



4-Port Gigabit Ethernet Layer 3 Switching Module (GBIC) Quick Start Guide

For the CoreBuilder® 9000 Enterprise Switch

Module Description

The 4-port Gigabit Ethernet Layer 3 Switching Module (GBIC) (Model Number 3CB9RG4) for the CoreBuilder® 9000 Enterprise Switch provides high-port-density, line speed, Gigabit Ethernet switching and routing on backbone networks running at Open Systems Interconnection (OSI) Layer 3.

The module offers the following connectivity:

- Four Gigabit Interface Converter (GBIC) ports on the front panel can be either 1000BASE-LX (single-mode fiber) or 1000BASE-SX (multimode fiber).
- Four Gigabit Ethernet ports connect the module to the chassis backplane.

Key Features

The 4-port Gigabit Ethernet Layer 3 Switching Module (GBIC) supports the following key features:

- High-density Gigabit Ethernet switching through the following maximum number of GBIC front panel ports:
 - 24 ports in the 7-slot chassis and 8-slot chassis
 - 56 ports in the 16-slot chassis
- Ability to use multimode and single-mode 1000BASE-LX GBICs and multimode 1000BASE-SX GBICs simultaneously on the front panel
- Ability to replace the module and GBIC ports while the chassis is operating (which is known as *hot swap*)

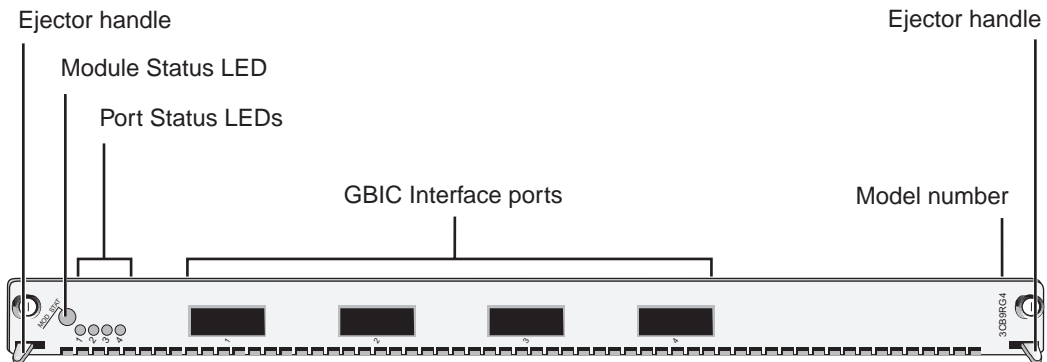
- Stand-alone operations if a switch fabric module fails or is not installed
- Full-duplex port operation (through front panel ports and backplane ports)
- Management using the CoreBuilder 9000 Administration Console command line interface, Web Management suite of applications, or the Simple Network Management Protocol (SNMP)

For information about the software features that this module supports, see the:

- *CoreBuilder 9000 Implementation Guide*
- *Command Reference Guide*
- *CoreBuilder 9000 Release Notes for Layer 3 Switching Modules*

Figure 1 identifies the components on the module front panel.

Figure 1 Front Panel of the 4-port Gigabit Ethernet Layer 3 Switching Module (GBIC)



Port Numbering

The four front panel ports (1 – 4) correspond to the four Port Status LEDs. Port numbers 5 – 8 on the rear of the module do not have corresponding status LEDs on the front panel.

The logical port numbering depends on your network configuration. See the *CoreBuilder 9000 Implementation Guide* for details.

Module Position in the Chassis

In the 7-slot chassis, you install all switching modules horizontally, with the module and port status LEDs on the left side.

In the 8-slot and 16-slot chassis, you install all switching modules vertically, with the module and port status LEDs at the top.

Audience Description

This guide is intended for *trained technical personnel* only. Do not attempt to install, remove, or replace CoreBuilder 9000 switching modules if you have not had the proper training from 3Com. For training information in the United States and Canada, call 1-800-NET-3Com. For training information in other countries, visit the 3Com Web site:

<http://www.3com.com>

Safety Precautions

When you handle components in a CoreBuilder 9000 system, be sure that you follow all safety precautions. To avoid electric shocks, burns, or equipment damage, read and follow these warnings:



WARNING: *This switching module must be installed, removed, or replaced only by trained service personnel.*



WARNING: *Hazardous energy exists within the system. Use extreme caution when you install, remove, or replace any module. When the system is on:*

- *Never insert metal objects such as a screwdriver or a finger with jewelry into open module slots.*
- *Do not touch any connections within the chassis with your hands or fingers.*

ESD Safety Information

Electrostatic discharge (ESD) can damage components of the module. ESD, which occurs when the module is improperly handled, can cause complete or intermittent failures on the module.



CAUTION: *To prevent ESD-related damage:*

- *Always wear an ESD wrist strap (not provided) when you handle any switching module, ensuring that the strap makes good skin contact and is properly grounded.*
- *Keep the switching module in its antistatic bag until you are ready to install it.*

**Handling
Precautions**

When you handle the 4-port Gigabit Ethernet Layer 3 Switching Module (GBIC), follow these precautions:

- Always handle the module by the front panel only.
- Do not touch the components, pins, leads, or solder connections.
- Do not twist or otherwise force the module into the chassis when you insert it into the module guides.
- Before you push the module into the chassis, make sure that the module ejector handles are open.
- When you slide the module into the 7-slot chassis, match the left and right guides. When you slide the module into the 8-slot chassis or 16-slot chassis, match the upper and lower module guides.

**Unpacking
Instructions**

Use the following procedure when you unpack the module:

- 1 Verify that the module is the correct model by matching the 3C number that is listed on the shipping box to the 3C number that appears on your order documentation (3CB9RG4).
- 2 Remove the module, in its antistatic bag, from the shipping box.
- 3 Remove the module from its antistatic bag and inspect it for physical damage.



CAUTION: Handle the module by the front panel only. Do not touch any components, pins, leads, or solder connections.

If the module appears to be damaged, replace it in its antistatic bag and shipping box, and contact your network supplier.

- 4 Ensure that the box also contains:
 - *CoreBuilder 9000 Release Notes for Layer 3 Switching Modules*
 - *4-port Gigabit Ethernet Layer 3 Switching Module (GBIC) Quick Start Guide for the CoreBuilder 9000 Enterprise Switch* (this guide)



All shipping boxes are reusable. After removing the contents, replace the packing materials and store the shipping box for future use.

Installation Prerequisites

Before you install your 4-port Gigabit Ethernet Layer 3 Switching Module (GBIC), comply with the following prerequisites:

- Verify that the chassis is properly installed in a rack, on a table, or on a shelf, according to the instructions in either of these guides:
 - *7-Slot Chassis Quick Installation Guide for the CoreBuilder 9000 Enterprise Switch*
 - *Chassis Quick Installation Guide for the CoreBuilder 9000 Enterprise Switch 8-slot Chassis and 16-slot Chassis*
- Have a flat-blade torque screwdriver available to secure the module to the chassis after you install it.
- Read the *CoreBuilder 9000 Release Notes for Layer 3 Switching Modules* that is included in your module shipping box for important upgrade procedures for other modules in an existing chassis or in a new chassis.



CAUTION: *All modules in a CoreBuilder 9000 chassis must operate at compatible software levels. You must verify the software release on all new and existing modules in your chassis and upgrade as necessary. See the CoreBuilder 9000 Release Notes for Layer 3 Switching Modules for a module software compatibility requirements table, mandatory upgrade procedures, and other important information.*

Choosing a Slot for Your Module

This section provides guidelines for choosing the best slot for your 4-port Gigabit Ethernet Layer 3 Switching Module (GBIC).

Installation in a 7-slot Chassis

You can choose any slot in the 7-slot chassis to house a 4-port Gigabit Ethernet Layer 3 Switching Module (GBIC) — except slot 7, which is for the wider switch fabric modules, and slots 8 and 9, which are for the smaller management modules.

Table 1 and Table 2 show the relationship among the Gigabit Ethernet (GEN) Switch Fabric Modules (24-port or 9-port) and the 4-port Gigabit Ethernet Layer 3 Switching Module (GBIC) when both are installed in a 7-slot chassis. To summarize the table:

- The switching module can use all four of its backplane ports in slots 1 – 6, when used in conjunction with a 24-port GEN Switch Fabric Module (3CB9FG24 or 3CB9FG24T). 3Com recommends that you install this Layer 3 switching module in any of those slots.
- The switching module can use only its first backplane port (module port number 5) when used in conjunction with a 9-port GEN Switch Fabric Module (3CB9FG9).

Table 1 and Table 2 also show the relationship between the GEN Switch Fabric Module backplane port numbers and the corresponding LED indicator numbers.

Table 1 24-port GEN SFM* and 4-port Gigabit Ethernet Layer 3 Switching Module (GBIC) in the 7-slot Chassis

Chassis Slot No.	Number of SFM Backplane Ports Allocated to This Slot	SFM Backplane Port Numbers That Connect to This Slot	LED Numbers That Correspond to the SFM Backplane Ports
1	4	1	1
		2	2
		3	13
		4	14
2	4	5	3
		6	4
		7	15
		8	16
3	4	9	5
		10	6
		11	17
		12	18
4	4	13	7
		14	8
		15	19
		16	20
5	4	17	9
		18	10
		19	21 (3CB9FG24T) 22 (3CB9FG24)
		20	22 (3CB9FG24T) 21 (3CB9FG24)
6	4	21	11
		22	12
		23	23 (3CB9FG24T) 24 (3CB9FG24)
		24	24 (3CB9FG24T) 23 (3CB9FG24)
7	Reserved for an SFM	Not applicable	Not applicable

* 24-Port Gigabit Ethernet Switch Fabric Module (Model Number 3CB9FG24 or 3CB9FG24T)

Table 2 9-port GEN SFM* and 4-port Gigabit Ethernet Layer 3 Switching Module (GBIC) in the 7-slot Chassis

Chassis Slot No.	Number of SFM Backplane Ports Allocated to This Slot	SFM Backplane Port Numbers That Connect to This Slot	LED Numbers That Correspond to the SFM Backplane Ports
1	1	1	1
2	1	2	2
3	1	3	3
4	1	4	4
5	1	5	5
6	1	6	6
7	Reserved for an SFM	Not applicable	Not applicable

* 9-Port Gigabit Ethernet Switch Fabric Module (Model Number 3CB9FG9). Six ports on this module are backplane ports. The remaining three ports are located on the front panel; LEDs 7, 8, and 9 correspond to these ports.

Installation in an 8-slot Chassis

You can choose any slot in the 8-slot chassis to house a 4-port Gigabit Ethernet Layer 3 Switching Module (GBIC) — except slots 7 and 8 which are for the wider switch fabric modules, and slots 9 and 10, which are for the smaller management modules.

Table 3 and Table 4 show the relationship among the GEN Switch Fabric Modules (24-port or 9-port) and the 4-port Gigabit Ethernet Layer 3 Switching Module (GBIC) when both are installed in an 8-slot chassis. To summarize the table:

- The switching module can use all four of its backplane ports in slots 1 – 6, when used in conjunction with a 24-port GEN Switch Fabric Module (3CB9FG24 or 3CB9FG24T). 3Com recommends that you install this Layer 3 switching module in any of those slots.
- The switching module can use only its first backplane port (module port number 5) when used in conjunction with a 9-port GEN Switch Fabric Module (3CB9FG9).

Table 3 and Table 4 also show the relationship between the GEN Switch Fabric Module backplane port numbers and the corresponding LED indicator numbers.

Table 3 24-port GEN SFM* and 4-port Gigabit Ethernet Layer 3 Switching Module (GBIC) in the 8-slot Chassis

Chassis Slot No.	Number of SFM Backplane Ports Allocated to This Slot	SFM Backplane Port Numbers That Connect to This Slot	LED Numbers That Correspond to the SFM Backplane Ports
1	4	1	1
		2	2
		3	13
		4	14
2	4	5	3
		6	4
		7	15
		8	16
3	4	9	5
		10	6
		11	17
		12	18
4	4	13	7
		14	8
		15	19
		16	20
5	4	17	9
		18	10
		19	21 (3CB9FG24T) 22 (3CB9FG24)
		20	22 (3CB9FG24T) 21 (3CB9FG24)
6	4	21	11
		22	12
		23	23 (3CB9FG24T) 24 (3CB9FG24)
		24	24 (3CB9FG24T) 23 (3CB9FG24)
7	Reserved for an SFM	Not applicable	Not applicable
8	Reserved for an SFM	Not applicable	Not applicable

* 24-Port Gigabit Ethernet Switch Fabric Module (Model Number 3CB9FG24 or 3CB9FG24T)

Table 4 9-port GEN SFM* and 4-port Gigabit Ethernet Layer 3 Switching Module (GBIC) in the 8-slot Chassis

Chassis Slot No.	Number of Switch Fabric Module Backplane Ports Allocated to This Slot	SFM Backplane Port Numbers That Connect to This Slot	LED Numbers That Correspond to the SFM Backplane Ports
1	1	1	1
2	1	2	2
3	1	3	3
4	1	4	4
5	1	5	5
6	1	6	6
7	Reserved for an SFM	Not applicable	Not applicable
8	Reserved for an SFM	Not applicable	Not applicable

* 9-Port Gigabit Ethernet Switch Fabric Module (Model Number 3CB9FG9). Six ports on this module are backplane ports. The remaining three ports are located on the front panel; LEDs 7, 8, and 9 correspond to these ports.

Installation in a 16-slot Chassis

You can choose any slot in the 16-slot chassis to house a 4-port Gigabit Ethernet Layer 3 Switching Module (GBIC) — except slots 8 and 9, which are for the larger switch fabric modules, and slots 17 and 18, which are for the smaller management modules.

Table 5 shows the relationship among the 24-port GEN Switch Fabric Modules and the 4-port Gigabit Ethernet Layer 3 Switching Module (GBIC) when both are installed in a 16-slot chassis. To summarize the table:

- The switching module can use two of its backplane ports in slots 1 – 7 and slots 10 – 12, when used in conjunction with a 24-port GEN Switch Fabric Module (3CB9FG24 or 3CB9FG24T). 3Com recommends that you install this Layer 3 switching module in any of those slots.
- The switching module can use only its first backplane port (module port number 5) in slots 13 – 16 when used in conjunction with a 24-port GEN Switch Fabric Module (3CB9FG24 or 3CB9FG24T).

Table 5 also shows the relationship between the GEN Switch Fabric Module backplane port numbers and the corresponding LED indicator numbers.



You cannot use the 9-port GEN Switch Fabric Module (3CB9FG9) in the 16-slot chassis.

Table 5 24-port GEN SFM* and 4-port Gigabit Ethernet Layer 3 Switching Module (GBIC) in the 16-slot Chassis

Chassis Slot No.	Number of Switch Fabric Module Backplane Ports Allocated to This Slot	SFM Backplane Port Numbers That Connect to This Slot	LED Numbers That Correspond to the SFM Backplane Ports
1	2	1, 2	1, 2
2	2	3, 4	3, 4
3	2	5, 6	5, 6
4	2	7, 8	7, 8
5	2	9, 10	9, 10
6	2	11, 12	11, 12
7	2	13, 14	13, 14
8	Reserved for an SFM	Not applicable	Not applicable
9	Reserved for an SFM	Not applicable	Not applicable
10	2	15, 16	15, 16
11	2	17, 18	17, 18
12	2	19, 20	19, 20
13	1	21	21
14	1	22	22
15	1	23	23
16	1	24	24

* 24-Port Gigabit Ethernet Switch Fabric Module (Model Number 3CB9FG24 or 3CB9FG24T). You cannot use the 9-port Gigabit Ethernet Switch Fabric Module (Model Number 3CB9FG9) in the 16-slot chassis.

Installing the Gigabit Ethernet Switching Module

To install a 4-port Gigabit Ethernet Layer 3 Switching Module (GBIC):

- 1 To verify that you have complied with all prerequisites and are ready to install your 4-port Gigabit Ethernet Layer 3 Switching Module (GBIC), read “Installation Prerequisites” earlier in this guide.
- 2 Before you start the installation process, read “Safety Precautions” and “Handling Precautions” earlier in this guide.
- 3 Select a chassis slot for your module, following the restrictions and recommendations in “Choosing a Slot for Your Module” earlier in this guide.
- 4 To expose the selected chassis slot, remove the blank faceplate that covers the chassis slot.

Save this faceplate in case you need to cover an empty slot in the future. Empty slots must always be covered to ensure proper airflow and cooling in the chassis.



3Com strongly recommends that you install only one module at a time and remove only the faceplate for the slot where you intend to install the module. Having either a module or a blank faceplate in the slots adjacent to your selected slot helps ensure that the module's spring-loaded screws align properly with the corresponding holes in the chassis.

- 5 Remove the module from its antistatic bag and open the two module ejector handles so that they are nearly perpendicular to the front panel.
- 6 Grasp the module with two hands — one at each end of the front panel near the ejector handles — and begin to insert the module in the slot:
 - In a 7-slot chassis, hold the module horizontally with the LEDs to the left and then insert the module using the guides on the right and the left of the slot.
 - In an 8-slot chassis or 16-slot chassis, hold the module vertically with the LEDs at the top (Figure 2) and then insert the module using the guides at the top and the bottom of the slot.



CAUTION: Do not twist or bend the module when you insert it into the chassis.

- 7 Slide the module into the chassis by pushing firmly on the two ends of the front panel near the ejector handles.



WARNING: Hazardous energy levels exist inside of the chassis. Do not place hands or objects into the chassis or touch any components on an inserted module.

- 8 To engage the module with the backplane, use both hands to perform the following steps:
 - a Push firmly at the two ends of the front panel near the ejector handles until you feel the module connectors make firm contact with the backplane connectors.
 - b Put your left thumb on the left or top ejector handle and your right thumb on the right or bottom ejector handle. Simultaneously, push the ejector handles in towards the front panel until each handle is parallel with the front panel.



CAUTION: *If there is too much resistance when you try to close the ejector handles, the module connectors and backplane connectors may not be aligned. Forcing the module into place can damage the connectors. If necessary, remove and reinsert the module, ensuring that the connectors are properly aligned. Do not tighten the spring-loaded screws to seat the module.*

- 9 To secure the module front panel to the front of the chassis, tighten its spring-loaded screws to a torque specification of 3–5 inch-pounds.



CAUTION: *Ensure that the module screws are properly aligned with the threaded holes in the chassis; otherwise you can strip the threads and make it impossible to secure any module in that slot.*



WARNING: *To ensure adequate cooling airflow and continued product safety agency compliance, install blank faceplates over all empty slots.*

You have now completed the physical installation of the 4-port Gigabit Ethernet Layer 3 Switching Module (GBIC). See “GBIC SX Transceivers” and “GBIC LX Transceivers” for cabling specifications.

To verify proper module operation, see “Verifying Module Operation” later in this guide. To configure and manage the module, see “Managing the Module” later in this guide.

Figure 2 illustrates installation in a 7-slot chassis.

Figure 2 Installing a 4-port Gigabit Ethernet Layer 3 Switching Module (GBIC) into a 7-slot Chassis

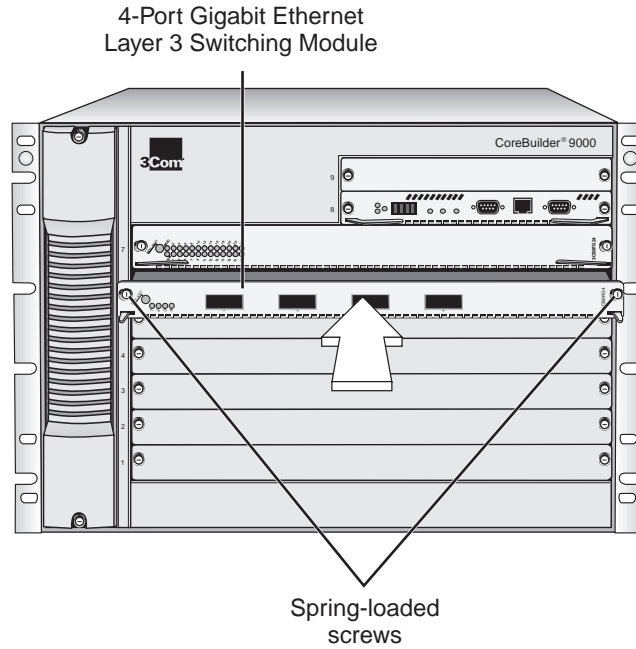


Figure 3 illustrates installation in a 8-slot chassis.

Figure 3 Installing a 4-port Gigabit Ethernet Layer 3 Switching Module (GBIC) into an 8-slot Chassis

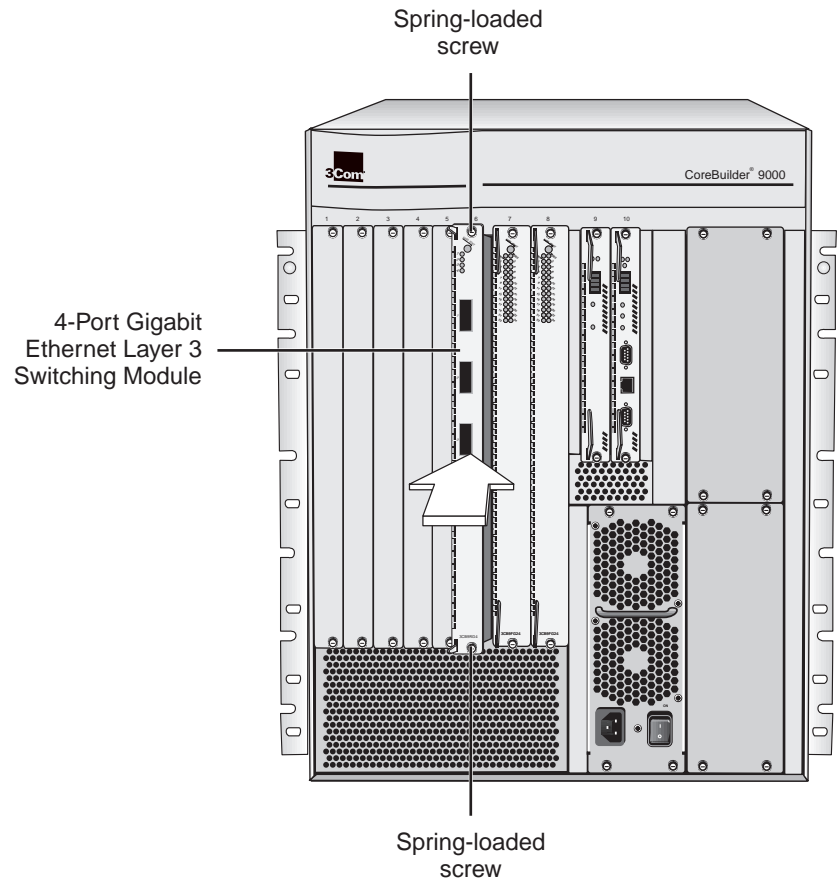
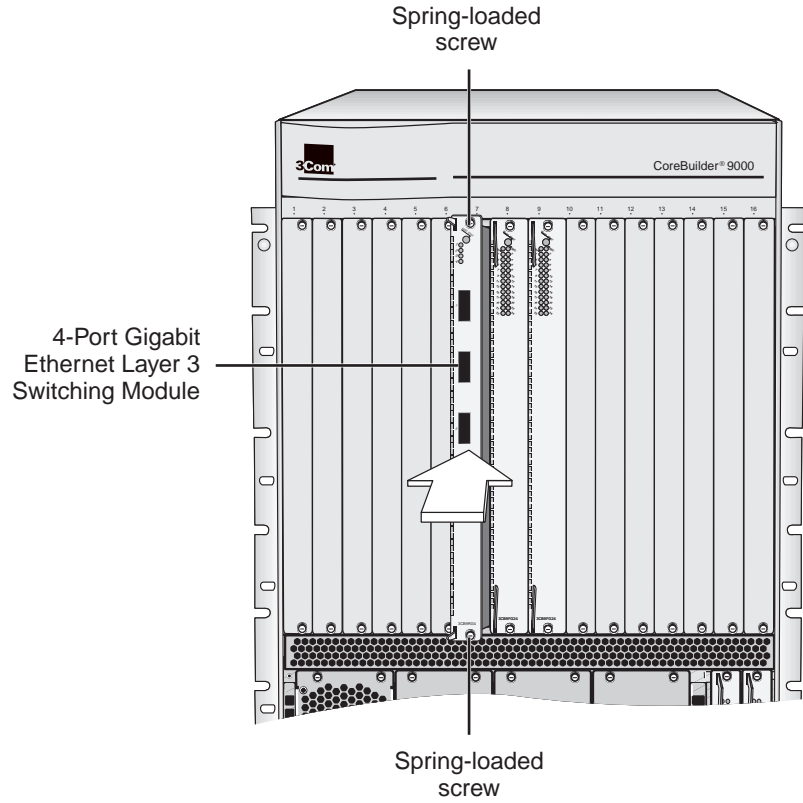


Figure 4 illustrates installation in a 16-slot chassis.

Figure 4 Installing a 4-port Gigabit Ethernet Layer 3 Switching Module (GBIC) into a 16-slot Chassis



Verifying Module Operation

After you install the 4-port Gigabit Ethernet Layer 3 Switching Module (GBIC), you must wait for the module to complete a successful initialization process before you can proceed to configure it according to the needs of your network. This initialization process includes power on verification tests, diagnostic self-tests, and a software boot cycle.

Front Panel LEDs

The front panel of the 4-port Gigabit Ethernet Layer 3 Switching Module (GBIC) contains one Module Status LED and four Port Status LEDs that flash and change color during the module initialization process and provide status information thereafter.



Port numbers 5 – 8 on the rear of the module do not have Port Status LEDs on the front panel. After the module initialization process is complete and the module is ready to manage, you can use the portState field in the ethernet detail display to determine the status of these ports.

Initial Activity

Whether you power on the chassis after you install the 4-port Gigabit Ethernet Layer 3 Switching Module (GBIC) or whether you hot insert or hot swap the module, the EME controls what happens next. The EME reads the module inventory data that is stored on the module and determines whether the chassis has sufficient power available to support the module. The Module LED and Port Status LEDs remain off during this short evaluation period (approximately 3 seconds).

If the EME does not enable power to the slot, the module initialization process does not begin. All LEDs remain off until the available power increases or the power configuration changes.

Module Initialization Process

After the EME enables power to the slot, the module initialization process begins and lasts up to 4 minutes. The following activities occur:

- The Module Status LED flashes on (using colors yellow and green) and off throughout the entire initialization process, although periods in the off state may last up to 25 seconds.
- The Port Status LEDs flash on (using colors yellow and green) and off, but they finish their sequence earlier than the Module Status LED and they remain off until you connect cabling and establish links.
- Toward the end of the module initialization process, the corresponding LED on the GEN Switch Fabric Module (which is listed in Table 1, Table 2, Table 3, Table 4, and Table 5 earlier in this guide) lights green. The module initialization process completes a few seconds later.

Successful Initialization

If no problems exist at the completion of the module initialization process, you see the following indicators:

- The Module Status LED lights green.
- The module's Port Status LEDs remain off until you attach cabling and establish links.
- The corresponding Port Status LED on the GEN Switch Fabric Module flashes green.

After you attach cabling and establish links, the module is ready to configure. See "Managing the Module" later in this guide.

Troubleshooting

LEDs can help you verify the state of the 4-port Gigabit Ethernet Layer 3 Switching Module (GBIC) or its ports. See Table 6.

Table 6 Module and Port Status LED Indicators

LED	State and Color	Description
Module Status	Green	Power is on (normal operation).
	Off	The module is not receiving power, or the module is inoperative in some way. (During initialization, the LED may be off for several seconds at a time. This is normal and does not indicate a lack of power.)
	Flashing Green	Diagnostic test, software boot, or software download is in progress. If this LED flashes beyond approximately 7 minutes during the initialization period, the diagnostic tests may be running in error.
	Yellow	Diagnostic test failure.
Port Status	Green	Port is enabled and link is up.
	Flashing Green	Port is receiving or transmitting packets.
	Yellow	Port is set to disabled.
	Off	Cable is not connected or link is down.

GBIC Transceiver Installation

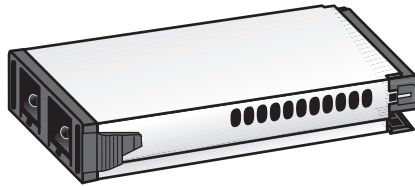
This section describes how to install Gigabit Interface Converter (GBIC) transceivers in the front panel ports of the 4-port Gigabit Ethernet Layer 3 Switching Module (GBIC).



Do not install GBICs until after the 4-port Gigabit Ethernet Layer 3 Switching Module (GBIC) is installed and has powered on successfully. (See “Verifying Module Operation” in the previous section.)

The GBIC ports on your system connect to Gigabit Ethernet networks through a GBIC transceiver (Figure 5), which provides a high-speed connection over fiber-optic cable. The transceiver connects to the network using a duplex subscriber connector (SC) fiber-optic connector. You can remove and replace the transceiver while the system is on.

Figure 5 Example of a GBIC Fiber-optic Transceiver



To ensure optimal performance, compatibility, and regulatory compliance, use only GBIC transceivers that 3Com supports. For a list of currently supported GBICs, see this 3Com Web site:

http://www.3com.com/gigabit_ethernet/gbics

GBIC SX Transceivers

The 1000BASE-SX transceiver supports a direct connection to 62.5-micron or 50-micron multimode fiber-optic cable.

Table 7 lists the transmission ranges for each GBIC SX connection.

Table 7 GBIC SX Transmission Ranges

Fiber Type	Diameter (microns)	Modal Bandwidth (MHz*km)	Transmission Range in meters (feet)
Multimode	62.5	160	2 – 220 (6.6 – 721.8)
Multimode	62.5	200	2 – 275 (6.6 – 902.3)
Multimode	50	400	2 – 500 (6.6 – 1640.5)
Multimode	50	500	2 – 550 (6.6 – 1804.6)

GBIC LX Transceivers

The 1000BASE-LX transceiver supports these connections:

- Direct connection to single-mode fiber-optic cable
- Connection to multimode fiber through a conditioned launch cable



To ensure optimal performance, compatibility, and regulatory compliance, use only conditioned launch cables that 3Com supports. For a list of currently supported conditioned launch cables, see this 3Com Web site:

http://www.3com.com/gigabit_ethernet/gbics

Table 8 lists the transmission ranges for each GBIC LX connection.

Table 8 GBIC LX Transmission Ranges

Fiber Type	Diameter (microns)	Modal Bandwidth (MHz*km)	Transmission Range in meters (feet)
Multimode	62.5	500	2 – 550 (6.6 – 1804.6)
Multimode	50	400	2 – 550 (6.6 – 1804.6)
Multimode	50	500	2 – 550 (6.6 – 1804.6)
Single-mode	9	–	2 – 10,000 (6.6 – 32,810)

Safety Precautions

Be sure to follow all safety precautions when you replace a 1000BASE GBIC transceiver in the module. To avoid electric shocks and burns to yourself and damage to the equipment, read and follow this warning:



WARNING: *When the system is on, never insert a metal object such as a screwdriver or a finger with jewelry into open GBIC slots.*

Fiber Safety Precautions

The GBIC ports on your system use lasers. To ensure your safety when you install or work with these GBIC systems, read and comply with the precautions in this section.



WARNING: *The fiber-optic lasers that are used in 3Com GBIC ports meet the regulatory requirements for casual exposure to the eye. As with any source of bright light, however, 3Com recommends that you do not look into the laser light source.*

CLASS 1
LASER PRODUCT

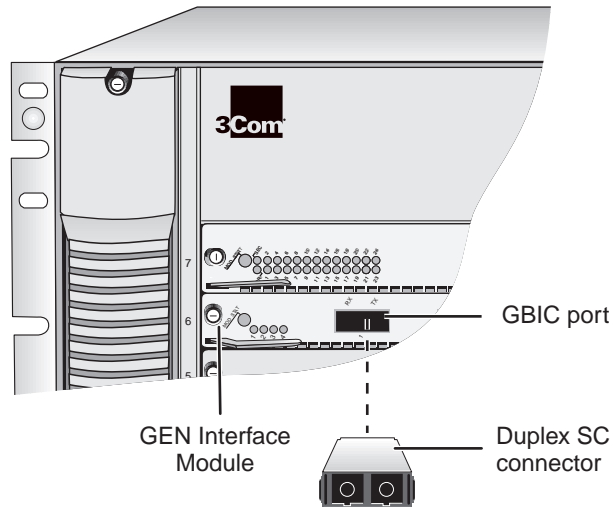
IEC 825, Class 1 Laser Devices are for connection only to Class 1 Laser Devices. Multimode and single-mode fiber-optic interfaces use lasers.

Inserting the Transceiver

Before you connect the system to the Gigabit Ethernet network, first insert the transceiver into the GBIC port on the module:

- 1 Orient the transceiver so that the SC connector is toward you (Figure 6).

Figure 6 Inserting the GBIC Transceiver



- 2 Compress the side tabs and gently slide the transceiver into the GBIC port until it clicks into place.



CAUTION: The transceiver is keyed so that you can only install it one way. If you insert the transceiver and it does not slide in all the way, do not try to force it into place. Remove the transceiver, turn it over, and then reinsert it into the module.

Removing the Transceiver

If you need to replace a GBIC transceiver, remove the old one by compressing the side tabs and gently pull the transceiver out of the port.

GBIC Troubleshooting

After you insert the GBIC transceiver into the port, the system software verifies whether the transceiver is working properly.



To ensure optimal performance, compatibility, and regulatory compliance, use only GBIC transceivers that 3Com supports. For a list of currently supported GBICs, see this 3Com Web site:

http://www.3com.com/gigabit_ethernet/gbics

If the transceiver is not working properly, one of the following error messages is displayed on the EME Console:

Unqualified GBIC Error

If the system detects that there is an unqualified GBIC installed or there is a problem with the integrity of the GBIC, it sets the port type to `Unqualified GBIC`, displays a short description at the EME Console (`Unqual.GBIC`), and captures the error in the event log:

```
WARNING: The GBIC in Port XX is NOT approved by 3Com & may
violate electromagnetic emission or safety requirements for
your country. Refer to 3Com's web page
(www.3com.com/gigabit_ethernet/gbics) for our current
approval list.
```

The following informational messages are shown in the event log:

■ `Unqualified GBIC: I2C read error`

A transceiver that is not properly connected to the module can cause this problem. The transceiver connects to the module host board through a 20-pin connector. If the transceiver is not seated properly, a clean connection cannot be established.

Corrective Action

To correct this problem, completely remove the transceiver and then reinsert it. If the problem persists, contact 3Com Technical Support. For contact information, see the Technical Support appendix in the *CoreBuilder 9000 Enterprise Switch Getting Started Guide*.

■ `Unqualified GBIC: Checksum match error`

The system also uses checksum error detection to verify the integrity of the GBIC data that it reads. If the system detects a problem with the data, the EME Console displays an error message that indicates a checksum failure.

Corrective Action Although this condition does not necessarily indicate that the GBIC transceiver will not function in the system, replace the transceiver to ensure proper operation.

- Unqualified GBIC: MODDEF Value - xx
- Unqualified GBIC: Transceiver byte(s) error

The value (xx) of this GBIC type is not a Module Definition 4 GBIC (Serial Identification) as defined by the Gigabit Interface Converter specification.

Corrective Action Replace this transceiver with a 3Com qualified GBIC.

GBIC Disable Error

If the system detects that the transceiver cannot emit the proper laser signal, it sets the port type to `disabled`, displays a short description at the EME console (`GBIC Disabled`), and captures the error in the event log.

The following informational message is shown in the event log:

```
Due to excessive TxFault conditions, GBIC Port xx has been disabled.
```

Excessive Tx Fault conditions indicate a faulty GBIC.

Corrective Action Replace the transceiver with another one. If the problem persists, contact 3Com Technical Support. For contact information, see the Technical Support appendix in the *CoreBuilder 9000 Enterprise Switch Getting Started Guide*.

Unapproved GBIC Error

Supported transceivers are those that 3Com has specifically tested and qualified for use with 3Com GBIC systems. Pretesting at 3Com ensures proper functionality and compatibility with the system.

If the system detects a transceiver that 3Com does not support, it sets the port type to `Unqualified GBIC`, displays a short description at the EME console (`Unappr.GBIC`), and captures the error in the event log.

```
WARNING: The GBIC in Port XX is NOT approved by 3Com & may violate electromagnetic emission or safety requirements for your country. Refer to 3Com's web page (www.3com.com/gigabit_ethernet/gbics) for our current approval list.
```

The following informational message is shown in the event log:

```
Unqualified GBIC: Unqualified vendor part number
```

Although this report does not necessarily indicate that the GBIC transceiver will not function properly with the system, it does indicate that 3Com has not qualified the transceiver and does not support it.

Corrective Action Contact 3Com Technical Support. For contact information, see the Technical Support appendix in the *CoreBuilder 9000 Enterprise Switch Getting Started Guide*.

Managing the Module

You can manage the 4-port Gigabit Ethernet Layer 3 Switching Module (GBIC) using several methods:

- Administration Console
- Web Management suite of applications
- External SNMP-based network management applications such as 3Com's Transcend® Network Control Services

The Administration Console and most of Web Management are embedded parts of the software and are available for immediate use to manage your module.

Administration Console Management

The Administration Console is a menu-driven, VT100 command line interface. To access the module's Administration Console, you must first log in to the primary EME. Follow these steps:

- 1 Log in to the EME via Telnet or a local connection.

For information about logging in to the EME, see the *CoreBuilder 9000 Enterprise Management Engine User Guide*.

- 2 At the EME prompt, enter:

```
connect <slot>.1
```

Where <slot> is the slot number of the module that you want to manage, and the number after the period is a subslot number (which is always 1).

This command brings you to the top-level menu and a prompt. The prompt shows the slot to which you are connected as well as an abbreviated description of the module. For example, if you install your 4-port Gigabit Ethernet Layer 3 Switching Module (GBIC) in slot 4, then the prompt is:

```
CB9000@slot4.1 [4-GEN-GBIC-L3] ( ):
```

- 3 Enter commands to manage the module.

For example, to display a summary configuration of bridge ports, enter:

```
bridge port summary
```

For more information about Administration Console commands, see the *Command Reference Guide*.

Web Management Access

Web Management applications are an embedded part of the CoreBuilder 9000 system software image. They include WebConsole, DeviceView, and Performance Monitoring tools. Also available is a Help system. After you have set up the IP address for the CoreBuilder 9000 system, you can access the Web Management applications directly by entering its IP address in your Web browser.

See the *Web Management User Guide for the CoreBuilder 9000 Enterprise Switch* for additional information about Web Management.

Module Specifications

The following tables list the specifications for the 4-port Gigabit Ethernet Layer 3 Switching Module (GBIC):

Environmental Requirements

Operating temperature	0 to 50 °C (32 to 122 °F)
Operating humidity	10% to 90% relative humidity, noncondensing
Storage temperature	-40 to 66 °C (-40 to 151 °F)
Storage humidity	5% to 95% relative humidity, noncondensing

Physical Specifications

Dimensions

25.4 mm x 340.36 mm x 388.112 mm
(1 in. x 13.4 in. x 15.28 in.)

Weight

1.27 kg
(2.8 lb)

Power Specifications

Voltage	Wattage
+5.2 V	10 W
+3.5 V	80 W
+12 V	3 W

Total Wattage = 93

Regulatory Compliance

Safety

- CSA 22.2 No. 950
- EN60950
- IEC950
- UL1950

Emissions

- FCC 47 CFR Part 15 Class A
- ICES003 Class A
- VCCI Class A
- EN55022 Class A
- EN50082-1
- AS3548
- CISPR 22 Class A

Related CoreBuilder 9000 Documents

For detailed information about using and managing your 4-port Gigabit Ethernet Layer 3 Switching Module (GBIC), see the following documents:

- *CoreBuilder 9000 Implementation Guide*
- *Command Reference Guide*
- *CoreBuilder 9000 Enterprise Management Engine User Guide*
- *Web Management User Guide for the CoreBuilder 9000 Enterprise Switch*

To obtain the software code installation procedure as well as known problem information for your 4-port Gigabit Ethernet Layer 3 Switching Module (GBIC), see the *CoreBuilder 9000 Release Notes for Layer 3 Switching Modules* that are included in the module shipping box.

For information about installing and powering on the system, see the following documents:

- *CoreBuilder 9000 Enterprise Switch Getting Started Guide*
- *CoreBuilder 9000 Release Notes for Layer 3 Switching Modules*
- *7-slot Chassis Quick Installation Guide for the CoreBuilder 9000 Enterprise Switch*
- *Quick Installation Guide for the CoreBuilder 9000 Enterprise Switch 8-slot Chassis and 16-slot Chassis*
- *7-slot Chassis Power Supply Installation Guide for the CoreBuilder 9000 Enterprise Switch*
- *Power Supply Installation Guide for the CoreBuilder 9000 Enterprise Switch 8-slot Chassis and 16-slot Chassis*

You can view and print these and other CoreBuilder 9000 documents from the:

- 3Com Web site — Enter the following URL:
<http://support.3com.com/nav/switches.htm>
- *CoreBuilder 9000 Documentation CD-ROM*

The Documentation CD-ROM is included in each chassis shipping box. You can also order the CD separately using order number 3CB9DB.

3Com Corporation LIMITED WARRANTY

4-Port Gigabit Ethernet Layer 3 Switching Module (GBIC) (Model Number 3CB9RG4) for the CoreBuilder® 9000 Enterprise Switch

HARDWARE

3Com warrants to the end user ("Customer") that this hardware product will be free from defects in workmanship and materials, under normal use and service, for one (1) year from the date of purchase from 3Com or its authorized reseller.

3Com's sole obligation under this express warranty shall be, at 3Com's option and expense, to repair the defective product or part, deliver to Customer an equivalent product or part to replace the defective item, or if neither of the two foregoing options is reasonably available, 3Com may, in its sole discretion, refund to Customer the purchase price paid for the defective product. All products that are replaced will become the property of 3Com. Replacement products may be new or reconditioned. 3Com warrants any replaced or repaired product or part for ninety (90) days from shipment, or the remainder of the initial warranty period, whichever is longer.

SOFTWARE

3Com warrants to Customer that each software program licensed from it will perform in substantial conformance to its program specifications, for a period of ninety (90) days from the date of purchase from 3Com or its authorized reseller. 3Com warrants the media containing software against failure during the warranty period. No updates are provided. 3Com's sole obligation under this express warranty shall be, at 3Com's option and expense, to refund the purchase price paid by Customer for any defective software product, or to replace any defective media with software which substantially conforms to applicable 3Com published specifications. Customer assumes responsibility for the selection of the appropriate applications program and associated reference materials. 3Com makes no warranty or representation that its software products will meet Customer's requirements or work in combination with any hardware or applications software products provided by third parties, that the operation of the software products will be uninterrupted or error free, or that all defects in the software products will be corrected. For any third-party products listed in the 3Com software product documentation or specifications as being compatible, 3Com will make reasonable efforts to provide compatibility, except where the noncompatibility is caused by a "bug" or defect in the third party's product or from use of the software product not in accordance with 3Com's published specifications or user manual.

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YEAR 2000 WARRANTY

In addition to the Hardware Warranty and Software Warranty stated above, 3Com warrants that each product sold or licensed to Customer on and after January 1, 1998, that is date sensitive will continue performing properly with regard to such date data on and after January 1, 2000, provided that all other products used by Customer in connection or combination with the 3Com product, including hardware, software, and firmware, accurately exchange date data with the 3Com product, with the exception of those products identified at 3Com's Web site, <http://www.3com.com/products/yr2000.html>, as not meeting this standard. If it appears that any product that is stated to meet this standard does not perform properly with regard to such date data on and after January 1, 2000, and Customer notifies 3Com before the later of April 1, 2000, or ninety (90) days after purchase of the product from 3Com or its authorized reseller, 3Com shall, at its option and expense, provide a software update which would effect the proper performance of such product, repair such product, deliver to Customer an equivalent product to replace such product, or, if none of the foregoing is feasible, refund to Customer the purchase price paid for such product.

Any software update or replaced or repaired product will carry a Year 2000 Warranty for ninety (90) days after purchase or until April 1, 2000, whichever is later.

OBTAINING WARRANTY SERVICE

Customer must contact a 3Com Corporate Service Center or an Authorized 3Com Service Center within the applicable warranty period to obtain warranty service authorization. Dated proof of purchase from 3Com or its authorized reseller may be required. Products returned to 3Com's Corporate Service Center must be preauthorized by 3Com with a Return Material Authorization (RMA) number or User Service Order (USO) number marked on the outside of the package, and sent prepaid and packaged appropriately for safe shipment, and it is recommended that they be insured or sent by a method that provides for tracking of the package. Responsibility for loss or damage does not transfer to 3Com until the returned item is received by 3Com. The repaired or replaced item will be shipped to Customer, at 3Com's expense, not later than thirty (30) days after 3Com receives the defective product.

3Com shall not be responsible for any software, firmware, information, or memory data of Customer contained in, stored on, or integrated with any products returned to 3Com for repair, whether under warranty or not.

Dead- or Defective-on-Arrival. In the event a product completely fails to function or exhibits a defect in materials or workmanship within the first forty-eight (48) hours of installation but no later than thirty (30) days after the date of purchase, and this is verified by 3Com, it will be considered dead- or defective-on-arrival (DOA) and a replacement shall be provided by advance replacement. The replacement product will normally be shipped not later than three (3) business days after 3Com's verification of the DOA product, but may be delayed due to export or import procedures. The shipment of advance replacement products is subject to local legal requirements and may not be available in all locations. When an advance replacement is provided and Customer fails to return the original product to 3Com within fifteen (15) days after shipment of the replacement, 3Com will charge Customer for the replacement product, at list price.

Advance Replacement is provided for ninety (90) days, after which time it may be available for a specified fee. 3Com will make commercially reasonable efforts to ship the replacement product not later than five (5) business days after receiving the request for advance replacement, but may be delayed due to product availability or export or import procedures. The shipment of advance replacement products is subject to local legal requirements and may not be available in all locations. When an advance replacement is provided and Customer fails to return the original product to 3Com within fifteen (15) days after shipment of the replacement, 3Com will charge Customer for the replacement, at list price. This advance replacement is different from the fee-based Advance Hardware Replacement Service, which is available as a contracted service offering.

INCLUDED SERVICES:

Telephone Support, with coverage for basic troubleshooting only, will be provided for ninety (90) days from the date of purchase, on a commercially reasonable efforts basis. Please refer to the Technical Support appendix in the Getting Started Guide for telephone numbers.

3Com's Web and Bulletin Board Services provide 3Knowledgebase, bug tracking, documentation, release notes, and some software maintenance releases at no charge.

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This Limited Warranty shall be governed by the laws of the State of California, U.S.A., excluding its conflicts of laws principles and excluding the United Nations Convention on Contracts for the International Sale of Goods.

3Com Corporation, 5400 Bayfront Plaza, P.O. Box 58145, Santa Clara, CA 95052-8145 (408) 326-5000

EMISSIONS COMPLIANCE STATEMENTS FOR CLASS A PRODUCTS

- Federal Communications Commission Notice This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his or her own expense.
- Canadian Emissions Requirements This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations. Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.
- VCCI Class A Compliance

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

EMC DIRECTIVE STATEMENT

- EMC Directive Compliance This equipment was tested and found to conform to the Council Directive 89/336/EEC for electromagnetic compatibility. Conformity with this Directive is based upon compliance with the following harmonized standards:
- | | |
|------------|---|
| EN 55022 | Limits and Methods of Measurement of Radio Interference |
| EN 50082-1 | Electromagnetic Compatibility Generic Immunity Standard:
Residential, Commercial, and Light Industry |

Warning: This is a Class A product. In a domestic environment, this product may cause radio interference, in which case you may be required to take adequate measures.

LOW VOLTAGE DIRECTIVE STATEMENT

- Low Voltage Directive Compliance This equipment was tested and found to conform to the Council Directive 72/23/EEC for safety of electrical equipment. Conformity with this Directive is based upon compliance with the following harmonized standard:
- | | |
|----------|--|
| EN 60950 | Safety of Information Technology Equipment |
|----------|--|

GENERAL APPROVAL STATEMENT FOR UK

- UK General Approval Statement This equipment is manufactured to the international Safety Standard EN60950 and is approved in the UK under the General Approval Number NS/G/12345/J/100003 for indirect connection to the public telecommunication network.

AUSTRALIAN EMC FRAMEWORKS STATEMENT

- Australian EMC Frameworks Compliance This product conforms to the EMC Frameworks and meets the Class A limits of AS3548.

3Com Corporation
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Santa Clara, California
95052-8145

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