CHAPTER 23

Configuring Redundancy

This chapter describes how to configure the redundant supervisor engines and how to configure redundancy on the Multilayer Switch Feature Cards (MSFCs) on the Catalyst 6500 series switches.

This chapter consists of these sections:

Note For information on configuring MSFC redundancy using Cisco nonstop forwarding (NSF) with stateful switchover (SSO), see Chapter 24, "Configuring NSF with SSO MSFC Redundancy."

Caution

Note Except where specifically differentiated, the information and procedures in this chapter apply to Supervisor Engine 32 with PFC3B/PFC3BXL, Supervisor Engine 720 with PFC3A/PFC3B/PFC3BXL, Supervisor Engine 2 with PFC2, and Supervisor Engine 1 with PFC.

The term *MSFC*

Catalyst 6500 Series Switch Module Installation Guide

Catalyst 6500 Series Switch Command Reference

Understanding How Supervisor Engine Redundancy Works

Note

WS-X6K-SUP1-2GE and the WS-X6K-SUP1A-2GE (both without PFCs) are compatible for redundancy. For supervisor engines with PFCs, the PFCs must be identical for redundancy (two PFCs, two PFC2s, two PFC3As, two PFC3Bs, or two PFC3BXLs).

When you install two supervisor engines, the first supervisor engine to come online becomes the active module; the second supervisor engine goes into standby mode. All administrative and network management functions, such as SNMP, command-line interface (CLI) console, Telnet, Spanning Tree Protocol (STP), Cisco Discovery Protocol (CDP), and VLAN Trunking Protocol (VTP) are processed on the active supervisor engine.

On the standby supervisor engine, the console port is inactive, the module status shows as “standby,” and the status for the uplink ports is shown normally.

For Supervisor Engine 1 and Supervisor Engine 2, you must install the redundant supervisor engines in slots 1 and 2 of the chassis. The Supervisor Engine 720 and Supervisor Engine 32 slot requirements are as follows: With a 3-slot chassis, install Supervisor Engine 720 and Supervisor Engine 32 in either slot 1 or 2. With a 6-slot or a 9-slot chassis, install Supervisor Engine 720 and Supervisor Engine 32 in either slot 5 or 6. With a 13-slot chassis, install Supervisor Engine 720 and Supervisor Engine 32 in either slot 7 or 8. You must install redundant supervisor engines in both slots.

The redundant supervisor engines are hot swappable. The system continues to operate with the same configuration after switching over to the redundant supervisor engine.

To allow you to control the booting of each supervisor engine separately, the configuration registers are not synchronized between the supervisor engines.

The switchover time from the active supervisor engine to the standby supervisor engine does not include the spanning-tree convergence time.

At power-up, both supervisor engines run initial module-level diagnostics. Assuming that both supervisor engines pass this level of diagnostics, the two supervisor engines communicate over the backplane, allowing them to cooperate during the switching-bus diagnostics. The supervisor engine in slot 1 becomes active, and the supervisor engine in slot 2 enters standby mode. If the software versions of the two supervisor engines are different, or if the NVRAM configuration of the two supervisor engines is different, the active supervisor engine automatically downloads its software image and configuration to the standby supervisor engine.

The terms *slot 1* and *slot 2*

If the background diagnostics on the active supervisor engine detect a major problem or an exception occurs, the active supervisor engine resets. The standby supervisor engine detects that the active supervisor engine is no longer running and becomes active. The standby supervisor engine can detect if the active supervisor engine is not functioning and can force a reset, if necessary. If the reset supervisor engine comes online again, it enters standby mode.

boot image *run-time image*

copy

delete undelete

slot0: **disk0:**

Flash PC card *PCMCIA card*

disk1: **slavedisk0:**
slavedisk1:

disk0: **slavedisk0:**

Configuring Redundant Supervisor Engines on the Switch

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Synchronization Process Initiation

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engines—The active supervisor engine synchronizes its run-time image with the standby supervisor engine if the time stamps of their respective run-time images differ when the system is booted or reset.

- Time stamp mismatch between the boot images on the active and standby supervisor engines—The active supervisor engine synchronizes its boot image with the standby supervisor engine if the time stamps of their respective boot images differ when the system is booted or reset, or if you change the BOOT environment variable.
- Current boot image overwritten—If you overwrite the current boot image that is stored on one of the flash devices, the file system management module detects this event and initiates synchronization. The active supervisor engine copies its new boot image to the standby supervisor engine.
- BOOT environment variables changed—If you change the BOOT environment variables to specify a different default boot image, the active supervisor engine initiates the boot-image synchronization. The NVRAM configuration module detects this event and calls the flash synchronization function with the next probable boot filename by looking at the boot configuration parameter.
- Flash PC cards with the same boot-image filename—If you change the flash device on either the active or standby supervisor engine and the new flash device contains a boot image that has the same name (but a different time stamp) as the boot image from the previous flash device, the flash file management module initiates synchronization.
- Current run-time image deleted—If you delete the current run-time image from the flash device, the flash file management module prompts you to verify that you want to delete the current run-time image. If you confirm the deletion, the flash file management module initiates flash synchronization and informs the NVRAM configuration module of the change. The NVRAM configuration module examines the BOOT environment variable to determine the next probable image to boot and calls the flash synchronization function using the new image name.

Redundant Supervisor Engine Configuration Guidelines and Restrictions

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Verifying the Standby Supervisor Engine Status

Note **show module** **show test**

Task	Command
	[ ]
Show the state of the standby supervisor engine uplink ports.	**show port** */port*
	mod

```
Console> (enable) show module 2
Mod Slot Ports Module-Type               Model               Status
--- ---- ----- ------------------------- ------------------- --------
2   2    2     1000BaseX Supervisor      WS-X6K-SUP1-2GE     ok

Mod Module-Name         Serial-Num
--- ------------------- -----------
2                       SAD02330231

Mod MAC-Address(es)                         Hw     Fw          Sw
--- --------------------------------------- ------ ----------- ------------------
2   00-e0-14-0e-f5-6c to 00-e0-14-0e-f5-6d 0.404  4.2(2038)  4.2(0.24)VAI50
    00-e0-14-0e-f5-6e to 00-e0-14-0e-f5-6f
    00-10-7b-bb-2b-00 to 00-10-7b-bb-2e-ff

Mod Sub-Type            Sub-Model           Sub-Serial  Sub-Hw
--- ------------------- ------------------- ----------- ------
2   L2 Switching Engine WS-F6020            SAD02350211 0.101
Console> (enable)

Console> (enable) show test 2
Module 2 : 2-port 1000BaseX Supervisor
Network Management Processor (NMP) Status: (. = Pass, F = Fail, U = Unknown)
  ROM:  .   Flash-EEPROM: .   Ser-EEPROM: .   NVRAM: .   EOBC Comm: .

Line Card Status for Module 1 : PASS

Port Status :
  Ports 1  2
  -----------
        .  .
Line Card Diag Status for Module 2  (. = Pass, F = Fail, N = N/A)

 Module 2
  Cafe II Status :
        NewLearnTest:             .
        IndexLearnTest:           .
        DontForwardTest:          .
        DontLearnTest:            .
        ConditionalLearnTest:     .
        BadBpduTest:              .
        TrapTest:                 .
 Loopback Status [Reported by Module 2] :
  Ports 1  2
  -----------
        .  .
Console> (enable)
```

Forcing a Switchover to the Standby Supervisor Engine

Note

reset 1

```
Do you want to continue (y/n) [n]? y
Console> (enable) 12/07/1998,17:04:39:SYS-5:Module 1 reset from Console//

System Bootstrap, Version 3.1(2)
Copyright (c) 1994-1997 by cisco Systems, Inc.

System Bootstrap, Version 3.1(2)
Copyright (c) 1994-1997 by cisco Systems, Inc.
Presto processor with 32768 Kbytes of main memory

Autoboot executing command: "boot bootflash:cat6000-sup.5-4-1a.bin"
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
Uncompressing file:  ###########################################################

System Power On Diagnostics
NVRAM Size .. .................512KB
ID Prom Test ..................Passed
DPRAM Size ....................16KB
DPRAM Data 0x55 Test ..........Passed
DPRAM Data 0xaa Test ..........Passed
DPRAM Address Test ............Passed
Clearing DPRAM ................Done
System DRAM Memory Size .......32MB
DRAM Data 0x55 Test ...........Passed
DRAM Data 0xaa Test ...........Passed
DRAM Address Test  ............Passed
Clearing DRAM .................Done
EARLII ........................Present
EARLII RAM Test ...............Passed
EARL Serial Prom Test .........Passed
Level2 Cache ..................Present
Level2 Cache test..............Passed

Boot image: bootflash:cat6000-sup.5-4-1a.bin
Downloading epld sram device please wait ...
Programming successful for Altera 10K50 SRAM EPLD
This module is now in standby mode.
Console is disabled for standby supervisor
```

```
Cisco Systems Console

Enter password:
12/07/1998,17:04:43:MLS-5:Multilayer switching is enabled
12/07/1998,17:04:43:MLS-5:Netflow Data Export disabled
12/07/1998,17:04:44:SYS-5:Module 2 is online
12/07/1998,17:04:45:SYS-5:Module 5 is online
12/07/1998,17:04:45:SYS-5:Module 7 is online
12/07/1998,17:04:45:SYS-5:Module 3 is online
12/07/1998,17:04:52:MLS-5:Route Processor 172.20.52.6 added
12/07/1998,17:05:10:SYS-5:Module 8 is online
12/07/1998,17:05:14:SYS-5:Module 9 is online
12/07/1998,17:05:22:SYS-5:Module 4 is online
12/07/1998,17:06:13:SYS-5:Module 1 is in standby mode
Supervisor image synchronization process will start in 10 seconds
12/07/1998,17:06:37:SYS-5:Ports on standby supervisor(Module 1) are UP
12/07/1998,17:06:41:SYS-5:Active supervisor is synchronizing the NMP image.
12/07/1998,17:06:44:SYS-5:The active supervisor has synchronized the NMP image.

Console>
```

High Availability

versioning

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High-Availability Overview

Note

High-Availability Supported Features

- Supported features—High availability is fully supported; the feature's database is synchronized from the active supervisor engine to the standby supervisor engine.
- Compatible features—High availability is not supported; the feature's database is not synchronized from the active supervisor engine to the standby supervisor engine. However, you can enable the compatible features when you enable high availability.
- Incompatible features—High availability is not supported. The feature's database is not synchronized from the active supervisor engine to the standby supervisor engine. You cannot enable the incompatible features if you enable high availability, and you cannot enable high availability if you enable these incompatible features.

Table 23-1 High-Availability Feature Support

Supported Features	Compatible Features	Incompatible Features
QoS	UplinkFast	
SPAN	VTP pruning	
STP		
Trunking		
UDLD		
VACLs		
VTP		
Port security		
802.1x		

High-Availability Configuration Guidelines

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Versioning Overview

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Note

Note

CLI Commands

Enabling or Disabling High Availability

Task	Command
	set system highavailability { | }

This example shows how to enable high availability:

```
set system highavailability enable
```

```
set system highavailability disable
```

Enabling or Disabling High-Availability Versioning

Task	Command

Showing High-Availability Settings and Operational Status

-
-
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Loading a Different but Compatible Image on the Standby Supervisor Engine

Step 1

Step 2

```
copy tftp:image2.bin bootflash
```

```
y
```

Step 3

```
copy bootflash:image2.bin 2/bootflash:

                                                                y
```

Step 4

```
BOOT variable = bootflash:image2.bin,1;slot0:image1.bin,1
Console> (enable)
```

Step 5

Configuring Supervisor Engine Redundancy Using NSF with SSO

Catalyst 6500 Series Cisco IOS Software Configuration Guide, 12.2SX

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http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/ios/12.2SXF/native/configuration/guide/nsfsso.html

Supervisor Engine Synchronization Examples

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Note

bootflash:f1,1

Synchronizing the Run-Time Image with the Bootstring

Example 1: Run-time image not synchronized

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-

Example 2: File copied, bootstring changed, standby supervisor engine reset

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-
- **f2**
-

  f1

  RTSYNC_f1

  f2, RTSYNC_f1

  bootflash:RTSYNC_f1,1;f2,1;

Example 3: File not copied, bootstring changed, standby supervisor engine reset

-
-
- f1 f1
  f2
-

f1

f1,1;f2,1;

Example 4: Oldest bootflash file deleted, bootflash squeezed

-
-
- f3 f3 f4

f1

f1

RTSYNC_f1

f3, f4, RTSYNC_f1

RTSYNC_f1,1;f2,1;

Example 1: Unable to allocate the boot image

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-
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-
-

Example 2: File copied, bootflash modified, standby supervisor engine not reset

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-
-
-
-

BTSYNC_f2

f1, BTSYNC_f2

bootflash:BTSYNC_f2,1;f1,1;

f1 **f1**
f2 **f2**

f2,1; f1,1;

f1

bootflash:f2,1;bootflash:f1,1;

f1 f1
f0 f1 f1 f3
bootflash:f2,1;bootflash:f1,1;

f2

f0

f2
BTSYNC_f2
f1, f3, BTSYNC_f2

bootflash:BTSYNC_f2,1;bootflash:f1,1;

MSFC Redundancy

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Note

Note

Dual MSFC Redundancy

Caution

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Hardware and Software Requirements

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Note

Layer 3 Redundancy for a Single Chassis

Caution

Single Chassis Layer 3-Redundancy Requirements

Identical Requirements—Global and Interface Levels	Exceptions—Interface Level	Exceptions—Global Level
• All interfaces have the same administrative status[1, 2]	HSRP standby commands IP address commands[3] IPX network[3]	

1. The dynamic and reflexive ACLs, which are based on actual data flow, may be programmed by either MSFC.
2. In addition to defining the same ACLs on both MSFCs, you must also apply the ACLs to the same VLAN interfaces in the same direction on both MSFCs.
3. The IP or IPX addresses do not have to be identical on both MSFCs, but there *must*

Note

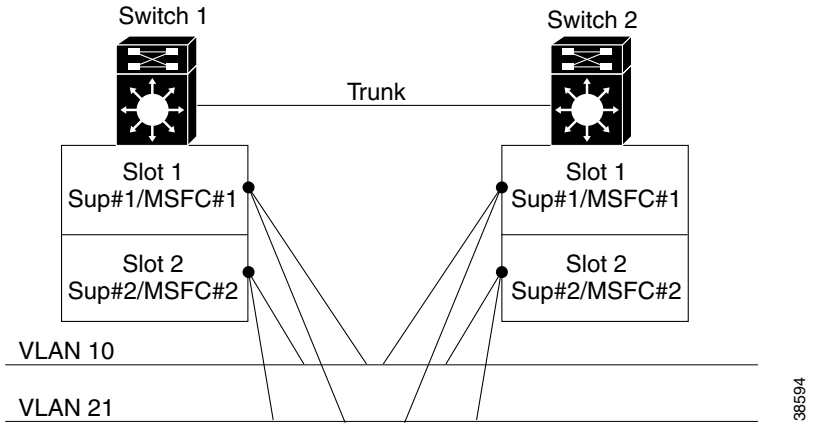
this URL: http://www.cisco.com/en/US/products/hw/switches/ps708/prod_release_notes_list.html

Routing Protocol Peering

Note **PFC:**

PFC2:

Dual Chassis and Dual MSFC Peering



Each MSFC has its own XTAG value to identify itself as the MLS Route Processor. MSFC #1 (on the active supervisor engine) has an XTAG of 1, and MSFC #2 (on the standby supervisor engine) has an XTAG of 2.

Only Supervisor Engine 1 uses the XTAG values; XTAG values are not used on Supervisor Engine 2.

For same-chassis Layer 3 redundancy to function as expected, the configuration on each MSFC be the same (see Table 23-2 on page 23-22).

Table 23-2 lists the configuration exceptions. For example, in Figure 23-1, there are 4 MSFCs on VLAN 10; each MSFC has different IP addresses and HSRP priorities.

If you use the Cisco IOS access control lists (ACLs) on the MSFC, you configure the ACLs on both MSFCs identically, globally, and at the interface level. Only the designated MSFC (the MSFC to come online first or the MSFC that has been online the longest) programs the PFC with ACL information.

The active supervisor engine's PFC multilayer switches the packets (CEF [Cisco Express Forwarding] for PFC2) after consulting with its ACL ASIC to determine whether a packet is forwarded or not, depending on the Cisco IOS ACL that is configured. If a designated MSFC fails, the new designated MSFC must reprogram the PFC for static ACLs. For consistent results, both MSFCs have identical ACL configurations, including the static ACLs.

In addition to defining the same ACLs on both MSFCs, you must also apply the ACLs to the same VLAN interfaces on both MSFCs.

The dynamic and reflexive ACLs, which are based on the actual data flow, may be programmed by either MSFC.

For detailed information on the hardware and software handling of the Cisco IOS ACLs with the PFC, see the "Hardware and Software Handling of Cisco IOS ACLs with PFC" section on page 15-10.

For detailed information on the hardware and software handling of the Cisco IOS ACLs with PFC2, see the "Hardware and Software Handling of Cisco IOS ACLs with PFC2 and PFC3A/PFC3B/PFC3BXL" section on page 15-13.

To determine the status of the designated MSFC, enter the or the command:

Dual MSFC Operational Model for Redundancy and Load Sharing

Dual MSFC Operational Model for Redundancy and Load Sharing—VLANs 10 and 21

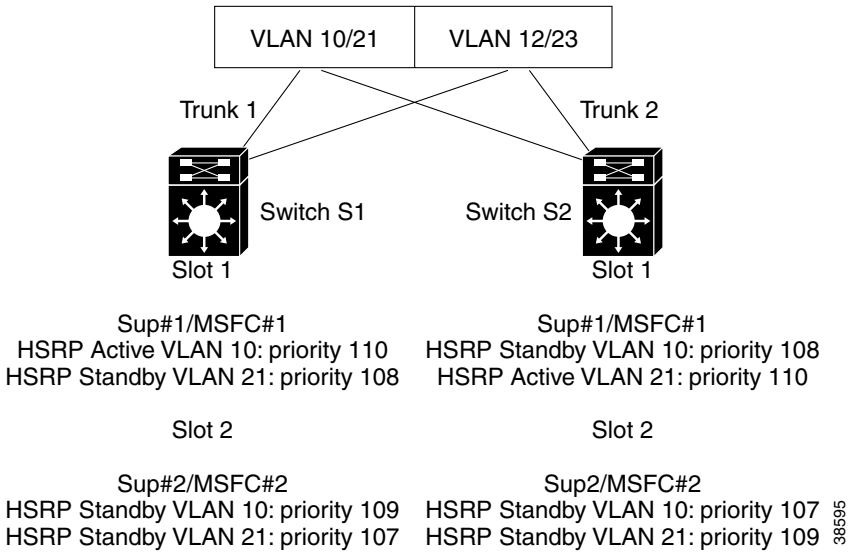
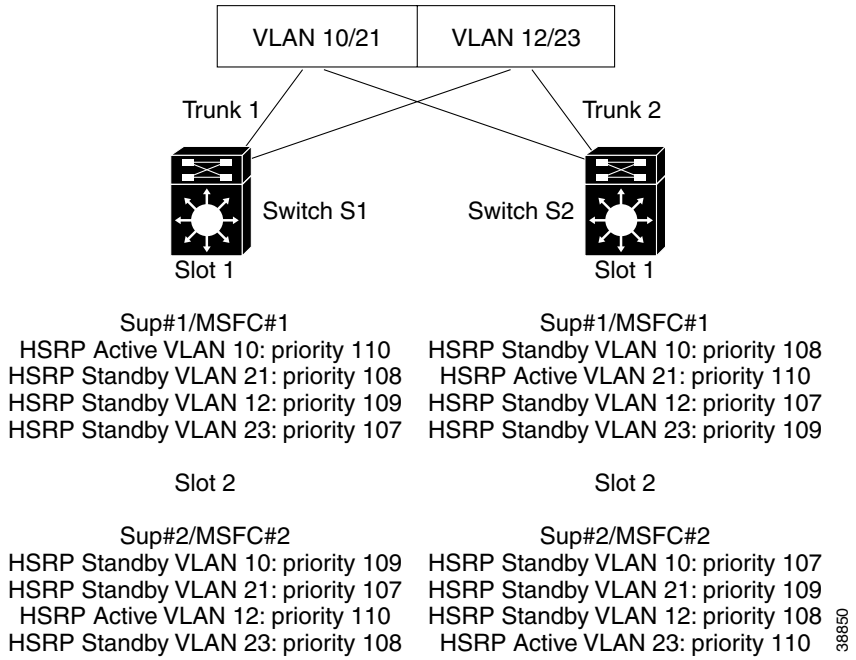


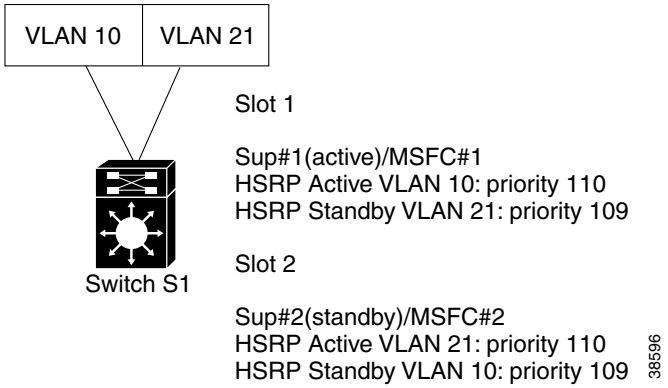
Figure 23-3 Dual MSFC Operational Model for Redundancy and Load Sharing—VLANs 10, 12, 21, and 23



Understanding Failure Scenarios

Note

Figure 23-4 Single Chassis with Dual Supervisor Engines and Dual MSFCs



Failure Case 1: Designated MSFC #1 Fails

1.
2.
3.
4.

Failure Case 2: Nondesignated MSFC #2 Fails

1.
2.
3.
4.

Failure Case 3: Active Sup #1 Fails

1.
2.
3.
4.

Failure Case 4: Standby Sup #2 Fails

1.
2.
3.

Failure Case 5: New or Previously Failed Supervisor Comes Back Online

1.
2.
3.
4.

Configuring Redundancy with HSRP

Note

Note

standby use-bia
standby use-bia **standby use-bia**

Task	Command
Step 1 *group_number*	*group_number* *ip_address*
	group_number *priority*
	group_number *delay*
	group_number *hellotime* *holdtime*
	group_number *string*

```
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)# interface vlan100
                  standby 100 ip 172.20.100.10
                  standby 100 priority 110
                  standby 100 preempt
                  standby 100 timers 5 15
                  standby 100 authentication Secret
                  ^Z
```

Configuration Examples

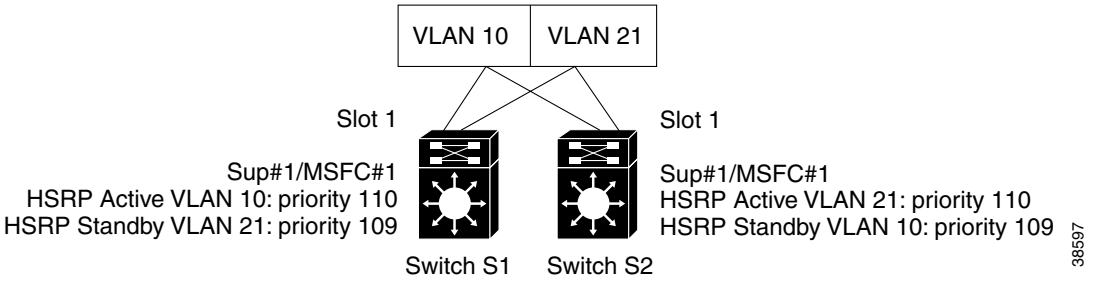
-
-
-

```
show redundancy
```

```
show redundancy
```

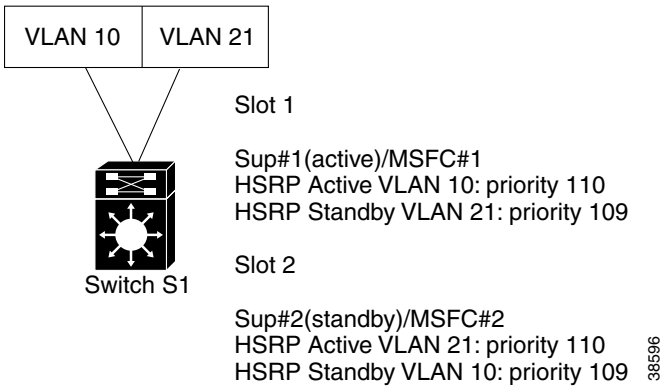
Example 1: Two Chassis with One Supervisor Engine and One MSFC Each

Figure 23-5 Two Chassis with One Supervisor Engine and One MSFC Each



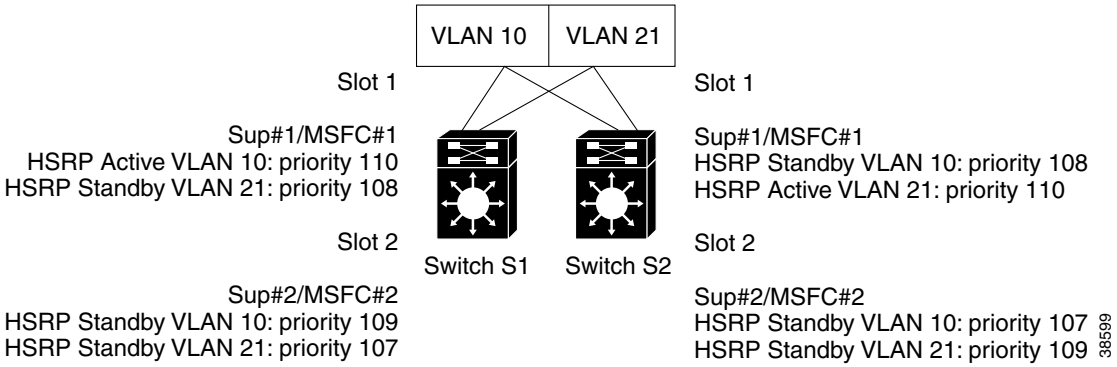
```
Type ^C^C^C to switch back...
Router#
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#
Router(config-if)#
Router(config-if)#
Router(config-if)#
Router(config-if)#
Router(config-if)#
Router(config-if)#
Router(config-if)# standby 21 ip 192.20.100.21
                   standby 21 priority 109
                   standby 21 preempt
                   standby 21 timers 5 15
                   standby 21 authentication Secret
                   ^Z
        ^C^C^C


                  switch console 15


        configure terminal

                interface vlan10
                   standby 10 ip 172.20.100.10
                   standby 10 priority 109
                   standby 10 preempt
                   standby 10 timers 5 15
                   standby 10 authentication Secret
                   interface vlan21
                   standby 21 ip 192.20.100.21
                   standby 21 priority 110
                   standby 21 preempt
                   standby 21 timers 5 15
                   standby 21 authentication Secret
                   ^Z
        ^C^C^C
```

Figure 23-6 Single Chassis with Redundant Supervisor Engines and MSFCs




```
          switch console 15


configure terminal

        interface vlan10
           standby 10 ip 172.20.100.10
           standby 10 priority 110
           standby 10 preempt
           standby 10 timers 5 15
           standby 10 authentication Secret
           interface vlan21
           standby 21 ip 192.20.100.21
           standby 21 priority 109
           standby 21 preempt
           standby 21 timers 5 15
           standby 21 authentication Secret
           ^Z
^C^C^C

          switch console 16


configure terminal

        interface vlan10
           standby 10 ip 172.20.100.10
           standby 10 priority 109
           standby 10 preempt
           standby 10 timers 5 15
           standby 10 authentication Secret
           interface vlan21
           standby 21 ip 192.20.100.21
           standby 21 priority 110
           standby 21 preempt
           standby 21 timers 5 15
           standby 21 authentication Secret
           ^Z
^C^C^C
```

Figure 23-7 Dual MSFC Operational Model for Redundancy and Load Sharing




```
            standby 21 priority 108
            standby 21 preempt
            standby 21 timers 5 15
            standby 21 authentication Secret
            ^Z
^C^C^C

          switch console 16



configure terminal

        interface vlan10
           standby 10 ip 172.20.100.10
           standby 10 priority 109
           standby 10 preempt
           standby 10 timers 5 15
           standby 10 authentication Secret
           interface vlan21
           standby 21 ip 192.20.100.21
           standby 21 priority 107
```

```
           standby 21 preempt
           standby 21 timers 5 15
           standby 21 authentication Secret
           ^Z
^C^C^C

          switch console 15


configure terminal

        interface vlan10
           standby 10 ip 172.20.100.10
           standby 10 priority 108
           standby 10 preempt
           standby 10 timers 5 15
           standby 10 authentication Secret
           interface vlan21
           standby 21 ip 192.20.100.21
           standby 21 priority 110
           standby 21 preempt
           standby 21 timers 5 15
           standby 21 authentication Secret
           ^Z
^C^C^C

          switch console 16


configure terminal

        interface vlan10
           standby 10 ip 172.20.100.10
           standby 10 priority 107
           standby 10 preempt
           standby 10 timers 5 15
           standby 10 authentication Secret
           interface vlan21
           standby 21 ip 192.20.100.21
           standby 21 priority 109
           standby 21 preempt
           standby 21 timers 5 15
           standby 21 authentication Secret
           ^Z
^C^C^C
```

show redundancy

show redundancy

alt Keyword Usage

Note

Interface and Global Configuration Commands Containing the alt Keyword

Interface Configuration Commands	Global Configuration Commands
•	**no hostname alt hostname** **no ip default-gateway**
•	
• *ip_address mask* *ip_address mask* **ipx network encapsulation secondary alt no ipx network encapsulation secondary**	

```
ip address 1.2.3.4 255.255.255.0 alt ip address 1.2.3.5 255.255.255.0
```


```
Escape character is '^]'.

Router-15>
Router-15#
Enter configuration commands, one per line.  End with CNTL/Z.
Router-15(config)#
Router-15(config-r)# high-availability
                       config-sync
                       end
```

session 16

enable
configure terminal

```
configure terminal

        redundancy
          high-availability
             config-sync
```

```
                  interface vlan 1
                     ip address 70.0.70.4 255.255.0.0 alt ip address 70.0.70.5
255.255.0.0
                     exit


                  redundancy
                    high-availability
                       config-sync
                       end

00:03:31: %SYS-5-CONFIG_I: Configured from console by console




00:17:05: %RUNCFGSYNC-6-SYNCEVENT:
Non-Designated Router is now online
High-Availability Redundancy Feature is not enabled on the Non-Designated Router



Router-151(config)#
Router-15(config-r)#
Router-15(config-r-ha)#
Router-15(config-r-ha)#
Router-15#
00:03:31: %SYS-5-CONFIG_I: Configured from console by console
```

```
00:18:57: %RUNCFGSYNC-6-SYNCEVENT:
The High-Availability Redundancy Feature is enabled
The config mode is no longer accessible

Router-15#

00:19:41: %RUNCFGSYNC-6-SYNCEVENT:
Non-Designated Router is now online
Running Configuration Synchronization will begin in 1 minute




00:20:41: %RUNCFGSYNC-6-SYNCEVENT:
Syncing Running Configuration to the Non-Designated Router

00:20:41: %RUNCFGSYNC-6-SYNCEVENT:
Syncing Startup Configuration to the Non-Designated Router



<designated MSFC>
Router-16#
Building configuration...

Current configuration:
!
version 12.1
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname Router-15 alt hostname Router-16
!
boot bootldr bootflash:c6msfc-boot-mz.120-7.XE1
!
ip subnet-zero
!
ip cef
redundancy
 high-availability
 config-sync
cns event-service server
!
!
!
interface Vlan1
 ip address 70.0.70.4 255.255.0.0 alt ip address 70.0.70.5 255.255.0.0
!
interface Vlan10
ip address 192.10.10.1 255.255.255.0 alt ip address 192.10.10.2 255.255.255.0
 no ip redirects
 shutdown
 standby ip 192.20.20.1 alt standby ip 192.20.20.1
!
ip classless
ip route 223.255.254.0 255.255.255.0 70.0.100.0
no ip http server
!
```

```
!
!
line con 0
 transport input none
line vty 0 4
 login
 transport input lat pad mop telnet rlogin udptn nasi
!
end


<nondesignated MSFC>
Router-15#
Building configuration...

Current configuration:
!
version 12.1
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname Router1 alt hostname Router2
!
boot bootldr bootflash:c6msfc-boot-mz.120-7.XE1
!
ip subnet-zero
!
ip cef
redundancy
 high-availability
 config-sync
cns event-service server
!
!
!
interface Vlan1
 ip address 70.0.70.4 255.255.0.0 alt ip address 70.0.70.5 255.255.0.0
!
interface Vlan10
ip address 192.10.10.1 255.255.255.0 alt ip address 192.10.10.2 255.255.255.0
 no ip redirects
 shutdown
 standby ip 192.20.20.1 alt standby ip 192.20.20.1
!
ip classless
ip route 223.255.254.0 255.255.255.0 70.0.100.0
no ip http server
!
!
!
line con 0
 transport input none
line vty 0 4
 login
 transport input lat pad mop telnet rlogin udptn nasi
!
end
```

```
Router-16#
Enter configuration commands, one per line.  End with CNTL/Z.
Router2(config)#
Router2(config-r)#
Router2(config-r-ha)#
```

```
00:13:00: %RUNCFGSYNC-6-SYNCEVENT:
The High-Availability Redundancy Feature is now disabled
The config mode is now accessible
```

```
Router-16#
Designated Router: 1 Non-designated Router:0

Redundancy Status: designated
Config Sync AdminStatus  : enabled
Config Sync RuntimeStatus: disabled
```

Config Sync AdminStatus is Enabled

Config Sync AdminStatus is Disabled

Scenario 5: Designated MSFC Goes Down

Single Router Mode Redundancy

-
-
-
-
-
-

Note

Hardware and Software Requirements

-

Note

Note **Multicast support:**

Note **Multicast support:**

-
-

SRM Redundancy Configuration Guidelines

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-
-
  copy tftp:
-

- TACACS+, you must configure a fallback option to log in with a local username and password if you want to access the nondesignated router through the or commands.

  See Chapter 39, "Configuring the Switch Access Using AAA" for information on configuring the fallback option.

Configuring Single Router Mode Redundancy on Supervisor Engine 720

Note

1.

2.

Tip

Note

Configuring Single Router Mode Redundancy on Supervisor Engine 1 or Supervisor Engine 2

Caution

show version

set system highavailability enable
show system highavailability

switch console
session

boot system flash bootflash:
boot system
show running-config **no** **boot system**

config-register 0x102

Step 6 **reload**

Step 7

Step 8

Note

Step 9

Step 10

Step 11

Step 12

Specifying the Transition Time on the Newly Designated Active Router

```
                        single-router-mode failover ?
   table-update-delay  Adjust for routing convergence time
Router(config-r-ha)#
   <0-4294967295>  Delay in seconds between switch over detection and h/w FIB reload
Router(config-r-ha)#
Router(config-r-ha)#


Router(config-r-ha)#
```

```
Router-16#
 Designated Router: 2 Non-designated Router: 1

 Redundancy Status: designated

 Config Sync AdminStatus  : enabled

 Config Sync RuntimeStatus: enabled

 Single Router Mode AdminStatus  : enabled

 Single Router Mode RuntimeStatus: enabled

 Single Router Mode transition timer : 240 seconds    <---- transition time

Router-16#
```

copy sup-slot0:c6msfc2-jsv-mz.9E bootflash:c6msfc2-jsv-mz.9E

copy sup-slot0:c6msfc2-jsv-mz.9E bootflash:c6msfc2-jsv-mz.9E

boot system flash bootflash:c6msfc2-jsv-mz.9E

```
redundancy
  high-availability
     no single-router-mode
```

Manual-Mode MSFC Redundancy

Note

-
-
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-
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-

Hardware and Software Requirements

-
-
-

Note

Manual-Mode MSFC Redundancy Guidelines

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Note

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-
-

Note

Accessing the Standby MSFC

Note

Manually Booting the MSFC

Step 1

Step 2

Step 3 three times at the Router> prompt to return to the supervisor engine prompt. Enter the command to access the MSFC.

For manual-mode MSFC redundancy, set the configuration registers as follows:

From Cisco IOS configuration mode on the active MSFC (MSFC-15), enter the command.

On the MSFC in ROM-monitor mode (MSFC-16), enter the command.

We recommend that system commands in both MSFC configurations point to a valid image on bootflash and that you do not set the configuration registers to ignore these commands.

This section describes how to recover from the temporary or permanent MSFC failures.

A temporary failure of the active MSFC results in an MSFC reboot because the configuration register is set to 0x2102.

You need to verify a suspected permanent failure of the active MSFC. Enter the **reset 15**

Option 1: If You Have Physical Access to the Switch

Step 1

Step 2

Step 3

Option 2: If You Have Only Remote Access to the Switch

Note

Step 1

Step 2

ISSUE BREAK AFTER THIS POINT

BUT BEFORE THIS POINT

at the "do you wish to change the configuration? y/n [n]:" prompt.

b. **Enter**

c.

d. to select the "0 = ROM Monitor" option at the next prompt.

e. Review the Configuration Summary to ensure the following value: boot: the ROM Monitor.

f.

g.

h.

Step 4

Step 5

Step 6

Step 7

Step 8

Step 9

Step 10

Step 11

Step 12