



Cisco IOS File System Commands

This chapter describes the commands used to configure the Cisco IOS File System (IFS) in Cisco IOS Release 12.1.

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.

In general, commands used to specify file locations use the following URL format:

prefix://username:password@location/directory-path/filename

All elements aside from the prefix and filename are optional. For example, you could specify only:

prefix:filename

[Table 13](#) lists common URL network prefixes used to indicate a device on the network.

Table 13 Network Prefixes for Cisco IFS URLs

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

[Table 14](#) lists the available suffix options (file identification suffixes) for the URL prefixes used in [Table 13](#).

Table 14 File ID Suffixes for Cisco IFS URLs

Prefix	Suffix Options
ftp:	<code>[//[username[:password]@]location]/directory]/filename</code> For example: ftp://network-config (<i>prefix://filename</i>) ftp://user1:secret@example.com/3600-config
rcp:	<code>rcp:[//[username@]location]/directory]/filename</code>
tftp:	<code>tftp:[//[location]/directory]/filename</code>

Table 15 lists common URL prefixes used to indicate memory locations on the system.

Table 15 File System Prefixes for Cisco IFS URLs

Prefix	Description
bootflash:	Bootflash memory.
disk0:	Rotating disk media.
flash: [<i>partition-number</i>]	Flash memory. This prefix is available on all platforms. For platforms that do not have a device named flash: , the prefix flash: is aliased to slot0: . Therefore, you can use the prefix flash: to refer to the main Flash memory storage area on all platforms
flh:	Flash load helper log files.
null:	Null destination for copies. You can copy a remote file to null to determine its size.
nvr:	NVRAM. This is the default location for the running-configuration file.
slavebootflash:	Internal Flash memory on a slave RSP card of a router configured with Dual RSPs.
slavenvr:	NVRAM on a slave RSP card.
slaveslot0:	First PCMCIA card on a slave RSP card.
slaveslot1:	Second PCMCIA card on a slave RSP card.
slot0:	First PCMCIA Flash memory card.
slot1:	Second PCMCIA Flash memory card.
xmodem:	Obtain the file from a network machine using the Xmodem protocol.
ymodem:	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 12.1*.

Some commands in this chapter refer to Flash File Systems (PCMCIA Filesystem). For information on Flash File systems classes in Cisco IOS-based platforms, see <http://www.cisco.com/warp/public/63/pcmciamatrix.html>.

cd

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

```
cd [filesystem:]
```

Syntax Description	<i>filesystem</i> : (Optional) URL or alias of the directory or file system followed by a colon.
---------------------------	--

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
----------------------	------

Command History	Release	Modification
	11.0	This command was introduced.

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

Examples	The following example sets the default file system to the Flash memory card inserted in the slot 0:
-----------------	---

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

Related Commands	Command	Description
	copy	Copies any file from a source to a destination, use the copy EXEC command.
	delete	Deletes a file on a Flash memory device.
	dir	Displays a list of files on a file system.
	pwd	Displays the current setting of the cd command.
	show file systems	Lists available file systems and their alias prefix names.
	undelete	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.

The **copy {ftp: | rcp: | tftp:} [filename] running-config** command replaces the **copy {rcp | tftp} running-config** command in Cisco IOS Release 12.1. See the description of the [copy](#) command for more information.

copy

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

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

Syntax Description	
<i>/erase</i>	(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 a alias keyword for a particular file or a 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 have 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 16 specifies two keyword shortcuts to URLs.

Table 16 Common Keyword Aliases to URLs

Keyword	Source or Destination
running-config	(Optional) Keyword alias for the system:running-config URL. The system:running-config keyword represents the current running configuration file. This keyword does not work in more and show file command syntaxes.
startup-config	(Optional) Keyword alias for the nvram:startup-config URL. The nvram:startup-config keyword represents the configuration file used during initialization (start up). 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 copy running-config startup-config command. This keyword does not work in more and show file command syntaxes.

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

Table 17 lists URL aliases for Special (opaque) file systems. Table 18 lists them for network file systems, and Table 19 lists them for local writable storage.

Table 17 URL Prefix Aliases for Special File Systems

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

Table 18 URL Prefix Aliases for Network File Systems

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

Table 19 URL Prefix Aliases for Local Writable Storage File Systems

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

Table 19 URL Prefix Aliases for Local Writable Storage File Systems (continued)

Alias	Source or Destination
slaveslot0:	Source or destination URL of first PCMCIA card on a slave RSP card of a router configured for HSA.
slaveslot1:	Source or destination URL of second PCMCIA slot on a slave RSP card of a router configured for HSA.
slot0:	Source or destination URL of first PCMCIA Flash memory card.
slot1:	Source or destination URL of 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 **copy** and have the router prompt you for any missing information.

If you enter information, choose one of the following three: **running-config**, **startup-config**, or a file system alias (see tables above.) 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, will remain supported, but 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 High System Availability](#)

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 20 describes the characters that you may see during processing of the **copy** command.

Table 20 *copy Character Descriptions*

Character	Description
!	For net 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 net 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 net 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** 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 in the following list:

1. The remote username specified in the **copy** command, if one is specified.
2. The username set by the **ip rcmd remote-username** 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 successfully, 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 successfully. 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's 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's 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 `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 in the following list:

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 send 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's 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** 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.



Caution

Verify the image in Flash memory before booting from the image.

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.

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. 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's 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.

**Caution**

Some specific commands might not get saved to NVRAM. You will have 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.

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:

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

To view the contents of environment variables, use the **show bootvar** command. To modify the CONFIG_FILE environment variable, use the **boot config** command. To modify the BOOTLDR environment variable use the **boot bootldr** command. To modify the BOOT environment variable, use the **boot system** 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 High System Availability

High System Availability (HSA) is the feature which allows you to install two RSP cards in a single router on the Cisco 7507 and Cisco 7513 platforms.

On a Cisco 7507 or Cisco 7513 configured for HSA, if you copy a file to **nvram:startup-configuration** with automatic synchronization disabled, the system asks you if you also want to copy the file to the slave's startup configuration. The default answer is **yes**. If automatic synchronization is enabled, the system automatically copies the file to the slave's 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. Depending on your platform, the output might be different from that shown in the examples.

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

Copy 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 from a server to Flash memory.

Copy 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 erase the contents of Flash memory first 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... eeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeee...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]
```

Copy 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: !
```

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

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

```
Copy 'master/igs-bfpx.100-4.3' from TFTP server
```

```
as 'master/igs-bfpx.100-4.3' into Flash WITH erase? [yes/no] yes
```

Copy an Image from a Server to a Flash Memory Card Partition Example

The following example copies the file c3600-i-mz from the rcp server at IP address 172.23.1.129 to the Flash memory card in slot 0 of a Cisco 3600 series router, which has only one partition. As the operation progresses, the Cisco IOS software asks you to erase the files on the Flash memory PC card to accommodate the incoming file. This entire operation takes 18 seconds to perform, as indicated at the end of the example.

```
Router# copy rcp: slot0:
```

```
PCMCIA Slot0 flash
```

Partition	Size	Used	Free	Bank-Size	State	Copy Mode
1	4096K	3068K	1027K	4096K	Read/Write	Direct
2	4096K	1671K	2424K	4096K	Read/Write	Direct
3	4096K	0K	4095K	4096K	Read/Write	Direct
4	4096K	3825K	270K	4096K	Read/Write	Direct

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

```

PCMCIA Slot0 flash directory, partition 1:
File Length Name/status
  1 3142288 c3600-j-mz.test
[3142352 bytes used, 1051952 available, 4194304 total]
Address or name of remote host [172.23.1.129]?
Source file name? /tftpboot/images/c3600-i-mz
Destination file name [/tftpboot/images/c3600-i-mz]?
Accessing file '/tftpboot/images/c3600-i-mz' on 172.23.1.129...
Connected to 172.23.1.129
Loading 1711088 byte file c3600-i-mz: ! [OK]

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

Copy '/tftpboot/images/c3600-i-mz' from server
  as '/tftpboot/images/c3600-i-mz' into Flash WITH erase? [yes/no] yes
Erasing device... eeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeee ...erased
Connected to 172.23.1.129
Loading 1711088 byte file c3600-i-mz:
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!

Verifying checksum... OK (0xF89A)
Flash device copy took 00:00:18 [hh:mm:ss]

```

Save a Copy of an Image on a Server Examples

The following four examples use **copy** commands to copy images to a server for storage.

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]

```

Copy an Image from a Flash Memory File System to an FTP Server

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]

```

Copy an Image from Boot Flash Memory to a TFTP Server

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]

```

Copy 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-confg by rcp from 172.16.101.101

```

Copy from a Server to the Startup Configuration Example

The following example copies a configuration file host2-config 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-config nvram:startup-config
Configure using rtr2-config from 172.16.101.101?[confirm]
Connected to 172.16.101.101
Loading 1112 byte file rtr2-config:[OK]
[OK]
Router#
%SYS-5-CONFIG_NV:Non-volatile store configured from rtr2-config by
FTP from 172.16.101.101
```

Copy 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-config, 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
```

Copy 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]
```

Save 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 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.

Move Configuration Files to Other Locations Examples

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

Copy 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
```

Copy 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:karen2
Building configuration...
```

```
5267 bytes copied in 0.720 secs
```

Copy to the Running Configuration from a Flash Memory Device Example

The following example copies the file 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
```

Copy 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
```

Copy a Configuration File from one Flash Device to Another Example

This 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)

```

Copy 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
boot config	Specifies the device and filename of the configuration file from which the router configures itself during initialization (startup). This command is only available on Class A file system platforms.
boot system	Specifies the system image that the router loads at startup.
cd	Changes the default directory or file system.
copy xmodem: flash:	Copies any file from a source to a destination, use the copy EXEC command.
copy ymodem: flash:	Copies any file from a source to a destination, use the copy EXEC command.
delete	Deletes a file on a Flash memory device.
dir	Displays a list of files on a file system.
erase	Erases a file system.
ip rcmd remote-username	Configures the remote username to be used when requesting a remote copy using rcp.
reload	Reloads the operating system.
show bootvar	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.
show file systems	Displays the layout and contents of a Flash memory file system.
slave auto-sync config	Turns on automatic synchronization of configuration files for a Cisco 7507 or Cisco 7513 that is configured for HSA.
verify bootflash:	Either of the identical verify bootflash: or verify bootflash commands replaces the copy verify bootflash command. Refer to the verify command for more information.

erase bootflash

The **erase bootflash:** and **erase bootflash** commands have identical function. See the **erase** command for more information.

delete

To delete a file on a Flash memory device, use the **delete** EXEC command.

```
delete flash-url
```

Syntax Description	<i>flash-url</i>	URL of the file to be deleted.
---------------------------	------------------	--------------------------------

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

Command History	Release	Modification
	11.0	This command was introduced.

Usage Guidelines

When you delete a file, the software simply marks the file as deleted, but it does not erase the file. On class A Flash file systems, you can later recover a “deleted” file using the **undelete** command. You can delete and undelete a file up to 15 times. To permanently delete all files marked “deleted” on a Flash memory device, use the **squeeze** command.

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.

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
cd	Changes the default directory or file system.
dir	Displays a list of files on a file system.
show bootvar	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.
squeeze	Permanently deletes Flash files by squeezing a Class A Flash file system.
undelete	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** EXEC command.

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

Syntax Description	
/all	(Optional) Lists deleted files, undeleted files, and files with errors.
filesystem:	(Optional) File system or directory containing the file(s) to list followed by a colon.
file-url	(Optional) Name of the file(s) 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 21 described the fields shown in these displays.

Table 21 *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"> • d—directory • r—readable • w—writable • x—executable
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
cd	Changes the default directory or file system.
delete	Deletes a file on a Flash memory device.
undelete	Recovers a file marked “deleted” on a Class A or Class B Flash file system.

erase

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

erase filesystem:

Syntax Description	<i>filesystem:</i>	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** command and then reclaim the space using the **squeeze** command. You can also use the **format** 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
boot config	Specifies the device and filename of the configuration file from which the router configures itself during initialization (startup). This command is only available on Class A file system platforms.
delete	Deletes a file on a Flash memory device.
more nvrnram:startup-config	Displays the startup configuration file contained in NVRAM or specified by the CONFIG_FILE environment variable. See the more command for details.
show bootvar	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
undelete	Recovers a file marked "deleted" on a Class A or Class B Flash file system.

file prompt

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

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

Syntax Description	Parameter	Description
	alert	(Optional) Prompts only for destructive file operations. This is the default.
	noisy	(Optional) Confirms all file operation parameters.
	quiet	(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** EXEC command.

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

spare	(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 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 between 0 and 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 *filesystem2*:’s 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, but you cannot boot the Cisco 7200 and 7500 series from a Flash memory card formatted for the Cisco 7000 series. Similarly, you can read from or write to Flash memory cards formatted for the Cisco 7200 and 7500 series in your Cisco 7000 series, but you cannot boot the Cisco 7000 series from a Flash memory card formatted for the Cisco 7200 and 7500 series.

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 successfully formatted and ready for use.

Related Commands

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

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

fsck

To check a Class C Flash file system for damage and repair any problems, use the **fsck** EXEC command.

fsck [/nocrc] *filesystem:*

Syntax Description	/nocrc	(Optional) Skips CRC checks.
	filesystem:	File system to check.

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

Command History	Release	Modification
	11.3 AA	This command was introduced.

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

Examples	The following example checks the flash: file system:
-----------------	--

```
Router# fsck flash:
Fsk operation may take a while. Continue? [confirm]
flashfs[4]: 0 files, 2 directories
flashfs[4]: 0 orphaned files, 0 orphaned directories
flashfs[4]: Total bytes: 8128000
flashfs[4]: Bytes used: 1024
flashfs[4]: Bytes available: 8126976
flashfs[4]: flashfs fsck took 23 seconds.
Fsk of flash: complete
```

mkdir

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

mkdir *directory*

Syntax Description	<i>directory</i> Name of the directory to create.
---------------------------	---

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

Command History	Release	Modification
	11.3 AA	This command was introduced.

Usage Guidelines	<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>
-------------------------	--

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

Related Commands	Command	Description
	dir	Displays a list of files on a file system.
	rmdir	Removes an existing directory in a Class C Flash file system.

more

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

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

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

Command Modes	
	EXEC

Command History	Release	Modification
	11.3 AA	This command was introduced.

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

You can use this command to display configuration files:

- 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 also 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
boot config	Specifies the device and filename of the configuration file from which the router configures itself during initialization (startup). This command is only available on Class A file system platforms.
service compress-config	Compresses startup configuration files.
show bootvar	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** EXEC command.

```
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 what 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
	cd	Changes the default directory or file system.
	dir	Displays a list of files on a file system.

rename

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

```
rename url1 url2
```

Syntax Description

<i>url1</i>	Original path name.
<i>url2</i>	New path name.

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** EXEC command.

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
	dir	Displays a list of files on a file system.
	mkdir	Creates a new directory in a Class C Flash file system.

show configuration

The **more nvram:startup-config** command replaces the **show configuration** command. Refer to the **more** command for further details.

show file descriptors

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

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 see 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 22](#) describes the fields show in this display.

Table 22 *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** EXEC command.

show file information *file-url*

Syntax Description	<i>file-url</i>	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://dir/hampton/c2500-j-1.a
tftp://dir/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 23](#) describes the possible file types.

Table 23 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.
ebedic	Text generated on an IBM mainframe.
lzw compression	Lzw compressed file.
tar	Text archive file used by the CIP.

show file systems

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

```
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 24](#) describes the fields shown in this display.

Table 24 *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.

Type	Description
disk	The file system is for a rotating medium.
flash	The file system is for a Flash memory device.
network	The file system is a network file system (TFTP, rcp, FTP, and so on.).
nvrn	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 25 describes file system flags.

Table 25 Possible File System Flags

Flag	Description
ro	The file system is Read Only.
rw	The file system is Write Only.
wo	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 /nolog and /quiet 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
	delete	Deletes a file on a Flash memory device.
	dir	Displays a list of files on a file system.
	undelete	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 Flash file system, use the **undelete** EXEC command.

undelete *index* [*filesystem:*]

Syntax Description	
<i>index</i>	Number that indexes the file in the dir command output.
<i>filesystem:</i>	(Optional) File system containing the file to undelete.

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 Class A Flash file systems are used on platforms such as the Cisco 7500 and Cisco 12000.

For Class A 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) one 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** command.

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

For further information on Flash file system types (classes), see <http://www.cisco.com/warp/public/63/pcmciatrix.html>.

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
	delete	Deletes a file on a Flash memory device.
	dir	Displays a list of files on a file system.
	squeeze	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** EXEC command.

```
verify filesystem:[file-url]
```

Syntax Description	
<i>filesystem:</i>	Flash memory filesystem. For example flash: or slot0: .
<i>file-url</i>	URL of the file to verify. Generally this consists only of the filename, but you may also specify directories (file paths), separated by forward-slashes (/).

Defaults The current working device is the default device.

Command Modes EXEC

Command History	Release	Modification
	11.0	This command was introduced.

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. 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

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.

To verify that a Cisco IOS software image was not corrupted while it was transferred to the router, copy the image from where it is stored on your router to a Unix server. Also copy the same image from CCO (Cisco.com) to the same Unix server. (The name may need to be modified if you try to save the IOS image in the same directory as the image that you copied from the router.) Now run a Unix **diff** command on the two Cisco IOS software images. If there is no difference then the IOS image stored on the router has not been corrupted.

Examples

The following example verifies that the file named c7200-js-mz is 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)
tw3-7200-1# verify slot0:
Verify filename []? c7200-js-mz
Verified slot0:
```

The following example also verifies that the file named c7200-js-mz is on the Flash memory card inserted in slot 0:

```
Router# verify slot0:?
slot0:c7200-js-mz slot0:rally slot0:hampton/nitro/c7200-j-mz slot0:the_time

Router# verify slot0:c7200-js-mz
Verified slot0:c7200-js-mz
```

Related Commands

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

write erase

The **erase nvram:** command replaces the **write erase** command. See the **erase** command in this chapter for more information.

write terminal

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

■ write terminal