



Formatting the Compact Flash Memory Cards

This appendix describes how to format the compact Flash memory into a Class B Flash file system, known as the low-end file system (LEFS), or into a Class C Flash file system, which is similar to DOS. It also describes how to perform file and directory operations in each file system.

Formatting Procedures for Compact Flash Memory Cards

The following sections describe formatting procedures for internal and external compact Flash memory cards.

Formatting Procedures

Cisco recommends that you erase (Class B) or format (Class C) new compact Flash memory cards to initialize them with either a Class B or Class C Flash file system. This ensures proper formatting and enables the ROM monitor to recognize and boot the Flash.

The Class B Flash file system is also known as the low end file system (LEFS).

The Class C Flash file system is similar to the standard DOS file system.



Note

A compact Flash memory card formatted with the standard DOS file system does not support booting from the ROM monitor.

Determining the File System on a Compact Flash Memory Card

To determine the file system of an external compact Flash memory card, enter the **show slot0: all** command. To determine the file system of an internal compact Flash memory card, enter the **show flash: all** command.

- If geometry and format information is not displayed, the card is formatted with a Class B Flash file system.
- If geometry and format information is displayed, the card is formatted with a Class C Flash file system.

The following examples show outputs for Class B and Class C Flash file systems:

External Card with Class B Flash File System:

The geometry and format information is not displayed for this format.

```
Router#show slot0: all
```

Partition Mode	Size	Used	Free	Bank-Size	State	Copy
1	31360K	6502K	24857K	0K	Read/Write	Direct

Slot0 CompactFlash directory:

```
File Length Name/status
      addr      fcksum  ccksum
  1   6658376  c3725-i-mz
      0x40      0xE0FF  0xE0FF
[6658440 bytes used, 25454200 available, 32112640 total]
31360K bytes of ATA Slot0 CompactFlash (Read/Write)
```

Chip information NOT available.

External Card with Class C Flash File System:

The geometry and format information is displayed in this format.

```
Router#show slot0:all
```

```
-#- --length-- -----date/time----- path
1      6658376 Mar 01 1993 04:27:46 c3725-i-mz

25268224 bytes available (6664192 bytes used)

***** ATA Flash Card Geometry/Format Info *****
```

ATA CARD GEOMETRY

```
Number of Heads:      4
Number of Cylinders   490
Sectors per Cylinder  32
Sector Size           512
Total Sectors         62720
```

ATA CARD FORMAT

```
Number of FAT Sectors  31
Sectors Per Cluster    8
Number of Clusters     7796
Number of Data Sectors 62560
Base Root Sector       155
Base FAT Sector        93
Base Data Sector       187
```

Internal Card with Class B Flash File System:

The geometry and format information is not displayed for this format.

```
Router# show flash: all
```

Partition Mode	Size	Used	Free	Bank-Size	State	Copy
1	125184K	20390K	104793K	0K	Read/Write	Direct

System CompactFlash directory:

```
File Length Name/status
      addr      fcksum  ccksum
  1   6658376  c3725-i-mz
      0x40      0xE0FF  0xE0FF
  2   14221136 c3631-telcoent-mz
```


Delete Files from Compact Flash Memory

To delete a file from compact Flash memory, enter the **delete** {flash: | slot0:} command, followed by the **squeeze** {flash: | slot0:} command.

When a file is deleted in the Class B Flash file system, the memory space occupied by the deleted file is not released until you enter the **squeeze** {flash: | slot0:} command. Although the memory space once occupied by the deleted file remains, the deleted file cannot be recovered. To release the memory space occupied by a deleted file, enter the **squeeze** {flash: | slot0:} command.



Note

The **dir** {flash: | slot0:} command does not show deleted files; the **show** {flash: | slot0:} command shows all files, including any deleted files if the **squeeze** {flash: | slot0:} command has not been entered.

The following example shows output for deleting a Cisco IOS file from an external compact Flash memory card, and then releasing the memory space originally occupied by the file:

```
Router# dir slot0:

Directory of slot0:/

   1  -rw-     6458208          <no date>  c3725-i-mz.tmp
   2  -rw-     6458208          <no date>  c3725-i-mz

16056320 bytes total (3139776 bytes free)
Router# delete slot0:c3725-i-mz.tmp

Delete filename [c3725-i-mz.tmp]?
Delete slot0:c3725-i-mz.tmp? [confirm]
Router# dir slot0:

Directory of slot0:/

   2  -rw-     6458208          <no date>  c3725-i-mz

16056320 bytes total (3139776 bytes free)
Router# show slot0:

Slot0 CompactFlash directory:
File Length Name/status
  1   6458208 c3725-i-mz.tmp [deleted]
  2   6458208 c3725-i-mz
[12916544 bytes used, 3139776 available, 16056320 total]
15680K bytes of ATA Slot0 CompactFlash (Read/Write)

Router# squeeze slot0:

Squeeze operation may take a while. Continue? [confirm]
squeeze in progress...
ssssssssssssssssssssssssseeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeee
Rebuild file system directory...
Squeeze of slot0 complete

Display File Content

To display the content of a file in compact Flash memory, use the more {flash: | slot0:} command.

The following example shows output from the more {flash: | slot0:} command on an external Cisco Flash memory card:

Router# more slot0:c3725-i-mz

00000000: 7F454C46 01020100 00000000 00000000      .ELF .... .
```


The following example shows output for copying a configuration file to the startup configuration in an internal compact Flash memory card (flash:):

```
Router# copy flash:my-config1 startup-config

Destination filename [startup-config]?
[OK]
517 bytes copied in 4.188 secs (129 bytes/sec)
```

The following example shows output for copying a configuration file to the running configuration in an internal compact Flash memory card (flash:):

```
Router# copy flash:my-config2 running-config

Destination filename [running-config]?
709 bytes copied in 0.72 secs
```

Display the Contents of a Compact Flash Memory Card

To display the contents (directories and files) of a compact Flash memory card formatted with a Class C Flash file system, use the **dir {flash: | slot0:}** or **show {flash: | slot0:}** command.

The following examples show outputs for displaying the contents of an external compact Flash memory card with a Class C Flash file system:

```
Router# show slot0:

-#- --length-- -----date/time----- path
1      6658376 Mar 01 1993 00:29:52 c3725-i-mz
2          2124 Mar 01 1993 00:34:38 running-config
3          2622 Mar 01 1993 00:34:44 startup-config

25260032 bytes available (6672384 bytes used)

Router# dir slot0:

Directory of slot0:/

   3  -rw-   6455048   Mar 01 2001 00:04:06  c3725-i-mz
1579 -rw-   6458584   Mar 01 2001 00:24:38  c3725-i-mz.new

15912960 bytes total (2998272 bytes free)
```

Display Geometry and Format Information

To display the geometry and format information of a compact Flash memory card formatted with a Class C Flash file system, use the **show {flash: | slot0:} fileys** command.

The following example shows output for displaying the geometry and format information of an external Cisco Flash memory card:

```
Router# show slot0: fileys

***** ATA Flash Card Geometry/Format Info *****

ATA CARD GEOMETRY
  Number of Heads:      4
  Number of Cylinders   490
  Sectors per Cylinder  32
  Sector Size           512
  Total Sectors         62720

ATA CARD FORMAT
  Number of FAT Sectors 31
```

```

Sectors Per Cluster      8
Number of Clusters      7796
Number of Data Sectors  62560
Base Root Sector        155
Base FAT Sector          93
Base Data Sector        187

```

Delete Files from Compact Flash Memory

To delete a file from a compact Flash memory card, use the **delete {flash: | slot0:}** command.

The following example shows output for deleting a Cisco IOS file from an internal compact Flash memory card:

```

Router# delete flash:c3725-i-mz.tmp

Delete filename [c3725-i-mz.tmp]?
Delete flash:c3725-i-mz.tmp? [confirm]
Router# dir flash:

Directory of flash:/

No files in directory

128094208 bytes total (128094208 bytes free)

```

Rename a File

To rename a file in a compact Flash memory card, use the **rename {flash: | slot0:}** command.

The following example shows output for renaming a Cisco IOS file in an internal compact Flash memory card:

```

Router# dir flash:

Directory of flash:/

   3  -rw-      6458388   Mar 01 1993 00:00:58  c3725-i-mz.tmp
1580 -rw-      6462268   Mar 06 1993 06:14:02  c3725-i-mz.3600ata

63930368 bytes total (51007488 bytes free)
Router# rename flash:c3725-i-mz.tmp flash:c3725-i-mz

Destination filename [c3725-i-mz]?
Router# dir flash:

Directory of flash:/

1580 -rw-      6462268   Mar 06 1993 06:14:02  c3725-i-mz.3600ata
   3  -rw-      6458388   Mar 01 1993 00:01:24  c3725-i-mz

63930368 bytes total (51007488 bytes free)

```

Display File Content

To display the content of a file in a compact Flash memory card, use the **more {flash: | slot0:}** command.

The following example shows output from the **more {flash: | slot0:}** command on an internal Compact Flash card:

```

Router# more flash:c3725-i-mz.tmp

00000000: 7F454C46 01020100 00000000 00000000      .ELF ....
00000010: 00020061 00000001 80008000 00000034      ...a ....4
00000020: 00000054 20000001 00340020 00010028      ...T ...4. ...
00000030: 00050008 00000001 0000011C 80008000      ....

```

```

00000040: 80008000 00628A44 00650EEC 00000007      .... .b.D .e.l ....
00000050: 0000011C 0000001B 00000001 00000006      .... .... ....
00000060: 80008000 0000011C 00004000 00000000      .... .... ..@. ....
00000070: 00000000 00000008 00000000 00000021      .... .... .... !
00000080: 00000001 00000002 8000C000 0000411C      .... .... ..@. ..A.
00000090: 00000700 00000000 00000000 00000004      .... .... ....
000000A0: 00000000 00000029 00000001 00000003      .... ...) ....
000000B0: 8000C700 0000481C 00000380 00000000      ..G. ..H. ....
000000C0: 00000000 00000004 00000000 0000002F      .... .... .... /
000000D0: 00000001 10000003 8000CA80 00004B9C      .... .... ..J. ..K.
000000E0: 00000020 00000000 00000000 00000008      ... ..
000000F0: 00000000 0000002F 00000001 10000003      ... .. / ..
00000100: 8000CAA0 00004BBC 00623FA4 00000000      ..J ..K< .b?$ ....
00000110: 00000000 00000008 00000000 3C1C8001      .... .. <...
00000120: 679C4A80 3C018001 AC3DC70C 3C018001      g.J. <... ,=G. <...
00000130: AC3FC710 3C018001 AC24C714 3C018001      ,?G. <... , $G. <...
00000140: AC25C718 3C018001 AC26C71C 3C018001      ,%G. <... ,&G. <...
00000150: AC27C720 3C018001 AC30C724 3C018001      ,'G <... ,0G$ <...
00000160: AC31C728 3C018001 AC32C72C 3C018001      ,1G( <... ,2G, <...
--More-- q

```

Directory Operations for Class C Flash File System

Create a New Directory

To create a directory in compact Flash memory, use the **mkdir {flash: | slot0:}** command.

The following example shows output for first displaying the contents of an internal compact Flash card, and then creating a directory named **config** and a subdirectory named **test-config**:

```

Router# dir flash:

Directory of flash:/

  3  -rw-      6458208   Mar 01 1993 00:04:08  c3725-i-mz.tmp

128094208 bytes total (121634816 bytes free)
Router# mkdir flash:/config

Create directory filename [config]?
Created dir flash:/config
Router# mkdir flash:/config/test-config

Create directory filename [/config/test-config]?
Created dir flash:/config/test-config
Router# dir flash:

Directory of flash:/

  3  -rw-      6458208   Mar 01 1993 00:04:08  c3725-i-mz.tmp
1580 drw-          0   Mar 01 1993 23:48:36  config

128094208 bytes total (121626624 bytes free)
Router# cd flash:/config
Router# dir flash:

Directory of flash:/config/

1581 drw-          0   Mar 01 1993 23:50:08  test-config

128094208 bytes total (121626624 bytes free)

```

Remove a Directory

To remove a directory from compact Flash memory, use the **rmdir** {**flash:** | **slot0:**} command.

Before you can remove a directory, all files and subdirectories must be removed from the directory.

The following example shows output for displaying the contents of an internal compact Flash card, then removing the subdirectory named **test-config**:

```
Router# dir flash:

Directory of flash:/config/

   1581  drw-          0   Mar 01 1993 23:50:08  test-config

128094208 bytes total (121626624 bytes free)
Router# rmdir flash:/config/test-config

Remove directory filename [/config/test-config]?
Delete flash:/config/test-config? [confirm]
Removed dir flash:/config/test-config
Router# dir flash:

Directory of flash:/config/

No files in directory

128094208 bytes total (121630720 bytes free)
```

Enter a Directory and Determine Which Directory You Are In

To enter a directory in compact Flash memory, use the **cd** command.

To determine which directory you are in, use the **pwd** command.

If you enter only **cd**, the router will enter the default home directory, which is **flash:/**.

The following example shows output for the following actions:

- Entering the home directory of a compact Flash memory card in an internal slot (**flash:/**)
- Verifying that you are in the home directory
- Displaying the contents of the home directory
- Entering the **/config** directory
- Verifying that you are in the **/config** directory
- Entering the home directory of a compact Flash memory card in an external slot (**slot0:/**)
- Verifying that you are in the **slot0:/** directory
- Returning to the home directory (**flash:/**)
- Verifying that you are in the home directory

```
Router# cd

Router# pwd
flash:
Router# dir

Directory of flash:/

   3  -rw-      6458208   Mar 01 1993 00:04:08  c3725-i-mz.tmp
 1580  drw-          0   Mar 01 1993 23:48:36  config

128094208 bytes total (121630720 bytes free)
```

```
Router# cd config
```

```
Router# pwd
```

```
flash:/config/
```

```
Router# cd slot0:
```

```
Router# pwd
```

```
slot0:/
```

```
Router# cd
```

```
Router# pwd
```

```
flash:
```