Upgrade Software Images on Catalyst 6000/6500 Series Switch

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Introduction

This document describes the step-by-step procedure to upgrade the software image on Catalyst 6000/6500 series switches.

Prerequisites

Requirements

Ensure that you meet these requirements before you attempt this configuration:

- Verify the memory and boot ROM requirements.
- Download a valid software image.
- Install TFTP server on your PC.
- Back up the current switch configuration and software image.

Components Used

This document is not restricted to specific software and hardware versions.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, ensure that you understand the potential impact of any command.

Conventions

Refer to the Cisco Technical Tips Conventions for more information on document conventions.

Background Information

This document explains the step-by-step procedure to upgrade the software image on Catalyst 6000/6500 series switches that run Catalyst Operating System (CatOS) on Supervisor, Cisco IOS® on MSM/MSFC and Cisco IOS System Software. The software image upgrade is necessary when:

- You want to implement new features in your network that are available in the new software release.
- You want to install a new line card that is not supported by the current software version that you run on the switch.
- A known bug affects your switch, and that bug is resolved in the next software release.

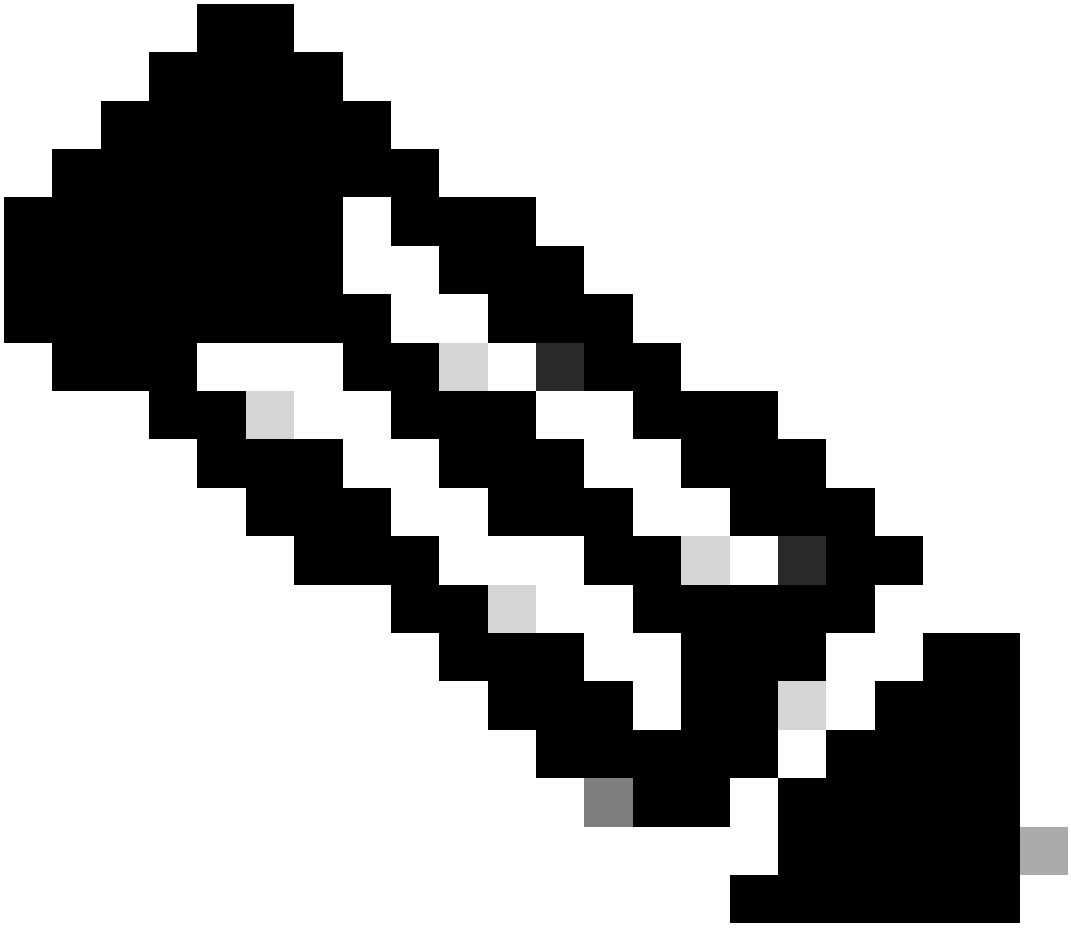
Difference Between CatOS and Cisco IOS System Software

CatOS on the Supervisor and Cisco IOS on the MSFC (Hybrid):

You can use a CatOS image as the system software in order to run the Supervisor on Catalyst 6500/6000 switches. If the optional Multilayer Switch Feature Card (MSFC) is installed, use a separate Cisco IOS image in order to run the MSFC.

Cisco IOS on both the Supervisor and MSFC (Native):

You can use a single Cisco IOS image as the system software in order to run both the Supervisor and MSFC on Catalyst 6500/6000 switches.



Note: Refer to Cisco Catalyst 6500 Series Switches for more information.

Pre-Upgrade Steps

Check Memory and Boot ROM Requirement

Verify the minimum amount of DRAM, flash memory and Boot ROM version necessary for the new software release. Check whether your switch supports the requirements. Refer to Release Notes for Catalyst 6000/6500 Series Switches in order to verify the requirements for the new software image.

The show versioncommand displays the BootROM version, DRAM installed and the bootflash size on your switch. Issue the show versioncommand on Catalyst 6000/6500 switches that run CatOS.

```
<#root>

Cat6509> (enable)

show version
```

```
WS-C6509 Software, Version NmpSW: 5.5(5)
Copyright (c) 1995-2000 by Cisco Systems
NMP S/W compiled on Dec 14 2000, 17:05:38
System Bootstrap Version: 5.3(1)

!--- This is the boot ROM version that runs on your switch.

Hardware Version: 3.0  Model: WS-C6509  Serial #: TBA05131085

Mod Port Model               Serial #    Versions
--- ---- ------------------- ----------- -------------------------------------
1   2    WS-X6K-SUP1A-2GE    SAD05060PU7 Hw : 7.0
                                         Fw : 5.3(1)
                                         Fw1: 5.4(2)
                                         Sw : 5.5(5)
                                         Sw1: 5.5(5)
         WS-F6K-PFC          SAD05060131 Hw : 1.1
4   48   WS-X6348-RJ-45      SAD0509003M Hw : 2.0
                                         Fw : 5.4(2)
                                         Sw : 5.5(5)
         WS-F6K-VPWR                     Hw : 1.0
15  1    WS-F6K-MSFC         SAD05140AG0 Hw : 1.4
                                         Fw : 12.1(6)E1
                                         Sw : 12.1(6)E1


DRAM


FLASH NVRAM

Module     Total   Used    Free     Total   Used   Free   Total   Used  Free
------    -------  ------- -------  ------- ------- ------- ----- ----- -----
1       65408K     37654K  27754K  16384K  14984K   1400K  512K  255K  257K

!--- This is the amount of DRAM and Flash size installed on the switch.

Uptime is 149 days, 1 hour, 20 minutes
Cat6509> (enable)
```

When you run Cisco IOS Software, check the memory requirements on both the Supervisor and MSFC. Issue the show version command on Catalyst 6000/6500 switches that run Cisco IOS Software.

```
<#root>

Cat6500#

show version

Cisco Internetwork Operating System Software
Cisco IOS (tm) c6sup1_rp Software (c6sup1_rp-JSV-M), Version 12.1(8b)E9, EARLY DEPLOYMENT
RELEASE SOFTWARE (fc3)
TAC Support: http://www.cisco.com/tac
Copyright (c) 1986-2002 by cisco Systems, Inc.
Compiled Sun 17-Feb-02 12:01 by eaarmas
Image text-base: 0x60020950, data-base: 0x61608000

!--- This is the Boot ROM version that runs on your switch MSFC.
```

```
ROM: System Bootstrap, Version 12.0(3)XE, RELEASE SOFTWARE


BOOTFLASH: MSFC Software (C6MSFC-BOOT-M), Version 12.1(8b)E9, EARLY DEPLOYMENT
RELEASE SOFTWARE (fc3)

Cat6500 uptime is 7 minutes
System returned to ROM by power-on (SP by reload)
System image file is "sup-bootflash:c6sup11-jsv-mz.121-8b.E9"

!--- The DRAM on the MSFC is the sum of these two values.


cisco Catalyst 6000 (R5000) processor with 114688K/16384K bytes of memory.

Processor board ID SAD04120BNJ
R5000 CPU at 200Mhz, Implementation 35, Rev 2.1, 512KB L2 Cache
Last reset from power-on
Bridging software.
X.25 software, Version 3.0.0.
SuperLAT software (copyright 1990 by Meridian Technology Corp).
TN3270 Emulation software.
2 Virtual Ethernet/IEEE 802.3  interface(s)
48 FastEthernet/IEEE 802.3 interface(s)
18 Gigabit Ethernet/IEEE 802.3 interface(s)
381K bytes of non-volatile configuration memory.
4096K bytes of packet SRAM memory.

!--- This is the bootflash size.


16384K bytes of Flash internal SIMM (Sector size 256K).

Configuration register is 0x2102

Cat6500#
```

You can also issue the show versioncommand on the Supervisor module. You can execute Supervisor Processor (SP) commands from the Route Processor (RP) prompt with the **remote command switch** command.

```
<#root>

Cat6500#

remote command switch show version


Cat6500-sp#
Cisco Internetwork Operating System Software
Cisco IOS (tm) c6sup1_sp Software (c6sup1_sp-SPV-M), Version 12.1(8b)E9,
   EARLY DEPLOYMENT RELEASE SOFTWARE (fc3)
TAC Support: http://www.cisco.com/tac
Copyright (c) 1986-2002 by cisco Systems, Inc.
Compiled Sun 17-Feb-02 12:29 by eaarmas
Image text-base: 0x60020950, data-base: 0x60648000

!--- This is the boot ROM version that runs on your switch supervisor.
```

```
ROM: System Bootstrap, Version 5.3(1)

BOOTFLASH: c6sup1_sp Software (c6sup1_sp-SPV-M), Version 12.1(8b)E9,
   EARLY DEPLOYMENT RELEASE SOFTWARE (fc3)

Switch uptime is 2 minutes
System returned to ROM by reload
System image file is "bootflash:c6sup11-jsv-mz.121-8b.E9"

!--- The DRAM on the Supervisor is the sum of these two values.


cisco 6000 (NMP150) processor with 49152K/16384K bytes of memory.

R4700 CPU at 150Mhz, Implementation 33, Rev 1.0, 512KB L2 Cache
Last reset from power-on
X.25 software, Version 3.0.0.
48 FastEthernet/IEEE 802.3 interface(s)
18 Gigabit Ethernet/IEEE 802.3 interface(s)
381K bytes of non-volatile configuration memory.

!--- This is the external Flash card and internal bootflash size.

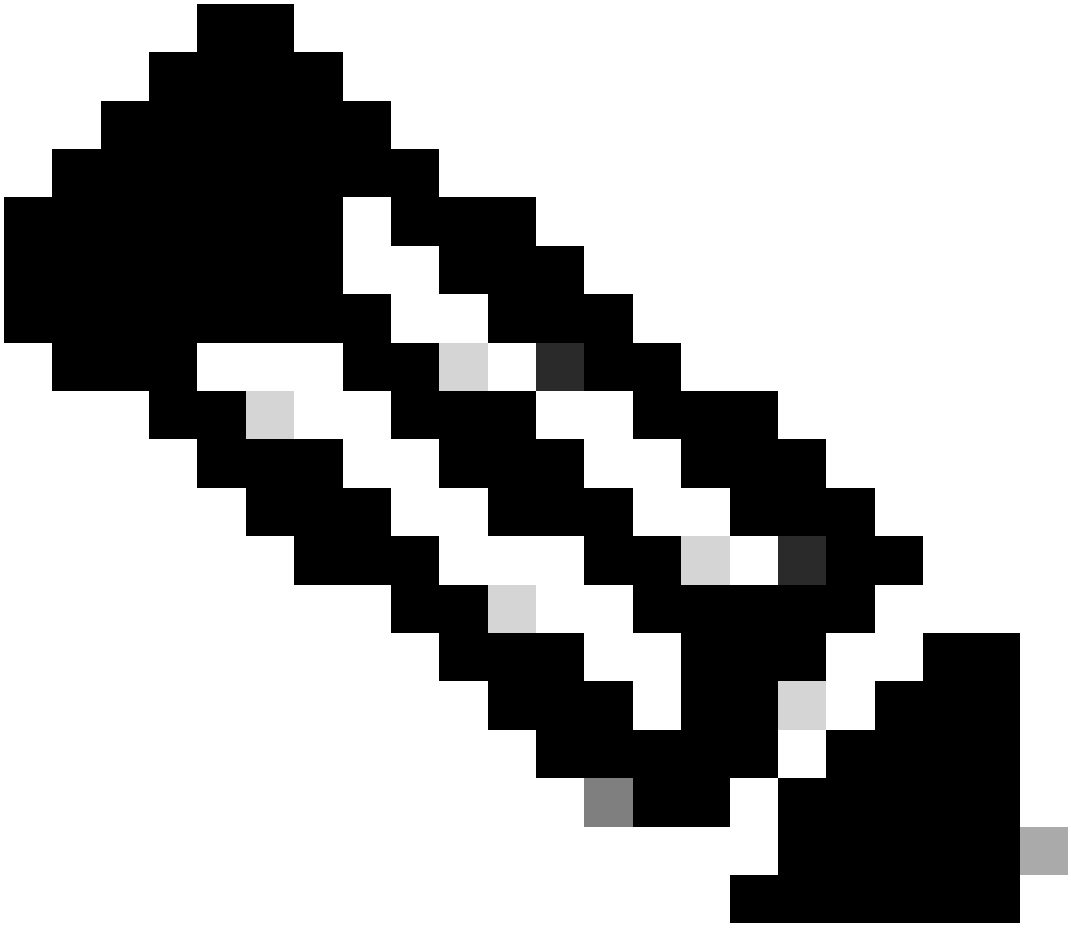

24576K bytes of Flash PCMCIA card at slot 0 (Sector size 128K).
16384K bytes of Flash internal SIMM (Sector size 256K).

Configuration register is 0x2102

Cat6500#
```

The Supervisor Boot ROM version upgrade is a boot ROM hardware upgrade if necessary. You can download the latest bootstrap software image in order to upgrade the MSFC Bootstrap version. Refer to these documents in order to upgrade boot ROM on Supervisor modules:

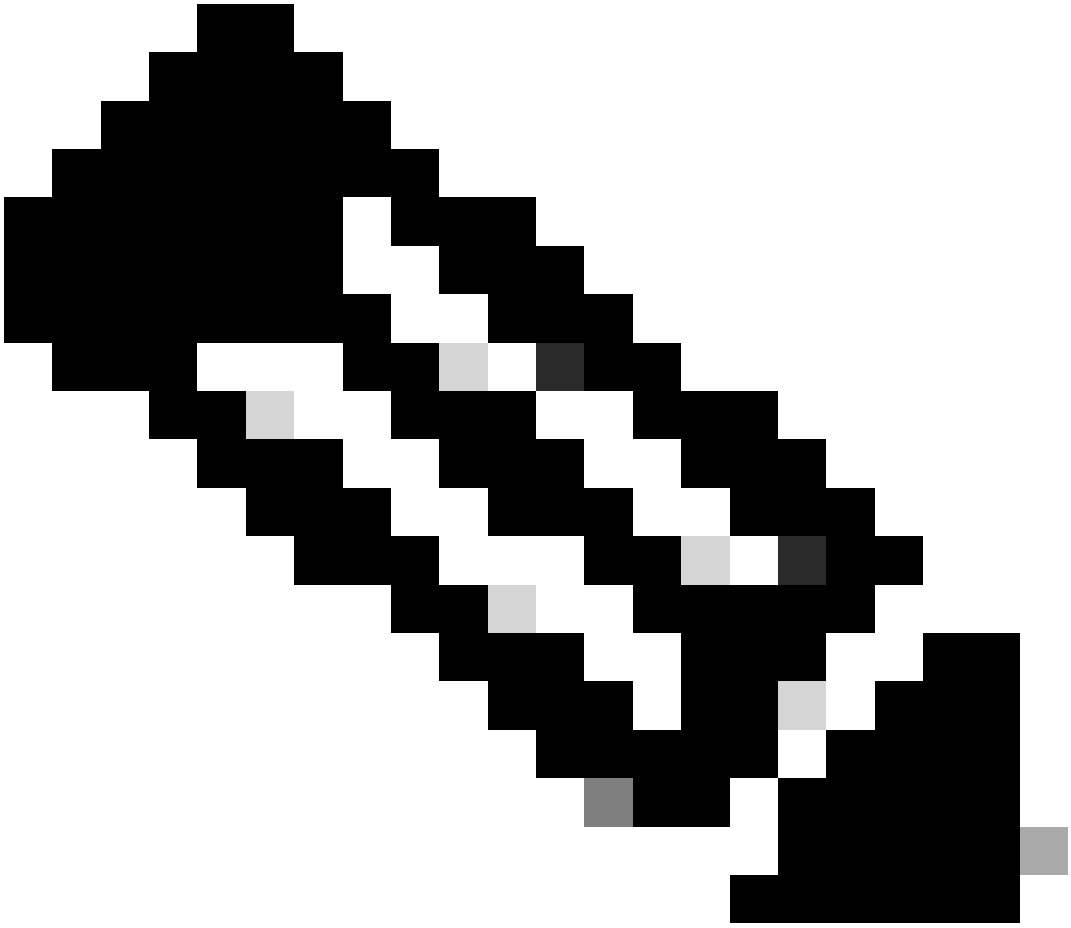
- Catalyst 6000 Family Supervisor Engine I and I A NMP Boot ROM Upgrade Installation Note
- Catalyst 6000 Family Supervisor Engine 2 Boot ROM and Bootflash Device Upgrade Installation Note



Note: The Supervisor 720 does not have a Boot ROM upgrade available currently.

Download the Software Image

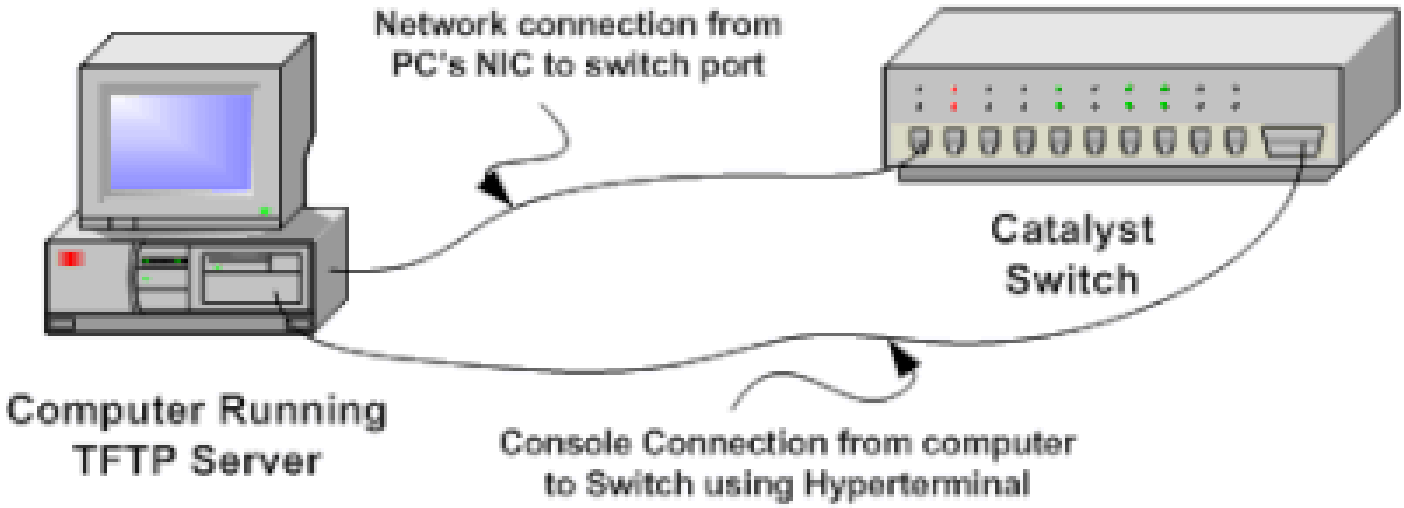
Download the CatOS software image onto the PC that acts as the TFTP server prior to actual image upgrade. You can download the software image from the Cisco LAN Switching Software Center. See the Difference Between CatOS and Cisco IOS System Software section for more information on CatOS and Cisco IOS Software.



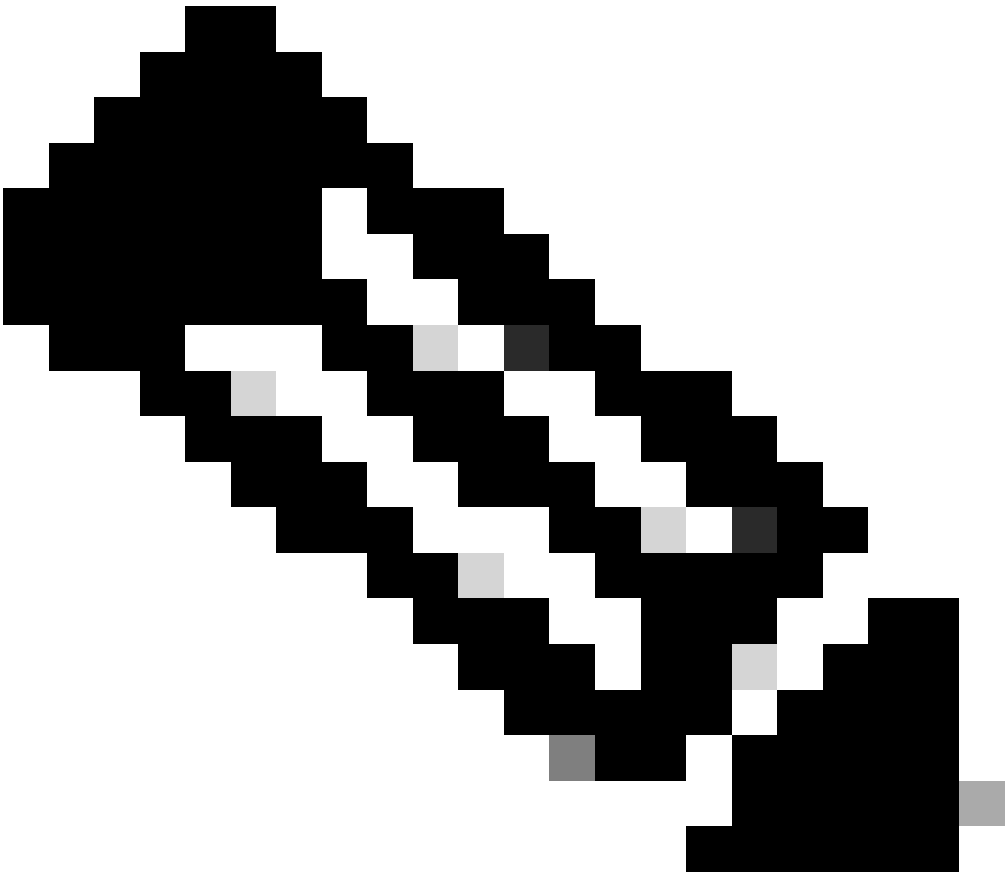
Note: Only registered Cisco users can access internal Cisco tools and information.

Install TFTP Server

The sample output in this document uses an installation of a Cisco TFTP server on a PC that runs Microsoft ™ Windows 2000 Professional. You can use any TFTP server that can be installed on any platform. You do not need to use a PC with a Windows OS.



1. Download and install any shareware TFTP software from the Internet on the PC that you use in order to copy the CatOS software image to the switch. The TFTP server root directory must be the directory to which the software image is downloaded. You can download the images to the default root directory of the TFTP server or change the root directory path to the directory in which the software image resides. For the Cisco TFTP server, you can change the root directory from the **View Menu > Options**.



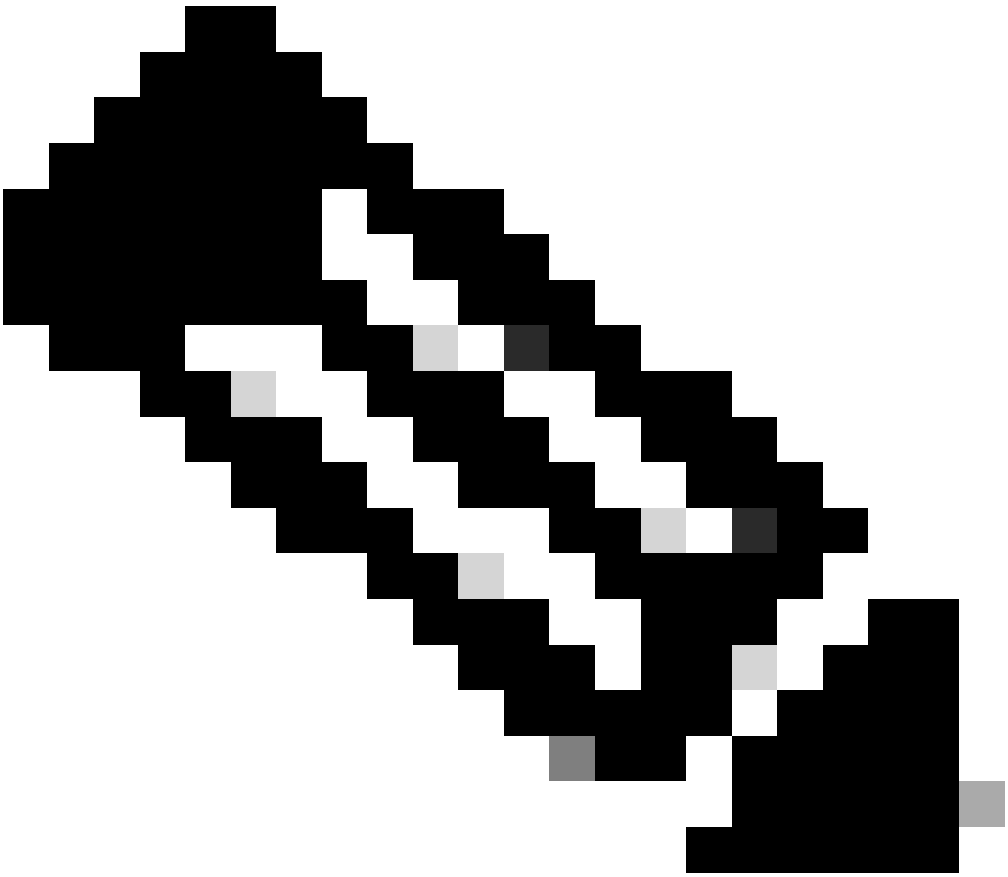
Note: This document was written when the Cisco TFTP server was available for download through the Software Center. Cisco no longer supports the Cisco TFTP server. If you use the Cisco TFTP server, disable the logging function to prevent excessive logs, which can disrupt the TFTP process.

In order to disable logging on the Cisco TFTP server, complete these steps:

a. Choose **View Menu > Options**.

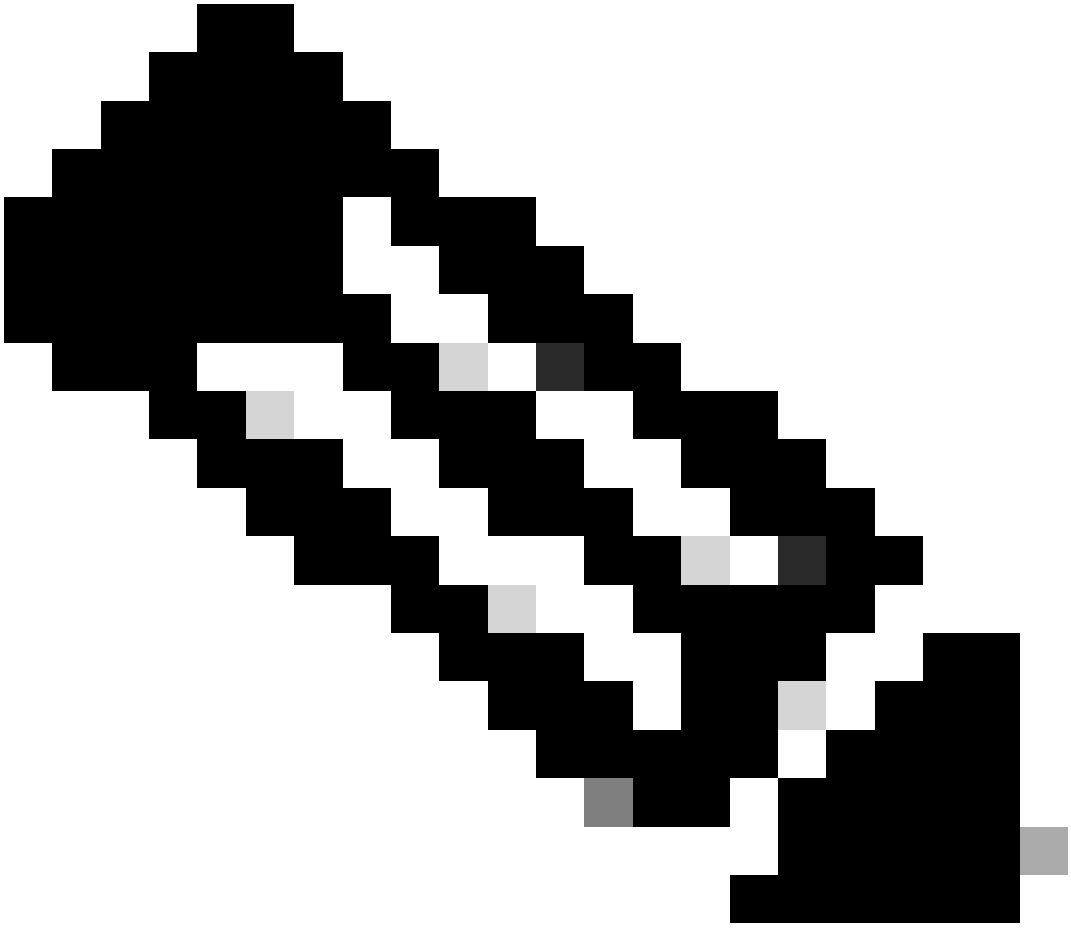
b. Clear the selection of **Enable Logging**.

c. Click **OK**.



Note: Note that logging is enabled by default.

2. Connect a console cable between the switch console port and the PC in order to access the switch command-line interface (CLI). Refer to Connecting a Terminal to the Console Port on Catalyst Switchesin order to access the CLI through the hyperterminal.



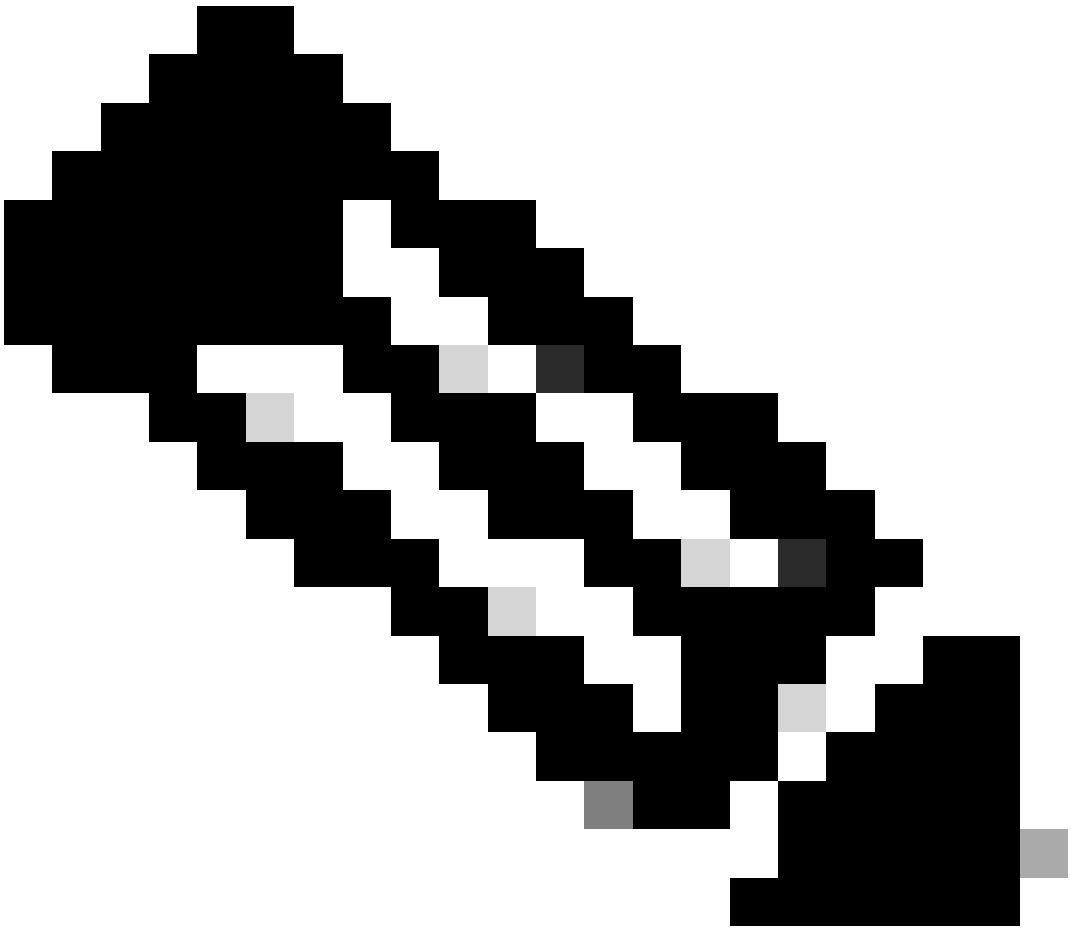
Note: You can upgrade the switch through remote Telnet access. But, you lose Telnet connectivity when the switch reloads during the software upgrade. You can re-establish the Telnet session when the switch loads with the new image. But, in order to troubleshoot in case of failure, you must have local console access. Cisco recommends a switch upgrade through console access.

Backup Configuration and Software Image

Perform a backup of the switch configuration and the current software image to the PC that runs TFTP server. If your upgrade procedure fails due to reasons such as insufficient memory or not enough space on the bootflash of the switch to support the new image, you can always recover the switch to normal mode with the same image that was present in the switch. If you lose the switch configuration for any reason, you can always restore the configuration from the TFTP server. Refer to Managing Software Images and Working with Configuration Files on Catalyst Switchesfor information on how to manage the configuration files and software images:

On Catalyst 6000/6500 switches that run Cisco IOS Software, you can issue the `copy startup-config tftp`or the `copy startup-config bootflash:`commands in order to copy or backup the configuration to the TFTP server or bootflash. If you modify your configuration, make sure to issue the `write memory`command in order to copy the current configuration to startup configuration and perform the backup. You can issue the `copy bootflash:`

tftp command in order to copy the current software images from bootflash to the TFTP server. If you want to copy the current software images from the external flashcard to the TFTP server, you can use the copy slot0: tftp command on Supervisor Engine 1 or 2. On the Supervisor Engine 720, use the copy disk0: tftp or copy disk1: tftp commands.



Note: The %% Non-volatile configuration memory invalid or not present error message shows if the startup configuration file is found empty by the switch while copy or backup of the configuration file is taken. Issue the write memory or copy run start command before you take the backup of the configuration file in order to avoid this error.

Switches that Run CatOS Software

CatOS on Supervisor Module

The Catalyst 6000/6500 switch Supervisor Engine 1 and 2 support one slot for the Personal Computer Memory Card Industry Association (PCMCIA) flash card while the Supervisor Engine 720 supports 2 slots. If you have the PCMCIA flash card installed on your switch, you have the choice to copy the new software image on bootflash or PCMCIA flash card.

This procedure uses the bootflash. If you use the PCMCIA flash card, replace the bootflash: word in all commands with slot0:when you use Supervisor 1 or 2, or disk0: / disk1: when you use Supervisor 720.

1. Ensure that you verify the memory/boot ROM requirements, have the TFTP server on your PC, and the switch console accessed from the switch console port. If you are not ready with this setup, see the Check Memory and Boot ROM Requirementsection.

2. Configure the management IP address (sc0) and check the connectivity between the switch and the PC on which TFTP server is installed. This sample scenario uses IP address 10.10.10.1 for switch management (sc0) and IP address 10.10.10.2 for the TFTP server.

```
<#root>


!--- The management(sc0) IP address is configured on the switch.

Cat6509> (enable)

set interface sc0 1 10.10.10.1 255.255.255.0

Interface sc0 vlan set, IP address and netmask set.

!--- Verify the management(sc0) IP address.

Cat6509> (enable)

show interface

sl0: flags=51<UP,POINTOPOINT,RUNNING>
        slip 0.0.0.0 dest 0.0.0.0

!--- The sc0 is set in VLAN1 and
!--- the switch port that connects to the PC is in VLAN1.


sl0: flags=63<UP,BROADCAST,RUNNING>


vlan 1 inet 10.10.10.1 netmask 255.255.255.0 broadcast 10.10.10.255

Cat6509> (enable)

!--- Verify the IP connectivity between
!--- the switch and PC with the TFTP server.

Cat6509> (enable)

ping 10.10.10.2

!!!!!
----10.10.10.2 PING Statistics----
5 packets transmitted, 5 packets received, 0% packet loss
round-trip (ms)  min/avg/max = 1/1/1
Cat6509> (enable)
```

3. Ensure that you have enough space available in the bootflash in order to copy the new image from TFTP server into the bootflash. You can check the size of the new image on the PC on which the image resides.

```
<#root>

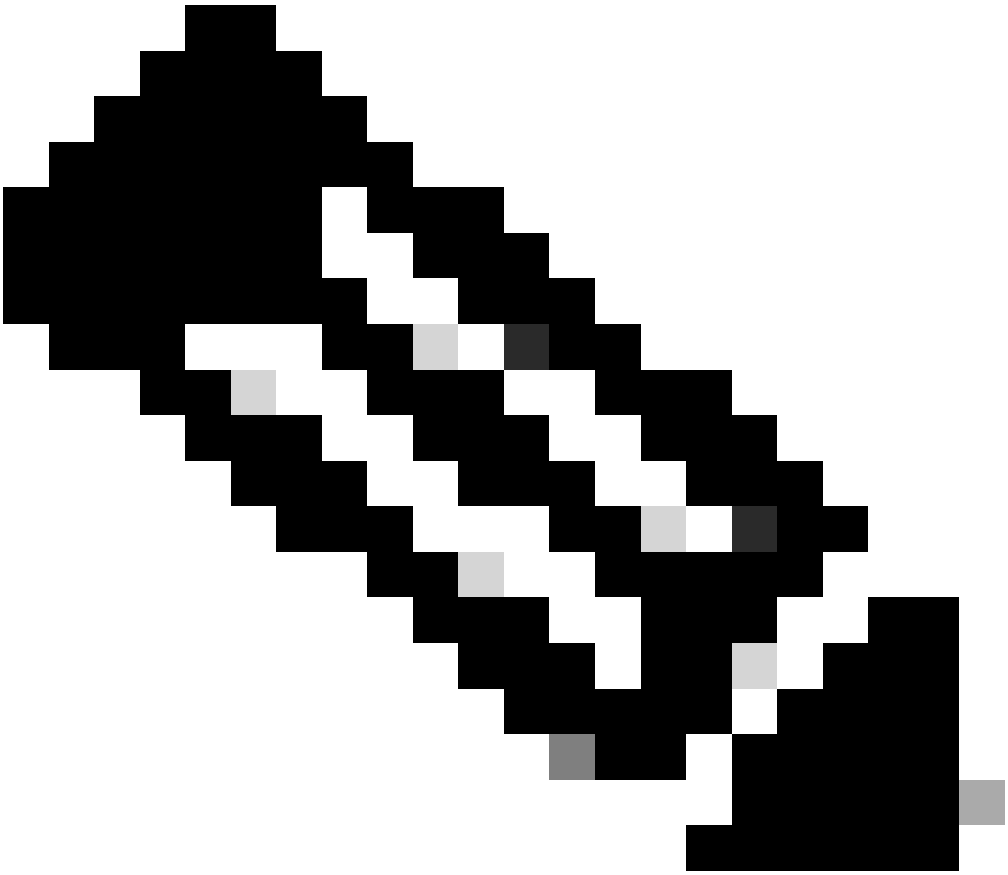
Cat6509> (enable)

dir bootflash:

-#- -length- -----date/time------ name
  1  5741220 Aug 15 2002 15:05:35 cat6000-sup2.6-3-6.bin
26240220 bytes available (5741348 bytes used)
Cat6509> (enable)

!--- Note that the new image size is around 10 MB
!--- and the space available on bootflash is around 26MB
!--- which is sufficient. In case of insufficient space
!--- to copy the new image, delete the current image
!--- with the delete command and squeeze the bootflash
!--- with the squeeze command in order to get enough space on bootflash.
```

4. Copy the new software image into the bootflash from TFTP server and verify if the image is properly copied. Check if the file size of the new image matches exactly the size mentioned on the software center on Cisco.com. If there is a difference, check whether the image was corrupt during transfer. Download the image again in order to ensure that the switch does not go into ROMMON mode after the reload.



Note: PCs that run Microsoft Windows OS can display the file size differently than the actual size. Right click on the filename and choose Properties in order to verify the actual file size in bytes.

<#root>

```
Cat6509> (enable)

copy tftp bootflash:

IP address or name of remote host []? 10.10.10.2
Name of file to copy from []? cat6000-sup2cvk8.7-3-2.bin
26240092 bytes available on device bootflash, proceed (y/n) [n]? y
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
File has been copied successfully.
Cat6509> (enable)
Cat6509> (enable)

dir bootflash:

-#- -length- -----date/time------ name
  1  5741220 Aug 15 2002 15:05:35 cat6000-sup2.6-3-6.bin
```

```
  2 10580536 Oct 08 2002 18:25:56 cat6000-sup2cvk8.7-3-2.bin
15659556 bytes available (16322012 bytes used)
Cat6509> (enable)
```

5. Change the boot variable so that the switch boots with new software image after reset.

```
<#root>

Cat6509> (enable)

show boot


!--- The switch originally boots with this image.

BOOT variable = bootflash:cat6000-sup2.6-3-6.bin,1;
CONFIG_FILE variable =
Configuration register is 0x2102
ignore-config: disabled
auto-config: non-recurring, overwrite, sync disabled
console baud: 9600
boot: image specified by the boot system commands
Cat6509> (enable)

!--- Old boot variable is cleared.

Cat6509> (enable)

clear boot system flash bootflash:cat6000-sup2.6-3-6.bin

BOOT variable =

!--- New boot variable is configured.

Cat6509> (enable)

set boot system flash bootflash:cat6000-sup2cvk8.7-3-2.bin

BOOT variable = bootflash:cat6000-sup2cvk8.7-3-2.bin,1;
Cat6509> (enable)

show boot

BOOT variable = bootflash:cat6000-sup2cvk8.7-3-2.bin,1;
CONFIG_FILE variable = slot0:switch.cfg

!--- Make sure the config-register is set to 0x2102 so that the
!--- switch boots with a valid software image. You can change the
!--- config-register with the set boot config-register 0x2102
!--- command. If the boot veriable is not specifed correctly,
!--- your switch can reload in ROMMON mode.


Configuration register is 0x2102

ignore-config: disabled
auto-config: non-recurring, overwrite, sync disabled
console baud: 9600
boot: image specified by the boot system commands
Cat6509> (enable)
```

6. Reset the switch so that during reload, the switch boots with the new software image.

```
<#root>

Cat6509> (enable) reset
This command will reset the system.
Do you want to continue (y/n) [n]? y
2002 Oct 08 18:32:02 %SYS-5-SYS_RESET:System reset from Console//
Powering OFF all existing linecards
System Bootstrap, Version 7.1(1)
Copyright (c) 1994-2001 by cisco Systems, Inc.
c6k_sup2 processor with 131072 Kbytes of main memory

!--- The switch boots with the new image.

Autoboot executing command:

"boot bootflash:cat6000-sup2cvk8.7-3-2.bin"

Self decompressing the image : ########################################
########################################################################
########################################################################
########################################################################
########################################################################
########################################################################
########################################################################
[OK]

System Power On Diagnostics
DRAM Size .........................128 MB
Testing DRAM ......................Passed
Verifying Text Segment ............Passed
NVRAM Size ........................512 KB
Level2 Cache ......................Present
Level3 Cache ......................Present
System Power On Diagnostics Complete
Currently running ROMMON from S (Gold) region
Boot image: bootflash:cat6000-sup2cvk8.7-3-2.bin
Running System Diagnostics from this Supervisor (Module 1)
This may take up to 2 minutes....please wait

2002 Oct 08 18:33:26 %SYS-4-NVLOG:convert_post_SAC_CiscoMIB:Block 0
   converted from version 8 to 11

Cisco Systems Console
Cat6509> (enable)
```

7. Verify whether the switch loads the new software image.

```
<#root>

Cat6509> (enable)

show version

WS-C6509 Software, Version NmpSW: 7.3(2)
```

```
!--- The switch runs CatOS version 7.3(2).

Copyright (c) 1995-2002 by Cisco Systems
NMP S/W compiled on Aug  1 2002, 17:38:15
System Bootstrap Version: 7.1(1)
System Web Interface Version: Engine Version: 5.3.4 ADP Device: Cat6000
   ADP Version: 1.9 ADK: 40
Hardware Version: 2.0  Model: WS-C6509  Serial #: SCA034401HK

PS1  Module: WS-CAC-1300W    Serial #: ACP03470856


Mod Port Model               Serial #    Versions
--- ---- ------------------- ----------- ----------------------------------
1   2    WS-X6K-SUP2-2GE     SAL060808K7 Hw : 3.4
                                         Fw : 7.1(1)
                                         Fw1: 6.1(3)
                                         Sw : 7.3(2)
                                         Sw1: 7.3(2)
         WS-F6K-PFC2         SAL060801AG Hw : 3.0
3   48   WS-X6348-RJ-45      SAD04230FB6 Hw : 1.1
                                         Fw : 5.3(1)
                                         Sw : 7.3(2)
5   0    WS-C6500-SFM        SAD043702RP Hw : 1.0
                                         Fw : 6.1(3)
                                         Sw : 7.3(2)
       DRAM                    FLASH                   NVRAM
Module Total   Used    Free    Total   Used    Free    Total Used  Free
------ ------- ------- ------- ------- ------- ------- ----- ----- -----
1      131072K  62774K  68298K  32768K  17476K  15292K  512K  258K  254K
Uptime is 0 day, 0 hour, 1 minute
Cat6509> (enable)
```

Supervisor Engine 720

On the Supervisor Engine 720, if you use the PCMCIA flash card, replace the word bootflash: in all commands of this procedure with disk0: or disk1:.

Complete these steps in order to upgrade the software image:

1. Verify whether you have enough space available in disk0: to copy the new image from TFTP server into disk0. You can check the size of the new image on the PC that hosts the file.

```
<#root>

Cat6509-E (enable)

dir disk0:

      2   -rw-  15057472    Apr 11 2006 07:28:11 cat6000-sup720k8.8-3-3.bin

49205248 bytes available (15060992 bytes used)

!--- Note that the new image size is around 15 MB and space
!--- available on disk0 is around 49 MB, which is sufficient.
!--- In case there is not enough free space to copy the new image,
```

```
!--- delete the current image with the delete <drive> <filename> command
.
```

2. Delete the current image in disk0: with the **delete disk0:cat6000-sup720k8.8-3-3.bin**command. Then issue the squeeze disk0:command in order to erase all deleted files from the device. This step is optional.

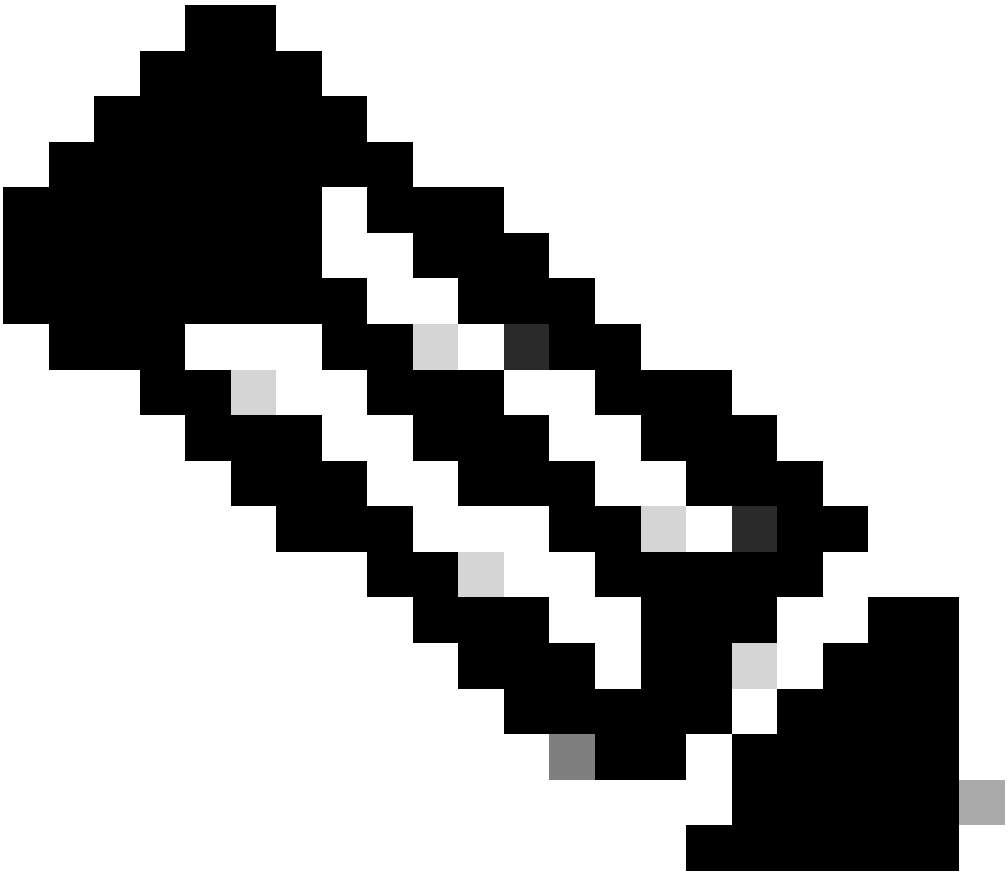
```
<#root>

Cat6509-E (enable)

delete disk0:cat6000-sup720k8.8-3-3.bin

File disk0:cat6000-sup32pfc3k8.8-4-5.bin will be deleted permanently,
continue (y/n) [n]? y
```

3. Copy the new software image into disk0 from the TFTP server and verify whether the image is properly copied. Check if the file size of the new image matches exactly the size mentioned on the software center on Cisco.com. If there is a difference, check whether the image became corrupt during transfer. Download the image again in order to ensure that the switch does not go into ROMMON mode after the reload.



Note: This procedure uses an FTP server, and there were no problems during the image transfer.

<#root>

```
Cat6509-E (enable)
```

copy ftp disk0:

```
IP address or name of remote host []? 10.66.64.10
Username for ftp[anonymous]? cisco
Password for User cisco[]:
Name of file to copy from []? cat6000-sup720k8.8-5-3.bin
64266240 bytes available on device disk0, proceed (y/n) [n]? y


Loading cat6000-sup720k8.8-5-3.bin
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!


!!--Output Surpressed--!!
[OK - 17659732 bytes copied in 61.671 secs (286354 bytes/sec)
```

```
File disk0:cat6000-sup720k8.8-5-3.bin checksum verified and is Ok.
File has been copied successfully.
```

4. Change the boot variable so that the switch boots with new software image after reset.

```
<#root>

Cat6509-E (enable)

 show boot

BOOT variable =

disk0:cat6000-sup720k8.8-3-3.bin,1;

CONFIG_FILE variable = disk0:switch.cfg

Configuration register is 0x2102
ignore-config: disabled
auto-config: non-recurring, overwrite, sync disabled
ROMMON console baud: 9600
boot: image specified by the boot system commands

Image auto sync is enabled
Image auto sync timer is 120 seconds

!--- The switch originally boots with the old image.


Cat6509-E (enable)


clear boot system flash disk0:cat6000-sup720k8.8-3-3.bin

BOOT variable =

!--- Old boot variable is cleared.


Cat6509-E (enable)


set boot system flash disk0:cat6000-sup720k8.8-5-3.bin

BOOT variable = disk0:cat6000-sup720k8.8-5-3.bin,1;

!--- New boot variable is configured.


Cat6509-E (enable)

 show boot

BOOT variable =

disk0:cat6000-sup720k8.8-5-3.bin,1;

CONFIG_FILE variable = bootflash:switch.cfg

Configuration register is 0x2102
ignore-config: disabled
```

```
auto-config: non-recurring, overwrite, sync disabled
ROMMON console baud: 9600
boot: image specified by the boot system commands

Image auto sync is enabled
Image auto sync timer is 120 seconds
```

5. Reset the switch so that during reload, the switch boots with the new software image.

```
<#root>

Cat6509-E (enable)

reset

This command will reset the system.
Do you want to continue (y/n) [n]? y
2006 Apr 11 09:29:07 %SYS-5-SYS_RESET:System reset from Console//
Powering OFF all existing linecards
Cat6509-E (enable)
System Bootstrap, Version 8.1(3)
Copyright (c) 1994-2004 by cisco Systems, Inc.
Cat6k-Sup720/SP processor with 1048576 Kbytes of main memory

Autoboot executing command: "boot disk0:cat6000-sup720k8.8-5-3.bin"
Loading image, please wait ...


Self decompressing the image : ##########
 !--- Output surpressed.

##### [OK]


System Power On Diagnostics
DRAM Size .........................1024 MB
Testing DRAM ......................Passed
Verifying Text Segment ............Passed
NVRAM Size ........................2048 KB
Level2 Cache ......................Present
Level3 Cache ......................Present
System Power On Diagnostics Complete

Currently running ROMMON from S (Gold) region
Boot image: disk0:cat6000-sup720k8.8-5-3.bin


Firmware compiled 27-Jan-06 16:09 by integ Build [100]


Running System Diagnostics from this Supervisor (Module 5)
This may take several minutes....please wait

Cisco Systems Console

Cat6509-E (enable)
```

6. Verify whether the switch loads the new software image.

```
<#root>

Cat6509-E (enable)

show version

WS-C6509-E Software, Version NmpSW: 8.5(3)
Copyright (c) 1995-2006 by Cisco Systems
NMP S/W compiled on Jan 28 2006, 17:37:02

System Bootstrap Version: 8.1(3)

System Boot Image File is 'disk0:cat6000-sup720k8.8-5-3.bin'

System Configuration register is 0x2102

Hardware Version: 1.0  Model: WS-C6509-E  Serial #: SCA080600KT

PS1  Module: WS-CAC-2500W    Serial #: ART0824E17L

Mod Port Model               Serial #    Versions
--- ---- ------------------- ----------- ----------------------------------
5   2    WS-SUP720-3BXL      SAL09148BCH Hw : 4.3
                                         Fw : 8.1(3)
                                         Fw1: 8.5(3)
                                         Sw : 8.5(3)
                                         Sw1: 8.5(3)
         WS-F6K-PFC3BXL      SAL091594QY Hw : 1.6
                                         Sw :
15  1    WS-SUP720           SAL09148NUB Hw : 2.3
                                         Fw : 12.2(17d)SXB11
                                         Sw : 12.2(17d)SXB11

       DRAM                    FLASH                   NVRAM
Module Total   Used    Free    Total   Used    Free    Total Used  Free
------ ------- ------- ------- ------- ------- ------- ----- ----- -----
5      1048576K 205619K 842957K  64000K  14705K  49295K 2048K  262K 1786K

Uptime is 0 day, 0 hour, 2 minutes
Cat6509-E (enable)
```

Supervisor Engine 32

The Supervisor Engine 32 has these features:

1. 256-MB bootflash through an internal Compact Flash device (referred to as "bootdisk" in the CLI)
2. Compact Flash slot (disk 0)

Refer to Release Notes for Catalyst 6500 Series Software Release 8.x for more information on Supervisor features.

Complete these steps in order to upgrade the software image:

1. Verify that you have enough space available in disk0: in order to copy the new image from the TFTP server into disk0. You can check the size of the new image on the PC that hosts the file.

```
<#root>

Console> (enable)

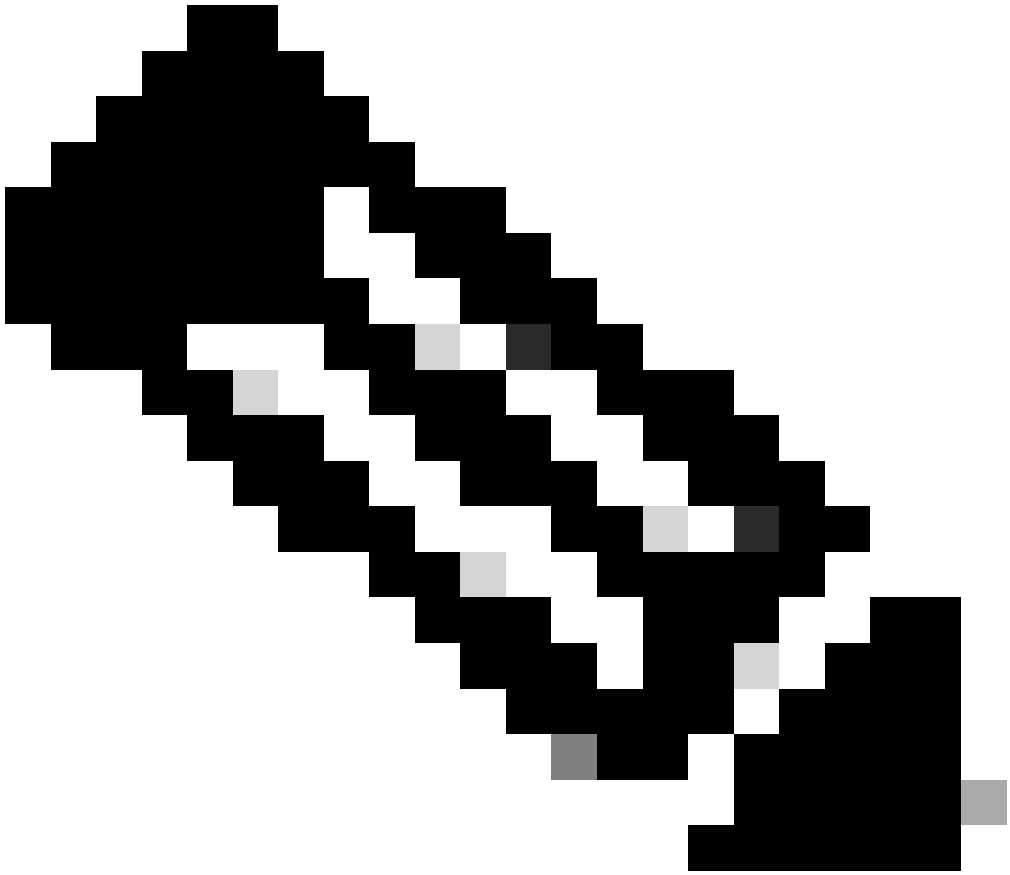
dir disk0:

   2        -rw-  9356096    Apr 10 2006 17:50:28 cat6000-sup32pfc3k8.8-4-5.bin

245751808 bytes available (9361542 bytes used)

!--- Note that the new image size is around 11 MB and space
!--- available on disk0 is around 53 MB, which is sufficient.
!--- In case there is not enough free space to copy the new image,
!--- delete the current image with the delete command.
```

2. Delete the current image in disk0: with the `delete disk0:cat6000-sup32pfc3k8.8-4-5.bin` command. This step is optional.



Note: The `squeeze` command does not work with the Supervisor 32.

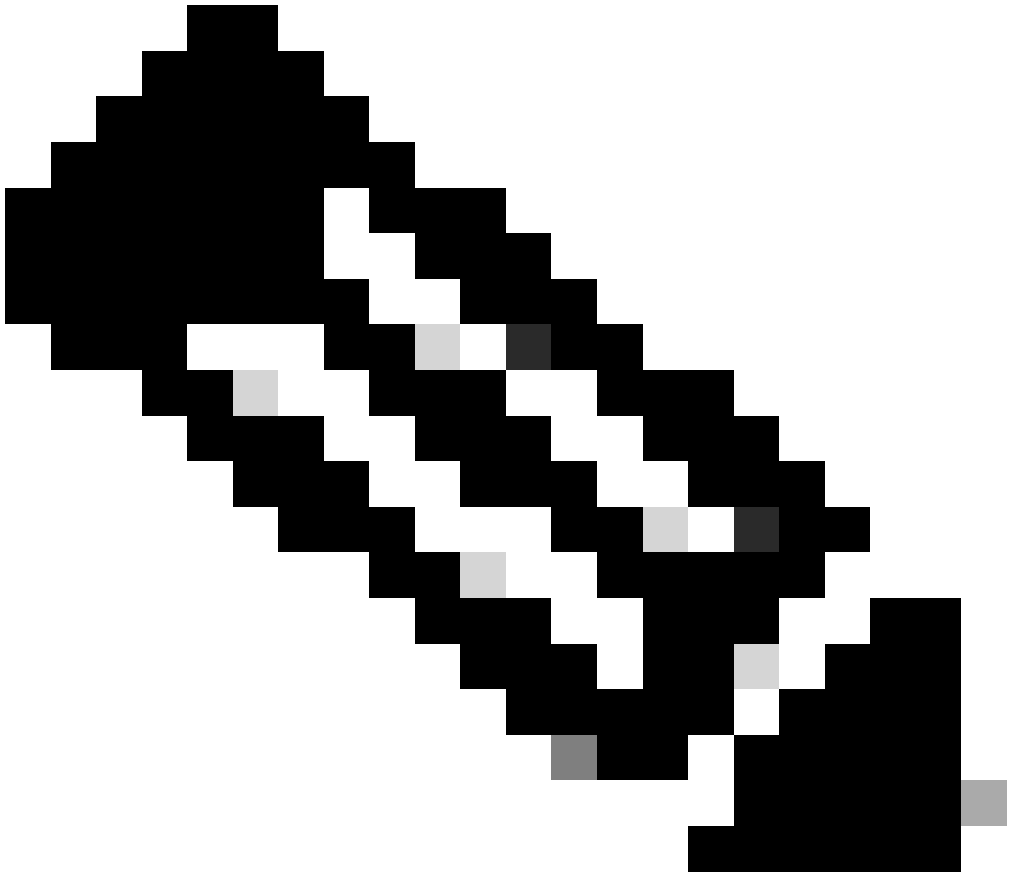
```
<#root>

Console> (enable)

delete disk0:cat6000-sup32pfc3k8.8-4-5.bin

File disk0:cat6000-sup32pfc3k8.8-4-5.bin will be deleted permanently,
continue (y/n) [n]? y
```

3. Copy the new software image into disk0 from the TFTP server and verify whether the image is properly copied. Check if the file size of the new image matches exactly the size mentioned on the software center on Cisco.com. If there is a difference, check whether the image got corrupt during transfer. Download the image again in order to ensure that the switch does not go into ROMMON mode after the reload.



Note: This procedure uses an FTP server, and there were no problems during the image transfer.

```
<#root>
```

```
Console> (enable)

copy ftp disk0:

IP address or name of remote host [10.66.64.10]? 10.66.64.10
Username for ftp[anonymous]? cisco
Password for User cisco[]:
Name of file to copy from [cat6000-sup32pfc3k8.8-5-3.bin]?
64258048 bytes available on device disk0, proceed (y/n) [n]? y


Loading cat6000-sup32pfc3k8.8-5-3.bin
!!!!!!
!--- Output surpressed.

[OK - 10011264 bytes copied in 43.985 secs (227606 bytes/sec)


File disk0:cat6000-sup32pfc3k8.8-5-3.bin checksum verified and is Ok.
File has been copied successfully.
```

4. Change the boot variable so that the switch boots with the new software image after reset.

```
<#root>

Console> (enable)

show boot

BOOT variable = disk0:cat6000-sup32pfc3k8.8-4-5.bin,1;
CONFIG_FILE variable =

Configuration register is 0x2102
ignore-config: disabled
auto-config: non-recurring, overwrite, sync disabled
ROMMON console baud: 9600
boot: image specified by the boot system commands

Image auto sync is enabled
Image auto sync timer is 120 seconds

!--- The switch originally boots with the old image.


Console> (enable)


clear boot system flash disk0:cat6000-sup32pfc3k8.8-4-5.bin

BOOT variable =

!--- Old boot variable is cleared.


Console> (enable)


set boot system flash disk0:cat6000-sup32pfc3k8.8-5-3.bin

BOOT variable = disk0:cat6000-sup32pfc3k8.8-5-3.bin,1;
```

```
!--- New boot variable is configured.


Console> (enable)

show boot

BOOT variable = disk0:cat6000-sup32pfc3k8.8-5-3.bin,1;
CONFIG_FILE variable =

Configuration register is 0x2102
ignore-config: disabled
auto-config: non-recurring, overwrite, sync disabled
ROMMON console baud: 9600
boot: image specified by the boot system commands

Image auto sync is enabled
Image auto sync timer is 120 seconds
```

5. Reset the switch so that on reload, the switch boots with the new software image.

```
<#root>

Console> (enable)

reset

This command will reset the system.
Do you want to continue (y/n) [n]? y
2006 Apr 10 22:12:14 %SYS-5-SYS_RESET:System reset from Console//
Powering OFF all existing linecards
Console> (enable)
System Bootstrap, Version 12.2(18r)SX2, RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 2004 by cisco Systems, Inc.
Cat6k-Sup32 platform with 262144 Kbytes of main memory

Autoboot executing command: "boot disk0:cat6000-sup32pfc3k8.8-5-3.bin"
Self decompressing the image : ##
 !--- Output surpressed.

## [OK]


System Power On Diagnostics
DRAM Size .....................256 MB
Testing DRAM ..................Passed
Verifying Text Segment ........Passed
NVRAM Size ....................2048 KB
Level2 Cache ..................Present
Level3 Cache ..................Absent
System Power On Diagnostics Complete

Currently running ROMMON from S (Gold) region
Boot image: disk0:cat6000-sup32pfc3k8.8-5-3.bin


Firmware compiled 27-Jan-06 16:09 by integ Build [100]
```

```
Running System Diagnostics from this Supervisor (Module 5)
This may take several minutes....please wait

Cisco Systems Console
Console>
```

6. Verify whether the switch loads the new software image.

```
<#root>

Console> (enable)

show version

WS-C6509 Software, Version NmpSW: 8.5(3)
Copyright (c) 1995-2006 by Cisco Systems
NMP S/W compiled on Jan 28 2006, 17:09:40

System Bootstrap Version: 12.2

System Boot Image File is 'disk0:cat6000-sup32pfc3k8.8-5-3.bin'

System Configuration register is 0x2102

Hardware Version: 2.0  Model: WS-C6509  Serial #: SCA044903GE

PS1  Module: WS-CAC-3000W    Serial #: SNI0803AL1X

Mod Port Model               Serial #    Versions
--- ---- ------------------- ----------- ----------------------------------
5   3    WS-SUP32-10GE-3B    SAD092003PK Hw : 1.2
                                         Fw : 12.2
                                         Fw1: 8.5(3)
                                         Sw : 8.5(3)
                                         Sw1: 8.5(3)
         WS-F6K-PFC3B        SAD091607E3 Hw : 2.1
                                         Sw :

       DRAM                    FLASH                   NVRAM
Module Total   Used    Free    Total   Used    Free    Total Used  Free
------ ------- ------- ------- ------- ------- ------- ----- ----- -----
5      262144K 123285K 138859K 249772K  18920K 230852K 2048K  261K 1787K

Uptime is 0 day, 0 hour, 1 minute
```

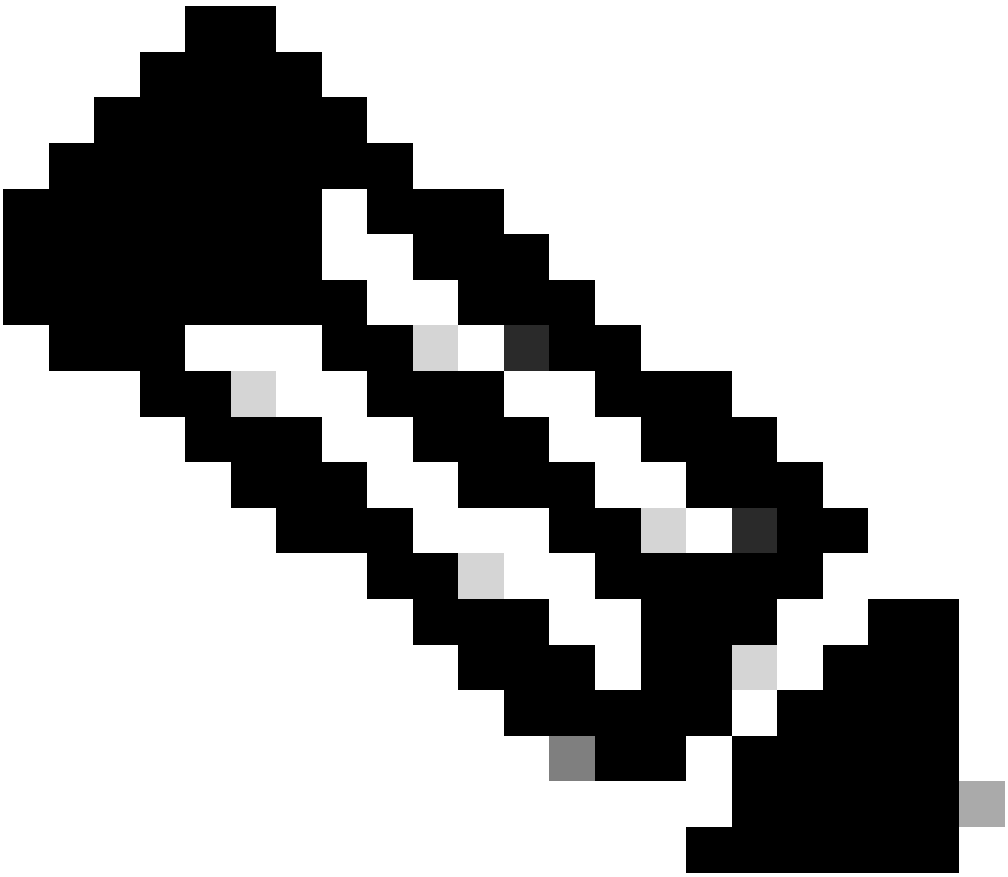
Cisco IOS on MSM and MSFC/MSFC2/MSFC3

Refer to Upgrade Software Images on Catalyst Switch Layer 3 Modules for a step-by-step procedure to upgrade the software image on Multilayer Switch Module (MSM) and Multilayer Switch Feature Card (MSFC)/ Multilayer Switch Feature Card 2 (MSFC2):/ Multilayer Switch Feature Card 3 (MSFC3).

Switches that Run Cisco IOS Software

1. Ensure that you verify the memory/boot ROM requirements, have the TFTP server on your PC, and the switch console accessed from the switch console port. If you are not ready with this setup, see

the Check Memory and Boot ROM Requirement section.



Note: Many TFTP implementations cannot transfer 16 MB or larger files. In Cisco IOS Software Release 12.1(8a)E and later, system software images for Supervisor Engine II are larger than 16 MB. Use FTP or Remote Copy Protocol (RCP) in order to transfer 16 MB or larger files. Refer to Loading and Maintaining System Images and Microcode for procedures on how to use FTP or RCP. This procedure uses the Cisco TFTP server and there were no problems during the image transfer.

---

2. Configure the management IP address (VLAN interface), and check the connectivity between the switch and the PC on which TFTP server is installed. This example uses the IP address 10.10.10.1 for switch management (int vlan1), and the IP address 10.10.10.2 for the TFTP server.

```
<#root>


!--- By default, all ports are Layer 3 ports. Port FastEthernet 4/48
!--- is configured to the Layer 2 port, which is connected to the
!--- PC that runs the TFTP server.

Cat6500#
```

```
configure terminal

Enter configuration commands, one per line.  End with CNTL/Z.
Cat6500(config)#

interface fa4/48

Cat6500(config-if)#

switchport


Cat6500(config-if)#

switchport mode access


Cat6500(config-if)#

switchport access vlan 1

Cat6500(config-if)#

no shutdown

Cat6500(config-if)#

exit


!--- Port fa4/48 is configured in VLAN 1. VLAN 1 is the
!--- management VLAN.

Cat6500(config)#

int vlan 1

Cat6500(config-if)#

ip address 10.10.10.1 255.255.255.0

Cat6500(config-if)#

no shutdown

Cat6500(config-if)#

^Z

Cat6500#
00:04:25: %SYS-5-CONFIG_I: Configured from console by console


!--- The configuration for interface fa4/48.

Cat6500#

show running-config int fa4/48

Building configuration...

Current configuration : 85 bytes
!
interface FastEthernet4/48
 no ip address
 switchport
 switchport mode access
end
```

```
Cat6500#

!--- Make sure that the VLAN 1 and fa4/48 interfaces are up.

Cat6500#

show ip int brief

Interface              IP-Address      OK? Method Status                Protocol

Vlan1                  10.10.10.1      YES manual up                    up


GigabitEthernet1/1     unassigned      YES unset  administratively down down
-- output skipped --
FastEthernet4/46       unassigned      YES unset  administratively down down
FastEthernet4/47       unassigned      YES unset  administratively down down

FastEthernet4/48       unassigned      YES unset  up                    up


Cat6500#

!--- IP connectivity with the PC that runs TFTP server is verified.

Cat6500#

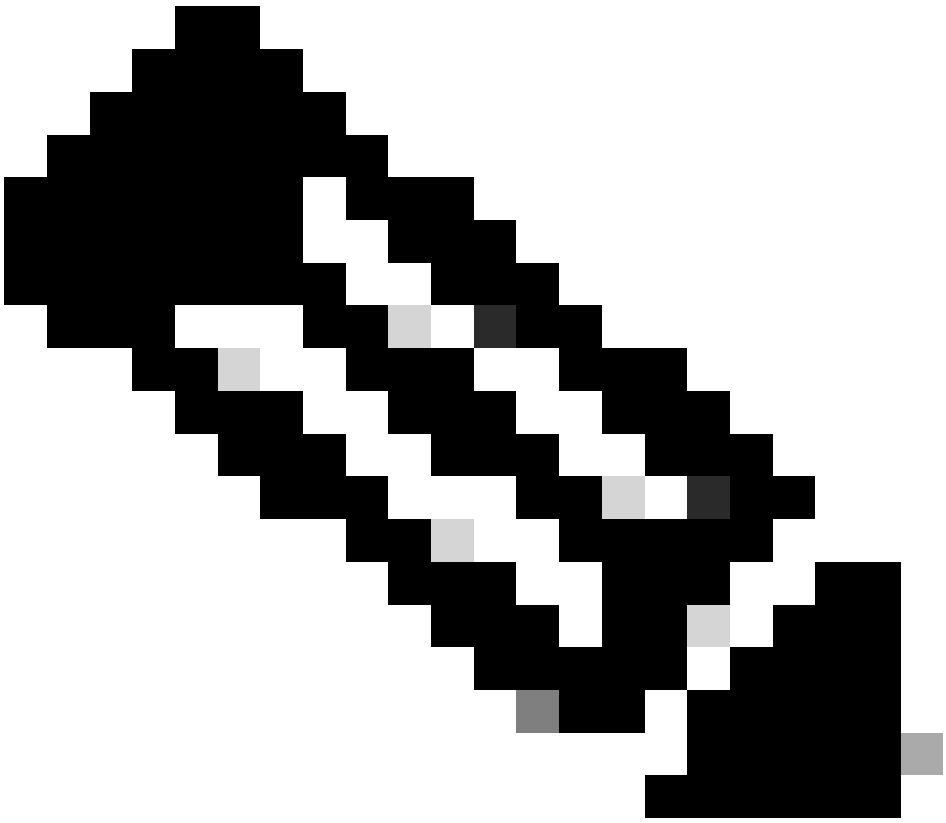
ping 10.10.10.2


Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.10.10.2, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/1 ms
Cat6500#
```

3. Cisco IOS Software requires two software images:

   a. the main software image

   b. the bootloader image



Note: The bootloader image is mandatory for MSFC1, and must be placed in the MSFC bootflash. A bootloader image is not a requirement for the MSFC2. However, Cisco recommends that you use a boot image as described in this procedure. A boot image is a much smaller, scaled-down version of the system image. With a boot image, you can perform a TFTP image transfer if the main system image becomes corrupt or lost. If you choose to use an MSFC2 boot image, you must store it in the MSFC bootflash.

The best practice is to keep the main software image in slot0 and the boot loader image in the MSFC bootflash. Verify whether you have enough space available in the slot0 and MSFC bootflash in order to copy the new image from the TFTP server. You can check the size of the new image on the PC to which it is downloaded. The Supervisor Engine 720, uses the term disk0: and **disk1:**rather than slot0:, so in this example, replace the word slot0: with disk0:or **disk1:**, which depends upon which disk you use.

```
<#root>

Cat6500#

dir slot0:

Directory of slot0:/

    1  -rw-    21611516   Mar 01 1993 00:08:04  c6sup22-jsv-mz.121-11b.E4
```

```
24772608 bytes total (

3160964 bytes free

)
Cat6500#

!--- The free space on slot0 is around 3 MB. The new image
!--- size is around 22 MB. Delete the current image in order to
!--- make room in slot0.

Cat6500#

delete slot0:c6sup22-jsv-mz.121-11b.E4

Delete filename [c6sup22-jsv-mz.121-11b.E4]?
Delete slot0:c6sup22-jsv-mz.121-11b.E4? [confirm]

Cat6500#

!--- After you delete the image, you cannot use the
!--- free space until you squeeze slot0 to use the free space.

Cat6500#

squeeze slot0:


All deleted files will be removed. Continue? [confirm]
Squeeze operation may take a while. Continue? [confirm]

Squeeze of slot0 complete
Cat6500#
Cat6500#

dir bootflash:

Directory of bootflash:/

    1  -rw-     1734148   Mar 01 1993 21:01:07  c6msfc2-boot-mz.121-11b.E4
15204352 bytes total (

13470076 bytes free

)
Cat6500#

!--- The free space on bootflash is around 13 MB,
!--- and the new boot loader image size is just 1.66 MB.
!--- You do not need to remove the current boot loader image.
```

4. Copy the new main software image into slot0, and the boot image into bootflash from the TFTP server. Verify whether the images are copied correctly. Check that the file size of the new image matches the size on the software center. If they do not match, check whether the image got corrupt during transfer. Download the image again in order to ensure that the switch does not reload in ROMMON mode.

```
<#root>

Cat6500#
```

copy tftp slot0:

Address or name of remote host []?

10.10.10.2

Source filename []?

c6sup22-jsv-mz.121-12c.E2

!--- This is the new main software image.

Destination filename [c6sup22-jsv-mz.121-12c.E2]?
Loading c6sup22-jsv-mz.121-12c.E2 from 10.10.10.2 (via Vlan1): !!!!!!!!!!!!
!!!
!!!
!!!
!!!
!!!

!--- Output suppressed.

!!!
!!
[OK - 22338124/44676096 bytes]
22338124 bytes copied in 235.880 secs (95055 bytes/sec)
Cat6500#

dir slot0:

Directory of slot0:/

1 -rw-   22338124   Mar 01 1993 00:20:15 c6sup22-jsv-mz.121-12c.E2

!--- The new software image is properly copied to slot0.

24772608 bytes total (2434356 bytes free)
Cat6500#

!--- Copy the boot image in bootflash.

Cat6500#

copy tftp bootflash:

Address or name of remote host [10.10.10.2]?
Source filename [c6sup22-jsv-mz.121-12c.E2]? c6msfc2-boot-mz.121-12c.E2
Destination filename [c6msfc2-boot-mz.121-12c.E2]?
Loading c6msfc2-boot-mz.121-12c.E2 from 10.10.10.2 (via Vlan1): !!!!!!!!!!!!
!!!
!!!
!!!
[OK - 1744836/3488768 bytes]

1744836 bytes copied in 9.340 secs (193870 bytes/sec)
Cat6500#

dir bootflash:

Directory of bootflash:/

```
    1  -rw-     1734148   Mar 01 1993 21:01:07  c6msfc2-boot-mz.121-11b.E4

2  -rw-     1744836   Mar 01 1993 00:25:17  c6msfc2-boot-mz.121-12c.E2

!--- The new boot image is properly copied in bootflash.

15204352 bytes total (11725112 bytes free)
Cat6500#
```

5. Change the boot variables so that the switch boots with the new software and boot image after reload. You can verify the boot variables with the **show running-config** or **show bootvar** commands.

```
<#root>

Cat6500#

show running-config


Building configuration...

Current configuration : 4193 bytes
!
version 12.1
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname Cat6500
!

!--- These are the old boot variables.


boot system flash slot0:c6sup22-jsv-mz.121-11b.E4
boot bootldr bootflash:c6msfc2-boot-mz.121-11b.E4

!
redundancy
 main-cpu
  auto-sync standard
ip subnet-zero
!

!--- Output suppressed.

Cat6500#
Cat6500#
Cat6500#

configure terminal

Enter configuration commands, one per line.  End with CNTL/Z.

!--- Remove the old boot variables.

Cat6500(config)#
```

```
no boot system flash slot0:c6sup22-jsv-mz.121-11b.E4

Cat6500(config)#

no boot bootldr bootflash:c6msfc2-boot-mz.121-11b.E4


!--- Configure the new boot variables.

Cat6500(config)#

boot system flash slot0:c6sup22-jsv-mz.121-12c.E2

Cat6500(config)#

boot bootldr bootflash:c6msfc2-boot-mz.121-12c.E2

Cat6500(config)#

^Z

Cat6500#
00:29:00: %SYS-5-CONFIG_I: Configured from console by console
Cat6500#

show running-config


Building configuration...

Current configuration : 4193 bytes
!
version 12.1
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname Cat6500
!

!--- These are the new boot variables.


boot system flash slot0:c6sup22-jsv-mz.121-12c.E2
boot bootldr bootflash:c6msfc2-boot-mz.121-12c.E2

!
redundancy
 main-cpu
  auto-sync standard
ip subnet-zero
!

!--- Output suppressed.

Cat6500#

!--- You can verify the boot variables with the

show bootvar


!--- command as well. Make sure to issue the

write memory
```

```
 command before
!--- you verify the changes with this command.

Cat6500#
show bootvar


!--- The boot variables are changed. But, the
!---
 show bootvar command
 output displays the old variable.

BOOT variable = slot0:c6sup22-jsv-mz.121-11b.E4,1
CONFIG_FILE variable does not exist
BOOTLDR variable = bootflash:c6msfc2-boot-mz.121-11b.E4
Configuration register is 0x2102

Cat6500#

!--- Save the changes with the
write memory
 command.

Cat6500#
write memory


Building configuration...
[OK]
Cat6500#
Cat6500#
show bootvar


!--- These are the new boot variables.


BOOT variable = slot0:c6sup22-jsv-mz.121-12c.E2,1

CONFIG_FILE variable does not exist
BOOTLDR variable = bootflash:c6msfc2-boot-mz.121-12c.E2


!--- Make sure the config-register is set to 0x2102 so that the
!--- switch boots with a valid software image. You can change the
!--- config-register with the
sconfig-register 0x2102


!--- configuration mode command. If the boot veriable
!--- is not specifed correctly, your switch can reload in ROMMON mode.


Cat6500#
```

6. Reload the switch so that after reboot, the switch boots with new software image.

```
<#root>

Cat6500#

reload


System configuration has been modified. Save? [yes/no]:

y

Building configuration...
[OK]
Proceed with reload? [confirm]

00:30:27: %SYS-5-RELOAD: Reload requested
00:30:30: %SYS-SP-3-LOGGER_FLUSHING: System pausing to ensure console
   debugging output.

00:30:30: %OIR-SP-6-CONSOLE: Changing console ownership to switch processor

00:30:30: %SYS-SP-3-LOGGER_FLUSHED: System was paused for 00:00:00 to
   ensure console debugging output.

00:30:32: %SYS-SP-3-LOGGER_FLUSHING: System pausing to ensure console
   debugging output.

***
*** --- SHUTDOWN NOW ---
***

00:30:32: %SYS-SP-5-RELOAD: Reload requested
00:30:32: %OIR-SP-6-CONSOLE: Changing console ownership to switch processor

00:30:32: %SYS-SP-3-LOGGER_FLUSHED: System was paused for 00:00:00 to
   ensure console debugging output.

System Bootstrap, Version 6.1(2)
Copyright (c) 1994-2000 by cisco Systems, Inc.
c6k_sup2 processor with 131072 Kbytes of main memory


Autoboot executing command: "boot slot0:c6sup22-jsv-mz.121-12c.E2"


!--- The switch is loading the new main software image.


Self decompressing the image : ########################################
################################################################################
################################################################################
################################################################################
################################################################################
################################################################################
################################################################################
################################################################################
################################################################################
[OK]
```

```
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           170 West Tasman Drive
           San Jose, California 95134-1706

Cisco Internetwork Operating System Software
IOS (tm) c6sup2_sp Software (c6sup2_sp-SPV-M), Version 12.1(12c)E2,
   EARLY DEPLOYMENT RELEASE SOFTWARE (fc1)
TAC Support: http://www.cisco.com/tac
Copyright (c) 1986-2002 by cisco Systems, Inc.
Compiled Fri 23-Aug-02 10:13 by eaarmas
Image text-base: 0x40020980, data-base: 0x407F2000

Start as Primary processor

00:00:02: %SYS-3-LOGGER_FLUSHING: System pausing to ensure console
   debugging output.

00:00:02: %OIR-6-CONSOLE: Changing console ownership to route processor

System Bootstrap, Version 12.1(3r)E2, RELEASE SOFTWARE (fc1)
Copyright (c) 2000 by cisco Systems, Inc.
Cat6k-MSFC2 platform with 524288 Kbytes of main memory
Download Start
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
Download Completed! Booting the image.
Self decompressing the image : ##########################################
#########################################################################
#########################################################################
#########################################################################
#########################################################################
#########################################################################
#########################################################################
################################################
[OK]

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Rights clause at FAR sec. 52.227-19 and subparagraph
(c) (1) (ii) of the Rights in Technical Data and Computer
Software clause at DFARS sec. 252.227-7013.

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           170 West Tasman Drive
           San Jose, California 95134-1706

Cisco Internetwork Operating System Software
IOS (tm) c6sup2_rp Software (c6sup2_rp-JSV-M), Version 12.1(12c)E2,
   EARLY DEPLOYMENT RELEASE SOFTWARE (fc1)
```

```
TAC Support: http://www.cisco.com/tac
Copyright (c) 1986-2002 by cisco Systems, Inc.
Compiled Fri 23-Aug-02 09:42 by eaarmas
Image text-base: 0x40008980, data-base: 0x41888000

cisco Catalyst 6000 (R7000) processor with 489472K/34816K bytes of memory.
Processor board ID SAD044204RE
R7000 CPU at 300Mhz, Implementation 39, Rev 2.1, 256KB L2, 1024KB L3 Cache
Last reset from power-on
Bridging software.
X.25 software, Version 3.0.0.
SuperLAT software (copyright 1990 by Meridian Technology Corp).
TN3270 Emulation software.
1 Virtual Ethernet/IEEE 802.3  interface(s)
48 FastEthernet/IEEE 802.3 interface(s)
18 Gigabit Ethernet/IEEE 802.3 interface(s)
381K bytes of non-volatile configuration memory.

16384K bytes of Flash internal SIMM (Sector size 512K).

Press RETURN to get started!

00:00:37: RP: Currently running ROMMON from S (Gold) region
00:00:44: %SYS-5-CONFIG_I: Configured from memory by console
00:00:44: %SYS-5-RESTART: System restarted --
Cisco Internetwork Operating System Software
IOS (tm) c6sup2_rp Software (c6sup2_rp-JSV-M), Version 12.1(12c)E2,
   EARLY DEPLOYMENT RELEASE SOFTWARE (fc1)
TAC Support: http://www.cisco.com/tac
Copyright (c) 1986-2002 by cisco Systems, Inc.
Compiled Fri 23-Aug-02 09:42 by eaarmas
00:00:02: %SYS-3-LOGGER_FLUSHED: System was paused for 00:00:00 to ensure
   console debugging output.

00:00:03: %C6KPWR-4-PSINSERTED: power supply inserted in slot 1.
00:00:03: %C6KPWR-4-PSOK: power supply 1 turned on.
00:00:41: SP: Currently running ROMMON from S (Gold) region
00:00:42: %SYS-SP-5-RESTART: System restarted --
Cisco Internetwork Operating System Software
IOS (tm) c6sup2_sp Software (c6sup2_sp-SPV-M), Version 12.1(12c)E2,
   EARLY DEPLOYMENT RELEASE SOFTWARE (fc1)
TAC Support: http://www.cisco.com/tac
Copyright (c) 1986-2002 by cisco Systems, Inc.
Compiled Fri 23-Aug-02 10:13 by eaarmas
00:00:45: %SNMP-5-COLDSTART: SNMP agent on host Cat6500 is undergoing a
   cold start
00:00:46: %SYS-6-BOOTTIME: Time taken to reboot after reload = -1781 seconds
00:00:46: %SYS-SP-6-BOOTTIME: Time taken to reboot after reload = 730945875
   seconds
00:00:48: %C6KPWR-SP-4-ENABLED: power to module in slot 3 set on
00:00:48: %C6KPWR-SP-4-ENABLED: power to module in slot 4 set on
Cat6500>
Cat6500>
```

7. Verify whether the switch loads the new software image.

```
<#root>

Cat6500>
```

```
enable

Cat6500#

show version

Cisco Internetwork Operating System Software

IOS (tm) c6sup2_rp Software (c6sup2_rp-JSV-M), Version 12.1(12c)E2,
   EARLY DEPLOYMENT RELEASE SOFTWARE (fc1)


!--- The switch runs the new software release.

TAC Support: http://www.cisco.com/tac
Copyright (c) 1986-2002 by cisco Systems, Inc.
Compiled Fri 23-Aug-02 09:42 by eaarmas
Image text-base: 0x40008980, data-base: 0x41888000

ROM: System Bootstrap, Version 12.1(3r)E2, RELEASE SOFTWARE (fc1)

BOOTLDR: c6sup2_rp Software (c6sup2_rp-JSV-M), Version 12.1(12c)E2,
   EARLY DEPLOYMENT RELEASE SOFTWARE (fc1)


!--- The switch runs the new boot image.

Cat6500 uptime is 1 minute
System returned to ROM by power-on (SP by power-on)
Running default software

cisco Catalyst 6000 (R7000) processor with 489472K/34816K bytes of memory.
Processor board ID SAD044204RE
R7000 CPU at 300Mhz, Implementation 39, Rev 2.1, 256KB L2, 1024KB L3 Cache
Last reset from power-on
Bridging software.
X.25 software, Version 3.0.0.
SuperLAT software (copyright 1990 by Meridian Technology Corp).
TN3270 Emulation software.
1 Virtual Ethernet/IEEE 802.3  interface(s)
48 FastEthernet/IEEE 802.3 interface(s)
18 Gigabit Ethernet/IEEE 802.3 interface(s)
381K bytes of non-volatile configuration memory.

16384K bytes of Flash internal SIMM (Sector size 512K).
Configuration register is 0x2102

Cat6500#
```

Supervisor Engine 720

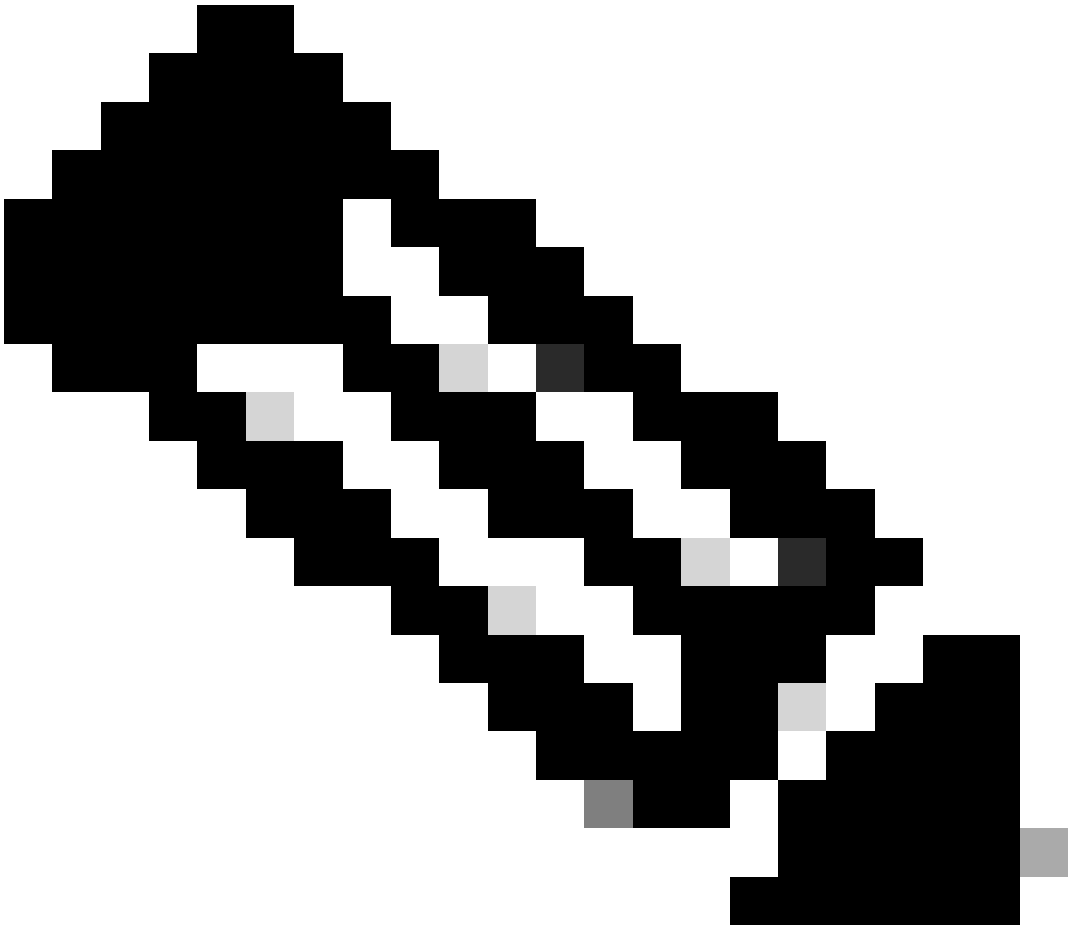
In Supervisor Engine 720, after the Cisco IOS Software Release 12.2 SX there are no seperate image files such as a bootloader image and the main IOS image. The Supervisor Engine and the MSFC both run a single bundled Cisco IOS image.

Supervisor Engine 720 Common Features:

- 64-MB bootflash device or CompactFlash adapter with 512 MB CompactFlash card (WS-CF-UPG=):
    - 64-MB bootflash device (sup-bootflash:) supported in all releases

- WS-CF-UPG= (sup-bootdisk:) supported in:
- Release 12.2(18)SXE5 and later releases
- Release 12.2(18)SXF and later releases

- 2 CompactFlash Type II slots (disk0: and disk1:)



Note: Because some of the latest software images for the Supervisor Engine 720 are larger than the bootflash device, a CompactFlash card is recommended.

Complete these steps in order to upgrade image on the supervisor module:

1. You can check the size of the new image to which it is downloaded. The Supervisor Engine 720 uses the term disk0: or **disk1:** rather than **slot0:**.

```
<#root>

Cat6509-E#
```

```
dir disk0:

Directory of disk0:/

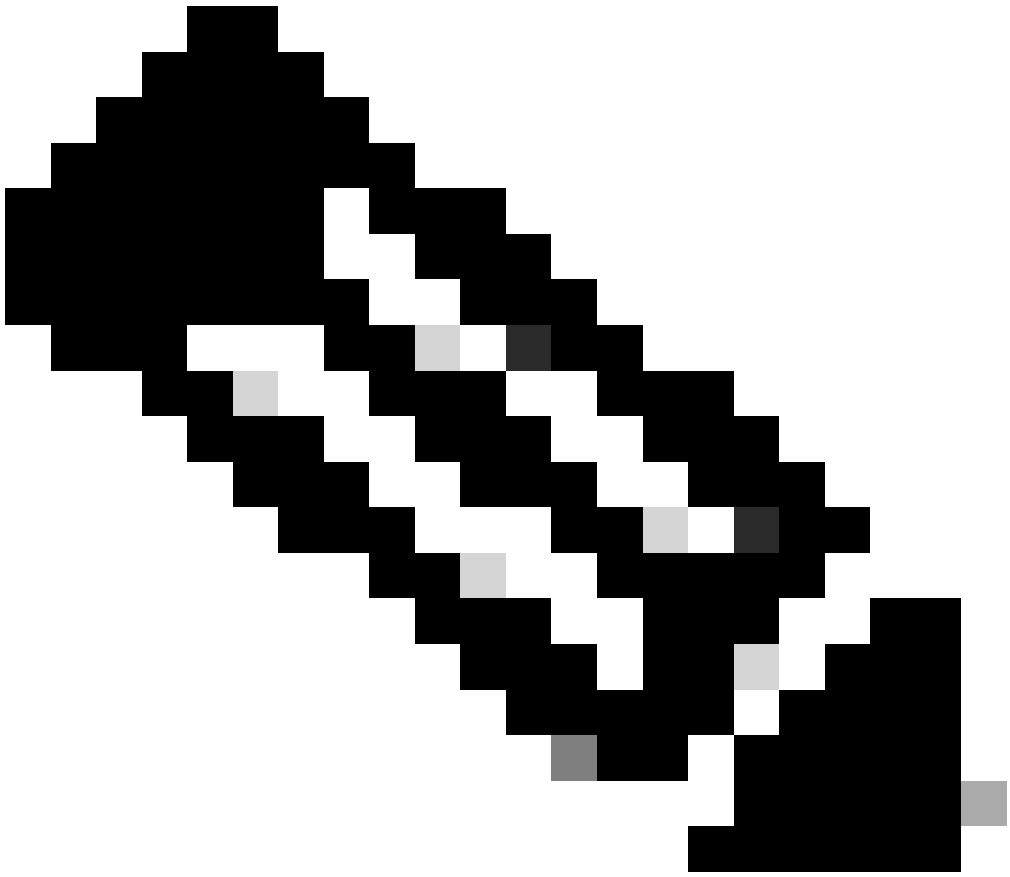
  1  -rw-    41050516   Apr 5 2006 05:39:24 +00:00  s72033-psv-mz.122-17d.SXB11.bin
65536000 bytes total (24485356 bytes free)
Cat6500#


!--- The free space on disk0 is around 24 MB. Delete the current image
!--- in order to make room for the new image in disk0.

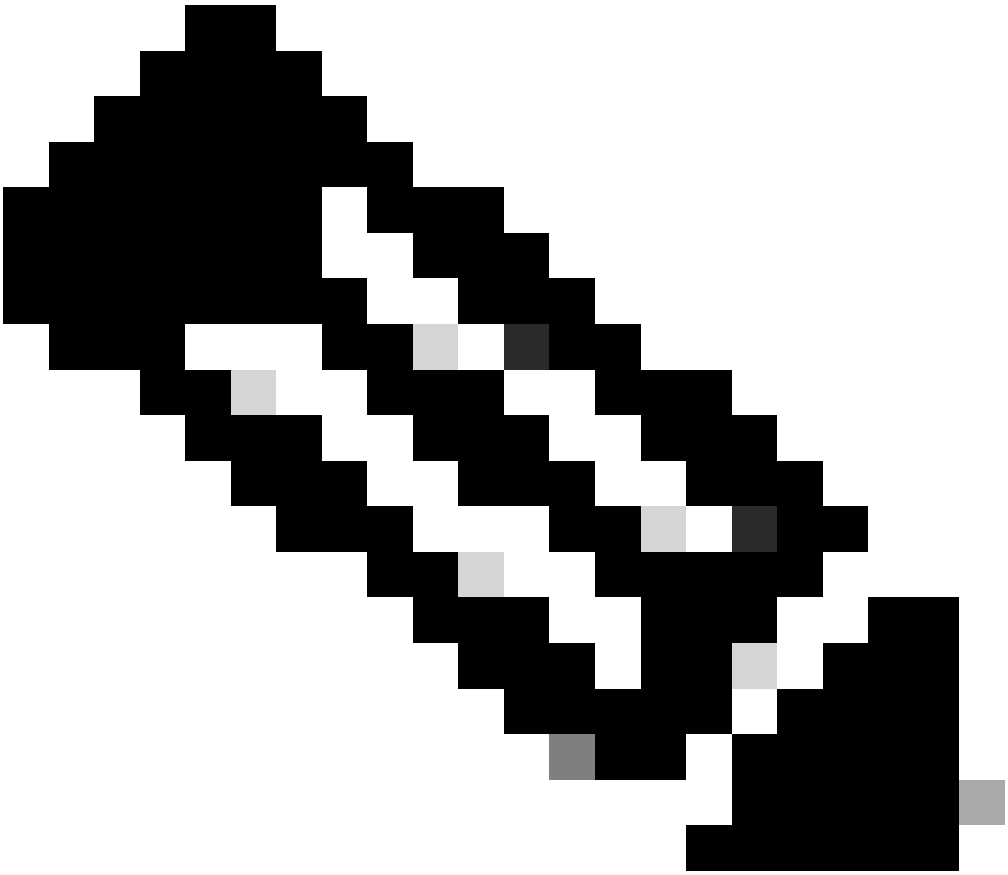

Cat6509-E#

delete disk0:s72033-psv-mz.122-17d.SXB11.bin

Delete filename [s72033-psv-mz.122-17d.SXB11.bin]?
Delete disk0:s72033-psv-mz.122-17d.SXB11.bin? [confirm]
```



Note: The squeeze command does not work for certain software releases.



Note: Issue this command in order to check the support of squeeze command:

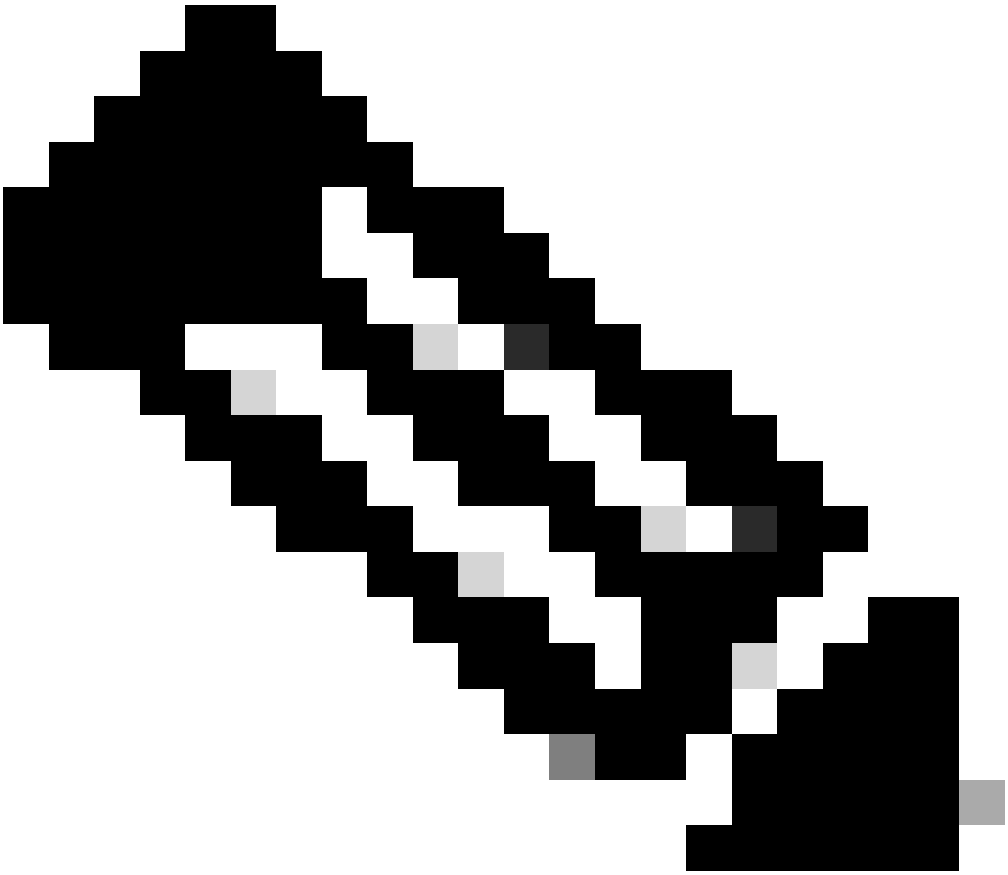
```
<#root>

Cat6509-E#

squeeze ?

  /nolog          Squeeze without squeeze logs
  /quiet          Squeeze without progress update
  bootflash:      Filesystem to be squeezed
  sup-bootflash:  Filesystem to be squeezed
```

2. Copy the new software image into disk0 from the TFTP server.



Note: Many TFTP implementations cannot transfer 16 MB or larger files. The Cisco IOS Software images for Supervisor Engine 720 are larger than 16 MB. Use FTP or Remote Copy Protocol (RCP) in order to transfer 16 MB or larger files. Refer to Loading and Maintaining System Images and Microcode for procedures on the use of FTP or RCP.

```
<#root>

Cat6509-E#

copy ftp://cisco:cisco@10.66.64.10//tftpboot/s72033-psv-mz.122-18.SXD7.bin disk0:

Destination filename [s72033-psv-mz.122-18.SXD7.bin]?
Accessing ftp://cisco:cisco@10.66.64.10//tftpboot/s72033-psv-mz.122-18.SXD7.bin.
..
Loading /tftpboot/s72033-psv-mz.122-18.SXD7.bin !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!

!--- Output suppressed.
```

```
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
[OK - 45463592/4096 bytes]
45463592 bytes copied in 139.600 secs (325670 bytes/sec)
```

3. Verify that the images are copied correctly. Check that the file size of the new image matches the size on the software center. If they do not match, it is possible that the image got corrupted during transfer. You need to download the image again in order to avoid the switch reloading in ROMMON mode.

```
<#root>

Cat6509-E#

dir disk0:

Directory of disk0:/

  1  -rw-    45463592   Apr 7 2006 05:45:36 +00:00  s72033-psv-mz.122-18.SXD7.bin

127793152 bytes total (82327552 bytes free)

!--- The new software image is properly copied to disk0.
```

4. Change the boot variables so that the switch boots with the new software image after reload. Issue the **show running-config**or show bootvarcommands in order to verify the boot variables.

```
<#root>

Cat6509-E#

show running-config


Building configuration...

Current configuration : 1129 bytes
!
version 12.2
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
service counters max age 10
!
hostname Cat6509-E
!

boot system  disk0:s72033-psv-mz.122-17d.SXB11.bin

!

!---- Output suppressed.
```

```
Cat6509-E#
configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Cat6509-E(config)#
no boot system  disk0:s72033-psv-mz.122-17d.SXB11.bin

!--- Removes the old boot variable.

Cat6509-E(config)#
boot system  disk0:s72033-psv-mz.122-18.SXD7.bin

!--- Configures the new boot variable.

Cat6509-E#
show running-config

Building configuration...

Current configuration : 1129 bytes
!
version 12.2
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
service counters max age 10
!
hostname Cat6509-E
!
boot system  disk0:s72033-psv-mz.122-18.SXD7.bin
!

!--- Output suppressed.

Cat6509-E#
show bootvar

BOOT variable = disk0:s72033-psv-mz.122-17d.SXB11.bin,1
CONFIG_FILE variable =
BOOTLDR variable =
Configuration register is 0x2102

!--- The boot variables are changed above. But, the
!--- show bootvar command output displays the old variable.

Cat6509-E#
write memory
Building configuration...
```

```
[OK]

!--- Saves the changes.


Cat6509-E#
```

show bootvar

```
BOOT variable = disk0:s72033-psv-mz.122-18.SXD7.bin,1
CONFIG_FILE variable =
BOOTLDR variable =
Configuration register is 0x2102

!--- Make sure the config-register is set to 0x2102 so that the
!--- switch boots a valid software image. You can change the
!--- configuration register value if you issue the
!---
```

config-register 0x2102

```

!--- configuration mode command. If the boot variable
!--- is not specifed correctly,
!--- switch may reload in ROMMON mode.
```

5. Reboot the switch so that the switch boots with new software image.

<#root>

```
Cat6509-E#
```

reload

```

System configuration has been modified. Save? [yes/no]: y
Building configuration...
[OK]
Proceed with reload? [confirm]

15:57:58: %SYS-5-RELOAD: Reload requested by console. Reload Reason: Reload Comm
and.
15:58:01: %SYS-SP-3-LOGGER_FLUSHING: System pausing to ensure console debugging
output.

15:58:01: %OIR-SP-6-CONSOLE: Changing console ownership to switch processor

15:58:01: %SYS-SP-3-LOGGER_FLUSHED: System was paused for 00:00:00 to ensure con
sole debugging output.

15:58:04: %SYS-SP-3-LOGGER_FLUSHING: System pausing to ensure console debugging
output.

***
*** --- SHUTDOWN NOW ---
***

15:58:04: %SYS-SP-5-RELOAD: Reload requested
15:58:04: %OIR-SP-6-CONSOLE: Changing console ownership to switch processor
```

```
15:58:04: %SYS-SP-3-LOGGER_FLUSHED: System was paused for 00:00:00 to ensure con
sole debugging output.

System Bootstrap, Version 8.1(3)
Copyright (c) 1994-2004 by cisco Systems, Inc.
Cat6k-Sup720/SP processor with 1048576 Kbytes of main memory

Autoboot executing command: "boot disk0:s72033-psv-mz.122-18.SXD7.bin"
Loading image, please wait ...
Self decompressing the image : ########################################################
################################################################################
################################################################################
################################################################################
######################## [OK]

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           San Jose, California 95134-1706

Cisco Internetwork Operating System Software
IOS (tm) s72033_sp Software (s72033_sp-PSV-M), Version 12.2(18)SXD7, RELEASE SOF
TWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2005 by cisco Systems, Inc.
Compiled Tue 13-Dec-05 21:47 by kellythw
Image text-base: 0x40021000, data-base: 0x40FD8000
0:00:04: %SYS-3-LOGGER_FLUSHING: System pausing to ensure console debugging out
put.
00:00:04: %PFREDUN-6-ACTIVE: Initializing as ACTIVE processor
00:00:04: %SYS-3-LOGGER_FLUSHING: System pausing to ensure console debugging out
put.
00:00:04: %SYS-3-LOGGER_FLUSHED: System was paused for 00:00:00 to ensure consol
e debugging output.
00:00:04: %OIR-6-CONSOLE: Changing console ownership to route processor

System Bootstrap, Version 12.2(17r)S2, RELEASE SOFTWARE (fc1)
TAC Support: http://www.cisco.com/tac
Copyright (c) 2004 by cisco Systems, Inc
Download Start
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!
Download Completed! Booting the image.
Self decompressing the image : ########################################################
################################################################################
############################ [OK]
```

```
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Cisco Internetwork Operating System Software
IOS (tm) s72033_rp Software (s72033_rp-PSV-M), Version 12.2(18)SXD7, RELEASE SOF
TWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2005 by cisco Systems, Inc.
Compiled Tue 13-Dec-05 22:10 by kellythw
Image text-base: 0x4002100C, data-base: 0x42040000
Cisco WS-C6509-E (R7000) processor (revision 1.0) with 983008K/65536K bytes of m
emory.
Processor board ID SCA080600KT
SR71000 CPU at 600Mhz, Implementation 0x504, Rev 1.2, 512KB L2 Cache
Last reset from s/w peripheral
X.25 software, Version 3.0.0.
Bridging software.
1 Virtual Ethernet/IEEE 802.3  interface(s)
2 Gigabit Ethernet/IEEE 802.3 interface(s)
1917K bytes of non-volatile configuration memory.
8192K bytes of packet buffer memory.

65536K bytes of Flash internal SIMM (Sector size 512K).

Press RETURN to get started!
00:00:58: curr is 0x0
00:00:58: RP: Currently running ROMMON from S (Gold) region
00:01:18: %SYS-5-CONFIG_I: Configured from memory by console
00:01:19: %SYS-5-RESTART: System restarted --
Cisco Internetwork Operating System Software
IOS (tm) s72033_rp Software (s72033_rp-PSV-M), Version 12.2(18)SXD7, RELEASE SOF
TWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2005 by cisco Systems, Inc.
Compiled Tue 13-Dec-05 22:10 by kellythw
00:01:19: %SYS-6-BOOTTIME: Time taken to reboot after reload =  210 seconds
00:00:04: %SYS-3-LOGGER_FLUSHED: System was paused for 00:00:00 to ensure consol
e debugging output.

00:00:05: %SYS-3-LOGGER_FLUSHED: System was paused for 00:00:00 to ensure consol
e debugging output.

Firmware compiled 18-Apr-05 17:29 by integ Build [100]

00:01:15: SP: SP: Currently running ROMMON from S (Gold) region
00:01:20: %SYS-SP-5-RESTART: System restarted --
Cisco Internetwork Operating System Software
IOS (tm) s72033_sp Software (s72033_sp-PSV-M), Version 12.2(18)SXD7, RELEASE SOF
TWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2005 by cisco Systems, Inc.
Compiled Tue 13-Dec-05 21:47 by kellythw
```

```
00:01:21: %OIR-SP-6-INSPS: Power supply inserted in slot 1
00:01:21: %C6KPWR-SP-4-PSOK: power supply 1 turned on.
00:01:26: %FABRIC-SP-5-CLEAR_BLOCK: Clear block option is off for the fabric in
slot 5.
00:01:26: %FABRIC-SP-5-FABRIC_MODULE_ACTIVE: The Switch Fabric Module in slot 5
became active.
00:01:28: %DIAG-SP-6-RUN_MINIMUM: Module 5: Running Minimum Diagnostics...
00:01:39: %DIAG-SP-6-DIAG_OK: Module 5: Passed Online Diagnostics
00:01:40: %OIR-SP-6-INSCARD: Card inserted in slot 5, interfaces are now online

Cat6509-E>

enable
```

6. Verify that the switch has loaded the new software image.

```
<#root>

Cat6509-E#

show version


Cisco Internetwork Operating System Software
IOS (tm) s72033_rp Software (s72033_rp-PSV-M), Version 12.2(18)SXD7, RELEASE SOF
TWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2005 by cisco Systems, Inc.
Compiled Tue 13-Dec-05 22:10 by kellythw
Image text-base: 0x4002100C, data-base: 0x42040000


ROM: System Bootstrap, Version 12.2(17r)S2, RELEASE SOFTWARE (fc1)
BOOTLDR: s72033_rp Software (s72033_rp-PSV-M), Version 12.2(18)SXD7, RELEASE SOF
TWARE (fc1)


Cat6509-E uptime is 3 minutes
Time since Cat6509-E switched to active is 2 minutes
System returned to ROM by unknown reload cause - suspect boot_data[BOOT_COUNT] 0
x0, BOOT_COUNT 0, BOOTDATA 19 (SP by reload)

System image file is "disk0:s72033-psv-mz.122-18.SXD7.bin"


cisco WS-C6509-E (R7000) processor (revision 1.0) with 983008K/65536K bytes of m
emory.
Processor board ID SCA080600KT
SR71000 CPU at 600Mhz, Implementation 0x504, Rev 1.2, 512KB L2 Cache
Last reset from s/w peripheral
X.25 software, Version 3.0.0.
Bridging software.
1 Virtual Ethernet/IEEE 802.3  interface(s)
2 Gigabit Ethernet/IEEE 802.3 interface(s)
1917K bytes of non-volatile configuration memory.
8192K bytes of packet buffer memory.

65536K bytes of Flash internal SIMM (Sector size 512K).
Configuration register is 0x2102
```

```
Cat6509-E#
```

Supervisor Engine 32

The Supervisor Engine 32 has:

- **disk0:** — One external CompactFlash Type II slot (supports CompactFlash Type II Flash PC cards)
- **sup-bootdisk:** — 256 MB internal CompactFlash Flash memory (from ROMMON, it is bootdisk:)

Complete these steps in order to upgrade image on the supervisor module:

1. You can check the size of the new image to which it is downloaded. The Supervisor Engine 32 uses the term disk0: rather than slot0:

```
<#root>

Cat6509-E#

dir disk0

:
Directory of disk0:/

    1  -rw-    45266372   Apr 4 2006 22:18:40 +00:00  s3223-ipbase_wan-mz.122-18.SXF2.bin

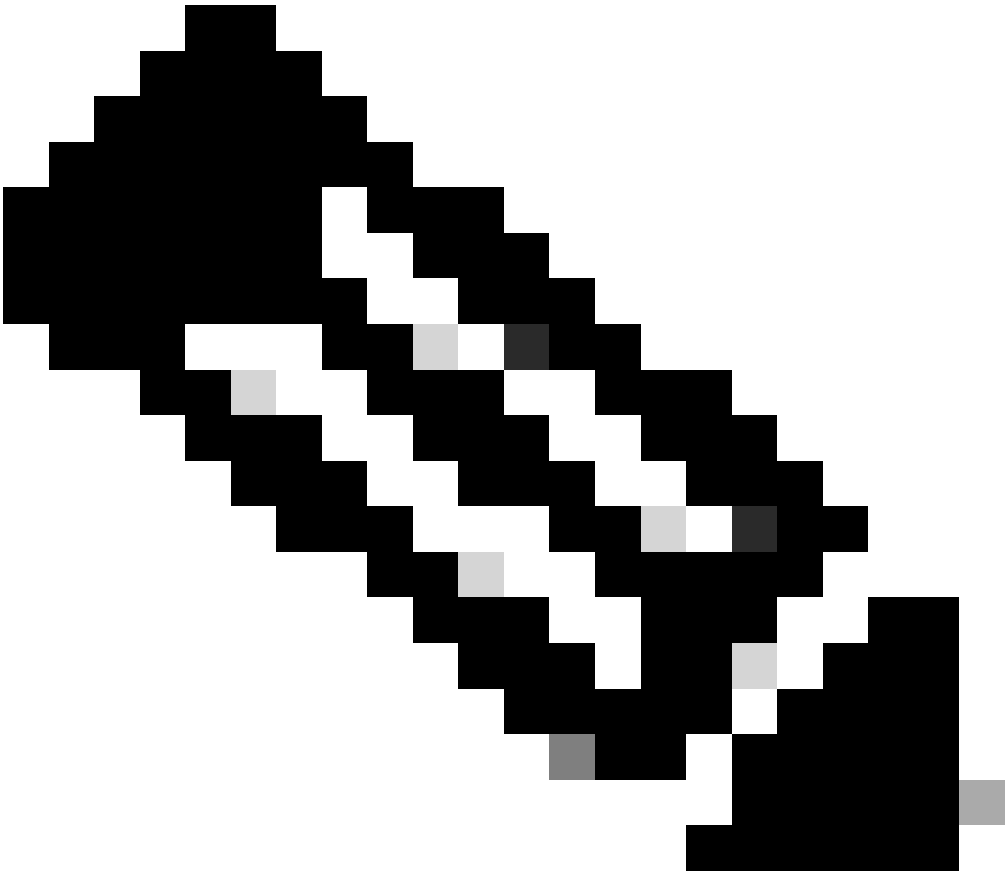
255938560 bytes total (210669568 bytes free)
Cat6509-E#


!--- The free space on disk0 is around 2 MB. Delete the current image
!--- in order to make room for the new image in disk0.

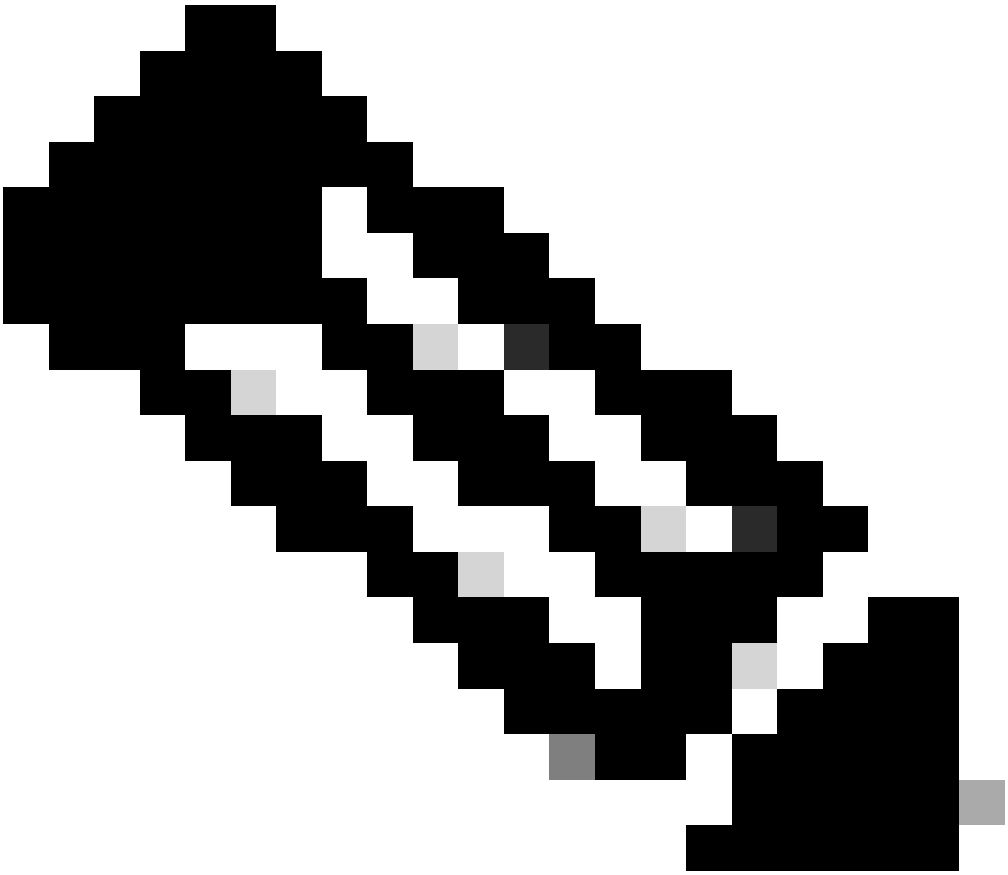

Cat6509-E#

delete disk0:s3223-ipbase_wan-mz.122-18.SXF2.bin

Delete filename [s3223-ipbase_wan-mz.122-18.SXF2.bin]?
Delete disk0:s3223-ipbase_wan-mz.122-18.SXF2.bin? [confirm]
```



Note: The squeeze command does not work for certain software releases.



Note: Issue this command in order to check the support of squeeze command:

```
<#root>

Cat6509-E#

squeeze ?

  /nolog      Squeeze without squeeze logs
  /quiet      Squeeze without progress update
  bootflash:  Filesystem to be squeezed
```

2. Copy the new software image into disk0 from the TFTP server.

Note: Many TFTP implementations cannot transfer 16 MB or larger files. The Cisco IOS Software images for Supervisor Engine 32 are larger than 16 MB. Use FTP or Remote Copy Protocol (RCP) in order to transfer 16 MB or larger files. Refer to Loading and Maintaining System Images and Microcode for procedures on how to use FTP or RCP.

<#root>

```
Cat6509-E#

copy ftp://cisco:cisco@10.66.64.10//tftpboot/s3223-ipbase_wan-mz.122-18.SXF4.bin disk0:

Loading /tftpboot/s3223-ipbase_wan-mz.122-18.SXF4.bin !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
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!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
```

```
!--- Output suppressed.

!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
[OK - 45302724/4096 bytes]
45302724 bytes copied in 159.400 secs (284208 bytes/sec)
```

3. Verify that the images are copied correctly. Check that the file size of the new image matches the size on the software center. If they do not match, it is possible that the image got corrupted during transfer. You need to download the image again in order to avoid the switch reloading in ROMMON mode.

```
<#root>

Cat6509-E#

dir disk0:

Directory of disk0:/

    1  -rw-    45302724   Apr 7 2006 03:56:18 +00:00  s3223-ipbase_wan-mz.122-18.SXF4.bin

64233472 bytes total (18927616 bytes free)

!--- The new software image is properly copied to disk0.
```

4. Change the boot variables so that the switch boots with the new software image after reload. Issue the show running-config or show bootvarcommands in order to check the boot variables.

```
<#root>

Cat6509-E#

show running-config


Building configuration...

Current configuration : 1346 bytes
!
upgrade fpd auto
version 12.2
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
service counters max age 5
!
hostname Cat6509-E
!

boot system  disk0:s3223-ipbase_wan-mz.122-18.SXF2.bin

!
```

```
!---- Output suppressed.


Cat6509-E#
configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Cat6509-E(config)#
no boot system  disk0:s3223-ipbase_wan-mz.122-18.SXF2.bin

!--- Remove the old boot variables.


Cat6509-E(config)#
boot system  disk0:s3223-ipbase_wan-mz.122-18.SXF4.bin

!--- Configure the new boot variables.


Cat6509-E#
show running-config

Building configuration...

Current configuration : 1129 bytes
!
version 12.2
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
service counters max age 10
!
hostname Cat6509-E
!
boot system  disk0:s3223-ipbase_wan-mz.122-18.SXF4.bin
!
!--- Output suppressed.


Cat6509-E#
show bootvar
BOOT variable = disk0:s3223-ipbase_wan-mz.122-18.SXF2.bin
CONFIG_FILE variable =CONFIG_FILE variable does not exist
BOOTLDR variable =
Configuration register is 0x2102

!--- Though the boot variables are previously changed, the
!---
```

```
show bootvar

 command output displays the old variable.


Cat6509-E#

write memory

Building configuration...
[OK]

!--- Saves the changes.


Cat6509-E#

show bootvar

BOOT variable = disk0:s3223-ipbase_wan-mz.122-18.SXF4.bin
CONFIG_FILE variable =CONFIG_FILE variable does not exist
BOOTLDR variable =
Configuration register is 0x2102

!--- Make sure the config-register is set to 0x2102 so that the
!--- switch boots a valid software image. You can change the
!--- configuration register value if you issue the
!--- config-register 0x2102
!--- configuration mode command. If the boot variable
!--- is not specifed correctly,
!--- switch may reload in ROMMON mode.
```

5. Reload the switch so that the switch boots with the new software image.

```
<#root>

Cat6509-E#

reload

Proceed with reload? [confirm]

21:51:24: %SYS-5-RELOAD: Reload requested by console. Reload Reason: Reload Command.
21:51:27: %SYS-SP-3-LOGGER_FLUSHING: System pausing to ensure console debugging output.

21:51:27: %OIR-SP-6-CONSOLE: Changing console ownership to switch processor



21:51:27: %SYS-SP-3-LOGGER_FLUSHED: System was paus
21:51:30: %SYS-SP-3-LOGGER_FLUSHING: System pausing to ensure console debugging output.



***
*** --- SHUTDOWN NOW ---
***

21:51:30: %SYS-SP-5-RELOAD: Reload requested
```

```
21:51:30: %OIR-SP-6-CONSOLE: Changing console ownership to switch processor


ed for 00:00:00 to ensure console debugging output.

21:51:30: %SYS-SP-3-LOGGER_FLUSHED: System was paused for 00:00:00 to ensure console debuggi

Resetting .......



System Bootstrap, Version 12.2(18r)SX2, RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 2004 by cisco Systems, Inc.
Cat6k-Sup32 platform with 262144 Kbytes of main memory

Autoboot executing command: "boot disk0:s3223-ipbase_wan-mz.122-18.SXF4.bin"

Initializing ATA monitor library...

Self extracting the image... [OK]
Self decompressing the image : ########################################################################
######################### [OK]

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subject to restrictions as set forth in subparagraph
(c) of the Commercial Computer Software - Restricted
Rights clause at FAR sec. 52.227-19 and subparagraph
(c) (1) (ii) of the Rights in Technical Data and Computer
Software clause at DFARS sec. 252.227-7013.

           cisco Systems, Inc.
           170 West Tasman Drive
           San Jose, California 95134-1706



Cisco Internetwork Operating System Software
IOS (tm) s3223_sp Software (s3223_sp-IPBASE_WAN-M), Version 12.2(18)SXF4, RELEASE SOFTWARE (
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2006 by cisco Systems, Inc.
Compiled Thu 23-Mar-06 17:25 by tinhuang
Image text-base: 0x4023105C, data-base: 0x4144C000

MAC based EOBC installed

00:00:05: %SYS-3-LOGGER_FLUSHING: System pausing to ensure console debugging output.

00:00:05: %PFREDUN-6-ACTIVE: Initializing as ACTIVE processor

00:00:06: %SYS-SP-3-LOGGER_FLUSHING: System pausing to ensure console debugging output.

00:00:05: %SYS-3-LOGGER_FLUSHED: System was paused for 00:00:00 to ensure console debugging

00:00:06: %OIR-SP-6-CONSOLE: Changing console ownership to route processor



System Bootstrap, Version 12.2(17r)SX3, RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
```

```
Copyright (c) 2004 by cisco Systems, Inc.
Cat6k-MSFC2A platform with 524288 Kbytes of main memory

Download Start
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!
Download Completed! Booting the image.
Self decompressing the image : #############################################################
##################################################################################################
#################### [OK]

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(c) (1) (ii) of the Rights in Technical Data and Computer
Software clause at DFARS sec. 252.227-7013.

           cisco Systems, Inc.
           170 West Tasman Drive
           San Jose, California 95134-1706



Cisco Internetwork Operating System Software
IOS (tm) s3223_rp Software (s3223_rp-IPBASE_WAN-M), Version 12.2(18)SXF4, RELEASE SOFTWARE (
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2006 by cisco Systems, Inc.
Compiled Thu 23-Mar-06 17:28 by tinhuang
Image text-base: 0x40101040, data-base: 0x429E0000

cisco WS-C6509 (R7000) processor (revision 2.0) with 458752K/65536K bytes of memory.
Processor board ID SCA044903GE
R7000 CPU at 300Mhz, Implementation 0x27, Rev 3.3, 256KB L2, 1024KB L3 Cache
Last reset from power-on
SuperLAT software (copyright 1990 by Meridian Technology Corp).
X.25 software, Version 3.0.0.
Bridging software.
TN3270 Emulation software.
1 Virtual Ethernet/IEEE 802.3 interface
1 Gigabit Ethernet/IEEE 802.3 interface
2 Ten Gigabit Ethernet/IEEE 802.3 interfaces
1915K bytes of non-volatile configuration memory.

65536K bytes of Flash internal SIMM (Sector size 512K).


Press RETURN to get started!

00:01:18: %MFIB_CONST_RP-6-REPLICATION_MODE_CHANGE: Replication Mode Change Detected. Curren
eplication mode is Ingress
00:00:05: %SYS-3-LOGGER_FLUSHED: System was paused for 00:00:00 to ensure console debugging

00:00:06: %OIR-SP-6-CONSOLE: Changing console ownership to route processor
```

```
00:00:06: %SYS-SP-3-LOGGER_FLUSHED: System was paused for 00:00:00 to ensure console debuggi


Firmware compiled 06-Mar-06 22:47 by integ Build [100]


00:01:18: %SYS-SP-5-RESTART: System restarted --
Cisco Internetwork Operating System Software
IOS (tm) s3223_sp Software (s3223_sp-IPBASE_WAN-M), Version 12.2(18)SXF4, RELEASE SOFTWARE (
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2006 by cisco Systems, Inc.
Compiled Thu 23-Mar-06 17:25 by tinhuang
00:01:18: SP: Currently running ROMMON from S (Gold) region
00:01:18: %SYS-SP-6-BOOTTIME: Time taken to reboot after reload =  225 seconds
00:01:19: %OIR-SP-6-INSPS: Power supply inserted in slot 1
00:01:20: %C6KPWR-SP-4-PSOK: power supply 1 turned on.
00:01:21: %C6KENV-SP-4-FANHIOUTPUT: Version 2 high-output fan-tray is in effect
00:01:24: %DIAG-SP-6-RUN_MINIMUM: Module 5: Running Minimal Diagnostics...
00:01:37: %C6KENV-SP-4-USE_RED_CLOCK: system is using the redundant clock (clock B).
00:01:38: %OIR-SP-6-INSCARD: Card inserted in slot 5, interfaces are now online

Cat6509-E>
```

6. Verify that the switch has loaded the new software image.

```
<#root>

Cat6509-E#

show version

Cisco Internetwork Operating System Software
IOS (tm) s3223_rp Software (s3223_rp-IPBASE_WAN-M), Version 12.2(18)SXF4, RELEASE SOFTWARE (
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2006 by cisco Systems, Inc.
Compiled Thu 23-Mar-06 17:28 by tinhuang
Image text-base: 0x40101040, data-base: 0x429E0000


ROM: System Bootstrap, Version 12.2(17r)SX3, RELEASE SOFTWARE (fc1)
BOOTLDR: s3223_rp Software (s3223_rp-IPBASE_WAN-M), Version 12.2(18)SXF4, RELEASE SOFTWARE (


Cat6509-E uptime is 28 minutes
Time since Cat6509-E switched to active is 27 minutes
System returned to ROM by power-on (SP by power-on)

System image file is "disk0:s3223-ipbase_wan-mz.122-18.SXF4.bin"


cisco WS-C6509 (R7000) processor (revision 2.0) with 458752K/65536K bytes of memory.
Processor board ID SCA044903GE
R7000 CPU at 300Mhz, Implementation 0x27, Rev 3.3, 256KB L2, 1024KB L3 Cache
Last reset from power-on
SuperLAT software (copyright 1990 by Meridian Technology Corp).
X.25 software, Version 3.0.0.
Bridging software.
```

```
TN3270 Emulation software.
1 Virtual Ethernet/IEEE 802.3 interface
1 Gigabit Ethernet/IEEE 802.3 interface
2 Ten Gigabit Ethernet/IEEE 802.3 interfaces
1915K bytes of non-volatile configuration memory.

65536K bytes of Flash internal SIMM (Sector size 512K).
Configuration register is 0x2102

Cat6509-E#
```

Software Upgrade with Redundant Supervisor Modules

Catalyst 6000/6500 series switches allow a redundant Supervisor Engine to take over if the primary Supervisor Engine fails in order to support fault resistance. Redundant Supervisor Engines must be of the same type with the same model feature card in order to support redundancy. When you install two Supervisor Engines, the first one to come online becomes the active module. The second Supervisor Engine goes into standby mode. All administrative and network management functions, such as Simple Network Management Protocol (SNMP), command-line interface (CLI) console, Telnet, Spanning Tree Protocol (STP), Cisco Discovery Protocol (CDP), and VLAN Trunk Protocol (VTP) are processed on the active Supervisor Engine. On the standby Supervisor Engine, the console port is inactive. Redundant Supervisor Engines are not swappable. The system continues to operate with the same configuration after it switches over to the redundant Supervisor Engine.

You cannot use the normal software upgrade procedure for Catalyst 6000/6500 series switches that have redundant supervisor modules. Refer to Catalyst 6000/6500 Series Switches with Redundant Supervisor Engines Software Image Upgrade Configuration Example in order to upgrade the Catalyst 6000/6500 series switches in redundant mode.

Verify

There is currently no verification procedure available for this configuration.

Troubleshoot the Configuration

This section provides information you can use to troubleshoot your configuration.

Error = -21 and -45: Bootflash is Full

The error occurs in CatOS switches while they try to copy an image to bootflash or squeeze the bootflash that has an incompatible format. This error occurs even if the bootflash is empty:

```
<#root>

Console> (enable)

copy tftp flash

error = -21
Can not open destination file bootflash:[x] (file system full),
where 'x' is the image name.
```

```
<#root>

Console> (enable)

squeeze bootflash:

error = -45
Squeeze device bootflash failed (error reading squeeze log)
```

The workaround is to format the bootflash and try the operations again.

```
<#root>

Console> (enable)

format bootflash:
```

Software Upgrade Failed / Switch is in ROMMON

The software upgrade can fail due to reasons such as IP connectivity problems between the switch and TFTP server, incorrectly set boot variables, or the power failure during the copy operation of the software image to the switch. These issues can cause your switch to boot in ROMMON. If the switch is in ROMMON and you do not have a valid image present on the bootflash or PCMCIA Flash card, you can recover your switch to normal mode with the software recovery procedure. Refer to these documents for software recovery procedures:

- Recovering Catalyst Switches Running CatOS from Booting Failures
- Recover Catalyst 6500/6000 from a Corrupted Boot Loader Image

Known Issue: Loss of Switch Configuration Due to Software Downgrade

A software downgrade on switches that run CatOS always causes loss of configuration. Issue the **copy config tftp**command in order to back up your configuration to a TFTP server. Alternatively, issue the copy config flash command in order to back up the configuration to a Flash device.

Issue the **copy tftp config** or **copy flash config**commands in order to get the configuration file from the TFTP server or Flash device in order to restore the configuration after the successful downgrade.

Refer to theCatalyst 6000 Command Reference Guidefor the command syntax and use of these commands.

Invalid or Unknown device slot0 error received

When you copy an image from a TFTP to slot0, this error message is received:

```
Invalid or Unknown device slot0
Failed to copy from tftp to slot0:
```

While you try to format a Flash file system, an error message similar to this can display:

```
<#root>

SW1 (enable)

format slot0:


All sectors will be erased, proceed (y/n) [n]? y
Enter volume id (up to 31 characters): test
error = -85
Format device slot0 failed (cannot find flash algorithm)
```

These error messages indicate that the Flash system slot0: is not available on the device. The Flash devices are referred to with different names based on the Supervisor Engines and the size of the Flash system. If the file size of the Flash memory is greater than 20MB, it is considered a disk, as opposed to a slot.

In order to view the list of file systems available in the device, use the show file system command and issue the copy or **format** command with the appropriate Flash device name.

Device does not Contain a Valid Magic Number Error Received

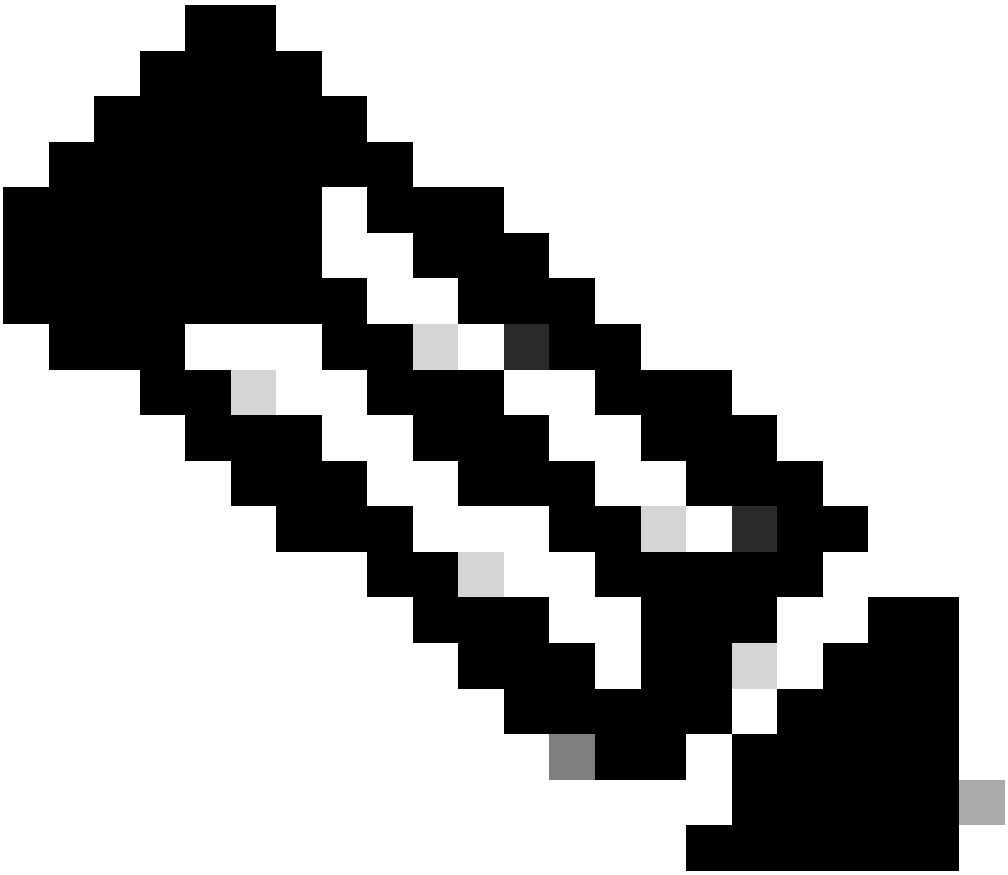
The "device does not contain a valid magic number" error message displays on a Cisco Catalyst 6500 Series Switch when it is reloaded after an upgrade or within conversion.

When this error message is prompted, the switch fails to load the Cisco IOS software image. The issue is caused by a corrupted file system on the device from which the CPU tries to load the Cisco IOS software image.

Also when you enter the dir disk0: or dir slot0: commands, an unformatted Flash PC card returns a "bad device block info" or "invalid magic number" error message.

In order to resolve the issue, perform these steps:

1. Go to ROM monitor (ROMmon) mode.
2. Manually boot the image with bootflash.
3. Check whether the size of the image in slot0 is the same as the image size downloaded from the TFTP server.
4. If the image size is the same, format the slot0 or disk0, and download a new image from the TFTP server with the copy command.



Note: It is not possible to copy multiple files in a single command.

5. Check whether the image has been downloaded directly from TFTP to slot 0 or downloaded to an ATA card and then copied from ATA cards to slot 0. If the image has been downloaded directly to the ATA cards, format the ATA cards before you download the image from the TFTP server.

Router Reloads After Upgrade

The config-register value for SP on the supervisor is set to 0x2142. The "4" indicates the ignore system config. The RP ROMMON has the value of 0x2102.

Due to this setting, the maximum routes code ignores the value that comes from the configuration which is non-default maximum routes. Once ignored, there is a mismatch between the values configured to the values loaded, This causes the router to reload.

As workaround, configure the config-register value to 0x2102 on SP with these commands:

```
<#root>

Switch#

configure terminal
```

```
Switch(config)#
config-register 0x2102
Switch#
write memory

!--- To save the configuration.
```

After configuration, check if the config-register value is same for RP and SP. The value must be 0x2102.

- To check RP config-register value, use the **show boot** command.
- To check SP config-register value, use the **remote command switch show version**command.

Related Information

- **Upgrade Software Images on Catalyst Switch Layer 3 Modules**
- **Recovering Catalyst Switches Running CatOS from Booting Failures**
- **Recovering a Catalyst 6000 Running Native IOS from a Corrupted or Missing Boot Loader Image or ROMmon Mode**
- **Catalyst 6000/6500 Series Switches with Redundant Supervisor Engines Software Image Upgrade Configuration Example**
- **Managing Software Images and Working with Configuration Files on Catalyst Switches**
- **Cisco Technical Support & Downloads**