Working with the Flash File System

Information About the Flash File System

The flash file system is a single flash device on which you can store files. It also provides several commands to help you manage software bundles and configuration files. The default flash file system on the switch is named flash:.

As viewed from the stack master, or any stack member, flash: refers to the local flash device, which is the device attached to the same switch on which the file system is being viewed. In a switch stack, each of the flash devices from the various stack members can be viewed from the stack master. The names of these flash file systems include the corresponding switch member numbers. For example, flash-3:, as viewed from the stack master, refers to the same file system as does flash: on stack member 3. Use the **show file systems** privileged EXEC command to list all file systems, including the flash file systems in the switch stack.

Only one user at a time can manage the software bundles and configuration files for a switch stack.

Displaying Available File Systems

To display the available file systems on your switch, use the **show file systems** privileged EXEC command as shown in this example for a standalone switch:

```
Switch# show file systems
File Systems:
     Size(b)     Free(b)      Type  Flags   Prefixes
*   15998976     5135872     flash     rw   flash:
           -           -    opaque     rw   bs:
           -           -    opaque     rw   vb:
```

```
      524288      520138     nvram     rw   nvram:
           -           -   network     rw   tftp:
           -           -    opaque     rw   null:
           -           -    opaque     rw   system:
           -           -    opaque     ro   xmodem:
           -           -    opaque     ro   ymodem:
```

This example shows a switch stack. In this example, the stack master is stack member 1; the file system on stack member 2 is displayed as flash-2, the file system on stack member 3 is displayed as flash-3 and so on. The example also shows the crashinfo directories and a USB flash drive plugged into the stack master.

```
Switch# show file systems
File Systems:

      Size(b)     Free(b)      Type  Flags  Prefixes
     145898496      68792320      disk     rw   crashinfo:
     146014208      99090432      disk     rw   crashinfo-2:
     248512512      87031808      disk     rw   crashinfo-3:
     146276352     108003328      disk     rw   crashinfo-4:
*   1749458944    1258868736      disk     rw   flash:
     729546752     282853376      disk     rw   flash-2:
    1622147072    1173880832      disk     rw   flash-3:
    1749549056    1301282816      disk     rw   flash-4:
             0             0      disk     rw   unix:
           -           -          disk     rw   usbflash0:
    1027342336      64749568      disk     rw   usbflash0-2:
           -           -      disk     rw   usbflash0-3:
           -           -      disk     rw   usbflash0-4:
           -           -    opaque     rw   system:
           -           -    opaque     rw   tmpsys:
           -           -     nvram     rw   stby-nvram:
           -           -     nvram     rw   stby-rcsf:
           -           -    opaque     rw   null:
           -           -    opaque     ro   tar:
           -           -   network     rw   tftp:
       2097152       2071500     nvram     rw   nvram:
           -           -    opaque     wo   syslog:
           -           -   network     rw   rcp:
           -           -   network     rw   http:
           -           -   network     rw   ftp:
           -           -   network     rw   scp:
           -           -   network     rw   https:
           -           -    opaque     ro   cns:
```

Table 1-1 show file systems Field Descriptions

Field	Value
Size(b)	Amount of memory in the file system in bytes.
Free(b)	Amount of free memory in the file system in bytes.

Table 1-1 show file systems Field Descriptions (continued)

Field	Value
Type	Type of file system. **disk**—The file system is for a flash memory device, USB flash, and crashinfo file. **network**—The file system for network devices; for example, an FTP server or and HTTP server. **nvram**—The file system is for a NVRAM device. **opaque**—The file system is a locally generated *pseudo* file system (for example, the *system*) or a download interface, such as brimux. **unknown**—The file system is an unknown type.
Flags	Permission for file system. **ro**—read-only. **rw**—read/write. **wo**—write-only.
Prefixes	Alias for file system. **crashinfo:**—Crashinfo file. **flash:**—Flash file system. **ftp:**—FTP server. **http:**—HTTP server. **https:**—Secure HTTP server. **nvram:**—NVRAM. **null:**—Null destination for copies. You can copy a remote file to null to find its size. **rcp:**—Remote Copy Protocol (RCP) server. **scp:**—Session Control Protocol (SCP) server. **system:**—Contains the system memory, including the running configuration. **tftp:**—TFTP network server. **xmodem:**—Obtain the file from a network machine by using the Xmodem protocol. **ymodem:**—Obtain the file from a network machine by using the Ymodem protocol.

Setting the Default File System

You can specify the file system or directory that the system uses as the default file system by using the **cd** *filesystem:* privileged EXEC command. You can set the default file system to omit the *filesystem:* argument from related commands. For example, for all privileged EXEC commands that have the optional *filesystem:* argument, the system uses the file system specified by the **cd** command.

By default, the default file system is *flash:*.

You can display the current default file system as specified by the **cd** command by using the **pwd** privileged EXEC command.

Displaying Information About Files on a File System

You can view a list of the contents of a file system before manipulating its contents. For example, before copying a new configuration file to flash memory, you might want to verify that the file system does not already contain a configuration file with the same name. Similarly, before copying a flash configuration file to another location, you might want to verify its filename for use in another command.

To display information about files on a file system, use one of the privileged EXEC commands listed in Table 1-2.

Table 1-2 Commands for Displaying Information About Files

Command	Description
dir [**/all**] [*filesystem***:**][*filename*]	Displays a list of files on a file system.
show file systems	Displays more information about each of the files on a file system.
show file information *file-url*	Displays information about a specific file.
show file descriptors	Displays a list of open file descriptors. File descriptors are the internal representations of open files. You can use this command to see if another user has a file open.

To display information about the driver text object in the CISCO-MEMORY-POOL-MIB, use the **show memory** privileged EXEC command:

```
Switch# show memory
System memory   : 1939252K total, 1317664K used, 621588K free, 118580K kernel reserved
Lowest(b)       : 54189544

                Total(K)     Used(K)      Free(K)
Process         1939252      1317664      621588
Config          0            0            0
```

Changing Directories and Displaying the Working Directory

Beginning in privileged EXEC mode, follow these steps to change directories and to display the working directory:

	Command	Purpose
Step 1	**dir** *filesystem***:** **Example:** `Switch# dir flash:`	Displays the directories on the specified file system. For *filesystem***:**, use flash: for the system board flash device. To access flash partitions of switch members in a stack, use flash-*n* where *n* is the stack member number. For example, flash-4.
Step 2	**cd** *directory_name* **Example:** `Switch# cd new_configs`	Navigates to the specified directory. The command example shows how to navigate to the directory named *new_configs*.

	Command	Purpose
Step 3	**pwd** **Example:** `Switch# pwd`	Displays the working directory.
Step 4	**cd** **Example:** `Switch# cd`	Navigates to the default directory.

Creating and Removing Directories

Beginning in privileged EXEC mode, follow these steps to create a directory:

	Command	Purpose
Step 1	**dir** *filesystem***:** **Example:** `Switch# dir flash:`	Displays the directories on the specified file system. For *filesystem***:**, use flash: for the system board flash device.
Step 2	**mkdir** ***directory_name*** **Example:** `Switch# mkdir old_configs`	Creates a new directory. Directory names are case sensitive and are limited to 45 characters between the slashes (/); the name cannot contain control characters, spaces, slashes, quotes, semicolons, or colons.
Step 3	**dir** *filesystem***:** **Example:** `Switch# dir flash:`	Verifies your entry.

To remove a directory with all its files and subdirectories, use the **delete /force /recursive** *filesystem***:/***file-url* privileged EXEC command.

Use the **/recursive** keyword to delete the named directory and all subdirectories and the files contained in it. Use the **/force** keyword to suppress the prompting that confirms a deletion of each file in the directory. You are prompted only once at the beginning of this deletion process.

For *filesystem*, use **flash:** for the system board flash device. For *file-url*, enter the name of the directory to be deleted. All the files in the directory and the directory are removed.

Caution When files and directories are deleted, their contents cannot be recovered.

Copying Files

To copy a file from a source to a destination, use the **copy** *source-url destination-url* privileged EXEC command. For the source and destination URLs, you can use **running-config** and **startup-config** keyword shortcuts. For example, the **copy running-config startup-config** command saves the currently running configuration file to the NVRAM section of flash memory to be used as the configuration during system initialization.

You can also copy from special file systems (**xmodem:**, **ymodem:**) as the source for the file from a network machine that uses the Xmodem or Ymodem protocol.

Network file system URLs include **ftp:**, **rcp:**, and **tftp:** and have these syntaxes:

- FTP—**ftp:**[[**//***username* [**:***password*]**@***location*]**/***directory*]**/***filename*
- RCP—**rcp:**[[**//***username***@***location*]**/***directory*]**/***filename*
- TFTP—**tftp:**[[**//***location*]**/***directory*]**/***filename*

Local writable file systems include flash:.

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

- 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)

For specific examples of using the **copy** command with configuration files, see the Chapter 2, "Working with the Configuration Files."

Deleting Files

When you no longer need a file on a flash memory device, you can permanently delete it. To delete a file or directory from a specified flash device, use the **delete** [**/force**] [**/recursive**] [*filesystem***:**]**/***file-url* privileged EXEC command.

Use the **/recursive** keyword for deleting a directory and all subdirectories and the files contained in it. Use the **/force** keyword to suppress the prompting that confirms a deletion of each file in the directory. You are prompted only once at the beginning of this deletion process. Use the **/force** and **/recursive** keywords for deleting old software images that were installed by using the **archive download-sw** command but are no longer needed.

If you omit the *filesystem***:** option, the switch uses the default device specified by the **cd** command. For *file-url*, you specify the path (directory) and the name of the file to be deleted.

When you attempt to delete any files, the system prompts you to confirm the deletion.

Caution When files are deleted, their contents cannot be recovered.

This example shows how to delete the file *myconfig* from the default flash memory device:

```
Switch# delete myconfig
```

Creating, Displaying, and Extracting Files

You can create a file and write files into it, list the files in a file, and extract the files from a file as described in the next sections.

Beginning in privileged EXEC mode, follow these steps to create a file, display the contents, and extract it:

	Command	Purpose
Step 1	**archive tar /create** *destination-url* **flash:***/file-url* **Example:** `Switch# archive tar /create tftp:172.20.10.30/saved. flash:/new-configs`	Creates a file and adds files to it. For *destination-url*, specify the destination URL alias for the local or network file system and the name of the file to create. The *-filename***.** is the file to be created. These options are supported: • Local flash file system syntax: **flash:** • FTP syntax: **ftp:**[[**//***username*[**:***password*]**@***location*]**/***directory]***/-filename***.** • RCP syntax: **rcp:**[[**//***username@location*]**/***directory*]**/-***filename***.** • TFTP syntax: **tftp:**[[**//***location*]**/***directory*]**/-***filename***.** For **flash:/***file-url*, specify the location on the local flash file system in which the new file is created. You can also specify an optional list of files or directories within the source directory to add to the new file. If none are specified, all files and directories at this level are written to the newly created file.
Step 2	**archive tar /table** *source-url* **Example:** `Switch# archive tar /table flash:/new-configs`	Displays the contents of a file. For *source-url*, specify the source URL alias for the local or network file system. The *-filename***.** is the file to display. These options are supported: • Local flash file system syntax: **flash:** • FTP syntax: **ftp:**[[**//***username*[**:***password*]**@***location*]**/***directory*]**/-***filename***.** • RCP syntax: **rcp:**[[**//***username@location*]**/***directory*]**/-***filename***.** • TFTP syntax: **tftp:**[[**//***location*]**/***directory*]**/-***filename***.** You can also limit the file displays by specifying a list of files or directories after the file. Only those files appear. If none are specified, all files and directories appear.

	Command	Purpose
Step 3	**archive tar /xtract** *source-url* **flash:/***file-url* [*dir/file...*] **Example:** `Switch# archive tar /xtract tftp:/172.20.10.30/saved. flash:/new-configs`	Extracts a file into a directory on the flash file system. For *source-url*, specify the source URL alias for the local file system. The *-filename***.** is the file from which to extract files. These options are supported: • local flash file system syntax: **flash:** • FTP syntax: **ftp:**[[**//***username*[**:***password*]**@***location*]**/***directory*]**/-***filename***.** • RCP syntax: **rcp:**[[**//***username***@***location*]**/***directory*]**/-***filename***.** • TFTP syntax: **tftp:**[[**//***location*]**/***directory*]**/-***filename***.** For **flash:/***file-url* [*dir/file...*], specify the location on the local flash file system from which the file is extracted. Use the *dir/file...* option to specify a list of files or directories within the file to be extracted. If none are specified, all files and directories are extracted.
Step 4	**more** [**/ascii** | **/binary** | **/ebcdic**] *file-url* **Example:** `Switch# more flash: /new-configs`	Displays the contents of any readable file, including a file on a remote file system.

This example shows how to create a file. This command writes the contents of the *new-configs* directory on the local flash device to a file named *saved.* on the TFTP server at 172.20.10.30:

```
Switch# archive tar /create tftp:172.20.10.30/saved. flash:/new-configs
```

This example shows how to extract the contents of a file located on the TFTP server at 172.20.10.30:

```
Switch# archive tar /xtract tftp:/172.20.10.30/saved. flash:/new-configs
```