



## Configuring the PA-4E

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To continue your PA 4E port adapter installation, you must configure the 4E 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, page 4-1](#)
- [Configuring the Interfaces, page 4-2](#)
- [Checking the Configuration, page 4-9](#)

### 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](#).

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# Configuring the Interfaces

After you verify that the new PA-4E 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-4E 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-4E that was previously configured, the system recognizes the new interfaces and brings each of them up in their existing configuration.

For a summary of the configuration options available and instructions for configuring interfaces on a PA-4E, refer to the appropriate 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, page 4-2](#)
- [Performing a Basic Configuration, page 4-7](#)



## Note

The 4E interfaces can be configured at 10 Mbps, full duplex (FDX), for a maximum aggregate bandwidth of 40 Mbps.

## 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 interface processor. 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 subcommands, 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 ethernet** subcommand (followed by the interface address of the interface), and then enter the **shutdown** command. [Table 4-1](#) shows the command syntax.

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 Syntax of the shutdown Command

Platform	Command	Example
Catalyst RSM/VIP2 in Catalyst 5000 family switches	<b>interface</b> , followed by the <i>type (ethernet)</i> and <i>slot/port (port-adapter-slot-number/interface-port-number)</i>	The example is for interface 0 and interface 1 on a port adapter in port adapter slot 0.  <pre>Router(config-if)# <b>interface ethernet 0/0</b> Router(config-if)# <b>shutdown</b> Router(config-if)# <b>interface ethernet 0/1</b> Router(config-if)# <b>shutdown</b> <b>Ctrl-Z</b> Router#</pre>
Cisco 7120 series routers	<b>interface</b> , followed by the <i>type (ethernet)</i> and <i>slot/port (port-adapter-slot number/interface-port-number)</i>	The example is for interface 0 and interface 1 on a port adapter in port adapter slot 3.  <pre>Router(config-if)# <b>interface ethernet 3/0</b> Router(config-if)# <b>shutdown</b> Router(config-if)# <b>interface ethernet 3/1</b> Router(config-if)# <b>shutdown</b> <b>Ctrl-Z</b> Router#</pre>
Cisco 7140 series routers	<b>interface</b> , followed by the <i>type (ethernet)</i> and <i>slot/port (port-adapter-slot number/interface-port-number)</i>	The example is for interface 0 and interface 1 on a port adapter in port adapter slot 4.  <pre>Router(config-if)# <b>interface ethernet 4/0</b> Router(config-if)# <b>shutdown</b> Router(config-if)# <b>interface ethernet 4/1</b> Router(config-if)# <b>shutdown</b> <b>Ctrl-Z</b> Router#</pre>
Cisco 7200 series routers	<b>interface</b> , followed by the <i>type (ethernet)</i> and <i>slot/port (port-adapter-slot-number/interface-port-number)</i>	The example is for interface 0 and interface 1 on a port adapter in port adapter slot 6.  <pre>Router(config-if)# <b>interface ethernet 6/0</b> Router(config-if)# <b>shutdown</b> Router(config-if)# <b>interface ethernet 6/1</b> Router(config-if)# <b>shutdown</b> <b>Ctrl-Z</b> Router#</pre>
Cisco uBR7223 router	<b>interface</b> , followed by the <i>type (ethernet)</i> and <i>slot/port (port-adapter-slot-number/interface-port-number)</i>	The example is for interface 0 and interface 1 on a port adapter in port adapter slot 1.  <pre>Router(config-if)# <b>interface ethernet 1/0</b> Router(config-if)# <b>shutdown</b> Router(config-if)# <b>interface ethernet 1/1</b> Router(config-if)# <b>shutdown</b> <b>Ctrl-Z</b> Router#</pre>
Cisco uBR7246 and Cisco uBR7246 VXR routers	<b>interface</b> , followed by the <i>type (ethernet)</i> and <i>slot/port (port-adapter-slot-number/interface-port-number)</i>	The example is for interface 0 and interface 1 on a port adapter in port adapter slot 2.  <pre>Router(config-if)# <b>interface ethernet 2/0</b> Router(config-if)# <b>shutdown</b> Router(config-if)# <b>interface ethernet 2/1</b> Router(config-if)# <b>shutdown</b> <b>Ctrl-Z</b> Router#</pre>

Table 4-1 Syntax of the shutdown Command (continued)

Platform	Command	Example
Cisco 7301 routers	<b>interface</b> , followed by the <i>type</i> ( <b>ethernet</b> ) 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 port adapter slot 1.  Router(config-if)# <b>interface ethernet 1/0</b> Router(config-if)# <b>shutdown</b> Router(config-if)# <b>interface ethernet 1/1</b> Router(config-if)# <b>shutdown</b> <b>Ctrl-Z</b> Router#
Cisco 7304 PCI Port Adapter Carrier Card in a Cisco 7304 router	<b>interface ethernet</b> , followed by <i>slot/port</i> (module-slot-number/interface-port-number)	The example is for interface 0 and interface 1 on a port adapter in a Cisco 7304 PCI Port Adapter Carrier Card in module slot 3 of a Cisco 7304 router.  Router(config-if)# <b>interface ethernet 3/0</b> Router(config-if)# <b>shutdown</b> Router(config-if)# <b>interface ethernet 3/1</b> Router(config-if)# <b>shutdown</b> <b>Ctrl-Z</b> Router#
Cisco 7401ASR routers	<b>interface</b> , followed by the <i>type</i> ( <b>ethernet</b> ) 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 port adapter slot 1.  Router(config-if)# <b>interface ethernet 1/0</b> Router(config-if)# <b>shutdown</b> Router(config-if)# <b>interface ethernet 1/1</b> Router(config-if)# <b>shutdown</b> <b>Ctrl-Z</b> Router#
VIP in Cisco 7000 series or Cisco 7500 series routers	<b>interface</b> , followed by the <i>type</i> ( <b>ethernet</b> ) and <i>slot/port adapter/port</i> (interface-processor-slot-number/port-adapter-slot-number/interface-port-number)	The example is for interface 0 on a port adapter in port adapter slot 1 of a VIP installed in interface processor slot 1.  Router(config-if)# <b>interface ethernet 1/1/1</b> Router(config-if)# <b>shutdown</b> Router(config-if)# <b>interface ethernet 1/1/0</b> Router(config-if)# <b>shutdown</b> <b>Ctrl-Z</b> Router#

**Note**

If you need to shut down additional interfaces, enter the **interface ethernet** command (followed by the interface address of the interface) for each of the interfaces on your port adapter. 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.

**Table 4-2** Examples of the *show interfaces* Command

Platform	Command	Example
Catalyst RSM/VIP2 in Catalyst 5000 family switches	<b>show interfaces ethernet</b> , followed by <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 1. Router# <b>show interfaces ethernet 1/0</b>  Ethernet 1/0 is administratively down, line protocol is down  [Additional display text omitted from this example]
Cisco 7120 series routers	<b>show interfaces ethernet</b> , followed by <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# <b>show interfaces ethernet 13/0</b>  Ethernet 3/0 is administratively down, line protocol is down  [Additional display text omitted from this example]
Cisco 7140 series routers	<b>show interfaces ethernet</b> , followed by <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# <b>show interfaces ethernet 4/0</b>  Ethernet 4/0 is administratively down, line protocol is down  [Additional display text omitted from this example]
Cisco 7200 series routers	<b>show interfaces ethernet</b> , followed by <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 6. Router# <b>show interfaces ethernet 6/0</b>  Ethernet 6/0 is administratively down, line protocol is down  [Additional display text omitted from this example]
Cisco uBR7223 router	<b>show interfaces ethernet</b> , followed by <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 1. Router# <b>show interfaces ethernet 1/0</b>  Ethernet 1/0 is administratively down, line protocol is down  [Additional display text omitted from this example]

Table 4-2 Examples of the show interfaces Command (continued)

Platform	Command	Example
Cisco uBR7246 and Cisco uBR7246 VXR routers	<b>show interfaces ethernet</b> , followed by <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 2.  Router# <b>show interfaces ethernet 2/0</b>  Ethernet 2/0 is administratively down, line protocol is down  [Additional display text omitted from this example]
Cisco 7301 routers	<b>show interfaces ethernet</b> , followed by <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 1.  Router# <b>show interfaces ethernet 1/0</b>  Ethernet 1/0 is administratively down, line protocol is down  [Additional display text omitted from this example]
Cisco 7304 PCI Port Adapter Carrier Card in a Cisco 7304 router	<b>show interfaces ethernet</b> , 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# <b>show interfaces ethernet 3/0</b>  Ethernet 3/0 is administratively down, line protocol is down  [Additional display text omitted from this example]
Cisco 7401ASR routers	<b>show interfaces ethernet</b> , followed by <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 1.  Router# <b>show interfaces ethernet 1/0</b>  Ethernet 1/0 is administratively down, line protocol is down  [Additional display text omitted from this example]
VIP in Cisco 7000 series or Cisco 7500 series routers	<b>show interfaces ethernet</b> , followed by <i>slot/port adapter/port</i> (interface-processor-slot-number/ port-adapter-slot-number/ interface-port-number)	The example is for interface 0 on a port adapter in port adapter slot 1 of a VIP in interface processor slot 1.  Router# <b>show interfaces ethernet 1/1/0</b>  Ethernet 1/1/0 is administratively down, line protocol is down  [Additional display text omitted from this example]

- Step 6** Reenable interfaces by doing the following:
- Repeat Step 3 to reenable an interface. Substitute the **no shutdown** command for the **shutdown** command.
  - Repeat Step 4 to write the new configuration to memory. Use the **copy running-config startup-config** command.
  - 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 Configuration

Following are instructions for a basic configuration: 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 ethernet** subcommand, followed by the interface address of the interface you plan to configure. [Table 4-3](#) gives examples.

**Table 4-3** Examples of the interface serial Subcommand

Platform	Command	Example
Catalyst RSM/VIP2 in Catalyst 5000 family switches	<b>interface ethernet</b> , 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 0.  Router(config)# <b>interface ethernet 0/0</b> Router(config-if)#
Cisco 7120 series routers	<b>interface ethernet</b> , 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 3.  Router(config)# <b>interface ethernet 3/0</b> Router(config-if)#

Table 4-3 Examples of the interface serial Subcommand (continued)

Platform	Command	Example
Cisco 7140 series routers	<b>interface ethernet</b> , 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 4.  Router (config) # <b>interface ethernet 4/0</b> Router (config-if) #
Cisco 7200 series routers	<b>interface ethernet</b> , 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) # <b>interface ethernet 6/0</b> Router (config-if) #
Cisco uBR7223 router	<b>interface ethernet</b> , 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 1.  Router (config) # <b>interface ethernet 1/0</b> Router (config-if) #
Cisco uBR7246 and Cisco uBR7246 VXR routers	<b>interface ethernet</b> , 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) # <b>interface ethernet 2/0</b> Router (config-if) #
Cisco 7301 routers	<b>interface ethernet</b> , 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 1.  Router (config) # <b>interface ethernet 1/0</b> Router (config-if) #
Cisco 7304 PCI Port Adapter Carrier Card in a Cisco 7304 router	<b>interface ethernet</b> , 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) # <b>interface ethernet 3/0</b> Router (config-if) #
Cisco 7401ASR routers	<b>interface ethernet</b> , 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 1.  Router (config) # <b>interface ethernet 1/0</b> Router (config-if) #
VIP in Cisco 7000 series or Cisco 7500 series routers	<b>interface ethernet</b> , followed by <i>slot/port adapter/port</i> (interface-processor-slot-number/ port-adapter-slot-number/ interface-port-number)	The example is for interface 0 of a port adapter in port adapter slot 1 of a VIP in interface processor slot 1.  Router (config) # <b>interface ethernet 1/1/0</b> Router (config-if) #

**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 subcommands required to enable routing protocols and set the interface characteristics.

**Step 5** Reenable 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 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 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.

## 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** and **loopback** commands to check connectivity. This section includes the following subsections:

- [Using show Commands to Verify the New Interface Status, page 4-9](#)
- [Using the ping Command to Verify Network Connectivity, page 4-21](#)
- [Using loopback Commands, page 4-21](#)

## 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-4E 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
<b>show version</b> or <b>show hardware</b>	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# <b>show version</b>
<b>show controllers</b>	Displays all the current interface processors and their interfaces	Router# <b>show controllers</b>

Table 4-4 Using show Commands (continued)

Command	Function	Example
<b>show diag slot</b> <b>Note</b> The <i>slot</i> argument is not required with Catalyst 5000 family switches.	Displays types of port adapters installed in your system and information about a specific port adapter slot, interface processor slot, or chassis slot	Router# <b>show diag 2</b>
<b>show interfaces type 0 or 1/ interface-port-number</b>	Displays status information about a specific type of interface (for example, ethernet) on a Catalyst RSM/VIP2	Router# <b>show interfaces ethernet 1/0</b>
<b>show interfaces type 3/interface-port-number</b>	Displays status information about a specific type of interface, for example, ethernet) in a Cisco 7120 series router.	Router# <b>show interfaces ethernet 3/1</b>
<b>show interfaces type 4/interface-port-number</b>	Displays status information about a specific type of interface (for example, ethernet) in a Cisco 7140 series router.	Router# <b>show interfaces ethernet 4/1</b>
<b>show interfaces type 1/interface-port-number</b>	Displays status information about a specific type of interface (for example, ethernet) in a Cisco uBR7223 router	Router# <b>show interfaces ethernet 1/1</b>
<b>show interfaces type 1 or 2/ interface-port-number</b>	Displays status information about a specific type of interface (for example, ethernet) in a Cisco uBR7246 or Cisco uBR7246 VXR router	Router# <b>show interfaces ethernet 2/0</b>
<b>show interfaces type interface-processor-slot-number/port-adapter-slot-number/ interface-port-number</b>	Displays status information about a specific type of interface (for example, ethernet) on a VIP in a Cisco 7000 series or Cisco 7500 series router	Router# <b>show interfaces ethernet 3/1/0</b>
<b>show interfaces type slot-number/interface-port-number</b>	Displays status information about a specific type of interface (for example, ethernet) on a Cisco 7200 series router, Cisco 7301 router, or Cisco 7401ASR router	Router# <b>show interfaces ethernet 1/0</b>
<b>show interfaces type 2 or 3 or 4 or 5/ interface-port-number</b>	Displays status information about a serial interface on a Cisco 7304 PCI Port Adapter Carrier Card in a Cisco 7304 router	Router# <b>show interfaces ethernet 3/0</b>
<b>show protocols</b>	Displays protocols configured for the entire system and for specific interfaces	Router# <b>show protocols</b>

Table 4-4 Using show Commands (continued)

Command	Function	Example
<code>show running-config</code>	Displays the running configuration file	Router# <code>show running-config</code>
<code>show startup-config</code>	Displays the configuration stored in NVRAM	Router# <code>show startup-config</code>

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 show version or show hardware Commands, page 4-11](#)
- [Using the show diag Command, page 4-14](#)
- [Using the show interfaces Command, page 4-16](#)

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 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. The following examples show output for the `show version` command on some of the platforms that support the PA-4E.



### 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.

### Catalyst RSM/VIP2 in Catalyst 5000 Family Switches

Following is an example of the `show version` command from a Catalyst 5000 family switch with the PA-4E:

```
Router# show version
Cisco Internetwork Operating System Software
IOS (tm) C5RSM Software (C5RSM-JSV-M), Version 11.2(9)P
Copyright (c) 1986-1997 by cisco Systems, Inc.
Compiled Tue 24-Jun-97 17:09 by shj
Image text-base: 0x600108E0, data-base: 0x6095E000

ROM: System Bootstrap, Version 11.2(15707)
BOOTFLASH: C5RSM Software (C5RSM-JSV-M), Version 11.2

yosemite_3 uptime is 17 hours, 17 minutes
System restarted by reload
System image file is "dirt/yosemite/c5rsm-jsv-mz.7P", booted via tftp from 223.2
55.254.254

cisco RSP2 (R4700) processor with 32768K bytes of memory.
R4700 processor, Implementation 33, Revision 1.0
Last reset from power-on
G.703/E1 software, Version 1.0.
```

```

SuperLAT software copyright 1990 by Meridian Technology Corp).
Bridging software.
X.25 software, Version 2.0, NET2, BFE and GOSIP compliant.
TN3270 Emulation software.
1 C5IP controller (15 Vlan).
1 VIP2 controller (4 Ethernet)(1 Fddi).
4 Ethernet/IEEE 802.3 interface(s)
15 Virtual Ethernet/IEEE 802.3 interface(s)
1 FDDI network interface(s)
123K bytes of non-volatile configuration memory.

16384K bytes of Flash PCMCIA card at slot 0 (Sector size 128K).
8192K bytes of Flash internal SIMM (Sector size 256K).
Configuration register is 0x100

```

```
Router#
```

## Cisco 7100 Series Routers

Following is an example of the **show version** command from a Cisco 7120 series router with the PA-4E:

```

Router# show version
Cisco Internetwork Operating System Software
IOS (tm) EGR Software (c7100-IS-M), Version 12.0(4)XE, EARLY DEPLOYMENT
RELEASE)
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(19990720:023243)
[gautham-conn_4xe-PRE_ALPHE
BOOTFLASH:EGR Software (c7100-IS-M), Version 12.0(4)XE, EARLY DEPLOYMENT
RELEA)

Router uptime is 24 minutes
System restarted by power-on
System image file is "disk0:c7100-is-mz.120-4.XE"

cisco 7120-bad (EGR) processor with 61440K/69632K bytes of memory.
R527x CPU at 225Mhz, Implementation 40, Rev 10.0, 2048KB L2 Cache
Last reset from power-on
Bridging software.
X.25 software, Version 3.0.0.
4 Ethernet/IEEE 802.3 interface(s)
125K bytes of non-volatile configuration memory.

40960K bytes of ATA PCMCIA card at slot 0 (Sector size 512 bytes).
8192K bytes of Flash internal SIMM (Sector size 256K).
Configuration register is 0x2000

```

## Cisco 7200 Series and Cisco uBR7200 Series

Following is an example of the **show version** command from a Cisco 7200 series router with the PA-4E:

```

Router# show version

Cisco Internetwork Operating System Software
IOS (tm) 7200 Software (C7200-J-M), Version 11.1(472) [biff 105]
Copyright (c) 1986-1996 by cisco Systems, Inc.
Compiled Sun 21-Apr-95 12:22 by
Image text-base: 0x600088A0, data-base: 0x605A4000

```

```
ROM: System Bootstrap, Version 11.1(10979) RELEASED SOFTWARE

Router uptime is 8 hours, 22 minutes
System restarted by reload
System image file is "slot0:c7200-j-mz.960421", booted via slot0

cisco 7200 (R4700) processor with 22528K/10240K bytes of memory.
R4700 processor, Implementation 33, Revision 1.0 (Level 2 Cache)
Last reset from power-on
Bridging software.
X.25 software, Version 2.0, NET2, BFE and GOSIP compliant.
Chassis Interface.
4 Ethernet/IEEE 802.3 interfaces.
5 FastEthernet/IEEE 802.3 interfaces.
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).
Configuration register is 0x2
```

### Cisco 7401ASR Routers

Following is an example of the **show version** command from a Cisco 7401ASR router with the PA-4E:

```
Router# show version

Cisco Internetwork Operating System Software
IOS (tm) 7401ASR Software (C7401ASR-J-M), Version 11.1(472) [biff 105]
Copyright (c) 1986-1996 by cisco Systems, Inc.
Compiled Sun 21-Apr-95 12:22 by
Image text-base: 0x600088A0, data-base: 0x605A4000

ROM: System Bootstrap, Version 11.1(10979) RELEASED SOFTWARE

Router uptime is 8 hours, 22 minutes
System restarted by reload
System image file is "slot0:c7200-j-mz.960421", booted via slot0

cisco 7401ASR (R4700) processor with 22528K/10240K bytes of memory.
R4700 processor, Implementation 33, Revision 1.0 (Level 2 Cache)
Last reset from power-on
Bridging software.
X.25 software, Version 2.0, NET2, BFE and GOSIP compliant.
Chassis Interface.
4 Ethernet/IEEE 802.3 interfaces.
5 FastEthernet/IEEE 802.3 interfaces.
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).
Configuration register is 0x2
```

### VIP in Cisco 7000 Series and Cisco 7500 Series Routers

Following is an example of the **show version** command from a Cisco 7500 series router with the PA-4E:

```
Router# show version

Cisco Internetwork Operating System Software
IOS (tm) GS Software (RSP-A), Version 11.1(471) [mpo 105]
Copyright (c) 1986-1995 by cisco Systems, Inc.
Compiled Fri 06-Oct-95 12:22 by mpo
Image text-base: 0x600088A0, data-base: 0x605A4000
```

```

ROM: System Bootstrap, Version 5.3(16645)
ROM: GS Bootstrap Software (RSP-BOOT-M), Version 11.1(1.2), MAINTENANCE INTERIME

honda uptime is 4 hours, 22 minutes
System restarted by reload
System image file is "slot0:rsp-a111-471", booted via slot0

cisco RSP2 (R4600) processor with 32768K bytes of memory.
R4600 processor, Implementation 32, Revision 2.0
Last reset from power-on
G.703/E1 software, Version 1.0.
Bridging software.
X.25 software, Version 2.0, NET2, BFE and GOSIP compliant.
Chassis Interface.
1 VIP2 controllers (4 Ethernet)(4 Serial).
4 Ethernet/IEEE 802.3 interfaces.
4 Serial network interfaces.
125K bytes of non-volatile configuration memory.

20480K bytes of Flash PCMCIA card at slot 0 (Sector size 128K).
8192K bytes of Flash internal SIMM (Sector size 256K).
No slave installed in slot 6.
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, Cisco 7200 series Cisco uBR7200 series router, Cisco 7301 router, and a Cisco 7401ASR router, and the *interface processor slot* in a Cisco 7000 series or Cisco 7500 series router with a VIP. The following examples show output for the **show diag** command on some of the platforms that support the PA-4E.



### 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.

---



### Note

---

The *slot* argument is not required for Catalyst 5000 family switches.

---

## Catalyst RSM/VIP2 in Catalyst 5000 Family Switches

Following is an example of the **show diag** command that shows a PA-4E on a Catalyst RSM/VIP2:

```

Router# show diag
Slot 0:
  Physical slot 0, ~physical slot 0xF, logical slot 0, CBus 1
  Microcode Status 0x4
  Master Enable, LED, WCS Loaded
  Board is analyzed
  Pending I/O Status: Console I/O, Debug I/O
  EEPROM format version 1
  C5IP controller, HW rev 1.0, board revision A0
  Serial number: 00000001 Part number: 00-0000-01
  Test history: 0x00 RMA number: 00-00-00
  Flags: cisco 7000 board; 7500 compatible

  EEPROM contents (hex):
    0x20: 01 1C 01 00 00 00 00 01 00 00 00 01 00 00 00 00

```

```

0x30: 50 00 00 00 00 00 00 00 00 00 00 00 78 00 00 00 00

Slot database information:
  Flags: 0x4      Insertion time: 0xFAC (17:24:40 ago)
Slot 7:
  EEPROM format version 1
  Route/Switch Processor 2, HW rev 1.0, board revision A0
  Serial number: 00000001  Part number: 00-0000-01
  Test history: 0x00      RMA number: 00-00-00
  Flags: cisco 7000 board; 7500 compatible

  EEPROM contents (hex):
    0x20: 01 1C 01 00 00 00 00 01 00 00 00 01 00 00 00 00
    0x30: 50 00 00 00 00 00 00 00 00 00 00 00 78 00 00 00 00

```

### Cisco 7100 Series Router

Following is an example of the **show diag slot** command that shows a PA-4E in port adapter slot 3 of a cisco 7120 series router:

```

Router# show diag 3
Slot 3:
  Ethernet port adapter, 4 ports
  Integrated port adapter is analyzed
  EEPROM contents at hardware discovery:
  Hardware revision 255.255          Board revision UNKNOWN
  EEPROM format version 1
  EEPROM contents (hex):
    0x20:01 D3 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

```



#### Note

To use the **show diag** command with the Cisco 7140 series router, replace the slot argument **3** with **4**.

### Cisco 7200 Series and Cisco uBR7200 Series

Following is an example of the **show diag slot** command that shows a PA-4E in port adapter slot 1 of a Cisco 7200 series router:

```

Router# show diag 1
Slot 1:
  Ethernet port adapter, 4 ports
  Port adapter is analyzed
  Port adapter insertion time 2d09h ago
  Hardware revision 1.14          Board revision A0
  Serial number 4294967295      Part number 73-1556-04
  Test history 0x0              RMA number 00-00-00
  EEPROM format version 1
  EEPROM contents (hex):
    0x20:01 02 01 0E FF FF FF FF FF 49 06 14 04 00 00 00 00
    0x30:50 00 00 00 FF FF FF FF FF FF FF FF FF FF FF FF

```



#### Note

Port adapters used with Cisco 7200 VXR and Cisco uBR7246 VXR routers require the correct base hardware revision in order to function. The following error message occurs on bootup if the incorrect hardware revision is used:

```
> PA-3-REVNOTSUPPORTED:PA in slot 1 (Ethernet) requires base h/w revision of (1.14) for this chassis
```

Use the **show diag** command to display the hardware revision.

## Cisco 7401ASR Routers

Following is an example of the **show diag slot** command that shows a PA-4E in port adapter slot 1 of a Cisco 7401ASR router:

```
Router# show diag 1
Slot 1:
Ethernet port adapter, 4 ports
Port adapter is analyzed
Port adapter insertion time 2d09h ago
Hardware revision 1.14          Board revision A0
Serial number 4294967295       Part number 73-1556-04
Test history 0x0               RMA number 00-00-00
EEPROM format version 1
EEPROM contents (hex):
0x20:01 02 01 0E FF FF FF FF 49 06 14 04 00 00 00 00
0x30:50 00 00 00 FF FF FF FF FF FF FF FF FF FF FF
```

## VIP in Cisco 7000 Series and Cisco 7500 Series Routers

Following is an example of the **show diag slot** command that shows a PA-4E in port adapter slot 11:

```
Router# show diag 11
Slot 11:
Physical slot 11, ~physical slot 0x4, logical slot 11, CBus 0
Microcode Status 0xC
Master Enable, LED, WCS Loaded
Board is analyzed
Pending I/O Status: Console I/O
EEPROM format version 1
VIP2 controller, HW rev 2.2, board revision UNKNOWN
Serial number: 03507967 Part number: 73-1684-02
Test history: 0x00      RMA number: 00-00-00
Flags: cisco 7000 board; 7500 compatible

EEPROM contents (hex):
0x20: 01 15 02 02 00 35 86 FF 49 06 94 02 00 00 00 00
0x30: 12 2B 00 2A 1A 00 00 00 00 00 00 00 00 00 00 00

Slot database information:
Flags: 0x4      Insertion time: 0x3E50 (6d14h ago)

Controller Memory Size: 8 MBytes

PA Bay 1 Information:
Ethernet PA, 4 ports
EEPROM format version 1
HW rev 1.0, Board revision 160
Serial number: 02023164 Part number: 73-1556-03
```

## Using the show interfaces Command

The **show interfaces** command displays status information (including the physical slot and interface address) for the interfaces you specify. All of the examples that follow specify ethernet interfaces.

For complete descriptions of interface subcommands and the configuration options available for Catalyst RSM/VIP2, Cisco 7100 series, Cisco 7200 series, Cisco uBR7200 series, Cisco 7301 routers, Cisco 7401ASR routers, and VIP interfaces, refer to the publications listed in the [“Related Documentation” section on page viii](#). The following examples show output for the **show interfaces** command on some of the platforms that support the PA-4E.

**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.

### Catalyst RSM/VIP2 show interfaces Command

In these examples, the four ethernet interfaces (0 to 3) are on a port adapter in port adapter slot 0 of a Catalyst RSM/VIP2; also, most of the status information for each interface is omitted. (Interfaces are administratively shut down until you enable them.)

```
Router# show interfaces ethernet 0/0
Ethernet0/0 is administratively down, line protocol is down
  Hardware is cxBus Ethernet, address is 0000.0ca5.2300 (bia 0000.0ca5.2389)
  MTU 1500 bytes, BW 10000 Kbit, DLY 1000 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive set (10 sec)
[Additional display text omitted from this example]
```

```
Router# show interfaces ethernet 0/1
Ethernet0/1 is administratively down, line protocol is down
  Hardware is cxBus Ethernet, address is 0000.0ca5.2301 (bia 0000.0ca5.238a)
  MTU 1500 bytes, BW 10000 Kbit, DLY 1000 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive set (10 sec)
[Additional display text omitted from this example]
```

```
Router# show interfaces ethernet 0/2
Ethernet0/2 is administratively down, line protocol is down
  Hardware is cxBus Ethernet, address is 0000.0ca5.2302 (bia 0000.0ca5.238b)
  MTU 1500 bytes, BW 10000 Kbit, DLY 1000 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive set (10 sec)
[Additional display text omitted from this example]
```

```
Router# show interfaces ethernet 0/3
Ethernet0/3 is administratively down, line protocol is down
  Hardware is cxBus Ethernet, address is 0000.0ca5.2303 (bia 0000.0ca5.238c)
  MTU 1500 bytes, BW 10000 Kbit, DLY 1000 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive set (10 sec)
[Additional display text omitted from this example]
```

### Cisco 7100 Series Routers

Following is an example of the **show interfaces** command used with a Cisco 7120 series router and a Cisco 7140 series router.

In this example the four ethernet interfaces (0 to 3) are on a port adapter in port adapter slot 3 of a Cisco 7120 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 ethernet 3/0
Ethernet3/0 is up, line protocol is up
  Hardware is M8T-RS232
  Internet address is 10.0.0.0
  MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec, rely 255/255, load 1/255
  Encapsulation HDLC, loopback not set, keepalive set (10 sec)
[Additional display text omitted from this example]
```

```
Router# show interfaces ethernet 3/1
Ethernet3/1 is up, line protocol is up
  Hardware is M8T-RS232
  Internet address is 10.0.0.1
  MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec, rely 255/255, load 1/255
```

```
Encapsulation HDLC, loopback not set, keepalive set (10 sec)
[Additional display text omitted from this example]
```

```
Router# show interfaces ethernet 3/2
Ethernet3/2 is up, line protocol is up
  Hardware is M8T-RS232
    Internet address is 10.0.0.2
      MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec, rely 255/255, load 1/255
        Encapsulation HDLC, loopback not set, keepalive set (10 sec)
[Additional display text omitted from this example]
```

```
Router# show interfaces ethernet 3/3
Ethernet3/3 is up, line protocol is up
  Hardware is M8T-RS232
    Internet address is 10.0.0.3
      MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec, rely 255/255, load 1/255
        Encapsulation HDLC, loopback not set, keepalive set (10 sec)
[Additional display text omitted from this example]
```

**Note**

To use the **show interfaces ethernet** command with the Cisco 7140 series router, replace the interface address arguments **3/0**, **3/1**, **3/2**, and **3/3** with **4/0**, **4/1**, **4/2**, and **4/3**, respectively.

Following is an example of the **show interfaces ethernet** command, which shows all of the information specific to interface 0 on a PA-4E installed in port adapter slot 3 of a Cisco 7120 series router:

```
Router# show interfaces ethernet 3/0
Ethernet3/0 is up, line protocol is up
  Hardware is M8T-RS232
    MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec, rely 255/255, load 1/255
      Encapsulation HDLC, loopback not set, keepalive set (10 sec)
        Last input never, output 1d17h, output hang never
          Last clearing of "show interface" counters never
            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 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
                        24 packets output, 5137 bytes, 0 underruns
                          0 output errors, 0 collisions, 0 interface resets
                            0 output buffer failures, 0 output buffers swapped out
                              0 carrier transitions      DCD=down DSR=down DTR=down RTS=down CTS=down
```

**Note**

To use the **show interfaces ethernet** command with the Cisco 7140 series router, replace the interface address argument **3/0** with **4/0**.

### Cisco 7200 Series and Cisco uBR7200 Series show interfaces Command

Following is an example of the **show interfaces** command for Cisco 7200 series and Cisco uBR7200 series routers. In this example, the four Ethernet interfaces (0 to 3) are in port adapter slot 2; also, most of the status information for each interface is omitted. (Interfaces are administratively shut down until you enable them.)

```
Router# show interfaces ethernet 2/0
Ethernet2/0 is administratively down, line protocol is down
  Hardware is AmdP2 Ethernet, address is 10.0.0.10 (bia 0000.0ca5.2389)
    MTU 1500 bytes, BW 10000 Kbit, DLY 1000 usec, rely 255/255, load 1/255
      Encapsulation ARPA, loopback not set, keepalive set (10 sec)
[Additional display text omitted from this example]
```

```

Router# show interfaces ethernet 2/1
Ethernet2/1 is administratively down, line protocol is down
  Hardware is AmdP2 Ethernet, address is 10.0.0.11 (bia 0000.0ca5.238a)
  MTU 1500 bytes, BW 10000 Kbit, DLY 1000 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive set (10 sec)
[Additional display text omitted from this example]

Router# show interfaces ethernet 2/2
Ethernet2/2 is administratively down, line protocol is down
  Hardware is AmdP2 Ethernet, address is 10.0.0.12 (bia 0000.0ca5.238a)
  MTU 1500 bytes, BW 10000 Kbit, DLY 1000 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive set (10 sec)
[Additional display text omitted from this example]

Router# show interfaces ethernet 2/3
Ethernet2/3 is administratively down, line protocol is down
  Hardware is AmdP2 Ethernet, address is 10.0.0.13 (bia 0000.0ca5.238c)
  MTU 1500 bytes, BW 10000 Kbit, DLY 1000 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive set (10 sec)
[Additional display text omitted from this example]

```

Following is an example of the **show interfaces ethernet** command, which shows all of the information specific to the interface 0 on a port adapter in port adapter slot 2:

```

Router# show interfaces ethernet 2/0
Ethernet2/0 is administratively down, line protocol is down
  Hardware is AmdP2 Ethernet, address is 10.0.0.20 (bia 0000.0ca5.2388)
  MTU 1500 bytes, BW 10000 Kbit, DLY 1000 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive set (10 sec)
  ARP type: ARPA, ARP Timeout 4:00:00
  Last input never, output never, output hang never
  Last clearing of "show interface" counters 2:56:26
  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 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
    0 input packets with dribble condition detected
    0 packets output, 0 bytes, 0 underruns
    0 output errors, 0 collisions, 0 interface resets, 0 restarts
    0 output buffer failures, 0 output buffers swapped out

```

## Cisco 7401ASR Routers

Following is an example of the **show interfaces ethernet** command, which shows all of the information specific to the interface 0 on a port adapter in port adapter slot 1:

```

Router# show interfaces ethernet 1/0
Ethernet1/0 is administratively down, line protocol is down
  Hardware is AmdP2 Ethernet, address is 10.0.0.20 (bia 0000.0ca5.2388)
  MTU 1500 bytes, BW 10000 Kbit, DLY 1000 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive set (10 sec)
  ARP type: ARPA, ARP Timeout 4:00:00
  Last input never, output never, output hang never
  Last clearing of "show interface" counters 2:56:26
  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 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
    0 input packets with dribble condition detected

```

```

0 packets output, 0 bytes, 0 underruns
0 output errors, 0 collisions, 0 interface resets, 0 restarts
0 output buffer failures, 0 output buffers swapped out

```

## VIP in Cisco 7000 Series or Cisco 7500 Series Routers

Following is an example of how the **show interfaces** command used with the VIP. In this example, the four Ethernet 10BaseT interfaces (0 to 3) are on a port adapter in port adapter slot 0 of a VIP in interface processor slot 3; also, most of the status information for each interface is omitted. (Interfaces are administratively shut down until you enable them.)

```

Router# show interfaces ethernet 3/0/0
Ethernet3/0/0 is administratively down, line protocol is down
  Hardware is cyBus Ethernet, address is 0000.0ca5.2300 (bia 0000.0ca5.2389)
  MTU 1500 bytes, BW 10000 Kbit, DLY 1000 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive set (10 sec)
[Additional display text omitted from this example]

```

```

Router# show interfaces ethernet 3/0/1
Ethernet3/0/1 is administratively down, line protocol is down
  Hardware is cyBus Ethernet, address is 0000.0ca5.2301 (bia 0000.0ca5.238a)
  MTU 1500 bytes, BW 10000 Kbit, DLY 1000 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive set (10 sec)
[Additional display text omitted from this example]

```

```

Router# show interfaces ethernet 3/0/2
Ethernet3/0/2 is administratively down, line protocol is down
  Hardware is cyBus Ethernet, address is 0000.0ca5.2302 (bia 0000.0ca5.238b)
  MTU 1500 bytes, BW 10000 Kbit, DLY 1000 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive set (10 sec)
[Additional display text omitted from this example]

```

```

Router# show interfaces ethernet 3/0/3
Ethernet3/0/3 is administratively down, line protocol is down
  Hardware is cyBus Ethernet, address is 0000.0ca5.2303 (bia 0000.0ca5.238c)
  MTU 1500 bytes, BW 10000 Kbit, DLY 1000 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive set (10 sec)
[Additional display text omitted from this example]

```

Following is an example of the **show interfaces ethernet** command, which shows all of the information specific to interface 0 on a port adapter in port adapter slot 1 of a VIP2 in interface processor slot 3:

```

Router# show interfaces ethernet 3/1/0
Ethernet3/1/0 is administratively down, line protocol is down
  Hardware is cyBus Ethernet, address is 0000.0ca5.2304 (bia 0000.0ca5.2388)
  MTU 1500 bytes, BW 10000 Kbit, DLY 1000 usec, rely 255/255, load 1/255
  Encapsulation ARPA, loopback not set, keepalive set (10 sec)
  ARP type: ARPA, ARP Timeout 4:00:00
  Last input never, output never, output hang never
  Last clearing of "show interface" counters 2:56:26
  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 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
    0 input packets with dribble condition detected
    0 packets output, 0 bytes, 0 underruns
    0 output errors, 0 collisions, 0 interface resets, 0 restarts
    0 output buffer failures, 0 output buffers swapped out

```

Proceed to the section [“Using the ping Command to Verify Network Connectivity”](#) to check network connectivity of the PA-4E and switch or router.

## Using the ping Command to Verify Network Connectivity

The **ping** command allows you to verify that an interface port is functioning properly. This section provides brief descriptions 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.

Proceed to the next section, [“Using loopback Commands”](#) to finish checking network connectivity.

## Using loopback Commands

With the loopback test, you can detect and isolate equipment malfunctions by testing the connection between the PA-4E interface and a remote device such as a modem or a CSU/DSU. The **loopback** subcommand places an interface in loopback mode, which enables test packets that are generated from the **ping** command to loop through a remote device or compact serial cable. If the packets complete the loop, the connection is good. If not, you can isolate a fault to the remote device or compact serial cable in the path of the loopback test.

Depending on the mode of the port, issuing the **loopback** command checks the following path:

- When no compact serial cable is attached to the PA-4E interface port, or if a DCE cable is attached to a port that is configured as line protocol up, the **loopback** command tests the path between the network processing engine and the interface port only (without leaving the network processing engine and port adapter).
- When a DTE cable is attached to the port, the **loopback** command tests the path between the network processing engine and the near (network processing engine) side of the DSU or modem to test the PA-4E interface and compact serial cable.

