



CHAPTER 5

Configuring the PA-GE

To continue your PA-GE port adapter installation, you must configure the Gigabit Ethernet (GE) interface. The following instructions apply to all supported platforms. Minor differences among the platforms—with Cisco IOS software commands—are noted.

This chapter contains the following sections:

- [Using the EXEC Command Interpreter, page 5-1](#)
- [Configuring the Interface, page 5-2](#)
- [Checking the Configuration, page 5-4](#)

Using the EXEC Command Interpreter

You modify the configuration of your router through the software command interpreter called the EXEC (also called enable mode). You must enter the privileged level of the EXEC command interpreter with the **enable** command before you can use the **configure** command to configure a new interface or change the existing configuration of an interface. The system prompts you for a password if one has been set.

The system prompt for the privileged level ends with a pound sign (#) instead of an angle bracket (>). At the console terminal, use the following procedure to enter the privileged level:

-
- Step 1** At the user-level EXEC prompt, enter the **enable** command. The EXEC prompts you for a privileged-level password as follows:

```
Router> enable
```

```
Password:
```

- Step 2** Enter the password (the password is case sensitive). For security purposes, the password is not displayed. When you enter the correct password, the system displays the privileged-level system prompt (#):

```
Router#
```

To configure the new interfaces, proceed to the [“Configuring the Interface” section on page 5-2](#).

Configuring the Interface

After you verify that the new PA-GE is installed correctly (the enabled LED goes on), use the privileged-level **configure** command to configure the new interface. Have the following information available:

- Protocols you plan to route on each new interface
- IP addresses, if you plan to configure the interfaces for IP routing
- Bridging protocols you plan to use

If you installed a new PA-GE or if you want to change the configuration of an existing interface, you must enter configuration mode to configure the new interfaces. If you replaced a PA-GE that was previously configured, the system recognizes the new interface and brings it up in its existing configuration.

For a summary of the configuration options available and instructions for configuring the interface on a PA-GE, refer to the appropriate configuration publications listed in the [“Related Documentation” section on page viii](#).

You execute configuration commands from the privileged level of the EXEC command interpreter, which usually requires password access. Contact your system administrator, if necessary, to obtain password access. (See the [“Using the EXEC Command Interpreter” section on page 5-1](#) for an explanation of the privileged level of the EXEC.)

Performing a Basic Interface Configuration

Following are instructions for a basic configuration, which include enabling an interface and specifying IP routing. You might also need to enter other configuration subcommands, depending on the requirements for your system configuration and the protocols you plan to route on the interface. For complete descriptions of configuration subcommands and the configuration options available for Ethernet interfaces, refer to the appropriate software documentation.

In the following procedure, press the **Return** key after each step unless otherwise noted. At any time you can exit the privileged level and return to the user level by entering **disable** at the prompt as follows:

```
Router# disable
```

```
Router>
```

-
- Step 1** Enter configuration mode and specify that the console terminal is the source of the configuration subcommands as follows:

```
Router# configure terminal  
Enter configuration commands, one per line. End with CNTL/Z.  
Router(config)#
```

- Step 2** Specify the first interface to configure by entering the **interface gigabitethernet** subcommand followed by the interface address of the interface you plan to configure.

Table 5-1 provides examples of the **interface gigabitethernet** subcommand for the supported platforms.

Table 5-1 Examples of the interface gigabitethernet Subcommand for the Supported Platforms

Platform	Command	Example
Cisco 7120 series routers	interface gigabitethernet , followed by the <i>slot/port</i> (port-adapter-slot-number/interface-port-number)	The example is for interface 0 on a port adapter in port adapter slot 3. Router(config)# interface gigabitethernet 3/0 Router(config-if)#
Cisco 7140 series routers	interface gigabitethernet , followed by the <i>slot/port</i> (port-adapter-slot-number/interface-port-number)	The example is for interface 0 on a port adapter in port adapter slot 4. Router(config)# interface gigabitethernet 4/0 Router(config-if)#
Cisco 7200 VXR routers	interface gigabitethernet , followed by <i>slot/port</i> (port-adapter-slot-number/interface-port-number)	The example is for interface 0 of a port adapter in port adapter slot 6. Router(config)# interface gigabitethernet 6/0 Router(config-if)#
Cisco 7201 router	interface , followed by the <i>type</i> (serial) and <i>slot/port</i> (port-adapter-slot-number/interface-port-number)	The example is for interface 0 and interface 1 on a port adapter in slot 1. Router(config)# interface serial 1/0 Router(config-if)# shutdown Router(config-if)# interface serial 1/1 Router(config-if)# shutdown Ctrl-Z Router#
Cisco uBR7246 VXR router	interface gigabitethernet , followed by <i>slot/port</i> (port-adapter-slot-number/interface-port-number)	The example is for interface 0 of a port adapter in port adapter slot 2. Router(config)# interface gigabitethernet 2/0 Router(config-if)#
Cisco 7304 PCI Port Adapter Carrier Card in a Cisco 7304 router	interface gigabitethernet , followed by <i>slot/port</i> (module-slot-number/interface-port-number)	The example is for interface 0 on a port adapter in a Cisco 7304 PCI Port Adapter Carrier Card in module slot 3 of a Cisco 7304 router. Router(config)# interface gigabitethernet 3/0 Router(config-if)#

Step 3 If IP routing is enabled on the system, you can assign an IP address and subnet mask to the interface with the **ip address** configuration subcommand, as in the following example:

```
Router(config-if)# ip address 10.1.1.10 255.255.255.255
```

Step 4 Add any additional configuration subcommands required to enable routing protocols and set the interface characteristics for your configuration requirements.



Note Full-duplex operation is the default for the PA-GE. Half-duplex operation is not supported.

Step 5 Re-enable the interfaces using the **no shutdown** command.

Step 6 After including all the configuration subcommands to complete your configuration, press **Ctrl-Z**—hold down the **Control** key while you press **Z**—or enter **end** or **exit** to exit configuration mode.

Step 7 Write the new configuration to NVRAM as follows:

```
Router# copy running-config startup-config
[OK]
Router#
```

This completes the procedure for creating a basic configuration.

Checking the Configuration

After configuring the new interface, use the **show** commands to display the status of the new interface or all interfaces and use the **ping** commands to check connectivity. This section includes the following subsections:

- [Using show Commands to Verify the New Interface Status, page 5-4](#)
- [Using the ping Command to Verify Network Connectivity, page 5-12](#)

Using show Commands to Verify the New Interface Status

[Table 5-2](#) demonstrates how you can use the **show** commands to verify that new interfaces are configured and operating correctly and that the PA-GE appears in them correctly. Sample displays of the output of selected **show** commands appear in the sections that follow. For complete command descriptions and examples, refer to the publications listed in the “[Related Documentation](#)” section on page viii.

Table 5-2 Using show Commands

Command	Function	Example
show version or show hardware	Displays system hardware configuration, the number of each interface type installed, Cisco IOS software version, names and sources of configuration files, and boot images	Router# show version
show controllers	Displays all the interface processors and their interfaces	Router# show controllers
show diag slot	Displays types of port adapters installed in your system and information about a specific port adapter slot	Router# show diag 2
show interfaces type 3/interface-port-number	Displays status information about a specific type of interface (for example, Gigabit Ethernet) in a Cisco 7120 series router	Router# show interfaces gigabitethernet 3/1

Table 5-2 Using show Commands (continued)

Command	Function	Example
show interfaces <i>type 4/interface-port-number</i>	Displays status information about a specific type of interface (for example, Gigabit Ethernet) in a Cisco 7140 series router	Router# show interfaces gigabitethernet 4/1
show interfaces <i>type port-adapter-slot-number/interface-port-number</i>	Displays status information about a specific type of interface (for example, Gigabit Ethernet) in a Cisco 7200 VXR router	Router# show interfaces gigabitethernet 1/0
show interfaces serial , followed by <i>slot/port</i> (port-adapter-slot-number/interface-port-number)	Displays status information about a specific type of interface (for example, Gigabit Ethernet) in a Cisco 7201 router	Router# show interfaces gigabitethernet 1/0
show interfaces <i>type 1 or 2/interface-port-number</i>	Displays status information about a specific type of interface (for example, Gigabit Ethernet) in a Cisco uBR7246 VXR router	Router# show interfaces gigabitethernet 2/0
show interfaces <i>type 2 or 3 or 4 or 5/interface-port-number</i>	Displays status information about a specific type of interface (for example, Gigabit Ethernet) on a Cisco 7304 PCI Port Adapter Carrier Card in a Cisco 7304 router	Router# show interfaces gigabitethernet 3/0
show protocols	Displays protocols configured for the entire system and for specific interfaces	Router# show protocols
show running-config	Displays the running configuration file	Router# show running-config
show startup-config	Displays the configuration stored in NVRAM	Router# show startup-config

If an interface is shut down and you configured it as up, or if the displays indicate that the hardware is not functioning properly, ensure that the interface is properly connected and terminated. If you still have problems bringing up the interface, contact a service representative for assistance. This section includes the following subsections:

- [Using the show version or show hardware Commands, page 5-6](#)
- [Using the show diag Command, page 5-8](#)
- [Using the show interfaces Command, page 5-10](#)

Choose the subsection appropriate for your system. Proceed to the [“Using the ping Command to Verify Network Connectivity”](#) section on page 5-12 when you have finished using the **show** commands.

Using the show version or show hardware Commands

Display the configuration of the system hardware, the number of each interface type installed, the Cisco IOS software version, the names and sources of configuration files, and the boot images, using the **show version** (or **show hardware**) command.



Note

The outputs that appear in this document may not match the output you receive when running these commands. The outputs in this document are examples only.

The following sections provide platform-specific output examples using the **show version** command:

- [Cisco 7100 Series Routers—Example Output of the show version Command, page 5-6](#)
- [Cisco 7200 VXR Routers—Example Output of the show version Command, page 5-7\](#)
- [Cisco 7201 Router—Example Output of the show version Command, page 5-7](#)

Cisco 7100 Series Routers—Example Output of the show version Command

Following is an example of the **show version** command from a Cisco 7140 series router with a PA-GE installed:

```
Router# show version
Cisco Internetwork Operating System Software
IOS (tm) EGR Software (C7100-JS56I-M),Version 12.1(4)E,
TAC:Home:SW:IOS:Specials for info
Copyright (c) 1986-1999 by cisco Systems, Inc.
Compiled Thu 10-Jun-99 15:32 by linda
Image text-base:0x60008900, data-base:0x60D8E000

ROM:System Bootstrap, Version 12.0(19991025:205336) [tkam-v120_5_xe_throttle_p23411 104],
BOOTFLASH:EGR Software (C7100-BOOT-M), Version 12.0(5)XE2, EARLY DEPLOYMENT RELEASE
SOFTWARE (fc1)

Router uptime is 24 minutes
System restarted by power-on
System image file is "disk0:c7100-is-mz.121-4.E"

cisco 7140-2MM3 (EGR) processor (revision A) with 253952K/73728K bytes of memory.
Processor board ID 15054452
R7000 CPU at 262Mhz, Implementation 39, Rev 1.0, 256KB L2, 2048KB L3 Cache
Last reset from power-on
Bridging software.
X.25 software, Version 3.0.0.
SuperLAT software (copyright 1990 by Meridian Technology Corp).
TN3270 Emulation software.
 2 FastEthernet/IEEE 802.3 interface(s)
 1 Gigabit Ethernet/IEEE 802.3 interface(s)
 2 ATM network interface(s)
125K bytes of non-volatile configuration memory.
40960K bytes of ATA PCMCIA card at slot 1 (Sector size 512 bytes).
8192K bytes of Flash internal SIMM (Sector size 256K).
Configuration register is 0x0
```

Cisco 7200 VXR Routers—Example Output of the show version Command

Following is an example of the **show version** command from a Cisco 7206VXR router:

```
Router# show version
X-UIDL:c2d95baa1be7793e276d7dd3cb13959a

Cisco Internetwork Operating System Software
IOS (tm) 7200 Software (C7200-JS-M), Released Version 12.0(6)XE [biff]
Copyright (c) 1986-1999 by cisco Systems, Inc.
Compiled Mon 10-May-99 06:02 by biff
Image text-base:0x60008900, data-base:0x614B2000

ROM:System Bootstrap, Version 12.0(19990210:195103) [12.0XE 105]

Router uptime is 38 minutes
System returned to ROM by reload
System image file is "slot0:c7200-js-mz"

cisco 7206VXR (NPE300) processor with 122880K/40960K bytes of memory.
R7000 CPU at 262Mhz, Implementation 39, Rev 1.0, 256KB L2, 2048KB L3 Cache
6 slot VXR midplane, Version 2.0

Last reset from power-on
Bridging software.
X.25 software, Version 3.0.0.
SuperLAT software (copyright 1990 by Meridian Technology Corp).
TN3270 Emulation software.
Primary Rate ISDN software, Version 1.1.

(Additional displayed text omitted from this example)

1 Gigabit Ethernet/IEEE 802.3 interface(s)

(Additional displayed text omitted from this example)

125K bytes of non-volatile configuration memory.

20480K bytes of Flash PCMCIA card at slot 0 (Sector size 128K).
4096K bytes of Flash internal SIMM (Sector size 256K).
```



Note

The example above is specific to a Cisco 7206VXR router. Actual display information for your Cisco uBR7246 VXR router might be different.

Cisco 7201 Router—Example Output of the show version Command

Following is an example of the **show version** command from a Cisco 7201 router:

```
Router# show version
Cisco IOS Software, 7200 Software (C7200P-ADVENTERPRISEK9-M), Version
12.4(biffDEV.061001), INTERIM SOFTWARE Copyright (c) 1986-2006 by Cisco Systems, Inc.
Compiled Sun 01-Oct-06 23:42 by biff
ROM: System Bootstrap, Version 12.4(4r)XD5, RELEASE SOFTWARE (fc1)
BOOTLDR: Cisco IOS Software, 7200 Software (C7200P-KBOOT-M), Version 12.4(TAZ3DEV.060927),
INTERIM SOFTWARE
c7201alpha1 uptime is 5 days, 18 hours, 32 minutes System returned to ROM by power-on
System image file is "disk0:c7200p-adventerprisek9-mz.2006-10-01.biffdev"
This product contains cryptographic features and is subject to United States and local
country laws governing import, export, transfer and use. Delivery of Cisco cryptographic
products does not imply third-party authority to import, export, distribute or use
encryption.
```

Importers, exporters, distributors and users are responsible for compliance with U.S. and local country laws. By using this product you agree to comply with applicable laws and regulations. If you are unable to comply with U.S. and local laws, return this product immediately.

A summary of U.S. laws governing Cisco cryptographic products may be found at:

<http://www.cisco.com/wwl/export/crypto/tool/stqrg.html>

If you require further assistance please contact us by sending email to export@cisco.com.

Cisco 7201 (c7201) processor (revision A) with 917504K/65536K bytes of memory.

Processor board ID 222222222222

MPC7448 CPU at 1666Mhz, Implementation 0, Rev 2.2

1 slot midplane, Version 2.255

Last reset from power-on

1 FastEthernet interface

4 Gigabit Ethernet interfaces

2045K bytes of NVRAM.

62443K bytes of USB Flash usbflash0 (Read/Write)

250880K bytes of ATA PCMCIA card at slot 0 (Sector size 512 bytes).

65536K bytes of Flash internal SIMM (Sector size 512K).

Configuration register is 0x2

Using the show diag Command

Display the types of port adapters installed in your system (and specific information about each) using the **show diag slot** command, where *slot* is the *port adapter slot* in a Cisco 7100 series router, Cisco 7201 router, Cisco 7200 VXR router, Cisco uBR7246 VXR router, or the *module slot* in a Cisco 7304 PCI Port Adapter Carrier Card in a Cisco 7304 router.



Note

The outputs that appear in this document may not match the output you receive when running these commands. The outputs in this document are examples only.

The following sections provide platform-specific output examples using the **show diag** command:

- [Cisco 7100 Series Routers—Example Output of the show diag Command, page 5-8](#)
- [Cisco 7200 VXR Routers—Example Output of the show diag Command, page 5-9](#)
- [Cisco 7201 Router—Example Output of the show diag Command, page 5-9](#)

Cisco 7100 Series Routers—Example Output of the show diag Command

Following is an example of the **show diag** command that shows a PA-GE in port adapter slot 4 of a Cisco 7140 series router:

```
Router# show diag 4
Slot 4:
Gigabit Ethernet Port adapter, 1 port
Port adapter is analyzed
Port adapter insertion time 00:08:44 ago
EEPROM contents at hardware discovery:
Hardware revision 1.0          Board revision A1
Serial number 19431171        Part number 73-3144-03
Test history 0x0              RMA number 00-00-00
```

```
EEPROM format version 1
EEPROM contents (hex):
0x20:01 98 01 00 01 28 7F 03 49 0C 48 03 00 00 00 00
0x30:51 02 73 00 00 00 00 00 01 FF FF FF FF FF FF
```

**Note**

To use the **show diag** command with the Cisco 7120 series router, replace the slot argument **4** with **3**.

Cisco 7200 VXR Routers—Example Output of the show diag Command

Following is an example of the **show diag** command for a PA-GE in port adapter slot 5 of a Cisco 7206VXR router:

```
Router# show diag 5
Slot 5:
Gigabit Ethernet port adapter, 1 port
Port adapter is analyzed
Port adapter insertion time 4d21h ago
EEPROM contents at hardware discovery:
Hardware revision 1.0          Board revision A0
Serial number 11624030        Part number 73-3144-03
Test history 0x0              RMA number 00-00-00
EEPROM format version 1
EEPROM contents (hex):
0x20:01 98 01 00 00 B1 5E 5E 49 0C 48 03 00 00 00 00
0x30:50 00 00 00 99 06 03 00 00 01 FF FF FF FF FF FF
Serial number:11623646 Part number:73-3144-03
```

**Note**

The example above is specific to a Cisco 7206VXR router. Actual display information for your Cisco uBR7246 VXR router might be different.

Cisco 7201 Router—Example Output of the show diag Command

Following is an example of the **show diag** command on a Cisco 7201 router:

```
Router# show diag 1
Slot 1:
Dual OC3 POS Port adapter, 2 ports
Port adapter is analyzed
Port adapter insertion time 00:02:19 ago
EEPROM contents at hardware discovery:
Hardware Revision : 1.0
PCB Serial Number : JAE07520DYL
Part Number : 73-8220-02
Board Revision : A0
RMA Test History : 00
RMA Number : 0-0-0-0
RMA History : 00
Deviation Number : 0
Product (FRU) Number : PA-POS-20C3
Top Assy. Part Number : 800-21857-02
EEPROM format version 4
EEPROM contents (hex):
0x00: 04 FF 40 03 E3 41 01 00 C1 8B 4A 41 45 30 37 35
0x10: 32 30 44 59 4C 82 49 20 1C 02 42 41 30 03 00 81
0x20: 00 00 00 00 04 00 88 00 00 00 00 CB 94 50 41 2D
0x30: 50 4F 53 2D 32 4F 43 33 20 20 20 20 20 20 20 20
0x40: 20 C0 46 03 20 00 55 61 02 FF FF FF FF FF FF FF
0x50: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
```

```

0x60: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
0x70: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF

```

Using the show interfaces Command

Display status information (including the physical slot and interface address) for the interfaces you specify using the **show interfaces** command.

For complete descriptions of interface subcommands and the configuration options available for the individual platforms, refer to the publications listed in the “[Related Documentation](#)” section on [page viii](#).



Note

The outputs that appear in this document may not match the output you receive when running these commands. The outputs in this document are examples only.

The following sections provide platform-specific output examples using the **show interfaces** command:

- [Cisco 7100 Series Routers—Example Output of the show interfaces Command, page 5-10](#)
- [Cisco 7200 VXR Routers—Example Output of the show interfaces Command, page 5-11](#)
- [Cisco 7201 Router—Example Output of the show interfaces Command, page 5-11](#)

Cisco 7100 Series Routers—Example Output of the show interfaces Command

Following is an example of the **show interfaces gigabitethernet** command that shows all of the information specific to the Gigabit Ethernet interface on a PA-GE installed in port adapter slot 4 of a Cisco 7140 router:

```

Router# show interfaces gigabitethernet 4/0
GigabitEthernet4/0 is up, line protocol is up
Hardware is WISEMAN, address is 00d0.9793.8070 (bia 00d0.9793.8070)
Internet address is 10.0.0.2/8
MTU 1500 bytes, BW 1000000 Kbit, DLY 10 usec,
reliability 255/255, txload 1/255, rxload 1/255
Encapsulation ARPA, loopback not set
Keepalive set (10 sec)
Full-duplex mode, link type is autonegotiation, media type is SX
output flow-control is on, input flow-control is on
ARP type:ARPA, ARP Timeout 04:00:00
Last input 00:00:01, output 00:00:05, output hang never
Last clearing of "show interface" counters never
Queueing strategy:fifo
Output queue 0/40, 0 drops; input queue 0/75, 0 drops
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
44 packets input, 4794 bytes, 0 no buffer
Received 12 broadcasts, 0 runts, 0 giants, 0 throttles
0 input errors, 0 CRC, 109 frame, 0 overrun, 0 ignored
0 watchdog, 1 multicast, 0 pause input
0 input packets with dribble condition detected

```

```

49 packets output, 6030 bytes, 0 underruns
0 output errors, 0 collisions, 1 interface resets
0 babbles, 0 late collision, 0 deferred
1 lost carrier, 0 no carrier, 0 pause output
0 output buffer failures, 0 output buffers swapped out

```

**Note**

To use the **show interfaces gigabitethernet** command with the Cisco 7120 series router, replace the interface address argument **4/0** with **3/0**.

Cisco 7200 VXR Routers—Example Output of the show interfaces Command

Following is an example of the **show interfaces gigabitethernet** command that shows all of the information specific to the Gigabit Ethernet interface on a PA-GE installed in port adapter slot 5 of a Cisco 7206VXR router:

```

Router# show interfaces gigabitethernet 5/0
GigabitEthernet5/0 is up, line protocol is up
  Hardware is (WISEMAN)Gigabit Ethernet, address is 00e0.14e4.6b8c (bia 00e0.14e4.6b8c)
  Internet address is 10.1.1.10/24
  MTU 1500 bytes, BW 1000000 Kbit, DLY 10 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set
  Keepalive set (10 sec)
  Full-duplex mode, link type is autonegotiation, media type is LX
  output flow-control is on, input flow-control is on
  ARP type:ARPA, ARP Timeout 04:00:00
  Last input 00:00:02, output 00:00:01, output hang never
  Last clearing of "show interface" counters never
  Queueing strategy:fifo
  Output queue 0/40, 0 drops; input queue 0/75, 0 drops
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
    18457 packets input, 1829178 bytes, 0 no buffer
    Received 257 broadcasts, 0 runts, 0 giants, 0 throttles
    0 input errors, 0 CRC, 7949 frame, 0 overrun, 0 ignored
    0 watchdog, 18084 multicast, 0 pause input
    230005 packets output, 245673899 bytes, 0 underruns
    0 babbles, 0 late collision, 674 deferred
    123 lost carrier, 0 no carrier, 0 pause output
    0 output buffer failures, 0 output buffers swapped out

```

**Note**

The example above is specific to a Cisco 7206VXR router. Actual display information for your Cisco uBR7246 VXR router might be different.

Cisco 7201 Router—Example Output of the show interfaces Command

Following is an example of the **show interfaces** command for the Cisco 7201 router:

```

Router# show interfaces

GigabitEthernet0/0 is up, line protocol is up
  Hardware is MV64460 Internal MAC, address is 0019.56c5.2adb (bia 0019.56c5.2adb)
  Internet address is 209.165.200.225
  MTU 1500 bytes, BW 1000000 Kbit, DLY 10 usec,
    reliability 255/255, txload 1/255, rxload 45/255
  Encapsulation ARPA, loopback not set
  Keepalive set (10 sec)
  Full-duplex, 1000Mb/s, media type is RJ45

```

```

output flow-control is XON, input flow-control is XON
ARP type: ARPA, ARP Timeout 04:00:00
Last input 00:07:03, output 00:00:07, output hang never
Last clearing of "show interface" counters 00:00:04
Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
Queueing strategy: fifo
Output queue: 0/40 (size/max)
5 minute input rate 180240000 bits/sec, 430965 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
  2222975 packets input, 133378500 bytes, 0 no buffer
    Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
    0 watchdog, 0 multicast, 0 pause input
    0 input packets with dribble condition detected
  0 packets output, 0 bytes, 0 underruns
    0 output errors, 0 collisions, 0 interface resets
    0 babbles, 0 late collision, 0 deferred
    0 lost carrier, 0 no carrier, 0 pause output
    0 output buffer failures, 0 output buffers swapped out

```

Using the ping Command to Verify Network Connectivity

The packet internet groper (**ping**) command allows you to verify that an interface port is functioning properly. This section provides a brief description of this command. Refer to the publications listed in the [“Related Documentation” section on page viii](#) for detailed command descriptions and examples.

The **ping** command sends echo request packets out to a remote device at an IP address that you specify. After sending an echo request, the system waits a specified time for the remote device to reply. Each echo reply is displayed as an exclamation point (!) on the console terminal; each request that is not returned before the specified timeout is displayed as a period (.). A series of exclamation points (!!!!!) indicates a good connection; a series of periods (.....) or the messages [timed out] or [failed] indicate a bad connection.

Following is an example of a successful **ping** command to a remote server with the address 10.0.0.10:

```

Router# ping 10.0.0.10 <Return>
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echoes to 10.0.0.10, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/15/64 ms
Router#

```

If the connection fails, verify that you have the correct IP address for the destination and that the device is active (powered on), and repeat the **ping** command.