



## Cisco 7200 VXR Routers

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# 1 Documentation and Resources

This section contains information to help you prepare for installing the Cisco 7200 VXR router. It contains a list of online documentation and resources.

## Document Revision History

The document revision history is in Table 1.

**Table 1** Document Revision History

Document Version	Date	Notes
OL-5012-05	May, 2006	This version of the document adds NPE-G2 information.
OL-5012-04	March, 2006	This revision of the document adds Port Adapter Jacket Card information
OL-5012-03	October, 2005	This revision of the document contains warning statement numbers and optical-fiber cleaning information.

## Documentation Survey

Is Cisco documentation helpful? Click [here](#) or go to <http://forums.cisco.com/eforum/servlet/viewsflash?cmd=showform&pollid=rtgdoc01!rtgdoc> to give us your feedback.

## Related Documentation

For detailed hardware installation instructions, refer to the online [Cisco 7200 VXR Installation and Configuration Guide](http://www.cisco.com/en/US/docs/routers/7200/install_and_upgrade/7200vyr_install_config/72vxicg.html) at [http://www.cisco.com/en/US/docs/routers/7200/install\\_and\\_upgrade/7200vyr\\_install\\_config/72vxicg.html](http://www.cisco.com/en/US/docs/routers/7200/install_and_upgrade/7200vyr_install_config/72vxicg.html).

For other documentation, see the following online documentation roadmaps for a listing of all documents related to this product:

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- [Cisco 7200 Series Routers Documentation Roadmap](http://www.cisco.com/en/US/docs/routers/7200/roadmaps/7200_series_doc_roadmap/3512.html) at: [http://www.cisco.com/en/US/docs/routers/7200/roadmaps/7200\\_series\\_doc\\_roadmap/3512.html](http://www.cisco.com/en/US/docs/routers/7200/roadmaps/7200_series_doc_roadmap/3512.html)
- [Cisco 7200 Series Routers Port Adapter Documentation Roadmap](http://www.cisco.com/en/US/docs/routers/7200/roadmaps/7200_series_port_adapter_doc_roadmap/3530.html) at: [http://www.cisco.com/en/US/docs/routers/7200/roadmaps/7200\\_series\\_port\\_adapter\\_doc\\_roadmap/3530.html](http://www.cisco.com/en/US/docs/routers/7200/roadmaps/7200_series_port_adapter_doc_roadmap/3530.html)

For troubleshooting information, see the following online documentation roadmap:

- [Cisco 7200 Series Routers Troubleshooting Documentation Roadmap](http://www.cisco.com/en/US/docs/routers/7200/roadmaps/7200_series_trblshoot_doc_roadmap/3518.html) at: [http://www.cisco.com/en/US/docs/routers/7200/roadmaps/7200\\_series\\_trblshoot\\_doc\\_roadmap/3518.html](http://www.cisco.com/en/US/docs/routers/7200/roadmaps/7200_series_trblshoot_doc_roadmap/3518.html)
- For Cisco IOS Configuration documentation including release notes and feature modules, see: <http://www.cisco.com/web/psa/products/index.html>

## Obtaining Documentation

Cisco documentation and additional literature are available on Cisco.com. Cisco also provides several ways to obtain technical assistance and other technical resources. These sections explain how to obtain technical information from Cisco Systems.

### Cisco.com

You can access the most current Cisco documentation at this URL:

<http://www.cisco.com/techsupport>

You can access the Cisco website at this URL:

<http://www.cisco.com>

You can access international Cisco websites at this URL:

[http://www.cisco.com/public/countries\\_languages.shtml](http://www.cisco.com/public/countries_languages.shtml)

## Product Documentation DVD

The Product Documentation DVD is a comprehensive library of technical product documentation on a portable medium. The DVD enables you to access multiple versions of installation, configuration, and command guides for Cisco hardware and software products. With the DVD, you have access to the same HTML documentation that is found on the Cisco website without being connected to the Internet. Certain products also have .PDF versions of the documentation available.

The Product Documentation DVD is available as a single unit or as a subscription. Registered Cisco.com users (Cisco direct customers) can order a Product Documentation DVD (product number DOC-DOCDVD= or DOC-DOCDVD=SUB) from Cisco Marketplace at this URL:

<http://www.cisco.com/go/marketplace/>

## Ordering Documentation

Registered Cisco.com users may order Cisco documentation at the Product Documentation Store in the Cisco Marketplace at this URL:

<http://www.cisco.com/go/marketplace/>

Nonregistered Cisco.com users can order technical documentation from 8:00 a.m. to 5:00 p.m. (0800 to 1700) PDT by calling 1 866 463-3487 in the United States and Canada, or elsewhere by calling 011 408 519-5055. You can also order documentation by e-mail at [tech-doc-store-mkpl@external.cisco.com](mailto:tech-doc-store-mkpl@external.cisco.com) or by fax at 1 408 519-5001 in the United States and Canada, or elsewhere at 011 408 519-5001.

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You can submit comments about Cisco documentation by using the response card (if present) behind the front cover of your document or by writing to the following address:

Cisco Systems  
Attn: Customer Document Ordering  
170 West Tasman Drive  
San Jose, CA 95134-9883

We appreciate your comments.

## Cisco Product Security Overview

Cisco provides a free online Security Vulnerability Policy portal at this URL:

[http://www.cisco.com/en/US/products/products\\_security\\_vulnerability\\_policy.html](http://www.cisco.com/en/US/products/products_security_vulnerability_policy.html)

From this site, you will find information about how to:

- Report security vulnerabilities in Cisco products.
- Obtain assistance with security incidents that involve Cisco products.
- Register to receive security information from Cisco.

A current list of security advisories, security notices, and security responses for Cisco products is available at this URL:

<http://www.cisco.com/go/psirt>

To see security advisories, security notices, and security responses as they are updated in real time, you can subscribe to the Product Security Incident Response Team Really Simple Syndication (PSIRT RSS) feed. Information about how to subscribe to the PSIRT RSS feed is found at this URL:

[http://www.cisco.com/en/US/products/products\\_psirt\\_rss\\_feed.html](http://www.cisco.com/en/US/products/products_psirt_rss_feed.html)

## Reporting Security Problems in Cisco Products

Cisco is committed to delivering secure products. We test our products internally before we release them, and we strive to correct all vulnerabilities quickly. If you think that you have identified a vulnerability in a Cisco product, contact PSIRT:

- For Emergencies only—[security-alert@cisco.com](mailto:security-alert@cisco.com)  
An emergency is either a condition in which a system is under active attack or a condition for which a severe and urgent security vulnerability should be reported. All other conditions are considered nonemergencies.
- For Nonemergencies—[psirt@cisco.com](mailto:psirt@cisco.com)

In an emergency, you can also reach PSIRT by telephone:

- 1 877 228-7302
- 1 408 525-6532



### Tip

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We encourage you to use Pretty Good Privacy (PGP) or a compatible product (for example, GnuPG) to encrypt any sensitive information that you send to Cisco. PSIRT can work with information that has been encrypted with PGP versions 2.x through 9.x.

Never use a revoked or an expired encryption key. The correct public key to use in your correspondence with PSIRT is the one linked in the Contact Summary section of the Security Vulnerability Policy page at this URL:

[http://www.cisco.com/en/US/products/products\\_security\\_vulnerability\\_policy.html](http://www.cisco.com/en/US/products/products_security_vulnerability_policy.html)

The link on this page has the current PGP key ID in use.

If you do not have or use PGP, contact PSIRT at the aforementioned e-mail addresses or phone numbers before sending any sensitive material to find other means of encrypting the data.

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## Obtaining Additional Publications and Information

Information about Cisco products, technologies, and network solutions is available from various online and printed sources.

- The *Cisco Product Quick Reference Guide* is a handy, compact reference tool that includes brief product overviews, key features, sample part numbers, and abbreviated technical specifications for many Cisco products that are sold through channel partners. It is updated twice a year and includes the latest Cisco offerings. To order and find out more about the Cisco Product Quick Reference Guide, go to this URL:  
<http://www.cisco.com/go/guide>
- Cisco Marketplace provides a variety of Cisco books, reference guides, documentation, and logo merchandise. Visit Cisco Marketplace, the company store, at this URL:  
<http://www.cisco.com/go/marketplace/>
- *Cisco Press* publishes a wide range of general networking, training and certification titles. Both new and experienced users will benefit from these publications. For current Cisco Press titles and other information, go to Cisco Press at this URL:  
<http://www.ciscopress.com>
- *Packet* magazine is the Cisco Systems technical user magazine for maximizing Internet and networking investments. Each quarter, Packet delivers coverage of the latest industry trends, technology breakthroughs, and Cisco products and solutions, as well as network deployment and troubleshooting tips, configuration examples, customer case studies, certification and training information, and links to scores of in-depth online resources. You can access Packet magazine at this URL:  
<http://www.cisco.com/packet>

- *iQ Magazine* is the quarterly publication from Cisco Systems designed to help growing companies learn how they can use technology to increase revenue, streamline their business, and expand services. The publication identifies the challenges facing these companies and the technologies to help solve them, using real-world case studies and business strategies to help readers make sound technology investment decisions. You can access iQ Magazine at this URL:  
<http://www.cisco.com/go/iqmagazine>  
or view the digital edition at this URL:  
<http://ciscoiq.texterity.com/ciscoiq/sample/>
- *Internet Protocol Journal* is a quarterly journal published by Cisco Systems for engineering professionals involved in designing, developing, and operating public and private internets and intranets. You can access the Internet Protocol Journal at this URL:  
<http://www.cisco.com/ipj>
- Networking products offered by Cisco Systems, as well as customer support services, can be obtained at this URL:  
<http://www.cisco.com/en/US/products/index.html>
- Networking Professionals Connection is an interactive website for networking professionals to share questions, suggestions, and information about networking products and technologies with Cisco experts and other networking professionals. Join a discussion at this URL:  
<http://www.cisco.com/discuss/networking>
- World-class networking training is available from Cisco. You can view current offerings at this URL:  
<http://www.cisco.com/en/US/learning/index.html>

## 2 Prepare for Installation



**Warning**

**Only trained and qualified personnel should install, replace, or service this equipment.** Statement 1030



**Warning**

**Read the installation instructions before you connect the system to its power source.** Statement 10



**Warning**

**This unit is intended for installation in restricted access areas. A restricted access area is where access can only be gained by service personnel through the use of a special tool, lock and key, or other means of security, and is controlled by the authority responsible for the location.** Statement 37

Before beginning this router installation read the [Regulatory Safety and Compliance Information for Cisco 7200 Series Routers](#) document including the section “Site Preparation and Safety Information.”

### Site Preparation and Unpacking

- Lift the router safely out of the packing container.
- Ensure the power service at the site is suitable for the router you are installing.
- Check the packing slip to ensure that all the proper components are present.
- Locate and have accessible the Site Log for recording information about this installation.

### Tools and Parts

Part	Part
<ul style="list-style-type: none"><li>• Grounding lug and wires:<ul style="list-style-type: none"><li>– A grounding lug with two number-10 screw holes with a 0.63-inch (16.002-mm) spacing between them</li><li>– A wire receptacle large enough to accept a 6-AWG multistrand, copper wire</li><li>– Two Phillips machine screws with locking washers—M5 (metric), 0.031-inch (.08-mm) pitch, 0.315-inch (8-mm) length</li><li>– A crimping tool to fit the grounding lug wire receptacle</li><li>– One grounding wire—6-AWG, 0.162-inch (4.115-mm) diameter, with approximately 0.108-inch (2.743-mm) insulation, for a total wire diameter of approximately 0.27 inches (6.858 mm). The wire length depends on your router location and site environment.</li></ul></li><li>• The rack-mount and cable-management kit:<ul style="list-style-type: none"><li>– Two rack-mount brackets and two cable-management brackets</li><li>– Four M4 x 8-mm Phillips flathead screws</li><li>– Six 10-32 x 3/8-inch slotted binderhead screws</li></ul></li></ul>	<ul style="list-style-type: none"><li>• Power cord</li><li>• Appropriate cables to connect the router to the network and console terminal</li><li>• Level</li><li>• Data service unit (DSU) to connect each serial port to an external network</li><li>• Tape measure</li><li>• One serial port adapter cable for each serial port to connect the port with the remote device or network Ethernet transceiver</li><li>• Number 2 Phillips screwdriver</li><li>• 3/16-inch flat-blade screwdriver</li><li>• Wire stripper</li><li>• ESD-preventative wrist strap</li></ul>

Part	Part
<ul style="list-style-type: none"> <li>• Port adapter documentation for configuring the interfaces</li> </ul>	<ul style="list-style-type: none"> <li>• AC power cable-retention clip</li> </ul>
<ul style="list-style-type: none"> <li>• T1 channel service unit/data service unit (CSU/DSU) that converts the High-Level Data Link Control (HDLC) synchronous serial data stream into a T1 data stream with the correct framing and ones density to connect a serial port to a T1 network. (Some telephone systems require a minimum number of 1 bits per time unit in a data stream, called <i>ones density</i>.) Several T1 CSU/DSU devices are available as additional equipment, and most provide a V.35, EIA/TIA-449, or EIA-530 electrical interface.</li> </ul>	

## Prepare for Workbench or Tabletop Installation

For a workbench or tabletop installation, verify the following before installing the router:

- The router is off the floor and has adequate ventilation.
- An adequate chassis ground (earth) connection exists for the router.
- The router has at least 3 inches (7.62 cm) of clearance at the inlet and exhaust vents (sides of router).
- The router has 19 inches (48.3 cm) clearance at the front and rear to allow for field-replaceable unit (FRU) replacement or installation, or to access cables or equipment.
- Port adapter and power supply filler panels are installed if port adapters and a second power supply are not installed. There must be no empty slots.

For cable-management bracket installation instructions, see page 8 and 9.

## Prepare for Rack-Mount Installation

Make these decisions before you begin the rack-mounting tasks:

- Decide whether or not you want to front- or rear-mount the chassis.
- Decide whether or not you want to attach cable-management brackets.
- Determine the type of rack—four-post or two-post—that you will be using.

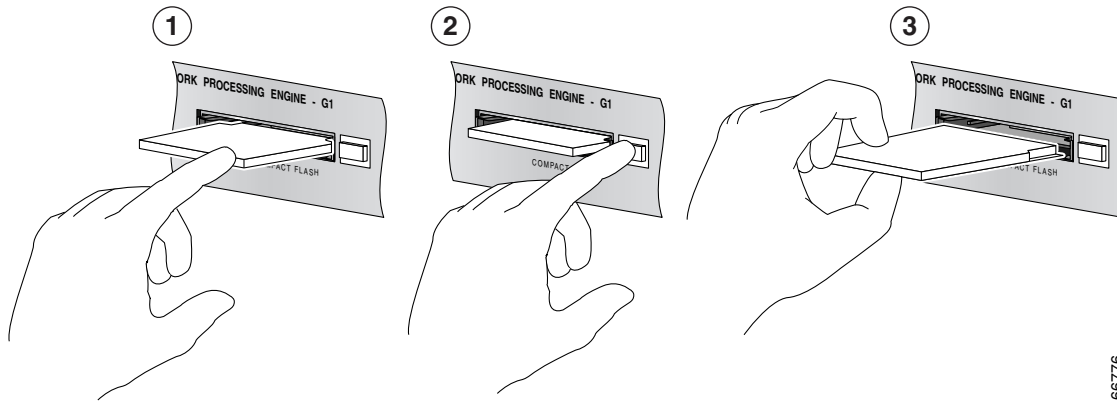
## Install the CompactFlash Disk, GBICs, and SFPs on the NPE-G1 or NPE-G2



**Note** The NPE-G1 and NPE-G2 shis with the CompactFlash Disk, GBICS, and SFPs installed.

If you need to install CompactFlash Disks, GBICs or SFPs into the NPE-G1 or NPE-G2, do so before you rack-mount the router. If you do not have an NPE-G1 or NPE-G2 in the router, skip to the “Rack-Mount the Router” section on page 10.

**Figure 1** *Installing a CompactFlash Disk*



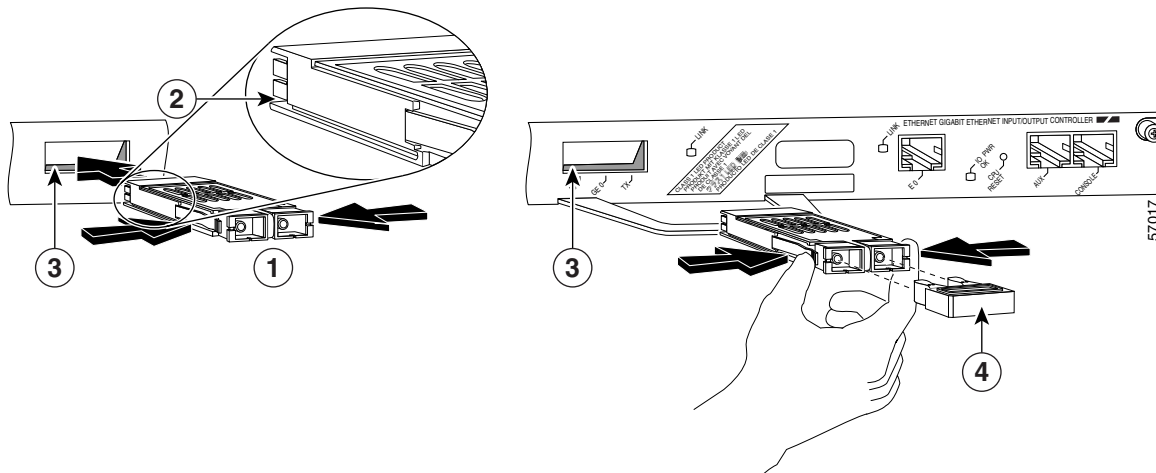
66776

<b>1</b>	Inserting the CompactFlash Disk	<b>3</b>	Removing the CompactFlash Disk
<b>2</b>	Releasing the CompactFlash Disk		

- Step 1** Turn the CompactFlash Disk so that the label is facing down. It is keyed and cannot be inserted incorrectly.
- Step 2** Slide the CompactFlash Disk into the CompactFlash Disk slot.

See the [Network Processing Engine and Network Services Engine Installation and Configuration](#) document for more information about using the NPE-G1 or NPE-G2.

**Figure 2** *Installing the GBIC in an NPE-G1*



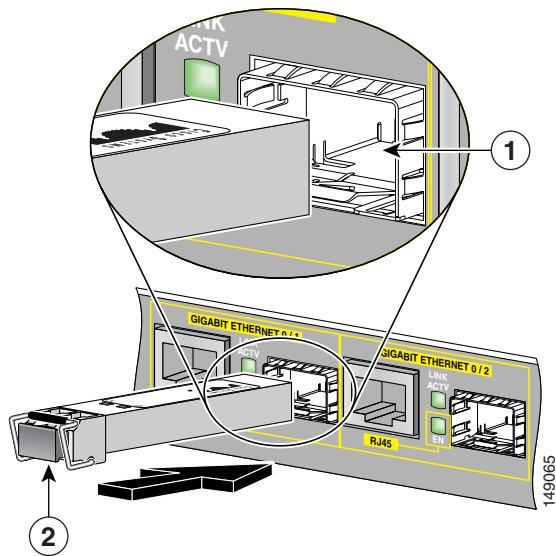
57017

<b>1</b>	GBIC	<b>3</b>	GBIC slot
<b>2</b>	Alignment groove	<b>4</b>	Plug

- Step 1** Insert the Gigabit Ethernet Gigabit Interface Converter (GBIC) in a GBIC slot on the NPE-G1. The GBIC is keyed so that it can only be inserted correctly.
- Step 2** Repeat Step 1 until the GBICs you ordered are installed.



**Figure 3** Inserting an SFP Module into the NPE-G2 Gigabit Ethernet Port 0/1



<b>1</b> SFP port 0/1	<b>2</b> SFP module
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Use the following procedure to install an SFP module in the NPE-G2:

**Step 1** Attach an ESD-preventive wrist strap between you and an unpainted chassis surface.

**Step 2** Locate the label on the SFP module and turn the SFP module so the label is on top and the alignment groove is down.



**Note** The SFP module is keyed so that it cannot be inserted incorrectly.

**Step 3** Insert the SFP module into SFP port 0/1, 0/2, or 0/3. The SFP module snaps into place when you have completely and properly inserted it.

**Step 4** Repeat Step 2 if you are inserting a second or third SFP module.



**Note** Do not remove the plug from the SFP module optical bores until you are ready to install the network interface optical fiber cable. Save the plug for future use.

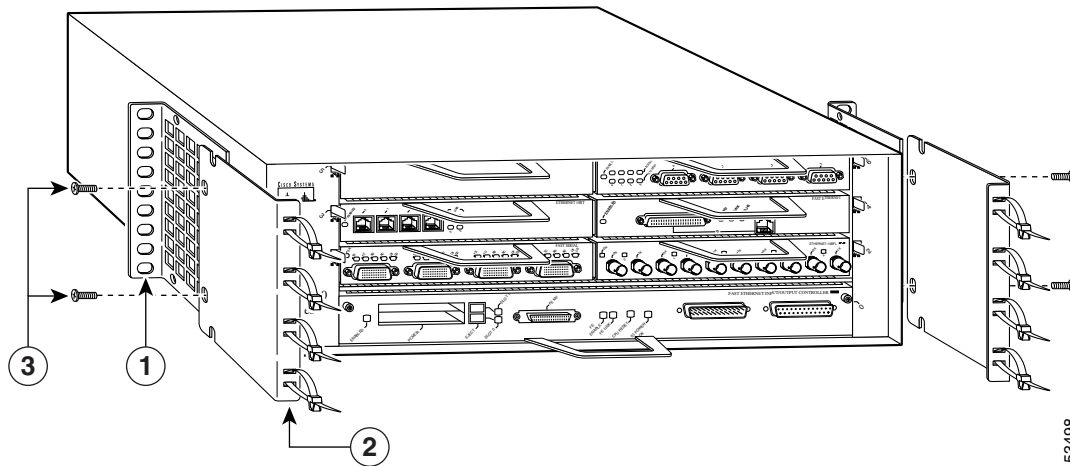


**Note** We strongly recommend cleaning all optical fiber connections before connecting optical cables to equipment. For information about cleaning optical connectors, see the [Inspection and Cleaning Procedures for Fiber-Optic Connections](#) document and the [Compressed Air Cleaning Issues for Fiber-Optic Connections](#) document.

See the [Cisco 7200 VXR Installation and Configuration Guide](#) for more information.

### 3 Rack-Mount the Router

Figure 4 Attaching the Rack-Mount Brackets to the Front of the Chassis



1	Rack-mount bracket	3	M4 x 8-mm Phillips flathead screws
2	Cable-management bracket		

#### Brackets Front-Mounted—Chassis Protrudes from the Rack

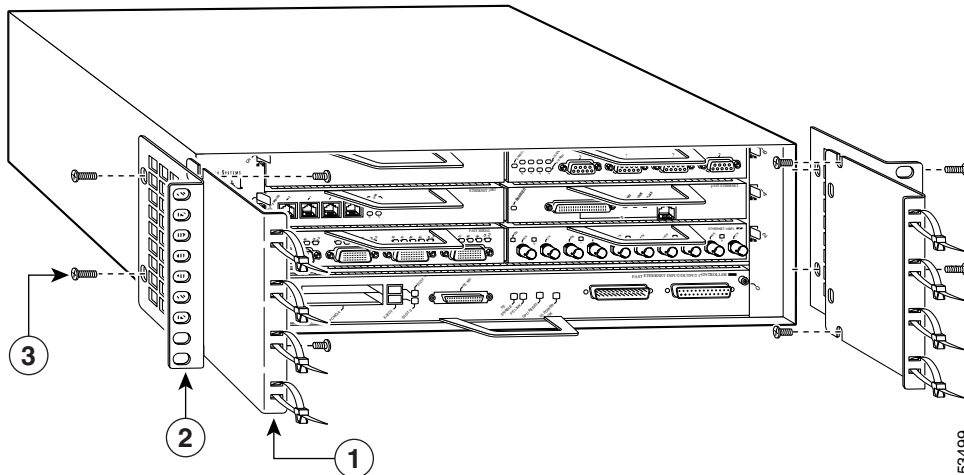
Locate the rack-mount and cable-management brackets and screws and a Number 2 Phillips screwdriver.

- Step 1** Align the rack-mount bracket (1)—as shown above—to the side of the router. Insert and tighten the screws (3) if you are not adding the cable-management brackets. Repeat this step on the other side of the router.
- Go to the “Two-Post or Four-Post Rack Installation” section on page 16.
- Step 2** If you are using the cable-management brackets, align the rack-mount bracket (1) to the side of the router, align the cable-management bracket (2) over the rack-mount bracket—as shown above—and insert the screws (3) through both. Tighten the screws. Repeat this step on the other side of the router.

If you have an NPE-G1 or NPE-G2 installed, go to the “NPE-G1 and NPE-G2 Rear Cable-Management Brackets on a Front-Mounted Router” section on page 12.

If you do not have an NPE-G1 or NPE-G2 installed, go to the “Two-Post or Four-Post Rack Installation” section on page 16.

**Figure 5 Attaching the Rack-Mount Brackets to the Front of the Chassis—Chassis Recessed**



<b>1</b>	Cable-management bracket	<b>3</b>	M4 x 8-mm Phillips flathead screws
<b>2</b>	Rack-mount bracket		

## Brackets Front-Mounted—Chassis Recessed in Rack

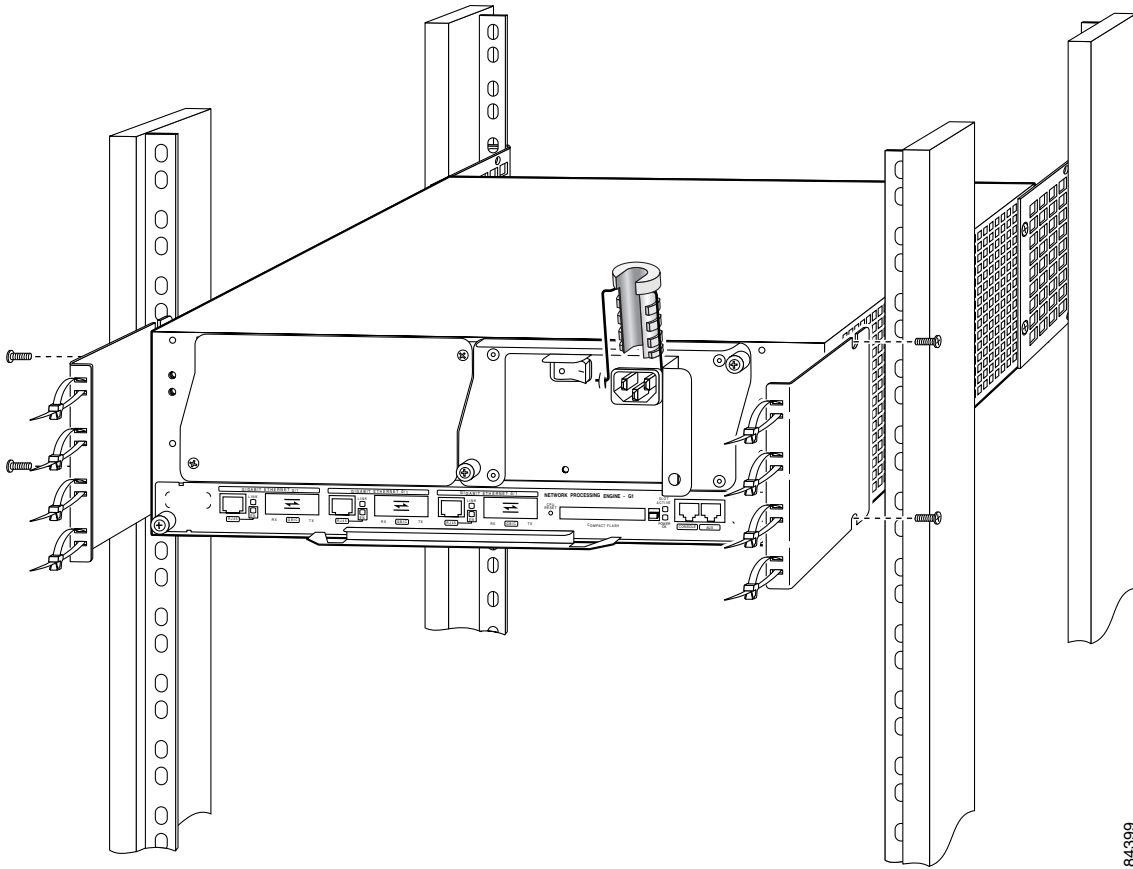
Locate the rack-mount and cable-management brackets and screws and a Number 2 Phillips screwdriver.

- Step 1** Align the cable-management bracket (1) to the side of the router. Align the rack-mount bracket over it—as shown above—and insert and tighten the screws (3).  
Go to the “Two-Post or Four-Post Rack Installation” section on page 16.
- Step 2** If you are not using the cable-management brackets, align the rack-mount brackets (2)—as shown above—to the router and insert and tighten the screws.

If you have an NPE-G1 or NPE-G2 installed, go to the “NPE-G1 and NPE-G2 Rear Cable-Management Brackets on a Front-Mounted Router” section on page 12.

If you do not have an NPE-G1 or NPE-G2 installed, go to the “Two-Post or Four-Post Rack Installation” section on page 16.

**Figure 6** *Installing the Rear Cable-Management Brackets with an NPE-G1 or NPE-G2 Installed—Router Front-Mounted*



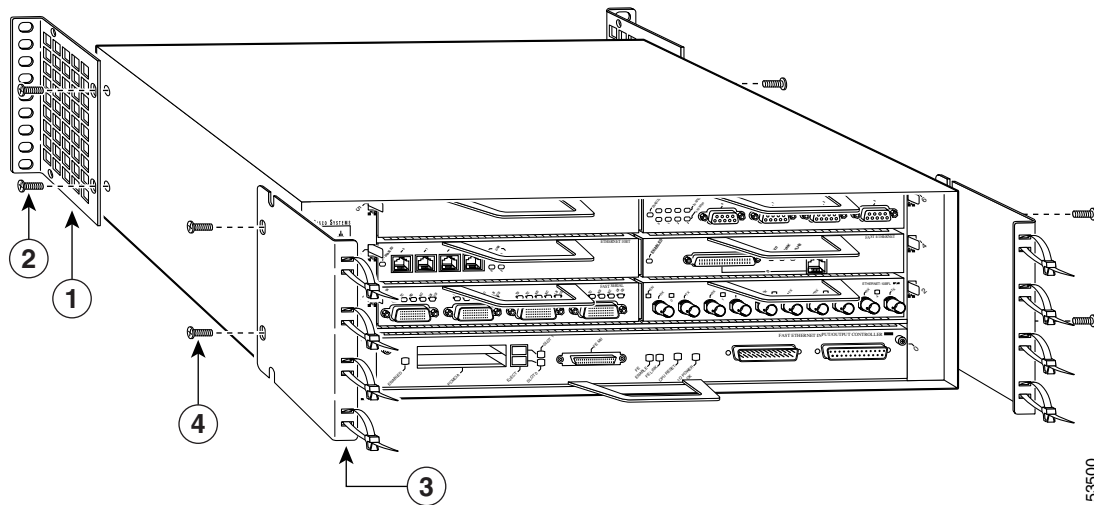
## NPE-G1 and NPE-G2 Rear Cable-Management Brackets on a Front-Mounted Router

If you have an NPE-G1 or NPE-G2 installed, install cable-management brackets on the rear of the router as well as on the front of the router.

- 
- Step 1** If the back of the router protrudes from the rack, place the cable-management brackets against the router as shown in Figure 6.
- Step 2** Insert two screws into each bracket, and tighten them to the router.
- 

Go to the “Two-Post or Four-Post Rack Installation” section on page 16.

**Figure 7 Attaching the Rack-Mount Brackets to the Rear of the Chassis—Front Protrudes from the Rack**



<b>1</b>	Rack-mount bracket	<b>3</b>	Cable-management bracket
<b>2</b>	M4 x 8-mm Phillips flathead screws	<b>4</b>	M4 x 8-mm Phillips flathead screws

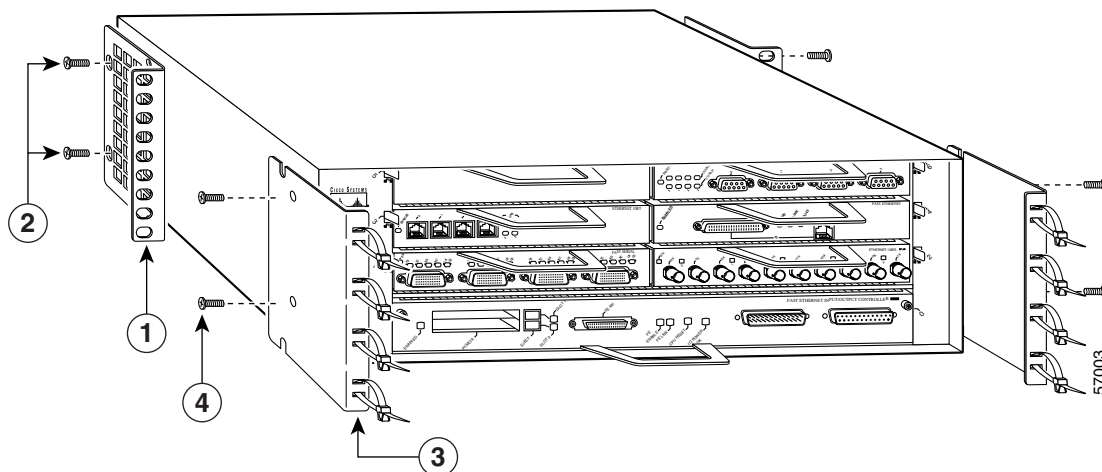
## Brackets Rear-Mounted—Front Protrudes from the Rack

- Step 1** Locate the threaded screw holes in the rear sides of the chassis.
- Step 2** Align a rack-mount bracket (1) to the threaded holes in the right side of the chassis.
- Step 3** Using a Number 2 Phillips screwdriver and two M4 x 8-mm Phillips flathead screws (2), attach the rack-mount bracket to the router.
- Step 4** Repeat Steps 2 and 3 for the bracket on the other side of the router. If you are not installing cable-management brackets, skip to the “Two-Post or Four-Post Rack Installation” section on page 16 for rack-mount instructions. Otherwise, continue with Step 5.
- Step 5** Align a cable-management bracket (3) to the threaded holes in the front of the chassis.
- Step 6** Using two M4 x 8-mm Phillips flathead screws (4), thread and tighten the screws through the cable-management bracket and into the chassis.
- Step 7** Repeat Step 5 and Step 6 on the other side of the router.

If you have an NPE-G1 or NPE-G2 installed, go to the “NPE-G1 or NPE-G2 Rear Cable-Management Brackets on a Rear-Mounted Router” section on page 15, or the “NPE-G1 or NPE-G2 Optical Cable-Management Bracket” section on page 16.

If you do not have an NPE-G1 or NPE-G2 installed, go to the “Two-Post or Four-Post Rack Installation” section on page 16.

**Figure 8 Attaching the Rack-Mount Brackets to the Rear of the Chassis—Front Recessed**



<b>1</b>	Rack-mount bracket	<b>3</b>	Cable-management bracket
<b>2</b>	M4 x 8-mm Phillips flathead screws	<b>4</b>	M4 x 8-mm Phillips flathead screws

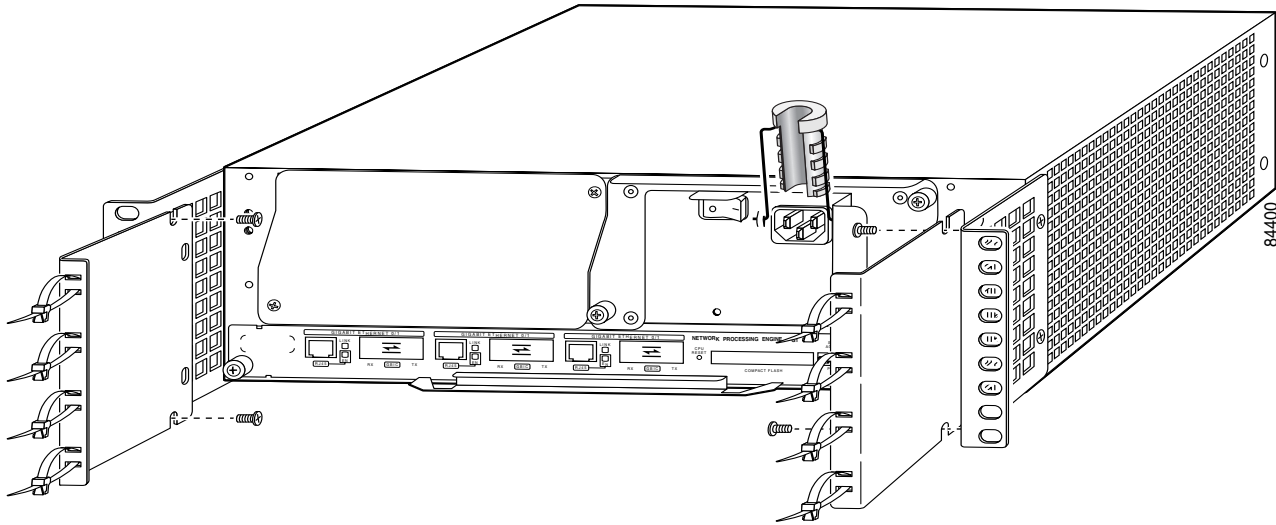
## Brackets Rear-Mounted—Front Recessed in the Rack

- Step 1** Locate the threaded screw holes in the rear sides of the chassis.
- Step 2** Align a rack-mount bracket (1) to the threaded holes in the right side of the chassis.
- Step 3** Using a Number 2 Phillips screwdriver and two M4 x 8-mm Phillips flathead screws (2), attach the rack-mount bracket to the router.
- Step 4** Repeat Step 2 and Step 3 for the bracket on the other side of the router. If you are not installing cable-management brackets, skip to the “Two-Post or Four-Post Rack Installation” section on page 16 for rack-mount instructions. Otherwise continue with Step 5.
- Step 5** Align a cable-management bracket (3) to the threaded holes in the front of the chassis.
- Step 6** Using two M4 x 8-mm Phillips flathead screws (4), thread and tighten the screws through the cable-management bracket and into the chassis.
- Step 7** Repeat Step 5 and Step 6 on the other side of the router.

If you have an NPE-G1 or NPE-G2 installed, go to the “NPE-G1 or NPE-G2 Rear Cable-Management Brackets on a Rear-Mounted Router” section on page 15, or the “NPE-G1 or NPE-G2 Optical Cable-Management Bracket” section on page 16.

If you do not have an NPE-G1 installed, go to the “Two-Post or Four-Post Rack Installation” section on page 16.

**Figure 9** Installing the Rear Cable-Management Brackets with the NPE-G1 or NPE-G2—Router Rear-Mounted



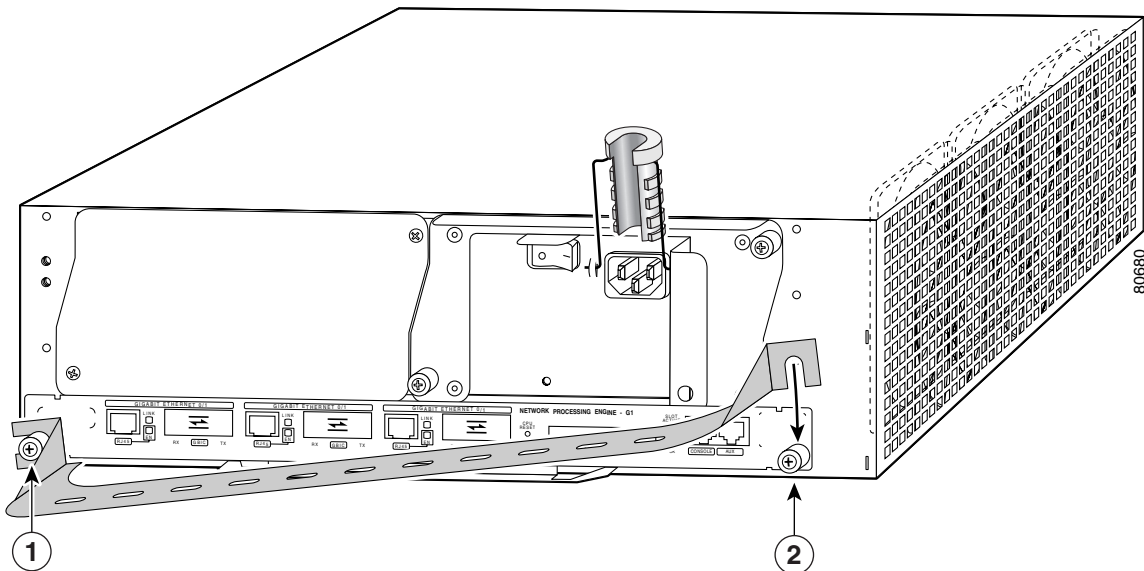
## NPE-G1 or NPE-G2 Rear Cable-Management Brackets on a Rear-Mounted Router

If you have an NPE-G1 or NPE-G2 installed, install cable-management brackets on the rear of the router as well as on the front of the router.

- 
- Step 1** Align the cable-management brackets with the rack-mount brackets.
  - Step 2** Insert and tighten two screws for each bracket. The screws come with the cable-management brackets.
- 

Go to the “Two-Post or Four-Post Rack Installation” section on page 16.

**Figure 10** Installing the Optical Cable-Management Bracket



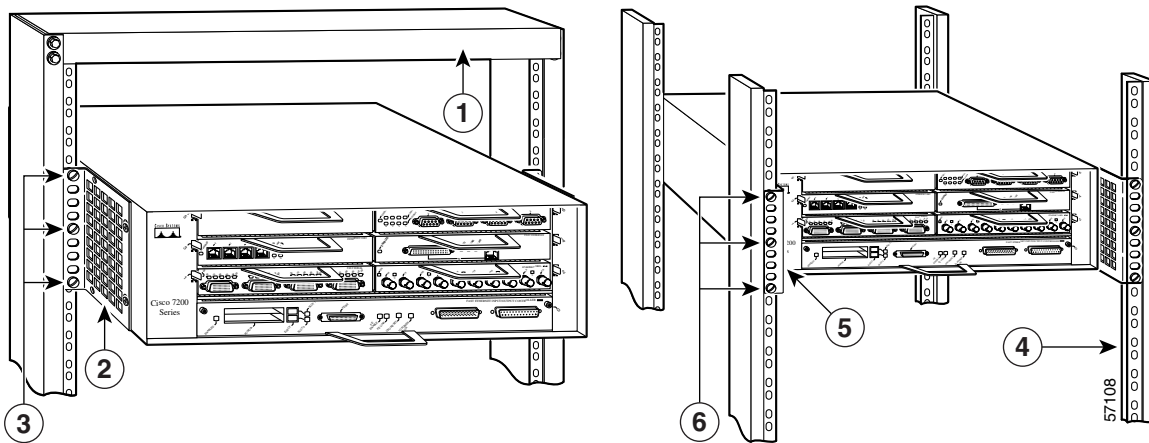
- 
- |          |                                 |          |                                  |
|----------|---------------------------------|----------|----------------------------------|
| <b>1</b> | Left captive installation screw | <b>2</b> | Right captive installation screw |
|----------|---------------------------------|----------|----------------------------------|
-

## NPE-G1 or NPE-G2 Optical Cable-Management Bracket

- Step 1** Loosen the left and right captive installation screws.
- Step 2** Hold the cable-management bracket so that it is positioned as shown in Figure 10.
- Step 3** Place the left end of the cable-management bracket over the screw.
- Step 4** Rotate the cable-management bracket down, until it slides behind the right captive installation screw.
- Step 5** Tighten both captive installation screws.

Go to the “Two-Post or Four-Post Rack Installation” section on page 16.

**Figure 11** Installing the 7200 VXR in a Two-Post and Four-Post Rack



<b>1</b>	Two-post rack	<b>4</b>	Four-post rack
<b>2</b>	Rack-mount bracket	<b>5</b>	Rack-mount bracket
<b>3</b>	10-32 x 3/8-inch slotted binderhead screws	<b>6</b>	10-32 x 3/8-inch slotted binderhead screws

## Two-Post or Four-Post Rack Installation

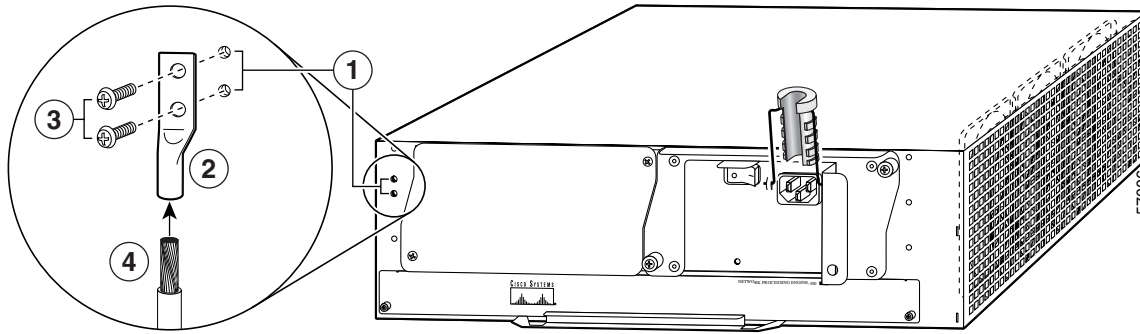


**Note** Inner clearance (the width between the inner sides of the two posts or rails) must be at least 17.00 inches (43.18 cm). The height of the chassis is 5.25 inches (13.34 cm).

- Step 1** Make sure that all chassis screws holding the network processing engine or network services engine, I/O controller, and power supply are tightened and that any port adapter levers are in a locked position.
- Step 2** Make sure the rack brakes are locked or the rack is stabilized.
- Step 3** With the router front closest to you, lift it carefully into the rack. To prevent injury, avoid any sudden twists or moves.
- Step 4** Slide the chassis into the rack, until the brackets meet the mounting strips or posts on both sides of the rack.
- Step 5** Keeping the brackets flush against the posts or mounting strips, align the holes in the brackets with the holes on the rack or mounting strip.
- Step 6** For each bracket, insert and tighten three 10-32 x 3/8-inch slotted binderhead screws, using the top, bottom, and one other location on the bracket.



**Figure 12** Installing the Chassis Ground Connection



<b>1</b>	Chassis ground connector	<b>3</b>	Screws
<b>2</b>	Grounding lug	<b>4</b>	Wire

## Install the Chassis Ground

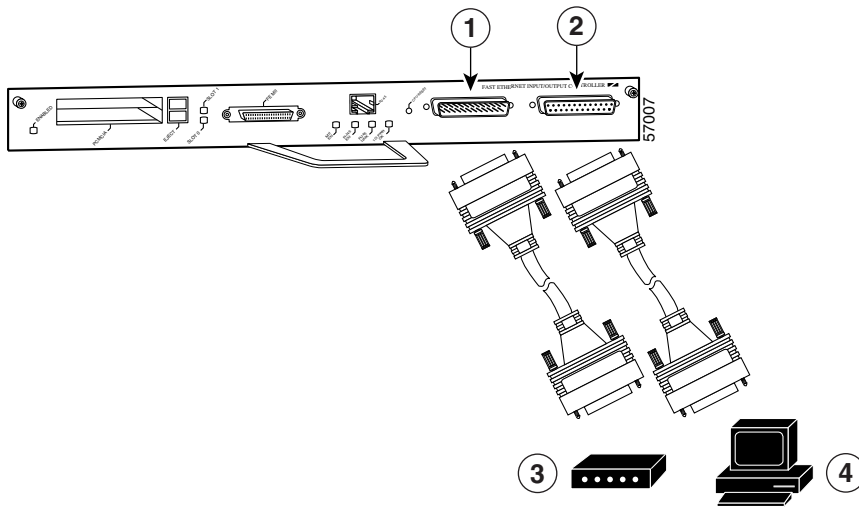


**Note** The grounding lug and Phillips screws are not available from Cisco Systems. Get the grounding lug from an electrical-connector vendor and the screws from a hardware vendor. See “Tools and Parts” section on page 6 for the parts needed.

- Step 1** Locate the chassis ground connector (1) on the rear of your router chassis.
- Step 2** Insert the two screws (3) through the holes in the grounding lug (2).
- Step 3** Ensure that the grounding lug does not interfere with other router hardware, such as power supplies or the network processing engine (NPE) or network services engine (NSE).
- Step 4** Use the Number 2 Phillips screwdriver to carefully tighten the screws until the grounding lug is held firmly to the chassis. Do not overtighten the screws.
- Step 5** Use the wire stripper to strip one end of the 6-AWG wire approximately 0.75 inches (19.05 mm).
- Step 6** Insert the 6-AWG wire (4) into the wire receptacle on the grounding lug.
- Step 7** Use the crimping tool to carefully crimp the wire receptacle around the wire; this step is required to ensure a proper mechanical connection.
- Step 8** Connect the opposite end of the grounding wire to the appropriate grounding point at your site to ensure an adequate chassis ground.

## 4 Connect the Router to the Network

Figure 13 Connecting the Console and Auxiliary Port Cables



1	Auxiliary port-DTE-mode; EIA/TIA-232, DTE-DB-25 connector (for modem, CSU/DSU, and so on.)	3	Modem
2	Console port-DCE-mode; EIA/TIA-232, DCE-DB-25 connector (for data terminal)	4	Console terminal

### I/O Controller and NPE-G1 or NPE-G2 Console and Auxiliary Port Cable Connections

**Note** Both the console and auxiliary ports are asynchronous serial ports; any devices connected to these ports must be capable of asynchronous transmission.

- Step 1** Before connecting a terminal to the console port, configure the terminal to match the router console port as follows: 9600 baud, 8 data bits, no parity, 2 stop bits (9600 8N2).
- Step 2** Use an EIA/TIA-232 DCE console cable to connect the terminal to the console port. After you establish normal router operation, you can disconnect the terminal.

**Note** You must supply your own interface cable between the auxiliary port and the equipment you are connecting. For console and auxiliary port pinouts, see the online [Cisco 7200 VXR Installation and Configuration Guide](#), Chapter 3, “Console Port Signals and Auxiliary Port Signals.”

**Note** When connecting to an auxiliary port on a Cisco 7200 VXR router, the port will not function at baud rates higher than 19.2kb. If the baud rate on the connecting device is set higher than 19.2kb, garbled text or nothing will be displayed on the screen.

Depending on the I/O controller installed in your Cisco 7200 VXR router, you may have a Gigabit Ethernet port, RJ-45 ports, or no Ethernet port. The following table provides information about the types of ports on different I/O controller models.

**Table 2 I/O Controller Port Information**

Product Number	Description
C7200-I/O-GE+E	1 Gigabit Ethernet and 1 Ethernet port; equipped with a GBIC receptacle for 1000 megabits per second (Mbps) operation and an RJ-45 receptacle for 10-Mbps operation.
C7200-I/O-2FE/E	2 autosensing Ethernet/Fast Ethernet ports; equipped with 2 RJ-45 receptacles for 10/100-Mbps operation.
C7200-I/O	Has no Ethernet port.

## Ethernet Port Connections

I/O controllers have the possibility of one or two of three types of Ethernet connections: MII connections and RJ-45 connections for 10/100-Mbps operation, and a Gigabit Interface Converter (GBIC) connection for 1000-Mbps operation. For more information about Ethernet ports, see the online [Cisco 7200 VXR Installation and Configuration Guide](#).

### RJ-45 Connections



**Warning**

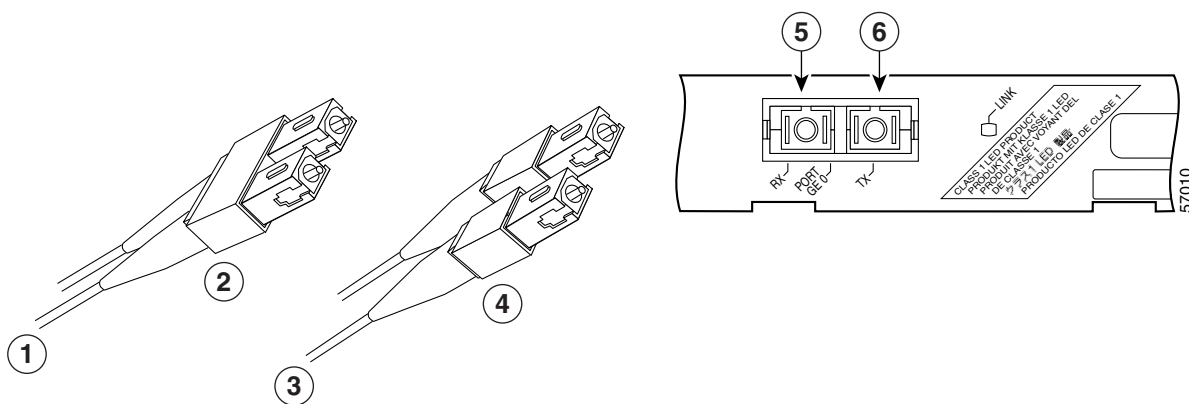
**To avoid electric shock, do not connect safety extra-low voltage (SELV) circuits to telephone-network voltage (TNV) circuits. LAN ports contain SELV circuits, and WAN ports contain TNV circuits. Some LAN and WAN ports both use RJ-45 connectors. Use caution when connecting cables.** Statement 1021

To identify the RJ-45 cable type, hold the two ends of the cable next to each other so you can see the colored wires inside the ends. The straight-through wire type has colored wires in the same sequence at both ends.

In the crossover wire type, the first colored wire at the far left is the third colored wire at the other end. The second colored wire at the far left is the sixth colored wire at the other end.

Attach any RJ-45 Ethernet cables to the appropriate connector.

**Figure 14 Connecting Optical Fiber Cables**



<b>1</b>	To external 1000BASEX network	<b>4</b>	2 simplex connectors
<b>2</b>	1 duplex connector (TX and RX)	<b>5</b>	RX
<b>3</b>	To external 1000BASEX network	<b>6</b>	TX

## SFP and GBIC Interface Cables Installation

For more information on cables, specifications, or product numbers, see the [Cisco 7200 VXR Installation and Configuration Guide](#) or the [Network Processing Engine or Network Services Engine Installation and Configuration](#).



---

**Note** All SFPs have LC type connectors. All GBIC ports have SC-type connectors.

---

After the GBIC or SFP is installed in the Gigabit Ethernet port, you must attach the optical fiber cables to the SFP or GBIC. Optical fiber cables are commercially available; they are not available from Cisco Systems.



---

**Warning** **Class 1 laser product.** Statement 1008

---



---

**Warning** **Because invisible laser radiation may be emitted from the aperture of the port when no cable is connected, avoid exposure to laser radiation and do not stare into open apertures.** Statement 70

---



---

**Note** The 1000BASEZX SFP or GBIC provides an optical power budget of 21.5 dB. Measure your cable plant with an optical loss test set to verify that the optical loss of the cable plant (including connectors and splices) is less than or equal to 21.5 dB. The optical loss measurement must be performed with a 1550-nm light source.

---

## Attach the Multimode and Single-Mode Optical Fiber Cables



---

**Note** We strongly recommend cleaning all optical fiber connections before reconnecting optical cables to equipment. For information about cleaning optical connectors, see the [Inspection and Cleaning Procedures for Fiber-Optic Connections](#) document and the [Compressed Air Cleaning Issues for Fiber-Optic Connections](#) document.

---

Attach the appropriate optical fiber cable directly to the LC-type connector on the SFP, or the SC-type receptacle on the GBIC. You can use either simplex or duplex connectors for most devices.

- Two cables are required for simplex connectors, one cable for transmit (TX) and one for receive (RX).
- One cable that has both TX and RX connectors is required for duplex connectors.



---

**Caution** If you plan to use a WS-G5486 or GBIC-LX/LH or SFP-GE-L at distances greater than 984.25 feet (300 meters) over 50/125-micron or 62.5/125-micron multimode fiber, you must use the mode-conditioning patch cord to prevent data transmission problems.

---

## Attach the Mode-Conditioning Patch Cord

A mode-conditioning patch cord can be used with GBIC WS-G5486 or GBIC-LX/LH or SFP-GE-L to allow reliable laser transmission between the single-mode laser source on the GBIC or SFP and a multimode optical fiber cable. To use the mode-conditioning patch cord, follow these steps:

- 
- Step 1** Attach the patch cord. For a GBIC on the NPE-G1, use a patch cord with an SC-type connector. For the SFP on the NPE-G2, use a patch cord with an LC-type connector.
- Step 2** Attach the network ends (beige/beige) of your patch cord to the appropriate 1000BASEX equipment in your building cable plant.
-



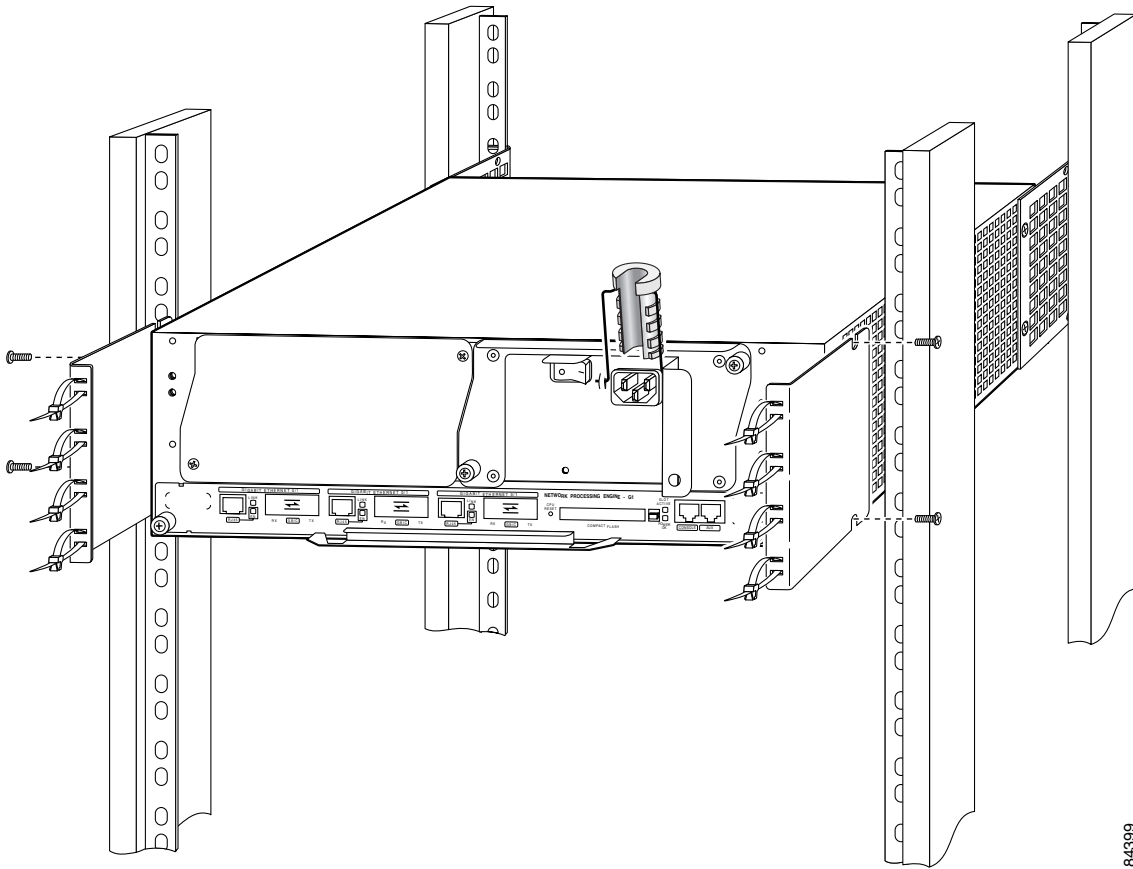
**Note** Ensure that you connect the TX and RX ports on one end of the patch cord to the RX and TX ports (respectively) on the other end. Connect TX to RX and RX to TX.

## Port Adapter Cable Connections

The instructions for connecting the cables for each port adapter installed in the Cisco 7200 VXR routers are in the respective online note for each port adapter. The documents are available on the Documentation DVD and on Cisco.com. Reference them from the [Cisco 7200 Series Routers Documentation Roadmap](http://www.cisco.com/en/US/docs/routers/7200/roadmaps/7200_series_doc_roadmap/3512.html) at: [http://www.cisco.com/en/US/docs/routers/7200/roadmaps/7200\\_series\\_doc\\_roadmap/3512.html](http://www.cisco.com/en/US/docs/routers/7200/roadmaps/7200_series_doc_roadmap/3512.html)

## Placing the Cables in the Cable-Management Brackets

**Figure 15** *Placing Cables in the Cable-Management Brackets*



- Step 1** Place the GBIC cables, RJ-45 cables, or SFP cables through the NPE-G1 or NPE-G2 optical cable-management brackets.
- Step 2** Place any cables from port adapters, auxiliary and console ports, through the cable management brackets and secure.

# 5 Start and Configure the Router

## Power Cable Connections



**Caution**

This unit might have more than one power cord. To reduce the risk of electric shock, disconnect the two power supply cords before servicing the unit. Statement 83



**Warning**

**The AC power supply has double pole/neutral fusing.** Statement 188

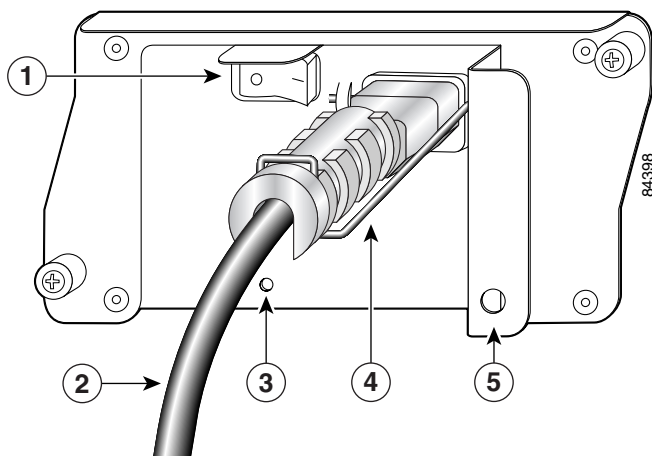
### Connect AC-Input Power



**Note**

When powering off the router, wait a minimum of 30 seconds before powering it on again.

**Figure 16** Connecting the AC Power Cable



1	Power switch	4	AC power cable-retention clip
2	AC power cable	5	Hole for nylon cable tie
3	PWR OK LED		

- Step 1** At the rear of the router, check that the power switch (1) is in the off (O) position.
- Step 2** Slide the cable-retention clip (4) up, away from the AC port, and plug in the power cable (2).
- Step 3** If you are installing the adjustable power cable-retention clip shown in Figure 16, follow these steps:
  - a. Remove the retention-clip wire and replace it with the new cable-retention clip wire.
  - b. Insert the plastic portion of the clip, and adjust it to the desired length.
- Step 4** Secure the cable in the power supply AC port by sliding the cable-retention clip down until it fits around the connector. The cable-retention clip provides strain relief for the AC power cable.
- Step 5** If you require additional AC power cable strain relief, secure the cable to the power supply handle by inserting a nylon cable tie through the hole (5) in the handle and around the cable.

**Step 6** Plug the AC power supply cable into the AC power source. Repeat Step 1 through Step 6 for the second power supply (if present).

## Connect DC-Input Power



### Note

The color coding of the DC-input power supply leads depends on the color coding of the DC power source at your site. Typically, green or green/yellow is used for ground. Make certain the lead color coding you choose for the DC-input power supply matches lead color coding used at the DC power source.



### Warning

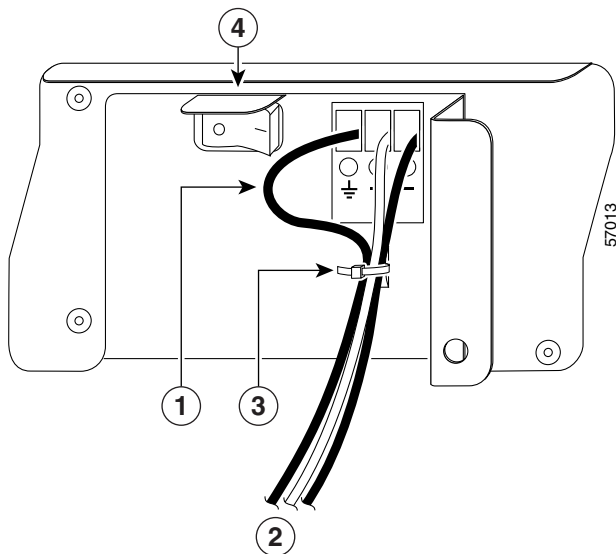
**When you install the unit, the ground connection must always be made first and disconnected last.** Statement 42



### Caution

The DC return connection to this system is to remain isolated from the system frame and chassis (DC-I).

**Figure 17** Attaching the DC Power Cables



<b>1</b>	Ground lead service loop	<b>3</b>	Cable tie
<b>2</b>	DC power leads	<b>4</b>	Power switch

**Step 1** At the rear of the router, check that the power switch is in the off (O) position.

**Step 2** Ensure that the -V and +V leads are disconnected from the power source.

**Step 3** Using a wire stripper, strip approximately 0.55 inch (14 mm) from the -V, +V, and ground leads (2).

**Step 4** Insert the stripped end of the ground lead (1) all the way into the ground lead receptacle on the DC-input power supply, and tighten the receptacle screw using a 3/16-inch flat-blade screwdriver.

**Step 5** Insert the stripped end of the +V lead all the way into the +V lead receptacle and tighten the receptacle screw using the same 3/16-inch flat-blade screwdriver. Repeat this step for the -V lead.

**Note**

---

Make sure the entire stripped end of each lead is inserted all the way into its receptacle. If any exposed wire at the stripped end of a lead is visible after inserting the lead into its receptacle, remove the lead from the receptacle, use the wire stripper to cut the stripped end of the lead, and repeat Step 3 through Step 5.

---

**Step 6** Use a cable tie to secure the leads to the power supply.

When securing the ground, +V, and -V DC-input leads to the power supply faceplate, leave a small service loop in the ground lead to ensure that the ground lead is the last lead to disconnect from the power supply if a great deal of strain is placed on all three leads.

**Step 7** Connect the ground, +V, and -V leads to the power source.

---

## Important NPE-G1 and NPE-G2 Information

Following is some important NPE-G1 information that you need to know before you power on the router:

- The NPE-G2 has its own Cisco IOS software image with the prefix “c7200p-” in the software images file names, including the boot image. The NPE-G2 does not boot up with a software image with the prefix “c7200-”. Previous network processing engines, or the network services engine, do not boot up with the “c7200p-” boot image. They use the prefix “c7200-”.
- The RJ-45 ports and GBIC ports or SFP ports are both reported in software as GigabitEthernet 0/1, GigabitEthernet 0/2, and GigabitEthernet 0/3. Only one of the pair of interface ports can be used at a time, for example, GE 0/2 or RJ-45 0/2.
- The I/O controller GE/E interface reports GE 0/0, and the I/O controller 2FE/E interface reports FE 0/0.
- If the RJ-45 port is in use, the EN (enabled) LED is on. If the GBIC or SFP is in use, the EN (enabled) LED is off.
- With the NPE-G1 or NPE-G2 and an I/O controller both installed, the I/O controller functionality on the NPE-G1 or NPE-G2 is shared with that of the I/O controller.
- The console and auxiliary ports on the NPE-G1 or NPE-G2 are disabled by Cisco IOS when an I/O controller is present; the console and auxiliary ports on the I/O controller are active.
- Console port messages can be routed to the auxiliary port on either the NPE-G1 or NPE-G2 or on the I/O controller.
- The default media is the RJ-45 port. To change the media type, use the **media-type** command.
- Only the port selected by the **media-type** command is active. A cable attached to the other of the RJ-45 and GBIC or SFP pair will be ignored. For example, if GBIC GigabitEthernet 0/2 is selected using the **media-type** command, RJ-45 GigabitEthernet 0/2 is ignored, even if a cable is attached to GBIC GigabitEthernet 0/2.
- The NPE-G1 or NPE-G2 uses no bandwidth points. If The NPE-G1 or NPE-G2 is in the router with an I/O controller, the I/O controller also uses no bandwidth points. None of the Gigabit Ethernet interfaces on the NPE-G1 or NPE-G2 use bandwidth points.
- The CompactFlash Disk on the NPE-G1 or NPE-G2 is available at all times, with or without an I/O controller installed.
- The USB ports on the NPE-G2 are available at all times, with our without an I/O controller installed.

**Note**

---

The Gigabit Ethernet interfaces on the NPE-G1 or NPE-G2 do not support the Inter-Switch Link (ISL) VLAN encapsulation protocol. We recommend that you use the IEEE 802.1Q VLAN encapsulation protocol as an alternative. Where an application requires the use of ISL, this can be provided by the Fast Ethernet or Gigabit Ethernet port adapters or I/O controllers.

---



## Start the System and Perform a Basic Configuration

---

- Step 1** Check that all hardware parts and cables are securely attached to the chassis.
- Step 2** Check that a CompactFlash Disk, Flash Disk, or PC Card or Flash memory card is installed.
- Step 3** Check that the console terminal is turned on.



### Caution

If you have just installed an NPE-G1 or NPE-G2 in place of an older NPE, you must save your configuration to a Flash Disk, PC Card, Flash memory card, or TFTP server before you power on the router with the new NPE-G1 or NPE-G2 installed, or you will lose your configuration. For instructions on copying and saving your configuration file, see the online [Network Processing Engine and Network Services Engine Installation and Configuration](#) document, Chapter 6, “Copying the Configuration File.”

---

- Step 4** Place the power switch in the on (I) position. Repeat this action if there is a second power supply.



### Note

When powering on the router, wait a minimum of 30 seconds before powering it off again.

---

- Step 5** Listen for the fans; they should be operating as soon as power is turned on.
- Step 6** During the boot process, observe the system LEDs. The power LED on the I/O controller comes on immediately. Port adapter LEDs go on and off irregularly.
- Step 7** Observe the initialization process. 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.



### Note

For more information on LEDs, refer to the “LED Description” section in Chapter 1 of the [Cisco 7200 VXR Installation and Configuration Guide](#).

---

Before configuring the router, determine whether or not you want to use a management tool such as Cisco Security Device Manager.

Cisco Security Device Manager (SDM), version 1.1, is an optional Java-based device-management tool that allows you to configure LAN interfaces, routing, Network Address Translation (NAT), firewalls, Virtual Private Networks (VPNs), and other features without knowledge of the Cisco command-line interface (CLI). You can configure features such as Access Control Lists (ACLs), routing protocols, and other options using SDMs advanced mode.



**Note** You will need to use CLI commands to configure several features that SDM does not support. SDM does not support the following features: WAN configuration, Gigabit Ethernet (GE) interfaces, AA client, EZ VPN server, QoS, SSHv2, DHCP server configuration options, and usability enhancements.

---

SDM is preinstalled on your routers Flash Disk or CompactFlash Disk when it is ordered as part of a VPN bundle or as part of a 7xxx VPN bundle. If your router did not ship with SDM preinstalled, you can download a free copy from the Software Center at Cisco.com at <http://www.cisco.com/kobayashi/sw-center/index.shtm>. Because SDM uses a GUI, it requires that you access it from a PC using a supported web browser. Go to the [Cisco Router and Security Device Manager \(SDM\) User Guide for the Cisco 7200 VXR and Cisco 7301 Routers](#) for more information.

## Configure the Router

When you start up the router for the first time, the system automatically enters the setup facility, which determines which port adapters are installed and prompts you for configuration information for each one. On the console terminal, after the system displays the system banner and hardware configuration, you will see the following System Configuration Dialog prompt:

```
--- System Configuration Dialog ---
```

At any point you may enter a questions mark '?' for help.  
Use ctrl-c to abort configuration dialog at any prompt.  
Default settings are in square brackets '['].

continue with configuration dialog? [yes]:

---

**Step 1** Enter **yes** or press **Return** to enter the initial configuration dialog.

You have the option of proceeding with the setup facility to configure the interfaces, or exiting from setup and using configuration commands to configure global (system-wide) and interface-specific parameters. You do not have to configure the interfaces immediately; however, you cannot enable the interfaces or connect them to any networks until you have configured them.

Many of the port adapter LEDs do not go on until you have configured the interfaces. To verify correct operation of each interface, complete the first-time startup procedures and configuration, and then refer to the configuration note for each port adapter for LED descriptions and to check the status of the interfaces.

If the system does not complete each of the steps in the startup procedure, refer to the online [Cisco 7200 VXR Installation and Configuration Guide](#), Appendix A, “Troubleshooting the Installation,” for troubleshooting recommendations and procedures.

**Note**

---

You need to acquire the correct network addresses from your system administrator or consult your network plan to determine correct addresses before you can complete the router configuration.

---

## Perform a Basic Configuration Using the Setup Facility

If you do not plan to use AutoInstall, do not connect the router’s serial (WAN) cable to the channel service unit/data service unit (CSU/DSU). If the WAN cable is not connected, the router boots from Flash memory and goes automatically into the setup facility.

**Note**

---

You can run the setup facility any time you are at the enable prompt (#) by entering the **setup** command.

---

If the serial (WAN) cable is connected to the CSU/DSU and the router does not have a configuration stored in NVRAM, the router attempts to run AutoInstall at startup. The router may take several minutes to determine that AutoInstall is not set up to a remote TCP/IP host. Once the router determines that AutoInstall is not configured, it defaults to the setup facility.

## Configure Global Parameters

When you first start the setup program, you must configure the global parameters. These parameters are used for controlling system-wide settings. Complete the following steps to enter the global parameters:

---

**Step 1** Connect a console terminal to the console port on the I/O controller, NPE-G1, or NPE-G2.**Step 2** Power on the router.

The system boots from Flash memory. After startup, the console screen displays a script and a system banner—after about 30 seconds—similar to the following. When you see this information, you have successfully booted your router:

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cisco Systems, Inc.  
170 West Tasman Drive  
San Jose, California 95134-1706

Cisco Internetwork Operating System Software  
IOS (tm) 7200 Software (C7200-JS-M), Released Version 12.0(19980705:021501)Copyright(c) 1986-1998 by  
cisco Systems, Inc.  
Compiled Thu 15-Oct-98 02:20 by xxxxxx  
Image text-base: 0x600088C4, data-base: 0x60FA6000

cisco 7206VXR (NPE300) processor with 61440K/20480K bytes of memory.  
R7000 CPU at 262Mhz, Implementation 39, Rev 1.0, 256KB L2, 2048KB L3 Cache  
Six slot VXR midplane, Version 2.0  
Last reset from power-on  
Bridging software.  
X.25 software, Version 3.0.0.  
SuperLAT software (copyright 1990 by Meridian Technology Corp).

TN3270 Emulation software.  
8 Ethernet/IEEE 802.3 interface(s)  
3 FastEthernet/IEEE 802.3 interface(s)  
125K bytes of non-volatile configuration memory.

20480K bytes of Flash PCMCIA card at slot 0 (Sector size 128K).  
8192K bytes of Flash PCMCIA card at slot 1 (Sector size 128K).  
4096K bytes of Flash internal SIMM (Sector size 256K).!!

Press RETURN to get started!

The first two sections of the configuration script (the banner and the installed hardware) appear only at initial system startup. On subsequent uses of the setup facility, the script begins with a System Configuration Dialog as shown in the following example:

```
--- System Configuration Dialog ---
```

```
At any point you may enter a question mark '?' for help.  
Use ctrl-c to abort configuration dialog at any prompt.  
Default settings are in square brackets '['].
```

**Step 3** When asked if you want to enter the initial configuration dialog and see the current interface summary, enter **yes** or press **Return**:

```
Would you like to enter the initial configuration dialog? [yes]:
```

```
First, would you like to see the current interface summary? [yes]:
```

In the following example, the summary shows a Cisco 7200 VXR router at first-time startup; that is, nothing is configured:

```
Any interface listed with OK? value "NO" does not have a valid configuration
```

Interface	IP-Address	OK?	Method	Status	Protocol
ATM1/0	unassigned	NO	unset	down	down
FastEthernet2/0	unassigned	NO	unset	down	down

**Step 4** Choose which protocols to support on your interfaces. For Internet Protocol (IP)-only installations, you can accept the default values for most of the questions. A typical configuration using IP, IPX, and AppleTalk follows and continues through Step 9:

```
Configuring global parameters:
```

```
Enter host name [Router]:
```

**Step 5** Enter enable secret, enable, and virtual terminal passwords:

The enable secret password is a one-way cryptographic secret password used instead of the enable password when it exists.

Enter enable secret: **barney**

The enable password is used when there is no enable secret password and when using older software and some boot images.

Enter enable password: **betty**

Enter virtual terminal password: **fred**

- Step 6** The Simple Network Management Protocol (SNMP) is the most widely supported open standard for network management. It provides a means to access and set configuration and run-time parameters of routers and communication servers. SNMP defines a set of functions that can be used to monitor and control network elements.

Enter **yes** or press **Return** to accept SNMP management; enter **no** to refuse it:

```
Configure SNMP Network Management? [yes]:  
Community string [public]:
```

- Step 7** For the following queries, do not enable VINES, LAT, DECnet, CLNS, bridging, XNS, or Apollo:

```
Configure Vines? [no]:  
Configure LAT? [no]:  
Configure DECnet? [no]:  
Configure CLNS? [no]:  
Configure bridging? [no]:  
Configure XNS? [no]:  
Configure Apollo? [no]:
```

- Step 8** For the following queries, enable routing on AppleTalk and IPX:

```
Configure AppleTalk? [no]: yes  
Multizone networks? [no]: yes
```

```
Configure IPX? [no]: yes
```

- Step 9** In most cases, you use IP routing. If you are using IP routing, you must also select an interior routing protocol. You can specify only one of two interior routing protocols to operate on your system using the setup facility: Interior Gateway Routing Protocol (IGRP) or Routing Information Protocol (RIP). To configure IP routing, enter **yes** (the default) or press **Return**, and then select an interior routing protocol:

```
Configure IP? [yes]:  
Configure IGRP routing? [yes]:  
Your IGRP autonomous system number [1]:
```

The following sample display includes a continuous listing of all configuration parameters selected in Step 4 through Step 9. Only IP, IPX, and AppleTalk are the selected protocols for this example.

Configuring global parameters:

```
Enter host name [Router]: router
```

The enable secret is a one-way cryptographic secret used instead of the enable password when it exists.

```
Enter enable secret: barney
```

The enable password is used when there is no enable secret and when using older software and some boot images.

```
Enter enable password: betty
```

```
Enter virtual terminal password: fred
```

```
Configure SNMP Network Management? [yes]:  
Community string [public]:  
Configure Vines? [no]:  
Configure LAT? [no]:  
Configure AppleTalk? [no]: yes  
Multizone networks? [no]: yes  
Configure DECnet? [no]:  
Configure IP? [yes]:
```

```
Configure IGRP routing? [yes]:
  Your IGRP autonomous system number [1]: 15
Configure RIP routing? [no]:
Configure CLNS? [no]: n
Configure bridging? [no]:
Configure IPX? [no]: yes
Configure XNS? [no]:
Configure Apollo? [no]:
```

**Step 10** Save your settings to NVRAM. (See the “Save the Running Configuration to NVRAM” section on page 34.) Save the configuration settings that you created in the router using the configuration mode and the setup facility. If you fail to do this, your configuration will be lost the next time you reload the router.

---

## Configuration Information for the NPE-G1 or NPE-G2

If the NPE-G1 or NPE-G2 and an I/O controller are both installed in the same system, the console and auxiliary ports on the I/O controller are used and the console and auxiliary ports on the NPE-G1 or NPE-G2 are disabled by Cisco IOS.



**Note** Both the NPE-G1 or NPE-G2 and the I/O controller console ports are available from the ROM monitor (ROMmon), however, the console port on the NPE-G1 or NPE-G2 will be disabled once the system has completed loading the Cisco IOS image.

---

If the NPE-G1 or NPE-G2 is used without an I/O controller, the console and auxiliary ports on the NPE-G1 or NPE-G2 are used.

## Configure an Auxiliary Port to Receive Console Port Messages for the NPE-G1 or NPE-G2

If you choose to have console port messages routed to the auxiliary port, use the Cisco IOS command **terminal monitor** on the auxiliary port on which you desire to receive console messages.

```
Router# terminal monitor
```

## Configure the Native Gigabit Ethernet Interfaces on the NPE-G1 or NPE-G2

The NPE-G1 or NPE-G2 reports both the RJ-45 and GBIC interface ports as GigabitEthernet 0/1, GigabitEthernet 0/2, and GigabitEthernet 0/3. Before configuring either port type, you must first use the **media-type** interface command to select the media type, either the GBIC (**gbic**) for NPE-G1, SFP (**sfp**) for NPE-G2, or RJ-45 (**rj45**) port.



**Note** The Gigabit Ethernet interfaces on the NPE-G1 or NPE-G2 do not support the Inter-Switch Link (ISL) VLAN encapsulation protocol. We recommend that you use the IEEE 802.1Q VLAN encapsulation protocol as an alternative. Where an application requires the use of ISL, this can be provided by the Fast Ethernet or Gigabit Ethernet port adapters or I/O controllers.

---



**Note** The RJ-45 port is the default media.

---

## Change the Media Type of the Native Gigabit Ethernet SFP, GBIC, or RJ-45 Ports

To be able to use a particular media port for the NPE-G1 or NPE-G2 or I/O Controller GE/E, use Cisco IOS to select the media type. This is done by using the **media-type** interface command:

```
media-type { sfp | gbic | rj45 }
```

Example:

```
interface GigabitEthernet 0/1
  media-type rj45
end
```

## Configure the Interface Transmission and Speed Modes for the NPE-G1 or NPE-G2

**Step 1** After changing the media type, configure the speed and transmission modes to appropriately match the new interface characteristics. Changing the speed and duplex of an NPE-G1 Gigabit Ethernet interface is done using the **speed** and **duplex** interface commands.



**Note** These commands are only applicable when using the RJ-45 media.

```
speed { 10 | 100 | 1000 | auto }
duplex { full | half | auto }
```

The following speed/duplex settings are supported:

Media Type	Speed	Duplex
RJ45	10, 100, 1000, auto	full, half, auto
GBIC(1)	1000, auto(2)	full, half, auto

- If you are using the **no negotiation auto** command, the speed and duplex should be set to a value other than **auto** for correct operation.
- The only available speed in this mode is 1000 Mbps; there is no difference whether **1000** or **auto** is selected.

When using the GBIC or SFP media, there is also the additional **negotiation auto** command that is used to enable the IEEE 802.1z Gigabit Ethernet (1000 Mbps) autonegotiation protocol.

**Step 2** To turn the autonegotiation feature off (it is on by default), issue the interface command **no negotiation auto**. This is useful for connecting to other Gigabit Ethernet equipment that does not support 802.1z autonegotiation.



**Note** The autonegotiation feature is not supported when using the media type **rj-45** and will be ignored if implementation is attempted.

If you change from the GBIC or SFP to the RJ-45 media type, you must set speed and duplex after you have executed the **media-type** command to ensure the interface will operate in the correct mode.

The **media-type GBIC** or **media-type SFP** mode will always default to 1000 Mbps. Both full-duplex and half-duplex operation are supported in this mode.

## Debug the NPE-G1 or NPE-G2

Cisco IOS provides two commands to provide information on your interfaces: **show interface GigabitEthernet 0/X** (where X is 1, 2, or 3) and **show controllers GigabitEthernet 0/1**.

The output of the **show interface** command is useful for determining the current operating mode of the interface (speed/duplex/media-type) and the current interface statistics.

The output of the **show controllers** command displays more information specific to the I/O controller interface. For example, it shows the detected link status, speed, and duplex, and also determines the current status of autonegotiation and the link partners' abilities (if it is an autonegotiation-capable interface).

The **show controllers** command also displays the current operating state of the driver and the Ethernet controller hardware. The **show controllers** command is a very powerful debugging aid, especially for Cisco engineers should you need help in debugging a problem. If you have any problems with your Gigabit Ethernet interfaces, you will need to provide this information to Cisco for analysis.

## Reset the Interface on the NPE-G1 or NPE-G2

Should you have a problem with your NPE-G1 or NPE-G2 interface and wish to try and reset it, use the command:  
`clear interface GigabitEthernet 0/X` (where X is 1, 2, or 3)

## Clear Counters on the NPE-G1 or NPE-G2

NPE-G1 or NPE-G2 interface counters may be cleared (reset) by using the command:  
`clear counters GigabitEthernet 0/X` (where X is 1, 2, or 3)

This will not reset the interface.

## Configure Interfaces

Following are the steps for configuring interfaces to allow communication over a LAN or WAN. To configure the interface parameters, you need your interface network addresses and subnet mask information.

### Configure ATM Interfaces

In the following example, an ATM interface in slot 1 is configured for an ATM LAN using IP. Follow these steps to configure an ATM interface:

---

**Step 1** Using your own addresses and mask at the setup prompts, respond to the prompts as follows:

```
Configuring interface parameters:

Configuring interface ATM1/0:
Is this interface in use? [yes]:
Configure IP on this interface? [yes]:
IP address for this interface: 1.1.1.10
Number of bits in subnet field [0]:
Class C network is 1.1.1.0, 0 subnet bits; mask is /24
```

**Step 2** Determine if you are going to enable IPX on this interface; if you are, enter the unique IPX network number:

```
Configure IPX on this interface? [no]: yes
IPX network number [2]:
```

**Step 3** If you are using AppleTalk on the interface, enter **yes**. Enter **yes** to configure for extended AppleTalk networks, and then enter the cable range number. Enter the zone name and any other additional zones that are associated with your local zone:

```
Configure AppleTalk on this interface? [no]: yes
Extended AppleTalk network? [no]: yes
AppleTalk starting cable range [0]:
```



---

**Note** If additional ATM interfaces are available in your system, you are prompted for their configurations as well.

---

**Step 4** Save your settings to NVRAM. (See the “Save the Running Configuration to NVRAM” section on page 34.) Save the configuration settings that you created in the router using configuration mode and the setup facility. If you fail to do this, your configuration will be lost the next time you reload the router.

---

## Configure Fast Ethernet Interfaces

In the following example, a Fast Ethernet interface in slot 2 is configured for a Fast Ethernet LAN using IP. Follow these steps to configure Fast Ethernet interfaces:

---

**Step 1** Using your own addresses and mask at the setup prompts, respond to the prompts as follows:

```
Configuring interface parameters:

Configuring interface FastEthernet2/0:
Is this interface in use? [yes]:
Use the 100 Base-TX (RJ-45) connector? [yes]:
Operate in full-duplex mode? [no]:
Configure IP on this interface? [yes]:
IP address for this interface: 1.1.1.20
Number of bits in subnet field [0]:
Class C network is 1.1.1.0, 0 subnet bits; mask is /24
```

**Step 2** Determine if you are going to enable IPX on this interface; if you are, enter the unique IPX network number:

```
Configure IPX on this interface? [no]: yes
IPX network number [2]:
```

**Step 3** If you are using AppleTalk on the interface, enter **yes**. Enter **yes** to configure for extended AppleTalk networks, and then enter the cable range number. Enter the zone name and any other additional zones that are associated with your local zone:

```
Configure AppleTalk on this interface? [no]: yes
Extended AppleTalk network? [no]: yes
AppleTalk starting cable range [0]:
```

**Step 4** Save your settings to NVRAM. (See the “Save the Running Configuration to NVRAM” section on page 34.) Save the configuration settings that you created in the router using configuration mode and the setup facility. If you fail to do this, your configuration will be lost the next time you reload the router.



---

**Note** If additional Fast Ethernet interfaces are available in your system, you are prompted for their configurations as well.

---

## Configure Synchronous Serial Interfaces

Synchronous serial interfaces are configured to allow connection to WANs through a CSU/DSU. In the following example, a serial interface in slot 3 is configured for a WAN connection using IP. Follow these steps to configure synchronous serial interfaces:

---

**Step 1** Using your own addresses and mask at the setup prompts, respond to the prompts as follows:

```
Configuring interface parameters:

Configuring interface serial 3/0:
Is this interface in use? [yes]:
Configure IP on this interface? [yes]:
IP address for this interface: 1.1.1.30
Number of bits in subnet field [0]:
Class A network is 1.1.1.0, 0 subnet bits; mask is /24
```

**Step 2** Determine if you are going to enable IPX on this interface; if you are, enter the unique IPX network number:

```
Configure IPX on this interface? [no]: yes
IPX network number [2]:
```



**Step 3** If you are using AppleTalk on the interface, enter **yes**. Enter **yes** to configure for extended AppleTalk networks, and then enter the cable range number. Enter the zone name and any other additional zones that are associated with your local zone:

```
Configure AppleTalk on this interface? [no]: yes
Extended AppleTalk network? [no]: yes
AppleTalk starting cable range [0]:
```

**Step 4** Save your settings to NVRAM. (See the “Save the Running Configuration to NVRAM” section on page 34.) Save the configuration settings that you created in the router using configuration mode and the setup facility. If you fail to do this, your configuration will be lost the next time you reload the router.



---

**Note** If additional synchronous serial interfaces are available in your system, you are prompted for their configurations as well.

---

The following sample display includes a continuous listing of all interface configuration parameters selected for ATM, Fast Ethernet, and serial interfaces.

Configuring interface parameters:

Configuring interface ATM1/0:

```
Is this interface in use? [yes]:
Configure IP on this interface? [yes]:
  IP address for this interface: 1.1.1.10
  Number of bits in subnet field [0]: 0
  Class C network is 1.1.1.0, 0 subnet bits; mask is /24
Configure IPX on this interface? [yes]:
  IPX network number [2]:
Configure AppleTalk on this interface? [no]: yes
  Extended AppleTalk network? [no]: yes
  AppleTalk starting cable range [0]:
```

Configuring interface FastEthernet2/0:

```
Is this interface in use? [yes]:
Use the 100 Base-TX (RJ-45) connector? [yes]:
Operate in full-duplex mode? [no]:
Configure IP on this interface? [yes]:
  IP address for this interface: 1.1.1.20
  Number of bits in subnet field [0]:
  Class C network is 1.1.1.0, 0 subnet bits; mask is /24
Configure IPX on this interface? [yes]:
  IPX network number [2]:
Configure AppleTalk on this interface? [no]: yes
  Extended AppleTalk network? [no]: yes
  AppleTalk starting cable range [0]:
```

Configuring interface Serial3/0:

```
Is this interface in use? [no]: yes
Configure IP on this interface? [no]: yes
Configure IP unnumbered on this interface? [no]:
  IP address for this interface: 1.1.1.30
  Number of bits in subnet field [0]:
  Class A network is 1.0.0.0, 0 subnet bits; mask is 255.0.0.0
Configure IPX on this interface? [no]: yes
  IPX network number [2]:
Configure AppleTalk on this interface? [no]: yes
  Extended AppleTalk network? [no]:
  AppleTalk network number [1]:
```

The following configuration command script was created:

```
hostname Router
enable secret 5 $1$u8z3$PMYY8em./8sszhzk78p/Y0
```

```

enable password betty
line vty 0 4
password fred
snmp-server community public

ip routing
no vines routing
ipx routing
appletalk routing
no apollo routing
no decnet routing
no xns routing
no clns routing
no bridge 1
! Turn off IPX to prevent network conflicts.
interface ATM1/0
ip address 1.1.1.10 255.0.0.1
appletalk cable-range 0-0 0.0
appletalk discovery
!
interface FastEthernet2/0
media-type 100BaseX
half-duplex
ip address 1.1.1.20 255.0.0.2
appletalk cable-range 0-0 0.0
appletalk discovery
!
interface serial3/0
ip address 1.1.1.30 255.0.0.3
ip route-cache cbus
no keepalive
!

router igrp 15
network 1.0.0.0
!
end

```

```

Use this configuration? [yes/no]: yes
Building configuration...
Use the enabled mode 'configure' command to modify this configuration.

```

Press RETURN to get started!

Your router is now minimally configured and ready to use. You can use the **setup** command if you want to modify the parameters after the initial configuration. To perform more complex configurations, use the **configure** command.

For information on additional interface configuration and specific system configurations, refer to the modular configuration and modular command reference publications in the Cisco IOS software configuration documentation set that corresponds to the software release installed on your Cisco hardware.

## Save the Running Configuration to NVRAM

To store the configuration or changes to your startup configuration in NVRAM, enter the **copy running-config startup-config** command at the Router# prompt:

```
Router# copy running-config startup-config
```

Using this command saves the configuration settings that you created in the router using configuration mode and the setup facility. If you fail to do this, your configuration will be lost the next time you reload the router.

## Check the Running Configuration Settings

To check the value of the settings you have entered, enter the **show running-config** command at the `Router#` prompt:

```
Router# show running-config
```

To review changes you make to the configuration, use the EXEC mode **show startup-config** command to display the information stored in NVRAM.

## View Your System Configuration

You can use the **show version** (or **show hardware**) and the **show diag** commands to display the system hardware (the network processing engine or network services engine and the number of interfaces installed), the software version, the names and sources of configuration files, and the boot images. Use the **show diag** command to determine what type of port adapters and I/O controller are installed.

For specific information on the **show version**, **show diag**, and other commands, refer to the modular configuration and modular command reference publications in the Cisco IOS software configuration documentation set that corresponds to the software release installed on your Cisco hardware.

## Perform Complex Configurations

After you have installed your Cisco 7200 VXR router hardware and minimally configured the system, you might need to perform more complex configurations, which are beyond the scope of this publication.

For specific information on system and interface configuration, refer to the modular configuration and modular command reference publications in the Cisco IOS software configuration documentation set that corresponds to the software release installed on your Cisco hardware. These publications contain additional information on using the **configure** command.

## Replace or Recover a Lost Password

See the *Cisco 7200 VXR Installation and Configuration Guide*, Chapter 4, “Observing System Startup and Performing a Basic Configuration” for instructions. It is possible to recover the enable or console login password. The enable secret password is encrypted and must be replaced with a new enable secret password.

## 6 After Installation

This section contains hardware replacement instructions. The PC card or Flash memory card, CompactFlash Disk, Flash Disk, GBIC, SFP, and port adapters support online insertion and removal (OIR).

These topics are covered in this section:

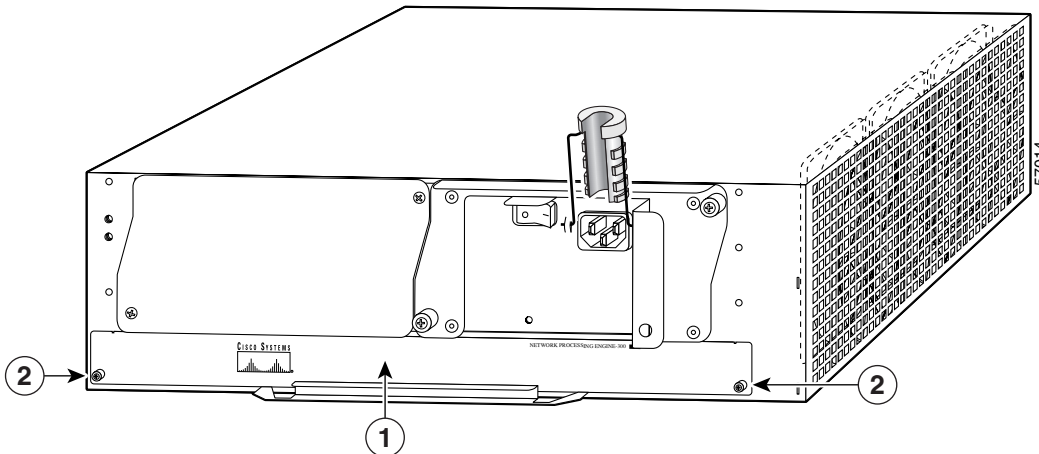
- Replace the Network Processing Engine or Network Services Engine, page 36
- Replace the I/O Controller, page 37
- Replace the PC Card, Flash Memory Card, Flash Disk, CompactFlash Disk, or USB Token, page 38
- Replace the Gigabit Interface Converter, page 39
- Replace a Port Adapter or Service Adapter, page 41
- Replace the Port Adapter Jacket Card, page 42
- Replace the Power Supply, page 44



**Note** When powering off or powering on the router, wait a minimum of 30 seconds before powering it on or off again.

### Replace the Network Processing Engine or Network Services Engine

**Figure 18** Replacing the Network Processing Engine or Network Services Engine



<b>1</b>	Network processing engine or network services engine	<b>2</b>	Captive installation screws
----------	--	----------	-----------------------------



**Caution** If you are installing an NPE-G1, you must copy your saved configuration to a Flash Disk or PC Card or to a TFTP server before you install the NPE-G1. If you have a C7200-I/O-2GE/E or C7200-I/O-2FE/E I/O controller installed, copy the saved configuration only to a Flash Disk or TFTP server.

- Step 1** Power down the router.
- Step 2** Disconnect the router from the power source.
- Step 3** If you have an NPE-G1 installed, remove the cables and cable-management brackets. See Figure 6 and Figure 9.
- Step 4** On the network processing engine (NPE) or network services engine (NSE) (1), unscrew the captive installation screws (2).



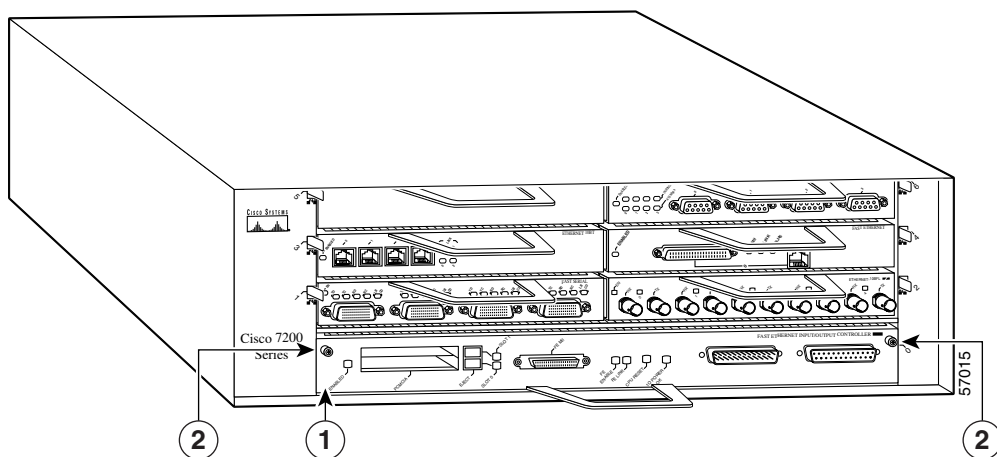
**Note** If you have difficulty installing a processing engine or I/O controller in the lowest slot of a Cisco 7200 VXR router that is rack-mounted, remove the port adapters, processing engine and I/O controller from the chassis and reinstall them. Install the processing engine and I/O controller in the lowest slots first, then populate the slots above them, in a bottom-to-top order.

- Step 5** Grasp the handle and pull the NPE or NSE from the chassis.
- Step 6** Insert the NPE or NSE and tighten the captive installation screws.
- Step 7** If you are replacing an NPE-G1, install the cable-management brackets and cables. See Figure 6 and Figure 9.
- Step 8** Connect the router to the power source and power up the router.

See the [Network Processing Engine or Network Services Engine Installation and Configuration](http://www.cisco.com/en/US/docs/routers/7200/install_and_upgrade/network_process_engine_install_config/npense.html) publication at [http://www.cisco.com/en/US/docs/routers/7200/install\\_and\\_upgrade/network\\_process\\_engine\\_install\\_config/npense.html](http://www.cisco.com/en/US/docs/routers/7200/install_and_upgrade/network_process_engine_install_config/npense.html).

## Replace the I/O Controller

**Figure 19** Replacing the I/O Controller



1	I/O controller	2	Captive installation screws
---	----------------	---	-----------------------------



**Note** Before powering down the router, use the **copy running-config tftp** command to save the router's running configuration to a TFTP file server.

- Step 1** Power off the router.
- Step 2** Disconnect the router from the power source.
- Step 3** Remove any I/O controller cables.
- Step 4** On the I/O controller (1), unscrew the captive installation screws (2), grasp the handle, and pull the I/O controller from the chassis.

**Note**

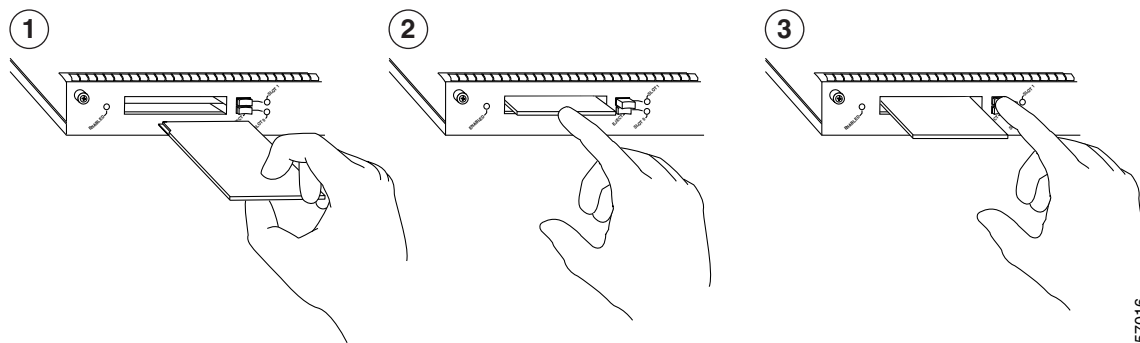
If you have difficulty installing a processing engine or I/O controller in the lowest slot of a Cisco 7200 VXR router that is rack-mounted, remove the port adapters, processing engine and I/O controller from the chassis and reinstall them. Install the processing engine and I/O controller in the lowest slots first, then populate the slots above them, in a bottom-to-top order.

- Step 5** Insert the I/O controller and tighten the captive installation screws.
- Step 6** Connect any I/O controller cables.
- Step 7** Connect the router to the power source and power on the router.
- Step 8** Retrieve and restore the configuration from the TFTP server and copy it to NVRAM. Use the `copy tftp running-config` command to copy the saved configuration from the TFTP file server.
- Step 9** Enter the `show running-config` command to display the currently running configuration on the terminal. Review the display and ensure that the configuration information is complete and correct.
- Step 10** When you have verified that the currently running configuration is correct, enter the `copy running-config startup-config` command to save the retrieved configuration in NVRAM. Otherwise, the new configuration will be lost.

See the [Input/Output Controller Replacement Instructions](http://www.cisco.com/en/US/docs/routers/7200/install_and_upgrade/7200_i.o_controller_install/4447io.html) publication at:  
[http://www.cisco.com/en/US/docs/routers/7200/install\\_and\\_upgrade/7200\\_i.o\\_controller\\_install/4447io.html](http://www.cisco.com/en/US/docs/routers/7200/install_and_upgrade/7200_i.o_controller_install/4447io.html)

## Replace the PC Card, Flash Memory Card, Flash Disk, CompactFlash Disk, or USB Token

**Figure 20** Replacing the PC Card, Flash Memory Card, Flash Disk, or CompactFlash Disk



<b>1</b>	Insert the PC Card or Flash memory card, CompactFlash Disk or Flash Disk	<b>3</b>	Press the ejector button
<b>2</b>	Insertion complete—PC Card or Flash memory card, CompactFlash Disk or Flash Disk protrudes		

**Note**

PC Cards or Flash memory cards, Flash Disks, and CompactFlash Disks are replaceable while the system is operating.

- Step 1** Remove the PC Card or Flash memory card, CompactFlash disk or Flash Disk by pushing the ejector button (3).
- Step 2** Insert the new PC Card or Flash memory card, Flash Disk, or CompactFlash Disk (1 and 2). The PC Card or Flash memory card or Flash Disk protrudes from the I/O controller when it is completely inserted.

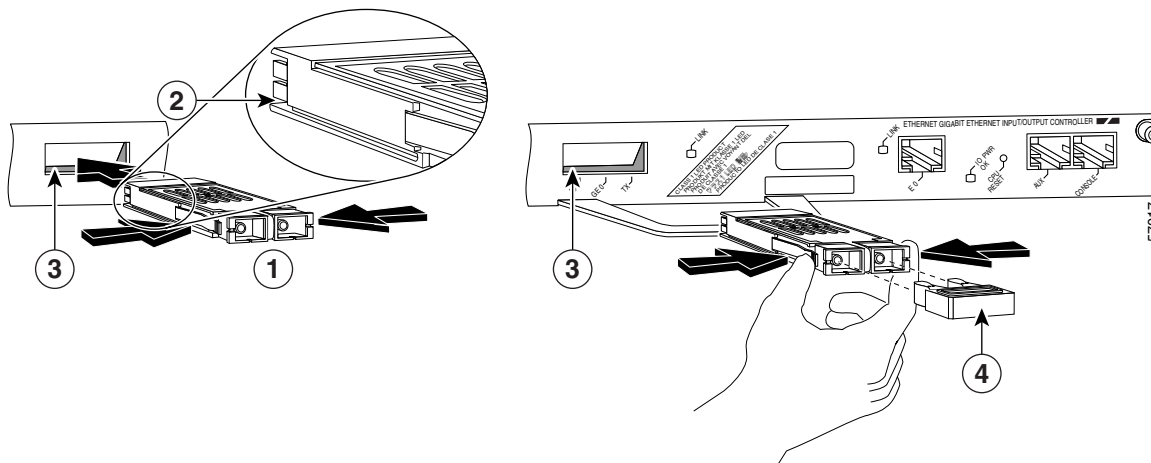
To replace the CompactFlash Disk in the NPE-G1, see the “Prepare for Installation” section on page 6.

Also see [Using the Flash Disk](#) at

[http://www.cisco.com/en/US/docs/routers/7200/install\\_and\\_upgrade/flash\\_disk\\_install\\_config/6452fd.html](http://www.cisco.com/en/US/docs/routers/7200/install_and_upgrade/flash_disk_install_config/6452fd.html), and [Memory Replacement Instructions for the Network Processing Engine or Network Services Engine and I/O Controller](#) at [http://www.cisco.com/en/US/docs/routers/7200/install\\_and\\_upgrade/npe-nse\\_memory\\_install/memory.html](http://www.cisco.com/en/US/docs/routers/7200/install_and_upgrade/npe-nse_memory_install/memory.html).

## Replace the Gigabit Interface Converter

**Figure 21** Replacing the GBIC



<b>1</b>	GBIC	<b>3</b>	GBIC slot
<b>2</b>	Alignment groove	<b>4</b>	Plug

**Step 1** Remove the Gigabit Ethernet Gigabit Interface Converter (GBIC) cables from the GBIC slot on the I/O controller or on the NPE-G1.

**Step 2** Remove the GBIC from the I/O controller or the NPE-G1.

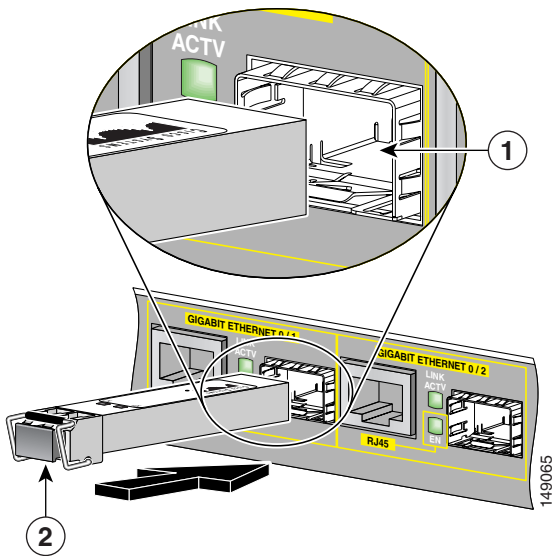
**Step 3** Locate the alignment groove (2) on the GBIC. (The label faces up.)  
The GBIC is keyed so that it cannot be inserted incorrectly.

**Step 4** Insert the GBIC into the slot on the I/O controller or the NPE-G1.

**Step 5** Attach the GBIC cables. Also see the “SFP and GBIC Interface Cables Installation” section on page 20.

## Replace the SFP–NPE-G2

Figure 22 Inserting an SFP Module into the NPE-G2 Gigabit Ethernet Port 0/1



<b>1</b> SFP port 0/1	<b>2</b> SFP module
-----------------------	---------------------

Use the following procedure to install an SFP module in the NPE-G2:

- Step 1** Attach an ESD-preventive wrist strap between you and an unpainted chassis surface.
- Step 2** Locate the label on the SFP module and turn the SFP module so the label is on top and the alignment groove is down.

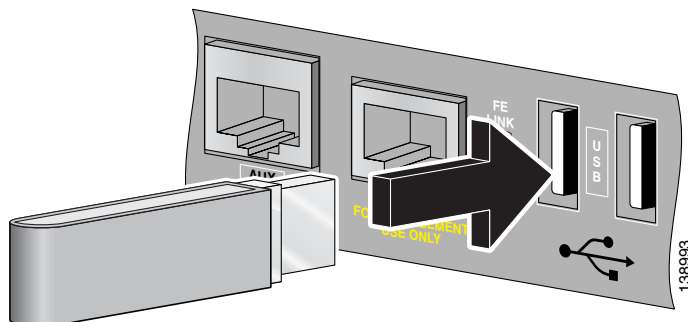


**Note** The SFP module is keyed so that it cannot be inserted incorrectly.

- Step 3** Insert the SFP module into SFP port 0/1, 0/2, or 0/3. The SFP module snaps into place when you have completely and properly inserted it.
- Step 4** Repeat Step 2 if you are inserting a second or third SFP module.

## Installing a USB Flash Memory Module or eToken—NPE-G2

Figure 23 Connecting a USB Flash Memory Module to a Router USB Port





To connect a Cisco USB Flash memory module or the Aladdin USB eToken Pro key to the NPE-G2 USB port, simply insert the module into the port as shown in Figure 23. The Flash memory module can be inserted in only one way, and can be inserted or removed regardless of whether the router is powered up or not.



**Caution**

Do not remove a USB Flash memory module when a read or write operation to the USB Flash memory module is in progress. The router might reload, or the USB Flash memory module card can be damaged.



**Note**

Only Cisco USB Flash memory modules and the Aladdin USB eToken Pro key are supported by Cisco routers.

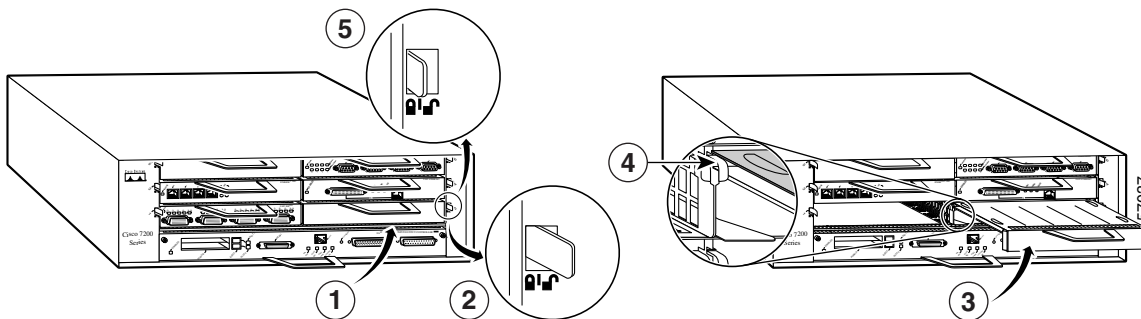


**Note**

For detailed information about the Cisco IOS commands that support USB Flash memory modules, see the [USB Storage](#) document at [http://www.cisco.com/en/US/docs/ios/fundamentals/configuration/guide/usb\\_flash\\_keys\\_ps6922\\_TSD\\_Products\\_Configuration\\_Guide\\_Chapter.html#wp1027188](http://www.cisco.com/en/US/docs/ios/fundamentals/configuration/guide/usb_flash_keys_ps6922_TSD_Products_Configuration_Guide_Chapter.html#wp1027188)

## Replace a Port Adapter or Service Adapter

**Figure 24 Replacing a Port Adapter**



<b>1</b>	Port adapter in place	<b>4</b>	Slot guide
<b>2</b>	Port adapter lever in unlocked position	<b>5</b>	Port adapter lever in locked position
<b>3</b>	Port adapter partially removed or installed		



**Note**

Before removing a port adapter, shut down the interface so that there is no traffic running through the port adapter when it is removed.

**Step 1** To remove a port adapter, place the port adapter lever in the unlocked position (2).



**Note**

If you have difficulty installing a processing engine or I/O controller in the lowest slot of a Cisco 7200 VXR router that is rack-mounted, remove the port adapters, processing engine and I/O controller from the chassis and reinstall them. Install the processing engine and I/O controller in the lowest slots first, then populate the slots above them, in a bottom-to-top order.

**Step 2** Grasp the handle and pull the port adapter from the router, about halfway out of its slot (3). If you are removing a blank port adapter, pull the blank port adapter completely out of the chassis slot.

- Step 3** With the port adapter halfway out of the slot, disconnect all cables from the port adapter. After disconnecting the cables, pull the port adapter from its chassis slot.
- Step 4** To insert the port adapter, carefully align the port adapter carrier between the upper and the lower edges of the port adapter slot guide (4) and slide the new port adapter halfway into the port adapter slot (3).
- Step 5** Connect all required cables to the port adapter. After connecting all required cables, carefully slide the port adapter all the way into the slot until the port adapter is seated in the router midplane.
- Step 6** After the port adapter is properly seated, lock the port adapter lever (5).

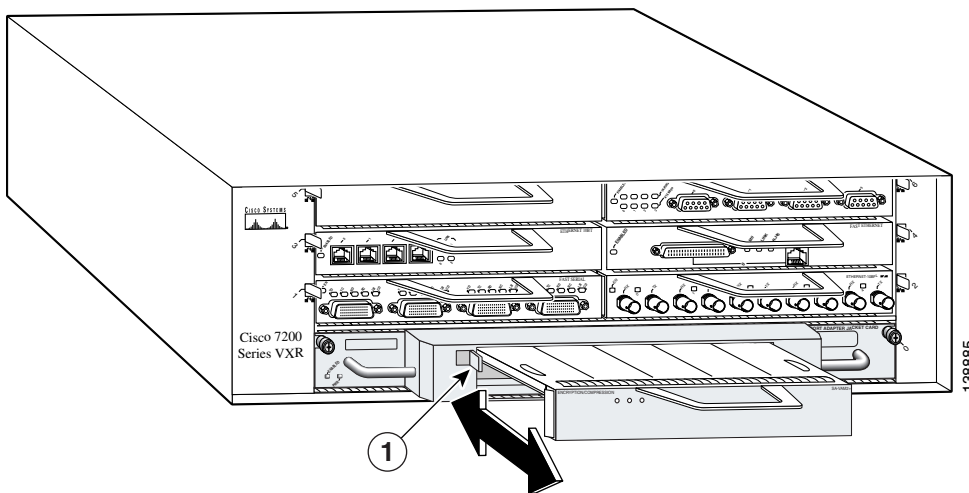
For port adapter documentation, see the [Cisco 7200 Series Routers Port Adapter Documentation Documentation Roadmap](#).

## Replace the Port Adapter Jacket Card



**Note** Online insertion and removal (OIR) is not supported on the Port Adapter Jacket Card. OIR is supported on the port adapter.

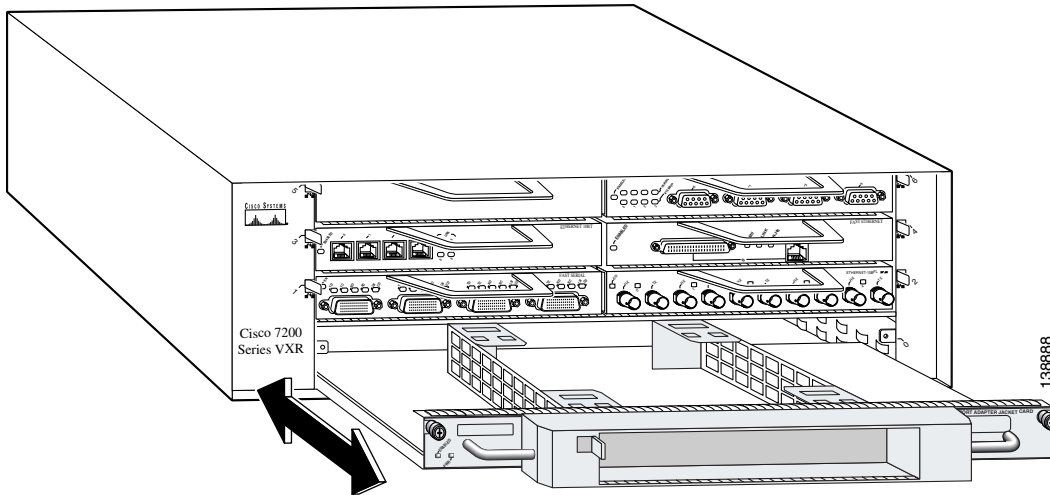
**Figure 25** Removing a Port Adapter



<b>1</b>	Port adapter lock lever	
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- Step 1** Power down the router.
- Step 2** Disconnect the router from the power source.
- Step 3** Disconnect any port adapter cable.
- Step 4** Remove the port adapter by pressing the lock lever until the port adapter releases.
- Step 5** Pull the port adapter from the Port Adapter Jacket Card.

**Figure 26** Removing the Port Adapter Jacket Card

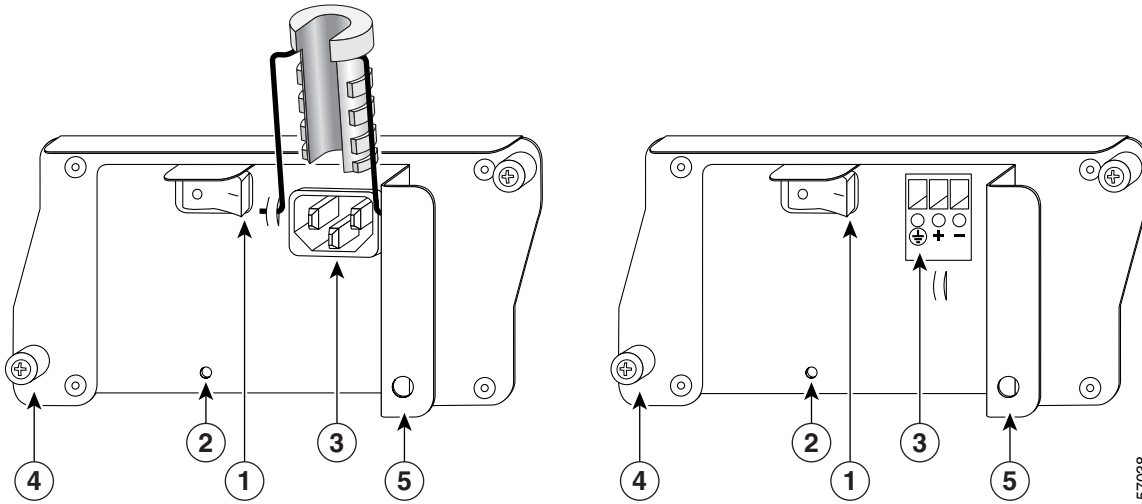


**Note** If you have difficulty removing the Port Adapter Jacket Card from the lowest slot of a Cisco 7200 VXR router that is rack-mounted, remove the port adapters, and processing engine from the chassis., then remove the Port Adapter Jacket Card.

- Step 6** Loosen the captive installation screws found at the top left and right corners of the Port Adapter Jacket Card and, using the handles on the Port Adapter Jacket Card, pull the Port Adapter Jacket Card from the chassis.
- Step 7** Replace the Port Adapter Jacket Card with an I/O controller blank panel or another Port Adapter Jacket Card to ensure proper airflow through the router.
- Step 8** If the Port Adapter Jacket Card has been replaced, insert a port adapter or a port adapter blank panel into the Port Adapter Jacket Card to ensure proper airflow through the router.
- Step 9** Tighten the captive installation screws.
- Step 10** If you removed the processing engine or port adapters from the chassis, replace them in a bottom-to-top order.

# Replace the Power Supply

Figure 27 Replacing the Power Supply



1	Power switch	4	Captive installation screws
2	PWR OK LED	5	Handle
3	AC/DC power input connection		

**Caution** Do not mix power supplies in Cisco 7200 VXR routers. In dual power supply configurations, both power supplies *must* be of the same type (two AC-input power supplies or two DC-input power supplies).

**Caution** To ensure adequate airflow across the router power supplies, a power supply or a power supply filler plate must be installed in each power supply bay. Figure 18 shows a Cisco 7206VXR with an installed power supply filler plate.

**Caution** The DC return connection to this system is to remain isolated from the system frame and chassis (DC-I).

- Step 1** Power down the router.
- Step 2** Disconnect the router from the power source (3).
- Step 3** Unscrew the captive installation screws (4).
- Step 4** Grasp the handle (5) and pull the power supply out of the chassis.
- Step 5** Insert a new power supply of the same type that you removed and tighten the captive installation screws.
- Step 6** Connect the power supply to the power source and power up the router.

**Note** When powering off the router, wait 30 seconds before powering it on again.

## 7 Cisco Product Security Overview

Cisco provides a free online Security Vulnerability Policy portal at this URL:

[http://www.cisco.com/en/US/products/products\\_security\\_vulnerability\\_policy.html](http://www.cisco.com/en/US/products/products_security_vulnerability_policy.html)

From this site, you can perform these tasks:

- Report security vulnerabilities in Cisco products.
- Obtain assistance with security incidents that involve Cisco products.
- Register to receive security information from Cisco.

A current list of security advisories and notices for Cisco products is available at this URL:

<http://www.cisco.com/go/psirt>

If you prefer to see advisories and notices as they are updated in real time, you can access a Product Security Incident Response Team Really Simple Syndication (PSIRT RSS) feed from this URL:

[http://www.cisco.com/en/US/products/products\\_psirt\\_rss\\_feed.html](http://www.cisco.com/en/US/products/products_psirt_rss_feed.html)

### Reporting Security Problems in Cisco Products

Cisco is committed to delivering secure products. We test our products internally before we release them, and we strive to correct all vulnerabilities quickly. If you think that you might have identified a vulnerability in a Cisco product, contact PSIRT:

- Emergencies—[security-alert@cisco.com](mailto:security-alert@cisco.com)

An emergency is either a condition in which a system is under active attack or a condition for which a severe and urgent security vulnerability should be reported. All other conditions are considered nonemergencies.

- Nonemergencies—[psirt@cisco.com](mailto:psirt@cisco.com)

In an emergency, you can also reach PSIRT by telephone:

- 1 877 228-7302
- 1 408 525-6532



#### Tip

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We encourage you to use Pretty Good Privacy (PGP) or a compatible product to encrypt any sensitive information that you send to Cisco. PSIRT can work from encrypted information that is compatible with PGP versions 2.x through 8.x.

Never use a revoked or an expired encryption key. The correct public key to use in your correspondence with PSIRT is the one linked in the Contact Summary section of the Security Vulnerability Policy page at this URL:

[http://www.cisco.com/en/US/products/products\\_security\\_vulnerability\\_policy.html](http://www.cisco.com/en/US/products/products_security_vulnerability_policy.html)

The link on this page has the current PGP key ID in use.

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## 8 Obtaining Technical Assistance

Cisco Technical Support provides 24-hour-a-day award-winning technical assistance. The Cisco Technical Support & Documentation website on Cisco.com features extensive online support resources. In addition, if you have a valid Cisco service contract, Cisco Technical Assistance Center (TAC) engineers provide telephone support. If you do not have a valid Cisco service contract, contact your reseller.

### Cisco Technical Support & Documentation Website

The Cisco Technical Support & Documentation website provides online documents and tools for troubleshooting and resolving technical issues with Cisco products and technologies. The website is available 24 hours a day, at this URL:

<http://www.cisco.com/techsupport>

Access to all tools on the Cisco Technical Support & Documentation website requires a Cisco.com user ID and password. If you have a valid service contract but do not have a user ID or password, you can register at this URL:

<http://tools.cisco.com/RPF/register/register.do>



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**Note** Use the Cisco Product Identification (CPI) tool to locate your product serial number before submitting a web or phone request for service. You can access the CPI tool from the Cisco Technical Support & Documentation website by clicking the **Tools & Resources** link under Documentation & Tools. Choose **Cisco Product Identification Tool** from the Alphabetical Index drop-down list, or click the **Cisco Product Identification Tool** link under Alerts & RMAs. The CPI tool offers three search options: by product ID or model name; by tree view; or for certain products, by copying and pasting **show** command output. Search results show an illustration of your product with the serial number label location highlighted. Locate the serial number label on your product and record the information before placing a service call.

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### Submitting a Service Request

Using the online TAC Service Request Tool is the fastest way to open S3 and S4 service requests. (S3 and S4 service requests are those in which your network is minimally impaired or for which you require product information.) After you describe your situation, the TAC Service Request Tool provides recommended solutions. If your issue is not resolved using the recommended resources, your service request is assigned to a Cisco engineer. The TAC Service Request Tool is located at this URL:

<http://www.cisco.com/techsupport/servicerequest>

For S1 or S2 service requests, or if you do not have Internet access, contact the Cisco TAC by telephone. (S1 or S2 service requests are those in which your production network is down or severely degraded.) Cisco engineers are assigned immediately to S1 and S2 service requests to help keep your business operations running smoothly.

To open a service request by telephone, use one of the following numbers:

Asia-Pacific: +61 2 8446 7411 (Australia: 1 800 805 227)

EMEA: +32 2 704 55 55

USA: 1 800 553-2447

For a complete list of Cisco TAC contacts, go to this URL:

<http://www.cisco.com/techsupport/contacts>

## Definitions of Service Request Severity

To ensure that all service requests are reported in a standard format, Cisco has established severity definitions.

Severity 1 (S1)—An existing network is down, or there is a critical impact to your business operations. You and Cisco will commit all necessary resources around the clock to resolve the situation.

Severity 2 (S2)—Operation of an existing network is severely degraded, or significant aspects of your business operations are negatively affected by inadequate performance of Cisco products. You and Cisco will commit full-time resources during normal business hours to resolve the situation.

Severity 3 (S3)—Operational performance of the network is impaired, while most business operations remain functional. You and Cisco will commit resources during normal business hours to restore service to satisfactory levels.

Severity 4 (S4)—You require information or assistance with Cisco product capabilities, installation, or configuration. There is little or no effect on your business operations.

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