



CentreVu®

Call Management System

Switch Connections, Administration, and
Troubleshooting

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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.

Preventing Toll Fraud

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

Avaya Fraud Intervention

If you *suspect that you are being victimized* by toll fraud and you need technical support or assistance, call Technical Service Center Toll Fraud Intervention Hotline at +1 800 643 2353.

Providing Telecommunications Security

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

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

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

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

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

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

Your Responsibility for Your Company's Telecommunications Security

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

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

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

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

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Avaya Web Page

<http://www.avaya.com>

Comments

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

Acknowledgment

This document was written by the CRM Development group of Avaya University

CentreVu[®] Call Management System Switch Connections, Administration, and Troubleshooting

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Preface

Overview

This document is written for technicians and call center customers who install and administer DEFINITY[®] switches that are used with the CentreVu[®] Call Management System (CMS).

This document assumes a minimum level of technical knowledge on the part of its readers. It assumes, for example, that a reader knows how to use the switch administration interfaces and how to connect switch hardware.

Reasons for reissue

Issue 3.0 of this document was changed for the following reasons:

- To add administration changes for DEFINITY R9.5.
- To add information about CMS R3V9.
- To add information about the Sun[®] Blade[™] 100 CMS hardware platform.

Issue 2.2 of this document was changed for the following reasons:

- To rearrange Chapters 2 and 3 to eliminate redundancy about TCP/IP connectivity and administration.
- To change from Lucent Technologies to Avaya.
- To note that asynchronous PPP is not supported for a remote CMS ([Remote switch network over synchronous PPP](#) on page 32) and that the two C-LAN configuration is the best way to provide link isolation ([Two C-LAN option](#) on page 34).
- To change the TCP/IP administration to support DEFINITY R9 (starting on [Administering a TCP/IP connection](#) on page 101).
- To make general wording corrections to the document.

Issue 2.1 of this document was changed for the following reasons:

- To add planning information for TCP/IP network configurations.
- To add sample TCP/IP network configurations.
- To clarify the relationship between the interface channel and remote and local ports on the Communications Interface Channel form.
- To add an appendix that explains how to convert an X.25 link to a TCP/IP link.
- To make general wording corrections to the document.

Organization

This document is organized as follows:

- Chapter 1 — [Introduction](#)
Provides an overview of the supported CentreVu CMS software, supported hardware platforms, required software, and supported switch releases. It also includes support contact information.
- Chapter 2 — [Connecting the switch link](#)
Explains how to connect the DEFINITY switches to the CMS computer.
- Chapter 3 — [Administering the switch link](#)
Explains how to administer the DEFINITY switches for the connections to a CMS computer.
- Chapter 4 — [Troubleshooting switch connections](#)
Explains how to maintain and troubleshoot the hardware and software components that make up a switch link.
- Appendix A — [Converting switch links from X.25 to TCP/IP](#)
Explains how to convert an X.25 link to a TCP/IP link.
- [Glossary](#)
- [Index](#)

Conventions

The following conventions are used in this document:

- Unless specified otherwise, all information and procedures in this document apply to the Sun SPARCserver™ computers, the Sun Enterprise™ 3000 computer, the Sun Enterprise 3500 computer, and the Sun Ultra™ 5 computer. Since all of these computers use the CMS software, they are referred to as the “CMS computer.”
- Commands you enter from the console are shown in **courier bold** font.
- Screens shown are examples of how the switch administration is done. The actual screen layouts vary from release to release, but the field information is valid. Information such as extension numbers and equipment locations will vary for every installation.
- Automatic Call Distribution (ACD) is a feature on the DEFINITY switch. The ACD feature is used to route incoming calls to groups of agents. When this document refers to “connecting to an ACD,” it refers to connecting to a switch that has ACD capabilities.

Related documents

This section lists sources for related information about call center products and features. To order Avaya documentation, call the Avaya Publications Center at 1-800-457-1235 or +1-317-361-5353.

CMS software documents

Title	Document number
Installing software on a CMS computer	
CentreVu Call Management System Release 3 Version 9 Software Installation, Maintenance, and Troubleshooting	585-215-956
CentreVu Call Management System Release 3 Version 8 Software Installation, Maintenance, and Troubleshooting	585-210-941
CentreVu Call Management System Software Installation and Setup (R3V6 and earlier)	585-215-866
Setting up a disk-mirrored system	
CentreVu Call Management System Release 3 Version 9 Software Installation, Maintenance, and Troubleshooting	585-215-956
CentreVu Call Management System Release 3 Version 8 Disk-Mirrored Systems	585-210-940
CentreVu Call Management System Disk-Mirrored Systems (R3V6)	585-215-841

Upgrade documents

There are several upgrade paths supported with CMS. For each of these upgrades, there is a document designed to support that upgrade. Note that none of these documents are available from the publications center, but are available from the [Avaya CMS documentation](#) web site.

- Base load upgrades

A base load upgrade is used when upgrading CMS to a newer load of the same version (for example, R3V8 ak.g to R3V8 al.k). A specific set of instructions are written for the upgrade and are shipped to the customer site with the CMS software CD as part of a Quality Protection Plan Change Notice (QPPCN).

Title
CentreVu Call Management System Release 3 Version 9 Base Load Upgrade Procedures
CentreVu Call Management System Release 3 Version 8 Base Load Upgrade Procedures

- Platform upgrades and data migration

A platform upgrade is used when upgrading to a new hardware platform (for example, upgrading from a SPARCserver 5 to an Enterprise 3500). The new hardware platform ships from the Avaya factory with the latest CMS load. Therefore, as part of the upgrade, you will automatically upgrade to the latest CMS load (for example, R3V8 to R3V9, or a newer load of the same CMS version). For R3V9, a specific set of instructions are written for the upgrade and are shipped to the customer site with the new hardware. For R3V8, see the [Avaya CMS documentation](#) web site.

Title
CentreVu Call Management System Release 3 Version 9 Platform Upgrade and Data Migration Instructions
CentreVu Call Management System Release 3 Version 8 Platform Upgrade and Data Migration Instructions

- CentreVu Upgrade Express (CVUE)
 - CVUE is used in the following conditions:
 - CMS is being upgraded from an older version (for example, R3V5u or R3V6) to the latest version (for example, R3V8 or R3V9)
 - The hardware platform is not changing.
 - A specific set of upgrade instructions are written for the upgrade and are shipped to the customer site with the CVUE kit.

Title
CentreVu Call Management System Release 3 Version 9 Sun Ultra 5 Computer CVUE Instructions
CentreVu Call Management System Release 3 Version 9 Sun Enterprise 3000 Computer CVUE Instructions
CentreVu Call Management System Release 3 Version 9 Sun Enterprise 3000 Computer Mirrored System CVUE Instructions
CentreVu Call Management System Release 3 Version 9 Sun Enterprise 3500 Computer CVUE Instructions
CentreVu Call Management System Release 3 Version 9 Sun Enterprise 3500 Computer Mirrored System CVUE Instructions
CentreVu Call Management System Release 3 Version 8 Sun SPARCserver 5 Computer CVUE Instructions
CentreVu Call Management System Release 3 Version 8 Sun SPARCserver 20 Computer CVUE Instructions
CentreVu Call Management System Release 3 Version 8 Sun Ultra 5 Computer CVUE Instructions
CentreVu Call Management System Release 3 Version 8 Sun Enterprise 3000 Computer CVUE Instructions
CentreVu Call Management System Release 3 Version 8 Sun Enterprise 3000 Computer Mirrored System CVUE Instructions
CentreVu Call Management System Release 3 Version 8 Sun Enterprise 3500 Computer CVUE Instructions
CentreVu Call Management System Release 3 Version 8 Sun Enterprise 3500 Computer Mirrored System CVUE Instructions

Hardware documents

Title	Document number
CentreVu Sun Blade 100 Computer Hardware Installation, Maintenance, and Troubleshooting	585-310-783
CentreVu Sun Blade 100 Computer Connectivity Diagram	585-310-782
CentreVu Sun Enterprise 3500 Computer Hardware Installation, Maintenance, and Troubleshooting	585-215-873
CentreVu Sun Enterprise 3500 Computer Connectivity Diagram	585-215-877
CentreVu Call Management System Sun Ultra 5 Computer Hardware Installation, Maintenance, and Troubleshooting	585-215-871
CentreVu Call Management System Sun Ultra 5 Computer Connectivity Diagram	585-215-872
CentreVu Call Management System Sun Enterprise 3000 and SPARCserver Computers Hardware Maintenance and Troubleshooting	585-214-016
CentreVu Call Management System Terminals, Printers, and Modems	585-215-874
CentreVu Call Management System Release 3 Version 6 Sun Enterprise 3000 Computer Hardware Installation	585-215-867
CentreVu Call Management System Release 3 Version 6 Sun Enterprise 3000 Computer Connectivity Diagram	585-215-865
CentreVu Call Management System Release 3 Version 6 Sun SPARCserver Computers Hardware Installation	585-215-857
CentreVu Call Management System Release 3 Version 6 Sun SPARCserver Computers Connectivity Diagram	585-215-858
CentreVu Call Management System Release 3 Version 5 Sun SPARCserver Installation and Maintenance	585-215-827
CentreVu Call Management System Release 3 Version 5 Sun SPARCserver Connectivity Diagram	585-215-828

Switch documents

Title	Document number
CentreVu Call Management System Switch Connections and Administration	585-215-876

Administration documents

Title	Document number
CentreVu Call Management System Release 3 Version 9 Administration	585-214-015
CentreVu Call Management System Release 3 Version 8 Administration	585-210-910
CentreVu Call Management System Release 3 Version 6 Administration (Volumes 1 and 2)	585-215-850
CentreVu Call Management System Release 3 Version 5 Administration (Volumes 1 and 2)	585-215-820

Other documents

Title	Document number
CentreVu CMS Open Database Connectivity	585-210-951
CentreVu CMS Release 3 Version 9 External Call History Interface	585-215-952
CentreVu CMS Release 3 Version 5 Real-Time and Historical Reports	585-215-821
CentreVu CMS Release 3 Version 5 Custom Reports	585-215-822
CentreVu CMS Release 3 Version 5 Forecast	585-215-825

Documentation Web sites

**IMPORTANT:**

Additional information about new software or hardware updates will be contained in a future issues of this book. New issues of this book will be placed on the web when available.

The new issues of this book can be found at:

<http://www.avaya.com/support>

1. Click **Online Services**.

The browser displays the Online Services menu.

2. Click **Documentation**.

The browser displays the Product Documentation page.

3. Click **Recent Documents**.

The browser displays the Recent Product Documentation page.

4. Click **CentreVu CMS**.

The browser displays a table with the current issues of the CentreVu Call Management System documentation.

5. Click the most recent issue of the book that is available.

Use the following Web sites to view support documentation:

- Sun hardware documentation

<http://docs.sun.com>

- Okidata printer documentation

<http://www.okidata.com>

- Informix documentation

<http://www.informix.com>

Introduction

Overview

CentreVu Call Management System (CMS) is a software application offered in association with the Automatic Call Distribution (ACD) feature of Avaya DEFINITY systems. The CentreVu CMS application provides monitoring and recording of ACD calls, agents handling these calls, and the use of Vector Directory Numbers (VDNs) for these calls to measure system and agent performance.

Supported switch releases

Different releases of CentreVu CMS are certified to run with the following DEFINITY systems:

Switch Release	CMS Release			
	R3V5*	R3V6	R3V8	R3V9
DEFINITY Communications System G2.2 Release 3.0 and later (QPPCN 696DR)	Yes	Yes	No	No
DEFINITY Communications System G3i Release 13.3 and later (QPPCN 576)	Yes	Yes	No	No
DEFINITY Communications System G3r Release 8.5 and later	Yes	Yes	No	No
DEFINITY Communications System G3s Release 14.2 and later	Yes	Yes	No	No
DEFINITY Communications System G3V1	Yes	Yes	No	No
DEFINITY Communications System G3V2 Load 82 and later	Yes	Yes	Yes	Yes
DEFINITY Communications System G3V3	Yes	Yes	Yes	Yes
DEFINITY Communications System G3V4	Yes	Yes	Yes	Yes
DEFINITY ECS R5	Yes	Yes	Yes	Yes
DEFINITY ECS R6	Yes	Yes	Yes	Yes
DEFINITY ECS R7	Yes	Yes	Yes	Yes
DEFINITY ECS R8	Yes	Yes	Yes	Yes
DEFINITY ECS R9	Yes	Yes	Yes	Yes

*. CMS R3V5 only supports X.25 switch links.

Support

If a problem arises that requires assistance, use the following support information and help lines.

Frequently asked questions (FAQ)

For answers to common problems, CMS customers and Avaya technicians can access the CMS technical support FAQ at:

<http://support.avaya.com/ccenter/centrevucallmgt/cms/faq/>

Please check this information before you call in a trouble ticket. It could save you time and money.

Customer support for the United States

Customers can report problems and generate trouble tickets by calling this number:

1-800-242-2121

The customer is prompted to identify the type of problem (that is, Automatic Call Distribution, hardware, or CentreVu CMS), and is connected to the appropriate service organization.

Technician support for the United States

Avaya technicians can receive help by using this number:

1-800-248-1234

Customer and technician support outside the United States

For customer and technician support outside the United States, contact your Avaya representative or distributor for more information.

Connecting the switch link

Overview

The connection between the CentreVu Call Management System (CMS) computer and a DEFINITY switch allows the CMS software on the computer to receive, store, and format the Automatic Call Distribution (ACD) information it receives from one or more switches. This chapter explains how to connect the CMS computer to the following DEFINITY switches:

- Generic 3si (G3si)
- Generic 3r (G3r)
- Generic 3csi (G3csi)
- Generic 2 (G2).

A switch technician should be on-site to make the final connection from the CMS computer to the switch and, if necessary, to administer the switch for the ACD feature and CMS. The CMS software will not communicate with the switch if the ACD feature, CMS, or the switch hardware is not properly administered. See [Administering the switch link](#) on page 93 for more information.

Local vs remote connections

This chapter shows both local and remote connections between the switch and the CMS computer. For clarification, these connections are defined as follows:

- Local — The connections between the switch and the CMS computer use facilities local to the switch, such as a direct connection over a local area network (LAN), a direct connection through an Isolating Data Interface (IDI), or a switched connection over 7400D data modules using digital ports.

NOTE:

The 7400D data module is now in limited availability/inactive (LAI) status. There will be no new sales of 7400D data modules, but existing units can still be used for switch connectivity.

- Remote — The connections between the switch and the CMS computer use central office (CO) facilities, such as analog or DS1 lines. Cabling diagrams for remote connections are given in this chapter, but administration must be done by the Avaya Sales and Design Support Center (SDSC) Switch Design Engineers.

Multiple ACDs (switches)

One CMS computer can collect data from up to eight different switches. From the CMS computer point of view, each switch represents one ACD. Depending on the release of the switch and the release of the CMS computer, you can have all switches connected via TCP/IP, all switches connected via X.25 protocol, or some combination of the two protocols. In any event, the physical connectivity as shown in this chapter still applies when connecting one switch or eight switches; each switch requires a link to the CMS computer.

High availability option

The High Availability option provides dual links between the switch and two separate CMS computers. If the customer has purchased the High Availability option, you must connect a link from one control-LAN (C-LAN) circuit pack to one CMS computer, and a second link from a different C-LAN circuit pack to another CMS computer. The High Availability option is not allowed using X.25 links.

In addition to having the correct CMS R3V8 load, the DEFINITY switch must be optioned with a switch version of V8, Call Center Release of 8.1, and Adjunct CMS Release of R3V8 See [Common switch administration](#) on page 96 for more information.

Connecting blocks

In this chapter, references are made to 103A connecting blocks, which have one RJ45 connector per block. If needed, you can substitute the 104A connecting block, which has two RJ45 connectors per block. The wiring for both connecting blocks are identical.

Planning for LAN switch links

When setting up a switch link using TCP/IP over a LAN, planning information must be gathered before you begin. In particular, you must take into account if the LAN connection includes both a connection to CMS and Intuity™ AUDIX® with Message Manager. You must coordinate the setup of the Intuity system with the switch and the CMS. Some of the information needed includes:

- How is the connection being made from the CMS computer to the switch?
 - Private LAN, no connectivity to customer LAN (uses private LAN addresses).
 - Preferred method, most robust and reliable, no dependency on customer's network
 - A secondary, dedicated LAN port on the CMS computer provides the switch link; the primary LAN port is used for other purposes (printers, terminals, CentreVu Supervisor, Intuity Message Manager)
 - If desired, a second DEFINITY C-LAN circuit pack can be used to provide additional isolation for the CMS link
 - Crossover cable (with flipped transmit/receive leads) is used so a hub is not required
 - Hub can be used instead of crossover cable to extend distances.
 - Customer LAN with private segment.
 - Uses a network switch or router to provide a private network or network segment
 - Minimal dependency on customer's network
 - A secondary, dedicated LAN port on the CMS computer provides the switch link; the primary LAN port is used for other purposes (printers, terminals, CentreVu Supervisor)
 - Customer must provide equipment and administer network for private segment
 - Customer LAN administrator must be present during setup.
 - Direct connect to Customer LAN, without private segment.
 - Least preferred method
 - Complete dependency on performance and reliability of customer's LAN

- Allows remote location of endpoints when customer LAN connectivity is convenient
- Customer LAN administrator must be present during setup.
- If option b or c is chosen, the following information is needed from the customer:
 - Customer network physical connectivity:
 - Location of 10BaseT network access point (hub, router, and so on)
 - Distance between C-LAN and network access point (328 ft, 100 m maximum)
 - Wiring to access point, existing or new, Category 5 minimum required.
 - Customer network administration:
 - IP address of C-LANs, CMS computer, Intuity, and gateways
 - Node names of C-LANs, CMS computer, Intuity, and gateways
 - Subnet masks for all LAN segments containing C-LANs or adjuncts
 - Gateway IP address for all LAN segments containing C-LANs, adjuncts, or routers
 - Are all endpoints (C-LANs and adjuncts) on the same local LAN segment?
 - Network routes.

Network administration information needs to be mapped into specific administration fields.
- Sanity check of information obtained from customer:
 - If C-LAN and adjuncts (CMS or Intuity) are on the same LAN segment:
 - Gateway IP address (if present) and subnet mask information is valid
 - All IP addresses contain the same subnet address
 - If C-LAN and adjuncts are on different LAN segments, gateway IP addresses are different

Without the above information, the technician may not be able to complete the installation. Installations that require the technicians to return because information was not available incur additional charges.

CMS computer connections

Overview

Regardless of the switch type, the CMS computer connects to an ACD (switch) using three possible methods:

- [Connecting one or more ACDs using TCP/IP over a LAN](#) (all platforms)
- [Connecting one or more ACDs using an HSI card \(X.25\)](#) on page 20 (all platforms).
- [Connecting a single ACD using serial port A or B \(X.25\)](#) on page 23 (Ultra 5 and SPARCserver only)

Connecting one or more ACDs using TCP/IP over a LAN

An ethernet port and Category 5 unshielded twisted pair (UTP) cabling are used to connect a CMS computer to a LAN for switch connectivity. This connection at the CMS computer is done in one of two ways:

- One ethernet port — If the CMS computer has only one ethernet port, the connection to the switch is made with that ethernet port. This one connection will be shared as the link to the switch and any Network Terminal Servers (NTS), printers, and CentreVu Supervisor users.
- Two ethernet ports — If the CMS computer has a Fast-SCSI Buffered Ethernet (FSBE), SunSwift™, or SunFastEthernet™ card, the connection to the switch should be dedicated to that second ethernet port. The primary ethernet port can be used for NTS, printers, and CentreVu Supervisor users.

NOTE:

A CMS computer may have a Token Ring card installed. This port cannot be used for the switch link.

Detailed parts lists and cabling diagrams are shown later in this document for each switch that supports a LAN connection. This LAN connection is available only with CMS R3V6 or later and a DEFINITY ECS Release 7 or later.

Connecting one or more ACDs using an HSI card (X.25)

Overview

An HSI card and associated cabling is used to connect one or more ACDs to a CMS computer using X.25. At the CMS computer end, either a DB-25 M/M Gender Changer or a DB-25 Direct-Connect link adapter is required depending upon the switch interface device to be used. See the cabling diagrams for each switch type in this chapter. The required HSI cabling is different depending on the CMS computer.



WARNING:
For multiple ACDs, the Black Box converter must be used when connecting the system to the switch. Bypassing the Black Box and connecting the HSI card port directly to the switch will cause electrical damage to the CMS computer and switch components. Verify that the CMS computer, HSI cables, and Black Box converter are connected properly. See Chapter 4 for more information about the Black Box converters.

HSI cabling for Enterprise 3500, Enterprise 3000, and SPARCserver

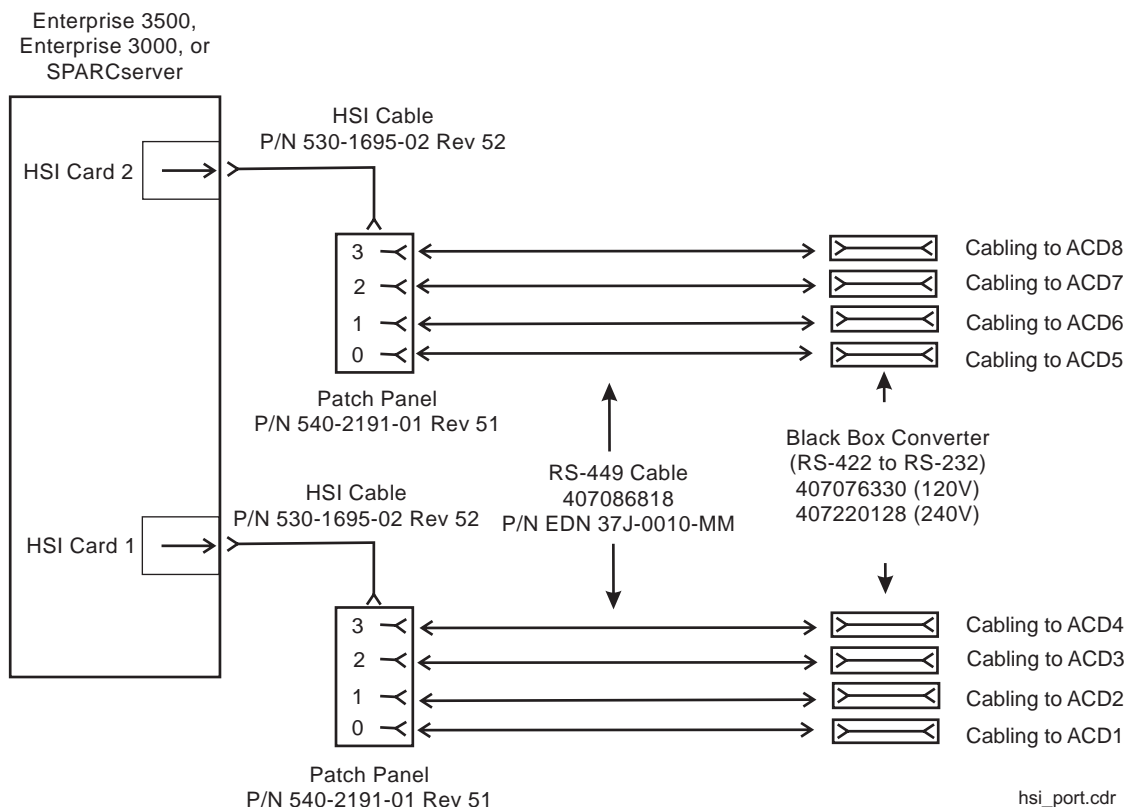
On the Enterprise 3500, Enterprise 3000, and SPARCserver computers, HSI Cables, Patch Panels, and Black Box converters are used for connections to one or more ACDs.

Parts list

Quantity	Description
1 or 2	HSI/S card For connections to more than four ACDs, you must have two HSI cards.
1 or 2	HSI patch panel cable (Sun P/N 530-1685-02 Rev 52) For connections to more than four ACDs, you must have two HSI patch panel cables.
1 or 2	HSI patch panel (Sun P/N 540-2191-01 Rev 51) For connections to more than four ACDs, you must have two HSI patch panels.
1 per ACD	RS-449 straight-through cable (P/N EDN 37J-0010-MM) (407086818)

Quantity	Description
1 per ACD	Black Box converter Model No. 1C456A-R4 (120V) (407076330) Model No. 1C456AE-R3 (240V) (407220128)

Cabling diagram



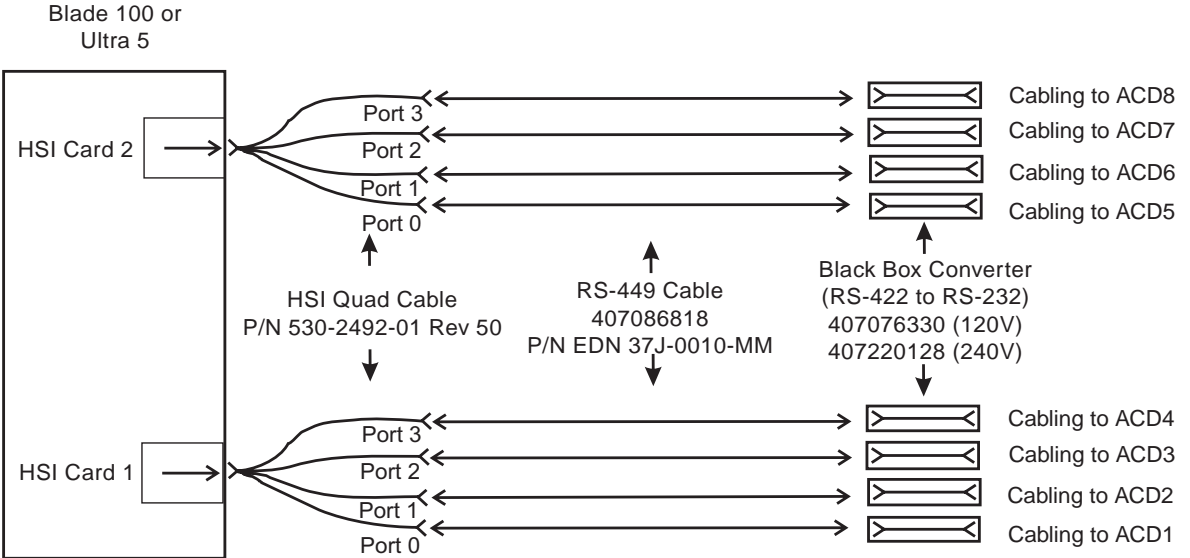
HSI cabling for Blade 100 and Ultra 5

On the Blade 100 and Ultra 5 computers, HSI quad cables and Black Box converters are used for connections to one or more ACDs.

Parts list

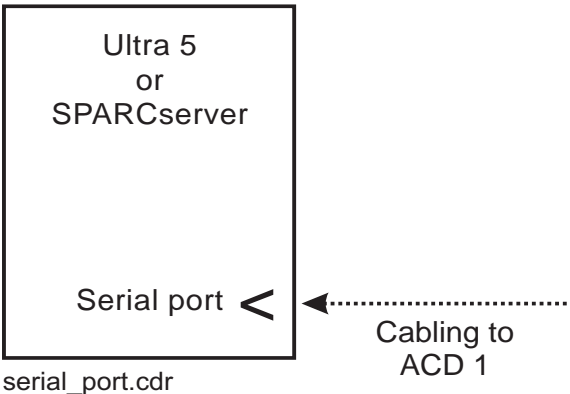
Quantity	Description
1 or 2	HSI/P card For connections to more than four ACDs, you must have two HSI cards.
1 or 2	HSI quad cable (P/N 530-2492-01 Rev 50) For connections to more than four ACDs, you must have two HSI quad cables.
1 per ACD	RS-449 straight-through cable (P/N EDN 37J-0010-MM) 407086818
1 per ACD	Black Box converter Model No. 1C456A-R4 (120V) (407076330) Model No. 1C456AE-R3 (240V) (407220128)

Cabling diagram



Connecting a single ACD using serial port A or B (X.25)

The serial port on an Ultra 5 or a SPARCserver is used for single ACD configurations using X.25 as shown in the following figure. At the CMS computer end, either a DB-25 M/M Gender Changer or a DB-25 Direct-Connect link adapter is required depending upon the switch interface device to be used. See the cabling diagrams for each switch type in this chapter.



The serial port used for the single-ACD connection depends on the CMS computer platform:

CMS Computer	Serial Port for Switch Connections
Ultra 5	Port A
SPARCserver 5/10/20	Port B

CAUTION:
The serial ports on an Enterprise 3500, Enterprise 3000, or Blade 100 cannot be used for a single ACD link. See [HSI cabling for Enterprise 3500, Enterprise 3000, and SPARCserver](#) on page 20 or [HSI cabling for Blade 100 and Ultra 5](#) on page 22 for more information on how to connect using X.25 links.

Switch connections

Overview

The switch connects to a CMS computer using one of the following methods:

- [Connecting with TCP/IP over a LAN](#)
- [Connecting with X.25 using an IDI](#) on page 44
- [Connecting with X.25 using data modules](#) on page 54
- [Connecting with X.25 remotely](#) on page 63

Within each of these sections, the specifics for connecting each switch type are described. Check the equipment and parts delivered to the site to determine which method to use.

Connecting with TCP/IP over a LAN

Overview

Any DEFINITY R7 or later switch (G3si, G3r, or G3csi) equipped with the TN799 C-LAN circuit pack connects to an R3V6 or later CMS computer using a LAN. There are three ways this connection can be made:

- Connecting with a 10Base-T hub or a network switch (recommended configuration)
- Connecting with a crossover cable (for dedicated point-to-point configurations)
- Connecting over a customer LAN.

Ethernet ports on a CMS computer

On some CMS computers, you may have two ethernet ports available for network connections. Either port can be used for a switch LAN connection, but you must ensure that the switch connection is cabled to the correct ethernet port. It is recommended that, if possible, the C-LAN switch connection be isolated to a dedicated LAN port without any other network connections.

C-LAN lead designations for cross-connects

The TN799 C-LAN circuit pack ethernet lead designations are as follows:

Lead Name	25-Pair Cable Wire Color	25-Pair Cable Connector Pin-out	RJ45 Jack Pin-out	Terminal Block Pin-out on Connecting Block
TD+	white/orange	27	1	3
TD-	orange/white	2	2	4
RD+	white/green	28	3	5
RD-	green/white	3	6	6

Use this information when making connections from the TN799 using a 259A adapter (single-port), a 258B adapter (6-port harmonica), a 356A adapter (8-port harmonica), or using standard cross-connect wiring. When using the 258B or 356A adapters, you must always connect to jack #1 of the adapter.

Sample configurations

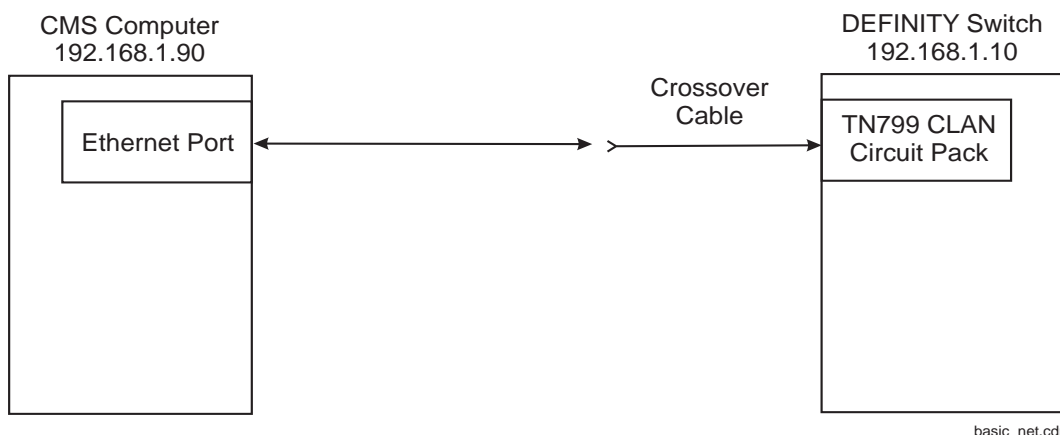
The CMS computer can connect to a switch in a number of ways using a LAN. This section shows some examples of how this can be done. Though several sample configurations are shown, there will be variations not shown here. All but the most basic configurations require planning by the customer and account team.

NOTE:

Please note that the IP addressing shown in these examples reflects a basic recommended scheme that can be used if the customer does not have their own addressing requirements.

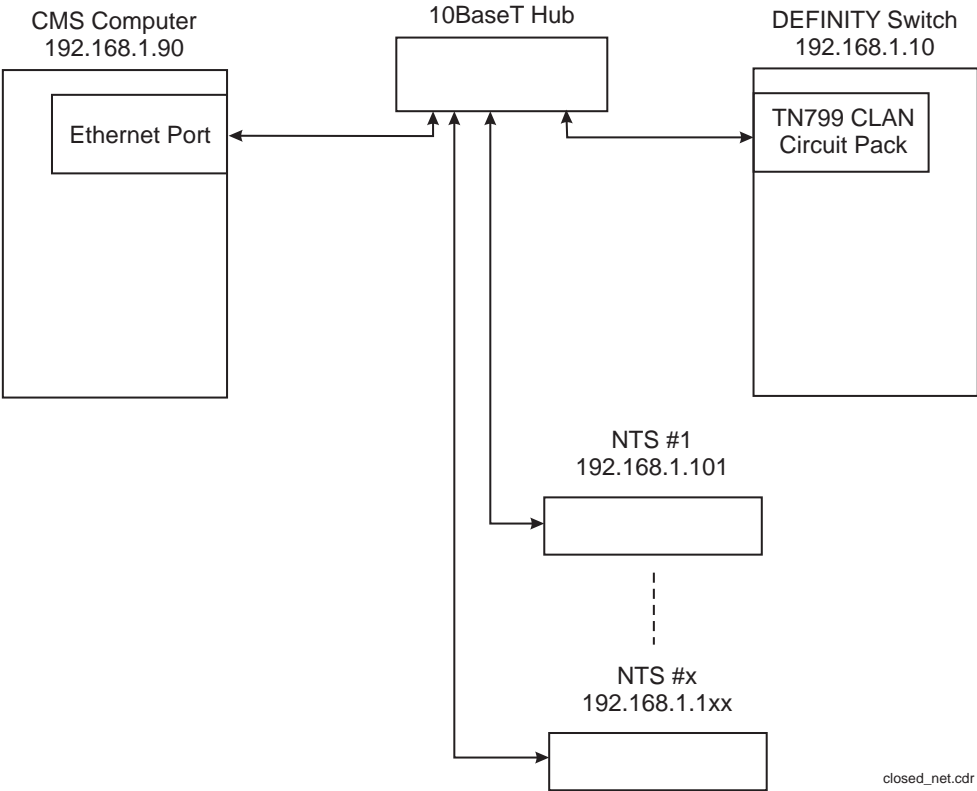
Basic configuration: In the most basic configuration, you can create a LAN between a CMS computer to a switch using a special crossover cable. This setup provides isolation from the customer's data network, keeping all switch-to-CMS messaging traffic on a dedicated private network. The CMS computer is directly connected to the switch, and neither is part of another network.

This configuration is adequate if there is no NTS, printer, CentreVu Supervisor traffic, or Intuity Message Manager traffic.

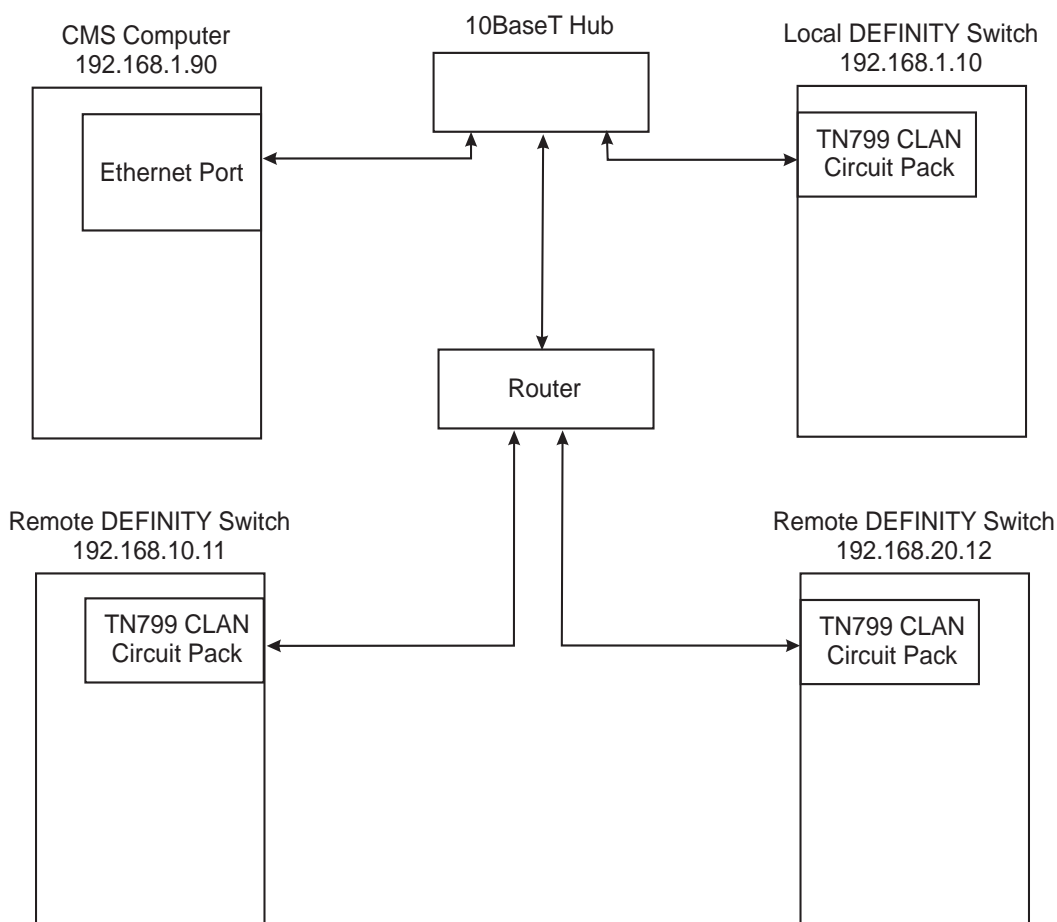


basic_net.cdr

Basic configuration with NTS: Building on the previous example, the following diagram shows how you can add a 10Base-T hub to provide additional LAN points of connection for NTS equipment.

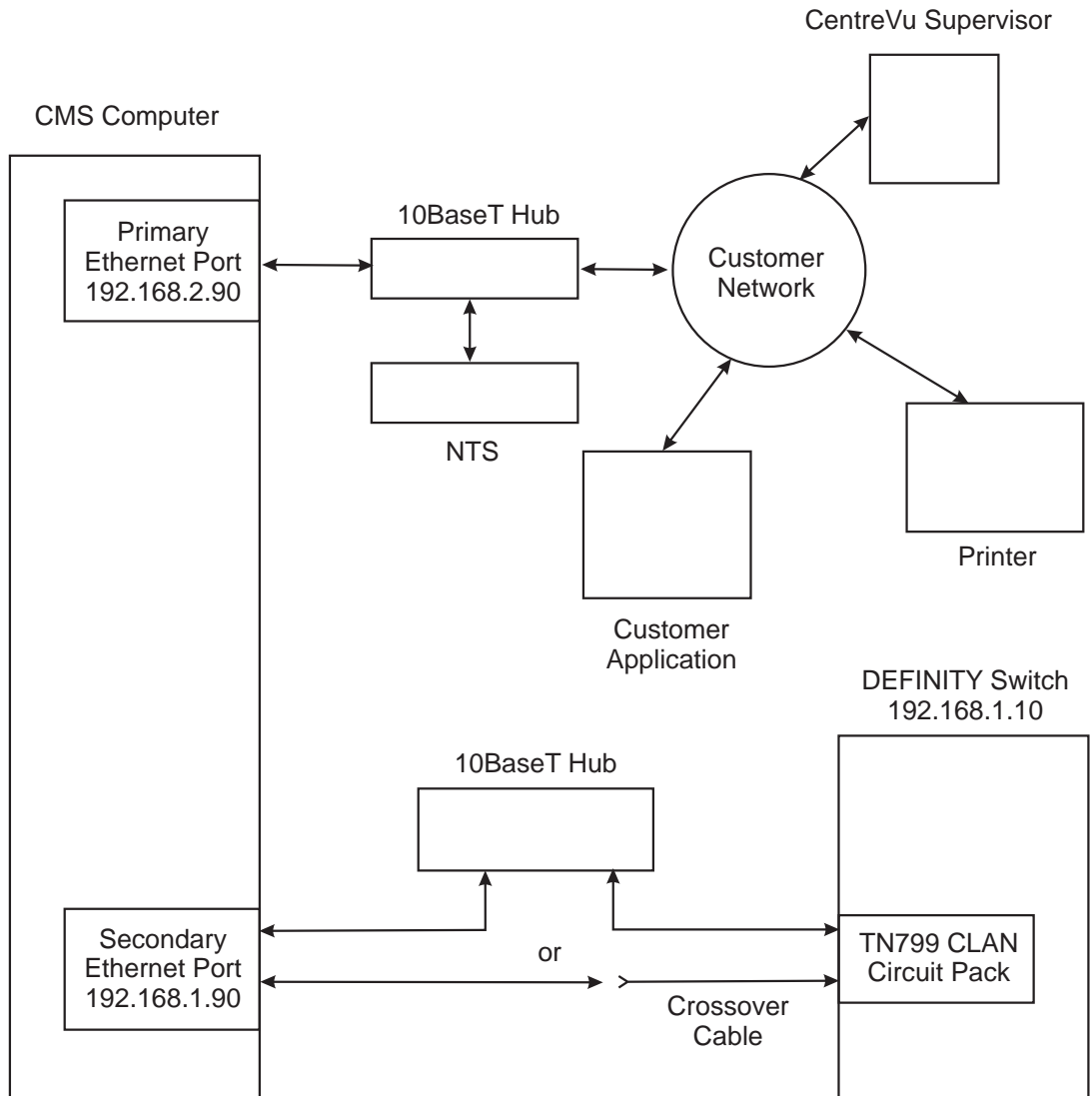


Multiple ACDs (switches): A CMS computer can collect data from more than one switch. The following figure shows how several ACDs (local or remote) would connect to a CMS computer over a LAN. This example isolates the switch-to-CMS traffic from any other network traffic.

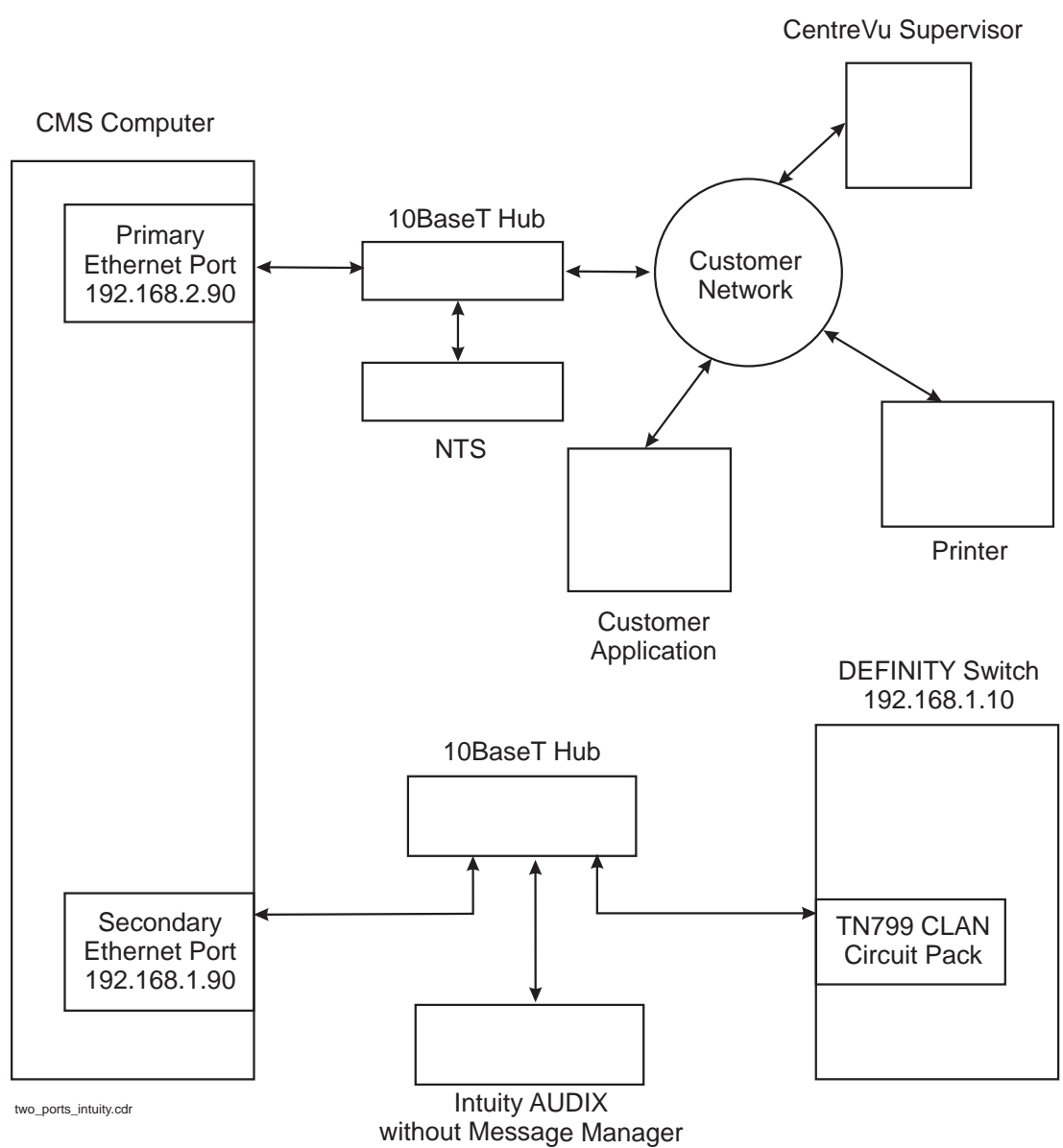


multiple_switch.cdr

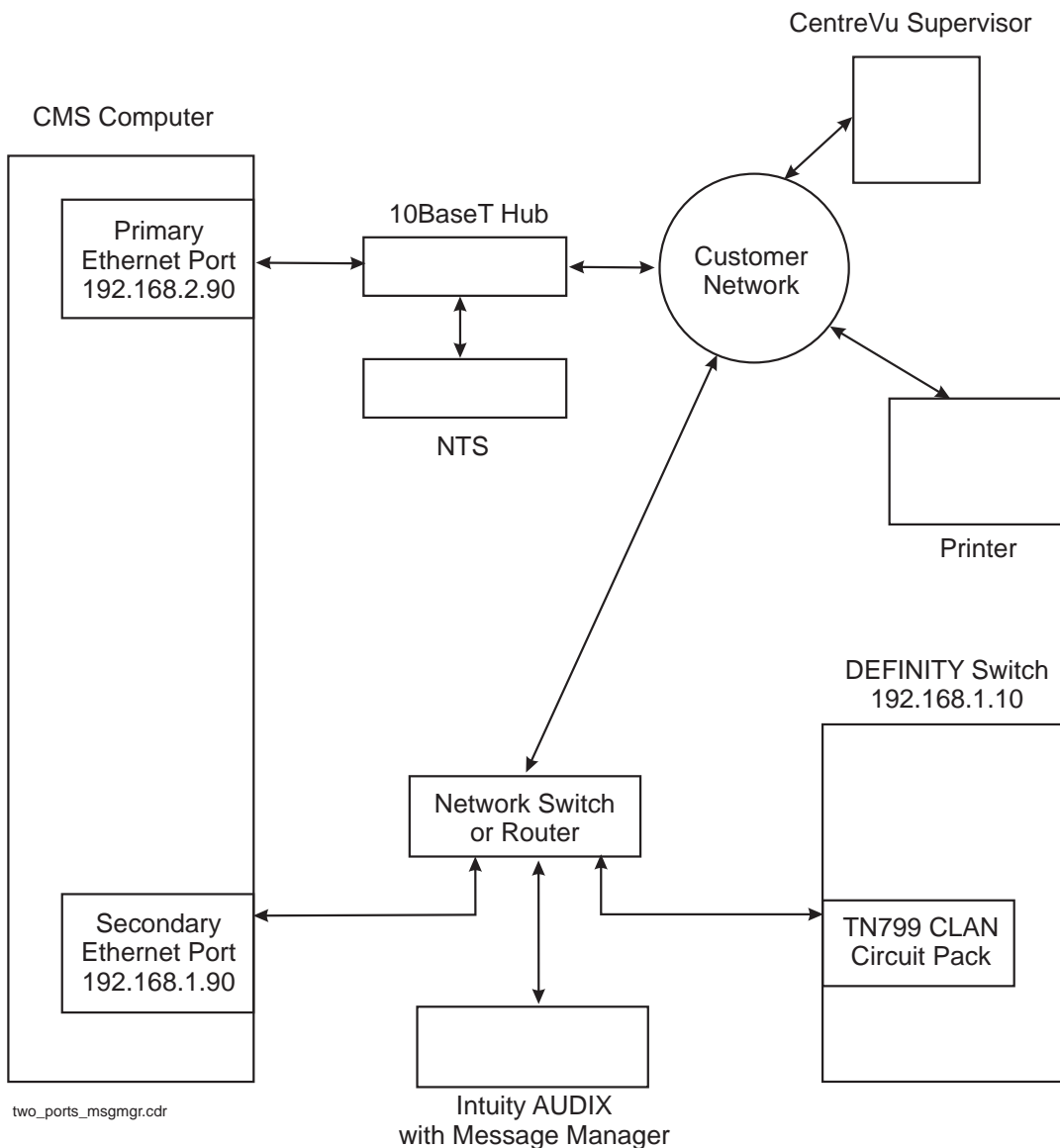
Two ethernet ports on CMS computer: If the CMS computer is using a LAN for both switch link traffic and connections to CentreVu Supervisor and other network applications, the CMS computer should be equipped with two ethernet ports. In this configuration, the primary ethernet port is used for all non-switch applications. The secondary ethernet port is dedicated for carrying switch link traffic. This link can be connected using either a 10BaseT hub or a crossover cable. Each ethernet port must be administered on different networks, so switch-to-CMS traffic doesn't mix with other traffic.



Integrating Intuity AUDIX on the link: This configuration shows how you can integrate an Intuity AUDIX system (without Message Manager) as part of the switch-to-CMS link. The additional traffic load should not cause any loss of data on the link.

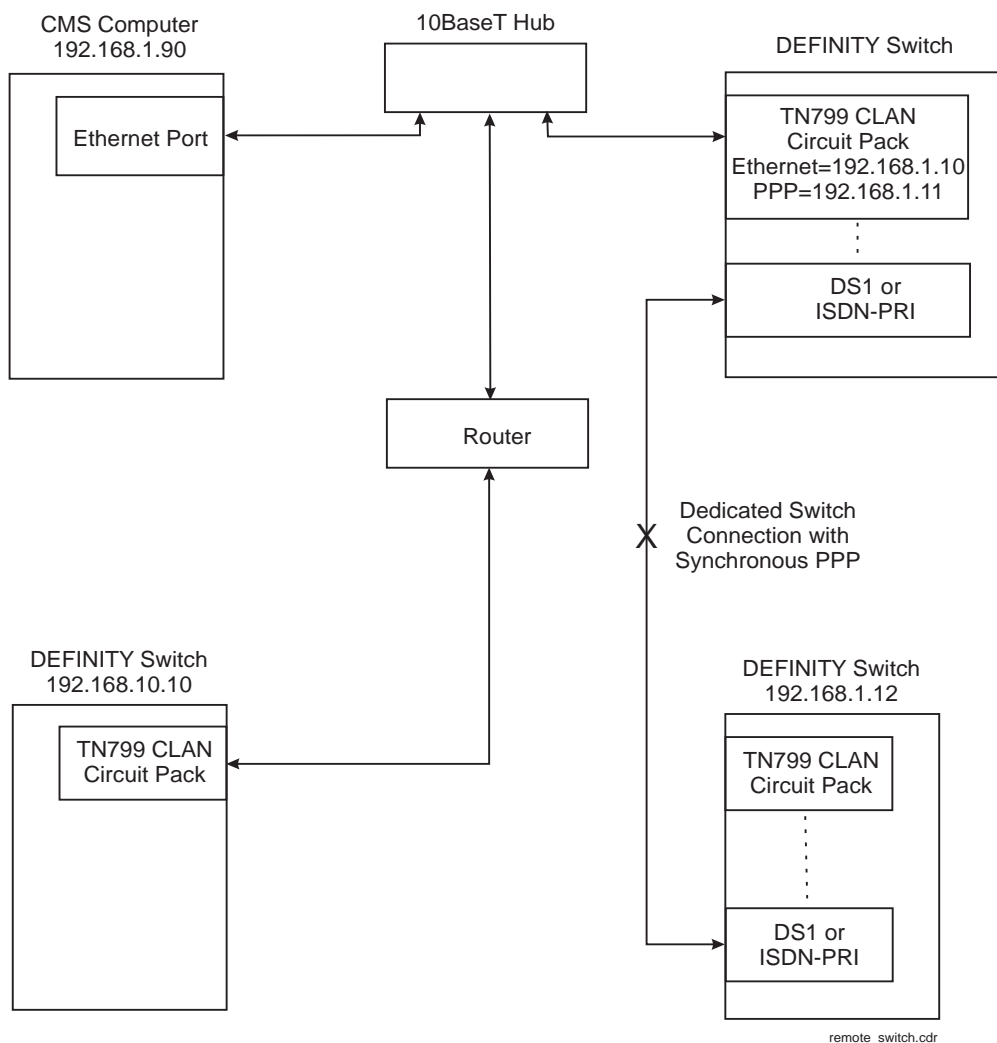


Intuity AUDIX with Message Manager traffic on the customer's network: This configuration does have a connection to the customer's network. However, the bulk of the traffic is isolated from the switch link using the router and a network switch. The router and network switch separate the Message Manager traffic originating by the customer's PCs from the switch link traffic.

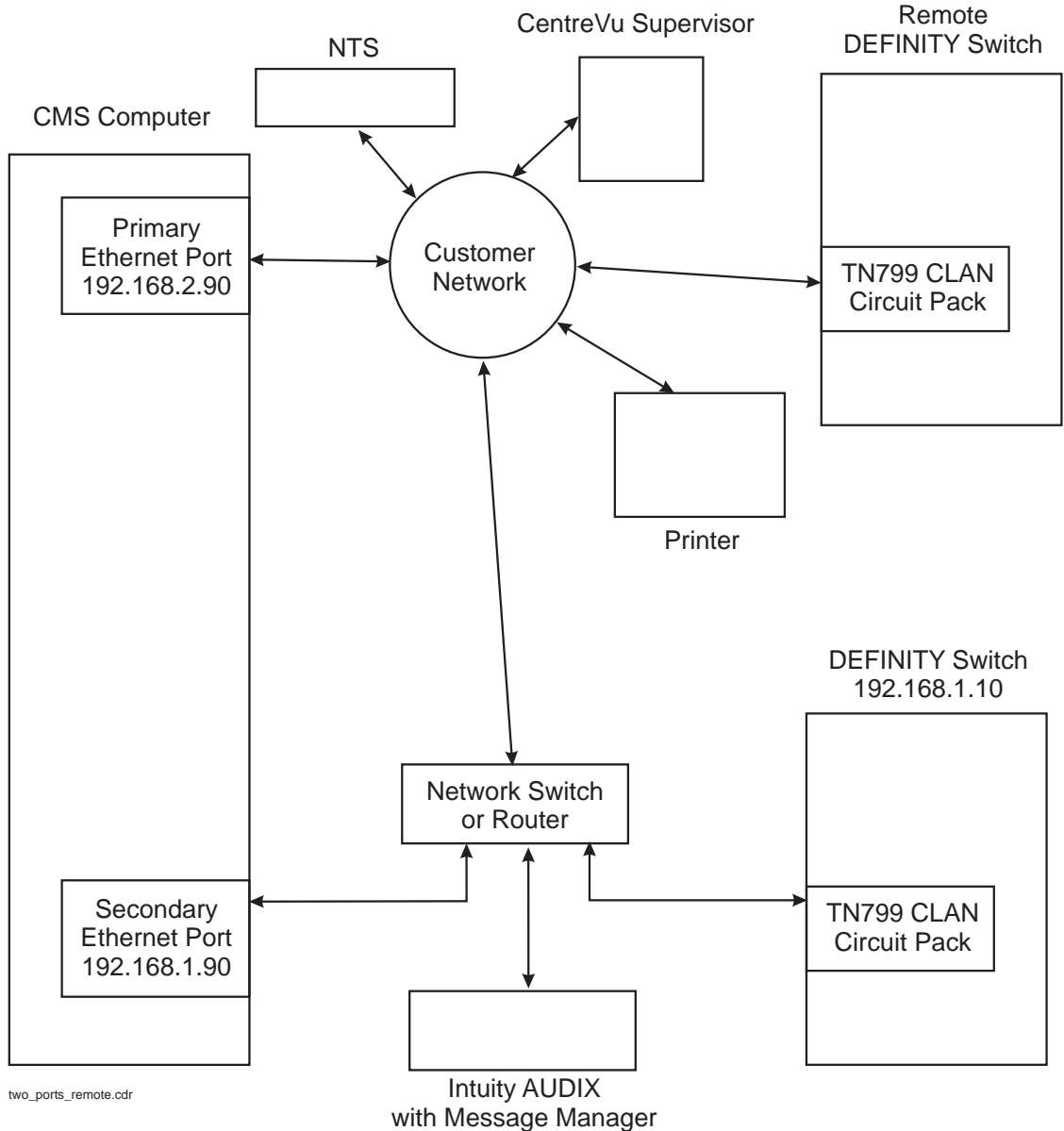


Remote switch network over synchronous PPP: Since one CMS computer may connect to several switches, you can connect to a remote switch two different ways:

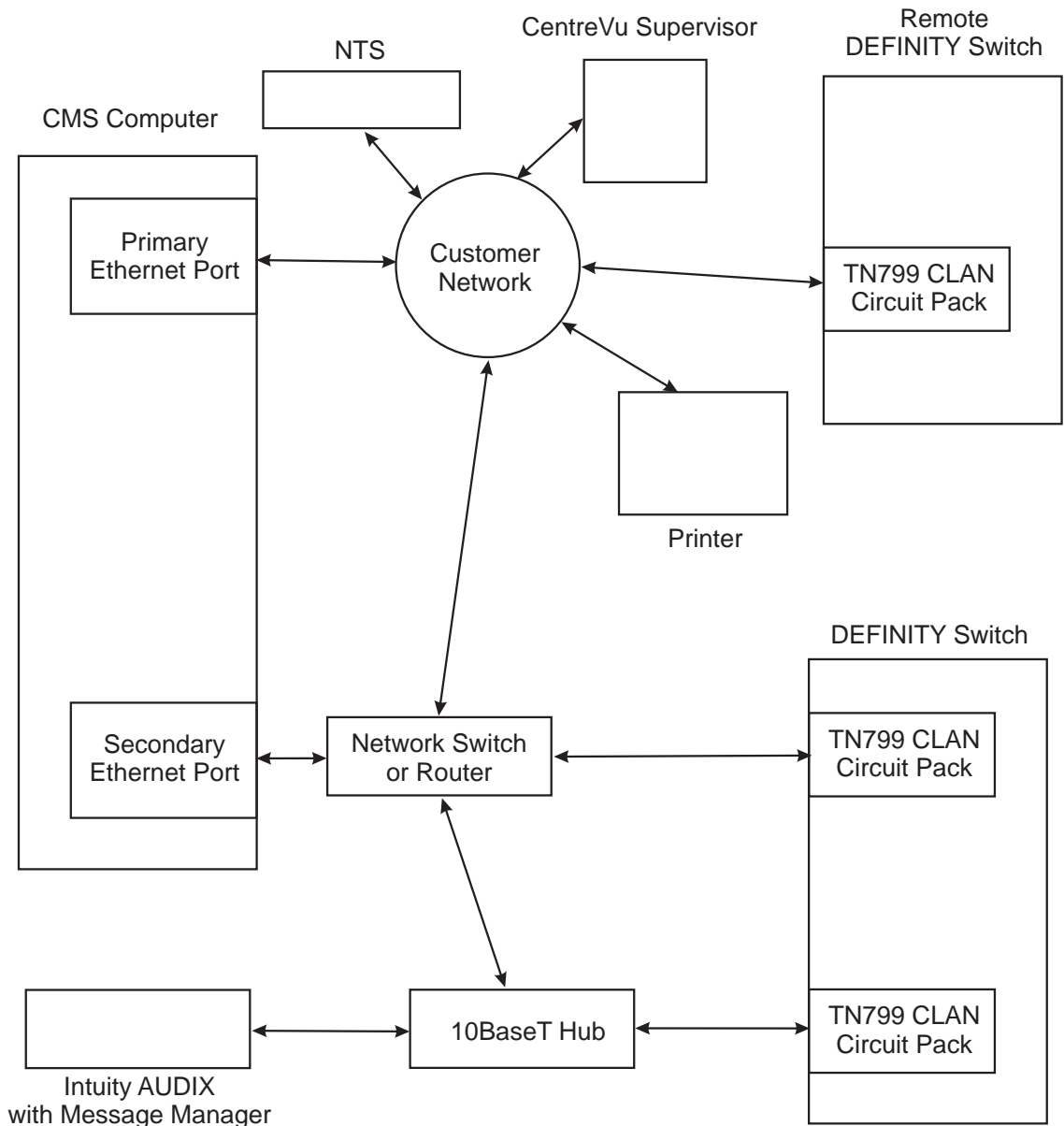
- Using a LAN through a router.
- Using synchronous PPP over DS1 or ISDN-PRI circuits (asynchronous PPP is not supported for this application).



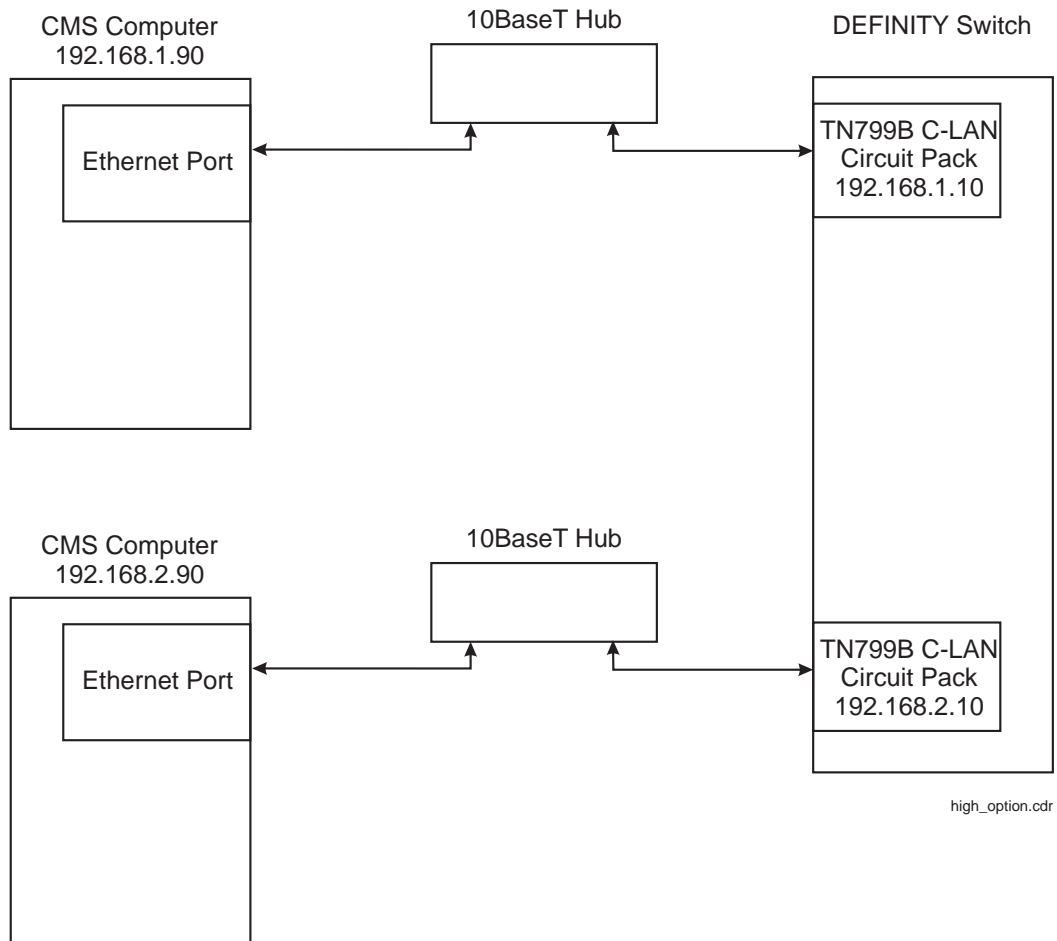
Remote switch on the customer's network: A remote switch can also be connected through the customer's network. using a router and a network switch to isolate the switch link traffic from the Message Manager traffic and the other customer network traffic.



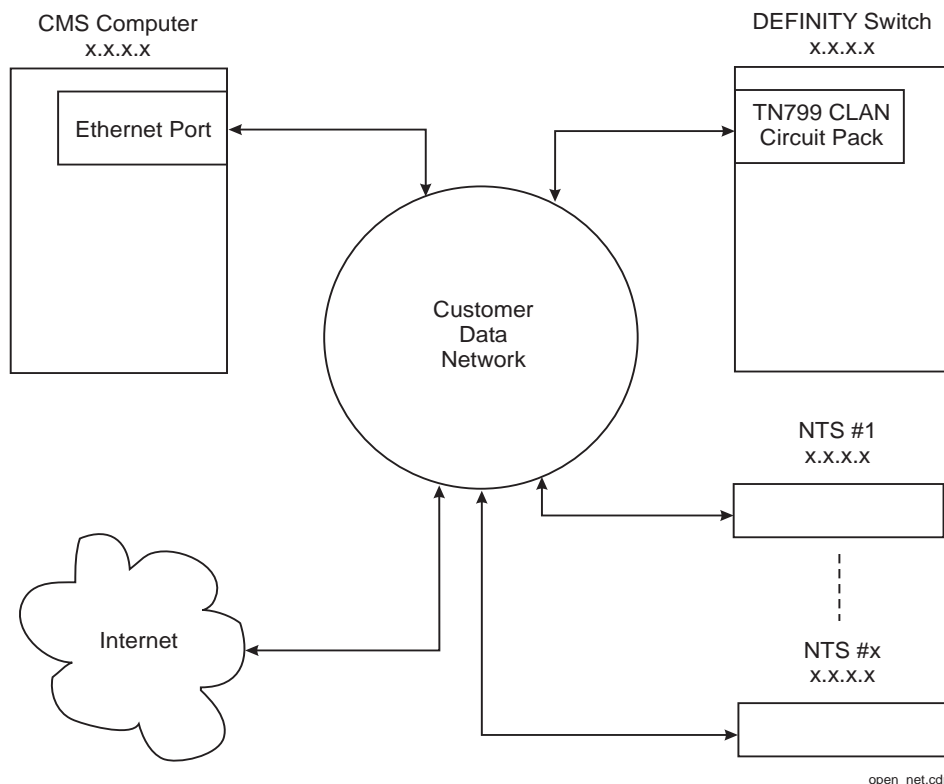
Two C-LAN option: This configuration shows the best way to isolate the CMS and Intuity links to the switch. This configuration uses two C-LAN circuit packs on the switch. A router must be used to send traffic from the customer's network to the Intuity, or if there is a remote switch that connects to the CMS computer. For true link isolation, this is the best option available.



High availability option: The High Availability option uses dual links from the switch to different CMS computers. This option helps ensure that CMS data is not lost if one of the links goes down or if one of the CMS computers goes down. This option is available on CMS R3V8 or later, and DEFINITY R8 or later equipped with two TN799B C-LAN circuit packs. The following figure shows a typical High Availability configuration. Though not shown here, a second ethernet port on the CMS computers can be used to isolate the NTS, printer, and CentreVu Supervisor traffic.



Public network: In a public network where the customer is connected to the Internet, the default IP addressing cannot be used. You must administer IP addressing based on the customer's requirements. For switch-to-CMS traffic, this setup is the least desirable way to set up a switch link because of potential message loss on a network that has too much traffic.



Connecting with a 10Base-T hub

The 10Base-T hub LAN connection is the recommended method to connect the switch to the CMS computer. The hub can be used to connect to more than one switch (multiple ACDs), and to connect to Network Terminal Server (NTS) units.

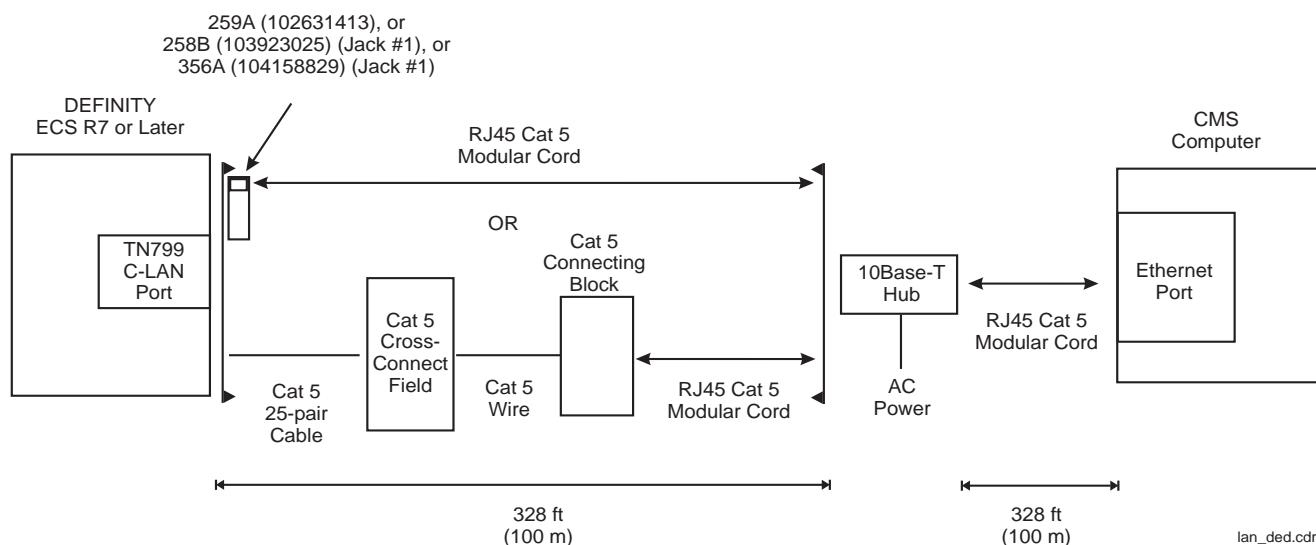
Distance limits

The distance limit for a single hub LAN connection is 328 feet (100 meters) from the switch to the hub, and another 328 feet (100 meters) from the hub to the CMS computer. If the distance between the switch and the CMS computer is more than 328 feet (100 meters), you can daisy-chain up to four separate hubs.

Parts list

Quantity	Description
1	TN799 C-LAN port
1	259A adapter (102631413), or 258B adapter (103923025), or 356A adapter (104158829), or Category 5 cross-connect hardware and connecting block
2	RJ45 UTP Category 5 modular cord 107748063 (5 feet, 1.5 meters) 107748105 (10 feet, 3 meters) 107748188 (15 feet, 4.5 meters) 107742322 (25 feet, 7.6 meters) 107742330 (50 feet, 15.2 meters) 107748238 (100 feet, 30.5 meters) 107748246 (200 feet, 61 meters) 107748253 (300 feet, 91 meters)
1	10Base-T LAN Hub
1	Ethernet port on the CMS computer

Cabling Diagram - LAN via 10Base-T hub



Cabling procedure

To connect the switch to a CMS computer using a LAN hub:

- Do one of the following:
 - Attach an adapter (259A, 258B, or 356A) to the backplane connector of the TN799 C-LAN circuit pack, then attach one end of an RJ45 Category 5 modular cord to the adapter. Use jack #1 on the 258B or 356A adapters.
 - Connect the ethernet port of a TN799 C-LAN circuit pack to a Category 5 connecting block using Category 5 cross-connect wiring, then attach one end of an RJ45 Category 5 modular cord to the connecting block.
- Connect the other end of the modular cord to a port on the 10Base-T hub.
- Connect another RJ45 Category 5 modular cord to a different port on the 10Base-T hub.
- Connect the other end of the modular cord to an ethernet port on the CMS computer.
- Connect and apply power to the 10Base-T hub.

Connecting with a crossover cable

The direct LAN connection is the most basic method to connect the switch to the CMS computer. Any NTSs must connect to a separate ethernet card on the CMS computer.

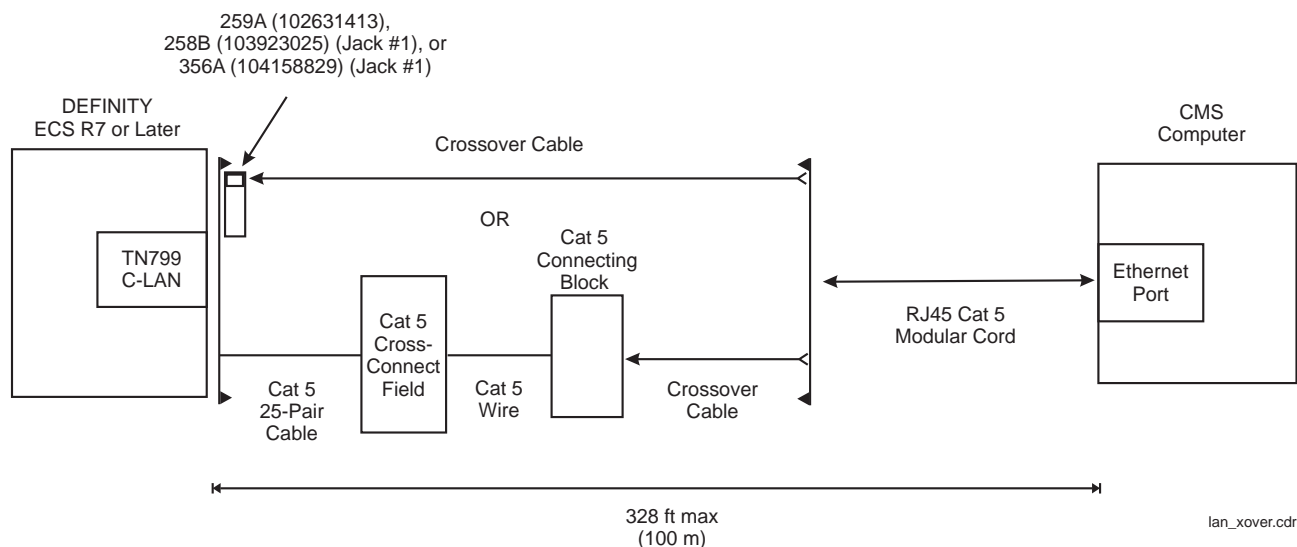
Distance limits

The distance limit for a direct LAN connection is 328 feet (100 meters).

Parts list

Quantity	Description
1	TN799 C-LAN port
1	259A adapter (102631413), or 258B adapter (103923025), or 356A adapter (104158829), or Category 5 cross-connect hardware and connecting block
1	6-inch RJ45 crossover cable (846943306 or 104154414)
1	RJ45 UTP Category 5 modular cord 107748063 (5 feet, 1.5 meters) 107748105 (10 feet, 3 meters) 107748188 (15 feet, 4.5 meters) 107742322 (25 feet, 7.6 meters) 107742330 (50 feet, 15.2 meters) 107748238 (100 feet, 30.5 meters) 107748246 (200 feet, 61 meters) 107748253 (300 feet, 91 meters)
1	Ethernet port on the CMS computer

Cabling diagram - LAN via crossover cable



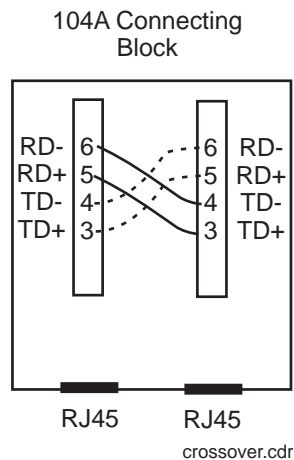
Cabling procedure

To connect the switch to a CMS computer using a crossover cable:

1. Do one of the following:
 - Attach an adapter (259A, 258B, or 356A) to the backplane connector of the TN799 C-LAN circuit pack, then attach the plug end of the crossover cable to the adapter. Use jack #1 on the 258B or 356A adapters.
 - Connect the ethernet port of a TN799 C-LAN circuit pack to a Category 5 connecting block using Category 5 cross-connect wiring, then attach the plug end of the crossover cable to the connecting block.
2. Connect one end of an RJ45 Category 5 modular cord to the receptacle end of the crossover cable.
3. Connect the other end of the modular cord to an ethernet port on the CMS computer.

Crossover wiring

If the standard crossover cable is not available, you can build your own crossover wiring arrangement to flip the transmit and receive leads 3/5 and 4/6 for the LAN connection. The following figure shows how this can be done with a 104A connecting block (comcode 105164859). When using this device, the distance limit from the switch to the CMS computer is 328 feet (100 meters). From this device, you would connect one RJ45 Category 5 modular cord to the switch C-LAN circuit pack, and another RJ45 Category 5 modular cord to the CMS computer ethernet port.



Connecting over a customer LAN

Using a customer's existing network is another method to connect a switch to the CMS computer. This method is not recommended except in special cases. The 10Base-T hub method should be used for most installations.

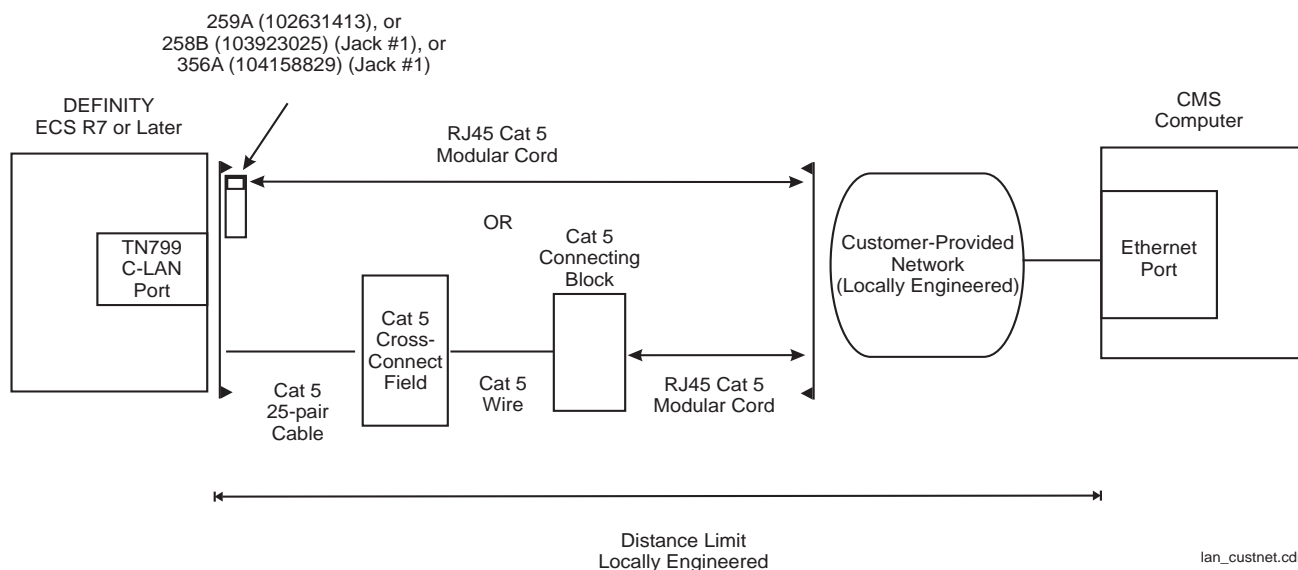
Distance limits

The distance limit using a customer's network must be locally engineered.

Parts list

Quantity	Description
1	TN799 C-LAN port
1	259A adapter (102631413), or 258B adapter (103923025), or 356A adapter (104158829), or Category 5 cross-connect hardware and connecting block
1	RJ45 UTP Category 5 modular cord 107748063 (5 feet, 1.5 meters) 107748105 (10 feet, 3 meters) 107748188 (15 feet, 4.5 meters) 107742322 (25 feet, 7.6 meters) 107742330 (50 feet, 15.2 meters) 107748238 (100 feet, 30.5 meters) 107748246 (200 feet, 61 meters) 107748253 (300 feet, 91 meters)
1	Ethernet port on the CMS computer

Cabling diagram - customer LAN



Cabling procedure

To connect the switch to a CMS computer using a customer's LAN:

- Do one of the following:
 - Attach an adapter (259A, 258B, or 356A) to the backplane connector of the TN799 C-LAN circuit pack, then attach one end of an RJ45 Category 5 modular cord to the adapter. Use jack #1 on the 258B or 356A adapters.
 - Connect the ethernet port of a TN799 C-LAN circuit pack to a Category 5 connecting block using Category 5 cross-connect wiring, then attach one end of an RJ45 Category 5 modular cord to the connecting block.
- Connect the other end of the modular cord to a port on the customer's data network.
- Connect from the customer's data network to an ethernet port the CMS computer.

Connecting with X.25 using an IDI

This section describes how to connect a CMS computer to a switch with X.25 using an IDI. The switch connections described in this section include:

- [G3si switch](#)
- [G3r switch](#) on page 48
- [G2 switch](#) on page 51

G3si switch

This section describes how to connect a switch port on the CMS computer to the EIA connector of a Processor Interface on the Generic 3si using an Isolating Data Interface (IDI).

Restrictions

An IDI connection cannot be used when:

- the switch is more than 210 feet (64 meters) from the CMS computer,
- the switch has a duplicated common control,
- the switch is DC-powered, or
- link 1 of the TN765 Processor Interface is already being used by another application (for example, voice mail).

If any of these conditions exist, you must use data modules for the switch-to-CMS connection. See [Connecting with X.25 using data modules](#) on page 54.

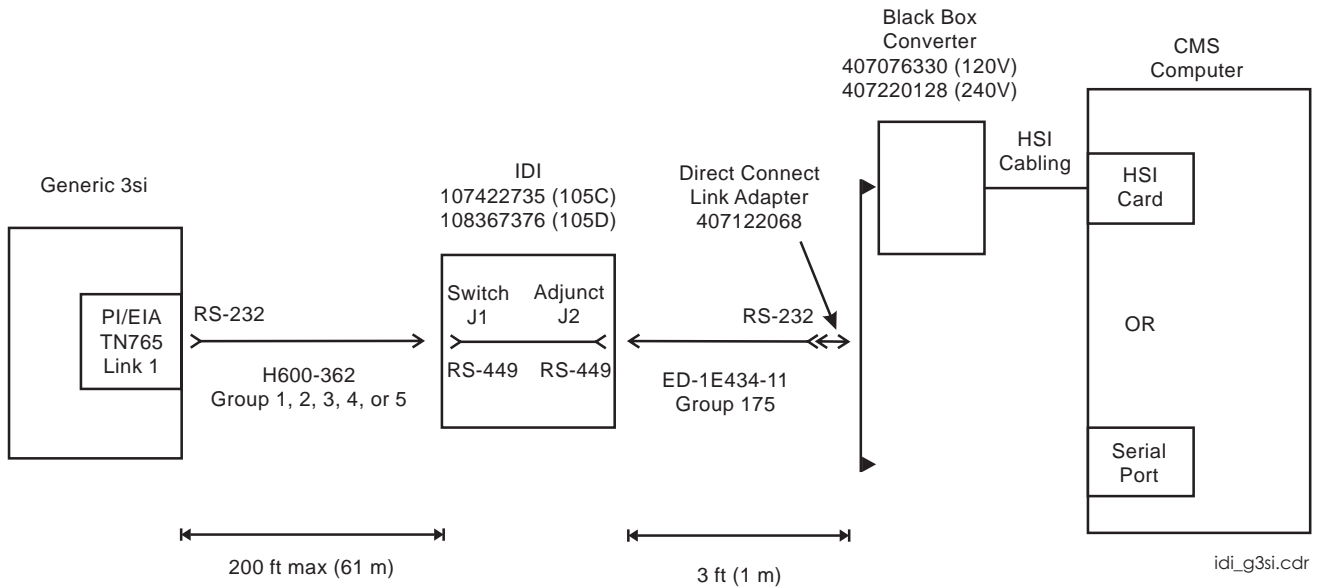
Distance limits

With this method, the maximum allowable distance between the CMS computer and the Generic 3si is 210 feet (64 meters). If your required distance is more than 210 feet (64 meters), see [Connecting with X.25 using data modules](#) on page 54.

Parts list

Quantity	Description
1	Link #1 port on the TN765 Processor Interface
1	H600-362 (RS232C to RS-449) cable Group 1 - 10 feet (3 meters) Group 2 - 25 feet (7.6 meters) Group 3 - 50 feet (15.2 meters) Group 4 - 100 feet (30.5 meters) Group 5 - 200 feet (61 meters)
1	Isolating Data Interface (IDI) unit The 105C (107422735) and earlier IDIs are designed to operate at a maximum of 9600 bps. The 105D (108367376) can operate at a maximum of 19200 bps.
1	ED-1E434-11, Group 175 (RS-232C to RS-449) cable
1	DB25 M/M Direct Connect Link adapter (407122068)
1	Serial port on the CMS computer <i>or</i> HSI port with associated cabling and parts (see HSI cabling for Enterprise 3500, Enterprise 3000, and SPARCserver on page 20 and HSI cabling for Blade 100 and Ultra 5 on page 22)

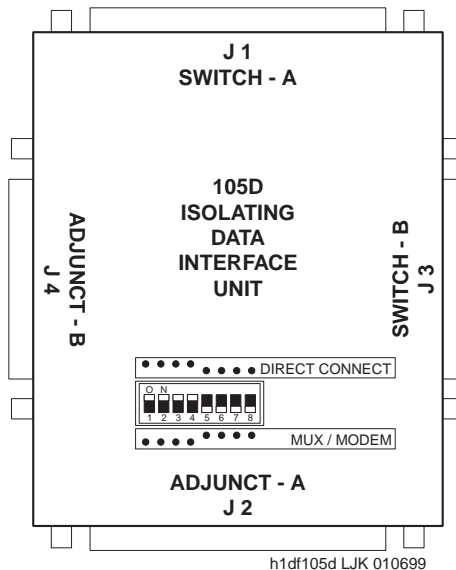
Cabling diagram - local using EIA port with IDI



Cabling procedure

To connect the switch to a CMS computer using an IDI:

1. Connect the female end of the ED-H600-362 cable to Link 1 (EIA connector) of the Processor Interface.
2. Connect the male end of the ED-H600-362 cable to the J1 (Switch/In) connector on the IDI.



3. Connect the male end of the ED-1E434-11, Group 175 cable to the J2 (Adjunct/Out) connector on the IDI.
4. If the IDI has DIP switches, make sure the switches are set for “Direct Connect.”
5. Connect the female end of the ED-1E434-11, Group 175 cable to the direct-connect link adapter.
6. If an HSI card is installed (multiple ACD configuration), connect the direct-connect link adapter to the DTE (RS-232) output port on the Black Box converter. See [HSI cabling for Enterprise 3500, Enterprise 3000, and SPARCserver](#) on page 20 and [HSI cabling for Blade 100 and Ultra 5](#) on page 22 for more information.

For a single ACD configuration (no HSI card), connect the direct-connect link adapter to the correct serial port on the CMS computer. See [Connecting a single ACD using serial port A or B \(X.25\)](#) on page 23 for more information.

G3r switch

This section describes how to connect a switch port on the CMS computer to the Packet Gateway board on the G3r using an IDI. This interface can be used with either a single ACD configuration or a multiple ACD configuration.

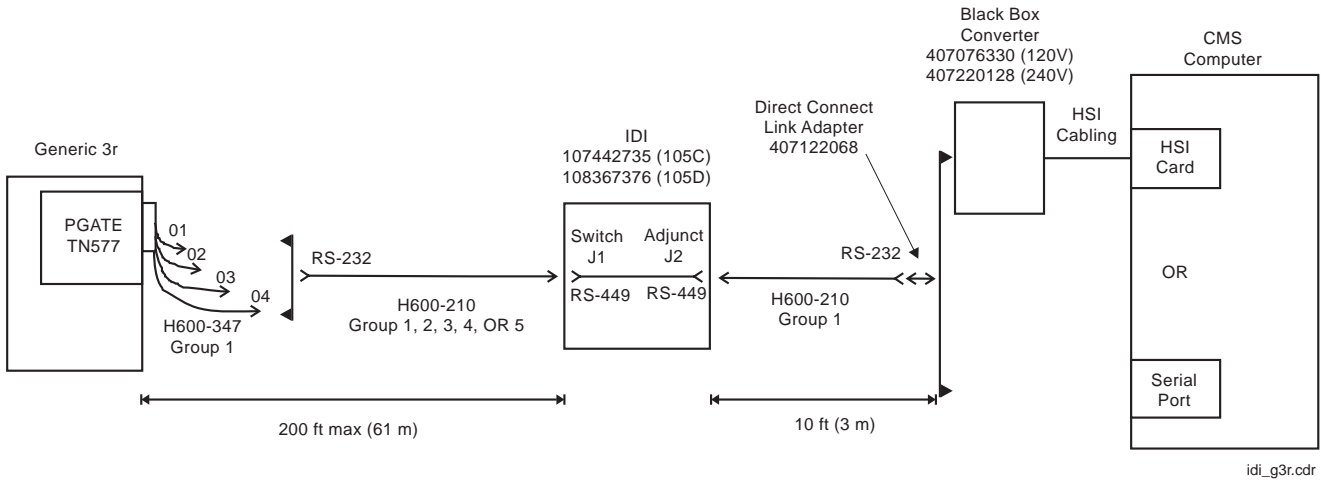
Distance limits

With this method, the maximum allowable distance between the CMS computer and the G3r switch is 210 feet (64 meters).

Parts list

Quantity	Description
1	TN577 PGATE circuit pack port
1	H600-347, Group 1 quad cable (provided as part of the TN577)
1	H600-210 (RS232C to RS-449) cable Group 1 - 10 feet (3 meters) Group 2 - 25 feet (7.6 meters) Group 3 - 50 feet (15.2 meters) Group 4 - 100 feet (30.5 meters) Group 5 - 200 feet (61 meters)
1	IDI unit The 105C (107442735) and earlier IDIs are designed to operate at a maximum of 9600 bps. The 105D (108367376) can operate at a maximum of 19200 bps.
1	H600-210, Group 1 (RS-232C to RS-449) cable
1	DB25 M/M Direct Connect Link adapter (407122068)
1	Serial port on the CMS computer <i>or</i> HSI port with associated cabling and parts (see HSI cabling for Enterprise 3500, Enterprise 3000, and SPARCserver on page 20 and HSI cabling for Blade 100 and Ultra 5 on page 22)

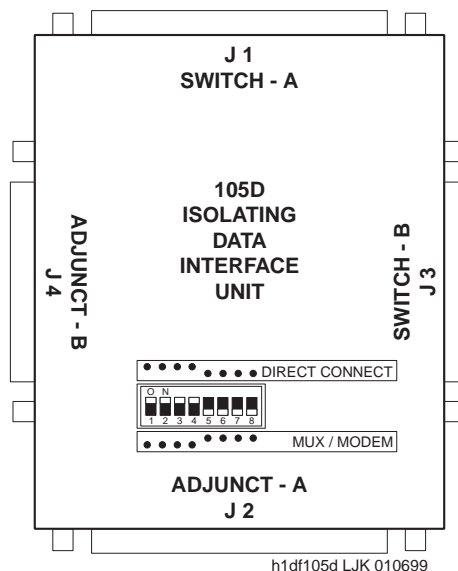
Cabling diagram - local using PGATE with IDI



Cabling procedure

To connect the switch to a CMS computer using an IDI:

1. Verify that the H600-347, Group 1 cable is connected to the amphenol connector of the Packet Gateway circuit pack.
2. Connect one of the four H600-347, Group 1 cable RS232 connectors to the female end of the H600-210, Group 1 cable. Record the number of the RS232 connector used.
3. Connect the male end of the H600-210, Group 1, 2, 3, 4, or 5 cable to the J1 (Switch/In) connector on the IDI.



4. Connect the male end of the H600-210, Group 1 cable to the J2 (Adjunct/Out) connector on the IDI.
5. If the IDI has DIP switches, make sure the switches are set for “Direct Connect.”
6. Connect the female end of the H600-210, Group 1 cable to the direct-connect link adapter.
7. If an HSI card is installed (multiple ACD configuration), connect the direct-connect link adapter to the DTE (RS-232) output port on the Black Box converter. See [HSI cabling for Enterprise 3500, Enterprise 3000, and SPARCserver](#) on page 20 and [HSI cabling for Blade 100 and Ultra 5](#) on page 22 for more information.

For a single ACD configuration (no HSI card), connect the direct-connect link adapter to the correct serial port on the CMS computer. See [Connecting a single ACD using serial port A or B \(X.25\)](#) on page 23 for more information.

G2 switch

This section describes how to connect a switch port on the CMS computer to the DCIU on the G2 using an IDI. This interface can be used for either a single ACD configuration or a multiple ACD configuration.

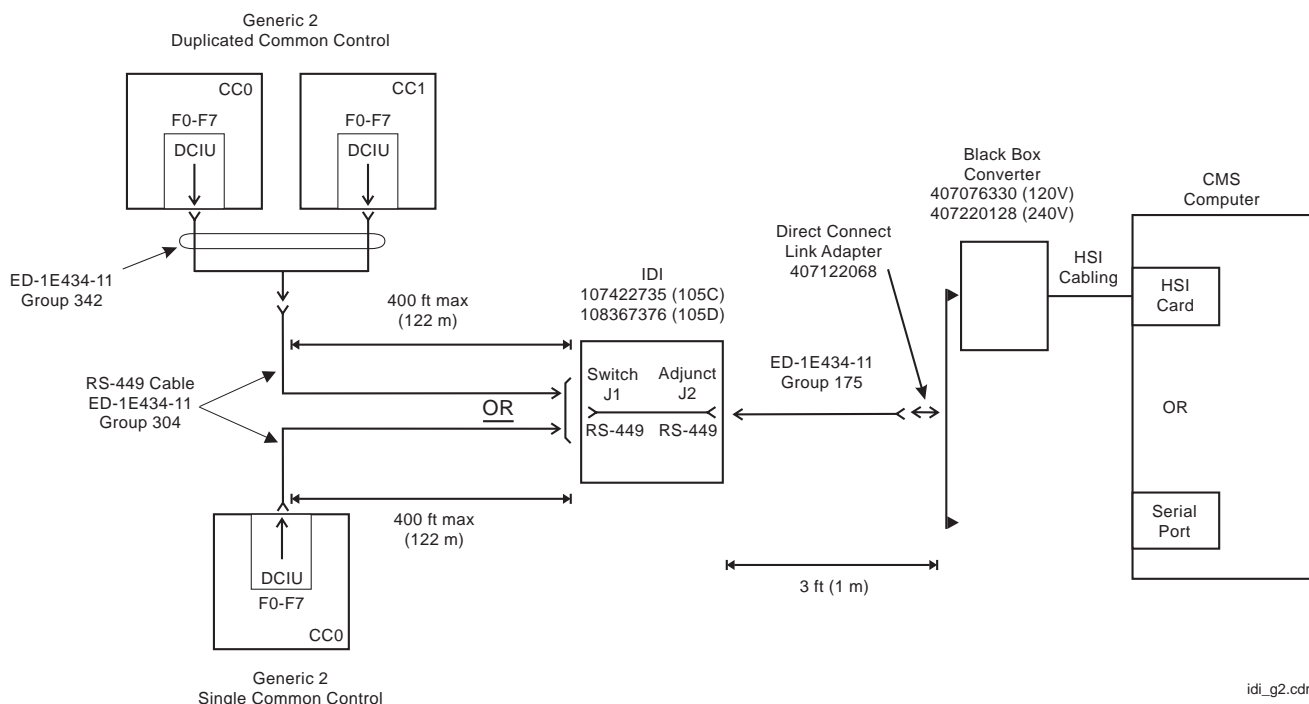
Distance limits

With this method, the maximum allowable distance between the CMS computer and G2 switch is 400 feet (122 meters).

Parts list

Quantity	Description
1	ED-1E434-11, Group 342 Y-cable (if the switch is equipped with duplicated common controls)
1	ED-1E434-11, Group 304 (RS-449) cable up to 400 feet (122 meters) long
1	IDI unit The 105C (107422735) and earlier IDIs are designed to operate at a maximum of 9600 bps. The 105D (108367376) can operate at a maximum of 19200 bps.
1	ED-1E434-11, Group 175 cable (RS-232C to RS-449 transition cable)
1	DB25 M/M Direct Connect Link adapter (407122068)
1	Serial port on the CMS computer <i>or</i> HSI port with associated cabling and parts (see HSI cabling for Enterprise 3500, Enterprise 3000, and SPARCserver on page 20 and HSI cabling for Blade 100 and Ultra 5 on page 22)

Cabling diagram - local using DCIU port with IDI



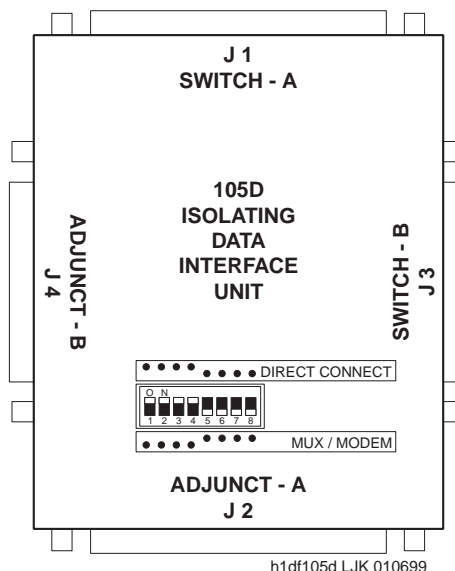
Cabling procedure

To connect the switch to a CMS computer using an IDI:

1. If the G2 is equipped with a single common control, connect the female end of the ED-1E434-11, Group 304 cable to the switch at ports F0 through F7. Record the port number that you use, because it will be needed during switch administration.
2. If the G2 is equipped with duplicated common controls, connect the female end of the ED-1E434-11, Group 304 cable to the male end of the ED-1E434-11, Group 342 cable.

Connect the female ends of the ED-1E434-11, Group 342 cable to the duplicated common controls at ports F0 through F7. You must select the same port on each of the common controls. Record the port number that you use, because it will be needed during switch administration.

3. Connect the male end of the ED-1E434-11, Group 304 cable to the J1 (Switch/In) connector on the IDI.



4. Connect the male end of the ED-1E434-11, Group 175 cable to the J2 (Adjunct/Out) connector on the IDI.
5. If the IDI has DIP switches, make sure the switches are set for "Direct Connect."
6. Connect the female end of the ED-1E434-11, Group 175 cable to the direct-connect link adapter.
7. If an HSI card is installed (multiple ACD configuration), connect the direct-connect link adapter to the DTE (RS-232) output port on the Black Box converter. See [HSI cabling for Enterprise 3500, Enterprise 3000, and SPARCserver](#) on page 20 and [HSI cabling for Blade 100 and Ultra 5](#) on page 22 for more information.

For a single ACD configuration (no HSI card), connect the direct-connect link adapter to the correct serial port on the CMS computer. See [Connecting a single ACD using serial port A or B \(X.25\)](#) on page 23 for more information.

Connecting with X.25 using data modules

This section describes how to connect a CMS computer to a switch with X.25 using data modules. The switch connections described in this section include:

- [G3si switch](#)
- [G3r switch](#) on page 57
- [G2 switch](#) on page 60

G3si switch

This section describes how to connect a switch port on the CMS computer to the Processor Interface circuit pack on the G3si using a 7400D Data Module.

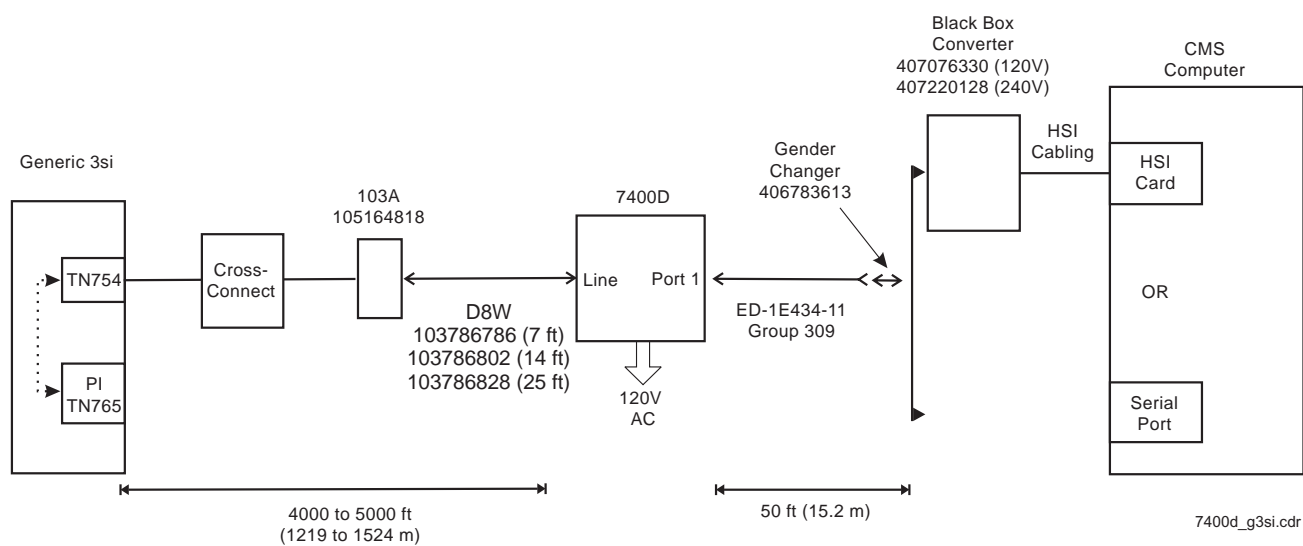
Distance limits

With this method, the maximum allowable distance between the CMS computer and the 7400D Data Module is 50 feet (15.2 meters). The maximum allowable distance between the 7400D and the G3si is 5000 feet (1524 meters) with 24-gauge wire and 4000 feet (1219 meters) with 26-gauge wire.

Parts list

Quantity	Description
1	TN754 4-wire digital port on the switch
1	103A connecting block (105164818)
1	D8W modular cord or equivalent (UTP Category 3) 103786786 (7 feet, 2.1 meters) 103786802 (14 feet, 4.2 meters) 103786828 (25 feet, 7.6 meters)
1	7400D with a stand-alone housing
1	ED-1E434-11, Group 309 (RS-232C) cable
1	DB25 M/M Gender Changer (406783613)
1	Serial port on the CMS computer <i>or</i> HSI port with associated cabling and parts (see HSI cabling for Enterprise 3500, Enterprise 3000, and SPARCserver on page 20 and HSI cabling for Blade 100 and Ultra 5 on page 22)

Cabling diagram - local with 7400D



Cabling procedure

To connect the switch to a CMS computer using a data module:

1. Run a cable from the cross-connect to a TN754 4-wire digital port on the switch.
2. Cross-connect the TN754 4-wire digital port to a 103A connecting block.
3. Connect one end of a D8W modular cord to the 103A connecting block.
4. Connect the other end of the D8W modular cord to the LINE jack of the 7400D.
5. Plug the power supply cord into the connector labeled "POWER" on the 7400D.
6. Connect the AC Power Converter to the 7400D and to an AC power outlet.

The default options for the 7400D are acceptable for CMS. Refer to the *7400D Data Module User's Guide*, 555-020-712, for information on options and setting options.

7. Connect the male end of the ED-1E434-11, Group 309 (RS-232) cable to the 7400D data module.
8. Connect the female end of the ED-1E434-11, Group 309 (RS-232) cable to the gender changer.
9. If an HSI card is installed (multiple ACD configuration), connect the direct-connect link adapter to the DTE (RS-232) output port on the Black Box converter. See [HSI cabling for Enterprise 3500, Enterprise 3000, and SPARCserver](#) on page 20 and [HSI cabling for Blade 100 and Ultra 5](#) on page 22 for more information.

For a single ACD configuration (no HSI card), connect the direct-connect link adapter to the correct serial port on the CMS computer. See [Connecting a single ACD using serial port A or B \(X.25\)](#) on page 23 for more information.

G3r switch

This section describes how to connect the CMS computer to the G3r using 7400D Data Modules. This interface can be used for either a single ACD configuration or a multiple ACD configuration.

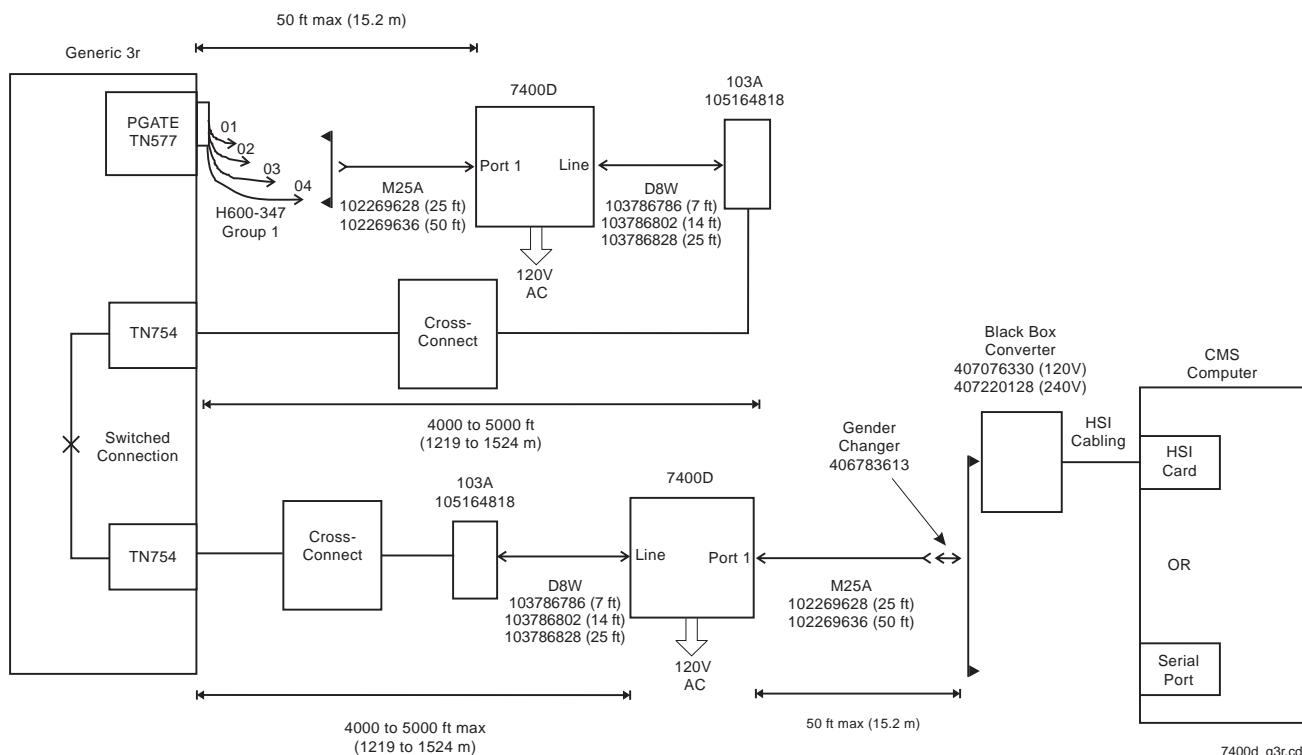
Distance limits

With this method, the maximum allowable distance between the CMS computer and the 7400D is 50 feet (15.2 meters). The maximum allowable distance between the 7400D and the Generic 3r is 5000 feet (1524 meters) with 24-gauge wire and 4000 feet (1219 meters) with 26-gauge wire.

Parts list

Quantity	Description
1	TN577 PGATE circuit pack port
1	H600-347, Group 1 quad cable (provided as part of the TN577)
2	M25A RS232 cable 102269628 (25 feet, 7.6 meters) 102269636 (50 feet, 15.2 meters)
2	7400D with stand-alone housing
2	D8W modular cord or equivalent (UTP Category 3) 103786786 (7 feet, 2.1 meters) 103786802 (14 feet, 4.2 meters) 103786828 (25 feet, 7.6 meters)
2	103A connecting block (105164818)
1	Cross-connect hardware
2	TN754 4-wire digital port on the switch
1	DB25 M/M Gender Changer (406783613)
1	Serial port on the CMS computer <i>or</i> HSI port with associated cabling and parts (see HSI cabling for Enterprise 3500, Enterprise 3000, and SPARCserver on page 20 and HSI cabling for Blade 100 and Ultra 5 on page 22)

Cabling diagram - local with 7400D



Cabling procedure

To connect the switch to a CMS computer using a data module:

1. Verify that the H600-347, Group 1 cable is connected to the amphenol connector of the Packet Gateway circuit pack (TN577).
2. Connect one of the four H600-347, Group 1 cable RS232 connectors to the female end of the M25A cable. Record the number of the RS232 connector used.
3. Connect the male end of the M25A cable to the connector labeled "PORT 1" on the 7400D.
4. Plug the power supply cord into the connector labeled "POWER" on the 7400D.
5. Plug the power supply cord into an AC power outlet.

When connecting the CMS to a G3r, set the speed of the 7400D to 9600. The remaining default options are acceptable for CMS. See the *7400D Data Module User's Guide*, 555-020-712, for information on options and setting options.

6. Connect one end of a D8W modular cord into the LINE jack on the 7400D.
7. Connect the other end of the D8W cord to a 103A connecting block.
8. Connect the 103A connecting block through the cross-connect to a TN754 4-wire digital port on the switch.
9. Connect another 103A connecting block through the cross-connect to another TN754 4-wire digital port on the switch.
10. Connect one end of a D8W modular cord to the 103A connecting block.
11. Connect the other end of the D8W modular cord into the LINE jack on the 7400D.
12. Plug the power supply cord into the connector labeled "POWER" on the 7400D.
13. Plug the power supply cord into an AC power outlet.

When connecting the CMS to a G3r, set the speed of the 7400D to 9600. The remaining default options are acceptable for CMS. See the *7400D Data Module User's Guide*, 555-020-712, for information on options and setting options.

14. Connect the male end of the M25A cable to port 1 (RS-232) on the 7400D.
15. Connect the female end of the M25A cable to the gender changer.
16. If an HSI card is installed (multiple ACD configuration), connect the direct-connect link adapter to the DTE (RS-232) output port on the Black Box converter. See [HSI cabling for Enterprise 3500](#), [Enterprise 3000](#), and [SPARCserver](#) on page 20 and [HSI cabling for Blade 100 and Ultra 5](#) on page 22 for more information.

For a single ACD configuration (no HSI card), connect the direct-connect link adapter to the correct serial port on the CMS computer. See [Connecting a single ACD using serial port A or B \(X.25\)](#) on page 23 for more information.

G2 switch

This section describes how to connect the CMS computer to the G2 using 7400D Data Modules. This interface can be used for either a single ACD configuration or a multiple ACD configuration.

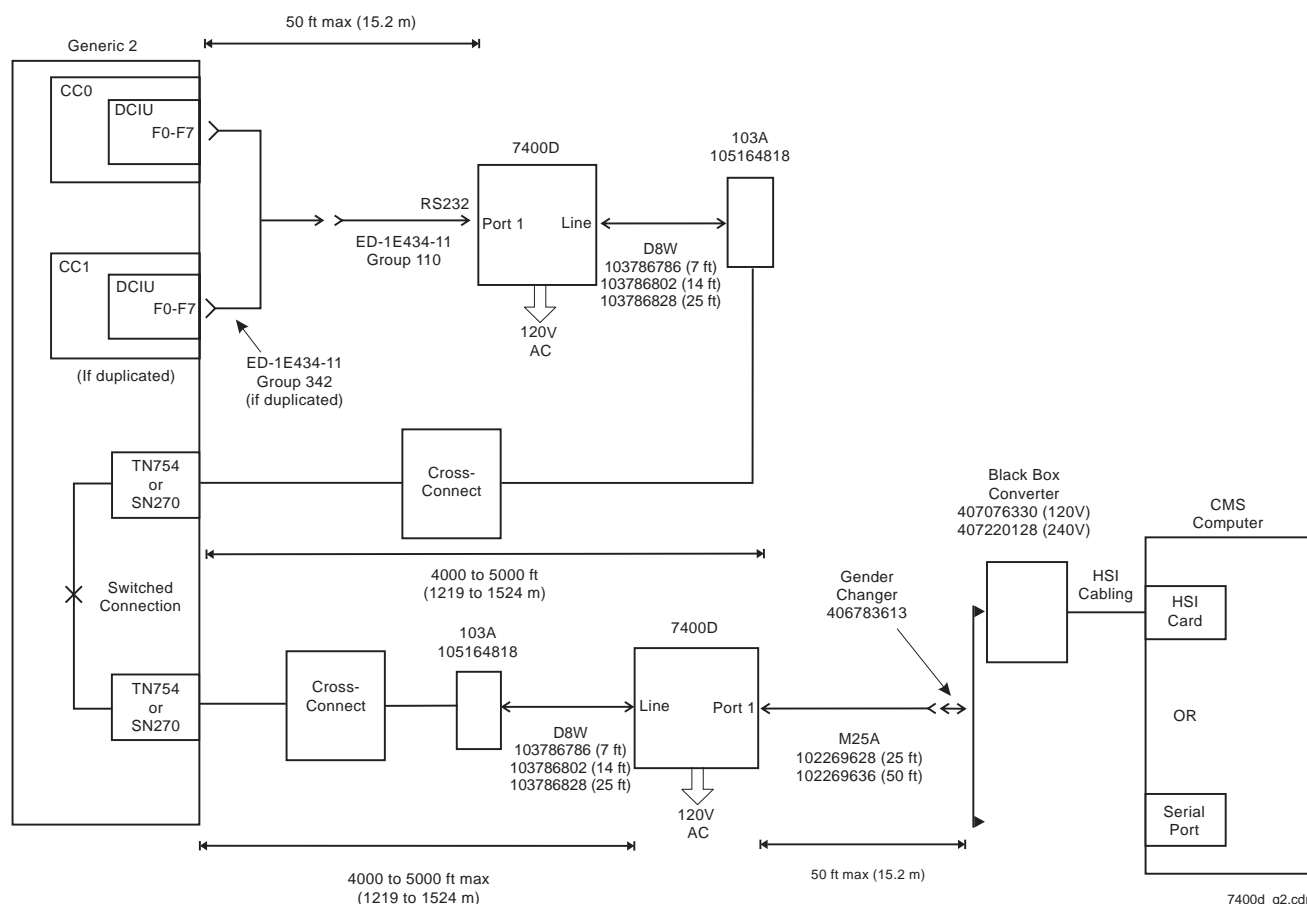
Distance limits

With this method, the maximum allowable distance between the CMS computer and the 7400D is 50 feet (15.2 meters). The maximum allowable distance between the 7400D and the G2 is 5000 feet (1524 meters) with 24-gauge wire and 4000 feet (1219 meters) with 26-gauge wire.

Parts list

Quantity	Description
1	ED-1E434-11, Group 342 Y-cable (if the switch is equipped with duplicated common controls)
1	ED-1E434-11, Group 110 (RS-449 to RS232) cable
2	7400D with stand-alone housing
2	D8W modular cord or equivalent (UTP Category 3) 103786786 (7 feet, 2.1 meters) 103786802 (14 feet, 4.2 meters) 103786828 (25 feet, 7.6 meters)
2	103A connecting block (105164818)
1	Cross-connect hardware
2	TN754 or SN270 4-wire digital port on the switch
1	M25A RS232 cable 102269628 (25 feet, 7.6 meters) 102269636 (50 feet, 15.2 meters)
1	DB25 M/M Gender Changer (406783613)
1	Serial port on the CMS computer <i>or</i> HSI port with associated cabling and parts (see HSI cabling for Enterprise 3500, Enterprise 3000, and SPARCserver on page 20 and HSI cabling for Blade 100 and Ultra 5 on page 22)

Cabling diagram - local with 7400D



Cabling procedure

To connect the switch to a CMS computer using a data module:

1. If the G2 is equipped with a single common control, connect the female end of the ED-1E434-11, Group 110 cable to the switch at ports F0 through F7. Record the port number that you use, because it will be needed during switch administration.
2. If the G2 is equipped with duplicated common controls, connect the female end of the ED-1E434-11, Group 110 cable to the male end of the ED-1E434-11, Group 342 cable.

Connect the female ends of the ED-1E434-11, Group 342 cable to the duplicated common controls at ports F0 through F7. You must select the same port on each of the common controls. Record the port number that you use, because it will be needed during switch administration.

3. Connect the male end of the ED-1E434-11, Group 110 cable to the connector labeled "PORT 1" on the 7400D.
4. Plug the power supply cord into the connector labeled "POWER" on the 7400D.
5. Plug the power supply cord into an AC power outlet.

When connecting the CMS to a G2, set the speed of the 7400D to 9600. The remaining default options are acceptable for CMS. See the *7400D Data Module User's Guide*, 555-020-712, for information on options and setting options.

6. Connect one end of a D8W modular cord into the LINE jack on the 7400D.
7. Connect the other end of the D8W cord to a 103A connecting block.
8. Connect the 103A connecting block through the cross-connect to a TN754 or SN270 4-wire digital port on the switch.
9. Connect another 103A connecting block through the cross-connect to a another TN754 or SN270 4-wire digital port on the switch.
10. Connect one end of a D8W modular cord to the 103A connecting block.
11. Connect the other end of the D8W modular cord into the LINE jack on the 7400D.
12. Plug the power supply cord into the connector labeled "POWER" on the 7400D.
13. Plug the power supply cord into an AC power outlet.

When connecting the CMS to a G2, set the speed of the 7400D to 9600. The remaining default options are acceptable for CMS. See the *7400D Data Module User's Guide*, 555-020-712, for information on options and setting options.

14. Connect the male end of the M25A cable to port 1 (RS-232) on the 7400D.
15. Connect the female end of the M25A cable to the gender changer.
16. If an HSI card is installed (multiple ACD configuration), connect the direct-connect link adapter to the DTE (RS-232) output port on the Black Box converter. See [HSI cabling for Enterprise 3500](#), [Enterprise 3000](#), and [SPARCserver](#) on page 20 and [HSI cabling for Blade 100 and Ultra 5](#) on page 22 for more information.

For a single ACD configuration (no HSI card), connect the direct-connect link adapter to the correct serial port on the CMS computer. See [Connecting a single ACD using serial port A or B \(X.25\)](#) on page 23 for more information.

Connecting with X.25 remotely

This section describes how to connect a CMS computer to a switch with X.25 remotely. The switch connections described in this section include:

- [G3si switch](#)
- [G3r switch](#) on page 73
- [G2 switch](#) on page 80

G3si switch

There are several ways you can remotely connect a CMS computer to a G3si switch:

- Analog connection directly to the PI
- Analog connection to a digital line linked to the PI
- DS1 connection linked to the PI.

Analog connection directly to the processor interface

This section describes how to connect a switch port on the CMS computer remotely through analog facilities on the public network to the EIA connector of the PI circuit pack (TN765).

Restrictions: This connection cannot be used when:

- the switch has a duplicated common control,
- the switch is DC-powered, or
- link 1 of the TN765 Processor Interface is already being used by another application (for example, voice mail).

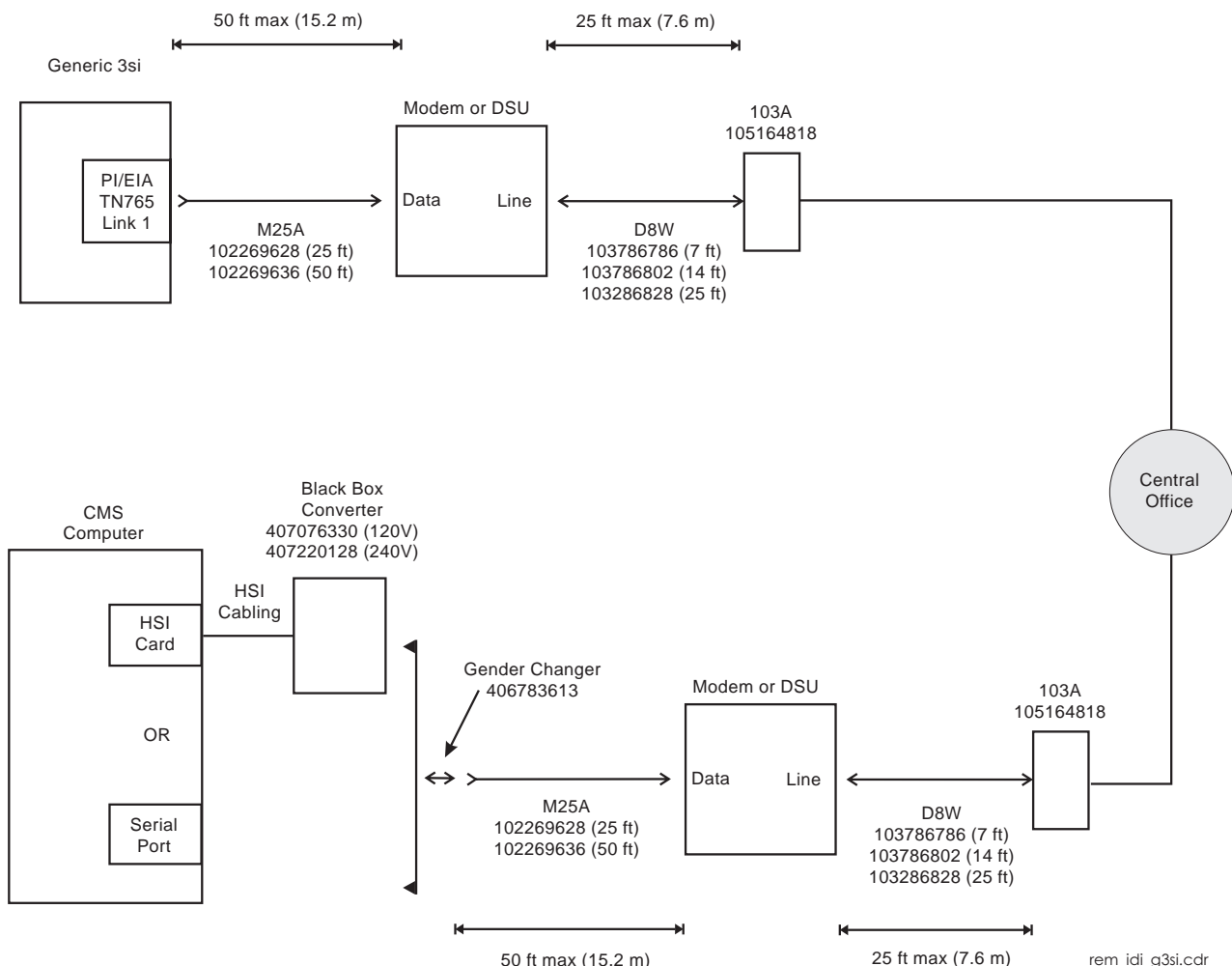
If any of these conditions exist, you must use a different method for remote connections. See the [Analog connection to a digital line linked to the processor interface](#) on page 67 section.

Distance Limits: There is a limit of 50 feet (15.2 meters) between the PI and the modem or DSU, and the CMS computer and the modem or DSU.

Parts list:

Quantity	Description
1	Link #1 port on the TN765 Processor Interface
2	M25A RS232 cable 102269628 (25 feet, 7.6 meters) 102269636 (50 feet, 15.2 meters)
2	Model 3810 analog modem (107560500), or Model 3510 analog DSU (107560542), or Model 3550 digital DSU (107560963), or Model 3610 digital DSU (contact Design Center)
2	D8W modular cord or equivalent (UTP Category 3) 103786786 (7 feet, 2.1 meters) 103786802 (14 feet, 4.2 meters) 103786828 (25 feet, 7.6 meters)
2	103A connecting block (105164818)
	Cross-connect hardware
1	DB25 M/M Gender Changer (406783613)
1	Serial port on the CMS computer <i>or</i> HSI port with associated cabling and parts (see HSI cabling for Enterprise 3500, Enterprise 3000, and SPARCserver on page 20 and HSI cabling for Blade 100 and Ultra 5 on page 22)

Cabling diagram - remote via private line using EIA port:



Cabling procedure: To connect from the G3si switch to a port at the central office:

1. Connect the female end of the M25A cable to Link 1 (EIA connector) of the Processor Interface.
2. Connect the male end of the M25A cable to the Data port on the modem or DSU.
3. Connect one end of a D8W modular cord to the Line port on the modem or DSU.
4. Connect the other end of the D8W modular cord to a 103A connecting block.
5. Cross-connect the 103A connecting block to an analog port of the central office switch.

To connect from the CMS computer to a port at the central office:

1. If an HSI card is installed (multiple ACD configuration), connect the direct-connect link adapter to the DTE (RS-232) output port on the Black Box converter. See [HSI cabling for Enterprise 3500, Enterprise 3000, and SPARCserver](#) on page 20 and [HSI cabling for Blade 100 and Ultra 5](#) on page 22 for more information.

For a single ACD configuration (no HSI card), connect the direct-connect link adapter to the correct serial port on the CMS computer. See [Connecting a single ACD using serial port A or B \(X.25\)](#) on page 23 for more information.

2. Connect the female end of the M25A cable to the gender changer.
3. Connect the male end of the M25A cable to the Data port on the modem or DSU.
4. Connect one end of a D8W modular cord to the Line port on the modem or DSU.
5. Connect the other end of the D8W modular cord to a 103A connecting block.
6. Cross-connect the 103A connecting block to an analog port of the central office switch.

Analog connection to a digital line linked to the processor interface

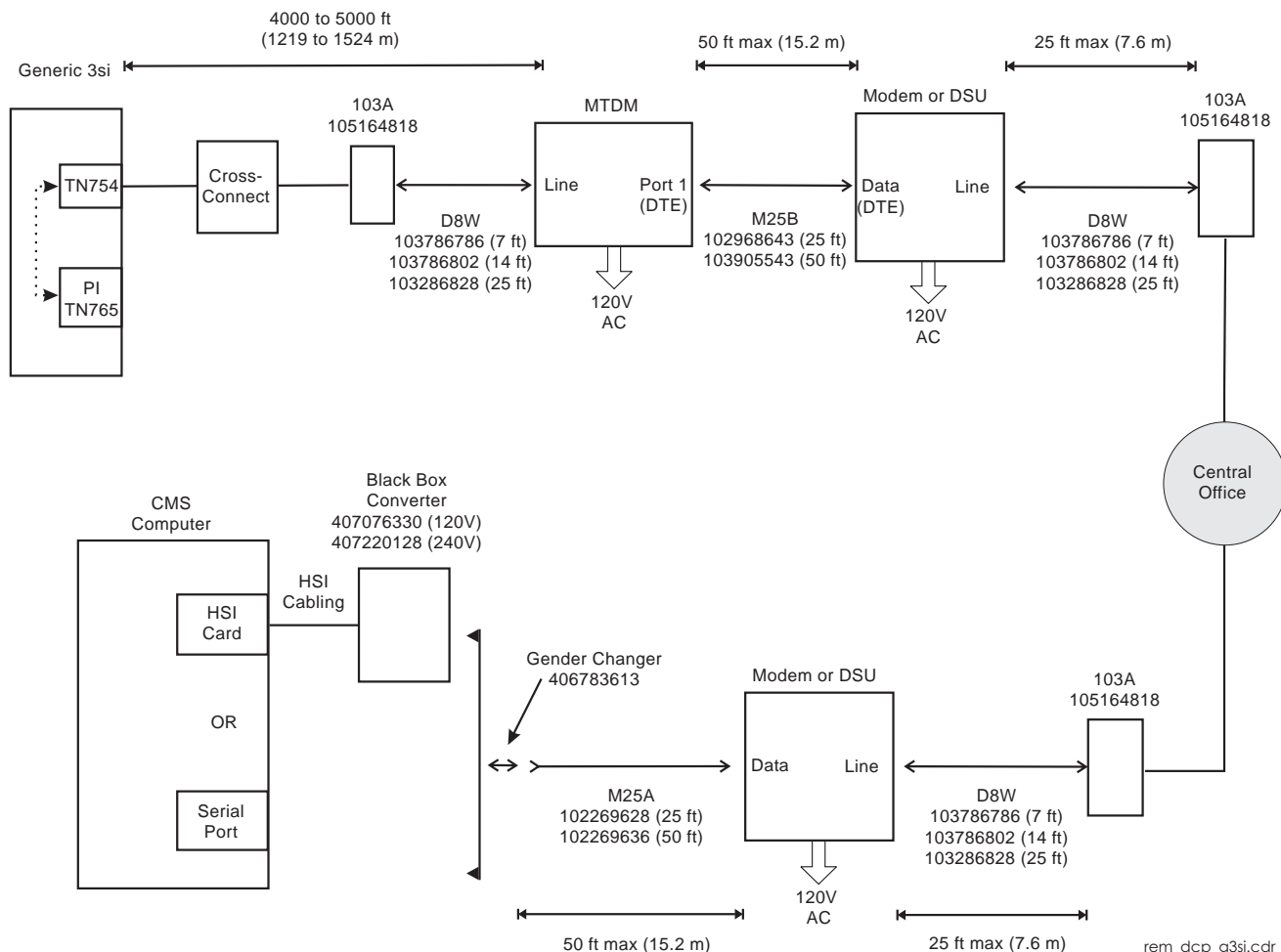
This section describes how to connect a switch port on the CMS computer remotely through analog facilities on the public network, to a digital port (TN754) on a G3si switch, which is internally linked to the PI.

Distance limits: There is a limit of 50 feet (15.2 meters) between the modular trunk data module (MTDM) and the modem or DSU, and the CMS computer and the modem or DSU.

Parts list:

Quantity	Description
1	M25A RS232 cable 102269628 (25 feet, 7.6 meters) 102269636 (50 feet, 15.2 meters)
1	M25B RS232 cable 102968643 (25 feet, 7.6 meters) 103905543 (50 feet, 15.2 meters)
1	TN754 4-wire digital port on the switch
1	Modular Trunk Data Module
2	Model 3810 analog modem (107560500), or Model 3510 analog DSU (107560542), or Model 3550 digital DSU (107560963), or Model 3610 digital DSU (contact Design Center)
3	D8W modular cord or equivalent (UTP Category 3) 103786786 (7 feet, 2.1 meters) 103786802 (14 feet, 4.2 meters) 103786828 (25 feet, 7.6 meters)
3	103A connecting block (105164818)
	Cross-connect hardware
1	DB25 M/M Gender Changer (406783613)
1	Serial port on the CMS computer <i>or</i> HSI port with associated cabling and parts (see HSI cabling for Enterprise 3500, Enterprise 3000, and SPARCserver on page 20 and HSI cabling for Blade 100 and Ultra 5 on page 22)

Cabling diagram - remote via private line using modems:



Cabling procedure: To connect from the G3si switch to a port at the central office:

1. Run a cable from the cross-connect to a TN754 4-wire digital port on the switch.
2. Cross-connect the TN754 4-wire digital port to a 103A connecting block.
3. Connect one end of a D8W modular cord to the 103A connecting block.
4. Connect the other end of the D8W modular cord to the LINE jack of the MTDM.
5. Plug the power supply cord into the connector labeled "POWER" on the MTDM.

6. Connect the AC Power Converter to the MTDM and to an AC power outlet.

You do not have to set options for the MTDM, since the default options for the MTDM are acceptable for CMS. Refer to the *MTDM Data Module User's Guide* for information on setting options.

7. Connect the male end of the M25B cable to the MTDM.

NOTE:

If a 7400D is being used instead of an MTDM, you must use a null modem cable between the 7400D and the modem/DSU. This null modem must be locally-provided.

8. Connect the other end of the M25B cable to the Data port on the modem or DSU.
9. Connect one end of a D8W modular cord to the Line port on the modem or DSU.
10. Connect the other end of the D8W modular cord to a 103A connecting block.
11. Cross-connect the 103A connecting block to an analog port of the central office switch.

To connect from the CMS computer to a port at the central office:

1. If an HSI card is installed (multiple ACD configuration), connect the direct-connect link adapter to the DTE (RS-232) output port on the Black Box converter. See [HSI cabling for Enterprise 3500, Enterprise 3000, and SPARCserver](#) on page 20 and [HSI cabling for Blade 100 and Ultra 5](#) on page 22 for more information.

For a single ACD configuration (no HSI card), connect the direct-connect link adapter to the correct serial port on the CMS computer. See [Connecting a single ACD using serial port A or B \(X.25\)](#) on page 23 for more information.

2. Connect the female end of the M25A cable to the gender changer.
3. Connect the male end of the M25A cable to the Data port on the modem or DSU.
4. Connect one end of a D8W modular cord to the Line port on the modem or DSU.
5. Connect the other end of the D8W modular cord to a 103A connecting block.
6. Cross-connect the 103A connecting block to an analog port of the central office switch.

DS1 connection linked to the processor interface

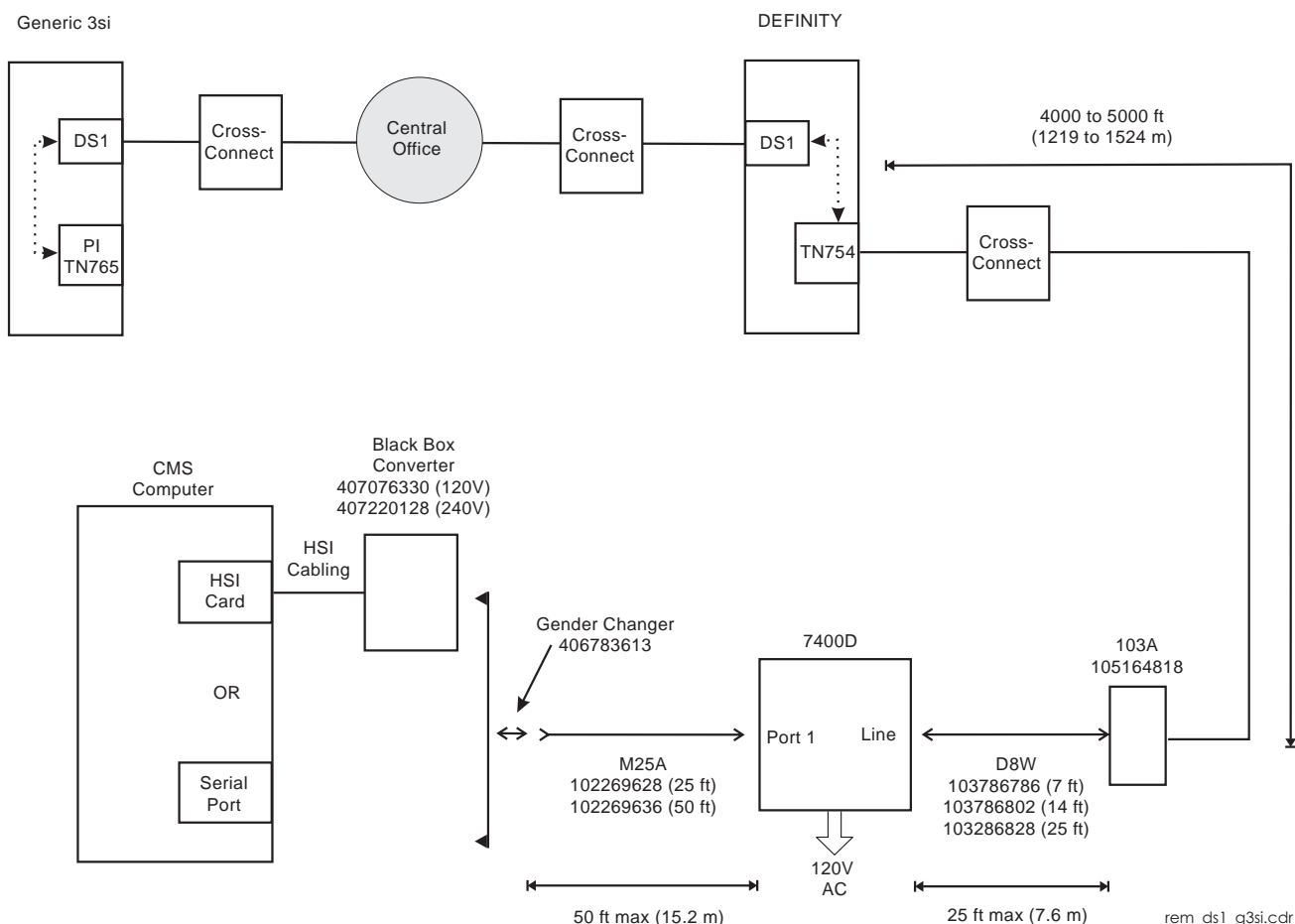
This section describes how to connect a switch port on the CMS computer remotely through DS1 facilities on the public network, to a DS1 circuit on the G3si switch, which is internally linked to the PI.

Distance limits: The maximum allowable distance between the CMS computer and the 7400D Data Module is 50 feet (15.2 meters). The maximum allowable distance between the 7400D and the G3si is 5000 feet (1524 meters) with 24-gauge wire and 4000 feet (1219 meters) with 26-gauge wire.

Parts list:

Quantity	Description
1	DS1 circuit on <i>each</i> switch
	Cross-connect hardware
	Central office DS1 facilities
1	TN754 4-wire digital port on the switch
1	103A connecting block (105164818)
1	D8W modular cord or equivalent (UTP Category 3) 103786786 (7 feet, 2.1 meters) 103786802 (14 feet, 4.2 meters) 103786828 (25 feet, 7.6 meters)
1	7400D with a stand-alone housing
1	M25A RS232 cable 102269628 (25 feet, 7.6 meters) 102269636 (50 feet, 15.2 meters)
1	DB25 M/M Gender Changer (406783613)
1	Serial port on the CMS computer <i>or</i> HSI port with associated cabling and parts (see HSI cabling for Enterprise 3500, Enterprise 3000, and SPARCserver on page 20 and HSI cabling for Blade 100 and Ultra 5 on page 22)

Cabling diagram - remote using UDP extension or trunk group over DS1:



Cabling procedure: To connect the switch to a CMS computer using a UDP extension or trunk group over DS1:

1. Connect a DS1 circuit on the distant switch through CO facilities to a DS1 circuit on the local switch.
2. Run a cable from the cross-connect to a TN754 4-wire digital port on the local switch.
3. Cross-connect the TN754 4-wire digital port to a 103A connecting block.
4. Connect one end of a D8W modular cord to the 103A connecting block.
5. Connect the other end of the D8W modular cord to the LINE jack of the 7400D.

6. Plug the power supply cord into the connector labeled "POWER" on the 7400D.
7. Connect the AC Power Converter to the 7400D and to an AC power outlet.

You do not have to set options for the 7400D, since the default options for the 7400D are acceptable for CMS. Refer to the *7400D Data Module User's Guide*, 555-020-712, for information on setting options.

8. Connect the male end of the M25A cable to Port 1 on the 7400D.
9. Connect the female end of the M25A cable to the gender changer.
10. If an HSI card is installed (multiple ACD configuration), connect the direct-connect link adapter to the DTE (RS-232) output port on the Black Box converter. See [HSI cabling for Enterprise 3500, Enterprise 3000, and SPARCserver](#) on page 20 and [HSI cabling for Blade 100 and Ultra 5](#) on page 22 for more information.

For a single ACD configuration (no HSI card), connect the direct-connect link adapter to the correct serial port on the CMS computer. See [Connecting a single ACD using serial port A or B \(X.25\)](#) on page 23 for more information.

G3r switch

There are two ways you can remotely connect a CMS computer to a G3r switch:

- Analog connection directly to the packet gateway (TN577)
- DS1 connection with DCP link to the packet gateway (TN577).

Analog connection directly to the packet gateway

This section describes how to connect a switch port on the CMS computer remotely through analog facilities on the public network to the packet gateway circuit pack (TN577).

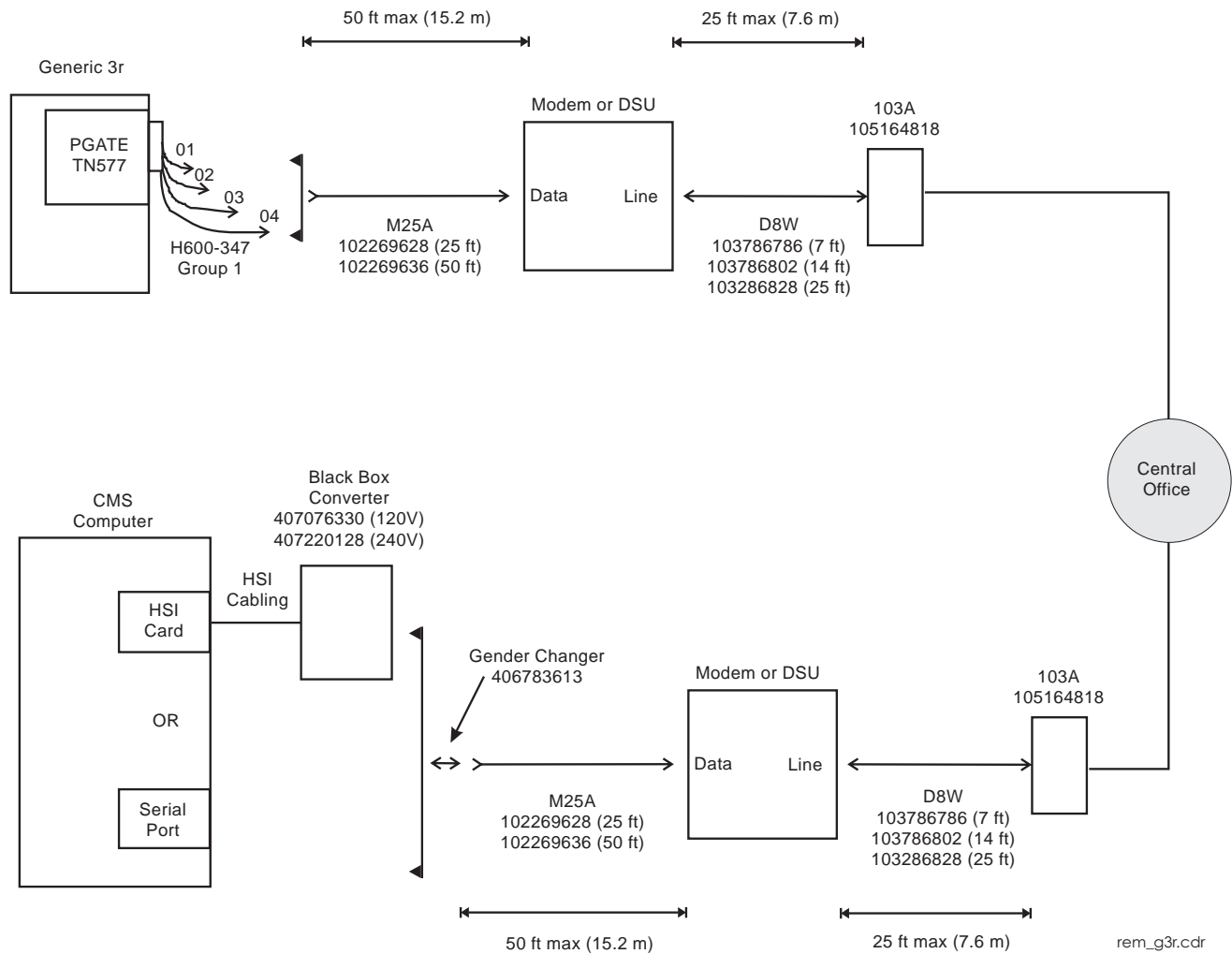
Distance limits: There is a limit of 50 feet (15.2 meters) between the Packet Gateway (TN577) and the modem or DSU, and the CMS computer and the modem or DSU.

Parts list:

Quantity	Description
1	TN577 PGATE circuit pack port
1	H600-347, Group 1 quad cable (provided as part of the TN577)
2	M25A RS232 cable 102269628 (25 feet, 7.6 meters) 102269636 (50 feet, 15.2 meters)
2	Model 3810 analog modem (107560500), or Model 3510 analog DSU (107560542), or Model 3550 digital DSU (107560963), or Model 3610 digital DSU (contact Design Center)
2	D8W modular cord or equivalent (UTP Category 3) 103786786 (7 feet, 2.1 meters) 103786802 (14 feet, 4.2 meters) 103786828 (25 feet, 7.6 meters)
2	103A connecting block (105164818)
	Cross-connect hardware
1	DB25 M/M Gender Changer (406783613)

Quantity	Description
1	Serial port on the CMS computer <i>or</i> HSI port with associated cabling and parts (see HSI cabling for Enterprise 3500, Enterprise 3000, and SPARCserver on page 20 and HSI cabling for Blade 100 and Ultra 5 on page 22)

Cabling diagram - remote via private line using PGATE:



Cabling procedure: To connect from the G3r switch to a port at the central office:

1. Verify that the H600-347, Group 1 cable is connected to the amphenol connector of the Packet Gateway circuit pack.
2. Connect one of the four H600-347, Group 1 cable RS232 connectors to the female end of the M25A cable. Record the number of the RS232 connector used.
3. Connect the male end of the M25A cable to the Data port on the modem or DSU.
4. Connect one end of a D8W modular cord to the Line port on the modem or DSU.
5. Connect the other end of the D8W modular cord to a 103A connecting block.
6. Cross-connect the 103A connecting block to an analog port of the central office switch.

To connect from the CMS computer to a port at the central office:

1. If an HSI card is installed (multiple ACD configuration), connect the direct-connect link adapter to the DTE (RS-232) output port on the Black Box converter. See [HSI cabling for Enterprise 3500, Enterprise 3000, and SPARCserver](#) on page 20 and [HSI cabling for Blade 100 and Ultra 5](#) on page 22 for more information.

For a single ACD configuration (no HSI card), connect the direct-connect link adapter to the correct serial port on the CMS computer. See [Connecting a single ACD using serial port A or B \(X.25\)](#) on page 23 for more information.

2. Connect the female end of the M25A cable to the gender changer.
3. Connect the male end of the M25A cable to the Data port on the modem or DSU.
4. Connect one end of a D8W modular cord to the Line port on the modem or DSU.
5. Connect the other end of the D8W modular cord to a 103A connecting block.
6. Cross-connect the 103A connecting block to an analog port of the central office switch.

DS1 connection linked to the packet gateway

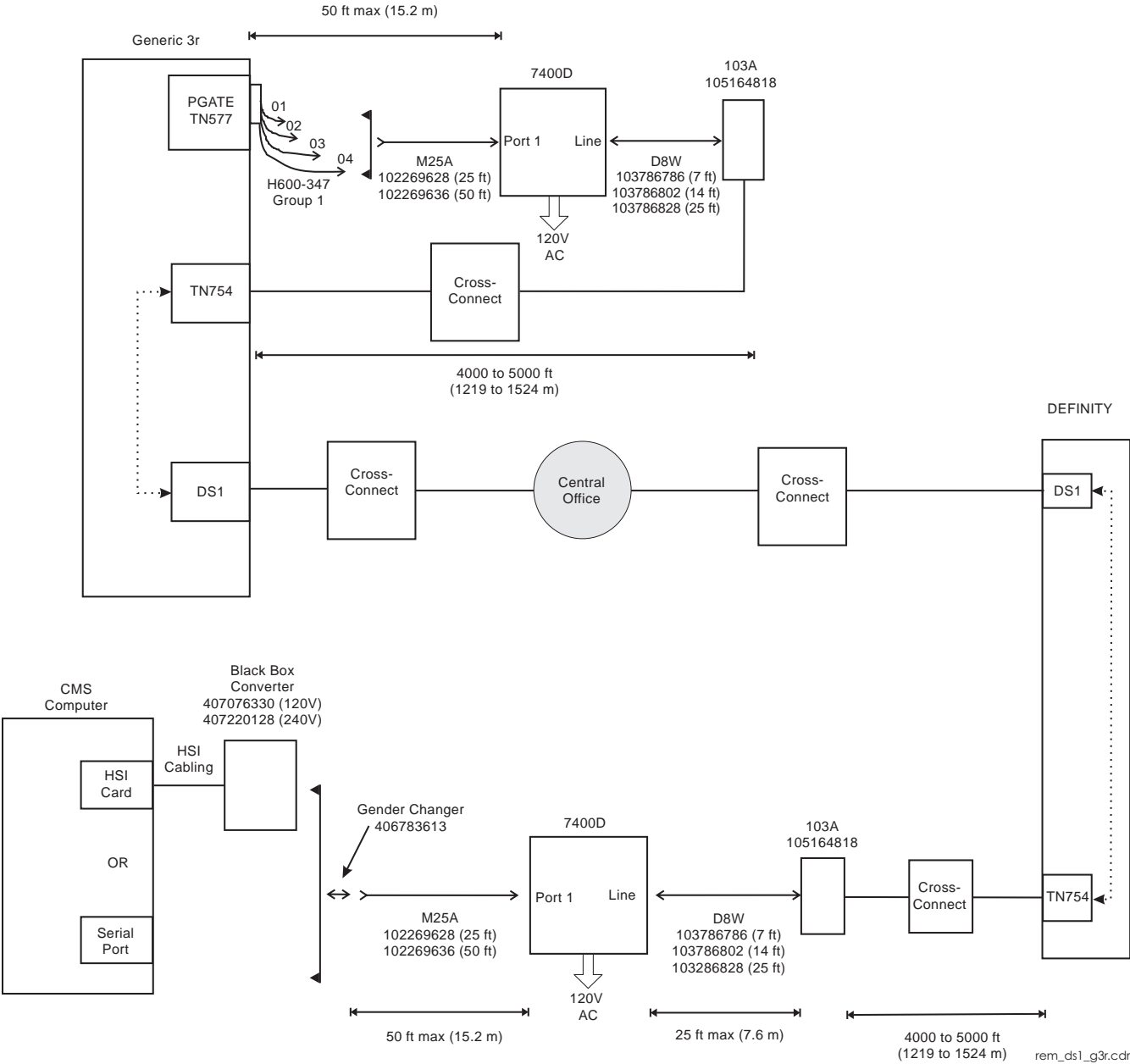
This section describes how to connect a switch port on the CMS computer remotely through DS1 facilities on the public network, to a DS1 circuit on the G3r switch, which is internally linked to a digital line, and then connected to the packet gateway (TN577).

Distance limits: The maximum allowable distance between the CMS computer or the packet gateway and the 7400D Data Module is 50 feet (15.2 meters). The maximum allowable distance between the 7400D and the switch is 5000 feet (1524 meters) with 24-gauge wire and 4000 feet (1219 meters) with 26-gauge wire.

Parts list:

Quantity	Description
1	TN577 PGATE circuit pack port
1	H600-347, Group 1 quad cable (provided as part of the TN577)
2	M25A RS232 cable 102269628 (25 feet, 7.6 meters) 102269636 (50 feet, 15.2 meters)
2	7400D with stand-alone housing
2	D8W modular cord or equivalent (UTP Category 3) 103786786 (7 feet, 2.1 meters) 103786802 (14 feet, 4.2 meters) 103786828 (25 feet, 7.6 meters)
2	103A connecting block (105164818)
1	Cross-connect hardware
1	DS1 circuit on <i>each</i> switch
	Central office DS1 facilities
1	TN754 4-wire digital port on <i>each</i> switch
1	DB25 M/M Gender Changer (406783613)
1	Serial port on the CMS computer <i>or</i> HSI port with associated cabling and parts (see HSI cabling for Enterprise 3500, Enterprise 3000, and SPARCserver on page 20 and HSI cabling for Blade 100 and Ultra 5 on page 22)

Cabling diagram - remote via private line using 7400D:



Cabling procedure: To connect the switch to a CMS computer using a DS1 connection:

1. Verify that the H600-347, Group 1 cable is connected to the amphenol connector of the Packet Gateway circuit pack (TN577).
2. Connect one of the four H600-347, Group 1 cable RS232 connectors to the female end of the M25A cable. Record the number of the RS232 connector used.
3. Connect the male end of the M25A cable to the connector labeled "PORT 1" on the 7400D.
4. Plug the power supply cord into the connector labeled "POWER" on the 7400D.
5. Plug the power supply cord into an AC power outlet.

You do not have to set options for the 7400D, since the default options for the 7400D are acceptable for CMS. Refer to the *7400D Data Module User's Guide*, 555-020-712, for information on setting options.
6. Connect one end of a D8W modular cord into the LINE jack on the 7400D.
7. Connect the other end of the D8W cord to a 103A connecting block.
8. Connect the 103A connecting block through the cross-connect to a TN754 4-wire digital port on the switch.
9. Connect a DS1 circuit on the distant switch through CO facilities to a DS1 circuit on the local switch.
10. Run a cable from the cross-connect to a TN754 4-wire digital port on the local switch.
11. Cross-connect the TN754 4-wire digital port to a 103A connecting block.
12. Connect one end of a D8W modular cord to the 103A connecting block.
13. Connect the other end of the D8W modular cord to the LINE jack of the 7400D.
14. Plug the power supply cord into the connector labeled "POWER" on the 7400D.
15. Connect the AC Power Converter to the 7400D and to an AC power outlet.

You do not have to set options for the 7400D, since the default options for the 7400D are acceptable for CMS. Refer to the *7400D Data Module User's Guide*, 555-020-712, for information on setting options.

16. Connect the male end of the M25A cable to Port 1 on the 7400D.
17. Connect the female end of the M25A cable to the gender changer.
18. If an HSI card is installed (multiple ACD configuration), connect the direct-connect link adapter to the DTE (RS-232) output port on the Black Box converter. See [HSI cabling for Enterprise 3500, Enterprise 3000, and SPARCserver](#) on page 20 and [HSI cabling for Blade 100 and Ultra 5](#) on page 22 for more information.

For a single ACD configuration (no HSI card), connect the direct-connect link adapter to the correct serial port on the CMS computer. See [Connecting a single ACD using serial port A or B \(X.25\)](#) on page 23 for more information.

G2 switch

There are several ways you can remotely connect a CMS computer to a G2 switch:

- DSU connection
- Analog and DS1 public network connection.
- Analog connection directly to the DCIU
- DS1 connection with DCP link to the DCIU.

Connecting with DSUs

This section describes how to connect a switch port on the CMS computer to the DCIU on the G2 using DSUs. This interface can be used for either a single ACD configuration or a multiple ACD configuration.

NOTE:

For the DSU method, 4-wire nonloaded metallic lines are required to interconnect the Data Service Units (DSUs). When provided by the telephone company, these 4-wire nonloaded metallic lines are called Local Area Data Channels (LADCs).

Distance limits: With this method, the maximum allowable distance between the CMS computer and the G2 switch is 100 feet (30.5 meters).

Parts list:

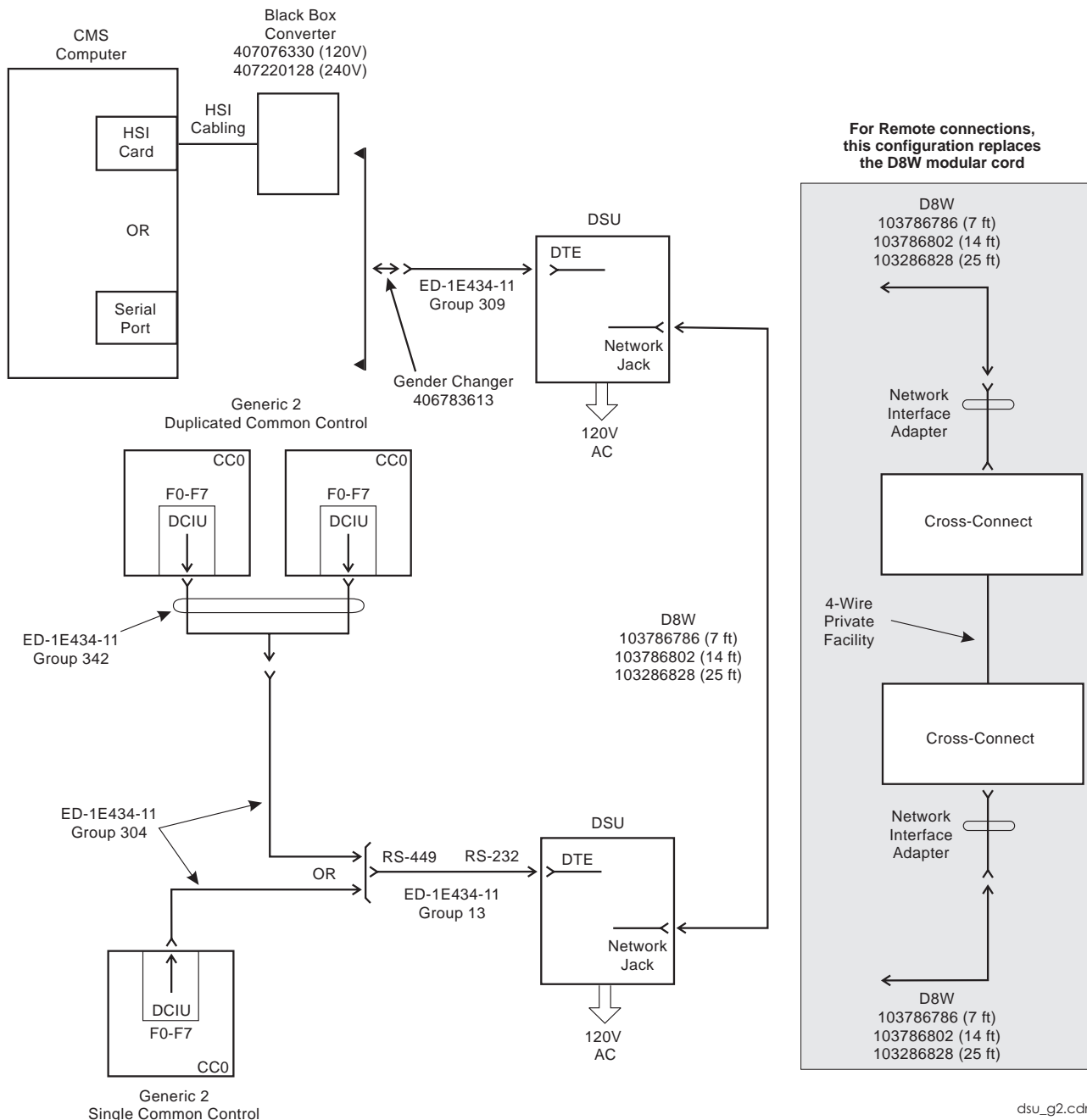
Quantity	Description
1	ED-1E434-11, Group 342 Y-cable — for duplicated common controls only
1	ED-1E434-11, Group 304 cable (RS-449) — for single or duplicated common controls
1	ED-1E434-11, Group 13 cable (RS-449 to RS-232C)
2	Model 3510 analog DSU (107560542), or Model 3550 digital DSU (107560963), or Model 3610 digital DSU (contact Design Center)
2	D8W modular cord or equivalent (UTP Category 3) 103786786 (7 feet, 2.1 meters) 103786802 (14 feet, 4.2 meters) 103786828 (25 feet, 7.6 meters)
1	ED-1E434-11, Group 309 (RS-232) cable
1	DB25 M/M Gender Changer (406783613)
1	Serial port on the CMS computer <i>or</i> HSI port with associated cabling and parts (see HSI cabling for Enterprise 3500 , Enterprise 3000 , and SPARCserver on page 20 and HSI cabling for Blade 100 and Ultra 5 on page 22)

Remote connections require the following additional parts:

Quantity	Description
2	Network interface adapter — one adapter is provided with each DSU
1	Cross-connect hardware
1	4-wire nonloaded metallic lines (LADC equivalent) — use lengths as needed

Switch connections

Cabling diagram - local with DSUs:



Cabling procedure: To connect the switch to a CMS computer using a DSU:

1. If the G2 is equipped with single common control, connect the female end of the Group 304 cable to the single common control at ports F0 through F7. Record the port number that you use, because it will be needed during switch administration.
2. If the G2 is equipped with duplicated common controls, connect the female end of the Group 304 cable to the male end of the ED-1E434-11, Group 342 Y-cable.

Connect the female ends of the Y-cable to the duplicated common controls at ports F0 through F7. You must select the same ports on both common controls. Record the port number that you use, because it will be needed during switch administration.

3. Connect the female end of the Group 13 transition cable to the male end of the ED-1E434-11, Group 304 cable.
4. Connect the male end of the Group 13 transition cable to the female labeled DTE on the back of the DSU that will be used to connect to the switch.
5. Connect each DSU to an AC power source by using the DSU power packs.
6. Connect the two DSUs together by using a 25-foot D8W-87 network cord and connecting each end of the cord to the network jacks on the DSUs.
7. Connect the male end of the ED-1E434-11, Group 309 (RS-232) cable to the port labeled DTE on the back of the DSU.
8. Connect the female end of ED-1E434-11, Group 309 (RS-232) cable to the gender changer.
9. If an HSI card is installed (multiple ACD configuration), connect the direct-connect link adapter to the DTE (RS-232) output port on the Black Box converter. See [HSI cabling for Enterprise 3500, Enterprise 3000, and SPARCserver](#) on page 20 and [HSI cabling for Blade 100 and Ultra 5](#) on page 22 for more information.

For a single ACD configuration (no HSI card), connect the direct-connect link adapter to the correct serial port on the CMS computer. See [Connecting a single ACD using serial port A or B \(X.25\)](#) on page 23 for more information.

10. **For Remote Connections Only:** Use 4-wire nonloaded metallic lines (LADC equivalent) to interconnect the cross-connect hardware.

Connect DSUs remotely to the switch: To connect the switch to a CMS computer remotely using a DSU:

1. Obtain another network interface adapter.
2. Punch down the spade-tipped leads of the network interface adapter to the switch's cross-connect hardware.
3. Connect the receptacle of the network interface adapter to one end of another D8W-87 network cord.
4. Connect the other end of a D8W-87 network cord to the network jack on the DSU that will be connected to the switch.
5. Connect each DSU to a 120-volt AC power source by using the DSU power packs.
6. Connect the male end of the Group 13 transition cable to the receptacle labeled DTE or Port A on the DSU that will be connected to the switch.
7. Then connect the female end of the Group 13 transition cable to the male end of the ED-1E434-11, Group 304 cable. In the next step, the switch technician should make the final connection to the DCIU port.
8. If the Generic 2 is equipped with single common control, connect the female end of the Group 304 cable to the single common control at ports F0 through F7. Record the port number you use: you will need it during switch administration.

If the Generic 2 is equipped with duplicated common controls, connect the female end of the Group 304 cable to the male end of the ED-1E434-11, Group 342 Y-cable. Connect the female ends of the Y-cable to the duplicated common controls at ports F0 through F7. You must select the same ports on both common controls. Record the port number that you use, because it will be needed during switch administration.

Analog connection directly to the DCIU

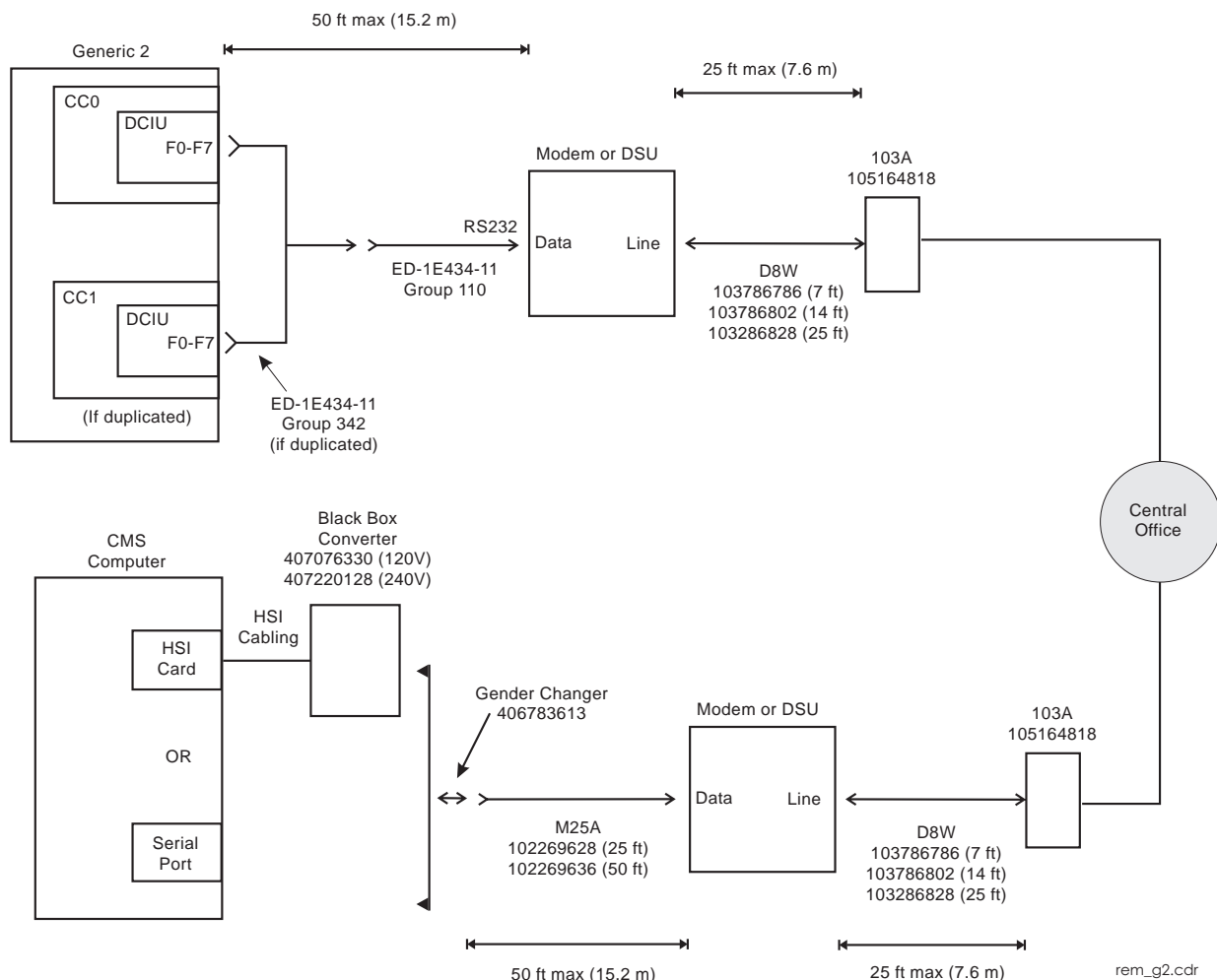
This section describes how to connect a switch port on the CMS computer remotely through analog facilities on the public network to the DCIU.

Distance limits: There is a limit of 50 feet (15.2 meters) between the DCIU and the modem or DSU, and the CMS computer and the modem or DSU.

Parts list:

Quantity	Description
1	ED-1E434-11, Group 342 Y-cable (if the switch is equipped with duplicated common controls)
1	ED-1E434-11, Group 110 (RS-449 to RS232) cable
1	M25A RS232 cable 102269628 (25 feet, 7.6 meters) 102269636 (50 feet, 15.2 meters)
2	Model 3810 analog modem (107560500), or Model 3510 analog DSU (107560542), or Model 3550 digital DSU (107560963), or Model 3610 digital DSU (contact Design Center)
2	D8W modular cord or equivalent (UTP Category 3) 103786786 (7 feet, 2.1 meters) 103786802 (14 feet, 4.2 meters) 103786828 (25 feet, 7.6 meters)
2	103A connecting block (105164818)
	Cross-connect hardware
1	DB25 M/M Gender Changer (406783613)
1	Serial port on the CMS computer <i>or</i> HSI port with associated cabling and parts (see HSI cabling for Enterprise 3500, Enterprise 3000, and SPARCserver on page 20 and HSI cabling for Blade 100 and Ultra 5 on page 22)

Cabling diagram - remote via modems:



Cabling procedure: To connect from the G2 switch to a port at the central office:

1. If the G2 is equipped with a single common control, connect the female end of the ED-1E434-11, Group 110 cable to the switch at ports F0 through F7. Record the port number that you use, because it will be needed during switch administration.
2. If the G2 is equipped with duplicated common controls, connect the female end of the ED-1E434-11, Group 110 cable to the male end of the ED-1E434-11, Group 342 cable.

Connect the female ends of the ED-1E434-11, Group 342 cable to the duplicated common controls at ports F0 through F7. You must select the same port on each of the common controls. Record the port number that you use, because it will be needed during switch administration.

3. Connect the male end of the ED-1E434-11, Group 110 cable to the Data port on the modem or DSU.
4. Connect one end of a D8W modular cord to the Line port on the modem or DSU.
5. Connect the other end of the D8W modular cord to a 103A connecting block.
6. Cross-connect the 103A connecting block to an analog port of the central office switch.

To connect from the CMS computer to a port at the central office, do the following:

1. If an HSI card is installed (multiple ACD configuration), connect the direct-connect link adapter to the DTE (RS-232) output port on the Black Box converter. See [HSI cabling for Enterprise 3500, Enterprise 3000, and SPARCserver](#) on page 20 and [HSI cabling for Blade 100 and Ultra 5](#) on page 22 for more information.

For a single ACD configuration (no HSI card), connect the direct-connect link adapter to the correct serial port on the CMS computer. See [Connecting a single ACD using serial port A or B \(X.25\)](#) on page 23 for more information.

2. Connect the female end of the M25A cable to the gender changer.
3. Connect the male end of the M25A cable to the Data port on the modem or DSU.
4. Connect one end of a D8W modular cord to the Line port on the modem or DSU.
5. Connect the other end of the D8W modular cord to a 103A connecting block.
6. Cross-connect the 103A connecting block to an analog port of the central office switch.

DS1 connection linked to the DCIU

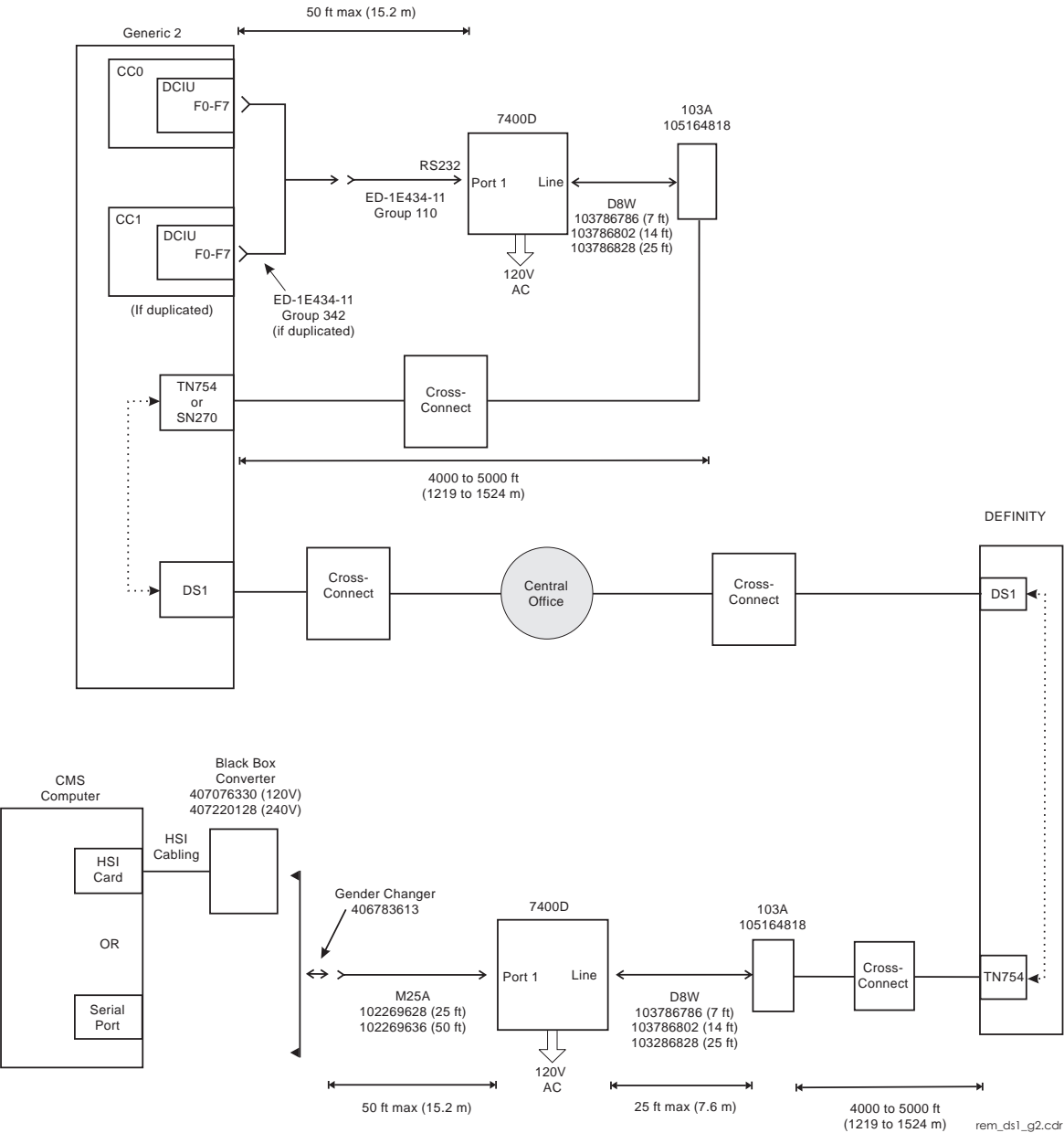
This section describes how to connect a switch port on the CMS computer remotely through DS1 facilities on the public network, to a DS1 circuit on the G2 switch, which is internally linked to a digital line, and then connected to the DCIU.

Distance limits: The maximum allowable distance between the CMS computer or the DCIU and the 7400D Data Module is 50 feet (15.2 meters). The maximum allowable distance between the 7400D and the switch is 5000 feet (1524 meters) with 24-gauge wire and 4000 feet (1219 meters) with 26-gauge wire.

Parts list:

Quantity	Description
1	ED-1E434-11, Group 342 Y-cable (if the switch is equipped with duplicated common controls)
1	ED-1E434-11, Group 110 (RS-449 to RS232) cable
2	7400D with stand-alone housing
2	D8W modular cord or equivalent (UTP Category 3) 103786786 (7 feet, 2.1 meters) 103786802 (14 feet, 4.2 meters) 103786828 (25 feet, 7.6 meters)
2	103A connecting block (105164818)
1	Cross-connect hardware
1	TN754 or SN270 4-wire digital port on <i>each</i> switch
1	DS1 circuit on <i>each</i> switch
	Central office DS1 facilities
1	M25A RS232 cable 102269628 (25 feet, 7.6 meters) 102269636 (50 feet, 15.2 meters)
1	DB25 M/M Gender Changer (406783613)
1	Serial port on the CMS computer <i>or</i> HSI port with associated cabling and parts (see HSI cabling for Enterprise 3500, Enterprise 3000, and SPARCserver on page 20 and HSI cabling for Blade 100 and Ultra 5 on page 22)

Cabling diagram - remote via DS1:



Cabling procedure: To connect the switch to a CMS computer using a data module over DS1:

1. If the G2 is equipped with a single common control, connect the female end of the ED-1E434-11, Group 110 cable to the switch at ports F0 through F7. Record the port number that you use, because it will be needed during switch administration.
2. If the G2 is equipped with duplicated common controls, connect the female end of the ED-1E434-11, Group 110 cable to the male end of the ED-1E434-11, Group 342 cable.

Connect the female ends of the ED-1E434-11, Group 342 cable to the duplicated common controls at ports F0 through F7. You must select the same port on each of the common controls. Record the port number that you use, because it will be needed during switch administration.

3. Connect the male end of the ED-1E434-11, Group 110 cable to the connector labeled "PORT 1" on the 7400D.
4. Plug the power supply cord into the connector labeled "POWER" on the 7400D.
5. Plug the power supply cord into an AC power outlet.

You do not have to set options for the 7400D, since the default options for the 7400D are acceptable for CMS. Refer to the *7400D Data Module User's Guide*, 555-020-712, for information on setting options.

6. Connect one end of a D8W modular cord into the LINE jack on the 7400D.
7. Connect the other end of the D8W cord to a 103A connecting block.
8. Connect the 103A connecting block through the cross-connect to a TN754 or SN270 4-wire digital port on the switch.
9. Connect a DS1 circuit on the distant switch through CO facilities to a DS1 circuit on the local switch.
10. Run a cable from the cross-connect to a TN754 4-wire digital port on the local switch.
11. Cross-connect the TN754 4-wire digital port to a 103A connecting block.
12. Connect one end of a D8W modular cord to the 103A connecting block.
13. Connect the other end of the D8W modular cord to the LINE jack of the 7400D.

14. Plug the power supply cord into the connector labeled "POWER" on the 7400D.
15. Connect the AC Power Converter to the 7400D and to an AC power outlet.

You do not have to set options for the 7400D, since the default options for the 7400D are acceptable for CMS. Refer to the *7400D Data Module User's Guide*, 555-020-712, for information on setting options.

16. Connect the male end of the M25A cable to Port 1 on the 7400D.
17. Connect the female end of the M25A cable to the gender changer.
18. If an HSI card is installed (multiple ACD configuration), connect the direct-connect link adapter to the DTE (RS-232) output port on the Black Box converter. See [HSI cabling for Enterprise 3500, Enterprise 3000, and SPARCserver](#) on page 20 and [HSI cabling for Blade 100 and Ultra 5](#) on page 22 for more information.

For a single ACD configuration (no HSI card), connect the direct-connect link adapter to the correct serial port on the CMS computer. See [Connecting a single ACD using serial port A or B \(X.25\)](#) on page 23 for more information.

Administering the switch link

Overview

The CentreVu Call Management System (CMS) application can collect and process Automatic Call Distribution (ACD) data from a DEFINITY switch. However, before CMS can collect and process the ACD data, a special hardware interface on the switch must be properly administered. Each switch can use a number of different interfaces to communicate to a CMS computer. This chapter provides the procedures to administer each of these interfaces on the following DEFINITY switches:

- Generic 3si (G3si)
- Generic 3r (G3r)
- Generic 3csi (G3csi)
- Generic 2 (G2).

For additional information about switch administration, refer to the appropriate switch administration documents.

Local vs remote connections

The switch and the CMS computer can be connected in local and remote arrangements. For clarification, these arrangements are defined as follows:

- Local — The connections between the switch and the CMS computer use facilities local to the switch, such as a direct connection over a LAN, a direct connection through an Isolating Data Interface (IDI), or a switched connection over 7400D data modules using digital ports.

NOTE:

The 7400D data module is now in limited availability/inactive (LAI) status. There will be no new sales of 7400D data modules, but existing units can still be used for switch connectivity.

- Remote — The connections between the switch and the CMS computer use central office (CO) facilities, such as analog or DS1 lines. Cabling diagrams for remote connections are given in Chapter 2, but administration must be done by the Avaya Sales and Design Support Center (SDSC) Switch Design Engineers.

Multiple ACDs (switches)

One CMS computer can collect data from up to eight different switches. From the CMS computer point of view, each switch represents one ACD. Depending on the release of the switch and the release of the CMS computer, you can have all switches connected via X.25 protocol, all switches connected via TCP/IP, or some combination of the two protocols. In any event, the administration as shown in this chapter still applies when setting up one switch or eight switches; each switch requires a link to the CMS computer.

High availability option

The High Availability option provides dual links between the switch and two separate CMS computers. If the customer has purchased the High Availability option, you must connect a link from one C-LAN circuit pack to one CMS computer, and a second link from a different C-LAN circuit pack to another CMS computer. The High Availability option is not allowed using X.25 links.

In addition to having the correct CMS R3V8 load, the DEFINITY switch must be optioned with a switch version of V8 or later, Call Center Release of 8.1 or later, and Adjunct CMS Release of R3V8 or later. See [Common switch administration](#) on page 96 for more information.

CMS link administration

In addition to the switch administration presented in this chapter, you must also set up the switch link on the CMS computer using the **swsetup** option of the **cmssvc** command. This procedure is documented in your CMS software installation document.

To set up the switch link:

1. Using the **cmssvc** command, turn off CMS.
2. Using the **cmssvc** command, access the **swsetup** option. When you access this option, you are queried for the following information:
 - Switch name
 - Switch model (release)
 - Is Vectoring enabled on the switch (if authorized)?
 - Is Expert Agent Selection (EAS) enabled on the switch (if authorized)?
 - Does the Central Office have disconnect supervision?
 - Local and remote port

The local and remote port assignments must be symmetrical between the switch and the CMS. The standard CMS provisioning procedure is to set the local and remote port assignments equal to the switch processor channel used for the link. For example, if you use processor channel 10, set the local and remote port to 10.

- Transport method used to connect to the switch (X.25 or TCP/IP)
 - If X.25, the device used for x.25 connectivity (serial port A or B, or HSI link 0-7)
 - If TCP/IP, the IP address or hostname, and TCP port (the default is 5001).

If the CMS computer has two ethernet ports, it is possible that the system might attempt to route packets from one interface to another. To prevent this, edit the **/etc/rc2.d/S98cms_ddd** file and add the following line to the end of the file:

```
ddd -set /dev/ip ip_forwarding 0
```

If the file already has this line, quit out of the file and make no changes.

G3 switch administration

This section contains procedures used to administer the CMS link on a DEFINITY G3 switch. The information in this section includes:

- Common switch administration
- Administering a TCP/IP connection
- Administering an IDI connection
- Administering a data module connection.

Common switch administration

Overview

This section contains switch administration that must be done for all G3 switches (si, r, and csi) before you administer the switch to CMS computer link. The following administration must be done:

- Set the G3 Version on the System Parameters Customer Options form
- Set the Call Center Release on the System Parameters Customer Options form
- Set the Adjunct CMS Release on the System Parameters Features form.

In addition, some basic CMS link administration is described in this section.

Determining switch/CMS compatibility

The following table reflects how you should set the G3 Version, Call Center Release, Adjunct CMS Release, and CMS Setup switch type based on the release of the switch. You can set the G3 Version, Call Center Release, or Adjunct CMS Release to an earlier version, but you will not have access to all of the features of the most recent release.

Switch Release	DEFINITY Switch Administration			CMS Administration
	G3 Version	Call Center Release	Adjunct CMS Release	CMS Setup Switch Model
R5, R6.1, R6.2, or R6.3 as bugfix [*]	V5	NA	R3V5 or R3V6	Definity-G3V5
R6.3 with new features [†]	V6	NA	R3V6	Definity-R6
R7.1	V7	NA	R3V6	Definity-R6/R7
R8.x [‡]	V8	8.1 or later	R3V8	Definity-R8
R9.x [§]	V9	8.1 or later	R3V9	Definity-R9/10

*. Bugfix load does not include CentreVu Advocate or CentreVu Virtual Routing.

†. Includes CentreVu Advocate and CentreVu Virtual Routing.

‡. R8 is a bugfix load for R7.

§. R9 is not a bugfix load.

Setting the switch version

Use Page 1 of the System Parameters Customer Options form to set the switch version.

change system-parameters customer-options

Page 1 of Y

OPTIONAL FEATURES

G3 Version: V9

Maximum Ports: 300

Location: 1

Maximum XMOBILE Stations: 0

IP PORT CAPACITIES

Maximum Administered IP Trunks: 100

Maximum Concurrently Registered IP Stations: 400

Maximum Administered Remote Office Trunks: 0

Maximum Concurrently Registered Remote Office Stations: 0

Maximum Number of DS1 Boards with Echo Cancellation: 0

Maximum VAL Boards: 1

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

Field	Definition
G3 Version	<p>Enter v5, v6, v7, v8, or v9 depending on the software release of the switch. If you set this field to an earlier release number, you will not have access to the latest switch features.</p> <p>The G3 Version must be set to v8 or later to use the High Availability option.</p>

Setting the call center release

Use the first Call Center Optional Features page of the System Parameters Customer Options form to set the Call Center Release. This field is new with R8.

change system-parameters customer-options

CALL CENTER OPTIONAL FEATURES

Call Center Release: 9.1

ACD? y

PASTE (Display PBX Data on Phone)? n

BCMS (Basic)? y

Reason Codes? y

BCMS/VuStats LoginIDs? y

BCMS/VuStats Service Level? n

Service Observing (Basic)? y

Call Work Codes? y

Service Observing (Remote/By FAC)? n

CentreVu Advocate? y

Service Observing (VDNs)? y

CentreVu Dynamic Advocate? y

Timed ACW? y

DTMF Feedback Signals For VRU? y

Vectoring (Basic)? y

Expert Agent Selection (EAS)? y

Vectoring (Prompting)? y

EAS-PHD? y

Vectoring (G3V4 Enhanced)? y

Forced ACD Calls? n

Vectoring (ANI/II-Digits Routing)? y

Vectoring (G3V4 Advanced Routing)? y

Lookahead Interflow (LAI)? y

Vectoring (CINFO)? y

Multiple Call Handling (On Request)? y

Vectoring (Best Service Routing)? y

Multiple Call Handling (Forced)? y

Vectoring (Holidays)? y

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

Field	Definition
Call Center Release	<div>Enter pre-8.1, or 8.1 or later depending on the set of Call Center features you wish to use. If you set this field to something other than your current Call Center load, you will not have access to the latest Call Center features.</div> <div>The Call Center Release must be set to 8.1 or later to use the High Availability option.</div>

Setting the adjunct CMS release

Use the Call Center System Parameters page of the System Parameters Features form to set the Adjunct CMS Release. Depending on switch release, this field can be found on different pages.

change system-parameters features

PageX ofY

FEATURE-RELATED SYSTEM PARAMETERS

CALL CENTER SYSTEM PARAMETERS

AGENT AND CALL SELECTION

MIA Across Splits or Skills? n

ACW Agents Considered Idle? y

Call Selection Measurement: current-wait-time

Service Level Supervisor Call Selection Override? y

Auto Reserve Agents: None

Copy ASAI UII During Conference/Transfer? n

REASON CODES

Aux Work Reason Code Type: none

Logout Reason Code Type: none

CALL MANAGEMENT SYSTEM

Adjunct CMS Release: R3V9

BCMS/VuStats Measurement Interval: hour

BCMS/VuStats Abandon Call Timer (seconds):

Validate BCMS/VuStats Login IDs? n

Clear VuStats Shift Data: on-login

Remove Inactive BCMS/VuStats Agents? n

Field	Definition
Adjunct CMS Release	<p>Enter R3V5, R3V6, R3V8, or R3V9 depending on the software release of the CMS computer. If you set this field to an earlier release number, you will not have access to the latest CMS features.</p> <p>The Adjunct CMS Release must be set to R3V6 or later to use the TCP/IP LAN switch link.</p> <p>The Adjunct CMS Release must be set to R3V8 or later to use the High Availability option.</p>

Administering a TCP/IP connection

Use the procedures in this section to administer a TCP/IP connection over a LAN to a DEFINITY R7 and later switch. This section contains examples of the administration forms with detailed explanations for the required fields. Use the forms in the order shown.

Form	Purpose
change system-parameter maintenance (G3csi only)	Adding a second packet interface
change node-names (R7 and R8) <i>or</i> change node-names ip (R9 and later)	Adding node names and IP addresses
change ip-interfaces (R8 and later)	Adding a C-LAN IP interface
add data-module	Adding an ethernet data module
change communication-interface processor-channels	Adding the processor interface channels
add ip-route	Adding IP routes (if needed)

NOTE:

If the customer has purchased the High Availability option, you must administer a link from one C-LAN circuit pack to one CMS computer, and a second link from a different C-LAN circuit pack to another CMS computer.

Planning for TCP/IP switch links

When setting up a switch link using TCP/IP over a LAN, planning information must be gathered before you begin. In particular, you must take into account if the LAN connection includes both a connection to CMS and Intuity™ AUDIX® with Message Manager. You must coordinate the setup of the Intuity system with the switch and the CMS. Some of the information needed includes:

- How is the connection being made from the CMS computer to the switch?
 - Private LAN, no connectivity to customer LAN (uses private LAN addresses).
 - Preferred method, most robust and reliable, no dependency on customer's network
 - A secondary, dedicated LAN port on the CMS computer provides the switch link; the primary LAN port is used for other purposes (printers, terminals, CentreVu Supervisor, Intuity Message Manager)
 - If desired, a second DEFINITY C-LAN circuit pack can be used to provide additional isolation for the CMS link
 - Crossover cable (with flipped transmit/receive leads) is used so a hub is not required
 - Hub can be used instead of crossover cable to extend distances.
 - Customer LAN with private segment.
 - Uses a network switch or router to provide a private network or network segment
 - Minimal dependency on customer's network
 - A secondary, dedicated LAN port on the CMS computer provides the switch link; the primary LAN port is used for other purposes (printers, terminals, CentreVu Supervisor)
 - Customer must provide equipment and administer network for private segment
 - Customer LAN administrator must be present during setup.
 - Direct connect to Customer LAN, without private segment.
 - Least preferred method
 - Complete dependency on performance and reliability of customer's LAN
 - Allows remote location of endpoints when customer LAN connectivity is convenient
 - Customer LAN administrator must be present during setup.

- If option b or c is chosen, the following information is needed from the customer:
 - Customer network physical connectivity:
 - Location of 10BaseT network access point (hub, router, and so on)
 - Distance between C-LAN and network access point (328 ft, 100 m maximum)
 - Wiring to access point, existing or new, Category 5 minimum required.
 - Customer network administration:
 - IP address of C-LANs, CMS computer, Intuity, and gateways
 - Node names of C-LANs, CMS computer, Intuity, and gateways
 - Subnet masks for all LAN segments containing C-LANs or adjuncts
 - Gateway IP address for all LAN segments containing C-LANs, adjuncts, or routers
 - Are all endpoints (C-LANs and adjuncts) on the same local LAN segment?
 - Network routes.
Network administration information needs to be mapped into specific administration fields.
- Sanity check of information obtained from customer:
 - If C-LAN and adjuncts (CMS or Intuity) are on the same LAN segment:
 - Gateway IP address (if present) and subnet mask information is valid
 - All IP addresses contain the same subnet address
 - If C-LAN and adjuncts are on different LAN segments, gateway IP addresses are different

Without the above information, the technician may not be able to complete the installation. Installations that require the technicians to return because information was not available incur additional charges.

Adding a second
packet interface
(G3csi only)

Use the Maintenance-Related System Parameters form to add a second packet interface to a G3csi switch. This is required for CMS computer connectivity.

change system-parameter maintenancePage 2 of X

MAINTENANCE-RELATED SYSTEM PARAMETERS

MINIMUM MAINTENANCE THRESHOLDS (Before Notification)

TTRs: 4CPTRs: 1Call Classifier Ports:

MMIs: 0VCs:

TERMINATING TRUNK TRANSMISSION TEST (Extension)

Test Type 100:Test Type 102:Test Type 105:

ISDN MAINTENANCE

ISDN-PRI TEST CALL Extension:ISDN BRI Service SPID:

DS1 MAINTENANCE

DSO Loop-Around Test Call Extension:

SPE OPTIONAL BOARDS

Packet Intf1? yPacket Intf2? y

Bus Bridge: 01A03Inter-Board Link TimeslotsPt0: 6Pt1: 1Pt2: 1

Field	Definition
Packet Intf2	Enter y to add a second packet interface.
Bus Bridge	Enter the equipment location of the CLAN circuit pack that does the bus bridge functionality when the packet bus is activated. This must be administered for the CLAN to work.
Inter-Board Link Timeslots — The total number of timeslots allocated cannot be greater than 11.	
Inter-Board Link Timeslot Pt0	Enter the number of timeslots (1-9) used by this port. Port 0 carries the bulk of messaging traffic between the switch and the CMS. The default of 6 should be adequate, but can be increased if needed to improve traffic flow.
Inter-Board Link Timeslot Pt1	Enter the number of timeslots (1-3) used by this port. Port 1 is a low traffic port and should always be set to 1 .
Inter-Board Link Timeslot Pt2	Enter the number of timeslots (1-3) used by this port. Port 2 is a low traffic port and should always be set to 1 .

Adding node names and IP addresses

Use the Node Names form to assign the name and IP address of the CMS computer and any switches that are networked with the CMS computer. With the High Availability option, you will assign two switch node names and two CMS computer node names.

The Node Names form is different between R7/R8 switches, and R9 and later switches.

Node Names Form (R7 and R8)

For R7 and R8, use Pages 2 through 6 of the Node Names form.

NOTE:
Page 1 of the Node Names form is reserved for Intuity administration.

change node-names

Page 2 of 6

NODE NAMES			
Name	IP Address	Name	IP Address
3net	192.168.3 .0		. . .
cmshost	192.168.1 .90		. . .
cmshost2	192.168.3 .90		. . .
default	0 .0 .0 .0		. . .
gateway	192.168.1 .211		. . .
gateway2	192.168.4 .211		. . .
switchhost	192.168.1 .10		. . .
switchhost2	192.168.4 .10		. . .

Node names form (R9 and later)

Use the following Node Names form for DEFINITY R9 and later.

change node-names ip

Page1 of 1

IP NODE NAMES	
Name	IP Address
3net	192.168.3 .0
cmshost	192.168.1 .90
cmshost2	192.168.3 .90
default	0 .0 .0 .0
gateway	192.168.1 .211
gateway2	192.168.4 .211
switchhost	192.168.1 .10
switchhost2	192.168.4 .10
	.
	.
	.
	.
	.
	.
	.
	.

(8 of 8 administered node-names were displayed)

Use 'list node-names' command to see all the administered node-names

Use 'change node-names ip xxx' to change a node-name 'xxx' or add a node-name

Field	Definition
Name	<p>Enter the host name of the CMS computer, any switches that are networked with the CMS computer, and any gateway hosts used in the network. The node names can be entered in any order. The names are displayed in alphabetical order the next time the form is displayed. The <code>default</code> node name entry is display-only and is not used for this application.</p> <p>For consistency, use the CMS computer's host name as defined during the CMS Setup procedure. See your CMS software installation document for more information.</p> <p>These names are also used in the IP interfaces, data module, IP routing, and other forms. If you change the node name in this form, it is automatically updated on the other forms.</p> <p>Note: Do not use special characters in the node name. Special characters are not allowed in the <code>/etc/hosts</code> file on the CMS computer.</p>
IP Address	<p>Enter the IP address of the CMS computer, the switches, and any required gateways.</p> <p>CAUTION: Plan out the network before you assign any IP addresses. Any future changes that require a change to IP addresses will cause a service disruption.</p>

Adding a C-LAN IP interface (R8 and later)

Use the IP Interfaces form to assign a C-LAN circuit pack as an IP interface. This form is not used when the link is synchronous PPP. With the High Availability option, you will assign two separate C-LAN IP interfaces. This form is only found with DEFINITY R8 and later. Several of the fields on this form were previously on the Data Module form in DEFINITY R7.

```
change ip-interfaces                                     Page 1 of 1

Network regions are interconnected? n
Enable
Eth Pt Type Slot Code Sfx Node Name Subnet Mask Gateway Address Rgn
y C-LAN 01A03 TN799 B switchhost 255.255.255.0 192.168.1 .254 1
y C-LAN 01C02 TN799 B switchhost2 255.255.255.0 192.168.4 .254 1
n                                     255.255.255.0 . . .
n                                     255.255.255.0 . . .
n                                     255.255.255.0 . . .
n                                     255.255.255.0 . . .
n                                     255.255.255.0 . . .
```

Field	Definition
Network regions are interconnected (R8 only)	Enter n . This application is not used for C-LAN.
Enabled	Enter y to enable the C-LAN IP interface. After initial administration, you must disable the interface before you make any changes.
Type	Enter C-LAN .
Slot	Enter the equipment location of the C-LAN circuit pack.
Code/Sfx	This is a display-only field that shows the designation number of the circuit pack installed in the specified slot.

Field	Definition
Node Name	Enter the switch node name assigned on the Node Names form. In this example, enter switchhost . The same node name cannot be assigned to two different IP interfaces.
Subnet Mask	Identifies which portion of an IP address is a network address and which is a host identifier. Use the default entry, or check with the LAN administrator on site if connecting through the customer's LAN.
Gateway Address	Enter the address of a network node that will serve as the default gateway for the IP interface. If the application goes to points off the subnet, the gateway address of the router is required. If the switch and CMS computer are on the same subnet, a gateway is not required. If using ethernet only, and a gateway address is administered, no IP routes are required.
Net Rgn	For a C-LAN IP interface, use 1.

Adding an ethernet data module (R7)

Use the Data Module form to assign the Ethernet port of the CLAN circuit pack. This version of the form applies only to DEFINITY R7.

add data-module 2000

DATA MODULE

Page 1 of 1

Data Extension: 2000

Type: ethernet

Port: 01A0317

Link: 8

Enable Link? y

Name: ethernet data module

BCC: 2

Node Name: switchhost

Subnet Mask: 255.255.255.0

Broadcast Address: 192.168.1 .255

Automatic Subnet Routing? y

Field	Definition
Data Extension	Enter an unassigned extension number.
Type	Enter ethernet in this field.
Port	Enter the equipment location of the CLAN circuit pack (TN799). For the ethernet link, always use circuit 17 (for example, 01A0317).
Link	Enter a TCP/IP link number (1-25 for csi/si, 1-33 for r). This entry is also used on the Processor Channel form.
Enable Link	Enter y .
Name	Enter a name for the data module. This name will display when you list the assigned data modules.
BCC	A display-only field.
Node Name	Enter the switch node name assigned on Page 2 of the Node Names form.

Field	Definition
Subnet Mask	Use the default entry, or check with the LAN administrator on site if connecting through the customer's LAN.
Broadcast Address	Though other options are available, a safe assignment is to use the network address followed by 255. For example, 192.168.2.255 .
Automatic Subnet Routing	<p>The recommended setting for this field is y.</p> <p>If you are on a private network, such as a dedicated link between the switch and the CMS computer, and they are both on the same subnet, enter y. This means that an IP route is not required.</p> <p>If the switch is connecting to the CMS computer over the customer's network or over a public network, or if they are on different subnets, enter n. This means that an IP route is required.</p> <p>NOTE: When upgrading to R8, this field is no longer used, and Subnet Routing is always enabled.</p>

Adding an ethernet data module (R8 and later)

Use the Data Module form to assign an ethernet data module. This version of the form applies to DEFINITY R8 and later. With the High Availability option, you will assign two ethernet data modules.

add data-module 2000

DATA MODULE

Data Extension: 2000

Type: ethernet

Port: 01A0317

Link: 8

Name: ethernet data module

Network uses 1's for Broadcast Address? y

Page 1 of 1

Field	Definition
Data Extension	Enter an unassigned extension number.
Type	Enter ethernet .
Port	Enter the equipment location of the C-LAN circuit pack (TN799). For the ethernet link, always use circuit 17 (for example, 01A0317).
Link	Enter a TCP/IP link number (1-25 for csi/si, 1-33 for r). This entry is also used on the Processor Channel form.
Name	Enter a name for the data module. This name will display when you list the assigned data modules.
Network uses 1's for Broadcast Address	This sets the host portion of the IP address to 0's or 1's. The default is yes (all 1's). Use the default if the private network contains only DEFINITY switches and adjuncts. Enter n only if the network includes non-DEFINITY switches that use the 0's method of forming broadcast addresses.

Adding the processor interface channels

Use the Processor Channel form to assign the processor channel attributes. With the High Availability option, you will assign two separate processor channels. If your configuration includes a remote switch using PPP over DS1 lines, contact CMS provisioning for assistance administering the gateway processor channels at the remote and local switches.

change communication-interface processor-channels

Page 1 of X

PROCESSOR CHANNEL ASSIGNMENT

Proc Chan	Enable	Appl.	Gtwy To	Mode	Interface Link/Chan	Destination Node	Port	Session Local/Remote	Mach ID
1:	y	mis		s	8 5001	cmshost	0	1 1	
2:	y	mis		s	9 5001	cmshost2	0	2 2	
3:									
4:									
5:									

Field	Definition
Proc Chan	Select a processor channel for this link. The standard CMS provisioning procedure is to use channel 1 on a G3r switch, and channel 10 on a G3csi or G3si switch.
Enable	Enter y .
Appl	Enter mis .
Gtwy To	Leave blank for the local CMS-to-switch link.
Mode	Enter s for server.
Interface Link	Enter the TCP/IP link number used on the ethernet data module form.
Interface Chan	Enter the TCP channel number (5000-64500). The default for CMS is 5001 and is defined during CMS setup. See your CMS software installation document for more information.
Destination Node	Enter the node name of the CMS computer as assigned on the Node Names form. In these examples, cmshost is used.

Field	Definition
Destination Port	Use the default of 0.
Session Local/ Session Remote	The local and remote port assignments must be symmetrical between the switch and the CMS. The standard CMS provisioning procedure is to set the local and remote port assignments equal to the switch processor channel used for this link. For example, if you use processor channel 10, set the local and remote port to 10.
Mach ID	Not used for CMS.

Adding IP routing

Use the IP Routing form to set up the IP route(s) from the switch to the CMS computer. This is required when:

- The switch and the CMS computer are on different subnets, or
- When a Gateway Address is not administered for the C-LAN IP interface.

The following example shows an IP route. This route shows how you get from a gateway (for example, a router) to a network.

add ip-route 1

Page1 of 1

IP ROUTING

Route Number: 1

Destination Node: 3net

Gateway: gateway2

C-LAN Board: 01C02

Metric: 0

Route Type: Network

Field	Definition
Route Number	If you are going through a router, you must set up IP route 1 from the switch to the router, and then set up IP route 2 from the switch to the CMS computer. The example above shows a simple IP route.
Destination Node	This field represents the node name of the destination for this route. You would typically enter the node name for the CMS computer or a router, depending on your configuration.

Field	Definition
Gateway	Enter the node name of the gateway by which the destination node is reached for this route. This is either the local C-LAN port of the first intermediate node between the C-LAN port and the final destination. For example, if there were one or more routers between the C-LAN port and the final destination node (the CMS computer), the gateway would be the node name of the first router.
C-LAN Board	Enter the equipment location of the CLAN circuit pack that provides this route. It is possible to have more than one C-LAN circuit pack, but most configurations will only have one C-LAN.
Metric	<p>Specifies the complexity of this IP route. Enter 0 if there are no intermediate nodes between the switch C-LAN port and the ethernet port on the CMS computer. A metric value of 1 is used only on a switch that has more than one C-LAN circuit pack installed.</p> <p>See <i>DEFINITY ECS Administration for Network Connectivity</i> for more information about using this field.</p>
Route Type (R8 only)	Specifies whether the route is host or network (default). Use a Host route to get to a specific IP address. Use a Network route to get to a subnet.

Administering an IDI connection

Use the procedures in this section to administer an IDI connection for the following switch types:

- [G3si switch](#)
- [G3r switch](#) on page 126

G3si switch

The processor interface on the G3si has eight interface links (01 to 08) available on a multi-carrier cabinet system and four interface links (01 to 04) available on a single-carrier cabinet system. One of these interface links must be assigned to a CMS computer.

The administration for an IDI connection differs for DEFINITY R6 and earlier, and DEFINITY R7 and later. Use the section that matches your switch release.

Restrictions

An IDI connection cannot be used if the switch is duplicated or if the switch is DC-powered. You must use data modules for the switch-to-CMS connection.

IDI connections, DEFINITY G3si, R6 and earlier

This section contains examples of the DEFINITY R6 and earlier administration forms used for IDI connections. Use the forms in the order shown.

Form	Purpose
add data-module	Adding processor interface data module
change communication-interface processor-channels	Adding the processor interface channel
change communication-interface links	Enabling the interface link

Adding the processor interface data module: se the Data Module form to administer the internal data module used by the Processor Interface.

add data-module 2005

Page 1 of 1

DATA MODULE

Data Extension: 2005

Type: procr-infc

Physical Channel: 01

ITC: restricted

Name: cms link data module

COS: 1

COR: 1

TN:

Maintenance Extension:

ABBREVIATED DIALING

List1:

SPECIAL DIALING OPTION:

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

Ext

Name

1:

Field	Definition
Data Extension	The extension of the data module on the processor.
Name	Enter a name for the data module. Do not use special characters in the name field.
Type	Enter procr-infc .
COS	Enter the desired COS value.
Maintenance Extension	Enter an extension per local procedures.
Physical Channel	Enter the interface link being used for this connection. The value 01 equals link 1.
COR	Enter the desired COR value.

Adding the processor interface channel: Use the Processor Channel form to assign one of the 64 local processor channels from the processor link to one of the 64 interface channels assigned to one interface link (1 to 4). Only one interface link is assigned to a CMS computer.

change communication-interface processor-channels

PROCESSOR CHANNEL ASSIGNMENT

Page 1 of 4

Proc Chan	Appl.	Interface Link	Chan	Priority	Remote Proc Chan	Machine-ID
1:	mis	1	1	h	1	
2:						
3:						
4:						
5:						
6:						
7:						

Field	Definition
Processor Channel	Select a processor channel for this link. The standard CMS provisioning procedure is to use channel 10 on a G3si switch.
Appl	Enter mis for the call center application.
Interface Link	Enter the same physical channel number used from the Data Module form.
Interface Chan	Enter 1 .
Priority	Enter h for high priority.
Remote Proc Chan	Enter 1 .
Machine-ID	Leave blank.

Enabling the interface link: Use the Interface Links form to enable the processor interface link.

change communication-interface links

INTERFACE LINKS

Link	Enable	Est Conn	PI Ext	Prot	Destination Digits	Brd	DTE/DCE	Identification
1:	y	y	2005	BX25	eia		DTE	cms link
2:								
3:								
4:								
5:								
6:								
7:								
8:								

Link 1 [eia] - Connected to : DCE Clocking : internal

Field	Definition
Link	Use the link number that corresponds to the Interface Link selected on the Processor Channel form.
Enable	Enter y to enable the link.
Est Conn	Enter y to establish the connection.
PI Ext	This displays the Processor Interface extension as defined in the Data Module form.
Prot	Enter BX25 for the X.25 protocol.
Destination Digits	Enter eia for a direct connection using the IDI.
Destination Brd	Leave blank.
DTE/DCE	Enter DTE .
Identification	Enter an identifying name for this link.
Connected to	Enter DCE .
Clocking	Enter internal .

IDI connections, DEFINITY G3si, R7 and later

This section contains examples of the DEFINITY R7 and later administration forms used for IDI connections. Use the forms in the order shown.

Form	Purpose
add data-module	Adding processor interface data module and communications interface link attributes
change communication-interface processor-channels	Adding the processor interface channel
change data-module	Enabling the data link after adding the processor interface channel

Adding the processor interface data module and interface link: Use the Data Module form to administer the internal data module used by the Processor Interface and the communications interface link attributes.

add data-module 2005

Page 1 of 1

DATA MODULE

Data Extension: 2005

Type: procr-inf

Physical Channel: 01

ITC: restricted

Link: 1

Name: cms link data module

COS: 1

COR: 1

TN:

DTE/DCE: DTE

Enable Link? n

Maintenance Extension:

Destination Number: eia

Establish Connection? y

Connected To: DCE

Clocking: internal

ABBREVIATED DIALING

List1:

SPECIAL DIALING OPTION:

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

Ext

Name

1:

Field	Definition
Data Extension	The extension of the data module on the processor.
Name	Enter a name for the data module. Do not use special characters in the name field.
Type	Enter procr-infc .
COS	Enter the desired COS value.
Maintenance Extension	Enter an extension per local procedures.
Physical Channel	Enter the interface link being used for this connection. The value 01 equals link 1.
COR	Enter the desired COR value.
Destination Number	Enter eia for a direct connection using the IDI.
Establish Connection	Enter y to establish the connection.
Link	Enter the interface link being used for this connection. This must match the Physical Channel field value.
DTE/DCE	Enter DTE .
Connected to	Enter DCE .
Enable Link	Enter n to disable the link. The link must be enabled after you have added the processor interface channel.
Clocking	Enter internal .

Adding the processor interface channel: Use the Processor Channel form to assign one of the 64 local processor channels from the processor link to one of the 64 interface channels assigned to one interface link (1 to 4). Only one interface link is assigned to a CMS computer.

change communication-interface processor-channels

PROCESSOR CHANNEL ASSIGNMENT

Page 1 of X

Proc Chan	Enable	Appl.	Gtwy To Mode	Interface Link/Chan	Destination Node	Port	Session Local/Remote	Mach ID
1:	y	mis		1 1		0	1 1	
2:								
3:								
4:								

Field	Definition
Processor Channel	Select a processor channel for this link. The standard CMS provisioning procedure is to use channel 10 on a G3si switch.
Appl	Enter mis for the Call Center application.
Interface Link	Enter the same Physical Channel number used from the Data Module form.
Interface Chan	Enter 1 .
Destination Port	Enter 0 .
Session Local/ Session Remote	The local and remote port assignments must be symmetrical between the switch and the CMS. The standard CMS provisioning procedure is to set the local and remote port assignments equal to the switch processor channel used for this link. For example, if you use processor channel 10, set the remote and local port to 10.
Mach ID	Leave blank.

Enabling the processor interface link: Use the Data Module form to enable the processor interface link after you have added the processor interface channel.

change data-module 2005

DATA MODULE

Data Extension: 2005

Type: procr-infc

Physical Channel: 01

ITC: restricted

Link: 1

Name: cms link data module

COS: 1

COR: 1

TN:

DTE/DCE: DTE

Enable Link? y

Maintenance Extension:

Destination Number: eia

Establish Connection? y

Connected To: DCE

Clocking: internal

ABBREVIATED DIALING

List1:

SPECIAL DIALING OPTION:

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

Ext

Name

1:

Field	Definition
Enable Link	Enter y to enable the link.

G3r switch

The Packet Gateway (TN577) board on the G3r has four interface links (01 to 04). One of these interface links must be assigned to a CMS computer.

The administration for an IDI connection differs for DEFINITY R6 and earlier, and DEFINITY R7 and later. Use the section that matches your switch release.

Restrictions

Though some IDI models operate at faster speeds, the recommended speed is 9600 bps.

IDI connections, DEFINITY G3r, R6 and earlier

This section contains examples of the DEFINITY R6 and earlier administration forms used for IDI connections. Use the forms in the order shown.

Form	Purpose
add pgate	Adding the Packet Gateway circuit pack (TN577)
add data-module	Adding the packet gateway X.25 data module
change communication-interface processor-channels	Adding the processor interface channel
change communication-interface links	Enabling the interface link

Adding the packet gateway circuit pack: Use the Packet Gateway Board form to add a packet gateway circuit pack (TN577). If the system already has a packet gateway circuit pack with an available port, this administration is not required.

add pgate 01C03

Page 1 of 1

PACKET GATEWAY BOARD

Board Location: 01C03

Name: cms link

Application: X.25

External cable type: rs232

Port configuration: 1) rs232 2)rs232 3)rs232 4)rs232

Field	Definition
Board Location	Enter the equipment location of the Packet Gateway circuit pack (TN577).
Application	Enter x.25 .
External cable type	Enter rs232 .
Name	Enter an identifying name for this circuit pack.

Adding the packet gateway X.25 data module: Use the Data Module form to administer the internal X.25 data module used by the Packet Gateway circuit pack.

add data-module 2005

Page 1 of 2

DATA MODULE

Data Extension: 2005

Type: x.25

Port: 01C0301

Baud Rate: 9600

Endpoint Type: adjunct

Name: cms link data module

Remote Loop-Around Test? n

COR: 1

TN: 1

DTE/DCE: dte

Error Logging? y

Permanent Virtual Circuit? y

Switched Virtual Circuit? n

Highest PVC Logical Channel: 64

Field	Definition
Data Extension	The extension of the data module on the packet gateway.
Name	Enter a name for the data module. Do not use special characters in the name field.
Type	Enter x.25 .
Port	Enter the equipment location of the packet gateway port used for the CMS connection.
COR	Enter the desired COR value.
Baud Rate	Enter 9600 .
DTE/DCE	Enter dte .
Error Logging	Enter y .

add data-module 2005

DATA MODULE

Page 2 of 2

LAYER 2 PARAMETERS

 Number of Outstanding Frames (w): 7

 Retry Attempt Counter (N2): 5

 Frame Size (N1): 135

Retransmission (T1) Timer (1/10 seconds): 10

 Idle (T4) Timer (1/10 seconds): 30

LAYER 3 PARAMETERS

 Number of Outstanding Packets: 7

 Restart (T20) Timer (seconds): 8

 Reset (T22) Timer (seconds): 10

Field	Definition
Number of Outstanding Frames (w)	Enter 7.
Retry Attempt Counter (N2)	Enter 5.
Number of Outstanding Packets	Enter 7.

Adding the processor channel: Use the Processor Channel form to assign one of the 64 local processor channels from the processor link to one of the 64 interface channels assigned to one interface link (1 to 4). Only one interface link is assigned to a CMS computer.

change communication-interface processor-channels

Page 1 of 8

PROCESSOR CHANNEL ASSIGNMENT

Proc Chan	Application	Interface Link	Interface Chan	Local Port	Remote Port	Adjunct Name	Machine-ID
1:	mis	1	1	1	1		
2:							
3:							
4:							
5:							
6:							
7:							

Field	Definition
Processor Channel	Select a processor channel for this link. The standard CMS provisioning procedure is to use channel 1 on a G3r switch.
Application	Enter mis for the call center application.
Interface Link	Enter the link number used on the Interface Links form.
Interface Chan	Enter 1 .
Local Port/ Remote Port	The local and remote port assignments must be symmetrical between the switch and the CMS. The standard CMS provisioning procedure is to set the local and remote port assignments equal to the switch processor channel used for this link. For example, if you use processor channel 10, set the remote and local port to 10.
Adjunct Name	Leave blank.
Machine-ID	Leave blank.

Enabling the interface link: Use the following form to enable the processor interface link.

```
change communication-interface links
                                INTERFACE LINKS
Link  Enabled      X.25      Destination  Establish    Connected
      1:      y      2005      external    Connection   Data Module  Identification
      2:
      3:
      4:
      5:
      6:
      7:
      8:
      9:
     10:
     11:
     12:
     13:
     14:
     15:
     16:
```

Field	Definition
Link	Use the link number that corresponds to the Interface Link selected on the Processor Channel form.
Enabled	Enter y to enable the link.
X.25 Extension	Enter the extension number of the Packet Gateway data module port.
Destination Number	Enter external .
Identification	Enter an identifying name for this link.

IDI connections, DEFINITY G3r, R7 and later

This section contains examples of the DEFINITY R7 and later administration forms used for IDI connections. Use the forms in the order shown.

Form	Purpose
add pgate	Adding the Packet Gateway circuit pack (TN577)
add data-module	Adding the packet gateway X.25 data module and communication interface link attributes
change communication-interface processor-channels	Adding the processor interface channel
change data-module	Enabling the interface link after adding the processor channel

Adding the packet gateway circuit pack: Use the Packet Gateway Board form to add a packet gateway circuit pack (TN577). If the system already has a packet gateway circuit pack with an available port, this administration is not required.

add pgate 01C03

Page 1 of 1

PACKET GATEWAY BOARD

Board Location: 01C03

Name: cms link

Application: X.25

External cable type: rs232

Port configuration: 1) rs232 2)rs232 3)rs232 4)rs232

Field	Definition
Board Location	Enter the equipment location of the Packet Gateway circuit pack (TN577).
Application	Enter x.25 .
External cable type	Enter rs232 .
Name	An identifying name for this circuit pack.

Adding the packet gateway X.25 data module and interface link: se the Data Module form to administer the internal X.25 data module used by the Packet Gateway circuit pack, and the communication interface link attributes.

add data-module 2005

Page 1 of 2

DATA MODULE

Data Extension: 2005

Type: x.25

Port: 01C0301

Baud Rate: 9600

Endpoint Type: adjunct

Link: 1

Name: cms link data module

COR: 1

TN: 1

DTE/DCE: dte

Enable Link? n

Remote Loop-Around Test? n

Destination Number: external

Establish Connection?

Connected Data Module:

Error Logging? y

Permanent Virtual Circuit? y

Switched Virtual Circuit? n

Highest PVC Logical Channel: 64

Field	Definition
Data Extension	The extension of the data module on the packet gateway.
Type	Enter x.25 .
Port	Enter the equipment location of the packet gateway port used for the CMS connection.
COR	Use the desired COR value.
Destination Number	Enter external .
Baud Rate	Enter 9600 .
DTE/DCE	Enter dte .
Link	Enter the link number that corresponds to the Interface Link selected on the Processor Channel form.
Enable Link	Enter n to disable the link. The link must be enabled after you have added the processor channel.
Error Logging	Enter y .

add data-module 2005

DATA MODULE

Page 2 of 2

LAYER 2 PARAMETERS

Number of Outstanding Frames (w): 7

Retry Attempt Counter (N2): 5

Frame Size (N1): 135

Retransmission (T1) Timer (1/10 seconds): 10

Idle (T4) Timer (1/10 seconds): 30

LAYER 3 PARAMETERS

Number of Outstanding Packets: 7

Restart (T20) Timer (seconds): 8

Reset (T22) Timer (seconds): 10

Field	Definition
Number of Outstanding Frames (w)	Enter 7.
Retry Attempt Counter (N2)	Enter 5.
Number of Outstanding Packets	Enter 7.

Adding the processor channel: Use the Processor Channel form to assign one of the 64 local processor channels from the processor link to one of the 64 interface channels assigned to one interface link (1 to 4). Only one interface link is assigned to a CMS computer.

change communication-interface processor-channels

PROCESSOR CHANNEL ASSIGNMENT

Page 1 of X

Proc Chan	Enable	Appl.	Gtwy To Mode	Interface Link/Chan	Destination Node	Port	Session Local/Remote	Mach ID
1:	y	mis		1 1			1 1	
2:								
3:								
4:								

Field	Definition
Processor Channel	Select a processor channel for this link. The standard CMS provisioning procedure is to use channel 1 on a G3r switch.
Enable	Enter y to enable the channel.
Appl	Enter mis for the call center application.
Interface Link	Enter the link number used on the X.25 Data Module form.
Interface Chan	Enter 1 .
Session Local/ Session Remote	The local and remote port assignments must be symmetrical between the switch and the CMS. The standard CMS provisioning procedure is to set the local and remote port assignments equal to the switch processor channel used for this link. For example, if you use processor channel 10, set the remote and local port to 10.
Mach ID	Leave blank.

Enabling the interface link: Use the Data Module form to enable the interface link after you have added the processor channel.

change data-module 2005

Page 1 of 2

DATA MODULE

Data Extension: 2005

Type: x.25

Port: 01C0301

Baud Rate: 9600

Endpoint Type: adjunct

Link: 1

Name: cms link data module

COR: 1

TN: 1

DTE/DCE: dte

Enable Link? y

Remote Loop-Around Test? n

Destination Number: external

Establish Connection?

Connected Data Module:

Error Logging? y

Permanent Virtual Circuit? y

Switched Virtual Circuit? n

Highest PVC Logical Channel: 64

Field	Definition
Enable Link	Enter y to enable the link.

Administering a data module connection

Use the procedures in this section to administer a data module connection to the following switch types:

- [G3si switch](#)
- [G3r switch](#) on page 147

G3si switch

When the distance from the switch to the CMS computer exceeds 200 feet, you must use a data module to interface from the Processor Interface on the switch to the CMS computer. The processor interface on the G3si has eight interface links (01 to 08) available on a multi-carrier cabinet system and four interface links (01 to 04) available on a single-carrier cabinet system. One of these interface links must be assigned to a CMS computer.

The administration for a data module connection differs for DEFINITY R6 and earlier, and DEFINITY R7 and later. Use the section that matches your switch release.

Data module connections, DEFINITY G3si, R6 and earlier

This section contains examples of the administration forms used for data module connections. Use the forms in the order shown.

Administration Form	Purpose
add data-module	Adding the processor interface data module and the CMS computer data module
change communication-interface processor-channels	Adding the processor interface channel
change communication-interface links	Enabling the interface link

Adding the processor interface data module: Use the Data Module form to administer the internal data module used by the Processor Interface.

add data-module 2005

Page 1 of 1

DATA MODULE

Data Extension: 2005

Type: procr-infc

Physical Channel: 01

ITC: restricted

Name: cms link data module

COS: 1

COR: 1

TN:

Maintenance Extension:

ABBREVIATED DIALING

List1:

SPECIAL DIALING OPTION:

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

Ext

Name

1:

Field	Definition
Data Extension	The extension of the data module on the processor.
Name	Enter a name for the data module. Do not use special characters in the name field.
Type	Enter procr-infc .
COS	Enter the desired COS value.
Maintenance Extension	Enter an extension per local procedures.
Physical Channel	Enter the interface link being used for this connection. The value 01 equals link 1.
COR	Enter the desired COR value.

Adding the CMS computer data module: Use the Data Module form to administer the data module that connects to the CMS computer.

add data-module 2009

Page 1 of 1

DATA MODULE

Data Extension: 2009

Type: pdm

Port: 01B0102

ITC: restricted

Name: cms comp data mod

COS: 1

COR: 1

TN: 1

BCC: 2

Remote Loop-Around Test? n

Secondary data module? n

Connected to: dte

ABBREVIATED DIALING

List1:

SPECIAL DIALING OPTION:

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

Ext

Name

1:

Field	Definition
Data Extension	The extension of the data module connected to the CMS computer.
Name	Enter a name for the data module. Do not use special characters in the name field.
Type	Enter pdm .
COS	Enter the desired COS value.
Port	Enter the port number of the digital interface circuit pack.
COR	Enter the desired COR value.
Connected to	Enter dte .

Adding the processor interface channel: Use the Processor Channel form to assign one of the 64 local processor channels from the processor link to one of the 64 interface channels assigned to one interface link (1 to 4). Only one interface link is assigned to a CMS computer.

change communication-interface processor-channels

Page 1 of 4

PROCESSOR CHANNEL ASSIGNMENT

Proc		Interface			Remote		
Chan	Appl.	Link	Chan	Priority	Proc	Chan	Machine-ID
1:	mis	1	1	h		1	
2:							
3:							
4:							
5:							
6:							
7:							

Field	Definition
Processor Channel	Select a processor channel for this link. The standard CMS provisioning procedure is to use channel 10 on a G3si switch.
Appl	Enter mis for the call center application.
Interface Link	Enter the same physical channel number used from the Data Module form.
Interface Chan	Enter 1 .
Priority	Enter h for high priority.
Remote Proc Chan	Enter 1 .
Machine-ID	Leave blank.

Enabling the interface link: Use the Interface Links form to enable the processor interface link.

change communication-interface links

INTERFACE LINKS

Link	Enable	Est Conn	PI Ext	Prot	Destination Digits	Brd	DTE/ DCE	Identification
1:	y	y	2005	BX25	2009		DTE	cms link
2:								
3:								
4:								
5:								
6:								
7:								
8:								

Field	Definition
Link	Use the link number that corresponds to the Interface Link selected on the Processor Channel form.
Enable	Enter y to enable the link.
Est Conn	Enter y to establish the connection.
PI Ext	Enter the Processor Interface extension as defined in the Data Module form.
Prot	Enter BX25 for the X.25 protocol.
Destination Digits	Enter the extension number of the data module connected to the CMS computer.
Destination Brd	Leave blank.
DTE/DCE	Enter DTE .
Identification	Enter an identifying name for this link.

Data module connections, DEFINITY G3si, R7 and later

This section contains examples of the DEFINITY R7 and later administration forms used for data module connections. Use the forms in the order shown.

Administration Form	Purpose
add data-module	Adding the processor interface data module and communications interface link attributes, and the CMS computer data module
change communication-interface processor-channels	Adding the processor interface channel
change data-module	Enabling the data link after adding the processor interface channel

Adding the processor interface data module and interface link: Use the Data Module form to administer the internal data module used by the Processor Interface and the communications interface link attributes.

add data-module 2005

Page 1 of 1

DATA MODULE

Data Extension: 2005

Type: procr-inf

Physical Channel: 01

ITC: restricted

Link: 1

Name: cms link data module

COS: 1

COR: 1

TN:

DTE/DCE: DTE

Enable Link? n

Maintenance Extension:

Destination Number: 2009

Establish Connection? y

Connected Data Module:

ABBREVIATED DIALING

List1:

SPECIAL DIALING OPTION:

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

Ext

Name

1:

Field	Definition
Data Extension	The extension of the data module on the processor.
Name	Enter a name for the data module. Do not use special characters in the name field.
Type	Enter procr-infc .
COS	Enter the desired COS value.
Maintenance Extension	Enter an extension per local procedures.
Physical Channel	Enter the interface link being used for this connection. The value 01 equals link 1.
COR	Enter the desired COR value.
Destination Number	Enter the extension number of the CMS computer data module.
Establish Connection	Enter y to establish the connection.
Link	Enter the interface link being used for this connection. This must match the Physical Channel field value.
DTE/DCE	Enter DTE .
Enable Link	Enter n to disable the link. The link must be enabled after you have added the processor interface channel.

Adding the CMS computer data module: Use the Data Module form to administer the data module that connects to the CMS computer.

add data-module 2009

Page 1 of 1

DATA MODULE

Data Extension: 2009

Type: pdm

Port: 01B0102

ITC: restricted

Name: cms comp data mod

COS: 1

COR: 1

TN: 1

BCC: 2

Remote Loop-Around Test? n

Secondary data module? n

Connected to: dte

ABBREVIATED DIALING

List1:

SPECIAL DIALING OPTION:

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

Ext

Name

1:

Field	Definition
Data Extension	The extension of the data module connected to the CMS computer.
Name	Enter a name for the data module. Do not use special characters in the name field.
Type	Enter pdm .
COS	Enter the desired COS value.
Port	Enter the port number of the digital interface circuit pack.
COR	Enter the desired COR value.
Connected to	Enter dte .

Adding the processor interface channel: Use the Processor Channel form to assign one of the 64 local processor channels from the processor link to one of the 64 interface channels assigned to one interface link (1 to 4). Only one interface link is assigned to a CMS computer.

change communication-interface processor-channels

PROCESSOR CHANNEL ASSIGNMENT

Proc Chan

1:

2:

3:

4:

Enable

y

Appl.

mis

Gtwy To Mode

Interface Link/Chan

1

1

Destination Node

Port

0

Session Local/Remote

1

1

Mach ID

Field	Definition
Processor Channel	Select a processor channel for this link. The standard CMS provisioning procedure is to use channel 10 on a G3si switch.
Appl	Enter mis for the call center application.
Interface Link	Enter the same physical channel number used from the Data Module form.
Interface Chan	Enter 1 .
Destination Port	Enter 0 .
Session Local/ Session Remote	The local and remote port assignments must be symmetrical between the switch and the CMS. The standard CMS provisioning procedure is to set the local and remote port assignments equal to the switch processor channel used for this link. For example, if you use processor channel 10, set the remote and local port to 10.
Mach ID	Leave blank.

Enabling the processor interface link: Use the Data Module form to enable the processor interface link after you have added the processor interface channel.

change data-module 2005

Page 1 of 1

DATA MODULE

Data Extension: 2005

Type: procr-infc

Physical Channel: 01

ITC: restricted

Link: 1

Name: cms link data module

COS: 1

COR: 1

TN:

DTE/DCE: DTE

Enable Link? y

Maintenance Extension:

Destination Number: 2009

Establish Connection? y

Connected Data Module:

ABBREVIATED DIALING

List1:

SPECIAL DIALING OPTION:

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

Ext

Name

1:

Field	Definition
Enable Link	Enter y to enable the link.

G3r switch

When the distance from the switch to the CMS computer exceeds 200 feet, you must use a data module to interface from the switch to the CMS computer. The Packet Gateway (TN577) board on the Generic 3r has four interface links (01 to 04). One of these interface links must be assigned to a CMS computer.

The administration for a data module connection differs for DEFINITY R6 and earlier, and DEFINITY R7 and later. Use the section that matches your switch release.

Data module connections, DEFINITY G3r, R6 and earlier

This section contains examples of the DEFINITY R6 and earlier administration forms used for data module connections. Use the forms in the order shown.

Form	Purpose
add pgate	Adding the Packet Gateway circuit pack (TN577)
add data-module	Adding the packet gateway X.25 data module, the packet gateway EIA data module, and the CMS computer data module
change communication-interface processor-channels	Adding the processor interface channel
change communication-interface links	Enabling the interface link
add administered-connection	Setting up an administered connection between the packet gateway data module and the CMS computer data module

Adding the packet gateway circuit pack: Use the Packet Gateway Board form to add a packet gateway circuit pack (TN577). If the system already has an available packet gateway circuit pack, this administration is not required.

add pgate 01C03

Page 1 of 1

PACKET GATEWAY BOARD

Board Location: 01C03

Name: cms link

Application: X.25

External cable type: rs232

Port configuration: 1) rs232 2)rs232 3)rs232 4)rs232

Field	Definition
Board Location	Enter the equipment location of the Packet Gateway circuit pack (TN577).
Application	Enter x.25 .
External cable type	Enter rs232 .
Name	An identifying name for this circuit pack.

Adding the packet gateway X.25 data module: Use the Data Module form to administer the internal data module used by the packet gateway port.

add data-module 2005

Page 1 of 2

DATA MODULE

Data Extension: 2005

Type: x.25

Port: 01C0301

Baud Rate: 9600

Endpoint Type: adjunct

Name: cms link data module

Remote Loop-Around Test? n

COR: 1

TN: 1

DTE/DTC: dte

Error Logging? y

Permanent Virtual Circuit? y

Switched Virtual Circuit? n

Highest PVC Logical Channel: 64

Field	Definition
Data Extension	The extension of the data module on the packet gateway.
Name	Enter a name for the data module. Do not use special characters in the name field.
Type	Enter x.25 .
Port	Enter the equipment location of the packet gateway port used for the CMS connection.
COR	Enter the desired COR value.
Baud Rate	Enter 9600 .
DTE/DCE	Enter dte .
Error Logging	Enter y .

```
LAYER 2 PARAMETERS
    Number of Outstanding Frames (w): 7
    Retry Attempt Counter (N2): 5
    Frame Size (N1): 135
    Retransmission (T1) Timer (1/10 seconds): 10
    Idle (T4) Timer (1/10 seconds): 30
LAYER 3 PARAMETERS
    Number of Outstanding Packets: 7
    Restart (T20) Timer (seconds): 8
    Reset (T22) Timer (seconds): 10
```

Field	Definition
Number of Outstanding Frames (w)	Enter 7.
Retry Attempt Counter (N2)	Enter 5.
Number of Outstanding Packets	Enter 7.

Adding the packet gateway EIA data module: Use the Data Module form to administer the data module used by the packet gateway port to connect to the CMS computer.

add data-module 2007

Page 1 of 1

DATA MODULE

Data Extension: 2007

Type: pdm

Port: 01B0104

ITC: restricted

Name: eia data module

COS: 1

COR: 1

TN: 1

BCC: 2

Remote Loop-Around Test? n

Secondary data module? n

Connected to: dte

ABBREVIATED DIALING

List1:

SPECIAL DIALING OPTION:

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

Ext

Name

1:

Field	Definition
Data Extension	The extension of the data module connected to the packet gateway EIA port.
Name	Enter a name for the data module. Do not use special characters in the name field.
Type	Enter pdm .
COS	Enter the desired COS value.
Port	Enter the port number of the digital interface circuit pack.
COR	Enter the desired COR value.
Connected to	Enter dte .

Adding the CMS computer data module: Use the Data Module form to administer the data module used by the CMS computer.

add data-module 2009

Page 1 of 1

DATA MODULE

Data Extension: 2009

Type: pdm

Port: 01B0102

ITC: restricted

Name: cms comp data mod

COS: 1

COR: 1

TN: 1

BCC: 2

Remote Loop-Around Test? n

Secondary data module? n

Connected to: dte

ABBREVIATED DIALING

List1:

SPECIAL DIALING OPTION:

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

Ext

Name

1:

Field	Definition
Data Extension	The extension of the data module connected to the CMS computer.
Name	Enter a name for the data module. Do not use special characters in the name field.
Type	Enter pdm .
COS	Enter the desired COS value.
Port	Enter the port number of the digital interface circuit pack.
COR	Enter the desired COR value.

Adding the processor channel: Use the Processor Channel form to assign one of the 64 local processor channels from the processor link to one of the 64 interface channels assigned to one interface link (1 to 4). Only one interface link is assigned to a CMS computer.

change communication-interface processor-channels

PROCESSOR CHANNEL ASSIGNMENT

Proc
Chan

Application

Interface
Link

Chan

Local
Port

Remote
Port

Adjunct
Name

Machine-ID

1:

mis

1

1

1

1

2:

3:

4:

5:

6:

7:

Field	Definition
Processor Channel	Select a processor channel for this link. The standard CMS provisioning procedure is to use channel 1 on a G3r switch.
Application	Enter mis for the call center application.
Interface Link	Enter the link number used on the Interface Links form.
Interface Chan	Enter 1 .
Local Port/ Remote Port	The local and remote port assignments must be symmetrical between the switch and the CMS. The standard CMS provisioning procedure is to set the local and remote port assignments equal to the switch processor channel used for this link. For example, if you use processor channel 10, set the remote and local port to 10.
Adjunct Name	Leave blank.
Machine-ID	Leave blank.

Enabling the interface link: Use the Interface Links form to enable the processor interface link.

```
change communication-interface links
                                INTERFACE LINKS
Link   Enabled   X.25      Destination  Establish    Connected
      1:      y      Extension  Number      Connection   Data Module Identification
      2:                                     cms link
      3:
      4:
      5:
      6:
      7:
      8:
      9:
     10:
     11:
     12:
     13:
     14:
     15:
     16:
```

Field	Definition
Link	Use the link number that corresponds to the Interface Link selected on the Processor Channel form.
Enabled	Enter y to enable the link.
X.25 Extension	Enter the extension number of the Packet Gateway data module port.
Destination Number	Enter external .
Identification	Enter an identifying name for this link.

Setting up an administered connection: Use the Administered Connections form to set up the permanent connection between the packet gateway EIA data module and the CMS computer data module.

```
add administered-connection 1                                     Page 1 of 1
                                ADMINISTERED CONNECTION

    Connection Number: 1                                           Enable? y
      Originator: 2007
      Destination: 2009
        Name:

AUTHORIZED TIME OF DAY
      Continuous? y

MISENTRYANEOUS PARAMETERS
      Alarm Type: warning                                           Alarm Threshold: 5
                                           Retry Interval: 2
      Priority: 5                                                    Auto Restoration? y
```

Field	Definition
Connection Number	Enter the desired connection number.
Enable	Enter y to enable the administered connection.
Originator	Enter the extension number of the Packet Gateway EIA data module.
Destination	Enter the extension number of the CMS computer data module.
Continuous	Enter y so that the administered connection is active at all times.

Data module connections, DEFINITY G3r, R7 and later

This section contains examples of the DEFINITY R7 and later administration forms used for data module connections. Use the forms in the order shown.

Form	Purpose
add pgate	Adding the Packet Gateway circuit pack (TN577)
add data-module	Adding the packet gateway X.25 data module and communication interface link attributes, the packet gateway EIA data module, and the CMS computer data module
change communication-interface processor-channels	Adding the processor channel
add administered-connection	Setting up an administered connection between the packet gateway data module and the CMS computer data module
change data-module	Enabling the interface link after adding the processor channel

Adding the packet gateway circuit pack: Use the Packet Gateway Board form to add a packet gateway circuit pack (TN577). If the system already has an available packet gateway circuit pack, this administration is not required.

add pgate 01C03

Page 1 of 1

PACKET GATEWAY BOARD

Board Location: 01C03

Name: cms link

Application: X.25

External cable type: rs232

Port configuration: 1) rs232 2)rs232 3)rs232 4)rs232

Field	Definition
Board Location	Enter the equipment location of the Packet Gateway circuit pack (TN577).
Application	Enter x.25 .
External cable type	Enter rs232 .
Name	An identifying name for this circuit pack.

Adding the packet gateway X.25 data module and interface link: see the Data Module form to administer the internal X.25 data module used by the Packet Gateway circuit pack, and the communication interface link attributes.

add data-module 2005

Page 1 of 2

DATA MODULE

Data Extension: 2005

Type: x.25

Port: 01C0301

Baud Rate: 9600

Endpoint Type: adjunct

Link: 1

Name: cms link data module

COS: 1

COR: 1

TN: 1

DTE/DCE: dte

Enable Link? n

Remote Loop-Around Test? n

Destination Number: external

Establish Connection?

Connected Data Module:

Error Logging? y

Permanent Virtual Circuit? y

Switched Virtual Circuit? n

Highest PVC Logical Channel: 64

Field	Definition
Data Extension	The extension of the data module on the packet gateway.
Name	Enter a name for the data module. Do not use special characters in the name field.
Type	Enter x.25 .
COS	Enter the desired COS value.
Port	Enter the equipment location of the packet gateway port used for the CMS connection.
COR	Enter the desired COR value.
Destination Number	Enter external .
Baud Rate	Enter 9600 .
DTE/DCE	Enter dte .
Link	Enter the link number that corresponds to the Interface Link selected on the Processor Channel form.

Field	Definition
Enable Link	Enter n to disable the link. The link must be enabled after you have added the processor channel.
Error Logging	Enter y .

add data-module 2005

DATA MODULE

LAYER 2 PARAMETERS

Number of Outstanding Frames (w): 7

Retry Attempt Counter (N2): 5

Frame Size (N1): 135

Retransmission (T1) Timer (1/10 seconds): 10

Idle (T4) Timer (1/10 seconds): 30

LAYER 3 PARAMETERS

Number of Outstanding Packets: 7

Restart (T20) Timer (seconds): 8

Reset (T22) Timer (seconds): 10

Field	Definition
Number of Outstanding Frames (w)	Enter 7 .
Retry Attempt Counter (N2)	Enter 5 .
Number of Outstanding Packets	Enter 7 .

Adding the packet gateway EIA data module: Use the Data Module form to administer the data module used by the packet gateway port to connect to the CMS computer.

add data-module 2007

Page 1 of 1

DATA MODULE

Data Extension: 2007

Type: pdm

Port: 01B0104

ITC: restricted

Name: eia data module

COS: 1

COR: 1

TN: 1

BCC: 2

Remote Loop-Around Test? n

Secondary data module? n

Connected to: dte

ABBREVIATED DIALING

List1:

SPECIAL DIALING OPTION:

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

Ext

Name

1:

Field	Definition
Data Extension	The extension of the data module connected to the packet gateway EIA port.
Name	Enter a name for the data module. Do not use special characters in the name field.
Type	Enter pdm .
COS	Enter the desired COS value.
Port	Enter the port number of the digital interface circuit pack.
COR	Enter the desired COR value.

Adding the CMS computer data module: Use the Data Module form to administer the data module used by the CMS computer.

add data-module 2009

Page 1 of 1

DATA MODULE

Data Extension: 2009

Name: cms comp data mod

BCC: 2

Type: pdm

COS: 1

Remote Loop-Around Test? n

Port: 01B0102

COR: 1

Secondary data module? n

ITC: restricted

TN: 1

Connected to: dte

ABBREVIATED DIALING

List1:

SPECIAL DIALING OPTION:

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

Ext

Name

1:

Field	Definition
Data Extension	The extension of the data module connected to the CMS computer.
Name	Enter a name for the data module. Do not use special characters in the name field.
Type	Enter pdm .
COS	Enter the desired COS value.
Port	Enter the port number of the digital interface circuit pack.
COR	Enter the desired COR value.

Adding the processor channel: Use the Processor Channel form to assign one of the 64 local processor channels from the processor link to one of the 64 interface channels assigned to one interface link (1 to 4). Only one interface link is assigned to a CMS computer.

change communication-interface processor-channels

PROCESSOR CHANNEL ASSIGNMENT

Page 1 of X

Proc	Chan	Enable	Appl.	Gtwy To Mode	Interface Link/Chan	Destination Node	Port	Session Local/Remote	Mach ID
	1:	y	mis		1 1			1 1	
	2:								
	3:								
	4:								

Field	Definition
Processor Channel	Select a processor channel for this link. The standard CMS provisioning procedure is to use channel 1 on a G3r switch.
Enable	Enter y to enable the channel.
Appl	Enter mis for the call center application.
Interface Link	Enter the link number used on the X.25 Data Module form.
Interface Chan	Enter 1 .
Session Local/ Session Remote	The local and remote port assignments must be symmetrical between the switch and the CMS. The standard CMS provisioning procedure is to set the local and remote port assignments equal to the switch processor channel used for this link. For example, if you use processor channel 10, set the remote and local port to 10.
Mach ID	Leave blank.

Enabling the interface link: Use the Data Module form to enable the interface link after you have added the processor channel.

change data-module 2005

Page 1 of 2

DATA MODULE

Data Extension: 2005

Type: x.25

Port: 01C0301

Baud Rate: 9600

Endpoint Type: adjunct

Link: 1

Name: cms link data module

COS: 1

COR: 1

TN: 1

DTE/DCE: dte

Enable Link? y

Remote Loop-Around Test? n

Destination Number: external

Establish Connection?

Connected Data Module:

Error Logging? y

Permanent Virtual Circuit? y

Switched Virtual Circuit? n

Highest PVC Logical Channel: 64

Field	Definition
Enable Link	Enter y to enable the link.

Setting Up an administered connection: Use the Administered Connections form to set up the permanent connection between the packet gateway EIA data module and the CMS computer data module.

```
add administered-connection 1                                     Page 1 of 1
                                ADMINISTERED CONNECTION

    Connection Number: 1                                           Enable? y
      Originator: 2007
    Destination: 2009
        Name:

AUTHORIZED TIME OF DAY
    Continuous? y

MISENTRYANEOUS PARAMETERS
    Alarm Type: warning                                           Alarm Threshold: 5
                                Retry Interval: 2
    Priority: 5                                                    Auto Restoration? y
```

Field	Definition
Connection Number	Enter the desired connection number.
Enable	Enter y to enable the administered connection.
Originator	Enter the extension number of the Packet Gateway EIA data module.
Destination	Enter the extension number of the CMS computer data module.
Continuous	Enter y so that the administered connection is active at all times.

G2 switch administration

Overview

This section contains the procedures required to establish a communications link between the CMS computer and the G2 switch. The switch connects to a CMS computer as follows:

- IDI connection
- DSU connection
- Data module connection.

Use the procedures in this section to administer the DCIU data link connection to the switch. This section contains examples of the administration procedures with detailed explanations for the required fields. Use the procedures in the order shown.

Procedure	Purpose
276 Word 1	Enabling the Call Center feature group
275 Word 1	Activating the DCIU
275 Word 4	Enabling CMS
258 Word 2	Copying the DCIU machine-read values to the scratch-pad table
256 Word 1	Adding the major characteristics of the DCIU link
256 Word 2	Adding the BX.25 level 2 characteristics
256 Word 3	Adding the BX.25 level 3 characteristics
257 Word 5 257 Word 2	Setting up the CMS port
257 Word 1	Setting up the CMS network channel
257 Word 5 257 Word 2	Setting up the maintenance port

Procedure	Purpose
257 Word 1	Setting up the maintenance network channel
258 Word 1	Swapping the scratch-pad tables with the machine-read memory

For additional information on administering a G2 switch, including data module administration, see *DEFINITY Communications System Generic 2 Administration of Features and Hardware* and *DEFINITY Communications System Generic 2 Administration Procedures* (issue and version appropriate to the specific switch being administered).

Enabling the call center feature group

Procedure 276

Word 1

Enables the call center feature group.

Field	Definition
13	If set to 0, the switch will work with an R3 CMS system administered as connected to G2.1 switch. This setup excludes enhanced transfer tracking a data pegs. If set to 1, an R3 CMS is required, and must be administered as connected to a G2.2 switch.

Activating the DCIU

Procedure 275

Word 1

Activates the DCIU.

Field	Definition
17	Enter 1 to activate the DCIU.

Enabling CMS

Procedure 275
Word 4

Enables CMS.

Field	Definition
13	Enter 1 to enable CMS.

Copying DCIU tables

Procedure 258
Word 2

Copies the DCIU machine-read memory values to the scratch-pad table. Use this procedure *before* making any DCIU changes.

Field	Definition
1	Enter 1 to make a copy of the DCIU tables. This overwrites the contents of the scratch-pad table.

Adding the DCIU characteristics

Procedure 256
Word 1

Administers the major characteristics of the data link. Included are the link number, status, baud rate, DTE/DCE, type of link, protocol, destination machine type, and the destination machine number.

Field	Definition
1	Enter the DCIU physical link number (1-8). This is the link number of the physical port on the DCIU that is connected to the CMS computer.
2	Enter 1 to set the status to assigned.
3	Enter the baud rate (6=9600 bps)
4	Enter 0 to set the local end of the DCIU to DTE.
5	Enter 0 to set the link as not a dial-up link.
6	Enter 1 to specify BX.25 protocol.

Field	Definition
7	Enter 8 to specify the destination machine as CMS.
8	Enter the destination machine number (1–7)

Adding the BX.25 level 2 characteristics

Procedure 256 Word 2

Administers the BX.25 level-2 characteristics. Included are the link number, the retransmission timer, the idle timer, the maximum number of retransmissions, and the maximum number of unacknowledged frames allowed on the link.

Field	Definition
1	Enter the DCIU physical link number (1-8).
2	Enter the time in seconds before retransmitting unacknowledged frames (1-255). For CMS, the value is 1.
3	Enter the time in seconds before frames are exchanged on a link (1-255). For CMS, the value is 10.
4	Enter the maximum number of retransmissions of an acknowledged frame (1–15). For CMS, the value is 2.
5	Enter the maximum number of frames transmitted on a link without acknowledgment (1–7). For CMS, the value is 7.

Adding the BX.25 level 3 characteristics

Procedure 256

Word 3

Administers the BX.25 level-3 characteristics. Included are the link number, the activity timer, the acknowledgment timer, the interrupt timer, the restart timer, and the maximum number of unacknowledged packets.

Field	Definition
1	Enter the DCIU physical link number (1-8).
2	Enter the time, in seconds, before sending a window advancement packet to indicate the present condition of a logical channel (1-255). For CMS, the value is 180.
3	Enter the time, in seconds, waited for acknowledgment of data packet before resetting a logical channel (1-255). For CMS, the value is 20.
4	Enter the time, in seconds, waited for confirmation of an interrupt packet before resetting a logical channel (1-255). For CMS, the value is 180.
5	Enter the time, in seconds, waited before retransmitting an unconfirmed reset request package (1-255). For CMS, the value is 8.
6	Enter the time, in seconds, waited before retransmitting an unconfirmed restart request package (1-255). For CMS, the value is 8.
10	Enter the maximum number of times an unacknowledged data packet can be transmitted (1-7). For CMS, the value is 4.

Setting up the CMS port

Procedure 257

Word 5

Reserves ports for CMS usage including the port number, the application type, and the application instance number.

Field	Definition
1	Enter 64 for the number of the local port.
2	Enter 11 to specify the application type as CMS.
3	Enter 1 for the application instance number.

Procedure 257

Word 2

Administers the port characteristics including the local port, the remote port/destination, the alternate routing destination routing code, and the alternate routing postage.

Field	Definition
1	Enter 64 for the local port number.
2	Enter 1 for the remote port/destination.

Setting up the CMS network channel

Procedure 257

Word 1

Administers the network channel for CMS applications. Included are the switch link, the logical channel on the local port, the hardware link, the logical channel, the priority, and the alternate routing flag.

Field	Definition
1	Enter 0 for the local link number (Component A).
2	Enter 64 for the logical channel number on the local link/switch.
3	Enter the link number (Component B). This values are 1–8 .
4	Enter 1 for the logical channel number on the link.
5	Enter 1 for the priority level (high).
6	Enter 0 for the alternate routing flag status.

Setting up the maintenance port

Procedure 257

Word 5

Reserves ports for CMS usage including the port number, the application type, and the application instance number.

Field	Definition
1	Enter 6 for the number of the local port.
2	Enter 10 to specify the DCIU test (TEST).
3	Enter 1 for the application instance number.

Procedure 257

Word 5

Reserves ports for CMS usage including the port number, the application type, and the application instance number.

Field	Definition
1	Enter 20 for the number of the local port.
2	Enter 10 to specify the DCIU test (TEST).
3	Enter 2 for the application instance number.

Procedure 257

Word 2

Administers the port characteristics including the local port, the remote port/destination, the alternate routing destination routing code, and the alternate routing postage.

Field	Definition
1	Enter 6 for the local port number.
2	Enter 20 for the remote port/destination.

Procedure 257

Word 2

Administers the port characteristics including the local port, the remote port/destination, the alternate routing destination routing code, and the alternate routing postage.

Field	Definition
1	Enter 20 for the local port number.
2	Enter 6 for the remote port/destination.

Setting up the maintenance network channel

Procedure 257

Word 2

Administers the network channel for CMS applications. Included are the switch link, the logical channel on the local port, the hardware link, the logical channel, the priority, and the alternate routing flag.

Field	Definition
1	Enter 0 for the local link number (Component A).
2	Enter 6 for the logical channel number on the local link/switch.
3	Enter 0 for the link number (Component B).
4	Enter 20 for the logical channel number on the link.
5	Enter 0 for the priority level (low).
6	Enter 0 for the alternate routing flag status.

Swapping the scratch-pad tables

Procedure 258

Word 1

Swaps the changes made to the DCIU scratch-pad table with the machine-read memory. Use this procedure *after* making any DCIU changes.

Field	Definition
1	Enter 1 to swap the tables and reboot DCIU.

Troubleshooting switch connections

Overview

This chapter provides procedures for troubleshooting switch connections. The information in this chapter includes:

- [Troubleshooting a TCP/IP link](#)
- [Troubleshooting HSI cards](#) on page 177
- [Troubleshooting an X.25 link](#) on page 190

Troubleshooting a TCP/IP link

TCP/IP link troubleshooting can be done at the switch and at the CMS computer. This section describes tests you can run from either system.

Switch tests

Using the system administration terminal on the switch, you can use the following commands to test the TCP/IP link:

- `ping ip-address X.X.X.X board CCs [packet-length YYYY repeat ZZZ]` (where `X.X.X.X` is the IP address of the CMS computer, `CCs` is the equipment location of the C-LAN circuit pack, `YYYY` is the size of the test packet, and `ZZZ` is the number of times the test will be repeated)

The packet length and repeat options are available with DEFINITY R8 or later. This command sends a test message to the specified IP address to request a remote echo. The results will be either pass or fail, and will show how long the test took to complete. The packet length defaults to 64 bytes, with a maximum of 1500 bytes.

- **ping node-name XXX board CCs [packet-length YYYY repeat ZZZ]** (where **XXX** is the node name of the CMS computer, **CCs** is the equipment location of the C-LAN circuit pack, **YYYY** is the size of the test packet, and **ZZZ** is the number of times the test will be repeated)

The packet length and repeat options are available with DEFINITY R8 or later. This command sends a test message to the specified node name to request a remote echo. The results will be either pass or fail, and will show how long the test took to complete. The packet length defaults to 64 bytes, with a maximum of 1500 bytes.

- **netstat ip-route**

This command displays the destination IP address, gateway IP address, C-LAN circuit pack used for the route, and the interface for the route.

- **status processor-channels x** (where **x** is the processor channel used for the TCP/IP link)

This command displays the current status of the processor channel used for the TCP/IP link, and the last time and reason that the channel went down.

- **status link x** (where **x** is the TCP/IP link number)

This command displays the status for the TCP/IP link. Page 1 of the test shows whether the link is connected and is in service. Page 3 of the test shows whether the link is up or down. If the link is not up, there is a problem in translations or connectivity.

- **status data-module XXXX** (where **XXXX** is the extension number of the ethernet data module)

This command displays the status for the ethernet data module. This shows which port is connected and if the port is in service.

- **status sys-link CCsc** (where **CCsc** is the cabinet, carrier, slot, and circuit of the system link in question)

This command displays the status data for a specific system link. Each system link can be listed using the **list sys-link** command. The status includes the type and operational state of the link, the associated processor channel (if any), active alarms and path status, and a list of all hardware components that make up the link's path.

- **status packet**

This command displays the packet interface status.

- **trace-route [ip-address X.X.X.X] [node-name nodename] board CCs** (where `X.X.X.X` is the IP address of the CMS computer, `nodename` is the node name of the CMS computer, and `CCs` is the cabinet, carrier, and slot number of the C-LAN circuit pack)

DEFINITY R8 or later using the TN799B C-LAN circuit pack. This command displays the hops traversed from source to destination, along with the IP addresses of the hop points and final destination, and the observed round-trip delay from the source to each hop point. If no reply is received from a hop point, the IP address is blank.

- **list measurements clan ethernet CCsc** (where `CCsc` is the cabinet, carrier, slot, and circuit number of the ethernet port on the C-LAN circuit pack)

DEFINITY R8 or later. This command displays Cyclic Redundancy Check and collision counts for the past 24 hours in 15-minute intervals. N/A is displayed if the data cannot be retrieved for any interval.

Additional references

See the following R7 or later documents for more details on these switch test commands:

- DEFINITY ECS Maintenance for si
- DEFINITY ECS Maintenance for r
- DEFINITY ECS Maintenance for csi

CMS computer tests

Using the system console on the CMS computer, you can use the following commands to test the TCP/IP link. More information about the UNIX commands can be found by printing out the manual pages (**man command**).

- **netstat**

This command displays general network status information.

- **ping x.x.x.x** (where **x.x.x.x** is the IP address of the switch)

This command sends a test message to the specified IP address to request a remote echo. The results will be either alive or no answer.

- **ping xxx** (where **xxx** is the node name of the switch)

This command sends a test message to the specified node name to request a remote echo. The results will be alive, no answer, or unknown host.

- **traceroute x.x.x.x** (where **x.x.x.x** is the IP address of the switch)

This command traces the route that an IP packet follows from the CMS computer to the switch. There are more options to the command other than the IP address. Check the manual page for **traceroute** for more options.

- **Maintenance:Connection Status** (from CMS Main Menu)

This CMS command displays status information for the switch links.

- **snoop**

This command allows you to capture and inspect network packets.

- **spray hostname** (where **hostname** is the name of the switch)

This command sends a stream of packets to a selected host, and reports how many were received and the transfer rate.

You should also check the **/etc/hosts** and **/etc/defaultrouter** files to verify that the IP addresses and host names are accurate.

Troubleshooting HSI cards

This section describes the following:

- How to test HSI cards
- How to remove and reinstall the HSI software and patches.

Testing an HSI card

Each HSI card provides a break-out for four separate female 37-pin RS-449 connections. A CMS computer supports up to eight physical switches connected to two HSI cards (ports 0-7).

To test an individual port on an HSI card for problems:

1. Log in as root.
2. Stop the X.25 daemons with the following command:

```
/etc/init.d/x25.control stop
```
3. Remove the cable from the port to be tested, and attach the loopback plug (which was shipped with the HSI card).
4. Run the following two loopback tests:
 - Internal loopback test
 - Loopback test using the loopback plug.

These tests send approximately 100 packets each. No transmission errors should be reported.

5. To run an internal loopback test on a Blade 100 or Ultra 5 computer, enter the following command:

```
/opt/SUNWconn/bin/hihp_loop -t 1 hih0
```

To run an internal loopback test on an Enterprise 3500, Enterprise 3000, or SPARCserver computer, enter the following command:

```
/opt/SUNWconn/bin/hsi_loop -t 1 hih0
```

The system displays a message similar to the following:

```
hih0: [Using /dev/hiho0]
hih0: speed=9600, loopback=yes, nrzi=no, txc=baud, rxc=rx
.
.
.
Port CRC errors Aborts Overruns Underruns      In <-Drops-> Out
hih0:   0    0    0    0    0    0
#
```

6. To run a loopback test using the loopback plug on a Blade 100 or Ultra 5 computer, enter the following command:

```
/opt/SUNWconn/bin/hihp_loop -t 2 hih0
```

To run a loopback test using the loopback plug on an Enterprise 3500, Enterprise 3000, or SPARCserver computer, enter the following command:

```
/opt/SUNWconn/bin/hsi_loop -t 2 hih0
```

The system displays a message similar to the following:

```
hih0: [Using /dev/hiho0]
hih0: speed=9600, loopback=yes, nrzi=no, txc=baud, rxc=rx
.
.
.
Port CRC errors Aborts Overruns Underruns      In <-Drops-> Out
hih0:   0    0    0    0    0    0
#
```

7. If the loopback tests fail, you should suspect HSI hardware problems. Prior to replacing the HSI card, do the following:
 - a. Verify that the loopback plug is in the correct HSI port.
 - b. Check the cabling to the HSI break-out module.

8. Remove the loopback plug.
9. Reconnect the link.
10. Restart X.25 after completing this test (see [Stopping and starting X.25](#) on page 193).

If you determine that the HSI card is defective and must be replaced, see the instructions in the Sun System Reference Manual for your CMS computer.

Removing and reinstalling the HSI software and patches

Sometimes when a new HSI card is installed or an existing HSI card is moved to a new location, the system will fail to recognize the new or relocated card. This can happen after adding a second HSI card to support additional ACDs. You can tell if the card is not recognized when the `show-devs` command (run from the open boot prompt) does not show the HSI card and when `/var/adm/messages` fails to recognize the card upon bootup even after booting with `boot -r`. If this happens, try running the following command:

```
/cms/toolsbin/lnsBusdev
```

If this does not cause the HSI card to be recognized, you must do the following:

- Back out the HSI patch
- Remove the HSI software
- Reinstall the HSI software
- Reinstall all of the Solaris® patches, which includes the HSI patch.

CAUTION:

These procedures should only be done if you are going to reinstall the patch and the software. The system will not operate correctly without the HSI software and patch installed.

This procedure is different for the different models of CMS computers, and for the different releases of CMS.

Blade 100 and Ultra 5

Note that the procedures in this section may differ slightly depending on the CMS release and different models of the hardware. See your CMS software installation document for more information.

Backing out (removing) the HSI/P patch

To back out or remove the current HSI/P patch (or patches):

1. Display the list of HSI patches by entering the following command:

```
showrev -p | grep hsi
```

The system displays the patch(es) associated with the HSI/P package. Some recent HSI/P patches are 106295-01 and 106922.04. If there are no HSI/P patches installed, continue with [Removing the HSI/P software](#) on page 180.

2. Go to the patch directory at **/var/sadm/patch/xxxxxx-xx** and read the **README.xxxxxx-xx** file. Use the actual patch number displayed in Step 1.
3. Verify that you are logged in as *root*.
4. Back out the current patch(es) by entering the following command (using the actual patch number):

```
/var/sadm/patch/xxxxxx-xx/backoutpatch xxxxxx-xx
```

Removing the HSI/P software

To remove the HSI/P software:

1. Enter: **pkgrm SUNWhsip**

The system displays a message similar to the following:

```
The following package is currently installed:
SUNWhsip          HSI/P Driver/Utilities for PCI Bus
                  (sparc) 1.0

Do you want to remove this package?
```

2. Enter **y**.

The system displays the following message:

```
## Removing installed package instance <SUNWhsip>
```

```
This package contains scripts which will be executed with  
super-user permission during the process of removing this  
package.
```

```
Do you want to continue with the removal of this package  
[y,n,?,q]
```

3. Enter **y**.

The system displays the following message:

```
## Verifying package dependencies.
```

```
## Processing package information.
```

```
.
```

```
.
```

```
## Updating system information.
```

```
Removal of <SUNWhsip> was successful.
```

Reinstalling the HSI/P software

To reinstall the HSI/P software:

4. Load the SunHSI/P Adapter CD into the CD-ROM drive.

5. After about 15 seconds, enter **mount** to verify the name of the CD-ROM. The program responds with a list of devices and file systems currently mounted. The last line should display the installed CD as shown below:

```
.  
. .  
.
```

```
/cdrom/sunhsip_1_0 on /vol/dev/dsk/c0t2d0/sunhsip_1_0 read  
only on Fri Jun 5 14:11:42 1998
```

6. Enter the following:

```
/usr/sbin/pkgadd -d /cdrom/cdrom0/Product SUNWhsip
```

The system displays the following message:

```
Processing package instance <SUNWhsip> from
</cdrom/sunhsip_1_0/Product>

HSI/P Driver/Utilities for PCI Bus
(sparc) 1.0
SunHSI/P 1.0
.
.
## Checking for conflicts with packages already installed.
## Checking for setuid/setgid programs.

This package contains scripts which will be executed with
super-user permission during the process of installing this
package.

Do you want to continue with the installation of <SUNWhsip>
[y,n,?] y
```

7. Enter **y**.

The system displays the following message:

```
Installing HSI/P Driver/Utilities for PCI Bus as <SUNWhsip>

## Installing part 1 of 1.
/opt/SUNWconn/hsip/drv/HSIP
.
.

## Executing postinstall script.

Adding entries to /etc/devlink.tab
.
.
.
Installation of <SUNWhsip> was successful.
#
```

8. Enter **eject cdrom** to eject the CD-ROM from the computer.

9. Remove the CD-ROM from the disk tray, place the CD-ROM back in its case, and close the CD-ROM tray.

Reinstalling the HSI/P patch

To reinstall the HSI/P patch, you must reinstall all of the *Solaris* patches. This should not take as long as when the patches were first installed, because the system recognizes when a patch is already installed and skips that patch.

To reinstall the patches:

1. Load the “CentreVu Call Management System” CD into the CD-ROM drive.
2. After about 15 seconds, enter **mount** to verify the name of the CD-ROM. The program responds with a list of devices and file systems currently mounted. The last line should display the installed CD as shown below:

```
...  
...  
/cdrom/cms on /vol/dev/dsk/c0t2d0/cms read only on  
Mon Jan 19 12:36:55 1998
```

3. Begin the installation by entering the following:

```
/usr/sbin/pkgadd -d /cdrom/cdrom0 spatches
```

The system displays the following message:

```
Processing package instance <spatches> from </cdrom/cms>  
  
CMS Supplied Solaris Patches  
(sparc) 1.0  
  
## Processing package information.  
## Processing system information.  
## Verifying disk space requirements.  
## Checking for conflicts with packages already  
installed.  
## Checking for setuid/setgid programs.  
  
This package contains scripts which will be executed with  
super-user permission during the process of installing  
this package.  
  
Do you want to continue with the installation of  
<spatches> [y,n,?]
```

4. Enter **y** to continue.

The system displays the following message:

```
Installing CMS Supplied Solaris Patches as <spatches>

## Installing part 1 of 1.
101130-12 is not needed
Spooling 103461-18
Spooling 103566-24
. . .
. . .
Installation of <spatches> was successful.
#
```

5. Enter the following to continue installing the patches:

```
/tmp/patches/install_patches | tee -a
/var/sadm/spatch.log
```

The system displays the following message:

```
Checking installed packages and patches...
Generating list of files to be patched...
Verifying sufficient filesystem capacity (exhaustive method)
Installing patch packages...

Patch number 103461-18 has been successfully installed.
See /var/sadm/patch/103461-18/log for details

Patch packages installed:
  SUNWmfrun
  .
  .
```

The program generates various lists of files to be patched. This can take from 30 minutes to several hours to process, depending on the number of patches and the CMS computer. When it finishes, the program displays the system prompt.

6. Reboot the system by entering the following:

```
/usr/sbin/shutdown -y -i6 -g0
```

The system displays the CDE prompt.

7. Log in as root. The Sun Solaris patches have been successfully installed and the system kernel has been rebuilt.

Enterprise 3500, Enterprise 3000, and SPARCserver

Note that the procedures in this section may differ slightly depending on the CMS release and different models of the hardware. See your CMS software installation document for more information.

Backing out (removing) the HSI/S patch

To back out or remove the current HSI/S patch (or patches):

1. Display the list of HSI patches by entering the following command:

```
showrev -p | grep hsi
```

The system displays the patch(es) associated with the HSI/S package. One recent HSI/S patch is 101130-12. If there are no HSI/S patches installed, continue with [Removing the HSI software](#) on page 185.

2. Go to the patch directory at `/var/sadm/patch/xxxxxx-xx` and read the `README.xxxxxx-xx` file. Use the actual patch number displayed in Step 1.
3. Verify that you are logged in as root.
4. Back out the current patch(es) by entering the following command (using the actual patch number):

```
/var/sadm/patch/xxxxxx-xx/backoutpatch xxxxxx-xx
```

Removing the HSI software

To remove the HSI software:

1. Enter the following command to remove the currently-installed HSI software:

```
pkgrm SUNWhsis
```

The system displays a message similar to the following:

```
The following package is currently installed:
SUNWhsis      HSI/S Driver/Utilities 2.0 v1.6
               (sparc) 2.0
```

```
Do you want to remove this package?
```

2. Enter **y**.

The system displays the following message:

```
## Removing installed package instance <SUNWhsis>
```

```
This package contains scripts which will be executed with  
super-user permission during the process of removing this  
package.
```

```
Do you want to continue with the removal of this package  
[y,n,?,q]
```

3. Enter **y**.

The system displays the following message:

```
## Verifying package dependencies.
```

```
## Processing package information.
```

```
.
```

```
.
```

```
## Updating system information.
```

```
Removal of <SUNWhsis> was successful.
```

Reinstalling the HSI/S software

To reinstall the HSI/S software:

1. Load the SunLink™ HSI/S CD into the CD-ROM drive.
2. After about 15 seconds, enter **mount** to verify the name of the CD-ROM. The program responds with a list of devices and file systems currently mounted. The last line should display the installed CD as shown below:

```
.  
. .  
.
```

```
/cdrom/unnamed_cdrom on /vol/dev/dsk/c0t2d0/unnamed_cdrom read  
only on Wed Jan 21 11:08:05 1998
```


3. Enter the following:

```
/usr/sbin/pkgadd -d /cdrom/cdrom0 SUNWhsis
```

The system displays the following message:

```
Processing package instance <SUNWhsis> from
</cdrom/unnamed_cdrom>

HSI/S Driver/Utilities 2.0 v1.6
(sparc) 2.0
    Copyright 1993 Sun Microsystems, Inc. All Rights
    Reserved.
    . . .
## Verifying disk space requirements.
## Checking for conflicts with packages already installed.
## Checking for setuid/setgid programs.

This package contains scripts which will be executed with
super-user permission during the process of installing this
package.

Do you want to continue with the installation of <SUNWhsis>
[y,n,?]
```

4. Enter **y**.

The system displays the following message:

```
Installing HSI/S Driver/Utilities 2.0 v1.6 as <SUNWhsis>
## Installing part 1 of 1.
/opt/SUNWconn/hsis/drv/HSI
.
.
NOTE: HSI driver will be loaded when it is referenced

Installation of <SUNWhsis> was successful.
#
```

5. Enter **eject cdrom** to eject the CD-ROM from the computer.

6. Remove the CD-ROM from the disk tray and place the CD-ROM back in its case.

Reinstalling the HSI/S patch

To reinstall the HSI/S patch(es), you must reinstall all of the Solaris patches. This should not take as long as when the patches were first installed, because the system recognizes when a patch is already installed and skips that patch.

To reinstall the patches:

1. Load the “CentreVu Call Management System” CD into the CD-ROM drive.
2. After about 15 seconds, enter **mount** to verify the name of the CD-ROM. The program responds with a list of devices and file systems currently mounted. The last line should display the installed CD as shown below:

```
...  
...  
/cdrom/cms on /vol/dev/dsk/c0t2d0/cms read only on  
Mon Jan 19 12:36:55 1998
```

3. Begin the installation by entering the following:

```
/usr/sbin/pkgadd -d /cdrom/cdrom0 spatches
```

The system displays the following message:

```
Processing package instance <spatches> from </cdrom/cms>  
  
CMS Supplied Solaris Patches  
(sparc) 1.0  
  
## Processing package information.  
## Processing system information.  
## Verifying disk space requirements.  
## Checking for conflicts with packages already  
installed.  
## Checking for setuid/setgid programs.  
  
This package contains scripts which will be executed with  
super-user permission during the process of installing  
this package.  
  
Do you want to continue with the installation of  
<spatches> [y,n,?]
```

4. Enter **y** to continue.

The system displays the following message:

```
Installing CMS Supplied Solaris Patches as <spatches>

## Installing part 1 of 1.
101130-12 is not needed
Spooling 103461-18
Spooling 103566-24
. . .
. . .
Installation of <spatches> was successful.
#
```

5. Enter the following to continue installing the patches:

```
/tmp/patches/install_patches | tee -a
/var/sadm/spatch.log
```

The system displays the following message:

```
Checking installed packages and patches...
Generating list of files to be patched...
Verifying sufficient filesystem capacity (exhaustive method)
Installing patch packages...

Patch number 103461-18 has been successfully installed.
See /var/sadm/patch/103461-18/log for details

Patch packages installed:
  SUNWmfrun
.
.
```

The program generates various lists of files to be patched. This can take from 30 minutes to several hours to process, depending on the number of patches and the CMS computer. When it finishes, the program displays the system prompt.

6. Reboot the system by entering the following:

```
/usr/sbin/shutdown -y -i6 -g0
```

The system displays the CDE prompt.

7. Log in as root. The Sun Solaris patches have been successfully installed and the system kernel has been rebuilt.

Troubleshooting an X.25 link

This section describes procedures used to troubleshoot an X.25 link problem. The information in this section includes the following:

- Checking the processor gateway circuit pack vintage.
- Checking the status of Link Access Protocol B (LAPB) for the link in question.
- Monitoring the LAPB and X.25 protocol.
- Stopping and starting the X.25.
- Checking the RS-232 to RS-422 Interface Converter (used only with an HSI card).
- Checking the switch administration.
- Checking the cabling.

Checking the processor gateway circuit pack vintage

On a G3r switch, check the vintage of the TN577 PGATE circuit pack. If the vintage is not V16 or later, replace the circuit pack.

Checking the status of LAPB

The first item to check for troubleshooting link problems is the status of LAPB for the link in question.

To check if LAPB (layer 2 of the X.25 Protocol) is up:

1. Examine the `/var/adm/messages` files or the system console for the last message about the link. One of the following messages appears:

Message 1: LAPB Up on link x

Diagnosis: LAPB is up for the link indicated.

Message 2: LAPB Down on link x

Diagnosis: LAPB is down for the link/port indicated.

Message 3: hihx: xmit hung

Diagnosis: LAPB is down for the link/port indicated.

2. If LAPB is not up, answer the following questions:
 - Has X.25 been started without errors?
 - Is the switch administration correct?
 - Is the cabling correct?
 - Is the Interface Converter operating correctly?
 - Is the HSI card ok?
3. If LAPB is up, answer the following questions:
 - Has data collection been turned on?
 - Is the switch administration correct?
 - Does the error log contain any link-related messages?
 - Does the `spi.err` file contain messages about mismatched administration?

Monitoring LAPB and X.25 protocol

To monitor LAPB and the X.25 protocol:

1. To monitor the LAPB (level 2) or the X.25 (level 3) protocol for any given link, enter the following command:

```
/opt/SUNWconn/x25/bin/x25trace
```

In many situations this command can be used in place of a line monitor.
2. To monitor the LAPB protocol for link 0, enter the following command:

```
/opt/SUNWconn/x25/bin/x25trace -i /dev/lapb -l 0  
lapb
```
3. To monitor the X.25 protocol for link 0, enter the following command:

```
/opt/SUNWconn/x25/bin/x25trace -i /dev/x25 -l 0  
lapb
```

If the link will not come up:

- Examine `cms /usr/elog/elog` for messages.
- Verify that cms data collection is on, and examine the `spi.err` file for messages.
- Examine link and MIS status on the switch.

Stopping and starting individual links

The `linkstop` command is used to “stop” a link. The link will not respond to any LAPB messages until the link is restarted with the `linkreset` or the `linkstart` command. To stop a link enter the following command:

```
/opt/SUNWconn/x25/bin/linkstop <linkid>
```

where the `<linkid>` is defined as follows:

Link ID Number	Definition
4	Serial Port A (single ACD application only)
5	Serial Port B (single ACD application only)
10	HSI card 1, port 0
11	HSI card 1, port 1
12	HSI card 1, port 2
13	HSI card 1, port 3
14	HSI card 2, port 0
15	HSI card 2, port 1
16	HSI card 2, port 2
17	HSI card 2, port 3

The `linkstart` command is used to “start” a link which has been stopped with the `linkstop` command. To start a link enter the following command:

```
/opt/SUNWconn/x25/bin/linkstart <linkid>
```

The `linkreset` command is used to “reset” a link. It may also be used to “start” a link which has been stopped with the `linkstop` command. To reset a link enter the following command:

```
/opt/SUNWconn/x25/bin/linkreset <linkid>
```

NOTE:

All links are reset when X.25 is started.

The most common use of these commands would be to reset an X.25 link while troubleshooting a problem. For example, to reset port 2 on the second HSI card, enter the following command:

```
/opt/SUNWconn/x25/bin/linkreset 16
```

Or enter the following commands:

```
/opt/SUNWconn/x25/bin/linkstop 16
```

```
/opt/SUNWconn/x25/bin/linkstart 16
```

NOTE:

X.25 must have been started prior to entering these commands.

Stopping and starting X.25

When you stop and start X.25, you are stopping and starting all links on the machine.

To stop and start X.25:

1. Check the status of the network daemons by entering the following command:

```
/etc/init.d/x25.control status
```

The system displays the following message:

```
The network is up
#
```

2. To stop the network daemons, enter the following command:

```
/etc/init.d/x25.control stop
```

3. To start the network daemons, enter the following command:

```
/etc/init.d/x25.control start
```

The system displays the following message:

```
Starting the X.25 software - please wait
X.25 has found a valid license
The network has been brought up.
#
```

4. If other messages are displayed, the network did not start successfully. For example:

```
x25netd: failed to open driver "/dev/hih0" (Bad file  
      number[9])  
#
```

NOTE:

You will see the above message if you tried to restart the network too quickly after stopping it. When you see this message, wait a minute before starting X.25.

5. If X.25 cannot start due to license problems, the system displays the following message:

```
The X.25 software is being stopped - please wait.  
The network programs are being killed - please wait  
The network has been stopped.  
#
```

6. Check the license manager. The license manager (lmgrd) is started when the CMS computer is booted. To check if the license manager is running, enter the following command:

```
ps -ef | grep lmgrd
```

7. If the license manager is not running, enter the following script command:

```
/etc/rc2.d/s85lmgrd
```

8. Examine any messages in the **/tmp/license_log** file.

Checking the RS-232 to RS-422 interface converter

The purpose of the RS-232 to RS-422 converter is to convert the RS-422 electrical/RS-449 physical interface on the HSI card to the RS-232 interface supported in existing switch connections. Each switch link that is connected to the HSI card uses one converter.

NOTE:

The Interface Converter is only used with the HSI card and not on the serial ports.

Checking LEDs

The Interface Converter has six LEDs (light indicators) on the front panel of the black box which help troubleshoot link problems. Three LEDs (DSR, CTS, and DATA) are located on the left side of the monitor. These LEDs are the CMS computer's HSI portion of the connection. Three LEDs (DSR, CTS, and DATA) are located on the right side of the monitor. These LEDs are the switch portion of the connection.

When the X.25 daemons are started, the LEDs on the left side are lit.

NOTE:

It is normal for the DSR LED on the right (switch) side of the converter to be out or to be very dim when IDI-based connections are being used.

If the LEDs on the left side are not lit, check the following items:

- DCE/DTE DIP-shunt settings inside the converter
- Status of the SunLink X.25 daemons
- Cabling between the interface converter and the CMS computer.

When the X.25 daemons are started and the link is administered and enabled on the switch, the LEDs on the right side of the interface converter are lit. If the LEDs on the right side are not lit, check the following items:

- Switch administration for the link
- Cabling between the interface converter and the switch.

Checking the correct DTE/DCE settings

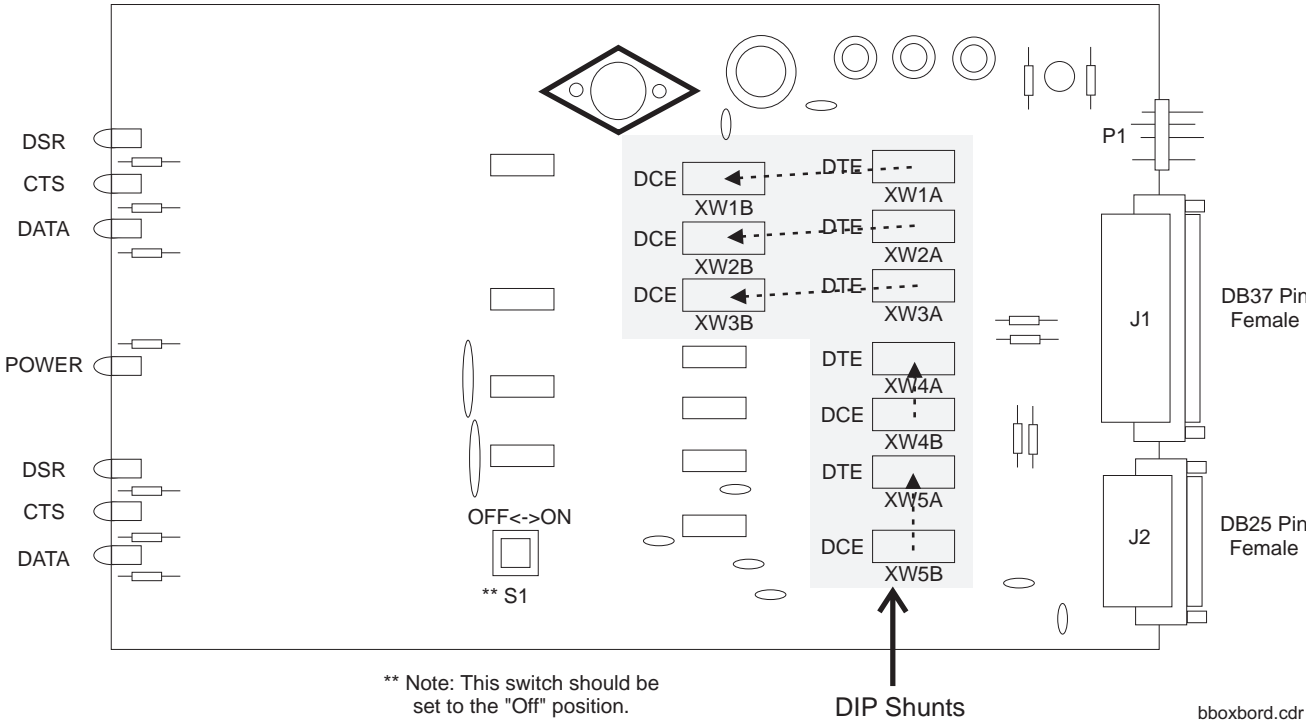
The Black Box converter used for HSI link connectivity comes preset from the factory with the correct settings. This section shows how to reset the converter to the default factory settings.

The following table shows where the Dual In-Line Package (DIP) shunts should be located.

Move DIP shunts	
From	To
XW1A	XW1B
XW2A	XW2B
XW3A	XW3B
XW4B	XW4A
XW5B	XW5A

Circuit board diagram

The following is a diagram of the circuit board.



Changing the shunt locations

To change the shunt locations:

1. Disconnect all power and cables from the Black Box converter.
2. Open the interface converter.
3. Compare the current settings with the table and diagram.



WARNING:

Be very careful when moving the DIP shunts. The DIP-shunt pins are fragile and could easily bend or break.

4. If a setting are not correct, carefully slide the tip of a common screwdriver between the DIP-shunt jumper and the DIP-shunt socket.
5. Gently pry/wiggle the DIP-shunt jumper free from the socket.
6. Move the DIP-shunt jumper to the appropriate socket (see the table or diagram).
7. Carefully align the pins, and gently press the DIP-shunt jumper into place.
8. Reassemble and reconnect the converter.

For additional information, see the booklet that comes with the converter.

Checking switch administration

To verify that the switch link administration is correct, see Chapter 3. You should also check the following:

- Packet Gateway data module administration
- Serial port administration.

Packet gateway data module administration

Make sure the following required G3r switch administration is in effect:

Set the `Number of Outstanding Frames(w)` field on the Packet Gateway data module to `7`.

NOTE:

If the window size for your system is not `7`, the link will reset under the heavy load.

Serial port administration

If you are using a serial port on your system for the switch link (port A or port B), verify that there is no login administration on that port.

Enter the following command to list any login administration on serial port A:

```
pmadm -l | grep /dev/term/a
```

Enter the following command to list any login administration on serial port B:

```
pmadm -l | grep /dev/term/b
```

If the `pmadm -l` command shows the login administration on the serial port use the `pmadm -r` command to remove the login administration. Remove *only* the login administration for the serial port used for the switch link.

Checking cabling

If the link is not operating reliably and does not operate for speeds above 9600 baud, do the following:

- Check that the link adapter is placed correctly between the Interface Converter and the IDI.
- If using a serial port, the link adapter must be between the serial port and the IDI.

To verify the link cabling is correct, see Chapter 2, [Connecting the switch link](#).

Appendix A: Converting switch links from X.25 to TCP/IP

Overview

This appendix describes the procedures required to convert an X.25 switch link to a TCP/IP switch link.

Prerequisites

Check for the following prerequisites:

- The switch must be R7 or later.
- Determine the IP addresses for the switch and the CMS computer before you begin the conversion.
- A C-LAN circuit pack must be installed in the switch.

Related administration

Check for the following related administration:

- A subnet mask for the CMS ethernet port may be required.
- A router or gateway IP address may be required.

Required documents

In addition to the procedures presented in this document, you will also need the following documents:

- CentreVu CMS software installation

The exact title and document number differs for each CMS load. Use the document that matches the customer's system.

- Sun hardware installation documents

The exact title and document number differs for each CMS computer platform. Use the document that matches the customer's computer.

Replacing the X.25 switch links

To replace the X.25 switch links, you must do the following:

- Disconnect the X.25 hardware between the switch and the CMS computer
- Administer the switch links
- Connect the TCP/IP hardware between the switch and the CMS computer
- Administer the CMS computer.

Disconnecting the X.25 hardware

Do the following to disconnect the X.25 link hardware that is being replaced by TCP/IP. See Chapter 2, [Connecting the switch link](#) on page 15 for diagrams that show typical X.25 link hardware.

To disconnect the X.25 hardware:

1. Disconnect the X.25 cabling that is connected to the serial ports or to the HSI cards on the CMS computer.
2. At the switch, disconnect the X.25 cabling that connects to the Processor Interface, the Packet Gateway, or to a digital port (DCP or DS1).
3. Leave the X.25 hardware intact on the switch and the CMS computer in case you have to reconnect the link.

Administering the switch links

To change from X.25 to TCP/IP, you must remove the X.25 administration and add the TCP/IP administration. This section only highlights what changes need to occur. For detailed information, see the TCP/IP procedures documented in Chapter 3, [Administering the switch link](#) on page 93.

Removing the X.25 administration

Remove the X.25 administration using the following forms:

Form	Purpose
change administered-connection (G3r only)	Remove the administered connection between the packet gateway data module and the CMS computer data module
change communication-interface processor-channels	Remove the processor channel
change data-module	Remove the packet gateway X.25 data module

Adding the TCP/IP administration

Add the TCP/IP administration using the following forms:

Form	Purpose
change node-names (R7/R8) or change node-names ip (R9 and later)	Adding node names and IP addresses
change ip-interfaces (R8 and later)	Adding a C-LAN IP interface
add data-module	Adding an ethernet data module
change communication-interface processor-channels	Adding the processor interface channels

Connecting the TCP/IP hardware

Follow the instructions in Chapter 2, [Connecting the switch link](#) on page 15, to connect the TCP/IP LAN switch link hardware.

Administering the CMS computer

At the CMS computer, do the following to change the switch setup for each ACD so it will use TCP/IP for the switch link:

4. Using the `cmssvc` command, turn off CMS.
5. Using the `cmssvc` command, access the `swsetup` option. When you access this option, you are queried for the following information:
 - Switch name
 - Switch model (release)
 - Is Vectoring enabled on the switch (if authorized)?
 - Is Expert Agent Selection (EAS) enabled on the switch (if authorized)?
 - Does the Central Office have disconnect supervision?
 - Local and remote port
 - The local and remote port assignments must be symmetrical between the switch and the CMS. The standard CMS provisioning procedure is to set the local and remote port assignments equal to the switch processor channel used for this link. For example, if you use processor channel 10, set the remote and local port to 10.
 - Transport method used to connect to the switch (TCP/IP). When using TCP/IP, enter the IP address and the TCP port (the default TCP port is 5001).
6. Edit the `/etc/hosts` file to add the switch host name and IP address.
7. If the CMS computer has two ethernet ports, it is possible that the system might attempt to route packets from one interface to another. To prevent this, edit the `/etc/rc2.d/S98cms_ndd` file and add the following line to the end of the file:

```
ndd -set /dev/ip ip_forwarding 0
```

If the file already has this line, quit out of the file and make no changes.

Glossary

ACD	See Automatic Call Distribution (ACD)
Automatic Call Distribution (ACD)	<p>A switch feature. ACD is software that channels high-volume incoming call traffic to agent groups (splits or skills).</p> <p>Also an agent state where the extension is engaged in an ACD call (with the agent either talking to the caller or the call waiting on hold).</p>
Cables	Wires or bundles of wires configured with adapters or connectors at each end and used to connect two or more hardware devices.
CentreVu CMS	CentreVu Call Management System (CMS). A software product used by business customers that have an Avaya telecommunications switch and receive a large volume of telephone calls that are processed through the Automatic Call Distribution (ACD) feature of the switch.
Command	A command is an instruction used to tell the computer to perform a function or to carry out an activity.
Data Communications Equipment (DCE)	Any equipment that connects to Data Terminal equipment (DTE) using an RS-232 standard interface. A modem is a DCE device.
Data Communications Interface Unit (DCIU)	A hardware device on the Generic 2 switches that prepares and sends architecture messages to other switches or application adjuncts.
Data Terminal Equipment (DTE)	Data Terminal Equipment (DTE) includes terminals, personal computers, and workstations. A Sun SPARCserver computer is a DTE device.
DCE	See Data Communications Equipment
DCIU	See Data Communications Interface Unit
DTE	See Data Terminal Equipment (DTE)
Ethernet	A local area network (LAN) that allows communication between systems connected directly together using either twisted-pair, coaxial cable, or fiber.
Ethernet Address	A unique number assigned to each system when it is manufactured. The ethernet address of your system is displayed on the banner screen that appears when you power on your system.

High Speed Serial Interface (HSI)	The HSI controller card is a 4-port serial communications card. Each of the four ports is used for a single physical X.25 link. It is an add-on package that is needed by CMS for multiple ACDs.
Host Name	A name that you (or your system administrator) assign to your system unit to uniquely identify it to the Solaris operating system (and also to the network).
Install	The procedures used to set up the hardware and software of a computer, terminal, printer, and modem so that they can be used. Installing often includes customizing the system for a particular situation or user.
Interface	A common boundary between two systems or pieces of equipment.
International Telecommunications Union (ITU)	Formerly the Consultative Committee for International Telephony and Telegraphy (CCITT). An international organization that sets communications standards.
Internet Protocol (IP)	An integral part of the internet communication protocol system (see Transmission Control Protocol/Internet Protocol [TCP/IP]). The IP provides the routing mechanism of the TCP/IP. See also Network Address.
LAPB	See Link Access Procedure Balanced (LAPB)
Link Access Procedure Balanced (LAPB)	The ITU standard error correction protocol used on most current X.25 packet switching networks.
Link	A transmitter-receiver channel or system that connects two locations.
Log In	The process of gaining access to a system by entering a user name and, optionally, a password.
Log Out	The process of exiting from a system.
Modem	A device that enables a computer or terminal to establish a connection with another computer or terminal and to communicate data through telephone lines.
Network Address	A unique number assigned to each system on a network, consisting of the network number and the system number. Also known as Internet Address or Internet Protocol (IP) address.
Network Hub	Hardware that connects a computer to a Network Terminal Server (NTS).
NTS	Network Terminal Server (NTS)
PBX	See Private Branch Exchange (PBX)

Password	A character string that is associated with a user name. Provides security for a user account. Desktop Sun computers require you to type a password when you log into the system, so that no unauthorized person can use your system.
Port (I/O Port)	A designation of the location of a circuit that provides an interface between the system and lines and/or trunks.
Private Branch Exchange (PBX)	A private switch system providing voice-only or voice and data communications services (including access to public and private networks) for a group of terminals within a customer's premises. Also see Switch.
Processor Interface (PI)	A hardware device on the Generic 3i switches that prepares and sends architecture messages to other switches or application adjuncts.
Recommended Standard (RS)	Any one of several Electronic Industries Association (EIA) standards commonly used in U.S. electronic applications.
RS	See Recommended Standard (RS)
RS-232	An electrical interface standard, normally using a 25-pin (DB-25) physical connector. The electrical portion of the interface is unbalanced (for example, RS-232 has a positive voltage and a ground). This standard was officially renamed TIA/EIA-232-E in 1984, but the RS-232 designation is still most commonly used.
RS-422	A balanced electrical interface (for example, RS-422 has a positive and a negative voltage). This interface is used by the HSI/S card.
RS-423	An unbalanced electrical interface (for example, RS-423 has a positive voltage and a ground).
RS-449	A 37-pin physical interface used by the HSI/S card.
Split	A group of extensions that receive special-purpose calls in an efficient, cost-effective manner. Normally, calls to a split arrive over one or a few trunk groups.
Switch	A private switch system providing voice-only or voice and data communications services (including access to public and private networks) for a group of terminals within a customer's premises. Also see PBX.
TCP/IP	See Transmission Control Protocol/Internet Protocol (TCP/IP).
TIA	Telecommunication Industry Association. An organization that sets standards for physical level interfaces (RS-232, RS-422, etc.) and cellular radio.
TSC	Technical Service Center. The Avaya organization that provides technical support for Avaya products.

Transmission Control Protocol/Internet Protocol (TCP/IP)	A communications protocol that provides interworking between dissimilar systems. It is the de facto standard for UNIX systems.
Trunk	A telephone line that carries calls between two switches, between a Central Office (CO) and a switch, or between a CO and a phone.
Trunk Group	A group of trunks that are assigned the same dialing digits — either a phone number or a Direct Inward Dialing (DID) prefix.
X.25	An ITU communications protocol standard for packet switching networks that typically operates at 56 Kbps or less. An add-on software package that allows CMS to communicate with the switch using X.25 protocol.

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How Are We Doing?

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We welcome your feedback on this document. Your comments are of great value in helping us to improve our documentation.

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Organization					////////////////////
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Examples					////////////////////
Illustration					
Overall Satisfaction					////////////////////

2. Please check the ways you feel we could improve this document:

- | | |
|--|---|
| <input type="checkbox"/> Improve the overview/introduction | <input type="checkbox"/> Make it more concise/brief |
| <input type="checkbox"/> Improve the table of contents | <input type="checkbox"/> Add more step-by-step procedures/tutorials |
| <input type="checkbox"/> Improve the organization | <input type="checkbox"/> Add more troubleshooting information |
| <input type="checkbox"/> Include more figures | <input type="checkbox"/> Make it less technical |
| <input type="checkbox"/> Add more examples | <input type="checkbox"/> Add more/better quick reference aids |
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