在 Catalyst 6000/6500 系列交换机上升级软件镜像

目录

简介

本文档说明如何对在 Supervisor 上运行 Catalyst 操作系统 (CatOS)、在 MSM/MSFC 上运行 Cisco IOS ，以及运行 Cisco IOS 系统软件的 Catalyst 6000/6500 系列交换机上的软件映像进行升级的分步过程。在以下情况下，需要升级软件镜像：

- 您想在网络中实现新软件版本中可用的新功能。
- 您想要安装新线卡，但在交换机上运行的最新软件版本不支持该线卡。
- 一个已知 Bug 影响了您的交换机，而该 Bug 在下一个软件版本中已得到解决。

先决条件

要求

尝试进行此配置之前，请确保满足以下要求：

- 验证存储器和 Boot ROM 要求。
- 下载有效的软件映像。
- 在您的 PC 上安装 TFTP 服务器。
- 备份当前交换机配置和软件映像。

使用的组件

本文档不限于特定的软件和硬件版本。

本文档中的信息都是基于特定实验室环境中的设备编写的。本文档中使用的所有设备最初均采用原始（默认）配置。如果您使用的是真实网络，请确保您已经了解所有命令的潜在影响。

规则

有关文档规则的详细信息，请参阅 Cisco 技术提示规则。

CatOS 和 Cisco IOS 系统软件之间的区别

Supervisor 上的 CatOS 和 MSFC 上的 Cisco IOS（混合）：

您可将 CatOS 映像用作系统软件，以在 Catalyst 6500/6000 交换机上运行 Supervisor。如果可选多层交换机特性卡(MSFC)安装，请使用一分开的Cisco IOS镜像为了运行MSFC。

Supervisor 和 MSFC 上的 Cisco IOS（本地）：

您可将单个 Cisco IOS 映像用作系统软件，以在 Catalyst 6500/6000 交换机上同时运行 Supervisor 和 MSFC。

注意： 有关详细信息，请参阅比较 Cisco Catalyst 6500 系列交换机的 Cisco Catalyst 和 Cisco IOS 操作系统。

升级前步骤

检查存储器和 Boot ROM 要求

确定新软件版本需要的最少 DRAM、闪存和最低 Boot ROM 版本。检查您的交换机是否支持这些要求。请参阅 Catalyst 6000/6500 系列交换机发行版本注释以确定新软件映像的要求。

show version 命令显示您的交换机上的 BootROM 版本、所安装的 DRAM 和 bootflash 大小。在运行 CatOS 的 Catalyst 6000/6500 交换机上发出 show version 命令。

```
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)
```

当运行 Cisco IOS 软件时，请检查 Supervisor 和 MSFC 上的存储器要求。在运行 Cisco IOS 软件的 Catalyst 6000/6500 交换机上发出 show version 命令。

```
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#
```

您还可以在 Supervisor 模块上发出 show version 命令。您能执行从路由处理器(RP)提示符的Supervisor处理器(SP)命令用remote command switch命令。

```
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#
```

Supervisor Boot ROM 版本升级即为 Boot ROM 硬件升级（如果需要）。可下载最新的 Bootstrap 软件映像以升级 MSFC Bootstrap 版本。请参阅以下文档以在 Supervisor 模块上升级 Boot ROM：

- Catalyst 6000 系列 Supervisor 引擎 I 和 IA NMP Boot ROM 升级安装说明
- Catalyst 6000 系列 Supervisor 引擎 2 Boot ROM 和 Bootflash 设备升级安装说明

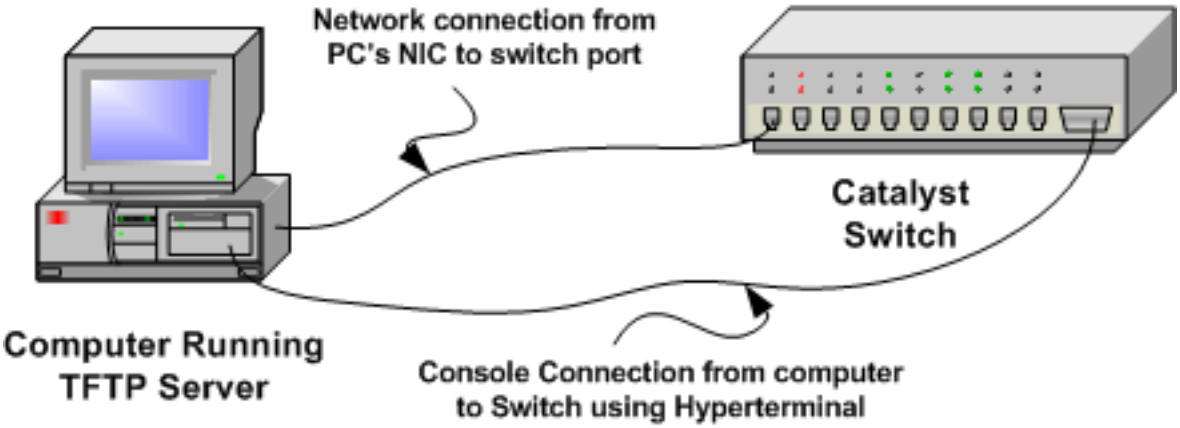
注意： Supervisor 720 目前未提供 Boot ROM 升级。

下载软件镜像

在进行实际的映像升级前，必须将 CatOs 软件映像下载到充当 TFTP 服务器的 PC 上。可从 Cisco LAN 交换软件中心（仅限注册用户）下载软件映像。有关 CatOS 和 Cisco IOS 软件的详细信息，请参阅 CatOS 和 Cisco IOS 系统软件之间的区别部分。

安装 TFTP 服务器

本文档中的输出示例使用运行 Microsoft™ Windows 2000 Professional 的 PC 上的 Cisco TFTP 服务器安装。可使用可在任何平台上安装的所有 TFTP 服务器。无需使用安装有 Windows 操作系统的 PC。



1. 从 Internet 下载任何共享软件的 TFTP 软件，并在将 CatOS 软件映像复制到交换机所使用的 PC 上安装这些软件。TFTP 服务器根目录必须是软件映像的下载目录。您可以将镜像下载到 TFTP 服务器的默认根目录，也可以将根目录路径更改为软件镜像所在的目录。对于 Cisco TFTP 服务器，您可以从 **View Menu > Options** 更改根目录。**注意：** 在撰写本文档时，已经可通过软件中心下载 Cisco TFTP 服务器。Cisco 不再支持 Cisco TFTP 服务器。如果您使用的是 Cisco TFTP 服务器，请禁用日志记录功能以免生成过多日志，这会中断 TFTP 进程。若要在 Cisco TFTP 服务器上禁用日志记录功能，请完成以下步骤：选择 **View Menu > Options**。清除 **Enable Logging** 选项。单击 **Ok**。**注意：** 请注意，默认情况下将启用日志记录功能。
2. 连接在交换机控制台端口和PC之间的一个控制台电缆为了访问交换机命令行界面(CLI)。请参阅将终端连接到 Catalyst 交换机上的控制台端口，以通过超级终端访问 CLI。**注意：** 可通过远程 Telnet 访问升级交换机。但是，在软件升级期间重新加载交换机时，您将断开 Telnet 连接。您可以在使用新映像加载交换机时重建 Telnet 会话。但是，为了在发生故障时排除故障，您必须具备本地控制台访问权限。Cisco 建议通过控制台访问升级交换机。

备份配置和软件镜像

在运行 TFTP 服务器的 PC 上备份交换机配置和最新软件映像。如果升级过程因存储器不足或交换机 Bootflash 没有足够的空间来支持新映像等原因而失败，则始终可以使用交换机中的相同映像将交换机恢复到正常模式。如果您因任何原因而丢失交换机配置，则始终可以从 TFTP 服务器恢复这些配置。有关如何管理配置文件和软件映像的信息，请参阅在 Catalyst 交换机上管理软件映像和使用配置文件。

在运行 Cisco IOS 软件的 Catalyst 6000/6500 交换机上，您可以发出 **copy startup-config tftp** 或 copy startup-config bootflash:命令，以便将配置复制或备份到 TFTP 服务器或 Bootflash。**如果您对配置进行了修改，请务必发出 write memory 命令以将当前配置复制到启动配置中，并执行备份。**发出 **copy bootflash:tftp** 命令可将 Bootflash 中的当前软件映像复制到 TFTP 服务器。如果您想将当前软件镜像从外部闪存卡复制到 TFTP 服务器上，可以在 Supervisor 引擎 1 或 2 上使用 **copy slot0:tftp** 命令。在 Supervisor 引擎 720 上，请使用 **copy disk0:tftp** 或 copy disk1:**tftp** 命令。

注意： 在复制或备份配置文件时，如果交换机发现启动配置文件为空，则会显示 %% Non-volatile configuration memory invalid or not present 错误消息。**请在备份配置文件前发出 write memory 或 copy run start 命令，以避免此错误。**

运行 CatOS 软件的交换机

Supervisor 模块上的 CatOS

当Supervisor引擎720支持2 slot时， Catalyst 6000/6500交换机管理引擎1和2支持个人计算机内存

卡行业协会(PCMCIA)闪存卡的一slot。如果您已经在交换机上安装了 PCMCIA 闪存卡，那么您可以选择在 Bootflash 或 PCMCIA 闪存卡上复制新的软件镜像。

以下过程采用 Bootflash。如果您使用 PCMCIA 闪存卡，请将所有命令中的 **bootflash:**字样替换为 **slot0:**（如果使用 Supervisor 1 或 2）或 **disk0:/ disk1:**（如果使用 Supervisor 720）。

1. 确保验证存储器/Boot ROM 要求，已在 PC 上安装 TFTP 服务器，并且可从交换机控制台端口访问交换机控制台。如果您尚未做好以下设置的准备工作，请参阅验证存储器和 Boot ROM 要求部分。
2. 配置管理 IP 地址 (sc0)，并检查交换机与安装有 TFTP 服务器的 PC 之间的连通性。此示例方案将 IP 地址 10.10.10.1 用于交换机管理 (sc0)，将 IP 地址 10.10.10.2 用于 TFTP 服务器。

```
!--- 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. 确保 Bootflash 中具有足够的可用空间，以便将新映像从 TFTP 服务器复制到 Bootflash。您可以在新映像所在的 PC 上查看该映像的大小。

```
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. 从 TFTP 服务器上将新的软件镜像复制到 Bootflash 中，并验证镜象复制是否正确。检查新镜象的文件大小是否确切地与 Cisco.com 软件中心提及的大小匹配。如果存在差异，请检查该映像是否已在传输期间损坏。重新下载映像，确保交换机在重新加载之后不会进入 ROMMON 模式。**注意：** 运行 Microsoft Windows 操作系统的 PC 所显示的文件大小可能不同于文件实际大小。右键单击文件名，并选择**"属性"**以便验证文件实际大小（以字节为单位）。

```
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
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
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. 更改引导变量，以使交换机在重置后使用新的软件映像进行引导。`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. 重置交换机，以使交换机在重新加载期间使用新的软件映像进行引导。`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. 验证交换机是否已加载新的软件映像。`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 引擎 720

在 Supervisor 引擎 720 上，如果您使用 PCMCIA 闪存卡，请在此过程的所有命令中将 **bootflash:**替换为 **disk0:**或 **disk1:** 中的 Cisco IOS 软件映像 (s720xy*) 启动。

请完成以下步骤以升级软件映像：

1. 验证 disk0: 中是否具有足够的空间，以将新映像从 TFTP 服务器复制到 disk0。您可以在新映像所在的 PC 上查看该文件的大小。`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. 使用用**delete disk0:cat6000-sup720k8.8-3-3.bin命令**。[然后发出 squeeze disk0:]命令，以从设备中清除所有已删除的文件。此步骤是可选的。`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. 将新软件映像从 TFTP 服务器复制到 disk0 中，并验证是否已正确复制该映像。检查新镜象的文件大小是否确切地与 Cisco.com 软件中心提及的大小匹配。如果存在差异，请检查该映像是否已在传输期间损坏。重新下载映像，确保交换机在重新加载之后不会进入 ROMMON 模式。**注意：** 以下过程采用 FTP 服务器，并且在图像传输期间未发生任何问题。`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. 更改引导变量，以使交换机在重置后使用新的软件映像进行引导。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. 重置交换机，以使交换机在重新加载期间使用新的软件映像进行引导。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. 验证交换机是否已加载新的软件映像。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 引擎 32

Supervisor 引擎 32 具有以下功能：

1. 通过内部微型闪存设备（在 CLI 中称为“bootdisk”）提供 256 MB 的 Bootflash
2. 微型闪存插槽 (disk0)

有关 Supervisor 功能的详细信息，请参阅 Catalyst 6500 系列软件版本 8.x 发行版本注释。

请完成以下步骤以升级软件映像：

1. 验证 disk0: 中是否具有足够的空间，以将新映像从 TFTP 服务器复制到 disk0。您可以在新映像所在的 PC 上查看该文件的大小。`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. 使用用delete disk0:cat6000-sup32pfc3k8.8-4-5.bin命令。此步骤是可选的。**注意：** squeeze 命令不适用于 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. 将新软件映像从 TFTP 服务器复制到 disk0 中，并验证是否已正确复制该映像。检查新镜象的文件大小是否确切地与 Cisco.com 软件中心提及的大小匹配。如果存在差异，请检查该映像是否已在传输期间损坏。重新下载映像，确保交换机在重新加载之后不会进入 ROMMON 模式。**注意：** 以下过程采用 FTP 服务器，并且在图像传输期间未发生任何问题。`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. 更改引导变量，以使交换机在重置后使用新的软件映像进行引导。`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. 重置交换机，以使交换机在重新加载期间使用新的软件映像进行引导。`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. 验证交换机是否已加载新的软件映像。`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
```

MSM 和 MSFC/MSFC2/MSFC3 上的 Cisco IOS

参考到升级软件如何在逐步程序的Catalyst交换层3模块制作镜像能升级在多层交换模块(MSM)和多层交换机特性卡(MSFC) /Multilayer的软件镜像交换功能卡德2 (MSFC2):/多层交换特性卡3 (MSFC3)。

运行 Cisco IOS 软件的交换机

1. 确保验证存储器/Boot ROM 要求，已在 PC 上安装 TFTP 服务器，并且可从交换机控制台端口访问交换机控制台。如果您尚未做好以下设置的准备工作，请参阅验证存储器和 Boot ROM 要求部分。**注意：** 许多 TFTP 实现都无法传输 16 MB 或更大的文件。在 Cisco IOS 软件版本 12.1 (8a)E 和更高版本中，Supervisor 引擎 II 的系统软件映像大于 16 MB。请使用FTP或远程拷贝协议(RCP)为了转接16 MB或更加大的文件。有关如何使用 FTP 或 RCP 的过程，请参阅加载和维护系统映像与微码。以下过程采用 Cisco TFTP 服务器，并且在图像传输期间未发生任何问题。
2. 配置管理IP地址（VLAN接口），并检查交换机与安装有TFTP服务器的PC之间的连通性。此示例将 IP 地址 10.10.10.1 用于交换机管理 (int vlan1)，将 IP 地址 10.10.10.2 用于 TFTP 服务器。

```
!--- 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 软件需要两个软件映像：主要软件映像引导加载程序映像**注意：** 对于 MSFC1 而言，引导加载程序映像是必需的，且必须放置在 MSFC Bootflash 中。MSFC2 不需要引导加载程序映像。但 Cisco 建议您使用引导映像，类似本过程中所示。引导映像是系统映像的小型、精简版本。使用引导映像，如果主系统映像损坏或丢失，您可执行 TFTP 映像传送。如果您选择使用 MSFC2 引导映像，则必须将其存储在 MSFC Bootflash 中。最佳实践是将主要软件镜像保存在slot0中，将启动加载器镜像保存在MSFC Bootflash中。验证 slot0 和 MSFC Bootflash 中是否具有足够的空间来复制 TFTP 服务器中的新映像。您可以检查下载它的PC的新镜象尺寸。Supervisor 引擎 720 使用术语 **disk0:**和 **disk1:**，而不使用 **slot0:**， 因此，在本示例中，请将 **slot0:**字样替换为 **disk0:**或 **disk1:**具体取决于您使用的磁盘。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. 从TFTP服务器上将新的主要软件镜像复制到slot0上，引导镜像复制到Bootflash上。验证是否已正确复制映像。检查新映像的文件大小是否与软件中心上的文件大小相符。如果不相符，请检查该映像是否已在传输期间损坏。重新下载映像，确保交换机不会在 ROMMON 模式下重新加载。

```
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. 更改引导变量，以便在重新加载时交换机使用新的软件和引导镜象引导。可使用 show running-config 或 show bootvar 命令验证引导变量。

```
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. 重新加载交换机，以使交换机在重新引导之后使用新的软件映像进行引导。`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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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) 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] Restricted Rights Legend Use, duplication, or disclosure by the Government is 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) 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. 验证交换机是否已加载新的软件映像。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 引擎 720

在 Supervisor 引擎 720 上，Cisco IOS 软件版本 12.2 SX 之后的版本中没有独立的映像文件，例如，引导加载程序映像和主要 IOS 映像。Supervisor 引擎和 MSFC 都运行单个打包的 Cisco IOS 映像。

Supervisor 引擎 720 常用功能包括：

- 64 MB Bootflash 设备或采用 512 MB CompactFlash 卡的 CompactFlash 适配器 (WS-CF-UPG=)：所有版本都支持 64 MB Bootflash 设备 (sup-bootflash:)在以下版本中支持 WS-CF-UPG= (sup-bootdisk:)：版本 12.2(18)SXE5 及更高版本版本 12.2(18)SXF 及更高版本
- 2 个 CompactFlash II 型插槽（disk0:和 disk1:）。

注意： 由于一些最新的 Supervisor 引擎 720 软件映像的大小已超过 bootflash 设备的大小，因此我们推荐使用 CompactFlash。有关可在 Catalyst 交换机平台上使用的最小和最大存储器的信息，请参阅 Catalyst 交换机平台中支持的存储器/闪存大小。

请完成以下步骤以在 Supervisor 模块上升级映像：

1. 您可以在下载新映像的 PC 上查看该文件的大小。Supervisor 引擎 720 使用术语 disk0:或disk1:而不使用 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 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]
   ```

   注意： squeeze 命令不适用于某些软件版本。**注意：** **发出以下命令，以查看是否支持 squeeze 命令：**

   ```
   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. 将新的软件映像从 TFTP 服务器复制到 disk0。**注意：** 许多 TFTP 实现都无法传输 16 MB 或更大的文件。Supervisor 引擎 720 的 Cisco IOS 软件映像大于 16 MB。请使用FTP或远程拷贝协议(RCP)为了转接16 MB或更加大的文件。有关使用 FTP 或 RCP 的过程，请参阅加载和维护系统映像与微码。

   ```
   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. 验证是否已正确复制映像。检查新映像的文件大小是否与软件中心上的文件大小相符。如果它

们不匹配，有可能镜像在传输期间被毁坏。您可能需要重新下载映像，以避免在 ROMMON 模式下重新加载交换机。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. 更改引导变量，以使交换机在重新加载后使用新的软件映像进行引导。[发出 show running-config 或 show bootvar 命令以便验证引导变量。](#) 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. 重新引导交换机，以使交换机使用新的软件映像进行引导。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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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) 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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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) 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. 验证交换机是否已装载新的软件映像。`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 引擎 32

Supervisor 引擎 32 包括以下各项：

- disk0:- 一个外部 CompactFlash II 型插槽（支持 CompactFlash II 型闪存 PC 卡）
- sup-bootdisk:- 256 MB 内部 CompactFlash 闪存（在 ROMMON 下为 bootdisk:）

请完成以下步骤以在 Supervisor 模块上升级映像：

1. 您可以在下载新映像的 PC 上查看该文件的大小。Supervisor 引擎 32 使用术语 disk0:而不使用 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.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]
   ```
   注意：squeeze 命令不适用于某些软件版本。**注意：发出以下命令，以查看是否支持 squeeze 命令：** `Cat6509-E#`**`squeeze ?`**
   ```
     /nolog      Squeeze without squeeze logs
     /quiet      Squeeze without progress update
     bootflash:  Filesystem to be squeezed
   ```
2. 将新的软件映像从 TFTP 服务器复制到 disk0。**注意：** 许多 TFTP 实现都无法传输 16 MB 或更大的文件。Supervisor 引擎 32 的 Cisco IOS 软件映像大于 16 MB。请使用FTP或远程拷贝协议(RCP)为了转接16 MB或更加大的文件。有关如何使用 FTP 或 RCP 的过程，请参阅加载和维护系统映像与微码。`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
   !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
   !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
   !!!!!
   !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
   !!!!!
   !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
   !!!!!
   !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
   !!!!!
   !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
   !!!!!
   ```

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

3. 验证是否已正确复制映像。检查新映像的文件大小是否与软件中心上的文件大小相符。如果它们不匹配，有可能镜像在传输期间被毁坏。您可能需要重新下载映像，以避免在 ROMMON 模式下重新加载交换机。

```
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. 更改引导变量，以使交换机在重新加载后使用新的软件映像进行引导。[发出 show running-config 或 show bootvar 命令以便检查引导变量。]

```
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. 重新加载交换机，以使交换机使用新的软件映像进行引导。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
debugging output.

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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           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
(fc1)
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
output.

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 SOFTWARE
(fc1)
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.
Current system r
eplication mode is Ingress
00:00:05: %SYS-3-LOGGER_FLUSHED: System was paused for 00:00:00 to ensure console debugging
output.

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
debugging output.


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
(fc1)
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. 验证交换机是否已装载新的软件映像。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
(fc1)
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
(fc1)

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#
```

带有冗余 Supervisor 模块时的软件升级

Catalyst 6000/6500 系列交换机允许在主 Supervisor 引擎发生故障时由冗余 Supervisor 引擎进行接管，以便提供故障防御支持。冗余 Supervisor 引擎必须采用相同型号的相同模型功能卡，以便提供冗余支持。如果您安装有两台 Supervisor 引擎，第一台联机的引擎即成为活动模块。第二台 Supervisor 引擎则进入备用模式。所有管理和网络管理功能（例如，简单网络管理协议 (SNMP)、命令行界面 (CLI) 控制台、Telnet、生成树协议 (STP)、Cisco 设备发现协议 (CDP) 和 VLAN 中继协议 (VTP)）均在活动 Supervisor 引擎上处理。在备用 Supervisor 引擎上，控制台端口处于非活动状态。冗余 Supervisor 引擎不可交换。在切换到冗余 Supervisor 引擎之后，系统将继续使用相同配置运行。

无法对具有冗余 Supervisor 模块的 Catalyst 6000/6500 系列交换机使用正常软件升级过程。请参阅带有冗余 Supervisor 引擎的 Catalyst 6000/6500 系列交换机的软件映像升级配置示例，以便在冗余模式下升级 Catalyst 6000/6500 系列交换机。

验证

当前没有可用于此配置的验证过程。

故障排除指南

本部分提供的信息可用于对配置进行故障排除。

Error = -21 和 -45：Bootflash 已满

当 CatOS 交换机尝试将映像复制到 Bootflash 或压紧格式不兼容的 Bootflash 时，将出现此错误。即使 Bootflash 为空，也仍会出现此错误：

- `Console> (enable) copy tftp flash`
  `error = -21`
  `Can not open destination file bootflash:[x] (file system full),`
  `where 'x' is the image name.`
- `Console> (enable) squeeze bootflash:`
  `error = -45`
  `Squeeze device bootflash failed (error reading squeeze log)`

解决方法是格式化 Bootflash，然后重新尝试此操作。

```
Console> (enable) format bootflash:
```

软件升级故障 / 交换机在 ROMmon 模式

软件升级可能因以下原因而失败：交换机和 TFTP 服务器之间的 IP 连接问题、错误设置引导变量，或者在将软件映像复制到交换机时电源关闭。这些问题可能导致您的交换机在 ROMMON 下进行引导。如果交换机处于 ROMMON 模式，并且 Bootflash 或 PCMCIA 闪存卡上没有有效映像，您可以采用软件恢复过程将您的交换机恢复到正常模式。请参阅以下文档以了解软件恢复过程：

- 从启动失败中恢复运行 CatOS 的 Catalyst 交换机
- 从损坏或丢失的启动加载程序镜像或 ROMmon 模式中恢复运行 Native IOS 的 Catalyst 6000

已知问题：因软件降级而导致丢失交换机配置

运行 CatOS 的交换机的软件降级始终导致配置丢失。发出 copy config tftp 命令，以便将您的配置备份到 TFTP 服务器。或者，请发出 copy config flash 命令，以便将配置备份到闪存设备。

发出 copy tftp config 或 copy flash config 命令从 TFTP 服务器或闪存设备获取配置文件，以便在成功降级之后恢复配置。

有关这些命令的命令语法和使用，请参阅 Catalyst 6000 命令参考指南。

收到“Invalid or Unknown device slot0”错误

当您将映像从 TFTP 复制到 slot0 时，将收到以下错误消息：

```
Console> (enable) format bootflash:
```

当您尝试格式化闪存文件系统时，可能会显示类似如下的错误消息：

```
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)
```

这些错误消息表明闪存系统 **slot0:**在设备上不可用。根据 Supervisor 引擎和闪存系统大小，采用不同名称来表示闪存设备。如果闪存文件大小超过 20 MB，则将其视为**磁盘**，而非插槽。

为了查看设备中的可用文件系统列表，请使用 **show file system** 命令，并使用适当的闪存设备名称发出 copy 或 format 命令。

收到“Device does not Contain a Valid Magic Number”错误

当在升级之后或在转换期间重新载入 Cisco Catalyst 6500 系列交换机时，该交换机将显示“device does not contain a valid magic number”错误消息。

如果提示此错误消息，交换机则无法加载 Cisco IOS 软件映像。导致此问题的原因在于：尝试加载 Cisco IOS 软件映像的 CPU 所在的设备上的文件系统已被损坏。

并且，当您输入 **dir disk0:**或 **dir slot0:**命令时，未格式化的闪存 PC 卡将返回“bad device block info”或“invalid magic number”错误消息。

要解决此问题，请执行以下步骤：

1. 转至 ROM Monitor (ROMmon) 模式。
2. 使用 Bootflash 手动引导映像。
3. 查看 slot0 中的映像大小是否与从 TFTP 服务器下载的映像大小相同。
4. 如果映像大小相同，请对 slot0 或 disk0 执行 **format**，并使用 copy 命令从 TFTP 服务器下载新映像。**注意：** 无法在单个命令中复制多个文件。
5. 请查看映像是从 TFTP 直接下载到 slot0，还是先下载到 ATA 卡，然后再从 ATA 卡复制到 slot0。如果映像直接下载到 ATA 卡，请格式化 ATA 卡，然后再从 TFTP 服务器下载映像。

在升级以后的路由器重启

SP的config-register value在Supervisor设置为0x2142。"4"指示忽略系统设置。RP ROMMON有值0x2102。

由于此设置，最大路由代码忽略来自是非默认最大路由的配置的值。一旦忽略，有值之间的一不匹配配置对装载的值，这造成路由器重新加载。

作为应急方案，请配置config-register value对在SP的0x2102用下面给的命令。

```
Switch#configure terminal
Switch(config)#config-register 0x2102
Switch#write memory
!--- To save the configuration.
```

在配置以后，检查config-register value是否是同样为RP和SP。值必须是0x2102。

- 要检查RP的config-register value，请使用show boot命令。
- 要检查SP的config-register value，请使用remote command switch show version命令。

相关信息

- 如何在 Catalyst 交换机第 3 层模块上升级软件镜像
- 从启动失败中恢复运行 CatOS 的 Catalyst 交换机
- 从损坏或丢失的启动加载程序镜像或 ROMmon 模式中恢复运行 Native IOS 的 Catalyst 6000
- 带有冗余 Supervisor 引擎的 Catalyst 6000/6500 系列交换机的软件镜像升级配置示例
- 在 Catalyst 交换机上管理软件镜像和使用配置文件
- Catalyst LAN 和 ATM 交换机产品支持
- 技术支持和文档 - Cisco Systems