

# 升級含有備援Supervisor引擎的交換器上的軟體

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## 簡介

本文說明使用備援Supervisor Engine升級Catalyst 6000/6500系列交換器上軟體映像的步驟。

## 必要條件

### 需求

思科建議您瞭解以下主題：

- [瞭解Catalyst交換器上的EtherChannel負載平衡和備援](#)
- [瞭解混合模式Catalyst 6000交換機上的內部MSFC冗餘](#)

### 採用元件

本檔案中所示的輸出基於以下Catalyst 6500系列硬體和軟體版本：

- 在本機模式下使用Cisco IOS®軟體版本12.2(18)SXF和12.2(18)SXF6的Supervisor Engine 32。
- 在混合模式下使用Catalyst OS版本8.5(6)和8.5(7)的Supervisor引擎32。

- 多層交換器功能卡(MSFC2a)，在混合模式下使用Cisco IOS軟體版本12.2(18)SXF和12.2(18)SXF6。

本文中的資訊是根據特定實驗室環境內的裝置所建立。文中使用到的所有裝置皆從已清除（預設）的組態來啟動。如果您的網路運作中，請確保您瞭解任何指令可能造成的影響。

## 相關產品

本檔案也適用於具有備援Supervisor Engine 720的Catalyst 6500系列交換器。

## 慣例

如需檔案慣例的詳細資訊，請參閱[思科技術提示](#)慣例。

## 背景資訊

### 簡介

本檔案介紹在具有備援Supervisor Engine(在Supervisor Engine上執行Cisco Catalyst作業系統(CatOS)，而在多層交換器功能卡(MSFC)上執行Cisco IOS)或本機模式(在Supervisor Engine和MSFC上執行Cisco IOS的備援Supervisor Engine的Catalyst 600/6500系列交換器上升級軟體映像的逐步程式。如需CatOS和Cisco IOS系統軟體之間差異的詳細資訊，請參閱[適用於Catalyst 6500/6000交換器的CatOS轉換為Cisco IOS](#)。

**註：**在VSS環境中升級Cisco IOS本機映像時，本文檔也適用。

在下列情況下，必須升級軟體映像：

- 您希望在網路中實施新軟體版本中可用的新功能。
- 您想安裝交換機上運行的當前軟體版本不支援的新線卡。
- 已知錯誤會影響交換器，該錯誤會在下一個軟體版本中解決。

## Supervisor冗餘

Catalyst 6500系列交換器允許備援Supervisor Engine在主Supervisor Engine發生故障時接管功能，以便支援容錯功能。冗餘Supervisor Engine的型別必須與同一型號功能卡相同，這樣才能支援冗餘。安裝兩個Supervisor Engine時，第一個聯機的Supervisor Engine將成為活動模組。第二個Supervisor Engine進入備用模式。所有管理和網路管理功能(例如簡易網路管理通訊協定(SNMP)、命令行介面(CLI)主控台、Telnet、跨距樹狀目錄通訊協定(STP)、Cisco探索通訊協定(CDP)和VLAN中繼線通訊協定(VTP))都在作用中Supervisor Engine上處理。在備用Supervisor Engine上，控制檯埠處於非活動狀態。冗餘Supervisor引擎可熱插拔。切換到冗餘Supervisor Engine後，系統繼續使用相同的配置運行。

Cisco IOS軟體和Catalyst OS都支援在Catalyst 6500機箱內部署冗餘管理引擎，以實現元件級冗餘。但是，Supervisor Engine備援的運作模式在Cisco IOS軟體和CatOS之間有所不同。

**注意：**冗餘始終處於啟用狀態，無法禁用。當交換機上安裝了兩個Supervisor引擎時，即會啟用冗餘，並且交換機根據其擁有的映像型別決定使用哪種特定的冗餘模式。兩個管理引擎上運行的Cisco IOS和功能集必須相同，才能實現SSO冗餘。

## 混合模式

在CatOS中，管理引擎冗餘的基礎是高可用性功能。此功能允許具有雙管理引擎的系統在活動和備用Supervisor引擎之間同步協定狀態。如果發生活動Supervisor故障，則備用Supervisor將接管系統操作，並獲取交換機上運行的協定的準確最新狀態資訊。這允許管理引擎故障切換在一到三秒內發生，並且不需要第2、3和4層協定的網路重新收斂。從路由器的角度看，MSFC引擎可設定為備援，也可設定為混合軟體。

在Cisco Catalyst OS 8.5版之前，Catalyst OS高可用性功能預設處於禁用狀態。備選方案稱為快速切換。快速切換功能是高可用性功能的前身。因此，當高可用性被禁用或軟體版本不支援時，Supervisor Engine就會採用切換機制。為了縮短切換時間，此功能將跳過Supervisor Engine發生故障時通常發生的一些事件。具體地，快速切換機制允許每個線卡跳過相應的軟體下載和診斷的一部分，這些通常為系統重新初始化的一部分。切換仍包括重新啟動所有協定（第2層及更高層）以及重置所有埠。

使用預設設定的切換效能結果大約需要28秒，加上協定重新啟動所需的時間。高可用性消除了此限制。高可用性允許活動Supervisor Engine與備用Supervisor Engine通訊。這會保持功能協定狀態同步。Supervisor Engine之間的同步允許備用Supervisor Engine在出現故障時進行接管。

預設情況下，在Cisco Catalyst 6500系列交換機上，主用和備用Supervisor Engine上的Catalyst OS軟體映像必須相同。如果在系統啟動期間，兩個Supervisor映像的版本不同，則活動Supervisor Engine會將其當前啟動映像下載到待命Supervisor Engine。作用中Supervisor Engine的NVRAM組態也會在Supervisor Engine之間同步。

Catalyst OS高可用性功能的第二部分稱為版本控制。這取決於在雙Supervisor Engine配置中啟用的高可用性功能。這允許不同的但相容的映像的活動和備用Supervisor Engine上運行，從而禁用預設的Supervisor映像同步進程。此功能主要用於簡化涉及兩個Supervisor Engine時的軟體升級程式。

具有冗餘管理引擎/MSFC組合的混合系統可以選擇在同一機箱中有兩個活動MSFC（稱為雙路由器模式）。在此配置中，熱待命路由器協定(HSRP)在兩個活動MSFC之間內部配置。使用Cisco IOS軟體時，備用MSFC不能完全運行。因此，無法在兩個MSFC之間運行內部HSRP。通過Cisco IOS軟體，路由處理器冗餘(RPR)、路由處理器冗餘Plus(RPR+)或狀態切換無中斷轉發(NSF/SSO)模式支援從Cisco Catalyst 6500到網路中其他路由器的外部HSRP。

如需詳細資訊，請參閱[設定備援連線](#)。

## 本地模式

Catalyst 6500上的Cisco IOS軟體支援RPR(也稱為增強型高系統可用性(EHSA)、RPR+、NSF/SSO)，以及具有狀態化切換(SRM/SSO)的單路由器模式。在此操作模型中，一對Supervisor/MSFC完全可操作，而另一對處於備用模式。

**show module**命令會列出作用中及備用管理引擎。兩對之間存在心跳消息以確保快速故障檢測。具有RPR或RPR+的Supervisor引擎之間沒有狀態協定冗餘。SSO冗餘模式在Cisco IOS中的Supervisor Engine之間提供狀態協定冗餘，在功能上與Cisco Catalyst OS高可用性冗餘模式等同。

在Cisco IOS軟體中，監督器和MSFC各自負責不同的功能和通訊協定（第2層和第3層）。但是，系統取決於兩個引擎的可用性以便正確操作。在RPR/RPR+/SSO模式下，Supervisor或MSFC發生故障會導致從活動Supervisor切換到備用Supervisor/MSFC。

**注意：**在混合模式下，如果一個MSFC發生故障，Supervisor Engine可以保持完全運行。

MSFC故障不一定導致管理引擎切換，但只能導致MSFC故障切換。這樣可建立一個交叉模式，其中主用原則功能卡(PFC)和執行Catalyst OS的交換處理器(SP)在一個插槽中完全運作，而路由處理器(RP)/MSFC在另一個插槽中完全運作。

本節概述具有RPR、RPR+、NSF/SSO和SRM/SSO的管理引擎冗餘特性：

- **RPR** - Cisco IOS軟體中引入的第一個冗餘操作模式。在RPR模式下，啟動配置和引導暫存器在活動管理引擎和備用管理引擎之間同步，備用管理引擎未完全初始化，並且活動管理引擎和備用管理引擎之間的映像不需要相同。切換後，備用Supervisor自動變為活動狀態，但它必須完成引導過程。此外，所有線卡都已重新載入，硬體也已重新程式設計。RPR切換時間為2分鐘或更長時間。
- **RPR+** — 對RPR的增強，其中備用管理引擎完全啟動，並且線卡在切換時不會重新載入。將在主用管理引擎和備用管理引擎之間同步運行的配置。還會執行從RPR繼承的所有同步活動。同步在切換之前完成，當備用裝置變為活動狀態時將使用同步到備用裝置的資訊，以最大限度地減少停機時間。主用管理引擎和備用管理引擎之間沒有同步鏈路層或控制平面資訊。切換後介面可能會發生跳轉，需要重新對硬體內容進程式設計。RPR+切換時間為30秒或更長。實際的故障切換時間取決於配置的大小和複雜性。
- **NSF/SSO** - Cisco IOS軟體和CatOS都支援使用SSO的NSF。這些功能的應用位置和方式與首先在Cisco IOS中部署的這些功能的更高級形式有關。SSO擴展了RPR+功能，以便在出現管理引擎故障時提供第2層協定的透明故障切換。SSO對於第2層協定是有狀態的。在切換過程中維護PFC和分散式轉發卡(DFC)硬體表。這允許在第2層和第4層進行透明故障切換。NSF與SSO協同工作，以確保切換後第3層的完整性。它允許遇到活動Supervisor故障的路由器繼續沿已知路由轉發資料包，同時恢復和驗證路由協定資訊。通過允許對等安排在故障轉移時進行恢復的重新啟動機制，可以繼續進行此類轉發。這可避免不必要的路由擺動和網路不穩定。使用NSF/SSO時，故障切換時間為0到3秒。
- **SRM/SSO** — 交換機通電後，帶有SSO的SRM將在兩個Supervisor引擎之間運行。首先啟動的Supervisor Engine會成為活動的Supervisor Engine。MSFC和PFC完全可操作。備援Supervisor Engine和MSFC的組態與作用中Supervisor Engine和MSFC的組態完全相同。在活動MSFC和備援MSFC上建立進程（如路由協定）。冗餘Supervisor Engine完全初始化和配置，縮短了切換時間。當冗餘Supervisor Engine聯機時，活動Supervisor Engine會檢查冗餘Supervisor Engine的映像版本。如果冗餘Supervisor Engine上的映像與活動Supervisor Engine上的映像不匹配，則使用RPR模式。如果活動Supervisor Engine或MSFC發生故障，則冗餘Supervisor Engine和MSFC將變為活動狀態。帶SSO的SRM支援第2層單播流量的0到3秒的切換時間。**註**：只有Supervisor Engine 720和Supervisor Engine 32支援帶SSO的SRM。

請參閱以下文件以瞭解更多資訊：

- [RPR和RPR+監督器引擎備援](#)
- [具有SSO Supervisor引擎冗餘的NSF](#)

## 軟體升級

本節提供在含備援Supervisor Engine的Catalyst 6500系列交換器上升級軟體映像的相關資訊。

**注意**：此過程可能會影響資料流量。思科建議您在scheduled maintenance（計畫維護）時段內執行此過程。

**注意**：使用[Cisco CLI Analyzer](#)獲取本節所用命令的詳細資訊。只有註冊思科使用者才能訪問

內部思科工具和資訊。

## 本地模式

本節提供在含在本機模式下執行的備援Supervisor引擎的Catalyst 6500系列交換器上升級軟體映像的相關資訊。

對於此過程，建議兩個Supervisor Engine都可以使用控制檯連線。活動Supervisor Engine上的控制檯埠處於活動狀態，而備用Supervisor Engine上的控制檯埠處於非活動狀態。

註：本文檔使用的軟體映像僅供示例使用。將映像替換為交換機環境中使用的映像。

完成以下步驟，升級作用中及待命Supervisor Engine上的Cisco IOS軟體映像：

1. 建立到活動Supervisor Engine的控制檯連線，並驗證映像版本是否在Supervisor Engine上運行。

```
Cat-6509#show version
Cisco Internetwork Operating System Software
IOS (tm) s3223_rp Software (s3223_rp-IPBASEK9-M),
Version 12.2(18)SXF, RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2005 by cisco Systems, Inc.
Compiled Fri 09-Sep-05 21:36 by ccai
Image text-base: 0x40101040, data-base: 0x42CC0000

ROM: System Bootstrap, Version 12.2(17r)SX3, RELEASE SOFTWARE (fc1)
BOOTLDR: s3223_rp Software (s3223_rp-IPBASEK9-M),
Version 12.2(18)SXF, RELEASE SOFTWARE (fc1)
```

註：如果嘗試建立與備用Supervisor Engine的控制檯連線，將顯示以下消息：

```
Cat-6509-sdby>
Standby console disabled
```

2. 檢查Supervisor Engine模組的狀態。

```
Cat-6509#show module
Mod Ports Card Type Model Serial No.
-----
 5 9 Supervisor Engine 32 8GE (Active) WS-SUP32-GE-3B SAD084401JD
 6 9 Supervisor Engine 32 8GE (Hot) WS-SUP32-GE-3B SAD084401GG

!--- The active Supervisor Engine is in slot 5 and standby is in slot 6. 7 48 48 port
10/100 mb RJ45 WS-X6348-RJ-45 SAL0618006V Mod MAC addresses Hw Fw Sw Status ---
----- 5 0030.f273.a008 to
0030.f273.a013 0.406 12.2(18r)SX2 12.2(18)SXF Ok 6 0030.f273.9f90 to 0030.f273.9f9b 0.406
12.2(18r)SX2 12.2(18)SXF Ok 7 0009.1264.b648 to 0009.1264.b677 6.1 5.4(2) 8.5(0.46)RWF Ok
!--- Output suppressed.
```

**show module** 命令輸出中待命Supervisor Engine的模組狀態在本機IOS的不同備援模式下是不同的：RPR — 狀態顯示為冷。冷冗餘是指冗餘系統傳統上提供的恢復能力。當備份或備用系統與其保護的系統之間不維護狀態資訊時，冗餘系統處於冷狀態。RPR+ — 狀態顯示熱。熱備援是指冷備系統之外的恢復能力。在這種情況下，冗餘系統已部分準備就緒。但是，系統沒有主系統為立即接管而知道的所有狀態資訊。必須確定一些其他資訊，或者從流量或對等網路裝置中收集這些資訊，才能處理資料包轉發。SSO — 狀態顯示熱。熱冗餘是指冗餘系統完全準備好處理主系統流量的恢復程度。大量狀態資訊被儲存，因此網路服務是連續的，並且在發生故障切換時，對通訊流的影響最小或為零。

### 3. 從作用中Supervisor Engine驗證備援模式狀態。

```
Cat-6509#show redundancy
Redundant System Information :
-----
    Available system uptime = 8 hours, 32 minutes
Switchovers system experienced = 0
    Standby failures = 0
    Last switchover reason = none

    Hardware Mode = Duplex
Configured Redundancy Mode = sso
Operating Redundancy Mode = sso
    Maintenance Mode = Disabled
    Communications = Up

Current Processor Information :
-----
    Active Location = slot 5
    Current Software state = ACTIVE
    Uptime in current state = 2 hours, 14 minutes
    Image Version = Cisco Internetwork Operating System Software
IOS (tm) s3223_rp Software (s3223_rp-IPBASEK9-M),
Version 12.2(18)SXF, RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2005 by cisco Systems, Inc.
Compiled Fri 09-Sep-05 21:36 by ccai
    BOOT = disk0:s3223-ipbasek9-mz.122-18.SXF.bin,12;
    BOOTLDR =
    Configuration register = 0x2102
```

```
Peer Processor Information :
-----
    Standby Location = slot 6
    Current Software state = STANDBY HOT
    Uptime in current state = 31 minutes
    Image Version = Cisco Internetwork Operating System Software
IOS (tm) s3223_rp Software (s3223_rp-IPBASEK9-M),
Version 12.2(18)SXF, RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2005 by cisco Systems, Inc.
Compiled Fri 09-Sep-05 21:36 by ccai
    BOOT = disk0:s3223-ipbasek9-mz.122-18.SXF.bin,12;
    BOOTLDR =
    Configuration register = 0x2102
```

Cat-6509#

**註:**Supervisor Engine 32的預設冗餘操作模式是具有相同映像版本的SSO，如果安裝了不同的映像版本，則為RPR。

### 4. 驗證兩個Supervisor Engine的啟動變數。

```
Cat-6509#show bootvar
BOOT variable = disk0:s3223-ipbasek9-mz.122-18.SXF.bin,12;
CONFIG_FILE variable does not exist
BOOTLDR variable =
Configuration register is 0x2102

Standby is up
Standby has 983040K/65536K bytes of memory.

Standby BOOT variable = disk0:s3223-ipbasek9-mz.122-18.SXF.bin,12;
Standby CONFIG_FILE variable does not exist
Standby BOOTLDR variable =
Standby Configuration register is 0x2102
```

### 5. 作為最佳實踐記錄您的控制檯會話。如果您需要排除故障，日誌使您能夠捕獲會話記錄並將日

誌與本文檔中的步驟進行比較。例如，在「超級終端機」中，選擇「傳輸」>「擷取文字」以記錄主控台作業階段。如需詳細資訊，請參閱[將終端機連接到 Catalyst 交換器上的主控台連接埠。](#)

6. 發出 `copy start tftp` 命令以備份配置。如果備份組態，則升級後檔案可作為參考。請參閱在 [Catalyst 交換器上管理軟體映像和使用組態檔](#)，以取得更多有關使用 `copy start tftp` 命令備份組態檔的資訊。
7. 驗證升級所需的 Cisco IOS 映像(s3223\*)是否位於 Supervisor Engine bootflash(sup-bootdisk: 和sulatedatessup-bootdisk: )上，或位於兩個 Supervisor Engine 的 CompactFlash 卡(disk0: 和sulatedatesk0:)上。

```
Cat-6509#dir disk0:
Directory of disk0:/

 1  -rw-      27267012  Oct 12 2006 21:28:42 +00:00  s3223-ipbasek9-mz.122-18.SXF.bin
 2  -rw-      27966916  Oct 12 2006 21:46:16 +00:00  s3223-ipbasek9-mz.122-18.SXF6.bin

!--- This is the CompactFlash card on the active Supervisor Engine.
!--- This is the Cisco IOS software image (s3223*) release for this upgrade. 63971328 bytes
total (8736768 bytes free) Cat-6509#
```

```
Cat-6509#dir subordinatedisk0:
Directory of subordinatedisk0:/

 1  -rw-      27267012  Oct 12 2006 21:36:22 +00:00  s3223-ipbasek9-mz.122-18.SXF.bin
 2  -rw-      27966916  Oct 12 2006 21:51:20 +00:00  s3223-ipbasek9-mz.122-18.SXF6.bin

!--- This is the CompactFlash card on the standby Supervisor Engine.
!--- This is the Cisco IOS software image (s3223*) release for this upgrade. 63971328 bytes
total (8736768 bytes free) Cat-6509#
```

如果您在 Supervisor bootflash(sup-bootdisk: 和sulatesup-bootdisk: )或 CompactFlash 卡(disk0: 和sulateatedisk0:)上沒有用於升級的 Cisco IOS 映像，請轉至步驟 8。如果您已安裝 Cisco IOS 映像，請轉至步驟 9。

8. 僅當 Cisco IOS 軟體映像(s3223\*)不存在於 Supervisor Engine bootflash(sup-bootdisk: 和sulatedatessup-bootdisk: )或 CompactFlash 卡(disk0: 和sulatedatedisk0: )上時完成此步驟。步驟 7 決定是否需要執行此步驟。註：如果 CompactFlash 以前未使用過，或者使用 CatOS 軟體演算法格式化過，則需要格式化它。若要格式化 Supervisor 引擎 32 上的 CompactFlash 卡，請發出 `format disk0:` 命令。您也可以根據需要釋放快閃記憶體裝置上的空間。發出 `delete sup-bootdisk: filename` 或 `delete disk0: filename` 命令以刪除檔案。首先發出 `copy tftp sup-bootdisk:` 命令，然後發出 `copy tftp sulatesup-bootdisk:` 或 `copy sup-bootdisk: sulatesup-bootdisk:` 命令，以便將映像下載到 Supervisor Engine 引導閃爍。或者，請首先發出 `copy tftp disk0:` 命令，然後發出 `copy tftp subsidiatedisk0:` 或 `copy disk0: subsidiatedisk0:` 命令將映像下載到 CompactFlash 卡。

```
Cat-6509#copy tftp disk0:
Address or name of remote host []? 10.1.1.2
Source filename []? s3223-ipbasek9-mz.122-18.SXF6.bin
Destination filename [s3223-ipbasek9-mz.122-18.SXF6.bin]?
Accessing tftp://10.1.1.2/s3223-ipbasek9-mz.122-18.SXF6.bin...
Loading s3223-ipbasek9-mz.122-18.SXF6.bin from 10.1.1.2
(via FastEthernet1/1):
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
[OK - 27966916 bytes]
27966916 bytes copied in 222.684 secs (125590 bytes/sec)
Verifying compressed IOS image checksum...
Verified compressed Cisco IOS image checksum for disk0:
/s3223-ipbasek9-mz.122-18.SXF6.bin
Cat-6509#
```

```

Cat-6509#copy tftp subordinatedisk0:
Address or name of remote host []? 10.1.1.2
Source filename []? s3223-ipbasek9-mz.122-18.SXF6.bin
Destination filename [s3223-ipbasek9-mz.122-18.SXF6.bin]?
Accessing tftp://10.1.1.2/s3223-ipbasek9-mz.122-18.SXF6.bin...
Loading s3223-ipbasek9-mz.122-18.SXF6.bin from 10.1.1.2
(via FastEthernet1/1):
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
[OK - 27966916 bytes]
27966916 bytes copied in 275.427 secs (101540 bytes/sec)
Verifying compressed Cisco IOS image checksum...
Verified compressed Cisco IOS image checksum for subordinatedisk0:
/s3223-ipbasek9-mz.122-18.SXF6.bin
Cat-6509#

```

## 9. 配置boot語句以引導新映像並儲存配置。

```

Cat-6509#show run
Building configuration...

Current configuration : 4933 bytes
!
upgrade fpd auto
version 12.2
service timestamps debug uptime
service timestamps log datetime msec
no service password-encryption
service counters max age 5
!
hostname Cat-6509
!
boot system disk0:s3223-ipbasek9-mz.122-18.SXF6.bin

!--- This is the current boot statement. ! no aaa new-model ip subnet-zero !--- Output
suppressed.

Cat-6509#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Cat-6509(config)#no boot system disk0:s3223-ipbasek9-mz.122-18.SXF6.bin

!--- This removes the current boot statement.

Cat-6509(config)#boot system disk0:s3223-ipbasek9-mz.122-18.SXF6.bin

!--- This modifies the boot statement to boot from the new image. Cat-6509(config)#^Z
Cat-6509#

Cat-6509#copy run start

!--- This also triggers a manual synchronization of
!--- startup configuration on the standby Supervisor Engine. Destination filename [startup-
config]? Building configuration... *Oct 13 03:21:05.331: %PFINIT-SP-5-CONFIG_SYNC:
Sync'ing the startup configuration to the standby Router. [OK]
Cat-6509#

Cat-6509#show bootvar

!--- This verifies the modified boot statements. BOOT variable = disk0:s3223-ipbasek9-
mz.122-18.SXF6.bin,12;
CONFIG_FILE variable does not exist
BOOTLDR variable =
Configuration register is 0x2102

```



```
Standby is up
Standby has 983040K/65536K bytes of memory.
```

```
Standby BOOT variable = disk0:s3223-ipbasek9-mz.122-18.SXF6.bin,12;
```

```
Standby CONFIG_FILE variable does not exist
```

```
Standby BOOTLDR variable =
```

```
Standby Configuration register is 0x2102
```

**註：啟動配置中的配置暫存器必須設定為自動引導(0x2102)。**

10. 重設待命Supervisor Engine。注意：在重置備用Supervisor Engine之前，請確保等待足夠長的時間，以確保所有配置同步更改都已完成。

```
Cat-6509#hw-module module 6 reset
```

```
!--- This resets the standby Supervisor Engine in slot 6. Proceed with reset of standby
supervisor? [confirm] % reset issued for standby supervisor Cat-6509# *Oct 13
03:21:50.507: %OIR-SP-3-PWRCYCLE: Card in module 6, is being power-cycled (Module reset)
*Oct 13 03:21:50.895: %PFREDUN-SP-6-ACTIVE: Standby processor removed or reloaded,
changing to Simplex mode *Oct 13 03:24:27.163: %PFREDUN-SP-4-VERSION_MISMATCH:
Defaulting to RPR mode (Different software versions)
```

```
!--- Redundancy mode changes to RPR during software upgrade. *Oct 13 03:24:28.183:
%PFREDUN-SP-6-ACTIVE: Standby initializing for RPR mode *Oct 13 03:24:28.467: %SYS-SP-3-
LOGGER_FLUSHED: System was paused for 00:00:00 to ensure console debugging output.
```

11. 等待備用Supervisor Engine聯機並同步配置。

```
*Oct 13 03:24:28.599: %PFINIT-SP-5-CONFIG_SYNC:
```

```
Sync'ing the startup configuration to the standby Router.
```

```
*Oct 13 03:24:30.883: %DIAG-SP-6-RUN_MINIMUM: Module 6:
```

```
Running Minimal Diagnostics...
```

```
*Oct 13 03:24:33.486: %DIAG-SP-6-DIAG_OK: Module 6:
```

```
Passed Online Diagnostics
```

```
*Oct 13 03:24:33.722: %OIR-SP-6-INSCARD: Card inserted in slot 6,
```

```
interfaces are now online
```

```
Cat-6509#
```

12. 驗證備援狀態。註：要在RPR+或SSO冗餘模式下運行，備用和活動Supervisor Engine上的映像版本必須相同。在這些備援模式下，待命Supervisor Engine聯機時，作用中Supervisor Engine會檢查待命Supervisor Engine的映像版本。如果待命Supervisor Engine上的映像與作用中Supervisor Engine上的映像不相符，則軟體會在執行軟體升級時將備援模式設定為RPR，並在軟體升級完成後將其設回SSO。

```
Cat-6509#show module
```

| Mod | Ports | Card Type                              | Model          | Serial No.  |
|-----|-------|--|----------------|-------------|
| 5   | 9     | Supervisor Engine 32 8GE (Active)      | WS-SUP32-GE-3B | SAD084401JD |
| 6   | 9     | <b>Supervisor Engine 32 8GE (Cold)</b> | WS-SUP32-GE-3B | SAD084401GG |
| 7   | 48    | 48 port 10/100 mb RJ45                 | WS-X6348-RJ-45 | SAL0618006V |

| Mod | MAC addresses                    | Hw    | Fw           | Sw                  | Status |
|-----|----------------------------------|-------|--------------|---------------------|--------|
| 5   | 0030.f273.a008 to 0030.f273.a013 | 0.406 | 12.2(18r)SX2 | <b>12.2(18)SXF</b>  | Ok     |
| 6   | 0030.f273.9f90 to 0030.f273.9f9b | 0.406 | 12.2(18r)SX2 | <b>12.2(18)SXF6</b> | Ok     |
| 7   | 0009.1264.b648 to 0009.1264.b677 | 6.1   | 5.4(2)       | 8.5(0.46)RFW        | Ok     |

```
!--- Output suppressed.
```

```
Cat-6509#show redundancy states
```

```
my state = 13 -ACTIVE
```

```
peer state = 4 -STANDBY COLD
```

```
Mode = Duplex
```

```
Unit = Primary
```

```
Unit ID = 5
```

```
Redundancy Mode (Operational) = rpr
```

```
Redundancy Mode (Configured) = sso
Redundancy State              = rpr
```

```
!--- Output suppressed.
!--- This verifies that the operational redundancy mode has
!--- changed to RPR during the software upgrade.
```

### 13. 手動切換到插槽6中的備用Supervisor Engine。

```
Cat-6509#redundancy force-switchover
```

```
!--- This reloads the active unit and forces switchover to standby [confirm]. Preparing
for switchover.. *Oct 13 03:50:38.167: %SYS-SP-3-LOGGER_FLUSHING: System pausing to ensure
console debugging output. *Oct 13 03:50:38.167: %OIR-SP-6-CONSOLE: Changing console
ownership to switch processor !--- Output suppressed.
```

```
MAC based EOBC installed
```

```
00:00:04: %SYS-3-LOGGER_FLUSHING: System pausing to ensure
console debugging output.
```

```
00:00:04: %PFREDUN-6-STANDBY: Initializing as STANDBY processor
```

```
!--- This Supervisor Engine is initialized as standby. 00:00:05: %SYS-3-LOGGER_FLUSHING:
System pausing to ensure console debugging output. 00:00:04: %SYS-3-LOGGER_FLUSHED: System
was paused for 00:00:00 to ensure console debugging output. !--- Output suppressed.
```

```
Press RETURN to get started!
```

```
00:01:21: STDBY: RP: Currently running ROMMON from S (Gold) region
```

```
*Oct 13 03:54:38.319: %SYS-STDBY-5-RESTART: System restarted --
```

```
Cisco Internetwork Operating System Software
```

```
Cisco IOS (tm) s3223_rp Software (s3223_rp-IPBASEK9-M),
```

```
Version 12.2(18)SXF6, RELEASE SOFTWARE (fc1)
```

```
Technical Support: http://www.cisco.com/techsupport
```

```
Copyright (c) 1986-2006 by cisco Systems, Inc.
```

```
Compiled Mon 18-Sep-06 19:43 by tinhuang
```

```
*Oct 13 03:54:38.343: %SYS-STDBY-6-BOOTTIME:
```

```
Time taken to reboot after reload = 240 seco
```

```
Cat-6509-sdby>
```

```
Standby console disabled
```

```
!--- The Supervisor Engine in slot 5 now becomes the standby.
```

插槽5中的舊活動Supervisor Engine會使用新映像重新啟動，並成為備用Supervisor Engine。註：從插槽5中的Supervisor Engine啟動切換時，同時在插槽6中建立與Supervisor Engine的控制檯連線。註：在軟體升級過程中，操作冗餘模式為RPR。從步驟12所示 [show redundancy states](#) 命令輸出中可明顯看出這一點。在RPR冗餘中，在切換期間，所有交換模組都重新通電。因此會有幾分鐘的停機時間。在正常切換期間，如果操作冗餘為SSO，則不會重新載入已安裝的交換模組，因為運行的啟動和配置都會從主用管理引擎持續同步到備用管理引擎。新的活動Supervisor引擎使用當前配置。

### 14. 監控插槽6中Supervisor Engine上的控制檯消息。

```
!--- Output suppressed. 00:01:21: %PFREDUN-SP-STDBY-6-STANDBY: Ready for RPR mode
```

```
00:01:22: %SYS-SP-STDBY-3-LOGGER_FLUSHED: System was paused for 00:00:00 to ensure console
debugging output. 00:27:23: %PFREDUN-SP-STDBY-6-ACTIVE: Initializing as ACTIVE processor
```

```
!--- The Supervisor Engine is initialized as active. 00:27:23: %SYS-SP-STDBY-3-
LOGGER_FLUSHED: System was paused for 00:00:00 to ensure console debugging output. !---
Output suppressed.
```

```
00:27:48: %SYS-SP-5-RESTART: System restarted --
```

```
Cisco Internetwork Operating System Software
```

```
Cisco IOS (tm) s3223_sp Software (s3223_sp-IPBASEK9-M),
```

```
Version 12.2(18)SXF6, RELEASE SOFTWARE (fc1)
```

```

Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2006 by cisco Systems, Inc.
Compiled Mon 18-Sep-06 19:43 by tinhuang
00:27:48: SP: Currently running ROMMON from S (Gold) region
*Oct 13 03:51:07.331: %OIR-SP-6-INSPS: Power supply inserted in slot 1
*Oct 13 03:51:07.387: %C6KPWR-SP-4-PSOK: power supply 1 turned on.
*Oct 13 03:51:09.907: %C6KENV-SP-4-FANHIOUTPUT:
Version 2 high-output fan-tray is in effect
*Oct 13 03:51:13.419: %OIR-SP-6-INSCARD:
Card inserted in slot 6, interfaces are now online
Cat-6509>

```

*!--- The Supervisor Engine in slot 6 now becomes the active.*

## 15. 從作用中Supervisor Engine驗證模組的狀態。

```

!--- Output suppressed. *Oct 13 03:53:46.531: %PFREDUN-SP-6-ACTIVE: Standby initializing
for SSO mode *Oct 13 03:53:46.703: %SYS-SP-3-LOGGER_FLUSHED: System was paused for
00:00:00 to ensure console debugging output. *Oct 13 03:53:48.199: %PFINIT-SP-5-
CONFIG_SYNC: Sync'ing the startup configuration to the standby Router. *Oct 13
03:54:22.919: %DIAG-SP-6-RUN_MINIMUM: Module 5: Running Minimal Diagnostics... *Oct 13
03:54:25.547: %DIAG-SP-6-DIAG_OK: Module 5: Passed Online Diagnostics *Oct 13
03:54:26.299: %OIR-SP-6-INSCARD: Card inserted in slot 5, interfaces are now online. !---
Output suppressed. Cat-6509>enable

```

```
Cat-6509#show module
```

| Mod | Ports | Card Type                         | Model          | Serial No.  |
|-----|-------|-----------------------------------|----------------|-------------|
| 5   | 9     | Supervisor Engine 32 8GE (Hot)    | WS-SUP32-GE-3B | SAD084401JD |
| 6   | 9     | Supervisor Engine 32 8GE (Active) | WS-SUP32-GE-3B | SAD084401GG |

```

!--- The active Supervisor Engine is in slot 6 and standby is in slot 5. 7 48 48 port
10/100 mb RJ45 WS-X6348-RJ-45 SAL0618006V Mod MAC addresses Hw Fw Sw Status ---
-----
----- 5 0030.f273.a008 to
0030.f273.a013 0.406 12.2(18r)SX2 12.2(18)SXF6 Ok 6 0030.f273.9f90 to 0030.f273.9f9b 0.406
12.2(18r)SX2 12.2(18)SXF6 Ok 7 0009.1264.b648 to 0009.1264.b677 6.1 5.4(2) 8.5(0.46)RFW Ok
!--- Output suppressed.

```

## 16. 驗證冗餘狀態以檢視系統是否按預期運行。

```
Cat-6509#show redundancy
```

```
Redundant System Information :
```

```

-----
Available system uptime = 10 hours, 12 minutes
Switchovers system experienced = 1
Standby failures = 1
Last switchover reason = user initiated

```

```
Hardware Mode = Duplex
```

```
Configured Redundancy Mode = sso
```

```
Operating Redundancy Mode = sso
```

*!--- This verifies that software has set the redundancy mode*

```

!--- back to SSO after the software upgrade. Maintenance Mode = Disabled Communications =
Up Current Processor Information : ----- Active Location = slot
6

```

```
Current Software state = ACTIVE
```

```
Uptime in current state = 7 minutes
```

```
Image Version = Cisco Internetwork Operating System Software
```

```
Cisco IOS (tm) s3223_rp Software (s3223_rp-IPBASEK9-M), Version 12.2(18)SXF6,
RELEASE SOFTWARE (fc1)
```

```
Technical Support: http://www.cisco.com/techsupport
```

```
Copyright (c) 1986-2006 by cisco Systems, Inc.
```

```
Compiled Mon 18-Sep-06 19:43 by tinhuang
```

```
BOOT = disk0:s3223-ipbasek9-mz.122-18.SXF6.bin,12;
```

```
CONFIG_FILE =
```

```
BOOTLDR =
```

```
Configuration register = 0x2102
```

Peer Processor Information :

-----

```
Standby Location = slot 5
Current Software state = STANDBY HOT
Uptime in current state = 2 minutes
Image Version = Cisco Internetwork Operating System Software
Cisco IOS (tm) s3223_rp Software (s3223_rp-IPBASEK9-M), Version 12.2(18)SXF6,
RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2006 by cisco Systems, Inc.
Compiled Mon 18-Sep-06 19:43 by tinhuang
BOOT = disk0:s3223-ipbasek9-mz.122-18.SXF6.bin,12;
CONFIG_FILE =
BOOTLDR =
Configuration register = 0x2102
```

**註：**您可以強制進行另一個切換，使備用Supervisor Engine成為活動Supervisor Engine，以便恢復Supervisor Engine的原始角色（它們的活動和備用狀態）。

#### 17. 驗證軟體升級後在Supervisor Engine上執行的映像版本。

```
Cat-6509#show version
Cisco Internetwork Operating System Software
Cisco IOS (tm) s3223_rp Software (s3223_rp-IPBASEK9-M),
Version 12.2(18)SXF6, RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2006 by cisco Systems, Inc.
Compiled Mon 18-Sep-06 19:43 by tinhuang
Image text-base: 0x40101040, data-base: 0x42D28000

ROM: System Bootstrap, Version 12.2(17r)SX3, RELEASE SOFTWARE (fc1)
BOOTLDR: s3223_rp Software (s3223_rp-IPBASEK9-M),
Version 12.2(18)SXF6, RELEASE SOFTWARE (fc1)
```

!--- Output suppressed.

在備援Supervisor Engine上升級Cisco IOS軟體的程式已完成。

## 混合模式

本節提供在含備援Supervisor Engine和在混合模式下執行的MSFC的Catalyst 6500系列交換器上升級軟體映像的相關資訊。

對於此過程，建議兩個Supervisor Engine都可以使用控制檯連線。活動Supervisor Engine上的控制檯埠處於活動狀態，而備用Supervisor Engine上的控制檯埠處於非活動狀態。

**註：**本文檔使用的軟體映像僅供示例使用。將映像替換為交換機環境中使用的映像。

## 升級Catalyst作業系統

完成以下步驟，升級作用中及待命Supervisor Engine上的Catalyst OS映像：

1. 建立到活動Supervisor Engine的控制檯連線，並驗證Supervisor Engine上運行的映像版本。

```
Console> (enable) show version
```

```
WS-C6509 Software, Version NmpSW: 8.4(1)
Copyright (c) 1995-2004 by Cisco Systems
NMP S/W compiled on Dec 27 2004, 18:36:22
```

```
System Bootstrap Version: 12.2
System Boot Image File is 'disk0:cat6000-sup32pfc3k8.8-5-6.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 9 WS-SUP32-GE-3B SAD084401JD Hw : 0.406
Fw : 12.2
Fw1: 8.5(6)
Sw : 8.5(6)
Sw1: 8.5(6)
WS-F6K-PFC3B SAD083905FJ Hw : 1.0
Sw :
6 9 WS-SUP32-GE-3B SAD084401GG Hw : 0.406
Fw : 12.2
Fw1: 8.5(6)
Sw : 8.5(6)
Sw1: 8.5(6)
```

!--- Output suppressed.

本檔案使用的影像僅作範例用途。將映像替換為交換機環境中使用的映像。註：如果嘗試建立到備用Supervisor Engine的控制檯連線，將顯示以下消息，如下一個代碼示例所示。

**This module is now in standby mode.**

**Console is disabled for standby supervisor**

## 2. 檢查Supervisor Engine模組的狀態。

```
Console> (enable) show module
```

```
Mod Slot Ports Module-Type Model Sub Status
-----
5 5 9 1000BaseX Supervisor WS-SUP32-GE-3B yes ok
15 5 1 Multilayer Switch Feature WS-F6K-MSFC2A no ok
6 6 9 1000BaseX Supervisor WS-SUP32-GE-3B yes standby
16 6 1 Multilayer Switch Feature WS-F6K-MSFC2A no standby
```

!--- The active Supervisor Engine and MSFC are in slot 5

!--- and standby is in slot 6. 7 7 48 10/100BaseTX Ethernet WS-X6348-RJ-45 no ok !---

Output suppressed.

註：在show module命令輸出中，待命Supervisor Engine和MSFC的模塊狀態在CatOS中顯示為待命。

## 3. 從作用中Supervisor Engine驗證備援模式狀態。

```
Console> (enable) show system highavailability
```

**Highavailability: disabled**

Highavailability versioning: disabled

Highavailability Operational-status: OFF(high-availability-not-enabled)

```
Console> (enable)
```

註：CatOS中的預設冗餘操作模式是快速切換。注意：高可用性版本控制選項允許您在活動和備用Supervisor Engine上運行不同的軟體映像。預設情況下禁用高可用性版本控制。如果兩個Supervisor Engine的軟體版本不同，或者兩個Supervisor Engine的NVRAM配置不同，並且您未啟用高可用性版本控制，則活動Supervisor Engine會自動將其軟體映像和配置下載到備用Supervisor Engine。

## 4. 驗證兩個Supervisor Engine的啟動變數。

```
Console> (enable) show boot 5
```

```
BOOT variable = bootdisk:cat6000-sup32pfc3k8.8-5-6.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
```

```
Console> (enable) show boot 6
```

```
BOOT variable = bootdisk:BTSYNC_cat6000-sup32pfc3k8.8-5-6.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. 作為最佳實踐記錄您的控制檯會話。如果您需要排除故障，日誌使您能夠捕獲會話記錄並將日誌與本文檔中的步驟進行比較。例如，在「超級終端機」中，選擇「傳輸」>「擷取文字」以記錄主控台作業階段。如需詳細資訊，請參閱[瞭解與Catalyst交換器上主控台連線埠的終端連線](#)。
6. 在Supervisor Engine上發出copy config tftp 命令，在MSFC上發出copy start tftp 命令，以備份配置。如果備份組態，則升級後檔案可作為參考。請參閱[在Catalyst交換器上管理軟體映像和使用組態檔](#)，以取得更多有關使用copy config tftp 和copy start tftp 指令備份組態檔的資訊。
7. 確認升級所需的CatOS映像(cat6000-sup32\*)位於活動Supervisor引擎bootflash(bootdisk:)或CompactFlash卡(disk0:)上。

```
Console> (enable) dir bootdisk:
```

```
 2277  -rw-  10025748   Oct 18 2006 23:34:28 cat6000-sup32pfc3k8.8-5-6.bin
  4725  -rw-  10028036   Oct 19 2006 23:37:18 cat6000-sup32pfc3k8.8-5-7.bin
```

```
!--- Output suppressed. 220229632 bytes available (35536896 bytes used)
```

如果您在活動的Supervisor Engine bootflash(bootdisk:)或CompactFlash卡(disk0:)上沒有用於升級的CatOS映像，請轉至步驟8。如果已安裝CatOS映像，請轉至步驟9。

8. 僅當CatOS映像(cat6000-sup32\*)不在活動Supervisor引擎bootflash(bootdisk:)或CompactFlash卡(disk0:)中時完成此步驟。步驟7確定需要此步驟。註：如果CompactFlash以前從未使用過，或者使用Cisco IOS軟體演算法格式化過，則需要對其進行格式化。若要格式化Supervisor引擎32上的CompactFlash卡，請發出format disk0: 命令。您也可以根據需要釋放快閃記憶體裝置上的空間。發出delete bootdisk: filename 或delete disk0: filename 命令以刪除檔案。將新的Catalyst OS軟體映像載入到僅活動Supervisor Engine的bootflash或CompactFlash卡中。發出copy tftp bootdisk: 或copy tftp disk0: 命令，將新映像下載到活動Supervisor Engine bootflash或CompactFlash卡。

```
Console> (enable) copy tftp bootdisk:
```

```
IP address or name of remote host []? 10.1.1.2
```

```
Name of file to copy from []?cat6000-sup32pfc3k8.8-5-7.bin
```

```
128626688 bytes available on device bootdisk, proceed (y/n) [n]? y
```

```
/
```

```
File has been copied successfully.
```

```
Console> (enable)
```

**註：要將新映像複製到備用Supervisor Engine bootflash或CompactFlash，可以發出copy y/bootdisk:<image.bin> x/bootdisk：或copy y/bootdisk:<image.bin> x/disk0：命令(其中y是活動Supervisor Engine模組編號，x是show module命令輸出中給定的備用Supervisor Engine模組編號)。驗證新映像是否已複製到活動Supervisor Engine的bootflash或CompactFlash卡中。**

```
Console> (enable) dir bootdisk:
```

```
2277  -rw-  10025748   Oct 18 2006 23:34:28 cat6000-sup32pfc3k8.8-5-6.bin
4725  -rw-  10028036   Oct 19 2006 23:37:18 cat6000-sup32pfc3k8.8-5-7.bin
```

```
!--- Output suppressed. 220229632 bytes available (35536896 bytes used)
```

9. 將映像自動同步計時器修改為最小值10秒，以加速同步過程。預設值為120秒。

```
Console> (enable) set boot sync timer 10
```

```
Image auto sync timer set to 10 seconds.
```

10. 清除活動Supervisor Engine上的當前啟動變數。

```
Console> (enable) clear boot system all
```

**註：清除活動Supervisor Engine上的啟動變數時，不會清除待命Supervisor Engine上的啟動變數。您需要發出clear boot system all 6 命令，以手動清除待命Supervisor Engine上的開機變數。此步驟是可選的。**

```
Console> (enable) show boot 6
```

```
BOOT variable = bootdisk:BTSYNC_cat6000-sup32pfc3k8.8-5-6.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 10 seconds
```

11. 在作用中Supervisor Engine上設定開機變數，以啟動新的Catalyst OS軟體映像。

```
Console> (enable) set boot system flash bootdisk:
```

```
cat6000-sup32pfc3k8.8-5-7.bin prepend
```

```
BOOT variable = bootdisk:cat6000-sup32pfc3k8.8-5-7.bin,1;
```

```
Console> (enable) 2006 Oct 19 04:37:55 %SYS-5-SUP_IMGSYNC:
File synchronization process will start in 10 seconds
2006 Oct 19 04:38:06 %SYS-5-SUP_IMGSYNCSTART:Active supervisor is
synchronizing bootdisk:cat6000-sup32pfc3k8.8-5-7.bin
2006 Oct 19 04:39:50 %SYS-5-SUP_IMGSYNCFINISH:Active supervisor has
synchronized bootdisk:cat6000-sup32pfc3k8.8-5-7.bin
```

如果CompactFlash以前從未使用過，或者它是使用Cisco IOS軟體演算法格式化的，則需要對其進行格式化。若要格式化Supervisor引擎32上的CompactFlash卡，請發出 [format disk0:](#) 命令。您也可以根據需要釋放快閃記憶體裝置上的空間。發出delete bootdisk: filename 或 delete disk0: filename 命令以刪除檔案。將新的Catalyst OS軟體映像載入到僅活動Supervisor Engine的bootflash或CompactFlash卡中。發出copy tftp bootdisk: 或copy tftp disk0: 命令，將新映像下載到活動Supervisor Engine bootflash或CompactFlash卡。

```
Console> (enable) show boot
```

```
BOOT variable = bootdisk:cat6000-sup32pfc3k8.8-5-7.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 10 seconds
```

Console> (enable)

**註：**將新映像下載到活動Supervisor Engine時，系統會將新映像複製到檔案系統（在bootflash中或快閃記憶體PC卡中）。由於您已經或沒有將此映像設定為開機映像，因此不會自動將新下載的映像複製到待命Supervisor Engine。為了啟動主用和備用Supervisor Engine之間的同步功能，您必須將這個新下載的映像設定為主用Supervisor Engine上的開機映像。更改引導變數時會發生同步。大約在120秒（此處為10秒）內，在作用中Supervisor Engine上設定為啟動專案的映像會複製到待命Supervisor Engine上的bootflash。這是映像同步。這是Catalyst OS映像檔案的內部TFTP，需要幾分鐘才能完成。**註：**啟動配置中的配置暫存器必須設定為自動啟動(0x2102)。

12. 映像同步後，請確認新的映像位於待命Supervisor Engine上，且已正確設定開機變數。

Console> (enable) **show boot 6**

```
BOOT variable = bootdisk:BTSYNC_cat6000-sup32pfc3k8.8-5-7.bin,
1;bootdisk:BTSYNC_cat6000-sup32pfc3k8.8-5-6.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 10 seconds
```

**註：**影象檔案的BTSYNC附加在檔名的開頭。這表示它已從作用中Supervisor Engine的開機時映像同步。

Console> (enable) **dir 6/bootdisk:**

```
2   -rw-   10025748   Oct 19 2006 00:34:08 BTSYNC_cat6000-sup32pfc3k8.8-5-6.bin
2450  -rw-   10028036   Oct 19 2006 04:39:23 BTSYNC_cat6000-sup32pfc3k8.8-5-7.bin
```

235708416 bytes available (20058112 bytes used)

Console> (enable)

13. 在活動Supervisor Engine上啟用高可用性版本控制。啟用高可用性版本控制後，可以在主用和備用Supervisor Engine上擁有兩個不同但相容的映像。活動Supervisor Engine與備用Supervisor Engine交換映像版本資訊並確定映像是否相容以啟用高可用性。如果主用和備用Supervisor Engine未運行相容的映像版本，則無法啟用高可用性。**註：**如果兩個軟體映像不相容，則軟體升級過程會影響系統操作（即大於高可用性切換的一至三秒切換時間），並且不會在Supervisor Engine之間同步NVRAM配置更改。**註：**8.x軟體版本系列中沒有軟體映像版本相容性。這包括主要版本，例如8.1(x)到8.2(x)到8.3(x)等。這也包括子版本，如8.1(1)到8.1(2)、8.2(1)到8.2(2)等。

Console> (enable) **set system highavailability versioning enable**

Image versioning enabled.

**注意：**運行新軟體的備用Supervisor Engine變為活動狀態之前，必須啟用版本控制。這允許待命Supervisor Engine在新版CatOS下重新開機，同時保留待命Supervisor Engine。

14. 重設待命Supervisor Engine。



```

Console> (enable) reset 6
This command will reset module 6.
Do you want to continue (y/n) [n]? y
2006 Oct 19 05:24:38 %SYS-5-MOD_RESET:Module 6 reset from Console//
Resetting module 6...
Console> (enable) 2006 Oct 19 05:24:50 %SYS-1-SYS_LCPERR1:Module 16:
RP requested reset of peer RP: MSFC on module 16 will be reset
2006 Oct 19 05:27:14 %SYS-5-SUP_MODSBY:Module 6 is in standby mode
2006 Oct 19 05:27:31 %SYS-5-PORT_SSUPOK:Ports on standby supervisor
(module 6) are up
2006 Oct 19 05:27:31 %SYS-3-MOD_PORTINTFINSYNC:Port Interface in sync for Module 6
2006 Oct 19 05:28:29 %SYS-5-MOD_OK:Module 16(WS-F6K-MSFC2A,SAD0844049E) is online

```

```
Console> (enable)
```

備用Supervisor Engine使用新的Catalyst OS映像重新啟動。它保持備用Supervisor Engine，並且不影響活動Supervisor Engine的運行。

#### 15. 待命Supervisor Engine重新開機後，確認其執行的是新的Catalyst OS映像。

```

Console> (enable) show version
WS-C6509 Software, Version NmpSW: 8.5(6)
Copyright (c) 1995-2006 by Cisco Systems
NMP S/W compiled on Aug 15 2006, 22:15:41

System Bootstrap Version: 12.2
System Boot Image File is 'bootdisk:cat6000-sup32pfc3k8.8-5-6.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        | 9        | WS-SUP32-GE-3B        | SAD084401JD        | Hw : 0.406<br>Fw : 12.2<br>Fw1: 8.5(6)<br>Sw : 8.5(6)<br>Sw1: 8.5(6)                      |
|          |          | WS-F6K-PFC3B          | SAD083905FJ        | Hw : 1.0<br>Sw :  |
| <b>6</b> | <b>9</b> | <b>WS-SUP32-GE-3B</b> | <b>SAD084401GG</b> | <b>Hw : 0.406</b><br>Fw : 12.2<br>Fw1: 8.5(7)<br><b>Sw : 8.5(7)</b><br><b>Sw1: 8.5(7)</b> |
|          |          | WS-F6K-PFC3B          | SAD08390376        | Hw : 1.0  |

```
!--- Output suppressed.
```

#### 16. 從作用中Supervisor Engine驗證備援狀態。

```

Console> (enable) show system highavailability
Highavailability: disabled
Highavailability versioning: enabled
Highavailability Operational-status: OFF(high-availability-not-enabled)

```

#### 17. 手動切換到插槽6中的備用Supervisor Engine。

```

Console> (enable) reset 5
This command will force a switch-over to the standby Supervisor module.
Do you want to continue (y/n) [n]? y
2006 Oct 19 05:40:13 %SYS-5-MOD_RESET:Module 5 reset from Console//

```

```
Console> (enable)
```

插槽5中的舊活動Supervisor Engine會使用新映像重新啟動，並成為備用Supervisor Engine。註：從插槽5中的Supervisor Engine啟動切換時，同時在插槽6中建立與Supervisor

Engine的控制檯連線。

18. 等待模組聯機，並從活動Supervisor Engine ( 插槽6 ) 中驗證模組的狀態。

```
Console> (enable) show module
Mod Slot Ports Module-Type Model Sub Status
-----
5 5 9 1000BaseX Supervisor WS-SUP32-GE-3B yes standby
15 5 1 Multilayer Switch Feature WS-F6K-MSFC2A no standby
6 6 9 1000BaseX Supervisor WS-SUP32-GE-3B yes ok
16 6 1 Multilayer Switch Feature WS-F6K-MSFC2A no ok
7 7 48 10/100BaseTX Ethernet WS-X6348-RJ-45 no ok
```

!--- Output suppressed.

Console> (enable)

19. 在活動Supervisor Engine上禁用高可用性版本控制。

```
Console> (enable) set system highavailability versioning disable
Image versioning disabled.
Console> (enable) 2006 Oct 19 05:48:48 %SYS-5-SUP_IMGSYNC:
File synchronization process will start in 10 seconds
2006 Oct 19 05:48:59 %SYS-5-SUP_IMGSYNCSTART:Active supervisor is
synchronizing bootdisk:BTSYNC_cat6000-sup32pfc3k8.8-5-7.bin
2006 Oct 19 05:49:01 %SYS-5-SUP_IMGSYNCFINISH:Active supervisor has
synchronized bootdisk:BTSYNC_cat6000-sup32pfc3k8.8-5-7.bin
```

Console> (enable)

如果系統按預期運行，則需要更新備用Supervisor Engine ( 現在為插槽5 ) 上的引導配置。您可以在禁用新活動Supervisor Engine上的版本控制時執行此操作，該引擎將自動啟用映像同步功能。

20. 驗證軟體升級後在Supervisor Engine上執行的映像版本。

```
Console> (enable) show version
WS-C6509 Software, Version NmpSW: 8.5(7)
Copyright (c) 1995-2006 by Cisco Systems
NMP S/W compiled on Oct 13 2006, 11:01:19

System Bootstrap Version: 12.2
System Boot Image File is 'bootdisk:BTSYNC_cat6000-sup32pfc3k8.8-5-7.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 9 WS-SUP32-GE-3B SAD084401JD Hw : 0.406
Fw : 12.2
Fw1: 8.5(7)
Sw : 8.5(7)
Sw1: 8.5(7)
WS-F6K-PFC3B SAD083905FJ Hw : 1.0
Sw :
6 9 WS-SUP32-GE-3B SAD084401GG Hw : 0.406
Fw : 12.2
Fw1: 8.5(7)
Sw : 8.5(7)
Sw1: 8.5(7)
WS-F6K-PFC3B SAD08390376 Hw : 1.0
```

!--- Output suppressed.

註：您可以強制進行另一個切換，使備用Supervisor Engine成為活動Supervisor Engine，以

便恢復Supervisor Engine的原始角色 ( 它們的活動和備用狀態 )。在備援Supervisor Engine上升級Catalyst OS軟體的程式已完成。

## 升級Cisco IOS

完成以下步驟，當交換器以混合模式執行時，升級作用中及待命MSFC上的Cisco IOS映像：

### 1. 建立到活動Supervisor Engine的控制檯連線並驗證模組狀態。

```
Console> (enable) show module
```

| Mod | Slot | Ports | Module-Type                      | Model                | Sub Status   |
|-----|------|-------|----------------------------------|----------------------|--------------|
| 5   | 5    | 9     | 1000BaseX Supervisor             | WS-SUP32-GE-3B       | yes ok       |
| 15  | 5    | 1     | <b>Multilayer Switch Feature</b> | <b>WS-F6K-MSFC2A</b> | <b>no ok</b> |

```
!--- Both the active supervisor and active MSFC are in slot 5. 6 6 9 1000BaseX Supervisor  
WS-SUP32-GE-3B yes standby 16 6 1 Multilayer Switch Feature WS-F6K-MSFC2A no  
standby
```

```
!--- Both the standby supervisor and standby MSFC are in slot 6. 7 7 48 10/100BaseTX  
Ethernet WS-X6348-RJ-45 no ok !--- Output suppressed.
```

**註：**在RPR模式下，備用MSFC不會顯示在show module命令輸出中。

### 2. 發出switch console 命令以存取作用中MSFC。

```
Console> (enable) switch console
```

```
Trying Router-15...
```

```
Connected to Router-15.
```

```
Type ^C^C to switch back...
```

如果透過Telnet作業階段連線，或如果作用中MSFC位於待命Supervisor Engine上，請發出 **session 15** 或 **session 16** 命令以存取作用中MSFC。**注意：**在混合模式下，活動MSFC可以位於活動或待命Supervisor Engine上。

### 3. 執行升級之前，請確認在作用中MSFC上執行的映像版本。

```
Router#show version
```

```
Cisco Internetwork Operating System Software  
IOS (tm) MSFC2A Software (C6MSFC2A-IPBASE_WAN-M), Version 12.2(18)SXF,  
RELEASE SOFTWARE (fc1)  
Technical Support: http://www.cisco.com/techsupport  
Copyright (c) 1986-2005 by cisco Systems, Inc.  
Compiled Fri 09-Sep-05 18:06 by ccai  
Image text-base: 0x40101040, data-base: 0x422E8000
```

```
ROM: System Bootstrap, Version 12.2(17r)SX3, RELEASE SOFTWARE (fc1)  
BOOTLDR: MSFC2A Software (C6MSFC2A-IPBASE_WAN-M), Version 12.2(18)SXF,  
RELEASE SOFTWARE (fc1)
```

```
Router uptime is 19 minutes
```

```
System returned to ROM by power-on
```

```
System image file is "bootflash:c6msfc2a-ipbase_wan-mz.122-18.SXF.bin"
```

```
!--- Output suppressed.
```

### 4. 從活動MSFC驗證冗餘狀態。

```
Router#show redundancy
```

```
Redundant System Information :
```

```
-----  
Available system uptime = 20 minutes  
Switchovers system experienced = 0  
Standby failures = 0  
Last switchover reason = none
```

```
Hardware Mode = Duplex
```

```
Configured Redundancy Mode = Stateful SwitchOver - SSO
```

**Operating Redundancy Mode = Stateful SwitchOver - SSO**

```
!--- MSFCs run in the SSO redundancy mode. Maintenance Mode = Disabled Communications = Up
Current Processor Information : ----- Active Location = slot 5
    Current Software state = ACTIVE
    Uptime in current state = 10 minutes
        Image Version = Cisco Internetwork Operating System Software
Cisco IOS (tm) MSFC2A Software (C6MSFC2A-IPBASE_WAN-M), Version 12.2(18)SXF,
RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2005 by cisco Systems, Inc.
Compiled Fri 09-Sep-05 18:06 by ccai
        BOOT = bootflash:c6msfc2a-ipbase_wan-mz.122-18.SXF.bin,1;
    CONFIG_FILE =
    BOOTLDR =
    Configuration register = 0x2102
```

Peer Processor Information :

-----

```
        Standby Location = slot 6
    Current Software state = STANDBY HOT
    Uptime in current state = 9 minutes
        Image Version = Cisco Internetwork Operating System Software
Cisco IOS (tm) MSFC2A Software (C6MSFC2A-IPBASE_WAN-M), Version 12.2(18)SXF,
RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2005 by cisco Systems, Inc.
Compiled Fri 09-Sep-05 18:06 by ccai
        BOOT = bootflash:c6msfc2a-ipbase_wan-mz.122-18.SXF.bin,1;
    CONFIG_FILE =
    BOOTLDR =
    Configuration register = 0x2102
```

**5. 驗證兩個MSFC的啟動變數。**

```
Router#show bootvar
BOOT variable = bootflash:c6msfc2a-ipbase_wan-mz.122-18.SXF.bin,1;
CONFIG_FILE variable =
BOOTLDR variable =
Configuration register is 0x2102
```

```
Standby is up
Standby has 983040K/65536K bytes of memory.
```

```
Standby BOOT variable = bootflash:c6msfc2a-ipbase_wan-mz.122-18.SXF.bin,1;
Standby CONFIG_FILE variable =
Standby BOOTLDR variable =
Standby Configuration register is 0x2102
```

**6. 發出 `dir bootflash:` 命令，以驗證升級所需的新映像(c6msfc2a\*)是否存在於兩個MSFC的 bootflash中。如果映像不存在，請發出 `copy tftp bootflash:` 或 `copy tftp subsidiatebootflash:` 命令，將新映像複製到活動和備用MSFC引導閃爍。注意：如果您有兩個MSFC，則必須將映像單獨下載到備用MSFC bootflash中。映像不會自動下載到備用MSFC。**

**7. 清除當前引導變數。**

```
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#no boot system flash bootflash:
c6msfc2a-ipbase_wan-mz.122-18.SXF.bin
Router(config)#^Z
Router#write memory
```

```
!--- This synchronizes both the active and standby MSFC start-up configurations. Building
configuration... [OK] Router#show bootvar
```

```
BOOT variable =
CONFIG_FILE variable =
BOOTLDR variable =
Configuration register is 0x2102

Standby is up
Standby has 983040K/65536K bytes of memory.
```

```
Standby BOOT variable =
Standby CONFIG_FILE variable =
Standby BOOTLDR variable =
Standby Configuration register is 0x2102
```

8. 在活動MSFC上，指定在重新載入MSFC時引導新映像。

```
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#boot system flash bootflash:
c6msfc2a-ipbase_wan-mz.122-18.SXF6.bin
```

9. 在作用中MSFC上，發出write memory命令，以確保備用MSFC啟動配置也獲取啟動資訊。

```
Router(config)#^Z
Router#write memory
Building configuration...
[OK]
```

10. 驗證新的引導變數設定。

```
Router#show bootvar
BOOT variable = bootflash:c6msfc2a-ipbase_wan-mz.122-18.SXF6.bin,1;
CONFIG_FILE variable =
BOOTLDR variable =
Configuration register is 0x2102
```

```
Standby is up
Standby has 983040K/65536K bytes of memory.
```

```
Standby BOOT variable = bootflash:c6msfc2a-ipbase_wan-mz.122-18.SXF6.bin,1;
Standby CONFIG_FILE variable =
Standby BOOTLDR variable =
Standby Configuration register is 0x2102
```

**註：**啟動配置中的配置暫存器必須設定為自動引導(0x2102)。

11. 在作用中MSFC上發出[redundancy reload peer](#)命令，以重新載入待命MSFC。

```
Router#redundancy reload peer
Reload peer [confirm]
Preparing to reload peer
Router#
00:12:37: %RF-3-COMMUNICATION: Communication with the peer Route Processor (RP)
has been lost.
00:12:37: %RF-3-SIMPLEX_MODE: The peer Route Processor (RP) has been lost
00:13:44: %RF-3-VERSION_MISMATCH: Version Info mismatch; Not running same version
of software on each Route Processor (RP). Cannot run in SSO mode;
will go to RPR mode instead.
00:13:49: %RF-6-NEGOTIATED_RED_MODE: Negotiated Redundancy MODE is RPR
00:13:51: %RF-6-DUPLEX_MODE: The peer Route Processor (RP) has been detected
00:13:51: %RF-3-COMMUNICATION: Communication with the peer Route Processor (RP)
has been established.
```

```
!--- Output suppressed. Router#
```

12. 幾分鐘後發出[show redundancy states](#)命令，以確保備用MSFC完全聯機。

```
Router#show redundancy states
my state = 13 -ACTIVE
peer state = 4 -STANDBY COLD
Mode = Duplex
Unit = Primary
```

Unit ID = 5

```
Redundancy Mode (Operational) = Route Processor Redundancy
Redundancy Mode (Configured)  = Stateful SwitchOver - SSO
Redundancy State               = Route Processor Redundancy
```

!--- Output suppressed.

**注意：**此時您的系統處於RPR模式，而不是SSO模式。這是因為當兩個Supervisor位於不同的映像上時，SSO模式不起作用。當它們在同一映像上重新載入且配置同步後，您將返回到SSO模式。

### 13. 發出**redundancy switch-activity force** 命令，以手動切換到備用MSFC。

```
Router#redundancy switch-activity force
This will reload the active unit and force a switch of activity [confirm]
Preparing to switch activity

00:16:08: %SYS-5-RELOAD: Reload requested Reload Reason: RF initiated reload.
```

!--- Output suppressed. Router-sdby> !--- The active MSFC reloads and becomes the standby MSFC.

活動MSFC重新載入，待命MSFC成為運行新映像的新活動MSFC。

### 14. 驗證在備用MSFC上運行的映像和冗餘模式。

```
Router-sdby#show version
Cisco Internetwork Operating System Software
Cisco IOS (tm) MSFC2A Software (C6MSFC2A-IPBASE_WAN-M), Version 12.2(18)SXF6,
RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2006 by cisco Systems, Inc.
Compiled Mon 18-Sep-06 17:17 by tinhuang
Image text-base: 0x40101040, data-base: 0x423A8000
```

```
ROM: System Bootstrap, Version 12.2(17r)SX3, RELEASE SOFTWARE (fc1)
BOOTLDR: MSFC2A Software (C6MSFC2A-IPBASE_WAN-M), Version 12.2(18)SXF6,
RELEASE SOFTWARE (fc1)
```

```
Router uptime is 2 minutes
System returned to ROM by power-on
System image file is "bootflash:c6msfc2a-ipbase_wan-mz.122-18.SXF6.bin"
```

!--- Output suppressed.

```
Router-sdby#show redundancy
Redundant System Information :
-----
    Available system uptime = 29 minutes
Switchovers system experienced = 1

    Hardware Mode = Duplex
Configured Redundancy Mode = Stateful SwitchOver - SSO
Operating Redundancy Mode = Stateful SwitchOver - SSO
    Maintenance Mode = Disabled
    Communications = Up
```

```
Current Processor Information :
-----
    Standby Location = slot 5
    Current Software state = STANDBY HOT
    Uptime in current state = 2 minutes
    Image Version = Cisco Internetwork Operating System Software
Cisco IOS (tm) MSFC2A Software (C6MSFC2A-IPBASE_WAN-M), Version 12.2(18)SXF6,
RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2006 by cisco Systems, Inc.
```

Compiled Mon 18-Sep-06 17:17 by tinhuang

BOOT = bootflash:c6msfc2a-ipbase\_wan-mz.122-18.SXF6.bin,1;

BOOTLDR =

Configuration register = 0x2102

**Peer (slot: 6, state: ACTIVE) information is not available because this is the standby processor**

## 15. 輸入Ctrl-C三次，以返回到Supervisor Engine，然後驗證模組狀態。

Router#^C

Router#^C

Router#^C

Console> (enable)

Console> (enable) **show module**

| Mod       | Slot     | Ports    | Module-Type                      | Model                | Sub       | Status         |
|-----------|----------|----------|----------------------------------|----------------------|-----------|----------------|
| 5         | 5        | 9        | 1000BaseX Supervisor             | WS-SUP32-GE-3B       | yes       | ok             |
| <b>15</b> | <b>5</b> | <b>1</b> | <b>Multilayer Switch Feature</b> | <b>WS-F6K-MSFC2A</b> | <b>no</b> | <b>standby</b> |
| 6         | 6        | 9        | 1000BaseX Supervisor             | WS-SUP32-GE-3B       | yes       | standby        |
| <b>16</b> | <b>6</b> | <b>1</b> | <b>Multilayer Switch Feature</b> | <b>WS-F6K-MSFC2A</b> | <b>no</b> | <b>ok</b>      |
| 7         | 7        | 48       | 10/100BaseTX Ethernet            | WS-X6348-RJ-45       | no        | ok             |

**註：如果發出 session 命令以訪問MSFC，則還必須發出exit命令，並且不能使用Ctrl-C鍵。**

## 16. 輸入新的活動MSFC。

Console> (enable) **session 16**

Trying Router-16...

Connected to Router-16.

Escape character is '^']'.

Router>

## 17. 驗證冗餘狀態以檢視系統是否按預期運行。

Router#**show redundancy**

Redundant System Information :

-----  
Available system uptime = 34 minutes  
Switchovers system experienced = 1  
Standby failures = 0  
Last switchover reason = unsupported

Hardware Mode = Duplex

**Configured Redundancy Mode = Stateful SwitchOver - SSO**

**Operating Redundancy Mode = Stateful SwitchOver - SSO**

!--- This verifies that software has set the redundancy mode

!--- back to SSO after the software upgrade. Maintenance Mode = Disabled Communications =

Up Current Processor Information : ----- **Active Location = slot 6**

Current Software state = ACTIVE

Uptime in current state = 4 minutes

Image Version = Cisco Internetwork Operating System Software

Cisco IOS (tm) MSFC2A Software (C6MSFC2A-IPBASE\_WAN-M), Version 12.2(18)SXF6,

RELEASE SOFTWARE (fc1)

Technical Support: <http://www.cisco.com/techsupport>

Copyright (c) 1986-2006 by cisco Systems, Inc.

Compiled Mon 18-Sep-06 17:17 by tinhuang

BOOT = bootflash:c6msfc2a-ipbase\_wan-mz.122-18.SXF6.bin,1;

```
CONFIG_FILE =
BOOTLDR =
Configuration register = 0x2102
```

Peer Processor Information :

-----

**Standby Location = slot 5**

Current Software state = STANDBY HOT

Uptime in current state = 3 minutes

Image Version = Cisco Internetwork Operating System Software

Cisco IOS (tm) MSFC2A Software (C6MSFC2A-IPBASE\_WAN-M), Version 12.2(18)SXF6,  
RELEASE SOFTWARE (fc1)

Technical Support: <http://www.cisco.com/techsupport>

Copyright (c) 1986-2006 by cisco Systems, Inc.

Compiled Mon 18-Sep-06 17:17 by tinhuang

BOOT = bootflash:c6msfc2a-ipbase\_wan-mz.122-18.SXF6.bin,1;

CONFIG\_FILE =

BOOTLDR =

Configuration register = 0x2102

## 18. 驗證升級後在作用中MSFC上執行的映像版本。

Router#**show version**

Cisco Internetwork Operating System Software

Cisco IOS (tm) MSFC2A Software (C6MSFC2A-IPBASE\_WAN-M), Version 12.2(18)SXF6,  
RELEASE SOFTWARE (fc1)

Technical Support: <http://www.cisco.com/techsupport>

Copyright (c) 1986-2006 by cisco Systems, Inc.

Compiled Mon 18-Sep-06 17:17 by tinhuang

Image text-base: 0x40101040, data-base: 0x423A8000

ROM: System Bootstrap, Version 12.2(17r)SX3, RELEASE SOFTWARE (fc1)

**BOOTLDR: MSFC2A Software (C6MSFC2A-IPBASE\_WAN-M), Version 12.2(18)SXF6,  
RELEASE SOFTWARE (fc1)**

**注意：**您可以強制進行另一個切換，使備用MSFC成為活動MSFC，以便恢復MSFC的原始角色（其活動和備用狀態）。在混合模式下升級冗餘MSFC上的Cisco IOS軟體的過程已完成。

## 將VSS核心從模組化代碼升級到非模組化代碼

在更改軟體的主要版本（模組化到非模組化）時，需要完全升級（機箱重新引導），而不是簡單地遷移到新的模組化版本；例如，從s72033-adviservicesk9\_wan-vz.122-33.SXI6.bin升級到s72033-adviservicesk9\_wan-mz.122-33.SXI7.bin時。

在機箱上發出**show file system**命令，以檢視映像位置。

此範例顯示每個機箱中的兩個管理引擎：

VSS#**show module switch all**

Switch Number: 1 Role: Virtual Switch Active

-----

| Mod | Ports | Card | Type | Model | Serial No. |
|-----|-------|------|------|-------|------------|
|-----|-------|------|------|-------|------------|

-----

|   |   |            |        |                   |                         |
|---|---|------------|--------|-------------------|-------------------------|
| 1 | 5 | Supervisor | Engine | 720 10GE (Active) | VS-S720-10G SAL1223SVBW |
|---|---|------------|--------|-------------------|-------------------------|



完成以下步驟，將映像升級到VSS中的每個Supervisor:

1. 使用TFTP將映像載入作用中Supervisor ( 很可能是sup-bootdisk )。
2. 將同一映像複製到活動機箱中的次管理引擎和備用機箱中的兩個管理引擎。例如：`copy sup-bootdisk:<image_name> sw1-slot2-sup-bootdisk:copy sup-bootdisk:<image_name> sw2-slot1-sup-bootdisk:copy sup-bootdisk:<image_name> sw2-slot2-sup-bootdisk:`
3. 使用`dir all` 命令驗證映像是否存在。
4. 重寫啟動語句 ( 在show run中找到 ) 以反映新映像。
5. 使用`write memory`命令以儲存組態。
6. 使用`show bootvar`命令以驗證啟動順序和配置暫存器。

## 驗證

目前沒有適用於此組態的驗證程序。

## 疑難排解

### 由於IPC錯誤，無法顯示備用堆疊

此錯誤訊息可能會出現在`show version` 指令輸出中。`show bootvar` 命令輸出中可能會出現類似錯誤。只有當您擁有冗餘Supervisor Engine且兩者都在不同Cisco IOS軟體版本上運行時，才會顯示此錯誤消息。升級Supervisor Engine中的Cisco IOS軟體版本時，這種情況很常見。

```
Cat-6509#show version
Cisco Internetwork Operating System Software
IOS (tm) c6sup2_rp Software (c6sup2_rp-JSV-M), Version 12.2(17d)SXB10, RELEASE SOFTWARE
(fc1)
Technical Support:
http://www.cisco.com/techsupport
Copyright (c) 1986-2005 by cisco Systems, Inc.
Compiled Thu 11-Aug-05 15:34 by kellythw
Image text-base: 0x40008FBC, data-base: 0x41F98000

ROM: System Bootstrap, Version 12.1(11r)E1, RELEASE SOFTWARE (fc1)
BOOTLDR: c6sup2_rp Software (c6sup2_rp-JSV-M), Version 12.2(17d)SXB10, RELEASE SOFTWARE
(fc1)

Cat-6509 uptime is 6 weeks, 5 days, 57 minutes
Time since Cat-6509 switched to active is 6 weeks, 5 days, 59 minutes
System returned to ROM by power-on (SP by power-on)
System restarted at 18:16:19 cst Mon Nov 20 2006
System image file is "disk0:c6k222-jsv-mz.122-17d.SXB10.bin"

cisco WS-C6509 (R7000) processor (revision 1.0) with 458752K/65536K bytes of memory.
Processor board ID SCA031400IM
R7000 CPU at 300Mhz, Implementation 0x27, Rev 3.3, 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.
17 Virtual Ethernet/IEEE 802.3 interface(s)
48 FastEthernet/IEEE 802.3 interface(s)
```

88 Gigabit Ethernet/IEEE 802.3 interface(s)  
381K bytes of non-volatile configuration memory.

32768K bytes of Flash internal SIMM (Sector size 512K).  
Standby is up  
Standby has 227328K/34816K bytes of memory.

**Cannot display standby stack due to IPC error**

Configuration register is 0x2102

Cat-6509#**show bootvar**

BOOT variable =  
disk0:c6k222-jsv-mz.122-17d.SXB10.bin,1;sup-bootflash:c6sup22-jsv-mz.121-22.E1.bin,1  
CONFIG\_FILE variable =  
BOOTLDR variable = bootflash:c6msfc2-boot-mz.121-22.E1.bin  
Configuration register is 0x2102

Standby is up  
Standby has 227328K/34816K bytes of memory.

**Standby BOOT variable is unobtainable due to IPC error**  
**Standby CONFIG\_FILE variable is unobtainable due to IPC error**  
**Standby BOOTLDR variable is unobtainable due to IPC error**  
**Standby Configuration register is unobtainable due to IPC error**

一旦兩個Supervisor引擎運行相同的Cisco IOS軟體版本，則不得顯示此錯誤消息。

**註：**如果冗餘Supervisor上不知道Cisco IOS版本，則機箱可以將此管理引擎顯示為未知，因為Cisco IOS代碼版本可能不匹配。但是，您可以通過控制檯埠訪問輔助Supervisor，並執行Cisco IOS升級過程以匹配Supervisor代碼的版本。升級代碼後，備用Supervisor會自動從活動Supervisor下載活動配置和VLAN資料庫。

## 相關資訊

- [Catalyst 6000/Catalyst 6500冗餘的硬體要求](#)
- [升級Catalyst 6000/6500系列交換器上的軟體映像](#)
- [升級Catalyst交換器第3層模組上的軟體映像](#)
- [Cisco Catalyst 6500 系列交換器](#)
- [LAN 交換技術支援](#)
- [思科技術支援與下載](#)

## 關於此翻譯

思科已使用電腦和人工技術翻譯本文件，讓全世界的使用者能夠以自己的語言理解支援內容。請注意，即使是最佳機器翻譯，也不如專業譯者翻譯的內容準確。Cisco Systems, Inc. 對這些翻譯的準確度概不負責，並建議一律查看原始英文文件（提供連結）。