CHAPTER 4

Configuring the PA-2FE

To continue your PA-2FE port adapter installation, you must configure the Fast Ethernet interfaces. The instructions that follow apply to all supported platforms. Minor differences between the platforms—with Cisco IOS software commands—are noted.

This chapter contains the following sections:

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 Interfaces" section on page 4-2.

Configuring the Interfaces

After you verify that the new PA-2FE is installed correctly (the ENABLED LED goes on), use the privileged-level **configure** command to configure the new interfaces. 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-2FE 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-2FE that was previously configured, the system recognizes the new interfaces and brings each of them up in their existing configurations.

You can configure each of the interfaces on a PA-2FE at:

- 100 Mbps, half duplex, for a maximum aggregate bandwidth of 200 Mbps per pair. Half-duplex operation is the default.
- 200 Mbps, full duplex, for a maximum aggregate bandwidth of 400 Mbps per pair.

You can also configure one PA-2FE interface at 100 Mbps, half duplex, and the second PA-2FE interface at 200 Mbps, full duplex, for a maximum aggregate bandwidth of 300 Mbps per pair.

For a summary of the configuration options available and instructions for configuring interfaces on a PA-2FE, 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 4-1 for an explanation of the privileged level of the EXEC.)

This section contains the following subsections:

Shutting Down an Interface

Before you remove an interface that you will not replace, or replace port adapters, use the **shutdown** command to shut down (disable) the interfaces to prevent anomalies when you reinstall the new or reconfigured port adapter. When you shut down an interface, it is designated *administratively down* in the **show** command displays.

Follow these steps to shut down an interface:

Step 1 Enter the privileged level of the EXEC command interpreter (also called enable mode). (See the "Using the EXEC Command Interpreter" section on page 4-1 for instructions.)

Step 2 At the privileged-level prompt, enter configuration mode and specify that the console terminal is the source of the configuration commands, as follows:

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

Step 3 Shut down interfaces by entering the **interface fastethernet** command (followed by the interface address of the interface), and then enter the **shutdown** command. Table 4-1 shows the command syntax for the **shutdown** command for the supported platforms.

When you have finished, press **Ctrl-Z**—hold down the **Control** key while you press **Z**—or enter **end** or **exit** to exit configuration mode and return to the EXEC command interpreter.

Table 4-1 Examples of the shutdown Command for the Supported Platforms

Platform	Command	Example

Cisco 7120 series routers	**interface**, followed by the *type* (**fastethernet**) and *slot/port* (port-adapter-slot-number/ interface-port-number)
	
	shutdown
		The example is for interface 0 and interface 1 on a PA-2FE in port adapter slot 3.
		`Router(config)# interface fastethernet 3/0`
		`Router(config-if)# shutdown`
		`Router(config-if)# interface fastethernet 3/1`
		`Router(config-if)# shutdown`
		`Ctrl-Z`
		`Router#`

Cisco 7140 series routers	**interface**, followed by the *type* (**fastethernet**) and *slot/port* (port-adapter-slot-number/ interface-port-number)
	
	shutdown
		The example is for interface 0 and interface 1 on a PA-2FE in port adapter slot 4.
		`Router(config)# interface fastethernet 4/0`
		`Router(config-if)# shutdown`
		`Router(config-if)# interface fastethernet 4/1`
		`Router(config-if)# shutdown`
		`Ctrl-Z`
		`Router#`

Cisco 7200 series routers and Cisco 7200 VXR routers	**interface**, followed by the *type* (**fastethernet**) and *slot/port* (port-adapter-slot-number/ interface-port-number)
	
	shutdown
		The example is for interface 0 and interface 1 on a PA-2FE in port adapter slot 6.
		`Router(config)# interface fastethernet 6/0`
		`Router(config-if)# shutdown`
		`Router(config-if)# interface fastethernet 6/1`
		`Router(config-if)# shutdown`
		`Ctrl-Z`
		`Router#`

Cisco uBR7200 series routers	**interface**, followed by the *type* (**fastethernet**) and *slot/port* (port-adapter-slot-number/ interface-port-number)
	
	shutdown
		The example is for interface 0 and interface 1 on a PA-2FE in port adapter slot 2.
		`Router(config)# interface fastethernet 2/0`
		`Router(config-if)# shutdown`
		`Router(config-if)# interface fastethernet 2/1`
		`Router(config-if)# shutdown`
		`Ctrl-Z`
		`Router#`

Cisco 7201 router	**interface**, followed by the *type* (**fastethernet**) and *slot/port* (port-adapter-slot-number/ interface-port-number)
	
	shutdown
		The example is for interface 0 and interface 1 on a PA-2FE in port adapter slot 1.
		`Router(config)# interface fastethernet 1/0`
		`Router(config-if)# shutdown`
		`Router(config-if)# interface fastethernet 1/1`
		`Router(config-if)# shutdown`
		`Ctrl-Z`
		`Router#`

Table 4-1 Examples of the shutdown Command for the Supported Platforms (continued)

Platform	Command	Example

Cisco 7301 router	**interface**, followed by the *type* (**fastethernet**) and *slot/port* (port-adapter-slot-number/ interface-port-number)
	
	shutdown
		The example is for interface 0 and interface 1 on a PA-2FE in port adapter slot 1.
		`Router(config)# interface fastethernet 1/0`
		`Router(config-if)# shutdown`
		`Router(config-if)# interface fastethernet 1/1`
		`Router(config-if)# shutdown`
		`Ctrl-Z`
		`Router#`

Cisco 7304 PCI port adapter carrier card in Cisco 7304 router	**interface**, followed by the *type* (**fastethernet**) and *slot/port* (module-slot-number/ interface-port-number)
	
	shutdown
		The example is for interface 0 and interface 1 of a PA-2FE in a Cisco 7304 PCI port adapter carrier card in module slot 3 of a Cisco 7304 router.
		`Router(config)# interface fastethernet 3/0`
		`Router(config-if)# shutdown`
		`Router(config-if)# interface fastethernet 3/1`
		`Router(config-if)# shutdown`
		`Ctrl-Z`
		`Router#`

Cisco 7401ASR router	**interface**, followed by the *type* (**fastethernet**) and *slot/port* (port-adapter-slot-number/ interface-port-number)
	
	shutdown
		The example is for interface 0 and interface 1 on a PA-2FE in port adapter slot 1.
		`Router(config)# interface fastethernet 1/0`
		`Router(config-if)# shutdown`
		`Router(config-if)# interface fastethernet 1/1`
		`Router(config-if)# shutdown`
		`Ctrl-Z`
		`Router#`

VIP in Cisco 7500 series routers	**interface**, followed by the *type* (**fastethernet**) and *slot/port adapter/port* (interface-processor-slot-number/ port-adapter-slot-number/ interface-port-number)
	
	shutdown
		The example is for interface 1 and interface 0 on a PA-2FE in port adapter slot 1 of a VIP installed in interface processor slot 1.
		`Router(config)# interface fastethernet 1/1/1`
		`Router(config-if)# shutdown`
		`Router(config-if)# interface fastethernet 1/1/0`
		`Router(config-if)# shutdown`
		`Ctrl-Z`
		`Router#`

Note If you need to shut down additional interfaces, enter the **interface fastethernet** command followed by the interface address (example: **1/1/1**) of the interface. Use the **no shutdown** command to enable the interface.

Step 4 Write the new configuration to NVRAM as follows:

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

The system displays an OK message when the configuration has been stored in NVRAM.

Step 5 Verify that new interfaces are now in the correct state (shut down) using the **show interfaces** command (followed by the interface type and interface address of the interface) to display the specific interface.

Table 4-2 provides examples of the **show interfaces fastethernet** command for the supported platforms.

Table 4-2 Examples of the show interfaces fastethernet Command for the Supported Platforms

Platform	Command	Example

Cisco 7120 series routers	**show interfaces fastethernet**, followed by *slot/port* (port-adapter-slot-number/ interface-port-number)	The example is for interface 0 on a PA-2FE in port adapter slot 3.
		`Router# show interfaces fastethernet 3/0`
		`fastethernet 3/0 is administratively down, line protocol is down`
		`[Additional display text omitted from this example]`

Cisco 7140 series routers	**show interfaces fastethernet**, followed by *slot/port* (port-adapter-slot-number/ interface-port-number)	The example is for interface 0 on a PA-2FE in port adapter slot 4.
		`Router# show interfaces fastethernet 4/0`
		`fastethernet 4/0 is administratively down, line protocol is down`
		`[Additional display text omitted from this example]`

Cisco 7200 series routers and Cisco 7200 VXR routers	**show interfaces fastethernet**, followed by *slot/port* (port-adapter-slot-number/ interface-port-number)
	For Cisco 7206 router shelves: **show interfaces fastethernet** *shelf-number/slot/port* (shelf-number/port-adapter-slot-number/interface-port-number).
		The example is for interface 0 on a PA-2FE in port adapter slot 6.
		`Router# show interfaces fastethernet 6/0`
		`fastethernet 6/0 is administratively down, line protocol is down`
		`[Additional display text omitted from this example]`

Cisco uBR7200 series routers	**show interfaces fastethernet**, followed by *slot/port* (port-adapter-slot-number/ interface-port-number)	The example is for interface 0 on a PA-2FE in port adapter slot 2.
		`Router# show interfaces fastethernet 2/0`
		`fastethernet 2/0 is administratively down, line protocol is down`
		`[Additional display text omitted from this example]`

Cisco 7201 router	**show interfaces fastethernet**, followed by *slot/port* (port-adapter-slot-number/ interface-port-number)	The example is for interface 0 on a PA-2FE in port adapter slot 1.
		`Router# show interfaces fastethernet 1/0`
		`fastethernet 1/0 is administratively down, line protocol is down`
		`[Additional display text omitted from this example]`

Table 4-2 Examples of the show interfaces fastethernet Command for the Supported Platforms (continued)

Platform	Command	Example

Cisco 7301 router	**show interfaces fastethernet**, followed by *slot/port* (port-adapter-slot-number/ interface-port-number)	The example is for interface 0 on a PA-2FE in port adapter slot 1.
		`Router# show interfaces fastethernet 1/0`
		`fastethernet 1/0 is administratively down, line protocol is down`
		`[Additional display text omitted from this example]`

Cisco 7304 PCI port adapter carrier card in Cisco 7304 router	**show interfaces fastethernet,** followed by *slot-number/port-number* (module-slot-number/ interface-port-number)	The example is for interface 0 of a PA-2FE in a Cisco 7304 PCI port adapter carrier card in module slot 3 of a Cisco 7304 router.
		`Router# show interfaces fastethernet 3/0`
		`FastEthernet3/0 is down, line protocol is down`

Cisco 7401ASR router	**show interfaces fastethernet**, followed by *slot/port* (port-adapter-slot-number/ interface-port-number)	The example is for interface 0 on a PA-2FE in port adapter slot 1.
		`Router# show interfaces fastethernet 1/0`
		`fastethernet 1/0 is administratively down, line protocol is down`
		`[Additional display text omitted from this example]`

VIP in Cisco 7500 series routers	**show interfaces fastethernet**, followed by *slot/port adapter/port* (interface-processor-slot-number/ port-adapter-slot-number/ interface-port-number)	The example is for interface 0 on a PA-2FE in port adapter slot 1 of a VIP in interface processor slot 1.
		`Router# show interfaces fastethernet 1/1/0`
		`fastethernet 1/1/0 is administratively down, line protocol is down`
		`[Additional display text omitted from this example]`

Step 6 Re-enable interfaces by doing the following:

a. Repeat Step 3 to re-enable an interface. Substitute the **no shutdown** command for the **shutdown** command.

b. Repeat Step 4 to write the new configuration to NVRAM. Use the **copy running-config startup-config** command.

c. Repeat Step 5 to verify that the interfaces are in the correct state. Use the **show interfaces** command followed by the interface type and interface address of the interface.

For complete descriptions of software configuration commands, refer to the publications listed in the "Related Documentation" section on page viii.

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 commands, depending on the requirements for your system configuration and the protocols you plan to route on the interface. For complete descriptions of configuration commands and the configuration options available for Fast 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 commands, 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 fastethernet** subcommand, followed by the interface address of the interface you plan to configure.

Table 4-3 gives examples of the **interface fastethernet** subcommand for the supported platforms.

Table 4-3 Examples of the interface fastethernet Subcommand for the Supported Platforms

Platform	Command	Example

Cisco 7120 series routers	**interface**, followed by *type* (**fastethernet**) and *slot/port* (port-adapter-slot-number/ interface-port-number)	The example is for interface 0 of a PA-2FE in port adapter slot 3.
		`Router(config)# interface fastethernet 3/0`
		`Router(config-if)#`

Cisco 7140 series routers	**interface**, followed by *type* (**fastethernet**) and *slot/port* (port-adapter-slot-number/ interface-port-number)	The example is for interface 0 of a PA-2FE in port adapter slot 4.
		`Router(config)# interface fastethernet 4/0`
		`Router(config-if)#`

Cisco 7200 series routers and Cisco 7200 VXR routers	**interface**, followed by *type* (**fastethernet**) and *slot/port* (port-adapter-slot-number/ interface-port-number)	The example is for interface 0 of a PA-2FE in slot 4.
		`Router(config)# interface fastethernet 4/0`
		`Router(config-if)#`

Cisco uBR7200 series routers	**interface**, followed by *type* (**fastethernet**) and *slot/port* (port-adapter-slot-number/ interface-port-number)	The example is for interface 0 of a PA-2FE in slot 2.
		`Router(config)# interface fastethernet 2/0`
		`Router(config-if)#`

Cisco 7201 router	**interface**, followed by *type* (**fastethernet**) and *slot/port* (port-adapter-slot-number/ interface-port-number)	The example is for interface 0 of a PA-2FE in port adapter slot 1.
		`Router(config)# interface fastethernet 1/0`
		`Router(config-if)#`

Table 4-3 Examples of the interface fastethernet Subcommand for the Supported Platforms (continued)

Platform	Command	Example

Cisco 7301 router	**interface**, followed by *type* (**fastethernet**) and *slot/port* (port-adapter-slot-number/ interface-port-number)	The example is for interface 0 of a PA-2FE in port adapter slot 1.
		`Router(config)# interface fastethernet 1/0`
		`Router(config-if)#`

Cisco 7304 PCI port adapter carrier card in Cisco 7304 router	**interface**, followed by *type* (**fastethernet**) and *slot/port* (module-slot-number/ interface-port-number)	The example is for interface 0 of a PA-2FE in a Cisco 7304 PCI port adapter carrier card in module slot 3 of a Cisco 7304 router.
		`Router(config)# interface fastethernet 3/0`
		`Router(config-if)#`

Cisco 7401ASR router	**interface**, followed by *type* (**fastethernet**) and *slot/port* (port-adapter-slot-number/ interface-port-number)	The example is for interface 0 of a PA-2FE in port adapter slot 1.
		`Router(config)# interface fastethernet 1/0`
		`Router(config-if)#`

VIP in Cisco 7500 series routers	**interface**, followed by *type* (**fastethernet**) and *slot/port-adapter/port* (interface-processor-slot-number/port-adapter-slot-number/interface-port-number).	The example is for interface 0 of a PA-2FE on a VIP in interface processor slot 1.
		`Router(config)# interface fastethernet 1/0/0`
		`Router(config-if)#`

Note The PA-2FE is automatically configured with 100-Mbps interfaces. If Cisco IOS software detects that the PA-2FE is connected to a 10-Mbps interface, the PA-2FE will automatically be configured to run at 10-Mbps. Use the **speed [10 | 100 | auto]** command to manually set the Fast Ethernet speed.

Step 3 Assign an IP address and subnet mask to the interface (if IP routing is enabled on the system) by using the **ip address** subcommand, as in the following example:

```
Router(config-if)# ip address 10.0.0.0 10.255.255.255
```

Step 4 Add any additional configuration commands required to enable routing protocols and set the interface characteristics.

Step 5 Re-enable the interfaces using the **no shutdown** command. (See the "Shutting Down an Interface" section on page 4-2.)

Step 6 Configure all additional port adapter interfaces as required.

Step 7 After including all of the configuration commands 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 and return to the EXEC command interpreter prompt.

Step 8 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. To check the interface configuration using **show** commands, proceed to the following section, "Checking the 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** command to check connectivity. This section includes the following subsections:

Using show Commands to Verify the New Interface Status

Table 4-4 demonstrates how you can use the **show** commands to verify that new interfaces are configured and operating correctly and that the PA-2FE 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.

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.

Table 4-4 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 current 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, interface processor slot, or chassis slot	`Router# show diag 2`
show interfaces *type* **3**/*interface-port-number*	Displays status information about a specific type of interface (for example, fastethernet) in a Cisco 7120 series router	`Router# show interfaces fastethernet 3/1`
show interfaces *type* **4**/*interface-port-number*	Displays status information about a specific type of interface (for example, fastethernet) in a Cisco 7140 series router	`Router# show interfaces fastethernet 4/1`

Table 4-4 Using show Commands (continued)

Command	Function	Example
show interfaces *type slot-number/interface-port-number* **Note** For the Cisco 7206 router shelves, the **show interfaces** command requires a shelf number in the format **show interfaces** *type shelf number/port adapter slot/port*.	Displays status information about a specific type of interface (for example, fastethernet) on a Cisco 7200 series router, Cisco 7200 VXR router, Cisco uBR7200 series router, Cisco 7201 router, Cisco 7301 router, or Cisco 7401ASR router	`Router# show interfaces fastethernet 1/0`
show interfaces *type interface-processor-slot-number/port-adapter-slot-number/ interface-port-number*	Displays status information about a specific type of interface (for example, fastethernet) on a VIP in a Cisco 7500 series router	`Router# show interfaces fastethernet 3/1/0`
show interfaces *type module-number/interface-port-number*	Displays status information about a specific type of interface (for example, fastethernet) in a Cisco 7304 PCI port adapter carrier card in a Cisco 7304 router	`Router# show interfaces fastethernet 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 4-11
- Using the show diag Command, page 4-14
- Using the show interfaces Command, page 4-18

Choose the subsection appropriate for your system. Proceed to the "Using the ping Command to Verify Network Connectivity" section on page 4-21 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 4-11
- Cisco 7200 Series Routers and Cisco 7200 VXR Routers—Example Output of the show version Command, page 4-12
- Cisco 7201 Router—Example Output of the show version Command, page 4-12
- Cisco 7401ASR Router—Example Output of the show version Command, page 4-13
- VIP in Cisco 7500 Series Routers—Example Output of the show version Command, page 4-13

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-2FE installed:

```
Router# show version
Cisco Internetwork Operating System Software
IOS (tm) EGR Software (C7100-JK2O3S-M)Copyright (c) 1986-2001 by cisco Systems, Inc.
Compiled 18:42
Image text-base:0x60008950, data-base:0x61CF2000

ROM:System Bootstrap, Version 12.0(5r)XE, RELEASE SOFTWARE (fc1)
BOOTFLASH:EGR Software (C7100-BOOT-M), Version 12.1(4.4)PI,  MAINTENANCE INTERI
M SOFTWARE

Router uptime is 2 minutes
System returned to ROM by reload at 14:19:09 UTC Fri Jan 19 2001
System image file is "tftp://223.255.254.254//auto/tftpboot-users/image
s/c7100-jk2o3s-mz.2FE"

cisco 7140-2E3 (EGR) processor (revision A) with 122880K/73728K bytes of memory.
Processor board ID 12622543
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.
4 FastEthernet/IEEE 802.3 interface(s)
2 Serial network interface(s)
1 Integrated service module(s)
125K bytes of non-volatile configuration memory.

8192K bytes of Flash internal SIMM (Sector size 256K).
Configuration register is 0x0
```

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

Following is an example of the **show version** command from a Cisco 7200 series router with a PA-2FE installed:

```
Router# show version
Cisco Internetwork Operating System Software
IOS (tm) 7200 Software (C7200-JS-M), Version 12.1(20000701:015939) [343]
Copyright (c) 1986-2000 by cisco Systems, Inc.
Compiled Sun 20-Aug-00 18:34 by pclee
Image text-base:0x60008968, data-base:0x6147A000

ROM:System Bootstrap, Version 11.1(13)CA, RELEASE SOFTWARE (fc1)
BOOTFLASH:7200 Software (C7200-BOOT-M), Version 12.0(2)XE2, RELEASE SOFTWARE (fc1)

Router uptime is 4 minutes
System returned to ROM by error - an Error Interrupt, PC 0x600BE5E0
System image file is "tftp://192.168.0.0"

cisco 7206 (NPE200) processor (revision B) with 114688K/16384K bytes of memory.
Processor board ID 15463328
R5000 CPU at 200Mhz, Implementation 35, Rev 2.1, 512KB L2 Cache
6 slot midplane, Version 1.3

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.
4 Ethernet/IEEE 802.3 interface(s)
3 FastEthernet/IEEE 802.3 interface(s)
125K bytes of non-volatile configuration memory.
4096K bytes of packet SRAM memory.

20480K bytes of Flash PCMCIA card at slot 0 (Sector size 128K).
4096K bytes of Flash internal SIMM (Sector size 256K).
Configuration register is 0x0
```

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 2222222222222
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
```

Cisco 7401ASR Router—Example Output of the show version Command

Following is an example of the **show version** command from a Cisco 7401ASR router with a PA-2FE installed:

```
Router# show version
Cisco Internetwork Operating System Software
IOS (tm) 7401ASR Software (C7401-JS-M), Version 12.1(20000701:015939) [343]
Copyright (c) 1986-2000 by cisco Systems, Inc.
Compiled Sun 20-Aug-00 18:34 by pclee
Image text-base:0x60008968, data-base:0x6147A000

ROM:System Bootstrap, Version 11.1(13)CA, RELEASE SOFTWARE (fc1)
BOOTFLASH:7401ASR Software (C7401ASR-BOOT-M), Version 12.0(2)XE2, RELEASE SOFTWARE (fc1)

Router uptime is 4 minutes
System returned to ROM by error - an Error Interrupt, PC 0x600BE5E0
System image file is "tftp://192.168.0.0"

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.
4 Ethernet/IEEE 802.3 interface(s)
3 FastEthernet/IEEE 802.3 interface(s)
125K bytes of non-volatile configuration memory.
4096K bytes of packet SRAM memory.

20480K bytes of Flash PCMCIA card at slot 0 (Sector size 128K).
4096K bytes of Flash internal SIMM (Sector size 256K).
Configuration register is 0x0
```

VIP in Cisco 7500 Series Routers—Example Output of the show version Command

Following is an example of the **show version** command from a Cisco 7500 series router with a PA-2FE installed:

```
Router# show version
Cisco Internetwork Operating System Software
IOS (tm) RSP Software (RSP-JSV-M), Version 12.1(20000701:015939) [485]
Copyright (c) 1986-2000 by cisco Systems, Inc.
Compiled Wed 06-Sep-00 11:19 by pcl
Image text-base:0x60010970, data-base:0x616E2000

ROM:System Bootstrap, Version 11.1(8)CA1, RELEASE SOFTWARE (fc1)
BOOTFLASH:RSP Software (RSP-BOOT-M), Version 12.0(5), RELEASE SOFTWARE (fc1)
```

```
Router uptime is 5 minutes
System returned to ROM by reload
System image file is "tftp://172.168.0.0"

cisco RSP4 (R5000) processor with 65536K/2072K bytes of memory.
R5000 CPU at 200Mhz, Implementation 35, Rev 2.1, 512KB L2 Cache
Last reset from power-on
G.703/E1 software, Version 1.0.
G.703/JT2 software, Version 1.0.
X.25 software, Version 3.0.0.
SuperLAT software (copyright 1990 by Meridian Technology Corp).
Bridging software.
TN3270 Emulation software.
Chassis Interface.
1 EIP controller (6 Ethernet).
1 VIP2 controller (2 FastEthernet).
1 VIP2 R5K controller (2 FastEthernet).
6 Ethernet/IEEE 802.3 interface(s)
4 FastEthernet/IEEE 802.3 interface(s)
123K bytes of non-volatile configuration memory.

8192K bytes of Flash PCMCIA card at slot 0 (Sector size 128K).
20480K bytes of Flash PCMCIA card at slot 1 (Sector size 128K).
8192K bytes of Flash internal SIMM (Sector size 256K).
No slave installed in slot 7.
Configuration register is 0x100
```

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 7200 series router, Cisco 7200 VXR router, Cisco uBR7200 series router, Cisco 7201 router, Cisco 7301 router, or Cisco 7401ASR router, the *module slot* in a Cisco 7304 PCI Port Adapter Carrier Card in a Cisco 7304 router, and the *interface processor slot* in a Cisco 7500 series router with a VIP.

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 4-15
- Cisco 7200 Series Routers and Cisco 7200 VXR Routers—Example Output of the show diag Command, page 4-15
- Cisco 7201 Router—Example Output of the show diag Command, page 4-16
- Cisco 7401ASR Routers—Example Output of the show diag Command, page 4-17
- VIP in Cisco 7500 Series Routers—Example Output of the show diag Command, page 4-17

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

Following is an example of the **show diag** command from a Cisco 7140 series router:

```
Router# show diag 4
Slot 4:
        Dual Port FastEthernet (MMF) Port adapter, 2 ports
        Port adapter is analyzed
        Port adapter insertion time 00:04:17 ago
        EEPROM contents at hardware discovery:
        Hardware Revision        :1.0
        PCB Serial Number        :MIC05022Q6M
        Part Number              :73-5420-04
        Board Revision           :A0
        RMA Test History         :00
        RMA Number               :0-0-0-0
        RMA History              :00
        Deviation Number         :0-0
        Product Number           :PA-2FE-FX
        Top Assy. Part Number    :800-08352-04
        EEPROM format version 4
        EEPROM contents (hex):
          0x00:04 FF 40 02 25 41 01 00 C1 8B 4D 49 43 30 35 30
          0x10:32 32 51 36 4D 82 49 15 2C 04 42 41 30 03 00 81
          0x20:00 00 00 00 04 00 80 00 00 00 00 CB 94 50 41 2D
          0x30:32 46 45 2D 46 58 20 20 20 20 20 20 20 20 20 20
          0x40:20 C0 46 03 20 00 20 A0 04 FF FF FF FF FF FF FF
          0x50:FF 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 FF
0x70:FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
```

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

Following is an example of the **show diag** command from a Cisco 7200 series router with a PA-2FE-FX istalled in port adapter slot 2:

```
Router# show diag 2
Slot 2:
        Dual Port FastEthernet (RJ45) Port adapter, 2 ports
        Port adapter is analyzed
        Port adapter insertion time 00:02:20 ago
        EEPROM contents at hardware discovery:
        Hardware Revision        :1.0
        PCB Serial Number        :MIC04291ZUY
        Part Number              :73-5419-01
        Number of Slots          :1

        EEPROM format version 4
        EEPROM contents (hex):
          0x00:04 FF 40 02 24 41 01 00 C1 8B 4D 49 43 30 34 32
          0x10:39 31 5A 55 59 82 49 15 2B 01 01 01 01 01 01 01
          0x20:01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01
          0x30:01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01
          0x40:01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01
          0x50:01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01
          0x60:01 01 01 01 01 01 01 01 01 01 01 01 01 01 FF FF
          0x70:FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
```

The following example shows information about the PA-2FE-FX installed in port adapter slot 3:

```
Router# show diag 3
Slot 3:
        Dual Port FastEthernet (MMF) Port adapter, 2 ports
        Port adapter is analyzed
        Port adapter insertion time 00:00:06 ago
        EEPROM contents at hardware discovery:
        Hardware Revision        :1.0
        PCB Serial Number        :MIC04291ZX4
        Part Number              :73-5419-01
        EEPROM format version 4
        EEPROM contents (hex):
          0x00:04 FF 40 02 25 41 01 00 C1 8B 4D 49 43 30 34 32
          0x10:39 31 5A 58 34 82 49 15 2B 01 FF FF FF FF FF FF
          0x20:FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
          0x30:FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
          0x40:FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
          0x50:FF 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 FF
          0x70:FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
```

Note For complete command descriptions and examples for the Cisco 7200 series routers, refer to the publications listed in the "Related Documentation" section on page viii.

Cisco 7201 Router—Example Output of the show diag Command

Following is an example of the **show diag** command from 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-2OC3
    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 FF
        0x60: FF 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 FF
```

Cisco 7401ASR Routers—Example Output of the show diag Command

Following is an example of the **show diag** command from a Cisco 7401ASR router:

```
Router# show diag 1
Slot 1:
        Dual Port FastEthernet (RJ45) Port adapter, 2 ports
        Port adapter is analyzed
        Port adapter insertion time 00:02:20 ago
        EEPROM contents at hardware discovery:
        Hardware Revision        :1.0
        PCB Serial Number        :MIC04291ZUY
        Part Number              :73-5419-01
        Number of Slots          :1

        EEPROM format version 4
        EEPROM contents (hex):
          0x00:04 FF 40 02 24 41 01 00 C1 8B 4D 49 43 30 34 32
          0x10:39 31 5A 55 59 82 49 15 2B 01 01 01 01 01 01 01
          0x20:01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01
          0x30:01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01
          0x40:01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01
          0x50:01 01 01 01 01 01 01 01 01 01 01 01 01 01 01 01
          0x60:01 01 01 01 01 01 01 01 01 01 01 01 01 01 FF FF
          0x70:FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
```

VIP in Cisco 7500 Series Routers—Example Output of the show diag Command

Following is an example of the **show diag** command from a Cisco 7500 series router with a PA-2FE-TX installed in port adapter bay 0 and a PA-2FE-FX installed in port adapter bay 1 of a VIP2 installed in interface processor slot 3:

```
Router# show diag 3
Slot 3:
        Physical slot 3, ~physical slot 0xC, logical slot 3, CBus 0
        Microcode Status 0x4
        Master Enable, LED, WCS Loaded
        Board is analyzed
        Pending I/O Status:None
        EEPROM format version 1
        VIP2 R5K controller, HW rev 2.02, board revision C0
        Serial number:13968891  Part number:73-2167-05
        Test history:0x00        RMA number:00-00-00
        Flags:cisco 7000 board; 7500 compatible

        EEPROM contents (hex):
          0x20:01 1E 02 02 00 D5 25 FB 49 08 77 05 00 00 00 00
          0x30:60 00 00 01 00 00 00 00 00 00 00 00 00 00 00 00

        Slot database information:
        Flags:0x4      Insertion time:0x2750 (00:06:45 ago)

        Controller Memory Size:128 MBytes DRAM, 8192 KBytes SRAM

        PA Bay 0 Information:

                Dual Port Fast Ethernet (RJ45), 2 ports
                EEPROM format version 4
                HW rev 1.00, Board revision UNKNOWN
                Serial number:MIC04291ZUY  Part number:73-5419-01

        PA Bay 1 Information:
```

```
Dual Port Fast Ethernet (MMF), 2 ports
EEPROM format version 4
HW rev 1.00, Board revision UNKNOWN
Serial number:MIC04291ZUY  Part number:73-5419-01
```

Note For complete command descriptions and examples for the VIP, refer to the publications listed in the "Related Documentation" section on page viii.

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 commands 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

Following is an example of the **show interfaces** command from a Cisco 7140 series router.

In this example, the two Fast Ethernet interfaces (0 and 1) are on a port adapter installed in port adapter slot 4 of a Cisco 7140 series router; also, most of the status information for each interface is omitted. (Interfaces are administratively shut down until you enable them.)

```
Router# show interfaces fastethernet 4/1
FastEthernet4/1 is up, line protocol is up
  Hardware is i82543 (Livengood), address is 00b0.4a3c.e071 (bia 00b0.4a3c.e071)
  Internet address is 10.0.0.1/8
  MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec,
     reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  Keepalive set (10 sec)
  Full-duplex, 100Mb/s
  ARP type:ARPA, ARP Timeout 04:00:00
  Last input 00:00:43, output 00:00:06, output hang never
  Last clearing of "show interface" counters 00:03:54
  Queueing strategy:fifo
  Output queue 0/40, 5 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
```

```
     26 packets input, 4922 bytes
     Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
     0 input errors, 1 CRC, 0 frame, 0 overrun, 0 ignored
     0 watchdog
     0 input packets with dribble condition detected
     50 packets output, 7016 bytes, 0 underruns
     0 output errors, 0 collisions, 0 interface resets
     0 babbles, 0 late collision, 0 deferred
     1 lost carrier, 0 no carrier
0 output buffer failures, 0 output buffers swapped out
```

Note To use the **show interfaces fastethernet** command with the Cisco 7120 series router, replace the interface address arguments 4/0 and 4/1, with 3/0 and 3/1, respectively.

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

Following is an example of the **show interfaces fastethernet** command from a Cisco 7200 series router with a Fast Ethernet interface on a PA-2FE installed in slot 2:

```
Router# show interfaces fastethernet 2/0
FastEthernet2/0 is up, line protocol is up
  Hardware is i82543 (Livengood), address is 0030.1983.b438 (bia 0030.1983.b438)
  MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec,
     reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  Keepalive set (10 sec)
  Half-duplex, 100Mb/s, 100BaseTX/FX
  ARP type:ARPA, ARP Timeout 04:00:00
  Last input 00:00:06, output 00:00:09, output hang never
  Last clearing of "show interface" counters 00:01:29
  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
     2 packets input, 690 bytes
     Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
     0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
     0 watchdog
     0 input packets with dribble condition detected
     14 packets output, 2220 bytes, 0 underruns
     0 output errors, 0 collisions, 0 interface resets
     0 babbles, 0 late collision, 0 deferred
     1 lost carrier, 0 no carrier
     0 output buffer failures, 0 output buffers swapped out
```

Note For the Cisco 7206 router shelves, the **show interfaces** command requires a shelf number in the format **show interfaces** *type shelf number/port adapter slot/port*.

Cisco 7201 Router—Example Output of the show interfaces Command

Following is an example of the **show interfaces** command from a 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
```

Cisco 7401ASR Router—Example Output of the show interfaces Command

Following is an example of the **show interfaces fastethernet** command for a Cisco 7401ASR router with a Fast Ethernet interface on a PA-2FE installed in slot 1:

```
Router# show interfaces fastethernet 1/0
FastEthernet1/0 is up, line protocol is up
  Hardware is i82543 (Livengood), address is 0030.1983.b438 (bia 0030.1983.b438)
  MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec,
     reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  Keepalive set (10 sec)
  Half-duplex, 100Mb/s, 100BaseTX/FX
  ARP type:ARPA, ARP Timeout 04:00:00
  Last input 00:00:06, output 00:00:09, output hang never
  Last clearing of "show interface" counters 00:01:29
  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
     2 packets input, 690 bytes
     Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
     0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
     0 watchdog
     0 input packets with dribble condition detected
     14 packets output, 2220 bytes, 0 underruns
     0 output errors, 0 collisions, 0 interface resets
     0 babbles, 0 late collision, 0 deferred
```

```
     1 lost carrier, 0 no carrier
     0 output buffer failures, 0 output buffers swapped out
```

VIP in Cisco 7500 Series Routers—Example Output of the show interfaces Command

Following is an example of the **show interfaces fastethernet** command from a Cisco 7500 series router with a Fast Ethernet interface on the PA-2FE installed in slot 3:

```
Router# show interfaces fastethernet 3/0/0
FastEthernet3/0/0 is up, line protocol is up
  Hardware is cyBus FastEthernet Interface, address is 0030.f233.a900 (bia 0030.f233.a900)
  Internet address is 7.7.7.7/24
  MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec,
     reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  Keepalive set (10 sec)
  Half-duplex, 100Mb/s, 100BaseTX/FX
  ARP type:ARPA, ARP Timeout 04:00:00
  Last input never, 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
     0 packets input, 0 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 input packets with dribble condition detected
     17 packets output, 3281 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 output buffer failures, 0 output buffers swapped out
```

Using the ping Command to Verify Network Connectivity

Using the **ping** command, you can 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 10.0.0.1:

```
Router# ping 10.0.0.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.0.0.1, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/4 ms
Router#
Router#ping 10.0.0.2
```

```
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.0.0.2, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/4 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.