



Using the Device File Systems, Directories, and Files

This chapter describes how to use your device file systems, directories, and files.

- [Information About Device File Systems, Directories, Files, and External Storage Devices, on page 1](#)
- [Working with External Storage Devices, on page 3](#)
- [Working with Directories, on page 5](#)
- [Working with Files, on page 7](#)
- [Working with Archive Files, on page 10](#)
- [Examples of Using a File System, on page 12](#)

Information About Device File Systems, Directories, Files, and External Storage Devices

This section describes the file systems, directories, files, and support provided to the external storage devices on Cisco Multilayer Director Switch (MDS) devices.

File Systems

This topic provides information about the file system components supported on a Cisco MDS device. (The syntax for specifying a local file system is `filesystem:[//modules/]`.)



Note The default `filesystem` parameter is `bootflash:`.

This table describes the file system components that you can use on a Cisco MDS device.

Table 1: File System Components

File System Name	Module	Description
bootflash	sup-active sup-local	Internal CompactFlash memory located on an active supervisor module. Used for storing image files, configuration files, and other miscellaneous files. The initial default directory is bootflash.
	sup-standby sup-remote	Internal CompactFlash memory located on a standby supervisor module. Used for storing image files, configuration files, and other miscellaneous files.
slot0	—	External CompactFlash memory installed on a supervisor module. Used for storing system images, configuration files, and other miscellaneous files.
volatile	—	Volatile random-access memory (VRAM) located on a supervisor module. Used for temporary or pending changes.
nvrn	—	Nonvolatile Random-Access Memory (NVRAM) located on a supervisor module. Used for storing the startup-configuration file.
log	—	Memory on an active supervisor module. Used for storing file statistics logs.
system	—	Memory on a supervisor module. Used for storing the running configuration file.
debug	—	Memory on a supervisor module. Used for storing the debug logs.
usb1	—	External USB flash memory installed in a supervisor module. Used for storing image files, configuration files, and other miscellaneous files.

File System Name	Module	Description
usb2	—	External USB flash memory installed in a supervisor module. Used for storing image files, configuration files, and other miscellaneous files.

Directories

You can create directories on bootflash: and external flash memory (slot0:, usb1:, and usb2:). You can create, store, and access files from directories.

Files

You can create and access files from bootflash:, volatile:, slot0:, usb1:, and usb2: file systems. You can only access files from the system: file system. Use the debug: file system to store the debug log files specified using the **debug logfile** command.

You can download files, such as system image files, from remote servers using FTP, Secure Copy Protocol (SCP), Secure File Transfer Protocol (SFTP), and TFTP. You can also copy files from an external server to your device because your device can act as an SCP server.

Working with External Storage Devices

This section describes formatting, mounting, and unmounting of external storage devices on Cisco MDS devices.

Formatting an External Flash Device

Insert the external flash device into the active supervisor module in a Cisco MDS device.

To format an external flash device, run the following command:

```
format {slot0: | usb1: | usb2:}
```

Example:

```
switch# format slot0:
```



Note You can format an external flash device to erase its contents and restore the device to its factory-shipped state. For information about recovering corrupted bootflash using formatting, see the [Cisco MDS 9000 Family NX-OS Troubleshooting Guide](#).

Mounting or Unmounting a USB Drive

Mount or unmount a USB drive automatically by plugging or unplugging the drive from a Cisco MDS device. You can also use the **mount** or **unmount** command in either the user EXEC mode or the privileged EXEC mode to mount or unmount the device, respectively.

- To mount a USB drive on a Cisco MDS device, run the following command:

```
mount {usb1: | usb2:}
```

Example:

```
switch# mount usb1:
```

- To unmount a USB drive from a Cisco MDS device, run the following command:

```
unmount {usb1: | usb2:}
```

Example:

```
switch# unmount usb1:
```

External Storage Device Support Matrix

This section provides information about hardware and software support for external storage device ports on each type of Cisco MDS platform.

Cisco MDS switches support devices formatted with the FAT32 file system.

Platform	PCMCIA	USB ¹			
	slot0	First supported	slot0	usb1	usb2
Cisco MDS 9700 Series Multilayer Director	No hardware port	Cisco MDS NX-OS Release 6.2(1)	Enabled	Enabled	No hardware port
Cisco MDS 9500 Series Multilayer Director	Enabled	Cisco MDS NX-OS Release 6.2(1)	No hardware port	Enabled	Enabled
Cisco MDS 9396S 16G Multilayer Fabric Switch	No hardware port	Cisco MDS NX-OS Release 6.2(13)	No hardware port	Enabled	No hardware port
Cisco MDS 9250i Multiservice Fabric Switch	No hardware port	Cisco MDS NX-OS Release 6.2(15)	No hardware port	Enabled	No hardware port
Cisco MDS 9222i Multiservice Modular Switch	No hardware port	—	No hardware port	No hardware port	No hardware port

Platform	PCMCIA	USB ¹			
	slot0	First supported	slot0	usb1	usb2
Cisco MDS 9148S 16G Multilayer Fabric Switch	No hardware port	Cisco MDS NX-OS Release 6.2(15)	No hardware port	Enabled	No hardware port
Cisco MDS 9148 Multilayer Fabric Switch	No hardware port	—	No hardware port	No hardware port	No hardware port
Cisco MDS 8Gb Fabric Switch for HP BladeSystem c-Class	No hardware port	—	No hardware port	No hardware port	No hardware port

¹USB 2.0 or higher devices supported.

Working with Directories

This section describes how to work with directories on a Cisco MDS device.

Identifying the Current Directory

To display the name of the current directory, run the following command:

```
pwd
```

Example:

```
switch# pwd
```

Changing the Current Directory

You can change the current directory for file system operations. The default directory is bootflash:.



Note The file system, module, and directory names are case sensitive.

To change to a new directory, run the following command:

```
cd {directory | filesystem:[//module/][directory]}
```

Example:

```
switch# cd slot0:
```

Creating a Directory

You can create directories in the bootflash: and flash device file systems.

**Note**

- The file system, module, and directory names are case sensitive.
- The *filesystem* argument is case sensitive. The *directory* argument is alphanumeric, case sensitive, and can have a maximum of 64 characters.

To create a new directory, run the following command:

```
mkdir [filesystem:[//module/]]directory
```

Example:

```
switch# mkdir test
```

Displaying Directory Contents

To display the contents of a directory, run the following command:

```
dir [directory | filesystem:[//module/][directory]]
```

Example:

```
switch# dir bootflash:
```

Deleting a Directory

You can remove directories from the file systems on a Cisco MDS device.

**Note**

- Ensure that the directory is empty before you delete it. If the directory is not empty, you must delete all the files before you delete the directory.
- The file system and directory names are case sensitive.

To delete a directory, run the following command:

```
rmdir [filesystem :[//module/]]directory
```

Example:

```
switch# rmdir test
```

Accessing the Directories on a Standby Supervisor Module

You can access all the file systems on a standby supervisor module (remote) from a session on an active supervisor module. This feature is useful when copying files to the active supervisor module that requires similar files to exist, as in the standby supervisor module.

To access the file systems on the standby supervisor module from a session on the active supervisor module, specify the standby supervisor module in the path to the file using either the `filesystem://sup-remote/` command, or the `filesystem://sup-standby/` command.

Working with Files

This section describes how to work with files on a Cisco MDS device.

Moving a File

Files can be moved from one directory to another directory.

You can use the **move** command to rename a file by moving the file within the same directory or to another directory.



Note The file system, module, and directory names are case sensitive.

To move a file from one directory to another directory, run the following command:

```
move [filesystem://module/][directory /] | directory/[source-filename] {{filesystem://module/}[directory /] | directory/}[target-filename] | target-filename}
```

Example:

```
switch# move test old_tests/test1
```



Note The *target-filename* argument is alphanumeric, case sensitive, and can have a maximum of 64 characters. If the *target-filename* argument is not specified, the filename defaults to the *source-filename* argument value.



Caution When you try to move a file from one directory to another, if a file with the same name already exists in the destination directory, that file is overwritten by the moved file.

Copying a File

You can make copies of files, either within the same directory or in another directory.



-
- Note**
- Use the **dir** command to ensure that enough space is available in the target file system. If enough space is not available, use the **delete** command to remove the files that are no longer required.
 - The file system, module, and directory names are case sensitive.
-

To copy a file, run the following command:

```
copy [filesystem:[//module/][directory/] | directory/]source-filename | {filesystem:[//module/][directory/] | directory/}[target-filename]
```

Example:

```
switch# copy test old_tests/test1
```



Note

- The *source-filename* argument is alphanumeric, case sensitive, and can have a maximum of 64 characters. If the *target-filename* argument is not specified, the filename defaults to the *source-filename* argument value.
 - The **copy** command supports FTP, SCP, SFTP, TFTP, and HTTP protocols.
-

Deleting a File



Caution

If you specify a directory, the **delete** command deletes the entire directory and all of its contents.



Note

The file system name, directory name, and *source-filename* argument are case sensitive.

To delete a file, run the following command:

```
delete [filesystem:[//module/][directory/] | directory/]filename
```

Example:

```
switch# delete test old_tests/test1
```

Displaying a File's Contents

To display a file's contents, run the following command:

```
show file [filesystem:[//module/]][directory/]filename
```

Example:

```
switch# show file bootflash:test-results
```

Displaying a File's Checksums

You can use checksums to verify a file's integrity.

To display the checksum or MD5 checksum of a file, run the following command:

```
show file [filesystem:[//module/]][directory/]filename {cksum | md5sum}
```

Example:

```
switch# show file bootflash:trunks2.cfg cksum
```


Compressing and Uncompressing a File

You can compress and uncompress the files on a Cisco MDS device using Lempel-Ziv 77 (LZ77) coding.



Note The file system and directory names are case sensitive.

- To compress a file, run the following command:

```
gzip [filesystem:[//module/][directory/] | directory/]filename
```

Example:

```
switch# gzip show_tech
```



Note After a file is compressed, it has a .gz suffix.

- To uncompress a file, run the following command:

```
gunzip [filesystem:[//module/][directory/] | directory/]filename .gz
```

Example:

```
switch# gunzip show_tech.gz
```



Note The file that has be uncompressed must have the .gz suffix. After the file is uncompressed, it does not have the .gz suffix.

- To display the contents of the current directory, run the following command:

```
dir [filesystem :[//module/][directory/]]
```

Example:

```
switch# dir bootflash:
```

Displaying the Last Lines in a File



Note The default number of lines is 10. The range is from 0 to 80 lines.

To display the last lines in a file, run the following command:

```
tail [filesystem:[//module/]][directory/]filename [lines]
```

Example:

```
switch# tail ospf-gr.conf
```

Redirecting show Command Output to a File

You can redirect the **show** command output to a file on bootflash:, slot0:, volatile:, or on a remote server.

To redirect the output from a **show** command to a file, run the following command:

```
show command > [filesystem:[//module/]][directory] | [[directory /]]filename
```

Example:

```
switch# show tech-support > bootflash:techinfo
```

Finding Files

You can find files that have names beginning with a specific character string in the current working directory and its subdirectories.

To find all the files beginning with the filename prefix in the default directory and in its subdirectories, run the following command:

```
find filename-prefix
```

Example:

```
switch# find bgp_script
```



Note The filename prefix is case sensitive.

Working with Archive Files

The Cisco MDS NX-OS software supports archive files. Besides creating an archive file, you can append files to, extract files from, and list the files in an archive file.

Creating an Archive File

You can create an archive file and add files to it. You can specify the following compression types:

- bzip2
- gzip
- Uncompressed

The default compression type is gzip.



Note The filename is alphanumeric, not case sensitive, and can have a maximum of 240 characters.

To create an archive file and add files to it, run the following command:

```
tar create {bootflash: | volatile:}archive-filename [absolute] [bz2-compress] [gz-compress] [remove]
[uncompressed] [verbose] filename-list
```

This example shows how to create a gzip compressed archive file:

```
switch# tar create bootflash:config-archive gz-compress bootflash:config-file
```

The **absolute** keyword specifies that the leading backslash characters (\) should not be removed from the names of the files added to the archive file. By default, the leading backslash characters are removed.

The **bz2-compress**, **gz-compress**, and **uncompressed** keywords determine the compression utility to use when files are added or later appended to the archive, and the decompression utility to use when extracting the files. If you do not specify an extension for the archive file, the default extensions are as follows:

- For **bz2-compress**, the extension is `.tar.bz2`.
- For **gz-compress**, the extension is `.tar.gz`.
- For **uncompressed**, the extension is `.tar`.

The **remove** keyword specifies that the Cisco MDS NX-OS software should delete the files from the file system after adding them to the archive. By default, the files are not deleted.

The **verbose** keyword specifies that the Cisco MDS NX-OS software should list the files as they are added to the archive. By default, the files are listed as they are added.

Appending Files to an Archive File

You can append files to an existing archive file on a Cisco MDS device.



Note The archive filename is not case sensitive.

To add files to an existing archive file, run the following command:

```
tar append {bootflash: | volatile:}archive-filename [absolute] [remove] [verbose] filename-list
```

Example:

```
switch# tar append bootflash:config-archive.tar.gz bootflash:new-config
```

The **absolute** keyword specifies that the leading backslash characters (\) should not be removed from the names of the files added to the archive file. By default, the leading backslash characters are removed.

The **remove** keyword specifies that the Cisco MDS NX-OS software should delete the files from the file system after adding them to the archive. By default, the files are not deleted.

The **verbose** keyword specifies that the Cisco MDS NX-OS software should list the files as they are added to the archive. By default, the files are listed as they are added.

Extracting Files from an Archive File

You can extract files from an existing archive file on a Cisco MDS device.



Note The archive filename is not case sensitive.

To extract files from an existing archive file, run the following command:

```
tar extract {bootflash: | volatile:}archive-filename [keep-old] [screen] [to {bootflash: | volatile:}/directory-name] [verbose]
```

Example:

```
switch# tar extract bootflash:config-archive.tar.gz
```

The **keep-old** keyword indicates that the Cisco MDS NX-OS software should not overwrite files with the same name as the files being extracted.

The **screen** keyword specifies that the Cisco MDS NX-OS software should display the contents of the extracted files to the terminal screen.

The **to** keyword specifies the target file system. You can include a directory name. The directory name is alphanumeric, case sensitive, and can have a maximum of 240 characters.

The **verbose** keyword specifies that the Cisco MDS NX-OS software should display the names of the files as they are extracted.

Displaying the Filenames in an Archive File



Note The archive filename is not case sensitive.

To display the file names in an archive file, run the following command:

```
tar list {bootflash: | volatile:}archive-filename
```

Example:

```
switch# tar list bootflash:config-archive.tar.gz
config-file
new-config
```

Examples of Using a File System

This section includes examples of using a file system on a Cisco MDS device.

Accessing Directories on a Standby Supervisor Module

This example shows how to list the files on a standby supervisor module:

```
switch# dir bootflash://sup-remote
 12198912      Aug 27 16:29:18 2003  m9500-sf1ek9-kickstart-mzg.1.3.0.39a.bin
  1864931      Apr 29 12:41:59 2003  dplug2
    12288      Apr 18 20:23:11 2003  lost+found/
```

```
12097024      Nov 21 16:34:18 2003  m9500-sflek9-kickstart-mz.1.3.1.1.bin
41574014      Nov 21 16:34:47 2003  m9500-sflek9-mz.1.3.1.1.bin
```

```
Usage for bootflash://sup-remote
67747169 bytes used
116812447 bytes free
184559616 bytes total
```

This example shows how to delete a file on a standby supervisor module:

```
switch# delete bootflash://sup-remote/aOldConfig.txt
```

Performing ISSU or ISSD Using a USB Drive

This example shows how to perform an In-Service Software Upgrade (ISSU) or In-Service Software Downgrade (ISSD) using a system image or kickstart image from a USB drive:

```
switch# install all system usb1:m9300-slek9-mzg.6.2.13.FM.0.65.bin.S0 kickstart
usb1:m9300-slek9-kickstart-mzg.6.2.13.FM.0.65.bin.S0
```

