



Working with System Software Images

This chapter describes how to work with system software image files on the Catalyst enterprise LAN switches.



Note

For complete syntax and usage information for the commands used in this chapter, refer to the *Command Reference—Catalyst 4000 Family, Catalyst 2948G, and Catalyst 2980G Switches*.

This chapter consists of these sections:

- [Software Image Naming Conventions, page 29-1](#)
- [Downloading System Software Images to the Switch Using TFTP, page 29-1](#)
- [Uploading System Software Images to a TFTP Server, page 29-5](#)
- [Downloading System Software Images to the Switch Using rcp, page 29-6](#)
- [Uploading System Software Images to an rcp Server, page 29-9](#)

Software Image Naming Conventions

The software images on the Catalyst 4000 family switches use the following naming conventions (software release 6.1(3) is used in the examples):

- 6.1(3) Flash image (standard)—cat4000.6-1-3.bin
- 6.1(3) Flash image (CiscoView)—cat4000-cv.6-1-3.bin
- 6.1(3) Flash image (Secure Shell)—cat4000-k9.6-1-3.bin

Downloading System Software Images to the Switch Using TFTP

These sections describe how to download system software images to the switch supervisor engine and to intelligent modules:

- [Understanding How TFTP Software Image Downloads Work, page 29-2](#)
- [Preparing to Download an Image Using TFTP, page 29-2](#)

- [Downloading Supervisor Engine Images Using TFTP, page 29-2](#)
- [Example TFTP Download Procedures, page 29-3](#)

Understanding How TFTP Software Image Downloads Work

You can download system software images to the switch using the Trivial File Transfer Protocol (TFTP). TFTP allows you to download system image files over the network from a TFTP server.

When you download a software image, the image file is downloaded to the supervisor engine Flash memory. You can store multiple image files on the Flash memory system devices.

**Note**

For more information on working with system software image files on the Flash file system, refer to [Chapter 30, “Using the Flash File System.”](#)

Preparing to Download an Image Using TFTP

Before you begin downloading a software image using TFTP, make sure of the following:

- Ensure that the workstation acting as the TFTP server is configured properly.
- Ensure that the switch has a route to the TFTP server. The switch and the TFTP server must be in the same subnetwork if you do not have a router to route traffic between subnets. Check connectivity to the TFTP server using the **ping** command.
- Ensure that the software image to be downloaded is in the correct directory on the TFTP server (for example, /tftpboot on a UNIX workstation).
- Ensure that the permissions on the file are set correctly. Permissions on the file should be at least read for the specific username. If you are not using a Telnet session with a valid username, you can use the **set rcp username** command to specify a valid username.
- A power interruption (or other problem) during the download procedure can corrupt the Flash code. If the Flash code is corrupted, you can connect to the switch through the console port. You can download the Flash code again through an enabled port in VLAN 1. By default, port 1/1 is enabled. You can use port 1/1 or enable another port.

Downloading Supervisor Engine Images Using TFTP

To download a supervisor engine software image to the switch from a TFTP server, follow these steps:

-
- Step 1** Copy the software image file to the appropriate TFTP directory on the workstation.
 - Step 2** Log into the switch through the console port or through a Telnet session. If you log in using Telnet, your Telnet session disconnects when you reset the switch to run the new software.
 - Step 3** Download the software image from the TFTP server using the **copy tftp flash** command. When prompted, enter the IP address or host name of the TFTP server and the name of the file to download. On those platforms that support the Flash file system, you are also prompted for the Flash device to which to copy the file and the destination filename.



Note The Catalyst 4000 family, 2948G, and 2980G switches have only one Flash device (**bootflash**).

The switch downloads the image file from the TFTP server, and the image is copied to the bootflash.



Note The switch remains operational while the image downloads.

- Step 4** Modify the BOOT environment variable using the **set boot system flash device:filename prepend** command, so that the new image boots when you reset the switch. Specify the Flash device (*device:*) and the filename of the downloaded image (*filename*).
- Step 5** Reset the switch using the **reset system** command. If you are connected to the switch through Telnet, your Telnet session disconnects.
- Step 6** When the switch reboots, enter the **show version** command to check the version of the code on the switch.



Note For examples that show complete TFTP download procedures for the various supervisor engine and switch types, see the [“Example TFTP Download Procedures”](#) section on page 29-3.

Example TFTP Download Procedures



Note For a step-by-step procedure for downloading a supervisor engine software image from a TFTP server, see the [“Downloading Supervisor Engine Images Using TFTP”](#) section on page 29-2.

This example shows a complete TFTP download procedure of a supervisor engine software image:

```

Console> (enable) show version 1
Mod Port Model      Serial #          Versions
-----
1   0   WS-X4012   JAB03130104     Hw : 1.5
                               Gsp: 6.1(1.4)
                               Nmp: 6.1(0.104)

Console> (enable) copy tftp flash
IP address or name of remote host []? 172.20.52.3
Name of file to copy from []? cat4000.6-1-1.bin
Flash device [bootflash]?
Name of file to copy to [cat4000.6-1-1.bin]?

4369664 bytes available on device bootflash, proceed (y/n) [n]? y
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCC
File has been copied successfully.
Console> (enable) set boot system flash bootflash:cat4000.6-1-1.bin prepend
BOOT variable = bootflash:cat4000.6-1-1.bin,1;bootflash:cat4000.4-1-2.bin,1;
Console> (enable) reset system
This command will reset the system.
Do you want to continue (y/n) [n]? y
Console> (enable) 07/21/2000,13:51:39:SYS-5:System reset from Console//

System Bootstrap, Version 3.1(2)

```

Copyright (c) 1994-1997 by cisco Systems, Inc.
 Presto processor with 32768 Kbytes of main memory

```
Autoboot executing command: "boot bootflash:cat4000.6-1-1.bin"
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
Uncompressing file: #####
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#####
```

```
System Power On Diagnostics
NVRAM Size .. .....512KB
ID Prom Test .....Passed
DPRAM Size .....16KB
DPRAM Data 0x55 Test .....Passed
DPRAM Data 0xaa Test .....Passed
DPRAM Address Test .....Passed
Clearing DPRAM .....Done
System DRAM Memory Size .....32MB
DRAM Data 0x55 Test .....Passed
DRAM Data 0xaa Test .....Passed
DRAM Address Test .....Passed
Clearing DRAM .....Done
EARL++ .....Present
EARL RAM Test .....Passed
EARL Serial Prom Test .....Passed
Level2 Cache .....Present
Level2 Cache test.....Passed
```

Boot image: bootflash:cat4000.6-1-1.bin

Cisco Systems Console

```
Enter password:
07/21/2000,13:52:51:SYS-5:Module 1 is online
07/21/2000,13:53:11:SYS-5:Module 4 is online
07/21/2000,13:53:11:SYS-5:Module 5 is online
07/21/2000,13:53:14:PAGP-5:Port 1/1 joined bridge port 1/1.
07/21/2000,13:53:14:PAGP-5:Port 1/2 joined bridge port 1/2.
07/21/2000,13:53:40:SYS-5:Module 2 is online
07/21/2000,13:53:45:SYS-5:Module 3 is online
```

Console> **show version 1**

| Mod | Port | Model | Serial # | Versions |
|-----|------|----------|-------------|--|
| 1 | 0 | WS-X4012 | JAB03130104 | Hw : 1.5 Gsp: 6.1(1.4) Nmp: 6.1(1) |

Console>

Downloading System Software Images to the Switch Using rcp

These sections describe how to download system software images to the switch supervisor engine and to intelligent modules using rcp:

- [Understanding How rcp Software Image Downloads Work](#), page 29-6
- [Preparing to Download an Image Using rcp](#), page 29-6
- [Downloading Supervisor Engine Images Using rcp](#), page 29-6
- [Sample rcp Download Procedures](#), page 29-7

Understanding How rcp Software Image Downloads Work

You can download system software images to the switch using the remote copy protocol (rcp); rcp allows you to download system image files over the network from an rcp server.

You can store multiple image files in the Flash memory.

**Note**

For more information on working with system software image files on the Flash file system, refer to [Chapter 30, “Using the Flash File System.”](#)

Preparing to Download an Image Using rcp

Before you begin downloading a software image using rcp, make sure of the following:

- Ensure that the workstation acting as the rcp server supports the remote shell (rsh).
- Ensure that the switch has a route to the rcp server. The switch and the rcp server must be in the same subnetwork if you do not have a router to route traffic between subnets. Check connectivity to the rcp server using the **ping** command.
- If you are accessing the switch through the console or a Telnet session without a valid username, make sure that the current rcp username is the one you want to use for the rcp download. You can enter the **show users** command to view the current valid username. If you do not want to use the current username, create a new rcp username using the **set rcp username** command. The new username will be stored in NVRAM. If you are accessing the switch through a Telnet session with a valid username, this username will be used and there is no need to set the rcp username.
- A power interruption (or other problem) during the download procedure can corrupt the Flash code. If the Flash code is corrupted, you can connect to the switch through the console port. You can download the Flash code again through an enabled port in VLAN 1. By default, port 1/1 is enabled. You can use port 1/1.

Downloading Supervisor Engine Images Using rcp

To download a supervisor engine software image to the switch from an rcp server, follow these steps:

-
- Step 1** Copy the software image file to the appropriate rcp directory on the workstation.
- Step 2** Log into the switch through the console port or through a Telnet session. If you log in using Telnet, your Telnet session disconnects when you reset the switch to run the new software.

- Step 3** Download the software image from the rcp server using the **copy rcp flash** command. When prompted, enter the IP address or host name of the rcp server and the name of the file to download. On those platforms that support the Flash file system, you are also prompted for the Flash device to which to copy the file and the destination filename.



Note The Catalyst 4000 family, 2948G, and 2980G switches have only one Flash device (**bootflash**).

The switch downloads the image file from the rcp server, and copies the image to bootflash.



Note The switch remains operational while the image downloads.

- Step 4** Modify the BOOT environment variable using the **set boot system flash device:filename prepend** command, so that the new image boots when you reset the switch. Specify the Flash device (*device:*) and the filename of the downloaded image (*filename*).
- Step 5** Reset the switch using the **reset system** command. If you are connected to the switch through Telnet, your Telnet session disconnects.
- During startup, the Flash memory on the supervisor engine is reprogrammed with the new Flash code.
- Step 6** When the switch reboots, enter the **show version** command to check the version of the code on the switch.

Sample rcp Download Procedures

This example shows a complete rcp download procedure of a supervisor engine software image:

```

Console> (enable) show version 1
Mod Port Model      Serial #  Versions
-----
1   2   WS-X5530   007451586 Hw : 1.3
                                Fw : 3.1.2
                                Fw1: 3.1(2)
                                Sw  : 4.1(2)

Console> (enable) copy rcp flash
IP address or name of remote host []? 172.20.52.3
Name of file to copy from []? cat4000.6-1-1.bin
Flash device [bootflash]?
Name of file to copy to [cat6000.6-1-1.bin]?

4369664 bytes available on device bootflash, proceed (y/n) [n]? y
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCC
File has been copied successfully.
Console> (enable) set boot system flash bootflash:cat4000.6-1-1.bin prepend
BOOT variable = bootflash:cat4000.6-1-1.bin,1;bootflash:cat4000.5-1-2.bin,1;
Console> (enable) reset system
This command will reset the system.
Do you want to continue (y/n) [n]? y
Console> (enable) 07/21/2000,13:51:39:SYS-5:System reset from Console//

System Bootstrap, Version 3.1(2)
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Presto processor with 32768 Kbytes of main memory

```


