



# Cisco IOS File System Commands

This chapter describes the basic set of commands used to manipulate files on your routing device using the Cisco IOS File System (IFS) in Cisco IOS Release 12.2.

Commands in this chapter use URLs as part of the command syntax. URLs used in the Cisco IFS contain two parts: a file system or network prefix, and a file identification suffix. The following tables list URL keywords that can be used in the *source-url* and *destination-url* arguments for all commands in this chapter. The prefixes listed below can also be used in the *filesystem* arguments in this chapter.

[Table 17](#) lists common URL network prefixes used to indicate a device on the network.

**Table 17 Network Prefixes for Cisco IFS URLs**

Prefix	Description
<b>ftp:</b>	Specifies a File Transfer Protocol (FTP) network server.
<b>rcp:</b>	Specifies an remote copy protocol (rcp) network server.
<b>tftp:</b>	Specifies a TFTP server.

[Table 18](#) lists the available suffix options (file identification suffixes) for the URL prefixes used in [Table 17](#).

**Table 18 File ID Suffixes for Cisco IFS URLs**

Prefix	Suffix Options
<b>ftp:</b>	[[//[username[:password]@]location]/directory]/filename For example: <b>ftp://network-config</b> ( <i>prefix://filename</i> ) <b>ftp://jeanluc:secret@enterprise.cisco.com/ship-config</b>
<b>rcp:</b>	rcp:[[//[username@]location]/directory]/filename
<b>tftp:</b>	tftp:[[//location]/directory]/filename

[Table 19](#) lists common URL prefixes used to indicate memory locations on the system.

**Table 19** File System Prefixes for Cisco IFS URLs

Prefix	Description
<b>bootflash:</b>	Bootflash memory.
<b>disk0:</b>	Rotating disk media.
<b>flash:</b> [ <i>partition-number</i> ]	Flash memory. This prefix is available on all platforms. For platforms that do not have a device named <b>flash:</b> , the prefix <b>flash:</b> is aliased to <b>slot0:</b> . Therefore, you can use the prefix <b>flash:</b> to refer to the main Flash memory storage area on all platforms
<b>flh:</b>	Flash load helper log files.
<b>null:</b>	Null destination for copies. You can copy a remote file to null to determine its size.
<b>nvr:</b>	NVRAM. This is the default location for the running-configuration file.
<b>slavebootflash:</b>	Internal Flash memory on a slave RSP card of a router configured with Dual RSPs.
<b>slavenvram:</b>	NVRAM on a slave RSP card.
<b>slaveslot0:</b>	First PCMCIA card on a slave RSP card.
<b>slaveslot1:</b>	Second PCMCIA card on a slave RSP card.
<b>slot0:</b>	First PCMCIA Flash memory card.
<b>slot1:</b>	Second PCMCIA Flash memory card.
<b>xmodem:</b>	Obtain the file from a network machine using the Xmodem protocol.
<b>ymodem:</b>	Obtain the file from a network machine using the Ymodem protocol.

For details about the Cisco IFS, and for IFS configuration tasks, refer to the “Configuring the Cisco IOS File System” chapter in the *Cisco IOS Configuration Fundamentals Configuration Guide, Release 12.2*.

# cd

To change the default directory or file system, use the **cd** command in EXEC mode.

```
cd [filesystem:]
```

<b>Syntax Description</b>	<i>filesystem:</i>	(Optional) The URL or alias of the directory or file systems followed by a colon.
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**Defaults**

The initial default file system is **flash:**. For platforms that do not have a physical device named **flash:**, the keyword **flash:** is aliased to the default Flash device.

If you do not specify a directory on a file system, the default is the root directory on that file system.

**Command Modes**

EXEC

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	11.0	This command was introduced.

**Usage Guidelines**

For all EXEC commands that have an optional *filesystem* argument, the system uses the file system specified by the **cd** command when you omit the optional *filesystem* argument. For example, the **dir** EXEC command, which displays a list of files on a file system, contain an optional *filesystem* argument. When you omit this argument, the system lists the files on the file system specified by the **cd** command.

**Examples**

In the following example, the **cd** command is used to set the default file system to the Flash memory card inserted in slot 0:

```
Router# pwd
bootflash:/
Router# cd slot0:
Router# pwd
slot0:/
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<a href="#">copy</a>	Copies any file from a source to a destination.
	<a href="#">delete</a>	Deletes a file on a Flash memory device.
	<a href="#">dir</a>	Displays a list of files on a file system.
	<a href="#">pwd</a>	Displays the current setting of the <b>cd</b> command.
	<a href="#">show file systems</a>	Lists available file systems and their alias prefix names.
	<a href="#">undelete</a>	Recovers a file marked “deleted” on a Class A or Class B Flash file system.

## configure network

The **configure network** command was replaced by the **copy {rcp | tftp} running-config** command in Cisco IOS Release 11.0. To maintain backward compatibility, the **configure network** command continues to function in Cisco IOS Release 12.2(11)T for most systems, but support for this command may be removed in a future release.

The **copy {rcp | tftp} running-config** command was replaced by the **copy {ftp: | rcp: | tftp:}[filename] system:running-config** command in Cisco IOS Release 12.1.

The **copy {ftp: | rcp: | tftp:}[filename] system:running-config** command specifies that a configuration file should be copied from a FTP, rcp, or TFTP source to the running configuration. See the description of the **copy** in this chapter command for more information.

# copy

To copy any file from a source to a destination, use the **copy** command in EXEC mode.

```
copy [/erase] source-url destination-url
```

Syntax Description	
<b>/erase</b>	(Optional) Erases the destination file system before copying.
<i>source-url</i>	The location URL or alias of the source file or directory to be copied.
<i>destination-url</i>	The destination URL or alias of the copied file or directory.

The exact format of the source and destination URLs varies according to the file or directory location. You may enter either an alias keyword for a particular file or an alias keyword for a file system type (not a file within a type).



## Timesaver

Aliases are used to cut down on the amount of typing you need to perform. For example, it is easier to type **copy run start** (the abbreviated form of the **copy running-config startup-config** command) than it is to type **copy system:r nvram:s** (the abbreviated form of the **copy system:running-config nvram:startup-config** command). These aliases also allow you to continue using some of the common commands used in previous versions of Cisco IOS software.

[Table 20](#) shows two keyword shortcuts to URLs.

**Table 20 Common Keyword Aliases to URLs**

Keyword	Source or Destination
<b>running-config</b>	(Optional) Keyword alias for the <b>system:running-config</b> URL. The <b>system:running-config</b> keyword represents the current running configuration file. This keyword does not work in <b>more</b> and <b>show file EXEC</b> command syntaxes.
<b>startup-config</b>	(Optional) Keyword alias for the <b>nvram:startup-config</b> URL. The <b>nvram:startup-config</b> keyword represents the configuration file used during initialization (startup). This file is contained in NVRAM for all platforms except the Cisco 7000 family, which uses the CONFIG_FILE environment variable to specify the startup configuration. The Cisco 4500 series cannot use the <b>copy running-config startup-config</b> command. This keyword does not work in <b>more</b> and <b>show file EXEC</b> command syntaxes.

The following tables list aliases by file system type. If you do not specify an alias, the router looks for a file in the current directory.

[Table 21](#) lists URL aliases for Special (opaque) file systems. [Table 22](#) lists them for network file systems, and [Table 23](#) lists them for local writable storage.

**Table 21 URL Prefix Aliases for Special File Systems**

Alias	Source or Destination
<b>flh:</b>	Source URL for flash load helper log files.
<b>modem:</b>	Destination URL for loading modem firmware on Cisco 5200 and 5300 Series routers.
<b>nvr:</b>	Router NVRAM. You can copy the startup configuration into or from NVRAM. You can also display the size of a private configuration file.
<b>null:</b>	Null destination for copies or files. You can copy a remote file to null to determine its size.
<b>system:</b>	Source or destination URL for system memory, which includes the running configuration.
<b>xmodem:</b>	Source destination for the file from a network machine that uses the Xmodem protocol.
<b>ymodem:</b>	Source destination for the file from a network machine that uses the Xmodem protocol.

**Table 22 URL Prefix Aliases for Network File Systems**

Alias	Source or Destination
<b>ftp:</b>	Source or destination URL for an File Transfer Protocol (FTP) network server. The syntax for this alias is as follows: <b>ftp:[[/username [:password]@]location]/directory]/filename.</b>
<b>rcp:</b>	Source or destination URL for a Remote Copy Protocol (rcp) network server. The syntax for this alias is as follows: <b>rcp:[[/username@]location]/directory]/filename.</b>
<b>tftp:</b>	Source or destination URL for a TFTP network server. The syntax for this alias is <b>tftp:[[/location]/directory]/filename.</b>

**Table 23 URL Prefix Aliases for Local Writable Storage File Systems**

Alias	Source or Destination
<b>bootflash:</b>	Source or destination URL for boot flash memory.
<b>disk0: and disk1:</b>	Source or destination URL of rotating media.
<b>flash:</b>	Source or destination URL for Flash memory. This alias is available on all platforms. For platforms that lack a flash: device, note that <b>flash:</b> is aliased to <b>slot0:</b> , allowing you to refer to the main Flash memory storage area on all platforms.
<b>slavebootflash:</b>	Source or destination URL for internal Flash memory on the slave RSP card of a router configured for HSA.
<b>slaveram:</b>	NVRAM on a slave RSP card of a router configured for HSA.
<b>slaveslot0:</b>	Source or destination URL of the first PCMCIA card on a slave RSP card of a router configured for HSA.

**Table 23 URL Prefix Aliases for Local Writable Storage File Systems (continued)**

Alias	Source or Destination
<b>slaveslot1:</b>	Source or destination URL of the second PCMCIA slot on a slave RSP card of a router configured for HSA.
<b>slot0:</b>	Source or destination URL of the first PCMCIA Flash memory card.
<b>slot1:</b>	Source or destination URL of the second PCMCIA Flash memory card.

**Command Modes**

EXEC

**Command History**

Release	Modification
11.3 T	This command was introduced.

**Usage Guidelines**

You can enter on the command line all necessary source- and destination-URL information and the username and password to use, or you can enter the **copy** command and have the router prompt you for any missing information.

If you enter information, choose one of the following three options: **running-config**, **startup-config**, or a file system alias (see previous tables.) The location of a file system dictates the format of the source or destination URL.

The colon is required after the alias. However, earlier commands not requiring a colon remain supported, but are unavailable in context-sensitive help.

The entire copying process may take several minutes and differs from protocol to protocol and from network to network.

In the alias syntax for **ftp:**, **rcp:**, and **tftp:**, the location is either an IP address or a host name. The filename is specified relative to the directory used for file transfers.

This section contains usage guidelines for the following topics:

- [Understanding Invalid Combinations of Source and Destination](#)
- [Understanding Character Descriptions](#)
- [Understanding Partitions](#)
- [Using rcp](#)
- [Using FTP](#)
- [Storing Images on Servers](#)
- [Copying from a Server to Flash Memory](#)
- [Verifying Images](#)
- [Copying a Configuration File from a Server to the Running Configuration](#)
- [Copying a Configuration File from a Server to the Startup Configuration](#)
- [Storing the Running or Startup Configuration on a Server](#)
- [Saving the Running Configuration to the Startup Configuration](#)

- [Using CONFIG\\_FILE, BOOT, and BOOTLDR Environment Variables](#)
- [Using the Copy Command with the Dual RSP Feature](#)

### Understanding Invalid Combinations of Source and Destination

Some invalid combinations of source and destination exist. Specifically, you cannot copy the following:

- From a running configuration to a running configuration
- From a startup configuration to a startup configuration
- From a device to the same device (for example, the **copy flash: flash:** command is invalid)

### Understanding Character Descriptions

[Table 24](#) describes the characters that you may see during processing of the **copy** command.

**Table 24** *copy Character Descriptions*

Character	Description
!	For network transfers, an exclamation point indicates that the copy process is taking place. Each exclamation point indicates the successful transfer of ten packets (512 bytes each).
.	For network transfers, a period indicates that the copy process timed out. Many periods in a row typically mean that the copy process may fail.
O	For network transfers, an uppercase O indicates that a packet was received out of order and the copy process may fail.
e	For Flash erasures, a lowercase e indicates that a device is being erased.
E	An uppercase E indicates an error. The copy process may fail.
V	A series of uppercase Vs indicates the progress during the verification of the image checksum.

### Understanding Partitions

You cannot copy an image or configuration file to a Flash partition from which you are currently running. For example, if partition 1 is running the current system image, copy the configuration file or image to partition 2. Otherwise, the copy operation will fail.

You can identify the available Flash partitions by entering the **show file system EXEC** command.

### Using rcp

The rcp protocol requires a client to send a remote username upon each rcp request to a server. When you copy a configuration file or image between the router and a server using rcp, the Cisco IOS software sends the first valid username it encounters in the following sequence:

1. The remote username specified in the **copy** command, if a username is specified.
2. The username set by the **ip rcmd remote-username** global configuration command, if the command is configured.
3. The remote username associated with the current tty (terminal) process. For example, if the user is connected to the router through Telnet and was authenticated through the **username** command, the router software sends the Telnet username as the remote username.
4. The router host name.

For the `rcp copy` request to process, an account must be defined on the network server for the remote username. If the network administrator of the destination server did not establish an account for the remote username, this command will not run. If the server has a directory structure, the configuration file or image is written to or copied from the directory associated with the remote username on the server. For example, if the system image resides in the home directory of a user on the server, specify that user name as the remote username.

If you are writing to the server, the `rcp` server must be properly configured to accept the `rcp` write request from the user on the router. For UNIX systems, add an entry to the `.rhosts` file for the remote user on the `rcp` server. Suppose the router contains the following configuration lines:

```
hostname Rtr1
ip rcmd remote-username User0
```

If the router IP address translates to `Router1.company.com`, then the `.rhosts` file for `User0` on the `rcp` server should contain the following line:

```
Router1.company.com Rtr1
```

Refer to the documentation for your `rcp` server for more details.

If you are using a personal computer as a file server, the computer must support the remote shell protocol (`rsh`).

### Using FTP

The FTP protocol requires a client to send a remote username and password upon each FTP request to a server. When you copy a configuration file from the router to a server using FTP, the Cisco IOS software sends the first valid username that it encounters in the following sequence:

1. The username specified in the **copy** command, if a username is specified.
2. The username set by the **ip ftp username** command, if the command is configured.
3. Anonymous.

The router sends the first valid password in the following list:

1. The password specified in the **copy** command, if a password is specified.
2. The password set by the **ip ftp password** command, if the command is configured.
3. The router forms a password `username@routename.domain`. The variable `username` is the username associated with the current session, `routename` is the configured host name, and `domain` is the domain of the router.

The username and password must be associated with an account on the FTP server. If you are writing to the server, the FTP server must be properly configured to accept the FTP write request from the user on the router.

If the server has a directory structure, the configuration file or image is written to or copied from the directory associated with the username on the server. For example, if the system image resides in the home directory of a user on the server, specify that user name as the remote username.

Refer to the documentation for your FTP server for more details.

Use the **ip ftp username** and **ip ftp password** global configuration commands to specify a username and password for all copies. Include the username in the **copy** command if you want to specify a username for that copy operation only.

### Storing Images on Servers

Use the **copy flash: destination-url** command (for example, **copy flash: tftp:**) to copy a system image or boot image from Flash memory to a network server. Use the copy of the image as a backup copy. Also, use it to verify that the copy in Flash memory is the same as that in the original file.

### Copying from a Server to Flash Memory

Use the **copy destination-url flash:** command (for example, **copy tftp: flash:**) to copy an image from a server to Flash memory.

On Class B file system platforms, the system provides an option to erase existing Flash memory before writing onto it.



#### Note

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Verify the image in Flash memory before booting the image.

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### Verifying Images

When copying a new image to your router, you should confirm that the image was not corrupted during the copy process. Depending on the destination filesystem type, a checksum for the image file may be displayed when the **copy** command completes. You can verify this checksum by comparing it to the checksum value provided for your image file on Cisco.com.



#### Caution

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If the checksum values do not match, do not reboot the router. Instead, reissue the **copy** command and compare the checksums again. If the checksum is repeatedly wrong, copy the original image back into Flash memory *before* you reboot the router from Flash memory. If you have a corrupted image in Flash memory and try to boot from Flash memory, the router will start the system image contained in ROM (assuming booting from a network server is not configured). If ROM does not contain a fully functional system image, the router might not function and will need to be reconfigured through a direct console port connection.

---

An alternate method for file verification is to use the UNIX 'diff' command. This method can also be applied to file types other than Cisco IOS images. If you suspect that a file is corrupted, copy the suspect file and the original file to a Unix server. (The file names may need to be modified if you try to save the files in the same directory.) Then run the Unix 'diff' command on the two files. If there is no difference, then the file has not been corrupted.

### Copying a Configuration File from a Server to the Running Configuration

Use the **copy {ftp: | rcp: | tftp:} running-config** command to load a configuration file from a network server to the running configuration of the router (note that **running-config** is the alias for the **system:running-config** keyword). The configuration will be added to the running configuration as if the commands were typed in the command-line interface (CLI). Thus, the resulting configuration file will be a combination of the previous running configuration and the loaded configuration file, with the loaded configuration file having precedence.

You can copy either a host configuration file or a network configuration file. Accept the default value of *host* to copy and load a host configuration file containing commands that apply to one network server in particular. Enter *network* to copy and load a network configuration file containing commands that apply to all network servers on a network.

### Copying a Configuration File from a Server to the Startup Configuration

Use the **copy {ftp: | rcp: | tftp:} nvram:startup-config** command to copy a configuration file from a network server to the router startup configuration. These commands replace the startup configuration file with the copied configuration file.

### Storing the Running or Startup Configuration on a Server

Use the **copy system:running-config {ftp: | rcp: | tftp:}** command to copy the current configuration file to a network server using FTP, rcp, or TFTP. Use the **copy nvram:startup-config {ftp: | rcp: | tftp:}** command to copy the startup configuration file to a network server.

The configuration file copy can serve as a backup copy.

### Saving the Running Configuration to the Startup Configuration

Use the **copy system:running-config nvram:startup-config** command to copy the running configuration to the startup configuration.



#### Note

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Some specific commands might not get saved to NVRAM. You will need to enter these commands again if you reboot the machine. These commands are noted in the documentation. We recommend that you keep a listing of these settings so you can quickly reconfigure your router after rebooting.

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If you issue the **copy system:running-config nvram:startup-config** command from a bootstrap system image, a warning will instruct you to indicate whether you want your previous NVRAM configuration to be overwritten and configuration commands to be lost. This warning does not appear if NVRAM contains an invalid configuration or if the previous configuration in NVRAM was generated by a bootstrap system image.

On all platforms except Class A file system platforms, the **copy system:running-config nvram:startup-config** command copies the currently running configuration to NVRAM.

On the Class A Flash file system platforms, the **copy system:running-config nvram:startup-config** command copies the currently running configuration to the location specified by the CONFIG\_FILE environment variable. This variable specifies the device and configuration file used for initialization. When the CONFIG\_FILE environment variable points to NVRAM or when this variable does not exist (such as at first-time startup), the software writes the current configuration to NVRAM. If the current configuration is too large for NVRAM, the software displays a message and stops executing the command.

When the CONFIG\_FILE environment variable specifies a valid device other than **nvram:** (that is, **flash:**, **bootflash:**, **slot0:**, or **slot1:**), the software writes the current configuration to the specified device and filename, and stores a distilled version of the configuration in NVRAM. A distilled version is one that does not contain access list information. If NVRAM already contains a copy of a complete configuration, the router prompts you to confirm the copy.

### Using CONFIG\_FILE, BOOT, and BOOTLDR Environment Variables

For the Class A Flash file system platforms, specifications are as follows:

- The CONFIG\_FILE environment variable specifies the configuration file used during router initialization.
- The BOOT environment variable specifies a list of bootable images on various devices.
- The BOOT environment variable specifies a list of bootable images on various devices.
- The BOOTLDR environment variable specifies the Flash device and filename containing the rxboot image that ROM uses for booting.

- Cisco 3600 routers do not use a dedicated boot helper image (rxboot), which many other routers use to help with the boot process. Instead, the BOOTLDR ROM monitor environment variable identifies the Flash memory device and filename that are used as the boot helper; the default is the first system image in Flash memory.

To view the contents of environment variables, use the **show bootvar** EXEC command. To modify the CONFIG\_FILE environment variable, use the **boot config** global configuration command. To modify the BOOTLDR environment variable, use the **boot bootldr** global configuration command. To modify the BOOT environment variable, use the **boot system** global configuration command. To save your modifications, use the **copy system:running-config nvram:startup-config** command.

When the destination of a **copy** command is specified by the CONFIG\_FILE or BOOTLDR environment variable, the router prompts you for confirmation before proceeding with the copy. When the destination is the only valid image in the BOOT environment variable, the router also prompts you for confirmation before proceeding with the copy.

### Using the Copy Command with the Dual RSP Feature

The Dual RSP feature allows you to install two Route/Switch Processor (RSP) cards in a single router on the Cisco 7507 and Cisco 7513 platforms.

On a Cisco 7507 or Cisco 7513 router configured for Dual RSPs, if you copy a file to **nvram:startup-configuration** with automatic synchronization disabled, the system asks if you also want to copy the file to the slave startup configuration. The default answer is **yes**. If automatic synchronization is enabled, the system automatically copies the file to the slave startup configuration each time you use a **copy** command with **nvram:startup-configuration** as the destination.

## Examples

The following examples illustrate uses of the **copy** command.

- [Copying an Image from a Server to Flash Memory Examples](#)
- [Saving a Copy of an Image on a Server Examples](#)
- [Copying a Configuration File from a Server to the Running Configuration Example](#)
- [Copying a Configuration File from a Server to the Startup Configuration Example](#)
- [Copying the Running Configuration to a Server Example](#)
- [Copying the Startup Configuration to a Server Example](#)
- [Saving the Current Running Configuration Example](#)
- [Moving Configuration Files to Other Locations Examples](#)
- [Copying an Image from the Master RSP Card to the Slave RSP Card Example](#)

### Copying an Image from a Server to Flash Memory Examples

The following three examples use a **copy rcp:**, **copy tftp:**, or **copy ftp:** command to copy an image file from a server to Flash memory:

- [Copying an Image from a Server to Flash Memory Example](#)
- [Copying an Image from a Server to a Flash Memory Using Flash Load Helper Example](#)
- [Copying an Image from a Server to a Flash Memory Card Partition Example](#)

### Copying an Image from a Server to Flash Memory Example

This example copies a system image named file1 from the remote rcp server with an IP address of 172.16.101.101 to Flash memory. On Class B file system platforms, the Cisco IOS software allows you to first erase the contents of Flash memory to ensure that enough Flash memory is available to accommodate the system image.

```
Router# copy rcp://netadmin@172.16.101.101/file1 flash:file1
```

```
Destination file name [file1]?
Accessing file 'file1' on 172.16.101.101...
Loading file1 from 172.16.101.101 (via Ethernet0): ! [OK]
```

```
Erase flash device before writing? [confirm]
Flash contains files. Are you sure you want to erase? [confirm]
```

```
Copy 'file1' from server
  as 'file1' into Flash WITH erase? [yes/no] yes
Erasing device... eeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeee...erased
Loading file1 from 172.16.101.101 (via Ethernet0): !
[OK - 984/8388608 bytes]
```

```
Verifying checksum... OK (0x14B3)
Flash copy took 0:00:01 [hh:mm:ss]
```

### Copying an Image from a Server to a Flash Memory Using Flash Load Helper Example

The following example copies a system image into a partition of Flash memory. The system will prompt for a partition number only if there are two or more read/write partitions or one read-only and one read/write partition and dual Flash bank support in boot ROMs. If the partition entered is not valid, the process terminates. You can enter a partition number, a question mark (?) for a directory display of all partitions, or a question mark and a number (?number) for directory display of a particular partition. The default is the first read/write partition. In this case, the partition is read-only and has dual Flash bank support in boot ROM, so the system uses Flash Load Helper.

```
Router# copy tftp: flash:
```

```
System flash partition information:
Partition  Size    Used    Free    Bank-Size    State    Copy-Mode
    1      4096K    2048K    2048K    2048K        Read Only  RXBOOT-FLH
    2      4096K    2048K    2048K    2048K        Read/Write  Direct
```

```
[Type ?<no> for partition directory; ? for full directory; q to abort]
Which partition? [default = 2]
```

```
**** NOTICE ****
```

```
Flash load helper v1.0
This process will accept the copy options and then terminate
the current system image to use the ROM based image for the copy.
Routing functionality will not be available during that time.
If you are logged in via telnet, this connection will terminate.
Users with console access can see the results of the copy operation.
---- ***** ----
```

```
Proceed? [confirm]
System flash directory, partition 1:
File Length Name/status
  1 3459720 master/igs-bfpx.100-4.3
[3459784 bytes used, 734520 available, 4194304 total]
Address or name of remote host [255.255.255.255]? 172.16.1.1
Source file name? master/igs-bfpx-100.4.3
Destination file name [default = source name]?
```

```
Loading master/igs-bfpx.100-4.3 from 172.16.1.111: !
```



### Saving a Copy of an Image on a Server Examples

The following four examples use **copy** commands to copy image files to a server for storage:

- [Copy an Image from Flash Memory to an rcp Server Example](#)
- [Copy an Image from a Partition of Flash Memory to a Server Example](#)
- [Copying an Image from a Flash Memory File System to an FTP Server Example](#)
- [Copying an Image from Boot Flash Memory to a TFTP Server Example](#)

#### Copy an Image from Flash Memory to an rcp Server Example

The following example copies a system image from Flash Memory to an rcp server using the default remote username. Because the rcp server address and filename are not included in the command, the router prompts for it.

```
Router# copy flash: rcp:

IP address of remote host [255.255.255.255]? 172.16.13.110
Name of file to copy? gsxx
writing gsxx - copy complete
```

#### Copy an Image from a Partition of Flash Memory to a Server Example

The following example copies an image from a particular partition of Flash memory to an rcp server using a remote username of netadmin1.

The system will prompt if there are two or more partitions. If the partition entered is not valid, the process terminates. You have the option to enter a partition number, a question mark (?) for a directory display of all partitions, or a question mark and a number (?number) for a directory display of a particular partition. The default is the first partition.

```
Router# configure terminal
Router# ip rcmd remote-username netadmin1
Router# end
Router# copy flash: rcp:
System flash partition information:
Partition  Size  Used  Free  Bank-Size  State      Copy-Mode
    1      4096K   2048K  2048K   2048K      Read Only  RXBOOT-FLH
    2      4096K   2048K  2048K   2048K      Read/Write Direct
[Type ?<number> for partition directory; ? for full directory; q to abort]
Which partition? [1] 2

System flash directory, partition 2:
File Length Name/status
  1 3459720 master/igs-bfpx.100-4.3
[3459784 bytes used, 734520 available, 4194304 total]
Address or name of remote host [ABC.CISCO.COM]?
Source file name? master/igs-bfpx.100-4.3
Destination file name [master/igs-bfpx.100-4.3]?
Verifying checksum for 'master/igs-bfpx.100-4.3' (file # 1)... OK
Copy 'master/igs-bfpx.100-4.3' from Flash to server
as 'master/igs-bfpx.100-4.3'? [yes/no] yes
!!!!...
Upload to server done
Flash copy took 0:00:00 [hh:mm:ss]
```

#### Copying an Image from a Flash Memory File System to an FTP Server Example

The following example copies the file c3600-i-mz from partition 1 of the Flash memory card in slot 0 to an FTP server at IP address 172.23.1.129.

```

Router# show slot0: partition 1

PCMCIA Slot0 flash directory, partition 1:
File Length Name/status
 1 1711088 c3600-i-mz
[1711152 bytes used, 2483152 available, 4194304 total]

Router# copy slot0:1:c3600-i-mz ftp://myuser:mypass@172.23.1.129/c3600-i-mz
Verifying checksum for '/tftpboot/cisco_rules/c3600-i-mz' (file # 1)... OK
Copy '/tftpboot/cisco_rules/c3600-i-mz' from Flash to server
  as 'c3700-i-mz'? [yes/no] yes
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
Upload to server done
Flash device copy took 00:00:23 [hh:mm:ss]

```

### Copying an Image from Boot Flash Memory to a TFTP Server Example

The following example copies an image from boot Flash memory to a TFTP server:

```

Router# copy bootflash:file1 tftp://192.168.117.23/file1

Verifying checksum for 'file1' (file # 1)... OK
Copy 'file1' from Flash to server
  as 'file1'? [yes/no] y
!!!!...
Upload to server done
Flash copy took 0:00:00 [hh:mm:ss]

```

### Copying a Configuration File from a Server to the Running Configuration Example

The following example copies and runs a configuration filename host1-confg from the netadmin1 directory on the remote server with an IP address of 172.16.101.101:

```

Router# copy rcp://netadmin1@172.16.101.101/host1-confg system:running-config

Configure using host1-confg from 172.16.101.101? [confirm]
Connected to 172.16.101.101
Loading 1112 byte file host1-confg:![OK]
Router#
%SYS-5-CONFIG: Configured from host1-config by rcp from 172.16.101.101

```

### Copying a Configuration File from a Server to the Startup Configuration Example

The following example copies a configuration file host2-confg from a remote FTP server to the startup configuration. The IP address is 172.16.101.101, the remote username is netadmin1, and the remote password is ftppass.

```

Router# copy ftp://netadmin1:ftppass@172.16.101.101/host2-confg nvram:startup-config
Configure using rtr2-confg from 172.16.101.101?[confirm]
Connected to 172.16.101.101
Loading 1112 byte file rtr2-confg:![OK]
[OK]
Router#
%SYS-5-CONFIG_NV:Non-volatile store configured from rtr2-config by
FTP from 172.16.101.101

```

### Copying the Running Configuration to a Server Example

The following example specifies a remote username of netadmin1. Then it copies the running configuration file named rtr2-confg to the netadmin1 directory on the remote host with an IP address of 172.16.101.101.

```

Router# configure terminal
Router(config)# ip rcmd remote-username netadmin1
Router(config)# end
Router# copy system:running-config rcp:
Remote host[]? 172.16.101.101

Name of configuration file to write [Rtr2-config]?
Write file rtr2-config on host 172.16.101.101?[confirm]
Building configuration...[OK]
Connected to 172.16.101.101

```

### Copying the Startup Configuration to a Server Example

The following example copies the startup configuration to a TFTP server:

```

Router# copy nvram:startup-config tftp:

Remote host[]? 172.16.101.101

Name of configuration file to write [rtr2-config]? <cr>
Write file rtr2-config on host 172.16.101.101?[confirm] <cr>
![OK]

```

### Saving the Current Running Configuration Example

The following example copies the running configuration to the startup configuration. On a Class A Flash file system platform, this command copies the running configuration to the startup configuration specified by the CONFIG\_FILE variable.

```
copy system:running-config nvram:startup-config
```

The following example shows the warning that the system provides if you try to save configuration information from bootstrap into the system:

```

Router(boot)# copy system:running-config nvram:startup-config

Warning: Attempting to overwrite an NVRAM configuration written
by a full system image. This bootstrap software does not support
the full configuration command set. If you perform this command now,
some configuration commands may be lost.
Overwrite the previous NVRAM configuration?[confirm]

```

Enter **no** to escape writing the configuration information to memory.

### Moving Configuration Files to Other Locations Examples

On some routers, you can store copies of configuration files on a Flash memory device. Five examples follow.

#### Copying the Startup Configuration to a Flash Memory Device Example

The following example copies the startup configuration file (specified by the CONFIG\_FILE environment variable) to a Flash memory card inserted in slot 0:

```
copy nvram:startup-config slot0:router-config
```

#### Copying the Running Configuration to a Flash Memory Device Example

The following example copies the running configuration from the router to the Flash memory PC card in slot 0:

```

Router# copy system:running-config slot0:berlin-cfg

Building configuration...

```

5267 bytes copied in 0.720 secs

### Copying to the Running Configuration from a Flash Memory Device Example

The following example copies the file named ios-upgrade-1 from the Flash memory card in slot 0 to the running configuration:

```
Router# copy slot0:4:ios-upgrade-1 system:running-config
```

```
Copy 'ios-upgrade-1' from flash device
  as 'running-config' ? [yes/no] yes
```

### Copying to the Startup Configuration from a Flash Memory Device Example

The following example copies the router-image file from the Flash memory to the startup configuration:

```
copy flash:router-image nvram:startup-config
```

### Copying a Configuration File from one Flash Device to Another Example

The following example copies the file running-config from the first partition in internal Flash memory to the Flash memory PC card in slot 1. The checksum of the file is verified, and its copying time of 30 seconds is displayed.

```
Router# copy flash: slot1:
```

```
System flash
```

Partition	Size	Used	Free	Bank-Size	State	Copy Mode
1	4096K	3070K	1025K	4096K	Read/Write	Direct
2	16384K	1671K	14712K	8192K	Read/Write	Direct

```
[Type ?<no> for partition directory; ? for full directory; q to abort]
Which partition? [default = 1]
```

```
System flash directory, partition 1:
```

```
File Length Name/status
  1 3142748 dirt/images/mars-test/c3600-j-mz.latest
  2 850 running-config
[3143728 bytes used, 1050576 available, 4194304 total]
```

```
PCMCIA Slot1 flash directory:
```

```
File Length Name/status
  1 1711088 dirt/images/c3600-i-mz
  2 850 running-config
[1712068 bytes used, 2482236 available, 4194304 total]
```

```
Source file name? running-config
```

```
Destination file name [running-config]?
```

```
Verifying checksum for 'running-config' (file # 2)... OK
```

```
Erase flash device before writing? [confirm]
```

```
Flash contains files. Are you sure you want to erase? [confirm]
```

```
Copy 'running-config' from flash: device
```

```
  as 'running-config' into slot1: device WITH erase? [yes/no] yes
```

```
Erasing device... eeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeee ...erased
!
```

```
[OK - 850/4194304 bytes]
```

```
Flash device copy took 00:00:30 [hh:mm:ss]
```

```
Verifying checksum... OK (0x16)
```

**Copying an Image from the Master RSP Card to the Slave RSP Card Example**

The following example copies the router-image file from the Flash memory card inserted in slot 1 of the master RSP card to slot 0 of the slave RSP card in the same router:

```
copy slot1:router-image slaveslot0:
```

**Related Commands**

Command	Description
<b>boot config</b>	Specifies the device and filename of the configuration file from which the router configures itself during initialization (startup).
<b>boot system</b>	Specifies the system image that the router loads at startup.
<b>cd</b>	Changes the default directory or file system.
<b>copy xmodem: flash:</b>	Copies any file from a source to a destination.
<b>copy ymodem: flash:</b>	Copies any file from a source to a destination.
<b>delete</b>	Deletes a file on a Flash memory device.
<b>dir</b>	Displays a list of files on a file system.
<b>erase</b>	Erases a file system.
<b>ip rcmd remote-username</b>	Configures the remote username to be used when requesting a remote copy using rep.
<b>reload</b>	Reloads the operating system.
<b>show bootvar</b>	Displays the contents of the BOOT environment variable, the name of the configuration file pointed to by the CONFIG_FILE environment variable, the contents of the BOOTLDR environment variable, and the configuration register setting.
<b>show (Flash file system)</b>	Displays the layout and contents of a Flash memory file system.
<b>slave auto-sync config</b>	Turns on automatic synchronization of configuration files for a Cisco 7507 or Cisco 7513 router that is configured for Dual RSP Backup.
<b>verify bootflash:</b>	Either of the identical <b>verify bootflash:</b> or <b>verify bootflash</b> commands replaces the <b>copy verify bootflash</b> command. Refer to the <b>verify</b> command for more information.

# delete

To delete a file on a Flash memory device or NVRAM, use the **delete** command in EXEC mode.

**delete** *URL* [/force | /recursive]

Syntax Description		
<i>URL</i>		IFS URL of the file to be deleted. Include the filesystem prefix, followed by a colon, and, optionally, the name of a file or directory.
<b>/force</b>		(Optional) Deletes the specified file or directory with prompting you for verification.  <b>Note</b> Use this keyword with caution: the system will not ask you to confirm the file deletion.
<b>/recursive</b>		(Optional) Deletes all files in the specified directory, as well as the directory itself.

Command Modes	
	EXEC

Command History	Release	Modification
	11.0	This command was introduced.

## Usage Guidelines

If you attempt to delete the configuration file or image specified by the CONFIG\_FILE or BOOTLDR environment variable, the system prompts you to confirm the deletion. Also, if you attempt to delete the last valid system image specified in the BOOT environment variable, the system prompts you to confirm the deletion.

When you delete a file in Flash memory, the software simply marks the file as deleted, but it does not erase the file. To later recover a “deleted” file in Flash memory, use the **undelete** EXEC command. You can delete and undelete a file up to 15 times.

To permanently delete all files marked “deleted” on a linear Flash memory device, use the **squeeze** EXEC command.

## Examples

The following example deletes the file named test from the Flash card inserted in slot 0:

```
Router# delete slot0:test
Delete slot0:test? [confirm]
```

Related Commands	Command	Description
	<a href="#">cd</a>	Changes the default directory or file system.
	<a href="#">dir</a>	Displays a list of files on a file system.

Command	Description
<b>show bootvar</b>	Displays the contents of the BOOT environment variable, the name of the configuration file pointed to by the CONFIG_FILE environment variable, the contents of the BOOTLDR environment variable, and the configuration register setting.
<b>squeeze</b>	Permanently deletes Flash files by squeezing a Class A Flash file system.
<b>undelete</b>	Recovers a file marked “deleted” on a Class A or Class B Flash file system.

# dir

To display a list of files on a file system, use the **dir** command in EXEC mode.

```
dir [/all] [filesystem: ][file-url]
```

Syntax Description	
<b>/all</b>	(Optional) Lists deleted files, undeleted files, and files with errors.
<b>filesystem:</b>	(Optional) File system or directory containing the files to list, followed by a colon.
<b>file-url</b>	(Optional) The name of the files to display on a specified device. The files can be of any type. You can use wildcards in the filename. A wildcard character (*) matches all patterns. Strings after a wildcard are ignored.

**Defaults** The default file system is specified by the **cd** command. When you omit the **/all** keyword, the Cisco IOS software displays only undeleted files.

**Command Modes** EXEC

Command History	Release	Modification
	11.0	This command was introduced.

**Usage Guidelines** Use the **show** (Flash file system) command to display more detail about the files in a particular file system.

**Examples** The following is sample output from the **dir** command:

```
Router# dir slot0:

Directory of slot0:/

 1  -rw-      4720148   Aug 29 1997 17:49:36 hampton/nitro/c7200-j-mz
 2  -rw-      4767328   Oct 01 1997 18:42:53 c7200-js-mz
 5  -rw-         639   Oct 02 1997 12:09:32 rally
 7  -rw-         639   Oct 02 1997 12:37:13 the_time

20578304 bytes total (3104544 bytes free)

Router# dir /all slot0:

Directory of slot0:/

 1  -rw-      4720148   Aug 29 1997 17:49:36 hampton/nitro/c7200-j-mz
 2  -rw-      4767328   Oct 01 1997 18:42:53 c7200-js-mz
 3  -rw-      7982828   Oct 01 1997 18:48:14 [rsp-jsv-mz]
 4  -rw-         639   Oct 02 1997 12:09:17 [the_time]
```

```

5  -rw-          639  Oct 02 1997 12:09:32  rally
6  -rw-          639  Oct 02 1997 12:37:01  [the_time]
7  -rw-          639  Oct 02 1997 12:37:13  the_time

```

Table 25 describes the significant fields shown in the displays.

**Table 25** *dir* Field Descriptions

Field	Description
1	Index number of the file.
-rw-	Permissions. The file can be any or all of the following: <ul style="list-style-type: none"> <li>• d—directory</li> <li>• r—readable</li> <li>• w—writable</li> <li>• x—executable</li> </ul>
4720148	Size of the file.
Aug 29 1997 17:49:36	Last modification date.
hampton/nitro/c7200-j-mz	Filename. Deleted files are indicated by square brackets around the filename.

#### Related Commands

Command	Description
<a href="#">cd</a>	Changes the default directory or file system.
<a href="#">delete</a>	Deletes a file on a Flash memory device.
<a href="#">undelete</a>	Recovers a file marked “deleted” on a Class A or Class B Flash file system.

# erase

To erase a file system, use the **erase** command in EXEC mode. The **erase nvram:** command replaces the **write erase** command and the **erase startup-config** command.

**erase filesystem:**

## Syntax Description

*filesystem:* File system name, followed by a colon. For example, **flash:** or **nvram:**

## Command Modes

EXEC

## Command History

Release	Modification
11.0	This command was introduced.

## Usage Guidelines

When a file system is erased, none of the files in the file system can be recovered.

The **erase** command can be used on both Class B and Class C Flash file systems only. To reclaim space on Flash file systems after deleting files using the **delete** command, you must use the **erase** command. This command erases all of the files in the Flash file system.

Class A Flash file systems cannot be erased. You can delete individual files using the **delete** EXEC command and then reclaim the space using the **squeeze** EXEC command. You can use the **format** EXEC command to format the Flash file system.

On Class C Flash file systems, space is dynamically reclaimed when you use the **delete** command. You can also use either the **format** or **erase** command to reinitialize a Class C Flash file system.

The **erase nvram:** command erases NVRAM. On Class A file system platforms, if the CONFIG\_FILE variable specifies a file in Flash memory, the specified file will be marked “deleted.”

## Examples

The following example erases the NVRAM, including the startup configuration located there:

```
erase nvram:
```

The following example erases all of partition 2 in internal Flash memory:

```
Router# erase flash:2

System flash directory, partition 2:
File Length Name/status
  1 1711088 dirt/images/c3600-i-mz
[1711152 bytes used, 15066064 available, 16777216 total]

Erase flash device, partition 2? [confirm]
Are you sure? [yes/no]: yes
Erasing device... eeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeee ..erased
```

The following example erases Flash memory when Flash is partitioned, but no partition is specified in the command:

```
Router# erase flash:
```

```
System flash partition information:
```

Partition	Size	Used	Free	Bank-Size	State	Copy-Mode
1	4096K	2048K	2048K	2048K	Read Only	RXBOOT-FLH
2	4096K	2048K	2048K	2048K	Read/Write	Direct

```
[Type ?<no> for partition directory; ? for full directory; q to abort]
Which partition? [default = 2]
```

The system will prompt only if there are two or more read/write partitions. If the partition entered is not valid or is the read-only partition, the process terminates. You can enter a partition number, a question mark (?) for a directory display of all partitions, or a question mark and a number (?*number*) for directory display of a particular partition. The default is the first read/write partition.

```
System flash directory, partition 2:
```

```
File Length Name/status
  1 3459720 master/igs-bfpx.100-4.3
[3459784 bytes used, 734520 available, 4194304 total]
```

```
Erase flash device, partition 2? [confirm] <Return>
```

## Related Commands

Command	Description
<b>boot config</b>	Specifies the device and filename of the configuration file from which the router configures itself during initialization (startup).
<b>delete</b>	Deletes a file on a Flash memory device.
<b>more</b> <b>nvrasm:startup-config</b>	Displays the startup configuration file contained in NVRAM or specified by the CONFIG_FILE environment variable.
<b>show bootvar</b>	Displays the contents of the BOOT environment variable, the name of the configuration file pointed to by the CONFIG_FILE environment variable, the contents of the BOOTLDR environment variable, and the configuration register setting
<b>undelete</b>	Recovers a file marked “deleted” on a Class A or Class B Flash file system.

## erase bootflash

The **erase bootflash:** and **erase bootflash** commands have identical functions. See the description of the **erase** command in this chapter for more information.

# file prompt

To specify the level of prompting, use the **file prompt** command in global configuration mode.

**file prompt** [alert | noisy | quiet]

Syntax Description	Parameter	Description
	<b>alert</b>	(Optional) Prompts only for destructive file operations. This is the default.
	<b>noisy</b>	(Optional) Confirms all file operation parameters.
	<b>quiet</b>	(Optional) Seldom prompts for file operations.

**Defaults** alert

**Command Modes** Global configuration

Command History	Release	Modification
	11.0	This command was introduced.

**Usage Guidelines** Use this command to change the amount of confirmation needed for different file operations. This command affects only prompts for confirmation of operations. The router will always prompt for missing information.

**Examples** The following example configures confirmation prompting for all file operations:

```
file prompt noisy
```

# format

To format a Class A or Class C Flash file system, use the **format** command in EXEC mode.

## Class C Flash File System

**format** *filesystem1*:

## Class A Flash File System

**format** [*spare spare-number*] *filesystem1*: [[*filesystem2*:][*monlib-filename*]]



### Caution

Reserve a certain number of memory sectors as spares, so that if some sectors fail, most of the Flash memory card can still be used. Otherwise, you must reformat the Flash card when some of the sectors fail.

### Syntax Description

<b>spare</b>	(Optional) Reserves spare sectors as specified by the <i>spare-number</i> argument when formatting Flash memory.
<i>spare-number</i>	(Optional) Number of the spare sectors to reserve on formatted Flash memory. Valid values are from 0 to 16. The default value is zero.
<i>filesystem1</i> :	Flash memory to format, followed by a colon.
<i>filesystem2</i> :	(Optional) File system containing the monlib file to use for formatting <i>filesystem1</i> followed by a colon.
<i>monlib-filename</i>	(Optional) Name of the ROM monitor library file (monlib file) to use for formatting the <i>filesystem1</i> argument. The default monlib file is the one bundled with the system software.  When used with HSA and you do not specify the <i>monlib-filename</i> argument, the system takes ROM monitor library file from the slave image bundle. If you specify the <i>monlib-filename</i> argument, the system assumes that the files reside on the slave devices.

### Defaults

The default monlib file is the one bundled with the system software.

The default number of spare sectors is zero (0).

### Command Modes

EXEC

### Command History

Release	Modification
11.0	This command was introduced.

### Usage Guidelines

Use this command to format Class A or C Flash memory file systems.

In some cases, you might need to insert a new PCMCIA Flash memory card and load images or backup configuration files onto it. Before you can use a new Flash memory card, you must format it.

Sectors in Flash memory cards can fail. Reserve certain Flash memory sectors as “spares” by using the optional *spare* argument on the **format** command to specify 0 to 16 sectors as spares. If you reserve a small number of spare sectors for emergencies, you can still use most of the Flash memory card. If you specify 0 spare sectors and some sectors fail, you must reformat the Flash memory card, thereby erasing all existing data.

The monlib file is the ROM monitor library. The ROM monitor uses this file to access files in the Flash file system. The Cisco IOS system software contains a monlib file.

In the command syntax, *filesystem1*: specifies the device to format and *filesystem2*: specifies the optional device containing the monlib file used to format *filesystem1*:. If you omit the optional *filesystem2*: and *monlib-filename* arguments, the system formats *filesystem1*: using the monlib file already bundled with the system software. If you omit only the optional *filesystem2*: argument, the system formats *filesystem1*: using the monlib file from the device you specified with the **cd** command. If you omit only the optional *monlib-filename* argument, the system formats *filesystem1*: using the *filesystem2*: monlib file. When you specify both arguments—*filesystem2*: and *monlib-filename*—the system formats *filesystem1*: using the monlib file from the specified device. You can specify *filesystem1*:’s own monlib file in this argument. If the system cannot find a monlib file, it terminates its formatting.



#### Caution

You can read from or write to Flash memory cards formatted for Cisco 7000 series Route Processor (RP) cards in your Cisco 7200 and 7500 series routers, but you cannot boot the Cisco 7200 and 7500 series routers from a Flash memory card formatted for the Cisco 7000 series routers. Similarly, you can read from or write to Flash memory cards formatted for the Cisco 7200 and 7500 series routers in your Cisco 7000 series routers, but you cannot boot the Cisco 7000 series routers from a Flash memory card formatted for the Cisco 7200 and 7500 series routers.

#### Examples

The following example formats a Flash memory card inserted in slot 0:

```
Router# format slot0:

Running config file on this device, proceed? [confirm]y
All sectors will be erased, proceed? [confirm]y
Enter volume id (up to 31 characters): <Return>
Formatting sector 1 (erasing)
Format device slot0 completed
```

When the console returns to the EXEC prompt, the new Flash memory card is formatted and ready for use.

#### Related Commands

Command	Description
<b>cd</b>	Changes the default directory or file system.
<b>copy</b>	Copies any file from a source to a destination.
<b>delete</b>	Deletes a file on a Flash memory device.
<b>show file systems (Flash file system)</b>	Lists available file systems.

<b>Command</b>	<b>Description</b>
<b>squeeze</b>	Permanently deletes Flash files by squeezing a Class A Flash file system.
<b>undelete</b>	Recovers a file marked “deleted” on a Class A or Class B Flash file system.

## ip rcmd remote-host

To create an entry for the remote user in a local authentication database so that remote users can execute commands on the router using remote shell (rsh) or remote copy (rcp) protocol requests, use the **ip rcmd remote-host** command in global configuration mode. To remove an entry for a remote user from the local authentication database, use the **no** form of this command.

**ip rcmd remote-host** *local-username* {*ip-address* | *host* | *access-list*} *remote-username* [**enable** [*level*]]

**no ip rcmd remote-host** *local-username* {*ip-address* | *host* | *access-list*} *remote-username* [**enable** [*level*]]

Syntax Description		
<i>local-username</i>		Name of the user on the local router. You can specify the router host name as the username. This name needs to be communicated to the network administrator or the user on the remote system. To be allowed to remotely execute commands on the router, the remote user must specify this value correctly.
<i>ip-address</i>		IP address of the remote host from which the local router will accept remotely executed commands. Either the IP address or the host name is required.
<i>host</i>		Name of the remote host from which the local router will accept remotely executed commands. Either the host name or the IP address is required.
<i>access-list</i>		Access list number. The range is from 1 to 99.
<i>remote-username</i>		Name of the user on the remote host from which the router will accept remotely executed commands.
<b>enable</b> <i>level</i>		(Optional) Enables the remote user to execute privileged EXEC commands using rsh or to copy files to the router using rcp. The range is from 1 to 15. The default is 15. For information on the enable level, refer to the <b>privilege level</b> global configuration command in the Release 12.2 <i>Cisco IOS Security Command Reference</i> .

**Defaults** No entries are in the local authentication database.

**Command Modes** Global configuration

Command History	Release	Modification
	10.3	This command was introduced.
	12.2(8)T	This command was modified to allow use of access lists when specifying multiple hosts for specific users.

**Usage Guidelines**

A TCP connection to a router is established using an IP address. Using the host name is valid only when you are initiating an rcp or rsh command from a local router. The host name is converted to an IP address using Domain Name System (DNS) or host-name aliasing.

To allow a remote user to execute rcp or rsh commands on a local router, you must create an entry for the remote user in the local authentication database. You must also enable the router to act as an rsh or rcp server.

To enable the router to act as an rsh server, issue the **ip rcmd rsh-enable** global configuration command. To enable the router to act as an rcp server, enter the **ip rcmd rcp-enable** command. The router cannot act as a server for either of these protocols unless you explicitly enable the capacity.

A local authentication database, which is similar to a UNIX .rhosts file, is used to enforce security on the router through access control. Each entry that you configure in the authentication database identifies the local user, the remote host, and the remote user. To permit a remote user of rsh to execute commands in privileged EXEC mode or to permit a remote user of rcp to copy files to the router, specify the **enable** keyword and level. For information on the enable level, refer to the **privilege level** global configuration command in the Release 12.2 *Cisco IOS Security Command Reference*.

An entry that you configure in the authentication database differs from an entry in a UNIX .rhosts file in the following aspect. Because the .rhosts file on a UNIX system resides in the home directory of a local user account, an entry in a UNIX .rhosts file need not include the local username; the local username is determined from the user account. To provide equivalent support on a router, specify the local username along with the remote host and remote username in each authentication database entry that you configure.

For a remote user to be able to execute commands on the router in its capacity as a server, the local username, host address or name, and remote username sent with the remote client request must match values configured in an entry in the local authentication file.

For a remote user who can execute commands from multiple hosts, you can use an access list to specify the remote hosts to which the user has access. The access list identifies the hosts by either host name or address. The access list must already be defined; otherwise, the user will be denied access to the host. For information about defining and creating access lists, refer to the *Cisco IOS Security Configuration Guide*, Release 12.2.

A remote client host should be registered with DNS. The Cisco IOS software uses DNS to authenticate the name and address of the remote host. Because DNS can return several valid IP addresses for a host name, the Cisco IOS software checks the address of the requesting client against all of the IP addresses for the named host returned by DNS. If the address sent by the requester is considered invalid, that is, it does not match any address listed with DNS for the host name, then the software will reject the remote-command execution request.

Note that if no DNS servers are configured for the router, then that device cannot authenticate the host in this manner. In this case, the Cisco IOS software sends a broadcast request to attempt to gain access to DNS services on another server. If DNS services are not available, you must use the **no ip domain-lookup** global configuration command to disable the attempt to gain access to a DNS server by sending a broadcast request.

If DNS services are not available and, therefore, the DNS security check is bypassed, the software will accept the request to remotely execute a command *only if* all three values sent with the request match exactly the values configured for an entry in the local authentication file.

**Examples**

The following example allows the remote user named netadmin3 on a remote host with the IP address 172.16.101.101 to execute commands on router1 using the rsh or rcp protocol. User netadmin3 is allowed to execute commands in privileged EXEC mode.

```
ip rcmd remote-host router1 172.16.101.101 netadmin3 enable
```

The following example specifies an access list 1 for user netadmin3. The access list contains the remote hosts that user netadmin3 can use to execute commands. User netadmin3 is allowed to execute commands in privileged EXEC mode.

```
ip rcmd remote-host router1 172.16.101.101 access-list 1 netadmin3 enable
```

**Related Commands**

Command	Description
<b>ip domain-lookup</b>	Enables the IP DNS-based host name-to-address translation.
<b>ip rcmd rcp-enable</b>	Configures the Cisco IOS software to allow remote users to copy files to and from the router.
<b>ip rcmd rsh-enable</b>	Configures the router to allow remote users to execute commands on it using the rsh protocol.

# mkdir

To create a new directory in a Class C Flash file system, use the **mkdir** command in EXEC mode.

**mkdir** *directory*

<b>Syntax Description</b>	<i>directory</i>	The name of the directory to create.
---------------------------	------------------	--------------------------------------

<b>Command Modes</b>	EXEC
----------------------	------

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	11.3 AA	This command was introduced.

<b>Usage Guidelines</b>	<p>This command is only valid on Class C Flash file systems.</p> <p>If you do not specify the directory name in the command line, the router prompts you for it.</p>
-------------------------	--

<b>Examples</b>	<p>The following example creates a directory named newdir:</p> <pre>Router# <b>mkdir newdir</b>  Mkdir file name [newdir]? Created dir flash:newdir Router# <b>dir</b> Directory of flash:    2  drwx          0   Mar 13 1993 13:16:21  newdir  8128000 bytes total (8126976 bytes free)</pre>
-----------------	---

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<a href="#">dir</a>	Displays a list of files on a file system.
	<a href="#">rmdir</a>	Removes an existing directory in a Class C Flash file system.

# more

To display a file, use the **more** command in EXEC mode.

```
more [/ascii | /binary | /ebcdic] file-url
```

Syntax Description	
<b>/ascii</b>	(Optional) Displays a binary file in ASCII format.
<b>/binary</b>	(Optional) Displays a file in hex/text format.
<b>/ebcdic</b>	(Optional) Displays a binary file in EBCDIC format.
<i>file-url</i>	The URL of the file to display.

Command Modes	
EXEC	

Command History	Release	Modification
	11.3 AA	This command was introduced.

**Usage Guidelines** The **more system:running-config** command displays the same output as the **show running-config** command. The **more nvram:startup-config** command replaces the **show startup-config** command and the **show configuration** command.

You can use this command to display configuration files, as follows:

- The **more nvram:startup-config** command displays the startup configuration file contained in NVRAM or specified by the CONFIG\_FILE environment variable. The Cisco IOS software informs you whether the displayed configuration is a complete configuration or a distilled version. A distilled configuration is one that does not contain access lists.
- The **more system:running-config** command displays the running configuration.

These commands show the version number of the software used when you last changed the configuration file.

You can display files on remote systems using the **more** command.

**Examples** The following partial sample output displays the configuration file named startup-config in NVRAM:

```
Router# more nvram:startup-config

!
! No configuration change since last restart
! NVRAM config last updated at 02:03:26 PDT Thu Oct 2 1997
!
version 12.1
service timestamps debug uptime
service timestamps log uptime
service password-encryption
service udp-small-servers
service tcp-small-servers
.
```

```
.
.
end
```

The following is partial sample output from the **more nvram:startup-config** command when the configuration file has been compressed:

```
Router# more nvram:startup-config
```

```
Using 21542 out of 65536 bytes, uncompressed size = 142085 bytes
!
version 12.1
service compress-config
!
hostname rose
!
.
.
.
```

The following partial sample output displays the running configuration:

```
Router2# more system:running-config
```

```
Building configuration...

Current configuration:
!
version 12.1
no service udp-small-servers
no service tcp-small-servers
!
hostname Router2
!
.
.
.
!
end
```

## Related Commands

Command	Description
<b>boot config</b>	Specifies the device and filename of the configuration file from which the router configures itself during initialization (startup).
<b>service compress-config</b>	Compresses startup configuration files.
<b>show bootvar</b>	Displays the contents of the BOOT environment variable, the name of the configuration file pointed to by the CONFIG_FILE environment variable, the contents of the BOOTLDR environment variable, and the configuration register setting.

# pwd

To show the current setting of the **cd** command, use the **pwd** command in EXEC mode.

**pwd**

**Syntax Description** This command has no arguments or keywords.

**Command Modes** EXEC

Command History	Release	Modification
	11.0	This command was introduced.

**Usage Guidelines** Use the **pwd** command to show which directory or file system is specified as the default by the **cd** command. For all EXEC commands that have an optional *filesystem* argument, the system uses the file system specified by the **cd** command when you omit the optional *filesystem* argument.

For example, the **dir** command contains an optional *filesystem* argument and displays a list of files on a particular file system. When you omit this *filesystem* argument, the system shows a list of the files on the file system specified by the **cd** command.

**Examples** The following example shows that the present working file system specified by the **cd** command is slot 0:

```
Router> pwd
slot0:/
```

The following example uses the **cd** command to change the present file system to slot 1 and then uses the **pwd** command to display that present working file system:

```
Router> cd slot1:
Router> pwd
slot1:/
```

Related Commands	Command	Description
	<b>cd</b>	Changes the default directory or file system.
	<b>dir</b>	Displays a list of files on a file system.

# rename

To rename a file in a Class C Flash file system, use the **rename** command in EXEC mode.

```
rename url1 url2
```

Syntax Description	
<i>url1</i>	The original path and filename.
<i>url2</i>	The new path and filename.

Command Modes	
EXEC	

Command History	Release	Modification
	11.3 AA	This command was introduced.

Usage Guidelines	
This command is valid only on Class C Flash file systems.	

Examples	
In the following example, the file named Karen.1 is renamed test:	

```
Router# dir

Directory of disk0:/Karen.dir/

 0  -rw-          0  Jan 21 1998 09:51:29  Karen.1
 0  -rw-          0  Jan 21 1998 09:51:29  Karen.2
 0  -rw-          0  Jan 21 1998 09:51:29  Karen.3
 0  -rw-          0  Jan 21 1998 09:51:31  Karen.4
243 -rw-         165  Jan 21 1998 09:53:17  Karen.cur

340492288 bytes total (328400896 bytes free)

Router# rename disk0:/Karen.dir/Karen.1 disk0:/Karen.dir/test
Router# dir

Directory of disk0:/Karen.dir/

 0  -rw-          0  Jan 21 1998 09:51:29  Karen.2
 0  -rw-          0  Jan 21 1998 09:51:29  Karen.3
 0  -rw-          0  Jan 21 1998 09:51:31  Karen.4
243 -rw-         165  Jan 21 1998 09:53:17  Karen.cur
 0  -rw-          0  Apr 24 1998 09:49:19  test

340492288 bytes total (328384512 bytes free)
```

# rmdir

To remove an existing directory in a Class C Flash file system, use the **rmdir** command in EXEC mode.

**rmdir** *directory*

Syntax Description	
	<i>directory</i> Directory to delete.

Command Modes	
	EXEC

Command History	Release	Modification
	11.3 AA	This command was introduced.

Usage Guidelines	
	This command is valid only on Class C Flash file systems.

Examples	
	The following example deletes the directory named newdir:

```
Router# dir
Directory of flash:
  2  drwx          0  Mar 13 1993 13:16:21  newdir

8128000 bytes total (8126976 bytes free)
Router# rmdir newdir
Rmdir file name [newdir]?
Delete flash:newdir? [confirm]
Removed dir flash:newdir
Router# dir
Directory of flash:

No files in directory

8128000 bytes total (8126976 bytes free)
```

Related Commands	Command	Description
	<a href="#">dir</a>	Displays a list of files on a file system.
	<a href="#">mkdir</a>	Creates a new directory in a Class C Flash file system.

# show file descriptors

To display a list of open file descriptors, use the **show file descriptors** command in EXEC mode.

## show file descriptors

**Syntax Description** This command has no arguments or keywords.

**Command Modes** EXEC

Command History	Release	Modification
	11.3 AA	This command was introduced.

**Usage Guidelines** File descriptors are the internal representations of open files. You can use this command to learn if another user has a file open.

**Examples** The following is sample output from the **show file descriptors** command:

```
Router# show file descriptors

File Descriptors:

  FD  Position  Open  PID  Path
  --  -
  0   187392    0001  2    tftp://dirt/hampton/c4000-i-m.a
  1   184320    030A  2    flash:c4000-i-m.a
```

[Table 26](#) describes the significant fields shown in the display.

**Table 26** *show file descriptors Field Descriptions*

Field	Description
FD	File descriptor. The file descriptor is a small integer used to specify the file once it has been opened.
Position	Byte offset from the start of the file.
Open	Flags supplied when opening the file.
PID	Process ID of the process that opened the file.
Path	Location of the file.

# show file information

To display information about a file, use the **show file information** command in EXEC mode.

**show file information** *file-url*

Syntax Description	<i>file-url</i>	The URL of the file to display.
--------------------	-----------------	---------------------------------

Command Modes	EXEC
---------------	------

Command History	Release	Modification
	11.3 AA	This command was introduced.

## Examples

The following is sample output from the **show file information** command:

```
Router# show file information tftp://dirt/hampton/c2500-j-1.a

tftp://dirt/hampton/c2500-j-1.a:
  type is image (a.out) [relocatable, run from flash]
  file size is 8624596 bytes, run size is 9044940 bytes [8512316+112248+420344]
  Foreign image

Router# show file information slot0:c7200-js-mz

slot0:c7200-js-mz:
  type is image (elf) []
  file size is 4770316 bytes, run size is 4935324 bytes
  Runnable image, entry point 0x80008000, run from ram

Router1# show file information nvram:startup-config

nvram:startup-config:
  type is ascii text
```

[Table 27](#) describes the possible file types.

**Table 27** Possible File Types

Types	Description
image (a.out)	Runnable image in a.out format.
image (elf)	Runnable image in elf format.
ascii text	Configuration file or other text file.
coff	Runnable image in coff format.
ebcdic	Text generated on an IBM mainframe.
lzw compression	Lzw compressed file.
tar	Text archive file used by the Channel Interface Processor (CIP).

# show file systems

To list available file systems, use the **show file systems** command in EXEC mode.

**show file systems**

**Syntax Description** This command has no arguments or keywords.

**Command Modes** EXEC

Command History	Release	Modification
	11.3 AA	This command was introduced.

**Usage Guidelines** Use this command to learn the alias names (Prefixes) of the file systems your router supports.

**Examples** The following is sample output from the **show file systems** command:

```
Router# show file systems

File Systems:

      Size(b)      Free(b)  Type    Flags  Prefixes
      -          -        opaque  rw     null:
      -          -        opaque  rw     system:
      -          -        opaque  ro     xmodem:
      -          -        opaque  ro     ymodem:
      -          -        network  rw     tftp:
      -          -        network  rw     rcp:
      -          -        network  rw     ftp:
*  4194304      4190616  flash   rw     flash:
      131066      129185   nvram   rw     nvram:
      -          -        opaque  wo     lex:
```

[Table 28](#) describes the significant fields shown in the display.

**Table 28** *show file systems Field Descriptions*

Type	Description
Size(b)	Amount of memory in the file system (in bytes).
Free(b)	Amount of free memory in the file system (in bytes).
Type	Type of file system.
Flags	Permissions for file system.
Prefixes	Alias for file system.
disk	The file system is for a rotating medium.
flash	The file system is for a Flash memory device.

**Table 28** *show file systems Field Descriptions (continued)*

Type	Description
network	The file system is a network file system (TFTP, rcp, FTP, and so on).
nvrाम	The file system is for an NVRAM device.
opaque	The file system is a locally generated “pseudo” file system (for example, the “system”) or a download interface, such as brimux.
rom	The file system is for a ROM or EPROM device.
tty	The file system is for a collection of terminal devices.
unknown	The file system is of unknown type.

Table 29 describes file system flags.

**Table 29** *Possible File System Flags*

Flag	Description
ro	The file system is Read Only.
wo	The file system is Write Only.
rw	The file system is Read/Write.

# squeeze

To permanently erase files tagged as “deleted” or “error” on Class A Flash file systems, use the **squeeze** command in EXEC mode.

**squeeze** [/nolog] [/quiet] *filesystem*:

Syntax Description		
/nolog	(Optional)	Disables the squeeze log (recovery data) and accelerates the squeeze process.
/quiet	(Optional)	Disables status messages during the squeeze process.
<i>filesystem</i> :		The Flash file system, followed by a colon.

**Command Modes** EXEC

Command History	Release	Modification
	11.1	This command was introduced.
	12.2(1)	This command was implemented in images for the Cisco 2600 and Cisco 3600 series.
	12.2(4)XL	This command was implemented in images for the Cisco 1700 series.
	12.1(9), 12.0(17)S 12.0(17)ST, 12.2(2), 12.2(2)T, 12.2(2)B, 12.1(9)E	The <b>/nolog</b> and <b>/quiet</b> keywords were added.

## Usage Guidelines

When Flash memory is full, you might need to rearrange the files so that the space used by the files marked “deleted” can be reclaimed. (This “squeeze” process is required for linear Flash memory cards to make sectors contiguous; the free memory must be in a “block” to be usable.)

When you enter the **squeeze** command, the router copies all valid files to the beginning of Flash memory and erases all files marked “deleted.” After the squeeze process is completed, you can write to the reclaimed Flash memory space.



### Caution

After performing the squeeze process you cannot recover deleted files using the **undelete** EXEC mode command.

In addition to removing deleted files, the **squeeze** command removes any files that the system has marked as “error”. An error file is created when a file write fails (for example, the device is full). To remove error files, you must use the **squeeze** command.

Rewriting Flash memory space during the squeeze operation may take several minutes.

Using the **/nolog** keyword disables the log for the squeeze process. In most cases this will speed up the squeeze process. However, if power is lost or the Flash card is removed during the squeeze process, all the data on the Flash card will be lost, and the device will have to be reformatted.

**Note**

Using the **/nolog** keyword makes the squeeze process uninterruptible.

Using the **/quiet** keyword disables the output of status messages to the console during the squeeze process.

If the optional keywords are not used, the progress of squeeze process will be displayed to the console, a log for the process will be maintained, and the squeeze process is interruptible.

On Cisco 2600 or Cisco 3600 series routers, the entire file system needs to be erased once before the **squeeze** command can be used. After being erased once, the **squeeze** command should operate properly on the Flash file system for the rest of the Flash file system's history.

To erase an entire flash file system on a Cisco 2600 or 3600 series router, perform the following steps:

- Step 1** If the Flash file system has multiple partitions, enter the **no partition** command to remove the partitions. The reason for removing partitions is to ensure that the entire Flash file system is erased. The **squeeze** command can be used in a Flash file system with partitions after the Flash file system is erased once.
- Step 2** Enter the **erase** command to erase the Flash file system.

**Examples**

In the following example, the file named "config1" is deleted, and then the **squeeze** command is used to reclaim the space used by that file. The **/nolog** option is used to speed up the squeeze process.

```
Router# delete config1
Delete filename [config1]?
Delete slot0:conf? [confirm]
Router# dir slot0:
! Note that the deleted file name appears in square brackets
Directory of slot0:/

   1  -rw-     4300244   Apr 02 2001 03:18:07  c7200-boot-mz.122-0.14
   2  -rw-         2199   Apr 02 2001 04:45:15  [config1]
   3  -rw-     4300244   Apr 02 2001 04:45:23  image
20578304 bytes total (11975232 bytes free)
!20,578,304 - 4,300,244 - 4,300,244 - 2,199 - 385 = 11975232

Router# squeeze /nolog slot0:
%Warning: Using /nolog option would render squeeze operation uninterruptible.
All deleted files will be removed. Continue? [confirm]
Squeeze operation may take a while. Continue? [confirm]

Squeeze of slot0 completed in 291.832 secs .
Router# dir slot0:
Directory of slot0:/

   1  -rw-     4300244   Apr 02 2001 03:18:07  c7200-boot-mz.122-0.14
   2  -rw-     4300244   Apr 02 2001 04:45:23  image

20578304 bytes total (11977560 bytes free)
!20,578,304 - 4,300,244 - 4,300,244 - 256 = 11977560
```

Related Commands	Command	Description
	<a href="#">delete</a>	Deletes a file on a Flash memory device.
	<a href="#">dir</a>	Displays a list of files on a file system.
	<a href="#">undelete</a>	Recovers a file marked “deleted” on a Class A or Class B Flash file system.

# undelete

To recover a file marked “deleted” on a Class A or Class B Flash file system, use the **undelete** command in EXEC mode.

```
undelete index [filesystem:]
```

Syntax Description	<i>index</i>	A number that indexes the file in the <b>dir</b> command output.
	<i>filesystem:</i>	(Optional) A file system containing the file to undelete, followed by a colon.

**Defaults** The default file system is the one specified by the **cd** command.

**Command Modes** EXEC

Command History	Release	Modification
	11.0	This command was introduced.

**Usage Guidelines** For Class A and B Flash file systems, when you delete a file, the Cisco IOS software simply marks the file as deleted, but it does not erase the file. This command allows you to recover a “deleted” file on a specified Flash memory device. You must undelete a file by its index because you could have multiple deleted files with the same name. For example, the “deleted” list could contain multiple configuration files with the name router-config. You undelete by index to indicate which of the many router-config files from the list to undelete. Use the **dir** command to learn the index number of the file you want to undelete.

You cannot undelete a file if a valid (undeleted) file with the same name exists. Instead, you first delete the existing file and then undelete the file you want. For example, if you had an undeleted version of the router-config file and you wanted to use a previous, deleted version instead, you could not simply undelete the previous version by index. You would first delete the existing router-config file and then undelete the previous router-config file by index. You can delete and undelete a file up to 15 times.

On Class A Flash file systems, if you try to recover the configuration file pointed to by the CONFIG\_FILE environment variable, the system prompts you to confirm recovery of the file. This prompt reminds you that the CONFIG\_FILE environment variable points to an undeleted file. To permanently delete all files marked “deleted” on a Flash memory device, use the **squeeze** EXEC command.

On Class B Flash file systems, you must use the **erase** EXEC command to recover any space taken up by deleted files.

**Examples** The following example recovers the deleted file whose index number is 1 to the Flash memory card inserted in slot 0:

```
undelete 1 slot0:
```

Related Commands	Command	Description
	<a href="#">delete</a>	Deletes a file on a Flash memory device.
	<a href="#">dir</a>	Displays a list of files on a file system.
	<a href="#">squeeze</a>	Permanently deletes Flash files by squeezing a Class A Flash file system.

# verify

To verify the checksum of a file on a Flash memory file system, use the **verify** command in EXEC mode.

```
verify [/md5 [md5-value]] filesystem:[file-url]
```

Syntax Description		
<b>/md5</b>	(Optional) Calculates and displays the MD5 value for the specified software image. Compare this value with the value available on Cisco.com for this image.	
<i>md5-value</i>	(Optional) The known MD5 value for the specified image. When an MD5 value is specified in the command, the system will calculate the MD5 value for the specified image and display a message verifying that the MD5 values match or that there is a mismatch.	
<i>filesystem:</i>	(Optional) File system or directory containing the files to list, followed by a colon. Standard file system keywords for this command are <b>flash:</b> and <b>bootflash:</b> .	
<i>file-url</i>	(Optional) The name of the files to display on a specified device. The files can be of any type. You can use wildcards in the filename. A wildcard character (*) matches all patterns. Strings after a wildcard are ignored.	

**Defaults** The current working device is the default device (file system).

**Command Modes** EXEC

Command History	Release	Modification
	11.0	This command was introduced.
	12.2(4)T	The <b>/md5</b> keyword was added.

**Usage Guidelines** This command replaces the **copy verify** and **copy verify flash** commands.

Use the **verify** command to verify the checksum of a file before using it.

Each software image that is distributed on disk uses a single checksum for the entire image. This checksum is displayed only when the image is copied into Flash memory; it is not displayed when the image file is copied from one disk to another.

Before loading or duplicating a new image, record the checksum and MD5 information for the image so that you can verify the checksum when you copy the image into Flash memory or onto a server. A variety of image information is available on Cisco.com. For example, you can get the Release, Feature Set, Size, BSD Checksum, Router Checksum, MD5, and Publication Date information by clicking on the image file name prior to downloading it from the Software Center on Cisco.com.

To display the contents of Flash memory, use the **show flash** command. The Flash contents listing does not include the checksum of individual files. To recompute and verify the image checksum after the image has been copied into Flash memory, use the **verify** command. Note, however, that the **verify**

command only performs a check on the integrity of the file after it has been saved in the file system. It is possible for a corrupt image to be transferred to the router and saved in the file system without detection. If a corrupt image is transferred successfully to the router, the software will be unable to tell that the image is corrupted and the file will verify successfully.

To use the message-digest5 (MD5) hash algorithm to ensure file validation, use the **verify** command with the **/md5** option. MD5 is an algorithm (defined in RFC 1321) that is used to verify data integrity through the creation of a unique 128-bit message digest. The **/md5** option of the **verify** command allows you to check the integrity of a Cisco IOS software image by comparing its MD5 checksum value against a known MD5 checksum value for the image. MD5 values are now made available on Cisco.com for all Cisco IOS software images for comparison against local system image values.

To perform the MD5 integrity check, execute the **verify** command using the **/md5** keyword. For example, executing the **verify flash:c7200-is-mz.122-2.T.bin/md5** command will calculate and display the MD5 value for the software image. Compare this value with the value available on Cisco.com for this image.

Alternatively, you can get the MD5 value from Cisco.com first, then specify this value in the command syntax. For example, executing the **verify flash:c7200-is-mz.122-2.T.bin/md5 8b5f3062c4caeccae72571440e962233** command will display a message verifying that the MD5 values match or that there is a mismatch. A mismatch in MD5 values means that either the image is corrupt or the wrong MD5 value was entered.

## Examples

In the following example, the **verify** command is used to check the integrity of the file **c7200-js-mz** on the Flash memory card inserted in slot 0:

```
Router# dir slot0:
Directory of slot0:/
 1  -rw-      4720148   Aug 29 1997 17:49:36 hampton/nitro/c7200-j-mz
 2  -rw-      4767328   Oct 01 1997 18:42:53 c7200-js-mz
 5  -rw-         639   Oct 02 1997 12:09:32 rally
 7  -rw-         639   Oct 02 1997 12:37:13 the_time

20578304 bytes total (3104544 bytes free)
Router# verify slot0:c7200-js-mz
Verified slot0:c7200-js-mz
```

In the following example, the **/md5** keyword is used to display the MD5 value for the image:

```
Router# verify /md5 disk1:
Verify filename []? c7200-js-mz
.....
.....
.....
.....
.....
.....Done!
verify /md5 (disk1:c7200-js-mz) = 0f369ed9e98756f179d4f29d6e7755d3
```

In the following example, the known MD5 value for the image (obtained from Cisco.com) is specified in the **verify** command, and the system checks the value against the stored value:

```
Router# verify /md5 disk1:c7200-js-mz ?
WORD Expected md5 signature
<cr>
router# verify /md5 disk1:c7200-js-mz 0f369ed9e98756f179d4f29d6e7755d3
.....
.....
```

```

.....
.....
.....
.....Done!
Verified (disk1:c7200-js-mz) = 0f369ed9e98756f179d4f29d6e7755d3

```

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>cd</b>	Changes the default directory or file system.
<b>copy</b>	Copies any file from a source to a destination.
<b>dir</b>	Displays a list of files on a file system.
<b>pwd</b>	Displays the current setting of the <b>cd</b> command.
<b>show file systems</b>	Lists available file systems.

## write erase

The **write erase** command is replaced by the **erase nvram:** command. See the description of the **erase** command in this chapter for more information.

# write terminal

The **more system:running-config** command replaces the **write terminal** command. See the description of the **more** command in this chapter for more information.

■ write terminal