



## Working With the Flash File System

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This chapter describes how to use the Flash file system on the Catalyst 6000 family switches.



**Note**

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For complete syntax and usage information for the commands used in this chapter, refer to the *Catalyst 6000 Family Command Reference* publication.

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This chapter consists of these sections:

- Understanding How the Flash File System Works, page 18-1
- Working with the Flash File System, page 18-1

## Understanding How the Flash File System Works

The Flash file system on a Catalyst 6000 family supervisor engine provides a number of useful commands to help you manage software image and configuration files.

The Flash file system on the supervisor engine consists of two Flash devices on which you can store files:

- bootflash: onboard Flash memory
- slot0: Flash PC card in the PCMCIA slot

## Working with the Flash File System

These sections describe how to work with the Flash file system:

- Setting the Default Flash Device, page 18-2
- Listing the Files on a Flash Device, page 18-2
- Copying Files, page 18-3
- Deleting Files, page 18-5
- Restoring Deleted Files, page 18-5
- Verifying a File Checksum, page 18-6
- Formatting a Flash Device, page 18-6

## Setting the Default Flash Device

When you set the default Flash device for the switch, the default device is assumed when you enter a Flash file system command without specifying the Flash device.

To set the default Flash device, perform this task:

	Task	Command
Step 1	Set the default Flash device for the switch.	<b>cd</b> <i>[[m/]bootflash:   slot0:]</i>
Step 2	Verify the default Flash device for the switch.	<b>pwd</b> <i>[mod_num]</i>

This example shows how to change the default Flash device to slot0: and verify the default device:

```
Console> (enable) cd slot0:
Console> (enable) pwd
slot0
Console> (enable)
```

## Listing the Files on a Flash Device

To list the files on a Flash device, perform one of these tasks:

	Task	Command
	• Display a list of files on a Flash device.	<b>dir</b> <i>[[m/]device:][filename]</i>
	• Display a list of deleted files on a Flash device.	<b>dir</b> <i>[[m/]device:][filename] deleted</i>
	• Display a list of all files on a Flash device, including deleted files.	<b>dir</b> <i>[[m/]device:][filename] all</i>
	• Display a detailed list of files on a Flash device.	<b>dir</b> <i>[[m/]device:][filename] long</i>

This example shows how to list the files on the default Flash device:

```
Console> (enable) dir
-#- -length- -date/time----- name
 4 3134688 Mar 15 1999 08:27:01 cat6000-sup.5-2-1-CSX.bin
 5 3231989 Jan 24 1999 12:04:40 cat6000-sup.5-1-1-CSX.bin
 6      135 Feb 17 1999 11:30:05 dns_config.cfg
```

```
1213952 bytes available (6388224 bytes used)
Console> (enable)
```

This example shows how to list the files on a Flash device other than the default device:

```
Console> (enable) dir slot0:
-#- -length- -date/time----- name
 1 3209261 Jun 16 1998 13:18:19 cat6000-sup.5-2-1-CSX.bin
 2      135 Jul 17 1998 11:32:53 dns-config.cfg
 3 3231989 Jul 17 1998 16:54:23 cat5000-sup3.4-1-2.bin
 4      8589 Jul 17 1998 17:02:52 6000_config.cfg
```

```
9933504 bytes available (6450496 bytes used)
Console> (enable)
```

This example shows how to list the deleted files on the default Flash device:

```

Console> (enable) dir deleted
-#- ED --type-- --crc--- -seek-- nlen -length- -----date/time----- name
  1 .D ffffffff 81a027ca 41bdc 22 7004 Apr 01 1998 15:27:45 5002.config.
4.1.98.cfg
  2 .D ffffffff ccce97a3 43644 23 6630 Apr 01 1998 15:36:47 5002.default
.config.cfg
  3 .D ffffffff 81a027ca 45220 15 7004 Apr 19 1998 10:05:59 5002_config.
cfg

1213952 bytes available (6388224 bytes used)
Console> (enable)
    
```

## Copying Files

To copy a file, perform one of these tasks in privileged mode:

Task	Command
<ul style="list-style-type: none"> <li>Copy a Flash file to a TFTP server, rcp server, Flash memory, another Flash device, or to the running configuration.</li> </ul>	<b>copy file-id {tftp   rcp   flash   file-id   config}</b>
<ul style="list-style-type: none"> <li>Copy a file from a TFTP server, rcp server to Flash memory, to a Flash device, or to the running configuration.</li> </ul>	<b>copy {tftp   rcp} {flash   file-id   config}</b>
<ul style="list-style-type: none"> <li>Copy a file from Flash memory to a TFTP server, rcp server, to a Flash device, or to the running configuration.</li> </ul>	<b>copy flash {tftp   rcp   file-id   config}</b>
<ul style="list-style-type: none"> <li>Copy the running configuration to Flash memory, another Flash device, to a TFTP server, or rcp server.</li> </ul>	<b>copy config {flash   file-id   tftp   rcp}</b>

This example shows how to copy a file from the default Flash device to another Flash device:

```

Console> (enable) copy cat6000-sup.5-2-1-CSX.bin slot0:

13174216 bytes available on device slot0, proceed (y/n) [n]? y
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
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CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
File has been copied successfully.
Console> (enable)
    
```

This example shows how to copy a file from a TFTP server to the running configuration:

```

Console> (enable) copy tftp config
IP address or name of remote host []? 172.20.52.3
Name of file to copy from []? dns_config.cfg

Configure using tftp:dns_config.cfg (y/n) [n]? y
/
Finished network download. (135 bytes)
>>
>> set ip dns server 172.16.10.70 primary
172.16.10.70 added to DNS server table as primary server.
>> set ip dns server 172.16.10.140
172.16.10.140 added to DNS server table as backup server.
>> set ip dns enable
DNS is enabled
>> set ip dns domain corp.com
Default DNS domain name set to corp.com
Console> (enable)

```

This example shows how to download a configuration file from a TFTP server for storage on a Flash device:

```

Console> (enable) copy tftp flash
IP address or name of remote host []? 172.20.52.3
Name of file to copy from []? dns-config.cfg
Flash device [slot0]?
Name of file to copy to [dns-config.cfg]?

9932056 bytes available on device slot0, proceed (y/n) [n]? y
/
File has been copied successfully.
Console> (enable)

```

This example shows how to copy the running configuration to Flash memory:

```

Console> (enable) copy config flash
Flash device [bootflash]? slot0:
Name of file to copy to []? 6000_config.cfg

Upload configuration to slot0:6000_config.cfg
9942096 bytes available on device slot0, proceed (y/n) [n]? y
.....
.....
.....
.....
.....
.....
..

Configuration has been copied successfully.
Console> (enable)

```

This example shows how to upload a configuration file on a Flash device to a TFTP server:

```

Console> (enable) copy slot0:6000_config.cfg tftp
IP address or name of remote host []? 172.20.52.3
Name of file to copy to [6000_config.cfg]?
/
File has been copied successfully.
Console> (enable)

```

This example shows how to upload an image from a remote host into Flash using rcp:

```

Console> (enable) copy rcp flash
IP address or name of remote host []? 172.20.52.3
Name of file to copy from []? 6000_config.cfg
Flash device [bootflash]?
Name of file to copy to [6000_config.cfg]?

4369664 bytes available on device bootflash, proceed (y/n) [n]? y
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCC
File has been copied successfully.
Console> (enable)

```

## Deleting Files



### Caution

If you enter the **squeeze** command on a Flash device, you cannot restore files deleted prior to the **squeeze** command.

To delete files on a Flash device, perform this task in privileged mode:

	Task	Command
<b>Step 1</b>	Delete a file on a Flash device.	<b>delete</b> <i>[[m/]device:]filename</i>
<b>Step 2</b>	If desired, permanently remove all deleted files on the Flash device (this operation can take a number of minutes to complete).	<b>squeeze</b> <i>[m/]device:</i>
<b>Step 3</b>	Verify the files are deleted.	<b>dir</b> <i>[[m/]device:][filename]</i>

This example shows how to delete a file from a Flash device:

```

Console> (enable) delete dns_config.cfg
Console> (enable)

```

This example shows how to permanently remove all deleted files from a Flash device:

```

Console> (enable) squeeze slot0:
All deleted files will be removed, proceed (y/n) [n]? y
Squeeze operation may take a while, proceed (y/n) [n]? y
Erasing squeeze log
Console> (enable)

```

## Restoring Deleted Files

You must specify the index number of a deleted file to identify the file to undelete. The index number for each file appears in the first column of the **dir** command output. A file cannot be undeleted if a valid file with the same name already exists. Instead, you must delete the existing file and then undelete the desired file. A file can be deleted and undeleted up to 15 times.

To restore deleted files on a Flash device, perform this task in privileged mode:

	Task	Command
Step 1	Identify the index number of the deleted files on the Flash device.	<b>dir</b> <i>[[m/]device:][filename] deleted</i>
Step 2	Undelete a file on a Flash device.	<b>undelete</b> <i>index</i> <i>[[m/]device:]</i>
Step 3	Verify that the file is restored.	<b>dir</b> <i>[[m/]device:][filename]</i>

This example shows how to restore a deleted file:

```

Console> (enable) dir deleted
-#- ED --type-- --crc--- -seek-- nlen -length- ----date/time----- name
6 .D ffffffff 42da7f71 657a00 14 135 Jul 17 1998 11:30:05 dns_config.cfg

1213952 bytes available (6388224 bytes used)
Console> (enable) undelete 6
Console> (enable) dir
-#- -length- ----date/time----- name
4 3134688 Apr 27 1998 08:27:01 cat6000-sup.5-2-1.bin
5 3231989 Jun 24 1998 12:04:40 cat6000-sup.5-2-1.bin
6 135 Jul 17 1998 11:30:05 dns_config.cfg

1213952 bytes available (6388224 bytes used)
Console> (enable)

```

## Verifying a File Checksum

To verify the checksum of a file on a Flash device, perform this task in privileged mode:

Task	Command
Verify the checksum of a file on a Flash device.	<b>verify</b> <i>[[m/]device:] filename</i>

This example shows how to verify the checksum of a file:

```

Console> (enable) verify cat6000-sup.5-2-1-CSX.bin
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCC
File bootflash:cat6000-sup.5-2-1-CSX.bin verified OK
Console> (enable)

```

## Formatting a Flash Device

Before you use a new Flash device, you must format it. You can reserve up to 16 spare sectors for use when other sectors fail (by default, none are reserved). If you do not reserve spare sectors and later some sectors fail, you will have to reformat the entire Flash memory, erasing all existing data.



### Note

Flash PC cards formatted on the supervisor engine or on a route-switch processor (RSP)-based Cisco 7500 series router are interchangeable if the router is running software at least at the same level as the supervisor engine. You cannot use Flash PC cards formatted on a route processor (RP)-based Cisco 7000 series router without reformatting.

When you format a Flash device, you can specify the *monlib* file (the ROM monitor library), which the ROM monitor uses to access files in the Flash file system. The *monlib* file is also compiled into the software image.

In the **format** command syntax, use the *device2* argument to specify the device that contains the *monlib* file to use. If you omit the entire *device2* argument, the switch formats the device using the *monlib* file that is bundled with the software. If you omit just the device name (*device2*) from the `[[device2:][monlib-filename]]` argument, the switch formats the device using the named *monlib* file from the default Flash device. If you omit the *monlib-filename* from the `[[device2:][monlib-filename]]` argument, the switch formats the device using the *monlib* file from *device2*. If you specify the entire `[[device2:][monlib-filename]]` argument, the switch formats the device using the specified *monlib* file from the specified device. If the switch cannot find a *monlib* file, it terminates the formatting process.

To format a Flash device, perform this task in privileged mode:

Task	Command
Format a Flash device.	<b>format</b> [ <i>spare spare-number</i> ] [ <i>ml</i> ] <i>device1</i> : [[ <i>device2</i> :] [ <i>monlib-filename</i> ]]

This example shows how to format the Flash device in slot0:

```

Console> (enable) format slot0:
All sectors will be erased, proceed (y/n) [n]?y
Enter volume id (up to 31 characters):
Formatting sector 1
Format device slot0 completed.
Console> (enable)

```

