



Router Memory Commands

This chapter provides detailed descriptions of the commands used to maintain router memory in Cisco IOS Release 12.0.

For configuration information and examples, refer to the “Maintaining Router Memory” chapter in the *Cisco IOS Release 12.0 Configuration Fundamentals Configuration Guide*.

Flash Memory File System Types

Cisco platforms use one of three different Flash memory file system types. Some commands are supported on only one or two file system types. This chapter notes commands that are not supported on all file system types.

Refer to Table 24 to determine which Flash memory file system type your platform uses.

Table 24 Flash Memory File System Types

| Type | Platforms |
|---------|---|
| Class A | Cisco 7000 family, C12000, LS1010 |
| Class B | Cisco 1003, Cisco 1004, Cisco 1005, Cisco 2500 series, Cisco 3600 series, Cisco 4000 series, Cisco AS5200 |
| Class C | Cisco MC3810, disk0 and disk1 of SC3640 |

Replaced Commands

Commands in this chapter that have been replaced by new commands continue to perform their normal functions in the current release but are no longer documented. Support for these commands will cease in a future release. Table 25 maps the old commands with their replacements.

Table 25 Mapping Old Commands to New Commands

| Old Command | New Command |
|--|--|
| <code>configure network</code> | <code>copy source-url system:running-config</code> |
| <code>configure overwrite-network</code> | <code>copy source-url nvram:startup-config</code> |

Table 25 Mapping Old Commands to New Commands (continued)

| Old Command | New Command |
|----------------------|--|
| write memory | copy system:running-config nvram:startup-config |
| write network | copy system:running config <i>destination-url</i> |

configure network

The `copy source-url system:running-config` command replaces the `configure network` command. Refer to the description of the `copy` command for further details.

copy

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

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

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

Command Modes EXEC

| Command History | Release | Modification |
|-----------------|---------|------------------------------|
| | 11.3 T | This command was introduced. |

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

Table 26 specifies two keyword shortcuts to URLs.

Table 26 Common Keyword Shortcuts to URLs

| Keyword | Source or Destination |
|-----------------------|---|
| running-config | (Optional) Keyword shortcut for system:running-config , the current running configuration file. This keyword does not work in more and show file command syntaxes. |
| startup-config | (Optional) Keyword shortcut for nvrn:startup-config , the configuration file used for initialization. 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 prefixes by file system type. If you do not specify a prefix, the router looks for a file in the current directory.

Table 27 lists URL prefixes for Special (opaque) file systems. Table 28 lists them for network file systems, and Table 29 lists them for local writable storage.

Table 27 URL Prefixes for Special File Systems

| Prefix | 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 28 URL Prefixes for Network File Systems

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

Table 29 URL Prefixes for Local Writable Storage File Systems

| Prefix | 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 prefix 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 29 URL Prefixes for Local Writable Storage File Systems (continued)

| Prefix | 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. |

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 prefix (See tables above.) The location of a file system dictates the format of the source or destination URL.

The colon is required after the prefix. 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 prefix 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
- Understanding High System Availability

Understanding Invalid Combinations of Source and Destination

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

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

Table 30 *copy Command 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 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 a packet was received out of order and the copy process may fail. |
| e | For flash erasures, a lowercase e indicates 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@routername.domain`. The variable `username` is the username associated with the current session, `routername` 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 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:} system:running-config** command to load a configuration file from a network server to the router's running configuration. The configuration will be added to the running configuration as if the commands were typed in the command line interface. Thus, the resulting configuration 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.

Understanding High System Availability

High System Availability (HSA) refers to how quickly your router returns to an operational status after a failure occurs. On the Cisco 7507 and Cisco 7513, you can install two RSP cards in a single router to improve system availability.

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
```

- Example: Copying an Image from a Server to a Flash Memory Card Partition

In the following example the file c3600-i-mz is copied 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 prompts the user to erase the files on the PCMCIA (Flash memory) 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-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
```

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 file's checksum 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... eeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeee ...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, use the ip rcmd remote-username. |
| 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 (Flash file system) | 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 High System Availability (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. Refer to the **erase** command for details.

erase flash

The **erase flash:** and **erase flash** commands have identical function. Refer to the **erase** command for details.

memory-size iomem

To reallocate the percentage of DRAM memory to use for I/O memory and processor memory on Cisco 3600 series routers, use the **memory-size iomem** global configuration command. The **no** form of this command reverts to the default allocation of 25 percent I/O memory and 75 percent processor memory.

memory-size iomem *i/o-memory-percentage*

no memory-size iomem *i/o-memory-percentage*

Syntax Description

| | |
|------------------------------|--|
| <i>i/o-memory-percentage</i> | The percentage of DRAM allocated to I/O memory. The values permitted are 10, 15, 20, 25, 30, 40, and 50 percent. A minimum of 4 MB of memory is required for I/O memory. |
|------------------------------|--|

Defaults

The default allocation is 25 percent I/O memory and 75 percent processor memory.

Command Modes

Global configuration

Command History

| Release | Modification |
|---------|------------------------------|
| 11.2 P | This command was introduced. |

Usage Guidelines

When you specify the percentage of I/O memory in the command line, processor memory automatically acquires the remaining percentage of DRAM memory.

Examples

The following example allocates 40 percent of the DRAM memory to I/O memory and the remaining 60 percent to processor memory.

```
Router# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)# memory-size iomem 40
Router(config)# exit
Router# copy system:running-config nvram:startup-config
Building configuration...
[OK]

Router# reload

rommon 1 > boot
program load complete, entry point: 0x80008000, size: 0x32ea24
Self decompressing the image :
#####
#####
##### [OK]
```

partition

To separate Flash memory into partitions on Class B file system platforms, use the **partition** global configuration command. Use the **no** form of this command to undo partitioning and to restore Flash memory to one partition.

Cisco 1600 series and Cisco 3600 series

partition *flash-filesystem*: [*number-of-partitions*][*partition-size*]

no partition *flash-filesystem*:

All other Class B platforms

partition flash *partitions* [*size1 size2*]

no partition flash

| Syntax Description | Description |
|-----------------------------|---|
| <i>flash-filesystem</i> | One of the following Flash file systems, which must be followed by a colon (:). The Cisco 1600 series can only use the flash: keyword. <ul style="list-style-type: none"> flash:—Internal Flash memory slot0:—Flash memory card in PCMCIA slot 0 slot1:—Flash memory card in PCMCIA slot 1 |
| <i>number-of-partitions</i> | (Optional) Number of partitions in Flash memory. |
| <i>partition-size</i> | (Optional) Size of each partition. The number of partition size entries must be equal to the number of specified partitions. |
| <i>partitions</i> | Number of partitions in Flash memory. Can be 1 or 2. |
| <i>size1</i> | (Optional) Size of the first partition in megabytes. |
| <i>size2</i> | (Optional) Size of the second partition in megabytes. |

Defaults

Flash memory consists of one partition.

If the partition size is not specified, partitions of equal size are created.

Command Modes

Global configuration

Command History

| Release | Modification |
|---------|------------------------------|
| 10.3 | This command was introduced. |

Usage Guidelines

For the Cisco 1600 series and Cisco 3600 series, to undo partitioning, use the **partition flash-filesystem:1** or **no partition flash-filesystem:** command. For other Class B platforms, use either the **partition flash 1** or **no partition flash** command. If there are files in a partition other than the first, you must use the command **erase flash-filesystem:partition-number** to erase the partition before reverting to a single partition.

When creating two partitions, you must not truncate a file or cause a file to spill over into the second partition.

Examples

The following example creates two partitions of 4 MB each in Flash memory:

```
partition flash 2 4 4
```

The following example divides the Flash memory card in slot 0 into two partitions, each 8 MB in size on the Cisco 3600:

```
Router# configure terminal  
Enter configuration commands, one per line. End with CNTL/Z.  
Router(config)# partition slot0: 2 8 8
```

The following example creates four partitions of equal size in the card on a Cisco 1600 series:

```
Router# configure terminal  
Enter configuration commands, one per line. End with CNTL/Z.  
Router(config)# partition flash: 4
```

show (Flash file system)

To display the layout and contents of a Flash memory file system, use the **show EXEC** command:

Class A Flash file systems

show flash-filesystem: [**all** | **chips** | **fileSYS**]

Class B Flash file systems

show flash-filesystem: [**partition number**] [**all** | **chips** | **detailed** | **err** | **summary**]

Class C Flash file systems

show flash-filesystem:

| Syntax Description | |
|-------------------------|---|
| <i>flash-filesystem</i> | Flash memory file system (bootflash: , flash: , slot0: , slot1: , slavebootflash: , slaveslot0: , or slaveslot1:). |
| all | (Optional) On Class B Flash file systems, all shows complete information about Flash memory, including information about the individual ROM devices in Flash memory and the names and sizes of all system image files stored in Flash memory, including those that are invalid. On Class A Flash file systems, all shows the following information: <ul style="list-style-type: none"> The information displayed when no keywords are used. The information displayed by the fileSYS keyword. The information displayed by the chips keyword. |
| chips | (Optional) Shows information per partition and per chip, including which bank the chip is in plus its code, size, and name. |
| fileSYS | (Optional) Shows the Device Info Block, the Status Info, and the Usage Info. |
| detailed | (Optional) Shows detailed file directory information per partition, including file length, address, name, Flash memory checksum, computer checksum, bytes used, bytes available, total bytes, and bytes of system Flash memory. |
| err | (Optional) Shows write or erase failures in the form of number of retries. |
| partition number | (Optional) Shows output for the specified partition number. If you do not specify a partition in the command, the router displays output for all partitions. You can use this keyword only when Flash memory has multiple partitions. |
| summary | (Optional) Shows summary information per partition, including the partition size, bank size, state, and method by which files can be copied into a particular partition. You can use this keyword only when Flash memory has multiple partitions. |

Command Modes EXEC

| Command History | Release | Modification |
|-----------------|---------|------------------------------|
| | 11.3 AA | This command was introduced. |

Usage Guidelines If Flash memory is partitioned, the command displays the requested output for each partition, unless you use the **partition** keyword.

The command also specifies the location of the current image.

To display the contents of boot Flash memory, use the **show bootflash:** command as follows:

Class A Flash file systems

show bootflash: [all | chips | fileys]

Class B Flash file systems

show bootflash: [partition *number*] [all | chips | detailed | err]

To display the contents of internal Flash memory, use the **show flash:** command as follows:

Class A Flash file systems

show flash: [all | chips | fileys]

Class B Flash file systems

show flash: [partition *number*][all | chips | detailed | err | summary]

The **show (Flash file system)** command replaces the **show flash devices** command.

Examples

The output of the **show** command depends on the type of Flash file system you select. Types include **flash:**, **bootflash:**, **slot0:**, **slot1:**, **slavebootflash:**, **slaveslot0:**, and **slaveslot1:**.

This section contains examples of output from **show flash:**.

- Class A Flash File System
- Class B Flash File Systems

Although the examples below use **flash:** as the Flash file system, you may also use the other Flash file systems listed above.

Class A Flash File System

The following three examples show sample output for Class A Flash file systems. Table 31 describes the fields shown in the output.

Table 31 *show (Class A Flash File System) Field Descriptions*

| Field | Description |
|-------|---|
| # | File's index number. |
| ED | Whether the file contains an error (<i>E</i>) or is deleted (<i>D</i>). |

Table 31 *show (Class A Flash File System) Field Descriptions (continued)*

| Field | Description |
|-----------|---|
| type | File's <i>type</i> (1 = configuration file, 2 = image file). The software displays these values only when the file's type is certain. When the file's type is unknown, the system displays unknown in this field. |
| crc | File's cyclic redundant check. |
| seek | Offset into the file system of the next file. |
| nlen | Length of the file's name. |
| length | Length of the file itself. |
| date/time | Date and time the file was created. |
| name | File's name. |

The following is sample output from the **show flash:** command.

RouterA# **show flash:**

```

-#- ED --type-- --crc--- -seek-- nlen -length- -----date/time----- name
1  .. unknown 317FBA1B 4A0694 24 4720148 Aug 29 1997 17:49:36 hampton/nitro/c7200-j-mz
2  .. unknown 9237F3FF 92C574 11 4767328 Oct 01 1997 18:42:53 c7200-js-mz
3  .D unknown 71AB01F1 10C94E0 10 7982828 Oct 01 1997 18:48:14 rsp-jsv-mz
4  .D unknown 96DACD45 10C97E0 8 639 Oct 02 1997 12:09:17 the_time
5  .. unknown 96DACD45 10C9AE0 3 639 Oct 02 1997 12:09:32 the_time
6  .D unknown 96DACD45 10C9DE0 8 639 Oct 02 1997 12:37:01 the_time
7  .. unknown 96DACD45 10CA0E0 8 639 Oct 02 1997 12:37:13 the_time

```

3104544 bytes available (17473760 bytes used)

The following is sample output from the **show flash: chips** command:

RouterA# **show flash: chips**

***** Intel Series 2+ Status/Register Dump *****

ATTRIBUTE MEMORY REGISTERS:

```

Config Option Reg (4000): 2
Config Status Reg (4002): 0
Card Status Reg (4100): 1
Write Protect Reg (4104): 4
Voltage Cntrl Reg (410C): 0
Rdy/Busy Mode Reg (4140): 2

```

COMMON MEMORY REGISTERS: Bank 0

```

Intelligent ID Code : 8989A0A0
Compatible Status Reg: 8080
Global Status Reg: B0B0
Block Status Regs:
0 : B0B0 B0B0 B0B0 B0B0 B0B0 B0B0 B0B0 B0B0
8 : B0B0 B0B0 B0B0 B0B0 B0B0 B0B0 B0B0 B0B0
16 : B0B0 B0B0 B0B0 B0B0 B0B0 B0B0 B0B0 B0B0
24 : B0B0 B0B0 B0B0 B0B0 B0B0 B0B0 B0B0 B0B0

```

COMMON MEMORY REGISTERS: Bank 1

```

Intelligent ID Code : 8989A0A0
Compatible Status Reg: 8080
Global Status Reg: B0B0
Block Status Regs:

```

show (Flash file system)

```

0 : B0B0 B0B0 B0B0 B0B0 B0B0 B0B0 B0B0 B0B0
8 : B0B0 B0B0 B0B0 B0B0 B0B0 B0B0 B0B0 B0B0
16 : B0B0 B0B0 B0B0 B0B0 B0B0 B0B0 B0B0 B0B0
24 : B0B0 B0B0 B0B0 B0B0 B0B0 B0B0 B0B0 B0B0

```

```

COMMON MEMORY REGISTERS: Bank 2
Intelligent ID Code : 8989A0A0
Compatible Status Reg: 8080
Global      Status Reg: B0B0
Block Status Regs:
 0 : B0B0 B0B0 B0B0 B0B0 B0B0 B0B0 B0B0 B0B0
 8 : B0B0 B0B0 B0B0 B0B0 B0B0 B0B0 B0B0 B0B0
16 : B0B0 B0B0 B0B0 B0B0 B0B0 B0B0 B0B0 B0B0
24 : B0B0 B0B0 B0B0 B0B0 B0B0 B0B0 B0B0 B0B0

```

```

COMMON MEMORY REGISTERS: Bank 3
Intelligent ID Code : 8989A0A0
Compatible Status Reg: 8080
Global      Status Reg: B0B0
Block Status Regs:
 0 : B0B0 B0B0 B0B0 B0B0 B0B0 B0B0 B0B0 B0B0
 8 : B0B0 B0B0 B0B0 B0B0 B0B0 B0B0 B0B0 B0B0
16 : B0B0 B0B0 B0B0 B0B0 B0B0 B0B0 B0B0 B0B0
24 : B0B0 B0B0 B0B0 B0B0 B0B0 B0B0 B0B0 B0B0

```

```

COMMON MEMORY REGISTERS: Bank 4
Intelligent ID Code : 8989A0A0
Compatible Status Reg: 8080
Global      Status Reg: B0B0
Block Status Regs:
 0 : B0B0 B0B0 B0B0 B0B0 B0B0 B0B0 B0B0 B0B0
 8 : B0B0 B0B0 B0B0 B0B0 B0B0 B0B0 B0B0 B0B0
16 : B0B0 B0B0 B0B0 B0B0 B0B0 B0B0 B0B0 B0B0
24 : B0B0 B0B0 B0B0 B0B0 B0B0 B0B0 B0B0 B0B0

```

The following is sample output from the **show flash: filesystems** command:

```

RouterA# show flash: filesystems

----- F I L E   S Y S T E M   S T A T U S -----
Device Number = 0
DEVICE INFO BLOCK:
Magic Number           = 6887635   File System Vers = 10000   (1.0)
Length                 = 1400000   Sector Size      = 20000
Programming Algorithm = 4           Erased State     = FFFFFFFF
File System Offset     = 20000     Length = 13A0000
MONLIB Offset         = 100           Length = C730
Bad Sector Map Offset = 1FFEC     Length = 14
Squeeze Log Offset    = 13C0000   Length = 20000
Squeeze Buffer Offset = 13E0000   Length = 20000
Num Spare Sectors     = 0
Spares:
STATUS INFO:
Writable
NO File Open for Write
Complete Stats
No Unrecovered Errors
No Squeeze in progress
USAGE INFO:
Bytes Used             = 10AA0E0   Bytes Available = 2F5F20
Bad Sectors           = 0           Spared Sectors  = 0
OK Files              = 4           Bytes = 90C974
Deleted Files         = 3           Bytes = 79D3EC
Files w/Errors        = 0           Bytes = 0

```

Class B Flash File Systems

Table 35 describes fields in the sample output for Class B Flash file systems.

Table 32 *show (Class B Flash File System) all Fields*

| Field | Description |
|-------------|---|
| addr | Address of the file in Flash memory. |
| available | Total number of bytes available in Flash memory. |
| Bank | Bank number. |
| Bank-Size | Size of bank in bytes. |
| bytes used | Total number of bytes used in Flash memory. |
| ccksum | Computed checksum. |
| Chip | Chip number. |
| Code | Code number. |
| Copy-Mode | Method by which the partition can be copied to: <ul style="list-style-type: none"> • RXBOOT-MANUAL indicates a user can copy manually by reloading to the boot ROM image. • RXBOOT-FLH indicates user can copy via Flash load helper. • Direct indicates user can copy directly into Flash memory. • None indicates that it is not possible to copy into that partition. |
| fcksum | Checksum recorded in Flash memory. |
| File | Number of the system image file. If no filename is specified in the boot system flash command, the router boots the system image file with the lowest file number. |
| Free | Number of bytes free in partition. |
| Length | Size of the system image file (in bytes). |
| Name | Name of chip manufacturer and chip type. |
| Name/status | Filename and status of a system image file. The status [invalidated] appears when a file has been rewritten (recopied) into Flash memory. The first (now invalidated) copy of the file is still present within Flash memory, but it is rendered unusable in favor of the newest version. The [invalidated] status can also indicate an incomplete file that results from the user abnormally terminating the copy process, a network timeout, or a Flash memory overflow. |
| Partition | Partition number in Flash memory. |
| Size | Size of partition in bytes or size of chip. |
| State | State of the partition. It can be one of the following values: <ul style="list-style-type: none"> • Read-Only indicates the partition that is being executed from. • Read/Write is a partition that can be copied to. |

Table 32 show (Class B Flash File System) all Fields (continued)

| Field | Description |
|------------------------|---------------------------------------|
| System flash directory | Flash directory and its contents. |
| total | Total size of Flash memory, in bytes. |
| Used | Number of bytes used in partition. |

The following is sample output from the **show flash:** command:

```
RouterB> show flash:

System flash directory:
File Length Name/status
  1 4137888 c3640-c2is-mz.Feb24
[4137952 bytes used, 12639264 available, 16777216 total]
16384K bytes of processor board System flash (Read/Write)\
```

The following example shows detailed information about the second partition in internal Flash memory:

```
RouterB# show flash: partition 2

System flash directory, partition 2:
File Length Name/status
  1 1711088 dirt/images/c3600-i-mz
[1711152 bytes used, 15066064 available, 16777216 total]
16384K bytes of processor board System flash (Read/Write)
```

The following is sample output from the **show flash: all** command:

```
RouterB> show flash: all

Partition Size Used Free Bank-Size State Copy Mode
  1      16384K 4040K 12343K 4096K Read/Write Direct

System flash directory:
File Length Name/status
      addr fcksum ccksum
  1 4137888 c3640-c2is-mz.Feb24
      0x40 0xED65 0xED65
[4137952 bytes used, 12639264 available, 16777216 total]
16384K bytes of processor board System flash (Read/Write)
```

| Chip | Bank | Code | Size | Name |
|------|------|------|--------|------------|
| 1 | 1 | 01D5 | 1024KB | AMD 29F080 |
| 2 | 1 | 01D5 | 1024KB | AMD 29F080 |
| 3 | 1 | 01D5 | 1024KB | AMD 29F080 |
| 4 | 1 | 01D5 | 1024KB | AMD 29F080 |
| 1 | 2 | 01D5 | 1024KB | AMD 29F080 |
| 2 | 2 | 01D5 | 1024KB | AMD 29F080 |
| 3 | 2 | 01D5 | 1024KB | AMD 29F080 |
| 4 | 2 | 01D5 | 1024KB | AMD 29F080 |
| 1 | 3 | 01D5 | 1024KB | AMD 29F080 |
| 2 | 3 | 01D5 | 1024KB | AMD 29F080 |
| 3 | 3 | 01D5 | 1024KB | AMD 29F080 |
| 4 | 3 | 01D5 | 1024KB | AMD 29F080 |
| 1 | 4 | 01D5 | 1024KB | AMD 29F080 |
| 2 | 4 | 01D5 | 1024KB | AMD 29F080 |
| 3 | 4 | 01D5 | 1024KB | AMD 29F080 |
| 4 | 4 | 01D5 | 1024KB | AMD 29F080 |

The following is sample output from the **show flash: all** command on a router with Flash memory partitioned:

Router# **show flash: all**

System flash partition information:

| Partition | Size | Used | Free | Bank-Size | State | Copy-Mode |
|-----------|-------|-------|------|-----------|------------|------------|
| 1 | 4096K | 3459K | 637K | 4096K | Read Only | RXBOOT-FLH |
| 2 | 4096K | 3224K | 872K | 4096K | Read/Write | Direct |

System flash directory, partition 1:

| File | Length | Name/status |
|------|---------|-------------------------|
| addr | fcksum | ccksum |
| 1 | 3459720 | master/igs-bfpx.100-4.3 |
| 0x40 | 0x3DE1 | 0x3DE1 |

[3459784 bytes used, 734520 available, 4194304 total]
4096K bytes of processor board System flash (Read ONLY)

| Chip | Bank | Code | Size | Name |
|------|------|------|--------|----------------|
| 1 | 1 | 89A2 | 1024KB | INTEL 28F008SA |
| 2 | 1 | 89A2 | 1024KB | INTEL 28F008SA |
| 3 | 1 | 89A2 | 1024KB | INTEL 28F008SA |
| 4 | 1 | 89A2 | 1024KB | INTEL 28F008SA |

Executing current image from System flash [partition 1]

System flash directory, partition2:

| File | Length | Name/status |
|------|---------|-------------|
| addr | fcksum | ccksum |
| 1 | 3224008 | igs-kf.100 |
| 0x40 | 0xEE91 | 0xEE91 |

[3224072 bytes used, 970232 available, 4194304 total]
4096K bytes of processor board System flash (Read/Write)

| Chip | Bank | Code | Size | Name |
|------|------|------|--------|----------------|
| 1 | 2 | 89A2 | 1024KB | INTEL 28F008SA |
| 2 | 2 | 89A2 | 1024KB | INTEL 28F008SA |
| 3 | 2 | 89A2 | 1024KB | INTEL 28F008SA |
| 4 | 2 | 89A2 | 1024KB | INTEL 28F008SA |

The following is sample output from the **show flash: chips** command:

RouterB> **show flash: chips**

16384K bytes of processor board System flash (Read/Write)

| Chip | Bank | Code | Size | Name |
|------|------|------|--------|------------|
| 1 | 1 | 01D5 | 1024KB | AMD 29F080 |
| 2 | 1 | 01D5 | 1024KB | AMD 29F080 |
| 3 | 1 | 01D5 | 1024KB | AMD 29F080 |
| 4 | 1 | 01D5 | 1024KB | AMD 29F080 |
| 1 | 2 | 01D5 | 1024KB | AMD 29F080 |
| 2 | 2 | 01D5 | 1024KB | AMD 29F080 |
| 3 | 2 | 01D5 | 1024KB | AMD 29F080 |
| 4 | 2 | 01D5 | 1024KB | AMD 29F080 |
| 1 | 3 | 01D5 | 1024KB | AMD 29F080 |
| 2 | 3 | 01D5 | 1024KB | AMD 29F080 |
| 3 | 3 | 01D5 | 1024KB | AMD 29F080 |
| 4 | 3 | 01D5 | 1024KB | AMD 29F080 |
| 1 | 4 | 01D5 | 1024KB | AMD 29F080 |
| 2 | 4 | 01D5 | 1024KB | AMD 29F080 |
| 3 | 4 | 01D5 | 1024KB | AMD 29F080 |
| 4 | 4 | 01D5 | 1024KB | AMD 29F080 |

The following is sample output from the **show flash: detailed** command:

RouterB> **show flash: detailed**

System flash directory:

show (Flash file system)

```
File Length Name/status
      addr      fcksum  ccksum
  1  4137888  c3640-c2is-mz.Feb24
      0x40      0xED65  0xED65
[4137952 bytes used, 12639264 available, 16777216 total]
16384K bytes of processor board System flash (Read/Write)
```

The following is sample output from the **show flash: err** command:

```
RouterB> show flash: err
```

```
System flash directory:
File Length Name/status
  1  4137888  c3640-c2is-mz.Feb24
[4137952 bytes used, 12639264 available, 16777216 total]
16384K bytes of processor board System flash (Read/Write)
```

| Chip | Bank | Code | Size | Name | | erase | write |
|------|------|------|--------|------------|--|-------|-------|
| 1 | 1 | 01D5 | 1024KB | AMD 29F080 | | 0 | 0 |
| 2 | 1 | 01D5 | 1024KB | AMD 29F080 | | 0 | 0 |
| 3 | 1 | 01D5 | 1024KB | AMD 29F080 | | 0 | 0 |
| 4 | 1 | 01D5 | 1024KB | AMD 29F080 | | 0 | 0 |
| 1 | 2 | 01D5 | 1024KB | AMD 29F080 | | 0 | 0 |
| 2 | 2 | 01D5 | 1024KB | AMD 29F080 | | 0 | 0 |
| 3 | 2 | 01D5 | 1024KB | AMD 29F080 | | 0 | 0 |
| 4 | 2 | 01D5 | 1024KB | AMD 29F080 | | 0 | 0 |
| 1 | 3 | 01D5 | 1024KB | AMD 29F080 | | 0 | 0 |
| 2 | 3 | 01D5 | 1024KB | AMD 29F080 | | 0 | 0 |
| 3 | 3 | 01D5 | 1024KB | AMD 29F080 | | 0 | 0 |
| 4 | 3 | 01D5 | 1024KB | AMD 29F080 | | 0 | 0 |
| 1 | 4 | 01D5 | 1024KB | AMD 29F080 | | 0 | 0 |
| 2 | 4 | 01D5 | 1024KB | AMD 29F080 | | 0 | 0 |
| 3 | 4 | 01D5 | 1024KB | AMD 29F080 | | 0 | 0 |
| 4 | 4 | 01D5 | 1024KB | AMD 29F080 | | 0 | 0 |

Refer to Table 32 for a description of the fields. The **show flash: err** command also displays two extra fields: erase and write. The erase field indicates the number of erase errors. The write field indicates the number of write errors.

The following is sample output from the **show flash summary** command on a router with Flash memory partitioned. The partition in the Read Only state is the partition from which the Cisco IOS image is being executed.

```
Router# show flash summary
```

```
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
```

Related Commands

| Command | Description |
|-------------------------------|---|
| show flash | Displays the layout and contents of a Flash memory file system. |
| show flash chips | Displays the layout and contents of a Flash memory file system. |
| show flash filesystems | Displays the layout and contents of a Flash memory file system. |

write memory

The **copy system:running-config nvram: startup-config** command replaces the **write memory** command. Refer to the **copy** command for further details.

write network

The **copy system:running-config *destination-url*** command replaces the **write network** command. Refer to the **copy** command for further details.