



Doc. No. 78-3225-02

Cisco 7200 Series Network Processing Engine Replacement Instructions

Product Number: NPE-150=

This document explains how to remove and replace the network processing engine in the Cisco 7200 series routers. It includes instructions for powering down a router, removing an installed network processing engine, and installing a new network processing engine in the router. This document also includes steps for verifying that the installed network processing engine initializes the system after you power up the router.

Note Use this document in conjunction with the *Cisco 72xx Installation and Configuration Guide* that shipped with the Cisco 7200 series router.

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Additional Information

The Cisco Internetwork Operating System (Cisco IOS) software running your router contains extensive features and functionality. The effective use of many of these features is easier if you have more information at hand.

Cisco documentation and additional literature are available on a CD-ROM called Cisco Connection Documentation, Enterprise Series, which ships with your chassis. The CD is updated and shipped monthly, so it might be more up to date than printed documentation. To order additional copies of the Cisco Connection Documentation, Enterprise Series CD, contact a Cisco Sales or Customer Service representative. You can also access Cisco technical documentation on the World Wide Web URL <http://www.cisco.com>.

For additional information on configuring the Cisco 7200 series routers, the following documentation resources are available to you:

- Cisco Connection Documentation, Enterprise Series CD-ROM
- For systems with Cisco IOS Release 11.1(6), a Cisco-approved Release 11.1(6) beta software version, or a later Cisco IOS release, refer to the following modular configuration and modular command reference publications, as appropriate for your configuration:
 - *Configuration Fundamentals Configuration Guide*
 - *Configuration Fundamentals Command Reference*
 - *Wide-Area Networking Configuration Guide*
 - *Wide-Area Networking Command Reference*
 - *Network Protocols Configuration Guide*
 - *Network Protocols Command Reference*
 - *Bridging and IBM Networking Configuration Guide*
 - *Bridging and IBM Networking Command Reference*
 - *Configuration Builder Getting Started Guide*
 - *Troubleshooting Internetworking Systems*
- For hardware installation and maintenance information on the Cisco 7200 series routers, refer to the *Cisco 72xx Installation and Configuration Guide* that shipped with your router.
- To obtain general information about documentation, refer to the section “Cisco Connection Online,” on page 19, or call Customer Service at 800 553-6387 or 408 526-7208. Customer Service hours are 5:00 a.m. to 6:00 p.m. Pacific time, Monday through Friday (excluding Cisco-observed company holidays). You can also send e-mail to cs-rep@cisco.com. You can also refer to the *Cisco Information Packet* that shipped with your router.

Product Overview

The following sections give brief overviews of the Cisco 7200 series routers and the network processing engine.

Cisco 7200 Series Overview

The Cisco 7200 series consists of the four-slot Cisco 7204 and the six-slot Cisco 7206. The Cisco 7200 series routers support multiprotocol, multimedia routing and bridging with a wide variety of protocols and any combination of Ethernet, Fast Ethernet, Token Ring, Fiber Distributed Data Interface (FDDI), and serial media. Network interfaces reside on port adapters that provide a connection between the routers' three Peripheral Component Interconnect (PCI) buses and external networks. Port adapters can be placed in any available port adapter slot, in any desired combination.

The front of the Cisco 7200 series routers provides access to an Input/Output (I/O) controller and up to four or six network interface port adapters. The I/O controller has a local console port for connecting a data terminal (or data terminal equipment [DTE]) and an auxiliary port for connecting a modem (or other data communications equipment [DCE]) or other devices for configuring and managing the router; two Personal Computer Memory Card International Association (PCMCIA) slots for Flash memory cards; and an optional Fast Ethernet port. The Fast Ethernet port provides a 100-Mbps connection to the network. Figure 1 shows the Cisco 7204. Figure 2 shows the Cisco 7206.

Note The I/O controller is available with or without a Fast Ethernet port. Figure 1 and Figure 2 show an I/O controller with a Fast Ethernet port.

Figure 1 Cisco 7204—Front View

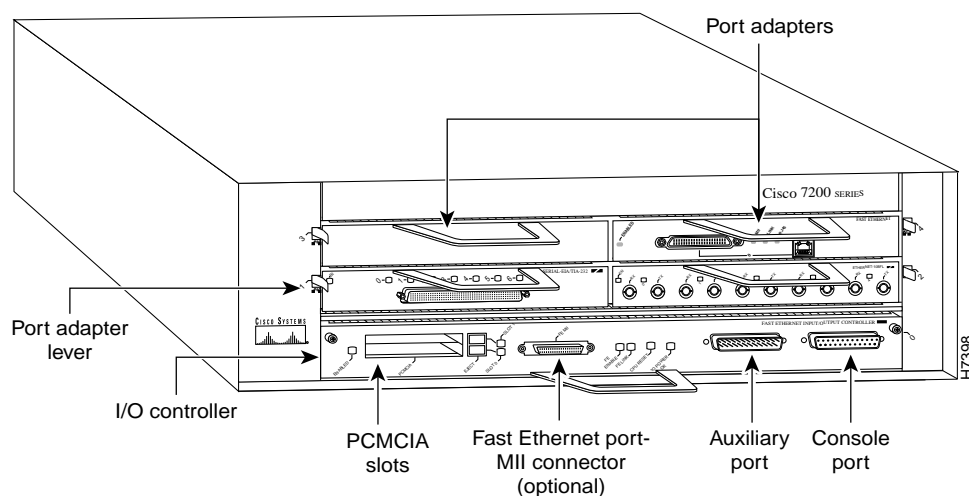
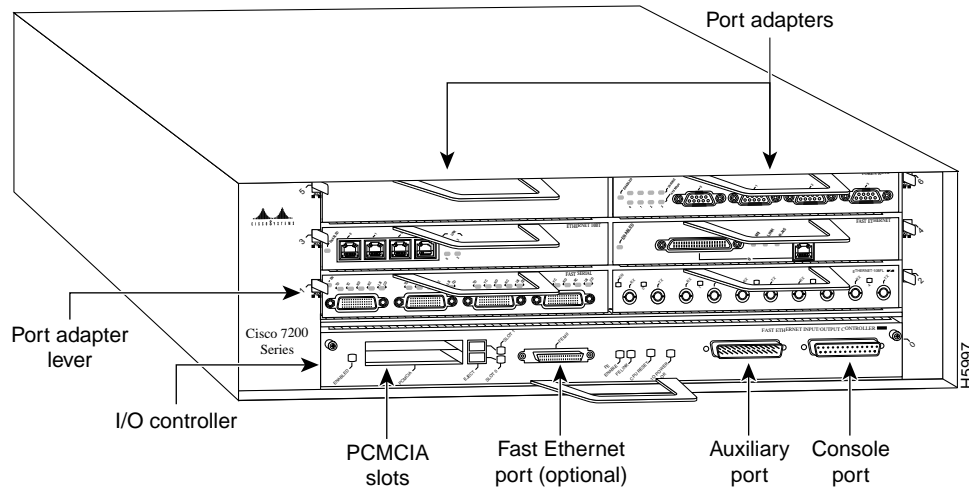


Figure 2 Cisco 7206—Front View

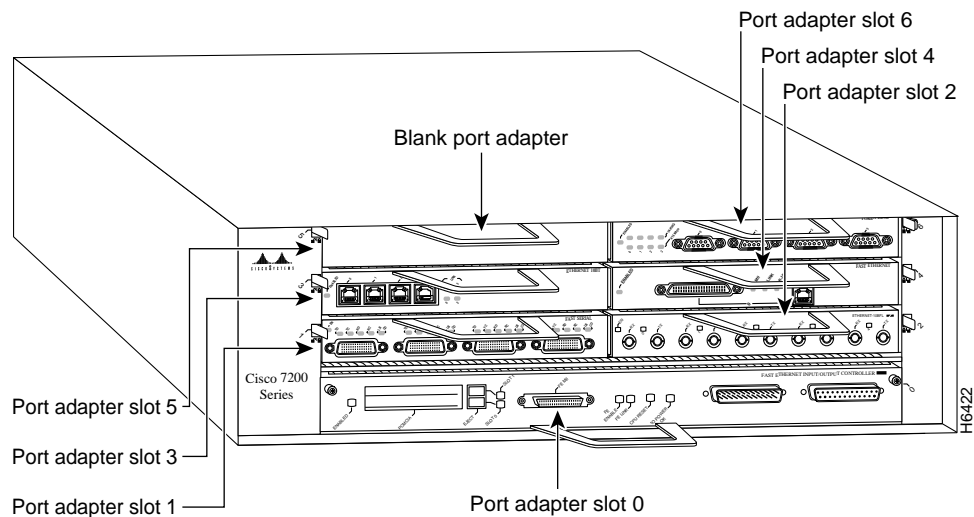


The port adapters installed in the Cisco 7200 series routers are of the same type as those installed on the second-generation Versatile Interface Processors (VIP2s) in the Cisco 7000 family routers. The port adapters installed in the Cisco 7200 series routers support online insertion and removal (OIR).

Port adapter slots in the Cisco 7200 series are numbered from left to right, beginning with port adapter slot 1 and continuing through port adapter slot 4 for the Cisco 7204, and slot 6 for the Cisco 7206. Port adapter slot 0 is the Fast Ethernet port on the I/O controller. Figure 3 shows the port adapter slot numbering for the Cisco 7206.

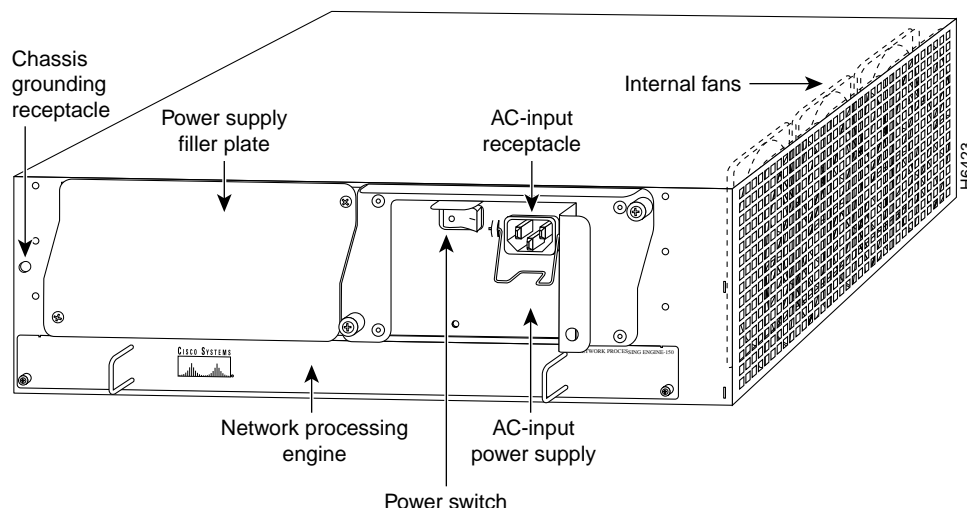
Note In Figure 3, a blank port adapter is installed in port adapter slot 5. To ensure adequate airflow across the router's internal components, ensure that each port adapter slot is filled with either a port adapter or a blank port adapter.

Figure 3 Port Adapter Numbering—Cisco 7206 Shown



The rear of the Cisco 7200 series routers provides access to the network processing engine and up to two 280W, AC-input or DC-input power supplies (refer to Figure 4).

Figure 4 Cisco 7200 Series Router—Rear View



The network processing engine has no external connectors or LEDs. There are two handles for removing and installing the network processing engine and two captive installation screws for securing it to the chassis.

A fully configured Cisco 7200 series router operates with only one installed power supply; however, a second, optional power supply provides hot-swappable, load-sharing, redundant power. The power supply has the router's main power switch and either an AC-input power receptacle, or a hardwired DC-input power cable (depending on the type of installed power supply). Adjacent to the power supply bays there is a 10 x 32-inch chassis ground receptacle that provides a chassis ground connection for ESD equipment or a grounding wire (refer to Figure 4).

Note The Cisco 7200 routers come equipped with either one 280W AC-input or one 280W DC-input power supply; a second 280W AC-input or DC-input power supply is available for the router. Figure 4 shows the rear of a Cisco 7200 series router that is configured with a single 280W AC-input power supply. (A power supply filler plate is installed over the second power supply bay.)

Three internal fans draw cooling air into the chassis interior and across internal components to maintain an acceptable operating temperature (refer to Figure 4). The three fans are enclosed in a tray that is located in the subchassis.

The I/O controller, port adapters, power supplies, and network processing engine slide into their respective chassis slots and connect directly to the router's midplane; there are no internal cables to connect. The midplane distributes DC power from the power supplies to the I/O controller, port adapters, fan tray, and network processing engine.

Network Processing Engine Overview

The network processing engine, shown in Figure 5, maintains and executes the system management functions for the Cisco 7200 series routers. The network processing engine also shares the system memory and environmental monitoring functions for the router with the I/O controller.

The network processing engine consists of the following components:

- Orion/R4700 reduced instruction set computing (RISC) processor operating at an internal clock speed of 150 megahertz (MHz).
- Galileo GT-64010 system controller that uses direct memory access (DMA) to transfer data between DRAM and packet SRAM on the network processing engine.
- Dynamic random-access memory (DRAM) for storing routing tables, protocols, network accounting applications, packets of information in preparation for process switching, and packet buffering for SRAM overflow. The standard configuration is 16 megabytes (MB), with up to 128 MB available through single in-line memory module (SIMM) upgrades.
- Packet SRAM for storing packets of information in preparation for fast switching.
- Unified cache SRAM that functions as the secondary cache for the R4700 RSIC processor.
- Two environmental sensors for monitoring the cooling air as it leaves the Cisco 7200 series chassis.

Figure 5 Cisco 7206 Network Processing Engine

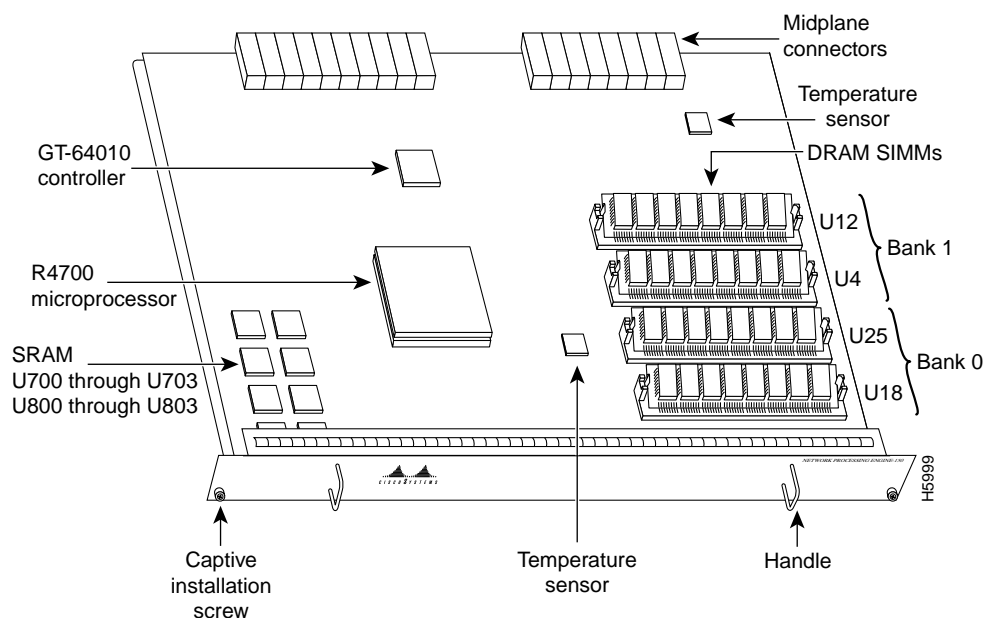


Table 1 lists the network processing engine memory components.

Table 1 Network Processing Engine Memory Components

Type	Size	Quantity	Description	Location
DRAM	16 to 128 MB	2 to 4	4-, 8-, 16-, or 32-MB SIMMs (based on maximum DRAM required).	Bank 1: U12 and U4 Bank 0: U25 and U18
SRAM	1 MB	8	Eight chips each being 128K words x 9 bits wide	Sockets U700 through U703 Sockets U800 through U803
Unified cache	512 KB	4	Secondary cache for the R4700 RISC processor	Sockets U12, U10, U14, and U26

Table 2 lists the network processing engine factory-installed DRAM configurations and their product numbers.

Table 2 DRAM SIMM Configurations

Total DRAM	DRAM Bank 0	Quantity	DRAM Bank 1	Quantity	Product Number
16 MB	U18 and U25	2 8-MB SIMMs	U4 and U12	–	MEM-NPE-16MB ¹
24 MB	U18 and U25	2 8-MB SIMMs	U4 and U12	2 4-MB SIMMs	MEM-NPE-24MB
32 MB	U18 and U25	2 16-MB SIMMs	U4 and U12	–	MEM-NPE-32MB ¹
64 MB	U18 and U25	2 32-MB SIMMs	U4 and U12	–	MEM-NPE-64MB ¹
128 MB	U18 and U25	2 32-MB SIMMs	U4 and U12	2 32-MB SIMMs	MEM-NPE-128MB ¹

1. These products are also available as DRAM upgrades. For example, to upgrade a network processing engine from 16 MB to 32 MB of DRAM, order product number MEM-NPE-16MB=.

Installation Prerequisites

This section provides a list of parts and tools you need to remove and replace the network processing engine in the Cisco 7200 series routers. This section also includes safety and ESD-prevention guidelines to help you avoid injury to yourself and damage to the equipment.

List of Parts and Tools

You need the following tools and parts to remove and replace the network processing engine. If you need additional equipment, contact a service representative for ordering information.

- A new network processing engine
- Number 2 Phillips screwdriver
- 3/16-inch flat-blade screwdriver
- Your own ESD-prevention equipment or the disposable grounding wrist strap included with all upgrade kits, FRUs, and spares
- An antistatic mat or surface

Safety Guidelines

Following are safety guidelines that you should follow when working with any equipment that connects to electrical power or telephone wiring.

Electrical Equipment Guidelines

Follow these basic guidelines when working with any electrical equipment:

- Before beginning any procedures requiring access to the chassis interior, locate the emergency power-off switch for the room in which you are working.
- Disconnect all power and external cables before moving a chassis.
- Do not work alone when potentially hazardous conditions exist.
- Never assume that power has been disconnected from a circuit; always check.
- Do not perform any action that creates a potential hazard to people or makes the equipment unsafe.
- Carefully examine your work area for possible hazards such as moist floors, ungrounded power extension cables, and missing safety grounds.

Telephone Wiring Guidelines

Use the following guidelines when working with any equipment that is connected to telephone wiring or to other network cabling:

- Never install telephone wiring during a lightning storm.
- Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
- Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
- Use caution when installing or modifying telephone lines.

Preventing Electrostatic Discharge Damage

Electrostatic discharge (ESD) damages equipment and impairs electrical circuitry. ESD occurs when printed circuit boards are improperly handled and results in complete or intermittent failures.

The network processing engine, I/O controller, and port adapters consist of a printed circuit board that is fixed in a metal carrier. Electromagnetic interference (EMI) shielding, connectors, and a handle are integral components of the carrier. Handle the network processing engine, I/O controller, and port adapters by their carrier edges and handle; never touch the printed circuit board or connector pins.

Figure 6 shows the location of a printed circuit board when it is installed in a network processing engine or I/O controller metal carrier. Do not touch the printed circuit board when handling either component.

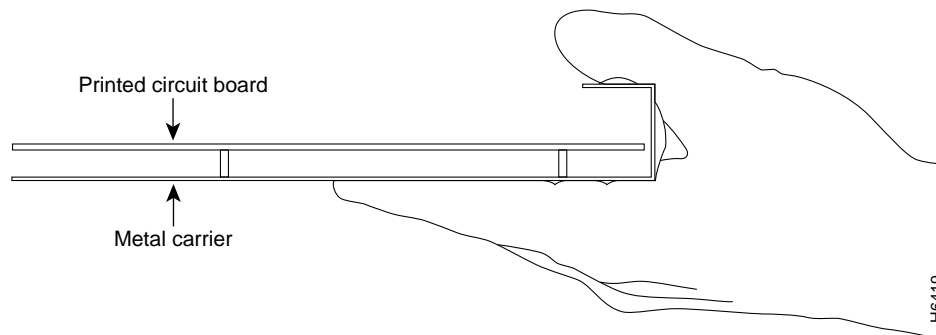
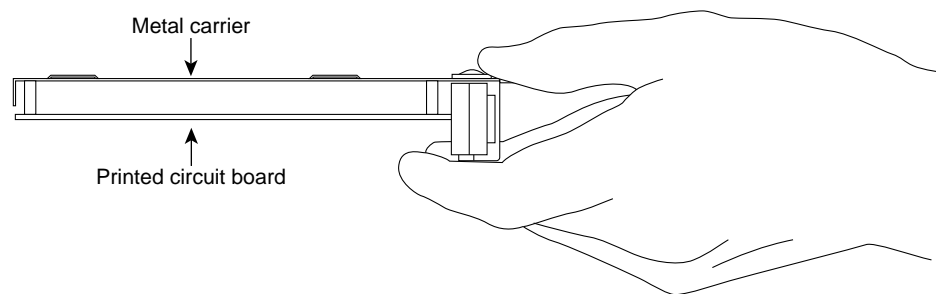
Figure 6 Handling the Network Processing Engine and the I/O Controller—Side View

Figure 7 shows the location of a printed circuit board when it is installed in a port adapter metal carrier. Do not touch the printed circuit board when handling a port adapter.

Figure 7 Handling a Port Adapter—Side View

Although the metal carrier helps to protect the printed circuit boards from ESD, wear a preventive antistatic strap whenever handling the network processing engine, I/O controller, or port adapters. Ensure that the strap makes good skin contact and connect the strap's clip to an unpainted chassis surface to safely channel unwanted ESD voltages to ground.

If no wrist strap is available, ground yourself by touching the metal part of the chassis.



Caution Make sure to tighten the captive installation screws on the network processing engine and the I/O controller (use a number 2 Phillips's screwdriver). These screws prevent accidental removal, provide proper grounding for the router, and help to ensure that the network processing engine and the I/O controller are properly seated in the router midplane.

Following are guidelines for preventing ESD damage:

- Always use an ESD wrist strap or ankle strap when installing or replacing the network processing engine, I/O controller, or port adapters. Ensure that the ESD strap makes contact with your skin.
- Handle the network processing engine, I/O controller, or port adapters by their metal carrier edges and handles only; avoid touching the printed circuit board components or any connector pins.
- When removing the network processing engine, I/O controller, or port adapters, place them on an antistatic surface with the printed circuit board components facing upward, or in a static shielding bag. If you are returning an I/O controller, network processing engine, or port adapter to the factory, immediately place it in a static shielding bag.



Caution Periodically check the resistance value of the antistatic strap. The measurement should be within the range of 1 and 10 megohms.

Ensuring Easy Access to the Router

If your Cisco 7200 series router is installed in a standard 19-inch rack or in a 19-inch Telco rack, cables from other equipment in the rack may obstruct access to the rear of the router. Also, rack power strips or other permanent fixtures may obstruct access to the router. Review the following guidelines to ensure easy access to the rear of the router when it is installed in a rack. If the router is not installed in a rack, or if you already have clear access to the rear of the router, proceed to the following section “Removing and Replacing the Network Processing Engine.”

Use the following guidelines to ensure easy access to the rear of the router when it is installed in a rack:

- Ensure that you have at least three to four feet of working space at the rear of the router.
- If cables from other equipment in the rack fall in front of the rear end of the router, carefully gather the cables (using care not to strain them) and use cable ties to anchor them away from the rear of the router.
- If access to the rear of the router is partially blocked by a power strip or some other permanent rack fixture, detach the router from the rack and carefully slide it forward until there is enough clearance to remove the power supply, the network processing engine, and the subchassis from the router. Detailed steps for detaching the router from the rack are contained in the following section “Removing and Replacing the Network Processing Engine.”



Caution Make sure that at least one other person is available to support the front of the router as you slide it out from the rack and, if necessary, to continue to support it while you remove and insert the power supply, network processing engine, or subchassis.

Removing and Replacing the Network Processing Engine

The following sections explain how to remove and replace the network processing engine in the Cisco 7200 series routers. It involves the following tasks:

- 1 Powering Down the Router and Disconnecting Input Power
- 2 Removing the Network Processing Engine
- 3 Replacing the Network Processing Engine
- 4 Reconnecting Input Power and Powering Up the Router

These tasks are described in detail in the following subsections.

Note The tasks for removing and replacing the network processing engine in the Cisco 7204 and the Cisco 7206 are the same. Therefore, the illustrations in the following sections show the Cisco 7206, unless indicated otherwise.

Powering Down the Router and Disconnecting Input Power

To power down a Cisco 7200 series router that has an installed AC-input power supply, complete the following steps:

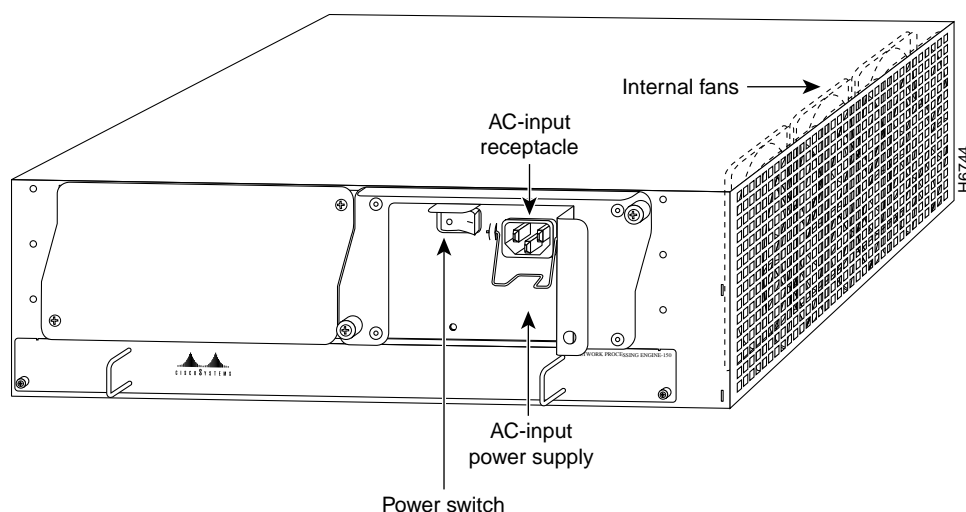
Note Before powering down the router, use the **copy running-config startup-config** command to save the router's running configuration to nonvolatile memory.

- Step 1** Facing the rear of the router, place the power switch (on the power supply) in the OFF (0) position. Repeat this action if a second power supply is installed in the router.
- Step 2** Observe the following items:
- The green OK LED on the power supply turns off
 - The fans stop operating
 - The LEDs on the I/O controller turn off
 - The LEDs on the port adapters turn off

To disconnect AC-input power to a Cisco 7200 series router, complete the following steps:

- Step 1** Unplug the input power cable from the power source.
- Step 2** Push down on the cable-retention clip that secures the input power cable to the router's power supply.
- Step 3** Unplug the other end of the input power cable from the power supply (refer to Figure 8).

Figure 8 Disconnecting Power from a Cisco 7200 Series AC-Input Power Supply



- Step 4** Repeat Step 2 through Step 1 if a second power supply is installed.

This completes the procedure for powering down the router and disconnecting input power. Proceed to the section "Removing the Network Processing Engine."

Removing the Network Processing Engine

To remove the network processing engine from a Cisco 7200 series router, complete the following steps:

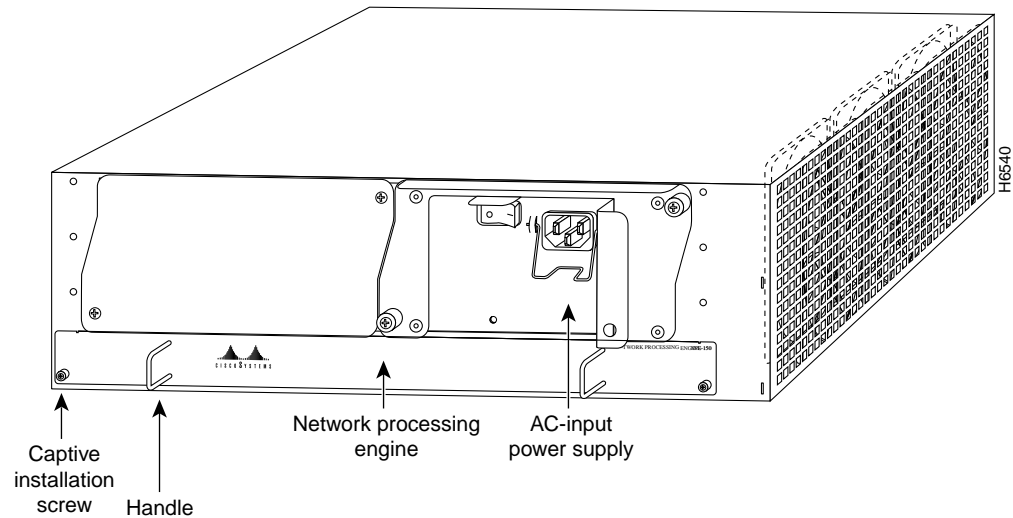
Note The weight of installed power supplies in your Cisco 7200 series router might make it difficult to remove the network processing engine. If you have difficulty, consider removing power supplies from the chassis and then removing the network processing engine. Refer to the section “Removing and Installing an AC-Input Power Supply” on page 16 of this document for information on removing and replacing an installed power supply.

- Step 1** Power down the router and disconnect its input power cable. Refer to the section “Powering Down the Router and Disconnecting Input Power” earlier in this document.
- Step 2** Attach an ESD-preventative wrist strap between you and an unfinished chassis surface.
- Step 3** Using a number 2 Phillips screwdriver, loosen the two captive installation screws on the faceplate of the network processing engine (refer to Figure 9).
- If the router is not installed in a standard 19-inch rack or in a Telco rack, skip to Step 7. If the router is installed in a rack, determine if any permanent rack fixtures, such as a power strip, are obstructing access to the rear of the router. If a rack fixture is obstructing access to the router, proceed with Step 4.
- Step 4** Using a 3/16-inch flat-blade screwdriver, loosen the screws that secure the router to the front mounting strips of the rack.
- Step 5** Position at least one person in front of the rack to support the front underside of the router.
- Step 6** From the rear of the rack, carefully push the front of the router out of the rack until there is enough clearance to remove the network processing engine.
- Step 7** Grasp the two network processing engine handles and carefully pull the network processing engine from its chassis slot.



Caution Handle the network processing engine by the carrier edges and handles only; never touch the printed circuit board components or connector pins (refer to Figure 6).

Figure 9 Cisco 7200 Series Network Processing Engine Captive Screws and Handles



- Step 8** Place the network processing engine on an antistatic surface with its printed circuit board components facing upward, or in a static shielding bag. If you are returning the network processing engine to the factory, immediately place it in a static shielding bag.

This completes the procedure for removing an installed network processing engine. Proceed to the section “Replacing the Network Processing Engine.”

Replacing the Network Processing Engine

To install a new network processing engine in the router, complete the following steps:

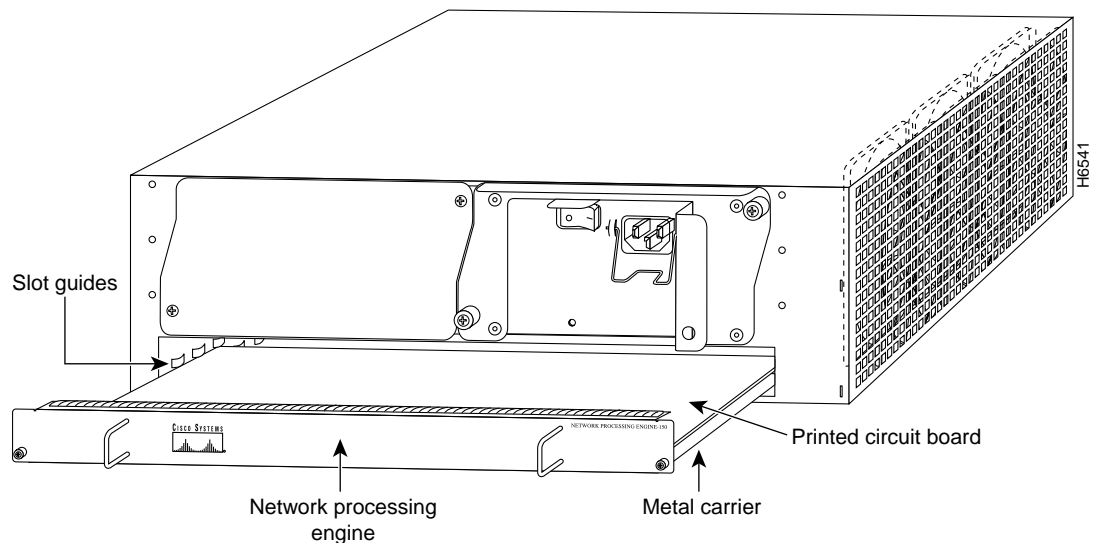
- Step 1** Ensure that the router is powered down and its input power cable is disconnected from the router and the power source. Refer to the section “Powering Down the Router and Disconnecting Input Power” earlier in this document.
- Step 2** Attach an ESD-preventative wrist strap between you and an unfinished chassis surface.
- Step 3** Remove the network processing engine from its static shielding bag.
- Step 4** Using both hands, grasp the network processing engine by its metal carrier edges and orient the network processing engine so that its printed circuit board components are upward (refer to Figure 6).



Caution Handle the network processing engine by the carrier edges and handles only; never touch the printed circuit board components or connector pins.

- Step 5** Align the left and right edge of the network processing engine’s printed circuit board between the network processing engine slot guides (refer to Figure 10).

Figure 10 Aligning the Network Processing Engine between the Slot Guides



Caution Do not align the network processing engine's *metal carrier* between the slot guides. Doing so will damage components on the network processing engine's printed circuit board as you slide the network processing engine into its chassis slot.

- Step 6** Gently slide the network processing engine all the way into its chassis slots until you feel the connectors mate with the router midplane.
- Step 7** Seat the network processing engine in the router midplane by tightening its captive installation screws with a number 2 Phillips screwdriver.

Note The network processing engine is not fully seated in the router midplane until you tighten its captive installation screws (use number 2 Phillips screwdriver).

- Step 8** If you removed power supplies from the router, replace the power supplies. Refer to the section "Removing and Installing an AC-Input Power Supply" on page 16 of this document when replacing an AC-input power supply in a Cisco 7200 series router.
- Step 9** If you slid the front of the router out of the rack, slowly guide the router back into the rack.
- Step 10** Use a 3/16-inch flat-blade screwdriver to tighten the screws that secure the router to front mounting strips of the rack.

This completes the procedure for replacing the network processing engine in a Cisco 7200 series router. Proceed to the section "Reconnecting Input Power and Powering Up the Router."

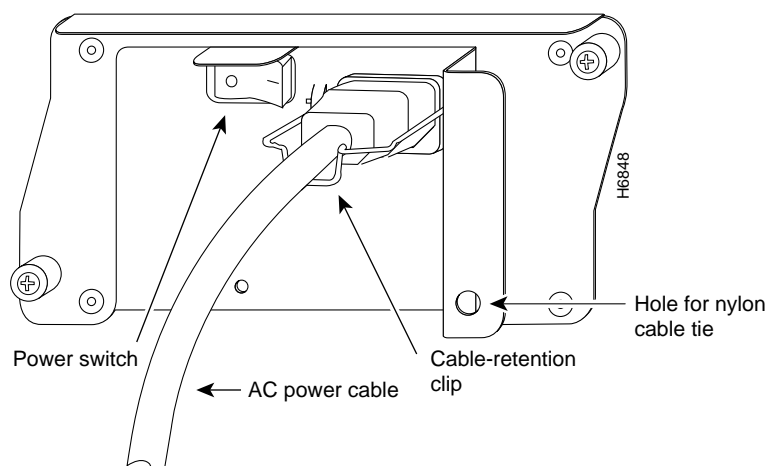
Reconnecting Input Power and Powering Up the Router

The following procedures explain how to reconnect AC-input power to a Cisco 7200 series router, power up the router, and verify a successful system boot.

To connect AC-input power to a Cisco 7200 series router, complete the following steps:

- Step 1** At the rear of the router, check that the power switch on the power supply is in the OFF (0) position.
- Step 2** Slide the cable-retention clip down, away from the AC receptacle, and plug in the power cable.
- Step 3** Secure the cable in the power supply AC receptacle by sliding the cable-retention clip up until it snaps around the connector. The cable-retention clip provides strain relief for the AC power cable (refer to Figure 11).

Figure 11 Connecting AC-Input Power to a Cisco 7200 Series Router



- Step 4** Plug the AC power supply cable into the AC power source.

Note Each AC-input power supply operating at 120 VAC requires a minimum of 5A service. We recommend powering the Cisco 7200 series routers from a 15A receptacle at the power source.

- Step 5** Repeat Step 1 through Step 4 for the second power supply (if present).

This completes the steps for connecting AC input power to a Cisco 7200 series router. To power up a Cisco 7200 series router that has an installed AC-input power supply, complete the following steps:

- Step 1** Check for the following:
 - Each port adapter is inserted in its slot and its respective port adapter lever is in the locked position
 - The network processing engine and the I/O controller are inserted in their respective slots, and their captive installation screws are tightened
 - All network interface cables are connected to the port adapters
 - A Flash memory card is installed in its PCMCIA slot (if present)

- Each power cable is connected and secured with the cable-retention clip
- The console terminal is turned on

- Step 2** At the rear of the router, place the power switch on the power supply in the ON (I) position. Repeat this step if a second power supply is installed in the router. The green OK LED on the power supply turns on.
- Step 3** Listen for the fans; you should immediately hear them operating.
- Step 4** During the boot process, observe the system's LEDs. The LEDs on most of the port adapters go on and off in irregular sequence. Some may go on, go out, and go on again for a short time. On the I/O controller, the IO Power OK LED comes on immediately.
- Step 5** Observe the initialization process. When the system boot is complete (a few seconds), the network processing engine begins to initialize the port adapters and the I/O controller. During this initialization, the LEDs on each port adapter behave differently (most flash on and off). The enabled LED on each port adapter goes on when initialization is completed, and the console screen displays a script and system banner similar to the following:

```
Cisco Internetwork Operating System Software
IOS (tm) 7200 Software (C7200-J-M), Version 11.1(6)CA [kpfjrgiu 100]
Copyright (c) 1986-1996 by cisco Systems, Inc.
Compiled Sun 21-Apr-96 04:10 by
```

This completes the procedures for reconnecting input power and powering up the router. This also completes the procedure for replacing the network processing engine in the Cisco 7206.

Removing and Installing an AC-Input Power Supply

The weight of power supplies installed in a Cisco 7200 series router might make it difficult for you to pull the network processing engine from its chassis slot. If this is the case, consider removing installed power supplies from the chassis and then removing the network processing engine. The following sections explain how remove and install an AC-input supply in a Cisco 7200 series router.

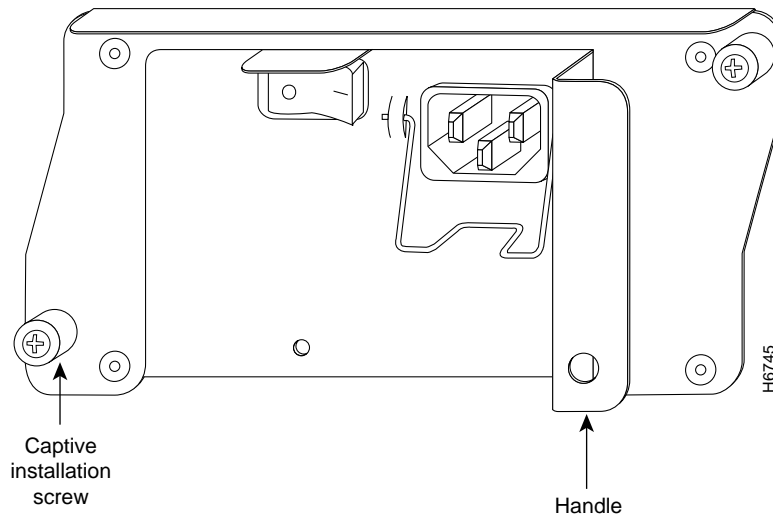
Removing an AC-Input Power Supply from a Cisco 7200 Series Router

To remove an AC-input power supply from a Cisco 7200 series router, complete the following steps:

- Step 1** Ensure that the power switch on the power supply is in the OFF (O) position and input power is disconnected from the power supply and its power source. (Refer to the section "Powering Down the Router and Disconnecting Input Power" earlier in this document.)
- Step 2** Using a number 2 Phillips screwdriver, loosen the two captive screws on the faceplate of the power supply (refer to Figure 12).

If the router is not installed in a standard 19-inch rack or in a Telco rack, skip to Step 6. If the router is installed in a rack, determine if any permanent rack fixtures, such as a power strip, are obstructing access to the power supply. If a rack fixture is obstructing access to the power supply, proceed to Step 3.

Figure 12 AC-Input Power Supply Captive Installation Screws and Handle



- Step 3** Using a 3/16-inch flat-blade screwdriver, loosen the screws that secure the router to the front mounting strips of the rack.
- Step 4** Position at least one person in front of the rack to support the front underside of the router.
- Step 5** From the rear of the rack, carefully push the front of the router out of the rack until there is enough clearance to remove the power supply.
- Step 6** Grasp the power supply handle and pull the power supply from the router.



Caution To maintain agency compliance requirements and meet EMI emissions standards for the Cisco 7200 series chassis with a single power supply, the power supply filler plate must remain in the power supply bay adjacent to the installed power supply. Do not remove this filler plate from the router unless you intend to install a redundant power supply.

- Step 7** Repeat Step 1 through Step 6 for the other installed power supply (if present).

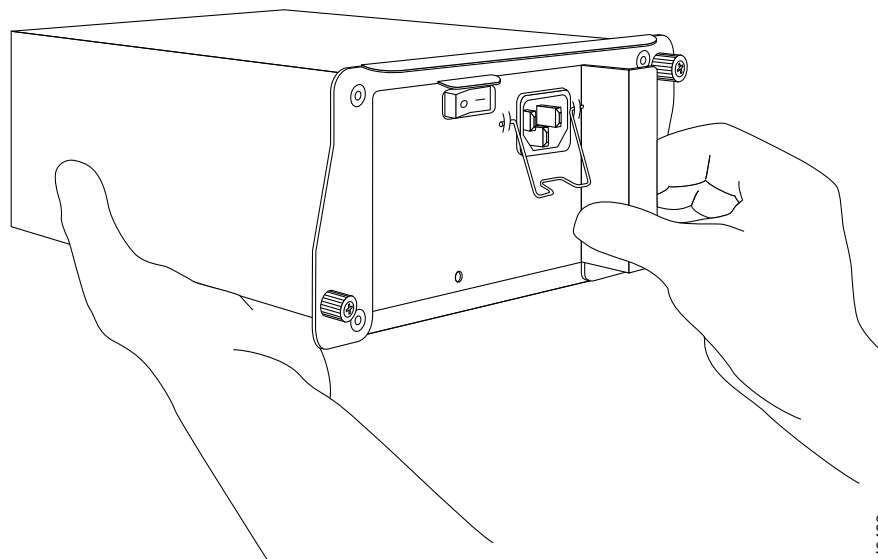
This completes the procedure for removing an AC-input power supply from a Cisco 7200 series router. Proceed to the following section “Installing an AC-Input Power Supply.”

Installing an AC-Input Power Supply

To install an AC-input power supply in a Cisco 7200 series router, complete the following steps:

- Step 1** Make sure the power switch on the power supply is in the OFF (O) position.
- Step 2** Grasp the power supply handle with one hand and place your other hand underneath the power supply for support (refer to Figure 13).

Figure 13 Holding the AC-Input Power Supply



Step 3 Align the power supply to the power supply bay.

Step 4 Slide the power supply completely in to the power supply bay until its faceplate is flush with the router's rear panel.



Caution When inserting a power supply into the router, do not use unnecessary force; slamming the power supply into the bay can damage the connectors on the rear of the supply and on the midplane.

Step 5 Seat the power supply in the router by tightening its captive screws with a number 2 Phillips screwdriver.

Note The power supply is not fully seated in the router midplane until you tighten its captive installation screws (use a number 2 Phillips screwdriver).

Step 6 Repeat Step 1 through Step 5 for a second power supply (if present).

Step 7 If there is no second power supply, replace the filler plate on the empty power supply bay. Using a number 2 Phillips screwdriver, tighten the filler plate's captive screws.

Step 8 If you pushed the router from the rack, slowly guide the router back into the rack.

Step 9 Use a 3/16-inch flat-blade screwdriver to tighten the screws that secure the router to front mounting strips of the rack.



Caution To maintain agency compliance requirements and meet EMI emissions standards for the Cisco 7200 series routers with a single power supply, the power supply filler plate must remain in the power supply bay adjacent to the installed power supply. Do not remove this filler plate from the router unless you intend to install a redundant power supply.

This completes the procedures for replacing an AC-input power supply in a Cisco 7200 series router.

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This document is to be used in conjunction with the *Cisco 7204 Installation and Configuration Guide* and the *Cisco 7206 Installation and Configuration Guide* publications.

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