EDGE ROUTER MODULE INSTALLATION GUIDE FOR ETHERNET

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Limited Warranty

ABOUT THIS GUIDE

Introduction

This guide describes how to install and configure a 3Com® ONline™ or ONcore® Edge Router module into the 3Com ONline System Concentrator or ONcore Switching Hub. In addition, this guide provides troubleshooting suggestions in case a problem arises with the module.

If the information in the release notes shipped with your product differs from the information in this guide, follow the release note instructions.

Audience

This guide is intended for the following people at your site:

- Network manager or administrator
- Trained hardware installer or service personnel

How to Use This Guide

Table 1 shows the location of specific information.

Table 1   How to Use This Guide

If you are looking for:	Turn to:
General information about the Edge Router module	Chapter 1
Description of the module architecture	
Typical applications of the Edge Router module	
Features of the Edge Router module	
An overview of the installation and configuration process	Chapter 2
Procedures for unpacking the Edge Router module	
Procedures for preparing to install the Edge Router module	
Procedures for installing the Edge Router module	
An overview of the managed configuration process	Chapter 3
Procedures for attaching a management terminal	
Procedures for configuring Edge Router carrier parameters	

Table 1   How to Use This Guide (continued)

Procedures for configuring Edge Router engine parameters	Chapter 3
Information for monitoring Edge Router module LEDs	Chapter 4
Procedures for displaying module configuration and status	
Information on troubleshooting the Edge Router module	Chapter 5
Information not covered in the rest of the guide	Appendixes A-B

Conventions

Table 2 and Table 3 list conventions used throughout this guide.

Table 2   Graphic Conventions

Icon	Type	Description
	Information Note	Information notes call attention to important features or instructions.
	Caution	Cautions alert you to personal safety risk, system damage, or loss of data.
	Warning	Warnings alert you to the risk of severe personal injury.

Table 3   Text Conventions

Convention	Description
"Enter" vs. "Type"	When the word "enter" is used in this guide, it means type something, then press the Return or Enter key. Do not press the Return or Enter key when an instruction simply says "type."

Table 3   Text Conventions (continued)

Convention	Description
"Syntax" vs. "Command"	When the word "syntax" is used in this guide, it indicates that the general form of a command syntax is provided. You must evaluate the syntax and supply the appropriate port, path, value, address, or string. For example:
	Enable RIPIP by using the following syntax:
	`SETDefault !<port> -RIPIP CONTrol = Listen`
	In this example, you must supply a port number for !<port>.
	When the word "command" is used in this guide, it indicates that all variables in the command have been supplied and you can enter the command as shown in text. For example:
	Remove the IP address by entering the following command:
	`SETDefault !0 -IP NETaddr = 0.0.0.0`
	For consistency and clarity, the full-form syntax (upper- and lowercase letters) is provided. However, you can enter the abbreviated form of a command by typing only the uppercase portion and supplying the appropriate port, path, address, value, and so on. You can enter the command in either upper- or lowercase letters at the prompt.
Text represented as `screen display`	`This typeface` is used to represent displays that appear on your terminal screen. For example:
	`NetLogin:`
Text represented as **commands**	**`This typeface`** is used to represent commands that you enter. For example:
	`SETDefault !0 -IP NETaddr = 0.0.0.0`
Keys	When specific keys are referred to in the text, they are called out by their labels, such as "the Return key" or "the Escape key," or they may be shown as [Return] or [Esc].
	If two or more keys are to be pressed simultaneously, the keys are linked with a plus sign (+). For example:
	Press [Ctrl]+[Alt]+[Del].
Italics	*Italics* are used to denote *new terms* or *emphasis*.

Related Documents

This section provides information on supporting documentation, including:

- 3Com Documents
- Cisco Documents
- Reference Documents

3Com Documents

The following documents provide additional information on 3Com products:

ONline System Concentrator Installation and Operation Guide — Provides information on the installation, operation, and configuration of the ONline System Concentrator. This guide also describes the principal features of the ONline Fault-Tolerant Controller Module.

ONline Ethernet, Token Ring, or FDDI Management Module User's Guide — Provides information on the ONline Management Module's operation, installation, and configuration. This guide also describes the software commands associated with the Management Module.

ONcore Switching Hub Installation and Operation Guide — Provides information on the installation, operation, and configuration of the ONcore Switching Hub. This guide also describes the principal features of the ONcore Fault-Tolerant Controller Module.

ONcore Distributed Management Module User's Guide — Provides information on the ONcore Distributed Management Module's operation, installation, and configuration. This guide also describes the software commands associated with the Distributed Management Module.

ONcore Distributed Management Module Commands Guide — Describes each management command by providing details on command format, use, and description.

For a complete list of 3Com documents, contact your 3Com representative.

Cisco Documents   Cisco® CD-ROM documents describe commands and other software-related information you need to operate the Edge Router module.

Reference Documents   The following documents supply related background information:

Case, J., Fedor, M., Scoffstall, M., and J. Davin, *The Simple Network Management Protocol*, RFC 1157, University of Tennessee at Knoxville, Performance Systems International and the MIT Laboratory for Computer Science, May 1990.

Rose, M., and K. McCloghrie, *Structure and Identification of Management Information for TCP/IP-based Internets*, RFC 1155, Performance Systems International and Hughes LAN Systems, May 1990.
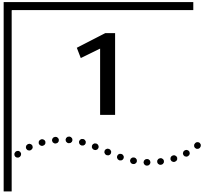
1 INTRODUCTION

This chapter provides an introduction to the 3Com® Edge Router module.

This chapter contains the following sections:

- Product Overview
- Edge Router Module Features

Product Overview

The Edge Router module is a serial port-to-Ethernet LAN interconnect module jointly developed by 3Com and Cisco Systems Inc.

This section provides information on the following topics:

- Edge Router Module Operation
- Edge Router Module Architecture

Edge Router Module Operation

The Edge Router module (Figure 1-1) is designed to:

- Connect corporate networks and increase wide area connectivity.
- Support both synchronous and asynchronous routing over serial links using one local area network (LAN) and up to three wide area network (WAN) connections.
- Provide flexible networking connections in multiprotocol environments.
- Sit at the network's logical and physical edge, either at a remote site or central facility.
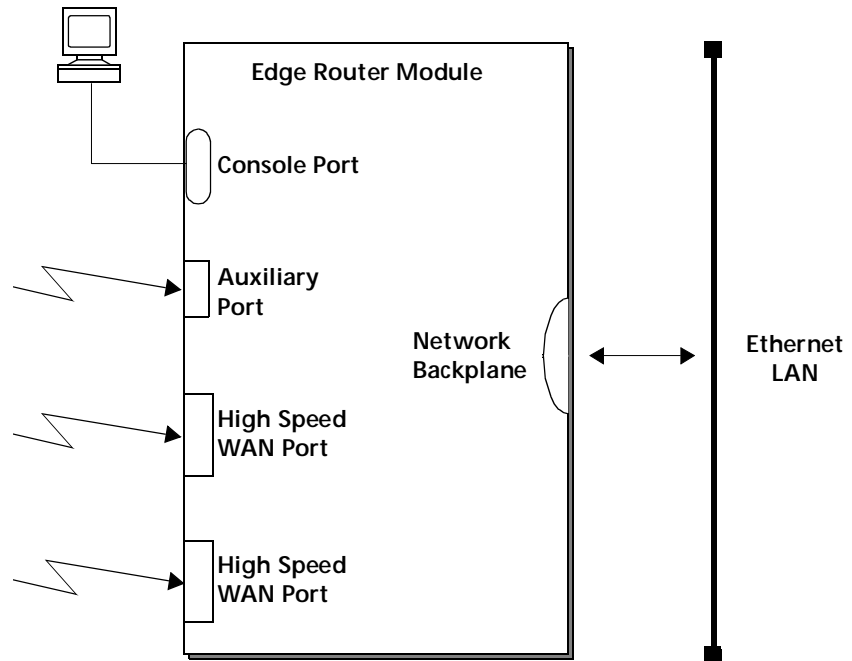
Figure 1-1   Typical Edge Router Module Connections

The router module runs Cisco standard software and fully interoperates with the:

- 3Com ONline™ Ethernet Router Module
- Cisco local and remote router servers, such as the AGS+™, MGS™, and the Cisco 3000, 4000, 4500, and 7000 series routers.

Edge Router Module Architecture   Each Edge Router module consists of the following components:

- **Carrier** – Provides connections to one of three 3Com switching hub products.
- **Engine** – Provides Ethernet-to-WAN port connections.
- **Interface Connector** – Connects the carrier to the engine. Both the carrier and the engine have an interface connector.

The engine mounts to one of three carrier types to form an Edge Router module for the ONline or ONcore hub products.

The ONline Edge Router module can also be installed in an ONcore Switching Hub. For detailed information on installing ONline modules in ONcore switching hubs, refer to the ONcore Switching Hub Installation and Operation Guide (Document Number 17-00362).

Figure 1-2 shows the architecture of each Edge Router module type.
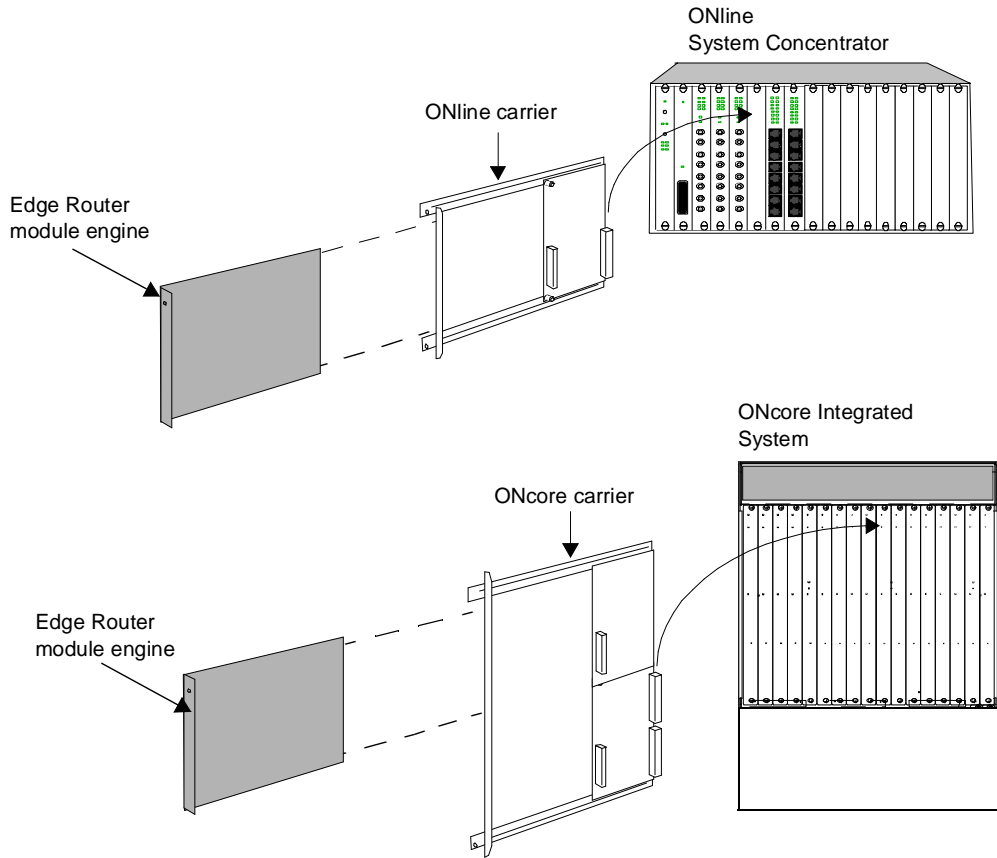
Figure 1-2   Edge Router Module Architecture

Edge Router Module Features

This section describes the major features of the Edge Router module, including:

- Software Options
- Topology Switching
- Network Reliability
- IOS Router Software Updates
- Memory Upgrades

Software Options

The Edge Router module is available with one of the following software feature sets:

- IP/IPX
- Desktop
- Desktop plus IBM®
- Enterprise

The components that make up each software feature set are listed in Table 1-1.

Table 1-1 Software Feature Sets

Feature Category	Feature Set			
	IP/IPX	**Desktop**	**Desktop plus IBM**	**Enterprise**
LAN Support	IP, Bridging, LAN Extension Host Software, Novell® IPX™	Includes IP/IPX features plus: DECnet™ IV, AppleTalk® Phase 1 and 2	Same as Desktop	Includes Desktop plus IBM features plus: DECnet V, XNS, Banyan VINES®, OSI, Apollo® Domain
WAN Serial Support	Dual Synchronous Ports, and Single Asynchronous Auxiliary Port			
WAN Services	HDLC, PPP, X.25, Frame Relay, ISDN, SMDS			
WAN Optimization	Header and link compression, dial-on-demand, dial backup, bandwidth-on-demand, custom and priority queuing, access lists, access security			
IP Routing	RIP, IGRP, Enhanced IGRP™, OSPF, BGP, EGP, PIM			Includes standard features plus: ES-IS and IS-IS
IBM Support	N/A	N/A	Remote source-route bridging, proxy, explorer, local acknowledgement, SNA local LU address prioritization, administrative filtering, NETBIOS name caching, NETBIOS access control filtering	Includes Desktop plus IBM features plus: serial tunneling for SDLC Transport, SDLC link-level support, SDLLC, TG/COS, QLLC
Network Management	Autoinstall, SNMP, TELNET			
Protocol Translation	N/A	N/A	N/A	TELNET, LAT, rlogin, TN3270, X.25

Topology Switching   Using topology switching you can:

- Switch the ONline Edge Router module among any of three Ethernet networks (channels) on the hub backplane
- Switch the ONcore Edge Router module among any of eight Ethernet networks (channels) on the hub backplane

  You perform topology switching using:

- Network management module commands
- Simple Network Management Protocol (SNMP)

  You do not have to swap cables or move the Edge Router module to move the routing or bridging functions to a different network within an ONline or ONcore hub. You can enter a command through one of the 3Com management modules and the network change is made automatically.

Network Reliability   The Edge Router module lets you implement several levels of reliability in your network as follows:

- By routing the Edge Router module's serial and auxiliary ports in parallel, you can create up to three redundant links.
- If the primary link fails, you can have up to two backup links in place to ensure application availability.

  These links can also implement load-balancing to enhance network performance. An example of a reliable network configuration is shown in Figure 1-3.

Ethernet LAN

Edge Router Module

Console Port **Aux Port** **WAN Port** **WAN Port**

Remote Site

Public Switched Telephone Network

Dial-Up Link **Primary Link** **Secondary Link**

Main Site

Main Site Router

Main Site Network Connections
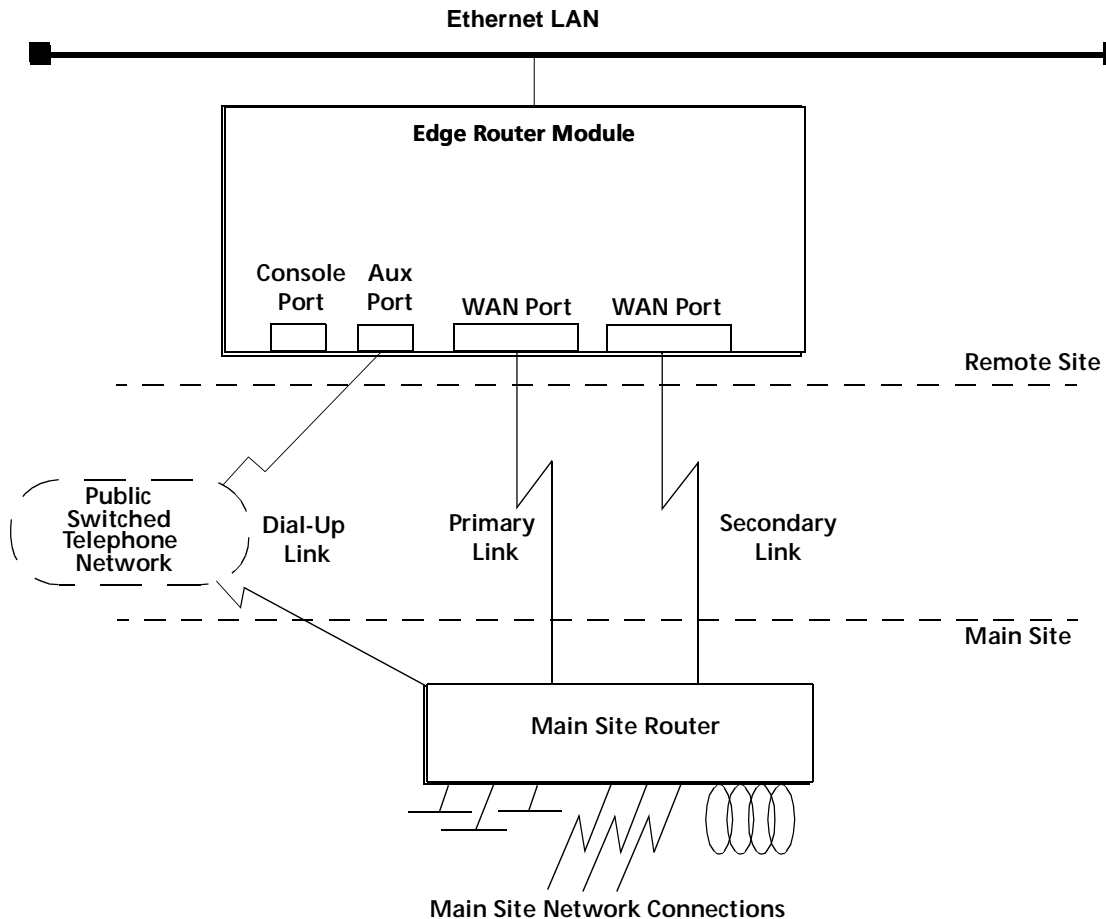
Figure 1-3 Network Reliability Configuration

IOS Router Software Updates

The IOS software in the Edge Router module engine can be updated by purchasing field-upgradeable software distribution kits. Update your module to the latest 3Com release of IOS software by downloading new code to flash memory on the module. New updates are shipped automatically as part of the 3Com 1-year Router Software Subscription Service or you can purchase it from 3Com as a single unit update.

You can also purchase an upgrade kit to upgrade your IP/IPX, Desktop, or Desktop plus IBM software to a version with an enhanced feature set.

Contact your 3Com reseller or 3Com Customer Support for more information and part numbers.

Memory Upgrades   The Edge Router module provides the capability to increase memory to meet the requirements of large routing table configurations.

Memory is configured on the Edge Router module to match the requirements of the selected IOS software feature set. Table 1-2 lists the base memory configurations for each software feature set.

Table 1-2   Memory Configurations

| | Feature Set | | | |
Memory Type	IP/IPX	Desktop	Desktop plus IBM	Enterprise
IOS (Flash EPROM)	4 MB (expandable to 8 MB)		8 MB	
Data (DRAM)	4 MB (expandable to 16 MB)			6 MB (expandable to 18 MB)

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INSTALLING THE EDGE ROUTER MODULE

This chapter contains the following sections:

- Installation Flowchart
- Precautionary Procedures
- Quick Installation
- Unpacking Procedures
- Verifying Jumper Plug Positions
- Configuring DIP Switches
- Installing the ONline Edge Router Module
- Installing the ONcore Edge Router Module

Installation Flowchart

The flowchart in Figure 2-1 identifies the steps required to install and configure the Edge Router module.
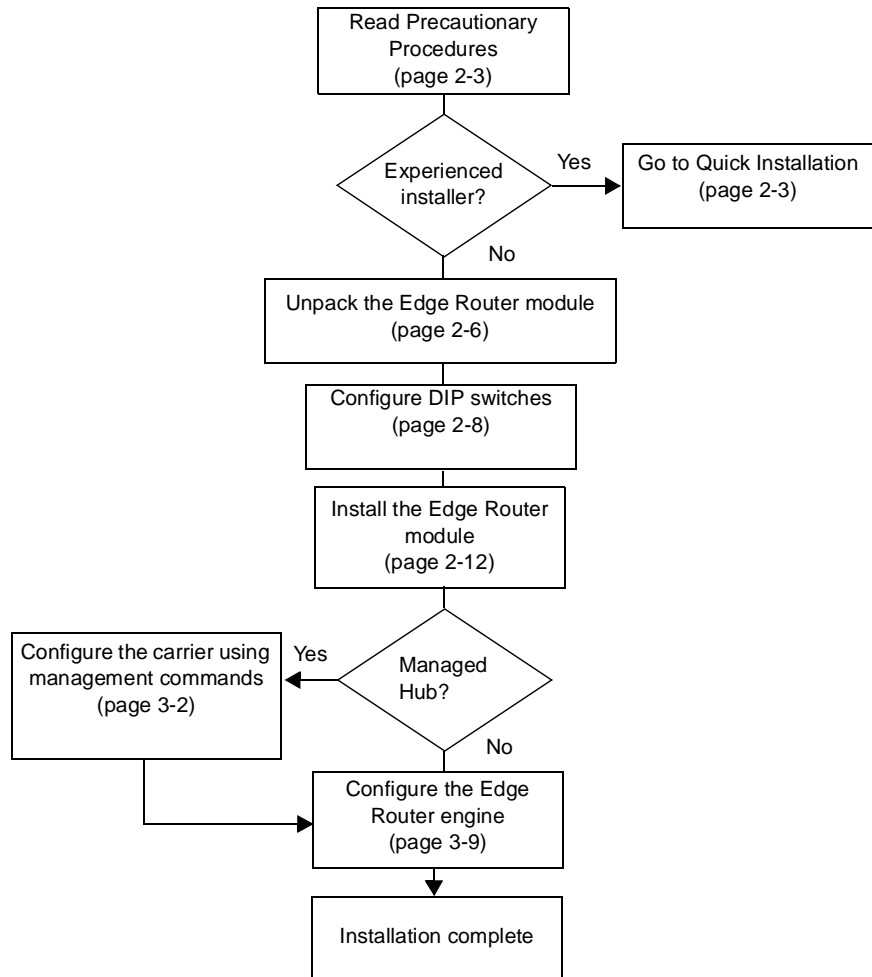
Figure 2-1   Flowchart for Installing and Configuring the Edge Router Module

| **Precautionary Procedures** | Electrostatic discharge (ESD) can damage static-sensitive devices on circuit boards. Follow these precautions when you handle an Edge Router module: |

⚠ **CAUTION***: Do not remove the product from any antistatic wrapping until you are ready to inspect or install the module.*

Handle Edge Router modules by the faceplate only.

⚠ **CAUTION:** *To avoid damaging the Edge Router module with ESD, use proper grounding techniques. Before unpacking, you should:*

- *Use a foot strap and grounded mat, or wear a grounded static discharge wrist strap.*
- *Touch a grounded source just before you remove the Edge Router module from the shipping carton.*

| **Quick Installation** | This section outlines the steps necessary to complete the installation of the Edge Router module in unmanaged or managed ONline or ONcore hubs. If you are already familiar with the procedures required to install a module in your 3Com hub type, use this table as a checklist. Otherwise, use the procedures specified in the remainder of this chapter to install the Edge Router module. |

ℹ *If you encounter problems while following the quick installation steps, consult the troubleshooting techniques in Chapter 5.*

Quick Installation for Unmanaged Hubs

Follow the general steps outlined in Table 2-1 to install and configure the Edge Router module in an unmanaged ONline or ONcore hub.

Table 2-1 Quick Installation for Unmanaged Hubs

Step	Procedure	Refer to:
1	Unpack the module.	Unpacking Procedures on page 2-6
2	Verify the jumper plug positions on the base and expansion engines.	Verifying Jumper Plug Positions on page 2-7
3	Configure the carrier for operation in an unmanaged hub using DIP switch settings.	Configuring DIP Switches on page 2-8
4	Insert the module into an open slot in the hub.	The appropriate installation instructions for your hub type in this chapter
5	Attach a management terminal to the Edge Router module console port.	Configuring the Edge Router Engine on page 3-9
6	Configure the engine parameters using Cisco Systems **setup** command.	*Cisco Systems Getting Started Guide*
7	Attach WAN cables to the 60-pin universal WAN connectors on the front panel.	Cable Pinouts on page A-5

Quick Installation for Managed Hubs

Follow the general steps outlined in Table 2-2 to install and configure the Edge Router module in a managed ONline or ONcore hub.

Table 2-2   Quick Installation for Managed Hubs

Step	Procedure	Refer to:
1	Unpack the module.	Unpacking Procedures on page 2-6
2	Verify the jumper plug positions on the base and expansion engines	Verifying Jumper Plug Positions on page 2-7
3	Insert the module into an open slot in the hub.	The appropriate installation instructions for your hub type in this chapter
4	Configure the carrier for possible operation in an unmanaged hub.	Configuring DIP Switches on page 2-8
5	Attach a management terminal to the Edge Router console port.	Configuring the Edge Router Engine on page 3-9
6	Configure the carrier using network management commands.	Configuring the Carrier in a Managed ONline Hub on page 3-4 or Configuring the Carrier in a Managed ONcore Hub on page 3-5
7	Configure the engine parameters using Cisco Systems **setup** command.	*Cisco Systems Getting Started Guide*
8	Attach WAN cables to the 60-pin universal WAN connectors on the front panel.	Cable Pinouts on page A-5

Unpacking Procedures	To unpack the Edge Router module:

1 Verify that the module is the model you ordered by checking the model number listed on the side of the shipping carton.

Note that the product model number printed on the shipping box differs from the model number on the product. The model number on the shipping box contains the prefix 3C9.

2 Remove the module, in its antistatic shielding bag, from the shipping carton.

3 When you unpack the Edge Router module, you should:

- Use a foot strap and grounded mat, or wear a grounded static discharge wrist strap.

- Touch a grounded source just before you remove the Edge Router module from the carton.

CAUTION: *To avoid damaging the Edge Router module with ESD, use proper grounding techniques.*

Remove the module from the antistatic bag and inspect it for damage.

Always handle modules by the faceplate, being careful not to touch the components. If the module appears to be damaged, return it to the antistatic shielding bag, repack it in the shipping carton, and contact your local supplier.

4 Verify that the contents of the shipment are complete. The shipment contents are as follows:

- Edge Router module

- Rack-mounting kit

- *Edge Router Module Installation Guide for Ethernet*

- Release Notes for the Edge Router module

5 Store the shipping cartons and antistatic wrapping so that you can repackage the product for storage or shipment.

Verifying Jumper Plug Positions

Verify the jumper plug positions on the ONline or ONcore Edge Router module before proceeding with the installation procedure.

The Edge Router module is equipped with several jumper plugs. The jumpers are factory-set to the appropriate settings. Do *not* modify the jumper settings, except to restore the settings to the required positions.

⚠ **CAUTION:** *If you modify any of the factory-set jumper positions, the Edge Router module may not operate properly.*

Table 2-3 lists the default jumper plug positions for the Edge Router module. If you suspect that any of the jumper positions have been changed, verify the plug positions using Table 2-3.

Table 2-3 Default Jumper Plug Settings

Jumper	Jumper Plug Position
J1	ETH INT
J2	Removed
J4	Inserted
J5	Removed
J9	Removed
J10	WAN 0 EXT
J12	WAN 1 EXT
J13	Removed
J14	Inserted
J15	Removed
J16	Inserted
J17	Inserted

Configuring DIP Switches

DIP switches let you select the backplane network used by an ONline or ONcore Edge Router module.

i *Even if you use a network management module to manage your hub, it is recommended that you configure the carrier DIP switches to ensure proper network assignments in the event of management module failure.*

This section describes:

- Configuring the ONline Carrier DIP Switches
- Configuring the ONcore Carrier DIP Switches

Configuring the ONline Carrier DIP Switches

ONline carrier DIP switches let you select the backplane network used by the Edge Router module. Modules set to the same network in the hub can communicate with each other.

i *The ONline Edge Router module can also be installed in an ONcore hub. For more information, refer to the ONcore Switching Hub Installation and Operation Guide (Document Number 17-00362).*

Figure 2-2 shows the ONline carrier DIP switch location.
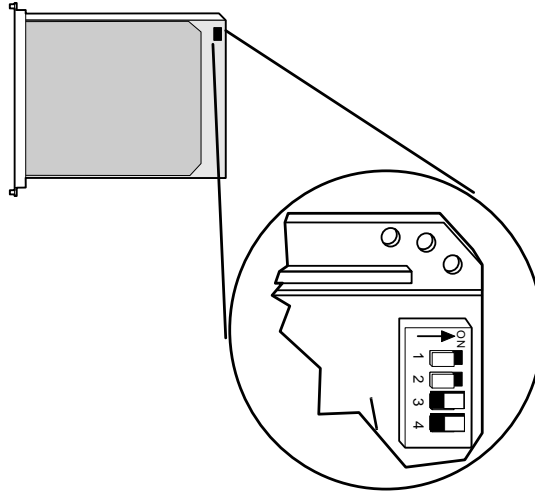
Figure 2-2   ONline Carrier DIP Switch Location

Selecting a Network

Use Table 2-4 to select a network by using the DIP switches.

Table 2-4   ONline Network Selection DIP Switch Settings

Network Selection	Switch Settings			
	Switch 1	Switch 2	Switch 3	Switch 4
Ethernet_1 (default)	ON	ON	ON	ON
Ethernet_2	ON	OFF	ON	ON
Ethernet_3	OFF	ON	ON	ON
Isolated	OFF	OFF	ON	ON

Isolating the ONline Edge Router Module

To isolate the Edge Router module from all backplane networks, set the DIP switches to the Isolated position as defined in Table 2-4.

Configuring the ONcore Carrier DIP Switches

ONcore carrier DIP switches allow you to set the following configuration parameters:

- Enabling or Disabling NVRAM Configuration
- Selecting a Network

Figure 2-3 shows the ONcore carrier DIP switch location.
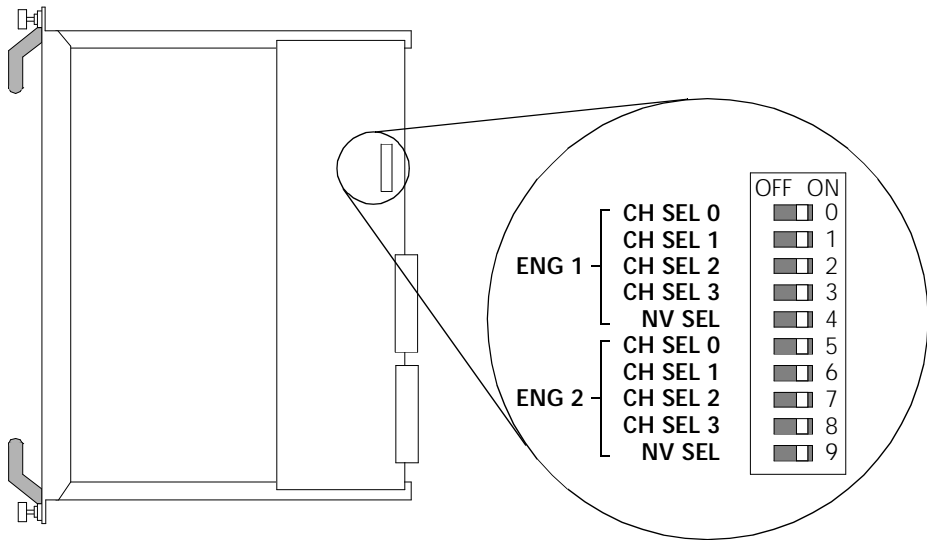
Figure 2-3   ONcore Carrier DIP Switch Location

Enabling or Disabling NVRAM Configuration

Two NV SEL DIP switches control whether the ONcore Edge Router module uses configuration settings stored in NVRAM (non-volatile memory).

- Switch 4 provides the NVRAM selection for engine bay 1 (top).
- Switch 9 provides the NVRAM selection for engine bay 2 (bottom).

If the NV SEL DIP switch is:

- **ON (enabled)** – The Edge Router module uses configuration settings stored in its NVRAM. If NVRAM does not contain configuration settings, the Edge Router modules are assigned to the Isolate_1 network.

- **OFF (disabled)** – The Edge Router module uses DIP switch settings.

Selecting a Network

In an unmanaged ONcore hub, the DIP switches determine the network setting (unless NVRAM configuration settings are enabled).

1 To select a network:

Set the switches according to Table 2-5.

Table 2-5   ONcore Network Selection DIP Switch Settings

Network Selection	Switch Settings			
	CH SEL 0	CH SEL 1	CH SEL 2	CH SEL 3
Ethernet_1 (default)	ON	ON	ON	ON
Ethernet_2	OFF	ON	ON	ON
Ethernet_3	ON	OFF	ON	ON
Ethernet_4	OFF	OFF	ON	ON
Ethernet_5	ON	ON	OFF	ON
Ethernet_6	OFF	ON	OFF	ON
Ethernet_7	ON	OFF	OFF	ON
Ethernet_8	OFF	OFF	OFF	ON
Isolate_1	ON	ON	ON	OFF
Isolate_2	OFF	ON	ON	OFF
Isolate_3	ON	OFF	ON	OFF
Isolate_4	OFF	OFF	ON	OFF

Switch combinations not listed in Table 2-5 select Isolate_1.

2 Disable NVRAM by setting the NV SEL DIP switch to the off position.

Installing the ONline Edge Router Module	This section describes how to install the ONline Edge Router module in an ONline hub.

If you are installing:

- An ONcore Edge Router module, refer to Installing the ONcore Edge Router Module on page 2-13.

- An ONline Edge Router module in an ONcore hub, refer to the *ONcore Switching Hub Installation and Operation Guide* (Document Number 17-00362)

You do not need to power off the ONline hub to install or remove the Edge Router module. You can insert the module while the hub is operating (this is called a hot swap).

To install the Edge Router module in an ONline hub:

1 Use one of the following proper grounding techniques when you install the Edge Router module:

- Properly ground yourself prior to handling the module.

- Attach a static wrist guard to yourself or touch a grounded static mat prior to handling the module.

2 Locate an open slot in the ONline hub. If necessary, remove a blank panel on the hub to expose a slot.

3 Insert the module into the slot's board guides and slide it into the hub by pressing firmly at the top and bottom of the faceplate. Make sure the connectors are well-seated into the backplane of the hub.

4 Using your fingers, tighten the two spring-loaded screws on the front of the module faceplate (Figure 2-4). Do not overtighten.
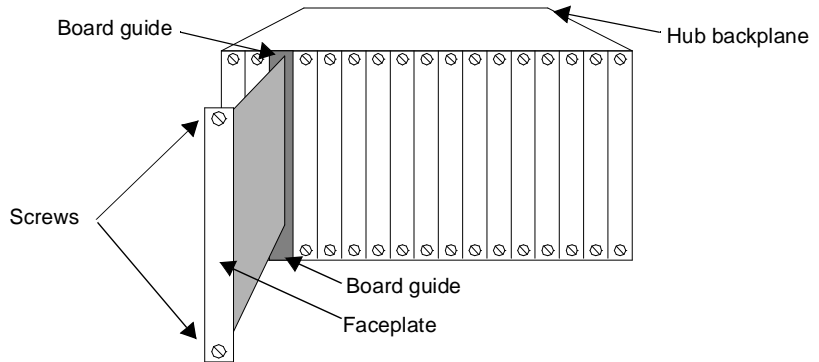
Figure 2-4   Installing the Edge Router Module in an ONline Hub

Installing the ONcore Edge Router Module

You do not need to power off the ONcore hub to install or remove the Edge Router module. You can insert the module while the hub is operating (this is called a hot swap).

To install the Edge Router module in an ONcore hub:

1 Use one of the following proper grounding techniques when you install the Edge Router module:

- Properly ground yourself prior to handling the module.

- Attach a static wrist guard to yourself or touch a grounded static mat prior to handling the module.

If you already have a management terminal connected to your ONcore hub, you can verify the hub has enough power for the new Edge Router module by entering the SHOW POWER BUDGET command. Refer to Appendix A for details on power requirements.

Refer to the ONcore Distributed Management Module Commands Guide for information on the SHOW POWER BUDGET command.

2 Locate an open slot in the ONcore hub. If necessary, remove a blank panel to expose a slot.

3 Insert the module into the board guides at the top and bottom of the slot and slide it into the hub by pressing firmly at a point slightly below the center of the faceplate (Figure 2-5).
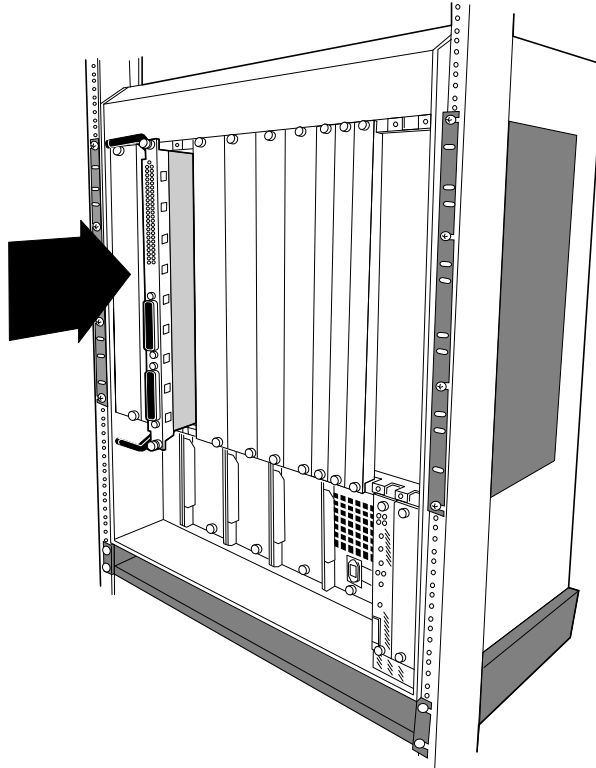
Figure 2-5   Installing the Edge Router Module in an ONcore Hub

4 Close the ejectors (Figure 2-6).
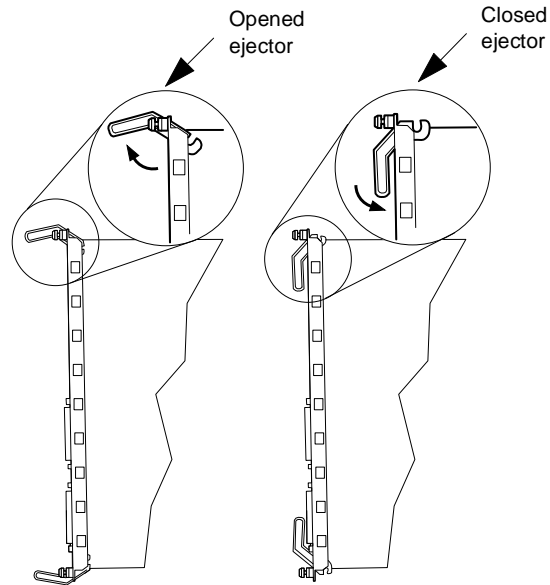
Figure 2-6   Opened and Closed Module Ejectors

5 Using your fingers, tighten the two spring-loaded screws on the front of the Edge Router module faceplate (do not overtighten).

3

CONFIGURING THE EDGE ROUTER MODULE

This chapter contains the following sections:

- Managed Configuration Overview
- Attaching a Management Terminal
- Configuring the Carrier in a Managed ONline Hub
- Configuring the Carrier in a Managed ONcore Hub
- Configuring the Edge Router Engine

If you are installing the Edge Router module in an unmanaged ONline or ONcore hub, you must configure the carrier using DIP switches. Refer to Configuring DIP Switches on page 2-8. When you finish setting the DIP switches, go to Configuring the Edge Router Engine on page 3-9.

Managed Configuration Overview

You can manage an ONline or ONcore carrier using a network management module installed in the same hub.

This section provides a brief overview of the following topics:

- 3Com Management Modules
- Using Management Commands
- Using ONdemand NCS
- Carrier Configuration Tasks

3Com Management Modules

You can manage the ONline or ONcore carrier through SNMP or management commands if a management module is installed. Management modules for ONline and ONcore hub types include:

- **ONline** – An ONline Ethernet Management Module (EMM) running software Version v4.10 or later installed in the same hub as the Edge Router module or a Token Ring Management Module (TRMM) running software Version v3.30 or later installed in the same hub as the Edge Router module.
- **ONcore** – A Distributed Management Module (DMM) running software Version v2.30 or later installed in the same hub as the Edge Router module.

Using Management Commands

You can use management commands to make basic changes to carrier configuration settings. For complete instructions on using management commands to manage the carrier, refer to the guide for the management module for your platform.

ONline management documentation includes:

- *ONline Ethernet Management Module Installation and Operation Guide* (Document Number 17-00087)
- *ONline Management Commands Guide* (Document Number 17-00403)
- *ONline Token Ring Management Module User's Guide* (Document Number 17-00211)

  For ONcore management, refer to the *ONcore Distributed Management Module Commands Guide* (Document Number 17-00372)

Using ONdemand NCS

The 3Com ONdemand™ Network Control System (NCS) is an SNMP manager with a graphical user interface. For instructions on using ONdemand NCS to manage the carrier, refer to one of the following documents:

- *Transcend Enterprise Manager ONdemand Management for Multi-Function Hubs, Version 4.0 for UNIX* (Document Number 17-00320)

- *ONdemand Network Control System for Windows User's Guide* (Document Number 17-00472)

Carrier Configuration Tasks

To configure an ONline or ONcore Edge Router carrier in a managed hub:

1 Attach a management terminal to the console port of the network management module (TRMM, DMM, or EMM).

2 Use the management terminal to configure the carrier using 3Com network management commands.

Attaching a Management Terminal

Use a terminal (or workstation running a terminal emulation program) to configure the Edge Router carrier.

Attach a terminal to a port on the network management module to configure or modify hub parameters, including:

- Selecting networks for modules in the hub
- Changing configurations
- Reporting the condition of any module in the hub

For information on attaching and configuring a management terminal for your hub type, refer to the documents specified in Using Management Commands on page 3-2.

Configuring the Carrier in a Managed ONline Hub

This section describes how to use network management commands to configure ONline carriers installed in an ONline System Concentrator. This section contains the following topics:

- Selecting a Network
- Saving the Configuration

i *When you install the carrier in a hub with a management module installed, the network defaults to isolated mode (Isolate_1). You must assign a network as described below.*

Selecting a Network

The engine connects to the backplane through a carrier module port on the ONline carrier. You can assign the carrier module port to:

- One of three Ethernet backplane networks
- Isolated mode

i *For details on backplane networks, refer to the ONline System Concentrator Installation and Operation Guide (Document Number 17-00417).*

To assign the carrier module ports to a network using the network management software, use the following command:

```
ONline> set port slot.port network      {ethernet_1 ... _3}
                                         {isolated_1}
```

For example, the following command sets port 1 in the ONline carrier installed in slot 3 to the Ethernet 2 backplane network:

```
ONline> set port 3.1 network ethernet_2
Port 03.01 network id set to ETHERNET_2
```

Saving the Configuration

To save configuration changes, use the SAVE command. For example, the following command saves all configuration changes:

```
ONline> save all
```

i *If you do not save module settings, you may lose configuration data.*

Configuring the Carrier in a Managed ONcore Hub	This section describes the possible sources of ONcore carrier configuration settings, the factors that determine the configuration source the carrier uses, and how to configure the carrier using network management commands. This section contains the following topics:

- ONcore Carrier Configuration Sources

- Hot Swapping an ONcore Module

- Determining the Configuration Source

- Selecting a Network

- Saving the Configuration

When you install the carrier in a hub with a management module installed, the network defaults to isolated mode (Isolate_1). You must assign a network as described in the sections that follow.

ONcore Carrier Configuration Sources	In a managed hub (a hub with a DMM installed), the ONcore carrier obtains its configuration settings from one of the following sources:

- DMM settings

- Carrier NVRAM settings

- Carrier DIP switch settings

- Carrier default settings

DMM Settings

The DMM can provide configuration settings to the ONcore carrier if you are performing a hot swap. For more information on hot swapping, refer to Hot Swapping an ONcore Module on page 3-7.

Carrier NVRAM Settings

The ONcore carrier can store configuration settings in its NVRAM (non-volatile random access memory), which it can use when powering on in either a managed or unmanaged hub. Two NVRAM DIP switches control whether or not the carrier uses NVRAM settings. For information on setting the NVRAM DIP switches, refer to Enabling or Disabling NVRAM Configuration on page 2-10.

When the ONcore carrier ships from the factory, the NVRAM does not contain any configuration settings.

The carrier stores configuration settings in NVRAM when either of the following occurs:

■ You use a DMM configuration command or an SNMP manager to change a carrier configuration setting. For example, if you use the SET PORT NETWORK command to change a carrier port network assignment, the carrier stores the new network assignment in its NVRAM.

The carrier stores the new setting as soon as you issue the command. The SAVE command does not affect the contents of NVRAM.

■ The DMM sends configuration settings to the carrier during a hot swap. For a definition of hot swap, refer to Hot Swapping an ONcore Module on page 3-7.

Carrier DIP Switch Settings

The carrier contains a DIP switch that you can use to configure network assignments. For more information on DIP switch settings, refer to Configuring the ONcore Carrier DIP Switches on page 2-9.

Carrier Default Settings

In some cases, the carrier uses default configuration settings contained in its software. The default network assignment for the ONcore carrier is Isolate_1.

Hot Swapping an ONcore Module

You can remove a module from the ONcore hub and install an identical module in the same slot without powering off the hub. This is called a hot swap. Whether or not you hot swap the Edge Router module affects which configuration source the carrier uses.

When you perform a hot swap, the DMM transfers to the new carrier the configuration used by the old carrier. The new carrier saves the settings in its NVRAM.

The DMM transfers the configuration to the new carrier only if it has a saved configuration for the old carrier installed in that slot. The DMM saves the configuration when you perform one of the following:

■ Issue the SAVE command.

■ Use SNMP to make the configuration changes to the carrier. The DMM automatically saves the changes.

■ Reset or power-cycle the DMM. The DMM automatically acquires and saves the NVRAM configurations of all installed modules.

Swapping in a new carrier that contains a different engine from the old carrier is still a hot swap. Only the carrier models must be the same.

Determining the Configuration Source

Table 3-1 shows how to determine the carrier configuration source

Table 3-1 Determining the Carrier Configuration Source

Hot Swap?	DMM DIP Configuration[*]	NVRAM DIP Switch	Carrier Configuration Source
Yes	Disable	ON or OFF	DMM passes the old configuration settings to the new carrier.
	Enable	ON	NVRAM settings[†]
		OFF	DIP switch settings
No[‡]	Disable	ON	NVRAM settings[†]
		OFF	Default settings
	Enable	ON	NVRAM settings[†]
		OFF	DIP switch settings

[*] Use the SHOW DEVICE command to view the DIP configuration setting. Use the SET DEVICE DIP_CONFIGURATION command to change the DIP configuration setting.

[†] If the carrier does not have configuration settings stored in NVRAM, it uses default settings. If the DMM detects a problem with the NVRAM configuration, it forces the carrier to use default settings. For example, if you install the carrier with ports assigned to Ethernet_8 into an ONcore hub model that does not support Ethernet_8. If the configuration problem is port level, the DMM forces only the affected ports to use default settings.

[‡] The DMM must be fully initialized when you install the carrier module.

Selecting a Network

The Edge Router engine connects to an Ethernet network through a backplane port on the ONcore carrier. A base engine installed in ONcore carrier engine bay 1 uses carrier backplane port 1. A base engine installed in ONcore carrier engine bay 2 uses carrier backplane port 5.

You can assign a carrier backplane port to:

- One of eight Ethernet backplane networks
- One of four Isolated backplane networks

For details on backplane networks, refer to the *ONcore Switching Hub Installation and Operation Guide* (Document Number 17-00362-5).

To assign a carrier backplane port to a network using network management software, use the following command:

```
set port   slot.port network {ethernet_1 ... ethernet_8}
                             {isolated_1 ... isolated_4}
```

For example, the following command sets backplane port 1 (engine 1) in the carrier installed in slot 3 to Ethernet_2:

```
ONcore> set port 3.1 network ethernet_2
Port 03.01 network id set to ETHERNET_2
```

Saving the Configuration   To save configuration changes, use the SAVE command. For example, the following command saves all configuration changes:

```
ONcore> save all
```

If you do not save module settings, you may lose configuration data.

Configuring the Edge Router Engine   Configure the Edge Router engine parameters using a management terminal attached to either the console port or the auxiliary port.

This section includes the following topics:

- Attaching a Terminal to the Console Port
- Using the Terminal to Configure the Edge Router Engine

Attaching a Terminal to the Console Port   To attach a management terminal to the Edge Router module console or auxiliary port:

1 Install the mini-DIN to DB-25 adapter cable into the circular connector labeled "console" or "auxiliary" on the Edge Router module. Figure 3-1 shows an example of how to connect the cable to the console port.
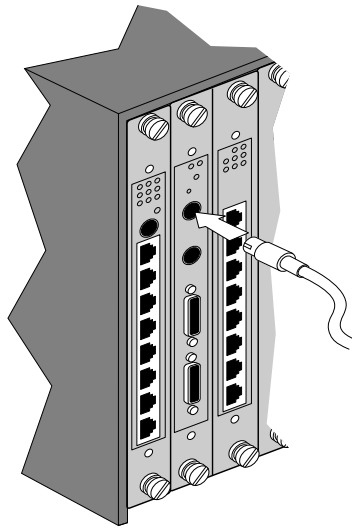
Figure 3-1   Attaching a Terminal Cable to the Console Port

2 Attach the DB-25 end of the adapter cable to the RS-232 null modem cable coming from your terminal. Figure 3-2 shows the terminal connections to both the management module and the Edge Router console port.

Configure the Edge Router engine

Assign Edge Router module to network and report module status
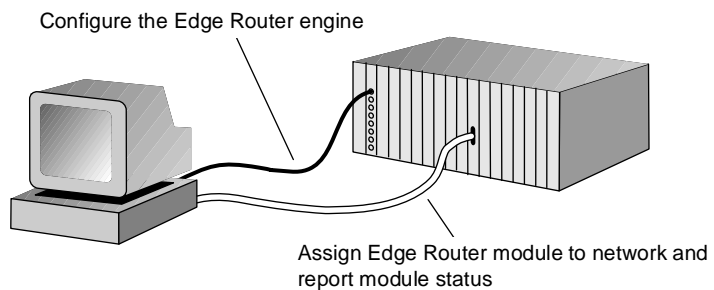
Figure 3-2   Terminal Connections

Console and auxiliary port specifications are provided in Table 3-2 and Table 3-3, respectively.

Table 3-2   Console Port Information

Interface	Connector	Transmission Type	Protocol
RS-232	8-pin mini-DIN	DTE	Asynchronous, 9600, 8-bit data, 1 stop bit, no parity, XON/XOFF

Table 3-3   Auxiliary Port Information

Interface	Connector	Transmission Type	Protocol
RS-232	8-pin mini-DIN	DTE	Asynchronous or synchronous, 9600, 8-bit data, 1 stop bit, no parity, XON/XOFF

Mini-DIN connector pinouts are provided in Appendix A.

The Edge Router module is shipped autoconfigured for connection to a network running NetWare®. If you are not connected to a NetWare network, you may see the following message:

```
The IPXNetwork for LocalPath ms_ethernet couldn't be
learned.
```

Ignore this message and continue with the appropriate configuration.

Using the Terminal to Configure the Edge Router Engine

Edge Router engine documentation is included on the Cisco Systems CD-ROM that is shipped with the Edge Router module.

Refer to the *Cisco Router Products Configuration and Reference Guide* for information on configuring parameters for the Edge Router module.

4

MONITORING EDGE ROUTER MODULE OPERATION

This chapter contains the following sections:

- Monitoring Edge Router Module Operation
- Showing Module Configuration and Status

Monitoring Edge Router Module Operation

The LEDs on the front panel of the Edge Router module allow you to monitor the status of the module and ports. When you install the Edge Router module in the hub:

1 The Router Status (RTR) LED is off if the router is booting (initializing).

2 The Router Status (RTR) LED illuminates once the router boot software is running.

3 The Module Status (S) LED blinks while the module is attempting communication with the carrier board.

4 The Module Status (S) LED stays illuminated once communication is established with the carrier board.

Figure 4-1 shows the LED locations. Each LED indicates the state of the module or port as described in Table 4-1.
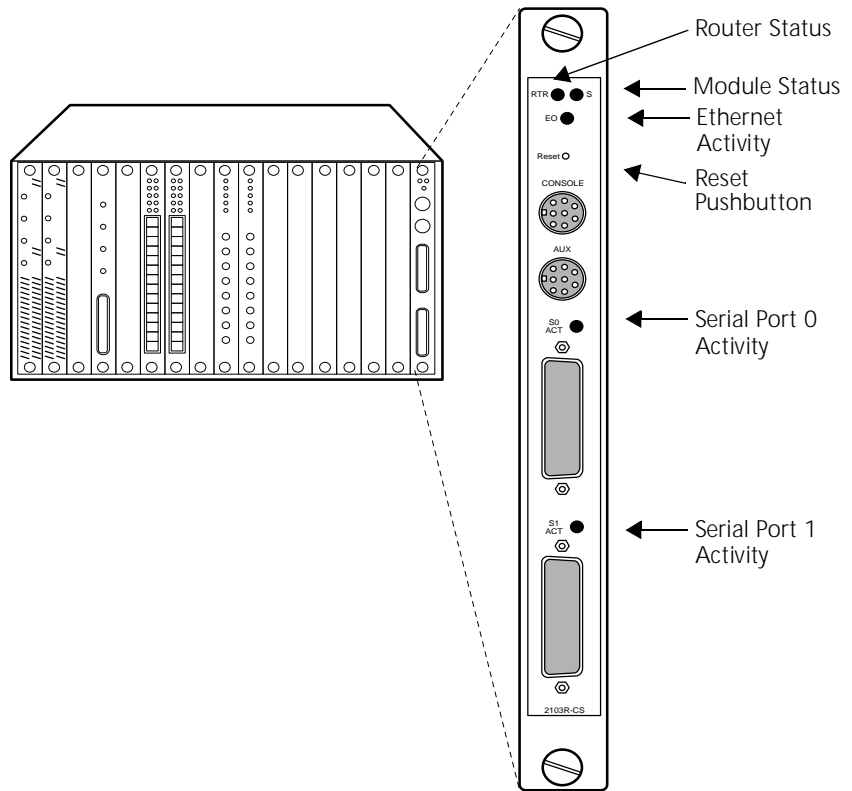
Figure 4-1 Edge Router Module LEDs

Each LED is described in Table 4-1.

Table 4-1   Module LED Interpretations

LED Name	Color	State	Indicates
S (Module Status)	Green	Blinking	The module is in boot mode and is attempting communication with the carrier board.
		On	Remains lit as long as there is active communication with the carrier board.
RTR (Router Status)	Green	On	Router is functioning properly.
		Off or Blinking	Router is not functioning. Replace the module.
E0 Activity (Ethernet Activity)	Yellow	Blinking	Traffic is being passed.
S0 (Serial Port 0 Activity)	Yellow	Blinking	Traffic is being passed on serial port 0.
S1 (Serial Port 1 Activity)	Yellow	Blinking	Traffic is being passed on serial port 1.

Showing Module Configuration and Status

This section describes NMM commands that show module configuration and status.

To show configuration and status for an Edge Router module, use the following network management module commands:

■ SHOW MODULE

■ SHOW PORT

Using the SHOW MODULE Command

The SHOW MODULE command displays information about a specific module.

The syntax for the SHOW MODULE command is:

```
SHOW MODULE slot    {verbose}
                    {no_verbose}
```

The following command displays verbose information for an Edge Router module installed in slot 1 of an ONcore hub:

```
ONcore> show module 1.1 verbose

Slot   Module      Version Network    General Information
-----  ---------   ------- -------    ----------------
01.01 6102M-SDEK  v1.00    PER_PORT   2103R-CSDI

6102M-SDEK: ONcore ONdeck Ethernet Carrier Module
Boot Version:                       v1.00

ENGINE 1 Model Number:              2103R-CSDI
Description:                        Edge Rtr DIBMSW
Expansion Module Model Number:
Native Software Version:            v10.03
Native Boot Software Version:       v4.14
IP Default Gateway:                 0.0.0.0
Mailbox Version:                    0.00.0
No. Backplane Ports:                1
No. Front Ports:                    2
Engine Status: OKAY
NVRAM Dip Switch State:             DISABLED
Module Capabilities:                MACCFG;IPCFG;

ENGINE 2 Model Number:              NOT INSTALLED
Description:
Expansion Module Model Number:
Native Software Version:
Native Boot Software Version:
IP Default Gateway:                 0.0.0.0
Mailbox Version:                    0.00.0
No. Backplane Ports:                4
No. Front Ports:                    0
Engine Status:                      NOT INSTALLED
NVRAM Dip Switch State:             DISABLED
Module Capabilities:                -NONE-
```

The following command displays verbose information for an Edge Router
module installed in slot 6 of an ONline hub:

```
ONline> show module 6 verbose

Slot   Module      Version Network   General Information
-----  ---------   ------  -------   -------------
06     2103R-CSD   v1.07   PER_PORT  Port(s) are up

5103R-CSD: Ethernet Edge Rtr DeskSW

Module Capabilities:                      MACCFG;IPCFG;
No. Front Panel Ports:                    2
Boot Version:                             v1.01
Native Software Version:                  x10.00
Native Boot Software Version:             x51.30
```

No_Verbose is the default option for the SHOW MODULE command. Use the
No_Verbose option to display summary information for the carrier. The
following command displays summary information for an Edge Router
module installed in slot 1 of an ONcore hub:

```
ONcore> show module 1.1

Slot   Module      Version Network   General Information
-----  ---------   ------  -------   -------------
01.01 6102M-SDEK v1.00    PER_PORT  2103R-CSDI
```

Using the SHOW PORT Command

The SHOW PORT command displays information about a single port or all ports.

The syntax for the SHOW PORT command is:

```
SHOW PORT slot.port {verbose}
                    {no_verbose}
```

The following command displays verbose information for port 1 on an Edge Router module installed in slot 1 of an ONcore hub:

```
ONcore> show port 1.1 verbose

Port Display for Module 6102M-SDEK:

Port   Mode    Status    Network   General Information
-----  ------ -------   -------   ----------------
01.01 LOGICAL   OKAY   ETHERNET_4 2103R-CSDI

Port Connector:                     BACKPLANE
IP Address:                         2.0.0.2
Subnetwork Mask:                    ff.00.00.00
Station Address:                    00-00-0c-c0-3d-63
Dip Network Setting:                ETHERNET_4
```

The following command displays verbose information for port 1 on an Edge Router module installed in slot 4 of an ONline hub:

```
ONline> show port 4.1 verbose

Port Display for Module 5103R-CSD:

Port   Mode     Status Network     General Information
----- --------    ------   --------    ----------------
04.01 LOGICAL    OKAY    ETHERNET_1

Port Connector:                     BACKPLANE
IP Address:                         151.104.15.39
Station Address:
Capabilities:                       -NONE-
Native Port Number:                 0
```

No_Verbose is the default option for the SHOW PORT command. Use the No_Verbose option to display summary information for the carrier ports. The following command displays summary information for port 1 on an Edge Router module installed in slot 1 of an ONcore hub:

```
ONcore> show port 1.1

Port Display for Module 6102M-SDEK:

Port    Mode    Status   Network      General Information
----    ----    ------   --------     -------------------
01.01   LOGICAL OKAY      ETHERNET_4   2103R-CSDI
```

5

TROUBLESHOOTING

This chapter provides hardware troubleshooting information you can use if the Edge Router module fails to operate correctly. If after reviewing the information in this chapter, you cannot correct the problem, contact your 3Com representative for further assistance.

For software-related troubleshooting information, refer to the appropriate Cisco Systems manual.

This chapter contains the following sections:

- Troubleshooting Startup Problems
- Troubleshooting Network Connectivity Problems
- Troubleshooting WAN Connectivity Problems
- Correcting Operating Malfunctions

Troubleshooting Startup Problems	This section describes how to troubleshoot startup problems by monitoring the LEDs on the Edge Router module.

This section describes:

- Troubleshooting Router-Specific Problems
- Troubleshooting Mailbox Interface Problems
- Troubleshooting 3Com Carrier Problems

Troubleshooting Router-Specific Problems

When you first install the Edge Router module in an ONline or ONcore hub the Cisco engine runs a full set of hardware diagnostic tests. If the engine fails diagnostics, the Router (RTR) LED does not illuminate or will flash. This indicates a problem with the router hardware or software. Refer to the appropriate Cisco Systems troubleshooting documentation for corrective action.

Troubleshooting Mailbox Interface Problems

ONline and ONcore Edge Routers use a hardware mailbox interface that allows the Cisco engine to communicate with the 3Com carrier board during powerup. If the 3Com mailbox does not establish communication with the engine, the following message is reported to the engine console port:

```
%MAILBOX-3-INITFAIL:Mailbox initialization failure.
Not getting interrupts. Mailbox offline.
```

If you see this message, contact your 3Com representative for assistance.

Troubleshooting 3Com Carrier Problems

Before mailbox communication is initialized and established between the Cisco engine and the 3Com carrier, the Module Status (S) LED on the front panel of the Edge Router module blinks slowly. If communication is established successfully, the Status LED illuminates and stays on solid. If the Status LED does not light, the 3Com carrier board has malfunctioned. Contact your 3Com representative for assistance. Refer to Appendix B for instructions on contacting Technical Support for you product.

Troubleshooting Network Connectivity Problems

If the Edge Router module does not appear to be routing traffic properly on the network, it may indicate that there is no connection to the network.

Try performing one or more of the following troubleshooting actions:

- For ONline and ONcore Edge Router modules only, use the 3Com management interface (for example, ONline management module) to verify that the Edge Router module backplane port is set to the appropriate backplane network (channel).

- Using the Cisco terminal interface, verify that the following parameters are set correctly:

    - IP address

    - Subnet mask

    - Default gateway

- Use the ping utility to confirm that there is network connectivity.

- Use the `cisco>show interfaces ethernet 0` command to verify that the interface is up and running. This command reports Ethernet statistics that aid you in troubleshooting the network.

    If the interface is down, you may need to use the Cisco configuration editor to issue the `no shutdown` command. The `no shutdown` command restarts a disabled interface.

- Verify that your router configuration is valid. Refer to the Cisco Systems *Troubleshooting Internetworking Systems* guide for more information.

Troubleshooting WAN Connectivity Problems

If you suspect that the Edge Router module has lost WAN connectivity, perform one or more of the following troubleshooting actions:

- Verify that you have the correct cable for your configuration. Refer to Appendix A, Specifications, for a list of approved cables, cable specifications, and pinouts.

- If you are using a:

    - **DCE cable** — Verify that a clock rate is defined in the router WAN interface configuration.

    - **DTE cable** — Verify that no clock rate is defined in the router WAN interface configuration.

- Verify that the cable's 60-pin WAN connector is not plugged in backwards.

- Ensure that the router configuration does not have a SHUTDOWN command associated with the interface.

- Verify that your router configuration is valid. Refer to the Cisco Systems *Troubleshooting Internetworking Systems* guide for more information.

Correcting Operating Malfunctions

Table 5-1 lists the symptoms of operating malfunctions for the Edge Router module and shows possible causes and corrective actions for these malfunctions.

Table 5-1   Troubleshooting Malfunctions

Symptom	Possible Cause	Corrective Action
Module does not power on.	Module is not fitted correctly against backplane.	Remove the module from the slot and replace it in the slot to ensure that the module is fitted correctly.
		Place the module in a different slot in the hub.
	The hub is receiving no electrical power.	Check that the hub is receiving power.
		Test for power at the wall outlet by plugging in another device.
		Select another outlet on a different circuit if necessary.
Attached terminal does not operate.	The terminal is malfunctioning.	Follow the troubleshooting procedures recommended by the terminal manufacturer.
	Cables are unattached.	Make sure that the cable connections at both ends are secure.
	Cables are not the correct type.	Make sure that the cable attached to the terminal conforms to the specification as described in Appendix A.
	The console or auxiliary port is configured incorrectly.	Check the console port and auxiliary port configurations.
		You can make a TELNET connection to the router to verify port configurations.
		Refer to the *Cisco Router Products Configuration and Reference* documentation for more information. Verify that the port is configured as 8-bit data, no parity, 1 stop bit, 9600 baud rate, with flow control parameters set to Xon and Xoff.

Table 5-1   Troubleshooting Malfunctions (continued)

Symptom	Possible Cause	Corrective Action
The terminal fails to respond to commands entered at the keyboard.	The terminal is not receiving commands.	Power off the terminal, wait 30 seconds, and then power it on again.
	The keyboard cable is attached incorrectly.	If the terminal still does not respond to commands, power off the terminal and disconnect the keyboard cable. Then reattach the keyboard cable and power on the terminal.
	The console port is malfunctioning.	Check the state of the LEDs on the front of the module as shown in Table 4-1. If the LEDs indicate a problem, contact your supplier for assistance.

A
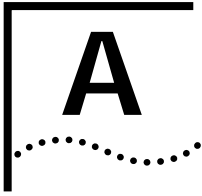
SPECIFICATIONS

This appendix contains the hardware specifications for the 3Com Edge Router module in the following sections:

- General Specifications
- Electrical Specifications
- Environmental Specifications
- Mechanical Specifications
- Hub Capacities
- Cable Pinouts

General Specifications

Table A-1   General Specifications

Processor	20 MHz Motorola® 68EC030
Memory	4 MB DRAM (expandable to 16 MB)
	4 MB system code (PROM or Flash) (expandable to 8 MB)
	32 KB non-volatile configuration RAM
Network Interface Options	1 Ethernet and 2 synchronous serial
Ethernet Interface	Backplane connection
Synchronous Serial Interfaces	RS-232, RS-449, V.35, X.21 (NRZ/NRZI and DTE/DCE), EIA-530 (NRZ/NRZI and DTE). All serial cables use a DB-60 connector.
Console and Auxiliary Ports	Asynchronous serial (mini-DIN)

Electrical Specifications

The following table lists the basic power requirements by module type.

Table A-2   Power Requirements by Module Type

		Power Requirements (AMPs)		
Module Type	Voltage	Carrier	Engine	Carrier and Engine
ONline	+5	.40	2.60	3.00
	+12	0	0.21	.21
	-12	0	0.21	.21
ONcore*	+5	.60	2.60	3.20
	+12	0	0.21	.21
	-12	0	0.21	.21

* ONcore power requirements are based on an Edge Router engine installed in bay 1 of the ONcore carrier. Bay 2 is empty.

Environmental Specifications

Table A-3   Environmental Specifications

Operating Temperature	0° to 50° C (32° to 122° F)
Storage Temperature	-10° to 66° C (22° to 138° F)
Humidity	Less than 95%, noncondensing

Table A-4 lists the BTU/hr calculations for the Edge Router module installed in each hub type.

Table A-4   BTU/hr Calculations

Hub Type	BTU/hr
ONline	68.28
ONcore	68.28

Mechanical Specifications

Table A-5   Mechanical Specifications

Hub Type	Dimensions	
ONline	Width	1.0″
	Length	10.275″
	Height	8.5″
	Weight	1.5 lbs
ONcore	Width	1.0″
	Length	10.275″
	Height	14.37″
	Weight	2.0 lbs

Hub Capacities

This section provides guidelines for installing Edge Router modules in ONline or ONcore hubs.

ONline Hub Capacities

Follow the guidelines in Table A-6 when installing ONline Edge Router modules in an ONline System Concentrator.

Table A-6   ONline Module Restrictions

ONline System Concentrator	Model Numbers	Power (Watts)	Maximum Number of Modules (both serial ports in use)	Maximum Number of Modules (one serial port in use)
17-Slot Concentrator	5017C	325	5	10
6-Slot Concentrator	5006C and 5006C-FT	200	3	6

ONcore Hub Capacities

Follow the guidelines in Table A-7 when installing ONcore Edge Router modules in an ONcore 10-slot or 17-slot hub.

Table A-7   ONcore Hub Capacities for ONcore Modules

Number of Power Supplies	Slots per Hub	Maximum Number of Modules (fault-tolerant mode)	Maximum Number of Modules (non-fault-tolerant mode)
1	10-Slot	N/A	8
	17-Slot	N/A	8
2	10-Slot	8	9
	17-Slot	8	14
3	10-Slot	9	9
	17-Slot	14	16
4	10-Slot	N/A	N/A
	17-Slot	16	16

Follow the guidelines in Table A-8 when installing ONline Edge Router modules in an ONcore 10-slot or 17-slot hub.

Table A-8 ONcore Hub Capacities for ONline Modules

Number of Power Supplies	Slots per Hub	Maximum Number of Modules (both serial ports in use)	Maximum Number of Modules (one serial port in use)
1	10-Slot	7	10
	17-Slot		14
2[1]	10-Slot	10	10
	17-Slot	14	17
3	10-Slot	10	10
	17-Slot	17	17
4	10-Slot	10	10
	17-Slot	17	17

[1] If hub is set to fault-tolerant mode, apply restrictions for 1 power supply.

Cable Pinouts

Use the information in this section to ensure that the cables and connecting hardware meet requirements. For proper operation, use only approved cables when you install all equipment.

The console and auxiliary ports on the Edge Router module require a mini-DIN to DB-25 serial port adapter cable. You can use a cable that meets the specifications described in this section or you can purchase the 3Com OpenHub Management Cable (Part Number OHPMGT-CAB).

The OpenHub Management Cable has a:

- **Mini-DIN connector** — Plugs into the console or auxiliary port on the Edge Router module.
- **DB-25 connector** — Plugs into the cable of the peripheral device.

To connect the mini-DIN to DB-25 cable to another DTE device, use a null modem adapter.

This section describes:

- Console Port Pinouts
- Auxiliary Port Pinouts
- DB-25 Null Modem Cable
- Serial Port Pinouts

Console Port Pinouts

This section lists the cable pinouts for the:

- DTE console port
- Mini-DIN to DB-25 modem cable

DTE Console Port

Table A-9 lists pinouts for the console port on the Edge Router module.

Table A-9 Console Port Pinouts (DTE)

Pin	Signal	Input/Output
1	DTR	Output
2	Not Connected	
3	TXD	Output
4	GND	
5	RXD	Input
6	Not Connected	
7	DCD	Input
8	Not Connected	

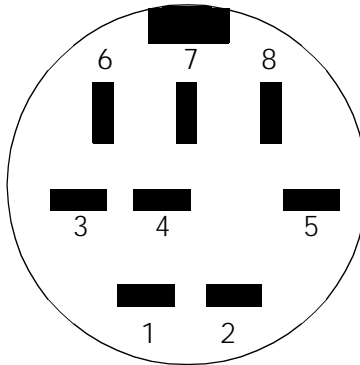Figure A-1 identifies the pins that the 8-pin mini-DIN port uses.

Figure A-1   Mini-DIN Serial Port Pinouts

Mini-DIN to DB-25 Modem Cable

Table A-10 lists console port pinouts for the 3Com OpenHub™ Management Cable (mini-DIN to DB-25 modem adapter cable).

Table A-10   Console Port Pinouts (Mini-DIN to DB-25 Modem Cable)

Mini-DIN		DB-25		
Pin	Signal	Pin	Signal	Input/Output
1	DTR	20	DTR	Output
2	Not Connected	5	CTS	
3	TXD	2	TXD	Output
4	GND	7	GND	
5	RXD	3	RXD	Input
6	Not Connected	4	RTS	
7	DCD	8	DCD	Input
8	Not Connected	17	RTXC	

Auxiliary Port Pinouts

Table A-11 lists the cable pinouts for the auxiliary port on the Edge Router module.

Table A-11   Auxiliary Port Pinouts (DTE)

Pin	Signal	Input/Output
1	DTR	Output
2	CTS	Input
3	TXD	Output
4	GND	
5	RXD	Input
6	RTS	Output
7	DCD	Input
8	Not Connected	

Mini-DIN to DB-25 Modem Cable

Table A-12 lists auxiliary port pinouts for the 3Com OpenHub Management Cable (mini-DIN to DB-25 modem adapter cable).

Table A-12   Auxiliary Port Pinouts (Mini-DIN to DB-25 Modem Cable)

Mini-DIN		DB-25		
Pin	Signal	Pin	Signal	Input/Output
1	DTR	20	DTR	Output
2	CTS	5	CTS	Input
3	TXD	2	TXD	Output
4	GND	7	GND	
5	RXD	3	RXD	Input
6	RTS	4	RTS	Output
7	DCD	8	DCD	Input
8	Not Connected	17	RTXC	

DB-25 Null Modem Cable   Use a null modem cable to connect the Edge Router module to another DTE device (for example, a dumb terminal).

Serial Port Pinouts   This section lists cable pinouts for each type of synchronous serial cable supported by the serial ports on the Edge Router module.

This section describes:

- EIA-530 DTE Synchronous Serial Cable Pinouts
- RS-232 DTE and DCE Serial Cable Pinouts
- RS-449 DTE and DCE Serial Cable Pinouts
- V.35 DTE and DCE Serial Cable Pinouts
- X.21 DTE and DCE Serial Cable Pinouts

In the following tables, serial pinouts for DTE and DCE cables use arrows to indicate signal direction:

- → indicates DTE to DCE
- ← indicates DCE to DTE

All serial cables have a DB-60 connector on the module end. The following pinouts represent only the module ends of the cables. Due to the small pins on the DB-60 connector, you should not attempt to manufacture or solder these cables.

EIA-530 DTE Synchronous Serial Cable Pinouts

Table A-13 lists pinouts for EIA-530 DTE synchronous serial cable (Part Number ERM530-CAB).

Table A-13   EIA-530 DTE Cable Pinouts (DB-25)

25 Pin[1]	Signal	Direction DTE DCE[2]	25 Pin	Signal	DTE DCE Direction
J2-1	Shield	—	J2-8	CF(A), DCD+	←
—	—	—	J2-10	CF(B), DCD-	←
J2-2	BA(A), TxD+	→	J2-15	DB(A), TxC+	←
J2-14	BA(B), TxD-	→	J2-12	DB(B), TxC-	←
J2-3	BB(A), RxD+	←	J2-17	DD(A), RxC+	←
J2-16	BB(B), RxD-	←	J2-9	DD(B), RxC-	←
J2-4	CA(A), RTS+	→	J2-18	LL	→
J2-19	CA(B), RTS-	→	J2-7	Circuit GND	—
J2-5	CB(A), CTS+	←	J2-20	CD(A), DTR+	→
J2-13	CB(B), CTS-	←	J2-23	CD(B), DTR-	→
J2-6	CC(A), DSR+	←	J2-24	DA(A), TxCE+	→
J2-22	CC(B), DSR-	←	J2-11	DA(B), TxCE-	→

[1] Any pin not referenced is not connected.

[2] The EIA-530 interface cannot be operated in DCE mode. A DCE cable is not available for the EIA-530 interface.

RS-232 DTE and DCE Serial Cable Pinouts

Table A-14 lists pinouts for:

- RS-232 DTE synchronous serial cable (Part Number ERM232-CAB)
- RS-232 DCE synchronous serial cable (Part Number ERF232-CAB)

Table A-14   RS-232 DTE and DCE Cable Pinouts (DB-25)

25 Pin[1]	Signal	DTE DCE Direction	25 Pin	Signal	DTE DCE Direction
J2-1	Shield GND	—	J2-7	Circuit GND	—
			Shield	—	—
J2-2 Shield	TxD	→	J2-8	DCD	←
	—	_	Shield	—	_
J2-3 Shield	RxD	←	J2-15	TxC	←
	—	_	Shield	—	_
J2-4 Shield	RTS	→	J2-17	RxC	←
	—	_	Shield	—	_
J2-5 Shield	CTS	←	J2-18	LTST	→
	—	_	Shield	—	_
J2-6 Shield	DSR	←	J2-20	DTR	→
	—	_	Shield	—	_
			J2-24	TxCE	→
			Shield	—	_

[1] Any pin not referenced is not connected.

RS-449 DTE and DCE Serial Cable Pinouts

Table A-15 lists pinouts for:

- RS-449 DTE synchronous serial cable (Part Number ERM449-CAB)
- RS-449 DCE synchronous serial cable (Part Number ERF449-CAB)

Table A-15   RS-449 DTE and DCE Cable Pinouts (DB-37)

37 Pin[1]	Signal	DTE DCE Direction	37 Pin	Signal	DTE DCE Direction
J2-1	Shield GND	—	J2-9	CS+	→
			J2-27	CS-	→
J2-4	SD+	←	J2-10	LL	→
J2-22	SD-	←	J2-37	SC	—
J2-5	ST+	→	J2-11	DM+	→
J2-23	ST-	→	J2-29	DM-	→
J2-6	RD+	→	J2-12	TR+	←
J2-24	RD-	→	J2-30	TR-	←
J2-7	RS+	←	J2-13	RR+	→
J2-25	RS-	←	J2-31	RR-	→
J2-8	RT+	→	J2-17	TT+	←
J2-26	RT-	→	J2-35	TT-	←
			J2-19	SG	—
			J2-20	RC	—

[1] Any pin not referenced is not connected.

V.35 DTE and DCE Serial Cable Pinouts

Table A-16 lists pinouts for:

- V.35 DTE synchronous serial cable (Part Number ERMV35-CAB)
- V.35 DCE synchronous serial cable (Part Number ERFV35-CAB)

Table A-16   V.35 DTE and DCE Cable Pinouts (Winchester-Type 34-Pin)

34 Pin[1]	Signal	DTE DCE Direction	34 Pin	Signal	DTE DCE Direction
J2-A	Frame GND	—	J2-H	DTR	→
			Shield	—	—
J2-B	Circuit GND	—	J2-K	LT	→
Shield	—	—	Shield	—	—
J2-C	RTS	→	J2-P	SD+	→
Shield	—	—	J2-S	SD-	→
J2-D	CTS	←	J2-R	RD+	←
Shield	—	—	J2-T	RD-	←
J2-E	DSR	←	J2-U	SCTE+	→
Shield	—	—	J2-W	SCTE-	→
J2-F	RLSD	←	J2-V	SCR+	←
Shield	—	—	J2-X	SCR-	←
			J2-Y	SCT+	←
			J2-AA	SCT-	←

[1] Any pin not referenced is not connected.

X.21 DTE and DCE Serial Cable Pinouts

Table A-17 lists pinouts for:

- X.21 DTE synchronous serial cable (Part Number ERMX21-CAB)
- X-21 DCE synchronous serial cable (Part Number ERFX21-CAB)

Table A-17 X.21 DTE and DCE Cable Pinouts (DB-15)

15 Pin[1]	Signal	DTE DCE Direction
J2-1	Shield GND	—
J2-2	Transmit+	→
J2-9	Transmit-	→
J2-3	Control+	→
J2-10	Control-	→
J2-4	Receive+	←
J2-11	Receive-	←
J2-5	Indication+	←
J2-12	Indication-	←
J2-6	Timing+	←
J2-13	Timing-	←
J2-8	Circuit GND	—
Shield	—	—

[1] Any pin not referenced is not connected.

B
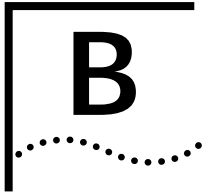
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3Com provides easy access to technical support information through a variety of services. This appendix contains the following sections:

- Online Technical Services
- Support From Your Network Supplier
- Support From 3Com Corporation
- Returning Products for Repair
- Accessing the 3Com ISD MIB
- Contacting 3Com ISD Technical Publications

Online Technical Services

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- World Wide Web site
- 3ComForum on CompuServe®
- 3ComFacts℠ automated fax service

3Com Bulletin Board Service

3ComBBS contains patches, software, and drivers for all 3Com products, as well as technical articles. This service is available through a modem or ISDN 7 days a week, 24 hours a day.

Access by Analog Modem

To reach the service by modem, set your modem to 8 data bits, no parity, and 1 stop bit. Call the telephone number nearest you:

Country	Data Rate	Telephone Number
Australia	up to 14400 bps	Sydney (61) (2) 9937 5000 Melbourne (61) (3) 9653 9515
France	up to 14400 bps	(33) (1) 69 86 69 54
Germany	up to 9600 bps	(49) (89) 627 32 188 **or** (49) (89) 627 32 189
Hong Kong	up to 14400 bps	(852) 2501 1111
Italy (fee required)	up to 14400 bps	(39) (2) 273 00680
Japan	up to 14400 bps	(81) (3) 3345 7266
Singapore	up to 14400 bps	(65) 534 5693
Taiwan	up to 14400 bps	(886) (2) 377 5840
U.K.	up to 28800 bps	(44) (1442) 278278
U.S.	up to 28800 bps	(1) (408) 980 8204

Access by Digital Modem

ISDN users can call in to 3ComBBS using a digital modem for fast access up to 56 Kbps. To access 3ComBBS using ISDN, call the following number:

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http://www.3Com.com/

This service features news and information about 3Com products, customer service and support, 3Com Corporation's latest news releases, selected articles from 3TECH™ (3Com Corporation's award-winning technical journal), and more.

3ComForum on CompuServe   3ComForum is a CompuServe-based service containing patches, software, drivers, and technical articles about all 3Com products, as well as a messaging section for peer support. To use 3ComForum, you need a CompuServe account.

To use 3ComForum:

1 Log in to CompuServe.

2 Enter **go threecom**.

3 Press Return to view the 3ComForum main menu.

3ComFacts Automated Fax Service   3Com Corporation's interactive fax service, 3ComFacts, provides data sheets, technical articles, diagrams, and troubleshooting instructions on 3Com products 7 days a week, 24 hours a day.

Call 3ComFacts using your touch-tone telephone. International access numbers are:

Country	Telephone Number
Hong Kong	(852) 2537 5610
U.K.	(44) (1442) 278279
U.S.	(1) (408) 727 7021

Local access numbers are available within the following countries:

Country	Telephone Number	Country	Telephone Number
Australia	800 123853	Netherlands	06 0228049
Belgium	0800 71279	Norway	800 11062
Denmark	800 17319	Portugal	0505 442607
Finland	98 001 4444	Russia (Moscow only)	956 0815
France	05 90 81 58	Spain	900 964445
Germany	0130 8180 63	Sweden	020 792954
Italy	1678 99085	U.K.	0800 626403

Support From Your Network Supplier

If additional assistance is required, contact your network supplier. Many suppliers are authorized 3Com service partners who are qualified to provide a variety of services, including network planning, installation, hardware maintenance, application training, and support services.

When you contact your network supplier for assistance, have the following information ready:

- Diagnostic error messages
- A list of system hardware and software, including revision levels
- Details about recent configuration changes, if applicable

If you are unable to contact your network supplier, refer to the following section on contacting 3Com.

Support From 3Com Corporation

If you are unable to receive support from your network supplier, technical support contracts are available from 3Com.

In the U.S. and Canada, call **(800) 876-3266** for customer service.

If you are outside the U.S. and Canada, contact your local 3Com sales office to find your authorized service provider:

Country	Telephone Number	Country	Telephone Number
Australia (Sydney)	(61) (2) 9937 5000	Japan	(81) (3) 3345 7251
(Melbourne)	(61) (3) 9653 9515	Mexico	(525) 531 0591
Belgium*	0800 71429	Netherlands*	06 0227788
Brazil	(55) (11) 546 0869	Norway*	800 13376
Canada	(905) 882 9964	Singapore	(65) 538 9368
Denmark*	800 17309	South Africa	(27) (11) 803 7404
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Germany*	0130 821502	Taiwan	(886) (2) 577 4352
Hong Kong	(852) 2501 1111	United Arab Emirates	(971) (4) 349049
Ireland*	1 800 553117	U.K.*	0800 966197
Italy*	1678 79489	U.S.	(1) (408) 492 1790

* These numbers are toll-free.

Returning Products for Repair

A product sent directly to 3Com for repair must first be assigned a Return Materials Authorization (RMA) number. A product sent to 3Com without an RMA number will be returned to the sender unopened, at the sender's expense.

To obtain an RMA number, call or fax:

Country	Telephone Number	Fax Number
U.S. and Canada	(800) 876 3266, option 2	(408) 764 7120
Europe	31 30 60 29900, option 5	(44) (1442) 275822
Outside Europe, U.S., and Canada	(1) (408) 492 1790	(1) (408) 764 7290

Accessing the 3Com ISD MIB

The 3Com Management Information Base (MIB) for the Integrated Systems Division (ISD) describes commands that enable you to manage 3Com SNMP-based products. The MIB is available over the Internet on an anonymous FTP server. Updates to these MIBs are released as new 3Com products are introduced.

To access Internet versions:

1 FTP to `ftp.chipcom.com` (151.104.9.65).

2 Enter the login name `anonymous`.

3 Enter your full Internet e-mail address as the password (for example, `jdoe@company.com`).

4 Change to the mib or schema directory using the `cd /pub/mibs` or `cd /pub/mibs/schemas` command.

5 To view the 3Com MIB, OID, or schema entries, enter the `dir` command.

   ■ To pause the display, press [Ctrl+S].

   ■ To continue the display, press [Ctrl+Q].

6 Copy the MIB, OID, or schema files to your current directory using the appropriate command (for example, `get chipcom.mib`).

7 To exit the FTP session, invoke the `quit` command.

Contacting 3Com ISD Technical Publications

If you have comments or questions on 3Com Integrated Systems Division Technical Publications documents, contact the Technical Publications group by fax at (508) 229-1551.

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Other hardware products	1 year
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