Upgrading Software Images on Catalyst 6000/6500 Series Switches

Document ID: 28724

Introduction

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.

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, make sure that you understand the potential impact of any command.

Conventions

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

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 Comparison of the Cisco Catalyst and Cisco IOS Operating Systems for the Cisco Catalyst 6500 Series Switch for more information.

Verify 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 orderto verify the requirements for the new software image.

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

```
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
--- ---- ------------------ ----------- -------------------------------------
```

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```
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.

```
Cat6500#show version
Cisco Internetwork Operating System Software
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 version** command on the Supervisor module. You can execute Supervisor Processor (SP) commands from the Route Processor (RP) prompt with the **remote command switch** command.

```
Cat6500#remote command switch show version

Cat6500-sp#
Cisco Internetwork Operating System Software
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 (registered customers only) . See the Difference Between CatOS and Cisco IOS System Software section for more information on CatOS and Cisco IOS Software.

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.
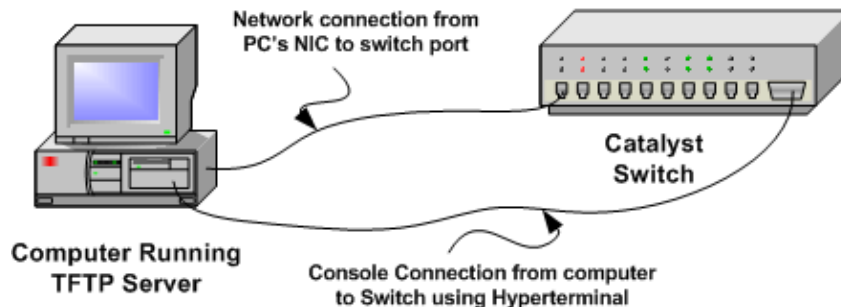
1. Download and install any shareware TFTP software from the Internet on the PC that you use in order to copy the CatOS software image to the switch. The TFTP server root directory must be the directory to which the software image is downloaded. You can download the images to the default root directory 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.

   Note: 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 Switches in 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 Switches for 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 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.

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 Verify Memory and Boot ROM Requirement section.
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.

```
!--- 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.

```
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.

```
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
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
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.

```
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
```

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```
                 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.

```
                 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
```

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```
        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.

```
        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.

```
        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)
```

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```
                 !--- 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.

```
        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.

```
        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.

```
        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.

```
        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.

                    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.

```
       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
```

Cisco – Upgrading Software Images on Catalyst 6000/6500 Series Switches

```
!--- 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.

   ```
   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.

   ```
   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.

   ```
   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.

```
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.

```
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 How 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, refer to Verify 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.

```
!--- 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

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.

```
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.

```
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.

```
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
```

Cisco – Upgrading Software Images on Catalyst 6000/6500 Series Switches

```
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.

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

Cisco – Upgrading Software Images on Catalyst 6000/6500 Series Switches

```
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.

```
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. Refer to Memory/Flash Size Supported in Catalyst Switch Platforms for information on the minimum and maximum memory available on the Catalyst switch platforms.

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:

```
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 2 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:

```
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.

```
Cat6509-E#copy ftp://cisco:cisco@10.66.64.10//tftpboot/s72033-psv-mz.122-18.SXD7.bin
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 might need to download the image again in order to avoid the switch reloading in ROMMON mode.

```
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 bootvar** commands in order to verify the 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: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.

Cisco – Upgrading Software Images on Catalyst 6000/6500 Series Switches

```
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 specified correctly,
!--- switch may reload in ROMMON mode.
```

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

```
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: 0x4002100C, 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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```

```
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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.

```
                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:¢56 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:

```
                Cat6509-E#dir disk0:
                Directory of disk0:/

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

```
                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:

```
                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.

```
                Cat6509-E#copy ftp://cisco:cisco@10.66.64.10//tftpboot/s3223-ipbase_wan-mz.122-18.SX
                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 might need to download the image again in order to avoid the switch reloading in ROMMON mode.

```
                Cat6509-E#dir disk0:
                Directory of disk0:/

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

```
                64233472 bytes total (18927616 bytes free)
```

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

```
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
```

Cisco – Upgrading Software Images on Catalyst 6000/6500 Series Switches

```
      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.

```
      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 outp

      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 outp



      ***
      *** --- 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

      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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Cisco Internetwork Operating System Software
IOS (tm) s3223_sp Software (s3223_sp-IPBASE_WAN-M), Version 12.2(18)SXF4, RELEASE SO
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 outp

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

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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Cisco Internetwork Operating System Software
IOS (tm) s3223_rp Software (s3223_rp-IPBASE_WAN-M), Version 12.2(18)SXF4, RELEASE SO
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
eplication mode is Ingress
00:00:05: %SYS-3-LOGGER_FLUSHED: System was paused for 00:00:00 to ensure console de

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


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 SO
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.

```
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 SO
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 SO

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

You cannot use the normal software upgrade procedure for Catalyst 6000/6500 series switches that have redundant supervisor modules. Refer to these documents in order to upgrade the Catalyst 6000/6500 series switches in redundant mode:

- Redundant Supervisor Software Image Upgrades on Catalyst 6000 series switches Running CatOS
- Redundant Supervisor Software Image Upgrades on Catalyst 6000 series switches Running Integrated Cisco IOS (Native Mode)

When a redundant supervisor engine first comes online, the configuration information synchronizes in bulk from the active supervisor engine to the redundant supervisor engine. This synchronization overwrites any startup configuration file that exists on the redundant supervisor engine. During normal operation, the startup–config and config–registers configurations are synchronized by default between the two supervisor

engines. In a switchover, the new active supervisor engine uses the current configuration. Perform the steps in Synchronizing the Supervisor Engine Configurations on the active supervisor engine in order to manually synchronize the configurations that the two supervisor engines use.

Note: Even though the redundant supervisor engine is fully initialized, the redundant supervisor engine only interacts with the active supervisor engine in order to receive incremental changes to the configuration files as the changes occur. You cannot enter CLI commands on the redundant supervisor engine.

Verify

There is currently no verification procedure available for this configuration.

Troubleshooting Guidelines

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

Image Transfer from TFTP Server Failed

If you find that image transfer from TFTP server fails continuously, refer to Common Problems in Installing Images Using TFTP or an RCP Server for known issues with TFTP server:

Software Upgrade Failed / Switch is in ROMMON

Your 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 your 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
- Recovering a Catalyst 6000 Running Native IOS from a Corrupted or Missing Boot Loader Image or ROMmon Mode

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 the Catalyst 6000 Command Reference Guide for the command syntax and use of these commands.

Related Information

- **How to Upgrade Software Images on Catalyst Switch Layer 3 Modules**
- **Recovering Catalyst Switches Running CatOS from Booting Failures**

Cisco – Upgrading Software Images on Catalyst 6000/6500 Series Switches

- **Recovering a Catalyst 6000 Running Native IOS from a Corrupted or Missing Boot Loader Image or ROMmon Mode**
- **Managing Software Images and Working with Configuration Files on Catalyst Switches**
- **Catalyst LAN and ATM Switches Product Support Pages**
- **Technical Support & Documentation – Cisco Systems**