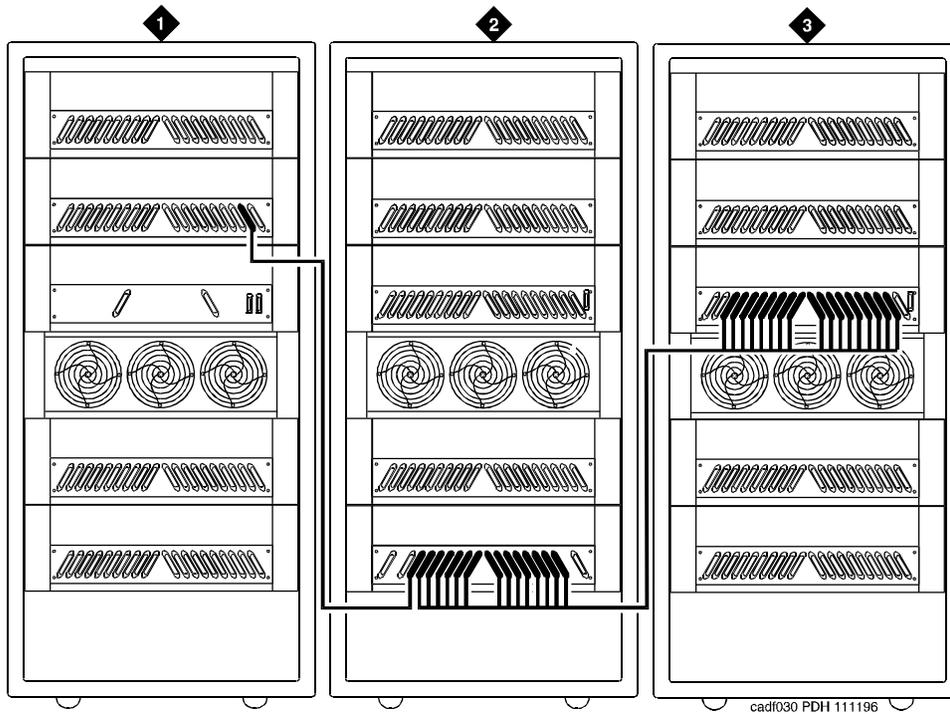
### **Switch-Connect New EPN to Existing PPN and EPN (Standard Reliability)**

For a standard reliability Release 5r with the Switch Node Carrier in the EPN, perform the following. For the following connection example, the PPN cabinet is called Cabinet 1, the first EPN cabinet is called Cabinet 2, and the EPN cabinet containing the Switch Node Carrier is called Cabinet 4.

#### **⇒ NOTE:**

For the following example, add links to PNs in alternating order, for example: 20 and 2, 19 and 3, 18 and 4, and so forth.

1. At the rear of the Port Carrier in position B in Cabinet 1, install a 9823A lightwave transceiver onto Slot 2 (1B02). See Figure 1-22.
2. Connect a 20 foot fiber optic cable (comcode 407439975) to the TX and RX connectors on the transceiver. Label the cable to make the connections to Cabinet 4 easier.
3. Route the fiber cable to the Port Carrier in position E in Cabinet 4.
4. At the rear of the Port Carrier in position E in Cabinet 4, install a 9823A lightwave transceiver onto Slot 2 (4E02).
5. Connect the 20 foot fiber optic cable from the Port Carrier in Cabinet 1 to the TX and RX connectors on the transceiver on the Port Carrier in Cabinet 4. Be sure the cable connected to the TX connector on one transceiver is connected to the RX connector on the other transceiver and vice versa.
6. At the rear of the Expansion Control Carrier in Cabinet 2, install a 9823A lightwave transceiver onto Slot 1 (2A01).
7. Connect a 20 foot fiber optic cable (comcode 407439975) to the TX and RX connectors on the transceiver. Be sure to label the cable.
8. At the rear of the Switch Node Carrier in position E in Cabinet 4, install a 9823A lightwave transceiver onto Slot 20 (4E20).
9. Connect the 20 foot fiber optic cable from Cabinet 2 to the TX and RX connectors on the transceiver on the Switch Node Carrier in Cabinet 4. Be sure the cable connected to the TX connector on one transceiver is connected to the RX connector on the other transceiver and vice versa.
10. Connect an H600-278 Metallic Cable from Slot 1 in the Expansion Control Carrier in Cabinet 4 (4A01) to Slot 19 on the Switch Node Carrier in position E in Cabinet 4 (4E19).



**Figure Notes:**

- 1. Cabinet 1 (PPN)
- 2. Cabinet 4 (MCC EPN with One Switch Node)
- 3. Cabinet 2, 3, and 5 through 16 (MCC or SCC EPNs)

**Figure 1-22. Switch-Connected Release 5r with SNC in EPN**

### **Switch-Connect New EPN to Existing PPN and EPN (High Reliability)**

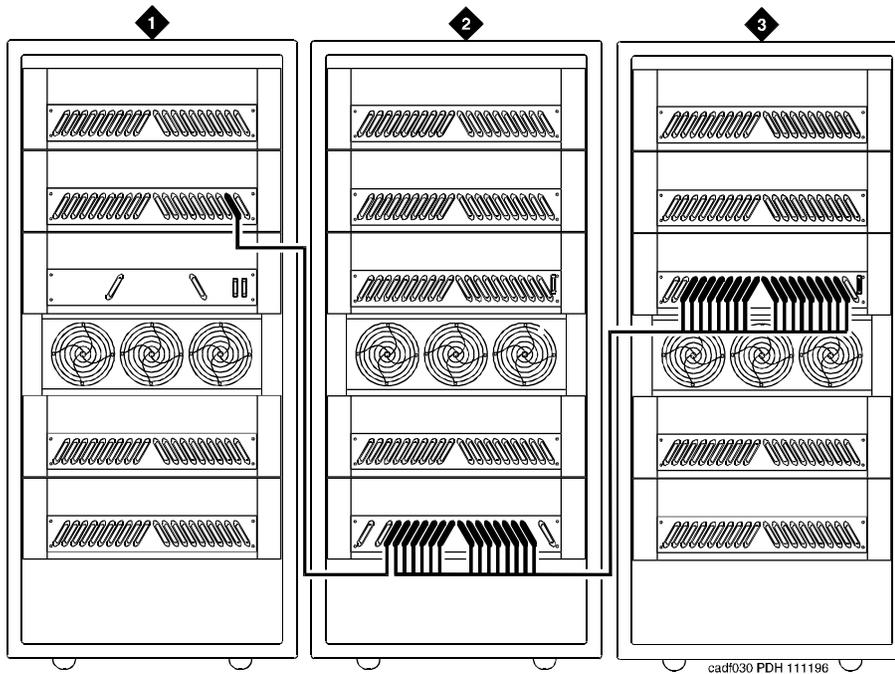
For a high reliability Release 5r with the Switch Node Carrier in the EPN, perform the following. For the following connection example, the PPN cabinet is called Cabinet 1, the first EPN cabinet is called Cabinet 2, and the EPN cabinet containing the Switch Node Carrier is called Cabinet 4.

**⇒ NOTE:**

For the following example, add links to PNs in alternating order, for example: 20 and 2, 19 and 3, 18 and 4, and so forth.

1. At the rear of the Port Carrier in position C in Cabinet 1, install a 9823A lightwave transceiver onto Slot 2 (1C02). See Figure 1-23.
2. Connect a 20 foot fiber optic cable (comcode 407439975) to the TX and RX connectors on the transceiver. Label the cable to make the connections to Cabinet 4 easier.
3. Route the fiber cable to the Port Carrier in position E in Cabinet 4.
4. At the rear of the Port Carrier in position E in Cabinet 4, install a 9823A lightwave transceiver onto Slot 2 (4E02).
5. Connect the 20 foot fiber optic cable from the Port Carrier in Cabinet 1 to the TX and RX connectors on the transceiver on the Port Carrier in Cabinet 4. Be sure the cable connected to the TX connector on one transceiver is connected to the RX connector on the other transceiver and vice versa.
6. At the rear of the Expansion Control Carrier in Cabinet 2, install a 9823A lightwave transceiver onto Slot 1 (2A01).
7. Connect a 20 foot fiber optic cable (comcode 407439975) to the TX and RX connectors on the transceiver. Be sure to label the cable.
8. At the rear of the Switch Node Carrier in position E in Cabinet 4, install a 9823A lightwave transceiver onto Slot 20 (4E20).
9. Connect the 20 foot fiber optic cable from Cabinet 2 to the TX and RX connectors on the transceiver on the Switch Node Carrier in Cabinet 4. Be sure the cable connected to the TX connector on one transceiver is connected to the RX connector on the other transceiver and vice versa.
10. At the rear of the Port Carrier in position D in Cabinet 1, install a 9823A lightwave transceiver onto Slot 2 (1D02).
11. Connect a 20 foot fiber optic cable (comcode 407439975) to the TX and RX connectors on the transceiver. Be sure to label the cable.
12. Route the fiber cable to Switch Node Carrier in position E in Cabinet 4.
13. At the rear of the Switch Node Carrier in position E in Cabinet 4, install a 9823A lightwave transceiver onto Slot 3 (4E03).

14. Connect the 20 foot fiber optic cable from Cabinet 1 to the TX and RX connectors on the transceiver on the Switch Node Carrier in Cabinet 4. Be sure the cable connected to the TX connector on one transceiver is connected to the RX connector on the other transceiver and vice versa.
  15. Connect an H600-278 Metallic Cable from Slot 1 in the Expansion Control Carrier in Cabinet 4 (4A01) to Slot 19 on the Switch Node Carrier in position E in Cabinet 4 (4E19).
- 



**Figure Notes:**

1. Cabinet 1 (PPN)
2. Cabinet 2, 3, and 5 through 16 (MCC or SCC EPNs)
3. Cabinet 4 (MCC EPN with One Switch Node)

---

**Figure 1-23. Switch-Connected Release 5r with SNC in EPN**

### Switch-Connect New EPN to Existing PPN and EPN (Critical Reliability)

For a critical reliability Release 5r with the Switch Node Carrier in the EPN, perform the following. For the following connection example, the PPN cabinet is called Cabinet 1, the first EPN cabinet is called Cabinet 2, and the EPN cabinet containing the Switch Node Carrier is called Cabinet 4.

**⇒ NOTE:**

For the following example, add links to PNs in alternating order, for example: 20 and 2, 19 and 3, 18 and 4, and so forth.

1. At the rear of the Port Carrier in position C in Cabinet 1, install a lightwave transceiver onto Slot 2 (1C02). See Figure 1-24.
2. Connect a 20 foot (6 m) fiber optic cable (comcode 407439975) to the TX and RX connectors on the transceiver. Label the cable to make the connections to Cabinet 4 easier.
3. Route the fiber cable to the Switch Node Carrier in position D in Cabinet 4.
4. At the rear of the Switch Node Carrier in position D in Cabinet 4, install a lightwave transceiver onto Slot 2 (4E02).
5. Connect the 20 foot (6 m) fiber optic cable from the Port Carrier in Cabinet 1 to the TX and RX connectors on the transceiver on the Switch Node Carrier in Cabinet 4. Be sure the cable connected to the TX connector on one transceiver is connected to the RX connector on the other transceiver and vice versa.
6. At the rear of the Port Carrier in position D in Cabinet 1, install a lightwave transceiver onto Slot 2 (1D02).
7. Connect a 20 foot (6 m) fiber optic cable (comcode 407439975) to the TX and RX connectors on the transceiver. Be sure to label the cable.
8. At the rear of the Switch Node Carrier in position D in Cabinet 4, install a lightwave transceiver onto Slot 2 (4D02).
9. Connect the 20 foot (6 m) fiber optic cable from the Port Carrier in position D in Cabinet 1 to the TX and RX connectors on the transceiver. Be sure to label the cable.
10. At the rear of the Port Carrier in position B in Cabinet 2, install a 9823A lightwave transceiver onto Slot 2 (2B02).
11. Connect a 20 foot (6 m) fiber optic cable (comcode 407439975) to the TX and RX connectors on the transceiver. Be sure to label the cable.
12. At the rear of the Switch Node Carrier in position D in Cabinet 4, install a lightwave transceiver onto Slot 20 (4D20).

13. Connect the 20 foot (6 m) fiber optic cable from the transceiver on the Switch Node Carrier position D in Cabinet 4. Be sure the cable connected to the TX connector on one transceiver is connected to the RX connector on the other transceiver and vice versa.
14. At the rear of the Expansion Control Carrier in position A in Cabinet 2, install a lightwave transceiver onto Slot 1 (2A01).
15. Connect a 20 foot (6 m) fiber optic cable (comcode 407439975) to the TX and RX connectors on the transceiver. Be sure to label the cable.
16. At the rear of the Switch Node Carrier in position E in Cabinet 4, install a lightwave transceiver onto Slot 20 (4E20).
17. Connect the 20 foot (6 m) fiber optic cable from the transceiver on the Switch Node Carrier position E in Cabinet 4. Be sure the cable connected to the TX connector on one transceiver is connected to the RX connector on the other transceiver and vice versa.
18. At the rear of the Port Carrier in position B in Cabinet 3, install a lightwave transceiver onto Slot 2 (3A01).
19. Connect a 20 foot (6 m) fiber optic cable (comcode 407439975) to the TX and RX connectors on the transceiver. Be sure to label the cable.
20. At the rear of the Switch Node Carrier in position E in Cabinet 4, install a lightwave transceiver onto Slot 3 (4E03).
21. Connect the 20 foot (6 m) fiber optic cable from the transceiver on the Switch Node Carrier position E in Cabinet 4. Be sure the cable connected to the TX connector on one transceiver is connected to the RX connector on the other transceiver and vice versa.
22. At the rear of the Expansion Control Carrier in position A in Cabinet 3, install a lightwave transceiver onto Slot 2 (3B02).
23. Connect a 20 foot (6 m) fiber optic cable (comcode 407439975) to the TX and RX connectors on the transceiver. Be sure to label the cable.
24. At the rear of the Switch Node Carrier in position D in Cabinet 4, install a lightwave transceiver onto Slot 3 (4D03).
25. Connect the 20 foot (6 m) fiber optic cable from the transceiver on the Switch Node Carrier position D in Cabinet 4. Be sure the cable connected to the TX connector on 1 transceiver is connected to the RX connector on the other transceiver and vice versa.

**⇒ NOTE:**

Continue connecting the fiber cables in this manner until all fiber connections are made. Be sure to add links to PNs in alternating order (20 and 2, 19 and 3, 18 and 4, and so forth).

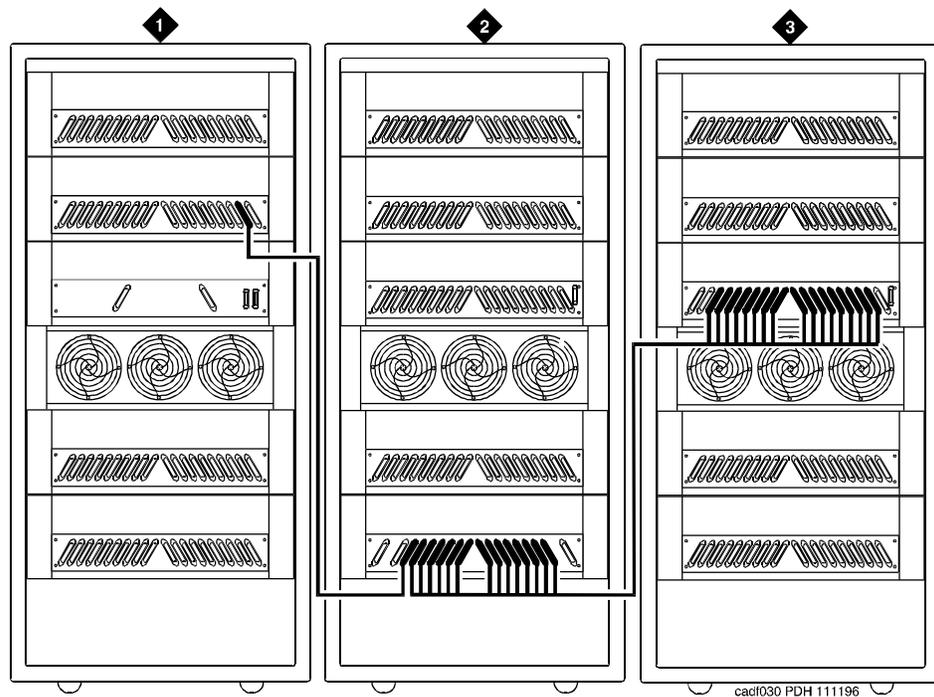
26. Connect an H600-278 Metallic Cable from Slot 1 in the Expansion Control Carrier in Cabinet 4 (4A01) to Slot 19 on the Switch Node Carrier in position E in Cabinet 4 (4E19).

27. Connect an H600-278 Metallic Cable from Slot 2 in the Port Carrier in position B in Cabinet 4 (4B02) to Slot 19 on the Switch Node Carrier in position D in Cabinet 4 (4D19).



**NOTE:**

Both fibers from each PN must connect to the same slot number in each Switch Node Carrier. For example: if Slot 3A01 of EPN 3 connects to Switch Node Carrier Slot 4E19, then Slot 3B02 of EPN 3 must connect to Switch Node Carrier Slot 4D19.



**Figure Notes:**

1. Cabinet 1 (PPN)
2. Cabinet 4 (MCC EPN with One Duplex Switch Node)
3. Cabinet 2, 3, and 5 through 16 (MCC or SCC EPNs) H600-278 Metallic Cable

**Figure 1-24. Switch-Connected Release 5r with SNC in EPN**



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## Install Telecommunications Cabling

# 2

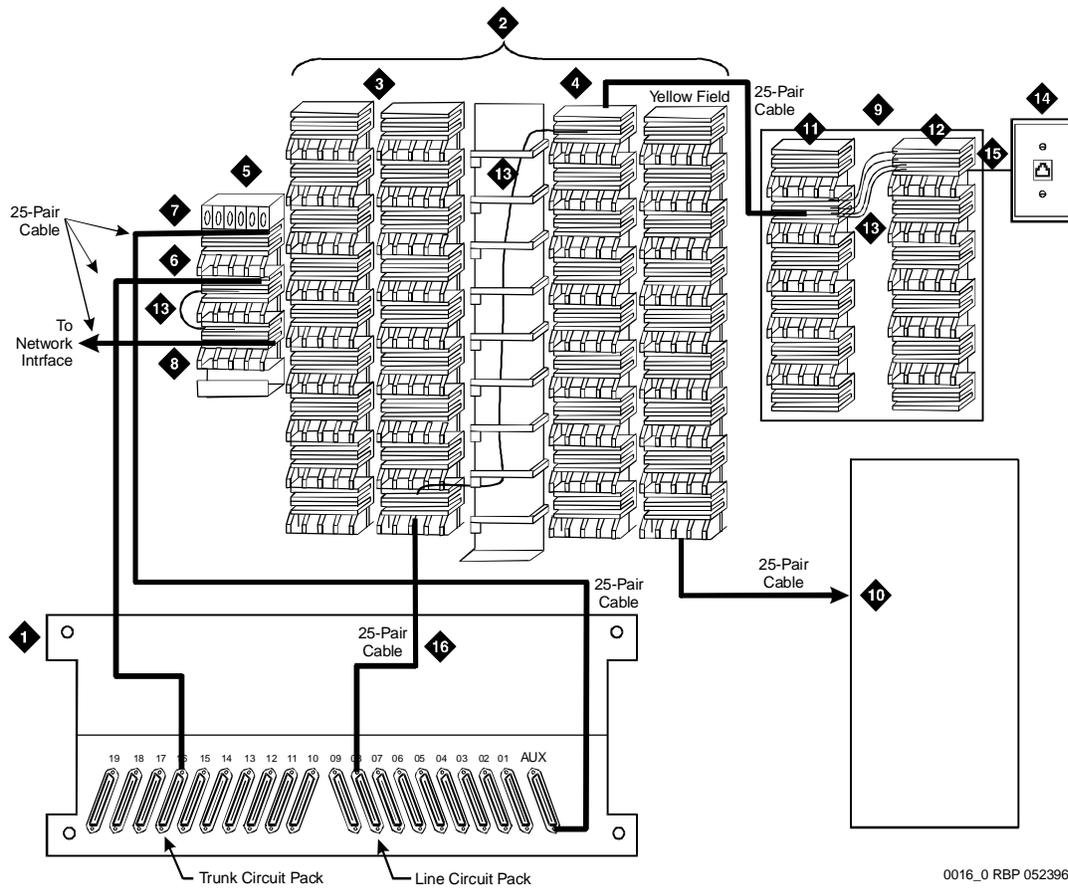
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### Equipment Room Hardware

SYSTIMAX 110-type hardware is used for the Main Distribution Frame (MDF). 110-type hardware is available in 2 basic types: the 110A and 110P. The 110A requires less wall space than the 110P. The 110P includes horizontal and vertical cable troughs for managing cross-connect cables. The system is connected to the MDF with the supplied B25A male to female 25-pair cables. The cables are provided in 10-foot (3 m) and 15-foot (4.5 m) lengths.

Refer to *DEFINITY Communications System Generic 1 and Generic 3 Main Distribution Field Design*, 555-230-630, for more information.

Figure 2-1 shows a detailed example of cables connecting system cabinets and satellite closets to the MDF. Figure 2-1 shows the cross-connections for 1 example station circuit.



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**Figure Notes**

- |   |   |
|---|---|
| 1. Rear of Port Carrier                     | 9. Satellite Closet                     |
| 2. Main Distribution Frame (MDF)            | 10. Auxiliary Cabinet (To Yellow Field) |
| 3. Port Distribution Field (Purple Field)   | 11. White Field                         |
| 4. Station Distribution Field (White Field) | 12. Blue Field                          |
| 5. Trunk/Auxiliary Field                    | 13. Cross-Connect Jumpers               |
| 6. Purple Field (To Trunk Circuit Pack)     | 14. 103A or Modular Wall Jack           |
| 7. Yellow Field                             | 15. 4-Pair Line Cord                    |
| 8. Green Field                              | 16. To Line Circuit Pack                |

**Figure 2-1. Example MDF Connections**

## Cross-Connect Fields

---

Each MDF contains a trunk/auxiliary field and a distribution field. The trunk/auxiliary field contains 3 cross-connect areas:

1. *The green field* terminates the network interface leads from the Central Office (CO) and provides the terminals to cross-connect the leads to the purple or yellow fields as required. A single row of the 110-type terminal block can terminate twenty-four 1-pair, eight 3-pair, or twelve 2-pair trunks.
2. *The purple field* terminates the trunk circuits from the system with WP-90929, List 1 or 3 concentrator cables. Also, 25-pair cables can be used to terminate trunk circuits from the system with each trunk circuit pack connecting to one 25-pair row of the 110-type terminal block. Each terminal block row can terminate twenty-four 1-pair, eight 3-pair, or twelve 2-pair trunks.
3. *The yellow field* provides cross-connect terminals for all miscellaneous leads from the system, such as alarm monitors, emergency transfer relay power, and attendant console power. This field is used for emergency transfer wiring, paging equipment, music sources, and so forth.

The distribution field contains four cross-connect areas:

1. *The purple field* (port field) terminates 25-pair cables from the system. Each line circuit pack connects to one 25-pair row of the 110-type terminal block. One 25-pair cable is required for each line circuit pack.

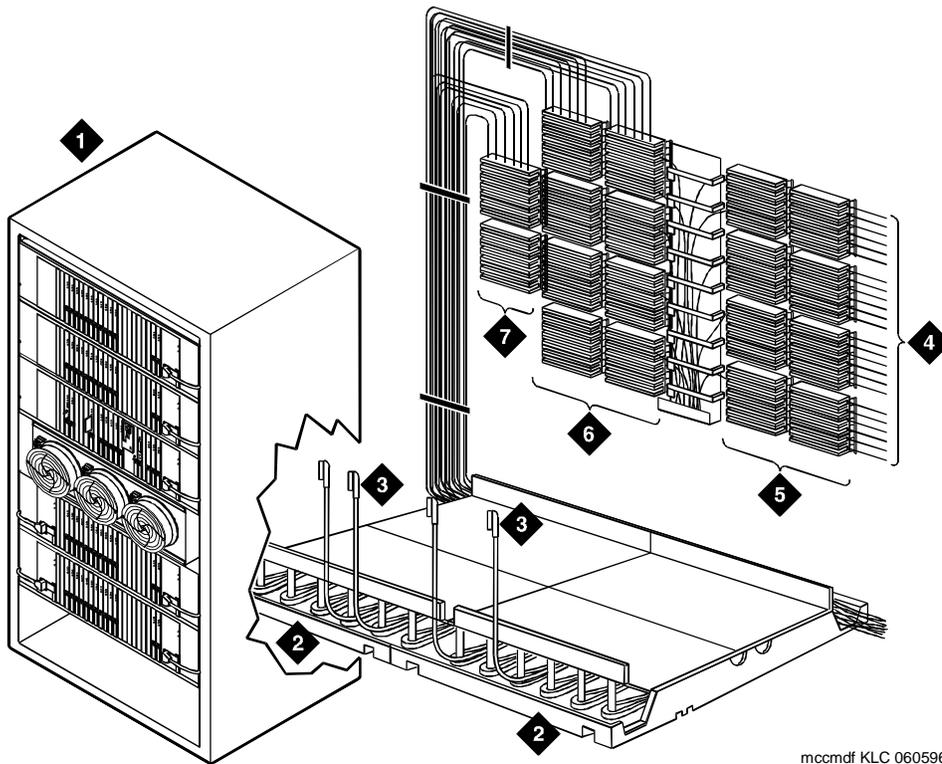
 **NOTE:**

This is the case except for the 16 port analog circuit pack and the MET circuit pack. The 16-port analog line circuit pack requires an adapter cable to connect from one connector on the system to 2 25-pair connectors on a 110-type terminal block. Two MET circuit packs require a concentrator cable to connect from 2 connectors on the system to one 25-pair connector on a 110-type terminal block.

2. *The yellow field* (auxiliary field) terminates all 25-pair cables from the auxiliary cabinet and adjunct equipment cabinets. The yellow field is located in the lower right-hand corner of the distribution field.
3. *The white field* (station field) terminates the station wiring. The white field indicates 3-pair station circuits (8 circuits per 25-pair cable) routed through a satellite closet.
4. *The blue field* (station field) also terminates station wiring. The blue field indicates 3- and/or 4-pair station circuits (8 or 6 circuits, respectively, per 25-pair cable). The fourth pair, of the 4-pair station circuit provides adjunct power from the cross-connect field on an as-needed basis to terminals within 250 feet (76 m) (wire length) of the MDF.

## Main Distribution Frame

The MDF is located directly behind the system cabinet. Figure 2-2 shows a typical installation using 900-pair 110P-type terminal blocks.



### Figure Notes

- |                                    |                               |
|------------------------------------|-------------------------------|
| 1. Multi-Carrier Cabinet           | 5. Station Distribution Field |
| 2. Z113A Cable Slack Manager       | 6. Port Distribution Field    |
| 3. 25-Pair Cable to System Cabinet | 7. Trunk/Auxiliary Field      |
| 4. Station Cables                  |                               |

Figure 2-2. Typical 110A-Type Terminal Blocks

## **Installation Requirements**

---

### **Sneak Fuse Panels and Emergency Transfer Units**

---

Approximately 8 inches (20 cm) of horizontal wall space is required for each column of sneak fuse panels. Up to 25 connector pairs can be protected by each panel. Horizontal wall space must also be provided for emergency transfer units.

### **110-Type Hardware**

---

The trunk/auxiliary field and the distribution field are mounted on the same wall. Each 110P-type terminal block is 8.5 inches (21.6 cm) wide. Vertical patch cord troughs are 5.31 inches (13.4 cm) wide and horizontal patch cord troughs are 23 inches (58.4 cm) wide.

Each 110A-type terminal block is 10.81 inches (27.4 cm) wide; however, no horizontal patch cord troughs are used and the blocks are shorter than 110P-type terminal blocks. This allows the 110A-type terminal blocks to be stacked. Therefore, the 110A-type hardware requires less space than the 110P-type hardware on a per-station basis.

### **Cable Slack Manager**

---

A Cable Slack Manager is 32 inches (81.3 cm) wide. The quantity of slack managers is determined by dividing the total length of the MDF in inches (cm) by 32 (81.3). A partial number of 0.4 or less should be rounded down, and a partial number of 0.5 or more should be rounded up (for example: 2.4 = 2 Cable Slack Managers and 2.5 = 3 Cable Slack Managers).

#### **⇒ NOTE:**

Cable clamps are required in installations with Cable Slack Managers. At the rear of the cabinets, on each rear ground plate, install 2 cable clamps using the screws provided. These clamps hold the 25-pair input/output or MDF cables in place.

## **Install Equipment and Cables**

---

### **Hardware Installation**

---

The following procedures assume one system technician is performing the installation. Procedures are provided for installing the following:

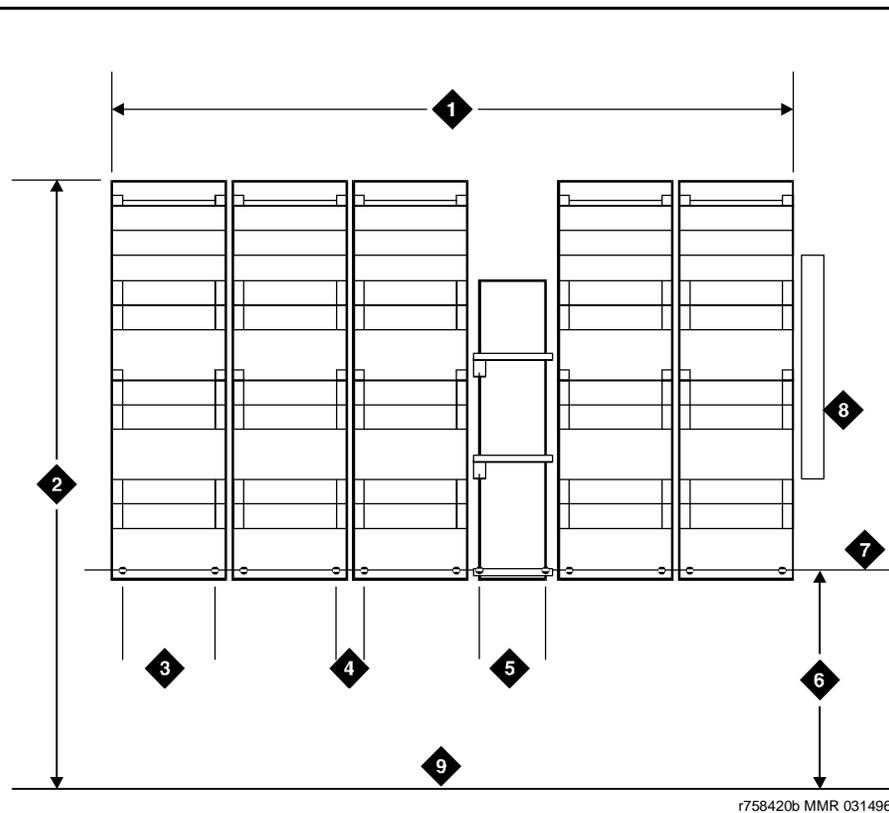
- Main Distribution Frame (MDF)
- Cable Slack Managers
- Sneak Fuse Panels
- Labels for the Main Distribution Frame

### **Install the Main Distribution Frame**

The preferred MDF location is directly behind the system cabinets.

#### **Wall Mounting 110A-Type Terminal Blocks**

The 110A-type hardware can be stacked in almost any arrangement at any height or location on the wall. One arrangement is shown in Figure 2-3. The distance between the mounting screw holes on the terminal blocks is 10.81 inches (27.4 cm). If a vertical patch cord trough is used, the distance between the mounting screw holes is 5.31 inches (13.3 cm).



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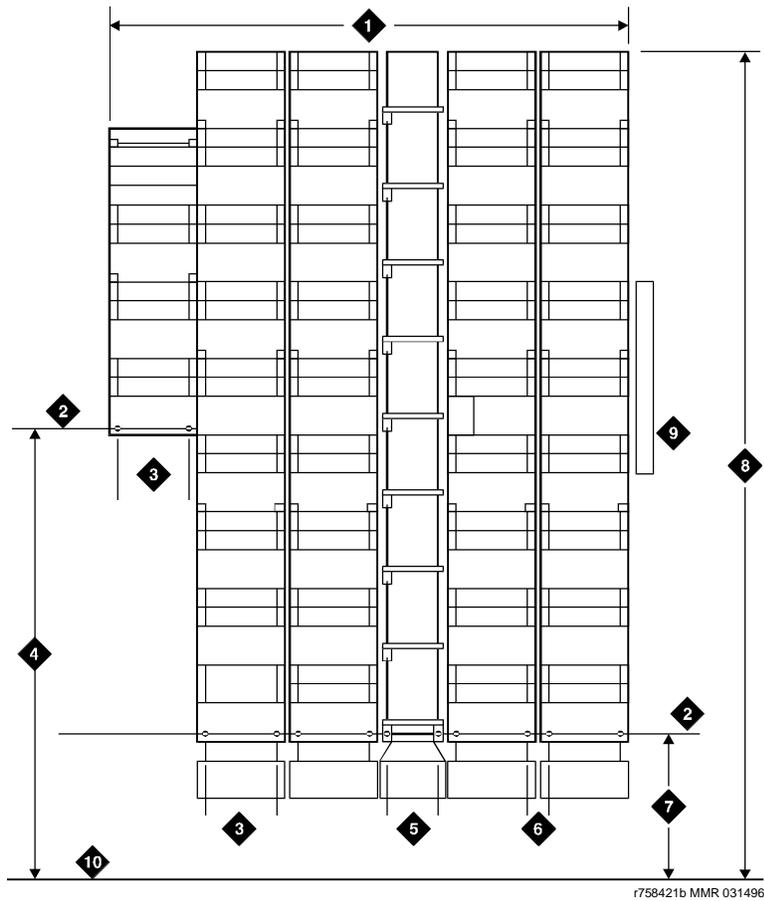
**Figure Notes**

- |                          |                           |
|--------------------------|---------------------------|
| 1. 4 Feet (1.22 m)       | 6. 47.5 Inches (120.6 cm) |
| 2. 6.6 Feet (2 m)        | 7. Horizontal Line        |
| 3. 7.68 Inches (19.5 cm) | 8. AC Power Strip         |
| 4. 7/8-Inch (2.22 cm)    | 9. Floor Line             |
| 5. 5.31 Inches (13.5 cm) |                           |

**Figure 2-3. 110A-Type Terminal Blocks (300-Pair)**

**Wall Mounting 110P-Type Terminal Blocks**

The first terminal block of the trunk/auxiliary field is aligned with the left side of the system cabinet. See Figure 2-4. This arrangement allows for growth on the right side of the MDF.



**Figure Notes**

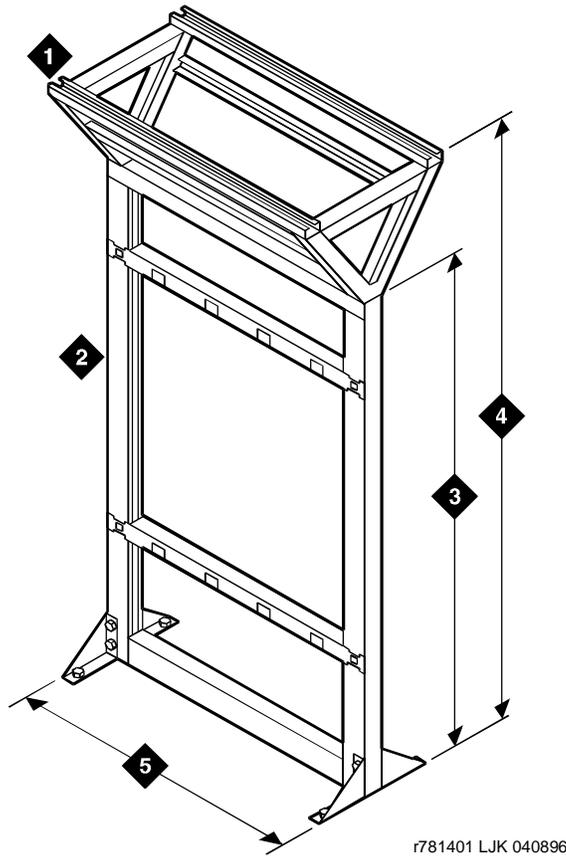
- |                           |                        |
|---------------------------|------------------------|
| 1. 4 Feet (1.22 m)        | 6. 7/8-Inch (2.22 cm)  |
| 2. Horizontal Line        | 7. 23 Inches (58.4 cm) |
| 3. 7.68 Inches (19.5 cm)  | 8. 8 Feet (2.43 m)     |
| 4. 47.5 Inches (120.6 cm) | 9. AC Power Strip      |
| 5. 5.31 Inches (13.5 cm)  | 10. Floor Line         |

**Figure 2-4. 110P-Type Terminal Blocks (900-Pair)**

1. If 300-pair terminal blocks are to be installed, draw a level horizontal line on the wall 47.5 inches (1.2 m) above the floor. See Figure 2-3.  
  
If 900-pair terminal blocks are to be installed, draw a level horizontal line on the wall 23 inches (58.4 cm) above the floor. See Figure 2-4.
2. To mount the first trunk/auxiliary field terminal block, partially install 2 3/4-inch #12 wood screws, 7-11/16 inches (19.5 cm) apart on the left side of the horizontal line on the wall.
3. Slide the bottom terminal block feet onto the mounting screws and mark the upper mounting screw locations.
4. Remove the terminal block and partially install the upper mounting screws.
5. Place the terminal block on the mounting screws and tighten the screws.
6. If installing a vertical patch cord trough, partially install the first screw for the patch cord trough, on the line, 7/8-inch (2.2 cm) to the right of the previous screw. Partially install the second mounting screw 5.31 inches (13.5 cm) to the right of the screw just installed. Repeat Steps 3, 4, and 5.
7. If another trunk/auxiliary field terminal block is to be installed, partially install the first screw for the terminal block, on the line, 7/8-inch (2.2 cm) to the right of the previous screw. Partially install the second mounting screw 7-11/16 inches (19.5 cm) to the right of the screw just installed. Repeat Steps 3, 4, and 5.
8. If a horizontal patch cord trough is to be installed, install it, on the line, between the trunk/auxiliary field and the distribution field.
9. To install the first distribution field terminal block, partially install 2 3/4-inch, #12 wood screws, 7-11/16 inches (19.5 cm) apart on the line, to the right of the vertical patch cord trough. Repeat Steps 3, 4, and 5.
10. If installing another distribution field terminal block, partially install the first screw for the terminal block, on the line, 7/8-inch (2.2 cm) to the right of the previous screw. Partially install the second mounting screw 7-11/16 inches (19.5 cm) to right of the screw just installed. Repeat Steps 3, 4, and 5.
11. If installing a vertical patch cord trough in the distribution field, repeat Step 6.
12. Repeat Steps 10 and 11 until all the terminal blocks and vertical patch cord troughs in the distribution field are installed.

### **Frame Mounting 110P-Type Terminal Blocks**

The 900-pair 110P-type terminal blocks and the associated patch cord troughs can also be mounted on a free-standing, floor-mounted 1110A2 Apparatus Mounting Frame. See Figure 2-5.



**Figure Notes:**

- |                              |                           |
|------------------------------|---------------------------|
| 1. 1110C1 Apparatus Mounting | 4. 88.5 Inches (225 cm)   |
| 2. 1110A2 Apparatus Mounting | 5. 43.5 Inches (110.5 cm) |
| 3. 76 Inches (193 cm)        |                           |

---

**Figure 2-5. 1110A2 and 1110C1 Apparatus Mountings**

Each 1110A2 provides the space to mount 5 terminal blocks/patch cord troughs on each side of the frame. A cable support structure, apparatus mounting 1110C1, mounts directly on top of the 1110A2 and provides support for all cables routed to and from the frame.

**Apparatus Mounting Frame Ordering Information**

<b>Code Number</b>	<b>Description</b>	<b>Comcode</b>
1110A2	Apparatus Mounting Frame	104032495
1110C1	Cable Support Assembly	104175120
1110A1	End Dress Panel	104176268
2110A1	Top Dress Panel	104176276
2110B1	Bottom Dress Panel	104176284

## Install Cable Slack Managers

1. Place the Z113A Cable Slack Manager against the wall under the MDF. See Figure 2-6. Align the left side of the Cable Slack Manager with the first terminal block of the trunk/auxiliary field.
2. Place the next Cable Slack Manager beside the previously installed unit. Align the tabs and interlocks and snap the units together.
3. Repeat Step 2 until all Cable Slack Managers are installed.

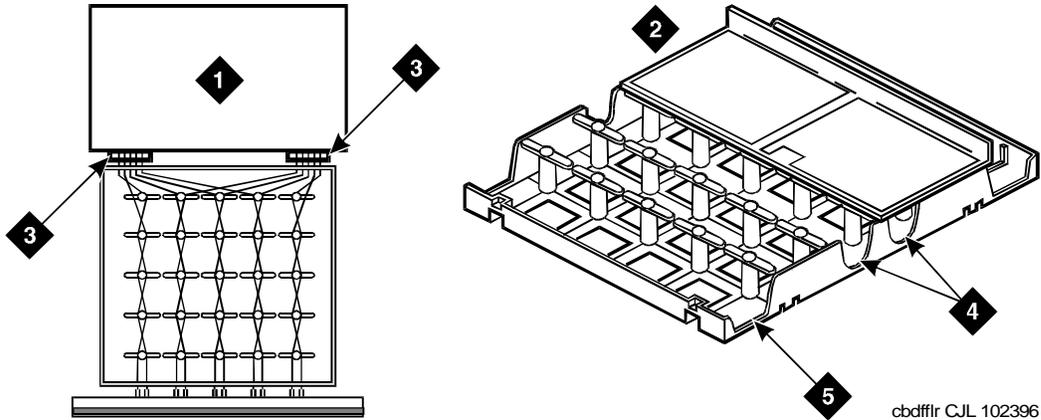


**NOTE:**

Nine 1/4-inch holes (0.63 cm) are provided in a Cable Slack Manager base if earthquake mounting is required. If a base is mounted on an uneven floor, shims may be required for leveling and to assure proper fit of the covers.

Holes are provided in the sides of the base for bolting Cable Slack Managers together. Bolts and shims must be obtained locally.

4. The system cables will route through the Cable Slack Manager as shown. Complete cable routing is covered later in this chapter.



**Figure Notes:**

- |                        |                                   |
|------------------------|-----------------------------------|
| 1. System Cabinet      | 4. Spare Center Troughs           |
| 2. Cable Slack Manager | 5. Cabinet Trough for Port Cables |
| 3. Cable Clamp         |                                   |

**Figure 2-6. Cable Routing Through Cable Slack Manager**

Cable clamps are required in installations with Cable Slack Managers. At the rear of the cabinets, install two cable clamps using the screws provided. These clamps hold the 25-pair input/output or MDF cables in place. Figure 2-6 shows cable clamp placement and cable routing.

## **Install Sneak Fuse Panels**

---

Sneak current protection is required between the incoming RJ21X or RJ2GX network interface and the system for both trunk and off-premise circuit packs.

The Model 507B sneak current fuse panel, or equivalent, is recommended for sneak current protection. See Figure 2-7. The panel contains two 25-pair connectors, fuse removal tool, and fifty 220029 Sneak Fuses (and 2 spares).

Connector cables (B25A male to female) connect the network interface to the sneak fuse panel. Also, 157B connecting blocks equipped with SCP-110 protectors can be used for sneak current protection.

**Table 2-1. Sneak Fuse Panel Ordering Information**

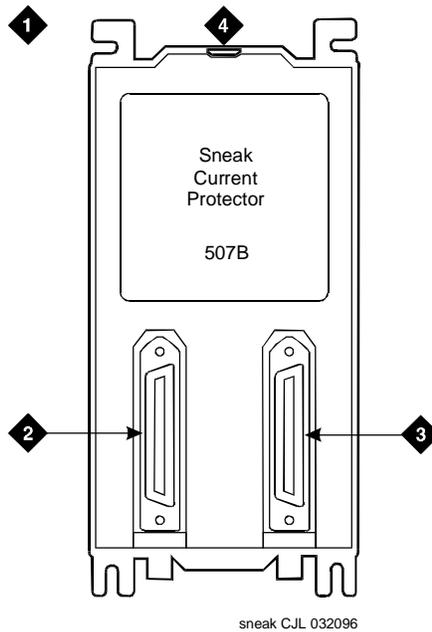
<b>Description</b>	<b>Comcode</b>
157B Connecting Block	403613003
SCP-110 Protector	406948976
507B Sneak Current Fuse Panel	107435091
220029 Sneak Current Fuse	407216316

**⇒ NOTE:**

Sneak current protectors with a rating of 350 mA at 600 Volts must be UL listed for domestic installation and CSA certified for Canadian installation.

The 507B includes 52 sneak fuses and 2 cables and can be ordered using PEC code 63210.

The SCP-110 protectors are used with 110-type hardware and on the 507B Sneak Fuse Panel. The SCP-110 Protectors can be ordered separately and installed on the 157B connecting block. Fifty protectors are required per block.



**Figure Notes:**

- |                                |  |
|--------------------------------|--|
| 1. Sneak Fuse Panel            | 3. 25-Pair Female Connector (Out)  |
| 2. 25-Pair Male Connector (In) | 4. 220029 Fuses (Inside Panel). Use Small Screwdriver to Pry Top Cover Off |

---

**Figure 2-7. Model 507B Sneak Fuse Panel**

1. Locate the 507B near the network interface or the MDF.
2. Hold the panel against the mounting surface and mark the mounting screw locations. Drill pilot holes at the marked locations and partially install a locally obtained #12 x 3/4-inch screw into the 2 bottom mounting slots.
3. Slide the sneak fuse panel onto the mounting screws and tighten the screws securely.
4. Install a locally obtained #12 x 3/4-inch screw into the top two mounting slots and tighten securely.
5. Repeat the procedure for each sneak fuse panel.

Table 2-2 is a pinout of the cable wiring and associated fuse numbers.

**Table 2-2. Sneak Fuse Connector Pinout**

---

<b>Connector Pin Numbers</b>	<b>Pair/Fuse Number</b>
26/1	1
27/2	2
28/3	3
29/4	4
30/5	5
31/6	6
32/7	7
33/8	8
34/9	9
35/10	10
36/11	11
37/12	12
38/13	13
39/14	14
40/15	15
41/16	16
42/17	17
43/18	18
44/19	19
45/20	20
46/21	21
47/22	22
48/23	23
49/34	24
50/25	25

---

6. Secure the top of each B25A Cable with the captive screw on the connector.
7. Secure the bottom of each cable with a supplied cable tie wrap.

## Cable Installation

---

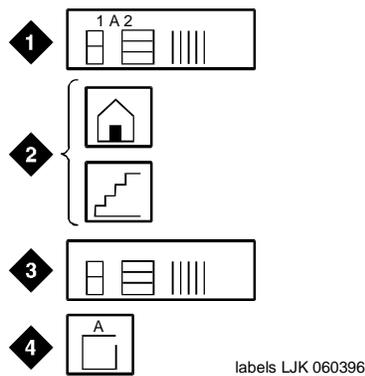
### Labels

---

The purple port label shown in Figure 2-8 is installed on both ends of the 25-pair cables connecting to the trunk/auxiliary field and/or distribution field.

The top blue/yellow building and floor labels are for cables connecting from the equipment room to a site/satellite location on another floor or in another building. The yellow label is for auxiliary circuits connecting to the trunk/auxiliary field. The bottom blue/yellow label is for 25-pair cables connecting to site/satellite closets.

---



#### Figure Notes:

- |   |  |
|---|--|
| 1. Purple Label (Port Cable)              | 3. Yellow Label (Auxiliary)              |
| 2. Blue/Yellow Label (Building and Floor) | 4. Blue/Yellow Label (Site or Satellite) |

---

**Figure 2-8. Equipment Room Cabling Labels**

Table 2-3 details the label name and range of each label.

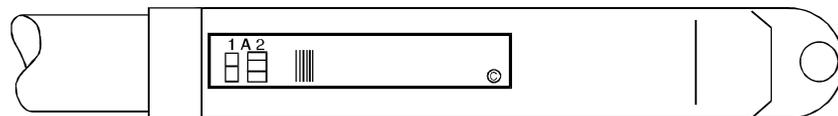
**Table 2-3. Equipment Room Labels**

Label Name	Range
Port Cable	1A1-1A20, 1B1-1B20, 1C1-1C20, 1D1-1D20, 1E1-1E20
Building	Field Identified
Floor	Field Identified
Auxiliary Cable	Field Identified
Site or Satellite	A-F and/or Field Identified

**Cable/Connector/Building Label Ordering Information**

Description	Quantity	Comcode
201A Labels	34 Sheets	103969994

Figure 2-9 shows the proper way to install a label on a 25-pair cable connector. Install the label near the rear of the connector so it is not obscured by the cabinet connector retainers. Also, it can be installed on the skin of the cable near the connector.



lbd#25p LJK 101596

**Figure 2-9. Self-Stick Label on 25-Pair Cable Connector**

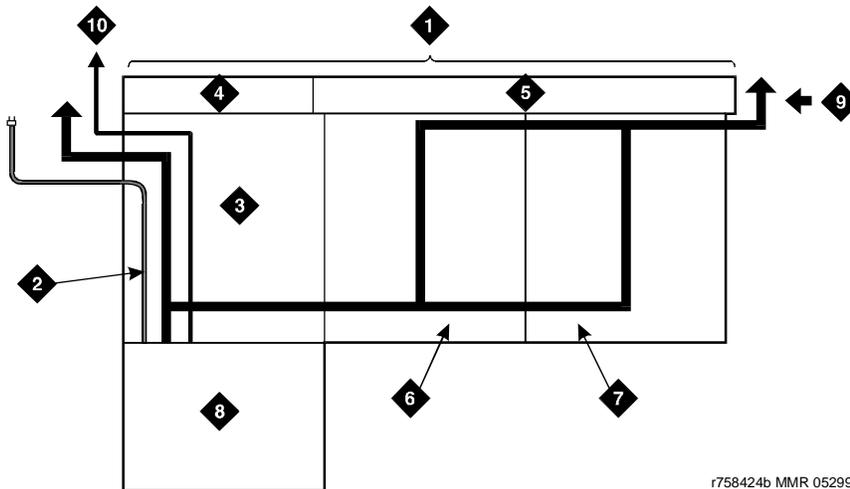
## Cable Routing Guidelines

---

### General

The following guidelines should be used when installing the equipment room cabling. Following these guidelines will maximize use of the Cable Slack Managers and make future cabling additions and changes easier.

Figure 2-10 and Figure 2-11 show typical cable routing from the cabinet to the top and bottom of the MDF, respectively.

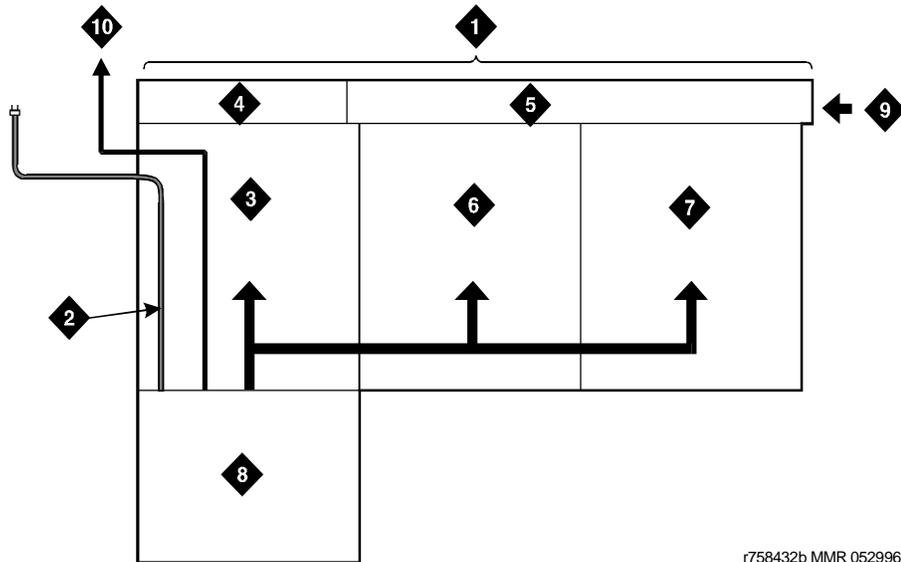


#### Figure Notes:

- |   |   |
|---|---|
| 1. Main Distribution Frame                  | 6. Cable Slack Manager Number 2                         |
| 2. AC Power Cord (AC-Powered Cabinets Only) | 7. Cable Slack Manager Number 3                         |
| 3. Cable Slack Manager Number 1             | 8. System Cabinet(s)                                    |
| 4. Trunk/Auxiliary Field                    | 9. To Building Cables                                   |
| 5. Station Distribution Field               | 10. 10 AWG (2.588 mm) Wire to Coupled Bonding Conductor |

---

**Figure 2-10. Cable Routing to Top Terminal Blocks**



r758432b MMR 052996

**Figure Notes:**

- |   |   |
|---|---|
| 1. Main Distribution Frame                  | 6. Cable Slack Manager Number 2                               |
| 2. AC Power Cord (AC-Powered Cabinets Only) | 7. Cable Slack Manager Number 3                               |
| 3. Cable Slack Manager Number 1             | 8. System Cabinet(s)  |
| 4. Trunk/Auxiliary Field                    | 9. Building Cables (Through Cable Trough)                     |
| 5. Station Distribution Field               | 10. 10 AWG (#25) (2.588 mm) Wire to Coupled Bonding Conductor |

**Figure 2-11. Cable Routing to Bottom Terminal Blocks**

**Route Cables to Main Distribution Frame**

The following guidelines should be followed when routing cables from the cabinet to the MDF.

- Each port cable is connected at the cabinet and then routed along the front trough of the Cable Slack Manager to the connecting/terminal block where the cable is to be terminated.
- Enough slack must be left at the cabinet end of the cable to allow for proper dressing of the cables.

- Route the cable from the cabinet to the wall. Place the cable beside one of the rows of columns in the Cable Slack Manager.



**NOTE:**

Retainers mounted on the columns keep the cable from protruding above the top of the base of the Cable Slack Manager.

- Determine the length of the cable required to reach from the Cable Slack Manager to the assigned connecting/terminal block.
- The cable must be supported on the wall using “D” rings.
- Cable slack is stored by coiling the cable around the columns in the Cable Slack Manager. The first run should always go across the full length of the five columns in the Cable Slack Manager.
- Connect the cable to the assigned connecting/terminal block.
- Avoid placing copper cables where they may bend or strain fiber optic cables.

### Install Control Carrier Outputs Cable

A connector on the rear of the Control Carrier is labeled **AUX**. A 25-pair cable connects the **AUX** connector to a 110-type terminal block in the yellow field of the trunk/auxiliary field. The **AUX** connector outputs include the following:

- Alarm monitoring for the processor interface
- Seven DC power (-48 VDC) sources for emergency transfer units
- Three DC power (-48 VDC) sources for remotely powering a total of three attendant consoles or executive voice terminal adjuncts
- The remote maintenance internal modem connection location
- Access to a relay contact is available to actuate a light, bell, or similar type customer-supplied device. The relay can be administered to make contact when a major, minor, or warning alarm condition occurs in the system

### **Label Control Carrier Cable**

Place the appropriate **AUX** connector label on the assigned 110-type terminal block row. On the control carrier cable, place a yellow auxiliary label on the connectors at each end of the cable. Write “AUX” on each label.

### **Connect Control Carrier Outputs Cable**

Plug the connector cable in the **AUX** connector on the rear of the Control Carrier. Route the connector cable through the Cable Slack Manager to the assigned 110-type terminal block in the yellow field of the trunk/auxiliary field.

### **Install Trunk Cables Among Network Interface, Sneak Fuse Panel, and Cabinet**

The 1-pair of Central Office (CO) trunks are installed by the network provider in the green field. Up to 24 pairs may be terminated on each row of the 110-type terminal block. Tie trunks also appear in the green field with up to eight 3-pair trunks terminated on each row of the 110-type terminal block.

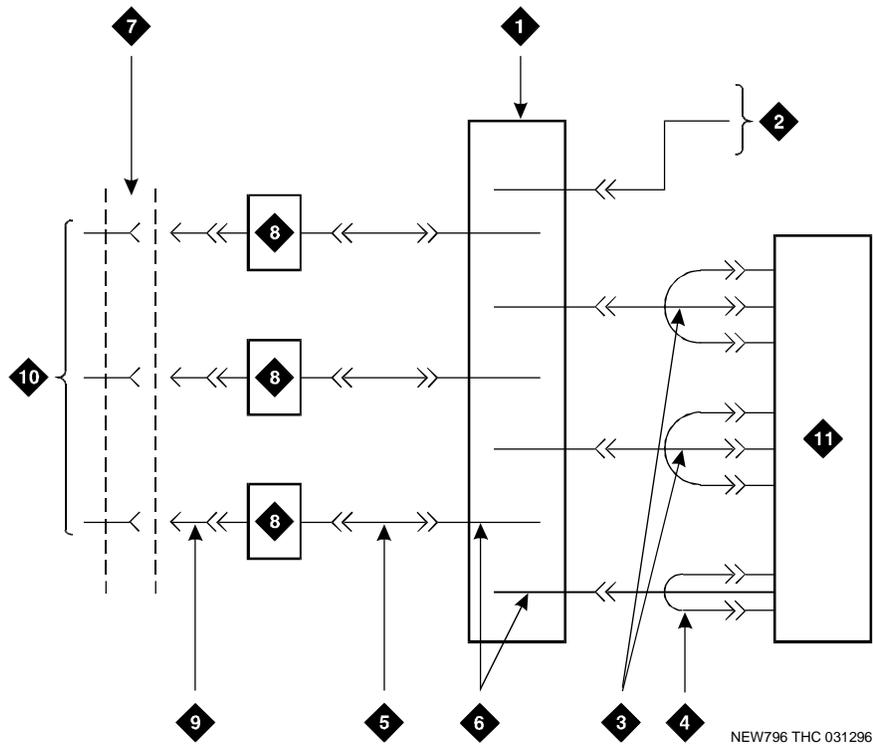
### **Select Concentrator Cables**

WP-90929, List 1 and 3 concentrator cables can be used to connect the cabinet to the 110-type terminal blocks in the purple field. The 1-pair patch cords/jumper wires are then run from the purple terminal block rows to the green terminal block rows in order to establish the correct 3-pair modularity.

### **Connect Trunk Pairs Using Concentrator Cables**

Figure 2-12 shows trunk pairs connected to the cabinet with concentrator cables. To install the cables:

1. Connect B25A (male to female) cables between the network interface and sneak fuse panels.
2. Connect A25D (male to male) cables from the sneak fuse panels to the 110-type terminal block connectors in the green field.
3. Connect patch cords/jumper wires from the terminal block in the green field to the associated terminal block in the purple field.
4. Connect the single-fingered end of the concentrator cables to the 110-type terminal block connectors in the purple field in Step 3.
5. Connect the other end (2/3-fingered end) of the concentrator cables to the appropriate carrier slots. Equipped carrier slots are identified on the CSD. Mark the nomenclature strips above the carriers to identify the slots.
6. Label connectors on each end of the cables that connect to the cabinet.
7. Route the cables down the sides of the cabinet and store the excess cable slack in the Cable Slack Manager as previously described.



NEW796 THC 031296

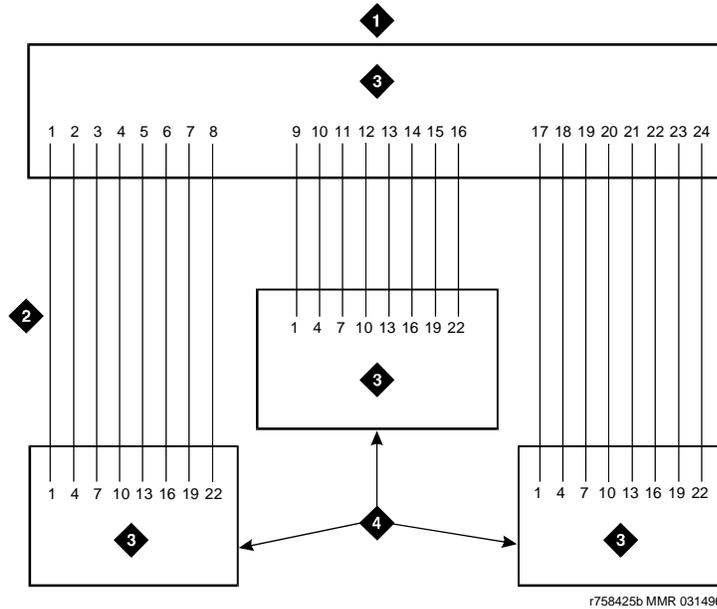
**Figure Notes:**

- |   |                                  |
|---|----------------------------------|
| 1. Trunk/Auxiliary Field                | 7. RJ21X/RJ2GX Network Interface |
| 2. To Control Carrier AUX Connector     | 8. Sneak Fuse Panel              |
| 3. Concentrator Cable (WP90929, List 1) | 9. B25A (Male-to-Female) Cable   |
| 4. Concentrator Cable (WP90929, List 3) | 10. Central Office Trunks        |
| 5. A25D (Male-to-Male) Cable            | 11. System Cabinet               |
| 6. Alternate Block/Rows                 |                                  |

**Figure 2-12. Connect Trunk Pairs Using Concentrator Cables**

### Connect Trunk Pairs to Cabinet Using Jumper Wires To Establish 3-Pair Modularity

Figure 2-13 on page 2-23 and Figure 2-14 on page 2-24 show trunk pairs connected to the cabinet with jumper wires to establish 3-pair modularity.



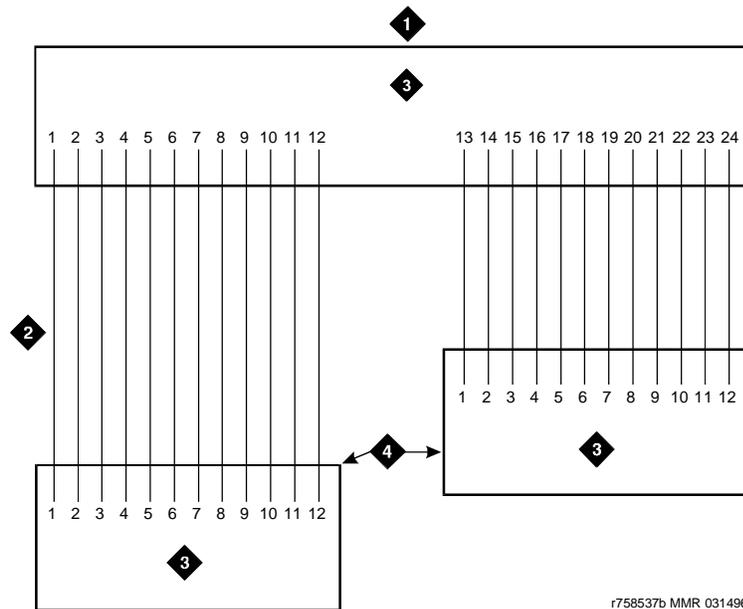
#### Figure Notes:

- |                   |                 |
|-------------------|-----------------|
| 1. Green Field    | 3. Pairs        |
| 2. 1-Pair Jumpers | 4. Purple Field |

#### Figure 2-13. 3-Pair Modularity for Trunk Pairs for 1-Pair Trunks

To connect the trunk pairs to the purple field:

1. Connect B25A cables between the network interface and the sneak fuse panels. See Figure 2-13.
2. Connect A25D/B25A cables from the sneak fuse panels to the 110-type terminal block-type connecting block connectors in the green field.
3. Connect 1-pair patch cords/jumper wires from each 110-type terminal block row in the green field to the 110-type terminal block rows in the purple field for 1-pair Central Office (CO) trunks or in Figure 2-14 on page 2-24 for 3-pair tie trunks.



**Figure Notes:**

- |                   |                 |
|-------------------|-----------------|
| 1. Green Field    | 3. Pairs        |
| 2. 1-Pair Jumpers | 4. Purple Field |

---

**Figure 2-14. 3-Pair Modularity for Trunk Pairs for 3-Pair Tie Trunks**

---

**Install Cables Between Cabinet and MDF**

1. Install "D" rings on the wall between the Cable Slack Manager and the terminal/connecting blocks mounted on the MDF.
2. Install a self-adhesive port label on the back of each connector on the connector cable. Labels should be positioned so they are not covered by the cabinet connector retainers.
3. At the rear of the cabinet, connect one end of the connector cable to the assigned connector.
4. Route the cable down the rear of the cabinet, through the Cable Slack Manager, and to the MDF.
5. At the MDF, connect the other end of the cable to the assigned terminal/connecting block connector.
6. Store the cable slack in the Cable Slack Manager.
7. Repeat Steps 2 through 6 until all cables are installed.

## **Install Connector Cables Between Auxiliary Cabinet and MDF**

---

Auxiliary equipment that connects to the MDF can be mounted inside the Auxiliary cabinet. The equipment connects to an ED-1E1443-10 (Group 1) intraconnection panel mounted in the cabinet. This intraconnection panel consists of a 110-type 100-pair wiring block. Auxiliary equipment is connected to the 110-type wiring block. The wiring block is pre-wired to four 25-pair female connectors mounted on the outside rear of the cabinet.

1. Install "D" rings on the wall between the Cable Slack Manager and the terminal/connecting blocks mounted on the MDF.
2. Install a self-sticking port label on the rear of each connector on the B25A connector cable. See Figure 2-9 on page 2-17.



**NOTE:**

Labels should be positioned so they will not be obscured by the cabinet connector retainers.

3. At the rear of the Auxiliary cabinet, connect one end of the connector cable to the assigned connector.
4. Route the cable down the rear of the cabinet and through the Cable Slack Manager to the MDF.
5. At the MDF, connect the other end of the cable to the assigned terminal/connecting block connector.
6. Store the excess cable in the Cable Slack Manager.
7. Repeat Steps 2 through 6 until all cables are installed.

## **Install Coupled Bonding Conductor**

The Coupled Bonding Conductor (CBC) connects to the single-point ground block and runs adjacent to pairs in an associated telecommunications cable. See Figure 2-15. The mutual coupling between the CBC and the wire pairs reduces potential differences in terminating equipment.

The conductor consists of a 10 AWG (#25) (2.588 mm) wire tie-wrapped to the inside wiring cable and terminated at the CBC terminal bar at the MDF. Maintain a minimum of 12 inches (30.48 cm) spacing between the CBC and other power and ground leads.

The 10 AWG (#25) (2.588 mm) wire must be long enough to reach the telecommunications cables at the rear of the system cabinets, follow these cables to the MDF, and to terminate at the CBC.

1. Cut a 10 AWG (#25) (2.588 mm) wire long enough to reach from the system's single-point ground block or DC power cabinet ground discharge bar to the MDF CBC block.
2. Connect one end of the 10 AWG (#25) (2.588 mm) wire to the single-point ground block (or ground discharge bar).
3. Route the wire next to the 25-pair cables connecting to the trunk/auxiliary (purple) field.
4. Tie wrap the 10 AWG (#25) (2.588 mm) wire to the 25-pair cables.
5. Connect the 10 AWG (#25) (2.588 mm) wire to the MDF CBC ground block.
6. Repeat the above steps for each CBC ground wire.



## Station Wiring Design

---

The following hardware and cabling is used:

- Information outlets (modular wall jacks)
- Station Cables
- Closets
  - Site locations
  - Satellite locations
- Adapters
- Labels

A brief description of each of the above listed items follows. Ordering information is not provided for station cables and information outlets. This information is available in the *Premises Distribution System Equipment and Supplies Catalog*.

### Information Outlets

---

Information outlets are 8-pin modular wall jacks. Most of the outlets are wired with push-on connections. Information outlets are also available that connect to a double modular plug-ended 4-pair station cable routed from the MDF, a site/satellite location, or an adapter.

### Station Cables

---

For clarity, a station cable is either a 25-pair cable, multiple 25-pair cable, or 4-pair D-inside wire (DIW) run from the equipment room, site/satellite location, or adapter to the information outlets. The following station cables are available. See Figure 2-16.

*25-pair station cable* — Use between the equipment room and site/ satellite locations or adapters. Use an A25D cable (male to male) between the equipment room and satellite closet. Use a B25A cable (male to female) between the equipment room and site closet or adapter.

*Multiple 25-pair station cable* — Use between the equipment room and site/satellite locations or adapters. This cable consists of individually sheathed 25-pair cables with a factory-installed 25-pair connector on each end. Use a male to female cable to connect between the equipment room and site location or adapter. Use a male to male cable to connect between the equipment room and satellite location. Staggered-finger cables are recommended for all multiple 25-pair station cables and are available in both double-ended and single-ended types.

*Single modular plug-ended 4-pair station cable* — Use this cable between adapters and information outlets that require push-on connections. It can also be used when 4-pair station cables are field-terminated on the 110-type terminal blocks in the equipment room or satellite closet and modularly connected to information outlets. The station cables are available in the following lengths:

- 10 feet (3.05 m)
- 25 feet (7.62 m)
- 50 feet (15.24 m)
- 75 feet (22.86 m)
- 100 feet (30.5 m)
- 150 feet (45.72 m)
- 200 feet (61 m)

**⇒ NOTE:**

If more than 200 feet (61 m) of 4-pair station cable is required, a 451A in-line adapter (double-ended modular female connector) is attached to the cable and a second 4-pair cable of the required length is plugged into the adapter. See Figure 2-16.

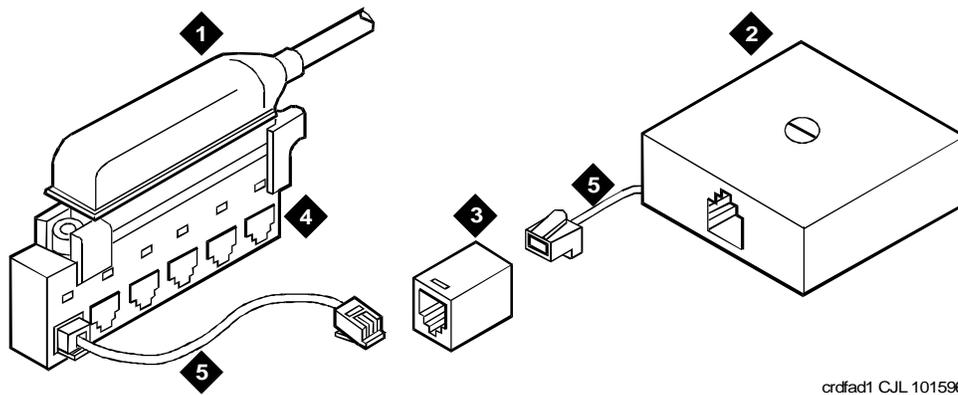
*Double modular plug-ended 4-pair station cable* — Use this cable to provide nonstandard length runs between adapters and information outlets with push-on connections. It can also be used between adapters and modularly connected information outlets. It is available in the same lengths as the single modular plug-ended cable.

*Bulk Cable* — Same as the 25-pair cable or multiple 25-pair cable; however, the bulk cable is not equipped with connectors. Use this cable between the equipment room and satellite closets when both are equipped with punch-down type terminal/connecting blocks.

*4-pair station cable* — Use this cable when 4-pair station cables are to be field-terminated on the 110-type terminal blocks in the equipment room or satellite closet and the information outlets require push-on connections.

**451A Adapter Ordering Information**

Color	Comcode
Gray	103942272
Ivory	103786240



**Figure Notes:**

- |                         |                         |
|-------------------------|-------------------------|
| 1. Station Cable        | 4. 258A Adapter         |
| 2. Information Outlet   | 5. 4-Pair Station Cable |
| 3. 451A In-Line Adapter |                         |

---

**Figure 2-16. Example of Extending 4-Pair Station Cables**

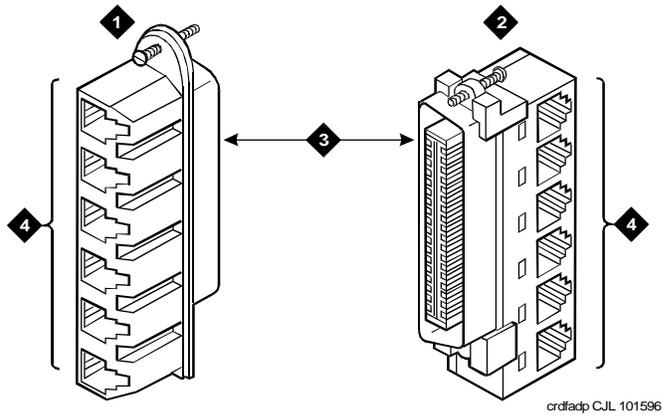
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## Closets

### Site Locations

Site locations are closets that provide a point in the station wiring for the administration of remote powering. Adapters are used at site locations to terminate the 25-pair station cables and provide connection points (modular jacks) for power adapters and 4-pair station cables.

The 258A and BR2580A adapters plug into a 25-pair female cable connector. These adapters divide the 25-pair cable into six 4-pair (modular jack) circuits. See Figure 2-17.



**Figure Notes:**

- |                    |                                      |
|--------------------|--------------------------------------|
| 1. BR2580A Adapter | 3. 25-Pair Male Ribbon Connector     |
| 2. 258A Adapter    | 4. 4-Pair Modular Jacks (Eight Pins) |

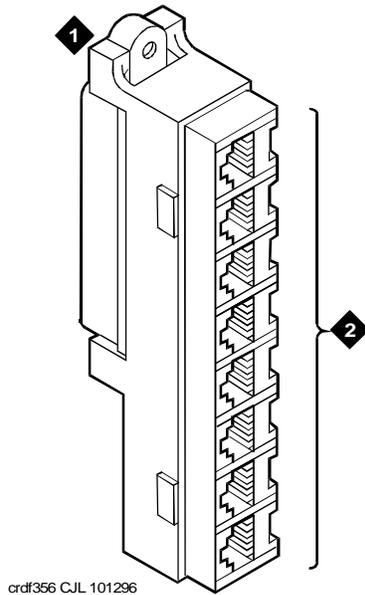
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**Figure 2-17. 258A and BR2580A Adapters**

The 356A adapter plugs into a 25-pair female cable connector. See Figure 2-18. The 356A adapter divides the 25-pair cable into eight 3-pair circuits. Although the circuits are 3-pair, the adapters modular jacks will accept the 8-wide modular plug used on the 4-pair station cable.

**CAUTION:**

*Adapters wired similarly to the 356A should not be used. Their jacks will not accept 4-pair plugs.*



**Figure Notes:**

- 1. 356A Adapter
- 2. 4-Pair Modular Jacks (Six Pins Each Connected to 25-Pair Ribbon Connector)

---

**Figure 2-18. 356A Adapter**

Use the ZD8AJ adapter to connect a Multi-Button Electronic Telephone (MET) line cord to an information outlet. The adapter interchanges pairs 3 and 4 to correspond with the pair assignments for the telephone. The line cord plugs into the adapter, and then the adapter plugs into an information outlet.

**Adapter Ordering Information**

Description	Comcode
258A Adapter	102605136
BR2580A Adapter	403384720
356A Adapter	104158829
400B Adapter	103848859
400B2 Adapter	104152558
ZD8AJ Adapter	103881421

### **Satellite Locations**

Satellite locations are closets that provide an administration point (using cross-connect equipment) for station cables and where adjunct power may be applied. The station cable circuits from the equipment room MDF are 3-pair. At the satellite location, 4-pair circuits run to the information outlets. The hardware used is 110-type terminal blocks.

### **Satellite Locations Using 110-Type Hardware**

Each terminal block has a 3-pair (white field) and a 4-pair (blue field) located on the same terminal block.

The 110A-type terminal block that can be used is the 110AE1-75FT. It must be field-terminated to both the white and blue fields.

The 300-pair 110P-type terminal blocks that can be used are:

- 110PE1-300CT/FT — 25-pair connector on the white field and field-terminated on the blue field
- 110PE1-300FT — Field-terminated on both the white and blue fields

The 900-pair 110P-type terminal blocks that can be used are:

- 110PE1-900CT/FT — 25-pair connector on the white field and field-terminated on the blue field
- 110PE1-900FT — Field-terminated on both the white and blue fields

## **Station Circuit Distribution from Equipment Room**

---

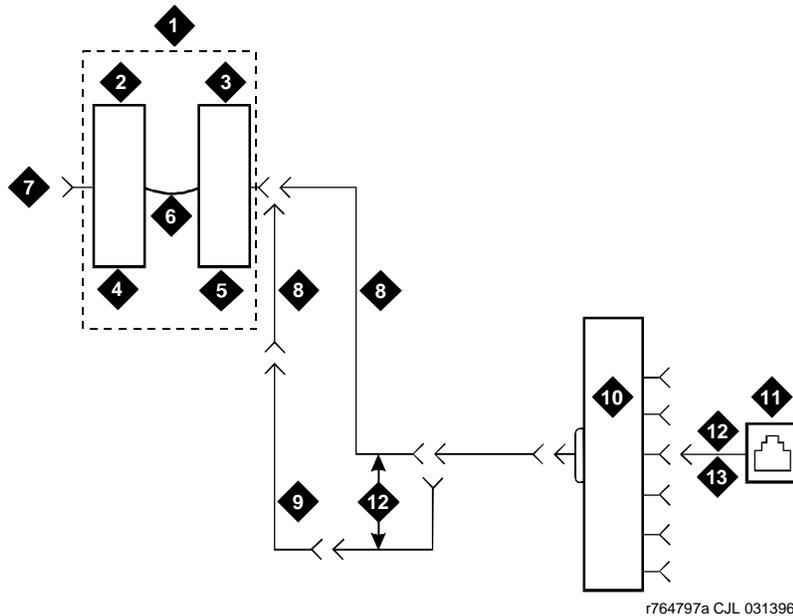
This section explains the station circuit distribution from the equipment room to the information outlets for new wiring installations. Example connection diagrams are provided to show the options for running and connecting the station cables.

If most of the telephones/voice terminals that require remote powering are within 250 feet (76.2 m) of the equipment room, 4-pair station circuits are run from the equipment room to the information outlets. If this is not the case, or if the customer requires 2-point administration, 3-pair station circuits are run from the equipment room to satellite locations. Then, the 4-pair station circuits are run from the satellite locations to the information outlets.

A list of voice and data terminals that can be connected to the system is provided in Table 2-4 on page 2-40. A list of administration terminals that can be connected to the system is provided in Table 2-5 on page 2-42.

## 4-Pair Station Circuits

Four-pair circuits can be run directly from an equipment room MDF to a 258A or BR2580A adapter as shown in Figure 2-19. The 4-pair station cables connect the adapter to the information outlets.



r764797a CJL 031396

### Figure Notes:

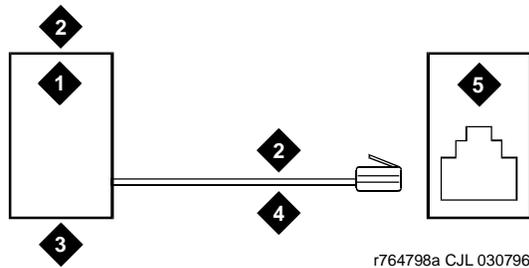
- |  |  |
|--|--|
| 1. Part of Main Distribution Frame (MDF)     | 8. B25A Cable  |
| 2. 3-Pair Connecting Blocks                  | 9. Connectorized (Staggered Finger) Multiple 25-Pair Cable |
| 3. 4-Pair Connecting Blocks                  | 10. 258A or BR2580A Adapter                                |
| 4. Purple Field                              | 11. Information Outlet                                     |
| 5. Blue Field                                | 12. 4-Pair Circuit   |
| 6. Patch Cord or Cross-Connect Jumpers       | 13. DIW Station Cable (D-Inside Wire)                      |
| 7. To System Cabinet (Three-Pair Modularity) |  |

**Figure 2-19. 4-Pair Circuit Distribution and Connectivity**

The 4-pair station cables can be run directly from the equipment room to the information outlets if 4-pair terminal blocks are used in the distribution field. See

Figure 2-20. The station cables must be field-terminated on the 110-type terminal blocks.

---



**Figure Notes:**

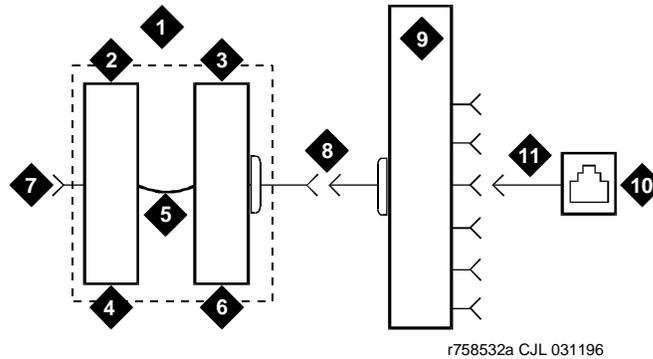
- |  |                                      |
|--|--------------------------------------|
| 1. Station Side of Main Distribution Frame (MDF) or Satellite Location | 3. Blue Field                        |
| 2. 4-Pair Circuit Blue Field   | 4. DIW Station Cable (D-Inside Wire) |
|  | 5. Information Outlet                |

---

**Figure 2-20. 4-Pair Run to Equipment Room or Satellite Location**

If 110-type terminal blocks are used with a modular plug-ended station cable, an adapter can be connected directly to the 110-type terminal block connectors. See Figure 2-21.

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**Figure Notes:**

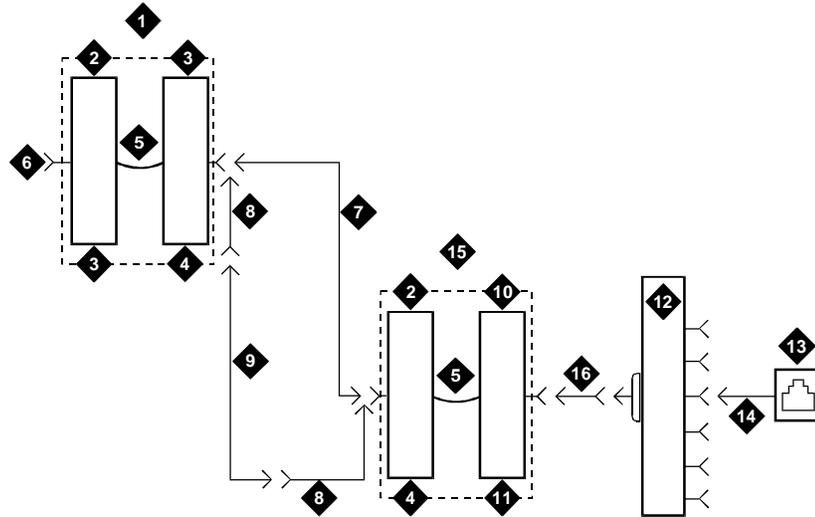
- |  |  |
|--|--|
| 1. Part of Main Distribution Frame (MDF) | 7. To System Cabinet (Three Pair Modularity)           |
| 2. 3-Pair Connecting Blocks              | 8. A25D Cable (Male to Male)                           |
| 3. 4-Pair Connecting Blocks              | 9. 258A or BR2580A Adapter                             |
| 4. Purple Field                          | 10. Information Outlet                                 |
| 5. Patch Cord or Cross-Connect Jumpers   | 11. 4-Pair Circuit (DIW Station Cable (D-Inside Wire)) |
| 6. Blue Field                            |  |

---

**Figure 2-21. 4-Pair Run to Equipment Room or Satellite Location**

### 3-Pair to 4-Pair Station Circuit Distribution

Figure 2-22 shows the 3-pair circuit distribution from an equipment room MDF to a satellite location using 110-type hardware. Four-pair circuits are distributed from the satellite location to the information outlets.

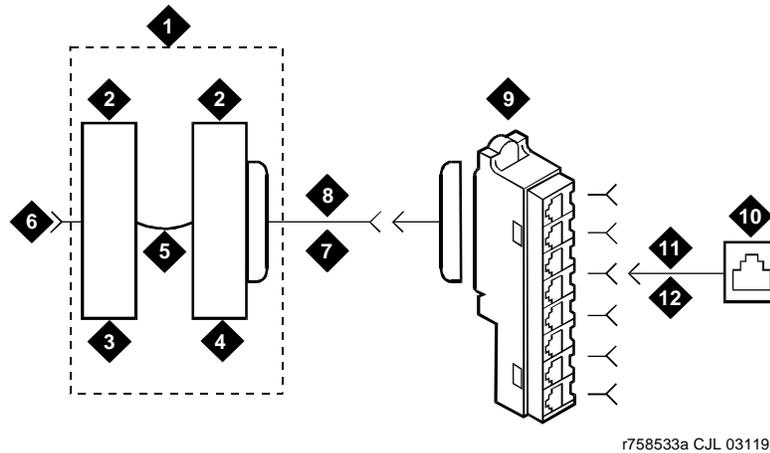


**Figure Notes:**

- |  |  |
|--|--|
| 1. Part of Main Distribution Frame (MDF)     | 9. Connectorized (Staggered Finger) Multiple 25-Pair Cable |
| 2. 3-Pair Connecting Blocks                  | 10. 4-Pair Connecting Blocks                               |
| 3. Purple Field                              | 11. Blue Field   |
| 4. White Field                               | 12. 258A or BR2580A Adapter                                |
| 5. Patch Cord or Cross-Connect Jumpers       | 13. Information Outlet                                     |
| 6. To System Cabinet (Three Pair Modularity) | 14. 4-Pair Circuit [DIW Station Cable (D-Inside Wire)]     |
| 7. A25D Cable (3-Pair Circuits)              | 15. Part of Satellite Location                             |
| 8. B25A Cable                                | 16. 4-Pair Circuits (B25A Cable)                           |

**Figure 2-22. 3-Pair to 4-Pair Satellite Location Connectivity**

Three-pair circuits can also be run directly from the equipment room MDF to a 356A adapter as shown in Figure 2-23. Four-pair station cables connect the adapter to the information outlets. Four-pair station cables can be run directly from a satellite location to the information outlets as previously described.



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**Figure Notes:**

- |  |                                       |
|--|---------------------------------------|
| 1. Part of Main Distribution Frame (MDF) | 7. B25A Cable (Male to Female)        |
| 2. 3-Pair Connecting Blocks              | 8. 3-Pair Circuits                    |
| 3. Purple Field                          | 9. 356A Adapter                       |
| 4. Blue Field                            | 10. Information Outlet                |
| 5. Patch Cord or Cross-Connect Jumpers   | 11. 3-Pair Circuit in 4-Pair Wire     |
| 6. To System Cabinet (3-Pair Modularity) | 12. DIW Station Cable (D-Inside Wire) |

**Figure 2-23. 3-Pair to 4-Pair Circuit Distribution and Connectivity**

**NOTE:**

Bridged taps are not allowed on any part of the station wiring.

## **Layout**

---

### **Locate Information Outlets**

---

The customer or marketing representative must provide floor plans showing the information outlet locations and types (flush- or surface-mounted) required. The floor plans must also show a complete overview of all conduit and cabling facilities in the building.

### **Locate Satellites and Sites**

---

Use the following information when determining site, satellite, or adapter locations.

- a. Keep the number of locations to a minimum.
- b. To minimize the station wiring distances, centrally locate the sites/satellites, or adapters among the information outlets.
- c. Site/satellite locations must be easily accessible and contain AC-powered receptacles.

### **Adapter Requirements**

One 258A/BR2580A adapter is required for each 25-pair station cable containing 4-pair station circuits. One 356A adapter is required for each 25-pair station cable containing 3-pair station circuits.

### **Hardware Requirements**

Hardware requirements are the same as for the equipment room.

### **Sizing 4-Pair Station Cables**

---

Use the scale of the floor plan to determine the approximate length of the station cables required per the standard SYSTIMAX wiring concepts.

### **Sizing 25-Pair and Multiple 25-Pair Station Cables**

---

Use the scale of the floor plan to determine the approximate length of each 25-pair station cable. The cables must be selected and properly sized to make maximum use of the hardware at the equipment room or satellite location.

Use 25-pair B25A cables (male to female) to connect adapters directly to the MDF or satellite location. Staggered-finger cables, equipped with factory-installed 25-pair connectors at both ends (male to female), should be used when

multiple 25-pair cables are used between the equipment room or satellite location and the adapters. B25A cables are required at the equipment room or satellite location to connect the staggered-finger cables to the 110-type terminal blocks.

Use the following information to determine the cable size (cable pairs) required for either 3-pair or 4-pair circuits. Note the length and size on the floor plan to aid in the ordering and installation of the station cables.

### 3-Pair Station Cable Circuits

To determine the size of station cables containing 3-pair circuits, multiply the number of 3-pair circuits required at the satellite location by 3.5. Then, using the minimum size cable requirement, round up the cable size requirement to the next highest available cable bundle size. This will provide additional pairs for growth and compensate for every twenty-fifth pair in a cable that is not used.

### 4-Pair Station Cable Circuits

To determine the size of station cables containing 4-pair circuits, find out how many information outlets are served by the equipment room MDF or satellite location MDF. Multiply the number of information outlets by 4. Then, using the minimum size cable requirement, round up the cable size requirement to the next highest available cable bundle size.

**⇒ NOTE:**

This formula may not compensate for the unused twenty-fifth pair in all cases. If not, it must be allowed for.

## Voice and Data Terminals

---

The system can connect to all DTE terminals and have RS-232 (or EIA-232) or DCP interfaces. Table 2-4 lists some of the terminals that can connect to the system. Contact your Lucent Technologies representative for more information.

**Table 2-4. Voice and Data Terminals**

<b>Terminal</b>	<b>Type</b>
Multi-button Electronic Telephone (MET) sets: 10, 20, 30 Button	Voice
Analog: 500, 2500/2554, 2500 DMGC, 2500YMGK, S203A Speakerphone	Analog voice

*Continued on next page*

**Table 2-4. Voice and Data Terminals — Continued**

<b>Terminal</b>	<b>Type</b>
71XXX series: 7101A, 7102A, 7103A, 7104A	Analog voice
73XXX series: 7302H, 7303H, 7303S, 7305S, 7305H	Hybrid voice
74XXD series: 7401D, 7403D, 7404D, 7405D, 7406D, 7407D, 7410D, 7434D, 7444	Digital voice
81XX series: 8102, 8110 91XX series: 9101, 9103, 9110	Analog voice
84XX series: 8403B, 8410B/D/B+/D+, 8411B/D, 8412, 8434, 8435 94XX series: 9403, 9410, 9434	Digital voice
Basic Rate Interface (BRI) (75XX series): 7505-VOM/T, 7506-VOM/T, 7507-VOM/T 85XX series: 8503, 8510, 8520	BRI voice
Workstation series Business Communications Terminals (BCTs) and Business Communications Systems (BCS): 510D BCT, 513 BCT, 515 BCT, 615 BCT, 715 BCT, 715 BCS PC/PBX platform (digital): PC/ISDN platform (BRI)	Data
Consoles: 301A Attendant Console 302A1 Enhanced Generic 1 Console 602A1 ACD Console (CallMaster® digital communications terminal)	Data and voice
ZE01A Expansion Module for 8434DX	Voice and Features
Cordless Hybrid: MDW 9000 (TransTalk 9000) MDC 9000	Voice

*Continued on next page*

**Table 2-4. Voice and Data Terminals — Continued**

Terminal	Type
PassageWay interface: Consoles: 302B1, 302C1 Attendant Console 603A/D Automatic Call Distribution (ACD) Console (CallMaster digital console) 603E Automatic Call Distribution (ACD) Console (CallMaster digital console)	Data and voice

### Administration Terminals

Table 2-5 lists the administration terminals that can be connected to the system.

**Table 2-5. Administration Terminals**

Administration Terminal	Application
510D	Remote administration
610D, 513, 610, 615, 715 <sup>1</sup> BCT, 4410, 4425, and VT220	Management Terminal: administration and general purpose
515 Business Communications Terminal (BCT)	Remote administration, general purpose
615 Management Terminal	Management Terminal system administration and maintenance terminal
715 BCS, 2900/715 BCS, and 715 BCS-2 Management Terminal	Management Terminal system administration and maintenance terminal

1. The keyboards and terminals are interchangeable when an adapter cable is used.

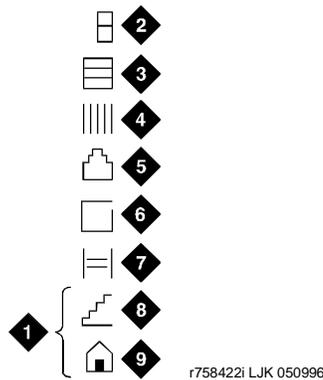
**⇒ NOTE:**

The 715 BCS (406803148 and 406803155), has a 6-pin mini-DIN keyboard connector. The 2900/715 BCS (4073113881 and 407313899), has a 6-pin RJ-11 keyboard jack located on the side of the terminal.

## Label the Main Distribution Frame

Figure 2-24 shows the graphic symbols used on labels for the system, cross-connections, information outlets, and cables. The labels are color-coded to identify system wiring:

- Green — To Central Office (CO)
- Purple — To system ports
- Yellow — To auxiliary equipment and miscellaneous system leads
- Blue — To information outlets
- White — From Main Distribution Frame to satellite locations (3-pair)



### Figure Notes:

- |  |                          |
|--|--------------------------|
| 1. Write Floor or Building Identification on Label | 5. Information Outlet    |
| 2. Cabinet   | 6. Site/Satellite Closet |
| 3. Carrier   | 7. Tie Circuit           |
| 4. Slot  | 8. Floor                 |
|  | 9. Building              |

### Figure 2-24. Label Graphic Symbols and Nomenclature

Each 110-type label identifies 2 rows on the 110-type terminal block. The upper half identifies the row above it and the lower half identifies the row below it. The labels are inserted into the clear plastic designation strips furnished with the 110-type terminal blocks. The strip is snapped in place between the terminal block rows. Label code number 220A (comcode 103970000) contains all of the 110-type labels.

## Patch Cord/Jumper Installation and Administration

Before starting the patch cord installation, obtain a copy of the Port Assignment Record forms from the customer or marketing representative. See Figure 2-25. These forms contain the port assignments and identify the extension numbers (**Terminal No.**) of the telephones/voice terminals. Enter the jack assignments at the equipment room and indicate if adjunct power is required and where it is provided (MDF, site/satellite closet, or information outlet).

CARRIER \_\_\_\_\_ PORT ASSIGNMENT RECORD Page \_\_\_\_\_

Slot	Port	Jack*	Extension Number		Bldg Flr Rm	Voice Terminal		Voice Terminal Adjunct	Module	Power*	User Name/Use
			Old	New		Type	Color				
Slot	01										
	02										
	03										
	04										
	05										
	06										
	07										
	08										
	09										
	10										
	11										
CKT PK Type	12										
	13										
	14										
	15										
	16										
	17										
	18										
	19										
	20										
	21										
	22										
	23										
	24										

\* To be completed by installation technician

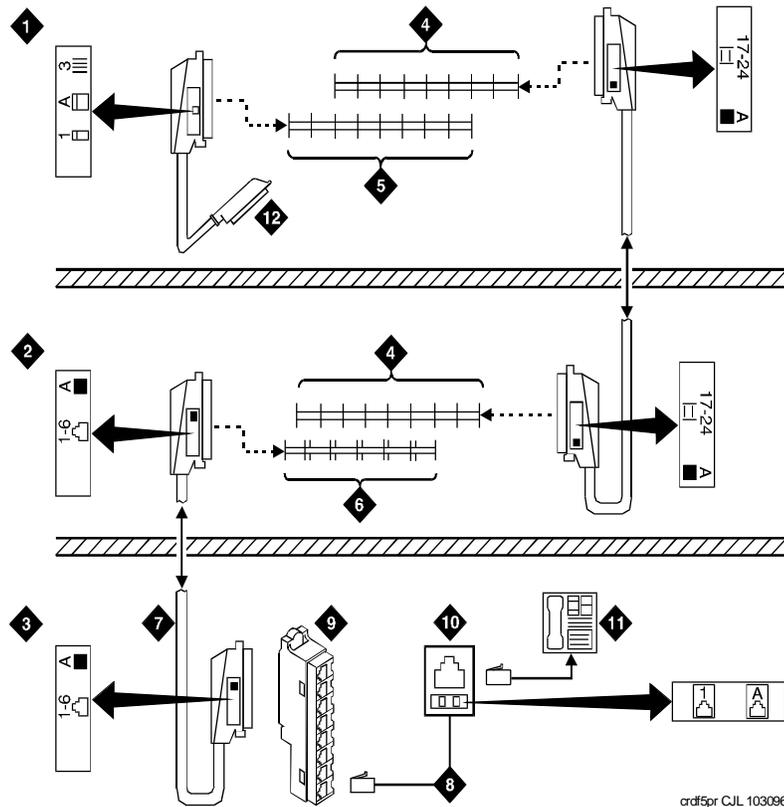
r764787 PDH 071596

**Figure 2-25. Port Assignment Record Form**

When satellite locations are provided, enter the satellite letter designation (“A” through “F”) and the jack appearance in the equipment room on the form. Also, enter the floor designation and/or building designation if appropriate. For 1-point administration, this entry is all that is required.

### Labeling

The white label identifying the terminal block row associated with circuits 17 to 24 connects to an identically labeled terminal block row at the satellite closet. See Figure 2-26. This is always the case for either 1-point or 2-point administration.



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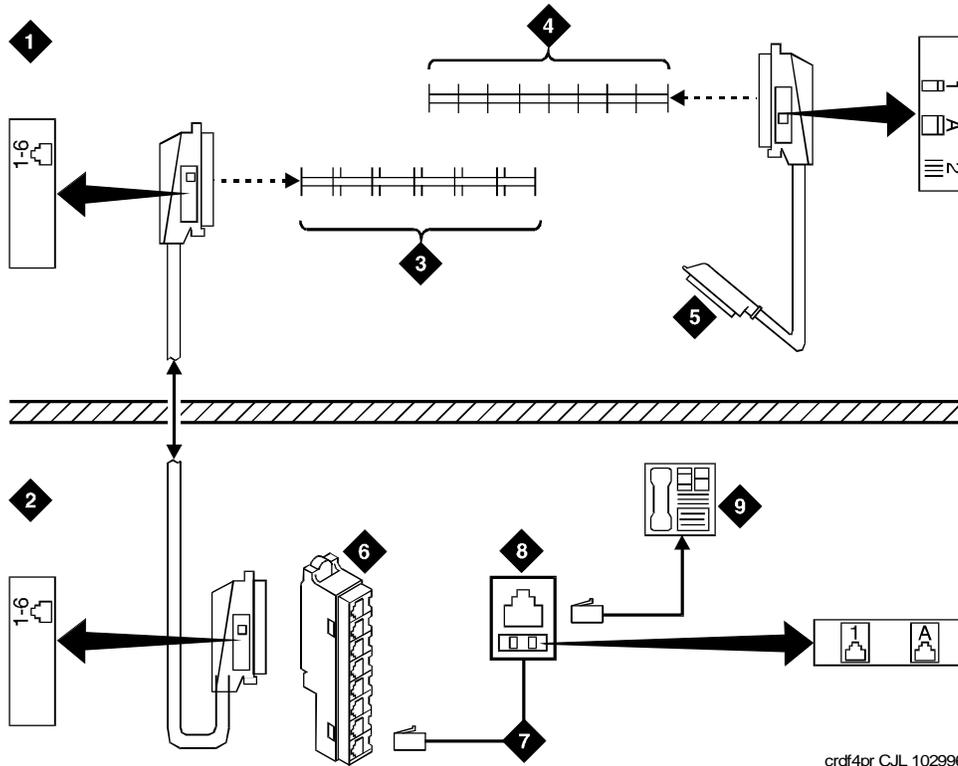
**Figure Notes:**

- |   |   |
|---|---|
| 1. Equipment Room                             | 8. D-Inside Wire Cut Down to Connecting Block |
| 2. Satellite Location                         | 9. 258A Adapter                               |
| 3. Work Location                              | 10. Information Outlet                        |
| 4. White Row on 110 Terminal Block            | 11. Voice Terminal                            |
| 5. Purple Row on 110 Terminal Block           |   |
| 6. Blue Row on 110 Terminal Block             |   |
| 7. Central Location for Terminals 1 through 6 |   |

**Figure 2-26. Example 3-Pair Labeling to Information Outlet**

The satellite symbol must be installed at all connection points between the blue field and the information outlet. It must also be installed at the information outlet itself.

Figure 2-27 shows an example labeling scheme for 4-pair circuits from the equipment room to the information outlets. The labeling scheme for 3-pair circuits from the MDF to a satellite location.



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**Figure Notes:**

- |   |   |
|---|---|
| 1. Equipment Room   | 6. 258A Adapter                               |
| 2. To Central Location for Terminals 1 through 6                | 7. D-Inside Wire Cut Down to Connecting Block |
| 3. Blue Row on 110 Terminal Block                               | 8. Information Outlet                         |
| 4. Purple Row on 110 Terminal Block                             | 9. Voice Terminal                             |
| 5. To Port Connector on Cabinet (Cabinet 1, Carrier A, Slot 03) |   |

**Figure 2-27. Example 4-Pair Labeling to Information Outlet**

## **Create a Provisioning Plan**

---

Determine an appropriate available port circuit on the system for each telephone, trunk, and peripheral connection needed, and, in addition, plan for auxiliary power for Basic Rate Interface (BRI) and certain display sets.

Create a Port Assignment Record to include the following. See Figure 2-25.

- Station or trunk type or feature/service
- Building location (floor/room/desk/information outlet)
- Extension number or trunk group and member number
- Port circuit location on the system for each endpoint (cabinet/carrier/slot/circuit)
- Route from equipment room through equipment closets to each endpoint
- Auxiliary power supply, if required



---

## Install Management Terminal and Activate System

# 3

---

This chapter contains procedures for installing the management terminal and bringing the system up to a “no red LEDs” state. This chapter details how to:

- Install Management Terminal
- Activate the System
- Power Up the System
- Screens and Commands
- Log in to the System
- Set Country Options
- Change Craft Password
- Set Date and Time
- Administer System Cabinet Configurations (Release 5r)
- Administer Fiber Link Configurations (Release 5r)
- Set System Maintenance Parameters
- Save Translations
- Initiate DEFINITY AUDIX System Power Procedures
- Register the System

 **CAUTION:**

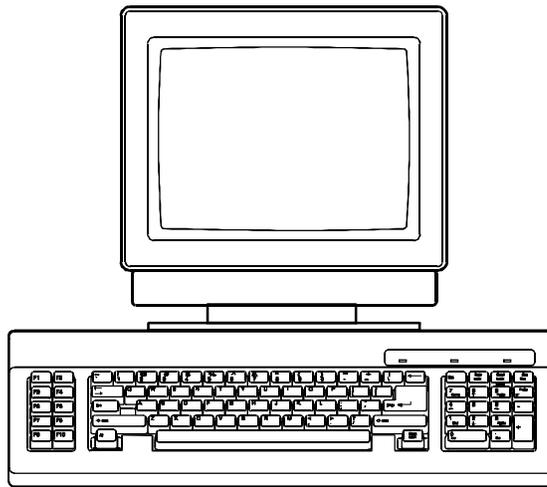
*To prevent unnecessary trouble tickets, do not enable the system alarms (Alarm Origination feature) before completing all installation and administration procedures. This chapter describes basic system start-up procedures only and is not intended to identify all system alarms or error conditions.*

## **Install Management Terminal**

Locate the management terminal within 50 feet (15.2 m) of the system. It may be necessary to reduce the maximum distance limitation if higher gauge wire is used or if the capacitive load on the line is increased. In general, connect the terminal directly to the system with the shortest possible cable. For maintenance purposes, locate the terminal in the same equipment room as the system or in sight of the system.

**⇒ NOTE:**

The management terminal in Figure 3-1 is shown for illustration purposes only and does not represent a specific terminal type.



---

**Figure 3-1. Typical Management Terminal**

The following types of terminals can connect to a system:

- 715 BCS
- 2900/715 BCS
- 715 BCS-2

The following notes apply:

- This chapter emphasizes terminal installation in Release 5 and later systems.
- If the terminal supports a DC-powered system, install a 116A Isolator (comcode 106005242).
- Connect an optional printer using a locally obtained EIA cord. See Appendix A, "Option Switch Settings" for printer option switch settings.

### **Unpack and Inspect**

---

1. Unpack the terminal and inspect for damage. Report all damage according to local requirements.
2. Remove and retain the installation and usage instructions from the carton. These instructions are needed to set up the terminal after it is installed.
3. Set the terminal, keyboard, and all cables onto the equipment room table.

### **Install a 715 BCS Terminal**

---

1. Plug the keyboard cable into the 6-pin mini-DIN jack on the rear of the terminal. See Callout 2 in Figure 3-2 on page 3-4.
2. Plug the supplied 25-pin Data Terminal Equipment (DTE) cable into the P2 port (center connector) on the rear of the terminal.

### **Install a 2900/715 BCS Terminal**

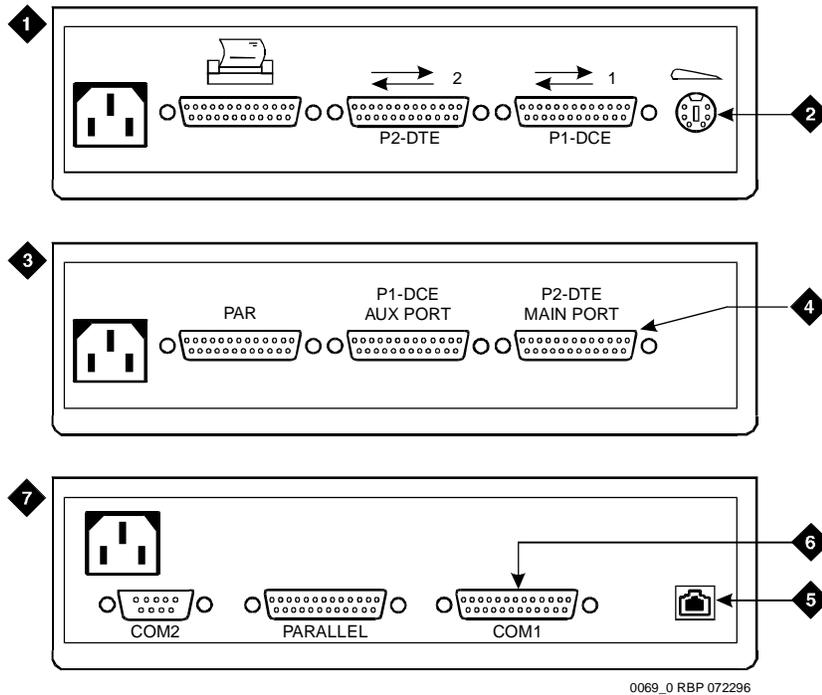
---

1. Plug the keyboard cable into the 6-pin RJ-11 jack on the left side of the terminal. An adapter cable is available to convert a 6-pin mini DIN jack to an RJ-11 jack to allow a 715 BCS keyboard to be used (comcode 847489895 or 847489903).
2. Plug the supplied 25-pin Data Terminal Equipment (DTE) cable into the P2 port (right side connector). See Callout 4 in Figure 3-2 on page 3-4.

### **Install a 715 BCS-2 Terminal**

---

1. Plug the keyboard cable into the modular keyboard jack on the rear of the terminal. See Callout 5 in Figure 3-2. This is a unique cable and must be connected to the 715 BCS-2 only.
2. Plug the supplied 25-pin Data Terminal Equipment (DTE) cable (H600-426) into the COM1 port (right side connector).



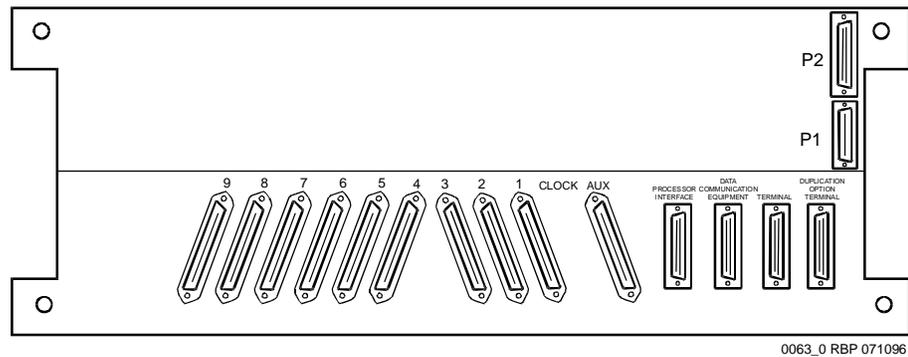
**Figure Notes**

- |  |                                     |
|--|-------------------------------------|
| 1. Rear Panel of 715 BCS Terminal      | 5. Modular Keyboard Jack            |
| 2. 6-Pin Mini DIN Connector            | 6. COM 1 Port                       |
| 3. Rear Panel of 2900/715 BCS Terminal | 7. Rear Panel of 715 BCS-2 Terminal |
| 4. P2-DTE Port                         |                                     |

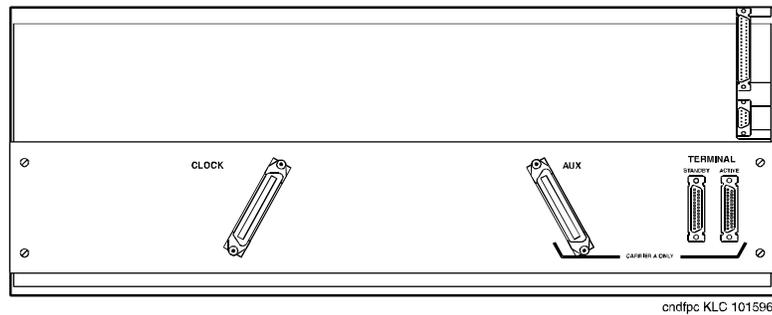
**Figure 3-2. Rear Panels on Management Terminals**

**Connect to the System**

1. Route the 25-pin DTE cable from the terminal to the rear of the system.
2. For Release 5si + memory, connect the cable to the TERM connector. See Figure 3-3. For Release 5r, connect the cable to the Terminal Active connector. See Figure 3-4.
3. Plug the AC power cord into the AC receptacle on the terminal. Plug the opposite end of the power cord to the AC receptacle located at the bottom rear of the cabinet, or into the selected AC receptacle.
4. Set the terminal power switch ON.



**Figure 3-3. Management Terminal Connections for Release 5si + M**

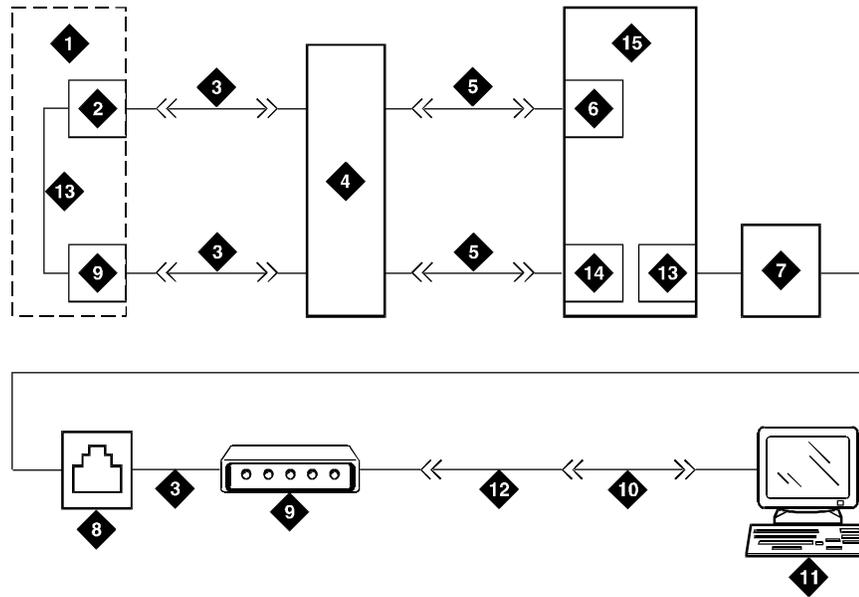


**Figure 3-4. Management Terminal Connections for Release 5r**

5. For a DC-powered system, install an EIA 116A Isolator (comcode 106005242) in series between the DTE cable and the TERM or Terminal Active connector.

## Remotely Connect Terminal

A management terminal can be installed at some distance from the system. Typical remote connections are shown in Figure 3-5.



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### Figure Notes

- |   |  |
|---|--|
| 1. External Modem Pool                    | 10. A DB9 to DB25 Converter (ED3-1-70, G115) May Be Required on a PC   |
| 2. 7400A Data Module                      | 11. Remote Management Terminal or Other Remote Device (CDRU, CAS+, PMS, BCMS, System/Journal Printers, Cost Allocator) |
| 3. Line Cord                              | 12. M25A Cable   |
| 4. Main Distribution Frame (MDF)          | 13. Can Be Any of the Following Trunk Circuit Packs: TN747, TN753, TN760, TN767, TN464, TN2147, TN465, and so forth.   |
| 5. B25A Cable (Male to Female)            | 14. Can Be Any Analog Line Circuit Pack  |
| 6. TN754 Digital Line 4-Wire Circuit Pack | 15. Multi-Carrier Cabinet System   |
| 7. Public Switched Telephone Network      |  |
| 8. 103A or Modular Wall Jack              |  |
| 9. Modem                                  |  |

Figure 3-5. Typical Connections to Remote Devices

1. Use Z3A2 Asynchronous Data Units (ADUs) and M25A cables on CDRU/CAS+, PMS, SAT PC, BCMS terminal, and Remote SAT.
2. Use Z3A1 ADUs and M25B cables on System/Journal printers.
3. If a DB-9 cable is used to connect to a PC, use the ED3P001-70, G115 converter to adapt the DB-9 to a DB-25.
4. A TN556 ISDN BRI circuit pack is used with the 7500 Data Module.

### **Set Up Management Terminal**

---

Each management terminal requires a different setup procedure. Refer to the installation and usage instructions packed with the management terminal.

### **Install Management Applications**

---

The PC-based Management Applications are installed according to the complete installation instructions provided in *Management Applications Operations*, 585-229-202.

## **Activate the System**

---

Instructions are provided to activate Release 5 and later systems. To activate a G3V4 and earlier system, refer to *DEFINITY Communications System Generic 3 Installation and Test*, 555-230-104.

#### **NOTE:**

To prevent unnecessary trouble tickets, do not enable the system alarms (Alarm Origination feature) until all installation and administration procedures are completed.

#### **CAUTION:**

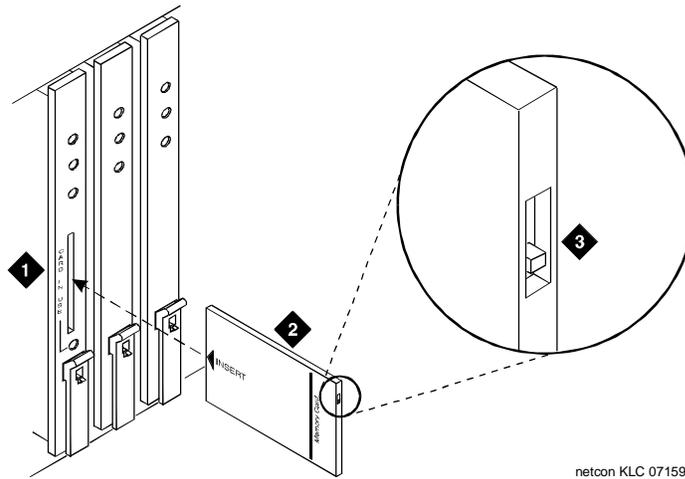
*It may be necessary to reseat circuit packs. To prevent damage from static electricity, always wear an Electromagnetic Compatibility (EMC) wrist strap (comcode 900698226) when handling all system components.*

### **Install Translation Card (Release 5si + M)**

---

If a Release 5r system is installed, skip this section.

1. Set the write switch on the translation card to the down position. See Figure 3-6.
2. Insert the translation card into the TN777B Network Control circuit pack in the direction indicated by the arrow on the label.



**Figure Notes**

- |  |                                 |
|--|---------------------------------|
| 1. Slot in TN777B Network Control Circuit Pack | 3. Write Switch Positioned Down |
| 2. Insert Card in Direction of Arrow           |                                 |

---

**Figure 3-6. Write Switch on Translation Card**

**Power Up AC-Powered System**

---

1. Set the associated circuit breakers on the AC power panel to ON. If the system is high or critical reliability, power-up the EPN cabinet first, then the PPN cabinet. *Always* power up the control cabinet *last*.
2. At the rear of each cabinet, set the circuit breaker to ON. This starts the system initialization and test. All red LEDs on the circuit packs go on and then off.
3. Skip to "Verify Messages on Terminal".

**Power Up DC-Powered System**

---

1. At the DC Battery Cabinet (if installed), set the circuit breaker to ON.
2. At the DC Power Cabinet, set the circuit breaker(s) on the rectifiers ON.

This starts the system initialization and test. Some red LEDs may be on but are turned off by other procedures in this chapter.

If the system is high or critical reliability, power-up the EPN cabinet first, then the PPN cabinet. *Always* power up the control cabinet *last*.

### Verify Messages on Terminal

1. After several minutes, verify all tests pass. Screen 3-1 displays the screen contents of a typical Release 5r system with three memory circuit packs. The Release 5si + memory system screen is similar.

**⇒ NOTE:**

If any of the terminal messages indicate a test has failed or if the message “spe down mode” is displayed, refer to *DEFINITY Enterprise Communications Server Release 5 Maintenance for R5r*, or *DEFINITY Enterprise Communications Server Release 5 Maintenance for R5vs/si*, to clear the trouble.

```
INTERNAL REGISTER TEST          PASSED
LOOP DATA TEST                 PASSED
DUART TEST                      PASSED
ROM CHECKSUM TEST              PASSED
CONTROL STATUS TEST           PASSED
DCACHE TEST                    PASSED
ICACHE TEST                    PASSED
WRITE BUFFER TEST             PASSED
BTO TEST                       PASSED
MEM CONFIG TEST               PASSED
MEMORY FUNCTIONAL TEST        PASSED
MEMORY MODULE A STUCK BIT TEST PASSED
MEMORY MODULE A PARITY TEST   PASSED
MEMORY MODULE A BURST TEST    PASSED
MEMORY MODULE B STUCK BIT TEST PASSED
MEMORY MODULE B PARITY TEST   PASSED
MEMORY MODULE B BURST TEST    PASSED
MEMORY MODULE C STUCK BIT TEST PASSED
MEMORY MODULE C PARITY TEST   PASSED
MEMORY MODULE C BURST TEST    PASSED
VIRTUAL MEMORY TEST           PASSED
EXCEPTION TEST                PASSED
TIMER TEST                     PASSED
MTP TEST                       PASSED
SANITY TIMER TEST             PASSED
ADDRESS MATCHER TEST          PASSED
FLASH TEXT CHECKSUM TEST      PASSED
RAM DATA CHECKSUM TEST       PASSED
RESET 4 (REBOOT PERFORMED)
```

**Screen 3-1. Typical Start-up Messages (Release 5r)**

2. About two minutes after `REBOOT PERFORMED` is displayed, verify the screen displays:

Login:

## Screens and Commands

---

### Screens

---

The system is administered using screens displayed on the terminal. The screens are used to add, change, display, list data, and to remove system and telephone features. To access a screen, enter a valid system command in response to the `Command:` prompt.

### Commands

---

System commands are standard words and phrases instructing the system to perform a specific function. The commands are arranged in a hierarchy of keywords; that is, enter one command to go to a different level. The commands contain three parts: ACTION, OBJECT, and QUALIFIER.

- ACTION is the first part of the command. When `Command:` appears on the screen. The ACTION specifies the operation desired. Examples include **add**, **duplicate**, **change**, **remove**, **display**, **list**, and **save**.
- OBJECT is the second part of the command and specifies the particular object to be administered. Typical entries are **hunt-group**, **coverage path**, and **station**.
- QUALIFIER is the last part of the command. It is one or more words or digits used to further identify or complete the OBJECT. For example, *hunt group 15* or *station 3600*, where *15* and *3600* are qualifiers.

An example of the command line required to add a station with extension number *1234* is **add station 1234**. In this example, **add** is the ACTION, **station** is the OBJECT, and **1234** is the QUALIFIER. In the command line, spaces are required between the ACTION, OBJECT, and QUALIFIER.

To save time, enter enough letters for each part of the command to make it unique. For example, if you want to enter the command **change system-parameters country-options**, typing **cha sys coun** is acceptable. However, typing the entire command is always best.

#### NOTE:

The craft login may not be allowed to perform some of the steps needed to initialize the system. If access is denied to some of these procedures, contact your Lucent Technologies representative for assistance.

## Getting Help

---

Use the **HELP** key for a list of options and the **CANCEL** key to back out of any command. Refer to *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*, for detailed procedures.

## Log in to the System

---

1. Verify the screen displays: `Login:`
2. Type **craft** and press **Enter**.
3. Verify the screen displays: `password:`
4. Type **crftpw** and press **Enter**. For security reasons, the password does not display as it is typed. The system verifies a valid login and password name were entered. If an invalid login or password name was entered, the screen displays:

```
login incorrect:
```

In this case, repeat the procedure using the correct login and matching password.

If the system recognizes the login and password name, the screen displays the software version.

5. Verify the screen display is similar to:  

```
Terminal Type (513, 715, 4410, 4425, VT220): [513]
```
6. Type the number of the management terminal and press **Enter**.
7. Verify the screen displays: `Command:`

### **NOTE:**

The following sections describe some of the procedures used to access and change certain options. These sections are not intended to replace or modify the instructions provided in *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*.

## Set Country Options

---

Certain country options need to be set to turn red failure indication LEDs off.

1. Verify the screen displays: Command:
2. Type **change system-parameters country options** and press Enter.

A screen similar to Screen 3-2 is displayed on the terminal. The cursor is set on the Companding Mode line.

```
change system parameters country-options          Page 1 of 21
                SYSTEM-PARAMETERS COUNTRY-OPTIONS

      Companding Mode: Mu-Law          Base Tone Generator Set: 1
440Hz PBX-dial Tone? n          440Hz Secondary-dial Tone? n
      Digital Loss Plan: 1
      Analog Ringing Cadence: 1      Set Layer 1 timer T1 to 30 seconds? n
      Analog Line Transmission: 1    Enhanced 84xx Display Character Set? n

TONE DETECTION PARAMETERS
      Tone Detection Mode: 5    Dial Tone Validation Timer (msec): 600
      Interdigit Pause: short
```

### Screen 3-2. Typical System Parameters Country-Options Screen

3. The default companding mode is  $\mu$ -Law. If the country uses A-Law companding, type A-Law.
4. Press ENTER when this information is correct.

Other items eventually need to be entered on this screen, but this is all that must be done to turn the red alarm LEDs off. Refer to Table 3-1 for a list of the country codes.

**Table 3-1. Country Codes**

Country	Code	Country	Code
USA	1	France	12
Australia	2	Germany	13
Japan	3	Czechoslovakia	14
Italy	4	Russia	15
The Netherlands	5	Argentina	16
Singapore	6	Greece	17
Mexico	7	China	18
Belgium	8	Hong Kong	19
Saudi Arabia	9	Thailand	20
United Kingdom	10	Macedonia	21
Spain	11		

5. If all red LEDs do not go off, reseal (unplug and reinsert) any *purple*-labeled circuit packs displaying red LEDs.

 **CAUTION:**

*To avoid a disk crash, **never** reseal the DEFINITY AUDIX System without first shutting it down. Shut down the DEFINITY AUDIX System (and allow the disk to completely spin down) before unplugging the assembly. See "DEFINITY AUDIX System Power Procedures" on page 3-27 for the proper procedures.*

6. If the red LEDs still do not go off, refer to *DEFINITY Enterprise Communications Server Release 5 Maintenance for R5r*, or *DEFINITY Enterprise Communications Server Release 5 Maintenance for R5vs/si*.

 **NOTE:**

Ignore the red alarm indication LED on the TN767 or TN464 DS1 circuit pack until after the DS1 circuit pack is administered. Alarms will appear in the Alarm Log when power is applied to the system before all equipment connecting to port circuit packs is installed. Normally, some alarms will be logged when power is applied to the system, but should be resolved quickly. If no equipment is connected to the port circuit packs, alarms associated with these ports can take up to four hours to log, but will clear automatically after all equipment is installed and operating correctly.

## Change Craft Password

---

The password for the craft login *must be changed* by the installing technician to prevent unauthorized administration changes.

**⚠ CAUTION:**

*After the password is changed, the new password must be safeguarded so no unauthorized administration changes can be made. This password MUST NOT BE REVEALED to the customer or to any unauthorized person.*

Passwords are changed using the Change Password Screen. See Screen 3-3. To change the “craft” password:

1. Verify the screen displays: Command :
2. Type **change password craft** . Press Enter.

```
change password craft                                Page 1 of 1
                                     PASSWORD ADMINISTRATION

Password For Login Making Change:

LOGIN BEING CHANGED
      Login Name: craft
LOGIN'S PASSWORD INFORMATION
      Login's Password:
      Reenter Login's Password:
```

### Screen 3-3. Typical Change Password Screen

3. Verify the screen displays the Change Password Screen. The cursor is positioned on “Password for Login Making Change:”
4. Type the password assigned to the craft login (assigned as *crftpw* when system is shipped) and press Enter. The cursor is positioned on “Login’s Password:”.
5. Enter new password. Valid passwords consist of a combination of from four to eleven alpha or numeric characters. At least one letter and one number must be used in each password.
6. Press Enter. The cursor is positioned on “Reenter Login’s Password:”.
7. Type new password again and press Enter.
8. Verify the screen displays:  
command successfully completed  
Command:

## Set Date and Time

---

1. Verify the screen displays Command :
2. Type **set time** and press Enter.
3. Verify the screen displays Set Date and Time Screen.  
The cursor is positioned on Day of the Week: field.

The screenshot shows a terminal window with the command 'set time' entered. The screen displays 'DATE AND TIME' and 'Page 1 of 1'. Under the 'DATE' section, there are fields for 'Day of the Week: \_\_\_\_\_', 'Month: \_\_\_\_\_', 'Day of the Month: \_\_', and 'Year: \_\_\_\_'. Under the 'TIME' section, there are fields for 'Hour: \_\_', 'Minute: \_\_', and 'Second: xx'.

**Screen 3-4. Typical Date and Time Screen**

4. Type the day of the week in English (Sunday through Saturday) and press TAB to move to next field. See Table 3-2 for English day of the week names.

**Table 3-2. English Day of the Week Names**

Day Number	Day Name
1	Sunday
2	Monday
3	Tuesday
4	Wednesday
5	Thursday
6	Friday
7	Saturday

5. The cursor is positioned on the `Month:` field. Type the current month in English (January through December). See Table 3-3 for English month names. After the month is entered, press `Tab` to move to next field.

**Table 3-3. English Month Names**

---

<b>Month Number</b>	<b>Month Name</b>
1	January
2	February
3	March
4	April
5	May
6	June
7	July
8	August
9	September
10	October
11	November
12	December

---

6. The cursor is positioned on the `Day of the Month:` field. Type the day of month (1 through 31) and press `Tab` to move to the next field.
7. The cursor is positioned on the `Year:` field. Type the current year and press `TAB` to move to the next field.
8. The cursor is positioned on the `Hour:` field. Type the current hour for a 24-hour clock. See Table 3-4. Press `Tab` to move to the next field.
9. The cursor is positioned on the `Minute:` field. Type current minute (0 through 59). Seconds cannot be set.
10. Press `Enter` when the information is correct.

**Table 3-4. Conversion to 24-Hour Clock**

Standard Time		Standard Time	
12-Hour	24-Hour	12-Hour	24-Hour
12:00 midnight	0000	12:00 noon	1200
1:00 am	0100	1:00 pm	1300
2:00 am	0200	2:00 pm	1400
3:00 am	0300	3:00 pm	1500
4:00 am	0400	4:00 pm	1600
5:00 am	0500	5:00 pm	1700
6:00 am	0600	6:00 pm	1800
7:00 am	0700	7:00 pm	1900
8:00 am	0800	8:00 pm	2000
9:00 am	0900	9:00 pm	2100
10:00 am	1000	10:00 pm	2200
11:00 am	1100	11:00 pm	2300

11. Verify the screen displays:

`command successfully completed`

Command:

12. Type **display time** and press Enter to verify date/time data.

## **Circuit Pack Administration**

---

After the equipment is installed (including circuit packs), the circuit packs must be administered. Refer to *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description* for more information.

The following information describes general administration information:

- Use the Circuit Packs form to administer circuit packs to carrier slots. The circuit packs must be installed (or assigned using the Circuit Packs form) before administering voice terminals, attendant consoles, or trunks.
- Each page of the form represents one carrier in the cabinet shown on the command line. For Release 5si + memory, all carriers and slots appear even if they are not included in the hardware.
- It is not necessary to fill in the Circuit Packs form if the circuit packs are installed at the time of administration.
- Refer to *DEFINITY Communications System Generic 3 Planning and Configuration*, 555-230-601, for more information about circuit pack administration and port assignment records (the DS1 circuit pack and translation are covered in Chapter 2 and Chapter 3).
- For initial installation, assign circuit packs to slots using the hardware configuration layout record from the factory or Customer Services Organization. Do not arbitrarily assign circuit packs to slots.
- For Release 5r, if the carrier type administered on the Cabinet Administration form does not match the physical hardware, question marks (??) may display in the Code fields.
- When a circuit pack in a slot differs from what has been administered on the form, a “#” displays between the “Sfx” and “Name” fields.
- For Release 5r, the number of slot fields displayed represents administrable slots for the given carrier type. For Release 5si + memory configurations, all slot fields are displayed.

## Set System Maintenance Parameters

If the system does not contain a TN778 Packet Control circuit pack, skip this section and proceed to "Administer System Cabinet Configurations (Release 5r)".

1. Verify the terminal screen displays: Command:
2. Type **change system-parameters maintenance** and press Enter. Verify the screen displayed is similar to Screen 3-5. The screen shows default values and the cursor is positioned on `Product Identification:` line.

```

change system-parameters maintenance                               Page 1 of 2
      MAINTENANCE-RELATED SYSTEM PARAMETERS

OPERATIONS SUPPORT PARAMETERS
      Product Identification: 1000000000
      First OSS Telephone Number:                               Abbrev Alarm Report? y
      Second OSS Telephone Number:                             Abbrev Alarm Report? n
      Alarm Origination to OSS Numbers: neither
      Cleared Alarm Notification? n
      Restart Notification? n
      Test Remote Access Port? n
      CPE Alarm Notification Level: none
      Packet Bus Activated? y
      Customer Access to INADS Port? n
      Repeat Dial Interval (mins): 7

SCHEDULED MAINTENANCE
      Start Time: 01 : 00                                       Stop Time: 06 : 00
      Daily Maintenance: daily                                 Save Translation: daily
      Control Channel Interchange: no                          System Clocks Interchange: no
      SPE Interchange: no

```

sddfcsp KLC 112796

**Screen 3-5. Typical Display System-Parameters Maintenance Screen (Page 1)**

### CAUTION:

*To prevent unnecessary trouble tickets, do not enable the system alarms (Alarm Origination feature) until all installation and administration procedures are completed.*

3. Move the cursor by pressing `Tab` to move down the screen from field to field and enter `y` in the `Packet Bus Activated?` field to indicate a TN778 circuit pack is installed. This is the only field needing change on this screen to turn the red LEDs off.
4. Press `ENTER` when the information is correct.

## Administer System Cabinet Configurations (Release 5r)

If a Release 5si + memory is installed, skip to "Save Translations" on page 3-25.

### Change Customer Options

The following features are part of the basic software package and do not need to be activated. They default to y (yes) on the Optional Features Form.

- Automatic Route Selection/Automatic Alternate Routing Partitioning
- Emergency Access to the Attendant
- Hospitality
- Service Observing

Use the following procedure to change the customer's optional features.

1. At the `Command:` prompt, enter the **change system-parameters customer-options** command. A display similar to Screen 3-6 appears.

```
change system-parameters customer-options                               Page 1 of 4
                                OPTIONAL FEATURES

                                G3 Version: V5                        Maximum Ports: 14000

Abbreviated Dialing Enhanced List? n                                CAS Main? Y
A/D Grp/Sys List Dialing Start at 01? n                          Cvg Of Calls Redirected Off-net? n
Answer Supervision by Call Classifier? n                          DCS (Basic)? Y
                                ARS? Y                               DCS Call Coverage? n
                                ARS/AAR Partitioning? n            Emergency Access to Attendant? Y
                                ASAI Interface? n                   Extended Cvg/Fwd Admin? n
ASAI Proprietary Adjuncts Links? n                                External Device Alarm Admin? n
                                ATMS? n                             Flexible Billing? n
Audible Message Waiting? n                                        Forced Entry of Account Codes? n
                                Authorization Codes? n              Hospitality (Basic)? n
                                CAS Branch? n                       Hopitality (G3V3 Enhancements)? n
                                Hopitality Parameter Reduction? n

(NOTE: You must logoff & login to effect the permission changes.)
```

Screen 3-6. Typical Customer-Options Form (Page 1 of 4)

2. Find the *Customer Order* and enable the optional features purchased by the customer (as shown by PEC codes on the Customer Order).

In Release 5 systems, a separate screen offers ASAI capability groups for selection in cases where the ASAI interface has been enabled. Change this screen in the same manner as Page 1 of the customer-options form.

### Change and Logoff Critical Reliability System

If a critical reliability system is installed (one with both processor and PNC duplicated), follow these steps. Otherwise, continue to "Change Site-Data".

#### ⇒ NOTE:

Be sure PNC Duplication was set to y in the customer-options form.

1. Issue the logoff command.
2. At the `login:` prompt, login in to the system as **craft**.

### Change Site-Data

This form initializes the building, floor, and color data to make them available later in help messages that refer to site information.

1. At the `Command:` prompt, enter the **change site-data** command.

The first of three pages of site data appears: See Screen 3-7.



```
display site-data                                     Page 1 of 3
                                                    SITE DATA USER DEFINITION
                                                    VALID BUILDING FIELDS

Denver
Middletown
Building30
Building22
Command abortedfully completed
Command: ch cab 1
```

#### Screen 3-7. Typical Display Site-Data Form

2. Enter names for the buildings served by the system. The example shows buildings *Denver*, *Middletown*, *Building 30*, and *Building 22*.
3. Access the remaining site-data pages and fill them in appropriately.

## Change Cabinet 1

1. Enter **change cabinet 1**. A screen similar to Screen 3-8 appears.
2. Fill in the blanks as required by the location and nature of the cabinet. If the system is critical reliability, verify the **B** field is set to the processor option, the **D** field is set to the dup-sw-node option, and the **E** field is set to the switch-node option.

```
change cabinet 1                                     Page 1 of 1
                                                    CABINET

CABINET DESCRIPTION
      Cabinet: 1
      Cabinet Layout: five-carrier
      Cabinet Type: processor
      Number of Portnetworks: 1
      Room:
      Floor:
      Building:

CARRIER DESCRIPTION
Carrier      Carrier Type      Number
C            port              PN 01
B            port              PN 01
A            processor         PN 01
X            fan
D            port              PN 01
E            switch-node      PN 01
not-used    port              switch-node
```

**Screen 3-8. Typical Change Cabinet 1 Form**

## Add Cabinet 2 through N (Release 5r)

1. Enter **add cabinet 2**. See Screen 3-9.
2. Fill in the blanks as required by the location and nature of the cabinet.

```
add cabinet 2                                     Page 1 of 1
                                                CABINET

CABINET DESCRIPTION
      Cabinet: 2
      Cabinet Layout: five-carrier
      Cabinet Type: expansion-portnetwork
      Number of Portnetworks: 1
      Room:
      Floor:
      Building:

CARRIER DESCRIPTION
Carrier      Carrier Type      Number
C            port
B            port
A            expansion-control
X            fan
D            not-used
E            not-used

five-carrier
command: add cab 2
```

**Screen 3-9. Typical Add Cabinet 2 Form**

## **Administer Fiber Link Configurations (Release 5r)**

---

Administer system fiber link configurations to match the hardware installed according to the Running List. Refer to *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*.

## **Reboot High Reliability System**

---

1. Enter **reset system 4**.
2. When the `login:` prompt appears, login as **craft**.
3. About eight minutes after booting and at the `Command:` prompt, enter the **status spe** command.
4. Verify that `handshake`, `shadowing`, and `refreshed` are all shown to be either `yes` or `on`.

## **Enable Duplication and Boot Critical Reliability System (Release 5r)**

---

1. Enter **change system-parameters duplication**.
2. Make sure duplication of both SPE and PNC are enabled on the screen that follows the command. Confirm that a `y` is contained in both fields.
3. Enter **save translation**.
4. Enter **reset system 4** to reboot the system.
5. When `login:` appears on the screen, login as **craft**.
6. About eight minutes after booting the system and at the `Command:` prompt, enter the **status spe** command.
7. Verify that `handshake`, `shadowing`, and `refreshed` are all shown to be either `yes` or `on`.

## **Save Translations**

---

### **Save Translations (Release 5si + M)**

---

For standard reliability systems, 1 translation card plus 1 backup is required. For high or critical reliability systems, 2 translation cards plus 2 backups are required.



#### **CAUTION:**

*Do not attempt to save translations on the orange-labeled, 10 MB memory card. Use the white translation card.*

Use the following procedure to save system translations on the original card and to make a backup card:

1. At the `Command :` prompt, enter **save translation** and press Enter.
2. After several minutes, the SAVE TRANSLATION screen appears.
3. Verify a 0 is displayed in the Error Code column for each SPE. A 0 indicates the save translation was successfully completed. If not, the save translation did not complete. Record the "error code number" and the "error message" and notify your Lucent Technologies representative.
4. Remove the original card from the TN777B and replace with backup card.
5. Repeat Steps 1 through 4 for the backup card(s).
6. Remove the backup card and replace with the original card.
7. Label the backup card with the date and time of the backup and store in a secure place.

### **Save Translations (Release 5r)**

---

To copy the current system translations onto both disks:

1. Enter the **save translation** command.
2. Verify the save completes to both disks and returns a result code of 0 (zero).

## **Add Translations**

---

1. Refer to *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*, to add new terminals to the system.
2. Enter the **save translation** command to merge these translations with the contents of disk or flash memory.
3. If a standard reliability Release 5r system is installed, enter the **backup disk incremental** command. If a high or critical reliability Release 5r system is installed, enter the **backup disk incremental both** command.

## **Installation Completion**

---

After the system is activated, it must be tested for proper operation. See Chapter 4, "Test the System".

After completion of the system tests, install the telephones and other equipment. See Chapter 5, "Install and Wire Telephones and Other Equipment".

Administer the system by adding the customer data to match the wiring, telephones, and other equipment. See *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*.

After the system is administered, the telephones and other equipment are tested. See Chapter 6, "Test Telephones and Other Equipment". The Alarm Origination feature is then activated and tested.

## **Logoff the System**

---

Log off the system to prevent unauthorized changes to data. To log off:

1. Enter **logoff** at the `Command:` prompt.
2. The `login:` prompt appears on the screen.

## DEFINITY AUDIX System Power Procedures

---

### Manually Power Down AUDIX System

A yellow caution sticker on the system's power unit notifies technicians to shut down the DEFINITY AUDIX System prior to powering down the system.

1. Using a pointed object, such as a paper clip or pen (do not use a pencil), press the Boot/Shutdown button. The button is located at the top right portion of the front panel.
2. Hold the Boot/Shutdown button in until the LCD display flashes the message `MSHUT`.
3. Release Boot/Shutdown button.



**NOTE:**

The DEFINITY AUDIX System takes about five minutes to shut down. The "heartbeat" indication on the display continues to flash.

### Manually Power Up AUDIX System

1. Using a pointed object such as a paper clip or a pen (do not use a pencil), press the Boot/Shutdown button.
2. Hold the Boot/Shutdown button in until the display indicates the message, `BTEST`, steady on.
3. Release the Boot/Shutdown button. The DEFINITY AUDIX System takes approximately 5 minutes to power up.

- The display has the following sequence of steady on messages:

- `OSINIT`
- `OS`
- `AINIT`
- `ADX`

- The DEFINITY AUDIX System is now powered up. When the system is in the active state, the display indicates `ADX`, and the red LED is off.



**NOTE:**

Upon the system powering up, the DEFINITY AUDIX System automatically reboots. This sequence may show an `MD` or `MJ ADX` alarm in the display until the system has powered up. When the system has completed its power up sequence, the DEFINITY AUDIX System display reads: `ADX`.



---

## Test the System

# 4

---

The following tests provide verification of the TDM bus cables and terminators, and fiber optic inter-cabinet cables (ICC). If a FAIL result code is seen or other problems are indicated, check these cables. If problems continue, refer to *DEFINITY Enterprise Communications Server Release 5 Maintenance for R5r* or *DEFINITY Enterprise Communications Server Release 5 Maintenance for R5vs/si*.

**⇒ NOTE:**

Refer to "LED Indicators" on page 4-15 for information regarding the LED status indicators for the different circuit packs.

1. The status of the system should be reviewed first.
2. Test the tone-clock, TDM bus, and duplication link in the Processor Port Network (PPN).
3. Test the Switch Node carrier (Release 5r only).
4. Test Expansion Interface circuit packs, tone-clock circuit packs, TDM buses, and duplication in the EPNs.

Circuit pack positions are usually given by cabinet, carrier, and slot. They may also be given by port.

The term "*cabinet*" refers to one Multi-Carrier Cabinet making up one port network. A port network is defined as a group of cabinets connected together with one TDM bus.

## Check System Status for Each Cabinet

1. Verify the terminal screen displays: Command :
2. Type **status system all-cabinets** and press Enter.
3. Verify the screen displays system status screens similar to Screen 4-1:

```

status system all-cabinets                               Page 1 of 3  SPE A
                SYSTEM STATUS CABINET 1
SPE  MODE
1A   active
1B   maint/init
                SELECT  SPE ALARMS  TONE/  SERVICE  SYSTEM  SYSTEM
                SWITCH  MAJOR MINOR  CLOCK  STATE  CLOCK  TONE
                auto    1    0    1A    in    standby standby
                auto    1    0    1B    in    active  active

                SERVICE  CONTROL  DEDICATED  SERVICE  BUS ALARMS  BUS  OPEN BUS
                STATE   CHANNEL  TONES     STATE  MAJOR MINOR  FAULTS LEADS
1A   in    y    n    1
1B   in    n    y

EMERGENCY  SELECT
TRANSFER   SWITCH  EXP-LINK  SERVICE  MODE  CABINET
1A         auto-on  01A01-02A01  in    standby  MCC
1B         auto-on  01B01-02B02  in    active
    
```

**Screen 4-1. Example System Status Screen for Cabinet 1**

The following notes pertain to Screen 4-1, Screen 4-2, and Screen 4-3.

**⇒ NOTE:**

In the first section of the report, all Tone-Clocks should report a **SERVICE STATE** of **in**.

In the second section of the report, all TDM buses should report a **SERVICE STATE** of **in**.

In the third section of the report, all expansion links should report a **SERVICE STATE** of **in**, and, under **EXP-LINK**, the cabinet/carrier/slot numbers for the fiber optic cables are listed. For example, 01A01 in Screen 4-1 refers to cabinet 01, carrier A, and slot 01.

Refer to *DEFINITY Enterprise Communications Server Release 5 Maintenance for R5r*, for a detailed interpretation of this screen.

## Check System Status for Each Cabinet

```

status system all-cabinets                                     Page 2 of 3 SPE A
SYSTEM STATUS CABINET 2

SPE  MODE                SELECT  SPE ALARMS  TONE/  SERVICE  SYSTEM  SYSTEM
1A   active              SWITCH  MAJOR MINOR  CLOCK  STATE   CLOCK  TONE
1B   maint/init         auto   1 0        2A    in     active active
                                auto   1 0        2B    in     standby standby

      SERVICE  CONTROL  DEDICATED  SERVICE  BUS ALARMS  BUS  OPEN BUS
TDM  STATE   CHANNEL  TONES     PKT     STATE  MAJOR MINOR  FAULTS  LEADS
2A   in      y      n      2
2B   in      n      y

EMERGENCY  SELECT  SERVICE  CABINET
TRANSFER   SWITCH  STATE   MODE   TYPE
2A         auto-on 01A01-02A01 in    standby MCC
                01B01-02B02 in    active

```

**Screen 4-2. Example System Status Screen for Cabinet 2**



**NOTE:**

See the notes associated with Screen 4-1 on the previous page.

```

status system all-cabinets                                     Page 3 of 3 SPE A
SYSTEM STATUS CABINET 3

SPE  MODE                SELECT  SPE ALARMS  TONE/  SERVICE  SYSTEM  SYSTEM
1A   active              SWITCH  MAJOR MINOR  CLOCK  STATE   CLOCK  TONE
1B   maint/init         auto   1 0        3A
                                auto   1 0        3B

      SERVICE  CONTROL  DEDICATED  SERVICE  BUS ALARMS  BUS  OPEN BUS
TDM  STATE   CHANNEL  TONES     PKT     STATE  MAJOR MINOR  FAULTS  LEADS
3A
3B

EMERGENCY  SELECT  SERVICE  CABINET
TRANSFER   SWITCH  STATE   MODE   TYPE
3A         -      -      -      -      -      -

```

**Screen 4-3. Example System Status Screen for Cabinet 3**



**NOTE:**

In the example of Screen 4-3, cabinet 3 (the second EPN) is not connected to the system.

## Check Circuit Pack Configuration

1. Verify the screen displays: Command :
2. Type **list configuration all** and press Enter.
3. Verify the screen displays list configuration screens similar to the example shown below. Check the report on the screen with the equipment installed and make sure the software is communicating with each circuit pack (except power supply circuit packs). Wait until after the diagnostic tests later in this chapter before attempting to correct any problems.
4. Note any circuit packs in the VINTAGE column stating: BOARD NOT PRESENT or CONFLICT.

```
list configuration all                                     Page 1

                                SYSTEM CONFIGURATION

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

01A01  EXPANSION INTRFC           TN570B 000001
01A03  DID TRUNK                  TN459  000004   u u u u u u u u
01A04  DID TRUNK                  TN436  000004   u u u u u u u u
01A07  TIE TRUNK                   TN439  000004   u u u u
01A09  ANNOUNCEMENT                TN750  000007   01 02 03 04 05 06 07 08
                                           09 10 11 12 13 14 15 16

01B01  EXPANSION INTRFC           TN570  000009
01B02  TONE DETECTOR               TN748D 000002   01 02 03   05 06 07
01B03  DATA LINE                  TN726  000012   u u u u u u u u
01B08  BRI LINE                     TN556B 000003   u u u u u u u u
                                           u u u u u u u u
                                           u u u u u u u u

01C01  ANALOG LINE                TN746B 000006   u u u u u u u u
                                           u u u u u u u u

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

Screen 4-4. Example System Configuration Screen — Page 1

**⇒ NOTE:**

Under Assigned Ports, a “u” indicates unassigned ports and a number indicates the port has been translated.

## **Test TDM Bus in PPN**

---

1. Verify the screen displays: Command :
2. Type **test tdm port-network 1** and press Enter.
3. Verify the screen displays the results similar to Screen 4-5.

```
test tdm port-network 1

                                TEST RESULTS

Port      Maintenance Name  Alt. Name  Test No.  Result      Error Code
-----
PN 01A    TDM-BUS                294        PASS
PN 01A    TDM-BUS                296        PASS
PN 01A    TDM-BUS                297        ABORT      1005
PN 01B    TDM-BUS                294        PASS
PN 01B    TDM-BUS                296        ABORT      1005
PN 01B    TDM-BUS                297        PASS

Command successfully completed

Command:
```

### **Screen 4-5. Example Test Results for TDM Port Network 1**

4. If the result is **FAIL** for any test, check the connectors of the TDM bus cables in PPN 1.

## Test Tone-Clock Circuit Packs

This test also detects problems with the TDM bus cables.

1. Verify the screen displays: Command :
2. Type **test tone-clock 1a** and press Enter.
3. Verify the screen displays test results similar to Screen 4-6.

```
test tone-clock 1a

                                TEST RESULTS

Port      Maintenance Name  Alt. Name  Test No.  Result      Error Code
-----
01A       TONE-BD                 46         PASS
01A       TONE-BD                 52         PASS
01AXX01   ETR-PT                 42         PASS
01AXX01   ETR-PT                 43         PASS
01AXX02   ETR-PT                 42         PASS
01AXX02   ETR-PT                 43         PASS
01AXX03   ETR-PT                 42         PASS
01AXX03   ETR-PT                 43         PASS
01AXX04   ETR-PT                 42         PASS
01AXX04   ETR-PT                 43         PASS
01AXX05   ETR-PT                 42         PASS
01AXX05   ETR-PT                 43         PASS
01AXX06   ETR-PT                 42         PASS
01AXX06   ETR-PT                 43         PASS

Command successfully completed

Command:
```

**Screen 4-6. Example Test Results for Tone-Clock 1A**

## **Test Switch Processing Element Duplication Memory Shadowing Link**

For high and critical reliability systems only.

1. Verify the screen displays: Command :
2. Type **test shadow-link** and press Enter.
3. Verify the screen displays test results similar to Screen 4-7.

TEST RESULTS						
Port	Maintenance Name	Alt. Name	Test No.	Result	Error Code	
	SHDW-LNK		318	PASS		
Command successfully completed						

**Screen 4-7. Example Test Results for SPE Duplication Memory Shadowing Link**

4. If result is **FAIL** for any test, check the Inter-Cabinet Cables (ICC) in the PPN.

## Test Duplicated Switch Processing Element Interchange

For high and critical reliability systems only.

1. Verify the screen displays: Command :
2. Type **status system all-cabinets** and press Enter.
3. Verify the screen displays test results similar to Screen 4-8.

```

status system all-cabinets                                     SPE A
                                SYSTEM STATUS CABINET 1
                                SELECT  SPE ALARMS  TONE/  SERVICE SYSTEM SYSTEM
                                SWITCH MAJOR MINOR  CLOCK STATE  CLOCK TONE
1A  active                      auto    1    0    1A    in    standby standby
1B  maint/init                  auto    1    0    1B    in    active  active

                                SERVICE CONTROL DEDICATED SERVICE BUS ALARMS BUS OPEN BUS
                                TDM STATE CHANNEL TONES PKT STATE MAJOR MINOR FAULTS LEADS
1A  in                          y          n          1          1A    in    standby standby
1B  in                          n          y          1          1B    in    active  active

EMERGENCY TRANSFER SELECT EXP-LINK SERVICE CABINET
                                SWITCH STATE MODE TYPE
1A          auto-on  01A01-02A01 in    standby MCC
1B          auto-on  01B01-02B02 in    active
                                -
                                -

Command successfully completed

Command:
    
```

**Screen 4-8. Example System Status Report for All Cabinets**

4. Note the **MODE** of SPE 1A and 1B.
5. Type **refresh spe** and press Enter.  
Command successfully completed should be displayed.
6. Type **reset system interchange** and press Enter. This causes the terminal to log off.
7. Log in as **craft** again. Remember to use the new password established for craft.
8. Type **status system cabinets-all** and press Enter.

9. A screen similar to Screen 4-9 should be displayed:

```

- status system all-cabinets                                     SPE B
                                SYSTEM STATUS CABINET 1

SPE  MODE                                SELECT  SPE ALARMS  TONE/  SERVICE  SYSTEM  SYSTEM
1A   standby                             auto    1    0    1A   in    standby standby
1B   active                              auto    1    0    1B   in    active  active

      SERVICE  CONTROL  DEDICATED  SERVICE  BUS ALARMS  BUS  OPEN BUS
TDM  STATE    CHANNEL  TONES     PKT     STATE  MAJOR MINOR  FAULTS  LEADS
1A   in       y       n           1
1B   in       n       y

EMERGENCY  SELECT  SERVICE  CABINET
TRANSFER   SWITCH  EXP-LINK STATE  MODE  TYPE
1A         unavail 01A01-02A01 in    standby MCC
1B         auto-on 01B01-02B02 in    active

-
    
```

**Screen 4-9. Example System Status Report for All Cabinets after Reset**

10. Note the `MODE` for `SPE 1A` and `1B` should have changed from that noted in Step 4.

## Test Expansion Interface Circuit Packs

1. Verify the screen displays: Command :
2. Type **test board xxx** (where **xxx** is the cabinet, carrier, and slot for an expansion interface circuit pack in the system) and press Enter. Labels on the port network and carrier containing the board and the label on the strip under the board contain this information.



**NOTE:**

Circuit pack positions are usually given by cabinet, carrier (within cabinet), and slot (within carrier). They may also be given by port (within slot). The term “cabinet” refers to one Multi-Carrier Cabinet making up one port network. A port network is defined as a group of cabinets connected together with one TDM bus.

3. Verify the screen displays test results similar to Screen 4-10. This example is for board 2A01.

TEST RESULTS					
Port	Maintenance Name	Alt. Name	Test No.	Result	Error Code
02A01	EXP-INTF		237	PASS	
02A01	EXP-INTF		238	PASS	
02A01	EXP-INTF		240	PASS	
02A01	EXP-INTF		241	PASS	
02A01	EXP-INTF		244	PASS	
02A01	EXP-INTF		316	PASS	

**Screen 4-10. Example Test Results for Expansion Interface Board 2A01**

4. If any result is FAIL, check the connections for the associated fiber optic link.
5. Repeat Steps 2 and 3 for each Expansion Interface circuit pack in the system.

## **Test TDM for each EPN**

---

1. Verify the screen displays: Command :
2. Type **test tdm port-network 2** and press Enter.
3. Verify a test results screen similar to Screen 4-11 is displayed.

```
test tdm port-network 2

                                TEST RESULTS

Port      Maintenance Name  Alt. Name  Test No.  Result      Error Code
-----
PN 02A    TDM-BUS                294       PASS
PN 02A    TDM-BUS                296       PASS
PN 02A    TDM-BUS                297       ABORT      1005
PN 02B    TDM-BUS                294       PASS
PN 02B    TDM-BUS                296       ABORT      1005
PN 02B    TDM-BUS                297       PASS

Command successfully completed

Command:
```

### **Screen 4-11. Example Test Results for TDM Port Network 2**

4. If result is **FAIL** for any test, check the connectors of the TDM bus cables in PPN 2.
5. Repeat these steps for each EPN to check the TDM bus cables.

## **Test Tone-Clock for each EPN**

---

1. Verify the screen displays: `Command :`
2. Type **test tone-clock 2A** (where **2A** is the cabinet and carrier number for one of the Tone-Clocks installed) and press Enter.



### **NOTE:**

Circuit pack positions are usually given by cabinet, carrier, and slot. They may also be given by port. The term “cabinet” refers to one Multi-Carrier Cabinet making up one port network. A port network is defined as a group of cabinets connected together with one TDM bus.

If any result is `FAIL`, check the associated TDM bus cables and intercabinet cables in the EPN.

3. Repeat Step 2 for each installed Tone-Clock circuit pack.

## **Test Tone-Clock Interchange for each EPN**

---

Critical reliability only.

1. Verify the screen displays: `Command :`
2. Type **status system all-cabinets** and press Enter. This displays the location of the Standby Tone-Clock.
3. Type **set tone-clock xxx** (where **xxx** is the port network/carrier for the standby tone-clock). Press Enter.
4. Type **status system all-cabinets** and press Enter.
5. Verify the duplicated Tone-Clock is active using the information displayed on the screen.

If any problems are indicated, check the TDM cables in the associated EPN.

## Test Expansion Interface Exchange for Each EPN

---

Critical reliability only.

1. Verify the screen displays: Command :
2. Type **status system all-cabinets** and press Enter. This displays the standby expansion link (before changes are made). See Screen 4-12.

```
status system all-cabinets
                                SYSTEM STATUS CABINET 1

EMERGENCY   SELECT           SERVICE           CABINET
TRANSFER    SWITCH          STATE           TYPE
1A          unavail         01A01-02A01    in           standby    MCC
1B          auto-on         01B01-02B02    in           active     MCC

                                -
                                -

Command successfully completed

Command:
```

**Screen 4-12. Example of System Status Before Expansion Link is Set**

3. Type **set expansion-link xxxx** (where **xxxx** is the either one of the cabinet, carrier, and port locations of the standby expansion link).
4. Verify the screen displays:  
Command successfully completed  
Command:
5. Type **status system all-cabinets** and press Enter. See Screen 4-13.

```
status system all-cabinets
                                SYSTEM STATUS CABINET 1

EMERGENCY   SELECT           SERVICE           CABINET
TRANSFER    SWITCH          STATE           TYPE
1A          auto-on         01A01-02A01    in           active     MCC
1B          auto-on         01B01-02B02    in           standby    MCC
```

**Screen 4-13. Example of System Status after Expansion Link is Set**

6. Verify the `MODES` of the expansion links have changed.
7. If any problems are indicated, check the TDM cables and the Inter-Cabinet Cables (ICC) in the associated EPN.

## Check Circuit Pack Configuration Again

---

1. Verify the screen displays: `Command :`
2. Type **list configuration all** and press Enter.
3. Verify all circuit packs installed in the system are listed in the reports. Refer to *DEFINITY Enterprise Communications Server Release 5 Maintenance for R5r*, to resolve any discrepancies.

## System Test Completion

---

### Save Translations

If any administration changes have been made, save and make a back up copy of the translations.

### Next Steps

After the basic hardware is installed and tested, three more steps must be completed:

1. Install the telephones and other equipment. See Chapter 5, "Install and Wire Telephones and Other Equipment".
2. Administer the features, telephones, and other equipment according to customer data on the provisioning plan. The data for system and telephone features can be administered using *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*.
3. After the system is administered, test the telephones and other equipment using the procedures in Chapter 6, "Test Telephones and Other Equipment".

#### NOTE:

It may be more efficient to install each hardware component, administer it, and test it before going on to install another component. As an example, install the attendant console using the procedures in Chapter 5, "Install and Wire Telephones and Other Equipment", administer it using the procedures in *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*, and test it using the procedures in Chapter 6, "Test Telephones and Other Equipment".

## **LED Indicators**

---

If a maintenance object begins to fail some periodic tests, the system generates an alarm. The system identifies three levels of alarms:

- Major Alarms — Failures that cause critical degradation of service and require immediate attention.
- Minor Alarms — Failures that cause some degradation of service, but do not cause a critical portion of the system to be inoperable. This condition requires action, but its consequences are not immediate. Problems might be impaired service to a few trunks or stations or interfering with one feature across the entire system.
- Warning Alarms — Failures that cause no significant degradation of service or failures in equipment external to the system. Warning alarms are not reported to the attendant console or INADS.

Alarms are communicated to the system users and technicians by entries in the alarm log and the lighting of LEDs located on the attendant console, on all circuit packs, and, optionally, on customer-designated voice terminals.

### **Attendant Console LEDs**

---

The console has two red LEDs, labeled “ALM” and “ACK”. The ALM LED lights steadily when there is a major or minor alarm at the system cabinet. The ACK LED lights steadily if the alarm has been successfully reported to INADS. If the system is unable to report the alarm to INADS, the LED flashes; this signals the attendant to call INADS and report the alarm.

### **Tone-Clock Circuit Pack LEDs**

---

The Tone-Clock circuit packs have the standard red, green and yellow LEDs. The red LED indicates an alarm condition. The yellow and green LEDs flash in specific patterns to indicate the status of the circuit pack.

The standby status applies only to systems with a duplication option, (High Reliability and Critical Reliability).

## Terminal Alarm Notification

Terminal Alarm Notification is an optional feature that displays several types of alarms on voice terminals with administered feature buttons or the attendant console. A maximum of 10 digital and/or hybrid voice terminals may be used.

When an alarm occurs, the green status LED associated with the assigned button is in a steady state. The LED may be turned off by pressing the button associated with the LED. If the LED is off and the alarm has not been resolved by the time maintenance reschedules testing, the green status LED resumes its steady state. See Table 4-1.

**Table 4-1. Terminal Alarm Notifications LEDs**

<b>Alarm Name</b>	<b>Description</b>
ac-alarm	Administered Connection alarm: a locally administered connection has a major, minor, or warning alarm active.
pr-awu-alm	Auto Wakeup Journal Printer alarm: the automatic wakeup journal printer has a major, minor, or warning alarm active.
ds1-alarm	DS1 Facility alarm: a DS1-BD has an off-board major, minor, or warning alarm active.
trk-ac-alm	Facility Access alarm: The facility access trunk test feature is activated.
major-alm	The system has logged a major alarm.
mj/mn-alm	The system has logged a major or minor alarm.
pr-pms-alm	The Property Management System printer has a major, minor, or warning alarm active.
rs-alert	Reset-Alert: a reset system 2 or 3 has been performed.
cdr1-alm	Call Detail Recording alarm: The primary CDR link has a major, minor, or warning alarm active.
cdr2-alm	Call Detail Recording alarm: The secondary link has a major, minor, or warning alarm active.
pr-sys-alm	The System Printer (SYS-PRNT) has a major, minor, or warning alarm active.
pms-alarm	The Property Management System has a major, minor or warning alarm active.

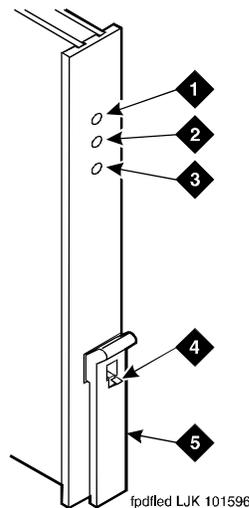
### **Circuit Pack LEDs**

---

Typically, each circuit pack has three LEDs on the front panel. Table 4-2 describes the red, green, and yellow LEDs and their meaning. Exceptions are explained in subsequent sections. Also see Figure 4-1.

**Table 4-2. Circuit Pack LEDs**

<b>LED Color</b>	<b>Status</b>	<b>Description</b>
Red	Alarm	The system has detected a fault in this circuit pack. The alarm log should contain an on-board alarm. The red LED is also lit briefly when a circuit pack is inserted or reset. If the circuit pack passes its initialization tests, the LED goes out.
Green	Testing	The system is currently running tests on this circuit pack as part of background maintenance or demand testing. This LED is also lit during initialization tests when a circuit pack is inserted or reset.
Yellow	Busy	The circuit pack is currently in use by the system.



**Figure Notes**

- |                      |                  |
|----------------------|------------------|
| 1. Alarm LED (Red)   | 4. Latch Pin     |
| 2. Test LED (Green)  | 5. Locking Lever |
| 3. Busy LED (Yellow) |                  |

---

**Figure 4-1. Circuit Pack LEDs**

**LED Alarms without Alarm Log Entry  
or with Error Type 1**

When the system or a part of the system is reset, all affected circuit packs briefly light the red and green LEDs as they are initialized. Upon power-up of a newly installed system, several alarm indicators may remain lit until the circuit packs are administered. Ignore these alarms until administration is completed.

During routine or demand testing of Mass Storage System components, the red, green and yellow LEDs on the MSSNET, TAPE, and DISK circuit packs all light temporarily. This is normal and does not indicate a problem.

After a circuit pack has been initialized, a lit red LED should be accompanied by an alarm in the alarm log. A single fault can sometimes light alarm LEDs on several circuit packs, as in the following examples:

- A TDM bus problem may cause several port circuit packs to display red LEDs.
- An EPN Maintenance circuit pack can prevent an Expansion Interface circuit pack from initializing.

- Extensive interactions in the Center Stage Switch can cause multiple alarms from single faults in DS1 Converter, SNI and SNC circuit packs and fiber links.
- Tone/clock problems may cause other circuit packs to report alarms.
- Misconnected optical fiber cables may cause several circuit packs to alarm.
- Packet bus faults can cause several port circuit packs to display red LEDs.
- Inspect the backplane connectors for bent pins.
- If the system seems to be functioning correctly, but the circuit pack in question is not communicating with the system, replace the circuit pack.

### **Expansion Interface Circuit Pack LEDs**

The TN570 Expansion Interface (EI) circuit pack has the standard red, green and yellow LEDs. The red LED indicates an alarm condition and the green LED indicates testing in progress.

The yellow LED displays various flashing patterns to provide status information useful in isolating faults in the fiber link and other components connected to the fiber link. Table 4-3 describes the EI yellow LED states.

**Table 4-3. Expansion Interface Yellow LED Flashing Codes**

<b>LED on</b>	<b>LED off</b>	<b>Condition</b>
0.1 second	0.1 second	Fiber Out-of-Frame: may be caused by absence of the opposite end EI or SNI, a defective or missing fiber, or defective lightwave transceiver on either endpoint.
0.5 second	0.5 second	In Frame — No Neighbor: usually due to a failure of this EI, or of the EI or SNI at the other end of the fiber.
2 seconds	0.2 second	Expansion Interface active: this is the normal state of an active EI that is an archangel of an EPN.
solid on		Expansion Interface active: this is the normal state for an active EI that is not an EPN archangel. These include EPN EIs connected to other EPN EIs in direct connect configurations, and EIs located in the PPN.
	solid off	Expansion Interface standby: this is the normal state for a standby EI in systems with a duplication option.

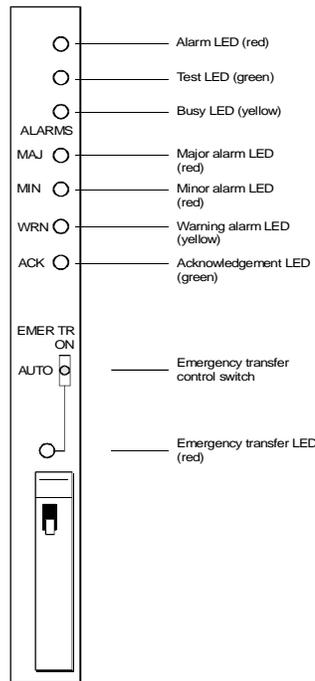
### **Maintenance Circuit Pack LEDs**

TN1648 System Access-Maintenance (SYSAM) and TN775 EPN Maintenance circuit packs have seven LEDs on the front panels. The top three LEDs are the standard group of red, green and yellow, and indicate the status of the circuit pack. The green LED on the TN775 blinks faintly once per second, indicating continual self-testing.

The second group of three LEDs, labeled "ALARMS", reflect maintenance conditions throughout the system, and indicate alarms reported against other components. On systems with duplicated SPEs, disregard the major, minor, and warning alarm LEDs on the standby SYSAM circuit pack. Only those on the active SYSAM are updated with the current system status. The yellow LED that is third from the top indicates which SYSAM is active. See Table 4-4 and Figure 4-2.

**Table 4-4. Maintenance Circuit Pack LEDs**

<b>Alarm</b>	<b>Description</b>
Major (red) flashing	Major alarm against a component in the same cabinet, (PPN for SYSAM, and EPN for MAINT)
Major (red) solid	Major alarm against a component in another cabinet in the system
Minor (red) flashing	Minor alarm against a component in the same cabinet
Minor (red) solid	Minor alarm against a component in another cabinet
Warning (yellow) flashing	Warning alarm against a component in the same cabinet
Wrng (yellow) solid	Warning alarm against a component in another cabinet
ACK (green) on	Acknowledged; alarm has been reported to INADS
EMERGENCY TRANSFER (red) on	Emergency transfer has been invoked. This occurs upon power-up as well as during disabling failures



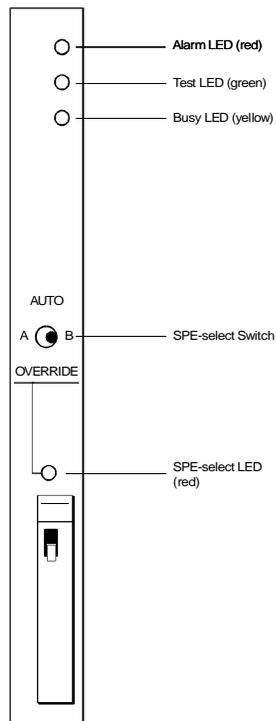
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**Figure 4-2. SYSAM and EPN Maintenance Circuit Pack LEDs**

### **Duplication Interface Circuit Pack LEDs**

In systems with duplicated SPEs, (High Reliability and Critical Reliability), there are two UN330B Duplication Interface circuit packs. One is located in carrier A and one in carrier B of the PPN. Each circuit pack has four LEDs. The top three have the traditional function of indicating the status of the circuit pack.

The LED located at the bottom of the faceplate directly beneath the SPE Select switch is labeled **OVERRIDE**. Under normal operating conditions, this switch is in the **AUTO** (center) position, and the **OVERRIDE** LED remains off. This means the system controls which SPE is active. System selection of the active SPE can be manually overridden by moving the SPE Select switches to either the "A" position or the "B" position on both Duplication Interface circuit packs. The red **OVERRIDE** LEDs on both Duplication Interface circuit packs light steadily to indicate one SPE is locked Active and the system is not duplicated. If both SPE Select switches are not in the same position, the system software retains control of Active SPE selection, and the **OVERRIDE** LED remains off. When control of the SPE selection is returned to the system by returning the SPE Select switches on both Duplication Interface circuit packs to the **AUTO** position, the **OVERRIDE** LED goes off. Forced SPE selection should be undertaken only after consulting *DEFINITY Enterprise Communications Server Release 5 Maintenance for R5r*.



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**Figure 4-3. Duplication Interface Circuit Pack LEDs**

### **Switch Node Interface LEDs**

---

The TN573 Switch Node Interface (SNI) circuit pack has the standard red, green and yellow LEDs. The red LED indicates an alarm condition and the green LED indicates testing in progress.

The yellow LED displays various flashing patterns to provide status information useful in isolating faults in the fiber link and other components connected to the fiber link. Table 4-5 describes the SNI yellow LED states.

**Table 4-5. Switch Node Interface Yellow LED Flashing States**

LED on	LED off	Condition
0.1 second	0.1 second	Fiber Out-of-Frame: may be caused by absence of the opposite end EI or SNI, a broken or missing fiber, or a missing lightwave transceiver on either endpoint.
0.5 second	0.5 second	In Frame — No Neighbor: usually due to a failure of this SNI, or the EI or SNI at the opposite of the fiber. This condition may also be due to a faulty Switch Node clock.
solid on		SNI Active This is the normal state for an active SNI.
	solid off	SNI Standby This is the normal state for a standby SNI in systems with a duplication option.

### **DS1 Converter Circuit Pack LEDs**

Eleven LEDs provide an indication of the state of the TN1654 DS1 Converter circuit pack and the T1/E1 facilities. The top group has the standard red, green and yellow LEDs. The red LED indicates an alarm condition and the green LED indicates testing in progress. The four SPAN LEDs indicate the status of the T1/E1 facilities. The four STATUS LEDs are currently unused and remain off.

The yellow LED is used to indicate the state of the fiber interface, the fiber channel, and the control channel, and the communications link to the SPE in the following manner and order of priority. See Table 4-6.

**Table 4-6. DS1 Converter Yellow LED Flashing States**

LED on	LED off	Condition
0.1 second	0.1 second	Fiber out-of-frame or fiber loss of signal
0.5 second	0.5 second	In frame, fiber channel down. The fiber channel communicating between the DS1 Converter and the other fiber endpoint (EI or SNI) is down.
1 second	1 second	In frame, control channel down. The control channel between the two DS1 Converters in the DS1 Converter complex is down.

*Continued on next page*

**Table 4-6. DS1 Converter Yellow LED Flashing States — *Continued***

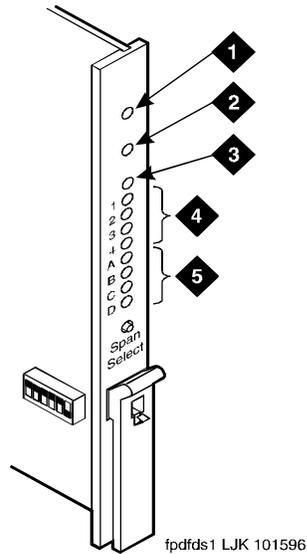
LED on	LED off	Condition
2 seconds	0.2 second	No response from SPE. The SPE is not acknowledging messages from the DS1 Converter or the communications link to the SPE is down.
solid on		DS1 Converter active. This is the normal state for an active DS1 Converter.
	solid off	DS1 Converter standby. This is the normal state for a standby DS1 Converter in critical reliability systems (duplicated PNC).

### **SPAN LEDs**

---

The four SPAN LEDs indicate the status of the four T1/E1 facilities. A SPAN LED is in one of the following states:

1. Solid on yellow: Facility is operational and alarm free.
2. Blinking yellow for 2 seconds, off 0.1 seconds: Facility is operational and alarm free AND is carrying the control channel (facility A or B only).
3. Solid on red: Facility is alarmed.
4. Solid off: Facility is not administered or has been busied out.



**Figure Notes**

- |                      |                |
|----------------------|----------------|
| 1. Alarm LED (Red)   | 4. STATUS LEDs |
| 2. Test LED (Green)  | 5. SPAN LEDs   |
| 3. Busy LED (Yellow) |                |

---

**Figure 4-4. TN1654 DS1 Converter Circuit Pack LEDs**

**Maintenance/Test Circuit Pack LEDs**

The TN771D Maintenance/Test circuit pack has the standard red, green, and yellow LEDs. The red LED indicates an alarm condition and the green LED indicates testing in progress.

The yellow LED can be off, on continuously, or flashing depending on the mode of operation and whether it has detected errors. The yellow LED is on steady when the TN771's analog test port or digital test ports are being used to test trunks or line circuits. The yellow LED is also used to indicate packet bus status. Table 4-7 describes the yellow LED states as they apply to packet bus activity.

**Table 4-7. TN771 Maintenance/Test Yellow LED States**

LED State	Mode	Condition
Solid off	Normal	The circuit pack detects no packet bus faults
Solid on <sup>1</sup>	Normal	The Packet bus port has successfully reconfigured the packet bus around a fault
Flashing (1 Hz)	Normal	The packet bus port is unable to reconfigure the packet bus around a fault
Solid off	Stand-alone <sup>2</sup>	The circuit pack detects no packet bus faults
Flashing (1 Hz)	Stand-alone	The packet bus port detects a packet bus fault

1. Because the yellow LED on the Maintenance/Test circuit pack can also be on steady when the digital and analog test ports on the circuit pack are in use, exact interpretation of the yellow LED may require the analog and digital test ports to be busied out or the error and alarm logs for PKT-BUS errors and alarms should be examined.
2. Refers to the TN771's ability to operate alone as a troubleshooting aid.

### **LEDs on Standby Components**

In high and critical reliability systems, duplicated components on standby usually have the yellow LEDs off, with the following exceptions:

- The major, minor and warning alarm LEDs on the SYSAM circuit pack on the standby SPE do not give reliable indications. Note only LEDs on the active SYSAM circuit pack.
- The yellow LED blinks on and off when the standby processor circuit pack is up and standby maintenance is running.
- In high reliability systems with a Center Stage Switch, (duplicated SPE, simplex PNC), the standby Switch Node clock's yellow LED is off. In critical reliability systems, the standby SNC is located on a separate carrier and normally remains lit.
- Yellow LEDs on power units on standby carriers normally remain lit.

---

## Install and Wire Telephones and Other Equipment

# 5

---

The wiring procedures are the same for most telephones and other equipment. This chapter provides wiring examples of these similar installation procedures. These are examples only and actual wiring procedures may differ at each site. Wiring pinouts for circuit packs mentioned in this chapter are in the tables at the end of this chapter.

After installing the hardware, the data for the system and telephone features is administered. These procedures are provided in *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*.

### **Telephone Connection Example**

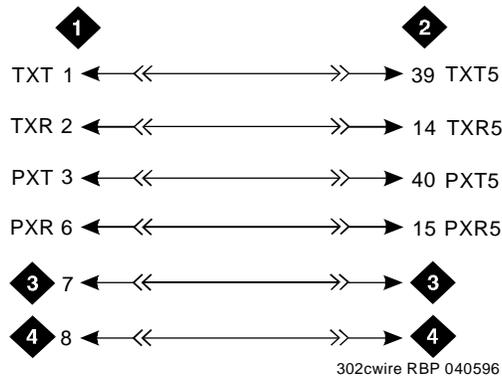
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The 302C1 Attendant Console is used as an example to describe a typical telephone connection. This connection information is typical of the 603E, 84xx (4-wire), and 94xx telephones. The attendant console always requires auxiliary (adjunct) power (-48 VDC). Power connects to the console through Pins 7 and 8 of the information outlet as shown in Figure 5-2. Only three consoles can be powered by the cabinet through the AUX connector. When possible, power the primary console from the system cabinet so it has the same power failure backup as the system.

The maximum cabling distance for the console powered from the cabinet is 350 feet (100 meters) using 24 AWG (#5) (0.511 mm) wire.

The general steps to connect a telephone are:

1. Choose a device to connect such as a 302C Attendant Console.
2. Choose the port circuit pack (from Table 5-3) and its carrier and slot number. Such as: TN754B, Cabinet 1, Carrier C, Slot 02.
3. Choose a port circuit on the port circuit pack. Such as Port 05.
4. Install cross-connect jumpers to wire the named pins on the terminal to the appropriate pins on the port circuit pack. See Figure 5-1. This pinout information is for the TN754B Digital Line circuit pack.



**Figure Notes**

- |   |                                 |
|---|---------------------------------|
| 1. 302C Attendant Console                           | 3. -48 VDC (From Adjunct Power) |
| 2. TN754B Digital Line Circuit Pack (Position 1C02) | 4. Ground (From Adjunct Power)  |

**Figure 5-1. 302C to TN754B Wiring**

5. For terminals needing adjunct power (such as an attendant console), wire -48 VDC and ground to appropriate pins on the terminal. See Figure 5-2.

**CAUTION:**

*The 329A power unit must not be used as the power source for the attendant console. Use an 1151A, 1151A2, 1145A, or MSP-1 power unit.*

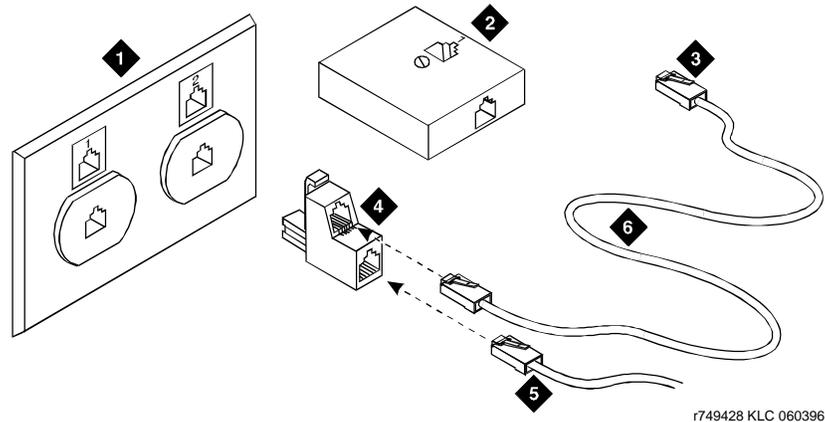
6. Refer to "Three-Pair and Four-Pair Modularity" and to "Adjunct Power Connections" later in this chapter.

---

## Connect Adjunct Power

---

The 400B2 adapter is convenient for connecting local -48 VDC power to a modular plug. See Figure 5-2.



### Figure Notes

- |                                       |   |
|---------------------------------------|---|
| 1. Flush-Mounted Information Outlet   | 4. 400B2 Adapter                                      |
| 2. Surface-Mounted Information Outlet | 5. To Telephone                                       |
| 3. To Individual Power Unit           | 6. Destination Service Access Point (DSAP) Power Cord |

---

### Figure 5-2. 400B2 Adapter Connecting to a Modular Plug

Adjunct power can be provided from the equipment room or equipment closet with an 1145B power unit. See "1145B Power Supply" on page 5-45.

Each system port network can provide power for up to three attendant consoles. This source of power is preferred for the attendant consoles because it has the same battery backup as the system. See the Auxiliary Power pinout information in Table 5-2.

Adjunct power can be provided locally at the telephone or console by the 1151A or 1151A2 Power Supply. See "1145B Power Supply" on page 5-45. *Do not use the 329A power unit.*

## Analog Station or 2-Wire Digital Station Example

---

This example is typical of the 2-wire digital stations (603E, 84xx, 94xx, 302C1), 2-wire analog stations (500, 2500, 71xx), analog Central Office (CO) trunks, Direct Inward Dial (DID) trunks, and external alarms.

The wiring designations for this example are shown in Figure 5-3.



### Figure Notes

1. 2500-Type Analog Station
2. TN2183 Analog Line Circuit Pack (Position 1C01)

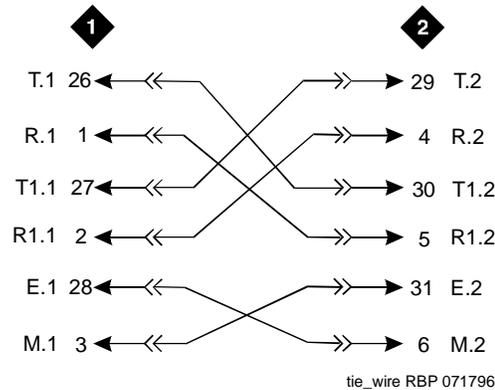
---

### Figure 5-3. 2500-Type Analog Telephone Wiring

1. Choose a peripheral to connect (such as an analog station or 2-wire digital station).
2. Choose the port circuit pack to use and its carrier and slot number (from Table 5-3). For example TN2183 Analog Line, Cabinet 1, Carrier C, Slot 1.
3. Choose a port circuit on the port circuit pack, for example Port 3.
4. Install cross-connect jumpers to connect the named pins from the analog station or 2-wire digital station to the appropriate pins on the port circuit pack. This pinout information is for the TN2183 Analog Line circuit pack.
5. Administer on the management terminal. See *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*, for more details.

## Analog Tie Trunk Example

This example shows how to connect analog tie trunk wiring from one DEFINITY System to another DEFINITY System.



### Figure Notes

1. External Trunk or Adapter
2. TN760 Tie Trunk Circuit Pack (Position 1C05)

### Figure 5-4. Analog Tie Trunk Wiring

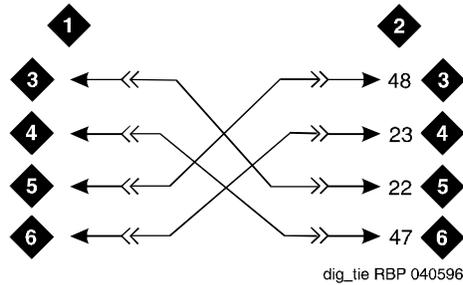
1. Set the option switches on the port circuit pack (TN760) as described in Appendix A, "Option Switch Settings".
2. Install cross-connect jumpers to connect the named pins from the tie trunk circuit pack to the appropriate leads on the external tie trunk. Names of the tie trunk leads must be determined from the manufacturer or supplier of the external trunk circuit. The example in Figure 5-4 shows a DEFINITY System tie trunk connected to a DEFINITY System tie trunk.
3. Administer on the Trunk Group Screen of the management terminal. See *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description* for more details.

## Digital Tie Trunk Example

---

This example shows how to connect digital tie trunk wiring from one DEFINITY System to another DEFINITY System. See Figure 5-5.

---



### Figure Notes

- |  |                              |
|--|------------------------------|
| 1. External Trunk                                    | 4. LO (Balanced Output Pair) |
| 2. TN464F Digital Trunk Circuit Pack (Position 1C06) | 5. LI                        |
| 3. LO  | 6. LI (Balanced Input Pair)  |

---

### Figure 5-5. Digital Tie Trunk Wiring

1. Install cross-connect jumpers to connect the named pins from the digital trunk circuit pack to appropriate pins on the manufacturer's or supplier's external digital trunk.
2. Set option switches on the port circuit pack (TN464F Digital Trunk) according to Appendix A, "Option Switch Settings".
3. Administer on the DS1 and Trunk Group Screens of the management terminal. See *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description* for more details.

## DS1 Tie Trunk Example

Digital Signal Level 1 (DS1) tie trunks provide a 1.544 Mbps digital data service between two collocated systems or between the system and a data network using T1 carrier facilities. DS1 tie trunk circuit packs provide connection capability to the DS1 facility.

The following cables can be used to connect DS1 tie trunk circuit packs to DS1 digital facilities:

- C6C connector cable (comcode 104307327) — 50-foot (15.24 m) shielded cable equipped with a 50-pin male connector on one end and a 15-pin male connector on the other end. Use this cable to connect a DS1 tie trunk circuit pack to a Channel Service Unit (CSU).
- C6D connector cable (comcode 104307376) — 50-foot (15.24 m) shielded cable equipped with a 50-pin male connector on each end. Use this cable to connect a DS1 tie trunks in collocated Single-Carrier Cabinets.
- C6E connector cable (comcode 104307434) — 100-foot (30.48 m) shielded cable equipped with a 50-pin male connector on one end and a 50-pin female connector on the other end. Use this cable as an “extension” cable between the DS1 tie trunk circuit pack and other connector cables.
- C6F connector cable (comcode 104307475) — 50-foot (15.24 m) shielded cable equipped with a 50-pin male connector on one end and a 3-inch (7.62 cm) stub on the other end. Use this cable to connect the DS1 tie trunk circuit pack to channel multiplexers requiring hardwired connections. See Table 5-1 for a pinout of the C6F cable.

**Table 5-1. Pinout of C6F Cable**

Wire Color	Lead Designation	Pin Number
White/Green	LI (High Side)	47
Green	LI	22
White/Brown	LO	48
Brown	LO (High Side)	23
White/Slate	LBACK2	49
Slate	LBACK1	24

### Collocated DS1 Tie Trunks

---

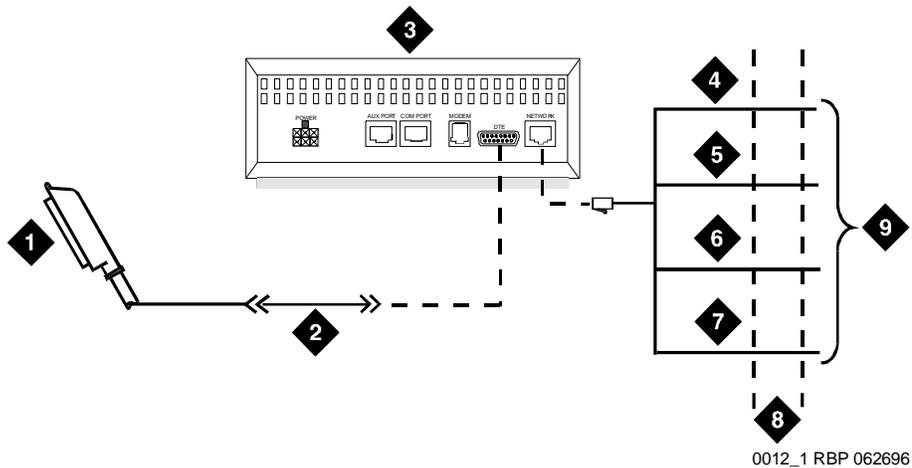
Connection to two TN722B DS1 Tie Trunk circuit packs in collocated systems can include a C6D cable for distances up to 50 feet (15.24 m). For distances over 50 feet (15.24 m) and up to 1310 Feet (399.3 m) maximum, use C6E cable(s).

### DS1 Tie Trunks Using Channel Service Unit

---

Figure 5-6 shows an example of the connections required to connect a DS1 tie trunk to a T1 Channel Service Unit (CSU) or Integrated Channel Service Unit (ICSU). The ICSU is used to interface the DS1 tie trunks with the 1.544 Mbps digital facility.

Contact your Lucent Technologies representative for maximum cabling distances.



#### Figure Notes

- |   |   |
|---|---|
| 1. To TN722B DS1 Tie Trunk Circuit Pack                             | 5. R (Ring)                             |
| 2. C6C Cable (For Distances Over 50 Feet (15.24 m), Use C6E Cables) | 6. T1 (Tip 1)                           |
| 3. CSU or ICSU (3150 Shown)   | 7. R1 (Ring 1)                          |
| 4. T (Tip)  | 8. 1.544 Mbps Digital Service Interface |
|   | 9. To T1 Carrier                        |

---

**Figure 5-6. Typical Connections to Channel Service Unit**

## Auxiliary Connector Outputs

The control carrier output cable pinouts are shown in Table 5-2. The control carrier AUX connector outputs include the following:

- Alarm monitoring for the auxiliary cabinet.
- Seven -48 VDC power sources for emergency transfer units.
- Three -48 VDC power sources for remotely powering three attendant consoles or telephone adjuncts.
- The remote system management terminal interface trunk connection location.
- Access to a relay contact is available to actuate a customer-provided light, bell, or similar alarm device. Administer the relay make contact when a major, minor or warning alarm condition occurs in the system. The circuitry required for this feature must be provided by the customer. The device connected to the alarm leads must not exceed a rating of 100 Volts at 0.75 Amps. The pinouts for an external alarm are shown in Table 5-2.

A connector labeled AUX is provided on the rear of the control carrier. Connect a 25-pair cable to this connector. Route the cable to a connecting block on the trunk/auxiliary field.

**Table 5-2. Auxiliary Lead Appearances at AUX Connector**

Color <sup>1,2</sup>	Pin Number	AUX Connector Outputs
W-BL BL-W	26 1	Major <sup>3</sup>
W-O O-W	27 2	Minor <sup>3</sup>
W-G G-W	28 3	GRD
W-BR BR-W	29 4	GRD
W-S S-W	30 5	GRD
R-BL BL-R	31 6	GRD
R-O O-R	32 7	GRD

*Continued on next page*

**Table 5-2. Auxiliary Lead Appearances at AUX Connector**  
**— Continued**

Color <sup>1,2</sup>	Pin Number	AUX Connector Outputs	
R-G G-R	33 8	Not Connected	
R-BR BR-R	34 9	Not Connected	
R-S S-R	35 10	Not Connected	
BK-BL BL-BK	36 11	-48 GND	Emergency Transfer Relay Power ↓
BK-O O-BK	37 12	-48 GND	
BK-G G-BK	38 13	-48 GND	
BK-BR BR-BK	39 14	-48 GND	
BK-S S-BK	40 15	-48 GND	
Y-BL BL-Y	41 16	-48 GND	
Y-O O-Y	42 17	-48 GND	
Y-G G-Y	43 18	Not Connected	
Y-BR BR-Y	44 19	-48 GND	AUX Power
Y-S S-Y	45 20	-48 GND	
V-BL BL-V	46 21	-48 GND	
V-O O-V	47 22	Not Connected	
V-G G-V	48 23	Ext Alarm A <sup>3</sup> Ext Alarm Return	
V-BR BR-V	49 24	Not Connected	
V-S S-V	50 25	INADS Tip INADS Ring	

*Continued on next page*

1. Color designation is AA-BB. AA is the main wire color and BB is the color of the stripe.
2. The following wire colors apply in Table 5-2:
 

W	White
BL	Blue
O	Orange
G	Green
BR	Brown
S	Slate (Grey)
R	Red
BK	Black
Y	Yellow
V	Violet
3. External alarm with signal incoming to system.

Table 5-3 provides port circuit pack and telephone pin designations.

**Table 5-3. Port Circuit Pack and Telephone Pin Designations**

Pin on Modular plug	4-wire; 302C1, 8403, 8410, 8411B/D, 8434, 603E, 9403, 9434	2-wire; 302C1, 8403, 8410, 8411B/D, 8434, 603E, 9403, 9410, 9434	8510T Basic Rate Interface (BRI) (with adjunct speaker phone)	Analog Station, Modem	NT1	Z3A1 & Z3A2 Asynchronous Data Units (ADU), Data Modules
1	TXT					TXT
2	TXR			T		TXR
3	PXT		TXT	R		PXT
4		T	PXR		T	
5		R	PXT	No	R	
6	PXR		TXR	Connection (4-pin modular jack)		PXR
7	-48VDC	(-48VDC)	(-48VDC)		-48VDC	
8	GRD	GRD	GRD		GRD	
<b>Circuit Pack</b>	<b>TN754 4-wire digital (8 port)</b>	<b>TN2181 2-wire digital (16 port)</b> <b>TN2224 2-wire digital (24 port)</b>	<b>TN556, ISDN-BRI Line</b>	<b>TN2183 Analog line (16 port)</b>	<b>TN2198 2-wire Basic Rate Interface line</b>	<b>TN726 Data Line</b>

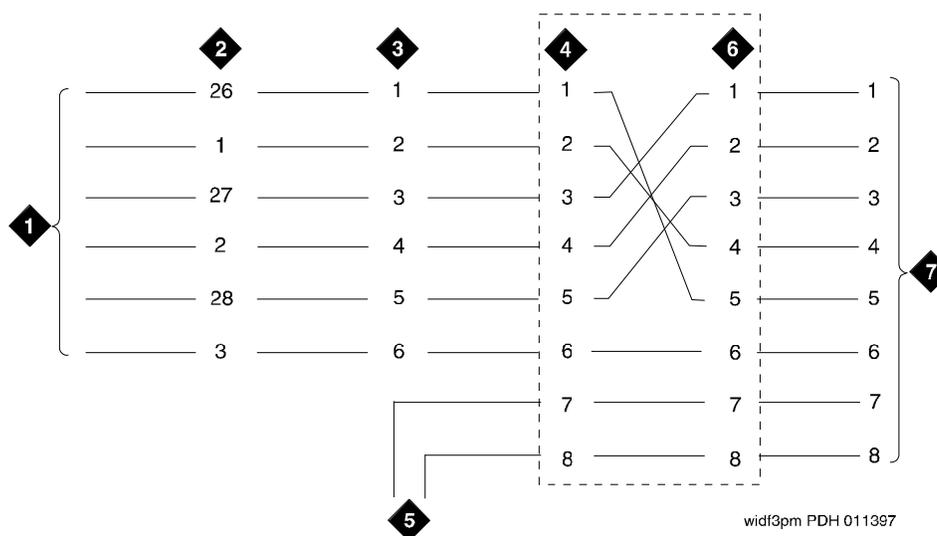
PX private branch exchange transmit (A)  
 TX Terminal transmit R Ring (B)

## Three-Pair and Four-Pair Modularity

Figure 5-7 shows 3-pair and 4-pair modularity from the port circuit pack to the terminal pins at the information outlet (modular jack). Most terminals connect to an information outlet installed at the work location.

Make the connections from the port circuit pack to the modular jacks as shown in Figure 5-7. Then, plug the terminal into the modular jack.

Figure 5-8 shows three methods of connecting adjunct power.



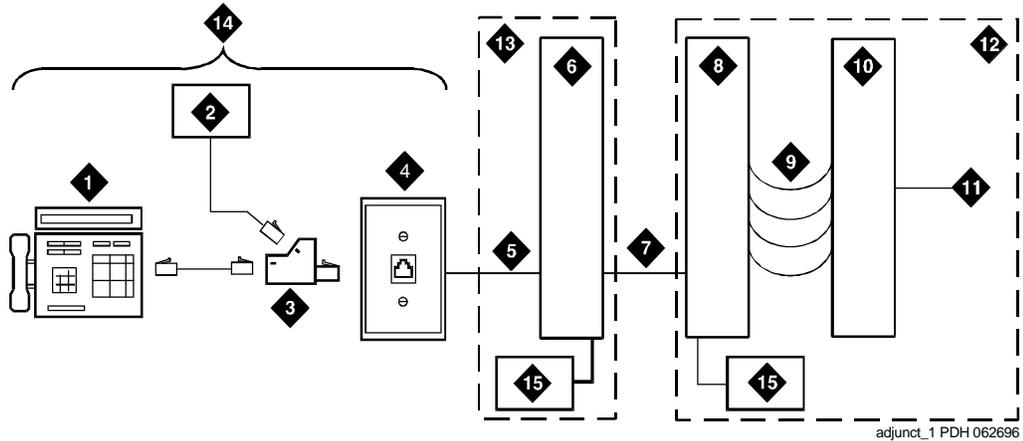
### Figure Notes

- |   |   |
|---|---|
| 1. Port Circuit Pack                                      | 4. Input to Information Outlet (4-Pair Modularity)    |
| 2. System Cabinet Connector Pins (3-Pair Modularity)      | 5. Adjunct Power                                      |
| 3. Main Distribution Frame (MDF) Pins (3-Pair Modularity) | 6. Output From Information Outlet (4-Pair Modularity) |
|   | 7. Voice Terminal                                     |

Figure 5-7. 3-Pair and 4-Pair Modularity

## Adjunct Power Connections

Figure 5-8 shows typical connection locations for adjunct power. Adjunct power for station equipment may be supplied from the equipment room, satellite location, or the work location.



### Figure Notes

- |   |  |
|---|--|
| 1. Typical Display Telephone                      | 9. 100P6A Patch Cord or Jumpers                              |
| 2. Adjunct Power Supply (Such as 1151A or 1151A2) | 10. System Side of Main Distribution Frame                   |
| 3. 400B2 Adapter                                  | 11. 25-Pair Cable to System Cabinet Analog Line Circuit Pack |
| 4. Information Outlet                             | 12. Equipment Room   |
| 5. 4-Pair D-Inside Wire (DIW) Cable               | 13. Satellite Location                                       |
| 6. Satellite Site or Adapter Location             | 14. Work Location  |
| 7. 25-Pair D-Inside Wire (DIW) Cable              | 15. Power From Bulk Power Source (Such as 1145B)             |
| 8. Station Side of Main Distribution Frame        |  |

### Figure 5-8. Example Adjunct Power Connections

For Figure 5-8, the following example is used:

- a. If 25 telephones connect to the system and all 25 telephones need adjunct power, install the adjunct power supply in the equipment room.
- b. If only ten of the telephones need adjunct power, install the adjunct power supply at the satellite location.
- c. If only one telephone needs adjunct power, install the adjunct power supply at the work location.

## Local and Phantom Power

A console's maximum distance from the system is limited. The maximum distance for a 302C1 console is as shown in Table 5-4.

**Table 5-4. Attendant Console Cabling Distances**

Enhanced Attendant Console (302C1)	24 AWG Wire (0.5106 mm)		26 AWG Wire (0.4049 mm)	
	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

## Auxiliary Power

The nonessential functions of an attendant console and its optional 26A1 or 24A1 selector console derive their power from an auxiliary power source. Of the maximum of 27 attendant consoles, three of the consoles can derive auxiliary power from the system and through the auxiliary cable located in the trunk/auxiliary field. When possible, provide auxiliary power for a primary attendant console through this cable so the console remains fully operational during short power outages.

### ⇒ NOTE:

For a console connected to a Multi-Carrier Cabinet to realize the longest nominal battery holdover, the console's TN754B or TN413 Digital Line circuit pack should reside in an EPN's expansion control carrier.

An attendant console can also derive auxiliary power from either:

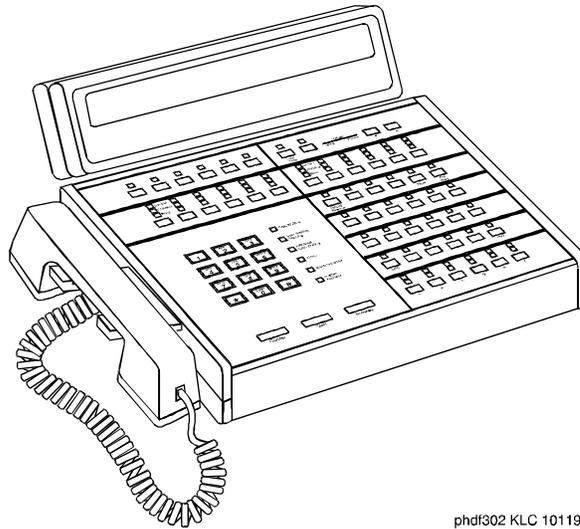
- Individual 1151A or 1151A2 power supply
- MSP-1 power supply
- 258A-type adapters
- Bulk power supplies such as the 1145A1

A console's maximum distance from its auxiliary power source is:

- 800 feet (244 m) for a 302A1
- 350 feet (107 m) for a 301B1 and 302C1

## Attendant Console

---



phd1302 KLC 101196

---

**Figure 5-9. 302C1 Console**

1. Install the Attendant Console and connect the modular cord to the information outlet.
2. Install labels per Attendant Console form and Display Module form assignments.
3. Install a TN754B or TN413 Digital Line circuit pack in the assigned carrier slot (if an additional circuit pack is required).
4. Administer forms listed under Attendant Console in *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*.

### Hard-Wire Bridging

---

Analog type hard-wire bridging is not allowed for 4-wire (only) DCP endpoints. This is because hard-wire bridging has no way of combining the digital output of 2 bridged DCP sets. Also, bridged endpoints cause an added load that degrades the DCP signal. 2-wire DCP interfaces require twice the spectrum of 4-wire interfaces.

**⚠ CAUTION:**

*Bridging or paralleling these endpoints can cause electrical damage to the consoles or cause the circuit pack to remove power from the consoles.*

## **Dual Wiring of Two-Wire and Four-Wire Endpoints**

---

A 2-wire and 4-wire endpoint cannot be simultaneously wired to the same equipment location in an MDF, even though they connect to differently colored wire pairs. The system uses separate circuit packs to interface 2- and 4-wire endpoints, and none of these circuit packs are capable of interfacing both.

## **26B1 Selector Console**

---

1. Connect the supplied 3-foot (0.9 m) D8AC cable to the modular jack on the bottom of the 26B1 Selector Console. Route the cable to the attendant console and connect to the DXS/BLF jack.
2. Attach labels according to the Attendant Console form.
3. Administer the console using *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*.

## Connect External Alarm Indicators

The system provides access to a relay contact that can be used to operate a customer-provided alarm, such as a light or bell. The circuitry and power source are customer-provided. The device connected to the alarm leads must not exceed a rating of more than 100 Volts at 0.75 Amp.

1. Route one major and one minor alarm pair to the trunk/auxiliary field for each carrier AUX connector. These pairs are designated *1M* (major) and *1m* (minor) in Table 5-5. Also refer to the tables at the end of this chapter for connector pin numbers to wiring block terminals.

**Table 5-5. External Alarm Leads at Main Distribution Frame**

Color	110-Type Wiring Block Terminal	Cabinet AUX Connector Outputs
White-Blue	01	1M (Pin 26)
Blue-White	02	Ground (Pin 1)
White-Orange	03	1m (Pin 27)
Orange-White	04	Ground (Pin 2)

Alarms can be generated on adjunct equipment, sent to the DEFINITY System, and recorded and reported as "External Alarms." A typical major alarm input is from pins 14 and 15 of J2 on an Uninterruptible Power Supply (UPS).

2. Connect external alarm inputs from the adjunct equipment through pins 45 and 20 of the wiring block associated with the AUX connector.
3. The connection is completed through the 25-pair cable to pins 48 and 23 of the AUX connector.
4. Note which device is connected to which alarm and give this information to your Lucent Technologies representative for future troubleshooting purposes.

## Connect Power Distribution Unit External Alarm Wires

---

The external alarm plug was already connected to the J58890CH-1 Power Distribution Unit. The pinout for the connector is shown in Table 5-6.

**Table 5-6. External Alarm Connector Pinout**

Pin	Designation	Definition
26	Not Used	
1	Not Used	
27	Not Used	
2	Not Used	
28	Not Used	
3	Not Used	
29	Not Used	
4	Not Used	
30	Not Used	
5	Not Used	
31	Not Used	
6	Not Used	
32	Not Used	
7	Not Used	
33	RFA2 +	Rectifier Failure (positive)
8	RFA2 -	Rectifier Failure (negative)
34	ACF2 +	AC Failure (positive)
9	ACF2 -	AC Failure (negative)
35	BIF2 +	Battery Interface Failure (positive)
10	BIF2 -	Battery Interface Failure (negative)
36	BOD2 +	Battery On Discharge (positive)
11	BOD2 -	Battery On Discharge (negative)
37	Not Used	

*Continued on next page*

**Table 5-6. External Alarm Connector Pinout — *Continued***

<b>Pin</b>	<b>Designation</b>	<b>Definition</b>
12	RXD	Receive Data
38	TXD	Transmit Data
13	DTR	Data Terminal Ready
39	RS-232 GRD	RS-232 Ground
14	DSR	Data Set Ready
40	RTS	Request To Send
15	Not Used	
41	Not Used	
16	Not Used	
42	Not Used	
17	Not Used	
43	Not Used	
18	Not Used	
44	Not Used	
19	Not Used	
45	Not Used	
20	Not Used	
46	Not Used	
21	Not Used	
47	Not Used	
22	Not Used	
48	Not Used	
23	Not Used	
49	Not Used	
24	Not Used	
50	Not Used	
25	Not Used	

**⇒ NOTE:**

RS-232 alarms (RXD, DTR, DSR, TXD, RS-232 GRD, and RTS) are not supported on the BU3200A Battery Interface Unit.

1. Choose an alarm to connect (such as Battery Interface Failure).
2. Choose the port circuit pack to use and its carrier and slot number (from Table 5-3). For example TN2183 Analog Line, Cabinet 1, Carrier C, Slot 1.
3. Choose a port circuit on the port circuit pack, for example Port 3.
4. Install cross-connect jumpers to connect the named pins from the alarm wires to the appropriate pins on the port circuit pack.

**⇒ NOTE:**

It is recommended that the RFA, ACF, and BIF alarm leads be connected to the major alarm device and the BOD alarm leads be connected to the minor alarm device.

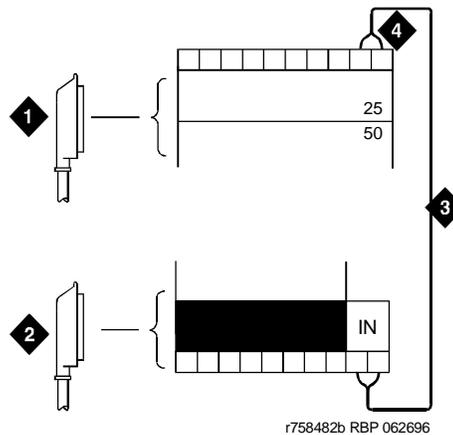
5. Connect the major and minor alarm devices to the appropriate cross-connect pins on the MDF.
6. Administer the alarms using *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*.

## Remote Network Interface

---

The Remote Network Interface (formerly Initialization and Administration System (INADS)) provides a 1200 bps modem connection for the remote management terminal. The network interface trunk should appear on the twenty-fifth pair of a RJ21X network interface jack. The trunk is a two-way, rotary dial, loop start trunk that connects to a TN731 Maintenance circuit pack, the processor circuit pack, or the TN1648 System circuit pack through the network interface terminals at the trunk/auxiliary Main Distribution Frame (MDF). Figure 5-10 shows a typical network interface trunk installation.

1. Determine the network interface trunk appearance at the green trunk/auxiliary field of the MDF.
2. Label the terminals for the trunk appearance.
3. Install jumpers between the trunk appearance on the green field and the Remote Network Interface terminals on the purple field.



### Figure Notes

- |   |  |
|---|--|
| 1. To Network Interface Facility          | 3. One Pair of Wires                                 |
| 2. To Control Carrier Auxiliary Connector | 4. Twenty-fifth Pair of RJ21X Network Interface Jack |

---

**Figure 5-10. Connections at Trunk/Auxiliary Field**

## TN1654 DS1 Converter (Release 5r Only)

### Set Circuit Pack Switches

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

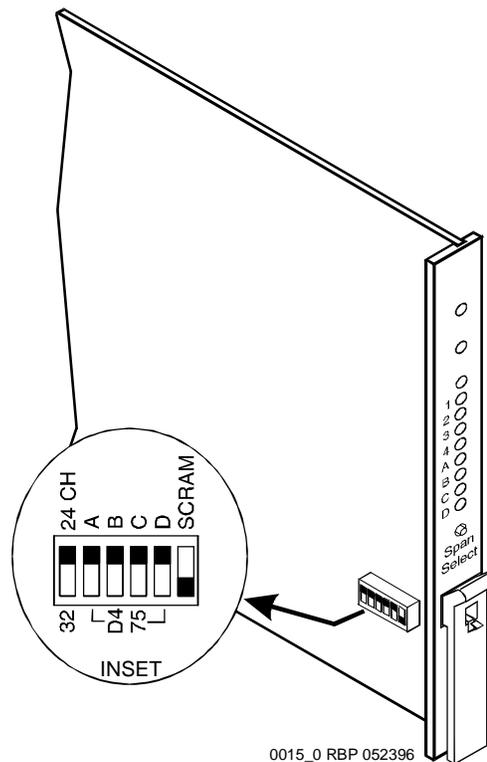
E1 facility line termination impedances of 120 Ohms for twisted-pair and 75 Ohms for coax wiring are supported. The T1 line impedance is fixed at 100 Ohms and the T1 framing is selectable for ESF (Extended Super Frame) or D4 for each facility.

Figure 5-11 shows the location of the switches. Table 5-7 shows the switch setting positions and functions.

**Table 5-7. TN1654 DS1 Converter Configuration Switches**

Switch	Function	Up	Down
1	Type of Facility	T1	E1
2	Span A Line Impedance (E1 Only) Span A Framing (T1 Only)	120 Ohm ESF	75 Ohm D4
3	Span B Line Impedance (E1 Only) Span B Framing (T1 Only)	120 Ohm ESF	75 Ohm D4
4	Span C Line Impedance (E1 Only) Span C Framing (T1 Only)	120 Ohm ESF	75 Ohm D4
5	Span D Line Impedance (E1 Only) Span D Framing (T1 Only)	120 Ohm ESF	75 Ohm D4
6	Force Fiber Data-Stream Scrambling	Enabled	Disabled

1. Set the configuration switches on the TN1654 as required per site.
2. Set Switch 6 down (disabled).



**Figure 5-11. DS1 Converter Circuit Pack Switches**

If Switch 1 is down, E1 facilities are selected. All subsequent facility switch settings (Switches 2-5) reflect E1 impedance on each of the four facilities. For example: If Switch 1 is down and Switch 2 is up, Span A Line Impedance of 120 Ohms is selected. If Switch 1 is down and Switch 2 is down, Span A Line Impedance of 75 Ohms is selected.

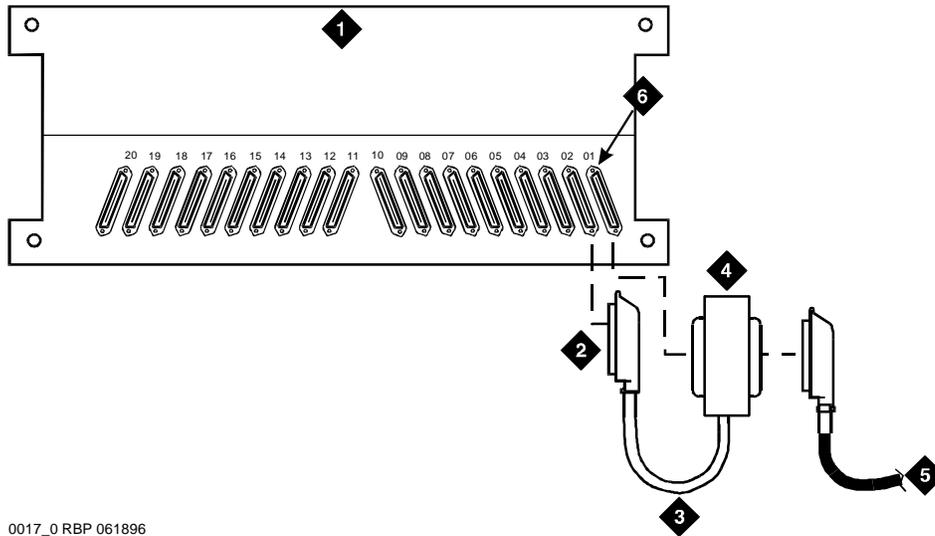
If Switch 1 is up, T1 facilities are selected. All subsequent facility switch settings (Switches 2-5) reflect T1 framing on each of the four facilities. For example: If Switch 1 is up and Switch 2 is up, ESF framing is selected. If Switch 1 is up and Switch 2 is down, D4 framing is selected.

Switch 6 must be set to the down (disabled) position. Switch 6 may not be present (or active) on all TN1654 DS1 Converter circuit packs.

### Install the Circuit Pack and Cabling (T1 Only)

The following installation instructions are provided as examples only.

Be sure to label the cables as they are installed.



0017\_0 RBP 061896

#### **Figure Notes**

- |   |   |
|---|---|
| 1. Port Cabinet   | 4. 50-Pin Male/50-Pin Female<br>Double-Headed Connector Cable                     |
| 2. 50-Pair Female Connector to<br>Expansion Interface Connector | 5. Quad Cable (With 50-Pin Male<br>Connector) Connects to Channel<br>Service Unit |
| 3. 14-Inch (35.56 cm) "Y" Cable                                 | 6. DS1 Converter Connector  |

---

**Figure 5-12. DS1 Converter Connections — Part 1**

### Port Carrier

1. Install the TN1654 in any slot in a Port Carrier, next to a TN570C Expansion Interface circuit pack.
2. On the backplane, connect a 14-inch (35.56 cm) "Y" cable from the TN1654 to the Expansion Interface circuit pack. See Figure 5-12.

 **CAUTION:**

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

3. Connect an H600-348 Quad cable to the remaining end of the "Y" cable.
4. Skip to "Channel Service Unit Cabling".

### Switch Node Carrier

Up to two TN1654 circuit packs can be installed in a Switch Node Carrier.

1. Install the TN1654 in any slot in the Switch Node Carrier, next to a TN573B Switch Node Interface circuit pack.
2. On the backplane, connect a 14-inch (35.56 cm) "Y" cable from the TN1654 to the Switch Node Interface circuit pack. See Figure 5-12.

 **CAUTION:**

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

3. Connect an H600-348 Quad cable to the remaining end of the "Y" cable.
4. Skip to "Channel Service Unit Cabling".

### Port Carrier to Switch Node Carrier

When the TN1654 is located in the Port Carrier and the Switch Node Interface circuit pack is located in the Switch Node Carrier, connect a 70" (177.8 cm) "Y" Cable between the two circuit packs.

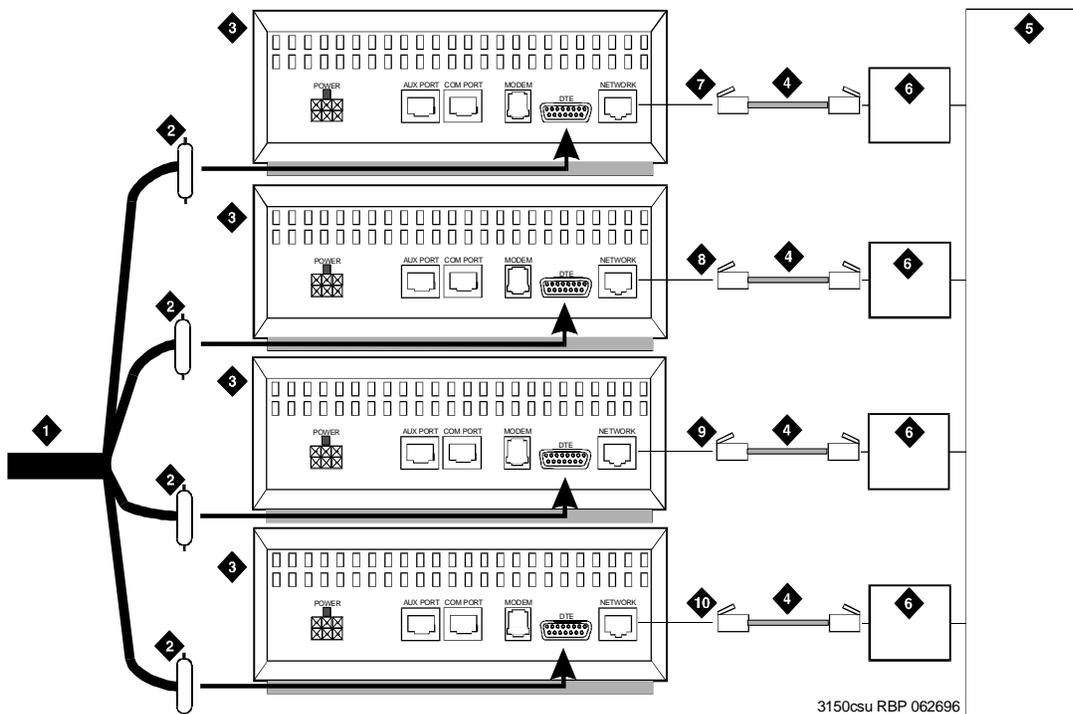
 **CAUTION:**

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

1. Connect an H600-348 Quad cable to the remaining end of the "Y" cable.

### Channel Service Unit Cabling

Figure 5-13 shows a typical connection from the H600-348 Quad Cable to the CSU, through the H600-307 Network Cable, and to the network interface through the Smart Jacks. The double-headed cable plugs into the DS1 converter slot. The quad cable provides up to four DS1 connections using a 15-pin connector that plugs into the DTE jack on each CSU. An adapter cable (comcode 107063711) may be required to connect the H600-348 and the H600-307 cables to the CSU.



#### Figure Notes

- |   |               |
|---|---------------|
| 1. H600-348 Quad Cable                              | 6. Smart Jack |
| 2. 15-Pin Male "D" Connectors (to DTE Jacks on CSU) | 7. Cable "A"  |
| 3. Channel Service Unit (CSU)                       | 8. Cable "B"  |
| 4. H600-307 Cable (RJ-48C to RJ-48C)                | 9. Cable "C"  |
|   | 10. Cable "D" |

Figure 5-13. DS1 Converter Connections — Part 2

1. Connection to the remote-located system is the same as that shown in Figure 5-12 and Figure 5-13.

Table 5-8 shows the “Y” cable lengths and associated comcode numbers.

**Table 5-8. “Y” Cable Lengths**

Length	Description	Comcode
14 Inches (35.5 cm)	TN1654 to adjacent Expansion Interface circuit pack or TN573B Switch Node Interface circuit pack in same carrier	847245750
70 Inches (177.8 cm)	TN1654 to Expansion Interface circuit pack or Switch Node Interface in another carrier	847245768
14 Inches (35.5 cm)	TN1654 to fiber optic transceiver (DC-powered cabinets only). This cable is for intercabinet cabling only.	847245776
14 Inches (35.5 cm)	TN1654 to adjacent TN570C Expansion Interface circuit pack	847746641

**⇒ NOTE:**

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

### Install the Circuit Pack and Cabling (E1 Only)

The E1 installation is similar to the T1 installation except the H600-348 Quad Cable and the Channel Service Unit are not used.

**⇒ NOTE:**

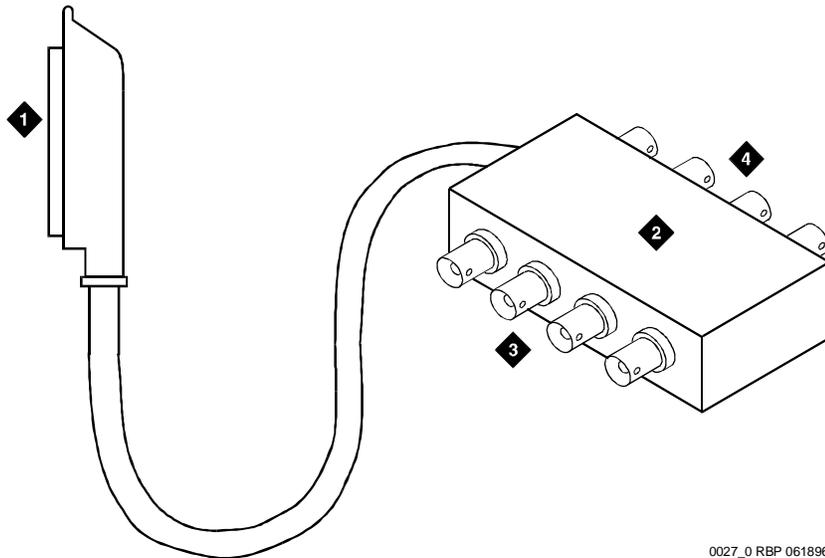
The H600-348 Quad Cable can be used on E1, 120 Ohm installations.

1. Install a “Y” cable between the DS1 Converter connector and the Expansion Interface connector. See Figure 5-12. Also refer to Table 5-8 for the “Y” cable lengths and associated comcode numbers.
2. Be sure to label the cables as they are installed.

## E1 Interface Cabling

---

Figure 5-14 shows typical E1 cabling to the network interface via the coaxial adapter cable. The actual adapter may be different in appearance.



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### Figure Notes

- |   |                          |
|---|--------------------------|
| 1. 50-Pin Male Connector on Coaxial Adapter Cable | 3. Connect to Quad Cable |
| 2. Coaxial Adapter Cable (With 8 BNC Connectors)  | 4. Connect to E1 Network |

---

### Figure 5-14. DS1 Converter Connections — E1 Only

1. Connect a coaxial adapter cable to the remaining end of the “Y” cable. The opposite end of this cable is wired to a coaxial adapter assembly.
2. Plug a customer-provided quad cable onto the four BNC connectors provided on the coaxial adapter.
3. Connect the opposite end of the quad cable to the network interface.

## **Off-Premises Station Wiring**

---

The cabling outside the building for off-premises stations is provided by the local telephone company. The off-premises stations can appear on any of the RJ21X network interfaces provided for the Central Office (CO) trunks.

### **⚠ CAUTION:**

*Only an FCC-approved (or equivalent) analog type telephone, for example, a 2500-type, can be used as an off-premises station. The TN746B and TN2183 Analog Line circuit packs can be used for off-premises stations.*

1. Connect an A25D (male-to-male) cable between the RJ21X network interface and a sneak fuse panel. See "Install Sneak Fuse Panels" on page 2-13 in Chapter 2, "Install Telecommunications Cabling".
2. At the MDF, connect jumper wires between one row/connecting block in the green field and up to three rows/connecting blocks in the purple field to concentrate the analog line pairs.
3. Connect an A25D cable between the sneak fuse panel and the 110-type terminal block connector associated with the green row in Step 2.
4. Install a green label on the 110-type terminal block to identify the remote location.
5. Administer per *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*.

## **Off-Premises or Out-of-Building Stations**

---

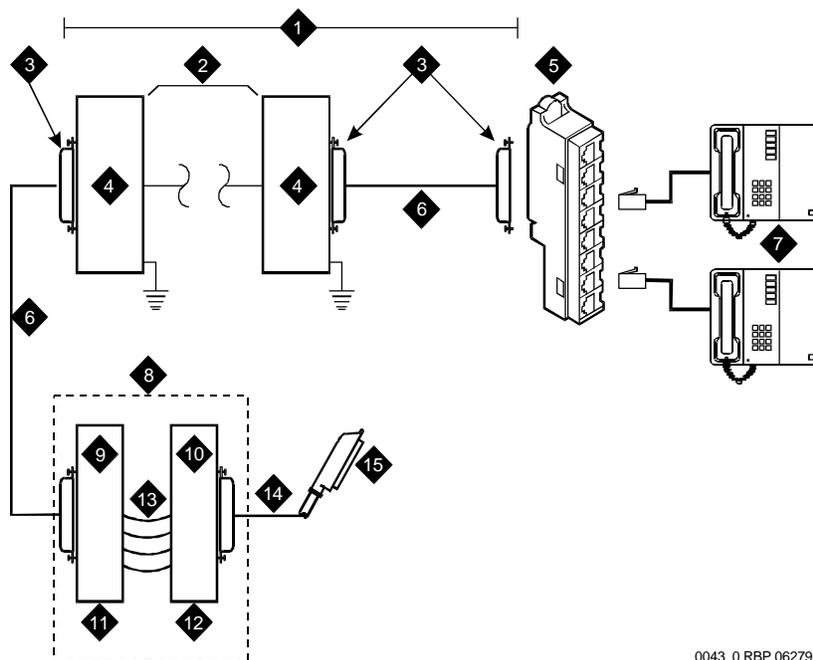
Out-of-building campus stations are those telephones/voice terminals not physically located in the same building as the equipment room but are located on the same property.

### **Analog Off-Premises Stations**

---

Figure 5-15 shows the connections for one to eight off-premises analog telephones. Only analog telephones connected to TN742, TN746B, TN2183, or TN769 Analog Line circuit packs can be installed out-of-building.

The maximum distance from the system cabinet to the out-of-building voice terminal is 6000 feet (1828.8 meters) using 24 AWG (0.511 mm) wire.



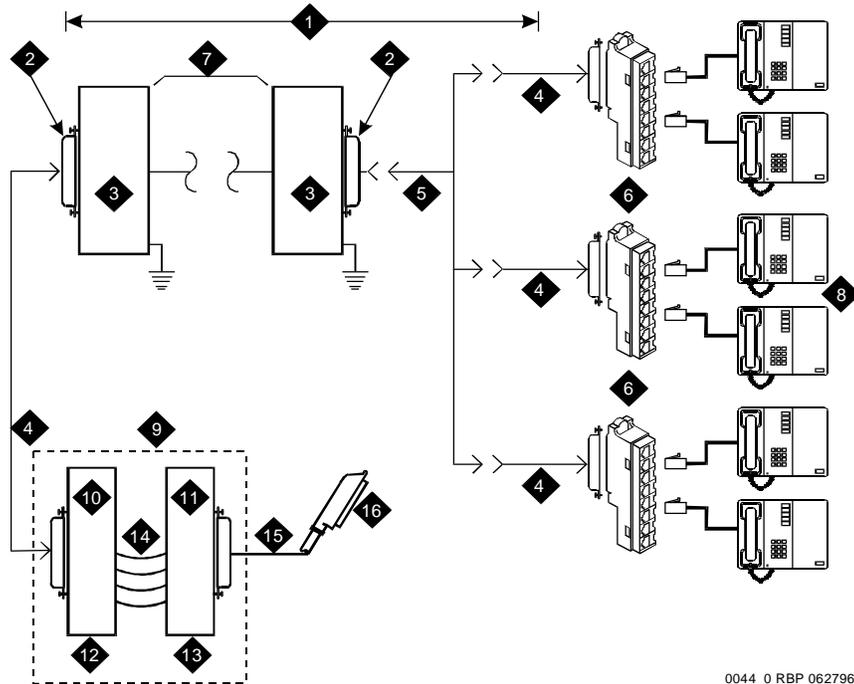
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**Figure Notes**

- |  |  |
|--|--|
| 1. Locally Engineered Cables and Equipment   | 8. Part of Main Distribution Frame (MDF)                         |
| 2. Out-of-Building Wiring  | 9. Station Side  |
| 3. 25-Pair Connector   | 10. System Side  |
| 4. Multi-Pair Protector Units (Primary Protectors with Heat Coils or Equivalent with Sneak Current Protection) | 11. White Field  |
| 5. 356A Adapter  | 12. Purple Field   |
| 6. B25A Cable (Male to Female)   | 13. Cross-Connect Jumpers  |
| 7. Out-Of-Building Analog Telephones   | 14. Tip and Ring Wires   |
|  | 15. To TN2183, TN769, TN742, TN746B, or Analog Line Circuit Pack |

**Figure 5-15. Connections for Up to Eight Out-of-Building Analog Telephones**

Figure 5-16 shows the connections for up to 24 off-premises analog telephones. Concentrations of analog line pairs are used at both buildings to minimize the off-premises wiring required. At the MDF, connect jumpers between one row/connecting block in the white field and up to 3 rows/connecting blocks in the purple field. At the station location, a WP-90929, List 1 Concentrator Cable is used. There are 8 station appearances on each of the 3 fingers of the concentrator cable.



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**Figure Notes**

- |  |   |
|--|---|
| 1. Locally Engineered Cables and Equipment   | 8. Out-Of-Building Analog Telephones                            |
| 2. 25-Pair Connector   | 9. Part of Main Distribution Frame (MDF)                        |
| 3. Multi-Pair Protector Units (Primary Protectors with Heat Coils or Equivalent with Sneak Current Protection) | 10. Station Side  |
| 4. B25A Cable (Male to Female)   | 11. System Side   |
| 5. Concentrator Cable (WP90929 List 1)   | 12. White Field   |
| 6. 356A Adapter  | 13. Purple Field  |
| 7. Out-of-Building Wiring  | 14. Cross-Connect Jumpers                                       |
|  | 15. Tip and Ring Wires  |
|  | 16. To TN742, TN769, TN746B, or TN2183 Analog Line Circuit Pack |

**Figure 5-16. Connections to 24 Out-of-Building Telephones**

Carbon block, or equivalent protection is required at both building entrances. Also sneak current protection is required. Protection can be provided by a 4-type protector or a 3-type protector plus a separate sneak current protector. The 4-type protector is equipped with a heat coil.

The 4-type protector is the preferred device. For installations not using primary protection, 4-type protectors should always be used. When the 3-type protector is already installed, a separate sneak current protector is required. The multi-pair protector units and the off-premises cabling must be locally engineered. Connectorized multi-pair protector units (female 25-pair connector) are recommended. The protector units can be ordered from the *Premises Distribution Systems Equipment and Supplies Catalog*. Table 5-9 shows the recommended protectors.

**Table 5-9. Analog Line Circuit Protectors**

<b>Protectors</b>		
<b>Primary<sup>1</sup></b>	<b>Primary (with heat coil)</b>	<b>Sneak Current Protectors<sup>2</sup></b>
3B1A (carbon)	4B1C (carbon)	220029 Fuse
3B1E-W (wide gap gas tube)	4B1E-W (wide gap gas tube)	SCP-1
3C1S (solid state)	4C1S (solid state)	

- 
1. The 3-type protectors should only be used if they are already part of the existing protection system. A sneak current protector is always required when a 3-type primary protector is used.
  2. The 3-type protectors should only be used if they are already part of the existing protection system. A sneak current protector is always required when a 3-type primary protector is used.
- 

The maximum range of out-of-building analog telephones (500-, 2500-, or 7100-types) connected to an analog line circuit pack should be such that the maximum loop resistance does not exceed 1300 ohms.

The following voice terminals/telephones cannot be installed in an exposed environment:

- 7300-type voice terminals connected to TN762 Hybrid Line circuit packs
- Multi-button Electronic Telephone (MET) sets connected to TN735 MET Line circuit packs
- Analog telephones connected TN746 Analog Line circuit packs

**Protector Ordering Information**

<b>Description</b>	<b>Comcode</b>
3B1A (Carbon Block)	102381779
3B1E-W (Wide Gap Gas Tube)	104410147
3C1S (Solid State)	105514756
4B1C (Carbon Block with Heat Coil)	102904893
4B1E-W (Wide Gap Gas Tube w/Heat Coil)	104401856
4C1S (Solid State with Heat Coil)	104386545
SCP-110 Sneak Current Protector	406948976
220029 Fuse (sneak current protector)	407216316

**Digital Out-of-Building Voice Terminals**

Protection is required at both building entrances for digital out-of-building voice terminals. There are two different types of protectors that can be used to protect digital voice terminals and digital line circuit packs in an out-of-building environment. The two enhanced protectors to use are the 4C3S-75 and the ITW Linx. These units provide primary and sneak current protection. For sneak current protection, the 4C3S-75 is equipped with a heat coil and the ITW Linx is equipped with replaceable fuses.

The 4C3S-75 may only be used with Vintage 14 or newer TN754 circuit packs. The 4C3S-75 can be used on all vintages of the TN754B circuit packs. The ITW Linx may be used on all vintages of the TN754 and TN754B circuit packs. Table 5-10 lists the approved protectors.

**Table 5-10. Digital Voice Circuit Protectors**

<b>Circuit Pack</b>	<b>Enhanced Primary Protector (With Sneak Current Protection)</b>
TN754 V13 or earlier	ITW Linx Only
TN754 V14 or later	4C3S-75 or ITW Linx
TN754B all vintages	4C3S-75 or ITW Linx

When possible, all new and reused wiring installations should use blocks that accept the standard 5-pin plug-in 4C3S-75 protector. However, there are reused wiring installations where this may not be cost effective. For these installations, the ITW Linx protector may be installed. An example of this is where screw-type carbon block protectors (or other non plug-compatible types) are in place and it is too costly to re-terminate the outside plant cable on a 5-pin mounting block for only a few out-of-building terminals.

The ITW Linx Enhanced Protector may be installed in series with existing primary protection. The 4C3S-75 protector cannot be installed in series with other types of primary protection. It must be installed as the only protection on the line entering the building. For the 4C3S-75 protector there are a variety of 25-, 50-, and 100-pair protector panels equipped with 110-type connecting blocks and/or RJ21X connectors. The ITW Linx Enhanced Protector mounts directly on connecting blocks and requires a separate ground bar.

The maximum range for out-of-building digital voice terminals is 3400 feet (1036 m) when using 24 AWG (0.511 mm) wire and 2200 feet (670 m) when using 26 AWG (#4) wire. The range can be extended to 5000 feet (1524 m) using 24 AWG (#5) wire or 4000 feet (1219 m) using 26 AWG (0.404 mm) wire with the use of a Data Link Protector (DLP). The DLP is an isolating transformer used to remove phantom power on the system side and re-introduce it on the terminal side. When a protector is used, the voice terminal must be locally powered by an external power supply or through the AC power cord provided with some of the 7400-type voice terminals. The protector is installed on the equipment side of the protection in both buildings.

### **Protector and Data Link Protector Ordering Information**

<b>Description</b>	<b>Comcode</b>
4C3S-75 (Solid State with Heat Coil)	105581086
ITW LINX (Gas Tube, Avalanche Suppress)	406144907
ITW Linx Ground Bar (used with above)	901007120
ITW Linx Replacement Fuse	406304816
Data Link Protector (one circuit)	103972758
Data Link Protector (eight circuits)	103972733

## **Emergency Transfer Units and Associated Telephones**

---

Emergency transfer capability is provided by a transfer unit mounted next to the trunk/auxiliary field. Analog telephones connected to the transfer panel can be used. The 500-and 2500-type telephones can also be used as normal extensions. Emergency transfer capability may be provided on analog Central Office (CO) and Wide Area Telecommunications Service (WATS) trunks.

The 808A Emergency Transfer Panel provides emergency trunk bypass or power-fail transfer for up to five incoming CO trunk loops to five selected station sets. The 808A equipment's Ringer Equivalency Number (REN) is 1.0 Amp.

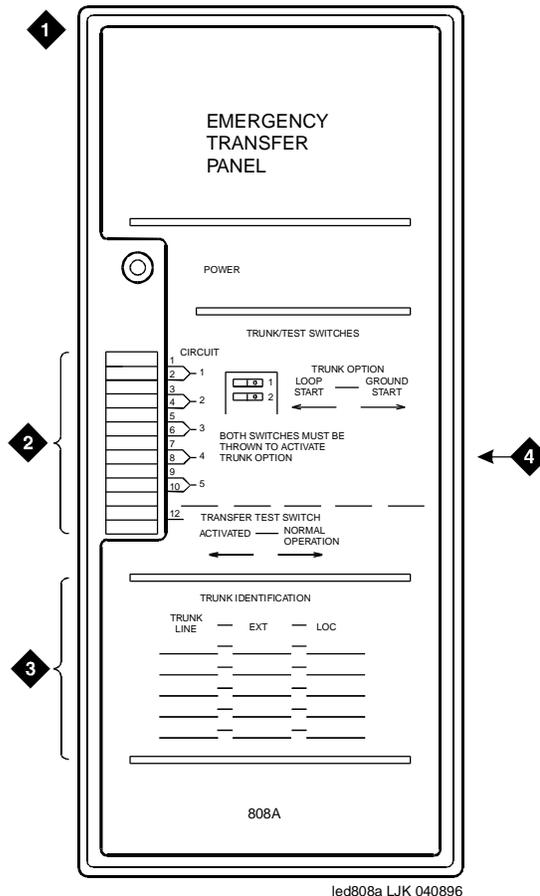
At the MDF, the unit is controlled by a connection to a yellow terminal row/connecting block in the trunk/auxiliary field. The unit is controlled by -48 VDC from the **EM TRANS RELAY PWR** terminals. There are seven **EM TRANS RELAY PWR** terminal pairs that allow powering of up to seven transfer units.

Should power be restored to the relays while a call connected through the 808A is in progress, the 808A maintains the connection until the user goes on-hook. Each 808A can handle up to five CO trunks.

### 808A Emergency Transfer Panel

Figure 5-17 shows a typical 808A Emergency Transfer Panel. The 808A is connected to the MDF with a B25A (male-to-female) or A25B cable.

The following procedures are provided as a typical installation example.

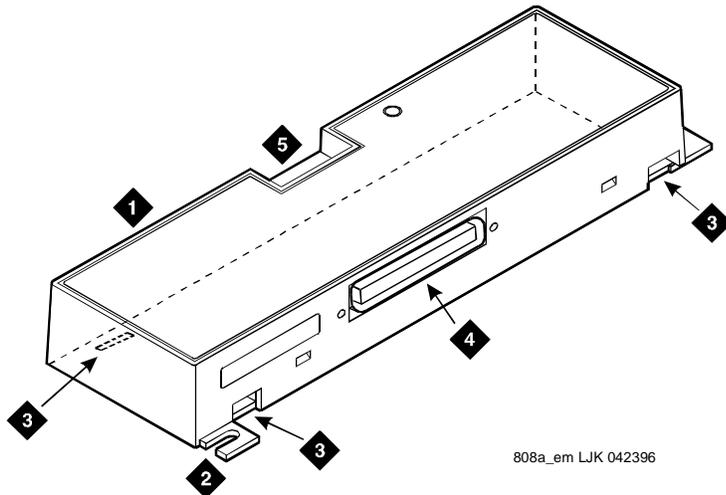


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#### Figure Notes

- |                                     |                               |
|-------------------------------------|-------------------------------|
| 1. 808A Emergency Transfer Panel    | 3. Trunk Identification Label |
| 2. Circuit Start Selection Switches | 4. 25-Pair Male Connector     |

Figure 5-17. 808A Emergency Transfer Panel



**Figure Notes**

- |                                  |                           |
|----------------------------------|---------------------------|
| 1. 808A Emergency Transfer Panel | 4. 25-Pair Male Connector |
| 2. Ear for Screw Mount           | 5. Switches               |
| 3. Cut-Out for Snap Mount        |                           |

---

**Figure 5-18. 808A Emergency Transfer Panel Mounting**

**NOTE:**

Install the 808A in a location that can be accessed only by authorized personnel. In addition, the location must meet standard environmental considerations such as temperature, humidity, and so forth.

6. Install the panel on any mounting frame in either a vertical or horizontal position. The housing has ears for screw-mounting and cutouts for snap-mounting the unit in an 89-type mounting bracket. See Figure 5-18. Verify dial tone is present at each trunk circuit.
7. Locate the circuit start selection switches. See Figure 5-17. These are the first 10 two-position switches on the left side of the panel. They are used to set each of the five incoming trunk lines to either loop start or ground start. Two switches are used for each circuit; switches 1 and 2 are used for circuit 1, switches 3 and 4 are used for circuit 2, and so forth. See Table 5-11. For loop start, set the switches to the **left**. For ground start, set the switches to the **right**.

**Table 5-11. Trunk/Test Switches**

<b>Switch Number</b>	<b>Circuit Number</b>
1	1
2	1
3	2
4	2
5	3
6	3
7	4
8	4
9	5
10	5
11	Not Used
12	Test Switch

8. Connect a 25-pair cable between the male RJ21 25-pair connector on the Emergency Transfer Panel and the yellow field of the MDF. See Figure 5-19. Table 5-12 shows the pin assignments.
9. Make cross-connections for each emergency trunk/emergency station pair. See Figure 5-20 and Table 5-12.

**Table 5-12. Pin Assignments for 25-Pair Connector**

Pin	Color	Designation	Connector/Description
26	W-BL	TTC1	Tip-PBX Trunk Circuit 1
1	BL-W	RTC1	Ring-PBX Trunk Circuit 1
27	W-O	TTK1	Tip-CO Trunk Circuit 1
2	O-W	RTK1	Ring-CO Trunk Circuit 1
28	W-G	TLC1	Tip-PBX Line Port 1
3	G-W	RLC1	Ring-PBX Line Port 1
29	W-BR	TST1	Tip-Emergency Terminal 1
4	BR-W	RST1	Ring-Emergency Terminal 1
30	W-S	TTC2	Tip-PBX Trunk Circuit 2
5	S-W	RTC2	Ring-PBX Trunk Circuit 2
31	R-BL	TTK2	Tip-CO Trunk Circuit 2
6	BL-R	RTK2	Ring-CO Trunk Circuit 2
32	R-O	TLC2	Tip-PBX Line Port 2
7	O-R	RLC2	Ring-PBX Line Port 2
33	R-G	TST2	Tip-Emergency Terminal 2
8	G-R	RST2	Ring-Emergency Terminal 2
34	R-BR	TTC3	Tip-PBX Trunk Circuit 3
9	BR-R	RTC3	Ring-PBX Trunk Circuit 3
35	R-S	TTK3	Tip-CO Trunk Circuit 3
10	S-R	RTK3	Ring-CO Line Port 3
36	BK-BL	TLC3	Tip-PBX Line Port 3
11	BL-BK	RLC3	Ring-PBX Line Port 3
37	BK-O	TST3	Tip-Emergency Terminal 3
12	O-BK	RST3	Ring-Emergency Terminal 3
38	BK-G	TTC4	Tip-PBX Trunk Circuit 4
13	G-BK	RTC4	Ring-PBX Trunk Circuit 4
39	BK-BR	TTK4	Tip-CO Trunk Circuit 4
14	BR-BK	RTK4	Ring-CO Trunk Circuit 4
40	BK-S	TLC4	Tip-PBX Line Port 4
15	S-BK	RLC4	Ring-PBX Line Port 4

*Continued on next page*

**Table 5-12. Pin Assignments for 25-Pair Connector — Continued**

Pin	Color	Designation	Connector/Description
41	Y-BL	TST4	Tip-Emergency Terminal 4
16	BL-Y	RST5	Ring-Emergency Terminal 4
42	Y-O	TTC5	Tip-PBX Trunk Circuit 5
17	O-Y	RTC5	Ring-PBX Trunk Circuit 5
43	Y-G	TTK5	Tip-CO Trunk Circuit 5
18	G-Y	RTK5	Ring-CO Trunk Circuit 5
44	Y-BR	TLC5	Tip-PBX Line Port 5
19	BR-Y	RLC5	Ring-PBX Line Port 5
45	Y-S	TST5	Tip-Emergency Terminal 5
20	S-Y	RST5	Ring-Emergency Terminal 5
46	V-BL	COM1	Common 1 Relay Contact
21	BL-V	NO1	Normally Open 1 Contact
47	V-O	NC2	Normally Closed 2 Contact
22	O-V	NC1	Normally Closed 1 Contact
48	V-G	COM2	Common 2 Relay Contact
23	G-V	NO2	Normally Open 2 Contact
49	V-BR		
24	BR-V		
50	V-S	GRD	Ground From PBX
25	S-V	-48PX	-48V from Alm Panel

10. On the trunk identification label at the bottom of the panel, record the trunk line, extension, and location for each circuit.
11. Attach a label identifying each voice terminal designated as an emergency terminal. The labels are provided with the unit.
12. Check the system for normal operation:
  - Set the test switch (switch 12) to NORMAL OPERATION.
  - Ensure the power supply is providing -48 VDC at 80 mA maximum.
  - The power LED should be ON.
  - Verify there is dial tone on all emergency transfer sets.

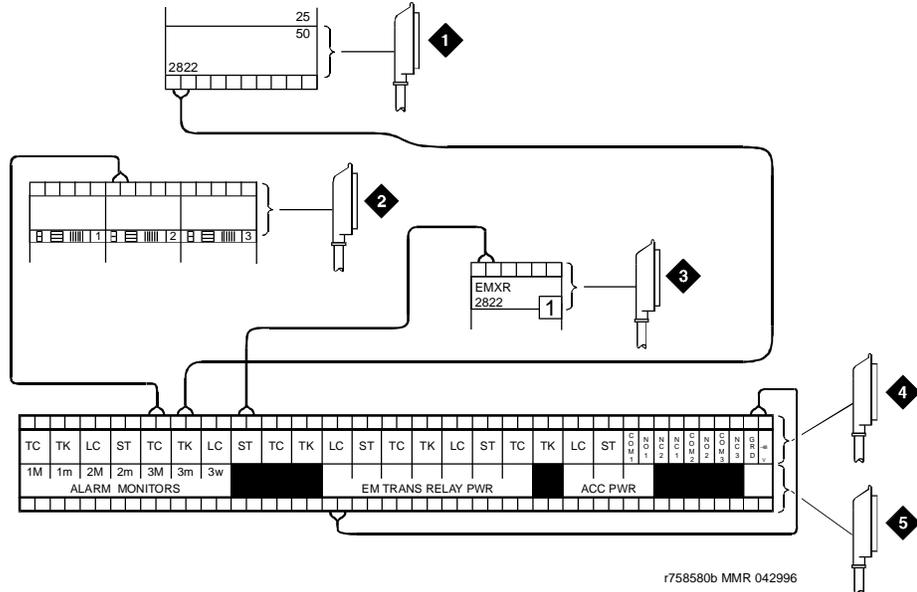
If all of the above conditions are not met, remove the panel from service and replace it with a new panel.

13. Check the system for transfer operation as follows:

- Place the test switch (switch 12) in the ACTIVATED position.
- The power LED should be OFF.
- Verify there is dial tone on all emergency transfer sets.

If all of the above conditions are not met, remove the panel from service and replace it with a new panel.

The 808A connect to the MDF with a B25A (male-to-female) cable. Figure 5-19 shows the connections at the trunk/auxiliary field for a telephone used only for emergency transfer.

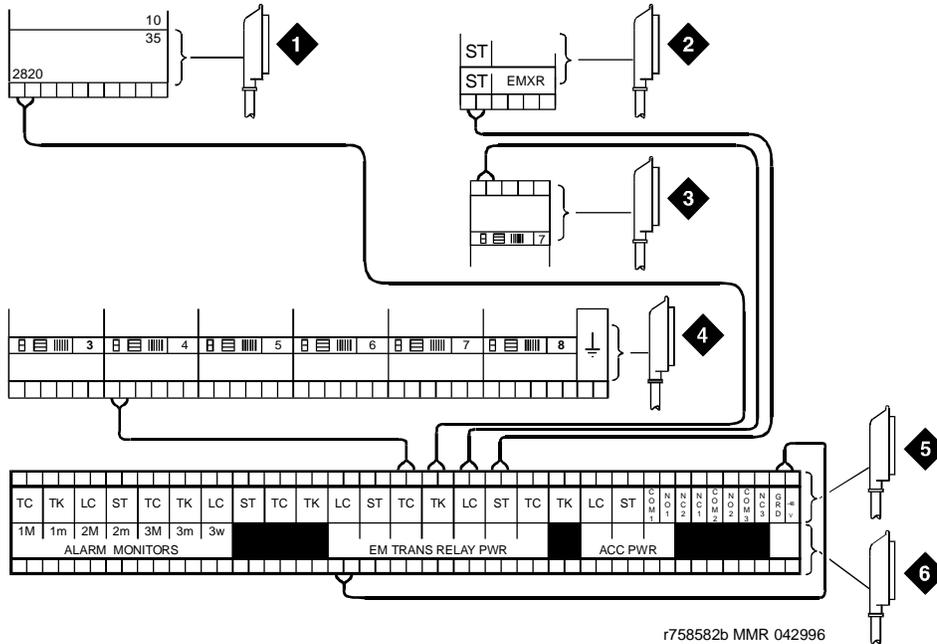


**Figure Notes**

- |   |  |
|---|--|
| 1. To Network Interface Circuitry                             | 3. To Blue or White Station Distribution Field |
| 2. To TN747 (or Equivalent) Central Office Trunk Circuit Pack | 4. To Power Transfer Unit                      |
|   | 5. To Control Carrier AUX Connector            |

**Figure 5-19. Connections for Telephone Used for Emergency Transfer**

Figure 5-20 shows the connections at the trunk/auxiliary field for a telephone used for emergency transfer as well as a normal extension.



**Figure Notes**

- |  |   |
|--|---|
| 1. To Network Interface Facility                                       | 4. To TN747 (or Equivalent) Central Office Trunk Circuit Pack |
| 2. To Blue or White Station Distribution Field                         | 5. To Power Transfer Unit                                     |
| 3. To TN742, TN746B, or TN769 (or Equivalent) Analog Line Circuit Pack | 6. To Control Carrier AUX Connector                           |

**Figure 5-20. Connections for Telephone Used for Emergency Transfer and as Normal Extension**

## Install Telephone for Power Transfer Unit

### Trunk/Auxiliary Field: Telephone Used Only for Emergency Transfer

1. Connect a pair of wires between the **-48V** and **GRD** terminals on the yellow emergency transfer row/connecting block and the **EM TRANS RELAY PWR** terminal. See Figure 5-19.
2. Connect CO trunk leads from the purple field to **TC** terminals on the yellow emergency transfer row/connecting block for each trunk.
3. Connect CO trunk leads from the green field to **TK** terminals on the yellow emergency transfer row/connecting block for each trunk.
4. Connect **ST** leads on the yellow emergency transfer row/connecting block for each emergency transfer telephone to the **ST** terminal appearance in the yellow trunk/auxiliary field. The **ST** terminal leads should be terminated on the following pairs: 1, 4, 7, 10, 13, 16, 19, or 22 (the first pair of any 3-pair group).
5. Connect the **ST** leads from the terminal in Step 4 to the assigned terminal in the blue or white station distribution field.

### Trunk/Auxiliary Field: Telephone Used for Emergency Transfer and as Normal Extension

1. Connect a pair of wires between the **-48V** and **GRD** terminals on the yellow emergency transfer row/connecting block to the **EM TRANS RELAY PWR** terminal. See Figure 5-20 on page 5-42.
2. Connect CO trunk leads from the purple field to **TC** terminals on the yellow emergency transfer row/connecting block for each trunk.
3. Connect CO trunk leads from the green field to **TK** terminals on the yellow emergency transfer row/connecting block for each trunk.
4. Connect telephone leads from the purple analog line board row/connecting block to the **LC** terminals on the yellow emergency transfer row/connecting block for each telephone.
5. Connect **ST** leads on the yellow emergency transfer row/connecting block for each emergency transfer telephone to the **ST** terminal appearance in the purple trunk/auxiliary field.
6. Connect the **ST** leads from the terminal in Step 4 to the assigned terminal in the blue or white station distribution field.

### Telephone Installation

Install telephone assigned to emergency transfer as follows:

1. Connect telephone to the information outlet.
2. Install patch cords/jumper wires between the system side and the station side of the station distribution field on the MDF.

## **External Ringing**

---

Connections for external ringing provided by a device, such as a gong, chime, or bell, are at an information outlet. The system side of the MDF connects to a TN2183 or equivalent analog line circuit pack located in a port carrier. The circuit packs contain 16 ports each.

**⇒ NOTE:**

A maximum of three devices can connect to one TN2183 circuit pack port.

1. Wire the ringing device to the information outlet as shown in Figure 5-7 and Figure 5-8.
2. Administer per *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*.

## **Queue Warning Indicator**

---

The connections for the queue warning indicator are the same as external ringing. An AC indicator (lamp) such as a 21C49 can be used in a Uniform Call Distribution/Direct Departmental Calling (UCD/DDC) queue.

The lamp connects to an information outlet. The system side of the MDF connects to an analog line circuit pack in a port carrier.

1. Wire the queue warning indicator to the information outlet as shown in Figure 5-7 and Figure 5-8.
2. Administer per *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*.

## **1145B Power Supply**

---

The 1145B closet power arrangement provides an uninterruptible -48 VDC power source with battery and 1145B distribution unit for ISDN/DCP, terminal equipment, adjuncts, and other customer-supplied equipment. During AC power interruptions, batteries automatically provide power to the load.

A manual switch on the distribution unit allows the user to redirect reserve power to outputs 1 through 32 so all outputs are provided battery reserve power.

**⇒ NOTE:**

The switch must be set to the 1-32 position.

The 1145B/1146B is a -48V power supply with 200 Watts total output. Each output circuit is current limited by a thermistor that limits the maximum output to 12 Watts. Each 1145B output has an LED to indicate the status of the thermistor. If the LED is on, the thermistor has a short on that power pair.

Not all outputs can simultaneously provide 12 Watts. The average power per output cannot exceed 6.25 Watts ( $200/32 = 6.25$ ). The 1145B is designed to power one ISDN terminal or DCP adjunct per output. The maximum number of terminals or adjuncts is 32. The 1145B is required for installations outside the United States.

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

- Attendant Console 302C
- Any 8520 terminal
- Any 7500- or 8500-series terminal with an asynchronous data module
- Any 7500-series terminal whether in passive bus, or point to point (one per BRI port)
- Any 8510 terminal in passive bus or with an asynchronous data module (unless the 8510 will not be used to support data or video)
- PassageWay adapter interface
- Any 8400-series terminal
- Any 7400-series terminal

Figure 5-21 shows how the standard power supply and wall-mounting plates fit together. Figure 5-22 shows the expanded power supply components (power distribution unit and "T" cable).

## Wall-Mounting Plates

---

The top plate is used for mounting the back-up battery. The bottom plate is used to mount the power supply and distribution units. The plates can be rack-mounted using standard rack-mounting brackets.

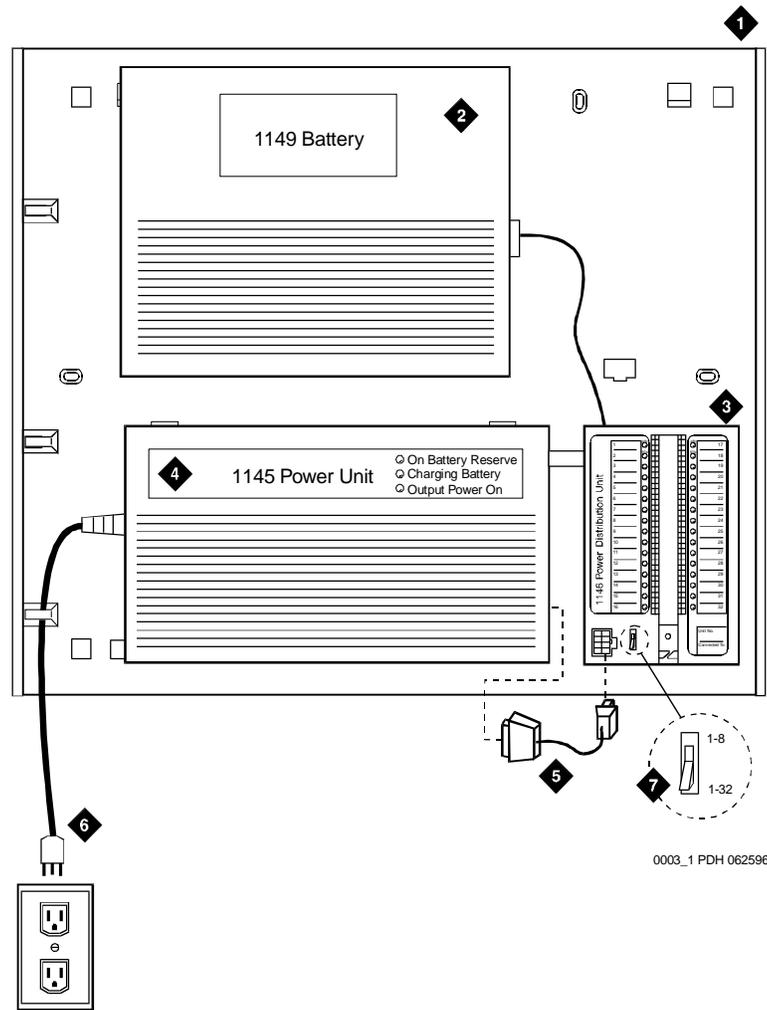
1. Locate one plate directly below the other one such that the AC power cord (6.5 feet or 2 meters) reaches the electrical outlet from a power supply mounted on the bottom plate. Both plates should be located so the raised letters are right side up.



**NOTE:**

A maximum of four power supplies can be powered from one dedicated 110 VAC, 20 amp (or 230 VAC, 15 amp) feeder. Use only unswitched receptacles (receptacles not connected to a wall switch).

2. Secure the wall mounting plates to a standard 3/4 inch (2 cm) thick plywood mounting board. Each mounting plate comes with four #10 x 1/2-inch wood screws.
3. The 1145B Power Supply is snap-fit onto the bottom wall mounting plate without tools.
4. An installer-provided insulated ground wire, 16 AWG (1.29 mm) or greater, is required to connect the power supply frame ground lug to an approved ground. The frame ground screw is located next to the AC receptacle, to the left of the unit.
5. Mark the Unit Number and Connectivity information on the front label next to the LEDs.



0003\_1 PDH 062596

**Figure Notes**

- |                                  |  |
|----------------------------------|--|
| 1. Wall Mounting Plate           | 5. Power Cable   |
| 2. Battery (1149B Shown)         | 6. Unswitched Outlet (120 VAC, 20 Amp<br>or 230 VAC, 15 Amp) |
| 3. 1146B Power Distribution Unit | 7. Battery Backup Switch Setting                             |
| 4. 1145B Power Unit              |  |

**Figure 5-21. 1145B/1146B Mounting Arrangement**

### **Mount the 1146B Power Distribution Unit**

---

1. Insert and securely tighten the two supplied #8-32 x 1/2-inch shoulder screws (they have an unthreaded section at the top) into the top holes designated for 1146B 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 inch 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-hand label to locate the output power connection.

### **Battery Mounting/Wiring**

---

Three types of back-up batteries are used; the 1148B, the 1149B, and the 1147B. Table 5-13 provides the rating and PEC code of each battery.

**Table 5-13. Back-Up Battery PEC Codes**

<b>Battery</b>	<b>Rating</b>	<b>PEC Code</b>
1148B	2.5 Amp Hour (AH)	24700
1149B	5 Amp Hour (AH)	24701
1147B	8 Amp Hour (AH)	24703

1. Loosely thread two #10-32 x 1/2-inch shoulder screws into the top designated battery holes on the wall mounting plate.
2. Place the keyhole slots in the battery bracket on these two screws. The battery cord exits from the right of the bracket. Make sure the label on the battery is visible. Tighten the screws securely.
3. Plug the battery cord into the power supply's right rear receptacle. The rear receptacle is indicated on the right label.

## **Install the Expanded Power Distribution Unit**

A second power distribution unit can be installed to provide power to additional 8400-series and 8500-series terminals.

### **CAUTION:**

*Total power cannot exceed 200 Watts. The maximum ISDN terminal mixture is twenty four 7500-series and twenty four 8500-series terminals.*

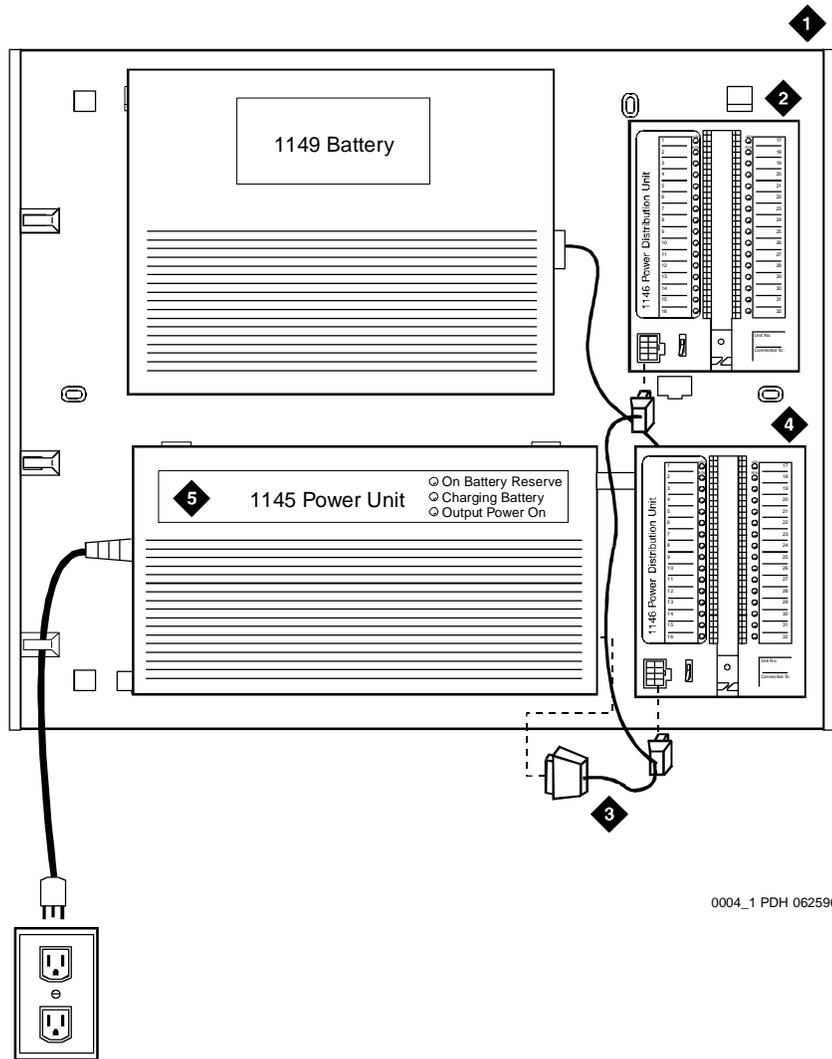
*The maximum DCP terminal mixture is twenty four 7400-series and twenty four 8400-series or sixty four 8400-series terminals.*

The following items are supplied with each expanded power distribution unit kit:

- One 1146B Power Distribution Unit (comcode 107250995)
- One “T” Cable (comcode 847529872)
- Two #8-32 x 1/2-inch Shoulder Screws
- One #8-32 x 1 inch Screw
- One Spacer Bracket (comcode 847554441)

Refer to Figure 5-22 while installing the power distribution unit.

1. Set the spacer bracket onto the mounting plate and secure with the #8-32 x 1/2-inch shoulder screws. The spacer bracket is not shown in Figure 5-22 but is installed 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 inch screw through the distribution unit, through the spacer bracket, and into the plate. The mounting hole is located just above the wire clip. Tighten the screw securely.
4. Set the battery back-up switch to the 1-32 (down) position.
5. Power-down the 1145B unit as described on the label on the side of the unit.
6. Remove the output power cable between the 1145B and the 1146B units. The cable will not be reused.
7. Connect the P1 connector end of the “T” cable to the bottom power distribution unit. Connect the P2 connector to the top distribution unit. Connect the P3 connector to the 1145B.
8. Power-up the 1145B as described on the label on the side of the unit.



**Figure Notes**

- |   |  |
|---|--|
| 1. Wall-Mounting Plate                  | 4. First 1146B Power Distribution Unit |
| 2. Second 1146B Power Distribution Unit |  |
| 3. "T" Cable (H600-347-G7)              | 5. 1145B Power Unit                    |

**Figure 5-22. Expanded Power Distribution Unit**

## **Power Up and Test**

---

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 Amp feeder. Use only unswitched receptacles.

2. Plug 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 LEDs at front of the unit should be lit together. Green means the power supply is providing power. Yellow means the battery is being charged. After the battery reaches full charge (maximum of twenty hours), the yellow LED should go out.

**FAIL:** If either green or yellow LED is not lit after powering up, check the connections. Test the AC outlet. If power is available and the AC power cord and connections are good, replace the power unit.

4. Disconnect the AC plug on the power supply, this activates the DC supply.
5. Check DC (battery back-up) operation of the 1145B Power Supply by monitoring the LEDs:

**PASS:** The red and green LEDs should be lit together. Red means the power supply is on battery back-up.

**FAIL:** If either green or red LED is not lit after disconnecting AC power, check the connections. If the connections are good, replace the power unit or batteries.

6. Reconnect AC power to the power supply.

### **Wire the 1146B Power Distribution Unit**

---

Wire endpoints to the 1146B while power from the 1145B is on. A red LED lights if its associated circuit is connected to shorted wiring or to a shorted terminal.

1. Install cross-connect jumpers to wire from the unit (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 "Reset LEDs on Power Distribution Unit" on page 5-52.
2. Mark lead destinations on the label next to each connector. Also mark the Unit Number and Connectivity information on the label.

### **Reset LEDs on Power Distribution Unit**

---

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 and must be replaced. If the LED is still lit, find and repair the short circuit in the building wiring.
3. Reconnect the terminal equipment to the wall jack and re-test terminal equipment operation.



#### **WARNING:**

*Important Safety Instructions follow.*

When operating this equipment, basic safety precautions must be followed to reduce the risk of fire, electric shock and personal injury, including the following:

- Read and understand all instructions.
- Do not attach the power supply cord to building surfaces.
- For continued back-up protection and battery reliability, replace batteries every four years.
- Follow all warnings and instructions marked on the products.
- Clean products only with a dry rag.
- Do not use this product near water.
- For mounting security, follow all installation instructions when mounting product.
- Openings on top and bottom of power unit are provided for ventilation. Do not block or cover these openings. Do not exceed recommended environmental temperatures.
- Operate these products only from the type of power source indicated on the product labels.

- The power unit is equipped with a three wire grounding type plug; a plug having a third (grounding) pin. This plug will only fit into a grounding type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact an electrician to replace the outlet. Do not defeat the safety purpose of the grounding type plug.
- Do not allow anything to rest on or spill into the products.
- To reduce risk of fire and electrical shock, do not overload power outlets.
- Never push objects of any kind through the power supply or distribution unit slots as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electrical shock.
- To reduce risk of electric shock, do not disassemble these products. Return them for repair when needed. Opening or removing covers may expose you to dangerous voltages or other risks. Incorrect reassembly can cause electric shock when the products are subsequently used.
- Power down the power unit (see label on power unit on how to do this) and refer servicing under the following conditions:
  - If liquid has been spilled into any of the products.
  - If any of the products have been exposed to water.
  - If any of the products do not operate normally.
  - If any of the products have been dropped or damaged.
  - If any of the products exhibits a change in performance.
- Do not attempt to recharge batteries on your own. The batteries may leak corrosive electrolyte or explode. The 1145B power unit recharges the batteries safely.
- Remove the batteries if the power unit will not be used for a long period of time (several months or more) since during this time the battery may leak.
- 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.

## **1151A Power Supply**

---

The 1151A and 1151A2 Power Supplies comply with the UL Standard UL 1459, second edition. Safety instructions follow the table of certifications.

Complies	UL 1459
Certified	CSA 22.2
Approved	EN6950
Approved	CE

### **Important Safety Instructions**

---

Please read the following helpful tips. Retain these tips for later use.

When using this power supply, the following safety precautions should always be followed to reduce the risk of fire, electric shock, and injury to persons.

- Read and understand all instructions.
- Follow all warnings and instructions marked on this power supply.
- This product can be hazardous if immersed in water. To avoid the possibility of electrical shock, do not use it near water.
- To reduce the risk of electric shock, do not disassemble this product except to replace battery.
- This product should be operated only from the type of AC power source indicated on the label. If you are not sure of the type of AC power being provided, contact a qualified service person.
- Do not allow anything to rest on the power cord. Do not locate this product where the cord will be abused by persons walking on it.
- Do not overload wall outlets and extension cords as this can result in the risk of line or electric shock.
- Disconnect the cords on this product and refer servicing to qualified service personnel under the following conditions:
  - When the power supply cord or plug is damaged or frayed.
  - If liquid has been spilled into the product.
  - If the product has been exposed to rain or water.
  - If the product was dropped or the housing has been damaged.
  - If the product exhibits a distinct change in performance.
  - If the product does not operate normally by following the operating instructions.

### **The 1151A and 1151A2 Power Supplies**

---

The 1151A and 1151A2 Power Supplies can be used to supply local power to ISDN-T 65xx, 75xx, 84xx, and 85xx 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.

 **CAUTION:**

*The power supply can be used **only** with telecommunications equipment, indoors, and in a controlled environment.*

The power supply has a single output of -48 VDC, 0.4 Amps, and can operate from either a 120 VAC 60 Hz power source (105 to 129 VAC) or a 220/230/240 VAC 50 Hz power source (198 to 264 VAC). Input voltage selection is automatic. The output capacity is 19.2 Watts.

The power supply can be placed on a flat surface such as a desk. For wall-mounting, keyhole slots are provided on the bottom of the chassis.

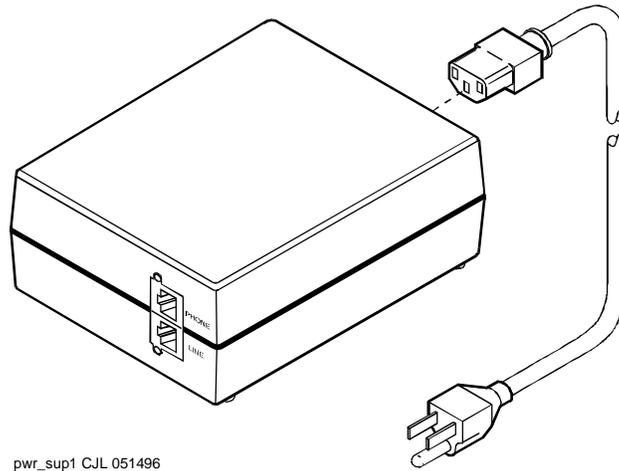
 **CAUTION:**

*Do not locate the unit within six inches of the floor.*

### **Connect the 1151A or 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 maximum loop range is 250 feet (76 meters). Two modular jacks are used. Power is provided on the PHONE jack, pins 7 and 8 (- and +, respectively).

The PHONE and LINE jacks are 8-pin female non-keyed 657-type jacks that can accept D4, D6, and D8 modular plug cables. Figure 5-23 shows an 1151A Power Supply. The 1151A2 looks similar.



---

**Figure 5-23. Typical 1151A Power Supply — Front**

## **BRI Terminating Resistor**

---

The resistors balance the cable plant between the receiver and the transmitter on the interface. When using the TN2198 ISDN-BRI 2-Wire U Interface circuit pack, an NT1 is required. A terminating resistor is always required near the terminal when the BRI S-type interface circuit pack (TN556 BRI 4-Wire S-NT Line circuit pack) is used (see *#5ESS Switch Integrated Services Digital Network Customer Premises Planning Guide*, 533-700-100).

The resistor is built into the NT1 and can be one of three values, depending on the configuration and the distance from the NT1 to the ISDN terminal. The resistor value is controlled from the NT1. A terminating resistor adapter may be needed near the terminal and can be placed in the satellite closet or work location.

 **NOTE:**

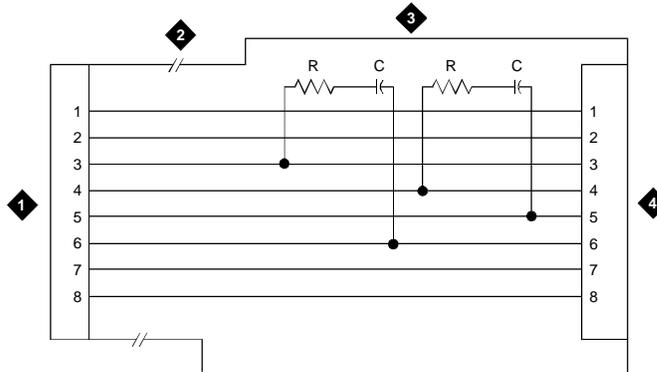
The 440A4 terminating resistor and 110RA1-12 terminating resistor block are UL listed. Most new installations are the 110RA1-12 terminating resistor block. The following installation instructions should be observed.

- Never install telephone wiring during a lightning storm.
- Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
- Never touch uninsulated wires or terminals unless the telephone line has been disconnected at the network interface.
- Use caution when installing or modifying telephone lines.

### Terminating Resistor Adapter

---

Figure 5-24 shows an 8-pin 440A4 terminating resistor adapter. The adapter is three inches long with an 8-wide plug at one end, a short cord, and an 8-wide jack at the opposite end.



#### Figure Notes

- |                |                    |
|----------------|--------------------|
| 1. 8-Wide Plug | 3. Plastic Housing |
| 2. Cord        | 4. 8-Wide Jack     |

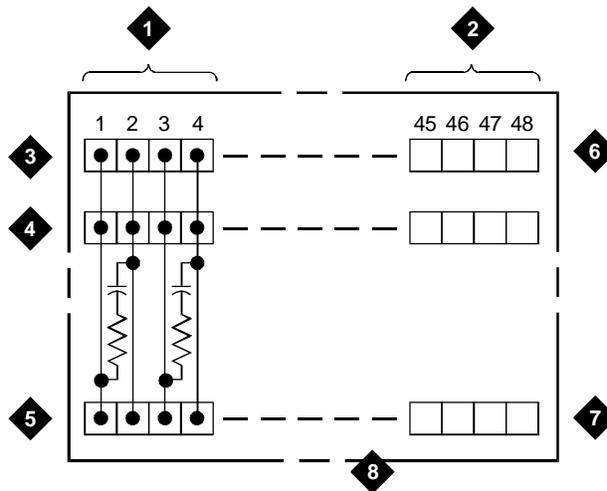
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**Figure 5-24. 8-Wide Terminating Resistor Adapter (440A4)**

### Closet Mounted (110RA1-12)

The 110RA1-12 terminating resistor block is designed to mount in the telecommunications wire closet. It consists of twelve 2-pair circuits and provides the 100 Ohm termination used for ISDN-BRI circuits.

Figure 5-25 shows the wiring of the 110RA1-12. Three rows of 110D-4 connector blocks are mounted on a printed wire board along with circuit resistors and capacitors. The bottom row is designated as the input row and the top and middle rows are designated as the output rows. The circuit assembly is mounted on a standard 110A-100 pair mounting base. The 110RA1-12 is shipped with preprinted designation strips to simplify circuit identification and installation.

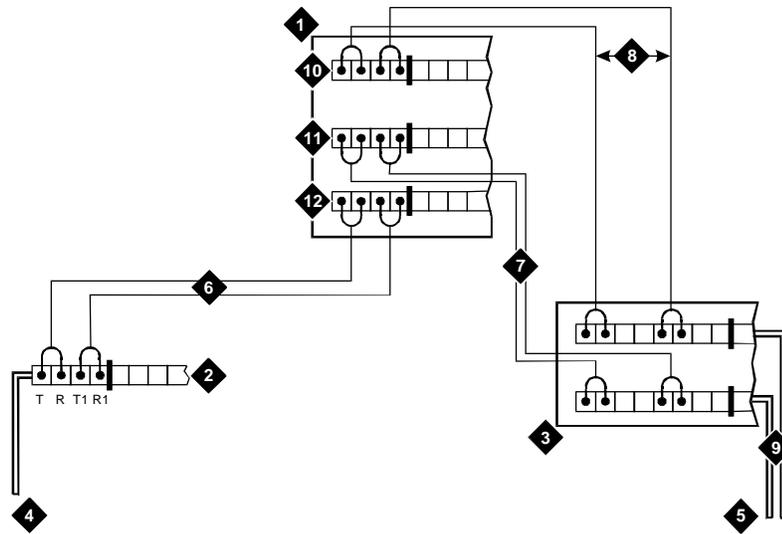


#### Figure Notes

- |                   |   |
|-------------------|---|
| 1. Circuit 1      | 5. Input Row "C"  |
| 2. Circuit 12     | 6. Only First Circuit Shown to All 12 Circuits (2APR) Per Block   |
| 3. Output Row "A" | 7. 110D-4 Connector Block   |
| 4. Output Row "B" | 8. Printed Circuit Board Mounted on Standard 110A or 100APR Block |

Figure 5-25. Terminating Resistor Block (110RA1-12)

Figure 5-26 shows the wiring connections for the 110RA1-12 terminal block. The TN556 Basic Rate Interface (BRI) switch port is terminated to bottom row C.



**Figure Notes**

- |   |                             |
|---|-----------------------------|
| 1. Part of Terminating Resistor Block     | 7. Basic Multi-point Option |
| 2. White or Purple Field                  | 8. 2-Pair Cross-Connect     |
| 3. Part of 4-Pair Blue Field              | 9. 4-Pair Horizontal Cables |
| 4. From ISDN T-interface Circuit (2-Pair) | 10. Row "A"                 |
| 5. To ISDN S/T-interface terminals        | 11. Row "B"                 |
| 6. 2-Pair Cross-Connect                   | 12. Row "C"                 |

**Figure 5-26. Typical Installation of Terminating Resistor Block (110RA1-12)**

For point-to-point wiring, the top row connects to the blue station field. The pair connects from the 110RA1-12 to the standard 4-pair circuit. Pair 1 from the 110RA1-12 connects to Pair 1 of the station field, and Pair 2 connects to Pair 3 of the station field.

Two terminal basic multipoint applications are accommodated by connecting row B (output) to the second terminal common to the multipoint circuit.

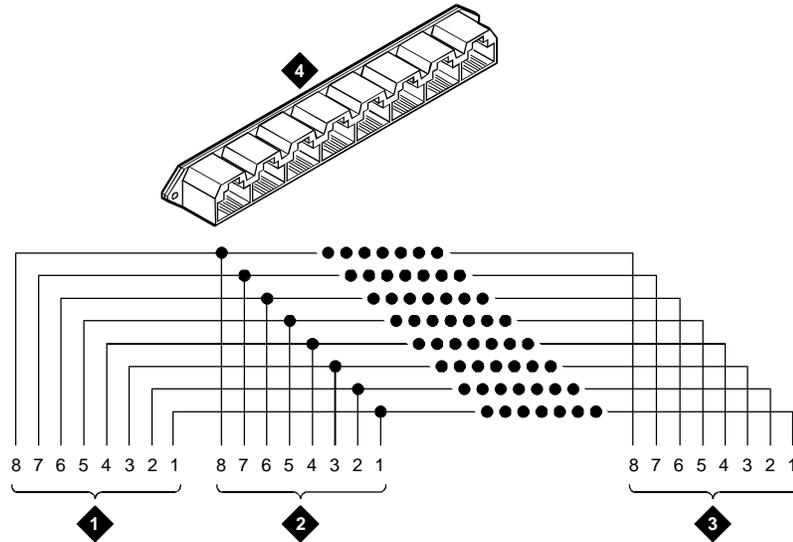


### 367A Adapter

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The 367A adapter provides fanout. See Figure 5-28. It can provide inputs to up to seven terminals. The 367A is an 8-conductor adapter and can be used at the work location for bridging three to seven terminals.

---



#### Figure Notes

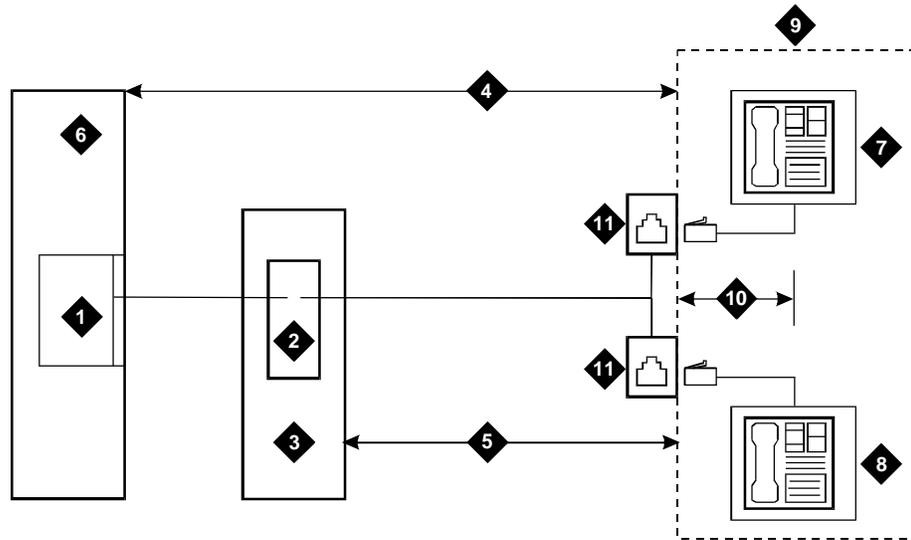
- |           |                 |
|-----------|-----------------|
| 1. Jack 1 | 3. Jack 8       |
| 2. Jack 2 | 4. 367A Adapter |

---

Figure 5-28. Wiring Diagram of 367A

### Basic Multipoint Installation Distances

Figure 5-29 provides cabling information for fan-out of ISDN-BRI multi-point installations. The terminating resistor is generally located in the satellite closet. All distances assume 24 AWG (#5) (0.511 mm) D-Inside Wire (DIW).



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#### Figure Notes

- |  |   |
|--|---|
| 1. S-Interface Source (TN556)  | 6. System Cabinet   |
| 2. Terminating Resistor  | 7. Terminating Endpoint 1   |
| 3. Satellite Closet  | 8. Terminating Endpoint 2   |
| 4. Maximum Distance from S-Interface Source to Work Location (1600 Feet) (488 m) | 9. Work Location  |
| 5. Maximum Distance From Satellite Closet to Work Location (250 Feet) (76 m)     | 10. Maximum Distance from Information Outlet to Terminating Endpoint (33 Feet) (10 m) |
|  | 11. Information Outlet (Bridged Tap)  |

Figure 5-29. Basic Multi-point with One Work Location

## Add Circuit Packs

---

When installing additional features or equipment, it may be necessary to install additional port circuit packs. This is a general procedure to use when adding features or equipment that require adding circuit packs.

1. Log onto the system and answer *y* to the *Suppress Alarm Origination* question during login.
2. Install the circuit pack into the carrier.
3. Log off the system after the addition (and any required administration) is complete.

 **NOTE:**

If North American and international circuit packs appear in the same row of a table, those circuit pack codes ordinarily used in North America appear in bold font to help distinguish these circuit packs from their international counterparts. If only circuit packs commonly used for international applications appear in a row of a table, the circuit-pack codes are enclosed in parentheses. If only circuit packs commonly used in North America appear in a row of a table, the circuit pack codes are enclosed in square brackets.

For more information about circuit packs, refer to *DEFINITY Enterprise Communications Server Release 5 System Description Pocket Reference*.

For information about connecting and administering international circuit packs, refer to the Application Notes in *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*.

## List of Circuit Packs

Table 5-14 lists the circuit packs sorted by apparatus code, including circuit packs used in non-United States installations. For more information on the circuit packs and other equipment, refer to *DEFINITY Enterprise Communications Server Release 5 System Description Pocket Reference*.

**Table 5-14. Circuit Packs and Circuit Modules**

<b>Apparatus Code</b>	<b>Name</b>	<b>Type</b>
631DA1	AC Power Unit	Power
631DB1	AC Power Unit	Power
644A1	DC Power Unit	Power
645B1	DC Power Unit	Power
649A	DC Power Converter	Power
676B	DC Power Supply	Power
982LS	Current Limiter	Power
CFY1B	Current Limiter	Power
CPP1	Memory Expansion	Control
ED-1E546 (TN2169) (TN2170) (TN566) (TN567)	DEFINITY AUDIX R3 System	Port Assembly
ED-1E546 (TN2208) (TN2170)	Call Visor ASAI over the DEFINITY (LAN) Gateway R1	Port Assembly
J58890MAP (TN800)	CallVisor over the DEFINITY LAN Gateway R2	Port Assembly
TN417	Auxiliary Trunk	Port
TN419B	Tone-Clock	Control
TN420B/C	Tone Detector	Service
TN429	Direct Inward/Outward Dialing (DIOD) Trunk	Port
TN433	Speech Synthesizer	Service
TN436B	Direct Inward Dialing Trunk	Port
TN437	Tie Trunk	Port
TN438B	Central Office Trunk	Port

*Continued on next page*

**Table 5-14. Circuit Packs and Circuit Modules — Continued**

<b>Apparatus Code</b>	<b>Name</b>	<b>Type</b>
TN439	Tie Trunk	Port
TN447	Central Office Trunk	Port
TN457	Speech Synthesizer	Service
TN458	Tie Trunk	Port
TN459B	Direct Inward Dialing Trunk	Port
TN464C/ D/E/ F	DS1/E1 Interface - T1, 24 Channel - E1, 32 Channel	Port
TN465/B/C	Central Office Trunk	Port
TN467	Analog Line	Port
TN468B	Analog Line	Port
TN479	Analog Line	Port
TN497	Tie Trunk	Port
TN553	Packet Data Line	Port
TN556/B	ISDN-BRI 4-Wire S/T-NT Line (A-Law)	Port
TN570/B/C	Expansion Interface	Port
TN572	Switch Node Clock	Control
TN573/B	Switch Node Interface	Control
TN574	DS1 Converter - T1, 24 Channel	Port
TN577	Packet Gateway	Port
TN722B	Digital Signal Level 1 Tie Trunk	Port
TN725B	Speech Synthesizer	Service
TN726/B	Data Line	Port
TN735	MET Line	Port
TN742	Analog Line	Port
TN744/B	Call Classifier	Service
TN744/C/D	Call Classifier - Detector	Service
TN746/B	Analog Line	Port
TN747B	Central Office Trunk	Port
TN748/B/C/D	Tone Detector	Service
TN750/B/C	Announcement	Service
TN753	Direct Inward Dialing Trunk	Port

*Continued on next page*

**Table 5-14. Circuit Packs and Circuit Modules — Continued**

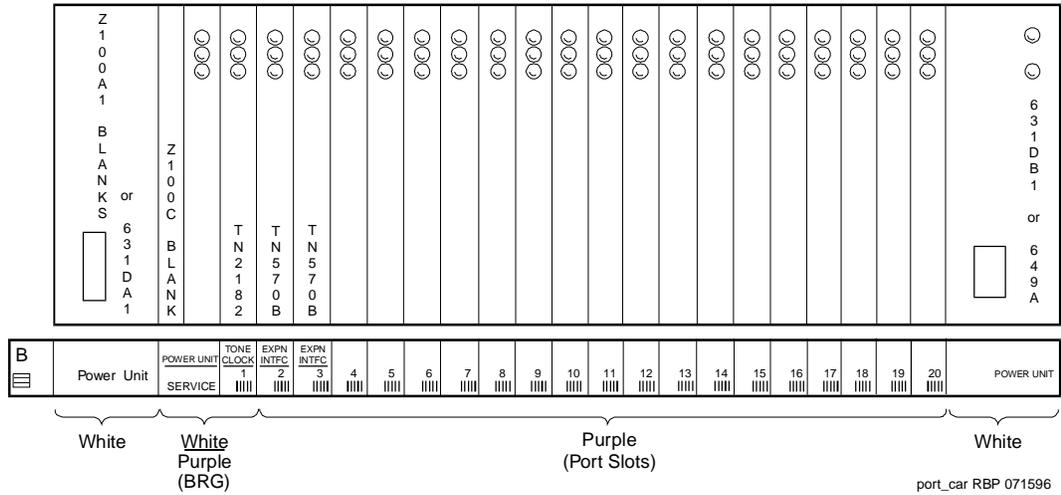
<b>Apparatus Code</b>	<b>Name</b>	<b>Type</b>
TN754/B	Digital Line 4-Wire DCP	Port
TN755B	Neon Power Unit	Power
TN756	Tone Detector	Service
TN758	Pooled Modem	Port
TN760B/C/D	Tie Trunk	Port
TN762B	Hybrid Line	Port
TN763B/C/D	Auxiliary Trunk	Port
TN765	Processor Interface	Control
TN767B/C/D/E	DS1 Interface - T1, 24 Channel	Port
TN768	Tone-Clock	Control
TN769	Analog Line	Port
TN771D	Maintenance/Test	Service
TN772	Duplication Interface	Control
TN773	Processor	Control
TN775/B	Maintenance	Service
TN776	Expansion Interface	Port
TN777/B	Network Control	Control
TN778	Packet Control	Control
TN780	Tone-Clock	Control
TN786	Processor	Control
TN786B	Processor	Control
TN787F/G	Multimedia Interface	Service
TN788B/C	Multimedia Voice Conditioner	Service
TN789	Radio Controller	Control
TN790	Processor	Control
TN796B	Processor	Control
TNPRI/BRI	PRI to BRI Converter	Port
TN1648	System Access/Maintenance	Control
TN1650B	Memory	Control
TN1654	DS1 Converter - T1, 24 Channel/E1, 32 Channel	Port

*Continued on next page*

**Table 5-14. Circuit Packs and Circuit Modules — Continued**

<b>Apparatus Code</b>	<b>Name</b>	<b>Type</b>
TN1655	Packet Interface	Control
TN1656	Tape Drive	Control
TN1657	Disk Drive	Control
TN2135	Analog Line	Port
TN2136	Digital Line 2-Wire DCP	Port
TN2138	Central Office Trunk	Port
TN2139	Direct Inward Dialing Trunk	Port
TN2140/B	Tie Trunk	Port
TN2144	Analog Line	Port
TN2146	Direct Inward Dialing Trunk	Port
TN2147/C	Central Office Trunk	Port
TN2149	Analog Line	Port
TN2180	Analog Line	Port
TN2181	Digital Line 2-Wire DCP	Port
TN2182/B	Tone-Clock -Tone Detector and Call Classifier	Control
TN2183	Analog Line	Port
TN2184	DIOD Trunk	Port
TN2198	ISDN-BRI 2-Wire U Interface	Port
TN2199	Central Office Trunk	Port
TN2202	Ring Generator	Power
TN2224	Digital Line, 24-Port, 2-Wire DCP	Port
TN793	Analog Line, 24-Port, 2-Wire	Port
UN330B	Duplication Interface	Control
UN331B	Processor	Control
UN332	Mass Storage/Network Control	Control
WP-90510	AC Power Supply (Compact Single-Carrier Cabinet)	Power
WP-91153	AC Power Supply (Single-Carrier Cabinet)	Power

## Multimedia Call Handling (MMCH)



**Figure 5-30. Typical Multimedia Call Handling Installation**

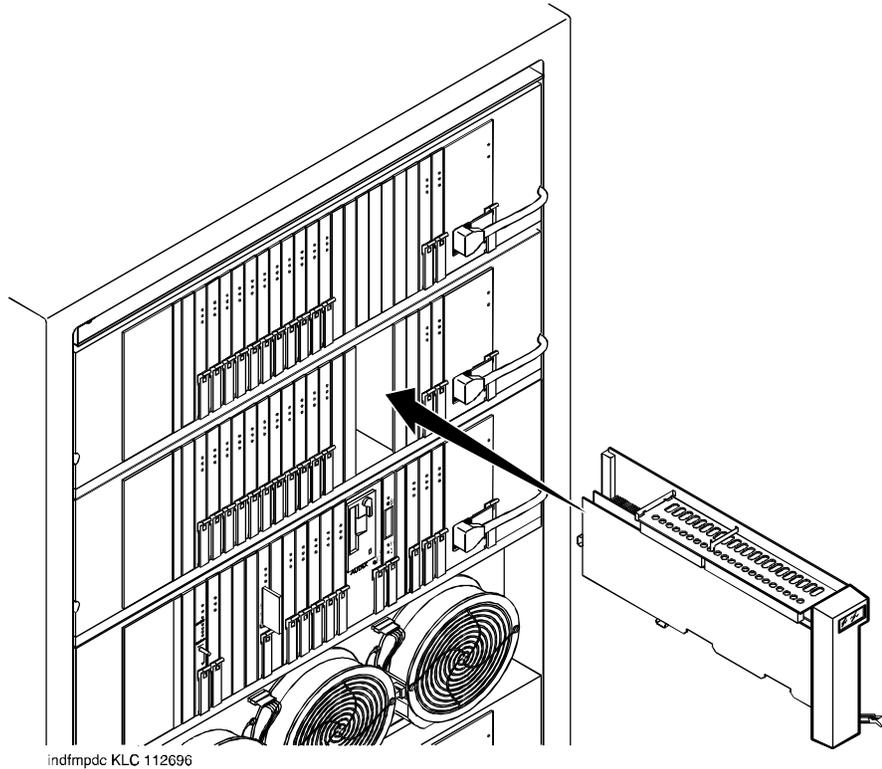
**NOTE:**

The MMCH circuit packs can only install in one port network per system (PPN or EPN, not both).

1. Install up to four TN787F (or later) Multimedia Interface circuit packs into any available port (purple) slots. See Figure 5-30.
2. Install up to 32 TN788B (or later) Multimedia Voice Conditioner circuit packs into any available port (purple) slots.
3. Refer to *DEFINITY Enterprise Communications Server Release 5 Installation for Adjuncts and Peripherals* to install and test the multimedia endpoints.

## Multi-Application Platform for DEFINITY (MAPD)

---



**Figure 5-31. Typical MAPD Installation**

1. Insert the J58890MAP Multi-Application Platform for DEFINITY (MAPD) unit into any 3 contiguous port (purple) slots. See Figure 5-31.
2. All electrical connections to customer-provided hardware or network systems are made from the rear of the carrier. Attach the 25-pair connector on the supplied adapter cable (H600-475) to the backplane connector associated with the parent circuit pack slot.
3. The following equipment connections are possible:
  - RS-232 for a modem
  - RS-232 for a Personal Computer (PC)
  - Ethernet 10BASE-T
  - DCIU RS-232

## Equipment Connections

1. Route the adapter cable to the customer-provided equipment. Refer to Table 5-15 on page 5-71 for the pinout of the adapter cable.
2. Connect the appropriate end of the cable to the customer-provided equipment. Refer to the equipment manufacturer's instructions.

**Table 5-15. Adapter Cable Pinout**

Pin	Color	Designation	Pin	Color	Designation
26	W-BL	N/A	01	BL-W	N/A
27	W-O	N/A	02	O-W	N/A
28	W-G	N/A	03	G-W	N/A
29	W-BR	Ethernet RD+	04	BR-W	Ethernet RD-
30	W-SL	N/A	05	SL-W	N/A
31	R-BL	DCIU TT	06	BL-R	N/A
32	R-O	DCIU DSR	07	O-R	DCIU DTR
33	R-G	DCIU TD	08	G-R	DCIU CTS
34	R-BR	TERM GRD	09	BR-R	DCIU TC
35	R-SL	TERM TD	10	SL-R	TERM RD
36	BK-BL	RS-232 DSR	11	BL-BK	RS-232 DCD
37	BK-O	RS-232 TX	12	O-BK	RS-232 DTR
38	BK-G	N/A	13	G-BK	N/A
39	BK-BR	N/A	14	BR-BK	N/A
40	BK-SL	N/A	15	SL-BK	N/A
41	Y-BL	Ethernet TD+	16	BL-Y	Ethernet TD-
42	Y-O	N/A	17	O-Y	N/A
43	Y-G	DCIU RI	18	G-Y	DCIU DCD
44	Y-BR	DCIU SG	19	BR-Y	DCIU RTS
45	Y-SL	DCIU RC	20	SL-Y	DCIU RD
46	V-BL	TERM CTS	21	BL-V	TERM DCD
47	V-O	RS-232 RI	22	O-V	TERM RTS
48	V-G	RS-232 GRD	23	G-V	RS-232 CTS
49	V-BR	RS-232 RTS	24	BR-V	RS-232 RX
50	V-SL	N/A	25	SL-V	N/A

## **Administration**

---

1. At the management terminal, enter **add station-next** and press Enter.  
Change the `Extension Type:` field to `MAPD-DIG-STA`.
2. Administer per *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*.

## **Testing the MAPD and External Connections**

---

1. Using a pointed object such as a paper clip or a pen (do not use a pencil), press the Boot/Shutdown button.
2. Hold the Boot/Shutdown button in until the display indicates the message, `BTEST`, steady on.
3. Release the Boot/Shutdown button. The unit takes approximately five minutes to power up.
  - The display has the following sequence of steady on messages:
    - `OSINIT`
    - `OS`
    - `AINIT`
    - `MAPD`
  - The MAPD system is now powered up. When the system is in the active state, the display indicates `MAPD`, and the red LED is off.



### **NOTE:**

Upon the system powering up, the MAPD system automatically reboots. This sequence may show an `MD` or `MJ` `MAPD` alarm in the display until the system has powered up. When the system has completed its power up sequence, the MAPD system display reads: `MAPD`.

## **Verify Program Operation**

To verify the PC program is functioning

1. Open the Windows™ application on the PC.
2. Double-click the appropriate icon to start the program.

Refer to the documentation that accompanies the MAPD unit to verify system operation and to custom-configure the program.

## **Add CO, FX, WATS, and PCOL**

---

### **Requirements**

---

Each Central Office (CO), Foreign Exchange (FX), Wide Area Telecommunications Service (WATS), or Personal Central Office Line (PCOL) trunk is connected to one port of either an 8-port TN747 or to one of an assortment of international CO Trunk circuit packs.

### **Installation**

---

1. Determine the port assignment of the trunk from Trunk Group form. For example:

Port Number	3	A	07	01
	Cabinet	Carrier	Slot	Circuit
	(Port Network)			

2. See "Install Off-Premises Station Wiring" earlier in this chapter and install a TN747 or an international CO trunk circuit pack in the assigned carrier slot (if an additional circuit pack is required).
3. Administer the forms listed under CO, FX, WATS, or PCOL Trunk Group in *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*.

## Add DID Trunks

---

### Requirements

---

Each Direct Inward Dial (DID) trunk connects to one port of an 8-port TN753 or to one of an assortment of international DID trunk circuit packs.

### Installation

---

1. Determine the port assignment of the trunk from Trunk Group form. For example:

Port Number	3	A	07	01
	Cabinet	Carrier	Slot	Circuit
	(Port Network)			

2. See “Install Off-Premises Station Wiring” earlier in this chapter and install a TN753 or an international DID trunk circuit pack in assigned carrier slot (if an additional circuit pack is required).
3. Administer forms listed under “DID Trunk Group” in *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*.

## Add Tie Trunks

---

### Requirements

---

Each tie trunk connects to one port of a 4-port TN760 or to an assortment of international Tie Trunk circuit packs.

### Installation

---

1. Determine the port assignment of the trunk from Trunk Group form.

Port Number	3	A	02	01
	Cabinet	Carrier	Slot	Circuit
	(Port Network)	(or Single-Carrier Cabinet)		

2. See "Install Off-Premises Station Wiring" earlier in this chapter and install TN760 or an international Tie Trunk circuit pack in the assigned carrier slot (if an additional circuit pack is required).
3. For customer-owned (not leased) tie-trunk facilities (such as campus environments), TN760 circuit packs provide signaling capabilities beyond those specified by the industry-wide E & M standard. Use Figure 5-32 and Table 5-16 to choose the preferred signaling format, set switches on the TN760 circuit pack, and administer the port.
4. Administer forms listed under "Tie Trunk Group" in *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*.

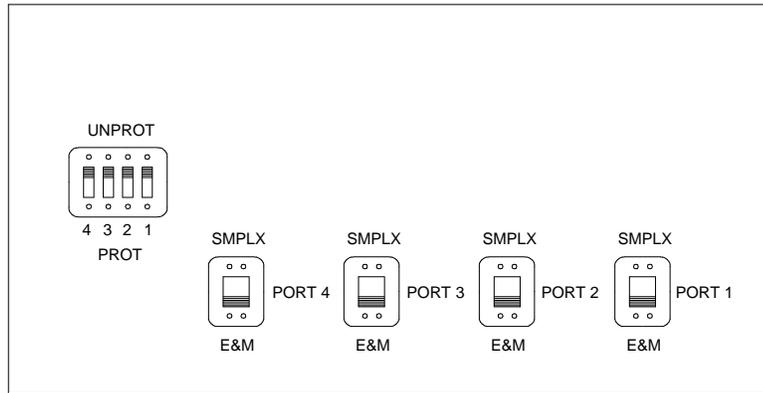


Figure 5-32. TN760 Tie Trunk Circuit Packs (Component Side)

Table 5-16. TN760 Option-Switch Settings and Administration

DEFINITY ECS R5 Installation Situation		Preferred Signaling Format		Set E&M/SMPLX Option Switch To:	Set Prot/Unprot Option Switch To:	Administer Port As:
Circumstance	To	R5	Far End			
Collocated	DEFINITY, Sys 75/75XE, Sys 85, Sys 25	Simplex, Type 5	Simplex, Type 5	SMPLX	Either	Type 5
Interbuilding	DEFINITY, Sys 75/75XE, Sys 85, Sys 25	Simplex, Type 5	Simplex, Type 5	SMPLX	Either	Type 5
Collocated	Dimension. PBX	E&M Type 1 Compatible	E&M Type 1 Standard	E&M	Unprotected	Type 1 Compatible
Interbuilding	Dimension PBX	Prot., Type 1 Compatible	Prot., Type 1 Standard	E&M	Protected	Type 1 Compatible
Collocated	Network Interface	E&M Type 1 Standard	Don't Care	E&M	Unprotected	Type 1
Collocated	Other	E&M Type 1 Compatible	E&M Type 1 Standard	E&M	Unprotected	Type 1 Compatible
Interbuilding	Other	Prot., Type 1 Compatible	Prot., Type 1 Std., plus Protection Unit	E&M	Protected	Type 1 Compatible

## Add DS1 Tie and OPS

---

The TN722B DS1 Tie Trunk, TN767C DS1 Interface, and TN464C DS1 Interface circuit packs provide connections to a 1.544 Mbps or 2.08 Mbps DS1 facility as 24 independent 64 kbps trunks. When upgrading from a TN722 to a TN767C:

1. Remove all TN722 trunk members from affected trunk groups.
2. Enter `remove ds1 PCSS` (PCSS is the slot containing the TN722).
3. Remove the TN722 circuit pack.
4. Put the TN767C circuit pack into the same slot.
5. Wait until the red LED goes off. The hardware tests take 12 to 20 seconds to run. When the red LED goes off, the tests have completed.
6. If the red LED stays on, reseal the board and repeat this step.
7. Enter `add ds1 PCSS`.
8. Continue with appropriate procedures to set up members of trunk groups.

## Service Interruption

---

Since the addition of DS1 tie-trunk service may require a service interruption, notify the customer in advance as to when the addition will be carried out.

## Disable Alarm Origination

---

1. Enter **change system-parameters maintenance**, and press RETURN.
2. Set the `Alarm Origination Activated` field to `n`.



**WARNING:**

*If you do not disable Alarm Origination, the system may generate alarms, resulting in unnecessary trouble tickets.*

3. For some releases of software, disable `Cleared Alarm Notification` and `Restart Notification` before submitting the form.

## **Save Translations**

---

1. If the system is high or critical reliability, enter **status system 1**, and press RETURN to verify that the system is in the "active/standby" mode.
2. Enter **save translation**. Press Enter. This instructs the system to take all translation information in memory and write it to the translation card(s) or tape(s).
3. If the system contains a TN750/B Announcement circuit pack, enter **display announcements**, and press Enter.

If administered recorded announcements are listed, enter **list configuration software-version**, press Enter. Check Page 2 of this form to see when the announcements were last saved. To save the current announcements, enter **save announcements**, and press Enter.

## **Shut Down DEFINITY LAN Gateway System**

---

If a DEFINITY LAN Gateway system resides in the control cabinet to be upgraded, prepare to shut down the DEFINITY LAN Gateway assembly and allow the disk to completely spin down.



### **CAUTION:**

*Save the system parameters if you plan to reuse the current system.*



### **CAUTION:**

*Neglecting to shut down a DEFINITY LAN Gateway assembly before powering down the system cabinet where it resides can damage the LAN Gateway disk.*

1. Log onto the DEFINITY LAN Gateway. See the *DEFINITY Communications System Generic 3 Installation, Administration and Maintenance of CallVisor ASAI over the DEFINITY LAN Gateway*, 555-230-223, for the procedure to log on.
2. When the main menu appears, select `Maintenance`.
3. Select `Reset System` from the `Maintenance` menu.
4. Select `Shutdown` from the `Reset System` menu.
5. Unseat the LAN Gateway assembly from its backplane connectors.

### **Shut Down DEFINITY AUDIX System**

---

1. If a DEFINITY AUDIX System resides in the system to be upgraded, shut down the AUDIX assembly and allow the disk to completely spin down.



**CAUTION:**

*Neglecting to shut down an AUDIX assembly before powering down the system cabinet where it resides can damage the AUDIX disk.*

2. Unseat the AUDIX assembly from its backplane connectors.

### **Power Down System**

---



**NOTE:**

Power down the PPN only if the existing Tone-Clock is being replaced in a standard reliability system.

1. At the PPN, set the main circuit breaker to OFF.
2. At each EPN, set the main circuit breaker to OFF.

### **Add Circuit Packs**

---

1. Determine the port assignments of the circuit packs to be added.
2. Install the TN722B DS1 Tie Trunk, the TN767C DS1 Interface, or TN464C DS1 Interface circuit pack in assigned carrier slot.
3. Replace an existing TN756 Tone Detector/Generator circuit pack with:
  - a. TN768, TN780, or an international TN419B Tone-Clock
  - b. TN748B or an international TN420B Tone Detector

### **Install Cables**

---

Install H600-307 cable from the cabinet to a Channel Service Unit (CSU) and install cables from the CSU to the MDF as required.

### **Reseat DEFINITY LAN Gateway System**

---

Reseat the LAN Gateway assembly into its backplane connectors in the carrier.

### **Reseat DEFINITY AUDIX System**

---

Reseat the AUDIX assembly to its backplane connectors.

## **Power Up System**

---

1. At each EPN, set the main circuit breaker to ON.
2. At the PPN, set the main circuit breaker to ON.
3. The system performs the level 4 rebooting process, loading the system translations from the translation card(s) or the tape(s). Rebooting takes 8 to 11 minutes.
4. After the system reboot is finished and all trouble is cleared, verify that the EMERGENCY TRANSFER CONTROL switch is set to AUTO. This restores the system to the normal mode.

## **Restart DEFINITY LAN Gateway System**

---

1. Log onto the DEFINITY LAN Gateway.
2. When the main menu appears, select `Maintenance`.
3. Select `Reset System` from the `Maintenance` menu.
4. Select `Restart System` from the `Reset System` menu.

## **Enter Added Translations**

---

Administer forms listed under "DS1 Tie Trunk Service" in *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*.

## **Save Translations**

---

1. If the system is high or critical reliability, enter **status system 1**, and press RETURN to verify that the system is in the "active/standby" mode.
2. Enter **save translation**. Press Enter. This instructs the system to take all translation information in memory and write it to the translation card(s) or the tape(s).
3. If the PPN contains a TN750 Announcement circuit pack, enter **list configuration software-version**, and press Enter.

If Page 2 of this form shows that recorded announcements were saved, these announcements can be restored using the restore announcements command. Enter **restore announcements**, and press Enter.

## **Enable Customer Options**

---

1. Enter **change system-parameters customer-options** and press Enter.
2. Use these forms to verify the customer options are properly set.

### **⇒ NOTE:**

In the `Basic Call Setup` field, if `ISDN-PRI?` was set to `y` before the upgrade, be sure to set the field back to `y`.

## **Resolve Alarms**

---

Examine the alarm log. Resolve any alarms that may exist using the *DEFINITY Enterprise Communications Server Release 5 Maintenance R5vs/si* manual.

## **Verify Alarm Origination to INADS**

---

Be sure the system is part of the existing INADS database by calling the INADS Database Administrator at the Technical Service Center (TSC). Verify that INADS can dial into the system and that the system can dial out to INADS.

As part of the system registration process, the INADS Database Administrator enables Alarm Origination.

## **Add Code Calling Access**

---

The tones for the Code Calling feature are generated by the TN756, TN768, TN780, TN2182, or TN419B Tone-Clock circuit packs in the port networks.

Install a TN763 (or an international TN417) Auxiliary Trunk circuit pack or a TN457 Speech Synthesizer circuit pack and connect for Loudspeaker Paging. The Code Calling Access feature shares the same ports as Loudspeaker Paging. An Auxiliary Trunk circuit pack provides four ports for Loudspeaker Paging and Code Calling Access.

Administer the form listed under "Code Calling Access" in *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*.

## **Add Speech Synthesis**

---

The TN725B Speech Synthesizer circuit pack is required when the Voice Message Retrieval, Automatic Wakeup, or Do Not Disturb features are activated. The TN725B circuit pack does not require administration.

1. Determine the port assignment of the Speech Synthesizer circuit pack being added.
2. Install the TN725B Speech Synthesizer circuit pack in the designated carrier slot.

## **Add Pooled Modem**

---

Modem Pooling supports two kinds of conversion resources: "integrated" and "combined." The integrated type requires a TN758 Pooled Modem circuit pack for each two conversion resources provided.

The combined type requires a port of a TN754, TN413, or TN2136 Digital Line circuit pack and a port of either an 8-port TN742, TN769, or TN467 or a 16-port TN746B, TN468B, TN2135, TN2144, or TN2149 Analog Line circuit pack for each conversion resource provided.

1. Determine the port assignment of the circuit pack(s) to be added (if required).
2. Install the appropriate circuit pack(s) in assigned carrier slot (if required).
3. Administer the forms listed under "Modem Pooling" in *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*.

## Add Multiple Integrated Recorded Announcement

---

TN750C circuit packs are required if the system has multiple announcement circuit packs. To use multiple announcement circuit packs, at least one TN750C circuit pack is required. No more than one TN750 or TN750B can reside in the system. The TN750C can install in any port or service (TDM) slot, and need not reside in a control carrier for extra power holdovers.

Table 5-17 shows the maximum number of announcement circuit packs allowed in a system.

**Table 5-17. Maximum Announcement Circuit Packs Per System**

System Type	Maximum Number of Announcement Boards
R5vs	1
R5si	1
R5si+m	5
R5r	10

The announcements from a TN750 or TN750B can be saved and then restored to a TN750C.

**⇒ NOTE:**

Do not copy or restore announcements from a TN750C to a TN750 or TN750B circuit pack, as this process may corrupt the announcement data.

### TN750C Announcement Circuit Pack

The TN750C circuit pack contains on-board flash memory which provides internal backup of announcements on the circuit packs. Thus, the TN750C circuit pack does not need the save and restore processes. However, you can use the save and restore processes to copy announcements from the TN750 or TN750B to a TN750C circuit pack.

The TN750C circuit pack can replace a TN750 or TN750B circuit pack. The difference in operation is that the TN750C circuit pack automatically restores and reports the availability of announcements from its own internal flash memory in 5 minutes, rather than the approximately 40 minutes for the TN750 or TN750B circuit pack reporting from the mass-storage system.

If a circuit pack already has announcements in its flash memory, the yellow LED flashes as the announcements copy to the Voice RAM.

## Save and Restore Recorded Announcements

### CAUTION:

*If the yellow LED is flashing, do not remove the circuit pack, as this will corrupt the announcement data.*

The syntax for saving from any TN750 circuit pack is **save announcements** [from PCSS] and press Enter. Where P is the port network number (1 for PPN, and 2-4 for EPN), C is the carrier designation (A, B, C, D, or E), and SS is the number of the slot in which the circuit pack resides (01 to 21).

The syntax for restoring to a TN750C circuit pack is **restore announcements** [disk | tape [to PCSS]] and press Enter. Where P is the port network number (1 for PPN, and 2-4 for EPN), C is the carrier designation (A, B, C, D, or E), and SS is the number of the slot in which the circuit pack resides (01 to 21). When executing a restore command and there are existing announcements on the circuit pack, the following warning message appears:

```
WARNING: This restore announcement command will overwrite
          the existing announcements on the specified
          board.
```

After five minutes (with no alterations to the announcements), the TN750C automatically copies the announcements from the Voice RAM to the internal flash memory. The yellow LED on the front of the TN750C flashes.

You can only save the announcement contents of one circuit pack to mass storage at a time. For the contents of every circuit pack, save to separate translation cards. Label each card to match the circuit pack saved to it.

## TN750 and TN750B Announcement Circuit Packs

### NOTE:

The following save and restore procedures are only necessary for TN750 and TN750B announcement circuit packs.

The recorded announcements in the system can be saved on the mass-storage system by entering the **save announcements spe-active/spe-standby** command. These commands should only be used after business hours or when the system is operating during a low-usage period. The system takes about 40 minutes to transfer the recorded announcements from the announcement circuit pack to the mass-storage system. During this time period, the management terminal cannot be used to administer the system until the transfer finishes; however, all other administration terminals, if provided, are allowed to perform administration procedures.

The recorded announcements in the system can be restored to system memory from the translation card by entering the `restore announcements` command.

### **Replace a TN750B with a TN750C or Move all Announcements from a TN750B to a TN750C**

Use this procedure to replace a TN750B circuit pack with a TN750C circuit pack or to move every announcement from a TN750B to a TN750C.

**⇒ NOTE:**

Do not copy or restore announcements from a TN750C to a TN750 or TN750B circuit pack, as this may corrupt the announcement data.

1. Save announcements from the TN750/B to the mass-storage system.
2. Align and slide the TN750C circuit pack with latch lever opened into a vacant slot of a carrier.

**⇒ NOTE:**

Any carrier is acceptable since power holdover is not a concern.

3. Lift the locking lever upward until the latch pin engages.
4. Administer a new data module on the TN750C circuit pack, as described in *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*.
5. Execute the **restore announcements** command to the TN750C circuit pack equipment location.
6. Wait until announcements copy from Voice RAM to flash memory (yellow LED on the TN750C stops flashing). This may take about ten minutes.
7. Execute the **busyout board 01c11** command for the TN750/B circuit pack, where “**01c11**” is an example circuit pack location.
8. Execute the **change integrated announcements** command. This modifies the translations for the TN750B circuit pack to reference the TN750C circuit pack.
9. Verify proper playback of the announcements from the TN750C circuit pack by calling them.
10. Execute the **release board 01c11** command for the TN750/B circuit pack, where “**01c11**” is an example circuit pack location.

### Add Additional TN750C Circuit Packs

1. Align and slide circuit pack with latch lever opened into a vacant slot in a carrier.



**NOTE:**

Any carrier is acceptable since power holdover is not a concern.

2. Lift the locking lever upward until the latch pin engages.
3. Administer a new data module on the TN750C circuit pack, as described in *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*.
4. Administer new announcements to that TN750C slot by executing the **change announcements** command and filling in the “designated board location” field for the circuit pack’s location.
5. Record the announcements, as described in *DEFINITY Enterprise Communications Server Release 5 Feature Description*.
6. Wait until the announcements copy from Voice RAM to the on-board flash memory (the yellow LED on the TN750C starts and then stops flashing). This may take about 10 minutes.

### Move a Single Announcement from One Announcement Circuit Pack to Another

1. Execute the **change announcements** command to change the circuit pack locations of a particular announcement. (You may also change the compression rate at this time.)
2. Rerecord the announcement, as described in *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*.

## Add ISDN — PRI

---

### North American

---

Use a TN767C DS1 or a TN464C DS1/E1 circuit pack for the assignment of a signaling link and up to 23 ISDN — PRI Trunk Group members. A TN768, TN780, or TN2182 Tone-Clock circuit pack is required to provide synchronization for the DS1 circuit pack. A TN765 Processor Interface circuit pack is required for use with the TN767C DS1 circuit pack when PRI is activated.

As an option to the TN768 or TN2182 Tone-Clock, a TN780 Tone-Clock circuit pack (installed in the PPN) can interface external Stratum 3 synchronization for DS1 connections.

### European

---

A TN464C DS1/E1 circuit pack is required for the assignment of the two signaling channels and up to 30 ISDN—PRI Trunk Group members. Each E1 span provides 32 ports. Except for North American private-network applications, a TN780, TN2182, or TN419B Tone-Clock circuit pack normally provides synchronization for the DS1/E1 circuit pack. A TN765 Processor Interface circuit pack is required for use with the TN464C DS1/E1 circuit pack when PRI is activated.

As an option to the TN2182 or TN419B Tone-Clock, a TN780 Tone-Clock circuit pack (installed in the PPN) can interface external Stratum 3 synchronization for DS1 connections.

### Service Interruption

---

Since the addition of ISDN—PRI requires a service interruption, notify the customer in advance as to when the addition will be carried out.

### Disable Alarm Origination

---

1. Enter **change system-parameters maintenance**, and press RETURN.
2. Set the `Alarm Origination Activated` field to `n`.



**CAUTION:**

*If you do not disable Alarm Origination, the system may generate alarms, resulting in unnecessary trouble tickets.*

3. For some releases of system software, disable *Cleared Alarm Notification* and *Restart Notification* before submitting the form.

### **Save Translations**

---

1. If the system is high or critical reliability, enter **status system 1**, and press RETURN to verify that the system is in the "active/standby" mode.
2. Enter **save translation**, and press Enter. This instructs the system to take all translation information in memory and write it to the translation card(s) or the tape(s).
3. If the system contains a TN750/B Announcement circuit pack, enter **display announcements**, and press Enter. If administered recorded announcements are listed, enter **list configuration software- version**, press Enter. Check Page 2 of this form to see when the announcements were last saved. To save the announcements, enter **save announcements**, and press Enter.

### **Power Down System**

---

1. At the PPN, set the main circuit breaker to OFF.
2. At an EPN, set the main circuit breaker to OFF.

### **Add Circuit Packs**

---

1. Determine port assignment of circuit packs to be added.
2. Install the TN767C DS1 or TN464C DS1/E1 Interface circuit pack in assigned carrier slot.
3. Remove an existing TN756 Tone Detector/Generator circuit pack and install the TN768, TN780, TN2182, or TN419B Tone-Clock circuit pack in assigned carrier slots, if required.
4. Install a TN765 Processor Interface circuit pack if required and a TN748B (or the international TN420B) Tone Detector circuit pack if required.

### **Install Cables**

---

Install cables from cabinet to cross-connect field as required.

### **Power Up System**

---

1. At an EPN, set the main circuit breaker to ON.
2. At the PPN, set the main circuit breaker to ON.
3. The system performs a level 4 reboot, loading the system translations from the translation card(s) or the tape(s). Rebooting takes 8 to 20 minutes.
4. After all trouble is cleared, verify the EMERGENCY TRANSFER CONTROL switch is set to AUTO. This restores the system to the normal mode.

### **Enter Added Translations**

---

Administer the forms listed under "Integrated Services Digital Network — Primary Rate Interface" in *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*.

### **Resolve Alarms**

---

Examine the alarm log. Resolve any alarms that may exist using *DEFINITY Enterprise Communications Server Release 5 Maintenance R5vs/si*.

### **Verify Alarm Origination to INADS**

---

Be sure the system is part of the existing INADS database by calling the INADS Database Administrator at the Technical Service Center (TSC). Verify that INADS can dial into the system and that the system can dial out to INADS.

As part of the system registration process, the INADS Database Administrator enables Alarm Origination.

 **CAUTION:**

*If you do not enable Alarm Origination when the customer has purchased a services contract, the system cannot report any alarm to the TSC automatically, causing the TSC to be unable to fulfill the services contract.*

### **Save Translations**

---

1. If the system is high or critical reliability, enter **status system 1**, and press RETURN to verify that the system is in the "active/standby" mode.
2. Enter **save translation**, and press RETURN. This instructs the system to take all translation information in memory and write it to the translation memory card(s) or the tape(s).
3. If the system contains a TN750 Announcement circuit pack, enter **list configuration software-version**, and press Enter. If Page 2 of this form shows that recorded announcements were saved, these announcements can be restored using **restore announcements**, and press Enter.
4. Update backup tape(s), if necessary.

## Add Packet Bus to R5si + M

---

### Standard Reliability R5si + M System

---

#### Disable Alarm Origination

1. Enter **change system-parameters maintenance**, and press Enter.
2. Set the Alarm Origination Activated field to n.



#### CAUTION:

*If you do not disable Alarm Origination, the system may generate alarms, resulting in unnecessary trouble tickets.*

3. For some releases of software, disable Cleared Alarm Notification and Restart Notification before submitting the form.

#### Save Translations

1. If the system is high or critical reliability, enter **status system 1**, and press Enter to verify that the system is in the "active/standby" mode.
2. Enter **save translation**. Press Enter. This instructs the system to take all translation information in memory and write it to the translation card(s) or the tape(s).

#### Install Circuit Packs

1. Power down the PPN, then EPN1, and then EPN2 as required.
2. At the PPN, install the appropriate circuit packs. See Table 5-18.

**Table 5-18. Circuit Pack Locations for Packet Bus in R5si+m PPN**

Circuit Pack	Carrier	Quantity	Slot
TN778	Control Carrier A	1	PACKET CONT
TN570	Control Carrier A	1 or 2 <sup>1</sup>	EXPN INTFC/1 and /2
TN771C	Control Carrier A	1 <sup>2</sup>	Any Available Port Slot

1. Quantity of this pack should equal the number of EPNs.
2. Optional for digital trunk testing.

3. At each EPN, install the appropriate circuit packs. See Table 5-19.
4. Power up EPN2, then EPN1, then the PPN as required.
5. Enter **change system-parameters maintenance** and press `Enter`. Use this form to enable the packet bus.
6. Perform tests.

**Table 5-19. Circuit-Pack Locations for Packet Bus in Each EPN**

Circuit Pack	Carrier	Quantity	Slot
TN570	Expansion Control Carrier A	1 or 2 <sup>1</sup>	EXPN INTFC/1 and /2
TN771C	Expansion Control Carrier A	1 <sup>2</sup>	Any Available Port Slot

1. Quantity of this pack should equal the number of EPNs.
2. Optional for digital trunk testing.

### Resolve Alarms

Examine the alarm log. Resolve any alarms that may exist using the *DEFINITY Enterprise Communications Server Release 5 Maintenance for R5vs/si* manual.

### Verify Alarm Origination to INADS

Be sure the system is part of the existing INADS database by calling the INADS Database Administrator at the Technical Service Center (TSC). Verify that INADS can dial into the system and that the system can dial out to INADS.

As part of the system registration process, the INADS Database Administrator enables Alarm Origination.

#### CAUTION:

*If you do not enable Alarm Origination when the customer has purchased a services contract, the system cannot report any alarm to the TSC automatically, causing the TSC to be unable to fulfill the services contract.*

## High or Critical Reliability R5si+ M System

### Disable Alarm Origination

1. Enter **change system-parameters maintenance** and press Enter.
2. Set the Alarm Origination Activated field to n.



#### **CAUTION:**

*If you do not disable Alarm Origination, the system may generate alarms, resulting in unnecessary trouble tickets.*

3. For some releases of software, disable Cleared Alarm Notification and Restart Notification before submitting the form.

### Save Translations

1. If the system is high or critical reliability, enter **status system 1**, and press Enter to verify that the system is in the “active/standby” mode.
2. Enter **save translation**. Press Enter. This instructs the system to write all translation information to the translation card(s) or the tape(s).

### Power Down the Control Carrier



#### **NOTE:**

For a high or critical reliability system, do not power down both control carriers at the same time. This defeats the duplication feature of the system.

1. Power down the control carrier and install the appropriate circuit packs. See Table 5-20.

**Table 5-20. Circuit Pack Locations for Packet Bus in PPN**

Circuit Pack	Carrier	Quantity	Slot
TN778	Control Carrier A	2	PACKET CONT
	Control Carrier B	2	PACKET CONT
TN570	Control Carrier A	1 or 2 <sup>1</sup>	EXPN INTFC/1 and /2
	Control Carrier B	1 or 2	EXPN INTFC/1 and /2
TN771C	Control Carrier A	1 <sup>2</sup>	Any Available Port Slot

1. Quantity of this pack should equal the number of EPNs.
2. Required for critical reliability PPN. Optional for digital trunk testing in high reliability PPN.

**Table 5-21. Circuit-Pack Locations for Packet Bus in Each EPN**

Circuit Pack	Carrier	Quantity	Slot
TN570	Expansion Control Carrier A	1 or 2 <sup>1</sup>	EXPN INTFC/01 and /02
	Port Carrier B	1 or 2	EXPN INTFC/02 and /03
TN771C	Expansion Control Carrier A	1 <sup>2</sup>	Any Available Port Slot

1. Quantity of this pack should equal the number of EPNs.
2. Required for critical reliability EPN. Optional for digital trunk testing in high reliability EPN.

### Power Up System

1. Power up the system.
2. Enter **change system-parameters maintenance.** and press Enter. Use this form to enable the packet bus.
3. Perform tests.

### Resolve Alarms

Examine the alarm log. Resolve any alarms that may exist using *DEFINITY Enterprise Communications Server Release 5 Maintenance for R5r*.

### Verify Alarm Origination to INADS

Be sure the system is part of the existing INADS database by calling the INADS Database Administrator at the Technical Service Center (TSC). Verify that INADS can dial into the system and that the system can dial out to INADS.

As part of the system registration process, the INADS Database Administrator enables Alarm Origination.

#### CAUTION:

*If you do not enable Alarm Origination when the customer has purchased a services contract, the system cannot report any alarm to the TSC automatically, causing the TSC to be unable to fulfill the services contract.*

## Add CallVisor ASAI

---

### Service Interruption

---

Since, if the packet bus is being added, the addition of CallVisor ASAI requires a service interruption, notify the customer in advance as to when the addition will be carried out.

### Disable Alarm Origination

---

1. Enter **change system-parameters maintenance**, and press RETURN.
2. Set the Alarm Origination Activated field to n.



**CAUTION:**

*If you do not disable Alarm Origination, the system may generate alarms, resulting in unnecessary trouble tickets.*

3. For some releases of software, disable Cleared Alarm Notification and Restart Notification before submitting the form.

### Enter Added Translations

---

On the System-Parameters Customer-Options form, be certain that the Calling Party Number/Billing Number (CPN/BN) option is disabled, and enable the CallVisor ASAI Interface option. (Either CallVisor ASAI or CPN/BN can be enabled on the switch, but not both.)

Also, the Packet Bus Activated option must be enabled on the System-Parameters Maintenance form.

See *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*, for details on disabling and enabling options on these forms.

### **Save Translations**

---

1. If the system is high or critical reliability, enter **status system 1**, and press Enter to verify that the system is in the “active/standby” mode.
2. Enter **save translation**. Press Enter. This instructs the system to take all translation information in memory and write it to the translation card(s) or the tape(s).
3. If the system contains a TN750 Announcement circuit pack, enter **display announcements**, and press Enter.

If administered recorded announcements are listed, enter **list configuration software-version**, press Enter. Check Page 2 of this form to see when the announcements were last saved. To save the announcements, enter **save announcements**, and press Enter.

### **Power Down System**

---

If the packet bus is being added:

1. At the PPN, set the main circuit breaker to OFF.
2. At each EPN, set the main circuit breaker to OFF.

### **Add Circuit Packs**

---

1. Determine port assignment of circuit packs to be added.
2. Install the appropriate circuit pack(s) in assigned cabinet slot (as required). For example:

<b>Port Number</b>	<b>3</b>	<b>B</b>	<b>02</b>	<b>01</b>
	Cabinet (Port Network)	Carrier	Slot	Circuit

The TN748C or TN744 Call Classifier circuit pack is required. The TN744 is required for those customers who desire switch call classification.

A vacant port is required on a TN556 ISDN—BRI circuit pack.

3. A Packet Bus is required with CallVisor ASAI. If the system is not equipped with a Packet Bus, see “Add Packet Bus to R5si + M” earlier in this chapter.

## **Install Cables**

---

Install cables from cabinet to the MDF as required.

## **Power Up System**

---

If the packet bus was added:

1. At each EPN, set the main circuit breaker to ON.
2. At the PPN, set the main circuit breaker to ON.
3. The system performs a level 4 reboot, loading the system translations from the translation card(s) or the tape(s). Rebooting takes several minutes.
4. After all trouble is cleared, verify the EMERGENCY TRANSFER CONTROL switch is set to AUTO. This restores the system to the normal mode.

## **Enter Added Translations**

---

Administer the required translation data using the forms listed under "Adjunct/Switch Applications Interface (ASAI)" in *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*.

## **Resolve Alarms**

---

Examine the alarm log. Resolve any alarms that may exist using *DEFINITY Enterprise Communications Server Release 5 Maintenance R5r*.

## **Verify Alarm Origination to INADS**

---

Be sure the system is part of the existing INADS database by calling the INADS Database Administrator at the Technical Service Center (TSC). Verify that INADS can dial into the system and that the system can dial out to INADS.

As part of the system registration process, the INADS Database Administrator enables Alarm Origination.

### **CAUTION:**

*If you do not enable Alarm Origination when the customer has purchased a services contract, the system cannot report any alarm to the TSC automatically, causing the TSC to be unable to fulfill the services contract.*

### **Save Translations**

---

1. If the system is high or critical reliability, enter **status system 1**, and press Enter to verify that the system is in the "active/standby" mode.
2. Enter **save translation**. Press Enter. This instructs the system to take all translation information in memory and write it to the translation card(s) or the tape(s).
3. If the system contains a TN750 Announcement circuit pack, enter **list configuration software-version**, and press Enter. If Page 2 of this form shows that recorded announcements were saved, restore these announcements using **restore announcements**, and press Enter.
4. Update backup tape(s), if required.

## Add ISDN—BRI

---

### Service Interruption

---

Since, if the packet bus is being added, the addition of ISDN—BRI requires a service interruption, notify the customer in advance as to when the addition will be carried out.

### Disable Alarm Origination

---

1. Enter **change system-parameters maintenance**, and press Enter.
2. Set the Alarm Origination Activated field to n.



**CAUTION:**

*If you do not disable Alarm Origination, the system may generate alarms, resulting in unnecessary trouble tickets.*

3. For some releases of system software, disable Cleared Alarm Notification and Restart Notification before submitting the form.

### Save Translations

---

1. If the system is high or critical reliability, enter **status system 1**, and press Enter to verify that the system is in the “active/standby” mode.
2. Enter **save translation**. Press Enter. This instructs the system to take all translation information in memory and write it to the translation card(s) or the tape(s).
3. If the system contains a TN750 Announcement circuit pack, enter **display announcements**, and press Enter.

If administered recorded announcements are listed, enter **list configuration software-version**, press Enter. Check Page 2 of this form to see when the announcements were last saved. To save the announcements, enter **save announcements**, and press Enter.

### Power Down System

---

If the packet bus is being added, set the main circuit breaker to OFF.

### Add Circuit Packs

---

1. Determine port assignment of circuit packs to be added.
2. Install the appropriate circuit pack(s) in assigned cabinet slot (as required). For example:

<b>Port Number</b>	<b>3</b>	<b>B</b>	<b>02</b>	<b>01</b>
	Cabinet (Port Network)	Carrier	Slot	Circuit

3. The TN778 Packet Control circuit pack and the TN556 or TN2198 ISDN BRI circuit pack are required. Add the TN778 Packet Control circuit pack first. If an EPN is present, a TN570 Expansion Interface circuit pack is required.
4. The packet bus is required with BRI. If the system is not equipped with a packet bus see "Add Packet Bus to R5si + M" on page 5-90.

### Install Cables

---

Install cables from cabinet to the MDF as required.



**NOTE:**

BRI requires a 12-port backplane cable terminator (breakout connector). Connect this terminator to the 25-pair cable. This is different from the 8-port connector used for DCP.

### Power Up System

---

1. At each EPN, set the main circuit breaker to ON.
2. At the PPN, set the main circuit breaker to ON.
3. The system performs a level 4 reboot, loading the system translations from the translation card(s) or the tape(s). Rebooting takes several minutes.
4. After the system reboot is finished and all trouble is cleared, verify the EMERGENCY TRANSFER CONTROL switch is set to AUTO. This restores the system to the normal mode.

### Enter Added Translations

---

Administer the required translation data using the forms listed under 7500D voice terminals and 8500 voice terminals in *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*.

## **Resolve Alarms**

---

Examine the alarm log. Resolve any alarms that may exist using *DEFINITY Enterprise Communications Server Release 5 Maintenance R5r*.

## **Verify Alarm Origination to INADS**

---

Be sure the system is part of the existing INADS database by calling the INADS Database Administrator at the Technical Service Center (TSC). Verify that INADS can dial into the system and that the system can dial out to INADS.

As part of the system registration process, the INADS Database Administrator enables Alarm Origination.

### **CAUTION:**

*If you do not enable Alarm Origination when the customer has purchased a services contract, the system cannot report any alarm to the TSC automatically, causing the TSC to be unable to fulfill the services contract.*

## **Save Translations**

---

1. If the system is high or critical reliability, enter **status system 1**, and press Enter to verify that the system is in the “active/standby” mode.
2. Enter **save translation**. Press Enter. This instructs the system to take all translation information in memory and write it to the translation card(s) or the tape(s).
3. If the system contains a TN750/B Announcement circuit pack, enter **list configuration software-version**, and press Enter. If Page 2 of this form shows that recorded announcements were saved, these announcements can be restored using **restore announcements**, and press Enter.
4. Update backup tape(s), if required.

## **Add PRI Over PACCON to R5si + M**

---

The optional asynchronous packet bus provided by a TN778 Packet Control circuit pack (rather than the synchronous TDM bus provided by TN765 Processor Interface circuit packs) can allow TN464 ISDN-PRI interfaces on an R5si + m system to communicate with the system's SPE.

### **Tone-Clock Circuit Packs**

---

Like DS1 and ISDN-PRI using a TN765 Processor Interface, a TN756 Tone Detector/Generator circuit pack cannot be used with PRI Over PACCON interfaces. Therefore, replace the TN756 circuit pack with both:

- TN768, TN780, TN419B, or TN2182 Tone-Clock circuit pack
- TN748B, TN420B, or TN744C Tone Detector circuit pack

#### **⇒ NOTE:**

If a TN756 tone-detector/generator is removed from the R5si control cabinet, the TN2182 tone clock should replace this circuit pack. The TN2182 Tone-Clock serves to replace the tone detector circuits on the old TN756. If using a TN2182, no TN748B is required.

### **Expansion Interface (EI) Circuit Packs**

---

If a new packet bus is being added to provide PRI Over PACCON for an R5si+m system with an EPN, replace every TN776 EI circuit pack in the system with a TN570 EI circuit pack. These TN570 EIs allow packet-based communication between the PPN and each EPN in the system.

### **DS1/E1 Interface Circuit Packs**

---

Like ISDN-PRI using a TN765 Processor Interface, a TN464C (minimum "C" suffix) DS1/E1 circuit pack is required to assign a European 32-port E1 interface.

### **PRI Over PACCON Versus "PRI Over Processor Interface"**

---

For simpler call processing, Release 5 administration does not allow packet interface *and* processor interface circuit packs to control ISDN-PRI calls for the *same* system at the *same* time. Therefore, during a PRI Over PACCON addition, replace every TN767C DS1 circuit pack used to provide a D-channel signaling for ISDN-PRI with a TN464F DS1 circuit pack. This frees up PI circuits to control other important links such as DCS, CMS, and AUDIX.

In an R5si + m system with Non-Facility-Associated Signaling, a TN767C DS1 circuit pack may still provide B channels for a PRI Over PACCON link as long as

each controlling D channel for the link (primary and optional backup) resides on a TN464F DS1 circuit pack.

### **Service Interruption**

---

Since the addition of PRI Over PACCON requires a service interruption, notify the customer in advance as to when the addition will take place.

### **Disable Alarm Origination**

---

1. Enter **change system-parameters maintenance**, and press Enter.
2. Set the Alarm Origination Activated field to n.



#### **CAUTION:**

*If you do not disable Alarm Origination, the system may generate alarms, resulting in unnecessary trouble tickets.*

3. For some releases of software, disable Cleared Alarm Notification and Restart Notification before submitting the form.

### **Save Translations**

---

1. If the system is high or critical reliability, enter **status system 1**, and press Enter to verify that the system is in the "active/standby" mode.
2. Enter **save translation**. Press Enter. This instructs the system to take all translation information in memory and write it to the translation card(s) or the tape(s).
3. If the system contains a TN750 Announcement circuit pack, enter **display announcements**, and press Enter.

If administered recorded announcements are listed, enter **list configuration software-version**, press Enter. Check Page 2 of this form to see when the announcements were last saved. To save the announcements, enter **save announcements**, and press Enter.

### **Power Down System**

---

If the packet bus is being added:

1. At the PPN, set the main circuit breaker to OFF.
2. At each EPN, set the main circuit breaker to OFF.

### Add Circuit Packs

1. To control every ISDN-PRI link in the system, a TN778 Packet Control circuit pack and TN464 ISDN-PRI circuit packs are required.

Since the packet bus is required with PRI Over PACCON, the TN778 Packet Control circuit pack should be added first. If the system is not equipped with a packet bus see "Add Packet Bus to R5si + M" on page 5-90.

If EPNs reside in the system, replace every TN776 EI circuit pack with a TN570 EI to provide packet-based communication between the PPN and each EPN.

2. Remove an existing TN756 Tone Detector/Generator circuit pack and install the TN768, TN780, or TN419B Tone-Clock circuit pack in assigned carrier slot, if required.
3. Determine port assignment of port circuit packs to be added.
4. Install the TN464 circuit pack(s) in assigned carrier slot (as required). For example:

<b>Port Number</b>	<b>3</b>	<b>B</b>	<b>02</b>	<b>01</b>
	Cabinet (Port Network)	Carrier	Slot	Circuit

5. Install the TN748B (or the international TN420B) Tone Detector circuit packs, as required.

### Install Cables

Install cables from cabinet to the MDF as required.

### Power Up System

1. At each EPN, set the main circuit breaker to ON.
2. At the PPN, set the main circuit breaker to ON.
3. The system performs a level 4 reboot, loading the system translations from the translation card(s) or the tape(s). Rebooting takes several minutes.
4. After the system reboot is finished and all trouble is cleared, verify the EMERGENCY TRANSFER CONTROL switch is set to AUTO. This restores the system to the normal mode.

## Enter Added Translations

---

1. Log in as **craft** at the `login:` prompt on the management terminal.

For a system where ISDN-PRI interfaces were previously controlled by a TN765 PI circuit pack, preliminary administration must first remove any:

- Existing PI-controlled ISDN-PRI links
- TN767C DS1 Interface circuit packs used to provide D-channel signaling for ISDN-PRI links

The preliminary administration includes:

2. Remove the existing PI-controlled ISDN-PRI link translations
  - **busyout link <n>** — For each PRI link assigned
  - **change trunk <nn>** — To not reference the signaling groups associated with each trunk's B channel
  - **remove signaling-group <nn>** — For each signaling group assigned
  - **change communications link** — To set the "Enable" field to "n" for each link of type "ISDN"
  - **change communications processor-channel** — To vacate all fields for each processor channel of type "ISDN"
  - **change communications link** — To vacate all fields for each link of type "ISDN"
3. For each TN767C previously used to provide D-channel signaling for ISDN-PRI, remove its existing DS1 translations, and reassign circuit pack as a TN464

## Assign ISDN-PRI and PRI Over PACCON Options

1. If ISDN-PRI is being assigned as a new feature on the system, get the DOSS order number of the ISDN-PRI addition.
2. Call the regional CSA to request an "init" login. Once logged in as "init," the CSA should assign the "ISDN-PRI" (if necessary) and the "PRI Over PACCON" option to the system.

The CSA should enter `change system-parameters customer-options`, and press RETURN to enable the "ISDN-PRI" (if necessary) and the "PRI Over PACCON" option. For details on enabling this option, see *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*.

### **Assign or Reassign ISDN-PRI Feature**

---

Assign or reassign ISDN-PRI using the forms listed under “Integrated Services Digital Network — Primary Rate Interface” in *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*.

### **Resolve Alarms**

---

Examine the alarm log. Resolve any alarms that may exist using *DEFINITY Enterprise Communications Server Release 5 Maintenance R5r*.

### **Verify Alarm Origination to INADS**

---

Be sure the system is part of the existing INADS database by calling the INADS Database Administrator at the Technical Service Center (TSC). Verify that INADS can dial into the system and that the system can dial out to INADS.

As part of the system registration process, the INADS Database Administrator enables Alarm Origination.

#### **CAUTION:**

*If you do not enable Alarm Origination when the customer has purchased a services contract, the system cannot report any alarm to the TSC automatically, causing the TSC to be unable to fulfill the services contract.*

### **Save Translations**

---

1. If the system is high or critical reliability, enter **status system 1**, and press Enter to verify that the system is in the “active/standby” mode.
2. Enter **save translation**. Press Enter. This instructs the system to take all translation information in memory and write it to the translation card(s) or the tape(s).
3. If the system contains a TN750 Announcement circuit pack, enter **list configuration software-version**, and press Enter.  
  
If Page 2 of this form shows that recorded announcements were saved, these announcements can be restored using **restore announcements**, and press Enter.
4. Update backup tape(s), if required.

### **Reseat DEFINITY LAN Gateway System**

---

Reseat the LAN Gateway assembly into its backplane connectors.

## **Reseat DEFINITY AUDIX System**

---

Reseat the AUDIX assembly to its backplane connectors.

## **Reboot the System**

---

1. Behind the PPN, set the circuit breaker to ON.
2. The system performs a reset level 4 reboot, loading translations from the translation card. Rebooting requires 8 to 11 minutes.
3. Login at the `login:` prompt on the management terminal, and set the time to ensure that the system is booted properly.
4. Enter **list configuration software-version**, and press Enter to compare the version number of the software program (displayed on the terminal) with the TN790 version number (written on a label on the TN790's faceplate). If the version numbers are not the same, change the version number on the TN790 label so that they agree.

### **⇒ NOTE:**

Certain forms have changed for Release 5. Upgraded translations may appear on a different form, fields may shift within a form, or the names assigned to particular fields may change. Refer to *DEFINITY Enterprise Communications Server Release 5 Transition Reference*, and *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*, and make the necessary changes.

## **Restart DEFINITY LAN Gateway System**

---

1. Log onto the DEFINITY LAN Gateway.
2. When the main menu appears, select `Maintenance`.
3. Select `Reset System` from the `Maintenance` menu.
4. Select `Restart System` from the `Reset System` menu.

## **Enable Customer Options**

---

1. Enter **change system-parameters customer-options** and press Enter.
2. Use these forms to verify the customer options are properly set.

### **⇒ NOTE:**

In the `Basic Call Setup` field, if `ISDN-PRI?` was set to `y` before the upgrade, be sure to set the field back to `y`.

## **Resolve Alarms**

---

Examine the alarm log. Resolve any alarms that may exist using *DEFINITY Enterprise Communications Server Release 5 Maintenance for R5r*.

## **Verify Alarm Origination to INADS**

---

Be sure the system is part of the existing INADS database by calling the INADS Database Administrator at the Technical Service Center (TSC). Verify that INADS can dial into the system and that the system can dial out to INADS.

As part of the system registration process, the INADS Database Administrator enables Alarm Origination.



### **CAUTION:**

*If you do not enable Alarm Origination when the customer has purchased a services contract, the system cannot report any alarm to the TSC automatically, causing the TSC to be unable to fulfill the services contract.*

## Connector and Cable Diagrams (Pinout Charts)

See Table 5-22 for lead designations. The circuit packs and auxiliary equipment are classified as shown in the tables at the end of this chapter.

**Table 5-22. Lead and Color Designations**

Cross- Connect Pin	Color	Amphenol Pin	Backplane Pin
1	W-BL	26	102
2	BL-W	01	002
3	W-O	27	103
4	O-W	02	003
5	W-G	28	104
6	G-W	03	004
7	W-BR	29	105
8	BR-W	04	005
9	W-SL	30	106
10	SL-W	05	006
11	R-BL	31	107
12	BL-R	06	007
13	R-O	32	108
14	O-R	07	008
15	R-G	33	109
16	G-R	08	009
17	R-BR	34	110
18	BR-R	09	010
19	R-SL	35	111
20	SL-R	10	011
21	BK-BL	36	112
22	BL-BK	11	012
23	BK-O	37	113
24	O-BK	12	013
25	BK-G	38	302
26	G-BK	13	202
27	BK-BR	39	303
28	BR-BK	14	203
29	BK-SL	40	304
30	SL-BK	15	204

*Continued on next page*

**Table 5-22. Lead and Color Designations — *Continued***

<b>Cross- Connect Pin</b>	<b>Color</b>	<b>Amphenol Pin</b>	<b>Backplane Pin</b>
31	Y-BL	41	305
32	BL-Y	16	205
33	Y-O	42	306
34	O-Y	17	206
35	Y-G	43	307
36	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	46	310
42	BL-V	21	210
43	V-O	47	311
44	O-V	22	211
45	V-G	48	312
46	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 5-23. Port Circuit Pack Lead Designations**

Cross-Connect Pin	TN742/B TN747B TN753 TN769 TN2147 TN465	TN754 TN726	TN760/B TN760C TN760D	TN762/B	TN763 TN763B TN763C	TN735	TN767B TN722/B TN464C	TN746/B TN2183	TN2224
1	T.1		T.1	T.1	T.1	T.1		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	GRD	T.2	T.2
4		TXR.1	R1.1	TXR.1	SZ1.1	BR.1	GRD	R.2	R.2
5		PXT.1	E.1	PXT.1	S.1	LT.1	GRD	T.3	T.3
6		PXR.1	M.1	PXR.1	S1.1	LR.1	GRD	R.3	R.3
7	T.2		T.2	T.2	T.2	T.2		T.4	T.4
8	R.2		R.2	R.2	R.2	R.2	GRD	R.4	R.4
9		TXT.2	T1.2	TXT.2	SZ.2	BT.2			T.5
10		TXR.2	R1.2	TXR.2	SZ1.2	BR.2	GRD		R.5
11		PXT.2	E.2	PXT.2	S.2	LT.2	GRD		T.6
12		PXR.2	M.2	PXR.2	S1.2	LR.2	GRD		R.6
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
16		TXR.3	R1.3	TXR.3	SZ1.3	BR.3	GRD		R.8
17		PXT.3	E.3	PXT.3	S.3	LT.3	GRD	T.5	T.9
18		PXR.3	M.3	PXR.3	S1.3	LR.3	GRD	R.5	R.9
19	T.4		T.4	T.4	T.4	T.4		T.6	T.10
20	R.4		R.4	R.4	R.4	R.4	GRD	R.6	R.10
21		TXT.4	T1.4	TXT.4	SZ.4	BT.4		T.7	T.11
22		TXR.4	R1.4	TXR.4	SZ1.4	BR.4	GRD	R.7	R.11
23		PXT.4	E.4	PXT.4	S.4	LT.4	+5	T.8	T.12
24		PXR.4	M.4	PXR.4	S1.4	LR.4	+5	R.8	R.12
25	T.5		T.5	T.5	T.5	T.5		T.9	T.13
26	R.5		R.5	R.5	R.5	R.5		R.9	R.13
27		TXT.5	T1.5	TXT.5	SZ.5	BT.5	GRD	T.10	T.14
28		TXR.5	R1.5	TXR.5	SZ1.5	BR.5	GRD	R.10	R.14
29		PXT.5	E.5	PXT.5	S.5	LT.5	GRD	T.11	T.15
30		PXR.5	M.5	PXR.5	S1.5	LR.5		R.11	R.15
31	T.6		T.6	T.6	T.6	T.6	LBACK1	T.12	T.16
32	R.6		R.6	R.6	R.6	R.6	LBACK2	R.12	R.16
33		TXT.6	T1.6	TXT.6	SZ.6	BT.6	GRD		T.17
34		TXR.6	R1.6	TXR.6	SZ1.6	BR.6	GRD		R.17
35		PXT.6	E.6	PXT.6	S.6	LT.6	GRD		T.18
36		PXR.6	M.6	PXR.6	S1.6	LR.6	GRD		R.18
37	T.7		T.7	T.7	T.7	T.7	LO		T.19

*Continued on next page*

**Table 5-23. Port Circuit Pack Lead Designations — Continued**

Cross-Connect Pin	TN742/B TN747B TN753 TN769 TN2147 TN465	TN754 TN726	TN760/B TN760C TN760D	TN762/B	TN763 TN763B TN763C	TN735	TN767B TN722/B TN464C	TN746/B TN2183	TN2224
	38	R.7		R.7	R.7	R.7	R.7	LO*	
39		TXT.7	T1.7	TXT.7	SZ.7	BT.7	GRD		T.20
40		TXR.7	R1.7	TXR.7	SZ1.7	BR.7	GRD		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	LI*	T.14	T.22
44	R.8		R.8	R.8	R.8	R.8	LI	R.14	R.22
45		TXT.8	T1.8	TXT.8	SZ.8	BT.8	GRD	T.15	T.23
46		TXR.8	R1.8	TXR.8	SZ1.8	BR.8	GRD	R.15	R.23
47		PXT.8	E.8	PXT.8	S.8	LT.8	+5	T.16	T.24
48		PXR.8	M.8	PXR.8	S1.8	LR.8	+5	R.16	R.24
49	GRD	GRD	GRD	GRD	GRD	GRD	GRD	GRD	GRD
50	GRD	GRD	GRD	GRD	GRD	GRD	GRD	GRD	GRD

**Table 5-24. DS1 Interface Cable H600-307 (and C6C)**

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	06	W-SL	LOOP2
24	SL-W	LOOP1	05	SL-W	LOOP1

All other pins empty.

**Table 5-25. DS1 Interface Cable H600-348**

50-Pin			15-Pin		
Pin	Color	Designation	Pin	Color	Designation
			<b>Plug 04</b>		
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)
			<b>Plug 03</b>		
41	W-G	LI (High)	11	W-G	LI (High)
16	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)
			<b>Plug 02</b>		
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)
			<b>Plug 01</b>		
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 5-26. TN1654 Lead Designations**

Pin	Color	Designation	Pin	Color	Designation
26	W-BL	+5E	01	BL-W	+5E
27	W-O	GRD	02	O-W	XMITDAT -
28	W-G	GRD	03	G-W	GRD
29	W-BR	XMITDAT +	04	BR-W	RCVDAT -
30	W-SL	GRD	05	SL-W	GRD
31	R-BL	RCVDAT +	06	BL-R	GRD
32	R-O	+5E	07	O-R	+5E
33	R-G	CCSYNC	08	G-R	CDSYNC
34	R-BR	C2DCDATA	09	BR-R	C2DDDATA
35	R-SL	CASYNC	10	SL-R	CBSYNC
36	BK-BL	D2CDATA	11	BL-BK	ISCLOCK
37	BK-O	CCPRES	12	O-BK	CDPRES
38	BK-G	LID *	13	G-BK	LID
39	BK-BR	LOD	14	BR-BK	LOD*
40	BK-SL	CCRESET	15	SL-BK	CDRESET
41	Y-BL	LIC*	16	BL-Y	LIC
42	Y-O	LOC	17	O-Y	LOC*
43	Y-G	CARESET	18	G-Y	CBRESET
44	Y-BR	LIB*	19	BR-Y	LIB
45	Y-SL	LOB	20	SL-Y	LOB*
46	V-BL	C2DADATA	21	BL-V	C2DBDATA
47	V-O	LIA*	22	O-V	LIA
48	V-G	LOA	23	G-V	LOA*
49	V-BR	CAPRES	24	BR-V	CBPRES
50	V-SL	GRD	25	SL-V	GRD

\* Denotes an active low signal.

**Table 5-27. TN793 24-Port Analog Line Lead Designations**

Pin	Color	Designation	Pin	Color	Designation
26	W-BL		01	BL-W	
27	W-O		02	O-W	
28	W-G		03	G-W	
29	W-BR		04	BR-W	
30	W-SL		05	SL-W	
31	R-BL		06	BL-R	
32	R-O		07	O-R	
33	R-G		08	G-R	
34	R-BR		09	BR-R	
35	R-SL		10	SL-R	
36	BK-BL		11	BL-BK	
37	BK-O		12	O-BK	
38	BK-G		13	G-BK	
39	BK-BR		14	BR-BK	
40	BK-SL		15	SL-BK	
41	Y-BL		16	BL-Y	
42	Y-O		17	O-Y	
43	Y-G		18	G-Y	
44	Y-BR		19	BR-Y	
45	Y-SL		20	SL-Y	
46	V-BL		21	BL-V	
47	V-O		22	O-V	
48	V-G		23	G-V	
49	V-BR		24	BR-V	
50	V-SL		25	SL-V	

**Table 5-28. Circuit Pack and Auxiliary Equipment Classifications**

Analog Line (8)	2-Wire Digital & Analog Line (16)	Data Line & Digital Line 4-Wire	Digital Line 2-Wire 24 Ports	Hybrid Line	MET Line	AUX Trunk	Central Office Trunk	Central Office Trunk 3-Wire	DID / DIOD Trunk	Tie Trunk	DS1 Tie Trunk	ISDN BRI Line 4-wire	ISDN BRI Line 2-wire	Packet Data Line	Four Port DIOD
TN467	TN2149	TN726B	TN2224	TN762	TN735	TN417	TN429	TN2199	TN429	TN478	TN483	TN556B	TN2198	TN553	TN2184
TN432	TN2135	TN754B		TN762B		TN763	TN493		TN2139	TN458	TN722				
TN431	TN468B	TN564B				TN763D	TN422		TN459B	TN449	TN767				
TN411B	TN448	TN413					TN421		TN436B	TN760D	TN722B				
TN742	TN746						TN438B		TN753	TN760C	TN464F				
TN769	TN746B						TN447		TN2146	TN434					
	TN2181						TN465C		TN414	TN415					
	TN2183						TN747B								
							TN2138								
							TN2147C								
							TN2148								

1. DID means Direct Inward Dialing
2. DIOD means Direct Inward Outward Dialing
3. MET means Multibutton Electronic Telephone

Table 5-29. Circuit Pack and Auxiliary Equipment Leads (Pinout Charts)

Color	Connector Pin Numbers	Analog Line Line 8 ports	2-Wire Digital Line and Analog Line Line 16 ports	Data Line and Digital Line Line 4-wire	Digital Line 2-Wire 24 Ports	Hybrid Line	MET Line	AUX Trunk	CO Trk.	CO Trunk 3-wire	DID/ DIOD Trunk	Tie Trk.	DS1 Tie Trunk	ISDN BRI Line 4-wire	ISDN BRI Line 2-wire	Packet Data Line	Four Port DIOD
W-BL	26	T1	T1		T1	V1T1	T1	T1	T1	A1	T1	T1		PXR1	T1	TXT1	T1
BL-W	01	R1	R1		R1	V1R1	R1	R1	R1	B1	R1	R1		PXT1	R1	TXR1	R1
W-O	27		T2	TXT1	T2	CT1	TXT1	SZ1				T11		TXT1	T2	PXT1	
O-W	02		R2	TXR1	R2	CR1	TXR1	SZ11				R11		TXR1	R2	PXR1	
W-G	28		T3	PXT1	T3	P-1	PXT1	S1				E1		PXR2	T3	TXT2	
G-W	03		R3	PXR1	R3	P+1	PXR1	S11		C1		M1		PXT2	R3	TXR2	
W-BR	29		T4		T4	V1T2	T2	T2	T2	A2	T2	T2		TXT2	T4	PXT2	T2
BR-W	04		R4		R4	V1R2	R2	R2	R2	B2	R2	R2		TXR2	R4	PXR2	R2
W-S	30			TXT2	T5	CT2	TXT2	SZ2				T12		PXR3	T5	TXT3	
S-W	05			TXR2	R5	CR2	TXR2	SZ12				R12		PXT3	R5	TXR3	
R-BL	31			PXT2	T6	P-2	PXT2	S2				E2		TXT3	T6	PXT3	
BL-R	06			PXR2	R6	P+2	PXR2	S12		C2		M2		TXR3	R6	PXR3	
R-O	32				T7	V1T3	T3	T3	T3	A3	T3	T3		PXR4	T7	TXT4	T3
O-R	07				R7	V1R3	R3	R3	R3	B3	R3	R3		PXT4	R7	TXR4	R3
R-G	33			TXT3	T8	CT3	TXT3	SZ3				T13		TXT4	T8	PXT4	
G-R	08			TXR3	R8	CR3	TXR3	SZ13				R13		TXR4	R8	PXR4	
R-BR	34			PXT3	T9	P-3	PXT3	S3				E3		PXR5	T9	TXT5	
BR-R	09			PXR3	R9	P+3	PXR3	S13		C3		M3		PXT5	R9	TXR5	
R-S	35				T10	V1T4	T4	T4	T4	A4	T4	T4		TXT5	T10	PXT5	T4
S-R	10				R10	V1R4	R4	R4	R4	B4	R4	R4		TXR5	R10	PXR5	R4
BK-BL	36			TXT4	T11	CT4	TXT4	SZ4				T14		PXR6	T11	TXT6	
BL-BK	11			TXR4	R11	CR4	TXR4	SZ14				R14		PXT6	R11	TXR6	
BK-O	37			PXT4	T12	P-4	PXT4	S4				E4		TXT6	T12	PXT6	
O-BK	12			PXR4	R12	P+4	PXR4	S14				M4		TXR6	R12	PXR6	

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**Table 5-29. Circuit Pack and Auxiliary Equipment Leads (Pinout Charts)**

Color	Connector Pin Numbers	Analog Line 8 ports	2-Wire Digital Line and Analog Line 16 ports	Data Line and Digital Line 4-wire	Digital Line 2-Wire 24 Ports	Hybrid Line	MET Line	AUX Trunk	CO Trk.	CO Trunk 3-wire	DID/ DIOD Trunk	Tie Trk.	DS1 Tie Trunk	ISDN BRI Line 4-wire	ISDN BRI Line 2-wire	Packet Data Line	Four Port DIOD
BK-G	38	T5	T9		T13	V1T5			T5		T5			PXR7		TXT7	
G-BK	13	R5	R9		R13	V1R5			R5		R5			PXT7		TXR7	
BK-BR	39		T10	TXT5	T14	CT4								TXT7		PXT7	
BR-BK	14		R10	TXR5	R14	CR4								TXR7		PXR7	
BK-S	40		T11	PXT5	T15	P-5								PXR8		TXT8	
S-BK	15		R11	PXR5	R15	P+5								PXT8		TXR8	
Y-BL	41	T6	T12		T16	V1T6			T6		T6			TXT8		PXT8	
BL-Y	16	R6	R12		R16	V1R6			R6		R6			TXR8		PXR8	
Y-O	42			TXT6	T17	CT6								PXR9		TXT9	
O-Y	17			TXR6	R17	CR6								PXT9		TXR9	
Y-G	43			PXT6	T18	P-6								TXT9		PXT9	
G-Y	18			PXR6	R18	P+6								TXR9		PXR9	
Y-BR	44	T7			T19	V1T7			T7		T7			PXR10		TXT10	
BR-Y	19	R7			R19	V1R7			R7		R7			PXT10		TXR10	
Y-S	45			TXT7	T20	CT7								TXT10		PXT10	
S-Y	20			TXR7	R20	CR7								TXR10		PXR10	
V-BL	46		T13	PXT7	T21	P-7								PXR11		TXT11	
BL-V	21		R13	PXR7	R21	P+7								PXT11		TXR11	
V-O	47	T8	T14		T22	V1T8			T8		T8		LI*	TXT11		PXT11	
O-V	22	R8	R14		R22	V1R8			R8		R8		LI	TXR11		PXR11	
V-G	48		T15	TXT8	T23	CT8							LO	PXR12		TXT12	
G-V	23		R15	TXR8	R23	CR8							LO*	PXT12		TXR12	

Continued on next page

**Table 5-29. Circuit Pack and Auxiliary Equipment Leads (Pinout Charts)**

Color	Connector Pin Numbers	Analog Line 8 ports	2-Wire Digital Line and Analog Line 16 ports	Data Line and Digital Line 4-wire	Digital Line 2-Wire 24 Ports	Hybrid Line	MET Line	AUX Trunk	CO Trk.	CO Trunk 3-wire	DID/DIODE Trunk	Tie Trk.	DS1 Tie Trunk	ISDN BRI Line 4-wire	ISDN BRI Line 2-wire	Packet Data Line	Four Port DIOD
V-BR	49		T16	PXT8	T24	P-8							LBACK2	TXT12		PXT12	
BR-V	24		R16	PXR8	R24	P-8							LBACK1	TXR12		PXR12	
V-S	50																
S-V	25																

† The wire colors in this chart apply only to B25A and A25B cables. H600-307 cable colors are not shown.

The following abbreviations apply for all circuit packs unless otherwise noted:

- T,R PBX transmit voice TTip(A)Green
- T1,R1 PBX receive voice RRing(B)Red
- M PBX transmit signal SSleeve
- E PBX receive signal PXPBX transmit
- TX Terminal transmit
- LI, LI\* Digital Trunk IN LO, LO\* Digital Trunk OUT

The following wire colors apply in the above chart:

- W White S Slate (Grey)
- BL Blue R Red
- O Orange BK Black
- G Green Y Yellow
- BR Brown V Violet

---

## Test Telephones and Other Equipment

# 6

---

This chapter describes how to test the telephones and other equipment. The following tests are included in this chapter:

1. Make Test Calls
2. Test 302C Attendant Console
3. Test Selector Console
4. Test External Ringing
5. Test Queue Warning Indicator
6. Test Integrated Announcement
7. Test Music-on-Hold
8. Test Emergency Transfer
9. Test Remote Access Interface (formerly INADS)
10. Test Basic Rate Interface (BRI)
11. Test Duplication Option Processing Element Interchange
12. Test Terminating Trunk Transmission
13. Test Stratum 3 Clock

The following tests are acceptance tests and provide some assurance the system will perform properly after installation and administration. If problems occur or more extensive tests are required, refer to *DEFINITY Enterprise Communications Server Release 5 Maintenance for R5r*, or *DEFINITY Enterprise Communications Server Release 5 Maintenance for R5vs/si*.

## **Make Test Calls**

---

Make 2 calls from 1 telephone to another telephone. Make the first call by dialing a telephone and make the second call by dialing a trunk access code and a Listed Directory Number (LDN).

## **Test 302C Attendant Console**

---

Check all lamps are operational and call another telephone in the system.

1. Simultaneously press and hold the Ringer Volume up button and the **POS BUSY button**. This puts the console in the self-test mode.



**NOTE:**

Releasing the buttons causes the console to return to normal mode.

2. Verify all lamps on display light and remain lighted. Each row of lamps on the console lights and goes dark in sequence from top to bottom.
3. Press **Start**. Listen for dial tone. The green lamp associated with idle call appearance button lights. The **Position Available** lamp goes dark.
4. Dial number associated with a working telephone. Audible ringing tone is heard in ear piece.
5. Press **Release**. Audible ringing tone is silenced. The green lamp associated with idle call appearance button goes dark. The **Position Available** lamp lights.

## **Test Selector Console**

---

Check all selector console lamps are operational. Make call to a telephone in the system.

1. Simultaneously press and hold the Ringer Volume up button and the **POS BUSY button** on the attendant console. This puts the console in the self-test mode.
2. Each row of lamps on the selector console lights and goes dark in sequence from top to bottom.
3. Press hundreds group select button. The hundreds group select lamp lights and any lamps associated with busy telephone light.
4. Press Direct Extension Selection (DXS) button for the desired extension. Audible ringing tone is heard in the earpiece on attendant console.
5. On attendant console, press **Release**. Audible ringing tone is silenced.

## **Test External Ringing**

---

Make a test call to the attendant console to verify ringing device sounds when **Night** lamp on console is lighted. If ringing device has not been installed by customer, connect spare telephone to information outlet reserved for ringing device and make test call.

## **Test Queue Warning Indicator**

---

Make a test call to an extension associated with a Uniform Call Distribution (UCD) or Direct Department Calling (DDC) group, and verify the queue warning indicator lamp lights. If the queue warning indicator has not been installed by customer, connect a spare telephone to the information outlet reserved for queue warning indicator and make a test call.

## **Test Integrated Announcement**

---

The TN750/B/C Announcement circuit pack provides the ability to store messages. The messages can be recorded from telephones on- or off-premises and have flexible message lengths. The telephone selected as the test telephone must have a class of service (COS) with console permission enabled.

### **Record Announcement**

---

1. Select test telephone with console permission enabled.
2. Dial access code followed by the integrated announcement extension number. Dial tone is heard.
3. Dial "1." A short burst of tone is heard and recording begins. Speak the announcement into the telephone.
4. Dial "#" or hang up. Recording stops and dial tone is heard.

### **Playback Announcement**

---

1. Dial access code followed by the integrated announcement extension number. Dial tone is heard.
2. Dial "2." The announcement is heard and dial tone is heard at completion of announcement.

### **Delete Announcement**

---

1. Dial access code followed by the integrated announcement extension number. Dial tone is heard.
2. Dial "3." A confirmation tone is heard and announcement is deleted.

## **Test Music-on-Hold**

---

Verify music is provided to a held party during any hold interval.

## **Test Emergency Transfer**

---

Put system in emergency transfer mode and make call using emergency transfer telephone. There may be up to four Emergency Transfer switches depending on the system configuration. The switch is located on the Processor circuit pack(s) in the Processor Port Network (PPN) Control Carrier.

## **Test Remote Access Interface**

---

Test the communication link between the system and the remote interface (formerly INADS) and verify the alarm notification process. Make a remote test from the remote interface to the DEFINITY System and a local test from the DEFINITY System to the remote interface.

In some countries, this remote access interface is not allowed. Contact your Lucent Technologies representative.

### **Remote Test**

---

1. Call outside personnel who will be accessing the system remotely to perform administration, maintenance, and testing.
2. Ask remote personnel to call system and login and display System Parameters Maintenance screen. The login must be successful.



**NOTE:**

Product Identification on the System Parameters screen must match the Product Identification administered by the local technician.

3. Remote personnel enters **test inads-link** command, terminates login, and disconnects.
4. Remote personnel then check the appropriate trouble ticket. The trouble ticket should show "INADS,n,MINOR" in the description field to indicate a minor off-board alarm was reported to the remote personnel. There may be more text in the description field if other resolved alarms were reported.
5. Remote personnel makes second call and login to system and checks the error log to verify no problems. See *DEFINITY Enterprise Communications Server Release 5 Maintenance for R5r*, for error log and error code information.
6. Remote access personnel terminate login and disconnects.

## Local Test

---

1. Log in and enter **test inads-link** command.
2. Request remote access personnel to verify a trouble ticket was created.
3. Check error log to verify no problems.
4. Log off the system.

## Test Basic Rate Interface

---

Check for normal voice telephone function (dial tone, ability to make and receive calls). Check for the correct Service Profile Identifier (SPID) on a display telephone and the management terminal.

## Test Duplication Option Processing Element Interchange

---

The process of the standby Processing Element (PE) taking over for the active PE is referred to as a PE Interchange. This interchange should not be performed immediately after powering up the system. Wait a few minutes to allow the system to complete its internal tests. The system default is PE\_B after powering up the system, so the active PE should be the B processor for this test, and the interchange should make PE\_A the active PE. Verify the system can successfully perform a PE interchange.

1. At the management terminal, verify the screen displays PE\_B in the upper right corner.
2. Enter **check status** command. Verify PE\_B is in the standby mode. If it is, proceed to Step 4. If it isn't, proceed to Step 3.
3. Enter **refresh-spr-standby** command.
4. Enter **reset system interchange** command. The management terminal will be logged off and a beep will be heard.
5. Login and verify that the screen displays PE\_A in the upper right corner.



### NOTE:

Processor A's yellow light is on and its green light is off.  
Processor B's yellow and green lights are off.  
The system is alarm free.

6. Make system test call. The call must complete and the conversation must be satisfactory.

## **Test Terminating Trunk Transmission**

The Terminating Trunk Transmission Test provides for extension number access to three tone sequences that can be used for trunk transmission testing from the distant end of the trunks.

The three test types must have extension numbers assigned on the **system-parameters maintenance** form:

Test Type 100:\_\_\_\_\_ Test Type 102:\_\_\_\_\_ Test Type 105:\_\_\_\_\_

Test type 100 provides:

- 5.5 Seconds of 1004 Hz tone at 0 dB
- Quiet until disconnect; disconnect is forced after one minute

Test Type 102 provides:

- 9 Seconds of 1004 Hz tone at 0 dB
- 1 Second of silence
- Cycle is repeated until disconnect, which is forced after 24 hours

Test Type 105 provides:

- 9 Seconds of 1004 Hz tone at -16 dB
- 1 Second of silence
- 9 Seconds of 404 Hz tone at -16 dB
- 1 Second of silence
- 9 Seconds of 2804 Hz tone at -16 dB
- 30 Seconds of silence
- 0.5 Seconds of test progress tone (2225 Hz)
- Approximately 5 seconds of silence
- Forced disconnect

## **Test Stratum 3 Clock**

To test the ability of the Stratum 3 clock to correctly provide timing and alarms to the system.

- Check for red LEDs
- Verify timing to the system
- Verify loss of power supply alarms to the system
- Verify loss of DS1 reference alarms to the system



**CAUTION:**

*The following procedures are destructive to DS1 data and should not be attempted while there are DS1 facilities in active use.*

**Check for Red LEDs**

1. Turn on the Stratum 3 clock and wait 40-50 seconds to allow the system to complete the on-board diagnostics before checking LEDs.
2. If there are any red LEDs, follow the procedures in Table 6-1.

**Table 6-1. Stratum 3 Clock LED Indicators**

<b>Card</b>	<b>LED Label</b>	<b>Procedure</b>
PAI	REF A	Check that the CI circuit pack on the left is inserted properly. Check wiring for DS1 in carrier "A" which connects the system to the CSU and the External Synchronization Clock at the MDF through a Y-cable assembly. If all else fails to clear the LED then replace the circuit pack.
PAI	REF B	Check that the CI circuit pack on the right is inserted properly. Check wiring for DS1 in carrier B which connects the system to the CSU and the External Synchronization Clock at the MDF through a Y-cable assembly. If all else fails to clear the LED then replace the circuit pack.
PAI	ST A	Replace the ST3 card
PAI	ST B	Replace the ST3 card
CI	FAIL	Check wiring for its associated DS1 reference and replace the circuit pack if necessary
ST3	FAIL	Replace the circuit pack
ST3	LOCK	Ignore this LED
ST3	HOLDOVE R	Ignore this LED
ST3	FREE RUN	Ignore this LED
TOCA	FAIL	Replace the circuit pack
TOCA	PORT ALM	Replace the circuit pack if necessary

### Verify Timing to the System

1. Administer the Stratum 3 clock by issuing the **change synchronization** command at the management terminal.
2. Type a "3" in the `stratum` field.
3. Type the port network number where the TN780 Tone-Clock circuit pack(s) reside in the `port network` field.



**NOTE:**

Wait one minute for the software to reconfigure the system synchronization.

4. Verify results of test 649. If test 649 fails with a code of 2101, then check the wiring for **EXTSYN0** and **EXTSYN1**. Refer to *DEFINITY Enterprise Communications Server Release 5 Maintenance for R5r*.
5. If test 649 is successful, then the system is getting correct timing from the Stratum 3 clock.

### Perform Complete System Test

---

Run the complete system test with the "Allports" option in the "SPE Interchange" and "Long Test" modes. The hardware group tests are described in *DEFINITY Enterprise Communications Server Release 5 Maintenance for R5r* or *DEFINITY Enterprise Communications Server Release 5 Maintenance for R5vs/si*.



**NOTE:**

This test takes several hours. It may be best to run the test in the background, or at night, or both.

### Resolve Alarms

---

After the test has completed, inspect the alarms log. Type display alarms and resolve the alarms in the usual manner.

Check the error log for evidence of failure. The only failure results logged should be the outcome of tests requiring a connected station, where a station is not connected to the port under test. Repair all other failures or refer them to a maintenance technician for repair.

Resolve any alarms that may exist using *DEFINITY Enterprise Communications Server Release 5 Maintenance for R5r*.

## **Activate and Test Alarm Origination Feature**

---

1. Activate the Alarm Origination feature from the *change system-parameter maintenance* form.
2. Run “test inads link” to verify the system can reach the INADS Database Administrator at the Technical Service Center (TSC).

Be sure the system is part of the existing INADS database by calling the INADS Database Administrator to verify the system can be dialed into and that the system can dial out to INADS.

As part of the system registration process, the INADS Database Administrator enables Alarm Origination.

Have the serial number of the system and the software version number available at the time of the call.



---

## Option Switch Settings



---

Some of the interface units used between the Multi-Carrier Cabinets and other types of equipment require specific option switch settings. This section lists the settings required for data modules, modems, printers, and so forth. Refer to the user's guide for each type of equipment for information on how to locate and set the option switches.

### Data Module Option Switch Settings

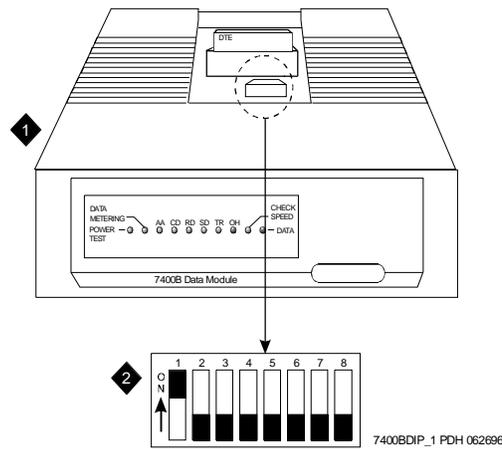
#### DCS Switch Settings

The Distributed Communications System (DCS) for a system is sometimes connected to the system through the TN765 Processor Interface circuit pack or a TN778 Packet Interface circuit pack. The first circuit can be connected directly to the DCS through the processor interface (**PI**) connector on the rear of the control carrier.

Any of the remaining three circuits on the processor interface used to support the DCS must be connected through a data module serving as the interface link. The option settings for a 7400B Data Module are shown in Table A-1. Refer to Figure A-1 for the location of the switches. Also refer to *7400B Data Module User's Manual*, 555-020-707.

**⇒ NOTE:**

The options for the 7400A and 7400C Data Modules are set from the front panel interface. For the 7400A, refer to *7400A Data Module User's Manual*, 555-020-706. For the 7400C, refer to *DEFINITY Communications System High Speed Link User's Guide*, 555-020-711.



**Figure Notes**

- 1. Data Module (7400B Shown)
- 2. DIP Switch

**Figure A-1. DIP Switch Locations**

1. Remove the top cover from the data module.
2. Switches 1, 5, and 8 are the only switches to be set. Refer to Table A-1 for the switch option settings.

**Table A-1. Data Module Option Switch Settings**

DIP Switch	Function	Setting
1	With Phone Without Phone	ON OFF
5	Data Metering No Data Metering	ON OFF
8	Make Busy on Loc Loop No Make Busy on Loc Loop	ON OFF
2, 3, 4, 6, and 7		OFF

## 7400D Data Module Option Settings

The option settings shown in Table A-2 are for the Answer Only interface and are set from the front panel interface. Set only the desired speed of the 7400D. All other default settings can be used.

Refer to "Set 7400D Options" on page A-4 to set the speed.

**Table A-2. 7400 Series Data Module Options (Answer Only Interface)**

Set Option Display	Abbreviation	Possible Values	Default
Set 300 SPEED?	300	ON, OFF	ON
Set 1200 SPEED?	1200	ON, OFF	ON
Set 2400 SPEED?	2400	ON, OFF	ON
Set 4800 SPEED?	4800	ON, OFF	ON
Set 9600 SPEED?	9600	ON, OFF	ON
Set 19200 SPEED?	19200	ON, OFF	ON
Set ANSWER?	ANS	AUTO, MANUAL	AUTO
Set CI LEAD?	CI	ON, OFF	OFF
Set CH LEAD?	CH	ON, OFF	OFF
Set CTS LEAD?	CTS	NORMAL, ON	ON
Set DCD LEAD?	DCD	NORMAL, ON	ON
Set DSR LEAD?	DSR	NORMAL, ON	ON
Set DTR DETECT?	DTR	0, 10, 20, 30, 50, 100 MSEC	50
Set DTR LEAD?	DTR	EIA STANDARD, IGNORE	EIA STANDARD
Set LL LEAD?	LL	ON, OFF	OFF
Set REMOTE LOOP?	REMLOOP	GRANT, DENY	GRANT
Set RI LEAD?	RI	CYCLE, ON	ON
Set RL LEAD?	RL	ON, OFF	OFF
Set SIGLS DISC?	SIGLS DISC	ON, OFF	ON
Set TIMING?	TIMING	INTERNAL, EXTERNAL	INT
Set TM LEAD?	TM	ON, OFF	OFF

**NOTE:**

It is recommended that CI and CH be set to ON, and DCD and DSR be set to normal. This allows login information to be displayed on the screen without having to send a carriage return character.

## Set 7400D Options

The following steps are used as an example to change the default setting of 9600 to the custom setting of 19200.

**⇒ NOTE:**

If the link is between a Release 5r and a CMS, set the 7400D to 19200. If the link is between any other system and a CMS, leave the speed of the 7400D set at 9600.

1. From the HOME screen, press **NEXT/NO** until SET OPTIONS? is displayed.
2. Press **ENTER/YES** to stay in the SET OPTIONS? menu.
3. Press **NEXT/NO** until SET 9600 SPEED? is displayed.
4. Press **ENTER/YES** when SET 9600 SPEED? is displayed.
5. Press **NEXT/NO** when 9600 = ON? is displayed.
6. Press **ENTER/YES** when 9600 -> OFF? is displayed.
7. Press **ENTER/YES** when CONTINUE? is displayed.
8. Press **ENTER/YES** when SET 19200 SPEED? is displayed.
9. Press **NEXT/NO** when 19200 = OFF? is displayed.
10. Press **ENTER/YES** when 19200 -> ON? is displayed.
11. Press **NEXT/NO** when CONTINUE? is displayed.
12. Press **ENTER/YES** when 19200 -> ON? is displayed.
13. Press **ENTER/YES** when SAVE CHANGES? is displayed.

**⇒ NOTE:**

The SET OPTIONS? menu cannot be terminated if all speeds are set to off.

## Modem Pooling (Combined) Option Settings

Combined modem pooling requires option switch settings on different modems and data modules. Refer to the vendor's documentation.

## 7400A and 7400B Option Settings

Determine if the 7400A or 7400B is interfacing with D-lead modems or attention control modems. Use Table A-3 for D lead modems and Table A-4 for attention control modems.

**Table A-3. 7400A Options for D-Lead Modems**

Set Option Display	Option	Desired Setting
Set 300 Speed?	300	Note 1
Set 1200 Speed?	1200	Note 1
Set 2400 Speed?	2400	Note 1
Set 4800 Speed?	4800	Note 1
Set 9600 Speed?	9600	Note 1
Set 19200 Speed?	19200	Note 1
Set AT Control?	AT	OFF
Set CI Lead?	CI	Note 2
Set CI2 Lead?	CI2	Note 2
Set CH Lead?	CH	Note 2
Set CH2 Lead?	CH2	Note 2
Set LL Lead?	LL	Note 2
Set REMOTE Loop?	REMLOOP	Grant
Set RL Lead?	RL	Note 2
Set SIGLS Disc?	SIGLS DISC	ON
Set TM Lead?	TM	Note 2

**⇒ NOTE:**

1. Set speed to match remote modem. At least one speed must be set ON.

**⇒ NOTE:**

2. Set to match remote modem.

**Table A-4. 7400A Options — Attention Control Modems**

Set Option Display	Option	Setting
Set 300 Speed?	300	Note 1
Set 1200 Speed?	1200	Note 1
Set 2400 Speed?	2400	Note 1
Set 4800 Speed?	4800	Note 1
Set 9600 Speed?	9600	Note 1
Set 19200 Speed?	19200	Note 1
Set AT Control?	AT	ON
Set CI Lead?	CI	Note 2
Set CI2 Lead?	CI2	Note 2
Set CH Lead	CH	Note 2
Set CH2 Lead?	CH2	Note 2
Set LL Lead?	LL	Note 2
Set REMOTE Loop?	REMLOOP	Grant
Set RL Lead?	RL	Note 2
Set SIGLS Disc?	SIGLS DISC	ON
Set TM Lead?	TM	Note 2

**⇒ NOTE:**

1. Set speed to match remote modem. At least one speed must be set ON.

**⇒ NOTE:**

2. Set to match remote modem.

## External Modem Option Settings

The COMSPHERE 3700, 3800, and 3900 series (recommended) external modems may require option switch settings. Refer to the documentation that accompanies each modem to set the options.

**⇒ NOTE:**

A locally obtained, type-approved external modem may be used. Contact your Lucent Technologies representative for more information.

The Release 5 systems operate with the COMSPHERE modems set to the factory default settings. See Screen A-1. Refer to *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*, to administer the modem after the options are set. The Customer Options Screen (Page 3) is modified.

```

change system-parameters maintenance                Page 3 of 3

      MAINTENANCE-RELATED SYSTEM PARAMETERS

Modem Connection: external
      Data Bits: 8
      Parity: none
      Modem Name: ___

      RTS/CTS Enabled: \Q3      Auto Answer Ring Count (rings): ___
Asynchronous Data Mode: &M0&Q0      Dial Type: T
      DTE Auto-Data Speed: ___      Adjustable Make/Break Ratio: ___
Disable Data Compression: ___      Dial Command: D
      Enable Error Control: ___      No Answer Time-out: S7=255
      Misc. Init. Param: _____

Help/Error Message Line
Command Line
    
```

### Screen A-1. External Modem Default Settings

There are fields that are hidden when the “Modem Connection” field is set to “internal.” When the “Modem Connection” field is set to “external” these fields are displayed. Two fields help setup the data format for the serial data from the system to the modem: the “Data Bits:” and “Parity:” fields. There are only two valid combinations of these two fields.

- Data Bits = 8, Parity = None
- Data Bits = 7, Parity =(odd , even, mark, or space)

The remaining modem fields are listed in Table A-5.

**Table A-5. Modem Fields**

<b>Modem Connection</b>	<b>Valid entries are “internal” or “external”. Default is internal.</b>
Modem Name	This field is 20 characters long and permits alphanumeric characters to provide a unique qualifier for a given modem (such as INTEL).
RTS/CTS Enabled	Informs the modem that communication with the data source UART is driven with RTS/CTS flow control. The field name has a default of \Q3 in a field 6 characters long. This field is not case sensitive. Default is upper case.
Asynchronous Data Mode	Configures modem as an asynchronous communications device. The field name has a default value of &M0&Q0 in a field 8 characters long. This field is not case sensitive. Default is upper case.
DTE Auto-Data Speed	Adjusts the speed of the data source (DTE) UART to the outgoing (modem-to-modem) data rate. At maximum, this speed is 9600 baud. It is not desirable to have the serial data fill the modem buffer faster than the outgoing data rate, since data compression is disabled. The field name has a blank default value in a field of 6 characters. The Lucent products use the command <b>S90=1</b> to enable this functionality while the Intel product uses the command <b>\J1</b> to enable similar functionality. This field is not case sensitive. Default is upper case.
Disable Data Compression	Turns off the default data compression algorithms in use by most modems. The field has a blank field of 6 characters as default. The AT commands that control this are supported by similar commands; however, these commands do not operate in the same manner. The Intel modems require “H0%C0” to disable V.42bis & MNP Class 5 data compression algorithms. The Paradyne products only use %C0 to disable both algorithms. This field is not case sensitive. Default is upper case.
Enable Error Control	Turns on the V.42 LAPM and MNP error control protocols, if available. The field has a blank field of 6 characters as default. The Paradyne products use the command <b>\N5</b> to enable V.42/MNP/Buffer error control while the Intel product uses \N3 to provide similar functionality.  This V.42/MNP/Buffer mode attempts to negotiate V.42 error control with the remote modem. If this fails, the modem changes to MNP, if this fails, no error control is used. This field is not case sensitive. Default is upper case.

*Continued on next page*

**Table A-5. Modem Fields — Continued**

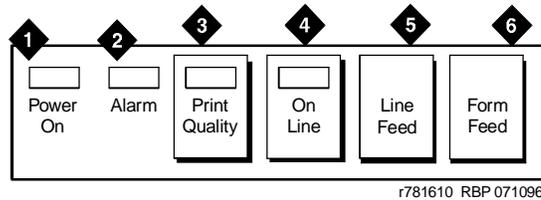
<b>Modem Connection</b>	<b>Valid entries are “internal” or “external”. Default is internal.</b>
Misc. Init. Param	This field has a blank as a default and a field length of 20 characters. This field supports any initialization parameters not already specified. The AT commands specified in this free-form field is always the last initialization parameters to be sent to the external modem. This field is not case sensitive. Default is upper case.
Auto-Answer Ring Number	This field controls the number of rings required before the modem answers an incoming call. This field has a blank default value in a field 6 characters long. Typically, the maximum permissible value for this register is 255. The values 1-255 denote the number of incoming ring cycles. This field is not case sensitive. Default is upper case.
Dial Type	This field controls the type of interregister signaling to be used between the modem and the Central Office. The field has a default of "T" for tone dialing. Pulse dialing is indicated by "P". The field length should be 3 characters long. This field is concatenated with the dial string. This field is not case sensitive. Default is upper case.
Adjustable Make/Break Ratio	This field controls the make/break ratios of pulses and DTMF dialing. The Intel product information has support for different make/ break options for pulse dialing only. Intel uses &P0 to select a ratio of 39% make and 61% break for communication within the United States and Canada. The option &P1 sets a ratio of 33% make and 67% break for the United Kingdom and Hong Kong. This field has a blank default and a 5 character long entry. This field is not case sensitive. Default is upper case.
Dial Command	This field has a default of "D" in a field 3 characters long. This field denotes the dialing command of the modem. This is a standard command. This field is not case sensitive. Default is upper case.
No Answer Time-Out	<p>Most external modems provide a timer that abandons any outbound data call after a predetermined interval. Some modems disable this timer, allowing an outbound call to ring indefinitely. Paradyne does not provide this capability because it is undesirable to have an outbound call attempt to ring indefinitely. Therefore, the initialization string must contain the following ASCII string to set the "No-Answer Timer" to the maximum value: S7=255. The internal modem must have this parameter disabled or set to at least 255 seconds. This is a non-administrable parameter.</p> <p>For the modem connection, this parameter is the first initialization string to be transmitted to the modem. This field is visible on the administration form in display mode only. The new field is set to S7=255. This hardcoded constant can be overridden for type approval applications, specifically in the United Kingdom and other Western European nations, by the use of the "Misc. Init. Param:" field. (S7=255)</p>

## Printer Option Settings

---

Printers can be used with a management terminal as journal printers for the hospitality feature and also as an output device for Call Detail Recording (CDR).

A 572 printer can function as a CDR device, system printer, or journal printer. The options are set with function keys rather than DIP switches. Figure A-2 shows the arrangement of the function keys on the printer control panel.



### Figure Notes

- |                         |                     |
|-------------------------|---------------------|
| 1. Power On Button      | 4. On Line Button   |
| 2. Alarm Button         | 5. Line Feed Button |
| 3. Print Quality Button | 6. Form Feed Button |

---

### Figure A-2. Control Panel for 572 Printer

1. Load the printer with paper and turn the power off (Callout 1).
2. Simultaneously press and hold the **Print Quality** and **On Line** buttons.
3. Press the **Power On** button. Release all three buttons. The printer is now in set-up mode and it prints the following settings:  
Form length                      Buzzer on/off  
Lines per inch                    Letter quality or near letter quality  
Characters per inch
4. Use **Line Feed** to step forward through the list of functions or use **Form Feed** to step backward.
5. Press **On Line**. This activates the menu for the function. Use **Line Feed** and **Form Feed** to step through the options for the function.
6. When a desired option is located, press **Print Quality**. Each time an option is set, the setting is printed. Repeat Step 4 for each option to be set.
7. When finished, press **Print Quality**. The printer changes to normal mode.

**Table A-6. 572 Printer Used with Management Terminal**

Function	Function Name	Menu	Menu Status
01	FORM LENGTH	09	11
02	LPI	01	6
03	CPI	01	10
04	LQ or NLQ	01	LQ
05	BUZZER	01	ON
06	FONT	02	FontCART
07	RESOLUTION	01	144
11	BUFFER	02	N-LINE
13	PW ON MODE	01	ON-LINE
14	DIRECTION	01	B1-DIR.1
15	BUFF FULL	02	LF + CR
16	P.E.	01	ACTIVE
17	AUTO CARRIAGE RETURN (CR)	01	CR + LF
18	ZERO	01	0
22	AUTO LINE FEED	01	CR ONLY
31	1" SKIP	01	OFF
32	CHAR.SET (GO, GL)	02	USA
33	CHAR.SET (G1, GR)	01	UK
34	CHAR SET (G2)	03	GE
35	CHAR SET (G3)	07	LINE DRAWING
81	OFF-LINE STATE	01	ALL RECEIVE
82	DSR	02	OFF
83	REQUEST TO SEND (RTS) TIMING	01	RTS
84	CD	02	OFF
85	CLEAR TO SEND (CTS)	02	OFF
91	OVER RUN	02	256
92	DATA BIT	02	8
93	PROTOCOL	03	XON/XOFF
94	STOP BIT	01	1
95	PARITY	01	NONE
96	PBS (matches connected device)	01	9600

**Table A-7. 572 Printer used as System Printer**

<b>572 Printer Option Settings</b>			
<b>Function</b>	<b>Function Name</b>	<b>Menu</b>	<b>Menu Status</b>
01	FORM LENGTH	09	11
02	LPI	01	6
03	CPI	01	10
04	LQ or NLQ	01	LQ
05	BUZZER	01	ON
06	FONT	02	FontCART
07	RESOLUTION	01	144
11	BUFFER	02	N-LINE
13	PW ON MODE	01	ON-LINE
14	DIRECTION	01	B1-DIR.1
15	BUFF FULL	02	LF + CR
16	P.E.	01	ACTIVE
17	AUTO CARRIAGE RETURN (CR)	01	CR + LF
18	ZERO	01	0
22	AUTO LINE FEED	01	CR ONLY
31	1" SKIP	01	OFF
32	CHAR.SET (GO, GL)	02	USA
33	CHAR.SET (G1, GR)	01	UK
34	CHAR SET (G2)	03	GE
35	CHAR SET (G3)	07	LINE DRAWING
81	OFF-LINE STATE	01	ALL RECEIVE
82	DSR	02	OFF
83	REQUEST TO SEND (RTS) TIMING	01	RTS
84	CD	02	OFF
85	CLEAR TO SEND (CTS)	02	OFF
91	OVER RUN	02	256
92	DATA BIT	02	8
93	PROTOCOL	03	XON/XOFF
94	STOP BIT	01	1
95	PARITY	01	NONE
96	PBS	04	1200

## Call Detail Recording Option Settings

The interface between the system and CDR equipment may be one of the following:

- Data Module — recommended option settings are shown in Table A-3.
- Modem — recommended option settings are in modem vendor document
- TN726 Data Line circuit pack and an Asynchronous Data Unit — data modules or modems are not required.
- Connected directly to the **DCE** connector (EIA Port) located on the rear of the Control Carrier — data modules or modems are not required.

A 572 Printer can be used as an output receiving device for CDR. The recommended option settings for this printer is shown in Table A-8 and Table A-9. Also, a TELESEER, CDR, 94A Local Storage Unit (LSU), or Customer Premises Equipment (CPE) can be used as the output receiving device.

Administration procedures for CDR equipment are provided in *DEFINITY Enterprise Communications Server Release 5 Administration and Feature Description*.

**Table A-8. 572 Printer Used with Management Terminal, CDR, or Journal Printer**

Function	Function Name	Menu	Menu Status
01	FORM LENGTH	09	11
02	LPI	01	6
03	CPI	01	10
04	LQ or NLQ	01	LQ
05	BUZZER	01	ON
06	FONT	02	FONTCART
07	RESOLUTION	01	144
11	BUFFER	02	N-LINE
13	PW ON MODE	01	ON-LINE
14	DIRECTION	01	B1-DIR.1
15	BUFF FULL	02	LF + CR
16	P.E.	01	ACTIVE
17	AUTO CARRIAGE RETURN (CR)	01	CR + LF
18	ZERO	01	0

*Continued on next page*

**Table A-8. 572 Printer Used with Management Terminal, CDR,  
or Journal Printer — *Continued***

<b>Function</b>	<b>Function Name</b>	<b>Menu</b>	<b>Menu Status</b>
22	AUTO LINE FEED	01	CR ONLY
31	1" SKIP	01	OFF
32	CHAR.SET (GO, GL)	02	USA
33	CHAR.SET (G1, GR)	01	UK
34	CHAR SET (G2)	03	GE
35	CHAR SET (G3)	07	LINE DRAWING
81	OFF-LINE STATE	01	ALL RECEIVE
82	DSR	02	OFF
83	REQUEST TO SEND (RTS) TIMING	01	RTS
84	CD	02	OFF
85	CLEAR TO SEND (CTS)	02	OFF
91	OVER RUN	02	256
92	DATA BIT	02	8
93	PROTOCOL	03	XON/XOFF
94	STOP BIT	01	1
95	PARITY	01	NONE
96	PBS	01	9600

## **AUDIX Interface Option Settings**

---

The Audio Information Exchange (AUDIX) is sometimes connected to the system through the Processor Interface circuit pack. The first circuit on the processor interface can be connected directly to the AUDIX through the **PI** connector on the rear of the Control Carrier.

Any of the remaining three circuits on the processor interface to be used to support AUDIX must be connected through a 7400D Data Module serving as the interface link for AUDIX. The option settings are shown in Table A-9.

**Table A-9. Data Module Settings for DEFINITY AUDIX**

<b>DIP Switch 1</b>	<b>Setting</b>
9600	ON
<b>DIP Switch 2</b>	<b>Setting</b>
SYNC	ON
INT	ON
AANS	ON
All Other Switches	OFF

---

## TN760D Tie Trunk Option Settings

The TN760D Tie Trunk circuit pack interfaces between four tie trunks and the TDM bus. Two tip and ring pairs form a 4-wire analog transmission line. An E and M pair are DC signaling leads used for call setup. The E-lead receives signals from the tie trunk and the M-lead transmits signals to the tie trunk.

To choose the preferred signaling format (Table A-10 and Table A-11), set the switches on the TN760D and administer the port per Figure A-3 and Table A-12.

### CAUTION:

*To prevent damage from static electricity, wear an EMC wrist strap (comcode 900698226) when handling circuit packs or other components.*

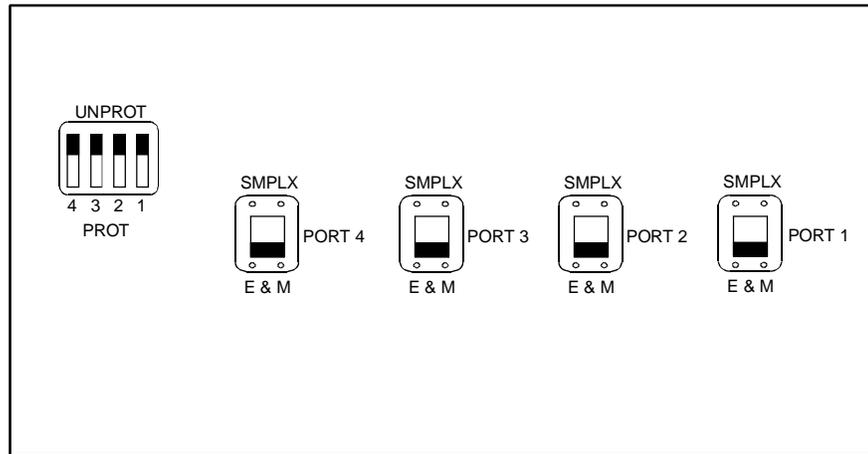
**Table A-10. Signaling Formats for TN760D**

Mode	Type
E & M	Type I Standard (unprotected)
E & M	Type I Compatible (unprotected)
Protected	Type I Compatible, Type I Standard
Simplex	Type V
E & M	Type V
E & M	Type V Revised

**Table A-11. Signaling Type Summary**

Signaling Type	Transmit (M-Lead)		Receive (E-Lead)	
	On-Hook	Off-Hook	On-Hook	Off-Hook
Type I Standard	grd	bat	open <sup>1</sup> /bat	grd
Type I Compatible	open <sup>1</sup> /bat	grd	grd	open <sup>1</sup> /bat
Type V	open <sup>1</sup> /bat	grd	open	grnd
Type V Reversed	grd	open	grd	open

1. An open circuit is preferred instead of battery voltage.



r758183 RBP 050896

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**Figure A-3. TN760D Tie Trunk Circuit Pack (Component Side)**

**Table A-12. TN760D Option Switch Settings and Administration**

Installation Situation		Preferred Signaling Format		Set E&M/SMPLX Option Switch	Set Prot/Unprot Option Switch	Administered Port
Circumstance	To	System	Far-End			
Co-Located	Sys75/G1	Simplex	Simplex	SMPLX	Either	Type 5
		Type 5	Type 5			
Inter-Building	Sys75/G1	Simplex	Simplex	SMPLX	Either	Type 5
		Type 5	Type 5			
Co-Located	Sys85/G2	Simplex	Simplex	SMPLX	Either	Type 5
		Type 5	Type 5			
Inter-Building	Sys85/G2	Simplex	Simplex	SMPLX	Either	Type 5
		Type 5	Type 5			
Co-Located	DIMENSION	E&M Type 1	E&M Type 1	E&M	Unprotected	Type 1
	PBX	Compatible	Standard			Compatible
Inter-Building	DIMENSION	Protected Type 1	Protected Type 1	E&M	Protected	Type 1
	PBX	Compatible	Standard			Compatible
Co-Located	Other	E&M Type 1	E&M Type 1	E&M	Unprotected	Type 1
		Compatible	Standard			Compatible
Inter-Building	Other	Protected Type 1	Protected Type 1	E&M	Protected	Type 1
		Compatible	Standard Plus			Compatible
			Protection			
			Unit			
Co-Located	Net Integrated	E&M Type 1	Any PBX	E&M	Unprotected	Type 1
		Standard				

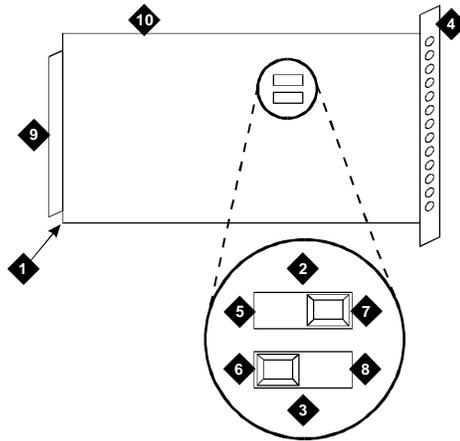
## TN464E/F Option Settings

The TN464E/F DS1/E1 Interface - T1/E1 circuit pack interfaces between a 24 or 32 channel Central Office/ISDN or tie trunk and the TDM bus.

Set the switches on the circuit pack to select bit rate and impedance match. See Table A-13 and Figure A-4.

**Table A-13. Option Switch Settings on TN464E/F**

120 Ohms	Twisted pair
75 Ohms	Coaxial requiring 888A adapter
32 Channel	2.048 megabits per second
24 Channel	1.544 megabits per second



**Figure Notes**

- |                           |  |
|---------------------------|--|
| 1. Backplane Connectors   | 6. 120 Ohm (shown selected)                |
| 2. 24/32 Channel Selector | 7. 24 Channel (shown selected)             |
| 3. 75/120 Ohm Selector    | 8. 75 Ohm                                  |
| 4. Faceplate              | 9. Connector                               |
| 5. 32 Channel             | 10. TN464E/F DS1/E1 Interface Circuit Pack |

**Figure A-4. TN464E/F Option Settings**

## **212-Type Modem Switch Settings**

Refer to Table A-14 for the 212-type modem settings for typical installations.

**Table A-14. 212-Type Modem Switch Settings**

<b>Switch</b>	<b>Setting</b>
AL	OFF
ST	OFF
RDL	OFF
DL	OFF
HS	ON

---

## Cable Ductwork

# B

---

The cable ductwork is assembled from various group numbers from ED-1E465 (facia paneling to cover the I/O ducts is assembled from ED-1E464). The assembly, installed after the cabinets have been installed, provides ducts for three types of cables: intercabinet cables, I/O cables (tip and ring), and AC power cables. DC power cables are installed in ductwork per local codes. Typical assembled ductwork is shown in Figure B-1. The three primary types of ductwork are detailed below:

- Shielded intercabinet cable duct — Provides the path for cables connected between cabinets. This duct is the first installed. Covers for this duct should be stored until the intercabinet cabling is completed.
- I/O cable duct — Provides the path for I/O cables to the Main Distribution Frame (MDF). The I/O cables originate at connectors on the rear of the cabinets and terminate on connectors at the MDF.
- AC power duct — Provides the path for the AC wiring that powers the system. This duct mounts to the rear of the shielded duct that runs across each cabinet.

Five group numbers provide various arrangements of receptacles necessary for different types of cabinets. Knockouts are provided for 1-inch (2.54 cm), 1.5-inch (3.81 cm), or 2-inch (5 cm) conduits that provide AC power connection at one end of each cabinet lineup. Covers for the power duct should be stored until the AC wiring is completed.

Three methods are available for running I/O cables from the I/O ducts to the MDF:

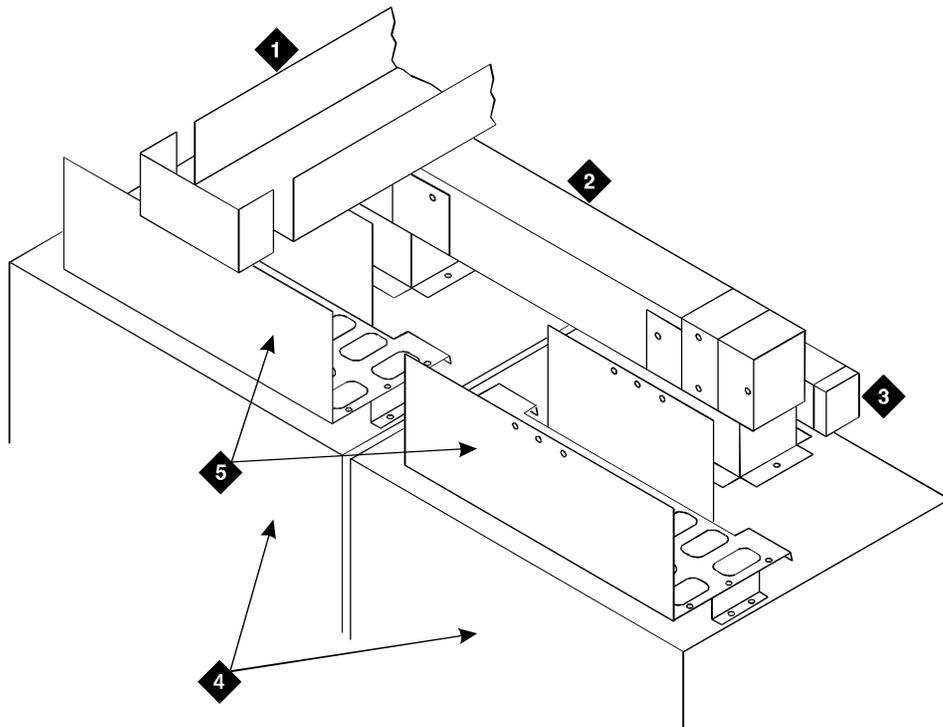
1. Using an overhead cable rack
2. Using cable duct groups 22 through 26, and 39
3. Using multiples of either group as required

Equipment room layout and expected growth determines which method to use. Installation of an overhead rack is covered by *Cable Racks* (800-614-157).

**NOTE:**

Install all screws in all appropriate places to comply with electromagnetic interference (EMI) requirements for shielding.

---



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**Figure Notes**

- |                               |                                     |
|-------------------------------|-------------------------------------|
| 1. I/O Cross-Isle Trough      | 4. Front of Cabinets                |
| 2. Shielded Intercabinet Duct | 5. I/O Ducts to Cross-Connect Field |
| 3. AC Power Cable Duct        |                                     |

---

**Figure B-1. Typical Layout of Assembled Ductwork**

---

## Installation

---

This ductwork consists of ED-1E465 group numbers (facia paneling to cover the I/O ducts is assembled from ED-1E464). The group numbers match those in the Customer Service Document (CSD) and floor plan layout.

Inventory the materials received and mark a copy of the floor plan with the location of each group number to be installed. Hardware used to assemble each item is packaged with the individual groups.

Table B-1 shows the available group numbers and a brief description of each group. Some ducts are equipped with covers which should be stored until all cabling is completed. When storing, tag the covers with their associated group numbers for ease in identification.

**Table B-1. ED-1E465 Group Numbers and Descriptions**

<b>Group</b>	<b>Description</b>
6	Rear or front end plate for I/O ductwork
8	I/O cable rack coupling to rear of cabinet
9	I/O cable rack riser to side of cabinet
10	I/O cross-aisle ductwork
12	AC power duct
13	AC power duct with one 3-wire twist-lock receptacle (right side)
14	AC power duct with one 3-wire twist-lock receptacle (left side)
15	AC power duct with two 3-wire twist-lock receptacles (right side)
16	AC power duct with four 3-wire twist-lock receptacles (left side)
17	Raceway cover
18	Raceway cover with utility outlet
19	AC power duct combination end
21	AC power duct with one 4-wire twist-lock receptacle (right side)
22	I/O duct-side of cabinet to wall (43 inch (109.2 cm ) aisle)
23	I/O duct-side of cabinet to wall over one cabinet
24	I/O duct-side of cabinet to wall over two cabinets
25	I/O duct-side of cabinets to wall over three cabinets
26	I/O duct-rear of cabinet to wall (43 inch (109.2 cm ) aisle)
27	Transition between older DIMENSION system-type cabinet and new DEFINITY system cabinets for shielded cable ducts

---

*Continued on next page*

**Table B-1. ED-1E465 Group Numbers and Descriptions — Continued**

<b>Group</b>	<b>Description</b>
28	Transition between older DIMENSION system-type cabinet and new DEFINITY system cabinets for I/O cables
29	Shielded duct assembly transition from the front of a System 85-R1 cabinet to the rear of a DEFINITY cabinet
30	I/O duct transition assembly for cross-aisle (System 85-R1 lineup to bridge a DEFINITY lineup)
31	Shielded duct assembly transition from rear of a System 85-R1 to front of a DEFINITY cabinet
32	AC power with a 4-wire twist-lock receptacle (left side viewed from rear)
33	Ladder rack supported 86 or 88.5 inches (218.4 cm or 224.7 cm) from floor
34	AC power duct with two 3-wire receptacles (250 VAC) (right side)
35	AC power duct with one 3-wire receptacle (250 VAC) (right side)
37	AC power duct with one 3-wire receptacle (30 A, 208 VAC) for CC
39	I/O cross-aisle ductwork (48 inch (109.2 cm ) aisle)
41	Basic hardware for one cabinet
42	Right or left end plate for shielded ductwork
44	Front and rear end plate for shielded ductwork
51	Shielded cross-aisle ductwork
78	Shielded cross-aisle ductwork (48 inch (122 cm) aisle)

Install the various cable ducts in the order shown in Table B-2. Figure B-2 shows an overhead view of a typical ductwork installation.

 **WARNING:**

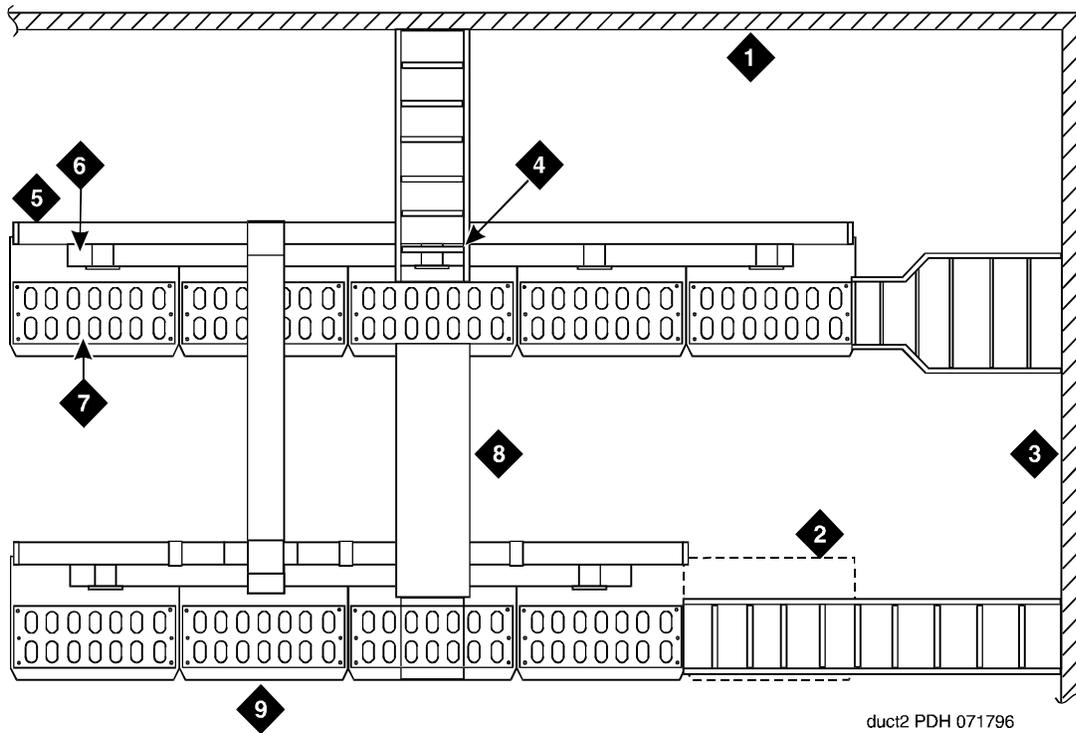
*To prevent damage to the cabinet circuitry or cables, place cardboard or equivalent in the cable ducts to catch any metal filings that may fall from the self-threading screws.*

---

**Table B-2. Installation Sequence**

<b>Step</b>	<b>Group</b>	<b>Remarks</b>
1	41	Install basic ductwork on each cabinet
2	51	Install cross-aisle shielded ductwork
3	10 or 26	Install I/O cross-aisle or cabinet to wall cable trough
	22-25	Install I/O cross-aisle to wall trough duct
4	8 or 9	Install I/O cable rack coupling to rear of cabinet or install I/O cable rack riser to end of cabinet
5	12-19, 21, 32, 34, & 35	Install AC power ducts
6	27	Install shielded cable ducts between DEFINITY and DIMENSION cabinets
7	28	Install I/O cable ducts between DEFINITY and DIMENSION cabinets
8	29 & 31	Install shielded duct assembly from front of system cabinet to rear of a DEFINITY cabinet (group 29) or front of a DEFINITY cabinet to rear of system cabinet (group 31)
9	30	I/O transition assembly for cross-aisle (DEFINITY)
10	33	Ladder rack supported 86 or 88.5 inches (218.4 cm or 224.8 cm) from floor

---



**Figure Notes**

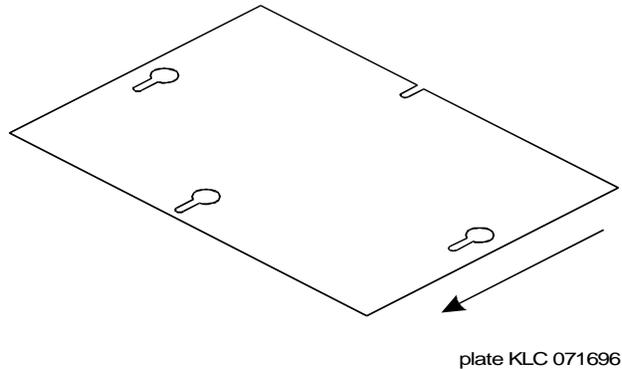
- |   |   |
|---|---|
| 1. Wall                                       | 6. Shielded Intercabinet Fiber Optic Cables |
| 2. Space for Future Cabinet                   | 7. I/O Duct to Cross-Connect Field          |
| 3. Plywood Wall and Cross-Connect Field       | 8. I/O Cross-Isle Trough                    |
| 4. I/O Cable Rack Coupling to Rear of Cabinet | 9. Front of Cabinets                        |
| 5. AC Power Cable Duct                        |   |

**Figure B-2. Overhead View of a Typical Ductwork Layout**

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### Install Intercabinet Shielded Ducts

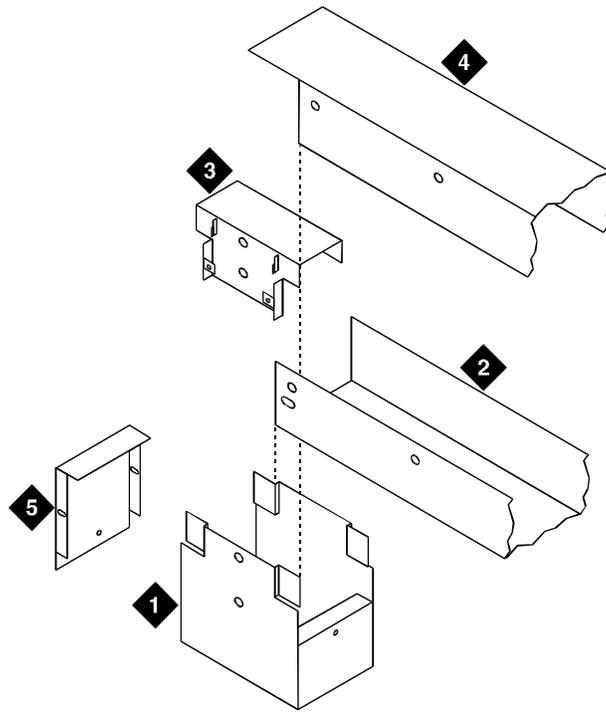
1. Loosen (do not remove) the four bolts holding the dust cover to the cable access hole in the top of the cabinet.



---

#### Figure B-3. Dust Cover Removal

2. Remove the dust cover by sliding it in the direction shown by the arrow in Figure B-3. Move the dust cover until it clears the bolts.
3. Set the cabinet riser ("A" in Figure B-4) with its base in place of the dust cover just removed. The four slots in its base should be just behind the bolts and the heads of the two middle bolts should have cleared the holes provided for them. Push the riser forward to seat the bolts in the four slots in the base of the riser. Then tighten the bolts.



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**Figure Notes**

- |      |      |
|------|------|
| 1. A | 4. D |
| 2. B | 5. E |
| 3. C |      |

---

**Figure B-4. Assembly of Inter-cabinet Shielded Ducts**

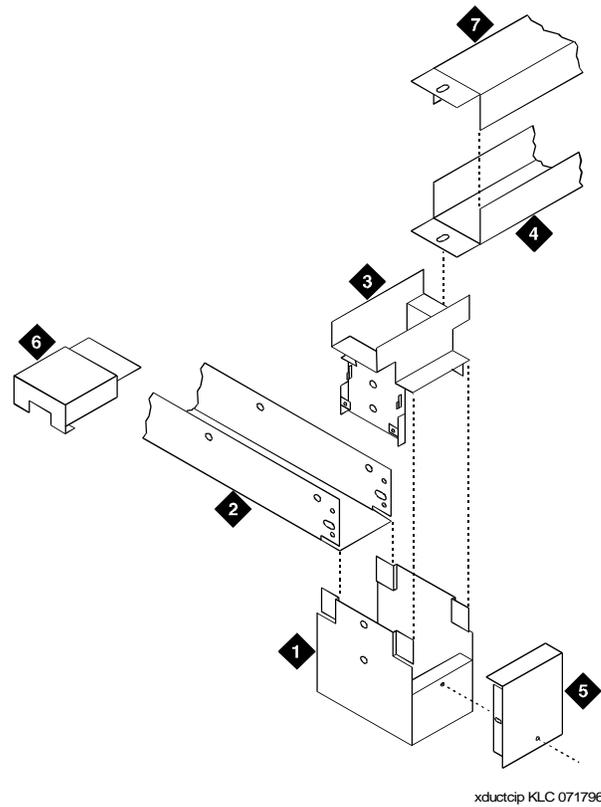
4. Install risers on any other cabinets that require shielded-duct connections.
5. Set a shielded trough ("B") between two cabinet risers ("A"). Push down on the trough so the slots in the ends of the trough engage the ears at the corners of the risers. The walls of the trough go inside the walls of the risers and outside of the ears of the risers.
6. Seat the bottom of the shielded trough on the support walls of the two cabinet risers that it connects. Attach the trough to each riser with a self-tapping screw.
7. Install shielded troughs on any other pairs of cabinets that require shielded-duct connections.

- 
8. Route the appropriate cables between the cabinets just connected.
  9. If a given cabinet is to support a cross-aisle shielded duct, set a cross-aisle riser ("C" in Figure B-4) on the cabinet riser ("A"). Otherwise set a shielded coupling ("D") on the cabinet riser. In either case, position the device so the two holes on the back wall line up with the holes on the back wall of the cabinet riser. Bolt the two pieces together at the holes just described.
  10. If there is no trough to install in one end of the cabinet riser, press a shielded end cap ("E") on the unused end of the riser. The side walls of the end cap go inside the walls of the riser and outside of the ears of the riser. The top of the end cap should rest on top of the shielded coupling or cross-aisle riser previously installed. Bolt the bottom of the end cap to the cabinet riser with a self-tapping screw.
  11. Set the shielded cover ("D") on the shielded trough ("B") and press it down so the dimples on the cover engage the holes in the trough.

### **Install Cross-Aisle Shielded Ducts**

The inter-cabinet ducts and cross-aisle risers must be installed before any cross-aisle ductwork is installed.

1. Set the tongue on the bottom of a cross-aisle trough ("G" in Figure B-5) into the platform of the cross-aisle riser ("C"). From above the trough, run a self-tapping screw through the slot in the trough and into the hole in the riser.



**Figure Notes**

- |      |      |
|------|------|
| 1. A | 5. E |
| 2. B | 6. F |
| 3. C | 7. H |
| 4. G |      |

---

**Figure B-5. Assembly of Cross-Aisle Shielded Ducts**

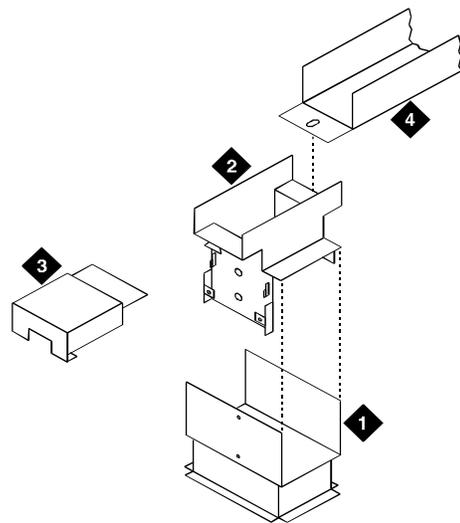
2. Install cross-aisle troughs on any other cabinets requiring such connections.
3. If there is no trough ("G") to install in one end of the cross-aisle riser ("C"), press a cross-aisle shielded end cap ("F") on the unused end of the riser. Unlike earlier ductwork, the endcap fits either end of the cross-aisle riser. The side walls of the end cap go outside the walls of the riser. The ears on the bottom of the end cap go outside of the riser's bottom plate, and the bottom plate of the end cap goes inside of the riser's bottom plate.

- 
4. Route the appropriate cables between the cabinets just connected.
  5. Set the shielded cross-aisle trough cover ("H") on top of the trough with its side walls outside of the walls of the trough, and press it down until it completely covers the trough.

### Mating Cross-Aisle Risers to Old Cabinet Risers

The new shielded ductwork is constructed so cross-aisle risers can be attached to cabinet risers of the former design.

1. Remove the shielded coupling from the old cabinet riser. This assembly is illustrated in the older system's installation document.
2. Replace the shielded coupling with a cross-aisle riser. Set the cross-aisle riser ("C" in Figure B-6) on the cabinet riser ("A"). Position the cross-aisle riser so the two holes on the back wall line up with the holes on the back wall of the cabinet riser. Bolt the two pieces together at the holes just described.



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#### Figure Notes

- |      |      |
|------|------|
| 1. A | 3. F |
| 2. C | 4. G |

---

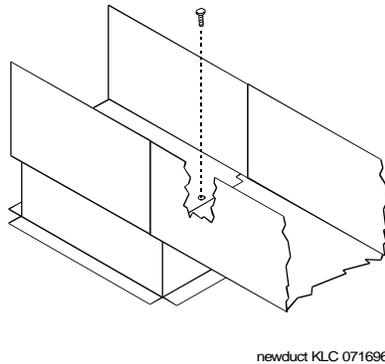
### Figure B-6. Mating Cross-Aisle Risers to System 85-R2 Cabinet Risers

3. Assemble cross-aisle ductwork as already described.

### Mating Shielded Ducts to Risers

The new shielded ductwork is constructed so new cross-aisle troughs can be attached to risers of the former design. They fit outside of the older risers.

To attach the new shielded trough to a riser, first set it under the trough on the riser and install the other side of the trough as already described. Lift the trough as shown in Figure B-7, with the walls of the trough outside of the walls of the riser. Hold a nut under the trough, and bolt the parts together as shown.

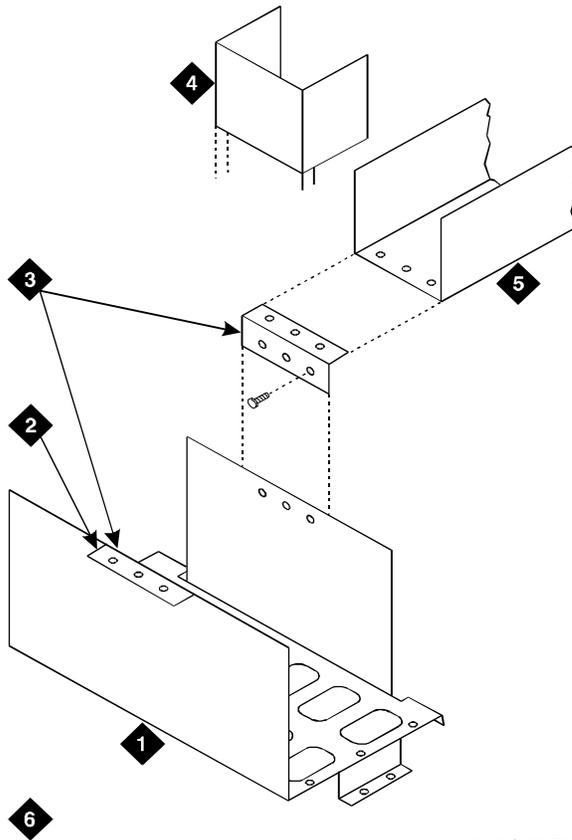


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**Figure B-7. Shielded Duct Connected to Old Style Riser**

### Install Cross Aisle I/O Ductwork

1. If required, attach I/O endplate (group 6) to the cross-aisle brackets (group 10). See Figure B-8.
2. Install a cross-aisle bracket on both sides of the I/O trough where cross-aisle or wall trough is to be used. Place the bracket inside the I/O trough with its angle end outside. Secure the bracket using three thread-forming screws in each trough (use the holes in the bracket closest to the angle).
3. If cross-aisle, install brackets on I/O trough of cross-aisle cabinet.
4. Place I/O cross-aisle trough (group 10) or I/O wall trough (group 26) on brackets and secure with thread-forming screws.



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**Figure Notes**

- |                           |  |
|---------------------------|--|
| 1. I/O Trough             | 4. I/O Endplate                              |
| 2. Use Only When Required | 5. Cross-Aisle I/O Trough or I/O Wall Trough |
| 3. Cross-Aisle Brackets   | 6. Front of Cabinet                          |

**Figure B-8. Install Cross-Aisle I/O Ductwork or I/O Cross-Aisle to Wall Trough**

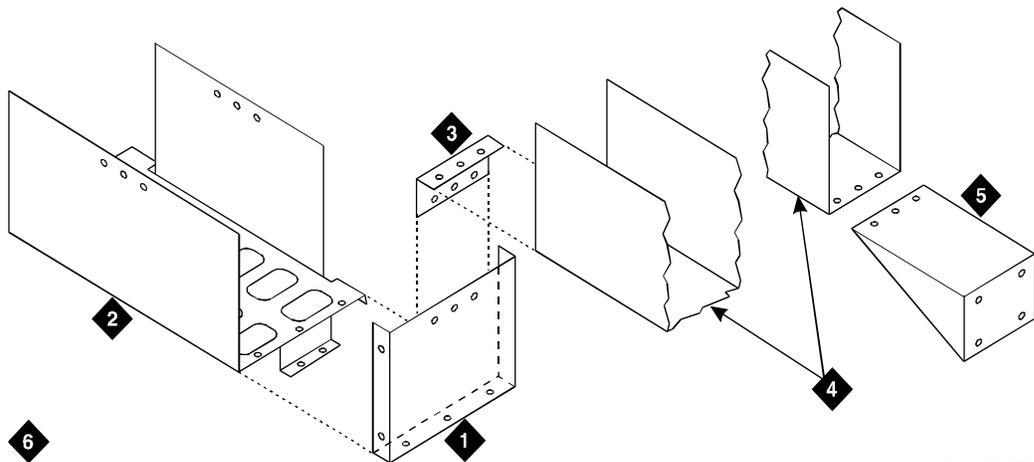
**⇒ NOTE:**

If wall trough is being installed, locally provided hardware is required at wall end of duct.

### Install Cross-Aisle to Wall Trough

Refer to Figure B-9 to assemble the ductwork:

1. Install wall mounting bracket to designated location. Hardware to mount bracket should be determined according to wall type and should be locally provided.
2. Use thread-forming screws to attach the 3-hole face of the angle bracket to the I/O trough.
3. Attach the angle bracket to the 6-hole face of the cross-aisle bracket using three 10-24 X 3/4 inch screws, connected to nuts and washers through the bottom holes.
4. Attach the I/O cable duct to the cross-aisle bracket using the thread-forming screws. Attach the other end of the I/O duct to the wall mounting using 10-24 X 3/4 inch screws, nuts and washers.



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#### Figure Notes

- |                        |                          |
|------------------------|--------------------------|
| 1. Angle Bracket       | 4. I/O Cable Duct        |
| 2. I/O Trough          | 5. Wall Mounting Bracket |
| 3. Cross-Aisle Bracket | 6. Front of Cabinet      |

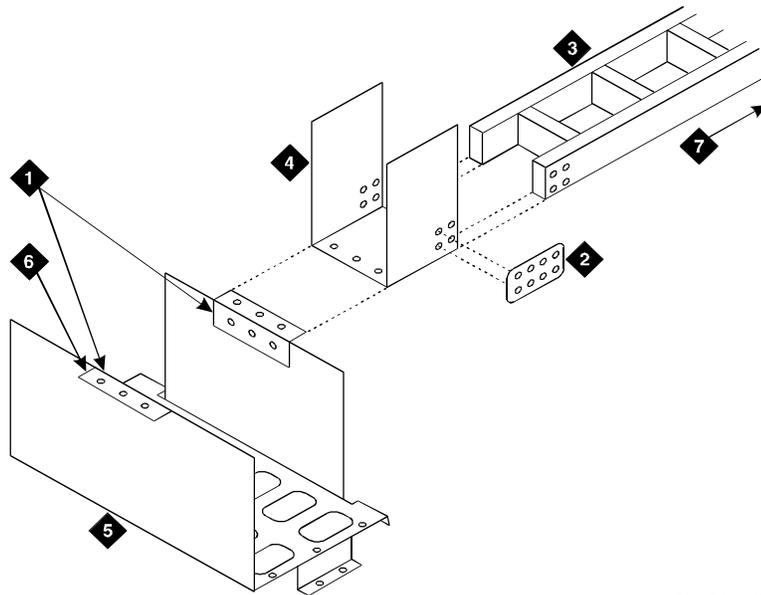
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**Figure B-9. Installation of I/O Cross-Aisle to Wall Trough**

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## Install I/O Cable Rack Coupling

1. Attach I/O trough to top of cabinet using thread-forming screws. See Figure B-10.
2. Attach cross-aisle bracket to I/O trough using thread-forming screws through the top three holes on the bracket's 6-hole face.
3. Attach I/O coupling trough to cross-aisle bracket using thread-forming screws.
4. Attach cable rack to coupling trough using locally-provided coupling plates and 3/8-18 x 1/2 inch hex head bolts with nuts.
5. Attach other end of cable rack to wall using locally-provided hardware.



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### Figure Notes

- |                        |                           |
|------------------------|---------------------------|
| 1. Cross-Aisle Bracket | 5. I/O Trough             |
| 2. Coupling Plate      | 6. Use Only When Required |
| 3. Cable Rack          | 7. To Wall                |
| 4. I/O Coupling Trough |                           |

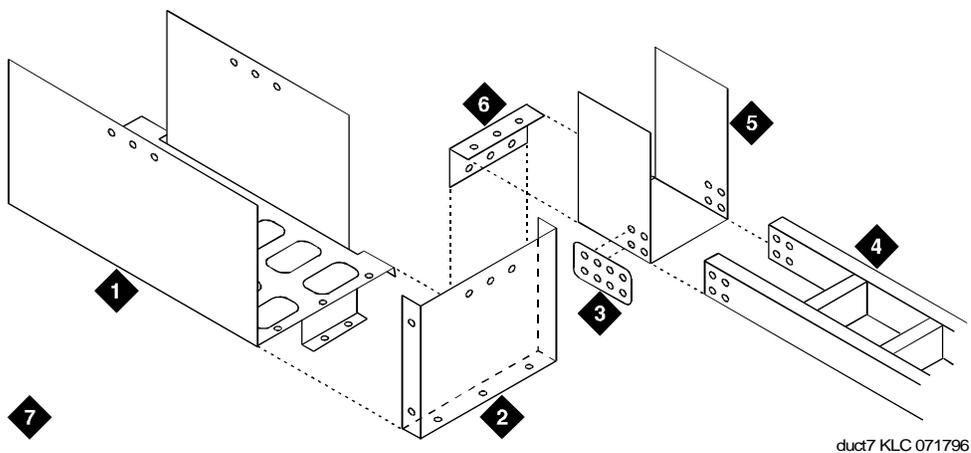
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**Figure B-10. Installation of I/O Cable Rack Coupling to Rear of Cabinet**

### Install I/O Cable Rack Riser

Refer to Figure B-11 and assemble the ductwork:

1. Attach angle bracket (group 9) to I/O trough using thread-forming screws.
2. Attach cross-aisle bracket to angle bracket using thread-forming screws. Attach the angle bracket to the 6-hole face of the cross-aisle bracket using three thread-forming screws through the bottom holes.
3. Attach I/O coupling trough (group 8) to cross-aisle bracket using thread-forming screws.
4. Attach cable rack to coupling trough using locally-provided coupling plates and 3/8-18 x 1/2 inch hex bolts and nuts.
5. Attach other end of cable rack to wall using locally provided hardware suitable to type of wall.



#### Figure Notes

- |                   |                        |
|-------------------|------------------------|
| 1. I/O Trough     | 5. I/O Coupling Trough |
| 2. Angle Bracket  | 6. Cross-Aisle Bracket |
| 3. Coupling Plate | 7. Front of Cabinet    |
| 4. Cable Rack     |                        |

---

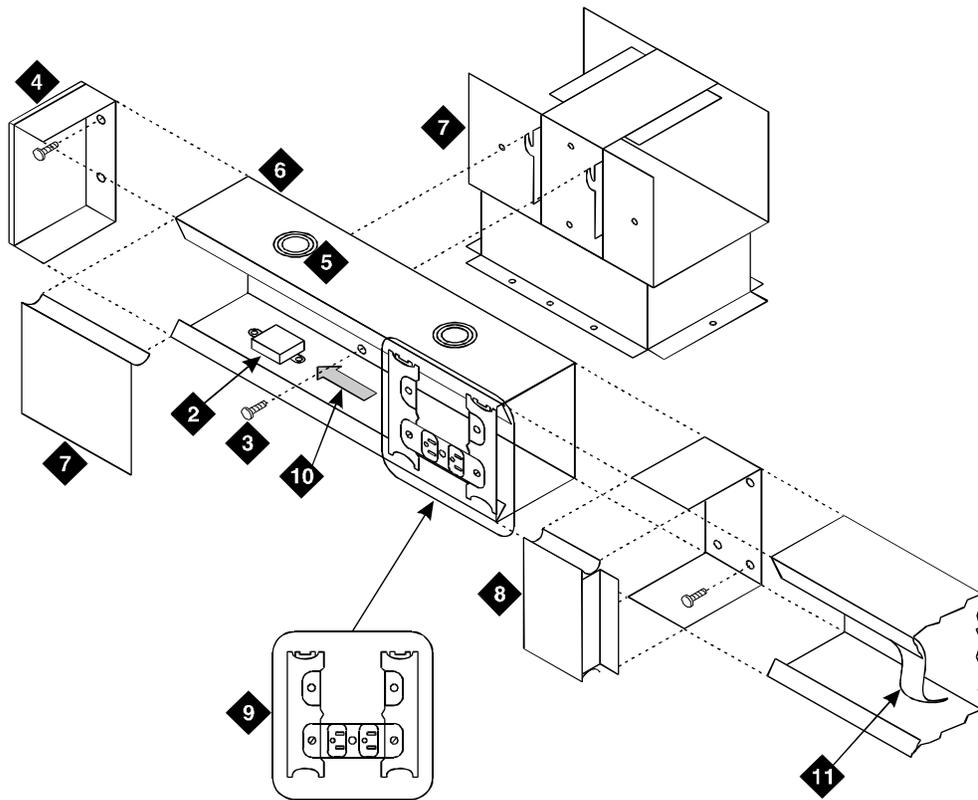
**Figure B-11. Installation of I/O Cable Rack Riser to End of Cabinet (Group 9)**

---

## **Install AC Power Duct**

Refer to Figure B-12 and assemble the ductwork:

1. Hang AC power duct (group 12 through 16 and 21) on back of shielded duct and anchor in place using one thread-forming screw at each cabinet.
2. If required, slide utility outlet assembly (part of group 18) into the duct from the end.
3. Repeat steps 1 and 2 for each cabinet.
4. Interconnect ducts with couplings using four round-head machine screws.
5. Insert 4 wire holders into each duct spaced evenly along duct.
6. If equipped with an AC outlet, snap two group 18 raceway covers into place onto the AC power ducts.
7. If not equipped with an AC outlet, snap a group 17 raceway cover into place onto the AC power ducts.
8. If required, attach group 19 (combination end cap) by using two round head machine screws.
9. Assemble the ladder rack as shown in Figure B-13 on page B-19.



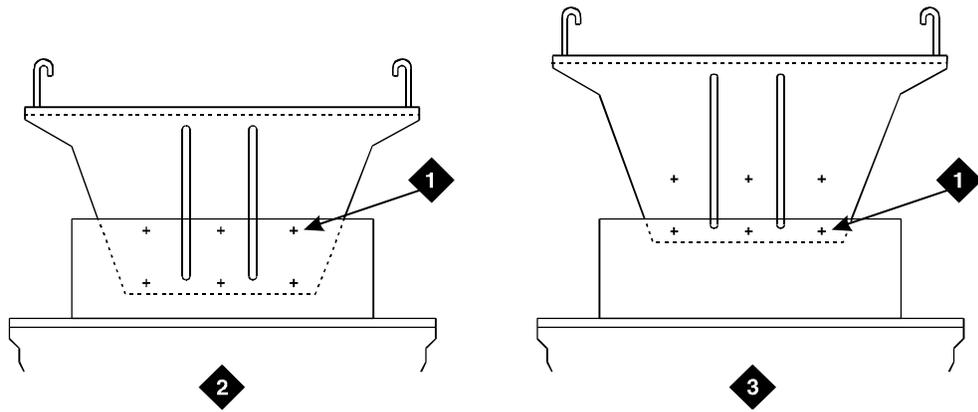
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**Figure Notes**

- |                          |                                    |
|--------------------------|------------------------------------|
| 1. Raceway Cover         | 7. Rear of Shielded Duct           |
| 2. Twist-Lock Receptacle | 8. Coupling                        |
| 3. Thread-Forming Screw  | 9. Typical Utility Outlet Assembly |
| 4. Combination Endcap    | 10. Slide in Direction Shown       |
| 5. Conduit Knockout      | 11. Wire Holders                   |
| 6. I/O Power Duct        |                                    |

---

**Figure B-12. Install AC Power Duct**



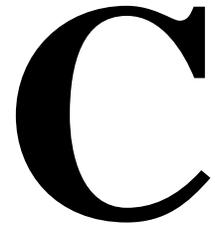
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**Figure B-13. Assembly of Ladder Rack**



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## Connecting and Handling Fiber Optic Cables



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Signals between the cabinets are carried by fiber optic cables. The electronic signals at the connectors on the rear of a cabinet must be converted into optical signals and optical signals from another cabinet must be converted back into electronic signals. Opto-electronic devices (lightwave transceivers) provide this interface.

### **LASER Product**

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The DEFINITY ECS may contain a Class 1 LASER device 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: -5 dBm  
Wavelength: 1310 nm  
Mode Field Diameter: 8.8 microns

**CLASS 1 LASER PRODUCT**  
**IEC 825 1993**

 **CAUTION:**

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

Contact your Lucent Technologies representative for more information.

## **Fiber Optic Requirements**

---

The requirements that determine the maximum fiber optic cabling distances are:

- The mean loss and the length of the outside plant fiber cable
- The mean loss and the length of fiber cable shipped with the cabinet (including any fiber riser cable)
- The mean loss of an ST connector and the number of ST connections
- The mean loss due to the total number of splices
- Higher-order mode loss

**⇒ NOTE:**

If estimated fiber limits such as loss, length, excessive splices, and so forth are expected, OTDR (Optical Time Domain Reflectometer) tests should be made to ensure a successful installation of a remote EPN fiber link.

## **Fiber Optic Cable Connections**

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The Customer Service Document (CSD) provides an “Inter-Carrier Cable Running List.” Each row on the list represents a cable connection. Use the running list to determine where to connect each fiber optic cable.

### **Multi-Mode Fiber Optic Connections**

The following components are used in multi-mode fiber optic connections:

- Expansion Interface (EI) circuit packs in port slots in cabinet carriers
- Cables from each interface circuit pack to each port slot connector
- The 9823A lightwave transceiver transmits up to 4,900 feet (1500 m). The 9823B lightwave transceiver transmits up to 25,000 feet (7600 m).
- Multi-mode fiber optic cable consists of two separate 62.5 micron or 50 micron diameter fiber optic cables.

### **Single-Mode Fiber Optic Connections**

The following components are used in single-mode fiber optic connections:

- Expansion Interface (EI) circuit packs in port slots in cabinet carriers
- Cables from each interface circuit pack to each port slot connector
- The 300A lightwave transceivers transmits light up to 115,000 feet or 22 miles (35 km). Fiber loss must be less than 17dB. Saturation may occur if distances are short; attenuators may be required if the total loss on the fiber link is less than 10dBm. An OTDR test is recommended to determine specific fiber optic hardware requirements.



**NOTE:**

Using the 300A may require 5 or 10 dB attenuators which are available. Contact your Lucent Technologies representative for more information.

- Single-mode fiber optic cable consists of 2 separate 8 to 10 micron core cables.

### **Cleaning Fiber Optic Cables**

---

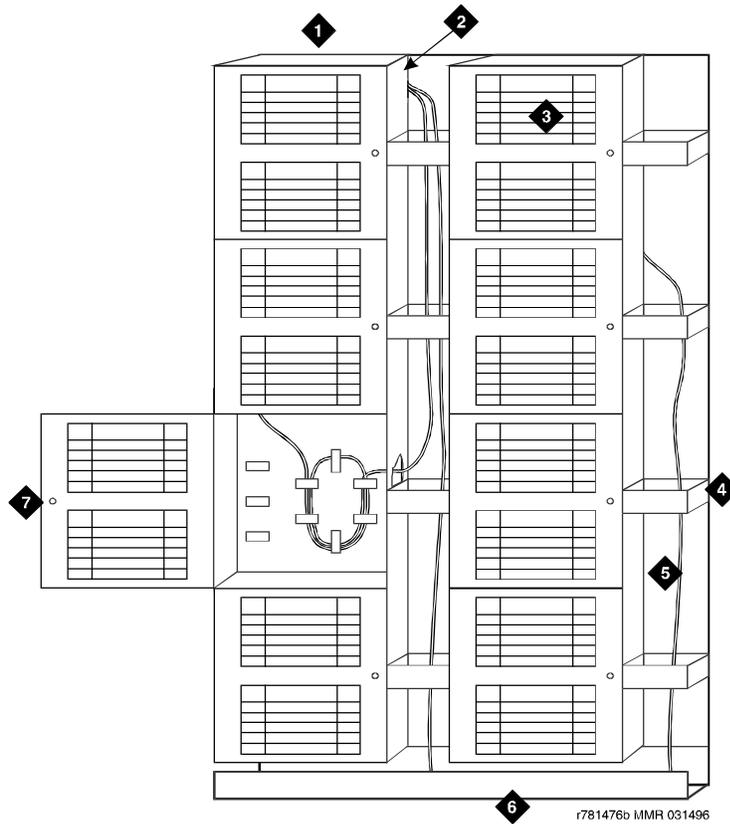
The use of isopropyl alcohol is recommended to properly clean fiber optic cables. Contact your Lucent Technologies representative for more information.

1. Moisten a lint-free cloth with isopropyl alcohol.
2. Wipe the ceramic ferrule with the cloth. Be sure to wipe the entire length of the ferrule and the ferrule tip.
3. Dry the ferrule with air.
4. If the connector is not being used immediately, cover the connector with the dust cap.

### **Optical Cross-Connect Hardware**

---

Optical cross-connects consist of Lightguide Interconnect Units (LIUs) with lightguide troughs in between them. See Figure C-1. One LIU terminates the incoming cables and the other terminates the outgoing cables. A fiber optic patch cord or jumper connects the circuits. Circuits can be routed the same as on 110-type connecting blocks, by moving the patch cord from one point on the MDF to another.



**Figure Notes:**

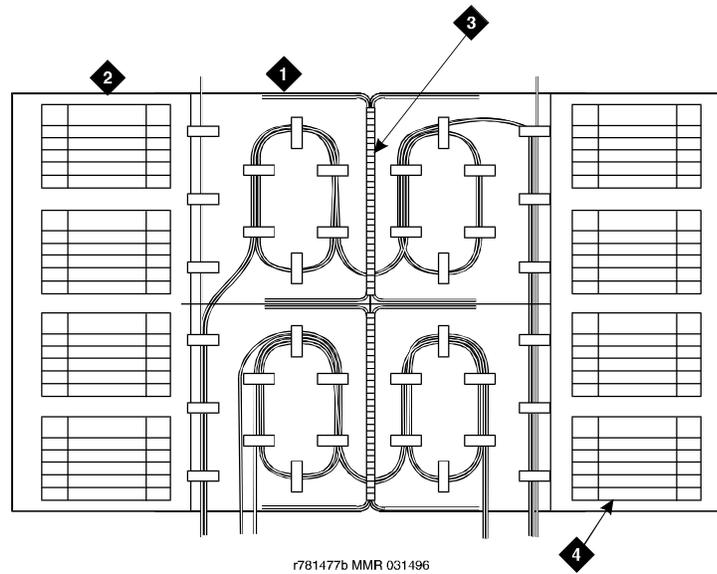
- |  |  |
|--|--|
| 1. 100A Lightguide Interconnect Unit (LIU)                             | 4. 1A4 Lightguide Trough                   |
| 2. C2000A-2 Connector (Multi-Mode)<br>C3000A-2 Connector (Single-Mode) | 5. Fiber Patch Cord                        |
| 3. Adhesive-Backed Circuit Labels                                      | 6. 1A6 Lightguide Trough                   |
|  | 7. Open Lightguide Interconnect Unit (LIU) |

---

**Figure C-1. Optical Main Distribution Frame (MDF)**

Optical interconnects consist of LIUs without a trough between them. See Figure C-2. Incoming and outgoing cables are connected directly to each other. This arrangement makes circuit changes more difficult, but reduces optical losses.

---



**Figure Notes:**

- |  |  |
|--|--|
| 1. 100A Lightguide Interconnect Unit (LIU) | 3. C2000A-2 Connector (Multi-Mode)<br>C3000A-2 Connector (Single-Mode) |
| 2. Open LIU Door                           | 4. Labels  |

---

**Figure C-2. Optical Interconnect Field**

Optical cross-connect and interconnect fields are made up of the following:

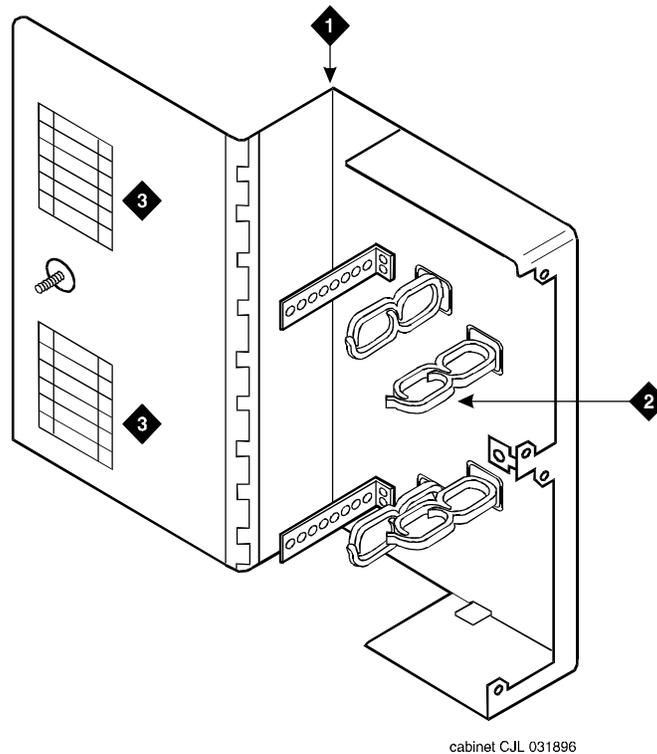
- 100A LIU
- 10A Lightguide Connector Panel
- C2000A-2 Connector Coupling (Multi-Mode) or C3000A-2 Connector Coupling (Single-Mode)
- 1A4 Lightguide Trough
- 1A6 Lightguide Trough
- Fiber Interconnect Cable (Multi-Mode or Single-Mode)

### **100A Lightguide Interconnect Unit**

---

The 100A LIU (comcode 104141841) consists of a cabinet with retainer rings to hold slack fiber cables, mounting cutouts for two 10A lightguide connector panels, and a door with circuit labels on each side. See Figure C-3.

---



**Figure Notes:**

- 1. 100A Lightguide Interconnect Unit (LIU)
- 2. Retainer Rings
- 3. Circuit Labels

---

**Figure C-3. 100A Lightguide Interconnection Unit**

### **10A Lightguide Connector Panel**

---

The 10A Lightguide Connector Panel (comcode 104141858) mounts in the cutouts of a 100A LIU. An LIU contains two connector panels. Each connector panel can hold six C2000A-2 Connector Couplings.

The C2000A-2 Connector Coupling (comcode 104148028) is used to join multi-mode fiber optic cables equipped with ST connectors. It has a threaded midsection that allows it to be screwed into the 10A Lightguide Connector Panel.

The C3000A-2 Connector Coupling (comcode 105271142) is used to join single-mode fiber optic cables equipped with ST connectors. It has a threaded midsection that allows it to be screwed into the 10A Lightguide Connector Panel.

### **Lightguide Troughs**

---

Two types of troughs are used with optical cross-connect hardware. The 1A4 trough secures single fiber optic jumpers routed between LIU columns, and the 1A6 trough is used at the bottom of an LIU column to prevent cable slack.

#### **Ordering Information**

<b>Description</b>	<b>Comcode</b>
1A4 Lightguide Trough	104141866
1A6 Lightguide Trough	104141874

Table C-1 provides the available multi-mode cable lengths and associated comcode numbers.

**Table C-1. Multi-Mode Fiber Cable Ordering Information**

<b>Description</b>	<b>Length</b>	<b>Comcode</b>
Fiber Interconnection Cable	20 Feet (6.1 m)	407439975
Fiber Interconnection Cable	25 Feet (7.62 m)	407441427
Fiber Interconnection Cable	30 Feet (9.14 m)	407441435
Fiber Interconnection Cable	35 Feet (10.67 m)	407441443
Fiber Interconnection Cable	40 Feet (12.2 m)	407441450
Fiber Interconnection Cable	50 Feet (15.2 m)	407441468
Fiber Interconnection Cable	75 Feet (22.8 m)	407441476
Fiber Interconnection Cable	100 Feet (30.48 m)	407441484
Fiber Interconnection Cable	125 Feet (38.1 m)	407441492
Fiber Interconnection Cable	150 Feet (45.7 m)	407441500
Fiber Interconnection Cable	175 Feet (53.3 m)	407441518
Fiber Interconnection Cable	200 Feet (61 m)	407441666

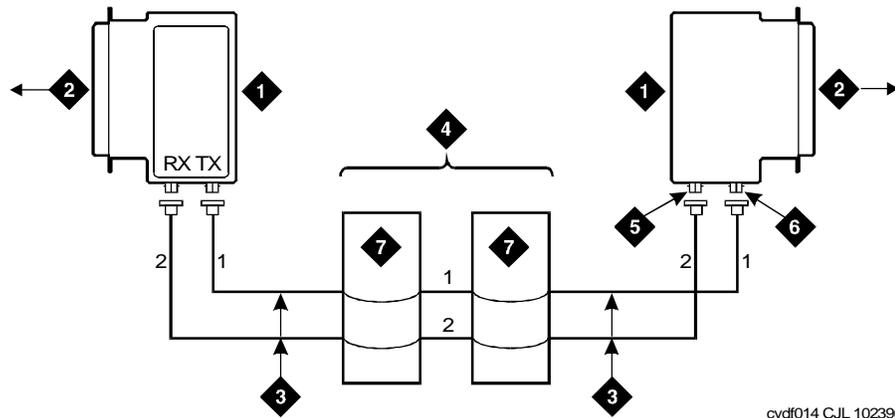
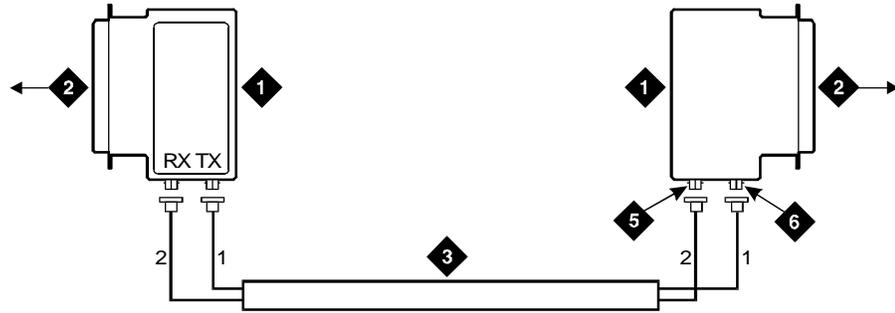
Table C-2 provides the available single-mode cable lengths and associated comcode numbers.

**Table C-2. Single-Mode Fiber Cable Ordering Information**

<b>Description</b>	<b>Length</b>	<b>Comcode</b>
Fiber Interconnection Cable	20 Feet (6.1 m)	407598325
Fiber Interconnection Cable	30 Feet (9.14 m)	407598333
Fiber Interconnection Cable	40 Feet (12.2 m)	407598341
Fiber Interconnection Cable	50 Feet (15.2 m)	407598358
Fiber Interconnection Cable	75 Feet (22.8 m)	407598366
Fiber Interconnection Cable	100 Feet (30.48 m)	407598374
Fiber Interconnection Cable	125 Feet (38.1 m)	407598390
Fiber Interconnection Cable	150 Feet (45.7 m)	407598408

### General Rules and Recommendations

Fiber optic cable requires careful handling and routing. Follow these rules and recommendations when installing fiber optic cables:



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#### Figure Notes

- |                           |                                      |
|---------------------------|--------------------------------------|
| 1. Lightwave Transceiver  | 4. Optical Cross-Connect Facility    |
| 2. To I/O Connector Panel | 5. TX Connector                      |
| 3. Fiber Optic Cable      | 6. RX Connector                      |
|                           | 7. 100A Lightguide Interconnect Unit |

Figure C-4. Fiber Optic Cable Connections Between Transceivers

### **Rule 1**

Cross-connect the fiber optic cable between 2 lightwave transceivers. That is, run the cable from the connector labeled TX on one transceiver to the connector labeled RX on the other transceiver, and in reverse for the other cable. See the top half of Figure C-4. Connections using a 100A LIU for fiber cross-connects are shown in the bottom half of Figure C-4.

Cross-connect the fiber optic cable between 2 lightwave transceivers for each connection (row) on the Running List contained in the CSD.

### **Rule 2**

For multi-mode fiber, use the 9823A (shortwave) transceiver for distances of up to 4900 feet (1494 m). Use the 9823B (longwave) transceiver for distances of up to 25,000 feet (7620 m). Ensure all 9823As connect to 9823As and all 9823Bs connect to 9823Bs.

For single-mode fiber, use the 300A single-mode fiber optic transceivers for distances of up to 115,000 feet (22 miles or 35 km). Single-mode fiber optic cable connects from the 300A lightwave transceiver on 1 carrier to the 300A lightwave transceiver on the other carrier.

### **Rule 3**



#### **CAUTION:**

*Do not route fiber optic cables and the B25A cables together.*

Route fiber optic cables away from groups of other cables where they may be stretched by the weight of metal cable bundles.

### **Rule 4**

Avoid bending fiber optic cables to a radius smaller than 1.5 inches (3.8 cm), to prevent mechanical stress on the cables. Plan the use of cable ties to avoid crimping the cable or creating a fixed stress point where, at a later time, movement of the cable causes it to exceed the minimum bend radius.

### **Rule 5**

Ensure fiber optic cables are not pressed against any sheet metal edges by subsequently installed cables.

### **Recommendations**

In some systems, it may be necessary to run fiber optic cables with the I/O cables, such as in the Cable Slack Manager or under a raised floor. In these situations, protect the cable by running it in a dedicated area if possible. When the cable must be run with other cabling, protect it by running it through flexible conduit. In these situations, use the following steps to route the cable:

1. Route the fiber optic cable up toward the top of the cabinet. The excess cable should be looped and draped from the B25A cable clamp.
2. Dress the cable running up the back of the cabinets by tie wrapping the cable to the outside of the B25A cable clamp (do not put the cable inside the clamp holding the B25A cables).

## **Labels for Fiber Optic Cables**

---

There are two types of labels used with fiber optic cables:

- Cable labels
- Cross-connect labels

Cable labels are used on the cables and cross-connect labels are used on the cross-connect equipment.

### **Cable Labels**

---

Cable labels, with adhesive backing, are installed on each end of a fiber optic cable. Each label displays the following information:

- The numbers of the cabinets, carriers, and slots connected by the cable
- Information on the cable itself, such as cable comcode number, and how it is used

### **Cross-Connect Labels**

---

The label used with cross-connect fiber optic cables shows the cabinet, carrier and slot numbers of the source of the cable. It also indicates that the cable goes to the MDF. The type of cable is indicated by its comcode number.

## **Administering Fiber Optic Cables**

---

When a fiber optic cable has been properly labeled, it is easy to trace the desired circuit by looking at the labels on the cross-connect, the cable itself, and the individual fibers in the cable. For more information, see the *PDS Fiber Installation Manual*, 555-401-102.

## **Making Changes at an Optical Main Distribution Frame**

---

Circuit changes are made with fiber optic patch cords in the same manner as when using 110P patch cords.

### **To Remove a Fiber Optic Patch Cord**

1. At the optical MDF, locate the patch cord to be removed.
2. Unplug the patch cord at one end.
3. Gently, lift the patch cord straight up until it can be located in the trough.



**NOTE:**

Take care to ensure the patch cord is not bent beyond the minimum bend radius of 1.5 inches (3.8 cm).

4. Remove the patch cord from the trough.
5. Trace the other end of the patch cord to its termination point and unplug it.
6. Remove the label associated with the removed patch cord.
7. Place plastic covers over the connectors to prevent damage.

### **To Make a New Cross-Connection**

1. At the optical MDF, locate the connector couplings associated with the circuit to be added.
2. Select a patch cord of the appropriate length for the cross-connection to be made. Excess cord length causes congestion in the trough and may cause the cable to be damaged.
3. Plug one end of the cord into the appropriate connector coupling.
4. Route the patch cord through the vertical and horizontal troughs.
5. Plug the other end of the patch cord into the appropriate connector coupling.
6. Prepare a label for the circuit added.
7. Test the circuit for loss levels. For more information, see the *PDS Fiber Installation Manual*, 555-401-102.

## **Making Changes on Optical Interconnect Fields**

---

### **To Make a New Interconnection**

1. At the optical interconnect field, locate the cable to be moved and unplug it from the connector coupling.
2. Unwind the cable from around the retainer rings, remembering the minimum bend radius.
3. If it is necessary to remove the cable from the module, carefully guide it through the split rings on the side of the module.
4. Locate the appropriate interconnection unit on the other side of the interconnect field and carefully route the cable through the split rings of the new module.
5. Wrap the cable from around the retainer rings, remembering the minimum bend radius.
6. Plug the cable into the appropriate connector coupling.
7. Prepare a label for the changed circuit.
8. Test the circuit for loss levels. For more information, see the *PDS Fiber Installation Manual*, 555-401-102.

### **Raised Floor or Cable Slack Managers**

Figure C-5 on page C-15 shows the recommended fiber routing for a system with either Cable Slack Managers or raised floors. Route the fiber cable to the outside of the carriers behind the rear connector panel and cable troughs.

Do not route fiber in the side cable troughs used for the B25A cables. However, since the B25A cables are routed out of the bottom of the trough, loop slack fiber at the top of the trough. Use the cable tie holes provided at the top of the cabinet to secure the fiber. Route the fiber through the holes over the cable troughs in the corners of the cabinet tops.

Protect cables routed between cabinets with an 846929883 cover. When routing fiber to a cabinet that is not adjacent, route the fiber back into and under the top of the intermediate cabinet.

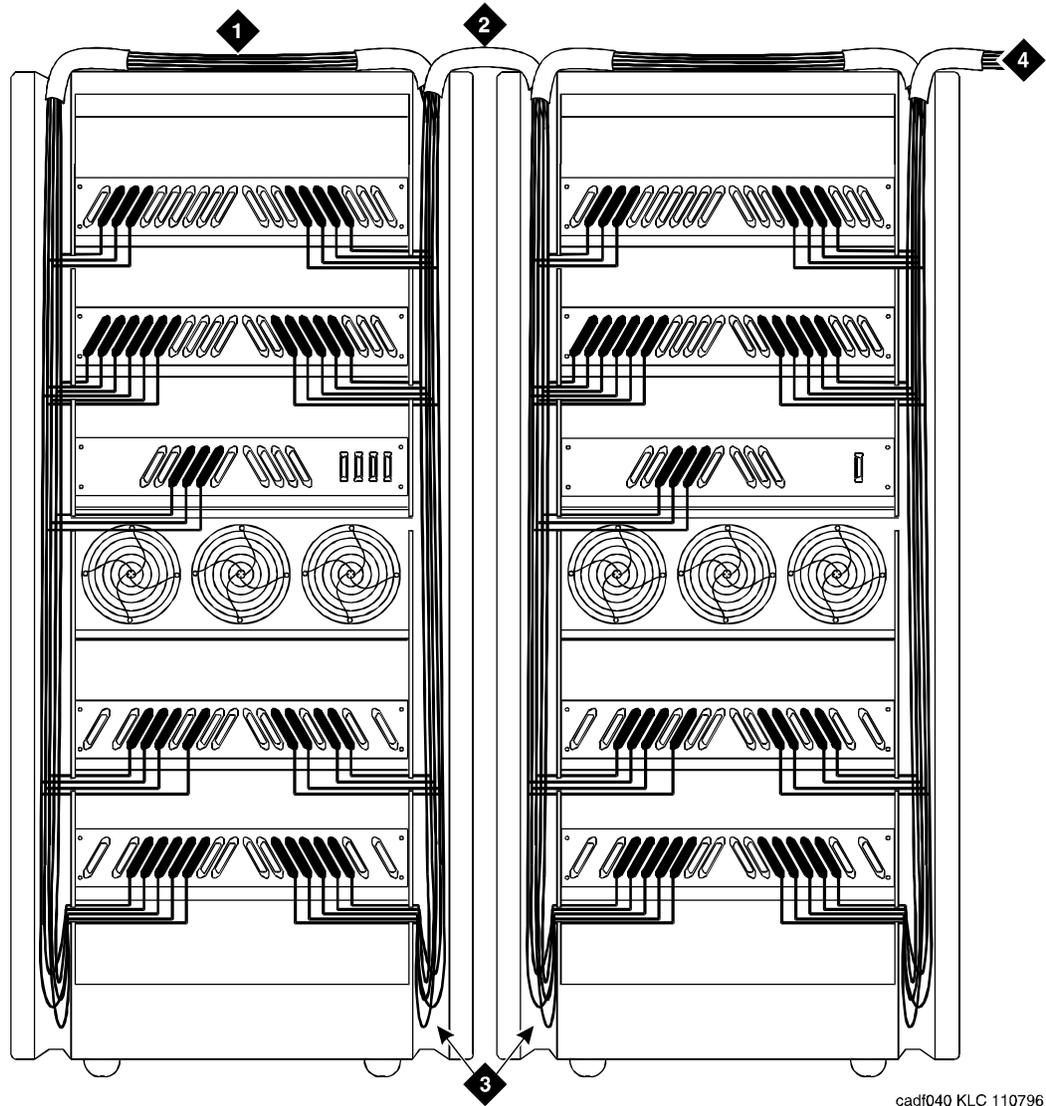
### **Overhead Ductwork**

Figure C-6 on page C-16 shows the recommended fiber routing for a system with ductwork installed. For systems with overhead ductwork, route the fiber cable to the outside of the carriers behind the rear connector panel and cable troughs and into the shielded ductwork.

Do not route fiber in the side cable troughs that are used for the B25A cables. Use the shielded ductwork to manage slack fiber and use the cable tie holes at the top of the cabinet as needed.

### **Connections for Remote Applications Through a Fiber Cross-Connect**

Figure C-7 shows systems that require connection to a PDS fiber cross-connect (for connection to remote cabinets). In some systems it may be necessary to run fiber with the I/O cables such as in the Cable Slack Manager or under a raised floor. In these situations protect the fiber by running it in a dedicated area if possible. In any situation where the fiber optic cable must be run with other cabling, protect it by first running it through flexible conduit.



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**Figure Notes**

- |                                      |  |
|--------------------------------------|--|
| 1. Fiber Optic Cables                | 3. Use This Area to Manage Slack Fiber Optic Cable |
| 2. Fiber Protector Cover (846929883) | 4. To Next Cabinet                                 |

**Figure C-5. Routing Fiber Between Adjacent Cabinets**

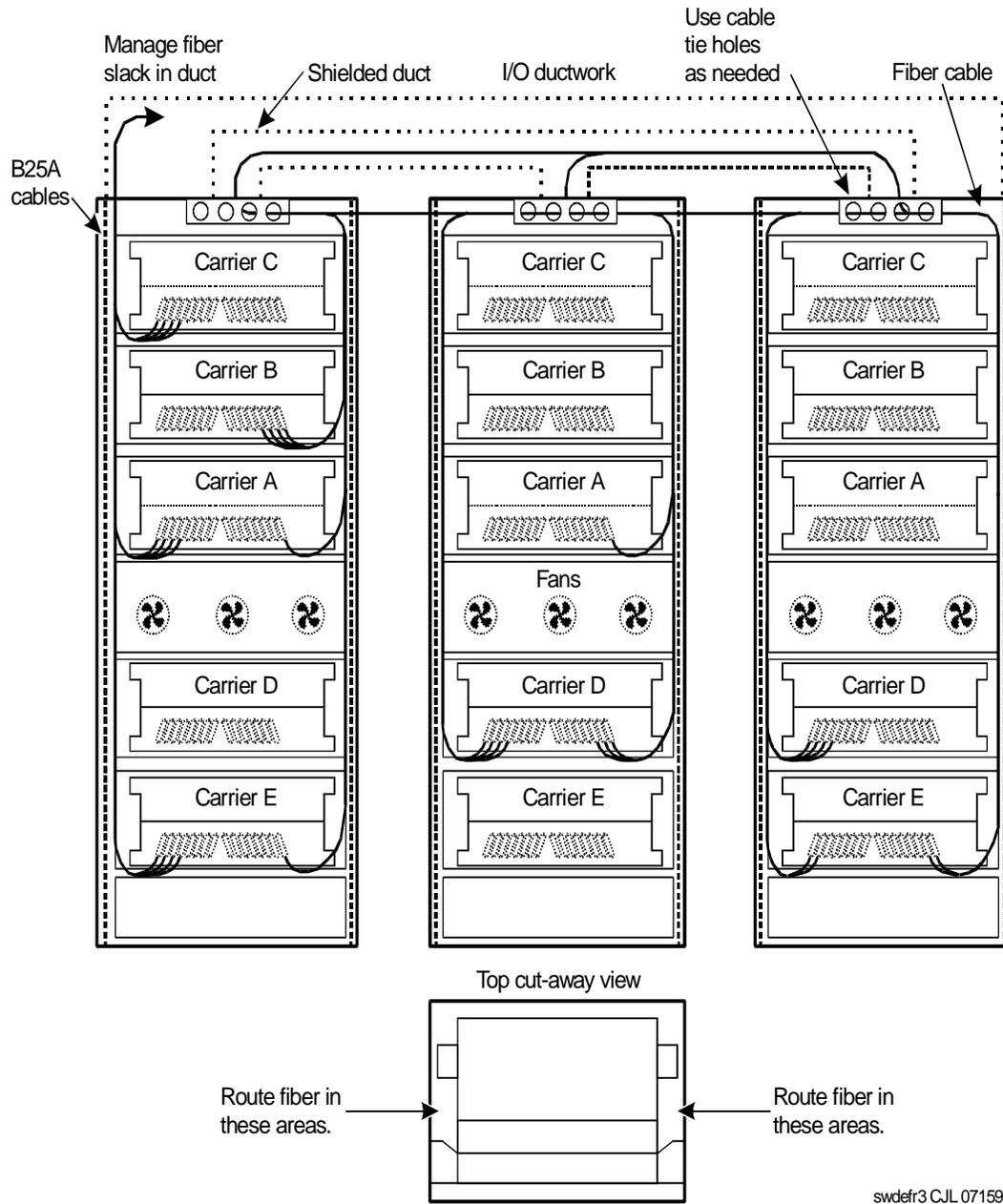
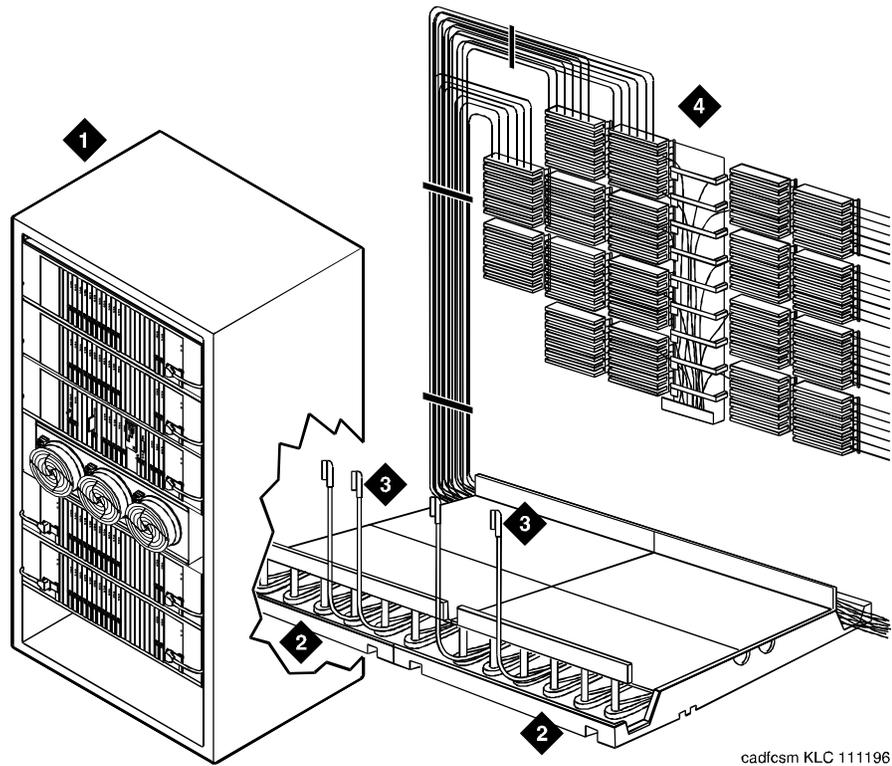


Figure C-6. Routing Fiber Through Ductwork



**Figure Notes:**

- |  |                                    |
|--|------------------------------------|
| 1. Multi-Carrier Cabinet                       | 3. 25-Pair Cable to System Cabinet |
| 2. Z113A Cable Slack Manager (or Raised Floor) | 4. Main Distribution Frame (MDF)   |

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**Figure C-7. Routing Fiber Under Raised Floor or Through Cable Slack Managers**



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## Connector and Cable Diagrams

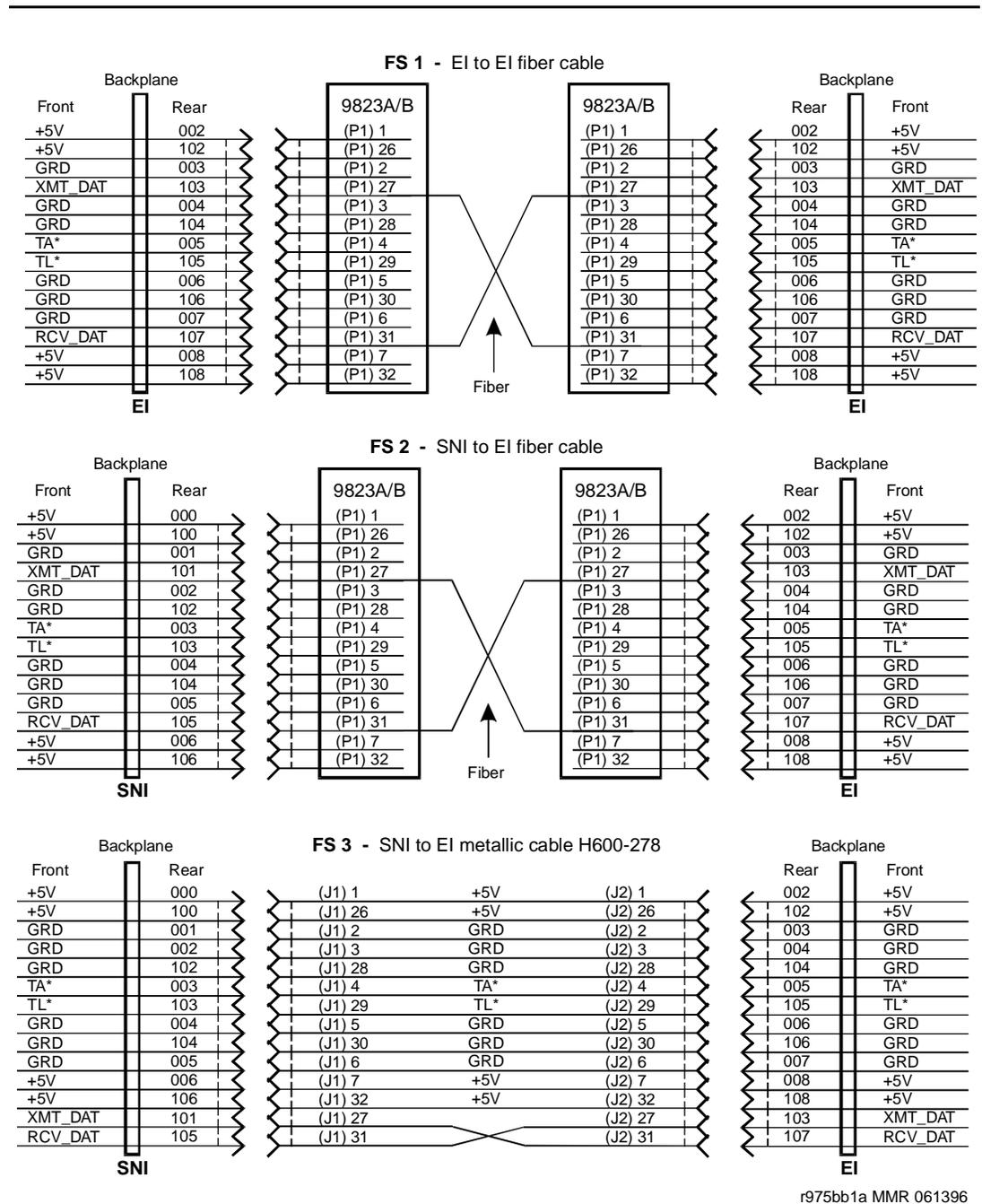
# D

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This provides connector and cable diagrams for the DEFINITY Enterprise Communications Server.

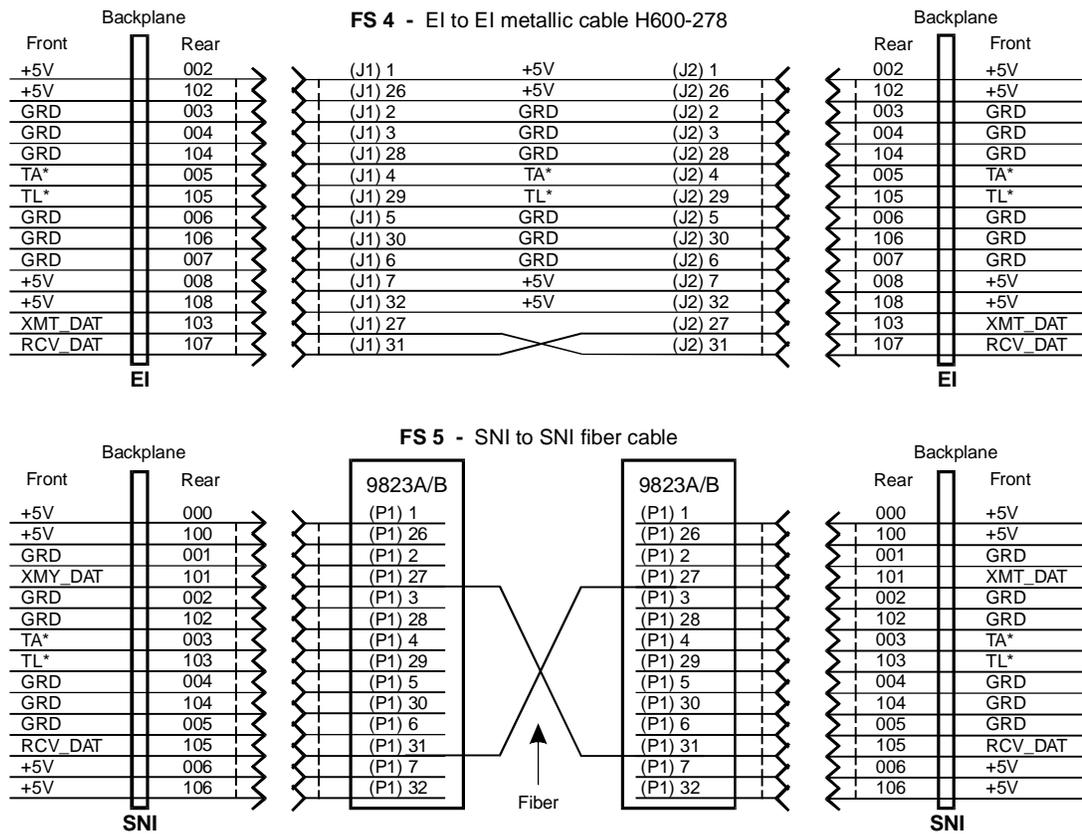
For circuit pack and auxiliary equipment classifications, see the tables at the end of Chapter 5, "Install and Wire Telephones and Other Equipment".

See Figure D-1 for Expansion Interface to Expansion Interface fiber interconnect.



r975bb1a MMR 061396

Figure D-1. Expansion Interface to Expansion Interface Fiber (Part 1)



r975bb1b MMR 061396

**Figure D-2. Expansion Interface to Expansion Interface Fiber (Part 2)**

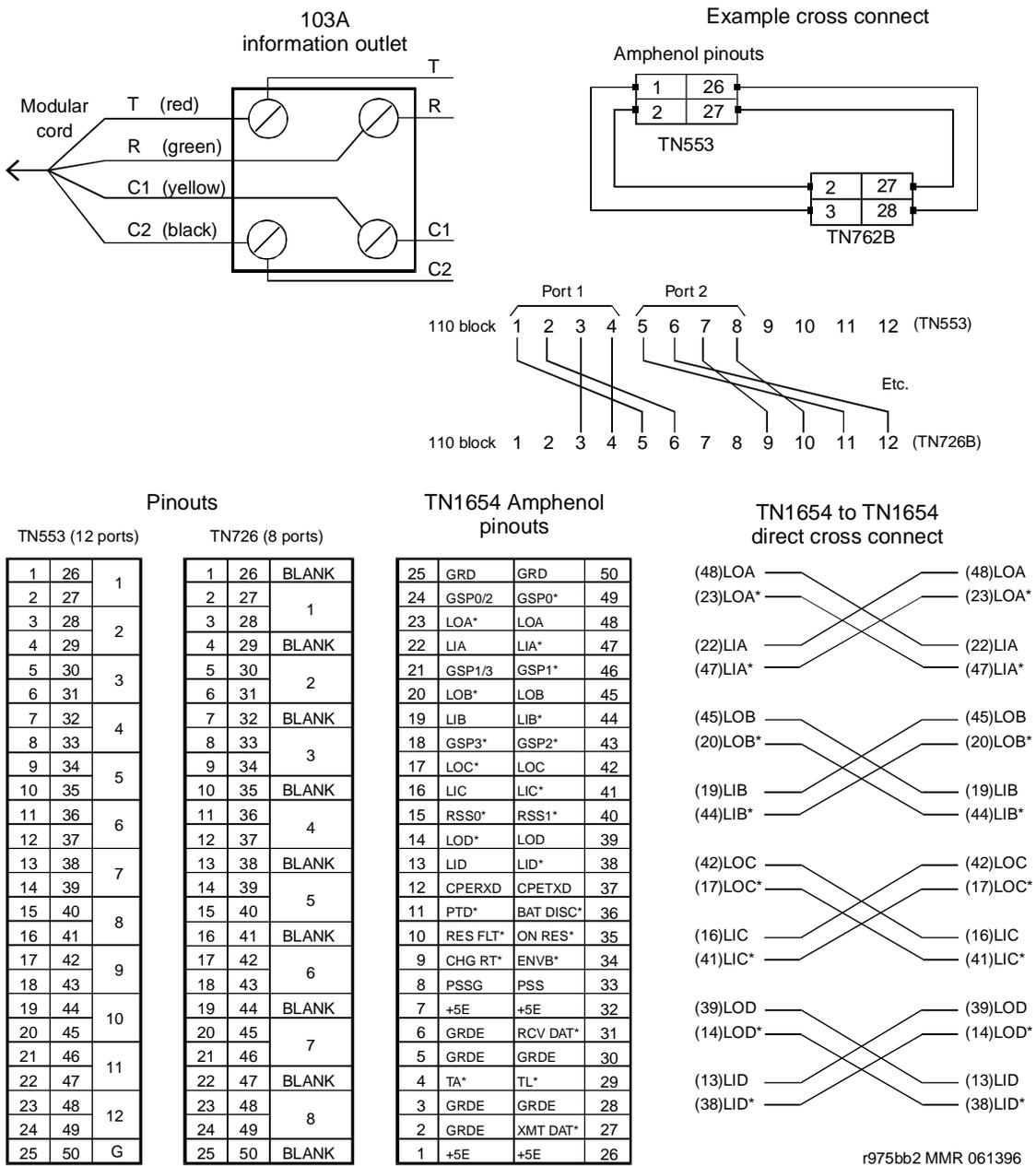
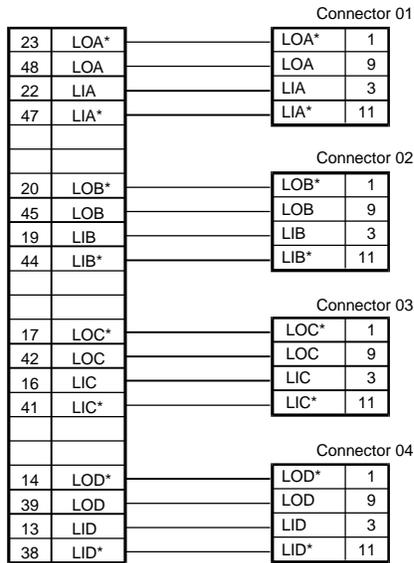
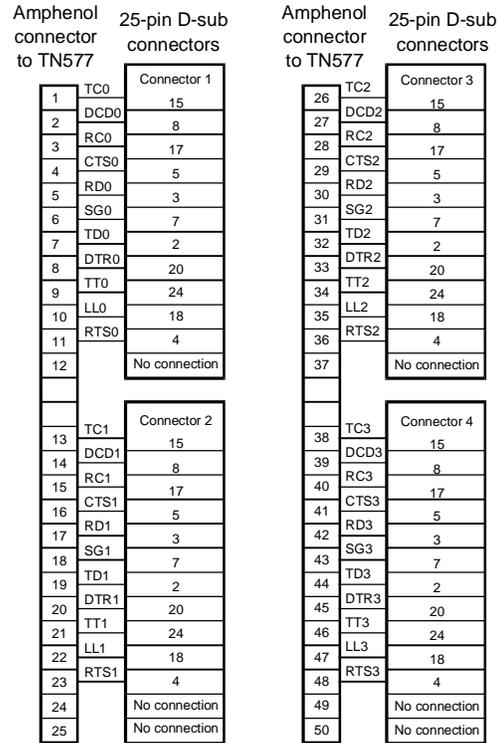


Figure D-3. Sample Cross-Connects

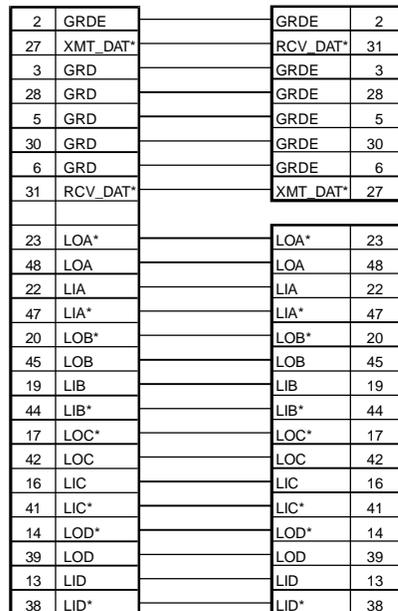
**FS 10** H600-348 cable  
50-pin Amphenol connector TN1654      15-pin D-sub DS1 interface to a CSU



**FS 11** H600-347 cable  
(packet gateway interface cable)



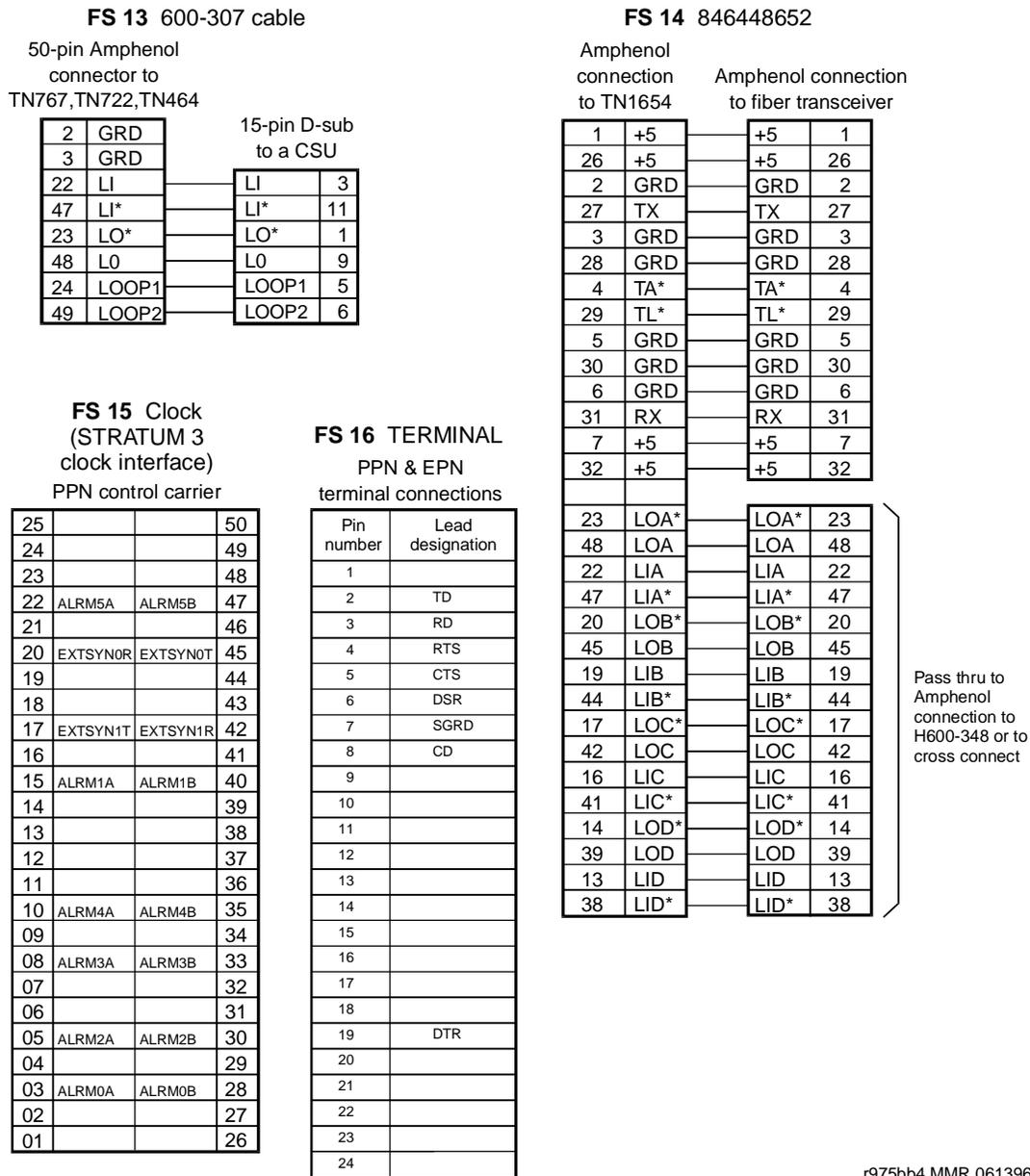
**FS 12**  
Amphenol connector to TN1654      Amphenol connector to TN570 or TN573



Pass thru to Amphenol connector to H600-348 or to cross connect

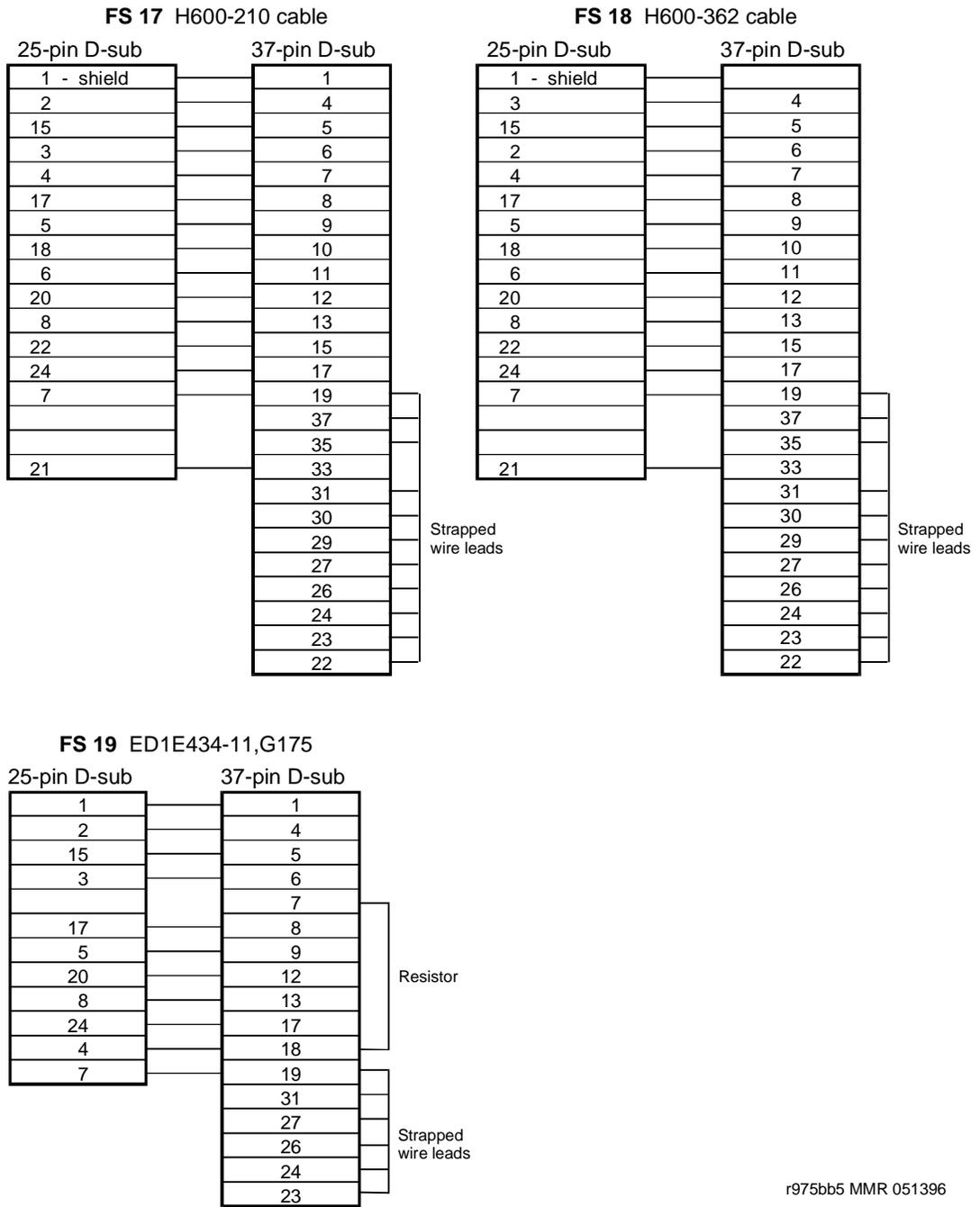
r975bb3 MMR 051096

**Figure D-4. Sample Cable Pinouts**



r975bb4 MMR 061396

Figure D-5. Sample Pinouts

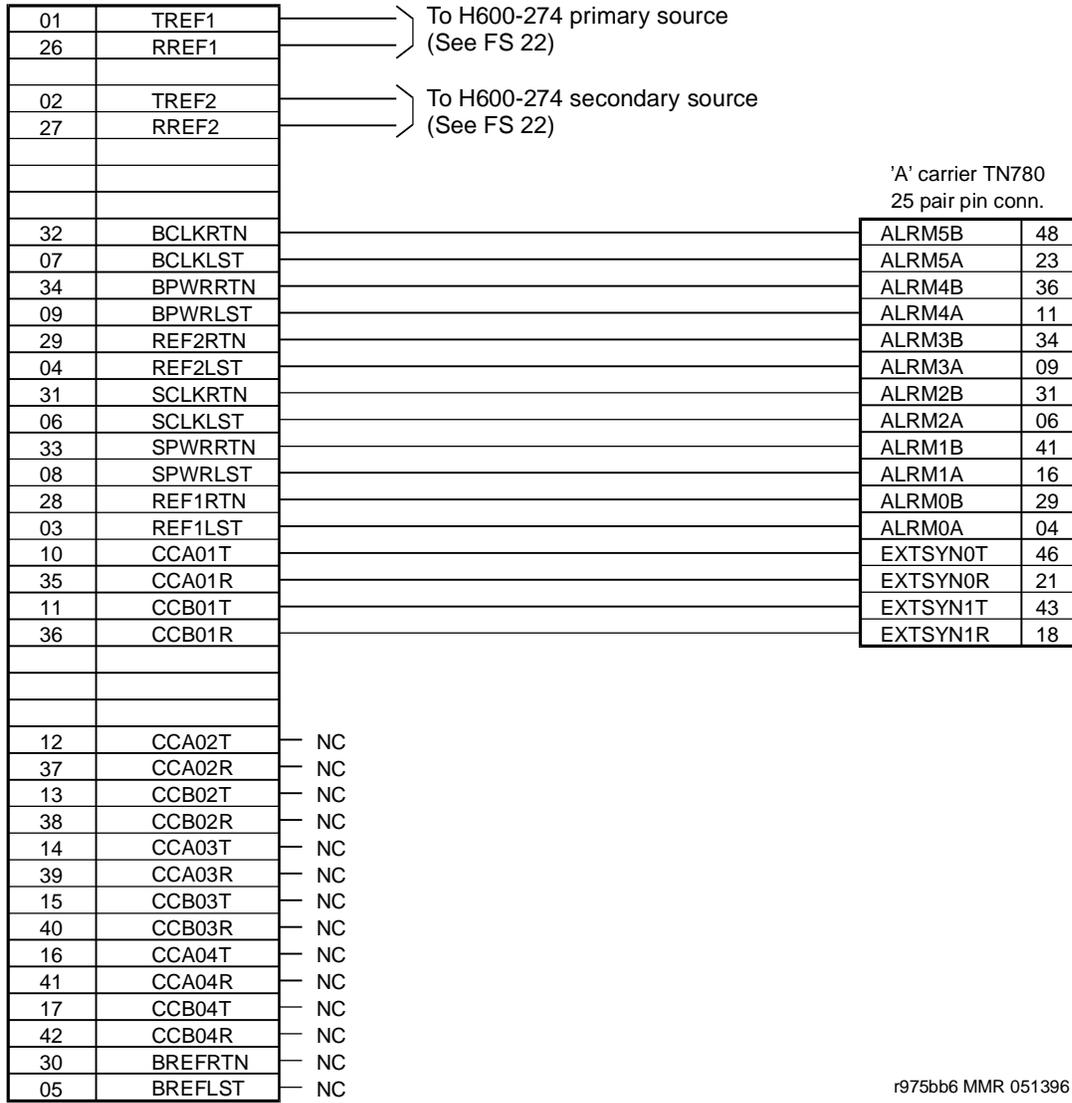


**Figure D-6. Sample Cable Pinouts**

**FS 20** STRATUM 3 clock connector

Duplicated synchronization clock,  
simplex system, dual input references

STRATUM 3 clock connector

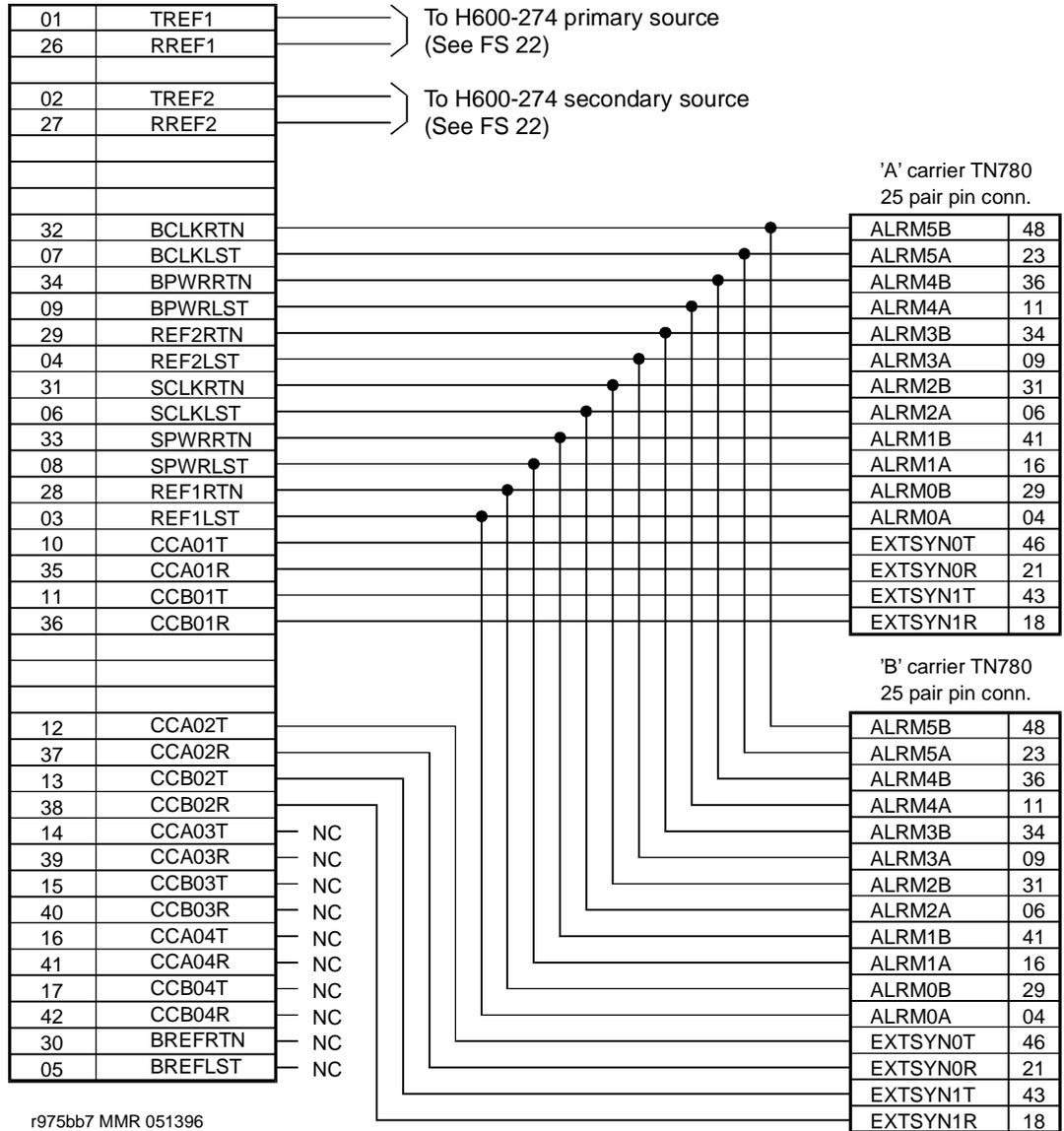


r975bb6 MMR 051396

**Figure D-7. STRATUM 3 Clock Connector Pinout**

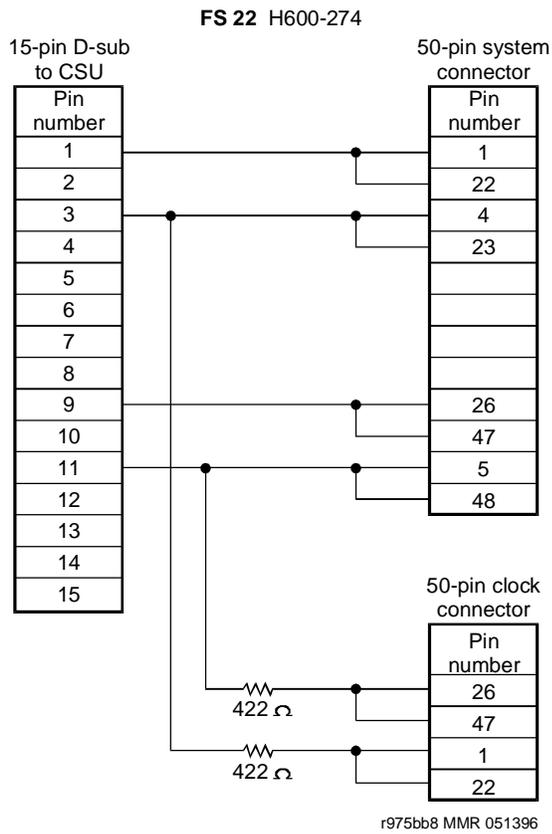
**FS 21 STRATUM 3 clock connector**  
 Duplicated synchronization clock,  
 duplicated system, dual input references

STRATUM 3 clock connector



r975bb7 MMR 051396

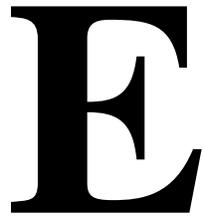
**Figure D-8. STRATUM 3 Clock Connector**



**Figure D-9. Sample H600-274 Cable**

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## References



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This section contains a list of user documents for the DEFINITY Enterprise Communications Server (ECS) Release 5.4.

To order these or other DEFINITY documents, contact the Lucent Technologies Publications Center at the address and phone number on the back of the title page of this document. A complete list of Business Communications Systems (BCS) documents, including previous issues of the documents listed here, is provided in *BCS Publications Catalog*, 555-000-010.

### **Basic DEFINITY ECS Documents**

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These are the basic documents issued for DEFINITY ECS Release 5.4.

***DEFINITY Enterprise Communications Server Release 5 — Overview, Issue 3, 555-230-024***

Provides a detailed overview of the ECS including descriptions of many of the major features, applications, hardware, system capabilities, and the support provided with the system. This document is available in the following languages: English, German (DE), Dutch (NL), Brazilian Portuguese (PTB), European French (FR), Colombian Spanish (SPL), and Japanese (JA). To order, append the language suffix to the document number; for example, 555-230-894DE for German. No suffix is needed for the English version.

***DEFINITY Enterprise Communications Server Release 5.4 — Change Description, Issue 1, 555-230-472.***

Gives a high-level overview of the DEFINITY ECS Release 5.4. Describes the hardware and software enhancements and lists the problem corrections for this release.

***DEFINITY Enterprise Communications Server Release 5 — System Description Pocket Reference, Issue 1, 555-230-207***

Provides hardware descriptions, system parameters, listings of features and system configurations, and environmental and maintenance requirements. This compact reference combines and replaces Release 5 *System Description and Specifications* and Release 5 *Pocket Reference*.

***DEFINITY Enterprise Communications Server Release 5 — Administration and Feature Description, Issue 1, 555-230-522***

Provides descriptions of system features. Also provides step-by-step procedures for preparing the screens that are required to implement the features, functions, and services of the system. Includes the applications and benefits, feature interactions, administration requirements, hardware requirements, and procedures for voice terminal, data module, and trunk group administration.

This document combines and replaces Release 5 *Feature Description* and Release 5 *Implementation*.

***DEFINITY Enterprise Communications Server Release 5 — Implementation Blank Forms, Issue 1, 555-230-303***

Provides blank hardcopy forms corresponding to the screens that are required to implement the features, functions, and services of the system.

***DEFINITY Enterprise Communications Server Release 5 — System Monitoring and Reporting, Issue 4, 555-230-511***

Provides detailed descriptions of the measurement, status, security, and recent change history reports available in the system and is intended for administrators who validate traffic reports and evaluate system performance. Includes corrective actions for potential problems. Issue 2 of this document was titled *Traffic Reports*.

***DEFINITY Enterprise Communications Server Release 5 — Installation and Test for Single-Carrier Cabinets, Issue 3, 555-230-894***

Provides procedures and information for hardware installation and initial testing of single-carrier cabinets.

This document is available in the following languages: English, German (DE), Dutch (NL), Brazilian Portuguese (PTB), European French (FR), Castilian Spanish (SP), and Japanese (JA). To order, append the language suffix to the document number; for example, 555-230-894DE for German. No suffix is needed for the English version.

***DEFINITY Enterprise Communications Server Release 5 — Installation and Test for Multi-Carrier Cabinets, Issue 2, 555-230-112***

Provides procedures and information for hardware installation and initial testing of multi-carrier cabinets.

***DEFINITY Communications System Generic 3vs and Generic 3si — Upgrades and Additions, Issue 1, 555-230-108***

Provides procedures for an installation technician to convert an existing DEFINITY Communications System earlier than Generic 3 Version 4 to Generic 3vs/si Version 4.

***DEFINITY Communications System Generic 3r — Upgrades and Additions, Issue 1, 555-230-109***

Provides procedures for an installation technician to convert an existing DEFINITY Communications System earlier than Generic 3 Version 4 to Generic 3r Version 4.

***DEFINITY Enterprise Communications Server Release 5 — Upgrades and Additions for R5r, Issue 2, 555-230-121***

Provides procedures for an installation technician to convert an existing Generic 3 Version 4 DEFINITY Communications System to DEFINITY ECS and from DEFINITY ECS Release 5 to DEFINITY ECS Release 5.4.

Included are upgrade considerations, lists of required hardware, and step-by-step upgrade procedures. Also included are procedures to add control carriers, switch node carriers, port carriers, circuit packs, auxiliary cabinets, and other equipment.

***DEFINITY Enterprise Communications Server Release 5 — Upgrades and Additions for R5vs/si, Issue 2, 555-230-120***

Provides procedures for an installation technician to convert an existing DEFINITY Communications System Generic 3 Version 4 to DEFINITY ECS and from DEFINITY ECS Release 5 to DEFINITY ECS Release 5.4.

Included are upgrade considerations, lists of required hardware, and step-by-step upgrade procedures. Also included are procedures to add control carriers, switch node carriers, port carriers, circuit packs, auxiliary cabinets, and other equipment.

***DEFINITY Enterprise Communications Server Release 5 — Maintenance and Test for R5r, Issue 1, 555-230-122***

Provides detailed descriptions of the procedures for monitoring, testing, and maintaining the ECS. Included are maintenance commands, step-by-step trouble-clearing procedures, the procedures for using all tests, and explanations of the system's error codes.

***DEFINITY Enterprise Communications Server Release 5 — Maintenance and Test for R5vs/si, Issue 1, 555-204-123***

Provides detailed descriptions of the procedures for monitoring, testing, and maintaining the ECS. Included are maintenance commands, step-by-step trouble-clearing procedures, the procedures for using all tests, and explanations of the system's error codes.

***DEFINITY Communications System Generic 3 Planning and Configuration, Issue 2, 555-230-601***

Provides step-by-step procedures for the account team in determining the customer's equipment and hardware requirements to configure a system according to the customer specifications. Includes detailed requirements and block diagrams. This document reflects Generic 3 Version 2 software, but still contains relevant information for the ECS.

***BCS Products Security Handbook, Issue 5, 555-025-600***

Provides information about the risks of telecommunications fraud and measures for addressing those risks and preventing unauthorized use of BCS products. This document is intended for telecommunications managers, console operators, and security organizations within companies.

***DEFINITY Enterprise Communications Server Release 5 — Terminals and Adjuncts Reference, Issue 8, 555-015-201***

Provides descriptions of the peripheral equipment that can be used with System 75, System 85, DEFINITY Communications System, and DEFINITY ECS. This document is intended for customers and Lucent Technologies account teams for selecting the correct peripherals to accompany an ECS.

***DEFINITY Enterprise Communications Server — Generic 1, Generic 3, System 75, and Voice Terminal Guide Builder, Issue 3, 555-230-755***

Provides capability to produce laser-printed documentation for specific voice terminals. The software is supported by a comprehensive user's guide and on-line help. This product requires a 386 PC, minimum of 6MB disk space, minimum of 4MB RAM, a printer supported by Microsoft GDI printer drive, and Microsoft Windows 3.1 or higher. A mouse is recommended.

## **Call Center**

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These documents are issued for Call-Center applications of the DEFINITY ECS.

### **DEFINITY**

#### ***DEFINITY Enterprise Communications Server Release 5 — Call Vectoring/EAS Guide, Issue 1, 585-230-521***

Provides information on how to write, use, and troubleshoot vectors, which are command sequences that process telephone calls in an Automatic Call Distribution (ACD) environment. It is provided in two parts: tutorial and reference.

The tutorial provides step-by-step procedures for writing and implementing basic vectors.

The reference includes detailed descriptions of the call vectoring features, vector management, vector administration, adjunct routing, troubleshooting, and interactions with management information systems (including the Call Management System).

#### ***DEFINITY Enterprise Communications Server Release 5 — Basic Call Management System (BCMS) Operations, Issue 1, 555-230-706***

Provides detailed instructions on how to generate reports and manage the system and is intended for telecommunications managers who wish to use Basic Call Management System (BCMS) reports and system managers responsible for maintaining the system.

### **CentreVu CMS**

#### ***CentreVu Call Management System Release 3 Version 5 — Administration, Issue 1, 585-215-820***

#### ***CentreVu Call Management System Release 3 Version 5 — Reports, Issue 1, 585-215-821***

#### ***CentreVu Call Management System Release 3 Version 5 — Custom Reports, Issue 1, 585-215-822***

#### ***CentreVu Call Management System Release 3 Version 5 — Upgrades and Migrations, Issue 1, 585-215-826***

#### ***CentreVu Call Management System Release 3 Version 5 — External Call History Reference, Issue 1, 585-215-824***

#### ***CentreVu Call Management System Release 3 Version 5 — Forecast, Issue 1, 585-215-825***

## **Application-Specific Documents**

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These documents are application-specific.

***DEFINITY Enterprise Communications Server Generic 2 to Release 5.4 — Transition Reference, Issue 1, 555-230-523***

Provides information on the differences in features and administration between the old and new systems when upgrading from a Generic 2 system to DEFINITY ECS Release 5.4.

### **ASAI**

***DEFINITY Enterprise Communications Server Release 5 — CallVisor ASAI Planning Guide, Issue 5, 555-230-222***

Provides procedures and directions for the account team and customer personnel for effectively planning and implementing the CallVisor Adjunct/Switch Application Interface (ASAI) PBX-Host environment. The CallVisor ASAI is a communications interface that allows adjunct processors to access switch features and to control switch calls. It is implemented using an Integrated Services Digital Network (ISDN) Basic Rate Interface (BRI). Hardware and software requirements are included.

***DEFINITY Enterprise Communications Server Release 5 — CallVisor ASAI Protocol Reference, Issue 6, 555-230-221***

Provides detailed layer 3 protocol information regarding the CallVisor Adjunct/Switch Application Interface (ASAI) for the systems and is intended for the library or driver programmer of an adjunct processor to create the library of commands used by the applications programmers. Describes the ISDN message, facility information elements, and information elements.

***DEFINITY Enterprise Communications Server Release 5 — CallVisor ASAI Technical Reference, Issue 6, 555-230-220***

Provides detailed information regarding the CallVisor Adjunct/Switch Application Interface (ASAI) for the systems and is intended for the application designer responsible for building and/or programming custom applications and features.

***DEFINITY Enterprise Communications Server Release 5 — Installation, Administration, and Maintenance of CallVisor ASAI Over the DEFINITY LAN Gateway, Issue 2, 555-230-223***

Provides procedures for installation, administration, and maintenance of the CallVisor Adjunct/Switch Application Interface (ASAI) Ethernet application over the DEFINITY LAN Gateway and is intended for system administrators, telecommunications managers, Management Information System (MIS) managers, LAN managers, and Lucent personnel. The ASAI-Ethernet application

provides ASAI functionality using 10Base-T Ethernet rather than BRI as a transport media.

***DEFINITY Enterprise Communications Server Release 5 — Call Visor ASAI Overview, Issue 2, 555-230-225***

Provides a general description of Call Visor ASAI.

This document is available in the following languages: English, German (DE), Dutch (NL), Brazilian Portuguese (PTB), European French (FR), Colombian Spanish (SPL), and Japanese (JA). To order, append the language suffix to the document number; for example, 555-230-894DE for German. No suffix is needed for the English version.

***DEFINITY Enterprise Communications Server Release 5 — CallVisor PC ASAI Installation and Reference, Issue 4, 555-246-205***

Provides procedural and reference information for installers, Tier 3 support personnel, and application designers.

## ACD

***DEFINITY Enterprise Communications Server Release 5 — Automatic Call Distribution (ACD) Agent Instructions, Issue 5, 555-230-722***

Provides information for use by agents after they have completed ACD training. Includes descriptions of ACD features and the procedures for using them.

***DEFINITY Enterprise Communications Server Release 5 — Automatic Call Distribution (ACD) Supervisor Instructions, Issue 4, 555-230-724***

Provides information for use by supervisors after they have completed ACD training. Includes descriptions of ACD features and the procedures for using them.

## Call Detail Recording

***Call Detail Acquisition & Processing Reference, 555-006-202***

Contains call detail recording information.

## Console Operations

***DEFINITY Communications System Generic 1 and Generic 3 Console Operations, Issue 2, 555-230-700***

Provides operating instructions for the attendant console. Included are descriptions of the console control keys and functions, call-handling procedures, basic system troubleshooting information, and routine maintenance procedures.

***DEFINITY Enterprise Communications Server Release 5 — Console Operations Quick Reference, Issue 2, 555-230-890***

Provides operating instructions for the attendant console. Included are descriptions of the console control keys and functions, call handling, basic system-troubleshooting information, and routine maintenance procedures.

This document is available in the following languages: English, German (DE), Dutch (NL), Brazilian Portuguese (PTB), European French (FR), Colombian Spanish (SPL), and Japanese (JA). To order, append the language suffix to the document number; for example, 555-230-894DE for German. No suffix is needed for the English version.

## **Hospitality**

***An Introduction to DEFINITY Communications System Generic 3 Hospitality Services, Issue 1, 555-230-021***

Provides an overview of the features available for use by the lodging and health industries to improve their property management and to provide assistance to their employees and clients. Included are brief definitions of many of the system features, descriptions of the hardware, planning considerations, and list of the system capabilities.

***DEFINITY Communications System Generic 1 and Generic 3 Hospitality Operations, Issue 31 555-230-723***

Provides step-by-step procedures for using the features available for the lodging and health industries to improve their property management and to provide assistance to their employees and clients. Includes detailed descriptions of reports.<sup>1</sup>

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# Glossary and Abbreviations

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## Numerics

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### **3B2 Message Server**

A software application that combines voice and data messaging services for voice-terminal users whose extensions are connected to a system.

### **800 service**

A service in the United States that allows incoming calls from certain areas to an assigned number for a flat-rate charge based on usage.

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## A

### **AA**

Archangel. See [angel](#).

### **AAC**

ATM access concentrator

### **AAR**

See [Automatic Alternate Routing \(AAR\)](#).

### **abandoned call**

An incoming call in which the caller hangs up before the call is answered.

### **Abbreviated Dialing (AD)**

A feature that allows callers to place calls by dialing just one or two digits.

### **AC**

1. Alternating current.
2. See [Administered Connection \(AC\)](#).

### **AAR**

Automatic Alternate Routing

### **ACA**

See [Automatic Circuit Assurance \(ACA\)](#).

### **ACB**

See [Automatic Callback \(ACB\)](#).

### **ACD**

See [Automatic Call Distribution \(ACD\)](#).

### **ACD agent**

See [agent](#).

### **ACU**

See [Automatic calling unit \(ACU\)](#).

### **ACW**

See [after-call work \(ACW\) mode](#).

**access code**

A 1-, 2-, or 3-digit dial code used to activate or cancel a feature, or access an outgoing trunk.

**access endpoint**

Either a nonsignaling channel on a DS1 interface or a nonsignaling port on an analog tie-trunk circuit pack that is assigned a unique extension.

**access tie trunk**

A trunk that connects a main communications system with a tandem communications system in an electronic tandem network (ETN). An access tie trunk can also be used to connect a system or tandem to a serving office or service node. Also called access trunk.

**access trunk**

See [access tie trunk](#).

**ACCUNET**

A trademarked name for a family of digital services offered by AT&T in the United States.

**ACD**

See [Automatic Call Distribution \(ACD\)](#). ACD also refers to a work state in which an agent is on an ACD call.

**ACD work mode**

See [work mode](#).

**active-notification association**

A link that is initiated by an adjunct, allowing it to receive event reports for a specific switch entity, such as an outgoing call.

**active-notification call**

A call for which event reports are sent over an active-notification association (communication channel) to the adjunct. Sometimes referred to as a monitored call.

**active notification domain**

VDN or ACD split extension for which event notification has been requested.

**ACU**

See [Automatic calling unit \(ACU\)](#).

**AD**

See [Abbreviated Dialing \(AD\)](#).

**ADAP**

AUDIX Data Acquisition Package

**ADC**

See [analog-to-digital converter \(ADC\)](#).

**adjunct**

A processor that does one or more tasks for another processor and that is optional in the configuration of the other processor. See also [application](#).

**adjunct-control association**

A relationship initiated by an application via *Third Party Make Call*, the *Third Party Take Control*, or *Domain (Station) Control* capabilities to set up calls and control calls already in progress.

**adjunct-controlled call**

Call that can be controlled using an adjunct-control association. Call must have been originated via *Third Party Make Call* or *Domain (Station) Control* capabilities or must have been taken control of via *Third Party Take Control* or *Domain (Station) Control* capabilities.

**adjunct-controlled split**

An ACD split that is administered to be under adjunct control. Agents logged into such splits must do all telephony work, ACD login/ logout, and changes of work mode through the adjunct (except for auto-available adjunct-controlled splits, whose agents may not log in/out or change work mode).

**adjunct-monitored call**

An adjunct-controlled call, active-notification call, or call that provides event reporting over a domain-control association.

**Adjunct-Switch Application Interface (ASAI)**

A recommendation for interfacing adjuncts and communications systems, based on the CCITT Q.932 specification for layer 3.

**ADM**

Asynchronous data module

**administer**

To access and change parameters associated with the services or features of a system.

**Administered Connection (AC)**

A feature that allows the switch to automatically establish and maintain end-to-end connections between access endpoints (trunks) and/or data endpoints (data modules).

**administration group**

See *capability group*.

**administration terminal**

A terminal that is used to administer and maintain a system. See also *terminal*.

**Administration Without Hardware (AWOH)**

A feature that allows administration of ports without associated terminals or other hardware.

**ADU**

See *asynchronous data unit (ADU)*.

**AE**

See *access endpoint*.

**after-call work (ACW) mode**

A mode in which agents are unavailable to receive ACD calls. Agents enter the ACW mode to perform ACD-related activities such as filling out a form after an ACD call.

**AG**

ASAI Gateway

**agent**

A person who receives calls directed to a split. A member of an ACD hunt group or ACD split. Also called an ACD agent.

**agent report**

A report that provides historical traffic information for internally measured agents.

**AIM**

Asynchronous interface module

**AIOD**

Automatic Identification of Outward Dialing

**ALBO**

Automatic Line Build Out

**All trunks busy (ATB)**

The state in which no trunks are available for call handling.

**ALM-ACK**

Alarm acknowledge

**American Standard Code for Information Interchange**

See ASCII (American Standard Code for Information Interchange).

**AMW**

Automatic Message Waiting

**AN**

Analog

**analog**

The representation of information by continuously variable physical quantities such as amplitude, frequency, and phase. See also digital.

**analog data**

Data that is transmitted over a digital facility in analog (PCM) form. The data must pass through a modem either at both ends or at a modem pool at the distant end.

**analog telephone**

A telephone that receives acoustic voice signals and sends analog electrical signals along the telephone line. Analog telephones are usually served by a single wire pair (tip and ring). The model-2500 telephone set is a typical example of an analog telephone.

**analog-to-digital converter (ADC)**

A device that converts an analog signal to digital form. See also digital-to-analog converter (DAC).

**angel**

A microprocessor located on each port card in a processor port network (PPN). The angel uses the control-channel message set (CCMS) to manage communications between the port card and the archangel on the controlling switch-processing element (SPE). The angel also monitors the status of other microprocessors on a port card and maintains error counters and thresholds.

**ANI**

See Automatic Number Identification (ANI).

**ANSI**

American National Standards Institute. A United States professional/technical association supporting a variety of standards.

**answerback code**

A number used to respond to a page from a code-calling or loudspeaker-paging system, or to retrieve a parked call.

**AOL**

Attendant-offered load

**AP**

Applications processor

**APLT**

Advanced Private-Line Termination

**appearance**

A software process that is associated with an extension and whose purpose is to supervise a call. An extension can have multiple appearances. Also called call appearance, line appearance, and occurrence. See also [call appearance](#).

**application**

An adjunct that requests and receives ASAI services or capabilities. One or more applications can reside on a single adjunct. However, the switch cannot distinguish among several applications residing on the same adjunct and treats the adjunct, and all resident applications, as a single application. The terms application and adjunct are used interchangeably throughout this document.

**applications processor**

A micro-computer based, program controlled computer providing application services for the DEFINITY switch. The processor is used with several user-controlled applications such as traffic analysis and electronic documentation.

**application service element**

See [capability group](#).

**architecture**

The organizational structure of a system, including hardware and software.

**ARS**

See [Automatic Route Selection \(ARS\)](#).

**ASAI**

See [Adjunct-Switch Application Interface \(ASAI\)](#).

**ASCII (American Standard Code for Information Interchange)**

The standard code for representing characters in digital form. Each character is represented by an 8-bit code (including parity bit).

**association**

A communication channel between adjunct and switch for messaging purposes. An active association is one that applies to an existing call on the switch or to an extension on the call.

**asynchronous data transmission**

A method of transmitting data in which each character is preceded by a start bit and followed by a stop bit, thus permitting data characters to be transmitted at irregular intervals. This type transmission is advantageous when transmission is not regular (characters typed at a keyboard). Also called asynchronous transmission. See also [synchronous data transmission](#).

**asynchronous data unit (ADU)**

A device that allows direct connection between RS-232C equipment and a digital switch.

**asynchronous Transfer Mode (ATM)**

A packet-like switching technology in which data is transmitted in fixed-size (53-byte) cells. ATM provides high-speed access for data communication in LAN, campus, and WAN environments.

**ATB**

See [All trunks busy \(ATB\)](#).

**ATD**

See [Attention dial \(ATD\)](#).

**attendant**

A person at a console who provides personalized service for incoming callers and voice-services users by performing switching and signaling operations. See also [attendant console](#).

**ATM**

See asynchronous Transfer Mode (ATM).

**attendant console**

The workstation used by an attendant. The attendant console allows the attendant to originate a call, answer an incoming call, transfer a call to another extension or trunk, put a call on hold, and remove a call from hold. Attendants using the console can also manage and monitor some system operations. Also called console. See also attendant.

**Attention dial (ATD)**

A command in the Hayes modem command set for asynchronous modems.

**Audio Information Exchange (AUDIX)**

A fully integrated voice-mail system. Can be used with a variety of communications systems to provide call-history data, such as subscriber identification and reason for redirection.

**AUDIX**

See Audio Information Exchange (AUDIX).

**auto-in trunk group**

Trunk group for which the CO processes all of the digits for an incoming call. When a CO seizes a trunk from an auto-in trunk group, the switch automatically connects the trunk to the destination — typically an ACD split where, if no agents are available, the call goes into a queue in which callers are answered in the order in which they arrive.

**Auto-In Work mode**

One of four agent work modes: the mode in which an agent is ready to process another call as soon as the current call is completed.

**Automatic Alternate Routing (AAR)**

A feature that routes calls to other than the first-choice route when facilities are unavailable.\*\*\*

**Automatic Callback (ACB)**

A feature that enables internal callers, upon reaching a busy extension, to have the system automatically connect and ring both parties when the called party becomes available.

**Automatic Call Distribution (ACD)**

A feature that answers calls, and then, depending on administered instructions, delivers messages appropriate for the caller and routes the call to an agent when one becomes available.

**Automatic Call Distribution (ACD) split**

A method of routing calls of a similar type among agents in a call center. Also, a group of extensions that are staffed by agents trained to handle a certain type of incoming call.

**Automatic calling unit (ACU)**

A device that places a telephone call.

**Automatic Circuit Assurance (ACA)**

A feature that tracks calls of unusual duration to facilitate troubleshooting. A high number of very short calls or a low number of very long calls may signify a faulty trunk.

**Automatic Number Identification (ANI)**

Representation of the calling number, for display or for further use to access information about the caller. Available with Signaling System 7.

**automatic restoration**

A service that restores disrupted connections between access endpoints (nonsignaling trunks) and data endpoints (devices that connect the switch to data terminal and/or communications

equipment). Restoration is done within seconds of a service disruption so that critical data applications can remain operational.

**Automatic Route Selection (ARS)**

A feature that allows the system to automatically choose the least-cost way to send a toll call.

**automatic trunk**

A trunk that does not require addressing information because the destination is predetermined. A request for service on the trunk, called a seizure, is sufficient to route the call. The normal destination of an automatic trunk is the communications-system attendant group. Also called automatic incoming trunk and automatic tie trunk.

**AUX**

Auxiliary

**auxiliary equipment**

Equipment used for optional system features, such as Loudspeaker Paging and Music-on-Hold.

**auxiliary trunk**

A trunk used to connect auxiliary equipment, such as radio-paging equipment, to a communications system.

**Aux-Work mode**

A work mode in which agents are unavailable to receive ACD calls. Agents enter Aux-Work mode when involved in non-ACD activities such as taking a break, going to lunch, or placing an outgoing call.

**AVD**

Alternate voice/data

**AWOH**

See Administration Without Hardware (AWOH).

**AWG**

American Wire Gauge

**AWT**

Average work time

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**B**

**B8ZS**

Bipolar Eight Zero Substitution.

**bandwidth**

The difference, expressed in hertz, between the defined highest and lowest frequencies in a range.

**barrier code**

A security code used with the Remote Access feature to prevent unauthorized access to the system.

**baud**

A unit of transmission rate equal to the number of signal events per second. See also bit rate and bits per second (bps).

**BCC**

See Bearer capability class (BCC).

**BCMS**

Basic Call Management System

**BCT**

See business communications terminal (BCT).

**Bearer capability class (BCC)**

Code that identifies the type of a call (for example, voice and different types of data).

Determination of BCC is based on the caller's characteristics for non-ISDN endpoints and on the Bearer Capability and Low-Layer Compatibility Information Elements of an ISDN endpoint.

Current BCCs are 0 (voice-grade data and voice), 1 (DMI mode 1, 56 kbps data transmission), 2 (DMI mode 2, synchronous/asynchronous data transmission up to 19.2 kbps) 3 (DMI mode 3, 64 kbps circuit/packet data transmission), 4 (DMI mode 0, 64 kbps synchronous data), 5 (temporary signaling connection, and 6 (wideband call, 128–1984 kbps synchronous data).

**BER**

Bit error rate

**BHCC**

Busy-hour call completions

**bit (binary digit)**

One unit of information in binary notation, having two possible values: 0 or 1.

**bits per second (bps)**

The number of binary units of information that are transmitted or received per second. See also baud and bit rate.

**bit rate**

The speed at which bits are transmitted, usually expressed in bits per second. Also called data rate. See also baud and bits per second (bps).

**BLF**

Busy Lamp Field

**BN**

Billing number

**BOS**

Bit-oriented signaling

**BPN**

Billed-party number

**bps**

See bits per second (bps).

**bridge (bridging)**

The appearance of a voice terminal's extension at one or more other voice terminals.

**BRI**

The ISDN Basic Rate Interface specification.

**bridged appearance**

A call appearance on a voice terminal that matches a call appearance on another voice terminal for the duration of a call.

**BTU**

British Thermal Unit

**buffer**

1. In hardware, a circuit or component that isolates one electrical circuit from another. Typically, a buffer holds data from one circuit or process until another circuit or process is ready to accept the data.
2. In software, an area of memory that is used for temporary storage.

**bus**

A multiconductor electrical path used to transfer information over a common connection from any of several sources to any of several destinations.

**business communications terminal (BCT)**

A digital data terminal used for business applications. A BCT can function via a data module as a special-purpose terminal for services provided by a processor or as a terminal for data entry and retrieval.

**BX.25**

A version of the CCITT X.25 protocol for data communications. BX.25 adds a fourth level to the standard X.25 interface. This uppermost level combines levels 4, 5, and 6 of the ISO reference model.

**bypass tie trunks**

A 1-way, outgoing tie trunk from a tandem switch to a main switch in an ETN. Bypass tie trunks, provided in limited quantities, are used as a last-choice route when all trunks to another tandem switch are busy. Bypass tie trunks are used only if all applicable intertandem trunks are busy.

**byte**

A sequence of (usually eight) bits processed together.

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**C**

**CACR**

Cancellation of Authorization Code Request

**cabinet**

Housing for racks, shelves, or carriers that hold electronic equipment.

**cable**

Physical connection between two pieces of equipment (for example, data terminal and modem) or between a piece of equipment and a termination field.

**cable connector**

A jack (female) or plug (male) on the end of a cable. A cable connector connects wires on a cable to specific leads on telephone or data equipment.

**CAG**

Coverage answer group

**call appearance**

1. For the attendant console, six buttons, labeled a–f, used to originate, receive, and hold calls. Two lights next to the button show the status of the call appearance.
2. For the voice terminal, a button labeled with an extension and used to place outgoing calls,

receive incoming calls, or hold calls. Two lights next to the button show the status of the call appearance.

### **call-control capabilities**

Capabilities (*Third Party Selective Hold, Third Party Reconnect, Third Party Merge*) that can be used in either of the Third Party Call Control ASE (cluster) subsets (Call Control and Domain Control).

### **Call Detail Recording (CDR)**

A feature that uses software and hardware to record call data (same as CDRU).

### **Call Detail Recording utility (CDRU)**

Software that collects, stores, optionally filters, and outputs call-detail records.

### **Call Management System (CMS)**

An application, running on an adjunct processor, that collects information from an ACD unit. CMS enables customers to monitor and manage telemarketing centers by generating reports on the status of agents, splits, trunks, trunk groups, vectors, and VDNs, and enables customers to partially administer the ACD feature for a communications system.

### **call-reference value (CRV)**

An identifier present in ISDN messages that associates a related sequence of messages. In ASAI, CRVs distinguish between associations.

### **call vector**

A set of up to 15 vector commands to be performed for an incoming or internal call.

### **callback call**

A call that automatically returns to a voice-terminal user who activated the Automatic Callback or Ringback Queuing feature.

### **call-waiting ringback tone**

A low-pitched tone identical to ringback tone except that the tone decreases in the last 0.2 seconds (in the United States). Call-waiting ringback tone notifies the attendant that the Attendant Call Waiting feature is activate and that the called party is aware of the waiting call. Tones in international countries may sound different.

### **call work code**

A number, up to 16 digits, entered by ACD agents to record the occurrence of customer-defined events (such as account codes, social security numbers, or phone numbers) on ACD calls.

### **CAMA**

Centralized Automatic Message Accounting

### **carrier**

An enclosed shelf containing vertical slots that hold circuit packs.

### **carried load**

The amount of traffic served by traffic-sensitive facilities during a given interval.

### **CARR-POW**

Carrier Port and Power Unit for AC Powered Systems

### **CAS**

Centralized Attendant Service or Call Accounting System

### **CCS or hundred call seconds**

A unit of call traffic. Call traffic for a facility is scanned every 100 seconds. If the facility is busy, it is assumed to have been busy for the entire scan interval. There are 3600 seconds per hour. The Roman numeral for 100 is the capital letter C. The abbreviation for call seconds is CS. Therefore,

100 call seconds is abbreviated CCS. If a facility is busy for an entire hour, then it is said to have been busy for 36 CCS. See also [Erlang](#).

**capability**

A request or indication of an operation. For example, *Third Party Make Call* is a request for setting up a call; *event report* is an indication that an event has occurred.

**capability group**

Set of capabilities, determined by switch administration, that can be requested by an application. Capability groups denote association types. For example, *Call Control* is a type of association that allows certain functions (the ones in the capability group) to be performed over this type of association. Also referred to as administration groups or application service elements (ASEs).

**CA-TSC**

Call-Associated Temporary Signaling Connection

**cause value**

A value is returned in response to requests or in event reports when a denial or unexpected condition occurs. ASAI cause values fall into two coding standards: Coding Standard 0 includes any cause values that are part of AT&T and CCITT ISDN specifications; Coding standard 3 includes any other ASAI cause values. This document uses a notation for cause value where the coding standard for the cause is given first, then a slash, then the cause value. Example: CS0/100 is coding standard 0, cause value 100.

**CBC**

Call-by-call or coupled bonding conductor

**CC**

Country code

**CCIS**

Common-Channel Interoffice Signaling

**CCITT**

CCITT (Comite Consultatif International Telephonique et Telegraphique), now called *International Telecommunications Union* (ITU). See [International Telecommunications Union \(ITU\)](#).

**CCMS**

Control-Channel Message Set

**CCS**

See [CCS or hundred call seconds](#).

**CCSA**

Common-Control Switching Arrangement

**CDM**

Channel-division multiplexing

**CDOS**

Customer-dialed and operator serviced

**CDR**

See [Call Detail Recording \(CDR\)](#).

**CDRP**

Call Detail Record Poller

**CDRR**

Call Detail Recording and Reporting

**CDRU**

See Call Detail Recording utility (CDRU).

**CEM**

Channel-expansion multiplexing

**center-stage switch (CSS)**

The central interface between the processor port network and expansion port networks in a CSS-connected system.

**central office (CO)**

The location housing telephone switching equipment that provides local telephone service and access to toll facilities for long-distance calling.

**central office (CO) codes**

The first three digits of a 7-digit public-network telephone number in the United States.

**central office (CO) trunk**

A telecommunications channel that provides access from the system to the public network through the local CO.

**CEPT**

European Conference of Postal and Telecommunications Rate 1

**channel**

1. A circuit-switched call.
2. A communications path for transmitting voice and data.
3. In wideband, all of the time slots (contiguous or noncontiguous) necessary to support a call. Example: an H0-channel uses six 64-kbps time slots.
4. A DS0 on a T1 or E1 facility not specifically associated with a logical circuit-switched call; analogous to a single trunk.

**channel negotiation**

The process by which the channel offered in the Channel Identification Information Element (CIIE) in the SETUP message is negotiated to be another channel acceptable to the switch that receives the SETUP message and ultimately to the switch that sent the SETUP. Negotiation is attempted only if the CIIE is encoded as *Preferred*. Channel negotiation is not attempted for wideband calls.

**CI**

Clock input

**circuit**

1. An arrangement of electrical elements through which electric current flows.
2. A channel or transmission path between two or more points.

**circuit pack**

A card on which electrical circuits are printed, and IC chips and electrical components are installed. A circuit pack is installed in a switch carrier.

**CISPR**

International Special Committee on Radio Interference

**Class of Restriction (COR)**

A feature that allows up to 64 classes of call-origination and call-termination restrictions for voice terminals, voice-terminal groups, data modules, and trunk groups. See also Class of Service (COS).

**Class of Service (COS)**

A feature that uses a number to specify if voice-terminal users can activate the Automatic Callback, Call Forwarding All Calls, Data Privacy, or Priority Calling features. See also [Class of Restriction \(COR\)](#).

**cm**

Centimeter

**CM**

Connection Manager

**CMDR**

Centralized Message Detail Recording

**CMS**

Call Management System

**CO**

See [central office \(CO\)](#).

**common-control switching arrangement (CCSA)**

A private telecommunications network using dedicated trunks and a shared switching center for interconnecting company locations.

**communications system**

The software-controlled processor complex that interprets dialing pulses, tones, and keyboard characters and makes the proper connections both within the system and external to the system. The communications system itself consists of a digital computer, software, storage device, and carriers with special hardware to perform the connections. A communications system provides voice and data communications services, including access to public and private networks, for telephones and data terminals on a customer's premises. See also [switch](#).

**confirmation tone**

A tone confirming that feature activation, deactivation, or cancellation has been accepted.

**connectivity**

The connection of disparate devices within a single system.

**console**

See [attendant console](#).

**contiguous**

Adjacent DS0s within one T1 or E1 facility or adjacent TDM or fiber time slots. The first and last TDM bus, DS0, or fiber time slots are not considered contiguous (no wraparound). For an E1 facility with a D-channel, DS0s 15 and 17 are considered contiguous.

**control cabinet**

See [control carrier](#).

**control carrier**

A carrier in a multicarrier cabinet that contains the SPE circuit packs and, unlike an R5r control carrier, port circuit packs. Also called control cabinet in a single-carrier cabinet. See also [switch-processing element \(SPE\)](#).

**controlled station**

A station that is monitored and controlled via a domain-control association.

**COR**

See [Class of Restriction \(COR\)](#).

**COS**

See Class of Service (COS).

**coverage answer group**

A group of up to eight voice terminals that ring simultaneously when a call is redirected to it by Call Coverage. Any one of the group can answer the call.

**coverage call**

A call that is automatically redirected from the called party's extension to an alternate answering position when certain coverage criteria are met.

**coverage path**

The order in which calls are redirected to alternate answering positions.

**coverage point**

An extension or attendant group, VDN, or ACD split designated as an alternate answering position in a coverage path.

**covering user**

A person at a coverage point who answers a redirected call.

**CP**

Circuit pack

**CPE**

Customer-premises equipment

**CPN**

Called-party number

**CPN/BN**

Calling-party number/billing number

**CPTR**

Call-progress-tone receiver

**CRC**

Cyclical Redundancy Checking

**critical-reliability system**

A system that has the following duplicated items: control carriers, tone clocks, EI circuit packs, and cabling between port networks and center-stage switch in a CSS-connected system. See also duplicated common control, and duplication.

**CSA**

Canadian Safety Association

**CSCC**

Compact single-carrier cabinet

**CSCN**

Center-stage control network

**CSD**

Customer-service document

**CSM**

Centralized System Management

**CSS**

See center-stage switch (CSS).

**CSSO**

Customer Services Support Organization

**CSU**

Channel service unit

**CTS**

Clear to Send

**CWC**

See [call work code](#).

---

**D**

**DAC**

1. Dial access code or Direct Agent Calling
2. See [digital-to-analog converter \(DAC\)](#).

**data channel**

A communications path between two points used to transmit digital signals.

**data-communications equipment (DCE)**

The equipment (usually a modem, data module, or packet assembler/disassembler) on the network side of a communications link that makes the binary serial data from the source or transmitter compatible with the communications channel.

**data link**

The configuration of physical facilities enabling end terminals to communicate directly with each other.

**data module**

An interconnection device between a BRI or DCP interface of the switch and data terminal equipment or data communications equipment.

**data path**

The end-to-end connection used for a data communications link. A data path is the combination of all elements of an interprocessor communication in a DCS.

**data port**

A point of access to a computer that uses trunks or lines for transmitting or receiving data.

**data rate**

See [bit rate](#).

**data service unit (DSU)**

A device that transmits digital data on transmission facilities.

**data terminal**

An input/output (I/O) device that has either switched or direct access to a host computer or to a processor interface.

**data terminal equipment (DTE)**

Equipment consisting of the endpoints in a connection over a data circuit. In a connection between a data terminal and host, the terminal, the host, and their associated modems or data modules make up the DTE.

**dB**

Decibel

**dba**

Decibels in reference to amperes.

**dBmC**

Decibels above reference noise with C filter.

**DC**

Direct current

**DCE**

Data-communications equipment

**D-channel backup**

Type of backup used with Non-Facility Associated Signaling (NFAS). A primary D-channel provides signaling for an NFAS D-channel group (two or more PRI facilities). A second D-channel, on a separate PRI facility of the NFAS D-channel group, is designated as backup for the D-channel. Failure of the primary D-channel causes automatic transfer of call-control signaling to the backup D-channel. The backup becomes the primary D-channel. When the failed channel returns to service, it becomes the backup D-channel.

**DCO**

Digital central office

**DCP**

Digital Communications Protocol

**DCS**

Distributed Communications System

**DDC**

Direct Department Calling

**DDD**

Direct Distance Dialing

**delay-dial trunk**

A trunk that allows dialing directly into a communications system (digits are received as they are dialed).

**denying a request**

Sending a negative acknowledgement (NAK), done by sending an FIE with a *return error* component (and a cause value). It should not be confused with the denial event report that applies to calls.

**designated voice terminal**

The specific voice terminal to which calls, originally directed to a certain extension, are redirected. Commonly used to mean the forwarded-to terminal when Call Forwarding All Calls is active.

**dial-repeating trunks**

A PBX tie trunk that is capable of handling PBX station-signaling information without attendant assistance.

**dial-repeating tie trunk**

A tie trunk that transmits called-party addressing information between two communications systems.

**DID**

Direct Inward Dialing

**digit conversion**

A process used to convert specific dialed numbers into other dialed numbers.

**digital**

The representation of information by discrete steps. See also analog.

**digital communications protocol (DCP)**

A proprietary protocol used to transmit both digitized voice and digitized data over the same communications link. A DCP link is made up of two 64-kbps information (I-) channels and one 8-kbps signaling (S-) channel.

**digital data endpoints**

In DEFINITY ECS, devices such as the 510D terminal or the 515-type business communications terminal (BCT).

**digital multiplexed interface (DMI)**

An interface that provides connectivity between a communications system and a host computer or between two communications systems using DS1 24th-channel signaling. DMI provides 23 64-kbps data channels and 1 common-signaling channel over a twisted-pair connection. DMI is offered through two capabilities: bit-oriented signaling (DMI-BOS) and message-oriented signaling (DMI-MOS).

**digital signal level 0 (DS0)**

A single 64-kbps voice channel. A DS0 is a single 64-kbps channel in a T1 or E1 facility and consists of eight bits in a T1 or E1 frame every 125 microseconds.

**digital signal level 1 (DS1)**

A single 1.544-Mbps (United States) or 2.048-Mbps (outside the United States) digital signal carried on a T1 transmission facility. A DS1 converter complex consists of a pair, one at each end, of DS1 converter circuit packs and the associated T1/E1 facilities.

**digital terminal data module (DTDM)**

An integrated or adjunct data module that shares with a digital telephone the same physical port for connection to a communications system. The function of a DTDM is similar to that of a PDM and MPDM in that it converts RS-232C signals to DCP signals.

**digital-to-analog converter (DAC)**

A device that converts data in digital form to the corresponding analog signals. See also analog-to-digital converter (ADC).

**digital transmission**

A mode of transmission in which information to be transmitted is first converted to digital form and then transmitted as a serial stream of pulses.

**digital trunk**

A circuit that carries digital voice and/or digital data in a telecommunications channel.

**DIOD**

Direct Inward and Outward Dialing

**direct agent**

A feature, accessed only via ASAI, that allows a call to be placed in a split queue but routed only to a specific agent in that split. The call receives normal ACD call treatment (for example, announcements) and is measured as an ACD call while ensuring that a particular agent answers.

**Direct Extension Selection (DXS)**

A feature on an attendant console that allows an attendant direct access to voice terminals by pressing a group-select button and a DXS button.

**Direct Inward Dialing (DID)**

A feature that allows an incoming call from the public network (not FX or WATS) to reach a specific telephone without attendant assistance.

**Direct Inward Dialing (DID) trunk**

An incoming trunk used for dialing directly from the public network into a communications system without help from the attendant.

**disk drive**

An electromechanical device that stores data on and retrieves data from one or more disks.

**distributed communications system (DCS)**

A network configuration linking two or more communications systems in such a way that selected features appear to operate as if the network were one system.

**DIVA**

Data In/Voice Answer

**DLC**

Data line circuit

**DLDM**

Data-line data module

**DMI**

Digital-multiplexed interface

**DND**

Do not disturb

**DNIS**

Dialed-Number Identification Service

**DOD**

Direct Outward Dialing

**domain**

VDNs, ACD splits, and stations. The VDN domain is used for active-notification associations. The ACD-split domain is for active-notification associations and domain-control associations. The station domain is used for the domain-control associations.

**domain-control association**

A *Third Party Domain Control Request* capability initiates a unique CRV/link number combination, which is referred to as a domain-control association.

**domain-controlled split**

A split for which *Third Party Domain Control* request has been accepted. A domain-controlled split provides an event report for logout.

**domain-controlled station**

A station for which a *Third Party Domain Control* request has been accepted. A domain-controlled station provides event reports for calls that are alerting, connected, or held at the station.

**domain-controlled station on a call**

A station that is active on a call, and which provides event reports over one or two domain-control associations.

**DOSS**

Delivery Operations Support System

**DOT**

Duplication Option Terminal

**DPM**

Dial Plan Manager

**DPR**

Dual-port RAM

**DS1**

Digital Signal Level 1

**DS1C**

Digital Signal Level-1 protocol C

**DS1 CONV**

Digital Signal Level-1 converter

**DSI**

Digital signal interface

**DSU**

Data service unit

**DTDM**

Digital-terminal data module

**DTE**

Data-terminal equipment

**DTGS**

Direct Trunk Group Select

**DTMF**

Dual-tone multifrequency

**DTS**

Disk-tape system

**duplicated common control**

Two processors ensuring continuous operation of a communications system. While one processor is online, the other functions as a backup. The backup processor goes online periodically or when a problem occurs.

**duplication**

The use of redundant components to improve availability. When a duplicated subsystem fails, its backup redundant system automatically takes over.

**duplication option**

A system option that duplicates the following: control carrier containing the SPE, EI circuit packs in carriers, fiber-optic cabling between port networks, and center-stage switch in a CSS-connected system.

**DWBS**

DEFINITY Wireless Business System

**DXS**

Direct extension selection

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**E**

**E1**

A digital transmission standard that carries traffic at 2.048 Mbps. The E1 facility is divided into 32 channels (DS0s) of 64 kbps information. Channel 0 is reserved for framing and synchronization information. A D-channel occupies channel 16.

**E & M**

Ear and mouth (receive and transmit)

**EA**

Expansion archangel

**EAL**

Expansion archangel link

**ear and mouth (E & M) signaling**

Trunk supervisory signaling, used between two communications systems, whereby signaling information is transferred through 2-state voltage conditions (on the E and M leads) for analog applications and through a single bit for digital applications.

**EEBCDIC**

Extended Binary-Coded Decimal Interexchange Code

**ECC**

Error Correct Code

**ECMA**

European Computer Manufacturers Association

**EPF**

Electronic power feed

**EI**

Expansion interface

**EIA**

Electronic Industries Association

**EIA-232**

A physical interface specified by the EIA. EIA-232 transmits and receives asynchronous data at speeds of up to 19.2 kbps over cable distances of up to 50 feet. EIA-232 replaces RS-232 protocol in some DEFINITY applications.

**electronic tandem network (ETN)**

A tandem tie-trunk network that has automatic call-routing capabilities based on the number dialed and the most preferred route available. Each switch in the network is assigned a unique private network office code (RNX), and each voice terminal is assigned a unique extension.

**Electronics Industries Association (EIA)**

A trade association of the electronics industry that establishes electrical and functional standards.

**emergency transfer**

If a major system failure occurs, automatic transfer is initiated to a group of telephones capable of making outgoing calls. The system operates in this mode until the failure is repaired and the system automatically returns to normal operation. Also called power-failure transfer.

**EMI**

Electromagnetic interference

**end-to-end signaling**

The transmission of touch-tone signals generated by dialing from a voice terminal to remote computer equipment. These digits are sent over the trunk as DTMF digits whether the trunk signaling type is marked as tone or rotary and whether the originating station is tone or rotary. Example: a call to a voice-mail machine or automated-attendant service. A connection is first established over an outgoing trunk. Then additional digits are dialed to transmit information to be processed by the computer equipment.

**enhanced private-switched communications service (EPSCS)**

An analog private telecommunications network based on the No. 5 crossbar and 1A ESS that provides advanced voice and data telecommunications services to companies with many locations.

**EPN**

Expansion-port network

**EPROM**

Erasable programmable read-only memory

**EPSCS**

Enhanced Private Switched Communications Services

**ERL**

Echo return loss

**Erlang**

A unit of traffic intensity, or load, used to express the amount of traffic needed to keep one facility busy for one hour. One Erlang is equal to 36 CCS. See also [CCS or hundred call seconds](#).

**ESF**

Extended superframe format

**ESPA**

European Standard Paging Access

**ETA**

Extended Trunk Access; also Enhanced Terminal Administration

**ETN**

Electronic tandem network

**ETSI**

European Telecommunications Standards Institute

**expansion archangel (EAA)**

A network-control microprocessor located on an expansion interface (EI) port circuit pack in an expansion port network. The EA provides an interface between the EPN and its controlling switch-processing element.

**expansion-archangel link (EAL)**

A link-access function on the D-channel (LAPD) logical link that exists between a switch-processing element and an expansion archangel (EA). The EAL carries control messages from the SPE to the EA and to port circuit packs in an expansion port network.

**expansion control cabinet**

See expansion control carrier.

**expansion control carrier**

A carrier in a multicarrier cabinet that contains extra port circuit packs and a maintenance interface. Also called expansion control cabinet in a single-carrier cabinet.

**expansion interface (EI)**

A port circuit pack in a port network that provides the interface between a PN's TDM bus/ packet bus and a fiber-optic link. The EI carries circuit-switched data, packet-switched data, network control, timing control, and DS1 control. In addition, an EI in an expansion port network communicates with the master maintenance circuit pack to provide the EPN's environmental and alarm status to the switch-processing element.

**expansion port network (EPN)**

A port network (PN) that is connected to the TDM bus and packet bus of a processor port network (PPN). Control is achieved by indirect connection of the EPN to the PPN via a port-network link (PNL). See also port network (PN).

**extension-in**

Extension-In (ExtIn) is the work state agents go into when they answer (receive) a non-ACD call. If the agent is in Manual-In or Auto-In and receives an extension-in call, it is recorded by CMS as an AUX-In call.

**extension-out**

The work state that agents go into when they place (originate) a non-ACD call.

**external measurements**

Those ACD measurements that are made by the External CMS adjunct.

**extension**

A 1- to 5-digit number by which calls are routed through a communications system or, with a Uniform Dial Plan (UDP) or main-satellite dialing plan, through a private network.

**external call**

A connection between a communications system user and a party on the public network or on another communications system in a private network.

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**F**

**FAC**

Feature Access Code

**facility**

A telecommunications transmission pathway and associated equipment.

**facility-associated signaling (FAS)**

Signaling for which a D-channel carries signaling only for those channels on the same physical interface.

**FAS**

Facility-associated signaling

**FAT**

Facility access trunk

**FAX**

Facsimile

**FCC**

Federal Communications Commission

**FEAC**

Forced Entry of Account Codes

**feature**

A specifically defined function or service provided by the system.

**feature button**

A labeled button on a telephone or attendant console used to access a specific feature.

**FEP**

Front-end processor

**FIC**

Facility interface codes

**fiber optics**

A technology using materials that transmit ultrawideband electromagnetic light-frequency ranges for high-capacity carrier systems.

**fixed**

A trunk allocation term. In the fixed allocation scheme, the time slots necessary to support a wideband call are contiguous, and the first time slot is constrained to certain starting points.

**flexible**

A trunk allocation term. In the flexible allocation scheme, the time slots of a wideband call can occupy noncontiguous positions within a single T1 or E1 facility.

**floating**

A trunk allocation term. In the floating allocation scheme, the time slots of a wideband call are contiguous, but the position of the first time slot is not fixed.

**FNPA**

Foreign Numbering-Plan Area

**foreign-exchange (FX)**

A CO other than the one providing local access to the public telephone network.

**foreign-exchange trunk**

A telecommunications channel that directly connects the system to a CO other than its local CO.

**foreign numbering-plan area code (FNPAC)**

An area code other than the local area code, that must be dialed to call outside the local geographical area.

**FRL**

Facilities Restriction Level

**FX**

Foreign exchange

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## G

### **G3-MA**

Generic 3 Management Applications

### **G3-MT**

Generic 3 Management Terminal

### **G3r**

Generic 3, RISC (Reduced Instruction Set Computer)

### **generalized route selection (GRS)**

An enhancement to Automatic Alternate Routing/Automatic Route Selection (AAR/ARS) that performs routing based on call attributes, such as Bearer Capability Classes (BCCs), in addition to the address and facilities restriction level (FRL), thus facilitating a Uniform Dial Plan (UDP) that is independent of the type of call being placed.

### **glare**

The simultaneous seizure of a 2-way trunk by two communications systems, resulting in a standoff.

### **GM**

Group manager

### **GPTR**

General-purpose tone receiver

### **grade of service**

The number of call attempts that fail to receive service immediately. Grade of service is also expressed as the quantity of all calls that are blocked or delayed.

### **ground-start trunk**

A trunk on which, for outgoing calls, the system transmits a request for services to a distant switching system by grounding the trunk ring lead. To receive the digits of the called number, that system grounds the trunk tip lead. When the system detects this ground, the digits are sent.

### **GRS**

Generalized Route Selection

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## H

### **H0**

An ISDN information transfer rate for 384-kbps data defined by CCITT and ANSI standards.

### **H11**

An ISDN information transfer rate for 1536-kbps data defined by CCITT and ANSI standards.

### **H12**

An ISDN information transfer rate for 1920-kbps data defined by CCITT and ANSI standards.

### **handshaking logic**

A format used to initiate a data connection between two data module devices.

**hertz (Hz)**

A unit of frequency equal to one cycle per second.

**high-reliability system**

A system having the following: two control carriers, duplicate expansion interface (EI) circuit packs in the PPN (in R5r with CSS), and duplicate switch node clock circuit packs in the switch node (SN) carriers. See also duplicate common control, duplication, duplication option, and critical-reliability system.

**HNPA**

See home numbering-plan area code (HNPA).

**holding time**

The total length of time in minutes and seconds that a facility is used during a call.

**home numbering-plan area code (HNPA)**

The local area code. The area code does not have to be dialed to call numbers within the local geographical area.

**hop**

Nondirect communication between two switch communications interfaces (SCI) where the SCI message passes automatically without intermediate processing through one or more intermediate SCIs.

**host computer**

A computer, connected to a network, that processes data from data-entry devices.

**hunt group**

A group of extensions that are assigned the Station Hunting feature so that a call to a busy extension reroutes to an idle extension in the group. See also ACD work mode.

**Hz**

See hertz (Hz).

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**I**

**I1**

The first information channel of DCP.

**I2**

The second information channel of DCP.

**I2 Interface**

A proprietary interface used for the DEFINITY Wireless Business System for the radio-controller circuit packs. Each interface provides communication between the radio-controller circuit pack and up to two wireless fixed bases.

**I3 Interface**

A proprietary interface used for the DEFINITY Wireless Business System for the cell antenna units. Each wireless fixed base can communicate to up to four cell antenna units.

**IAS**

Inter-PBX Attendant Service

**ICC**

Intercabinet cable or intercarrier cable

**ICD**

Inbound Call Director

**ICDOS**

International Customer-Dialed Operator Service

**ICHT**

Incoming call-handling table

**ICI**

Incoming call identifier

**ICM**

Inbound Call Management

**IDDD**

International Direct Distance Dialing

**IDF**

Intermediate distribution frame

**IE**

Information element

**immediate-start tie trunk**

A trunk on which, after making a connection with a distant switching system for an outgoing call, the system waits a nominal 65 ms before sending the digits of the called number. This allows time for the distant system to prepare to receive digits. On an incoming call, the system has less than 65 ms to prepare to receive the digits.

**IMT**

Intermachine trunk

**in**

Inch

**INADS**

Initialization and Administration System

**incoming gateway**

A PBX that routes an incoming call on a trunk *not* administered for Supplementary Services Protocol B to a trunk *not* administered for Supplementary Services Protocol B.

**information exchange**

The exchange of data between users of two different systems, such as the switch and a host computer, over a LAN.

**Information Systems Network (ISN)**

A WAN and LAN with an open architecture combining host computers, minicomputers, word processors, storage devices, PCs, high-speed printers, and nonintelligent terminals into a single packet-switching system.

**INS**

ISDN Network Service

**inside call**

A call placed from one telephone to another within the local communications system.

**Integrated Services Digital Network (ISDN)**

A public or private network that provides end-to-end digital communications for all services to which users have access by a limited set of standard multipurpose user-network interfaces defined by the CCITT. Through internationally accepted standard interfaces, ISDN provides digital circuit-switched or packet-switched communications within the network and links to other ISDNs to provide national and international digital communications. See also [Integrated Services Digital Network Basic Rate Interface \(ISDN-BRI\)](#) and [Integrated Services Digital Network Primary Rate Interface \(ISDN-PRI\)](#).

**Integrated Services Digital Network Basic Rate Interface (ISDN-BRI)**

The interface between a communications system and terminal that includes two 64-kbps B-channels for transmitting voice or data and one 16-kbps D-channel for transmitting associated B-channel call control and out-of-band signaling information. ISDN-BRI also includes 48 kbps for transmitting framing and D-channel contention information, for a total interface speed of 192 kbps. ISDN-BRI serves ISDN terminals and digital terminals fitted with ISDN terminal adapters. See also [Integrated Services Digital Network \(ISDN\)](#) and [Integrated Services Digital Network Primary Rate Interface \(ISDN-PRI\)](#).

**Integrated Services Digital Network Primary Rate Interface (ISDN-PRI)**

The interface between multiple communications systems that in North America includes 24 64-kbps channels, corresponding to the North American digital signal level-1 (DS1) standard rate of 1.544 Mbps. The most common arrangement of channels in ISDN-PRI is 23 64-kbps B-channels for transmitting voice and data and 1 64-kbps D-channel for transmitting associated B-channel call control and out-of-band signaling information. With nonfacility-associated signaling (NFAS), ISDN-PRI can include 24 B-channels and no D-channel. See also [Integrated Services Digital Network \(ISDN\)](#) and [Integrated Services Digital Network Basic Rate Interface \(ISDN-BRI\)](#).

**intercept tone**

An tone that indicates a dialing error or denial of the service requested.

**interface**

A common boundary between two systems or pieces of equipment.

**internal call**

A connection between two users within a system.

**International Telecommunications Union (ITU)**

Formerly known as International Telegraph and Telephone Consultative Committee (CCITT), ITU is an international organization that sets universal standards for data communications, including ISDN. ITU members are from telecommunications companies and organizations around the world. See also [BX.25](#).

**International Telegraph and Telephone Consultative Committee**

See [International Telecommunications Union \(ITU\)](#).

**interflow**

The ability for calls to forward to other splits on the same PBX or a different PBX using the Call Forward All Calls feature.

**intraflow**

The ability for calls to redirect to other splits on the same PBX on a conditional or unconditional basis using call coverage busy, don't answer, or all criteria.

**internal measurements**

BCMS measurements that are made by the system. ACD measurements that are made external to the system (via External CMS) are referred to as external measurements.

**in-use lamp**

A red light on a multiappearance voice terminal that lights to show which call appearance will be selected when the handset is lifted or which call appearance is active when a user is off-hook.

**INWATS**

Inward Wide Area Telephone Service

**IO**

Information outlet

**ISDN**

See Integrated Services Digital Network (ISDN).

**ISDN Gateway (IG)**

A feature allowing integration of the switch and a host-based telemarketing application via a link to a gateway adjunct. The gateway adjunct is a 3B-based product that notifies the host-based telemarketing application of call events.

**ISDN trunk**

A trunk administered for use with ISDN-PRI. Also called ISDN facility.

**ISDN-PRI terminal adapter**

An interface between endpoint applications and an ISDN PRI facility. ISDN-PRI terminal adapters are currently available from other vendors and are primarily designed for video conferencing applications. Accordingly, currently available terminal adapters adapt the two pairs of video codec data (V.35) and dialing (RS-366) ports to an ISDN PRI facility.

**IS/DTT**

Integrated Services/digital tie trunk

**ISN**

Information Systems Network

**ISO**

International Standards Organization

**ISV**

Independent software vendor

**ITP**

Installation test procedure

**ITU**

International Telecommunications Union

**IXC**

Interexchange carrier code

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**K****kHz**

Kilohertz

**kbps**

Kilobits per second

**kbyte**

Kilobyte

**kg**

Kilogram

---

**L**

**LAN**

Local area network

**LAP-D**

Link Access Procedure on the D-channel

**LAPD**

Link Access Procedure data

**LATA**

Local access and transport area

**lb**

Pound

**LBO**

Line buildout

**LDN**

Listed directory number

**LDS**

Long-distance service

**LEC**

Local exchange carrier

**LED**

See [light-emitting diode \(LED\)](#).

**light-emitting diode (LED)**

A semiconductor device that produces light when voltage is applied. LEDs provide a visual indication of the operational status of hardware components, the results of maintenance tests, the alarm status of circuit packs, and the activation of telephone features.

**lightwave transceiver**

Hardware that provides an interface to fiber-optic cable from port circuit packs and DS1 converter circuit packs. Lightwave transceivers convert electrical signals to light signals and vice versa.

**line**

A transmission path between a communications system or CO switching system and a voice terminal or other terminal.

**line appearance**

See [appearance](#).

**line buildout**

A selectable output attenuation is generally required of DTE equipment because T1 circuits require the last span to lose 15–22.5 dB.

**line port**

Hardware that provides the access point to a communications system for each circuit associated with a telephone or data terminal.

**link**

A transmitter-receiver channel that connects two systems.

**link-access procedure on the D-channel (LAPD)**

A link-layer protocol on the ISDN-BRI and ISDN-PRI data-link layer (level 2). LAPD provides data transfer between two devices, and error and flow control on multiple logical links. LAPD is used for signaling and low-speed packet data (X.25 and mode 3) on the signaling (D-) channel and for mode-3 data communications on a bearer (B-) channel.

**LINL**

Local indirect neighbor link

**local area network (LAN)**

A networking arrangement designed for a limited geographical area. Generally, a LAN is limited in range to a maximum of 6.2 miles and provides high-speed carrier service with low error rates. Common configurations include daisy chain, star (including circuit-switched), ring, and bus.

**logical link**

The communications path between a processor and a BRI terminal.

**loop-start trunk**

A trunk on which, after establishing a connection with a distant switching system for an outgoing call, the system waits for a signal on the loop formed by the trunk leads before sending the digits of the called number.

**LSU**

Local storage unit

**LWC**

Leave Word Calling

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**M**

**MAC**

Medium access

**MADU**

Modular asynchronous data unit

**main distribution frame (MDF)**

A device that mounts to the wall inside the system equipment room. The MDF provides a connection point from outside telephone lines to the PBX switch and to the inside telephone stations.

**main-satellite-tributary**

A private network configuration that can either stand alone or access an ETN. A main switch provides interconnection, via tie trunks, with one or more subtending switches, called satellites; all attendant positions for the main/satellite configuration; and access to and from the public network. To a user outside the complex, a main/satellite configuration appears as one switch, with

one listed directory number (LDN). A tributary switch is connected to the main switch via tie trunks, but has its own attendant positions and LDN.

**maintenance**

Activities involved in keeping a telecommunications system in proper working condition: the detection and isolation of software and hardware faults, and automatic and manual recovery from these faults.

**management terminal**

The terminal that is used by the system administrator to administer the switch. The terminal may also be used to access the BCMS feature.

**major alarm**

An indication of a failure that has caused critical degradation of service and requires immediate attention. Major alarms are automatically displayed on LEDs on the attendant console and maintenance or alarming circuit pack, logged to the alarm log, and reported to a remote maintenance facility, if applicable.

**Manual-In work mode**

One of four agent work modes: the mode in which an agent is ready to process another call manually. See Auto-In Work mode for a contrast.

**MAP**

Maintenance action process

**MAPD**

Multiapplication platform for DEFINITY

**MA-UII**

Message-Associated User-to-User Signaling

**Mbps**

Megabits per second

**M-Bus**

Memory bus

**Mbyte**

Megabyte

**MCC**

Multicarrier cabinet

**MCS**

Message Center Service

**MCT**

Malicious Call Trace

**MCU**

Multipoint control unit

**MDF**

Main distribution frame

**MDM**

Modular data module

**MDR**

Message detail record

**MEM**

Memory

**memory**

A device into which information can be copied and held, and from which information can later be obtained.

**memory shadowing link**

An operating-system condition that provides a method for memory-resident programs to be more quickly accessed, allowing a system to reboot faster.

**message center**

An answering service that supplies agents to and stores messages for later retrieval.

**message center agent**

A member of a message-center hunt group who takes and retrieves messages for voice-terminal users.

**MET**

Multibutton electronic telephone

**MF**

Multifrequency

**MFB**

Multifunction board

**MFC**

Multifrequency code

**MHz**

Megahertz

**MIM**

Management information message

**minor alarm**

An indication of a failure that could affect customer service. Minor alarms are automatically displayed on LEDs on the attendant console and maintenance or alarming circuit pack, sent to the alarm log, and reported to a remote maintenance facility, if applicable.

**MIPS**

Million instructions per second

**MIS**

Management information system

**MISCID**

Miscellaneous identification

**MMCS**

Multimedia Call Server

**MMCH**

Multimedia call handling

**MMI**

Multimedia interface

**MMS**

Material Management Services

**MO**

Maintenance object

**modem**

A device that converts digital data signals to analog signals for transmission over telephone circuits. The analog signals are converted back to the original digital data signals by another modem at the other end of the circuit.

**modem pooling**

A capability that provides shared conversion resources (modems and data modules) for cost-effective access to analog facilities by data terminals. When needed, modem pooling inserts a conversion resource into the path of a data call. Modem pooling serves both outgoing and incoming calls.

**modular processor data module (MPDM)**

A processor data module (PDM) that can be configured to provide several kinds of interfaces (RS-232C, RS-449, and V.35) to customer-provided data terminal equipment (DTE). See also [processor data module \(PDM\)](#).

**modular trunk data module (MTDM)**

A trunk data module that can be configured to provide several kinds of interfaces (RS-232, RS-449, and V.35) to customer-provided data terminal equipment.

**modulator-demodulator**

See [modem](#).

**monitored call**

See [active-notification call](#).

**MOS**

Message-oriented signaling

**MPDM**

Modular processor data module

**MS**

Message server

**ms**

Millisecond

**MS/T**

Main satellite/tributary

**MSA**

Message servicing adjunct

**MSG**

Message service

**MSL**

Material stocking location

**MSM**

Modular System Management

**MSS**

Mass storage system

**MSSNET**

Mass storage/network control

**MT**

Management terminal

**MTDM**

Modular trunk data module

**MTP**

Maintenance tape processor

**MTT**

Multitasking terminal

**multiappearance voice terminal**

A terminal equipped with several call-appearance buttons for the same extension, allowing the user to handle more than one call on that same extension at the same time.

**Multicarrier cabinet**

A structure that holds one to five carriers. See also [single-carrier cabinet](#).

**Multifrequency Compelled (MFC) Release 2 (R2) signaling**

A signal consisting of two frequency components, such that when a signal is transmitted from a switch, another signal acknowledging the transmitted signal is received by the switch. R2 designates signaling used in the United States and in countries outside the United States.

**multiplexer**

A device used to combine a number of individual channels into a single common bit stream for transmission.

**multiplexing**

A process whereby a transmission facility is divided into two or more channels, either by splitting the frequency band into a number of narrower bands or by dividing the transmission channel into successive time slots. See also [time-division multiplexing \(TDM\)](#).

**multirate**

The new N x DS0 service (see N x DS0).

**MWL**

Message-waiting lamp

---

## N

**N+1**

Method of determining redundant backup requirements. Example: if four rectifier modules are required for a DC-powered single-carrier cabinet, a fifth rectifier module is installed for backup.

**N x DS0**

N x DS0, equivalently referred to as N x 64 kbps, is an emerging standard for wideband calls separate from H0, H11, and H12 ISDN channels. The emerging N x DS0 ISDN multirate circuit mode bearer service will provide circuit-switched calls with data-rate multiples of 64 kbps up to 1536 kbps on a T1 facility or up to 1920 kbps on an E1 facility. In the switch, N x DS0 channels will range up to 1984 kbps using NFAS E1 interfaces.

**NANP**

North American Numbering Plan

**narrowband**

A circuit-switched call at a data rate up to and including 64 kbps. All nonwideband switch calls are considered narrowband.

**native terminal support**

A predefined terminal type exists in switch software, eliminating the need to alias the terminal (that is, manually map call appearances and feature buttons onto some other natively supported terminal type).

**NAU**

Network access unit

**NCA/TSC**

Noncall-associated/temporary-signaling connection

**NCOSS**

Network Control Operations Support Center

**NCSO**

National Customer Support Organization

**NEC**

National Engineering Center

**NEMA**

National Electrical Manufacturer's Association

**NETCON**

Network-control circuit pack

**network**

A series of points, nodes, or stations connected by communications channels.

**network-specific facility (NSF)**

An information element in an ISDN-PRI message that specifies which public-network service is used. NSF applies only when Call-by-Call Service Selection is used to access a public-network service.

**network interface**

A common boundary between two systems in an interconnected group of systems.

**NFAS**

See Nonfacility-associated signaling (NFAS).

**NI**

Network interface

**NID**

Network Inward Dialing

**NM**

Network management

**NN**

National number

**node**

A switching or control point for a network. Nodes are either tandem (they receive signals and pass them on) or terminal (they originate or terminate a transmission path).

**Nonfacility-associated signaling (NFAS)**

A method that allows multiple T1 and/or E1 facilities to share a single D-channel to form an ISDN-PRI. If D-channel backup is not used, one facility is configured with a D-channel, and the other facilities that share the D-channel are configured without D-channels. If D-channel backup is used, two facilities are configured to have D-channels (one D-channel on each facility), and the other facilities that share the D-channels are configured without D-channels.

**NPA**

Numbering-plan area

**NPE**

Network processing element

**NQC**

Number of queued calls

**NSE**

Night-service extension

**NSU**

Network sharing unit

**null modem cable**

Special wiring of an RS-232-C cable such that a computer can talk to another computer (or to a printer) without a modem.

**NXX**

Public-network office code

---

**O**

**OA**

Operator assisted

**occurrence**

See appearance.

**OCM**

Outbound Call Management

**offered load**

The traffic that would be generated by all the requests for service occurring within a monitored interval, usually one hour.

**ONS**

On-premises station

**OPS**

Off-premises station

**OPX**

Off-premises extension

**OQT**

Oldest queued time

**OSHA**

Occupational Safety and Health Act

**OSI**

Open Systems Interconnect

**OSS**

Operations Support System

**OSSI**

Operational Support System Interface

**OTDR**

Optical time-domain reflectometer

**othersplit**

The work state that indicates that an agent is currently active on another split's call, or in ACW for another split.

**OTQ**

Outgoing trunk queuing

**outgoing gateway**

A PBX that routes an incoming call on a trunk administered for Supplementary Services Protocol B to a trunk *not* administered for Supplementary Services Protocol B.

---

**P**

**PACCON**

Packet control

**packet**

A group of bits (including a message element, which is the data, and a control information element (IE), which is the header) used in packet switching and transmitted as a discrete unit. In each packet, the message element and control IE are arranged in a specified format. See also **packet bus** and **packet switching**.

**packet bus**

A wide-bandwidth bus that transmits packets.

**packet switching**

A data-transmission technique whereby user information is segmented and routed in discrete data envelopes called packets, each with its own appended control information, for routing, sequencing, and error checking. Packet switching allows a channel to be occupied only during the transmission of a packet. On completion of the transmission, the channel is made available for the transfer of other packets. See also **BX.25** and **packet**.

**PAD**

Packet assembly/disassembly

**paging trunk**

A telecommunications channel used to access an amplifier for loudspeaker paging.

**party/extension active on call**

A party is on the call if he or she is actually connected to the call (in active talk or in held state). An originator of a call is always a party on the call. Alerting parties, busy parties, and tones are not parties on the call.

**PBX**

Private branch exchange

**PC**

See personal computer (PC).

**PCM**

See pulse-code modulation (PCM).

**PCOL**

Personal central-office line

**PCOLG**

Personal central-office line group

**PCS**

Permanent switched calls

**PDM**

See processor data module (PDM).

**PDS**

Premises Distribution System

**PE**

Processing element

**PEC**

Price element code

**PEI**

Processor element interchange

**personal computer (PC)**

A personally controllable microcomputer.

**PGATE**

Packet gateway

**PGN**

Partitioned group number

**PI**

Processor interface

**PIB**

Processor interface board

**pickup group**

A group of individuals authorized to answer any call directed to an extension within the group.

**PIDB**

Product image database

**PKTINT**

Packet interface

**PL**

Private line

**PLS**

Premises Lightwave System

**PMS**

Property Management System

**PN**

Port network

**PNA**

Private network access

**POE**

Processor occupancy evaluation

**POP**

Point of presence

**port**

A data- or voice-transmission access point on a device that is used for communicating with other devices.

**port carrier**

A carrier in a multicarrier cabinet or a single-carrier cabinet containing port circuit packs, power units, and service circuits. Also called a port cabinet in a single-carrier cabinet.

**port network (PN)**

A cabinet containing a TDM bus and packet bus to which the following components are connected: port circuit packs, one or two tone-clock circuit packs, a maintenance circuit pack, service circuit packs, and (optionally) up to four expansion interface (EI) circuit packs in DEFINITY ECS. Each PN is controlled either locally or remotely by a switch processing element (SPE). See also expansion port network (EPN) and processor port network (PPN).

**port-network connectivity**

The interconnection of port networks (PNs), regardless of whether the configuration uses direct or switched connectivity.

**PPM**

1. Parts per million
2. Periodic pulse metering

**PPN**

See processor port network (PPN).

**PRI**

See Primary Rate Interface (PRI).

**primary extension**

The main extension associated with the physical voice or data terminal.

**Primary Rate Interface (PRI)**

A standard ISDN frame format that specifies the protocol used between two or more communications systems. PRI runs at 1.544 Mbps and, as used in North America, provides 23 64-kbps B-channels (voice or data) and one 64-kbps D-channel (signaling). The D-channel is the 24th channel of the interface and contains multiplexed signaling information for the other 23 channels.

**PRI endpoint (PE)**

The wideband switching capability introduces PRI endpoints on switch line-side interfaces. A PRI endpoint consists of one or more contiguous B-channels on a line-side T1 or E1 ISDN PRI facility and has an extension. Endpoint applications have call-control capabilities over PRI endpoints.

**principal**

A terminal that has its primary extension bridged on one or more other terminals.

**principal (user)**

A person to whom a telephone is assigned and who has message-center coverage.

**private network**

A network used exclusively for the telecommunications needs of a particular customer.

**private network office code (RNX)**

The first three digits of a 7-digit private network number.

**PROCR**

Processor

**processor carrier**

See control carrier.

**processor data module (PDM)**

A device that provides an RS-232C DCE interface for connecting to data terminals, applications processors (APs), and host computers, and provides a DCP interface for connection to a communications system. See also modular processor data module (MPDM).

**processor port network (PPN)**

A port network controlled by a switch-processing element that is directly connected to that PN's TDM bus and LAN bus. See also port network (PN).

**processor port network (PPN) control carrier**

A carrier containing the maintenance circuit pack, tone/clock circuit pack, and SPE circuit packs for a processor port network (PPN) and, optionally, port circuit packs.

**Property Management System (PMS)**

A stand-alone computer used by lodging and health-services organizations for services such as reservations, housekeeping, and billing.

**protocol**

A set of conventions or rules governing the format and timing of message exchanges to control data movement and correction of errors.

**PSC**

Premises service consultant

**PSDN**

Packet-switch public data network

**PT**

Personal terminal

**PTC**

Positive temperature coefficient

**PTT**

Postal Telephone and Telegraph

**public network**

The network that can be openly accessed by all customers for local and long-distance calling.

**pulse-code modulation (PCM)**

An extension of pulse-amplitude modulation (PAM) in which carrier-signal pulses modulated by an analog signal, such as speech, are quantized and encoded to a digital, usually binary, format.

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**Q**

**QPPCN**

Quality Protection Plan Change Notice

**quadrant**

A group of six contiguous DS0s in fixed locations on an ISDN-PRI facility. Note that this term comes from T1 terminology (one-fourth of a T1), but there are five quadrants on an E1 ISDN-PRI facility (30B + D).

**queue**

An ordered sequence of calls waiting to be processed.

**queuing**

The process of holding calls in order of their arrival to await connection to an attendant, to an answering group, or to an idle trunk. Calls are automatically connected in first-in, first-out sequence.

---

**R**

**RAM**

See *random-access memory (RAM)*.

**random-access memory (RAM)**

A storage arrangement whereby information can be retrieved at a speed independent of the location of the stored information.

**RBS**

Robbed-bit signaling

**RC**

Radio controller

**RCL**

Restricted call list

**read-only memory (ROM)**

A storage arrangement primarily for information-retrieval applications.

**recall dial tone**

Tones signalling that the system has completed a function (such as holding a call) and is ready to accept dialing.

**redirection criteria**

Information administered for each voice terminal's coverage path that determines when an incoming call is redirected to coverage.

**Redirection on No Answer**

An optional feature that redirects an unanswered ringing ACD call after an administered number of rings. The call is then redirected back to the agent.

**remote home numbering-plan area code (RHNPA)**

A foreign numbering-plan area code that is treated as a home area code by the Automatic Route Selection (ARS) feature. Calls can be allowed or denied based on the area code and the dialed CO code rather than just the area code. If the call is allowed, the ARS pattern used for the call is determined by these six digits.

**Remote Operations Service Element (ROSE)**

A CCITT and ISO standard that defines a notation and services that support interactions between the various entities that make up a distributed application.

**REN**

Ringer equivalency number

**reorder tone**

A tone to signal that at least one of the facilities, such as a trunk or a digit transmitter, needed for the call was not available.

**report scheduler**

Software that is used in conjunction with the system printer to schedule the days of the week and time of day that the desired reports are to be printed.

**RFP**

Request for proposal

**RHNPA**

See remote home numbering-plan area code (RHNPA).

**RINL**

Remote indirect neighbor link

**RISC**

Reduced-instruction-set computer

**RLT**

Release-link trunk

**RMATS**

Remote Maintenance, Administration, and Traffic System

**RNX**

Route-number index (private network office code)

**ROM**

See read-only memory (ROM).

**RPN**

Routing-plan number

**RS-232C**

A physical interface specified by the Electronic Industries Association (EIA). RS-232C transmits and receives asynchronous data at speeds of up to 19.2 kbps over cable distances of up to 50 feet.

**RS-449**

Recommended Standard 449

**RSC**  
Regional Support Center

**ROSE**  
See Remote Operations Service Element (ROSE).

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## **S**

**S1**  
The first logical signalling channel of DCP. The channel is used to provide signaling information for DCP's I1 channel.

**S2**  
The second logical signaling channel of DCP. The channel is used to provide signaling information for DCP's I2 channel.

**SABM**  
Set Asynchronous Balance Mode

**SAC**  
Send All Calls

**SAKI**  
See sanity and control interface (SAKI).

**sanity and control interface (SAKI)**  
A custom VLSI microchip located on each port circuit pack. The SAKI provides address recognition, buffering, and synchronization between the angel and the five control time slots that make up the control channel. The SAKI also scans and collects status information for the angel on its port circuit pack and, when polled, transmits this information to the archangel.

**SAT**  
System access terminal

**SCC**  
1. See single-carrier cabinet.  
2. Serial communications controller

**SCD**  
Switch-control driver

**SCI**  
Switch communications interface

**SCO**  
System control office

**SCOTCH**  
Switch Conferencing for TDM Bus in Concentration Highway

**SCSI**  
See small computer system interface (SCSI).

**SDDN**  
Software-Defined Data Network

**SDI**

Switched Digital International

**SDLC**

Synchronous data-link control

**SDN**

Software-defined network

**SFRL**

Single-frequency return loss

**SID**

Station-identification number

**simplex system**

A system that has no redundant hardware.

**simulated bridged appearance**

The same as a temporary bridged appearance; allows the terminal user (usually the principal) to bridge onto a call that had been answered by another party on his or her behalf.

**single-carrier cabinet**

A combined cabinet and carrier unit that contains one carrier. See also [Multicarrier cabinet](#).

**single-line voice terminal**

A voice terminal served by a single-line tip and ring circuit (models 500, 2500, 7101A, 7103A).

**SIT**

Special-information tones

**small computer system interface (SCSI)**

An ANSI bus standard that provides a high-level command interface between host computers and peripheral devices.

**SMDR**

Station Message Detail Recording

**SN**

Switch Node

**SNA**

Systems Network Architecture

**SNC**

Switch Node Clock

**SNI**

Switch Node Interface

**SNMP**

Simple Network Management Protocol

**software**

A set of computer programs that perform one or more tasks.

**SPE**

Switch Processing Element

**SPID**

Service Profile Identifier

**split**

See [ACD work mode](#).

**split condition**

A condition whereby a caller is temporarily separated from a connection with an attendant. A split condition automatically occurs when the attendant, active on a call, presses the start button.

**split number**

The split's identity to the switch and BCMS.

**split report**

A report that provides historical traffic information for internally measured splits.

**split (agent) status report**

A report that provides real-time status and measurement data for internally measured agents and the split to which they are assigned.

**SSI**

Standard serial interface

**SSM**

Single-site management

**SSV**

Station service

**ST3**

Stratum 3 clock board

**staffed**

Indicates that an agent position is logged in. A staffed agent functions in one of four work modes: Auto-In, Manual-In, ACW, or AUX-Work.

**STARLAN**

Star-Based Local Area Network

**Station Message Detail Recording (SMDR)**

An obsolete term now called CDR — a switch feature that uses software and hardware to record call data. See [Call Detail Recording \(CDR\)](#).

**standard serial interface (SSI)**

A communications protocol developed for use with 500-type business communications terminals (BCTs) and 400-series printers.

**status lamp**

A green light that shows the status of a call appearance or a feature button by the state of the light (lit, flashing, fluttering, broken flutter, or unlit).

**stroke counts**

A method used by ACD agents to record up to nine customer-defined events per call when CMS is active.

**SVN**

Security-violation notification

**switch**

Any kind of telephone switching system. See also [communications system](#).

**switchhook**

The buttons located under the receiver on a voice terminal.

**switch-node (SN) carrier**

A carrier containing a single switch node, power units, and, optionally, one or two DS1 converter circuit packs. An SN carrier is located in a center-stage switch.

**switch-node (SN) clock**

The circuit pack in an SN carrier that provides clock and maintenance alarm functions and environmental monitors.

**switch-node interface (SNI)**

The basic building block of a switch node. An SNI circuit pack controls the routing of circuit, packet, and control messages.

**switch-node link (SNL)**

The hardware that provides a bridge between two or more switch nodes. The SNL consists of the two SNI circuit packs residing on the switch nodes and the hardware connecting the SNIs. This hardware can include lightwave transceivers that convert the SNI's electrical signals to light signals, the copper wire that connects the SNIs to the lightwave transceivers, a full-duplex fiber-optic cable, DS1 converter circuit cards and DS1 facilities if a company does not have rights to lay cable, and appropriate connectors.

**switch-processing element (SPE)**

A complex of circuit packs (processor, memory, disk controller, and bus-interface cards) mounted in a PPN control carrier. The SPE serves as the control element for that PPN and, optionally, for one or more EPNs.

**SXS**

Step-by-step

**synchronous data transmission**

A method of sending data in which discrete signal elements are sent at a fixed and continuous rate and specified times. See also [association](#).

**SYSAM**

System Access and Administration

**system administrator**

The person who maintains overall customer responsibility for system administration. Generally, all administration functions are performed from the Management Terminal. The switch requires a special login, referred to as the system administrator login, to gain access to system-administration capabilities.

**system printer**

An optional printer that may be used to print scheduled reports via the report scheduler.

**system report**

A report that provides historical traffic information for internally measured splits.

**system-status report**

A report that provides real-time status information for internally measured splits.

**system manager**

A person responsible for specifying and administering features and services for a system.

**system reload**

A process that allows stored data to be written from a tape into the system memory (normally after a power outage).

## T

### T1

A digital transmission standard that in North America carries traffic at the DS1 rate of 1.544 Mbps. A T1 facility is divided into 24 channels (DS0s) of 64 kbps. These 24 channels, with an overall digital rate of 1.536 Mbps, and an 8-kbps framing and synchronization channel make up the 1.544-Mbps transmission. When a D-channel is present, it occupies channel 24. T1 facilities are also used in Japan and some Middle-Eastern countries.

### TAAS

Trunk Answer from Any Station

### TABS

Telemetry asynchronous block serial

### TAC

Trunk-access code

### tandem switch

A switch within an electronic tandem network (ETN) that provides the logic to determine the best route for a network call, possibly modifies the digits outpulsed, and allows or denies certain calls to certain users.

### tandem through

The switched connection of an incoming trunk to an outgoing trunk without human intervention.

### tandem tie-trunk network (TTTN)

A private network that interconnects several customer switching systems.

### TC

Technical consultant

### TCM

Traveling class mark

### TDM

See [time-division multiplexing \(TDM\)](#).

### TDR

Time-of-day routing

### TEG

Terminating extension group

### terminal

A device that sends and receives data within a system. See also [administration terminal](#).

### tie trunk

A telecommunications channel that directly connects two private switching systems.

### time-division multiplex (TDM) bus

A bus that is time-shared regularly by preallocating short time slots to each transmitter. In a PBX, all port circuits are connected to the TDM bus, permitting any port to send a signal to any other port.

### time-division multiplexing (TDM)

Multiplexing that divides a transmission channel into successive time slots. See also [multiplexing](#).

**time interval**

The period of time, either one hour or one-half hour, that BCMS measurements are collected for a reports.

**time slice**

See **time interval**.

**time slot**

64 kbps of digital information structured as eight bits every 125 microseconds. In the switch, a time slot refers to either a DS0 on a T1 or E1 facility or a 64-kbps unit on the TDM bus or fiber connection between port networks.

**time slot sequence integrity**

The situation whereby the N octets of a wideband call that are transmitted in one T1 or E1 frame arrive at the output in the same order that they were introduced.

**to control**

An application can invoke *Third Party Call Control* capabilities using either an adjunct-control or domain-control association.

**to monitor**

An application can receive *event reports* on an active-notification, adjunct-control, or domain-control association.

**TOD**

Time of day

**tone ringer**

A device with a speaker, used in electronic voice terminals to alert the user.

**TOP**

Task-oriented protocol

**trunk**

A dedicated telecommunications channel between two communications systems or COs.

**trunk allocation**

The manner in which trunks are selected to form wideband channels.

**trunk-data module**

A device that connects off-premises private-line trunk facilities and DEFINITY ECS. The trunk-data module converts between the RS-232C and the DCP, and can connect to DDD modems as the DCP member of a modem pool.

**trunk group**

Telecommunications channels assigned as a group for certain functions that can be used interchangeably between two communications systems or COs.

**TSC**

Technical Service Center

**TTI**

Terminal translation initialization

**TTR**

Touch-tone receiver

**TTT**

Terminating trunk transmission

**TTTN**

See tandem tie-trunk network (TTTN).

**TTY**

Teletypewriter

---

**U**

**UAP**

Usage-allocation plan

**UART**

Universal asynchronous transmitter

**UCD**

Uniform call distribution

**UCL**

Unrestricted call list

**UDP**

See Uniform Dial Plan (UDP).

**UL**

Underwriter Laboratories

**UM**

User manager

**Uniform Dial Plan (UDP)**

A feature that allows a unique 4- or 5-digit number assignment for each terminal in a multiswitch configuration such as a DCS or main-satellite-tributary system.

**UNMA**

Unified Network Management Architecture

**UNP**

Uniform numbering plan

**UPS**

Uninterruptible power supply

**USOP**

User service-order profile

**UUCP**

UNIX-to-UNIX Communications Protocol

**UUI**

User-to-user information

---

## V

### **VAR**

Value-added reseller

### **VDN**

See vector directory number (VDN).

### **vector directory number (VDN)**

An extension that provides access to the Vectoring feature on the switch. Vectoring allows a customer to specify the treatment of incoming calls based on the dialed number.

### **vector-controlled split**

A hunt group or ACD split administered with the vector field enabled. Access to such a split is possible only by dialing a VDN extension.

### **VIS**

Voice Information System

### **VLSI**

Very-large-scale integration

### **VM**

Voltmeter

### **VNI**

Virtual nodepoint identifier

### **voice terminal**

A single-line or multiappearance telephone.

---

## W

### **WATS**

See Wide Area Telecommunications Service (WATS).

### **WCC**

World-Class Core

### **WCR**

World-Class Routing

### **WCTD**

World-Class Tone Detection

### **WFB**

Wireless fixed base

### **Wide Area Telecommunications Service (WATS)**

A service in the United States that allows calls to certain areas for a flat-rate charge based on expected usage.

**wideband**

A circuit-switched call at a data rate greater than 64 kbps. A circuit-switched call on a single T1 or E1 facility with a bandwidth between 128 and 1536 (T1) or 1984 (E1) kbps in multiples of 64 kbps. H0, H11, H12, and N x DS0 calls are wideband.

**wideband access endpoint**

Access endpoints, extended with wideband switching to include wideband access endpoints. A wideband access endpoint consists of one or more contiguous DS0s on a line-side T1 or E1 facility and has an extension. The Administered Connections feature provides call control for calls originating from wideband access endpoints.

**wink-start tie trunk**

A trunk with which, after making a connection with a distant switching system for an outgoing call, the system waits for a momentary signal (wink) before sending the digits of the called number. Similarly, on an incoming call, the system sends the wink signal when ready to receive digits.

**work mode**

One of four states (Auto-In, Manual-In, ACW, AUX-Work) that an ACD agent can be in. Upon logging in, an agent enters AUX-Work mode. To become available to receive ACD calls, the agent enters Auto-In or Manual-In mode. To do work associated with a completed ACD call, an agent enters ACW mode.

**work state**

An ACD agent may be a member of up to three different splits. Each ACD agent continuously exhibits a work state for every split of which it is a member. Valid work states are Avail, Unstaffed, AUX-Work, ACW, ACD (answering an ACD call), ExtIn, ExtOut, and OtherSpl. An agent's work state for a particular split may change for a variety of reasons (example: when a call is answered or abandoned, or the agent changes work modes). The BCMS feature monitors work states and uses this information to provide BCMS reports.

**write operation**

The process of putting information onto a storage medium, such as a hard disk.

**WSA**

Waiting session accept

**WSS**

Wireless Subscriber System

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**Z**

**ZCS**

Zero Code Suppression



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