



Software Images

This chapter describes how to install and upgrade software images. It includes the following sections:

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About Software Images

Each switch is shipped with Cisco MDS 9000 FabricWare software. The software image install procedure is dependent on the following factors:

- Software images—The image file must reside in the volatile: file system.
- Image version—Each image file has a version.

Essential Upgrade Prerequisites

Before attempting to migrate to any software image version, follow these guidelines to ensure a nondisruptive upgrade:



Caution

Failure to follow these guidelines could result in a disruptive upgrade.

- Customer Service

Before performing any software upgrade, contact your respective customer service representative to review your software upgrade requirements and to provide recommendations based on your current operating environment.



Note

If you purchased Cisco support through a Cisco reseller, contact the reseller directly. If you purchased support directly from Cisco Systems, contact Cisco Technical Support at this URL: <http://www.cisco.com/warp/public/687/Directory/DirTAC.shtml>

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- Scheduling

Schedule the upgrade when the fabric is stable and steady. Ensure that everyone who has access to the switch or the network is not configuring the switch or the network during this time. All configurations are disallowed at this time.
- Space

Verify that sufficient space is available in the volatile: file system where you are copying the firmware image.
- Hardware

Avoid power interruption during any install procedure. This type of problem can corrupt the software image.
- Connectivity (to retrieve images from remote servers)
 - Configure the IP address for the 10/100BASE-T Ethernet port connection (interface mgmt0).
 - Ensure that the switch has a route to the remote server. The switch and the remote server must be in the same subnetwork if you do not have a router to route traffic between subnets.
- Retrieve an image in one of two ways:
 - Locally—Image is locally available on the switch.
 - Remotely—Image is in a remote location, and the user specifies the destination using the remote server parameters and the file name to be used locally.
- Terminology

[Table 4-1](#) summarizes terms used in this chapter with specific reference to the install and upgrade process.

Table 4-1 Terms Specific to This Chapter

Term		Definition
bootable		The module's ability to boot or not boot based on image compatibility.
impact		The type of software upgrade mechanism—disruptive or nondisruptive.
install-type	reset	Resets the switch.

- Commands
 - Verify connectivity to the remote server using the **ping** command.
 - Use the **dir** command to ensure that the required space is available for the image file to be copied.
 - Use the one-step **install all** command to upgrade your software.
 - Only one **install all** command can be running on a switch at any time.
 - No other command can be entered while running the **install all** command.



Note When you enter the **install all** command, the switch displays a summary of changes that are made to your configuration.

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Software Upgrade Methods

You can upgrade software without disruptions by using the Cisco MDS 9000 FabricWare software designed for high availability environments. You can upgrade a Cisco MDS 9020 Fabric Switch using the **install all** command. The **install all** command will attempt a nondisruptive upgrade; if a nondisruptive upgrade is not possible, a disruptive upgrade will occur. (See the “Automated Upgrades” section on page 4-3.)

Automated Upgrades

The **install all** command upgrades the Cisco MDS 9020 Fabric Switch. The **install all** command provides the following features:

- You can upgrade the entire switch using just one command.
- The command performs a platform validity check to verify that a wrong image is not used.
- After entering the command, if any step in the sequence fails, the command completes the step in progress and ends.

For example, if a switching module fails to be updated for any reason (for example, due to an unstable fabric state), then the command sequence disruptively updates that module and ends. In such cases, you can investigate the problem on the affected switching module and upgrade the other switching modules.

Recognizing Failure Cases

The following situations cause the **install all** command to end:

- If the volatile: file system does not have sufficient space to accept the updated image.
- If the switch has any power disruption while the upgrade is in progress.
- If the entire path for the remote location is not specified accurately.



Tip

Most configurations are disallowed while the **install all** command is in progress.

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Using the install all Command

To perform an automated software upgrade on a switch, follow these steps:

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- Step 1** Log in to the switch through the console.
- Step 2** Create a backup of your existing configuration file, if required. (See the “[Working with Configuration Files](#)” section on page 3-16.)

- Step 3** Download the firmware image file to the volatile: file system:

```
switch# copy ftp://10.20.102.98/firmware/latest_mpc volatile:latest_mpc
```

- Step 4** Perform the upgrade by entering the **install all** command.

```
switch# install all system volatile:latest_mpc
Performing configuration copy.
[#####] 100%
```

```
Unpacking image - this may take several seconds...
```

- Step 5** Exit the switch console, and open a new terminal session to view the upgraded switch using the **show module** command.

If the configuration meets all guidelines when the **install all** command is entered, the switch is upgraded.



Caution If a nondisruptive upgrade operation fails for any reason other than those listed in the “[Recognizing Failure Cases](#)” section on page 4-3, contact your reseller or Cisco representative for further assistance.

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Corrupted Bootflash Recovery

In the event that the switch bootflash is corrupted, the file system must be recreated. To recreate the file system, you must enter maintenance mode and choose **Remake Filesystem** option. The **Remake Filesystem** recreates the file system and resets the switch to the factory default values, including user accounts and zoning.



Caution

The **Remake Filesystem** option deletes the running-config and startup-config files. You must then restore the switch from an archived configuration or reconfigure the portions of the fabric that involve the switch.

To recreate the file system, follow these steps:

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- Step 1** Isolate the switch from the fabric.
- Step 2** Connect the PC console to the switch using a serial console connection.
- Step 3** Place the switch in maintenance mode. Press and hold the **Maintenance** button with a pointed tool. When the Heartbeat LED turns on continuously, release the button.
- Step 4** Enter the account name (prom) and password (prom), and press the **Enter** key.
- ```
Switch login: prom
Password:xxxx
```
- Step 5** Enter **6** (Remake Filesystem) on the maintenance menu, and press the **Enter** key to recreate the configuration file.
- ```
0) Exit
1) Image Unpack
2) Reset Network Config
3) Reset User Accounts to Default
4) Copy Log Files
5) Remove Switch Config
6) Remake Filesystem
7) Reset Switch
8) Update Boot Loader
Option: 6
```
- Step 6** When the process is complete, enter **7** (Reset Switch) to reset the switch and exit maintenance mode.
- ```
0) Exit
1) Image Unpack
2) Reset Network Config
3) Reset User Accounts to Default
4) Copy Log Files
5) Remove Switch Config
6) Remake Filesystem
7) Reset Switch
8) Update Boot Loader
Option: 7
```
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