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Release Notes for Cisco IOS Release 11.2(11)P Feature Packs—7200 Series Routers

April 1, 1998

These release notes describe Cisco IOS Release 11.2 feature packs for Cisco 7200 series routers.

Product numbers for the feature packs are as follows:

- CD72-A-11.2= (Cisco 7200 Enterprise Feature Pack)
- CD72-AN-11.2= (Cisco 7200 Enterprise and APPN Feature Pack)
- CD72-BS-11.2= (Cisco 7200 Desktop and IBM Feature Pack)
- CD72-BSN-11.2= (Cisco 7200 Desktop and IBM and APPN Feature Pack)
- CD72-C-11.2= (Cisco 7200 IP Feature Pack)
- CD72-R-11.2= (Cisco 7200 Layer 3 Switching Feature Pack)

Note The feature packs listed here contain Cisco IOS Release 11.2(11)P and 11.1(14)CA software images. The feature packs contain Router Software Loader (RSL) Version 6.0.

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Platforms Supported

These feature packs support Cisco 7204 and Cisco 7206 routers.

What is a Feature Pack?

The heart of a Cisco IOS software feature pack is a CD-ROM that contains a software image and Router Software Loader (RSL), a Windows 95 application that loads the image onto the access server/router. Each Cisco IOS Release 11.2 feature pack CD contains one feature set. For users without Windows 95, images can also be loaded with a Trivial File Transfer Protocol server application, as explained in these release notes.

Each Cisco IOS Release 11.2 software feature pack box contains the following:

- CD-ROM with the following software:
 - Feature set software image that includes bundled modem firmware
 - RSL program (Windows 95 application)
 - TFTP server application (Windows 95 application)
- Instruction booklet for using RSL
- Release notes (this document), which include instructions for using a TFTP server application on a system not running Windows 95
- Software license—for using Cisco software in object code form on a single access server or router
- Cisco Documentation CD-ROM, which contains all Cisco IOS software documentation

Cisco Feature Pack Description

This section describes the Cisco feature packs, listing the software feature sets comprising each feature pack. You can use this information to identify your feature pack set in conjunction with the corresponding information provided in Table 3 in the section “Cisco IOS Release 11.2 Feature Sets” on page 7. Table 3 identifies which features are supported for a feature set on a specific platform.

Note RSL Version 6.0, contained in every Cisco IOS Release 11.2 software feature pack, supports Ethernet, Fast Ethernet, and Token Ring interfaces.

Software Feature Packs

This section includes two tables: Table 1, describes each feature pack image, including a brief description of each feature set, the UNIX and DOS filenames of the images, and the memory required to run each feature set on the Cisco 7200 Series Router. Table 1 lists the memory delivered by default, and Table 3, Table 4, and Table 5 list the the memory upgrades available.

You can use Table 1 to identify the memory required for your configuration based on the image you run. You can then check this against Table 3, Table 4, and Table 5 to determine how much memory is available on the router as the factory default and the upgrades that you can obtain to satisfy your requirements.

Cisco Feature Pack Descriptions

Table 1 provides feature pack names, descriptions, and UNIX filenames of the Cisco IOS images.

Table 1 Feature Pack Image Filenames and Memory Requirements

Model No. (SKU)	CD-ROM Description	Cisco IOS Image Description	UNIX Image Name	DOS Image Name	Flash Memory Required	Main Memory Required
CD72-AN-11.2=	Cisco 7200 Enterprise & APPN Feature Pack Release 11.2(11)P (Router Software Loader Version 6.0)	Cisco 7200 Enterprise & APPN feature set 11.2(8)P	c7200-ajs-mz.112-8.p	80203408.bin	16MB	32 MB
		Cisco 7200 Enterprise & APPN feature set 11.1(17)CA	c7200-aj-mz.111-17.ca		16 MB	32 MB
		Cisco 7200 Enterprise & APPN feature set 11.2(11)P	c7200-ajs-mz.112-11.p		16 MB	32 MB
CD72-A-11.2=	Cisco 7200 Enterprise Feature Pack Release 11.2(11)P (Router Software Loader Version 6.0)	Cisco 7200 Enterprise feature set 11.2(8)P	c7200-js-mz.112-8.p	80203808.bin	16MB	32MB
		Cisco 7200 Enterprise feature set 11.1(17)CA	c7200-j-mz.111-17.ca		16 MB	32 MB
		Cisco 7200 Enterprise feature set 11.2(11)P	c7200-js-mz.112-11.p		16 MB	32 MB
CD72-BSN-11.2=	Cisco 7200 Desktop/IBM/APPN Feature Pack Release 11.2(11)P (Router Software Loader Version 6.0)	Cisco 7200 Desktop/IBM/APPN feature set 11.2(8)P	c7200-ads-mz.112-8.p	80203308.bin	16MB	32MB
		Cisco 7200 Desktop/IBM/APPN feature set 11.2(11)P	c7200-ads-mz.112-11.p		16MB	32MB
					16MB	32MB
CD72-BS-11.2=	Cisco 7200 Desktop/IBM Feature Pack Release 11.2(11)P (Router Software Loader Version 7.0)	Cisco 7200 Desktop & IBM feature set 11.2(8)P	c7200-ds-mz.112-8.p	80203508.bin	16MB	32MB
		Cisco 7200 Desktop & IBM feature set 11.1(17)CA	c7200-dr-mz.111-17.ca		16 MB	32 MB
		Cisco 7200 Desktop & IBM feature set 11.2(11)P	c7200-dr-mz.111-17.p		16MB	32 MB
CD72-C-11.2=	Cisco 7200 IP Feature Pack Release 11.2(11)P (Router Software Loader Version 6.0)	Cisco 7200 IP feature set 11.2(8)P	c7200-is-mz.112-8.p	80203708	16MB	32MB
		Cisco 7200 IP feature set 11.2(11)P	c7200-is-mz.112-11.p		16MB	32MB

Model No. (SKU)	CD-ROM Description	Cisco IOS Image Description	UNIX Image Name	DOS Image Name	Flash Memory Required	Main Memory Required
CD72-R-11.2=	Cisco 7200 Layer 3 Switching Feature Pack Release 11.2(11)P (Router Software Loader Version 7.0)	Cisco 7200 Layer 3 Switching feature set 11.2(8)P	c7200-inu-mz.112-8.p	80203608	16MB	32MB
		Cisco 7200 Layer 3 Switching feature set 11.1(17)CA	c7200-inu-mz.111-17.ca		16MB	32MB
		Cisco 7200 Layer 3 Switching feature set 11.2(11)P	c7200-inu-mz.112-11.p		16MB	32MB

RSL Installation Tips

This section describes several solutions to problems you might encounter when using RSL. These solutions are additions to the RSL online help.

Recovering from a Connection Error

This installation tip provides a possible recovery solution in the event that you are unable to connect to your access server or router. You can skip this section unless you are experiencing a connection error.

In some cases, you might receive the following error message while connecting to the target router:

```
"Failed to configure the router to enable the Cisco IOS software image and configuration file upload and download operations. You may want to check the router to make sure that the selected interface exists."
```

If you encounter this message, try increasing the Short Timeout value, which is set to 25 seconds, in the Options dialog box, especially if one of the following situations applies:

Note Increasing the Short Timeout value may increase the time it takes for RSL to connect to the target router.

- You are connecting to a router that has a large configuration file.
- You are connecting to a Cisco AS5200 access server. A Cisco AS5200 access server requires up to 45 seconds to write a configuration to nonvolatile random-access memory (NVRAM), due to the amount of interfaces that must be checked during this process. Increase the Short Timeout value to 60 seconds.

Restoring the Startup Configuration

In some cases, RSL is unable to restore the startup configuration. If this happens, take the following steps:

- Step 1** Ensure that all cables are properly attached to both the router and the PC.
- Step 2** Restart RSL and connect using the **Preconfigured router** option.
- Step 3** When asked if you want to overwrite the existing startup configuration file, choose **NO**.

- Step 4** When asked if you want to continue, choose **YES**.
- Step 5** When connected, select **Download Router Configuration** in the Router Software Loader dialog box.
- Step 6** Select the appropriate file, and click **Copy configuration to the router's nonvolatile memory**.

The router should now contain the startup configuration it had before the initial RSL connection. You can now exit RSL.

Note In the previous situation, the router's configuration register (**config-register 0xnnnn**) is not restored.

Note If you enter **Ctrl-Alt-Delete** to terminate RSL, the router's configuration and configuration register are not restored. However, in this case the configuration file is not deleted from the PC, so it can be restored using the previous steps.

Helpful Hints

The following information about RSL operations can help you with the installation process:

- If you have added any static entries to the PC's Address Resolution Protocol (ARP) table, one of them might be deleted by RSL. This entry will need to be manually reentered into the PC's ARP table.
- If the router's running configuration at connection time is not the same as the router's startup configuration, the exact configuration will not be restored. Any changes that you have made since the last time a **copy running-config startup-config** or **write memory** command was entered will be lost.
- RSL will restore the router's running configuration, but some configuration commands will not be restored. However, the startup configuration will be correct. You can restore the exact running configuration by rebooting the router. Commands not restored to the running configuration include the following interface configuration commands: **no shutdown**, **no ringspeed**, and **media-type aui**.

Cisco IOS Release 11.2 Feature Sets

This section identifies supported features, within each feature set, supported on Cisco 7200 series routers. Table 2 shows specific features supported for Cisco IOS Release 11.2 feature sets.

The table uses these conventions to identify features:

- “Yes” means the feature is offered in the basic feature set
- “—” means the feature is not offered in the feature set

You can use the information given in the table provided in this section in conjunction with the information in Table 1 to determine which features a particular feature set supports.

Note You can pick either feature set to use—11.2(11)P or 11.1CA; however, you cannot run both feature sets at the same time. Some feature sets are available only in 11.1 CA or 11.2, as noted in Table 2.

Table 2 Cisco 7200 Series Software Feature Sets

Features	Feature Sets			
	Network Layer 3 Switching (Only 11.1 CA)	IP Routing (Only 11.2)	Desktop/IBM ¹ (Both 11.1 CA & 11.2)	Enterprise ¹ (Both 11.1 CA and 11.2)
LAN Support				
Apollo Domain	—	—	—	Yes
AppleTalk 1 and 2 (includes AppleTalk load balancing)	—	—	Yes	Yes
Banyan VINES	—	—	—	Yes
Concurrent routing and bridging (CRB applies to transparent bridging, not source-route bridging)	Yes	Yes	Yes	Yes
DECnet IV	—	—	Yes	Yes
DECnet V	—	—	—	Yes
GRE	—	Yes	Yes	Yes
Integrated routing and bridging (IRB) ²	Yes	Yes	Yes	Yes
IP	Yes	Yes	Yes	Yes
LAN extension host	Yes	Yes	Yes	Yes
Multiring	Yes	Yes	Yes	Yes
Novell IPX ³	Yes	—	Yes	Yes
OSI	—	—	—	Yes
Transparent and translational bridging	Yes	Yes	Yes	Yes
VLANs (ISL and IEEE 802.10)	Yes	Yes	Yes	Yes
XNS	—	—	—	Yes
WAN Services				
ATM LAN emulation: DECnet routing, XNS routing, and Banyan VINES support	Yes	Yes	Yes	Yes

Table 2 Cisco 7200 Series Software Feature Sets (Continued)

Features	Feature Sets			
	Network Layer 3 Switching (Only 11.1 CA)	IP Routing (Only 11.2)	Desktop/IBM ¹ (Both 11.1 CA & 11.2)	Enterprise ¹ (Both 11.1 CA and 11.2)
ATM LAN emulation: Hot Standby Router Protocol (HSRP) and Simple Server Redundancy Protocol (SSRP)	Yes	Yes	Yes	Yes
ATM: UNI 3.1 signaling for ATM	Yes	Yes	Yes	Yes
Combinet Packet Protocol (CPP)	Yes	Yes	Yes	Yes
Dialer profiles	Yes	Yes	Yes	Yes
Half bridge/half router for CPP and PPP	Yes	Yes	Yes	Yes
HDLC	Yes	Yes	Yes	Yes
IPXWAN 2.0	Yes	—	Yes	Yes
ISDN ⁴	—	Yes	Yes	Yes
Multichassis Multilink PPP (MMP)	—	—	—	Yes
PPP ⁵	—	Yes	Yes	Yes
Virtual Private Dial-up Network (VPDN)	—	—	Yes	Yes
Web Cache Control Protocol (WCCP)	Yes	Yes	Yes	Yes
WAN Optimization				
Bandwidth-on-demand	—	Yes	Yes	Yes
Custom and priority queuing	—	Yes	Yes	Yes
Dial backup	—	Yes	Yes	Yes
Dial-on-demand	—	Yes	Yes	Yes
Header ⁶ , link and payload compression ⁷	—	Yes	Yes	Yes
Snapshot routing	Yes	Yes	Yes	Yes
Weighted fair queuing	—	Yes	Yes	Yes
IP Routing				
Enhanced IGRP	Yes	Yes	Yes	Yes
Enhanced IGRP Optimizations	Yes	Yes	Yes	Yes
ES-IS	—	—	—	Yes
IGRP	Yes	Yes	Yes	Yes
IS-IS	—	—	—	Yes
Named IP Access Control List ⁸	—	Yes	Yes	Yes
NHRP	Yes	Yes	Yes	Yes
Network Address Translation (NAT)	Yes	Yes	Yes	Yes
On Demand Routing (ODR)	Yes	Yes	Yes	Yes
OSPF	Yes	Yes	Yes	Yes
OSPF Not-So-Stubby-Areas (NSSA)	Yes	Yes	Yes	Yes
OSPF On Demand Circuit (RFC 1793)	Yes	Yes	Yes	Yes
PIM	Yes	Yes	Yes	Yes

Table 2 Cisco 7200 Series Software Feature Sets (Continued)

Features	Feature Sets			
	Network Layer 3 Switching (Only 11.1 CA)	IP Routing (Only 11.2)	Desktop/IBM ¹ (Both 11.1 CA & 11.2)	Enterprise ¹ (Both 11.1 CA and 11.2)
Policy-based routing	Yes	Yes	Yes	Yes
RIP	Yes	Yes	Yes	Yes
RIP Version 2	Yes	Yes	Yes	Yes
Other Routing				
AURP	—	—	Yes	Yes
IPX RIP	Yes	—	Yes	Yes
NLSP	Yes	—	Yes	Yes
RTMP	Yes	Yes	Yes	Yes
SMRP	—	—	Yes	Yes
S RTP	—	—	—	Yes
Multimedia and Quality of Service				
Generic traffic shaping	Yes	Yes	Yes	Yes
Random Early Detection (RED)	Yes	Yes	Yes	Yes
Resource Reservation Protocol (RSVP)	Yes	Yes	Yes	Yes
Management				
AutoInstall	Yes	Yes	Yes	Yes
HTTP Server	Yes	Yes	Yes	Yes
RMON events and alarms	Yes	Yes	Yes	Yes
SNMP	Yes	Yes	Yes	Yes
Telnet	Yes	Yes	Yes	Yes
Security				
Access lists	Yes	Yes	Yes	Yes
Access security	Yes	Yes	Yes	Yes
Extended access lists	Yes	Yes	Yes	Yes
Kerberized login	—	—	—	Yes
Kerberos V client support	—	—	—	Yes
Lock and key	Yes	Yes	Yes	Yes
MD5 routing authentication	Yes	Yes	Yes	Yes
Network layer encryption (40-bit or export controlled 56-bit DES)	Encrypt	Encrypt	Encrypt	Encrypt
RADIUS	Yes	Yes	Yes	Yes
Router authentication	Encrypt	Encrypt	Encrypt	Encrypt
TACACS+ (TACACS+ Single Connection and SENDAUTH enhancements)	Yes	Yes	Yes	Yes
IBM Support				
APPN (optional) ¹	—	—	Yes	Yes

Table 2 Cisco 7200 Series Software Feature Sets (Continued)

Features	Feature Sets			
	Network Layer 3 Switching (Only 11.1 CA)	IP Routing (Only 11.2)	Desktop/IBM ¹ (Both 11.1 CA & 11.2)	Enterprise ¹ (Both 11.1 CA and 11.2)
BAN for SNA Frame Relay support	—	—	Yes	—
Caching and filtering	—	—	Yes	Yes
DLSw+ (TACACS+ Single Connection and SENDAUTH enhancements) ⁹	—	—	Yes	Yes
Downstream PU concentration (DSPU)	—	—	Yes	Yes
Frame Relay SNA support (RFC 1490)	—	—	Yes	Yes
Native Client Interface Architecture (NCIA) Server	—	—	Yes	Yes
NetView Native Service Point	—	—	Yes	Yes
QLLC	—	—	Yes	Yes
Response Time Reporter (RTR)	—	—	Yes	Yes
SDLC integration	—	—	Yes	Yes
SDLC transport (STUN)	—	—	Yes	Yes
SDLC-to-LAN conversion (SDLLC)	—	—	Yes	Yes
SNA and NetBIOS WAN optimization via local acknowledgment	—	—	Yes	Yes
SRB/RSRB ¹⁰	Yes	—	Yes	Yes
SRT	Yes	—	Yes	Yes
TG/COS	—	—	—	Yes

1. Desktop/IBM and Enterprise are available with APPN in a separate feature set. Use the product numbers that specify APPN. APPN includes APPN Central Registration (CRR) and APPN over DLSw+.
2. Releases 11.2(1) through 11.2(3) do not support IRB. In a later maintenance release IRB supports IP, IPX, and AppleTalk; it is supported for transparent bridging, but not for SRB; it is supported on all media-type interfaces except X.25 and ISDN bridged interfaces; and IRB and CRB cannot operate at the same time.
3. The Novell IPX feature includes display SAP by name, IPX Access Control List violation logging, and plain-English IPX access lists.
4. ISDN support includes calling line identification (ANI), X.25 over the B channel, ISDN subaddressing, and applicable WAN optimization features. Asynchronous ISDN Access (V.120) is only supported in the Enterprise feature set.
5. PPP includes support for LAN protocols supported by the feature set, address negotiation, PAP and CHAP authentication, and PPP compression.
6. IPX header compression (RFC 1553) is available in the feature sets that support IPX.
7. X.25 and Frame Relay payload compression.
8. This feature can only be used by packet and route filters, it is not backward-compatible with earlier Cisco IOS releases, and is not supported with Distributed Fast Switching.
9. Cisco IOS Release 11.2 introduces several DLSw+ enhancements.
10. SRB/RSRB is fast switched. This enhancement is on by default, but can be disabled.

Back Rev Feature Sets

For a list of features supported by the back rev feature sets, see the release notes available on the Documentation CD-ROM or the World Wide Web (at <http://www.cisco.com>, <http://www-europe.cisco.com>, or <http://www-china.cisco.com>). To find a feature set list for Cisco IOS Release 11.1(14), locate the **Cisco IOS Software Configuration** database. Then select **Cisco IOS Release 11.1**, and then select **Release Notes for Cisco IOS Release 11.1**.

Memory Requirements

Depending on the circumstances, you might need to determine the amount of main memory (DRAM) required by your Cisco 7200 series router to support a combination of installed port adapter types and the Cisco IOS image you intend to load from the feature pack CD-ROM. To calculate memory requirements, use the publication *Cisco 7200 Series Port Adapter Hardware Configuration Guidelines (78-3471-xx)*, which ships with your chassis.

Memory Upgrade Options

Table 3 lists Cisco 7200 series DRAM options, and Table 4 lists Cisco 7200 series Flash memory card options. Note that all spare PCMCIA Flash memory cards are shipped blank and unformatted.

Table 3 Cisco 7200 Series Network Processing Engine DRAM Upgrade Options

Description	Product Number
32-MB DRAM upgrade kit (2 16-MB SIMMs ¹) (default)	MEM-NPE-32MB=
64-MB DRAM upgrade kit (2 32-MB SIMMs)	MEM-NPE-64MB=
128-MB DRAM upgrade kit (4 32-MB SIMMs)	MEM-NPE-128MB=

1. SIMM = single in-line memory module.

Table 4 Cisco 7200 Series Flash Memory Card Upgrade and Spare Options

Description	Product Number
8-MB PCMCIA Flash memory card	MEM-I/O-FLC8M=
16-MB PCMCIA Flash memory card	MEM-I/O-FLC16M=
20-MB PCMCIA Flash memory card	MEM-I/O-FLC20M=

Table 5 lists the processor and I/O memory available for each Cisco 7200 series DRAM option on the NPEs.

Table 5 Cisco 7200 Series DRAM Options

DRAM Options for all NPEs	NPE-100= Processor Memory	NPE-150= I/O Memory	NPE-150= Processor Memory	NPE-150= I/O Memory ¹	NPE-200= Processor Memory	NPE-200= I/O Memory ²
32 MB	26 MB	6 MB	26 MB	7 MB	26 MB	6 MB
64 MB	56 MB	8 MB	56 MB	9 MB	56 MB	8 MB
128 MB	120 MB	8 MB	120 MB	9 MB	120 MB	8 MB

1. The I/O memory for the NPE-150 DRAM options includes 1 MB of packet SRAM.

2. The I/O memory for the NPE-200 DRAM options includes 4 MB of packet SRAM.

Note The amount of I/O memory available for each DRAM option differs between the three network processing engines, NPE-100=, NPE-150=, and NPE-200=. The NPEs have the same functionality; however, their performance differs because, unlike the NPE-150= and NPE-200=, the NPE-100= does not contain packet SRAM. All NPEs are shipped with 32 MB DRAM.

Installing the Software Image Using a TFTP Server Application

The Router Software Loader application contained on the feature pack CD-ROM is designed to work with a PC running Microsoft Windows 95. The booklet included with the CD-ROM explains how to perform this simple and recommended install process. However, an alternative is available using a TFTP server application to install router software.

This section explains how to use a TFTP server application as an alternative to using the RSL to install the router software from the CD-ROM. You can perform this procedure using a PC (running Microsoft Windows 95 or Microsoft Windows 3.1), a Macintosh, or a UNIX system. You can use either the **copy tftp flash** or **copy rcp flash** command to download the software to the router.

First obtain a TFTP application or a remote copy protocol (rcp) application to set up your computer as a TFTP server or an rcp server. You can use the RSL or the TFTP server included on the feature pack CD-ROM to install the software only if you are using a PC running Windows 95. For other operating systems, a number of TFTP or rcp applications are available from independent software vendors or as shareware from public sources on the World Wide Web.

Installation Process for Router Software Feature Sets

This section provides steps that describe how to install the router software feature sets using a Microsoft Windows 3.1 PC with a TFTP server application. You can also set up your Macintosh or UNIX workstation as a TFTP server and follow the same steps.

To install the software using an rcp application, follow the same procedure and substitute rcp for TFTP in the instructions. You must also substitute the **copy rcp flash** command for the **copy tftp flash** command in Step 8.

- Step 1** Install any TFTP application on the PC. (Not provided by Cisco.)
- Step 2** Launch the TFTP application on the PC. You commonly do this by double-clicking the application icon or its filename.
- Step 3** Set up the PC as a TFTP server using the TFTP application setup or configuration facility.

The user interface of most TFTP applications includes a setup facility that allows you to specify the PC as a server. For example, from the TFTP menu of one application, you can select **Settings** to display a panel that includes a checkbox beside the word **Server**. To configure the local PC as a server, click in this checkbox.

The TFTP server also allows you to select a "root" directory. You must select the directory in which the Cisco IOS and upgrade files reside, for example **d:\cpwinst\images**.



Caution Be sure you set up your local PC as a TFTP server. If you overlook this step, you will not be able to perform the copy procedure. This reminder also applies if you are using **rcp** on your system instead of TFTP.

- Step 4** Establish a console session from your local PC (which is now configured as a TFTP server) to the Cisco router.

You can do this in two ways:

- Connect the PC's COM port to the router's console port.

This is the recommended method. If you use this method, when you reload the router to cause the image to take effect in Step 10, you will remain connected to the router. (Using Telnet, you will lose connection to the router at that point in the process.)

- Establish a Telnet session from the PC to the router.

Step 5 Connect your PC's Ethernet, Fast Ethernet, or Token Ring port to the router's corresponding LAN port. Use the 10BaseT crossover cable provided if connecting to an Ethernet or Fast Ethernet port. You must use Category 5 cable for Fast Ethernet routers.

Note Use straight-through cables if you are connecting through a 10BaseT hub or a 100BaseT hub.

For systems without a LAN interface, make sure that the router and the PC have IP connectivity through the available interface (that is, the router and PC can ping each other with IP traffic).

Step 6 At the router prompt, enter the enable mode and supply the necessary password if prompted:

```
Router> enable
password: <password>
router#
```



Caution Be aware that the Cisco 7200 Series router does not prompt you before it erases the Flash memory card. Also, it will load the Cisco IOS image even if it doesn't fit. For this reason, Cisco Systems recommends that you issue the **delete** and **squeeze** commands before copying the new software image to Flash memory.

The entire copying process takes several minutes and differs from network to network. During the transfer process, the software displays messages indicating that it has accessed the file you have specified and is loading it.

The exclamation point (!) indicates that the copy process is taking place. Each exclamation point (!) indicates that ten packets have been transferred successfully. A checksum verification of the image occurs after the image is written to Flash memory.

After the load process completes, the router verifies that the transfer was successful and displays a series of Cs on the console.

Step 10 Enter the reload command to reload the router:

```
Router# reload
```

Note You do not need to save the system configuration when prompted here. After **reload** is complete, the router should be running the required Cisco IOS image. Use the **show version** command to verify.

Related Documentation

Release notes and other Cisco documentation are on the Documentation CD-ROM that is included with your feature pack, and at Cisco Connection Online (CCO) on the World Wide Web.

On the Documentation CD-ROM, the path for Cisco IOS documentation is as follows:

— *Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 11.2.*

On CCO, <http://www.cisco.com/>, the path is as follows:

— *Software & Support*, scroll down and select *Documentation*. Click *Cisco Documentation: Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 11.2.*

Online documentation for Release 11.2 includes:

- Release Notes
- Feature Guides, including new features for Cisco IOS Release 11.2(10)P
- Configuration Guides and Command References
- Command Summary
- System Error Messages
- MIB User Quick Reference
- Debug Command Reference
- Caveats

The Cisco IOS software documentation for Cisco IOS Release 11.2 is divided into eight modules. There are also supporting documents. Each documentation module consists of two books: a configuration guide and a corresponding command reference. The Cisco IOS documentation set consists of the following books and chapter topics:

Books	Chapter Topics
<ul style="list-style-type: none"> • <i>Configuration Fundamentals Configuration Guide</i> • <i>Configuration Fundamentals Command Reference</i> 	<ul style="list-style-type: none"> Access Server and Router Product Overview User Interface System Images and Configuration Files Using ClickStart, AutoInstall, and Setup Interfaces System Management
<ul style="list-style-type: none"> • <i>Security Configuration Guide</i> • <i>Security Command Reference</i> 	<ul style="list-style-type: none"> Network Access Security Terminal Access Security Accounting and Billing Traffic Filters Controlling Router Access Network Data Encryption with Router Authentication
<ul style="list-style-type: none"> • <i>Access Services Configuration Guide</i> • <i>Access Services Command Reference</i> 	<ul style="list-style-type: none"> Terminal Lines and Modem Support Network Connections AppleTalk Remote Access SLIP and PPP XRemote LAT Telnet TN3270 Protocol Translation Configuring Modem Support and Chat Scripts X.3 PAD Regular Expressions
<ul style="list-style-type: none"> • <i>Wide-Area Networking Configuration Guide</i> • <i>Wide-Area Networking Command Reference</i> 	<ul style="list-style-type: none"> ATM Dial-on-Demand Routing (DDR) Frame Relay ISDN LANE PPP for Wide-Area Networking SMDS X.25 and LAPB
<ul style="list-style-type: none"> • <i>Network Protocols Configuration Guide, Part 1</i> • <i>Network Protocols Command Reference, Part 1</i> 	<ul style="list-style-type: none"> IP IP Routing
<ul style="list-style-type: none"> • <i>Network Protocols Configuration Guide, Part 2</i> • <i>Network Protocols Command Reference, Part 2</i> 	<ul style="list-style-type: none"> AppleTalk Novell IPX

Books	Chapter Topics
<ul style="list-style-type: none"> • <i>Network Protocols Configuration Guide, Part 3</i> • <i>Network Protocols Command Reference, Part 3</i> 	Apollo Domain Banyan VINES DECnet ISO CLNS XNS
<ul style="list-style-type: none"> • <i>Bridging and IBM Networking Configuration Guide</i> • <i>Bridging and IBM Networking Command Reference</i> 	Transparent Bridging Source-Route Bridging Remote Source-Route Bridging DLSw+ STUN and BSTUN LLC2 and SDLC IBM Network Media Translation DSPU and SNA Service Point Support SNA Frame Relay Access Support APPN NCIA Client/Server Topologies IBM Channel Attach
Supporting documents:	
<ul style="list-style-type: none"> • <i>Cisco IOS Software Command Summary</i> • <i>Access Services Quick Configuration Guide</i> • <i>System Error Messages</i> • <i>Debug Command Reference</i> • <i>Cisco Management Information Base (MIB) User Quick Reference</i> 	

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