



Configuring the PA-F/FD

To continue your PA-F/FD-SM or PA-F/FD-MM installation, you must configure the FDDI interfaces. The instructions that follow apply to all supported platforms. Minor differences between the platforms—for example, with Cisco IOS software commands—are noted.

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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#
```

Configuring the FDDI Interfaces

If you installed a new FDDI port adapter or if you want to change the configuration of an existing interface, you must enter configuration mode using the **configure** command. If you replaced a FDDI port adapter that was previously configured, the system recognizes the new FDDI interfaces and brings them up in their existing configuration. After you verify that the new FDDI port adapter is installed correctly (the enabled LED goes on), use the privileged-level **configure** command to configure the new interfaces. Be prepared with the information you need, such as the following:

- Protocols you plan to route on each new interface
- IP addresses if you plan to configure the interfaces for IP routing
- Bridging protocol you plan to use (for example, source-route bridging)

The **configure** command requires privileged-level access to the EXEC command interpreter, which usually requires a password. Contact your system administrator if necessary to obtain EXEC-level access.

Identifying Interface Addresses

This section describes how to identify interface addresses for the PA-F/FD-MM and the PA-F/FD-SM in Cisco 7200 series routers, on the VIP used in Cisco 7000 series and Cisco 7500 series routers, and on the Catalyst RSM/VIP2 used in Catalyst 5000 family switches.

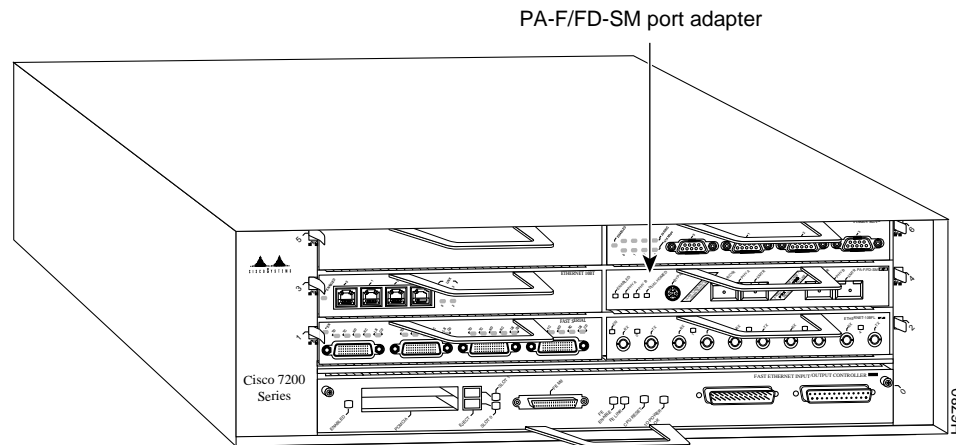
Cisco 7200 Series Interface Addresses

This section describes how to identify the interface addresses used for Cisco 7200 series routers.

In a Cisco 7200 series router, physical port addresses specify the actual physical location of each interface port on the router. (See .) This address is composed of a two-part number in the format *port adapter slot number/interface port number*, as follows:

- The first number identifies the port adapter slot in which the FDDI port adapter is installed.
- The second number identifies the interface port on each FDDI port adapter, which is always numbered interface 0.

Figure 5-1 FDDI Interface Port Number Example—Cisco 7206

**Note**

For the Cisco 7206 router shelf, physical port addresses are composed of a three-part number in the format *shelf number/port adapter slot number/interface port number*, where the *shelf number* is a number assigned to the Cisco 7206 router shelf during the initial configuration of the Cisco AS5800 Universal Access Server. A Cisco AS5800 Universal Access Server can consist of several shelves; therefore, each shelf is assigned a shelf number.

Interface ports maintain the same address regardless of whether other port adapters are installed or removed from the slot. However, when you move a port adapter to a different slot, the port adapter slot number in the address changes to reflect the new port adapter slot number.

shows some of the port adapter slots and interface ports of a Cisco 7206. The port adapter slot numbers start with 1 and continue through 6 (slot 0 is always reserved for the Fast Ethernet port on the I/O controller—if present). The individual interface port numbers always begin with 0. The number of additional ports depends on the number of ports on a port adapter.

For example, the FDDI port adapter in port adapter slot 4 would have the address 4/0. (See [Figure 5-1](#).) If the FDDI port adapter was in port adapter slot 1, this same interface port would be numbered 1/0. Port adapters can occupy any port adapter slot; there are no restrictions.

**Note**

For the Cisco 7206 router shelf, the FDDI port adapter in port adapter slot 4 would have the address *x/4/0*, where *x* is the number assigned to the router shelf during the initial configuration of the Cisco AS5800 Universal Access Server.

You can identify interface ports by physically checking the slot/interface port location on the front of the router or by using **show** commands to display information about a specific interface or all interfaces in the router.

VIP Interface Addresses

This section describes how to identify the interface addresses used for the PA-F/FD-MM and PA-F/FD-SM on a VIP in the Cisco 7000 series and Cisco 7500 series routers.



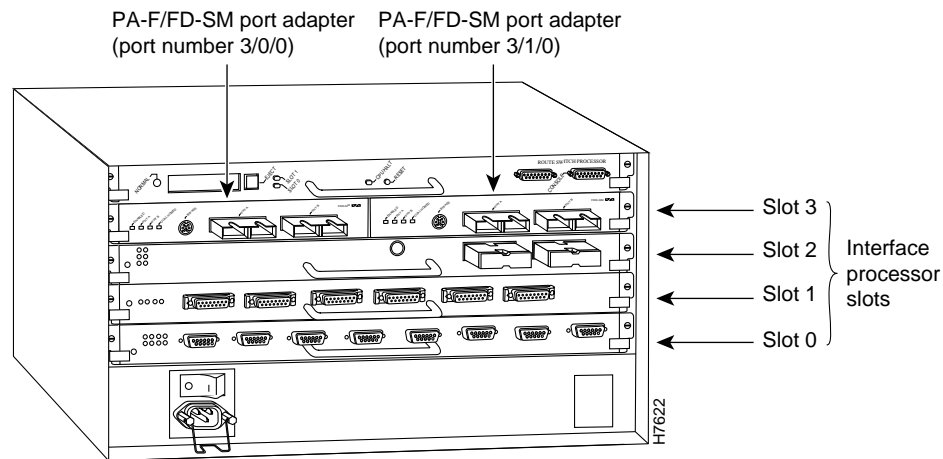
Note

Although the processor slots in the 7-slot Cisco 7000 and Cisco 7507 and 13-slot Cisco 7513 are vertically oriented and those in the 5-slot Cisco 7010 and Cisco 7505 are horizontally oriented, all models use the same method for slot and port numbering.

In the router, physical port addresses specify the actual physical location of each interface port on the router interface processor end. (See .) This address is composed of a three-part number in the format *interface processor slot number/port adapter number/interface port number*, as follows:

- The first number identifies the interface processor slot in which the VIP is installed (as shown in the sample system in).
- The second number identifies the physical port adapter slot number on the VIP and is either 0 or 1.
- The third number identifies the interface port on each FDDI port adapter and is always numbered interface 0.

Figure 5-2 Interface Port Number Example—Cisco 7505 Shown



Interface ports on the VIP maintain the same address regardless of whether other interface processors are installed or removed. However, when you move a VIP to a different slot, the first number in the address changes to reflect the new interface processor slot number.

Figure 5-2 shows some interface address examples on a sample Cisco 7505 system. For example, on a VIP equipped with two FDDI port adapters in slot 3, the address of the first FDDI port adapter is 3/0/0 (interface processor slot 3, port adapter slot 0, and interface port 0), and the address of the second FDDI port adapter is 3/1/0.

The first port adapter slot number is always 0. The second port adapter slot number is always 1. The individual interface port numbers always begin with 0. The number of additional ports depends on the number of ports on a port adapter.



Note

If you remove a VIP with two FDDI port adapters from slot 3 and install it in slot 2, the addresses of those same FDDI ports become 2/0/0 through 2/1/0.

You can identify interface ports by physically checking the slot/port adapter/interface port location on the back of the router or by using software commands to display information about a specific interface or all interfaces in the router.

Catalyst RSM/VIP2 Interface Addresses

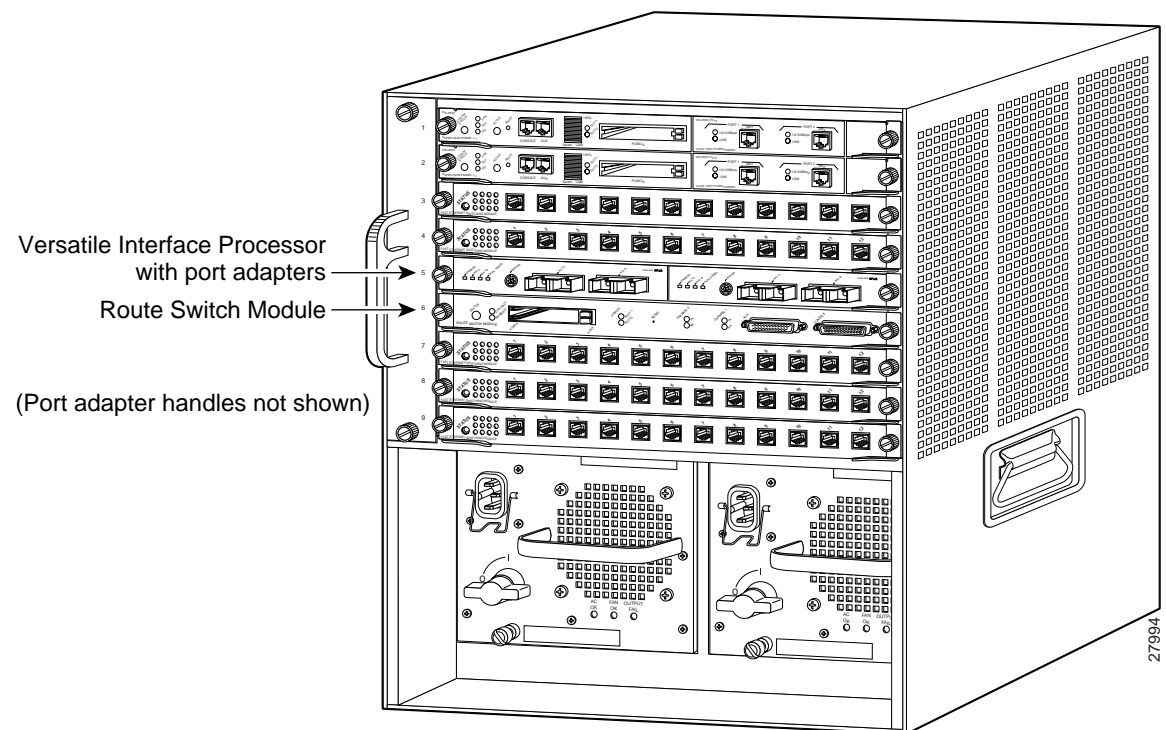
This section describes how to identify the interface addresses used for the PA-F/FD-MM and PA-F/FD-SM on a Catalyst RSM/VIP2 in the Catalyst 5000 family switches.

In the Catalyst RSM/VIP2, each address is composed of a two-part number in the format *port adapter number/interface port number*, as follows:

- The first number identifies the physical port adapter slot number on the Catalyst RSM/VIP2 and is either 0 or 1.
- The second number identifies the interface port on each FDDI port adapter and is always numbered interface 0.

shows the port adapters on a Catalyst RSM/VIP2 installed in a Catalyst 5509 switch. The addresses for the port adapters, on a Catalyst RSM/VIP2 equipped with two FDDI port adapters, is 0/0 (port adapter slot 0 and interface port 0) for the first port adapter and 1/0 for the second port adapter.

Figure 5-3 PA-F/FD-SM Port Adapter in the Catalyst 5509 Switch



The first port adapter slot number is always 0. The second port adapter slot number is always 1. The individual interface port numbers always begin with 0. The number of additional ports depends on the number of ports on a port adapter.

You can identify interface ports by physically checking the port adapter/interface port location or by using software commands to display information about a specific interface.

Performing a Basic Configuration

This section describes the procedures for performing a basic configuration. 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>
```

Use the following procedure to perform a basic configuration:

- Step 1** 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 2** Specify the first interface to configure.

- For the Cisco 7200 series, at the prompt, enter the subcommand **interface**, followed by the *type (fdi) slot/port* (port adapter slot number and interface number). The example that follows is for the first interface of the port adapter in slot 4:

```
Router(config)# interface fdi 4/0
```



Note For the Cisco 7206 router shelf, the interface specified in [Step 2](#) would include a shelf number. For example, the command **interface fdi 5/4/0** would specify the first FDDI interface of the port adapter in slot 4 of Cisco 7206 router shelf 5.

- For the VIP, at the prompt, enter the subcommand **interface**, followed by the *type (fdi) slot/port adapter/port* (interface processor slot number, port adapter slot number, and interface number). The example that follows is for the first interface of the first port adapter on a VIP in interface processor slot 1:

```
Router(config)# interface fdi 1/0/0
```

- For the Catalyst RSM/VIP2, at the prompt, enter the subcommand **interface**, followed by the *type (fdi) port adapter/port* (port adapter slot number and interface number). The example that follows is for the first interface of the first port adapter on a Catalyst RSM/VIP2:

```
Router(config)# interface fdi 0/0
```

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

```
Router(config-int)# ip address 10.1.1.10 255.255.255.0
```

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

- Step 5** Change the shutdown state to up and enable the interface as follows:

```
Router(config-int)# no shutdown
```

- Step 6** Configure additional interfaces as required.

- Step 7** When you have included all of the configuration subcommands to complete the configuration, press **Ctrl-Z** to exit configuration mode.

Step 8 Write the new configuration to nonvolatile memory as follows:

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

Configuring Full-Duplex Operation

Full-duplex operation requires the PA-F/D-SM or PA-F/D-MM port adapter, and requires that the host router have a specific, minimum Cisco IOS software release. (See the “[Software and Hardware Requirements](#)” section on page 2-2.)

Full-duplex operation is *not* the default configuration and must be turned on using the **full-duplex** command. To turn off full-duplex operation (and enable half-duplex operation) and reset the interface, use the **no full-duplex** (or **half-duplex**) command.

Following is an example of configuring a FDDI interface for full-duplex operation on a VIP using the **full-duplex** command:

```
Router# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)# interface fddi 5/0/0
Router(config-if)# full-duplex
Ctrl-z
Router#
```

Following is an example of configuring a FDDI interface for full-duplex operation on a Catalyst RSM/VIP2 using the **full-duplex** command:

```
Router# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)# interface fddi 0/0
Router(config-if)# full-duplex
Ctrl-z
Router#
```

Following is an example of configuring a FDDI interface for full-duplex operation in a Cisco 7200 series router using the **full-duplex** command:

```
Router# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)# interface fddi 4/0
Router(config-if)# full-duplex
Ctrl-z
Router#
```



Note

If the port adapter does not support full-duplex operation, the following error message appears:

```
%FDDI4/0 interface does not support full-duplex
```

If the port adapter *does* support full-duplex operation, the interface resets as it changes to full-duplex operation.

The output of the **show interfaces fddi slot/port-adapter/port** command displays the state of the FDDI port adapter interface and the state of full-duplex operation. Following is a partial sample output of this command from a FDDI interface on a VIP with full-duplex operation enabled:

```
Router# show interfaces fddi 3/0/0
Fddi3/0/0 is up, line protocol is up
  Hardware is cxBus FDDI, address is 0000.0c0c.4444 (bia 0060.3e47.4360)
  Internet address is 14.0.0.2/8
  MTU 4470 bytes, BW 100000 Kbit, DLY 100 usec, rely 255/255, load 10/255
  Encapsulation SNAP, loopback not set, keepalive not set
  ARP type: SNAP, ARP Timeout 04:00:00
  FDX supported, FDX enabled, FDX state is *
```

The output of the **show interfaces fddi port-adapter/port** command displays the state of the FDDI port adapter interface and the state of full-duplex operation. Following is a partial sample output of this command from a FDDI interface on a Catalyst RSM/VIP2 with full-duplex operation enabled:

```
Router# show interfaces fddi 0/0
Fddi0/0 is up, line protocol is up
  Hardware is cxBus FDDI, address is 0000.0c0c.4444 (bia 0060.3e47.4360)
  Internet address is 14.0.0.2/8
  MTU 4470 bytes, BW 100000 Kbit, DLY 100 usec, rely 255/255, load 10/255
  Encapsulation SNAP, loopback not set, keepalive not set
  ARP type: SNAP, ARP Timeout 04:00:00
  FDX supported, FDX enabled, FDX state is *
```

The asterisk (*) in the last line could be *idle*, *request*, *confirm*, or *operation*, depending on the state of the FDDI interface when the **show interfaces fddi** command is entered.

Following is a partial sample output of the **show interfaces fddi** command from a FDDI interface in a Cisco 7200 series router with full-duplex operation enabled:

```
Router# show interfaces fddi 4/0
Fddi4/0 is up, line protocol is up
  Hardware is MIF68840_MM, address is 0060.7054.8808 (bia 0060.7054.8808)
  Internet address is 2.1.1.3/24
  MTU 4470 bytes, BW 100000 Kbit, DLY 100 usec, rely 255/255, load 9/255
  Encapsulation SNAP, loopback not set, keepalive not set
  ARP type: SNAP, ARP Timeout 04:00:00
  FDX supported, FDX enabled, FDX state is *
```

The asterisk (*) in the last line could be *idle*, *request*, *confirm*, or *operation*, depending on the state of the FDDI interface when the **show interfaces fddi** command is entered.

**Note**

For the Cisco 7206 router shelf, the interface specified in the preceding example would include a shelf number. For example, the command **interface fddi 5/4/0** or the command **show interfaces fddi 5/4/0** would specify the first FDDI interface of the port adapter in slot 4 of Cisco 7206 router shelf 5.

**Note**

When full-duplex operation is turned off using the **no full-duplex** (or **half-duplex**) command, the last line of the preceding display includes the following information:

```
FDX supported, FDX disabled
```

If the port adapter does *not* support full-duplex operation, the following message is displayed:

```
FDX NOT supported
```


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.

Using show Commands to Verify the New Interface Status

Use **show** commands to verify that the new interfaces are configured and operating correctly, as follows:

-
- Step 1** Display the system hardware configuration with the **show version** command. Ensure that the list includes the new interfaces.
- Step 2** Display all the current port adapters and their interfaces.
- For the Cisco 7200 series, use the **show controllers** command. Verify that the new FDDI port adapter appears in the correct slot.
 - For the VIP and the Catalyst RSM/VIP2, use the **show controllers cbus** command. Verify that the new FDDI port adapter appears in the correct slot.



Note The slot values displayed by some commands (such as **show diag** and **show controllers cbus**) are not relevant to any physical connection; disregard these slot values for the Catalyst RSM/VIP2.

- Step 3** Specify one of the new interfaces:
- For the Cisco 7200 series, use the **show interfaces type slot/port** command and verify that the first line of the display specifies the interface with the correct slot number. Also verify that the interface and line protocol are in the correct state: up or down.



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

- For the VIP, use the **show interfaces type slot/port adapter/port** command and verify that the first line of the display specifies the interface with the correct slot number. Also verify that the interface and line protocol are in the correct state: up or down.
 - For the Catalyst RSM/VIP2, use the **show interfaces port adapter/port** command and verify that the first line of the display specifies the interface with the correct slot number. Also verify that the interface and line protocol are in the correct state: up or down.
- Step 4** Display the protocols configured for the entire system and specific interfaces with the **show protocols** command. If necessary, return to configuration mode to add or remove protocol routing on the system or specific interfaces.
- Step 5** Display the running configuration file with the **show running-config** command. Display the configuration stored in NVRAM using the **show startup-config** command. Verify that the configuration is accurate for the system and each interface.

If the interface is down and you configured it as up, or if the displays indicate that the hardware is not functioning properly, ensure that the network interface is properly connected and terminated. If you still have problems bringing the interface up, contact a service representative for assistance.

Using show Commands to Display Interface Information

To display information about a specific interface, use the **show interfaces** command with the interface type and port address in the format **show interfaces** *[type slot/port]* for the Cisco 7200 series and in the format **show interfaces** *[type slot/port adapter/port]* for the VIP2, and in the format **show interfaces** *[port adapter/port]* for the Catalyst RSM/VIP2.



Note

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

Cisco 7200 Series show Commands

Following is an example of how the **show interfaces** *[type slot/port]* command displays status information (including the physical slot and port address) for the interfaces you specify. In these examples, most of the status information for each interface is omitted. In the following example, the **show interfaces fddi** command shows all of the information specific to the FDDI port (interface port 0) in port adapter slot 4:

```
Router# show interfaces fddi 4/0
Fddi4/0 is up, line protocol is up
  Hardware is MIF68840_MM, address is 0060.7054.8808 (bia 0060.7054.8808)
  Internet address is 10.1.1.3/24
  MTU 4470 bytes, BW 100000 Kbit, DLY 100 usec, rely 255/255, load 9/255
  Encapsulation SNAP, loopback not set, keepalive not set
  ARP type: SNAP, ARP Timeout 04:00:00
  FDX supported, FDX enabled, FDX state is operation
```

(If full-duplex operation is not supported, the following is displayed:

```
  FDX NOT supported)
```

```
Phy-A state is connect, neighbor is Unknown, status Q
Phy-B state is active, neighbor is A, status II
ECM is in, CFM is c_wrap_b, RMT is ring_op,
Requested token rotation 5000 usec, negotiated 4997 usec
Configured tvx is 2500 usec ring operational 00:01:21
Upstream neighbor 0060.3e33.3608, downstream neighbor 0060.3e33.3608
Last input 00:00:00, output 00:00:00, 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 3678000 bits/sec, 152 packets/sec
5 minute output rate 3678000 bits/sec, 152 packets/sec
  490909 packets input, 1695024765 bytes, 0 no buffer
  Received 2130 broadcasts, 0 runts, 0 giants
  0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
  492973 packets output, 1695017763 bytes, 0 underruns
  0 output errors, 0 collisions, 0 interface resets
  0 output buffer failures, 0 output buffers swapped out
  0 transitions, 0 traces, 0 claims, 0 beacon
```

Interfaces are administratively shut down until you enable them. With the **show interfaces** *type slot/port* command, use arguments such as the interface type (fddi, and so forth), slot, and the port number (slot/port) to display information about a specific FDDI interface only.

Use the **show version** (or **show hardware**) command to display the configuration of the system hardware (the number of each port adapter type installed), the software version, the names and sources of configuration files, and the boot images. Following is an example of the **show version** command:

```
Router# show version

Cisco Internetwork Operating System Software
IOS (tm) 7200 Software (C7200-J-M), Version 11.1(7)CA1 [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(7) 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.
2 FDDI network 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
```

Use the **show diag slot** command to determine which type of port adapter is installed in your system. Specific port adapter information is displayed, as shown in the following examples of multimode and single-mode full-duplex FDDI port adapters in port adapter slots 4 and 3, respectively:

```
Router# show diag 4
Slot 4:
  FD FDDI DAS (Multimode), PA-F/FD-MM port adapter, 1 port
  Port adapter is analyzed
  Port adapter insertion time 03:23:10 ago
  Hardware revision 1.11          Board revision A0
  Serial number 3544601          Part number 73-2138-01
  Test history 0x0              RMA number 00-00-00
  EEPROM format version 1
  EEPROM contents (hex):
    0x20: 01 31 01 0B 00 36 16 19 49 08 5A 01 00 00 00 00
    0x30: 50 00 00 00 96 08 28 00 FF FF FF FF FF FF FF FF

Router# show diag 3
Slot 3:
  FD FDDI DAS (Singlemode), PA-F/FD-SM port adapter, 1 port
  Port adapter is analyzed
  Port adapter insertion time 00:08:34 ago
  Hardware revision 1.10          Board revision A0
  Serial number 3095203          Part number 73-2139-01
  Test history 0x0              RMA number 00-00-00
  EEPROM format version 1
  EEPROM contents (hex):
    0x20: 01 32 01 0A 00 2F 3A A3 49 08 5B 01 00 00 00 00
    0x30: 50 00 00 00 96 07 30 00 FF FF FF FF FF FF FF FF
```

For command descriptions and examples for Cisco 7200 series routers, refer to the documentation resources listed in the section [“Related Documentation”](#) section on page vi.

VIP show Commands

Use the **show interfaces** *type slot/port adapter/port* command to display status information (including the physical slot and port address) for the interfaces you specify. In the examples in this section, most of the status information for each interface is omitted. The following example shows all of the information specific to the first FDDI port (interface port 0) in interface processor slot 3, port adapter slot 0:

```
Router# show interfaces fddi 3/0/0
Fddi3/0/0 is up, line protocol is up
  Hardware is cxBus FDDI, address is 0000.0c0c.4444 (bia 0060.3e47.4360)
  Internet address is 14.0.0.2/8
  MTU 4470 bytes, BW 100000 Kbit, DLY 100 usec, rely 255/255, load 10/255
  Encapsulation SNAP, loopback not set, keepalive not set
  ARP type: SNAP, ARP Timeout 04:00:00
  FDX supported, FDX disabled, FDX state is operation
  Phy-A state is connect, neighbor is Unknown, status QLS
  Phy-B state is active, neighbor is A, status SILS
  ECM is in, CFM is c_wrap_b, RMT is ring_op,
  Requested token rotation 5000 usec, negotiated 0 usec
  Configured tvx is 2500 usec
  LER for PortA = 09, LER for PortB = 0C ring operational 11:36:23
  Upstream neighbor 0000.0c0c.8888, downstream neighbor 0000.0c0c.8888
  Last input 00:02:22, output 00:00:06, output hang never
  Last clearing of "show interface" counters 14:57:58
  Output queue 0/40, 0 drops; input queue 0/75, 0 drops
  5 minute input rate 3922000 bits/sec, 147 packets/sec
  5 minute output rate 3962000 bits/sec, 148 packets/sec
    7523044 packets input, 631964210 bytes, 0 no buffer
    Received 0 broadcasts, 0 runts, 0 giants
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
    7523554 packets output, 625092443 bytes, 0 underruns
    0 output errors, 0 collisions, 1 interface resets
    0 output buffer failures, 0 output buffers swapped out
    0 transitions, 0 traces, 0 claims, 0 beacon
```

Interfaces are administratively shut down until you enable them. With the **show interfaces** command, use only the *type* argument to display information about a specific type of interface only. For example, **show interfaces fddi** displays information about only the FDDI ports in the system.

Use the **show version** (or **show hardware**) command to display the configuration of the system hardware (the number of each interface processor type installed), the software version, the names and sources of configuration files, and the boot images.

Following is an example of the **show version** command used with a Cisco 7500 series system in which a VIP with a PA-F/FD port adapter is installed:

```
Router# show version
Cisco Internetwork Operating System Software
IOS (tm) GS Software (RSP-JV-M), Released Version 11.1(6)CA
Copyright (c) 1986-1996 by cisco Systems, Inc.
Compiled Fri 10-May-96 16:20 by biff
Image text-base: 0x600108A0, data-base: 0x608DC000

ROM: System Bootstrap, Version 5.3(18168) [biff 61], INTERIM SOFTWARE
ROM: GS Software (RSP-BOOT-M), Version 11.1(6) [biff 103]

Router uptime is 20 hours, 34 minutes
System restarted by power-on
System image file is "slot0:zippy/biff/rsp-jv-mz.111.6ca", booted via slot0

cisco RSP2 (R4600) processor with 16384K bytes of memory.
R4600 processor, Implementation 32, Revision 2.0
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 (copyright 1994 by TGV Inc).
Primary Rate ISDN software, Version 1.0.
Chassis Interface.
2 VIP2 controllers (8 Ethernet)(2 Fddi).
8 Ethernet/IEEE 802.3 interfaces.
2 FDDI network interfaces.
125K bytes of non-volatile configuration memory.

8192K 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 0x0

```

Use the **show diagbus slot** command to determine which type of port adapter is installed on a VIP in your system. Specific port adapter information is displayed, as shown in the following examples of PA-F/D-SM and PA-F/D-MM port adapters in interface processor slots 3 and 5:

```

Router# show diagbus 3
Slot 3:
Physical slot 3, ~physical slot 0xC, logical slot 3, 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: 03507946 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 EA 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: 0x1988 (20:32:53 ago)

Controller Memory Size: 8 MBytes

PA Bay 0 Information:
FDDI PA, 1 ports, PA-F/D-SM
EEPROM format version 1
HW rev 1.0, Board revision 21
Serial number: 03524551 Part number: 73-2139-01

```

“*Part number*” in the last line refers to a PA-F/D-SM port adapter.

```

Router# show diagbus 5
Slot 5:
Physical slot 5, ~physical slot 0xA, logical slot 5, CBus 0
Microcode Status 0x4
Master Enable, LED, WCS Loaded
Board is analyzed
Pending I/O Status: None
EEPROM format version 1
VIP2 controller, HW rev 2.2, board revision UNKNOWN
Serial number: 03507948 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 EC 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: 0x3C3C (20:32:59 ago)

Controller Memory Size: 8 MBytes

PA Bay 0 Information:
  FDDI PA, 1 ports, PA-F/FD-MM
  EEPROM format version 1
  HW rev 1.0, Board revision 21
  Serial number: 02825768 Part number: 73-2138-01

```

“Part number” in the last line refers to a PA-F/FD-MM port adapter.

Catalyst RSM/VIP2 show Commands

Use the **show interfaces port adapter/port** command to display status information for the interfaces you specify. In the examples in this section, most of the status information for each interface is omitted. The following example shows all of the information specific to the first FDDI port (interface port 0) in port adapter slot 0:

```

Router# show interfaces fddi 0/0
Fddi0/0 is up, line protocol is up
  Hardware is cxBus FDDI, address is 0000.0c0c.4444 (bia 0060.3e47.4360)
  Internet address is 14.0.0.2/8
  MTU 4470 bytes, BW 100000 Kbit, DLY 100 usec, rely 255/255, load 10/255
  Encapsulation SNAP, loopback not set, keepalive not set
  ARP type: SNAP, ARP Timeout 04:00:00
  FDX supported, FDX disabled, FDX state is operation
  Phy-A state is connect, neighbor is Unknown, status QLS
  Phy-B state is active, neighbor is A, status SILS
  ECM is in, CFM is c_wrap_b, RMT is ring_op,
  Requested token rotation 5000 usec, negotiated 0 usec
  Configured tvx is 2500 usec
  LER for PortA = 09, LER for PortB = 0C ring operational 11:36:23
  Upstream neighbor 0000.0c0c.8888, downstream neighbor 0000.0c0c.8888
  Last input 00:02:22, output 00:00:06, output hang never
  Last clearing of "show interface" counters 14:57:58
  Output queue 0/40, 0 drops; input queue 0/75, 0 drops
  5 minute input rate 3922000 bits/sec, 147 packets/sec
  5 minute output rate 3962000 bits/sec, 148 packets/sec
  7523044 packets input, 631964210 bytes, 0 no buffer
  Received 0 broadcasts, 0 runts, 0 giants
  0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
  7523554 packets output, 625092443 bytes, 0 underruns
  0 output errors, 0 collisions, 1 interface resets
  0 output buffer failures, 0 output buffers swapped out
  0 transitions, 0 traces, 0 claims, 0 beacon

```

Interfaces are administratively shut down until you enable them. With the **show interfaces** command, use only the *type* argument to display information about a specific type of interface only. For example, **show interfaces fddi** displays information about only the FDDI ports in the system.

Use the **show version** (or **show hardware**) command to display the configuration of the system hardware (the number of each interface processor type installed), the software version, the names and sources of configuration files, and the boot images.

Following is an example of the **show version** command used with a Catalyst RSM/VIP2 with a PA-F/FD port adapter installed:

```
Router# show version
Cisco Internetwork Operating System Software
IOS (tm) GS Software (RSP-JV-M), Released Version 11.1(6)CA
Copyright (c) 1986-1996 by cisco Systems, Inc.
Compiled Fri 10-May-96 16:20 by biff
Image text-base: 0x600108A0, data-base: 0x608DC000

ROM: System Bootstrap, Version 5.3(18168) [biff 61], INTERIM SOFTWARE
ROM: GS Software (RSP-BOOT-M), Version 11.1(6) [biff 103]

Router uptime is 20 hours, 34 minutes
System restarted by power-on
System image file is "slot0:zippy/biff/rsp-jv-mz.111.6ca", booted via slot0

cisco RSP2 (R4600) processor with 16384K bytes of memory.
R4600 processor, Implementation 32, Revision 2.0
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 (copyright 1994 by TGV Inc).
Primary Rate ISDN software, Version 1.0.
Chassis Interface.
2 VIP2 controllers (8 Ethernet)(2 Fddi).
8 Ethernet/IEEE 802.3 interfaces.
2 FDDI network interfaces.
125K bytes of non-volatile configuration memory.

8192K 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 0x0
```

Use the **show diagbus slot** command to determine which type of port adapter is installed on a Catalyst RSM/VIP2 in your system. Specific port adapter information is displayed, as shown in the following example of the PA-F/FD-SM port adapter:

```
Router# show diagbus 3
Slot 3:
  Physical slot 3, ~physical slot 0xC, logical slot 3, 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: 03507946 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 EA 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: 0x1988 (20:32:53 ago)

  Controller Memory Size: 8 MBytes
```

```
PA Bay 0 Information:
  FDDI PA, 1 ports, PA-F/FD-SM
  EEPROM format version 1
  HW rev 1.0, Board revision 21
  Serial number: 03524551 Part number: 73-2139-01
```

“*Part number*” in the last line refers to a PA-F/FD-SM port adapter.

Using the ping Command

The **ping** command allows you to verify that an interface port is functioning properly and to check the path between a specific port and connected devices at various locations on the network. This section provides brief descriptions of the **ping** command. After you verify that the system has booted successfully and is operational, you can use this command to verify the status of interface ports. Refer to the documentation resources listed in the “[Related Documentation](#)” section on page vi for detailed command descriptions and examples.

The **ping** command sends an echo request out to a remote device at an IP address that you specify. After sending a series of signals, the command waits a specified time for the remote device to echo the signals. Each returned signal is displayed as an exclamation point (!) on the console terminal; each signal 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 that the connection failed.

Following is an example of a successful **ping** command to a remote server with the address 10.1.1.10:

```
Router# ping 10.1.1.10 <Return>
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echoes to 10.1.1.10, 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 server and that the server is active (powered on), and repeat the **ping** command.

If the connection fails, verify that you have the correct IP address for the server and that the server is active (powered on), and repeat the **ping** command. For complete descriptions of interface subcommands and the configuration options available for supported interfaces and functionality, refer to the documents listed in the “[Obtaining Documentation](#)” section on page vii.

This completes the PA-F/FD-SM and PA-F/FD/MM installation and configuration.