



Upgrading Memory in Cisco 800 Series Routers

This document describes how to upgrade flash memory and dynamic RAM (DRAM) for the Cisco 800 series routers:

- Cisco 801–804 routers
- Cisco 805 routers
- Cisco 806 routers
- Cisco 811–813 routers
- Cisco 826 routers
- Cisco 827 routers
- Cisco 828 routers
- Cisco 831 routers
- Cisco 836 routers
- Cisco 837 routers
- Cisco 851 routers
- Cisco 857 routers
- Cisco 871 routers
- Cisco 876 routers
- Cisco 877 routers
- Cisco 878 routers



Note

The memory on the Cisco SOHO routers cannot be upgraded.

Organization

The following sections are included in this document:

- [Warning and Safety Information](#)
- [Opening the Chassis](#)
- [Upgrading the Flash Memory](#)
- [Upgrading the DRAM](#)
- [Closing the Chassis](#)
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Corporate Headquarters:
Cisco Systems, Inc., 170 West Tasman Drive, San Jose, CA 95134-1706 USA

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Warning and Safety Information

To see translations of the warnings that appear in this publication, refer to the *Regulatory Compliance and Safety Information* (RCSI) document that accompanied your Cisco router. The following warning information is included in the RCSI:



Warning

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



Warning

During this procedure, wear grounding wrist straps to avoid ESD damage to the card. Do not directly touch the backplane with your hand or any metal tool, or you could shock yourself. Statement 94

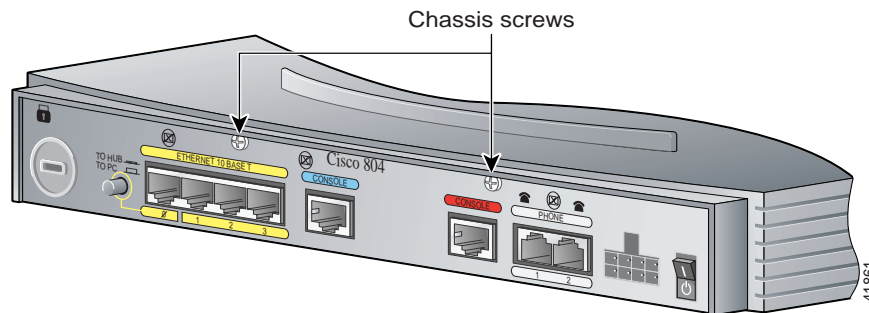
Opening the Chassis

To upgrade the flash memory and dynamic RAM (DRAM), you must open the router chassis. You must provide a number 1 Phillips screwdriver and an antistatic mat.

The model shown in the following procedure is a Cisco 804 router, but the other Cisco 800 series routers are similar to it. Follow these steps to open the chassis:

- Step 1 Make sure that the power switch is turned to standby and that the power supply cable is disconnected.
- Step 2 Disconnect all cables from the router back panel.
- Step 3 Use the Phillips screwdriver to remove the two screws. [Figure 1](#) shows the chassis screw locations. The chassis screw locations are the same on all Cisco 800 series routers.

Figure 1 Removing the Chassis Screws



- Step 4 Gently push the top of the router away from you and then lift it up from the bottom of the router.
- Step 5 Place the router bottom on an antistatic mat.

Upgrading the Flash Memory

This section describes how to upgrade the flash memory in a Cisco 800 series router.



Note

The Cisco SOHO series routers do not support flash and StrataFlash memory upgrade.

[Table 1](#) shows the flash memory options for each Cisco 800 series router platform.

Table 1 *Flash Memory Options*

Platform	Flash Memory Card Options	Default Flash Memory	Maximum Flash Memory
Cisco 801–804 routers	4 MB or 8 MB	8 MB (4 MB of onboard flash memory and a 4-MB flash memory card)	12 MB
Cisco 805 routers	4 MB or 8 MB	8 MB (4 MB of onboard flash memory and a 4-MB flash memory card)	12 MB
Cisco 806 routers	8 MB	8 MB (onboard flash only)	16 MB
Cisco 811–813 routers	4 MB or 8 MB	8 MB (4 MB of onboard flash memory and a 4-MB flash memory card)	12 MB
Cisco 826, 827, and 828 routers	4 MB or 8 MB	8 MB (onboard flash only)	16 MB
Cisco 827-4V routers	4 MB or 8 MB	12 MB (8 MB onboard flash memory and 4-MB flash memory card)	16 MB
Cisco 831, 836, and 837 routers	4 MB, 8 MB, or 16 MB	12 MB (8 MB onboard flash memory and a 4-MB flash memory card)	24 MB
Cisco 851, 857, 871, 876, 877, and 878 routers	4 MB, 16 MB, or 32 MB	20 MB (onboard flash memory only)	52 MB

You can order upgrade kits and have trained and qualified personnel add the flash memory.

Table 2 identifies the flash memory upgrade kits available for the Cisco 801–806, 811–813, and 826–828 routers.

Table 2 *Flash Memory Upgrade Kits for Cisco 801–806, 811–813, and 826–828 Routers*

Description	Cisco Part Number
4-MB flash memory module	MEM800-4F=
8-MB flash memory module	MEM800-8F=

Table 4 identifies the flash memory upgrade kits available for the Cisco 831, 836, and 837 routers.

Table 3 *Flash Memory Upgrade Kits for Cisco 831, 836, and 837 Routers*

Description	Cisco Part Number
4-MB flash memory module	MEM830-4F=
8-MB flash memory module	MEM830-8F=
16-MB flash memory module	MEM830-16F=

Table 4 identifies the flash memory upgrade kits available for the Cisco 871, 876, 877, 878 routers.

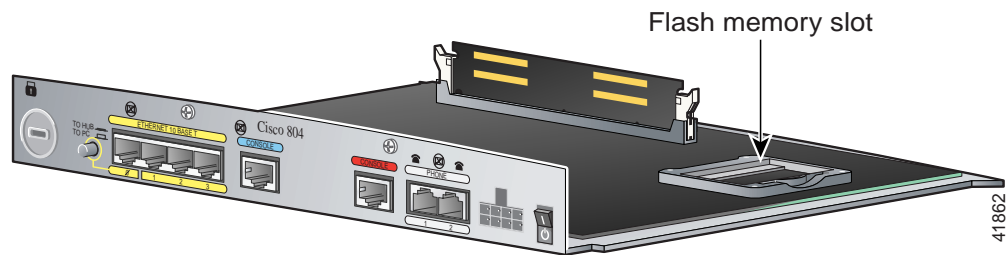
Table 4 *Flash Memory Upgrade Kits for Cisco 871, 876, 877, 878 Routers*

Description	Cisco Part Number
4-MB flash memory module	MEM870-4F=
8-MB flash memory module	MEM870-8F=
16-MB flash memory module	MEM870-16F=
32-MB flash memory module	MEM870-32F=

Locating the Flash Memory Slot

Figure 2 shows where the flash memory module can be installed on the router motherboard. The flash memory slot location is similar on all Cisco 800 series routers. The connector type may vary for some Cisco 800 series routers and will look slightly different from the one illustrated below.

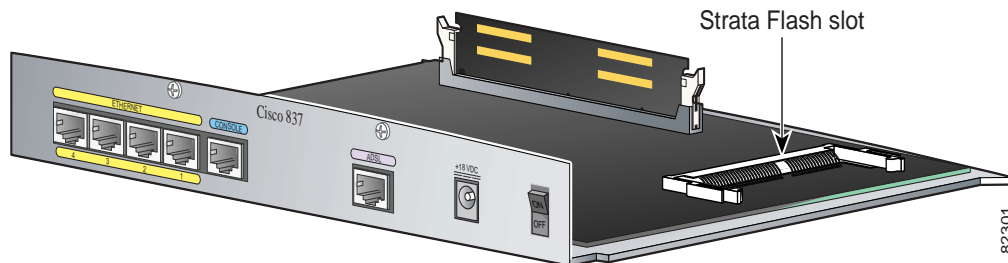
Figure 2 *Location of Flash Memory Slot*



Locating the StrataFlash Memory Slot

Figure 3 shows where the StrataFlash memory module can be installed on the router motherboard. The StrataFlash memory slot location is similar on all Cisco 800 series routers. The orientation of the connector may vary for some Cisco 800 series routers, with the opening turned inward instead of outward as illustrated below.

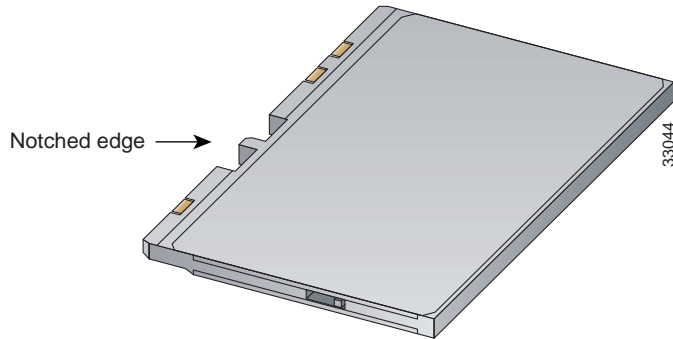
Figure 3 *Location of StrataFlash Memory Slot*



Installing Flash Memory

To upgrade the flash memory, you must install a mini-flash memory module on the router motherboard, as shown in [Figure 4](#).

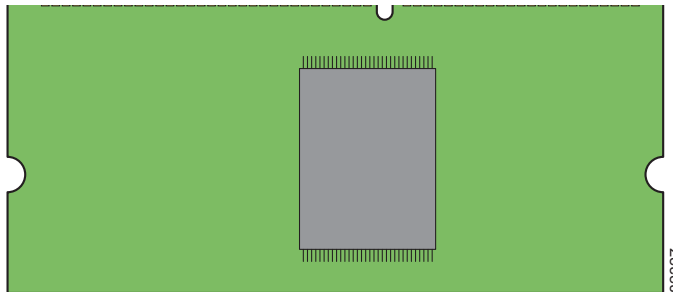
Figure 4 Mini-Flash Memory Module



Installing StrataFlash Memory

To upgrade the StrataFlash memory, you must install a StrataFlash memory module on the router motherboard, as shown in [Figure 5](#).

Figure 5 StrataFlash Memory Module

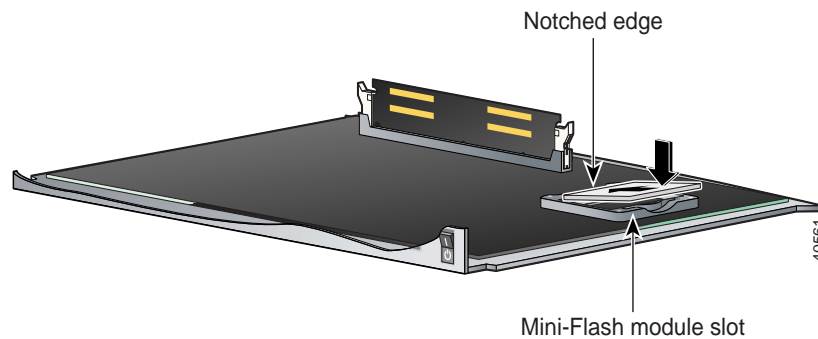


Installing a Mini-Flash Memory Module

Follow these steps to install a mini-flash memory module:

- Step 1** Insert the notched edge of the module into the slot at an angle, as shown in [Figure 6](#).

Figure 6 Installing a Mini-Flash Memory Module



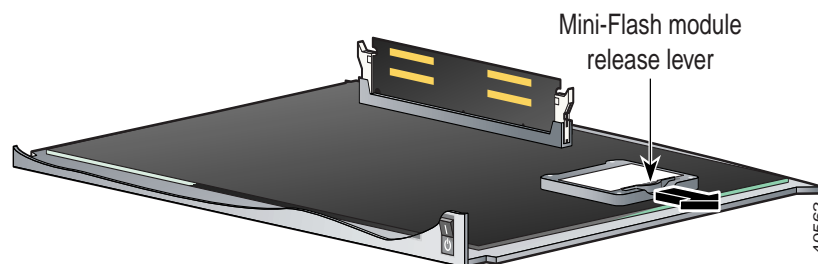
- Step 2** Firmly press down the unnotched edge of the module until you hear a click.

Removing a Mini-Flash Memory Module

Follow these steps to remove a mini-flash memory module:

- Step 1** Put your finger on the mini-flash module release lever and push up. See [Figure 7](#).

Figure 7 Removing a Mini-Flash Module



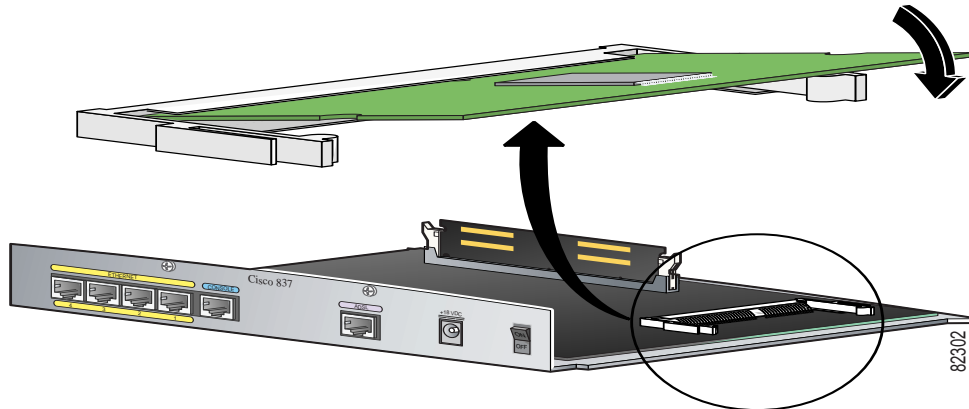
- Step 2** Firmly pull the release lever away from the module until the module pops up and away from the module slot.

Installing a StrataFlash Memory Module

Follow these steps to install a StrataFlash memory module:

- Step 1** Insert the notched edge of the module into the slot at an angle, as shown in [Figure 8](#). Make sure the module is fully seated and makes good contact.

Figure 8 Installing a StrataFlash Memory Module



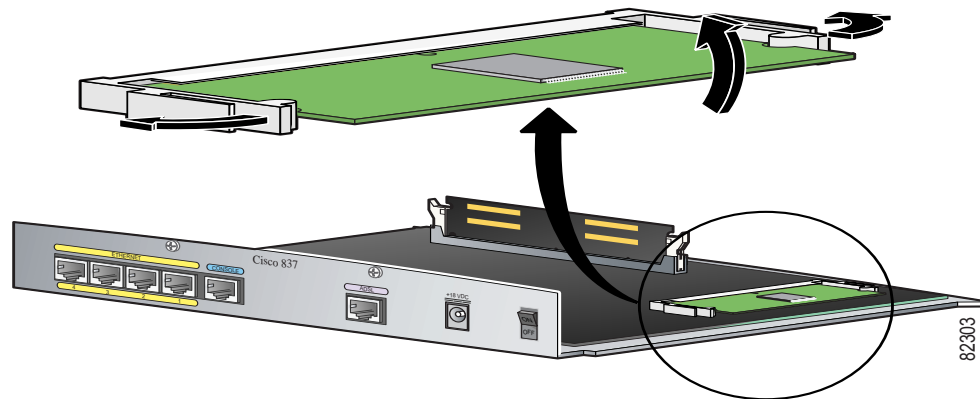
- Step 2** Firmly press down the unnotched edge of the module until you hear a click. The indents must be fully in the notches.

Removing a StrataFlash Memory Module

Follow these steps to remove a StrataFlash memory module:

- Step 1** Place your thumbs on the levers at the two sides of the slot, and push open, as shown in [Figure 9](#).

Figure 9 Removing a StrataFlash Memory Module



- Step 2** Firmly pull the release lever away from the module until the module pops up. You can then remove the module from the module slot.

Upgrading the DRAM

This section describes how to upgrade the DRAM in Cisco 800 series routers. Check the board to see whether it already has a DRAM module.



Note

The Cisco SOHO series routers do not support DRAM upgrade.

Table 5 shows the DRAM memory options for each model of the Cisco 800 series routers.

Table 5 *DRAM Memory Options*

Platform	DRAM Memory Card Options	Default DRAM Memory	Maximum DRAM Memory
Cisco 801–804 routers	4 MB or 8 MB	8 MB (4 MB of onboard DRAM and a 4-MB DRAM memory card)	12 MB
Cisco 805 routers	4 MB or 8 MB	8 MB (onboard DRAM only)	16 MB
Cisco 806 routers	4 MB, 8 MB, or 16 MB	32 MB (16 MB of onboard DRAM and a 16-MB DRAM memory card)	32 MB
Cisco 811–813 routers	4 MB or 8 MB	8 MB (onboard DRAM only)	16 MB
Cisco 826, 827, and 827H routers	4 MB, 8 MB, or 16 MB	The default memory depends on the firmware: <ul style="list-style-type: none"> For Cisco IOS Base IP and IP firmware, 20 MB (16 MB of onboard DRAM and a 4-MB DRAM memory card) For Cisco IOS IP Plus and 3DES firmware, 24 MB (16 MB of onboard DRAM and an 8-MB DRAM memory card) 	32 MB
Cisco 827-4V routers	4 MB, 8 MB, 16 MB, or 32 MB	48 MB (16 MB onboard DRAM and 32-MB DRAM memory card)	48 MB

Table 5 *DRAM Memory Options (continued)*

Platform	DRAM Memory Card Options	Default DRAM Memory	Maximum DRAM Memory
Cisco 828 Router	4 MB, 8 MB, or 16 MB	The default memory depends on the firmware: <ul style="list-style-type: none"> For Cisco IOS Base IP and IP firmware, 20 MB (16 MB of onboard DRAM and a 4-MB DRAM memory card) For Cisco IOS 3DES and IP Plus firmware, 24 MB (16 MB of onboard DRAM and an 8-MB DRAM memory card) 	32 MB
Cisco 831, 836, and 837 routers	4 MB, 8 MB, or 16 MB	64 MB (onboard DRAM only)	80 MB
Cisco 851 and 857 routers	64 MB or 128 MB	64 MB (onboard DRAM only)	192 MB
Cisco 871, 876, 877, and 878 routers	64 MB or 128 MB	128 MB (onboard DRAM only)	256 MB

Because of the height restriction of the actual DRAM component, you must order the additional DRAM from Cisco Systems.

You can order upgrade kits and have trained and qualified personnel add the memory.

[Table 7](#) identifies the DRAM upgrade kits available for Cisco 801–806, 811–813, 826–828, 831, 836, and 837 routers.

Table 6 *Dynamic RAM Upgrade Kits for Cisco 801–806, 811–813, and 826–828, 831, 836, and 837 Routers*

Description	Cisco Part Number
4-MB DRAM module	MEM800-4D=
8-MB DRAM module	MEM800-8D=
16-MB DRAM module	MEM820-16D=
32-MB DRAM module	MEM820-32D=

[Table 7](#) identifies the DRAM upgrade kits available for Cisco 871, 876, 877, 878 routers.

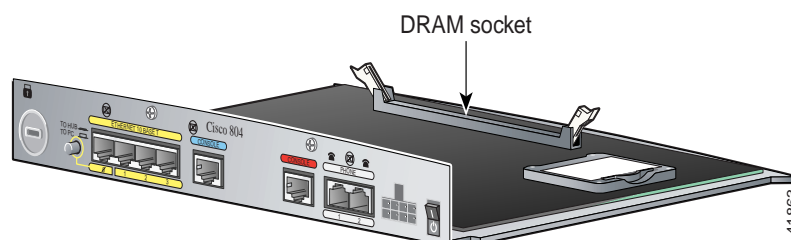
Table 7 *Dynamic RAM Upgrade Kits for Cisco 871, 876, 877, 878 Routers*

Description	Cisco Part Number
64-MB DRAM module	MEM870-64D=
128-MB DRAM module	MEM870-128D=

Locating the DRAM Slot

Figure 10 shows where the DRAM module can be installed on the router motherboard. The DRAM socket location is similar on all Cisco 800 series routers.

Figure 10 Location of DRAM



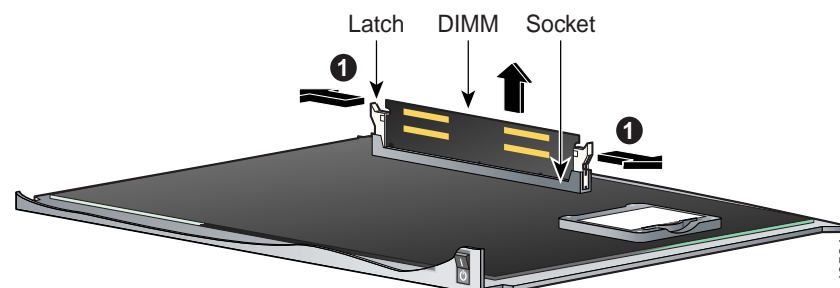
Installing the DRAM

To upgrade the DRAM, you must install the dual in-line memory module (DIMM) on the router motherboard.

Follow these steps to install a DIMM:

-
- Step 1** If a DIMM is already installed in the slot, firmly push the slot guides away from the DIMM and down toward the motherboard, as shown in Figure 11, until the DIMM pops out of the slot.

Figure 11 Removing a DIMM

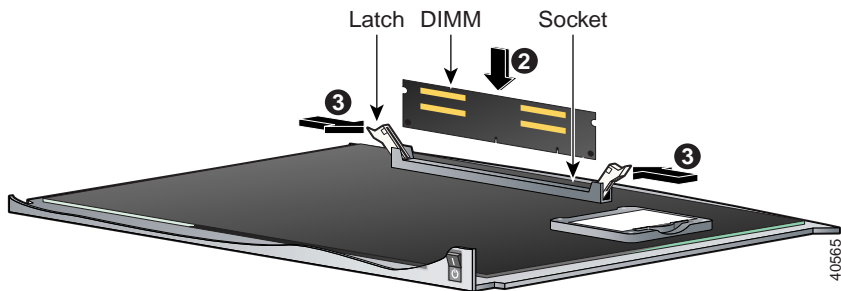


Step 2 Insert the new DIMM into the slot, making sure that the notches on the edge of the DIMM are inserted over the bars inside the slot, as shown in [Figure 12](#).



Note The DIMM orientation for the Cisco 801–804 and 805 routers is 180 degrees opposite the DIMM orientation for the Cisco 827 router.

Figure 12 *Installing a DIMM*



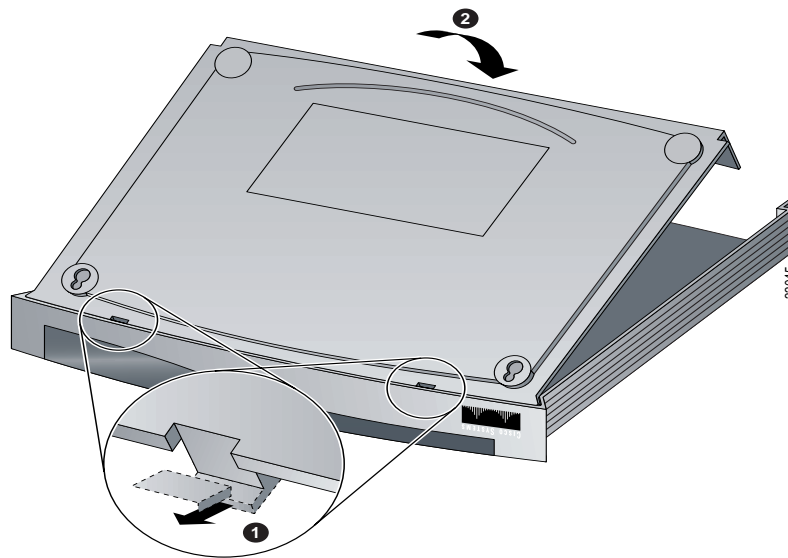
Step 3 Firmly press the DIMM into the slot until the two slot guides on each side move up and over the DIMM edges, and you hear a click. If the guides do not move up and over the DIMM edges, move them with your hands.

Closing the Chassis

Follows these steps to close the chassis:

-
- Step 1** Place the router cover upside down, with the front of the cover facing you.
Notice the two rectangular tabs near the bottom of the front cover.
 - Step 2** Pick up the router bottom and turn it upside down, with the back panel facing away from you.
Notice the two hooks along the router bottom.
 - Step 3** Hold the front of the router bottom at an angle so that the hooks slip under the tabs on the front cover, as shown in [Figure 13](#).

Figure 13 Closing the Chassis



- Step 4** Lower the back of the router bottom.
The router bottom and the bottom of the front cover should be aligned.
 - Step 5** Turn the router chassis over so that the back panel is facing you.
 - Step 6** Replace the two screws that you removed when you opened the chassis. (See [Figure 1](#) on page 2.)
-

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/univercd/home/home.htm>

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

Documentation DVD

Cisco documentation and additional literature are available in a Documentation DVD package, which may have shipped with your product. The Documentation DVD is updated regularly and may be more current than printed documentation. The Documentation DVD package is available as a single unit.

Registered Cisco.com users (Cisco direct customers) can order a Cisco Documentation DVD (product number DOC-DOCDVD=) from the Ordering tool or Cisco Marketplace.

Cisco Ordering tool:

<http://www.cisco.com/en/US/partner/ordering/>

Cisco Marketplace:

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

Ordering Documentation

You can find instructions for ordering documentation at this URL:

http://www.cisco.com/univercd/cc/td/doc/es_inpk/pdi.htm

You can order Cisco documentation in these ways:

- Registered Cisco.com users (Cisco direct customers) can order Cisco product documentation from the Ordering tool:
<http://www.cisco.com/en/US/partner/ordering/>
- Nonregistered Cisco.com users can order documentation through a local account representative by calling Cisco Systems Corporate Headquarters (California, USA) at 408 526-7208 or, elsewhere in North America, by calling 1 800 553-NETS (6387).

Documentation Feedback

You can send comments about technical documentation to bug-doc@cisco.com.

You can submit comments 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

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

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
- Nonemergencies—psirt@cisco.com



Tip

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 that has the most recent creation date in this public key server list:

<http://pgp.mit.edu:11371/pks/lookup?search=psirt%40cisco.com&op=index&exact=on>

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

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

Obtaining Technical Assistance

For all customers, partners, resellers, and distributors who hold valid Cisco service contracts, Cisco Technical Support provides 24-hour-a-day, award-winning technical assistance. The Cisco Technical Support Website on Cisco.com features extensive online support resources. In addition, Cisco Technical Assistance Center (TAC) engineers provide telephone support. If you do not hold a valid Cisco service contract, contact your reseller.

Cisco Technical Support Website

The Cisco Technical Support 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, 365 days a year, at this URL:

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

Access to all tools on the Cisco Technical Support 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>



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 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.

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 TAC 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 TAC 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)—Your 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 operation 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 your network is impaired, but 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.

Obtaining Additional Publications and Information

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

- Cisco Marketplace provides a variety of Cisco books, reference guides, 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>
- *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>

- 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>

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