Release Notes for Catalyst 6500 Series Software Release 8.*x*

Current Releases
8.7(3)—September 11, 2009
Previous Releases: 8.7(2), 8.7(1), 8.6(6), 8.6 (5), 8.6(4), 8.6 (3), 8.6(2), 8.6(1), 8.5(9), 8.5(8), 8.5(7), 8.5(6), 8.5(5), 8.5(4), 8.5(3), 8.5(2), 8.5(1), 8.4(6), 8.4(5), 8.4(4), 8.4(3), 8.4(2a), 8.4(2), 8.4(1), 8.3(7), 8.3(6), 8.3(5), 8.3(4), 8.3(3), 8.3(2), 8.3(1), 8.2(2), 8.2(1), 8.1(3), 8.1(2), 8.1(1)

Caution Due to a compatibility issue between Supervisor Engine 32 hardware version 1.2 and Catalyst software releases prior to release 8.4(4) and MSFC2A Cisco IOS Releases prior to Release 12.2(17d)SXB9, you need to verify your Supervisor Engine 32 hardware version, and if necessary, take the appropriate action as described in the following paragraphs.

For Supervisor Engine 32 (WS-SUP32-GE-3B and WS-SUP32-10GE-3B), if the hardware version is 1.2, you must run software release 8.4(4) and later releases on the supervisor engine and Cisco IOS Release 12.2(17d)SXB9 and later releases on the MSFC2A. To determine the hardware version, enter the **show module** command and note the hardware (Hw) version for the supervisor engine.

When Supervisor Engine 32 with hardware version 1.2 is running software release 8.4(4) or later, if the MSFC2A image is not Cisco IOS Release 12.2(17d)SXB9 or later, the MSFC2A is placed in the "other" state and the following message is displayed on the supervisor engine:

%SYS-1-MOD_MSFC_FAILONLINE:MSFC Module 16 FAILED to come ONLINE
2005 Apr 21 01:31:46 %SYS-1-MOD_MSFC_INCOMPATIBLEIMAGE:MSFC Module 16 Image Upgrade Required to support Inband Port ASIC present in System

To correct this problem, you must upgrade the MSFC2A to Cisco IOS Release 12.2(17d)SXB9 and later releases.

Note that in redundant systems, if one Supervisor Engine 32 is hardware version 1.2, the other Supervisor Engine 32 must also be hardware version 1.2 and both supervisor engines must be running software release 8.4(4) or later on the supervisor engine and Cisco IOS release 12.2(17d)SXB9 or later on the MSFC2A.

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Caution With software release 8.3(1), we recommend that you run Cisco IOS Release 12.2(17d)SXB1 on the Supervisor Engine 720/MSFC3. It is mandatory that you run Cisco IOS Release 12.2(17d)SXB1 if you plan on using any of the following software release 8.3(1) features: Bidirectional PIM, Policy Feature Card 3BXL, IGMP version 3 snooping with Multicast Multilayer Switching (MMLS), or Gateway Load Balancing Protocol (GLBP).

For Cisco IOS Release requirements for all supervisor engines and modules, see the "Release Notes for Cisco IOS on the MSFC" section at this URL:
http://www.cisco.com/en/US/products/hw/switches/ps708/prod_release_notes_list.html

Caution Support for Optical Services Modules (OSMs) and the FlexWAN module in systems with Supervisor Engine 2 running software release 8.1(1) and later releases requires Cisco IOS Release 12.1(19)E and later releases. OSMs are only supported with Supervisor Engine 2; they are not supported with any other supervisor engine. Support for the FlexWAN module in systems with Supervisor Engine 1 and Supervisor Engine 2 running software release 8.1(1) and later releases requires Cisco IOS Release 12.1(19)E and later releases. Support for the FlexWAN module in systems with Supervisor Engine 720 running software release 8.2(1) and later releases requires Cisco IOS Release 12.2(14)SX2 and later releases.

Also note that with software release 8.1(1) and later releases you need to use the Cisco IOS Release 12.1(13)E4 or later version bootloader on the MSFC/MSFC2 to boot a Cisco IOS image reliably from sup-slot0 or sup-bootflash. The Cisco IOS Release 12.1(19)E train bootloader, or bootloaders earlier than Cisco IOS Release 12.1(13)E4, do not support booting the MSFC/MSFC2 from sup-slot0 or sup-bootflash due to caveats CSCeb36759, CSCdz60980, and/or CSCdz31321.

For a complete list of OSMs supported with Catalyst software, see the "Optical Services Modules" section on page 22.

Caution The MSFC3 on Supervisor Engine 720 requires Cisco IOS Release 12.2(14)SX2 and later releases.

Caution The 12.2(14r)S9 MSFC3 ROMMON software upgrade is required if you plan to run Catalyst software release 8.1(x) on Supervisor Engine 720 and Cisco IOS software on the MSFC3. For information on the 12.2(14r)S9 MSFC3 ROMMON software upgrade procedure, refer to this URL:
http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/rommon/OL_4497.html

Caution If stateful switchover (SSO) is enabled on the MSFC, you must enable high availability on the supervisor engine *before* upgrading to supervisor engine software release 8.5(1) and later releases. Use the **set system highavailability enable** command to enable high availability on the supervisor engine. For detailed information on configuring SSO on the MSFC, refer to the "Configuring NSF with SSO MSFC Redundancy" chapter of the *Catalyst 6500 Series Software Configuration Guide* at this URL:
http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/catos/8.x/configuration/guide/nde.html

Caution The Supervisor Engines 1 and 1A are not supported in Catalyst software release 8.5(4) or later releases. For more information, refer to Product Bulletin No. 2595 at this URL:

http://www.cisco.com/en/US/prod/collateral/switches/ps5718/ps708/prod_end-of-life_notice0900aecd8017a5d1.html

Caution The Supervisor Engine 2 is not supported in Catalyst software release 8.6(5) or later releases. For more information, refer to Product Bulletin No. 1031 at this URL:

http://www.cisco.com/en/US/prod/collateral/switches/ps5718/ps708/prod_end-of-life_notice0900aecd80423d31.html

Note Cisco IOS Release 12.2(18)SXF includes features that require Catalyst software release 8.5(1). For details, refer to the *Release Notes for Cisco IOS Release 12.2 SX on the Catalyst 6500 Series MSFC* at this URL:

http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/ios/12.2SXF/hybrid/release/notes/ol_4563.html

Contents

This document consists of these sections:

Release 8.*x* DRAM Memory Requirements

Supervisor Engine 32: The Catalyst 6500 series Supervisor Engine 32 ships with 256-MB DRAM, which fully supports software release 8.4(1) and later releases.

Supervisor Engine 720: The Catalyst 6500 series Supervisor Engine 720 ships with 512-MB DRAM, which fully supports software release 8.*x*.

Supervisor Engine 2: The Catalyst 6500 series Supervisor Engine 2 ships with 256-MB DRAM (WS-X6K-S2U-MSFC2) and the default 128-MB DRAM (WS-X6K-S2-MSFC2), both of which fully support software release 8.*x*.

Caution When running software release 8.x with a large number of routes configured, the Supervisor Engine 2 requires 256-MB DRAM. The exact number of routes supported by the Supervisor Engine 2 with 128-MB DRAM depends on the features you have configured.

Supervisor Engine 1: Early versions of the Catalyst 6500 series Supervisor Engine 1 shipped with 64-MB DRAM which does not support software release 8.x (currently, new Supervisor Engine 1 modules ship with 128-MB DRAM). To support software release 8.x, you need 128-MB DRAM.

With the exception of WS-X6K-SUP1A-MSFC, all other Supervisor Engine 1 modules can upgrade to 128-MB DRAM using the MEM-S1-128MB= upgrade kit. For detailed information on the MEM-S1-128MB= upgrade, refer to the *Catalyst 6500 Series Switch Supervisor Engine 1A DRAM Upgrade Installation Note* at this URL:

http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/hardware/Config_Notes/78_14357.html

To upgrade to 128-MB DRAM on the WS-X6K-SUP1A-MSFC, use the MEM-S1-128MB-UPG= upgrade kit *which also includes* an MSFC2 upgrade.

Boot ROM (ROMMON) Requirements

For Supervisor Engine 1, the minimum boot ROM (ROMMON) required for software release 5.4(1) and later 5.x(x) releases is 5.2(1). The minimum boot ROM required for software releases 6.x(x), 7.x(x), and 8.x(x) is also 5.2(1). The default (shipping) image for software releases 6.x(x), 7.x(x), and 8.x(x) is 5.3(1).

For Supervisor Engine 2, the minimum boot ROM required for software release 6.2(2) and later releases is 6.1(3).

For Supervisor Engine 720, the minimum boot ROM required for software release 8.1(1) and later releases is 7.7(1).

Note The supervisor engine boot ROM versions must be identical in redundant systems.

Upgrading the Boot ROM

Follow these guidelines to upgrade the supervisor engine boot ROM (ROMMON) on Supervisor Engine 1 or 1A:

- For supervisor engines with an MSFC, due to the location of the boot ROM, upgrading the boot ROM could damage your supervisor engine. This hardware configuration is not field upgradable.
- For supervisor engines with an MSFC2 or no PFC, the boot ROM upgrade can be done in the field:
  - The boot ROM upgrade kit part number is WS-X6K-BOOT=

Note The boot ROM upgrade kit is not orderable. If an upgrade is needed, contact the Technical Assistance Center (TAC) to verify your hardware configuration and arrange for delivery of the upgrade kit.

  - For boot ROM installation information, refer to the *Catalyst 6500 Series Switch Supervisor Engine NMP Boot ROM Upgrade Installation Note* at this URL:

    http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/hardware/Config_Notes/78_10142.html

Note For Supervisor Engine 2 with boot ROM version 6.1(3) or later, the boot ROM software image can be upgraded through a software download from Cisco.com. Refer to the boot ROM software upgrade procedure at this URL:

http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/hardware/Config_Notes/78_13488.html

FLASH PC CARD SUPPORT:

The following Flash PC cards are supported on Catalyst 6500 series switches:

- MEM-C6K-FLC16M(=)

  Supported only on Supervisor Engine 1 and Supervisor Engine 2.
- MEM-C6K-FLC24M(=)

  Supported only on Supervisor Engine 1 and Supervisor Engine 2.
- MEM-C6K-FLC64M(=)

  Supported only on Supervisor Engine 1.
- MEM-C6K-ATA-1-64M(=)

  Supported only on Supervisor Engine 2.

Prior to software release 7.5(1), Supervisor Engine 1 and Supervisor Engine 2 supported the following Flash PC cards:

- 16-MB Flash PC card (MEM-C6K-FLC16M=). The device name is **slot0:**.
- 24-MB Flash PC card (MEM-C6K-FLC24M=). The device name is **slot0:**.

With software releases 7.5(1) and later, additional Flash PC card support was added as follows:

- 64-MB ATA Flash PC card (MEM-C6K-ATA-1-64M=)—Only supported on Supervisor Engine 2. The device name is **disk0:** and the card requires ROMMON version 7.1(1) and later releases.
- 64-MB linear Flash PC card (MEM-C6K-FLC64M=)—Only supported on Supervisor Engine 1. The device name is **slot0:** and the card requires ROMMON software release 5.3(1) and later releases.

Note The MEM-C6K-ATA-1-64M(=) and MEM-C6K-FLC64M= Flash PC cards are not formatted. Although the cards appear to be formatted when first installed, you must format the cards to prevent possible data corruption.

Note The 16-MB MEM-C6K-FLC16M(=) and 24-MB MEM-C6K-FLC24M(=) linear Flash PC cards are not formatted. Supervisor Engine 1 and Supervisor Engine 2 do not support the same Flash PC card format. To use a Flash PC card with Supervisor Engine 2, you must format the card with Supervisor Engine 2. To use a Flash PC card with Supervisor Engine 1, you must format the card with Supervisor Engine 1.

The following Compact Flash cards are supported only on Supervisor Engine 720 with software release 8.1(1) and later releases and Supervisor Engine 32 with software release 8.4(1) and later releases:

- MEM-C6K-CPTFL64M=
- MEM-C6K-CPTFL128M=
- MEM-C6K-CPTFL256M=
- MEM-C6K-CPTFL512M=

  MEM-C6K-CPTFL512M= is supported with Supervisor Engine 720 and Supervisor Engine 32 starting with software release 8.4(1).

Note For Supervisor Engine 720, a Compact Flash card can be installed only in the DISK 0 slot with software releases prior to release 8.4(1). With software releases 8.4(1) and later releases, you can use the DISK 1 slot.

Note For Supervisor Engine 1, software release 7.6(1) or later CV images need a 24-MB or 64-MB linear Flash PC card.

With the 24-MB linear Flash PC card with a Supervisor Engine 1/MSFC or a Supervisor Engine 1/MSFC2 with a 16-MB MSFC2 bootflash, you need to put the Catalyst image on the 24-MB linear Flash PC card, the IOS bootloader on the MSFC bootflash, and the Cisco IOS image on the 16-MB supervisor engine bootflash.

With the 64-MB linear Flash PC card with a Supervisor Engine 1/MSFC or a Supervisor Engine 1/MSFC2 with a 16-MB MSFC2 bootflash, you can put the Catalyst image and the MSFC/MSFC2 Cisco IOS image on the 64-MB linear Flash PC card, and the Cisco IOS bootloader on the MSFC bootflash.

With the 24-MB or 64-MB linear Flash PC card on a Supervisor Engine 1/MSFC2 with 32-MB MSFC2 bootflash, the MSFC2 bootloader and Cisco IOS image can be put on the MSFC2 bootflash, and the Catalyst image can be put on the 24-MB or 64-MB linear Flash PC cards.

Supervisor Engine Bootflash

Supervisor Engine 32: The Catalyst 6500 series Supervisor Engine 32 ships with a 256-MB bootflash device.

Supervisor Engine 720: The Catalyst 6500 series Supervisor Engine 720 ships with a 64-MB bootflash device.

Supervisor Engine 2: The Catalyst 6500 series Supervisor Engine 2 ships with a 32-MB bootflash device.

Note The default bootflash configuration on Supervisor Engine 2 shipped since late January 2001, is 32 MB. Enter the show version command to determine what size bootflash device is installed on the Supervisor Engine 2. If you have 16 MB, there is an upgrade to 32 MB available at this URL: http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/hardware/Config_Notes/78_12667.html

Supervisor Engine 1: The Catalyst 6500 series Supervisor Engine 1 (and 1A) ship with a 16-MB bootflash device. The Supervisor Engine 1 (and 1A) bootflash is not upgradeable.

Redundant Supervisor Engine Configurations

In systems with redundant supervisor engines, both supervisor engines must be identical and have the same daughter card configurations. For example, your switch can have the following configurations:

- Slot 1—Supervisor Engine 2, PFC2, MSFC2
  Slot 2—Supervisor Engine 2, PFC2, MSFC2
- Slot 1—Supervisor Engine 2, PFC2
  Slot 2—Supervisor Engine 2, PFC2
- Slot 1—Supervisor Engine 1, PFC, MSFC2
  Slot 2—Supervisor Engine 1, PFC, MSFC2
- Slot 1—Supervisor Engine 1, PFC, MSFC1
  Slot 2—Supervisor Engine 1, PFC, MSFC1
- Slot 1—Supervisor Engine 1, PFC
  Slot 2—Supervisor Engine 1, PFC
- Slot 1—Supervisor Engine 1
  Slot 2—Supervisor Engine 1

The slot locations for Supervisor Engine 720 (with PFC3 and MSFC3) and Supervisor Engine 32 (with PFC3B and MSFC2A) are chassis dependent:

- With a 3-slot chassis, install the active supervisor engine in slot 1 and the redundant supervisor engine in slot 2.
- With a 6-slot or a 9-slot chassis, install the active supervisor engine in slot 5 and the redundant supervisor engine in slot 6.
- With a 13-slot chassis, install the active supervisor engine in slot 7 and the redundant supervisor engine in slot 8.

These configuration requirements apply to all Catalyst 6500 series switches. We do not support configurations that are not identical.

Product and Software Release Matrix

These sections list the minimum supervisor engine version and the current recommended supervisor engine software release for Catalyst 6500 series modules, power supplies, fan trays, and chassis:

Note There might be additional minimum software release requirements for intelligent modules (those that run an additional, separate software image). Refer to the software release notes for the module type for more information.

Note Line modules and Service modules with different Hardware and Firmware can reside on the same chassis. To recognise the modules, you must know the minimum Supervisor Engine software release.

Supervisor Engines

Note Supervisor Engine 32 (WS-SUP32-GE-3B and WS-SUP32-10GE-3B) common features:

- Supports 32-Gbps non-fabric-enabled switching bus (the WS-C6500-SFM and WS-C6500-SFM2 modules are not supported)
- 256-MB bootflash through an internal Compact Flash device (referred to as "bootdisk" in the CLI)
- Compact Flash slot (disk 0)
- One 10/100/1000 Mbps RJ-45 port (port 9)
- Two USB ports
  - Host port (Type B port) interfaces with a standard host such as a PC
  - Device port (Type A port) interfaces with devices such as USB disks or USB keys

Note The USB ports are not enabled. These ports will be enabled in a future software release.

- QoS port architecture (Rx/Tx): **2q8t/1p3q8t**
- Eight Gigabit Ethernet SFP ports (ports 1 through 8) on WS-SUP32-GE-3B

Note For a list of supported SFPs, see the "Small Form-Factor Pluggable Modules (SFPs)" section on page 14.

- Two 10-Gigabit Ethernet uplink ports on WS-SUP32-10GE-3B (require XENPAKs)
- For Supervisor Engine 32 fan tray requirements, see the "Fan Trays" section on page 26

Note Supervisor Engine 720 common features:

- Integrated 720-Gbps Switch Fabric
- 64-MB bootflash device
- 2 Compact Flash slots (disk0 and disk1)
- Two Ethernet uplink ports:
  - 1-MB packet buffer per port
  - Port 1—Gigabit Ethernet SFP
  - Port 2—Configurable as Gigabit Ethernet SFP or 10/100/1000 Mbps RJ-45

Note For a list of supported SFPs, see the "Small Form-Factor Pluggable Modules (SFPs)" section on page 14.

- QoS port architecture (Rx/Tx): **1p1q4t/1p2q2t**
- For Supervisor Engine 720 fan tray requirements, see the "Fan Trays" section on page 26

Product Number append with "=" for spares	Product Description	Minimum Supervisor Engine software release	Recommended Supervisor Engine software release
Supervisor Engine 32[1, 2]			
WS-SUP32-GE-3B	Supervisor Engine 32 with PFC3B: • 256-MB DRAM • Policy Feature Card 3B; see the "Policy Feature Cards" section on page 13 • Multilayer Switch Feature Card 2A (MSFC2A) – 256-MB DRAM – 32-MB bootflash	8.4(1)	8.4(2)
WS-SUP32-10GE-3B		8.4(4)	8.4(4)
Supervisor Engine 720[2]			
WS-SUP720-3B	Supervisor Engine 720 with PFC3B: • 512-MB DRAM • Policy Feature Card 3B; see the "Policy Feature Cards" section on page 13 • Multilayer Switch Feature Card 3 (MSFC3): – 512-MB DRAM – 64-MB bootflash	8.7(1)	8.7(1)
	Note • There are no memory-only upgrade options for WS-SUP720-3B. • Use WS-F6K-PFC3BXL= to upgrade a WS-SUP720-3B with a PFC3BXL. WS-F6K-PFC3BXL= includes 1 GB memory upgrades for the Supervisor Engine 720 and the MSFC3. Refer to this publication for more information: http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/hardware/Config_Notes/78_16220.html		
WS-SUP720-3BXL	Supervisor Engine 720 with PFC3BXL: • 1-GB DRAM • Policy Feature Card 3BXL; see the "Policy Feature Cards" section on page 13 • Multilayer Switch Feature Card 3 (MSFC3): – 1-GB DRAM – 64-MB bootflash	8.3(1)	8.3(3)
	Note There are no memory upgrade options for WS-SUP720-3BXL.		
WS-SUP720	Supervisor Engine 720 with the following features: • 512-MB DRAM • Policy Feature Card 3A (PFC3A); see the "Policy Feature Cards" section on page 13 • Multilayer Switch Feature Card 3 (MSFC3) with 64-MB bootflash device and 512-MB DRAM	8.1(1)	8.3(3)

Product Number append with "=" for spares	Product Description	Minimum Supervisor Engine software release	Recommended Supervisor Engine software release
Supervisor Engine 2[3]			
WS-X6K-S2U-MSFC2	Supervisor Engine 2, dual 1000BASE-X GBIC uplinks, fabric-enabled, CEF, PFC2, and MSFC2 256 MB on supervisor engine, 256 MB on MSFC2 QoS port architecture (Rx/Tx): **1p1q4t/1p2q2t**	6.1(1d)	6.4(21)
WS-X6K-S2-MSFC2	Supervisor Engine 2, dual 1000BASE-X GBIC uplinks, fabric-enabled, CEF, PFC2, and MSFC2 128 MB on supervisor engine, 128 MB on MSFC2 QoS port architecture (Rx/Tx): **1p1q4t/1p2q2t**	6.1(1d)	6.4(21)
WS-X6K-S2-PFC2	Supervisor Engine 2, dual 1000BASE-X GBIC uplinks, fabric-enabled, and PFC2 QoS port architecture (Rx/Tx): **1p1q4t/1p2q2t**	6.1(1d)	6.4(21)
Supervisor Engine 1[4, 5]			
WS-X6K-S1A-MSFC2	Supervisor Engine 1A, dual 1000BASE-X GBIC uplinks, PFC, and MSFC2 QoS port architecture (Rx/Tx): **1p1q4t/1p2q2t**	5.4(3)	6.4(21)
WS-X6K-SUP1A-MSFC	Supervisor Engine 1A, dual 1000BASE-X GBIC uplinks, PFC, and MSFC QoS port architecture (Rx/Tx): **1p1q4t/1p2q2t**	5.3(1a)CSX	6.4(21)
WS-X6K-SUP1A-PFC	Supervisor Engine 1A, dual 1000BASE-X GBIC uplinks, and PFC QoS port architecture (Rx/Tx): **1p1q4t/1p2q2t**	5.3(1a)CSX	6.4(21)
WS-X6K-SUP1A-2GE	Supervisor Engine 1A, dual 1000BASE-X GBIC uplinks QoS port architecture (Rx/Tx): **1p1q4t/1p2q2t**	5.3(1a)CSX	6.4(21)
WS-X6K-SUP1-2GE	Supervisor Engine 1, dual 1000BASE-X GBIC uplinks, Layer 2 Switching Engine I (WS-F6020) or Layer 2 Switching Engine II (WS-F6020A) QoS port architecture (Rx/Tx): **1q4t/2q2t**	5.1(1a)CSX	6.4(21)

1. Read the Cautionary information on page 1 of this document to verify your Supervisor Engine 32 hardware version. The hardware version determines the required software releases for Supervisor Engine 32.
2. Supervisor Engine 720 and Supervisor Engine 32 require a 2500 W or larger power supply in all 6-, 9-, and 13-slot chassis.
3. Not supported in software release 8.6(5) or later releases.
4. Not supported in the WS-C6513 chassis.
5. Not supported in software release 8.5(4). For more information, refer to Product Bulletin No. 2595 at this URL: http://www.cisco.com/en/US/prod/collateral/switches/ps5718/ps708/prod_end-of-life_notice0900aecd8017a5d1.html

Policy Feature Cards

Note

- The PFC2 supports a theoretical maximum of 128 K MAC addresses (32 K MAC addresses recommended maximum).
- The PFC3 supports a theoretical maximum of 64 K MAC addresses (32 K MAC addresses recommended maximum).
- You cannot use a PFC3BXL or a PFC3B on one supervisor engine and a PFC3A on the other supervisor engine for redundancy. You must use identical policy feature cards for redundancy.

Product Number append with "=" for spares	Product Description	Minimum Supervisor Engine software release	Recommended Supervisor Engine software release
PFC3B[1]	Policy Feature Card 3B (PFC3B)	8.4(1)	8.4(1)
PFC3BXL[1]	Policy Feature Card 3BXL (PFC3BXL)	8.3(1)	8.3(3)
PFC3A[2]	Policy Feature Card 3A (PFC3A)	8.1(1)	8.3(3)
For PFC and PFC2 information, see the "Supervisor Engines" section on page 10.			

1. Supported on Supervisor Engine 720 and Supervisor Engine 32.
2. Supported only with Supervisor Engine 720.

Switch Fabric Modules

Note

- The Switch Fabric Modules are not supported with Supervisor Engine 720 because the Supervisor Engine 720 has an integrated switch fabric.
- The WS-C6500-SFM2 and the WS-X6500-SFM are supported only in systems with a Supervisor Engine 2.
- Except in a 13-slot chassis, WS-X6500-SFM2 and WS-C6500-SFM can be used together to provide redundancy.
- 3-slot chassis do not support WS-X6500-SFM2 or WS-C6500-SFM.

Product Number append with "=" for spares	Product Description	Minimum Supervisor Engine software release	Recommended Supervisor Engine software release
WS-C6500-SFM	Switch Fabric Module to support fabric-enabled modules	6.1(1d)	6.4(11)
WS-X6500-SFM2	Switch Fabric Module version 2	6.2(2)	6.4(11)

Small Form-Factor Pluggable Modules (SFPs)

Note For a list of transceiver that support Digital Optical Monitoring (DOM), refer to the *Cisco Digital Optical Monitoring Compatibility Matrix* at this URL: http://www.cisco.com/en/US/docs/interfaces_modules/transceiver_modules/compatibility/matrix/OL_8031.html

Product Number append with "=" for spares	Product Description	Minimum Supervisor Engine software release	Recommended Supervisor Engine software release
CWDM-SFP	1000BASE-CWDM SFP	8.3(1)	8.3(3)
GLC-T	1000BASE-T SFP	8.3(1)	8.3(3)
GLC-LH-SM	1000BASE-LX/LH SFP	8.1(1)	8.3(3)
GLC-SX-MM	1000BASE-SX SFP	8.1(1)	8.3(3)
GLC-ZX-SM	1000BASE-ZX SFP	8.2(1)	8.3(3)
GLC-FE-100FX	100BASE-FX SFP	8.4(1)	8.4(1)
GLC-FE-100LX	100BASE-LX SFP	8.4(1)	8.4(1)
GLC-FE-100BX-D GLC-FE-100BX-U	100BASE-BX10 SFPs	8.4(1)	8.4(1)
GLC-BX-U	1000BASE-BX SFP, transmit 1310-nm, receive 1490-nm	8.5(1)	8.5(1)
GLC-BX-D	1000BASE-BX SFP, transmit 1490-nm, receive 1310-nm	8.5(1)	8.5(1)

10-Gigabit Ethernet Switching Modules

Product Number append with "=" for spares	Product Description	Minimum Supervisor Engine software release	Recommended Supervisor Engine software release
WS-X6502-10GE	1-port 10GBASE-E Serial 10-Gigabit Ethernet, fabric-enabled QoS port architecture (Rx/Tx): **1p1q8t/1p2q1t** **Note** The WS-X6502-10GE module does not support ISL encapsulation.	7.1(1)	7.6(9)
WS-G6483	10GBASE-ER Serial 1550-nm extended-reach Optical Interface Module (OIM)	7.2(2)	7.6(9)

Product Number append with "=" for spares	Product Description	Minimum Supervisor Engine software release	Recommended Supervisor Engine software release
WS-G6488	10GBASE-LR Serial 1310-nm long-haul OIM	7.1(1)	7.6(9)
WS-X6704-10GE [1], [2], [3]	4-port 10-Gigabit Ethernet, requires XENPAKs, fabric-enabled QoS port architecture (Rx/Tx): **1q8t/1p7q8t** **Note** For a list of supported XENPAKs, see the "XENPAKs" section on page 15.	8.1(2)	8.3(3)

1. Not supported in a 6503 chassis in software releases prior to release 8.4(1). Supported in the 6503-E chassis with software release 8.4(1) and later releases.
2. In a 13-slot chassis, this module must be installed in slots 9, 10, 11, 12, or 13.
3. Supported only with Supervisor Engine 720.

XENPAKs

Note For a list of transceivers that support Digital Optical Monitoring (DOM), refer to the *Cisco Digital Optical Monitoring Compatibility Matrix* at this URL:

http://www.cisco.com/en/US/docs/interfaces_modules/transceiver_modules/compatibility/matrix/OL_8031.html

Product Number append with "=" for spares	Product Description	Minimum Supervisor Engine software release	Recommended Supervisor Engine software release
XENPAK-10GB-LR	Up to 10-kilometer range, 10GBASE-LR Serial 1310-nm long-haul (SMF)	8.1(2)	8.3(3)
XENPAK-10GB-LX4	10GBASE-LX4 Serial 1310-nm multimode (MMF)	8.2(1)	8.3(3)
XENPAK-10GB-ER	10GBASE-ER Serial 1550-nm extended-reach (SMF)	8.2(1)	8.3(3)
XENPAK-10GB-SR	10GBASE-SR Serial 850-nm short-reach multi-mode (MMF)	8.3(1)	8.3(3)
XENPAK-10GB-CX4	10GBASE-CX4 provides support for copper up to 15 meters on CX4 cable	8.3(1)	8.3(3)
XENPAK-10GB-ZR	10GBASE-ZR XENPAK 1550-nm, SC connector (SMF)	8.5(1)	8.5(1)
XENPAK-10GB-LW	10GBASE-LW XENPAK 1310-nm, SC connector (SMF) **Note** The XENPAK-10GB-LW operates at an interface speed compatible with SONET/SDH OC-192/STM-64 and supports transmission at a data rate of 9.6Gbps.	When used with the WS-X6704-10GE module: 8.3(1) When used with the WS-SUP32-10GE-3B uplinks: 8.4(4)	8.5(3)
DWDM-XENPAK-*xx.xx*[1]	Dense Wavelength Division Multiplexing (DWDM) XENPAK transceivers	8.5(1)	8.5(4)

1. For a list of the DWDM XENPAK product numbers, band, and channel assignments, refer to the *Cisco DWDM XENPAK Transceiver Installation Note* at this URL: http://www.cisco.com/en/US/docs/interfaces_modules/transceiver_modules/installation/note/78_15665.html

Gigabit Ethernet Switching Modules

Product Number append with "=" for spares	Product Description	Minimum Supervisor Engine software release	Recommended Supervisor Engine software release
WS-X6148A-GE-TX WS-X6148A-GE-45AF	48-port 10/100/1000BASE-T switching module, RJ-45 (WS-X6148A-GE-45AF provides inline power to IP telephones using the voice daughter card WS-F6K-GE48-AF) QoS port architecture (Rx/Tx): **1q2t/1p3q8t**	8.4(1)	8.4(1)
WS-X6748-GE-TX[1], [2], [3]	48-port 10/100/1000BASETX switching module, RJ-45, fabric-enabled QoS port architecture (Rx/Tx): **1q8t/1p3q8t**	8.1(2)	8.3(3)
WS-X6748-SFP1, 2, 3	48-port Gigabit Ethernet switching module, requires SFPs, fabric enabled QoS port architecture (Rx/Tx): **1q8t/1p3q8t** **Note** For a list of supported SFPs, see the "Small Form-Factor Pluggable Modules (SFPs)" section on page 14.	8.3(2)	8.3(3)
WS-X6724-SFP1, 3	24-port Gigabit Ethernet switching module, requires SFPs, fabric-enabled QoS port architecture (Rx/Tx): **1q8t/1p3q8t** **Note** For the 24-port Gigabit Ethernet switching module hardware version 2.2 and earlier versions, the recommended supervisor engine software release is 8.1(2). **Note** For the 24-port Gigabit Ethernet switching module hardware version 2.3 and later versions, the recommended supervisor software release is 8.3(3). **Note** For a list of supported SFPs, see the "Small Form-Factor Pluggable Modules (SFPs)" section on page 14.	See the Notes in the Product Description.	See the Notes in the Product Description.
WS-X6148-GE-TX WS-X6148V-GE-TX	48-port 10/100/1000BASE-TX switching module (WS-X6148V-GE-TX provides inline power to IP telephones using the voice daughter card WS-F6K-GE48-AF or WS-F6K-VPWR-GE) QoS port architecture (Rx/Tx): **1q2t/1p2q2t**	7.6(1)	7.6(9)
WS-X6148-GE-45AF	48-port 10/100/1000BASE-TX switching module, provides inline power to IP telephones using the voice daughter card WS-F6K-GE48-AF QoS port architecture (Rx/Tx): **1q2t/1p2q2t**	8.2(1)	8.3(3)

Product Number append with "=" for spares	Product Description	Minimum Supervisor Engine software release	Recommended Supervisor Engine software release
WS-X6548-GE-TX WS-X6548V-GE-TX	48-port 10/100/1000BASE-TX switching module, fabric-enabled (WS-X6548V-GE-TX provides inline power to IP telephones using the voice daughter card WS-F6K-GE48-AF or WS-F6K-VPWR-GE) QoS port architecture (Rx/Tx): **1q2t/1p2q2t**	7.6(1)	7.6(9)
WS-X6548-GE-45AF	48-port 10/100/1000BASE-TX switching module, fabric-enabled, provides inline power to IP telephones using the voice daughter card WS-F6K-GE48-AF QoS port architecture (Rx/Tx): **1q2t/1p2q2t**	8.2(1)	8.3(3)
WS-X6516A-GBIC	16-port Gigabit Ethernet GBIC switching module, fabric-enabled, 1-MB per-port packet buffers QoS port architecture (Rx/Tx): **1p1q4t/1p2q2t**	7.5(1)	7.6(9)
WS-X6516-GBIC[4]	16-port Gigabit Ethernet GBIC switching module, fabric-enabled QoS port architecture (Rx/Tx): **1p1q4t/1p2q2t**	6.1(1d)	6.4(11)
WS-X6516-GE-TX	16-port 10/100/1000BASE-T Ethernet Module, fabric-enabled QoS port architecture (Rx/Tx): **1p1q4t/1p2q2t**	6.2(2)	6.4(11)
WS-X6416-GBIC	16-port Gigabit Ethernet GBIC switching module QoS port architecture (Rx/Tx): **1p1q4t/1p2q2t**	5.4(2)	6.4(11)
WS-X6416-GE-MT	16-port Gigabit Ethernet MT-RJ QoS port architecture (Rx/Tx): **1p1q4t/1p2q2t**	5.3(5a)CSX	6.4(11)
WS-X6316-GE-TX	16-port 1000BASE-TX RJ-45 Gigabit Ethernet QoS port architecture (Rx/Tx): **1p1q4t/1p2q2t**	5.4(2)	6.4(11)
WS-X6408A-GBIC	8-port Gigabit Ethernet GBIC QoS port architecture (Rx/Tx): **1p1q4t/1p2q2t**	5.3(1a)CSX	6.4(11)
WS-X6408-GBIC	8-port Gigabit Ethernet GBIC QoS port architecture (Rx/Tx): **1q4t/2q2t**	5.1(1)CSX	6.4(11)

1. Not supported in a 6503 chassis in software releases prior to release 8.4(1). Supported in the 6503-E chassis with software release 8.4(1) and later releases.
2. In a 13-slot chassis, this module must be installed in slots 9, 10, 11, 12, or 13.
3. Supported only with Supervisor Engine 720.
4. Hardware (Hw) revisions 5.0 through 5.4 are not supported with a Supervisor Engine 720 or a Supervisor Engine 32.

Gigabit Interface Converters (GBICs)

Note For a list of transceiver that support Digital Optical Monitoring (DOM), refer to the *Cisco Digital Optical Monitoring Compatibility Matrix* at this URL:

http://www.cisco.com/en/US/docs/interfaces_modules/transceiver_modules/compatibility/matrix/OL_8031.html

Product Number append with "=" for spares	Product Description	Minimum Supervisor Engine software release	Recommended Supervisor Engine software release
WS-G5483	1000BASE-T GBIC transceiver module for Category 5 copper wire RJ-45 connector	7.2(1)	7.6(17)
WS-G5484	1000BASE-SX GBIC transceiver module for MMF, 850-nm wavelength SC connector	5.1(1)CSX	6.4(21)
WS-G5486	1000BASE-LX/LH GBIC transceiver for MMF and SMF, 1300-nm wavelength SC connector	5.1(1)CSX	6.4(21)
WS-G5487	1000BASE-ZX GBIC transceiver module for SMF, 1550-nm wavelength SC connector	5.1(1)CSX	6.4(21)
CWDM-GBIC-*xxxx*[1]	1000BASE-CWDM GBIC	7.2(1)	7.6(17)
DWDM-GBIC-*xx.xx*[2]	1000BASE-DWDM GBIC	8.3(1)	8.5(4)

1. For a list of the CWDM GBIC product numbers and wavelengths, refer to the *Cisco CWDM GBIC and CWDM SFP Installation Note* at this URL: http://www.cisco.com/en/US/products/hw/modules/ps4999/prod_installation_guides_list.html
2. For a list of the DWDM GBIC product numbers, band, and channel assignments, refer to the *DWDM Gigabit Interface Converter Installation Note* at this URL: http://www.cisco.com/en/US/docs/interfaces_modules/transceiver_modules/installation/note/78_15299.html

Fast Ethernet Switching Modules

Product Number append with "=" for spares	Product Description	Minimum Supervisor Engine software release	Recommended Supervisor Engine software release
WS-X6148-FE-SFP	48-port 100BASE-FX, requires SFPs QoS port architecture (Rx/Tx): **1p1q4t/1p3q8t** **Note** For a list of supported SFPs, see the "Small Form-Factor Pluggable Modules (SFPs)" section on page 14.	8.4(1)	8.4(1)
WS-X6524-100FX-MM	24-port 100BASE-FX multimode, fabric-enabled QoS port architecture (Rx/Tx): **1p1q0t/1p3q1t**	7.1(1)	7.6(9)
WS-X6324-100FX-SM WS-X6324-100FX-MM	24-port 100BASE-FX single mode or multimode, MT-RJ with 128K per-port packet buffers QoS port architecture (Rx/Tx): **1q4t/2q2t**	5.4(2)	6.4(11)
WS-X6224-100FX-MT	24-port 100BASE-FX multimode, MT-RJ QoS port architecture (Rx/Tx): **1q4t/2q2t**	5.1(1)CSX	6.4(11)

Ethernet/Fast Ethernet (10/100) Switching Modules

Product Number append with "=" for spares	Product Description	Minimum Supervisor Engine software release	Recommended Supervisor Engine software release
WS-X6196-RJ-21 WS-X6196-21AF	96-port, 10/100BASE-TX RJ-21 (WS-X6196-21AF provides inline power to IP telephones using the voice daughter card WS-F6K-FE48X2-AF) QoS port architecture: **1p1q0t/1p3q1t**	8.4(1)	8.4(1)
WS-X6148A-RJ-45 WS-X6148A-45AF	48-port 10/100BASE-TX RJ-45 with 5.3Mb per-port packet buffers (WS-X6148A-45AF provides inline power to IP telephones using the voice daughter card WS-F6K-48-AF) QoS port architecture (Rx/Tx): **1p1q4t/1p3q8t**	8.4(1)	8.4(1)
WS-X6148X2-RJ-45 WS-X6148X2-45AF	96-port 10/100BASE-TX RJ-45, (WS-X6148X2-45AF provides inline power to IP telephones using the voice daughter card WS-F6K-FE48X2-AF) QoS port architecture (Rx/Tx): **1p1q0t/1p3q1t**	8.2(1)	8.3(3)
WS-X6548-RJ-21	48-port 10/100BASE-TX RJ-21, fabric-enabled QoS port architecture (Rx/Tx): **1p1q0t/1p3q1t**	6.2(2)	6.4(11)
WS-X6548-RJ-45	48-port 10/100BASE-TX RJ-45, fabric-enabled QoS port architecture (Rx/Tx): **1p1q0t/1p3q1t**	6.2(2)	6.4(11)
WS-X6348-RJ21V	48-port 10/100BASE-TX RJ-21 with 128K per-port packet buffers (WS-X6348-RJ21V provides inline power to IP telephones using the voice daughter card WS-F6K-VPWR) QoS port architecture (Rx/Tx): **1q4t/2q2t**	6.2(2)	6.4(11)
WS-X6348-RJ-45 WS-X6348-RJ-45V	48-port 10/100BASE-TX RJ-45 with 128K per-port packet buffers (WS-X6348-RJ-45V provides inline power to IP telephones using the voice daughter card WS-F6K-VPWR) QoS port architecture (Rx/Tx): **1q4t/2q2t**	Without WS-F6K-VPWR: 5.4(2) With WS-F6K-VPWR: 5.5(1)	Without WS-F6K-VPWR: 6.4(11) With WS-F6K-VPWR: 6.4(11)
WS-X6148-RJ-45 WS-X6148-RJ-45V	48-port 10/100BASE-TX RJ-45 with 128K per-port packet buffers (WS-X6148-RJ-45V provides inline power to IP telephones using the voice daughter card WS-F6K-48-AF or WS-F6K-VPWR) QoS port architecture (Rx/Tx): **1q4t/2q2t**	For software releases 6.x: 6.4(1) For software releases 7.x: 7.2(2)	For software releases 6.x: 6.4(11) For software releases 7.x: 7.6(9)
WS-X6148-RJ-21 WS-X6148-RJ21V	48-port 10/100BASE-TX RJ-21 with 128K per-port packet buffers (WS-X6148-RJ21V provides inline power to IP telephones using the voice daughter card WS-F6K-48-AF or WS-F6K-VPWR) QoS port architecture (Rx/Tx): **1q4t/2q2t**	For software releases 6.x: 6.4(1) For software releases 7.x: 7.2(2)	For software releases 6.x: 6.4(11) For software releases 7.x: 7.6(9)

Product Number append with "=" for spares	Product Description	Minimum Supervisor Engine software release	Recommended Supervisor Engine software release
WS-X6148-45AF	48-port 10/100BASE-TX RJ-45 with 128K per-port packet buffers (WS-X6148-45AF has the WS-F6K-48-AF daughter card to provide inline power to IP telephones) QoS port architecture (Rx/Tx): **1q4t/2q2t**	8.2(1)	8.3(3)
WS-X6148-21AF	48-port 10/100BASE-TX RJ-21 with 128K per-port packet buffers (WS-X6148-21AF has the WS-F6K-48-AF daughter card to provide inline power to IP telephones) QoS port architecture (Rx/Tx): **1q4t/2q2t**	8.2(1)	8.3(3)
WS-F6K-VPWR	Inline-power field-upgrade module mounts on the 48-port 10/100BASE-TX RJ-45 and RJ-21 modules	5.5(1)	6.4(11)
WS-X6248-RJ-45	48-port 10/100BASE-TX RJ-45 QoS port architecture (Rx/Tx): **1q4t/2q2t**	5.1(1)CSX	6.4(11)
WS-X6248A-TEL	48-port 10/100BASE-TX RJ-21 with 128K per-port packet buffers QoS port architecture (Rx/Tx): **1q4t/2q2t**	5.3(2)CSX	6.4(11)
WS-X6248-TEL	48-port 10/100BASE-TX RJ-21 QoS port architecture (Rx/Tx): **1q4t/2q2t**	5.2(1)CSX	6.4(11)

Ethernet Switching Modules

Product Number append with "=" for spares	Product Description	Minimum Supervisor Engine software release	Recommended Supervisor Engine software release
WS-X6024-10FL-MT	24-port 10BASE-FL MT-RJ QoS port architecture (Rx/Tx): **1q4t/2q2t**	5.3(3)CSX	6.4(11)

Power Over Ethernet Daughter Cards

Product Number append with "=" for spares	Product Description	Minimum Supervisor Engine software release	Recommended Supervisor Engine software release
WS-F6K-FE48X2-AF	IEEE 802.3af PoE daughter card for:		
	WS-X6148X2-45AF	8.2(1)	8.3(3)
	WS-X6196-21AF	8.4(1)	8.4(1)

Product Number append with "=" for spares	Product Description	Minimum Supervisor Engine software release	Recommended Supervisor Engine software release
WS-F6K-GE48-AF	IEEE 802.3af PoE daughter card for:		
	WS-X6148A-GE-45AF	8.4(1)	8.4(1)
	WS-X6148V-GE-TX	7.6(1)	7.6(9)
	WS-X6148-GE-45AF	8.2(1)	8.3(3)
	WS-X6548V-GE-TX	7.6(1)	7.6(9)
	WS-X6548-GE-45AF	8.2(1)	8.3(3)
WS-F6K-48-AF	IEEE 802.3af PoE daughter card for:		
	WS-X6148A-45AF	8.4(1)	8.4(1)
	WS-X6148-RJ-45V	For software releases 6.x: 6.4(1) For software releases 7.x: 7.2(2)	For software releases 6.x: 6.4(11) For software releases 7.x: 7.6(9)
	WS-X6148-RJ21V	For software releases 6.x: 6.4(1) For software releases 7.x: 7.2(2)	For software releases 6.x: 6.4(11) For software releases 7.x: 7.6(9)
WS-F6K-VPWR-GE	PoE daughter card for:		
	WS-X6548V-GE-TX	7.6(1)	7.6(9)
	WS-X6148V-GE-TX	7.6(1)	7.6(9)
WS-F6K-VPWR	PoE daughter card for:		
	WS-X6348-RJ-45V	5.5(1)	6.4(11)
	WS-X6348-RJ21V	6.2(2)	6.4(11)
	WS-X6148-RJ-45V	For software releases 6.x: 6.4(1) For software releases 7.x: 7.2(2)	For software releases 6.x: 6.4(11) For software releases 7.x: 7.6(9)
	WS-X6148-RJ21V	For software releases 6.x: 6.4(1) For software releases 7.x: 7.2(2)	For software releases 6.x: 6.4(11) For software releases 7.x: 7.6(9)

Voice Modules

Product Number append with "=" for spares	Product Description[1]	Minimum Supervisor Engine software release	Recommended Supervisor Engine software release
WS-SVC-CMM	Communication Media Module	7.6(12)	8.3(3)
WS-SVC-CMM-6E	16-port E1 interface port adapter	7.6(12)	8.3(3)

Product Number append with "=" for spares	Product Description[1]	Minimum Supervisor Engine software release	Recommended Supervisor Engine software release
WS-SVC-CMM-6T1	6-port T1 interface port adapter	7.6(12)	8.3(3)
WS-SVC-CMM-24FXS	24-port FXS interface port adapter	7.6(12)	8.3(3)
WS-SVC-CMM-ACT	Ad-hoc conferencing and transcoding port adapter	7.6(12)	8.3(3)
WS-X6624-FXS	24-port FXS analog interface module	5.5(1)	6.4(11)
WS-X6608-T1 WS-X6608-E1	8-port T1/E1 PSTN interface modules	5.5(1)	6.4(11)

1. The voice modules are not supported with Supervisor Engine 720 in software release 8.1(x). The voice modules are supported with Supervisor Engine 720 in software release 8.2(1) and later releases.

FlexWAN Module

Product Number append with "=" for spares	Product Description	Minimum Supervisor Engine software release	Recommended Supervisor Engine software release
WS-X6582-2PA [1]	FlexWAN2, enhanced FlexWAN module	8.5(1)	8.5(1)
WS-X6182-2PA[2], [3]	FlexWAN Module	5.4(2)	6.4(11)

1. For enhanced FlexWAN2 documentation, refer to this URL:
http://www.cisco.com/en/US/docs/routers/7600/install_config/flexwan_config/flexwan-config-guide.html
2. The WS-X6182-2PA FlexWAN module is not supported with Supervisor Engine 720 in software release 8.1(x). The WS-X6182-2PA FlexWAN module is supported with Supervisor Engine 720 in software release 8.2(1) and later releases. The WS-X6182-2PA FlexWAN module is not supported with Supervisor Engine 32. For detailed information on Cisco IOS Release requirements for the FlexWAN module, see the "Release Notes for Cisco IOS on the MSFC" section at this URL:
http://www.cisco.com/en/US/products/hw/switches/ps708/prod_release_notes_list.html
3. Refer to the *Catalyst 6500 Series Switch FlexWAN Module Installation and Configuration Note.*

Optical Services Modules

Product Number append with "=" for spares	Product Description[1, 2, 3]	Minimum Supervisor Engine software release	Recommended Supervisor Engine software release
4-port Gigabit Ethernet WAN			
OSM-4GE-WAN-GBIC	4-port Gigabit Ethernet Optical Services Module	6.1(2)	6.4(11)

Product Number append with "=" for spares	Product Description[1, 2, 3]	Minimum Supervisor Engine software release	Recommended Supervisor Engine software release
OC-12 Packet over SONET[4]			
OSM-2OC12-POS-MM	2-port OC-12c/STM-4c POS Optical Services Module, MM, with 4 Gigabit Ethernet ports	6.1(2)	6.4(11)
OSM-2OC12-POS-SI	2-port OC-12c/STM-4c POS Optical Services Module, SM-IR, with 4 Gigabit Ethernet ports	6.1(2)	6.4(11)
OSM-2OC12-POS-SL	2-port OC-12c/STM-4c POS Optical Services Module, SM-LR[5], with 4 Gigabit Ethernet ports	6.1(2)	6.4(11)
OSM-4OC12-POS-MM	4-port OC-12c/STM-4c POS Optical Services Module, MM, with 4 Gigabit Ethernet ports	6.1(2)	6.4(11)
OSM-4OC12-POS-SI	4-port OC-12c/STM-4c POS Optical Services Module, SM-IR, with 4 Gigabit Ethernet ports	6.1(2)	6.4(11)
OSM-4OC12-POS-SL	4-port OC-12c/STM-4c POS Optical Services Module, SM-LR, with 4 Gigabit Ethernet ports	6.1(2)	6.4(11)
OC-3 Packet over SONET3			
OSM-4OC3-POS-SI	4-port OC-3c/STM-1c POS Optical Services Module, SM-IR, with 4 Gigabit Ethernet ports	7.1(1)	7.6(9)
OSM-8OC3-POS-MM	8-port OC-3c/STM-1c POS Optical Services Module, MM, with 4 Gigabit Ethernet ports	6.1(2)	6.4(11)
OSM-8OC3-POS-SI	8-port OC-3c/STM-1c POS Optical Services Module, SM-IR, with 4 Gigabit Ethernet ports	6.1(2)	6.4(11)
OSM-8OC3-POS-SL	8-port OC-3c/STM-1c POS Optical Services Module, SM-LR, with 4 Gigabit Ethernet ports	6.1(2)	6.4(11)
OSM-16OC3-POS-MM	16-port OC-3c/STM-1c POS Optical Services Module, MM, with 4 Gigabit Ethernet ports	6.1(2)	6.4(11)
OSM-16OC3-POS-SI	16-port OC-3c/STM-1c POS Optical Services Module, SM-IR, with 4 Gigabit Ethernet ports	6.1(2)	6.4(11)
OSM-16OC3-POS-SL	16-port OC-3c/STM-1c POS Optical Services Module, SM-LR, with 4 Gigabit Ethernet ports	6.1(2)	6.4(11)
OC-48 Packet over SONET3			
OSM-1OC48-POS-SS	1-port OC-48c/STM-16c POS Optical Services Module, SM-SR, with 4 Gigabit Ethernet ports	6.1(3)	6.4(11)
OSM-1OC48-POS-SI	1-port OC-48c/STM-16c POS Optical Services Module, SM-IR, with 4 Gigabit Ethernet ports	6.1(3)	6.4(11)
OSM-1OC48-POS-SL	1-port OC-48c/STM-16c POS Optical Services Module, SM-LR, with 4 Gigabit Ethernet ports	6.1(3)	6.4(11)

1. The OSMs are only supported with Supervisor Engine 2.
2. Refer to the *Optical Services Module Installation and Configuration Note.*
3. Channelized OSMs are not supported on Catalyst 6500 series switches; they are supported only on the Cisco 7600 series router platform.
4. Also has four Layer 2 Gigabit Ethernet ports.
5. Single-mode, long reach.

Service Modules

Product Number append with "=" for spares	Product Description[1]	Minimum Supervisor Engine software release	Recommended Supervisor Engine software release
Intrusion Detection System Module (IDSM)[2]			
WS-X6381-IDS[3]	Intrusion Detection System Module	6.1(1d)	6.4(11)
WS-SVC-IDSM2-BUN-K9	Intrusion Detection System Module 2	7.5(1)	7.6(9)
Network Analysis Module (NAM)[4], [5]			
WS-X6380-NAM3	Network Analysis Module, 256-MB RAM	5.5(1)	6.4(11)
WS-SVC-NAM-1	Network Analysis Module, 512-MB RAM, fabric-enabled	7.3(1)	7.6(9)
WS-SVC-NAM-2	Network Analysis Module, 1-GB RAM, fabric enabled, accelerator daughter card	7.3(1)	7.6(9)
Firewall Services Module[6]			
WS-SVC-FWM-1-K9	Firewall Services Module	7.5(1)	7.6(9)
SSL Services Module[7]			
WS-SVC-SSL-1	SSL Services Module	7.5(1)	7.6(9)
Content Switching Module (CSM)[8]			
WS-X6066-SLB-APC[9]	Content Switching Module	7.5(1)	7.6(9)
Content Services Gateway (CSG)[10]			
WS-SVC-CSG-1	Content Services Gateway	7.6(1)	7.6(9)
Application-Oriented Networking (AON) Module[11]			
WS-SVC-AON-1-K9	Application-Oriented Networking (AON) Module	8.4(2a)	8.4(2a)

1. The service modules are not supported with supervisor engine WS-SUP720 in software release 8.1(x). The service modules are supported with supervisor engine WS-SUP720 in software release 8.2(1) and later releases. The service modules are supported with supervisor engine WS-SUP720-3BXL in software release 8.3(1) and later releases. The service modules are supported with supervisor engine WS-SUP720-3B in software releases 8.3(7) and later releases. The service modules are supported with supervisor engine WS-SUP32-GE-3B in software release 8.4(1) and later releases. The service modules are supported with supervisor engine WS-SUP32-10GE-3B in software releases 8.4(4) and later releases.
2. Refer to the *Catalyst 6500 Series Switch Intrusion Detection System Module Installation and Configuration Note*.
3. Not supported with Supervisor Engine 720 or Supervisor Engine 32.
4. Refer to the *Network Analysis Module Installation and Configuration Note*.
5. The Network Analysis Module (NAM) application image 1.1(1a) and NAM maintenance image 1.1(1a)m are not supported with supervisor engine software releases 6.3(2) and later. For supervisor engine software releases 6.3(2) and later, use the 1.2 NAM image.
6. Refer to the *Catalyst 6500 Series Switch and 7600 Series Firewall Services Module Installation and Configuration Note*.
7. Refer to the *Catalyst 6500 Series Switch SSL Services Module Installation and Configuration Note*.
8. Refer to the *Cisco Content Switching Module Installation and Configuration Guide*.
9. The WS-X6066-SLB-APC module is not supported with Supervisor Engine 32.
10. Refer to the *Cisco Content Services Gateway Installation and Configuration Guide*.
11. Refer to the Application-Oriented Networking (AON) documentation at this URL:http://www.cisco.com/en/US/products/ps6692/Products_Sub_Category_Home.html

ATM Modules

Product Number append with "=" for spares	Product Description[1, 2]	Minimum Supervisor Engine software release	Recommended Supervisor Engine software release
WS-X6101-OC12-SMF	Single-port single-mode OC-12 ATM	5.3(2)CSX	6.4(11)
WS-X6101-OC12-MMF	Single-port multimode OC-12 ATM	5.3(2)CSX	6.4(11)

1. The ATM modules are not supported with the Supervisor Engine 720 in software release 8.1(x). The ATM modules are supported with Supervisor Engine 720 in software release 8.2(1) and later releases.
2. Refer to the *ATM Configuration Guide and Command Reference.*

Multilayer Switch Module

Product Number append with "=" for spares	Product Description[1, 2]	Minimum Supervisor Engine software release	Recommended Supervisor Engine software release
WS-X6302-MSM	Multilayer Switch Module	5.2(1)CSX	6.4(11)

1. The Multilayer Switch Module is not supported with Supervisor Engine 720 or Supervisor Engine 32 (there will be no Supervisor Engine 720 or Supervisor Engine 32 support in any future software releases).
2. Refer to the *Multilayer Switch Module Release Notes.*

Power Supplies

Product Number append with "=" for spares	Product Description	Minimum Supervisor Engine software release	Recommended Supervisor Engine software release
WS-CAC-6000W[1]	6000 W AC power supply	8.4(1)	8.4(1)
PWR-2700-AC[2]	2700 W AC power supply	8.4(1)	8.4(1)
PWR-2700-DC2	2700 W DC power supply	8.4(1)	8.4(1)
WS-CAC-1000W	1000 W AC power supply	5.1(1)CSX	6.4(11)
WS-CAC-1300W	1300 W AC power supply	5.1(1)CSX	6.4(11)
WS-CDC-1300W	1300 W DC power supply	5.1(1)CSX	6.4(11)
PWR-1400-AC[3]	1400 W AC power supply	8.1(1)	8.3(3)
WS-CAC-2500W	2500 W AC power supply	5.4(2)	6.4(11)
WS-CDC-2500W	2500 W DC power supply	5.4(2)	6.4(11)
WS-CAC-3000W	3000W AC power supply	7.5(1)	7.6(9)
WS-CAC-4000W	4000 W AC power supply	6.1(3)	6.4(11)
PWR-4000-DC[4]	4000 W DC power supply	6.1(3)	8.3(3)
PWR-950-AC3	950 W AC power supply	7.5(1)	7.6(9)
PWR-950-DC3	950 W DC power supply	7.5(1)	7.6(9)

Product Number append with "=" for spares	Product Description	Minimum Supervisor Engine software release	Recommended Supervisor Engine software release
PWR-1900-AC/6[5]	1900 W AC power supply	7.2(2)	7.6(9)
PWR-1900-DC5	1900 W DC power supply	7.2(2)	7.6(9)

1. Supported in all 65xx and 65xx-E chassis except for the 6503 and 6503-E (form-factor difference). Only the 6513 and -E chassis support the full 6000W; the other chassis rely on software to current limit the power supply.
2. Supported in the 7606 chassis and the 6504-E chassis. Support in the 6504-E chassis requires software release 8.4(2) and later releases.
3. Supported only on the WS-C6503, WS-C6503-E, and CISCO7603 chassis.
4. The full 4000W is only available with software release 8.1(1) and later releases. With software release 6.1(3) and later 6.x and 7.x releases, the maximum wattage is 2506.56W.
5. Supported only on the CISCO7606 chassis.

Fan Trays

Product Number append with "=" for spares	Product Description[1]	Minimum Supervisor Engine software release	Recommended Supervisor Engine software release
FAN-MOD-3	Standard-capacity fan tray for 6503 chassis Standard-capacity fan tray for 7603 chassis	7.4(2) 7.1(1)	7.6(9) 7.6(9)
FAN-MOD-3HS	High-capacity fan tray for 6503/7603 chassis	8.1(1)	8.3(3)
FAN-MOD-4HS	High-capacity fan tray for the 6504 chassis	8.4(2)	8.4(2)
WS-C6K-6SLOT-FAN	Standard-capacity fan tray for 6506 chassis	5.2(1)CSX	6.4(11)
WS-C6K-6SLOT-FAN2[2]	High-capacity fan tray for 6506 chassis	8.1(1)	8.3(3)
WS-C6K-9SLOT-FAN	Standard-capacity fan tray for 6509 chassis	5.1(1)CSX	6.4(11)
WS-C6K-9SLOT-FAN22, [3]	High-capacity fan tray for 6509 chassis	8.1(1)	8.3(3)
WS-C6K-13SLOT-FAN	Standard-capacity fan tray for 6513 chassis Standard-capacity fan tray for 7613 chassis	6.2(2) 7.6(1)	6.4(11) 7.6(9)
WS-C6K-13SLT-FAN22	High-capacity fan tray for 6513/7613 chassis	8.1(1)	8.3(3)
FAN-MOD-6	Standard-capacity fan tray for 7606 chassis	7.2(2)	7.6(9)
FAN-MOD-6HS2	High-capacity fan tray for 7606 chassis	8.1(1)	8.3(3)
WS-C6506-E-FAN2	High-capacity fan tray for WS-C6506-E chassis	6.3(7)	8.3(3)
WS-C6509-E-FAN2	High-capacity fan tray for WS-C6509-E chassis	6.3(7)	8.3(3)
WS-C6503-E-FAN2	High-capacity fan tray for WS-C6503-E chassis	6.3(7)	8.3(3)
FAN-MOD-09	Standard-capacity fan tray for 6509-NEB-A/7609 chassis	8.1(1)	8.3(3)
FAN-MOD-09-HS2	High-capacity fan tray for 6509-NEB-A/7609 chassis	8.1(1)	8.3(3)
WS-C6509-NEB-FAN	Standard-capacity fan tray for 6509-NEB chassis	5.4(2)	6.4(11)

1. Some chassis require a high capacity fan tray for use with Supervisor Engine 720 and Supervisor Engine 32. To determine which chassis require a fan tray for Supervisor Engine 720 and Supervisor Engine 32, see the "Modular Chassis" section on page 27.
2. These fan trays require a 2500 W or 4000 W power supply.
3. This fan tray is supported in all chassis (except for the 3-slot chassis) and all software releases. The minimum power supply requirement is 2500W. It is important that you determine the power requirements for your hardware configuration to ensure that your switch has adequate power for all modules. To determine power requirements, refer to the CCO power calculator at this URL: http://www.cisco.com/go/powercalculator.

Modular Chassis

Product Number append with "=" for spares	Product Description	Minimum Supervisor Engine software release	Recommended Supervisor Engine software release
WS-C6513	Catalyst 6513 chassis: • 13 slots • 64 chassis MAC addresses • Supported only with Supervisor Engine 2, Supervisor Engine 720, and Supervisor Engine 32 • Supervisor Engine 720 and Supervisor Engine 32 require WS-C6K-13SLT-FAN2. Each power supply in the chassis must be at least 2500 W	6.2(2)	6.4(11)
WS-C6509-E2	Catalyst 6509 chassis: • 9 slots • 1024 chassis MAC addresses • Requires WS-C6509-E-FAN	8.3(1)	8.4(1)
WS-C6509	Catalyst 6509 chassis: • 9 slots • 1024 chassis MAC addresses • Supervisor Engine 720 and Supervisor Engine 32 require WS-C6K-9SLOT-FAN2. Each power supply in the chassis must be at least 2500 W	5.1(1)CSX	6.4(11)
WS-C6509-NEB[1]	Catalyst 6509-NEB chassis: • 9 vertical slots • 1024 chassis MAC addresses	5.4(2)	6.4(11)
WS-C6509-NEB-A[2]	Catalyst 6509-NEB-A chassis: • 9 vertical slots • 64 chassis MAC addresses • No fan tray upgrade needed to use Supervisor Engine 720 and Supervisor Engine 32	8.1(1)	8.3(3)
WS-C6506-E2	Catalyst 6506 chassis: • 6 slots • 1024 chassis MAC addresses • Requires WS-C6506-E-FAN	8.3(1)	8.4(1)

Product Number append with "=" for spares	Product Description	Minimum Supervisor Engine software release	Recommended Supervisor Engine software release
WS-C6506	Catalyst 6506 chassis: • 6 slots • 1024 chassis MAC addresses • Supervisor Engine 720 and Supervisor Engine 32 require WS-C6K-6SLOT-FAN2. Each power supply in the chassis must be at least 2500 W	5.2(1)CSX	6.4(11)
WS-C6504-E	Catalyst 6504 chassis: • 4 slots • 64 chassis MAC addresses • Does not support: – WS-X6500-SFM2 – WS-C6500-SFM – Supervisor Engine 2 – Supervisor Engine 1A	8.4(2)	8.4(2)
WS-C6503-E[3]	Catalyst 6503 chassis: • 3 slots • 64 chassis MAC addresses • Supervisor Engine 720 and Supervisor Engine 32 require WS-C6503-E-FAN • Does not support: – WS-X6500-SFM2 – WS-C6500-SFM	8.3(1)	8.4(1)
WS-C6503	Catalyst 6503 chassis: • 3 slots • 64 chassis MAC addresses • Does not support SFM • Supervisor Engine 720 and Supervisor Engine 32 require FAN-MOD-3HS=	7.4(2)	7.6(9)
WS-C6009	Catalyst 6009 chassis: • 9 slots • 1024 chassis MAC addresses	5.1(1)CSX	6.4(11)
WS-C6006	Catalyst 6006 chassis: • 6 slots • 1024 chassis MAC addresses	5.2(1)CSX	6.4(11)

Product Number append with "=" for spares	Product Description	Minimum Supervisor Engine software release	Recommended Supervisor Engine software release
OSR-7609-AC, -DC1	Cisco 7609 router chassis: • 9 vertical slots • 1024 chassis MAC addresses • Supported only with Supervisor Engine 2	6.1(1b)	6.4(11)
CISCO7603	Cisco 7603 router chassis: • 3 slots • 64 chassis MAC addresses • Does not support SFM • Supervisor Engine 720 and Supervisor Engine 32 require FAN-MOD-3HS=	7.1(1)	7.6(9)
CISCO7606	Cisco 7606 router chassis: • 6 slots • 64 chassis MAC addresses • Supported only with Supervisor Engine 2 and Supervisor Engine 720 • Supervisor Engine 720 and Supervisor Engine 32 require FAN-MOD-6HS	7.2(2)	7.6(9)
CISCO76092	Cisco 7609 router chassis: • 9 vertical slots • 64 chassis MAC addresses • No fan tray upgrade needed to use Supervisor Engine 720 and Supervisor Engine 32	8.1(1)	8.3(3)
CISCO7613	Cisco 7613 router chassis: • 13 slots • 64 chassis MAC addresses • Supported only with Supervisor Engine 2 and Supervisor Engine 720 • Supervisor Engine 720 and Supervisor Engine 32 require WS-C6K-13SLT-FAN2. Each power supply in the chassis must be at least 2500 W	7.6(1)	7.6(9)

1. These chassis are not supported with Supervisor Engine 720 in Release 8.1(x) and 8.2(x).
2. These chassis require a 2500 W or 4000 W power supply. Lower wattage power supplies are not supported.
3. Supervisor Engine 720 requires software release 8.1(1) and later releases and the WS-C6503-E-FAN tray.

Unsupported Hardware

The following hardware is not supported:

- Compact Flash adapter (WS-CF-UPG=)

Note This part also appears as CF-ADAPTER-SP in the configuration tool.

- 16-port Gigabit Ethernet switching module (WS-X6816-GBIC)
- Distributed forwarding cards (DFC) installed on WS-X67*xx* modules:
  - WS-F6700-DFC3BXL
  - WS-F6700-DFC3B
  - WS-F6700-DFC3A
  - WS-X6708-10G-3C
  - WS-X6708-10G-3CXL
- DFC installed on dCEF256 and CEF256 modules:
  - WS-F6K-DFC3BXL
  - WS-F6K-DFC3B
  - WS-F6K-DFC3A
  - WS-F6K-DFC
- Supervisor Engine 720-10G-3C
- Supervisor Engine 720-10G-3CXL
- SPA interface processors (7600-SIP-200, 7600-SIP-400, 7600-SIP-600)
- Cisco Application Control Engine (ACE10-6500-K9)
- WebVPN Services Module (WS-SVC-WEBVPN-K9)

Unsupported modules remain powered down if detected and do not affect system behavior.

Orderable Software Images

Table 1 lists the software releases and applicable ordering information for the Catalyst 6500 series supervisor engine software.

Caution Always back up the switch configuration file before upgrading or downgrading the switch software to avoid losing all or part of the configuration stored in nonvolatile RAM (NVRAM). **When downgrading switch software, you will lose your configuration.** Use the **write network** command or the **copy config tftp** command to back up your configuration to a Trivial File Transfer Protocol (TFTP) server. Use the **copy config flash** command to back up the configuration to a Flash device.

Note CiscoView images are available approximately 2 weeks after the Flash images are released.

Table 1 Orderable Software Images

Software Release	Filename	Orderable Product Number[1]
Supervisor Engine 32		
8.7(3) Flash image	cat6000-sup720k8.8-7-3.bin	SC6K-S7K8-8.7
8.7(3) Flash image (Secure Shell)	cat6000-sup720k9.8-7-3.bin	SC6K-S7K9-8.7
8.7(3) Flash image (CiscoView)	cat6000-sup720cvk8.8-7-3.bin	SC6K-S7CVK8-8.7
8.7(3) Flash image (Secure Shell and CiscoView)	cat6000-sup720cvk9.8-7-3.bin	SC6K-S7CVK9-8.7
8.7(2) Flash image	cat6000-sup720k8.8-7-2.bin	SC6K-S7K8-8.7
8.7(2) Flash image (Secure Shell)	cat6000-sup720k9.8-7-2.bin	SC6K-S7K9-8.7
8.7(2) Flash image (CiscoView)	cat6000-sup720cvk8.8-7-2.bin	SC6K-S7CVK8-8.7
8.7(2) Flash image (Secure Shell and CiscoView)	cat6000-sup720cvk9.8-7-2.bin	SC6K-S7CVK9-8.7
8.7(1) Flash image	cat6000-sup720k8.8-7-1.bin	SC6K-S7K8-8.7
8.7(1) Flash image (Secure Shell)	cat6000-sup720k9.8-7-1.bin	SC6K-S7K9-8.7
8.7(1) Flash image (CiscoView)	cat6000-sup720cvk8.8-7-1.bin	SC6K-S7CVK8-8.7
8.7(1) Flash image (Secure Shell and CiscoView)	cat6000-sup720cvk9.8-7-1.bin	SC6K-S7CVK9-8.7
8.6(6) Flash image	cat6000-sup720k8.8-6-5.bin	SC6K-S7K8-8.6
8.6(6) Flash image (Secure Shell)	cat6000-sup720k9.8-6-5.bin	SC6K-S7K9-8.6
8.6(6) Flash image (CiscoView)	cat6000-sup720cvk8.8-6-5.bin	SC6K-S7CVK8-8.6
8.6(6) Flash image (Secure Shell and CiscoView)	cat6000-sup720cvk9.8-6-5.bin	SC6K-S7CVK9-8.6
8.6(5) Flash image	cat6000-sup720k8.8-6-5.bin	SC6K-S7K8-8.6
8.6(5) Flash image (Secure Shell)	cat6000-sup720k9.8-6-5.bin	SC6K-S7K9-8.6
8.6(5) Flash image (CiscoView)	cat6000-sup720cvk8.8-6-5.bin	SC6K-S7CVK8-8.6
8.6(5) Flash image (Secure Shell and CiscoView)	cat6000-sup720cvk9.8-6-5.bin	SC6K-S7CVK9-8.6
8.6(4) Flash image	cat6000-sup720k8.8-6-4.bin	SC6K-S7K8-8.6
8.6(4) Flash image (Secure Shell)	cat6000-sup720k9.8-6-4.bin	SC6K-S7K9-8.6
8.6(4) Flash image (CiscoView)	cat6000-sup720cvk8.8-6-4.bin	SC6K-S7CVK8-8.6
8.6(4) Flash image (Secure Shell and CiscoView)	cat6000-sup720cvk9.8-6-4.bin	SC6K-S7CVK9-8.6
8.6(3) Flash image	cat6000-sup720k8.8-6-3.bin	SC6K-S7K8-8.6
8.6(3) Flash image (Secure Shell)	cat6000-sup720k9.8-6-3.bin	SC6K-S7K9-8.6
8.6(3) Flash image (CiscoView)	cat6000-sup720cvk8.8-5-3.bin	SC6K-S7CVK8-8.6
8.6(3) Flash image (Secure Shell and CiscoView)	cat6000-sup720cvk9.8-5-3.bin	SC6K-S7CVK9-8.6
8.6(2) Flash image	cat6000-sup32pfc3k8.8-6-2.bin	SC6K-S323K8-8.6
8.6(2) Flash image (Secure Shell)	cat6000-sup32pfc3k9.8-6-2.bin	SC6K-S323K9-8.6
8.6(2) Flash image (CiscoView)	cat6000-sup32pfc3cvk8.8-6-2.bin	SC6K-S323CVK8-8.6
8.6(2) Flash image (Secure Shell and CiscoView)	cat6000-sup32pfc3cvk9.8-6-2.bin	SC6K-S323CVK9-8.6
8.6(1) Flash image	cat6000-sup32pfc3k8.8-6-1.bin	SC6K-S323K8-8.6
8.6(1) Flash image (Secure Shell)	cat6000-sup32pfc3k9.8-6-1.bin	SC6K-S323K9-8.6
8.6(1) Flash image (CiscoView)	cat6000-sup32pfc3cvk8.8-6-1.bin	SC6K-S323CVK8-8.6

Table 1 Orderable Software Images (continued)

Software Release	Filename	Orderable Product Number[1]
8.6(1) Flash image (Secure Shell and CiscoView)	cat6000-sup32pfc3cvk9.8-6-1.bin	SC6K-S323CVK9-8.6
8.5(9) Flash image	cat6000-sup32pfc3k8.8-5-9.bin	SC6K-S323K8-8.5
8.5(9) Flash image (Secure Shell)	cat6000-sup32pfc3k9.8-5-9.bin	SC6K-S323K9-8.5
8.5(9) Flash image (CiscoView)	cat6000-sup32pfc3cvk8.8-5-9.bin	SC6K-S323CVK8-8.5
8.5(9) Flash image (Secure Shell and CiscoView)	cat6000-sup32pfc3cvk9.8-5-9.bin	SC6K-S323CVK9-8.5
8.5(8) Flash image	cat6000-sup32pfc3k8.8-5-8.bin	SC6K-S323K8-8.5
8.5(8) Flash image (Secure Shell)	cat6000-sup32pfc3k9.8-5-8.bin	SC6K-S323K9-8.5
8.5(8) Flash image (CiscoView)	cat6000-sup32pfc3cvk8.8-5-8.bin	SC6K-S323CVK8-8.5
8.5(8) Flash image (Secure Shell and CiscoView)	cat6000-sup32pfc3cvk9.8-5-8.bin	SC6K-S323CVK9-8.5
8.5(7) Flash image	cat6000-sup32pfc3k8.8-5-7.bin	SC6K-S323K8-8.5
8.5(7) Flash image (Secure Shell)	cat6000-sup32pfc3k9.8-5-7.bin	SC6K-S323K9-8.5
8.5(7) Flash image (CiscoView)	cat6000-sup32pfc3cvk8.8-5-7.bin	SC6K-S323CVK8-8.5
8.5(7) Flash image (Secure Shell and CiscoView)	cat6000-sup32pfc3cvk9.8-5-7.bin	SC6K-S323CVK9-8.5
8.5(6) Flash image	cat6000-sup32pfc3k8.8-5-6.bin	SC6K-S323K8-8.5
8.5(6) Flash image (Secure Shell)	cat6000-sup32pfc3k9.8-5-6.bin	SC6K-S323K9-8.5
8.5(6) Flash image (CiscoView)	cat6000-sup32pfc3cvk8.8-5-6.bin	SC6K-S323CVK8-8.5
8.5(6) Flash image (Secure Shell and CiscoView)	cat6000-sup32pfc3cvk9.8-5-6.bin	SC6K-S323CVK9-8.5
8.5(5) Flash image	cat6000-sup32pfc3k8.8-5-5.bin	SC6K-S323K8-8.5
8.5(5) Flash image (Secure Shell)	cat6000-sup32pfc3k9.8-5-5.bin	SC6K-S323K9-8.5
8.5(5) Flash image (CiscoView)	cat6000-sup32pfc3cvk8.8-5-5.bin	SC6K-S323CVK8-8.5
8.5(5) Flash image (Secure Shell and CiscoView)	cat6000-sup32pfc3cvk9.8-5-5.bin	SC6K-S323CVK9-8.5
8.5(4) Flash image	cat6000-sup32pfc3k8.8-5-4.bin	SC6K-S323K8-8.5
8.5(4) Flash image (Secure Shell)	cat6000-sup32pfc3k9.8-5-4.bin	SC6K-S323K9-8.5
8.5(4) Flash image (CiscoView)	cat6000-sup32pfc3cvk8.8-5-4.bin	SC6K-S323CVK8-8.5
8.5(4) Flash image (Secure Shell and CiscoView)	cat6000-sup32pfc3cvk9.8-5-4.bin	SC6K-S323CVK9-8.5
8.5(3) Flash image	cat6000-sup32pfc3k8.8-5-3.bin	SC6K-S323K8-8.5
8.5(3) Flash image (Secure Shell)	cat6000-sup32pfc3k9.8-5-3.bin	SC6K-S323K9-8.5
8.5(3) Flash image (CiscoView)	cat6000-sup32pfc3cvk8.8-5-3.bin	SC6K-S323CVK8-8.5
8.5(3) Flash image (Secure Shell and CiscoView)	cat6000-sup32pfc3cvk9.8-5-3.bin	SC6K-S323CVK9-8.5
8.5(2) Flash image	cat6000-sup32pfc3k8.8-5-2.bin	SC6K-S323K8-8.5
8.5(2) Flash image (Secure Shell)	cat6000-sup32pfc3k9.8-5-2.bin	SC6K-S323K9-8.5
8.5(2) Flash image (CiscoView)	cat6000-sup32pfc3cvk8.8-5-2bin	SC6K-S323CVK8-8.5
8.5(2) Flash image (Secure Shell and CiscoView)	cat6000-sup32pfc3cvk9.8-5-2.bin	SC6K-S323CVK9-8.5
8.5(1) Flash image[2]	cat6000-sup32pfc3k8.8-5-1.bin	SC6K-S323K8-8.5
8.5(1) Flash image (Secure Shell)	cat6000-sup32pfc3k9.8-5-1.bin	SC6K-S323K9-8.5
8.4(6) Flash image	cat6000-sup32pfc3k8.8-4-6.bin	SC6K-S323K8-8.4

Table 1 Orderable Software Images (continued)

Software Release	Filename	Orderable Product Number[1]
8.4(6) Flash image (Secure Shell)	cat6000-sup32pfc3k9.8-4-6.bin	SC6K-S323K9-8.4
8.4(6) Flash image (CiscoView)	cat6000-sup32pfc3cvk8.8-4-6.bin	SC6K-S323CVK8-8.4
8.4(6) Flash image (Secure Shell and CiscoView)	cat6000-sup32pfc3cvk9.8-4-6.bin	SC6K-S323CVK9-8.4
8.4(5) Flash image	cat6000-sup32pfc3k8.8-4-5.bin	SC6K-S323K8-8.4
8.4(5) Flash image (Secure Shell)	cat6000-sup32pfc3k9.8-4-5.bin	SC6K-S323K9-8.4
8.4(5) Flash image (CiscoView)	cat6000-sup32pfc3cvk8.8-4-5.bin	SC6K-S323CVK8-8.4
8.4(5) Flash image (Secure Shell and CiscoView)	cat6000-sup32pfc3cvk9.8-4-5.bin	SC6K-S323CVK9-8.4
8.4(4) Flash image	cat6000-sup32pfc3k8.8-4-4.bin	SC6K-S323K8-8.4
8.4(4) Flash image (Secure Shell)	cat6000-sup32pfc3k9.8-4-4.bin	SC6K-S323K9-8.4
8.4(4) Flash image (CiscoView)	cat6000-sup32pfc3cvk8.8-4-4.bin	SC6K-S323CVK8-8.4
8.4(4) Flash image (Secure Shell and CiscoView)	cat6000-sup32pfc3cvk9.8-4-4.bin	SC6K-S323CVK9-8.4
8.4(3) Flash image	cat6000-sup32pfc3k8.8-4-3.bin	SC6K-S323K8-8.4
8.4(3) Flash image (Secure Shell)	cat6000-sup32pfc3k9.8-4-3.bin	SC6K-S323K9-8.4
8.4(3) Flash image (CiscoView)	cat6000-sup32pfc3cvk8.8-4-3.bin	SC6K-S323CVK8-8.4
8.4(3) Flash image (Secure Shell and CiscoView)	cat6000-sup32pfc3cvk9.8-4-3.bin	SC6K-S323CVK9-8.4
8.4(2a) Flash image	cat6000-sup32pfc3k8.8-4-2a.bin	SC6K-S323K8-8.4
8.4(2a) Flash image (Secure Shell)	cat6000-sup32pfc3k9.8-4-2a.bin	SC6K-S323K9-8.4
8.4(2a) Flash image (CiscoView)	cat6000-sup32pfc3cvk8.8-4-2a.bin	SC6K-S323CVK8-8.4
8.4(2a) Flash image (Secure Shell and CiscoView)	cat6000-sup32pfc3cvk9.8-4-2a.bin	SC6K-S323CVK9-8.4
8.4(2) Flash image	cat6000-sup32pfc3k8.8-4-2.bin	SC6K-S323K8-8.4
8.4(2) Flash image (Secure Shell)	cat6000-sup32pfc3k9.8-4-2.bin	SC6K-S323K9-8.4
8.4(2) Flash image (CiscoView)	cat6000-sup32pfc3cvk8.8-4-2.bin	SC6K-S323CVK8-8.4
8.4(2) Flash image (Secure Shell and CiscoView)	cat6000-sup32pfc3cvk9.8-4-2.bin	SC6K-S323CVK9-8.4
8.4(1) Flash image	cat6000-sup32pfc3k8.8-4-1.bin	SC6K-S323K8-8.4
8.4(1) Flash image (Secure Shell)	cat6000-sup32pfc3k9.8-4-1.bin	SC6K-S323K9-8.4
8.4(1) Flash image (CiscoView)	cat6000-sup32pfc3cvk8.8-4-1.bin	SC6K-S323CVK8-8.4
8.4(1) Flash image (Secure Shell and CiscoView)	cat6000-sup32pfc3cvk9.8-4-1.bin	SC6K-S323CVK9-8.4
Supervisor Engine 720		
8.6(2) Flash image	cat6000-sup720k8.8-6-2.bin	SC6K-S7K8-8.6
8.6(2) Flash image (Secure Shell)	cat6000-sup720k9.8-6-2.bin	SC6K-S7K9-8.6
8.6(2) Flash image (CiscoView)	cat6000-sup720cvk8.8-6-2.bin	SC6K-S7CVK8-8.6
8.6(2) Flash image (Secure Shell and CiscoView)	cat6000-sup720cvk9.8-6-2.bin	SC6K-S7CVK9-8.6
8.6(1) Flash image	cat6000-sup720k8.8-6-1.bin	SC6K-S7K8-8.6
8.6(1) Flash image (Secure Shell)	cat6000-sup720k9.8-6-1.bin	SC6K-S7K9-8.6
8.6(1) Flash image (CiscoView)	cat6000-sup720cvk8.8-6-1.bin	SC6K-S7CVK8-8.6
8.6(1) Flash image (Secure Shell and CiscoView)	cat6000-sup720cvk9.8-6-1.bin	SC6K-S7CVK9-8.6

Table 1 Orderable Software Images (continued)

Software Release	Filename	Orderable Product Number[1]
8.5(9) Flash image	cat6000-sup720k8.8-5-9.bin	SC6K-S7K8-8.5
8.5(9) Flash image (Secure Shell)	cat6000-sup720k9.8-5-9.bin	SC6K-S7K9-8.5
8.5(9) Flash image (CiscoView)	cat6000-sup720cvk8.8-5-9.bin	SC6K-S7CVK8-8.5
8.5(9) Flash image (Secure Shell and CiscoView)	cat6000-sup720cvk9.8-5-9.bin	SC6K-S7CVK9-8.5
8.5(8) Flash image	cat6000-sup720k8.8-5-8.bin	SC6K-S7K8-8.5
8.5(8) Flash image (Secure Shell)	cat6000-sup720k9.8-5-8.bin	SC6K-S7K9-8.5
8.5(8) Flash image (CiscoView)	cat6000-sup720cvk8.8-5-8.bin	SC6K-S7CVK8-8.5
8.5(8) Flash image (Secure Shell and CiscoView)	cat6000-sup720cvk9.8-5-8.bin	SC6K-S7CVK9-8.5
8.5(7) Flash image	cat6000-sup720k8.8-5-7.bin	SC6K-S7K8-8.5
8.5(7) Flash image (Secure Shell)	cat6000-sup720k9.8-5-7.bin	SC6K-S7K9-8.5
8.5(7) Flash image (CiscoView)	cat6000-sup720cvk8.8-5-7.bin	SC6K-S7CVK8-8.5
8.5(7) Flash image (Secure Shell and CiscoView)	cat6000-sup720cvk9.8-5-7.bin	SC6K-S7CVK9-8.5
8.5(6) Flash image	cat6000-sup720k8.8-5-6.bin	SC6K-S7K8-8.5
8.5(6) Flash image (Secure Shell)	cat6000-sup720k9.8-5-6.bin	SC6K-S7K9-8.5
8.5(6) Flash image (CiscoView)	cat6000-sup720cvk8.8-5-6.bin	SC6K-S7CVK8-8.5
8.5(6) Flash image (Secure Shell and CiscoView)	cat6000-sup720cvk9.8-5-6.bin	SC6K-S7CVK9-8.5
8.5(5) Flash image	cat6000-sup720k8.8-5-5.bin	SC6K-S7K8-8.5
8.5(5) Flash image (Secure Shell)	cat6000-sup720k9.8-5-5.bin	SC6K-S7K9-8.5
8.5(5) Flash image (CiscoView)	cat6000-sup720cvk8.8-5-5.bin	SC6K-S7CVK8-8.5
8.5(5) Flash image (Secure Shell and CiscoView)	cat6000-sup720cvk9.8-5-5.bin	SC6K-S7CVK9-8.5
8.5(4) Flash image	cat6000-sup720k8.8-5-4.bin	SC6K-S7K8-8.5
8.5(4) Flash image (Secure Shell)	cat6000-sup720k9.8-5-4.bin	SC6K-S7K9-8.5
8.5(4) Flash image (CiscoView)	cat6000-sup720cvk8.8-5-4.bin	SC6K-S7CVK8-8.5
8.5(4) Flash image (Secure Shell and CiscoView)	cat6000-sup720cvk9.8-5-4.bin	SC6K-S7CVK9-8.5
8.5(3) Flash image	cat6000-sup720k8.8-5-3.bin	SC6K-S7K8-8.5
8.5(3) Flash image (Secure Shell)	cat6000-sup720k9.8-5-3.bin	SC6K-S7K9-8.5
8.5(3) Flash image (CiscoView)	cat6000-sup720cvk8.8-5-3.bin	SC6K-S7CVK8-8.5
8.5(3) Flash image (Secure Shell and CiscoView)	cat6000-sup720cvk9.8-5-3.bin	SC6K-S7CVK9-8.5
8.5(2) Flash image	cat6000-sup720k8.8-5-2.bin	SC6K-S7K8-8.5
8.5(2) Flash image (Secure Shell)	cat6000-sup720k9.8-5-2.bin	SC6K-S7K9-8.5
8.5(2) Flash image (CiscoView)	cat6000-sup720cvk8.8-5-2.bin	SC6K-S7CVK8-8.5
8.5(2) Flash image (Secure Shell and CiscoView)	cat6000-sup720cvk9.8-5-2.bin	SC6K-S7CVK9-8.5
8.5(1) Flash image[2]	cat6000-sup720k8.8-5-1.bin	SC6K-S7K8-8.5
8.5(1) Flash image (Secure Shell)	cat6000-sup720k9.8-5-1.bin	SC6K-S7K9-8.5
8.4(6) Flash image	cat6000-sup720k8.8-4-6.bin	SC6K-S7K8-8.4
8.4(6) Flash image (CiscoView)	cat6000-sup720cvk8.8-4-6.bin	SC6K-S7CVK8-8.4

Table 1 Orderable Software Images (continued)

Software Release	Filename	Orderable Product Number[1]
8.4(6) Flash image (Secure Shell)	cat6000-sup720k9.8-4-6.bin	SC6K-S7K9-8.4
8.4(6) Flash image (Secure Shell and CiscoView)	cat6000-sup720cvk9.8-4-6.bin	SC6K-S7CVK9-8.4
8.4(5) Flash image	cat6000-sup720k8.8-4-5.bin	SC6K-S7K8-8.4
8.4(5) Flash image (CiscoView)	cat6000-sup720cvk8.8-4-5.bin	SC6K-S7CVK8-8.4
8.4(5) Flash image (Secure Shell)	cat6000-sup720k9.8-4-5.bin	SC6K-S7K9-8.4
8.4(5) Flash image (Secure Shell and CiscoView)	cat6000-sup720cvk9.8-4-5.bin	SC6K-S7CVK9-8.4
8.4(4) Flash image	cat6000-sup720k8.8-4-4.bin	SC6K-S7K8-8.4
8.4(4) Flash image (CiscoView)	cat6000-sup720cvk8.8-4-4.bin	SC6K-S7CVK8-8.4
8.4(4) Flash image (Secure Shell)	cat6000-sup720k9.8-4-4.bin	SC6K-S7K9-8.4
8.4(4) Flash image (Secure Shell and CiscoView)	cat6000-sup720cvk9.8-4-4.bin	SC6K-S7CVK9-8.4
8.4(3) Flash image	cat6000-sup720k8.8-4-3.bin	SC6K-S7K8-8.4
8.4(3) Flash image (CiscoView)	cat6000-sup720cvk8.8-4-3.bin	SC6K-S7CVK8-8.4
8.4(3) Flash image (Secure Shell)	cat6000-sup720k9.8-4-3.bin	SC6K-S7K9-8.4
8.4(3) Flash image (Secure Shell and CiscoView)	cat6000-sup720cvk9.8-4-3.bin	SC6K-S7CVK9-8.4
8.4(2a) Flash image	cat6000-sup720k8.8-4-2a.bin	SC6K-S7K8-8.4
8.4(2a) Flash image (CiscoView)	cat6000-sup720cvk8.8-4-2a.bin	SC6K-S7CVK8-8.4
8.4(2a) Flash image (Secure Shell)	cat6000-sup720k9.8-4-2a.bin	SC6K-S7K9-8.4
8.4(2a) Flash image (Secure Shell and CiscoView)	cat6000-sup720cvk9.8-4-2a.bin	SC6K-S7CVK9-8.4
8.4(2) Flash image	cat6000-sup720k8.8-4-2.bin	SC6K-S7K8-8.4
8.4(2) Flash image (CiscoView)	cat6000-sup720cvk8.8-4-2.bin	SC6K-S7CVK8-8.4
8.4(2) Flash image (Secure Shell)	cat6000-sup720k9.8-4-2.bin	SC6K-S7K9-8.4
8.4(2) Flash image (Secure Shell and CiscoView)	cat6000-sup720cvk9.8-4-2.bin	SC6K-S7CVK9-8.4
8.4(1) Flash image	cat6000-sup720k8.8-4-1.bin	SC6K-S7K8-8.4
8.4(1) Flash image (CiscoView)	cat6000-sup720cvk8.8-4-1.bin	SC6K-S7CVK8-8.4
8.4(1) Flash image (Secure Shell)	cat6000-sup720k9.8-4-1.bin	SC6K-S7K9-8.4
8.4(1) Flash image (Secure Shell and CiscoView)	cat6000-sup720cvk9.8-4-1.bin	SC6K-S7CVK9-8.4
8.3(7) Flash image	cat6000-sup720k8.8-3-7.bin	SC6K-S7K8-8.3
8.3(7) Flash image (CiscoView)	cat6000-sup720cvk8.8-3-7.bin	SC6K-S7CVK8-8.3
8.3(7) Flash image (Secure Shell)	cat6000-sup720k9.8-3-7.bin	SC6K-S7K9-8.3
8.3(7) Flash image (Secure Shell and CiscoView)	cat6000-sup720cvk9.8-3-7.bin	SC6K-S7CVK9-8.3
8.3(6) Flash image	cat6000-sup720k8.8-3-6.bin	SC6K-S7K8-8.3
8.3(6) Flash image (CiscoView)	cat6000-sup720cvk8.8-3-6.bin	SC6K-S7CVK8-8.3
8.3(6) Flash image (Secure Shell)	cat6000-sup720k9.8-3-6.bin	SC6K-S7K9-8.3
8.3(6) Flash image (Secure Shell and CiscoView)	cat6000-sup720cvk9.8-3-6.bin	SC6K-S7CVK9-8.3
8.3(5) Flash image	cat6000-sup720k8.8-3-5.bin	SC6K-S7K8-8.3
8.3(5) Flash image (CiscoView)	cat6000-sup720cvk8.8-3-5.bin	SC6K-S7CVK8-8.3

Table 1 Orderable Software Images (continued)

Software Release	Filename	Orderable Product Number[1]
8.3(5) Flash image (Secure Shell)	cat6000-sup720k9.8-3-5.bin	SC6K-S7K9-8.3
8.3(5) Flash image (Secure Shell and CiscoView)	cat6000-sup720cvk9.8-3-5.bin	SC6K-S7CVK9-8.3
8.3(4) Flash image	cat6000-sup720k8.8-3-4.bin	SC6K-S7K8-8.3
8.3(4) Flash image (CiscoView)	cat6000-sup720cvk8.8-3-4.bin	SC6K-S7CVK8-8.3
8.3(4) Flash image (Secure Shell)	cat6000-sup720k9.8-3-4.bin	SC6K-S7K9-8.3
8.3(4) Flash image (Secure Shell and CiscoView)	cat6000-sup720cvk9.8-3-4.bin	SC6K-S7CVK9-8.3
8.3(3) Flash image	cat6000-sup720k8.8-3-3.bin	SC6K-S7K8-8.3
8.3(3) Flash image (CiscoView)	cat6000-sup720cvk8.8-3-3.bin	SC6K-S7CVK8-8.3
8.3(3) Flash image (Secure Shell)	cat6000-sup720k9.8-3-3.bin	SC6K-S7K9-8.3
8.3(3) Flash image (Secure Shell and CiscoView)	cat6000-sup720cvk9.8-3-3.bin	SC6K-S7CVK9-8.3
8.3(2) Flash image	cat6000-sup720k8.8-3-2.bin	SC6K-S7K8-8.3
8.3(2) Flash image (CiscoView)	cat6000-sup720cvk8.8-3-2.bin	SC6K-S7CVK8-8.3
8.3(2) Flash image (Secure Shell)	cat6000-sup720k9.8-3-2.bin	SC6K-S7K9-8.3
8.3(2) Flash image (Secure Shell and CiscoView)	cat6000-sup720cvk9.8-3-2.bin	SC6K-S7CVK9-8.3
8.3(1) Flash image[3]	cat6000-sup720k8.8-3-1.bin	SC6K-S7K8-8.3
8.3(1) Flash image (Secure Shell)	cat6000-sup720k9.8-3-1.bin	SC6K-S7K9-8.3
8.2(2) Flash image	cat6000-sup720k8.8-2-2.bin	SC6K-S7K8-8.2
8.2(2) Flash image (CiscoView)	cat6000-sup720cvk8.8-2-2.bin	SC6K-S7CVK8-8.2
8.2(2) Flash image (Secure Shell)	cat6000-sup720k9.8-2-2.bin	SC6K-S7K9-8.2
8.2(2) Flash image (Secure Shell and CiscoView)	cat6000-sup720cvk9.8-2-2.bin	SC6K-S7CVK9-8.2
8.2(1) Flash image	cat6000-sup720k8.8-2-1.bin	SC6K-S7K8-8.2
8.2(1) Flash image (CiscoView)	cat6000-sup720cvk8.8-2-1.bin	SC6K-S7CVK8-8.2
8.2(1) Flash image (Secure Shell)	cat6000-sup720k9.8-2-1.bin	SC6K-S7K9-8.2
8.2(1) Flash image (Secure Shell and CiscoView)	cat6000-sup720cvk9.8-2-1.bin	SC6K-S7CVK9-8.2
8.1(3) Flash image	cat6000-sup720k8.8-1-3.bin	SC6K-S7K8-8.1
8.1(3) Flash image (CiscoView)	cat6000-sup720cvk8.8-1-3.bin	SC6K-S7CVK8-8.1
8.1(3) Flash image (Secure Shell)	cat6000-sup720k9.8-1-3.bin	SC6K-S7K9-8.1
8.1(3) Flash image (Secure Shell and CiscoView)	cat6000-sup720cvk9.8-1-3.bin	SC6K-S7CVK9-8.1
8.1(2) Flash image	cat6000-sup720k8.8-1-2.bin	SC6K-S7K8-8.1
8.1(2) Flash image (CiscoView)	cat6000-sup720cvk8.8-1-2.bin	SC6K-S7CVK8-8.1
8.1(2) Flash image (Secure Shell)	cat6000-sup720k9.8-1-2.bin	SC6K-S7K9-8.1
8.1(2) Flash image (Secure Shell and CiscoView)	cat6000-sup720cvk9.8-1-2.bin	SC6K-S7CVK9-8.1
8.1(1) Flash image	cat6000-sup720k8.8-1-1.bin	SC6K-S7K8-8.1.1
8.1(1) Flash image (CiscoView)	cat6000-sup720cvk8.8-1-1.bin	SC6K-S7CVK8-8.1.1
8.1(1) Flash image (Secure Shell)	cat6000-sup720k9.8-1-1.bin	SC6K-S7K9-8.1.1
8.1(1) Flash image (Secure Shell and CiscoView)	cat6000-sup720cvk9.8-1-1.bin	SC6K-S7CVK9-8.1.1

Table 1 Orderable Software Images (continued)

Software Release	Filename	Orderable Product Number[1]
Supervisor Engine 2		
8.6(4) Flash image	cat6000-sup2k8.8-6-4.bin	SC6K-SUP2K8-8.6
8.6(4) Flash image (Secure Shell)	cat6000-sup2k9.8-6-4.bin	SC6K-SUP2K9-8.6
8.6(4) Flash image (CiscoView)	cat6000-sup2cvk8.8-6-4.bin	SC6K-S2CVK8-8.6
8.6(4) Flash image (Secure Shell and CiscoView)	cat6000-sup2cvk9.8-6-4.bin	SC6K-S2CVK9-8.6
8.6(2) Flash image	cat6000-sup2k8.8-6-2.bin	SC6K-SUP2K8-8.6
8.6(2) Flash image (Secure Shell)	cat6000-sup2k9.8-6-2.bin	SC6K-SUP2K9-8.6
8.6(2) Flash image (CiscoView)	cat6000-sup2cvk8.8-6-2.bin	SC6K-S2CVK8-8.6
8.6(2) Flash image (Secure Shell and CiscoView)	cat6000-sup2cvk9.8-6-2.bin	SC6K-S2CVK9-8.6
8.6(1) Flash image	cat6000-sup2k8.8-6-1.bin	SC6K-SUP2K8-8.6
8.6(1) Flash image (Secure Shell)	cat6000-sup2k9.8-6-1.bin	SC6K-SUP2K9-8.6
8.6(1) Flash image (CiscoView)	cat6000-sup2cvk8.8-6-1.bin	SC6K-S2CVK8-8.6
8.6(1) Flash image (Secure Shell and CiscoView)	cat6000-sup2cvk9.8-6-1.bin	SC6K-S2CVK9-8.6
8.5(9) Flash image	cat6000-sup2k8.8-5-9.bin	SC6K-SUP2K8-8.5
8.5(9) Flash image (Secure Shell)	cat6000-sup2k9.8-5-9.bin	SC6K-SUP2K9-8.5
8.5(9) Flash image (CiscoView)	cat6000-sup2cvk8.8-5-9.bin	SC6K-S2CVK8-8.5
8.5(9) Flash image (Secure Shell and CiscoView)	cat6000-sup2cvk9.8-5-9.bin	SC6K-S2CVK9-8.5
8.5(8) Flash image	cat6000-sup2k8.8-5-8.bin	SC6K-SUP2K8-8.5
8.5(8) Flash image (Secure Shell)	cat6000-sup2k9.8-5-8.bin	SC6K-SUP2K9-8.5
8.5(8) Flash image (CiscoView)	cat6000-sup2cvk8.8-5-8.bin	SC6K-S2CVK8-8.5
8.5(8) Flash image (Secure Shell and CiscoView)	cat6000-sup2cvk9.8-5-8.bin	SC6K-S2CVK9-8.5
8.5(7) Flash image	cat6000-sup2k8.8-5-7.bin	SC6K-SUP2K8-8.5
8.5(7) Flash image (Secure Shell)	cat6000-sup2k9.8-5-7.bin	SC6K-SUP2K9-8.5
8.5(7) Flash image (CiscoView)	cat6000-sup2cvk8.8-5-7.bin	SC6K-S2CVK8-8.5
8.5(7) Flash image (Secure Shell and CiscoView)	cat6000-sup2cvk9.8-5-7.bin	SC6K-S2CVK9-8.5
8.5(6) Flash image	cat6000-sup2k8.8-5-6.bin	SC6K-SUP2K8-8.5
8.5(6) Flash image (Secure Shell)	cat6000-sup2k9.8-5-6.bin	SC6K-SUP2K9-8.5
8.5(6) Flash image (CiscoView)	cat6000-sup2cvk8.8-5-6.bin	SC6K-S2CVK8-8.5
8.5(6) Flash image (Secure Shell and CiscoView)	cat6000-sup2cvk9.8-5-6.bin	SC6K-S2CVK9-8.5
8.5(5) Flash image	cat6000-sup2k8.8-5-5.bin	SC6K-SUP2K8-8.5
8.5(5) Flash image (Secure Shell)	cat6000-sup2k9.8-5-5.bin	SC6K-SUP2K9-8.5
8.5(5) Flash image (CiscoView)	cat6000-sup2cvk8.8-5-5.bin	SC6K-S2CVK8-8.5
8.5(5) Flash image (Secure Shell and CiscoView)	cat6000-sup2cvk9.8-5-5.bin	SC6K-S2CVK9-8.5
8.5(4) Flash image	cat6000-sup2k8.8-5-4.bin	SC6K-SUP2K8-8.5
8.5(4) Flash image (Secure Shell)	cat6000-sup2k9.8-5-4.bin	SC6K-SUP2K9-8.5
8.5(4) Flash image (CiscoView)	cat6000-sup2cvk8.8-5-4.bin	SC6K-S2CVK8-8.5

Table 1 Orderable Software Images (continued)

Software Release	Filename	Orderable Product Number[1]
8.5(4) Flash image (Secure Shell and CiscoView)	cat6000-sup2cvk9.8-5-4.bin	SC6K-S2CVK9-8.5
8.5(3) Flash image	cat6000-sup2k8.8-5-3.bin	SC6K-SUP2K8-8.5
8.5(3) Flash image (Secure Shell)	cat6000-sup2k9.8-5-3.bin	SC6K-SUP2K9-8.5
8.5(3) Flash image (CiscoView)	cat6000-sup2cvk8.8-5-3.bin	SC6K-S2CVK8-8.5
8.5(3) Flash image (Secure Shell and CiscoView)	cat6000-sup2cvk9.8-5-3.bin	SC6K-S2CVK9-8.5
8.5(2) Flash image	cat6000-sup2k8.8-5-2.bin	SC6K-SUP2K8-8.5
8.5(2) Flash image (Secure Shell)	cat6000-sup2k9.8-5-2.bin	SC6K-SUP2K9-8.5
8.5(2) Flash image (CiscoView)	cat6000-sup2cvk8.8-5-2.bin	SC6K-S2CVK8-8.5
8.5(2) Flash image (Secure Shell and CiscoView)	cat6000-sup2cvk9.8-5-2.bin	SC6K-S2CVK9-8.5
8.5(1) Flash image[2]	cat6000-sup2k8.8-5-1.bin	SC6K-SUP2K8-8.5
8.5(1) Flash image (Secure Shell)	cat6000-sup2k9.8-5-1.bin	SC6K-SUP2K9-8.5
8.4(6) Flash image	cat6000-sup2k8.8-4-6.bin	SC6K-SUP2K8-8.4
8.4(6) Flash image (CiscoView)	cat6000-sup2cvk8.8-4-6.bin	SC6K-S2CVK8-8.4
8.4(6) Flash image (Secure Shell)	cat6000-sup2k9.8-4-6.bin	SC6K-SUP2K9-8.4
8.4(6) Flash image (Secure Shell and CiscoView)	cat6000-sup2cvk9.8-4-6.bin	SC6K-S2CVK9-8.4
8.4(5) Flash image	cat6000-sup2k8.8-4-5.bin	SC6K-SUP2K8-8.4
8.4(5) Flash image (CiscoView)	cat6000-sup2cvk8.8-4-5.bin	SC6K-S2CVK8-8.4
8.4(5) Flash image (Secure Shell)	cat6000-sup2k9.8-4-5.bin	SC6K-SUP2K9-8.4
8.4(5) Flash image (Secure Shell and CiscoView)	cat6000-sup2cvk9.8-4-5.bin	SC6K-S2CVK9-8.4
8.4(4) Flash image	cat6000-sup2k8.8-4-4.bin	SC6K-SUP2K8-8.4
8.4(4) Flash image (CiscoView)	cat6000-sup2cvk8.8-4-4.bin	SC6K-S2CVK8-8.4
8.4(4) Flash image (Secure Shell)	cat6000-sup2k9.8-4-4.bin	SC6K-SUP2K9-8.4
8.4(4) Flash image (Secure Shell and CiscoView)	cat6000-sup2cvk9.8-4-4.bin	SC6K-S2CVK9-8.4
8.4(3) Flash image	cat6000-sup2k8.8-4-3.bin	SC6K-SUP2K8-8.4
8.4(3) Flash image (CiscoView)	cat6000-sup2cvk8.8-4-3.bin	SC6K-S2CVK8-8.4
8.4(3) Flash image (Secure Shell)	cat6000-sup2k9.8-4-3.bin	SC6K-SUP2K9-8.4
8.4(3) Flash image (Secure Shell and CiscoView)	cat6000-sup2cvk9.8-4-3.bin	SC6K-S2CVK9-8.4
8.4(2a) Flash image	cat6000-sup2k8.8-4-2a.bin	SC6K-SUP2K8-8.4
8.4(2a) Flash image (CiscoView)	cat6000-sup2cvk8.8-4-2a.bin	SC6K-S2CVK8-8.4
8.4(2a) Flash image (Secure Shell)	cat6000-sup2k9.8-4-2a.bin	SC6K-SUP2K9-8.4
8.4(2a) Flash image (Secure Shell and CiscoView)	cat6000-sup2cvk9.8-4-2a.bin	SC6K-S2CVK9-8.4
8.4(2) Flash image	cat6000-sup2k8.8-4-2.bin	SC6K-SUP2K8-8.4
8.4(2) Flash image (CiscoView)	cat6000-sup2cvk8.8-4-2.bin	SC6K-S2CVK8-8.4
8.4(2) Flash image (Secure Shell)	cat6000-sup2k9.8-4-2.bin	SC6K-SUP2K9-8.4
8.4(2) Flash image (Secure Shell and CiscoView)	cat6000-sup2cvk9.8-4-2.bin	SC6K-S2CVK9-8.4
8.4(1) Flash image	cat6000-sup2k8.8-4-1.bin	SC6K-SUP2K8-8.4

Table 1 Orderable Software Images (continued)

Software Release	Filename	Orderable Product Number[1]
8.4(1) Flash image (CiscoView)	cat6000-sup2cvk8.8-4-1.bin	SC6K-S2CVK8-8.4
8.4(1) Flash image (Secure Shell)	cat6000-sup2k9.8-4-1.bin	SC6K-SUP2K9-8.4
8.4(1) Flash image (Secure Shell and CiscoView)	cat6000-sup2cvk9.8-4-1.bin	SC6K-S2CVK9-8.4
8.3(7) Flash image	cat6000-sup2k8.8-3-7.bin	SC6K-SUP2K8-8.3
8.3(7) Flash image (CiscoView)	cat6000-sup2cvk8.8-3-7.bin	SC6K-S2CVK8-8.3
8.3(7) Flash image (Secure Shell)	cat6000-sup2k9.8-3-7.bin	SC6K-SUP2K9-8.3
8.3(7) Flash image (Secure Shell and CiscoView)	cat6000-sup2cvk9.8-3-7.bin	SC6K-S2CVK9-8.3
8.3(6) Flash image	cat6000-sup2k8.8-3-6.bin	SC6K-SUP2K8-8.3
8.3(6) Flash image (CiscoView)	cat6000-sup2cvk8.8-3-6.bin	SC6K-S2CVK8-8.3
8.3(6) Flash image (Secure Shell)	cat6000-sup2k9.8-3-6.bin	SC6K-SUP2K9-8.3
8.3(6) Flash image (Secure Shell and CiscoView)	cat6000-sup2cvk9.8-3-6.bin	SC6K-S2CVK9-8.3
8.3(5) Flash image	cat6000-sup2k8.8-3-5.bin	SC6K-SUP2K8-8.3
8.3(5) Flash image (CiscoView)	cat6000-sup2cvk8.8-3-5.bin	SC6K-S2CVK8-8.3
8.3(5) Flash image (Secure Shell)	cat6000-sup2k9.8-3-5.bin	SC6K-SUP2K9-8.3
8.3(5) Flash image (Secure Shell and CiscoView)	cat6000-sup2cvk9.8-3-5.bin	SC6K-S2CVK9-8.3
8.3(4) Flash image	cat6000-sup2k8.8-3-4.bin	SC6K-SUP2K8-8.3
8.3(4) Flash image (CiscoView)	cat6000-sup2cvk8.8-3-4.bin	SC6K-S2CVK8-8.3
8.3(4) Flash image (Secure Shell)	cat6000-sup2k9.8-3-4.bin	SC6K-SUP2K9-8.3
8.3(4) Flash image (Secure Shell and CiscoView)	cat6000-sup2cvk9.8-3-4.bin	SC6K-S2CVK9-8.3
8.3(3) Flash image	cat6000-sup2k8.8-3-3.bin	SC6K-SUP2K8-8.3
8.3(3) Flash image (CiscoView)	cat6000-sup2cvk8.8-3-3.bin	SC6K-S2CVK8-8.3
8.3(3) Flash image (Secure Shell)	cat6000-sup2k9.8-3-3.bin	SC6K-SUP2K9-8.3
8.3(3) Flash image (Secure Shell and CiscoView)	cat6000-sup2cvk9.8-3-3.bin	SC6K-S2CVK9-8.3
8.3(2) Flash image	cat6000-sup2k8.8-3-2.bin	SC6K-SUP2K8-8.3
8.3(2) Flash image (CiscoView)	cat6000-sup2cvk8.8-3-2.bin	SC6K-S2CVK8-8.3
8.3(2) Flash image (Secure Shell)	cat6000-sup2k9.8-3-2.bin	SC6K-SUP2K9-8.3
8.3(2) Flash image (Secure Shell and CiscoView)	cat6000-sup2cvk9.8-3-2.bin	SC6K-S2CVK9-8.3
8.3(1) Flash image[3]	cat6000-sup2k8.8-3-1.bin	SC6K-SUP2K8-8.3
8.3(1) Flash image (Secure Shell)	cat6000-sup2k9.8-3-1.bin	SC6K-SUP2K9-8.3
8.2(2) Flash image	cat6000-sup2k8.8-2-2.bin	SC6K-SUP2K8-8.2
8.2(2) Flash image (CiscoView)	cat6000-sup2cvk8.8-2-2.bin	SC6K-S2CVK8-8.2
8.2(2) Flash image (Secure Shell)	cat6000-sup2k9.8-2-2.bin	SC6K-SUP2K9-8.2
8.2(2) Flash image (Secure Shell and CiscoView)	cat6000-sup2cvk9.8-2-2.bin	SC6K-S2CVK9-8.2
8.2(1) Flash image	cat6000-sup2k8.8-2-1.bin	SC6K-SUP2K8-8.2
8.2(1) Flash image (CiscoView)	cat6000-sup2cvk8.8-2-1.bin	SC6K-S2CVK8-8.2
8.2(1) Flash image (Secure Shell)	cat6000-sup2k9.8-2-1.bin	SC6K-SUP2K9-8.2

Table 1 Orderable Software Images (continued)

Software Release	Filename	Orderable Product Number[1]
8.2(1) Flash image (Secure Shell and CiscoView)	cat6000-sup2cvk9.8-2-1.bin	SC6K-S2CVK9-8.2
8.1(3) Flash image	cat6000-sup2k8.8-1-3.bin	SC6K-SUP2K8-8.1
8.1(3) Flash image (CiscoView)	cat6000-sup2cvk8.8-1-3.bin	SC6K-S2CVK8-8.1
8.1(3) Flash image (Secure Shell)	cat6000-sup2k9.8-1-3.bin	SC6K-SUP2K9-8.1
8.1(3) Flash image (Secure Shell and CiscoView)	cat6000-sup2cvk9.8-1-3.bin	SC6K-S2CVK9-8.1
8.1(2) Flash image	cat6000-sup2k8.8-1-2.bin	SC6K-SUP2K8-8.1
8.1(2) Flash image (CiscoView)	cat6000-sup2cvk8.8-1-2.bin	SC6K-S2CVK8-8.1
8.1(2) Flash image (Secure Shell)	cat6000-sup2k9.8-1-2.bin	SC6K-SUP2K9-8.1
8.1(2) Flash image (Secure Shell and CiscoView)	cat6000-sup2cvk9.8-1-2.bin	SC6K-S2CVK9-8.1
8.1(1) Flash image	cat6000-sup2k8.8-1-1.bin	SC6K-SUP2K8-8.1.1
8.1(1) Flash image (CiscoView)	cat6000-sup2cvk8.8-1-1.bin	SC6K-S2CVK8-8.1.1
8.1(1) Flash image (Secure Shell)	cat6000-sup2k9.8-1-1.bin	SC6K-SUP2K9-8.1.1
8.1(1) Flash image (Secure Shell and CiscoView)	cat6000-sup2cvk9.8-1-1.bin	SC6K-S2CVK9-8.1.1
Supervisor Engine 1		
8.5(3) Flash image	cat6000-supk8.8-5-3.bin	SC6K-SUPK8-8.5
8.5(3) Flash image (Secure Shell)	cat6000-supk9.8-5-3.bin	SC6K-SUPK9-8.5
8.5(3) Flash image (CiscoView)	cat6000-supcvk8.8-5-3.bin	SC6K-SCVK8-8.5
8.5(3) Flash image (Secure Shell and CiscoView)	cat6000-supcvk9.8-5-3.bin	SC6K-SCVK9-8.5
8.5(2) Flash image	cat6000-supk8.8-5-2.bin	SC6K-SUPK8-8.5
8.5(2) Flash image (Secure Shell)	cat6000-supk9.8-5-2.bin	SC6K-SUPK9-8.5
8.5(2) Flash image (CiscoView)	cat6000-supcvk8.8-5-2.bin	SC6K-SCVK8-8.5
8.5(2) Flash image (Secure Shell and CiscoView)	cat6000-supcvk9.8-5-2.bin	SC6K-SCVK9-8.5
8.5(1) Flash image[2]	cat6000-supk8.8-5-1.bin	SC6K-SUPK8-8.5
8.5(1) Flash image (Secure Shell)	cat6000-supk9.8-5-1.bin	SC6K-SUPK9-8.5
8.4(6) Flash image	cat6000-supk8.8-4-6.bin	SC6K-SUPK8-8.4
8.4(6) Flash image (CiscoView)	cat6000-supcvk8.8-4-6.bin	SC6K-SCVK8-8.4
8.4(6) Flash image (Secure Shell)	cat6000-supk9.8-4-6.bin	SC6K-SUPK9-8.4
8.4(6) Flash image (Secure Shell and CiscoView)	cat6000-supcvk9.8-4-6.bin	SC6K-SCVK9-8.4
8.4(5) Flash image	cat6000-supk8.8-4-5.bin	SC6K-SUPK8-8.4
8.4(5) Flash image (CiscoView)	cat6000-supcvk8.8-4-5.bin	SC6K-SCVK8-8.4
8.4(5) Flash image (Secure Shell)	cat6000-supk9.8-4-5.bin	SC6K-SUPK9-8.4
8.4(5) Flash image (Secure Shell and CiscoView)	cat6000-supcvk9.8-4-5.bin	SC6K-SCVK9-8.4
8.4(4) Flash image	cat6000-supk8.8-4-4.bin	SC6K-SUPK8-8.4
8.4(4) Flash image (CiscoView)	cat6000-supcvk8.8-4-4.bin	SC6K-SCVK8-8.4
8.4(4) Flash image (Secure Shell)	cat6000-supk9.8-4-4.bin	SC6K-SUPK9-8.4
8.4(4) Flash image (Secure Shell and CiscoView)	cat6000-supcvk9.8-4-4.bin	SC6K-SCVK9-8.4

Table 1 Orderable Software Images (continued)

Software Release	Filename	Orderable Product Number[1]
8.4(3) Flash image	cat6000-supk8.8-4-3.bin	SC6K-SUPK8-8.4
8.4(3) Flash image (CiscoView)	cat6000-supcvk8.8-4-3.bin	SC6K-SCVK8-8.4
8.4(3) Flash image (Secure Shell)	cat6000-supk9.8-4-3.bin	SC6K-SUPK9-8.4
8.4(3) Flash image (Secure Shell and CiscoView)	cat6000-supcvk9.8-4-3.bin	SC6K-SCVK9-8.4
8.4(2a) Flash image	cat6000-supk8.8-4-2a.bin	SC6K-SUPK8-8.4
8.4(2a) Flash image (CiscoView)	cat6000-supcvk8.8-4-2a.bin	SC6K-SCVK8-8.4
8.4(2a) Flash image (Secure Shell)	cat6000-supk9.8-4-2a.bin	SC6K-SUPK9-8.4
8.4(2a) Flash image (Secure Shell and CiscoView)	cat6000-supcvk9.8-4-2a.bin	SC6K-SCVK9-8.4
8.4(2) Flash image	cat6000-supk8.8-4-2.bin	SC6K-SUPK8-8.4
8.4(2) Flash image (CiscoView)	cat6000-supcvk8.8-4-2.bin	SC6K-SCVK8-8.4
8.4(2) Flash image (Secure Shell)	cat6000-supk9.8-4-2.bin	SC6K-SUPK9-8.4
8.4(2) Flash image (Secure Shell and CiscoView)	cat6000-supcvk9.8-4-2.bin	SC6K-SCVK9-8.4
8.4(1) Flash image	cat6000-supk8.8-4-1.bin	SC6K-SUPK8-8.4
8.4(1) Flash image (CiscoView)	cat6000-supcvk8.8-4-1.bin	SC6K-SCVK8-8.4
8.4(1) Flash image (Secure Shell)	cat6000-supk9.8-4-1.bin	SC6K-SUPK9-8.4
8.4(1) Flash image (Secure Shell and CiscoView)	cat6000-supcvk9.8-4-1.bin	SC6K-SCVK9-8.4
8.3(7) Flash image	cat6000-supk8.8-3-7.bin	SC6K-SUPK8-8.3
8.3(7) Flash image (CiscoView)	cat6000-supcvk8.8-3-7.bin	SC6K-SCVK8-8.3
8.3(7) Flash image (Secure Shell)	cat6000-supk9.8-3-7.bin	SC6K-SUPK9-8.3
8.3(7) Flash image (Secure Shell and CiscoView)	cat6000-supcvk9.8-3-7.bin	SC6K-SCVK9-8.3
8.3(6) Flash image	cat6000-supk8.8-3-6.bin	SC6K-SUPK8-8.3
8.3(6) Flash image (CiscoView)	cat6000-supcvk8.8-3-6.bin	SC6K-SCVK8-8.3
8.3(6) Flash image (Secure Shell)	cat6000-supk9.8-3-6.bin	SC6K-SUPK9-8.3
8.3(6) Flash image (Secure Shell and CiscoView)	cat6000-supcvk9.8-3-6.bin	SC6K-SCVK9-8.3
8.3(5) Flash image	cat6000-supk8.8-3-5.bin	SC6K-SUPK8-8.3
8.3(5) Flash image (CiscoView)	cat6000-supcvk8.8-3-5.bin	SC6K-SCVK8-8.3
8.3(5) Flash image (Secure Shell)	cat6000-supk9.8-3-5.bin	SC6K-SUPK9-8.3
8.3(5) Flash image (Secure Shell and CiscoView)	cat6000-supcvk9.8-3-5.bin	SC6K-SCVK9-8.3
8.3(4) Flash image	cat6000-supk8.8-3-4.bin	SC6K-SUPK8-8.3
8.3(4) Flash image (CiscoView)	cat6000-supcvk8.8-3-4.bin	SC6K-SCVK8-8.3
8.3(4) Flash image (Secure Shell)	cat6000-supk9.8-3-4.bin	SC6K-SUPK9-8.3
8.3(4) Flash image (Secure Shell and CiscoView)	cat6000-supcvk9.8-3-4.bin	SC6K-SCVK9-8.3
8.3(3) Flash image	cat6000-supk8.8-3-3.bin	SC6K-SUPK8-8.3
8.3(3) Flash image (CiscoView)	cat6000-supcvk8.8-3-3.bin	SC6K-SCVK8-8.3
8.3(3) Flash image (Secure Shell)	cat6000-supk9.8-3-3.bin	SC6K-SUPK9-8.3
8.3(3) Flash image (Secure Shell and CiscoView)	cat6000-supcvk9.8-3-3.bin	SC6K-SCVK9-8.3

Table 1 Orderable Software Images (continued)

Software Release	Filename	Orderable Product Number[1]
8.3(2) Flash image	cat6000-supk8.8-3-2.bin	SC6K-SUPK8-8.3
8.3(2) Flash image (CiscoView)	cat6000-supcvk8.8-3-2.bin	SC6K-SCVK8-8.3
8.3(2) Flash image (Secure Shell)	cat6000-supk9.8-3-2.bin	SC6K-SUPK9-8.3
8.3(2) Flash image (Secure Shell and CiscoView)	cat6000-supcvk9.8-3-2.bin	SC6K-SCVK9-8.3
8.3(1) Flash image[3]	cat6000-supk8.8-3-1.bin	SC6K-SUPK8-8.3
8.3(1) Flash image (Secure Shell)	cat6000-supk9.8-3-1.bin	SC6K-SUPK9-8.3
8.2(2) Flash image	cat6000-supk8.8-2-2.bin	SC6K-SUPK8-8.2
8.2(2) Flash image (CiscoView)	cat6000-supcvk8.8-2-2.bin	SC6K-SCVK8-8.2
8.2(2) Flash image (Secure Shell)	cat6000-supk9.8-2-2.bin	SC6K-SUPK9-8.2
8.2(2) Flash image (Secure Shell and CiscoView)	cat6000-supcvk9.8-2-2.bin	SC6K-SCVK9-8.2
8.2(1) Flash image	cat6000-supk8.8-2-1.bin	SC6K-SUPK8-8.2
8.2(1) Flash image (CiscoView)	cat6000-supcvk8.8-2-1.bin	SC6K-SCVK8-8.2
8.2(1) Flash image (Secure Shell)	cat6000-supk9.8-2-1.bin	SC6K-SUPK9-8.2
8.2(1) Flash image (Secure Shell and CiscoView)	cat6000-supcvk9.8-2-1.bin	SC6K-SCVK9-8.2
8.1(3) Flash image	cat6000-supk8.8-1-3.bin	SC6K-SUPK8-8.1
8.1(3) Flash image (CiscoView)	cat6000-supcvk8.8-1-3.bin	SC6K-SCVK8-8.1
8.1(3) Flash image (Secure Shell)	cat6000-supk9.8-1-3.bin	SC6K-SUPK9-8.1
8.1(3) Flash image (Secure Shell and CiscoView)	cat6000-supcvk9.8-1-3.bin	SC6K-SCVK9-8.1
8.1(2) Flash image	cat6000-supk8.8-1-2.bin	SC6K-SUPK8-8.1
8.1(2) Flash image (CiscoView)	cat6000-supcvk8.8-1-2.bin	SC6K-SCVK8-8.1
8.1(2) Flash image (Secure Shell)	cat6000-supk9.8-1-2.bin	SC6K-SUPK9-8.1
8.1(2) Flash image (Secure Shell and CiscoView)	cat6000-supcvk9.8-1-2.bin	SC6K-SCVK9-8.1
8.1(1) Flash image	cat6000-supk8.8-1-1.bin	SC6K-SUPK8-8.1.1
8.1(1) Flash image (CiscoView)	cat6000-supcvk8.8-1-1.bin	SC6K-SCVK8-8.1.1
8.1(1) Flash image (Secure Shell)	cat6000-supk9.8-1-1.bin	SC6K-SUPK9-8.1.1
8.1(1) Flash image (Secure Shell and CiscoView)	cat6000-supcvk9.8-1-1.bin	SC6K-SCVK9-8.1.1

1. Installed on system; append with "=" for spare on floppy media.
2. There are no CiscoView images in software release 8.5(1). CiscoView images are scheduled for software release 8.5(2).
3. There are no CiscoView images in software release 8.3(1). CiscoView images are scheduled for software release 8.3(2).

Software Image Version Compatibility

With high-availability versioning enabled, you can have two different but compatible images on the active and standby supervisor engines. The active supervisor engine exchanges image version information with the standby supervisor engine and determines whether the images are compatible for enabling high availability. If the active and standby supervisor engines are not running compatible image versions, you cannot enable high availability.

Image versioning is supported in supervisor engine software releases 5.4(1) and later. With versioning enabled, high availability is fully supported with the active and standby supervisor engines running different images as long as the images are compatible. The only fully compatible images are as follows:

Note There is no software image version compatibility in the 8.x software release train. This includes major releases such as 8.1(x) to 8.2(x) to 8.3(x) and so on. This also includes subreleases such as 8.1(1) to 8.1(2), 8.2(1) to 8.2(2) and so on.

- Supervisor Engine 1
  - 5.5(3) and 5.5(4)
  - 6.1(3) and 6.1(4)
  - 6.2(2) and 6.2(3)
  - 6.3(2) and 6.3(3)
  - 6.3(4) and 6.3(5)
  - 6.3(6) and 6.3(7)
- Supervisor Engine 2
  - 6.1(3) and 6.1(4)
  - 6.2(2) and 6.2(3)
  - 6.3(2) and 6.3(3)

Images that are compatible with all modules except Gigabit Ethernet switching modules are as follows:

- Supervisor Engine 1
  - 5.4(3) and 5.4(4)
  - 5.5(3) and 5.5(5)
  - 5.5(4) and 5.5(5)

Images that are compatible with Gigabit Ethernet switching modules but not compatible with 10/100BASE-T modules are as follows:

- Supervisor Engine 1
  - 5.5(6a) and 5.5(7)

Images that are compatible with all modules except the SFM/SFM2 and fabric-enabled modules are as follows:

- Supervisor Engine 2
  - 6.3(4) and 6.3(5)
  - 6.3(6) and 6.3(7)

Note Attempting to run incompatible image versions could result in configuration loss.

Catalyst 6500 Series Features

Note For complete hardware requirements for the software features listed, see the *Catalyst 6500 Series Software Configuration Guides*.

These sections describe the Catalyst 6500 series features:

Features for Supervisor Engine Software Release 8.7

Note Maximum switching performance is achieved when all switch components are fabric enabled. The presence of nonfabric-enabled switching modules might impact overall switching performance.

These sections describe the features in software release 8.7, 23 April 2008:

Software Release 8.7 Hardware Features

Software release 8.7 provides support for these hardware features:

- A 512-MB CompactFlash memory card on Supervisor Engine 720 with a Melody adapter card.
- LR+/ER+ XENPAKs with DOM support.

Software Release 8.7 Software Features

Software release 8.7 provides support for the following software features:

- IEEE 802.1ag draft 8.0 Metro Ethernet Connectivity Fault Management (CFM) Protocol. CFM incorporates several OAM facilities that allow you to manage Metro Ethernet networks, including an Ethernet continuity check, an end-to-end Ethernet traceroute, a Link Trace Message (LTM), a

Loopback Message (LBM), and a Loopback Reply (LBR). These Metro Ethernet CFM elements allow you to identify problems in your network. This protocol replaces IEEE 802.1: 802.1ag-Connectivity Fault Management protocol.

- Ethernet Local Management Protocol (ELMI). The ELMI protocols are as follows:

1. Ethernet Virtual Connections (EVC).
2. Ethernet Local Management Interface (ELMI).

- The Ethernet Alarm Indication function (ETH-AIS) and the Ethernet Remote Defect Indication (ETH-RDI) are new functional extensions to Metro Ethernet Connectivity Fault Management (CFM). The ETH-AIS is a standard defined by ITU Y.1731 and the ETH-RDI is part of IEEE 802.1ag. AIS-RDI works together to help reduce the management complexity of large SPAN networks and multiple constituent networks that belong to separate organizations.
- IEEE 802.1ak Multiple VLAN Registration Protocol (MVRP).

  This protocol replaces GVRP in VLAN pruning and dynamic VLAN creation on trunk ports with faster and smaller transmissions, and extends support to larger networks and 4k (4094) VLANs.

  1. MVRP default timers need to be tuned appropriately for a high number of VLANs. MVRP is a CPU-intensive protocol that requires an adequate processing interval between PDUs for processing a high number of VLAN states.
  2. MVRP does not support Flex link.
  3. MVRP does not interoperate with L2PT.

- Agentless Hosts Audit Support with MAB

  This feature facilitates NAC auditing for agentless hosts with MAB- enabled NAD ports using external audit servers.

- QoS and Security ACL assignment with MAB

  MAB-enabled ports support ACL assignments similar to 802.1X-enabled ports.

- IP Device Tracking (Host Aging using MAB)

  This feature tracks the existence of the host and removes aged entries in the CAM table, which ensure that the hosts are removed from the EARL.

- MAC Utilization Rate

  This feature displays the packet rate, bit rate, and octet rate per port, per module, and per VLAN, based on the load interval that can be specified.

- MAC Duplication Indicator

  This feature displays an indicator (&) next to the MAC entries that appear more than once in the CAM table.

- Mini Protocol Analyzer Enhancements

  The Mini Protocol Analyzer Enhancements also capture double tagged frames on dot1qtunnel, PAgP and LACP channel ports, and RFI Link Fault Recovery (OAM Enhancements).

- This feature changes the port to the blocking state when a remote link failure is encountered and then automatically changes the port to forwarding state whenever the remote link becomes operational.

Software Release 8.7 Unsupported Software Features

This section lists the unsupported software features in software release 8.7(x):

- IEEE P802.1ag/D1 Draft Standard for the Local and Metropolitan Area Networks is not supported.
- IEEE P802.1ag/D1 to Draft 8.1 interoperability is not supported.
- Change in channel configuration is not supported with Connectivity Fault Management (CFM) enabled.
- PVST+ simulation with CFM enabled is not supported.
- VTP pruning interoperability with MVRP is not supported.

Features for Supervisor Engine Software Release 8.6

Note Maximum switching performance is achieved when all switch components are fabric enabled. The presence of nonfabric-enabled switching modules might impact overall switching performance.

The following sections describe the features in software release 8.6, 28 February 2007:

- Software Release 8.6 Hardware Features, page 46
- Software Release 8.6 Software Features, page 46
- Software Release 8.6 Unsupported Software Features, page 47

Software Release 8.6 Hardware Features

There are no new hardware features in software release 8.6(x).

Software Release 8.6 Software Features

Software release 8.6 provides support for the following software features:

- Policy-Based Forwarding (PBF) macro enhancement

  The PBF macro enhancement feature stores macros that were are to create security and adjacency ACLs associated with PBF clients, gateways, and maps in a switch configuration. The **set pbf** macro commands are included in the output of **show config** and related commands.

- IEEE 802.1ag Ethernet OAM CFM

  This protocol provides end-to-end Ethernet connectivity fault management.

- Mini Protocol Analyzer

  The Mini Protocol Analyzer captures data and control traffic in a flash file that can be read offline using an ethereal client for analysis and troubleshooting purposes.

- Digital Optical Monitoring (DOM)

  This feature monitors optical power and related information for SFP, GBIC, and XENPAK modules.

- Additional QoS statistics

  This feature provides peak/maximum QoS statistics for a specified time interval.

- Bridge learning MAC move counters

  This feature provides a running count of how many times MACs move from one port to another within a VLAN.

- Show port per VLAN

This feature displays all ports in a specific VLAN.

- Topology change in show spantree

  This feature provides the addition of topology change information to **show spantree** command output. This includes the number of topology changes, the last topology change, the initiator of a topology change, and the time of topology changes.

- Downloadable ACLs with 802.1X and webauth

  This feature provides the ability to define per-user ACLs in a central location on the AAA server and have the ACLs downloaded on the switch port to enforce access control on the port.

- 802.1X with PVLAN

  This feature provides the ability to use 802.1X on private VLAN ports.

- NAC LAN Port 802.1X enhancements

  This feature provides support for non-responsive devices (those without Cisco Trust Agents). All the features of LAN port 802.1X are available for these devices.

- Inaccessible authentication bypass (IAB)

  This feature provides MAC authentication bypass enhancements and web authentication bypass for IAB.

- NAC LAN port IP enhancements

  This feature provides support for non-responsive or exception devices and URL redirects.

- DAI enhancements

  This feature adds PACLs that co-exist with dynamic ARP inspection and increase the limit for the maximum number of hosts that can be supported on a port.

- SCP w/SSHv2

  This feature upgrades SCP so that it can use SSHv2 for enhanced security.

- SFTP w/SSHv2

  This feature upgrades SFTP to use SSHv2 for enhanced security.

Software Release 8.6 Unsupported Software Features

This section lists the unsupported software features in software release 8.6(x):

- IEEE 802.1ad provider bridge
- MRP
- CAM use optimization
- MAC age timeout statistics
- Per VLAN MAC address limiting
- MAC utilization rate
- Counters for unknown frames
- HTTPS transport for web authorization proxy

Features for Supervisor Engine Software Release 8.5

Note Maximum switching performance is achieved when all switch components are fabric enabled. The presence of nonfabric-enabled switching modules might impact overall switching performance.

These sections describe the features in software release 8.5, 25 October 2005:

Software Release 8.5 Hardware Features

Software release 8.5 provides initial support for these modules and chassis:

- FlexWAN2—enhanced FlexWAN module (WS-X6582-2PA)
- Inline power daughter card (WS-F6K-48-AF)
- ZR XENPAK—10GBASE-ZR XENPAK transceiver module for SMF, 1550-nm wavelength, SC connector (XENPAK-10GE-ZR)
- Dense Wavelength Division Multiplexing (DWDM) XENPAK

Software Release 8.5 Software Features

Software release 8.5 provides support for these software features:

- NAC - L2 IP:

  Network Admission Control (NAC) L2 IP extends NAC support to Layer 2 switches and is intended to be deployed on Layer 2 Ethernet access ports at the network edge. The device to be validated must be attached to the Layer 2 port within the first Layer 3 hop. NAC L2 IP does not require 802.1X support on the hosts. Performing posture validation at the edge maximizes the portion of the network that is protected by the access control, and allows posture validation to be performed within a VLAN. NAC - L2 IP acts at the same point in the network as the NAC - L2 IEEE 802.1X feature, but uses different mechanisms to initiate posture validation, to carry the communication between host and authentication server, and to enforce the resulting access limitations.

- NAC - L2 IEEE 802.1X:

  NAC L2 IEEE 802.1X extends NAC support to Layer 2 switches and wireless access points. Combining it with 802.1X provides a unified authentication and posture validation mechanism at the Layer 2 network edge. This helps protect the network from attack by machines with an insufficient antivirus posture. Performing posture validation at the edge maximizes the portion of the network that is protected and allows posture validation to be performed within a VLAN.

- Web Authentication Proxy:

  Web-based authentication proxy is an HTTP-based authentication mechanism that allows clients that do not support the 802.1X supplicant functionality to integrate into the Cisco Identity Based Networking Services (IBNS) and NAC strategy using a standard web browser. This feature addresses network environments in which a supplicant code is not available for the given client

platform, and environments in which the configuration of the end client is not under administrative control (where the installation and use of an IEEE 802.1X supplicant cannot be enforced despite its availability) and yet controlled access to the network is desired.

- IEEE 802.1X - Inaccessible Authentication Bypass:

  On an 802.1X-enabled port, if a device fails authentication because access to the back-end authentication server is not available, the port is denied network access. Inaccessible authentication bypass allows network access to critical user-designated servers when access to the back-end authentication server is not available.

- MAC Authentication Bypass:

  MAC authentication bypass is a MAC address-based authentication mechanism that allows clients that do not support the 802.1X supplicant functionality to integrate into the Cisco Identity Based Networking Services (IBNS) and NAC strategy using the client MAC address. MAC authentication bypass addresses network environments in which a supplicant code is not available for a given client platform and environments in which the configuration of the end client is not under administrative control (where the installation and use of an IEEE 802.1X supplicant cannot be enforced despite its availability) and yet controlled access to the network is desired.

- GOLD - Generic Online Diagnostics:

  GOLD implements a number of health checks both at system startup and while the system is running. GOLD runs in the background and complements the high-availability features, such as NSF/SSO, alerting them if a disruption occurs. GOLD provides a variety of diagnostic tests; some tests run nonintrusively in the background while other tests can be triggered on demand.

- IEEE 802.3ah Ethernet OAM - Operations Administration and Maintenance:

  Support for Ethernet OAM refers to a suite of tools designed to install, monitor, and troubleshoot Ethernet networks. Ethernet OAM relies on a new sublayer in the data link layer to provide a way to assist in detecting failing links or fault conditions. This feature provides some key capabilities that enable you to monitor the health of the network and pinpoint the location of the failing links.

- Flex Links:

  Flex links are a pair of Layer 2 interfaces (switch ports or port channels) configured to act as a backup to another Layer 2 interface. Flex links provide an alternative solution to the Spanning Tree Protocol (STP), allowing you to turn off STP and still provide basic link redundancy.

- SmartPorts - Customizable Configuration:

  Provides you with a convenient way to save and share common, customizable configurations. It extends the functionality of both SmartPorts and the **set alias** command by providing a way to define and name a macro and associate one or more commands to that macro. You create a macro using a CLI command and then enter a list of commands that are part of that macro.

- Text Configuration Mode Optimization:

  Reduces the amount of time required for the system to boot up when you use the text configuration mode. This enhancement ensures that downtime, planned or otherwise, will be shorter.

- Firewall Autostate Capability:

  The existing autostate feature has been extended as part of this enhancement to add the capability to inform the FWSM when either the first or last port has joined or left a VLAN assigned to that FWSM, excluding the FWSM port channel and trunk port to the MSFC. The FWSM responds to a VLAN down condition by marking the interfaces associated with that VLAN as “Autostate Down.” An interface marked as “Autostate Down” is considered a failed interface for purposes of interface-monitoring health status and may cause a failover if the interface-policy threshold is met.

- WCCP:

The Web Cache Communication Protocol (WCCP) is a Cisco-developed content-routing technology that allows you to integrate cache engines (such as the Cisco Cache Engine 550) into your network infrastructure.

Software Release 8.5 Unsupported Software Features

This section lists the unsupported software features in software release 8.5(x):

- The following QoS features and the commands that are used to configure them are not supported in a system with a Supervisor Engine 720 in software release 8.5(x):
  - RSVP
  - COPS
  - NBAR

Features for Supervisor Engine Software Release 8.4

Note Maximum switching performance is achieved when all switch components are fabric enabled. The presence of nonfabric-enabled switching modules might impact overall switching performance.

These sections describe the features in software release 8.4, 29 December 2004:

- Software Release 8.4 Hardware Features, page 50
- Software Release 8.4 Software Features, page 51
- Software Release 8.4 Unsupported Software Features, page 53

Software Release 8.4 Hardware Features

Software release 8.4 provides initial support for these modules and chassis:

- Supervisor Engine 32 (WS-SUP32-GE-3B) with PFC3B and MSFC2A
- 6000 W power supply (WS-CAC-6000W)

  Supported in all Catalyst 65xx and Catalyst 65xx-E chassis except for the 6503 and 6503-E (form-factor difference). Only the 6513 and -E chassis support the full 6000 W; the other chassis rely on software to current limit the power supply.
- 2700 W power supply (PWR-2700-AC, PWR-2700-DC)

  Supported in the Cisco 7606 chassis. Cannot be used in the 65xx chassis.
- Catalyst 6500 E-series chassis enhancements

  Enhanced power capacity allowing higher-powered modules to be installed (including PoE support for 30 W per-port devices). Additionally, support for the 67xx switching modules in the 6503-E chassis is provided with software release 8.4(1) and later releases.
- WS-X6148A-GE-TX, WS-X6148A-GE-45AF

  48-port 10/100/1000BASE-T, RJ-45 connectors. WS-X6148A-GE-45AF provides inline power for IP telephones with the WS-F6K-GE48-AF daughter card.
- WS-X6148-FE-SFP

48-port 100FX Ethernet, requires SFPs. The following SFPs are introduced with the WS-X6148-FE-SFP module:

  - GLC-FE-100FX (100BASE-FX SFP)
  - GLC-FE-100LX (100BASE-LX SFP)
  - GLC-FE-100BX-U, GLC-FE-100BX-D (100BASE-BX SFP)

- WS-X6148A-RJ-45, WS-X6148A-45AF

  48-port 10/100BASE-TX, RJ-45 connectors. WS-X6148A-45AF provides inline power for IP telephones with the WS-F6K-GE48-AF daughter card.

- WS-X6196-RJ-21, WS-X6196-21AF

  96-port 10/100BASE-TX, RJ-21 connectors. WS-X6196-21AF provides inline power for IP telephones with the WS-F6K-FE48X2-AF daughter card.

- 1000BASE-BX SFP (GLC-BX-1310, GLC-BX-1490)
- 4-slot 6504-E chassis (WS-C6504-E) (Supported in software release 8.4(2) and later releases.)

Software Release 8.4 Software Features

Software release 8.4 provides support for these software features:

- EtherChannel enhancements:

  Provides for an automatic failover of traffic from one port in an EtherChannel to another port in the same EtherChannel when one of the ports in the channel exceeds a configurable error threshold within the specified interval. The port failover only occurs if there is an operational port left in the EtherChannel. If the failed port is the last port in the EtherChannel, the port does not enter the "port failover" state and continues to pass traffic regardless of the type of errors being received. Single, nonchanneling ports do not go into the port failover state; these ports go into the errdisable state when the error threshold is exceeded within the specified interval.

- VLAN translation:

  VLAN mapping has been enhanced to allow you to map *any* type of VLAN to any other type of VLAN without any VLAN range restrictions. VLAN mapping is now configurable on a per-port or per-ASIC basis.

- MAC-based ACLs:

  PFC3B and PFC3BXL allow the ACL lookups on *all* packet types using the MAC ACL. This feature is useful for doing MAC-based matching on all packets regardless of whether the packet is IP version 4, IP version 6, IPX, MPLS, and so on. You can utilize this feature to rate limit all traffic ingressing a VLAN to some specific value by coupling an aggregate policer with a match-all MAC ACL.

- SmartPorts enhancements:
  - Ciscorouter SmartPorts template
  - Ciscoswitch SmartPorts template
  - Ciscodesktop SmartPorts template
  - Ciscoipphone SmartPorts template
  - Ciscosoftphone SmartPorts template
  - Global SmartPorts template
- System profiles (lockdown profiles):

With the profile files, you can eliminate the features or processes that may pose security risks (for example, disabling CDP or turning off auto-trunking on a port) to your switch. A profile file that has most of the security risks disabled is also known as a "lockdown" profile. A lockdown profile changes the functionality of the switch from enabling access to preventing access by default. When a lockdown profile is applied, you must manually enable the features that were disabled by the profile file.

- CRAM algorithm:

  The compression and reordering of the ACL masks (CRAM) feature optimizes the mask usage across the different ACLs. This optimization promotes mask sharing and results in more efficient usage of the TCAM and the ability to program more ACLs in the TCAM.

- ACL statistics:

  When you select the **statistics** keyword with the **set security acl** command set, the statistics are stored for the ACEs or the ACLs (VACLs and PACLs). The ACL statistics are disabled by default and can be enabled on a per-ACL, per-VLAN, or per-ACE basis.

- NetFlow top talkers:

  The **show mls statistics entry ip top-talkers** command can display the statistics for the netflows with the maximum amount of network usage. The NetFlow entries are pulled out of the NetFlow table based on the number of packets that each flow has. The results are displayed in descending order with the top talkers being the entries with the largest packet count. You can get the statistics for the network (the top 32 talkers will be displayed) or for a specified number of flows such as the top 1 or 2 talkers.

- Configuration rollback:

  Provides for rolling back the current switch configuration file to a previously saved configuration file if the current file produces undesirable system results. This rollback feature provides a command to set multiple configuration "checkpoint" files. If you no longer want the current configuration file to run on the switch, you can return to one of these configuration checkpoint files quickly and with the least possible disturbance to switch functionality.

- SPAN—Multiple destination ports can be specified in each local SPAN session.
- NetFlow—Create NetFlow table entries on a per-VLAN basis.
- Time domain reflectometer (TDR) support added for the following modules: WS-X6748-GE-TX, WS-X6148A-GE-TX, WS-X6148A-GE-45AF, WS-X6148A-RJ-45, and WS-X6148A-45AF.
- Layer 2 protocol tunneling enhancements:

  Provides for specifying the drop and shutdown thresholds for individual protocols on a per-port basis. If you configure thresholds only and do not specify a protocol, the packets are rate limited cumulatively irrespective of protocols. If you specify a threshold for a protocol on a port, the packets are rate limited on a cumulative basis and then per-protocol thresholds are applied to the packets.

- 802.1X authentication failure VLAN:

  On a traditional 802.1X port, the switch does not provide access to the network until the supplicant that is connected to the port is authenticated by verifying its identity information with an authentication server. With the authentication failure VLAN feature, you can configure the authentication failure VLAN on a per-port basis and after three failed 802.1X authentication attempts by the supplicant, the port is moved to the authentication failure VLAN where the supplicant can access the network.

- 802.1X RADIUS server failover enhancements:

Before software release 8.4(1), when the active RADIUS server went down or was unreachable, the 802.1X authentication timed out before the backup RADIUS server could become active. With software release 8.4(1) and later releases, some RADIUS server timer values are now configurable and the **show radius** command has been enhanced to show the active RADIUS server.

- Shaped round robin (SRR):

  Provides egress traffic shaping and is supported as an option on Supervisor Engine 32 **1p3q8t** ports. If you do not enable SRR, weighted round robin (WRR) is used. SRR only allows a queue to use the specific amount of bandwidth that the weight allocates.

- Support for the following MIBs:
  - CISCO-SECURE-SHELL-MIB
  - CISCO-RADIUS-MIB
  - CISCO-COPY-CONFIG-MIB
  - CISCO-VLAN-TRANSLATION-MIB
  - MAU-MIB
  - CISCO-MAU-EXT-MIB
  - POWER-ETHERNET-MIB
  - CISCO-POWER-ETHERNET-EXT-MIB
  - CISCO-NETFLOW-MIB
  - HC-ALARM-MIB
  - CISCO-VMPS-MIB enhancement
  - RMON-MIB enhancement
  - CISCO-STP-EXTENSIONS-MIB enhancement
  - CISCO-CATOS-ACL-QOS-MIB enhancement
  - SMON-MIB/CISCO-RMON-CONFIG-MIB enhancement
  - CISCO-QOS-PIB-MIB enhancement
  - CISCO-SWITCH-ENGINE-MIB enhancement
  - CISCO-L2-TUNNEL-CONFIG-MIB enhancement

Software Release 8.4 Unsupported Software Features

This section lists the unsupported software features in software release 8.4(x):

- The following QoS features and the commands that are used to configure them are not supported in a system with a Supervisor Engine 720 in software release 8.4(x):
  - RSVP
  - COPS
  - NBAR
- The following features are not supported with a Supervisor Engine 720 or Supervisor Engine 32 in software release 8.4(x):
  - TCP Intercept.
  - WCCP.

Features for Supervisor Engine Software Release 8.3

Note Maximum switching performance is achieved when all switch components are fabric enabled. The presence of nonfabric-enabled switching modules might impact overall switching performance.

These sections describe the features in software release 8.3, 3 May 2004:

Software Release 8.3 Hardware Features

Software release 8.3 provides initial support for these modules and chassis:

Note With software release 8.3(1), WS-SUP720-3BXL and WS-SUP720-3B support the same feature set and have the same performance characteristics as WS-F6K-PFC3A.

- WS-SUP720-3BXL—Supervisor Engine 720 with PFC3BXL:
  - 1-GB DRAM
  - Policy Feature Card 3BXL
  - Multilayer Switch Feature Card 3 (MSFC3):

    1-GB DRAM

    64-MB bootflash
- WS-F6K-PFC3BXL—Policy Feature Card 3BXL:

  Use WS-F6K-PFC3BXL= to upgrade a WS-SUP720 with a PFC3BXL. WS-F6K-PFC3BXL= includes 1-GB memory upgrades for the Supervisor Engine 720 and the MSFC3. Refer to this publication for more information:

  http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/hardware/Config_Notes/78_16220.html
- WS-SUP720-3B—Supervisor Engine 720 with PFC3B:
  - 512-MB DRAM
  - Policy Feature Card 3B
  - Multilayer Switch Feature Card 3 (MSFC3):

    256-MB DRAM

    32-MB bootflash
- WS-F6K-PFC3B—Policy Feature Card 3B:

  There are no memory-only upgrade options for WS-SUP720-3B.

  Use WS-F6K-PFC3BXL= to upgrade a WS-SUP720-3B with a PFC3BXL. WS-F6K-PFC3BXL= includes 1 GB memory upgrades for the Supervisor Engine 720 and the MSFC3. Refer to this publication for more information:

  http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/hardware/Config_Notes/78_16220.html

- Dense Wavelength Division Multiplexing (DWDM) GBIC transceivers
- Coarse Wave Division Multiplexer SFP (CWDM-SFP) (1000BASE-CWDM SFP)
- GLC-T (1000BASE-T SFP)
- XENPAKs:

  XENPAK-10GB-SR—10GBASE-SR Serial 850-nm short-reach multimode (MMF)

  XENPAK-10GB-CX4—10GBASE-CX4 provides support for copper up to 15 meters
- WS-X6748-SFP module (48-port Gigabit Ethernet SFP)

Note Support for the WS-X6748-SFP module started in software release 8.3(2) and later releases.

Software Release 8.3 Software Features

Software release 8.3 provides support for these software features:

- DHCP snooping:

  DHCP snooping provides security against Denial-Of-Service (DoS) attacks that are launched using DHCP messages by filtering DHCP packets and building and maintaining a DHCP-snooping binding table. DHCP snooping uses trusted and untrusted ports to filter the DHCP packets that are received by the switch.
- IP source guard:

  IP source guard prevents IP spoofing by allowing only the IP addresses that are obtained through DHCP snooping on a particular port.
- Dynamic ARP inspection:

  Dynamic ARP inspection (DAI) uses the binding information that is built by DHCP snooping to enforce the advertisement of bindings to prevent “man-in-the-middle” attacks. These attacks can occur when an attacker intercepts and selectively modifies communicated data to masquerade as one or more of the entries in a communication association. DAI adds an extra layer of security to ARP inspection by verifying that the ARP packet's MAC address and IP address match an existing DHCP snooping binding in the same VLAN.
- Port ACLs (PACLs):

  Prior to software release 8.3(1), there were two types of access-lists—VACLs and IOS ACLs. The VACLs are applied to Layer 2 and Layer 3 forwarded traffic while the Cisco IOS ACLs are only applied to Layer 3 forwarded packets. Both access list types are applied to VLANs and filter traffic based on the packet header information.

  Typically, a VLAN is composed of many physical ports. A PACL provides you with the extra granularity to filter traffic on a specific physical port. A PACL is an access list that is mapped to a physical port. Like VACLs, PACLs are applied to both Layer 2 and Layer 3 forwarded packets.
- Fabric enhancements with Supervisor Engine 720:

  The integrated 720-Gbps switch fabric supports a high-availability failover to the standby switch fabric.
- Automatic QoS enhancement:

  Allows you to clear the automatic QoS configuration by using a port-based **clear** command and a global **clear** command.
- Multiple collectors for NDE:

Allows NetFlow export data to be sent to two destinations simultaneously.

- PBF enhancements:

  Simplifies the process of setting and committing the security ACLs and adjacency information.

- EtherChannel enhancements:

  Clears and restores channel-based counters on a per-protocol and per-channel basis.

- Disables an auxiliary VLAN until an IP phone is detected:

  Provides security for the auxiliary VLANs by ensuring that the auxiliary VLAN is not enabled until an IP phone is detected. As soon the switch detects the presence of an IP phone, the auxiliary VLAN is enabled.

- 802.1X unidirectional controlled port:

  Allows you to use wake-on LAN technology (also referred to as remote wake-up) to perform unattended system backups or software upgrades on hosts attached to the switch.

- 802.1X with ACL assignments:

  When you configure 802.1X with ACL assignments, you can automatically configure the QoS ACLs and VACLs to a user once the user is authenticated. The RADIUS server sends a QoS VLAN-based ACL, QoS port-based ACL, or VACL policy name with the authentication success packet. The policy that is associated with the policy name is already configured on the switch through the CLI. The policy is converted into a set of ACEs and then installed on the switch. Once you configure the 802.1X ACL assignments, the switch does the following:

  - Authenticates the user(s)
  - Uses DHCP snooping or dynamic ARP inspection to obtain the IP address of the user(s)
  - Expands the ACL using the IP address(es) and programs the PFC

- 802.1X user distribution:

  Configuring the 802.1X user distribution feature allows you to distribute users that have the same group name across multiple VLANs. Prior to software release 8.3(1), the RADIUS VLAN assignment feature supported by 802.1X took the VLAN number obtained from the RADIUS server and added all users to that VLAN. With software release 8.3(1) and later releases, you can load balance 802.1X-authenticated users that are configured under one group name by distributing them evenly between VLANs.

- 802.1X RADIUS accounting and tracking:

  Allows you to send 802.1X user accounting information to the RADIUS server.

- 802.1X authenticated identity-to-port description mappings:

  Assigns a port description to the 802.1X port based on the information received from the RADIUS server. This feature makes use of an AV-Pair, “Supplicant Name,” to uniquely assign a port description for an authenticated user.

- DNS resolution for a RADIUS server configuration:

  Allows you to configure the RADIUS server using a DNS name in addition to IP addresses.

- VTP version 3 enhancement—MST mapping propagations:

  Provides the ability to distribute the MST database across the network using VTP version 3.

- 802.1s:

  The Multiple Spanning Tree (MST) feature is the IEEE 802.1s and is an amendment to 802.1Q. MST extends the 802.1w Rapid Spanning Tree (RST) algorithm to multiple spanning trees. This extension provides for both rapid convergence and load balancing in a VLAN environment. In software

release 8.3(1), the MST protocol is compliant with IEEE 802.1s and is backward compatible with 802.1D STP, 802.1w, the Rapid Spanning Tree Protocol (RSTP), and the Cisco PVST+ architecture that was implemented in previous software releases.

- Layer 2 PDU rate limiting:

  The Layer 2 PDU rate limiters are supported in hardware, and they rate limit traffic on the Local Target Logic (LTL) index. You can configure up to four rate limiters. You can configure rate limiters to limit the following PDU types globally on the switch:

  - Spanning-tree BPDUs—IEEE and SSTP, CDP, UDLD, VTP, and PAgP
  - Layer 2 protocol tunnel-encapsulated PDUs
  - 802.1X port security

- Automatic module shutdown:

  Automatically shut down any module based on the number of times that the module resets itself within a specified time frame. A module that frequently resets itself can disrupt traffic load balancing. By setting the automatic module shutdown, you can limit the number of times that the module resets itself before shutting down completely.

- System crash-info files:

  The crash-info file contains extended system information that is captured very quickly when the system reloads due to an error condition. Like the core-dump file, the crash-info file is stored in the file system. The information in the crash-info file should be used in addition to the core-dump information and does not replace that information. By examining both the crash-info file and core-dump file, Cisco TAC can better analyze the error condition.

- MSFC autostate enhancements:
  - Normal autostate mode—Autostate shuts down (or brings up) Layer 3 interfaces/subinterfaces on the MSFC and the Multilayer Switch Module (MSM) when specific port configuration changes occur on the switch.
  - Autostate exclude mode—Allows you to specify the ports to exclude from autostate.
  - Autostate track mode—Tracks key VLAN or port connections to the MSFC.

- Port security on trunk ports

- MAC address monitoring:

  Because the Catalyst 6500 series switches learn the source MAC addresses automatically, the system is vulnerable to flooding of spoofed traffic and potential Denial of Service (DoS) attacks. To prevent traffic flooding and DoS attacks, you can monitor the number of MAC addresses that are learned by the system on a per-port, per-VLAN, or per-port-per-VLAN basis.

- CoS-to-CoS maps on IEEE 802.1Q tunnel ports:

  Ingress Cos-to-CoS mapping is supported on 802.1Q tunnel ports on WS-X6704-10GE, WS-X6724-SFP, and WS-X6748-GE-TX switching modules. The CoS-to-CoS mapping feature is disabled on ports that are not configured as 802.1Q tunnel ports.

- Back up the VMPS configuration file:

  When you reboot a Catalyst 6500 series switch that is configured as a VMPS server, the VMPS requests that are sent by the clients are queued by the TFTP server until the VMPS server downloads the VMPS configuration file from the VMPS server. To ensure that client access is not delayed during a system reboot, you can configure the switch to back up the VMPS configuration file locally and use this file until it is has downloaded the current VMPS configuration file from the remote TFTP server.

- SCP:

  Secure Copy (SCP) provides a secure method for copying crypto image files. SCP relies on Secure Shell (SSH) and allows you to copy a crypto file to and from the system through an encrypted channel.

- Comparing configuration files:

  You can compare the configuration files that are stored on the system to determine the differences between the configuration files or to check if changes have been made to the system configuration.

- Using Secure Shell Encryption for Telnet sessions (support for SSH version 2)

  Secure Shell encryption provides security for Telnet sessions and other remote connections to the switch. Secure Shell encryption is supported for remote logins to the switch only. Telnet sessions that are initiated from the switch cannot be encrypted. To use this feature, you must install the application on the client accessing the switch, and you must configure Secure Shell encryption on the switch. The current implementation of Secure Shell encryption supports SSH version 1and version 2. SSH version 1 supports the DES and 3DES encryption methods, and SSH version 2 supports the 3 DES and AES encryption methods. Secure shell encryption can be used with RADIUS and TACACS+ authentication.

- GLBP:

  Gateway Load Balancing Protocol (GLBP) provides load-balancing over multiple gateways through a single virtual IP address and multiple virtual MAC addresses. This protocol is similar to Host Standby Router Protocol (HSRP) and Virtual Router Redundancy Protocol (VRRP). GLBP protects data traffic from a failed router or circuit, while allowing packet load sharing between a group of redundant routers.

- IGMP version 3 snooping with Multicast Multilayer Switching (MMLS):

  Prior to software release 8.3(1), IGMP version 3 snooping operated only with MMLS disabled on the supervisor engine. This resulted in the IGMP version 3 snooping capability being available on individual bridged VLANs but there was no IGMP version 3 snooping support for hardware-switched Layer 3 flows. Software release 8.3(1) and later releases provides IGMP version 3 snooping with MMLS integration.

- CLI command logging:

  Entering the **show log command** displays recorded commands executed from the CLI through Telnet, SSH, or console sessions. The log provides a history of the events and operations performed by users.

- Generic Attribute Registration Protocol (GARP) VLAN Registration Protocol (GVRP) support on Supervisor Engine 720

- Verify software images:

  Because a software image goes through a sequence of transfers before it is copied into the memory of the switch, the integrity of the image is at risk each time that it is downloaded from Cisco.com. The image size and checksum are automatically checked when the image is copied, but these types of checks do not ensure that the downloaded image has not been corrupted. To ensure the integrity of any images that you download, you can use the **set image-verification** command. You can set image verification to work when booting, after the image has been copied, or before a system reset.

- Bidirectional PIM:

Supervisor Engine 720 supports hardware forwarding of bidirectional PIM groups. To support bidirectional PIM groups, the Supervisor Engine 720 implements a new mode called designated forwarder (DF) mode. The designated forwarder is the router that is elected to forward packets to and from a segment for a bidirectional PIM group. In DF mode, the supervisor engine accepts packets from the reverse path forwarding (RPF) interface and from the DF interface.

- VLAN manager enhancements:

  Instead of reserved VLANs, we now have only user and internal VLANs. VLAN manager no longer permanently sets aside VLANs for features that require them; they are now dynamically assigned as needed. The entire VLAN range (1 to 4094) is now available for user (and internal) VLANs.

- QoS policer burst value change:

  The burst value changed from 1–32000 (1 Kb to 32 Kb) to 1–256000 (1 Kb to 256 Mb)

- PFC3 output QoS ACLs trust change:

  Egress traffic uses the same trust values as ingress traffic when attaching ACLs to a VLAN. Any traffic trusted at ingress will also be trusted at egress.

- UDI - Unique Device Identifier:

  The Cisco Unique Device Identifier (UDI) provides inventory identification in the output of the **show inventory** command.

- System sanity check:

  The **show system sanity** command runs a series of checks on the configuration and highlights possible conditions that could lead to problems with your configuration.

- System health check:

  The **show system health** command tracks registers, counters, and software patch "kick-ins" and compiles a list of entities it considers as "unhealthy" for the system. The feature also lists CPU and memory utilization.

- Expanded memory support:

  Software release 8.3(1) and later releases support up to 1-GB DRAM on the Supervisor Engine 720.

- SmartPort macros:

  SmartPort macros provide a convenient way to save and share common configurations. You can use SmartPort macros to enable features and settings based on the location of a switch in the network and for mass configuration deployments across the network.

- Virtual Router Redundancy Protocol (VRRP)

  VRRP eliminates the single point of failure inherent in the static default routed environment.

Software Release 8.3 Unsupported Software Features

This section lists the unsupported software features in software release 8.3(x):

- The following QoS features and the commands that are used to configure them are not supported in a system with a Supervisor Engine 720 in software release 8.3(x):
  - RSVP
  - COPS
  - NBAR
- The following features are not supported with a Supervisor Engine 720 in software release 8.3(x):

- TCP Intercept.
- WCCP.

Features for Supervisor Engine Software Release 8.2

Note Maximum switching performance is achieved when all switch components are fabric enabled. The presence of nonfabric-enabled switching modules might impact overall switching performance.

These sections describe the features in software release 8.2, 4 December 2003:

- Software Release 8.2 Hardware Features, page 60
- Software Release 8.2 Software Features, page 61
- Software Release 8.2 Unsupported Software Features, page 62

Software Release 8.2 Hardware Features

Software release 8.2 provides initial support for these modules and chassis:

- The 96-port 10/100BASE-TX switching module (WS-X6148X2-RJ-45) is supported. WS-X6148X2-45AF has the voice daughter card (WS-F6K-FE48X2-AF).

  Voice daughter card features include the following:

  - Inline power for Cisco IP phones, Cisco Aironet wireless access points, and IEEE 802.3af-compliant devices
  - Power to any of the 96 ports
  - Up to 15.4 W per port (limited to a total of 740 W per daughter card)
  - 48 ports may be powered at 15.4 W each
  - 96 ports may be powered at 7 W each
- Two additional voice daughter cards are supported:
  - WS-F6K-48-AF for the WS-X6148-RJ-45 and WS-X6148-RJ-21 48-port 10/100BASE-TX switching modules
  - WS-F6K-GE48-AF for the WS-X6148-GE-TX and WS-X6548-GE-TX 48-port 10/100/1000BASE-TX switching modules

  These voice daughter card features are supported:

  - Inline power for Cisco IP phones, Cisco Aironet wireless access points, and IEEE 802.3af-compliant devices.
  - Power to all 48 ports (up to 15.4 W per port)

  Note To determine your exact power needs, use the CCO power calculator at this URL:

  http://www.cisco.com/go/powercalculator
- The 1000BASE-ZX SFP (GLC-ZX-SM), single mode only, dual LC connector is supported.
- XENPAK-10GB-LX4—10GBASE-LX4 Serial 1310-nm multimode (MMF)

- The Catalyst 6500 series switch service modules are supported with Supervisor Engine 720 in software release 8.2(1) and later releases. The "Service Modules" section on page 24 lists the service modules.
- The Catalyst 6500 series switch voice modules are supported with Supervisor Engine 720 in software release 8.2(1) and later releases. The "Voice Modules" section on page 21 lists the voice modules.
- The ATM modules are supported with Supervisor Engine 720 in software release 8.2(1) and later releases. The "ATM Modules" section on page 25 lists the ATM modules.
- The FlexWAN module is supported with Supervisor Engine 720 in software release 8.2(1) and later releases. The "FlexWAN Module" section on page 22 lists the FlexWAN module.

Software Release 8.2 Software Features

Software release 8.2 provides support for these software features:

- Specifying a custom 802.1Q EtherType field

  By specifying a custom EtherType field, your network can support Cisco and non-Cisco switches that do not use the standard 0x8100 EtherType to identify 802.1Q-tagged frames.
- Supervisor Engine 720 supports these QoS-related features:
  - Egress QoS
  - Egress DSCP mutation
  - Optional egress DSCP rewrite
  - Disable DSCP rewrite
  - QDE
  - Automatic QoS
- IEEE 802.3af power compliance
- Cisco IP Phone support enhancements:
  - Support for a high-powered phone to negotiate a low-power mode (dimmed screen) when powered by a pre-standard Cisco PoE daughter card.
  - Support for a high-powered phone to negotiate a high-power mode (full screen brightness) when powered by a IEEE 802.3af Cisco PoE daughter card.
- Support for new SFPs and XENPAKs:

  For information on SFP and XENPAK support, see the "SFP, XENPAK, and GBIC Behavior" section on page 75.
- New **auto-10-100** keyword for the **set port speed** command:

  Use the **auto-10-100** keyword on ports that support speeds of 10/100/1000 Mbps. Using the **auto-10-100** keyword makes the port behave the same as a 10/100-Mbps port that has the speed set to **auto.** The speed and duplex are negotiated (the 1000-Mbps speed does not take part in the negotiation).
- New **auto-configure** keyword for the **set port security** command:

  Automatically configured addresses are not aged out and are retained across reboots. These addresses are retained if a secure port shuts down because of a security violation, if the port is administratively disabled, or if port security is disabled.
- Auto-MDI/MDIX capability:

You can use either straight or crossover cable, and the module will automatically detect and adjust for the cable type. For complete details, see the "Auto-MDI/MDIX" section on page 89.

- In software release 8.2.2, improved supervisor engine failover rates with high-availability enabled are as follows:
  - In flow-through, truncated and compact modes, the Supervisor Engine 1 and Supervisor Engine 2 failover time is less than 500 ms.
  - In flow-through mode, the Supervisor Engine 720 failover time is about 1.5 seconds. In truncated or compact mode, the Supervisor Engine 720 failover time is less than 3 seconds.
- In software release 8.2.1, the supervisor engine failover rates with high-availability enabled are as follows:
  - In flow-through mode, the Supervisor Engine 1 and Supervisor Engine 2 failover time is less than 500 ms. With Supervisor Engine 720, the failover time is approximately 1.5 seconds.
  - In truncated or compact mode, the Supervisor Engine 2 failover time is about 1.5 seconds. With Supervisor Engine 720, the failover time is approximately 3.5 seconds.
- The maximum number of permanent CAM entries has been increased from 128 to 256.
- Support for the following MIBs:
  - CISCO-VLAN-MEMBERSHIP-MIB enhancement
  - CISCO-CATOS-ACL-QOS-MIB enhancement

Software Release 8.2 Unsupported Software Features

This section lists the unsupported software features in software release 8.2(x):

- The following QoS features and the commands that are used to configure them are not supported in a system with a Supervisor Engine 720 in software release 8.2(x):
  - RSVP
  - COPS
  - NBAR
- The following automatic QoS **clear** commands are visible in the CLI but are not supported in software release 8.2(x):
  - **clear qos autoqos**
  - **clear port qos** *mod/port* **autoqos**
- The following features are not supported with a Supervisor Engine 720 in software release 8.2(x):
  - TCP Intercept.
  - WCCP.
  - IGMP version 3.

Features for Supervisor Engine Software Release 8.1

Note Maximum switching performance is achieved when all switch components are fabric enabled. The presence of nonfabric-enabled switching modules might impact overall switching performance.

These sections describe the features in software release 8.1, 30 June 2003:

Software Release 8.1 Hardware Features

Software release 8.1 provides initial support for these modules and chassis:

- Supervisor Engine 720 (WS-SUP720)
- 4000 W DC-power supply (PWR-4000-DC)
- Cisco 7609 router chassis, 9 vertical slots (CISCO7609)
- Catalyst 6509-NEB-A chassis, 9 vertical slots (6509-NEB-A)
- 48-port 10/100/1000 Ethernet Module, RJ-45, fabric enabled (WS-X6748-GE-TX)
- 24-port Gigabit Ethernet Module, requires SFPs, fabric enabled (WS-X6724-SFP)
- 4-port 10-Gigabit Ethernet Module, requires XENPAKs, fabric enabled (WS-X6704-10GE)
- XENPAK—Up to 10-kilometer range, 10GBASE-LR Serial 1310-nm long-haul (SMF) (XENPAK-10GB-LR)

Software Release 8.1 Software Features

Software release 8.1 provides support for these software features:

- VTP version 3—VTP version 3 differs from earlier VTP versions in that it does not directly handle VLANs. VTP version 3 is a protocol that is only responsible for distributing a list of opaque databases over an administrative domain. When enabled, VTP version 3 provides the following enhancements to previous VTP versions:
  - Support for extended VLANs.
  - Support for the creation and advertising of private VLANs.
  - Improved server authentication.
  - Protection from the “wrong” database accidentally being inserted into a VTP domain.
  - Interaction with VTP version 1 and VTP version 2.
  - Ability to be configured on a per-port basis.
- CallHome—You can use the CallHome feature to set your switch to e-mail or you can page a syslog message of a specified severity to a specified e-mail or pager address or a set of e-mail or pager addresses.
- Logging system information to a TFTP, FTP, or rcp server—You can configure your system to periodically execute up to 15 **show** commands and log the output of these commands in a file on a specified server. The information in the output can be used for debugging and troubleshooting purposes.
- TCL scripting—Tool Command Language (TCL) is a simple, programmable, text-based language that allows you to write command procedures that expand the capabilities of the built in set of commands. It is used primarily with interactive programs such as text editors, debuggers, illustrators, and shells. The Catalyst 6500 series switch software supports TCL version 7.4.

- VLAN port-provisioning verification—When VLAN port-provisioning verification is enabled, you must specify the VLAN name in addition to the VLAN number when assigning switch ports to VLANs. Because you are required to specify both the VLAN name and the VLAN number, this verification feature helps ensure that ports are not inadvertently placed in the wrong VLAN.
- FTP support for downloading software images.
- Increased number of command aliases—Use the **set alias** command to define up to 100 command aliases (shorthand versions of commands) for frequently used or long and complex commands.
- Increased number of MAC addresses supported (4097) for port security.
- Configure 802.1X guest VLANs on a per-port basis.
- Pipe command—Introduces a UNIX style output piping functionality to the Catalyst software. This feature enables you to *pipe* the output of a command, such as **show port**, to another command for post-processing.
- CMM online diagnostics are supported in software release 8.1(1) and later releases.
- Support for the following MIBs:
  - ENTITY-MIB enhancement
  - CISCO-UDLDP-MIB enhancement
  - CISCO-RF-MIB
  - CISCO-CALLHOME-MIB
  - CISCO-VTP-MIB enhancement
  - CISCO-SYS-INFO-LOG-MIB
  - CISCO-CAT6K-CROSSBAR-MIB enhancement
  - CISCO-ENTITY-ASSET-MIB
  - CISCO-SWITCH-ENGINE-MIB enhancement
  - CISCO-CATOS-ACL-QOS-MIB enhancement
  - CISCO-PAGP-MIB enhancement
  - CISCO-LAG-MIB enhancement
  - CISCO-IGMP-SNOOPING-MIB enhancement

Software Release 8.1 Unsupported Software Features

This section lists unsupported software features:

- The following QoS commands are present in software release 8.1(x) images, but are not tested or supported:
  - **set qos dscp-rewrite enable**
  - **set qos dscp-rewrite disable**
  - **output** keyword for the **set qos acl** and **clear qos acl** commands
  - **set qos dscp-mutation-map**
  - **clear qos dscp-mutation-map**
  - **dscp-mutation-map** keyword for the **show qos** commands
- The following QoS features and the commands used to configure them are not supported in a system with a Supervisor Engine 720 in software release 8.1(x):
  - No DSCP rewrite
  - Egress QoS
  - PFC3 egress DSCP mutation
  - Automatic QoS
  - RSVP
  - COPS
  - QoS and voice macros
  - NBAR
  - QDE
- The following features are not supported with a Supervisor Engine 720 in software release 8.1(x):
  - TCP Intercept.
  - WCCP.
  - IGMP version 3.

Features for Supervisor Engine Software Releases 7.1 Through 7.6

For a complete list of hardware and software features for software releases 7.1 through 7.6, refer to the *Release Notes for Catalyst 6500 Series Switch Software Release 7.x* at this URL:

http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/catos/7.x/release/notes/OL_1982.html

Features for Supervisor Engine Software Releases 6.1 Through 6.4

For a complete list of hardware and software features for software releases 6.1 through 6.4, refer to the *Release Notes for Catalyst 6500 Series Switch Software Release 6.x* at at this URL:

http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/catos/6.x/release/notes/78_11235.html

Features for Supervisor Engine Software Releases 5.1 Through 5.5

For a complete list of hardware and software features for software releases 5.1 through 5.5, refer to the *Release Notes for Catalyst 6500 Series Switch Software Release 5.x* at this URL:

http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/catos/5.x/release/notes/78_6218.html

Usage Guidelines and Restrictions

These sections provide usage guidelines and restrictions for the Catalyst 6500 series switches:

System and Supervisor Engine

This section contains usage guidelines, restrictions, and troubleshooting information that apply to the supervisor engine and to the switch at the system level:

Note For information about AC power requirements and heat dissipation, refer to Chapter 2, "Preparing for Installation," of the *Catalyst 6500 Series Switch Installation Guide*:

http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/hardware/Chassis_Installation/Cat6500/6500_ins.html

- On a Catalyst 6500 series switch that runs software release 8.7(3), the 10-Gigabit Ethernet uplink ports on a WS-SUP32-10GE-3B engine cannot transfer frames over 10100 bytes. The switch that operates with Supervisor Engine 720 does not support large frames over 9760 byte maximum transmission units (MTUs).

Note The large frames with 10100 bytes is not supported in Cisco IOS software.

Workaround: None. (CSCsg73697)

- On a Catalyst 6500 series switch that runs software release 8.7(3), enabling set cam zero-mac-filter using **set cam zero-mac-filter enable** command discards all the traffic that comes with the destination MAC address 00-00-00-00-00-00, and it is not seen in CAM table. The MAC address is learnt when the set cam zero-mac-filter is disabled.

  Workaorund: None. (CSCsw16568)

- On a Catalyst 6500 series switch with WS-SUP32-10GE-3B that runs software release 8.7(1) or later, the configuration of the supervisor module is lost during an upgrade. This problem occurs when the switch operates in binary configuration mode.

  Workaround: Upgrade the software in text configuration mode. (CSCsx47569)

- For Software Release 8.3(1) and later, the total power available in a system running combined mode will be equal to the larger of a) 1.67 * the smaller supply or b) the larger supply. The previous behavior was to add the output of both supplies. (CSCea60961)

- If a high percentage of traffic over 32 Gbps is switched through a 13-slot chassis, protocols such as UDLD, CDP, and STP, may fail and result in network downtime. Both Supervisor Engine 2 and Supervisor Engine 720 systems are affected. This problem affects only the 13-slot chassis. This problem is usually seen when the uplink ports on the Supervisor Engine are passing traffic but there needs to be traffic on other modules to reach 32 Gbps. (CSCee23154)

- Moving a Supervisor Engine 2 and MSFC2 between a Catalyst 6509 switch and a Catalyst 6503 switch may corrupt the MSFC2 NVRAM.

  Workaround: Save the configuration to Flash memory and restore the configuration after the move. (CSCdy83320)

- Cisco 1200 series wireless access points may not receive power from a Catalyst 6500 series switch. This problem usually happens if the switch is reset or power cycled, if the module in the switch to which the access point is connected is reset or power cycled, or if a fast switchover occurs.

  When this problem happens, a system message such as the following is displayed:

  %SYS-3-PORT_DEVICENOLINK Device on port m/p powered but no link up

However, this system message may not always be seen depending on the type of module used.

Workaround: Disable the Ethernet port that the access point is connected to for 2 to 3 minutes and then enable the port again. If this does not resolve the problem, replace the AIR-RM20A radio module with the AIR-RM21A module. (CSCeg05847)

- The broadcast suppression counter undercounts packets that have a size evenly divisible by 16:
  - A 64-byte packet should be counted as 4 but is counted as 3
  - 65- to 79-byte packets are correctly counted as 4
  - An 80-byte packet should be counted as 5 but is counted as 4
  - 81- to 95-byte packets are correctly counted as 5
  - A 96-byte packet should be counted as 6 but is counted as 5

  (CSCdr56784)
- For software release 8.3(4) and later releases, the **show fabric status** command does not indicate the fabric speed.
- The **set option** command set was inadvertently removed from software releases 7.6(7) and 8.3(1). The **set option** command set will be available again (engineering mode only) in software releases 7.6(8) and 8.3(3).
- If you are running software release 8.3(1) or later on a Supervisor Engine 720 in text configuration mode and downgrade to software releases 8.1(x) or 8.2(1), the switch will crash with a TLB exception when the downgraded image is booted.

  Workaround: To prevent this problem, enter the **clear config all** command before doing the downgrade. This problem is applicable only to the Supervisor Engine 720 in text configuration mode. Note that you do not see this problem when downgrading to software release 8.2(2). (CSCec56329)
- With Supervisor Engine 720, there is a CLI inconsistency between Cisco IOS images for the MSFC and Catalyst images for the supervisor engine due to changes to rate-limiter groups. The inconsistency does not affect rate limiting; it only affects the data displayed using the **show mls rate** command on the MSFC and **show rate limit** command on the supervisor engine. The inconsistency may cause the supervisor engine to enable/disable TTL Fail rate limiters as a side effect when some rate limiters, including RPF Fail, No-route, and ICMP unreachable, are enabled/disabled.

  The inconsistency is due to a group change on the MSFC. There are two rate-limiter groups that were previously defined as follows:

  a) ACL input and ACL output

  b) RPF Fail, No-route, ICMP unreachable, and TTL Fail

  In group b, for the MSFC, “TTL Fail” was replaced with “IP errors” in Cisco IOS Release 12.2(17a)SX1 but this change was not made in the supervisor engine software until software release 8.3(1).

  If the MSFC and Catalyst images do not use the same grouping policy, the inconsistency problem remains. To avoid the inconsistency, note the following software guidelines:
  - With Catalyst software release 8.3(1) and later releases, you must use Cisco IOS Release 12.2(17a)SX1 or later images.
  - With Catalyst software releases 8.1(x) and 8.2(x), you must use images earlier than Cisco IOS Release 12.2(17a)SX1.

- When you save your configuration to a file when running software release 8.3(1), all trunk configurations are saved with the allowed VLAN range of 1 to 4094. If you try to reuse this configuration when downgrading to an earlier software release, all trunk-related commands fail because the earlier software release is expecting a VLAN range of 1 to 1005 and 1025 to 4094.
- MAC addresses—Theoretical and recommended limits
  - PFC/PFC2: 128K theoretical maximum, 32K recommended
  - PFC3: 64K theoretical maximum, 32K recommended
- A Supervisor Engine 2 might show 100 percent traffic utilization in the **show system** and **show traffic** command displays. This problem is cosmetic and does not indicate true traffic utilization. To correct the problem, you need to reprogram the Supervisor Engine 2 EPLD. To reprogram the EPLD, download the epld-sup2-trafficmeter-swupdate.hZ image and follow the instructions documented in the README.epld_update file. (CSCdx54751)
- The **standby use-bia** option should not be used in an HSRP configuration. MLS entries are not created when you use the **standby use-bia** option. When you configure the **standby use-bia** option, if an HSRP active interface goes up and down, there will be no router CAM address for the standby VLAN interface. Without the router CAM entry, no shortcuts are created. This problem is independent of any MSFC Cisco IOS release. (CSCdz17169)
- When upgrading an image (image synchronization) from the active supervisor engine to the standby supervisor engine, the standby supervisor engine and possibly other modules might report "Minor hardware problem in Module X" to the console display.

  Workaround: Either reset the individual modules reporting this error, or reset the switch. (CSCdv51172)
- ATA Flash PC cards are supported with software release 7.5(1) and later releases. However, we recommend using software release 7.6(1) and later releases because these releases have corrected earlier Flash file corruption issues.
- When the diagnostic mode is set to **complete** (**set test diaglevel complete** command), the system might display "local bus stall error" messages when modules come online. The messages are erroneous and can be ignored. This problem does not occur when the system is configured to run **minimal** (default) diagnostics. (CSCdw09555)
- In a redundant supervisor engine configuration, both supervisor engines must be running the same boot ROM version. For information on upgrading the boot ROM version, refer to the *Catalyst 6500 Series Switch Supervisor Engine 2 Boot ROM and Bootflash Device Upgrade Installation Note* at

  http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/hardware/Config_Notes/78_12667.html
- For Supervisor Engine 1, the minimum boot ROM required for software release 5.4(1) and later releases is 5.3(1). For Supervisor Engine 2, the minimum boot ROM required for software release 6.2(2) and later releases is 6.1(3).
- IPX Layer-3 switched traffic with a SAP encapsulation type (Novell Ethernet 802.2) to non-SAP encapsulation type (Novell Ethertype's: Ethernet 802.3, Ethernet II, and Ethernet SNAP) and vice versa, follows the software forwarding path (via MSFC/MSFC2) on the PFC and PFC2 forwarding engines. This might cause high CPU utilization on the MSFC/MSFC2.

  Workaround: Avoid SAP to non-SAP and vice versa encapsulation changes when doing IPX Layer 3 switching.
- When a Supervisor Engine 2 is running in truncated mode with QoS enabled and policers configured, the traffic subject to policing that is received on a fabric-enabled switching module destined to a non-fabric-enabled switching module is overpoliced. The traffic is policed to half the value configured in the policer. (CSCds02280)

- If you perform a manual switchover or reset a switch while high-availability events are waiting in the queue of the standby supervisor engine, when the events will be completely processed is not known, and all configurations might not synchronize to the standby supervisor engine properly. (High-availability events are the result of changing the configuration through the CLI.) We suggest that after changing the configuration, you allow additional time before resetting the switch to allow the supervisor engine to process all synchronized events. (CSCdp59261)
- With a PFC2, traffic that matches an egress reflexive ACL is handled by the MSFC2 as a partially switched flow. (CSCds09775)
- Changing the console port baud rate from 19,200 to 38,400 incorrectly sets the console port to 9600 baud. After a reset, the console port baud rate is 38,400. Changing the rate to 38,400 from any other setting works correctly. (CSCdk86876)
- In extremely rare conditions, if you enter the **show module** command, the status of the MSFC on the standby supervisor engine might be displayed as **other**. This has no impact on MSFC behavior and you should ignore this display. (CSCdp87997)
- With PFC or PFC2 and a standard network topology as shown below where you have multicast senders in the core and multicast receivers on the access layer:

		Layer 3 distribution No. 1		
	/		\	
Layer 2 access				Core
	\		/	
		Layer 3 distribution No. 2		

  If both distribution switches have two supervisor engines and MSFCs and are configured to provide multicast functionality for the same access VLANs, then you will see high CPU utilization on the non-DR routers due to non-RPF traffic. (CSCdr74908)
- If you configure aging for UDP, it could slow down the removal of TCP entries belonging to a terminated connection. You might see entries no longer used in the NetFlow table being aged with the regular aging time of all the NetFlow entries instead of the very fast LDA aging.

  Workaround: Enable the fast UDP aging only when it is really needed (for example, when load balancing UDP). (CSCdp79475)
- In a system with a Supervisor Engine 2 and WS-X6101 (ATM LANE) modules, ACLs that you configured from the CLI or COPS on the ATM LANE module ingress ports do not work. (CSCds09425)
- With Supervisor Engine 1 and PFC, online diagnostic failures are experienced on modules during bootup, online insertion, or module reset if you reconfigure the QoS default-action MAC ACL to include an aggregate policer with an action of drop. The system default does not include an aggregate policer in the default-action MAC ACL. The likelihood of the diagnostics failures increases as the amount of traffic being policed (dropped) by that aggregate policer increases. As the rate value specified in the policer decreases, the amount of traffic matching all ACLs specifying that aggregate policer increases. (CSCdp15471)

  Note For switches with Supervisor Engine 2 and PFC2, CSCdp15471 is resolved in software release 6.1(1a).

- In a 13-slot chassis with redundant Supervisor Engine 2s, if the diagnostic mode is set to **bypass**, the bringup time of the system may be longer.

Workaround: Set the diagnostic mode to **minimal** or **complete**. (CSCdw09563)

- In a 13-slot chassis with a large number of installed modules (especially 48-port 10/100 modules), there might not be enough NVRAM to save the configuration. In this event, use the text file configuration mode.

Modules and Switch Ports

This section contains usage guidelines, restrictions, and troubleshooting information that apply to modules and switch ports:

- On a Catalyst 6500 series switch that runs software release 8.7(3), the Maintenance Intermediate Points (MIPs) continue to send AIS PDUs when the intermediate switch/module is reset. This problem is observed in a network in which an edge switch and an aggregation switch is connected, and when CFM AIS and Link-OAM are enabled.

  Workaround:

  1) Disable CFM/AIS/Link-OAM on the administratively disabled ports and its connected peer ports.

  2) Set the default port status of the switch to disable. The unused ports will stay in the disabled state and will not appear in the nondefault configuration.

  3) Keep all the unused ports unplugged.

  4) Enable the Link-OAM and AIS feature only on the active ports which are required for the CFM protocol functionality. (CSCsy91845)

- The WS-X6724-SFP modules are not recognized correctly on the Catalyst 6500 series switch. For this reason, the recommended supervisior engine software release is as follows:
  - For the 24-port Gigabit Ethernet switching module hardware version 2.2 and earlier versions, the recommended supervisor engine software release is 8.1(2). (CSCee30191)
  - For the 24-port Gigabit Ethernet switching module hardware version 2.3 and later versions, the recommended supervisor software release is 8.3(3). (CSCee30191)
- It is possible to power down a Switch Fabric Module from the CLI before it comes online but we do not support this action. Powering down a Switch Fabric Module while it is coming online can cause conflicting switching mode change operations to occur simultaneously which can result in delays in restoring the data path and unpredictable switch behavior. This Switch Fabric Module behavior is not going to be addressed by any hardware or software modifications. Rather, we are advising you to wait to power down a Switch Fabric Module until it comes online.
- Later model 10/100/1000 switching module ports (such as WS-X6148-GE-TX, WS-X6548-GE-TX, and WS-X6516-GE-TX) that are set to half-duplex may count runts along with collisions. This is a hardware issue and is not related to any software releases. (CSCec79736)
- With software release 8.2(1), new CLI commands have been developed to deal with packet buffer memory errors that could occur with the WS-X6248-RJ-45, WS-X6348-RJ-45, and WS-X6348-RJ45V modules (these errors are documented in CSCec37610).

  You are given two options to deal with these errors. The first option is to put the ports with this error condition in err-disable state. The second option is to power cycle the module. Putting the ports in the errdisable state is configured as the default. Additionally, there is a new errdisable-timeout cause: packet-buffer-error.

  The new CLI is as follows:

```
Console>(enable) set errordetection packet-buffer ?
errdisable
powercycle
```

```
Console>(enable) set errordetection packet-buffer errdisable
Packet buffer error detection set to errdisable.
Console>(enable) set errordetection packet-buffer powercycle
Packet buffer error detection set to powercycle.
Console>(enable)

Console> show errordetection
Inband error detection:   disabled
Memory error detection:        disabled
Port counter error detection:  disabled
Packet buffer error detection: powercycle
Console> show errdisable-timeout
ErrDisable Reason           Timeout Status
---------------------       -------------------
bpdu-guard                  disable
channel-misconfig           disable
duplex-mismatch             disable
udld                        disable
crossbar-fallback           disable
packet-buffer-error         disable
other                       disable

Interval: 300 seconds

Port      ErrDisable Reason
-----      ----------------------
5/1         packet-buffer-error
5/2         packet-buffer-error
5/3         packet-buffer-error
5/4         packet-buffer-error
```

- The WS-X6548-GE-TX, WS-X6548V-GE-TX, WS-X6148-GE-TX, and WS-X6148V-GE-TX modules do not support the following:
  - More than 1 Gbps of traffic per EtherChannel
  - ISL trunking
  - VLAN translation
  - Jumbo frames
  - 802.1Q tunneling
  - Traffic storm control
  - In software release 7.6(x) and earlier releases: Ingress SPAN sources when the switch is operating in truncated and compact modes (also applies to the WS-X6516A-GBIC module)

Note With software release 8.2(1), due to firmware enhancements, the oversubscription problems associated with EtherChannel are no longer an issue with the WS-X6548-GE-TX module.

- If a link partner has auto-mdix enabled, this will interfere with the TDR cable diagnostics test and the test results will be misleading. Auto-mdix should only be enabled on one end of the link. (CSCea73643)
- With some legacy modules (such as WS-X6148-RJ45/RJ21, WS-X6248, and WS-X6348), jumbo frames are passing through even though jumbo frames have been disabled on the ports. This behavior is expected for the port ASICs on these legacy modules. (CSCeb20374)
- The 8-port T1 PSTN interface module (WS-X6608-T1) voice ports will not retain their configuration across switch reboots if the switch is in text config mode.

Workaround: Manually configure the T1 voice module after each switch reset. This problem only applies if the switch is in text config mode. (CSCdv04864)

- When the WS-X6548-RJ-45 is operating at 10Mb mode, pre-1994 NICs on ports 7, 15, 23, 31 and 39 may have connectivity problems. If these ports are having connectivity problems, enable auto-polarity detection in the NIC driver (where this is available) or use any of the other module ports. For additional information, refer to CSCdx15951.
- With a Switch Fabric Module installed and the switch in flow-through mode, resetting a fabric-enabled module during periods of high traffic might cause other modules to reset. This situation can cause temporary traffic loss until the reset module comes back online. This problem is only seen when the diagnostics are set to **minimal** or **complete** (**set test diaglevel** command).

  Workaround: Power cycle the module (**set module power up/down** *mod_num*). (CSCdw04861)
- When you connect a Cisco IP Phone 7960 to a port on the 10/100 Ethernet switching module that supplies inline power, the phone might lose power after switching from wall power back to inline power. The link remains up but the phone is down. This problem only occurs at 10 Mbps.

  Workaround: Disconnect and then reconnect the cable between the switch port and the phone. (CSCdr37056)
- If a module fails to come online after a software upgrade, as a workaround, reset the module to bring it online. (CSCdu77125)
- When a module is reset due to a firmware download, the module may take 30 to 50 seconds (depending on the type of module) to come online and another 2 to 30 seconds (depending upon whether PortFast is configured or not) for spanning tree related events.
- The Distributed Forwarding Card (WS-F6K-DFC) and 16-port Gigabit Ethernet switching module (WS-X6816-GBIC) are not supported in systems running Catalyst software on the supervisor engine and Cisco IOS software only on the MSFC. These items are supported on systems running Cisco IOS Release 12.1(8a)E or later on both the Supervisor Engine 2 and the MSFC2. For more information, refer to the Release Notes for 12.1(8a)E on Cisco.com:

  http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/ios/12.1E/native/release/notes/OL_2310.html
- You cannot reset individual ports on WS-X6608-T1 or -E1 modules. To reset a port, reset the module. (CSCds19417)
- When you hot insert a module into a Catalyst 6000 or 6500 series chassis, be sure to use the ejector levers on the front of the module to seat the backplane pins properly. Inserting a module without using the ejector levers might cause the supervisor engine to display incorrect messages about the module.

  If you see minor hardware failures or sync errors on bootup, reconfirm that the supervisor engine and all the switching modules are fully seated, the ejector levers are fully depressed, and the thumbscrews are fully tightened.
- There is a cabling issue with the 48-port 10/100BASE-TX switching module (WS-X6248-TEL). The WS-X6248-TEL module RJ-21 connectors **do not** support Category 3 RJ-21 telco connectors and cabling. Using Category 3 connectors and cabling causes carrier sense errors. The connectors are keyed for Category 5 telco connectors and cables. You **must** use Category 5 RJ-21 telco connectors and cables.
- 24-port 100FX switching modules (WS-X6224-100FX-MT) with a hardware version of 1.1 or lower only support IEEE 802.1Q VLAN trunking; they do not support ISL trunking. Do not configure ISL trunks on 24-port 100FX switching modules (WS-X6224-100FX-MT) with a hardware version of 1.1 or lower. The restriction against ISL VLAN trunking is the only known problem with hardware version 1.1 or lower of these modules. If you do not require ISL VLAN trunking, these modules are

fully functional. The ISL VLAN trunking problem has been corrected in hardware version 1.2 or later of these modules. If you wish to return a WS-X6224-100FX-MT module with a hardware version of 1.1 or lower, contact Cisco Systems.

You can identify WS-X6224-100FX-MT hardware versions using one of the following two methods:

- Command-line interface (CLI) method—Use the **show version** command to identify the hardware version of the WS-X6224-100FX-MT module as follows:

```
Console> show version
< ... output truncated ... >
Mod Port Model               Serial #    Versions
--- ---- ------------------- ----------- -------------------------------------
< ... output truncated ... >
5   24   WS-X6224-100FX-MT   SAD02470006 Hw : 1.1
< ... output truncated ... >
Console>
```

  The example shows a WS-X6224-100FX-MT module with a hardware version of 1.1; this version does not support ISL VLAN trunking.

- Physical inspection method—Look for the part number that is printed on a label on the outer edge of the component side of the module. Versions 73-3245-04 or lower do not support ISL trunking.

- When multiple instances are configured over a LANE trunk and when the root for one of the instances is moved, the other instances stop receiving BPDUs. The fix for this problem will be available in a Cisco IOS Release for the ATM LANE module later than Release 12.1(2)E1. (CSCdr88794)
- The **show module** command might show different versions for different modules in the chassis when upgraded with versioning enabled. (CSCdr55665)
- The following **debounce timer** command options have been added to increase the jitter tolerance on 10/100 UTP ports to make them interoperable with out-of-spec NICs:
  set option debounce enable—Sets debounce to 3.1 seconds on 10/100 cards.
  set option debounce disable—Sets debounce to 300 ms. The default is 300 ms debounce. (CSCdp56343)
- If a 16-port Gigabit Ethernet fabric-enabled GBIC switching module (WS-X6516-GBIC) is fully populated with 1000BASE-T GBICs (WS-G5483), it might be difficult to access the insertion/removal bracket on the module.

  Workaround: Remove at least two of the 1000BASE-T GBICs before removing the module. (CSCdw25775)
- If a 16-port Gigabit Ethernet fabric-enabled GBIC switching module (WS-X6516-GBIC) is fully populated with 1000BASE-T GBICs (WS-G5483), it might be difficult to remove the module in the slot above the WS-X6516-GBIC module.

  Workaround: Remove at least two of the 1000BASE-T GBICs before removing the module above the WS-X6516-GBIC module. (CSCdx19538)
- A SPAN session with a 10/100 source port and a Gigabit destination port might result in duplicated packets on the destination port. (CSCea32926)
- Voice modules, such as a WS-X6624-FXS and a WS-X6608-T1/E1, fail to register with the Cisco CallManager if a WS-X6148-GE-TX is used for the Cisco CallManager connection.

  Workaround: Use another type of module, such as a WS-X6148-RJ45V, for the Cisco CallManager connection.

  This problem is resolved in Cisco CallManager Release 3.3(3)sr1. (CSCeb38168)

- The WS-X6748-GE-TX module, and possibly other modules, might take an unusually long time to come online. This problem is seen only when Layer 2 port security ratelimiters *are not* enabled, there is significant traffic from Ixia on all the trunk ports, and the switch is rebooting. The problem is not seen when Layer 2 port security ratelimiters are enabled.

  Workaround: Enable Layer 2 port security ratelimiters by entering the **set rate-limit l2port-security enable** command. Note that this command is not supported in truncated mode and is supported only on PFC3. (CSCee44405)

SFP, XENPAK, and GBIC Behavior

This section contains usage guidelines, restrictions, and troubleshooting information that apply to SFP, XENPAK, and GBIC behavior:

- All non-Cisco SFPs and XENPAKs come up as "Faulty" and will not work. The port is marked "Failed." A syslog is printed stating that the integrity check on the transceiver has failed. This behavior is true for SFPs since software release 8.1(1), and XENPAKs since software release 8.1(2).
- All unsupported Cisco SFPs and XENPAKs come up as "Unknown". A syslog is printed stating that the transceiver is unsupported. This behavior is true for unsupported Cisco SFPs and XENPAKs in software release 8.2(1) only. In software release 8.1(x), all unsupported Cisco SFPs and XENPAKs come up as "Faulty."
- All Cisco and non-Cisco SX, LX, LH and ZX GBICs will work with the correct port type. Other third-party GBICs (non-SX, non-LX, non-LH and non-ZX) may or may not work starting with software release 7.2(1). That is, the GBIC might be marked "Faulty," and the port marked "Failed" or they might come up as "Unknown." Some third-party GBICs recognized by the software as "Unknown" may work.

EtherChannel

This section contains usage guidelines, restrictions, and troubleshooting information that apply to EtherChannel:

- The WS-X6548-GE-TX, WS-X6548V-GE-TX, WS-X6148-GE-TX, and WS-X6148V-GE-TX modules have a limitation with EtherChannel. EtherChannel is supported on these modules for all configurations (10, 100, and 1000 Mbps speeds) but be aware of the following cases of oversubscription when you are configuring these modules:

  Note With software release 8.2(1), due to firmware enhancements, the following oversubscription problems are no longer an issue with the WS-X6548-GE-TX and WS-X6548V-GE-TX modules.

  - On these modules there is a single 1-Gigabit Ethernet uplink from the port ASIC that supports eight ports. For EtherChannel, the data from all links in a bundle goes to the port ASIC, even though the data is destined for another link. This data consumes bandwidth in the 1-Gigabit Ethernet link. For these modules, the sum total of all data on an EtherChannel cannot exceed 1 Gigabit.
  - You could also run into the oversubscription problem if you have four WS-X6148-GE-TX or WS-X6148V-GE-TX modules running at 100 Mbps with 48 EtherChannels, and each channel having 4 ports (1 port per module).

  - If you use the Switch Fabric Module with the WS-X6548-GE-TX or WS-X6548V-GE-TX modules, that configuration would avoid the oversubscription problem. The Switch Fabric Module interface filters and distributes the packets to the correct module per the EtherChannel bundle hash. However, you must have one port per module in the bundle. Once you have more than one port of a WS-X6548-GE-TX or WS-X6548V-GE-TX module in an EtherChannel bundle it will start oversubscribing.

Note Using channeling for Layer 1 redundancy is a valid configuration option with these modules.

- Catalyst switches running supervisor engine software releases 6.2(x) and later cannot form a channel with HP-server NICs. TLV checking, which was added for PAgP packets in software release 6.2(1), uncovered a problem with HP-UX systems where the packet length was set incorrectly. HP has an updated driver available that can solve the problem; contact HP Technical Support for details. (CSCdu84575)
- When you enable UplinkFast, the EtherChannel port path cost (set with the **set channel cost** command) for a 4-port 10/100 EtherChannel is less than the port path cost of a parallel Gigabit Ethernet link. This situation causes the slower 4-port EtherChannel to forward and the Gigabit Ethernet link to block. (CSCds22895)

Quality of Service

This section contains usage guidelines, restrictions, and troubleshooting information that apply to QoS:

- The ToS byte remains unchanged in bridged multicast packets when you enable Multicast Multilayer Switching (MMLS). The system does not support multiple, different rewrites for a single packet. A Layer 3 rewrite is generated for multicast; there is no rewrite for the Layer 2 forwarding.

  For example, you have a multicast source in VLAN 13, a receiver in the same VLAN, and a QoS IP ACL configured and mapped to the source's ingress port that matches the traffic flow and specifies DSCP 31. When you disable the MMLS feature, the IP packets captured on the receiver's port contain a ToS byte of x7C (the expected result). When you enable the MMLS feature and establish a Layer 3 flow, the captured packet's ToS byte is unchanged from the value sent by the source. A ToS rewrite occurs on the replicated packets in the outgoing VLANs (other than VLAN 13). No ToS rewrite occurs for the packets that are bridged in the same incoming VLAN. (CSCdm72364)
- The rate and burst parameters for microflow/aggregate policing are specified in terms of kbps (kilobits per second) and Kb (kilobits). However, the following should be noted:
  - Rate specification—1 kbps is equivalent to 1000 bits per second (as opposed to 1024 bits per second)
  - Burst specification—1 Kb is equivalent to 1024 bits
- Running two or more QoS commands from different Telnet or SSH sessions could cause the switch to hang or reset. We recommend that you do not execute two or more QoS commands simultaneously from different Telnet, SSH, or console sessions. (CSCdy74994)
- With Supervisor Engine 1 and Supervisor Engine 2, the **set port qos** *mod/por*t {**port-based** | **vlan-based**} command configures all ports on switching modules with **1p1q0t/1p3q1t** QoS port architecture.
- Microflow policing does not support policing of identical flows arriving on different interfaces simultaneously. Attempts to do so lead to incorrectly policed flows. (CSCdt72147)

- If there is an error in installing any COPS policy, a successful commit is sent to the PDP even if the policy was not correctly installed. In such situations, any modifications to the port's role combination does not install the correct policy on the port and might result in a switch reset. (CSCdp66572)
- If you create a security ACL with the redirect option and then replace the module that has the redirect port with another kind of module, the security ACL does not have the redirect port list anymore.

  Workaround: Manually modify the security ACL with the new redirect port information. (CSCdp74757)
- If you download a COPS ACL containing a policer to the switch and the switch cannot support the exact rate/burst supplied by the policer, no message informs you that the rate/burst was rounded off to the nearest value that the hardware could support. (CSCdr28715)
- If the QoS policy source is set to COPS, Catalyst 6500 series switches do not support nonzero WRED minimum values. If a COPS QPM server sends down a COPS policy with a nonzero WRED minimum value, no error report is returned to the COPS server. As a result, there is no indication to the user that the WRED minimum specified in the COPS policy was not used. (CSCdr28819)
- On a Catalyst 6500 series switch, when the switch QoS policy source is COPS, no COPS roles are defined for a port, and the port policy source is COPS, the values that you set for the QoS configuration (such as queue mappings and sizes) are inappropriate. For example, all CoS values get mapped to the strict-priority queue on a 1p2q2t or 1p1q4t port type. This situation can lead to bandwidth starvation for other ports in the switch, especially, if these ports with a strict-priority queue are generating high rates of traffic.

  Workaround: Avoid this problem is to either configure a COPS role on all ports in the switch or configure all ports without a COPS role to use local policy. (CSCdp44965)
- If a large number of QoS ACLs are defined on the system during switch bootup, some packets might get switched before the QoS ACLs are installed in hardware. This scenario would result in some packets getting an incorrect ToS or no policing applied. After the QoS ACLs are installed in hardware, the correct ToS and policers are applied. It is considered inappropriate to block traffic from flowing until all the QoS policy is installed. (CSCdp68608)
- After setting the QoS policy source to local, you might need to wait approximately 20 seconds before the QoS policy source can be set back to COPS. (CSCdp34367)
- The COPS policy fails to install on ports with a large number of QoS policers.

  Workaround: Unmap the local ACLs before installing the COPS policy. (CSCdp63138)
- Use the QoS strict-priority queues for your highest-priority traffic only. The strict-priority queues are designed to accommodate only a limited volume of traffic. If you overload the strict-priority queues, the supervisor engine cannot service the standard queues. (CSCdm90683)
- With QoS disabled, an EtherChannel can contain ports with both strict-priority queues and ports without strict-priority queues. With QoS enabled, an EtherChannel cannot contain both port types. If you enable QoS, ports drop out of any EtherChannels that contain both port types.
- When COPS is the QoS policy source, TFTP traffic and switching might be affected if a COPS policer is configured with a rate or burst value that the Catalyst 6500 series switch cannot support. (CSCds16976)
- Except for ports that support 1p1q0t/1p3q1t and 1q2t/1p2q2t, the **set port qos trust** command and the **trust-ipprec** and **trust-dscp** port keywords are not supported on 10-, 10/100-, and 100-Mbps ports. Instead, configure ACLs with the **trust-cos**, **trust-dscp**, and **trust-ipprec** ACE keywords. Note that the **trust-cos** port keyword can be used on 10-, 10/100-, and 100-Mbps ports to enable receive-queue drop thresholds.

Note The WS-X6148-RJ45, WS-X6148-RJ45V, WS-X6148-RJ-21, and WS-X6148-RJ21V modules also support trust-cos, trust-ipprec, and trust-dscp.

- To avoid the case where all traffic is out of profile, the burst size specified in a QoS policing rule must be at least as large as the maximum packet size permissible in the traffic to which the rule is applied.
- With heavy COPS protocol traffic between either the COPS-DS client or the COPS-RSVP client and the PDP, it is possible for a connection keep-alive timeout event to occur and for the COPS connection manager to miss a Client Close from the PDP. When this happens, the switch might have an exception later. (CSCdp64213)

Automatic Quality of Service with Cisco IP Phones

This section contains usage guidelines, restrictions, and troubleshooting information that apply to configuring automatic QoS with Cisco IP Phones:

- Cisco IP Phone 79xx phone marking—The Cisco IP Phone 79xx does not mark its protocol packets such as DHCP, TFTP, and DNS packets with nonzero DSCP values. This causes the IP phone to see DHCP, DNS, and/or TFTP timeouts when an uplink port on a switch is oversubscribed. This results in the IP phone taking a long time to register with the Cisco CallManager or the IP phone might not register at all. Additionally, phone directories, IP phone services, call logs, ring tones, and so on become unavailable or do not work correctly for the IP phone user.

  Workaround: Use custom QoS ACLs instead of automatic QoS on the switch. For this problem, caveat CSCdy62735 has been logged against the Cisco IP phone.

- Cisco CallManager is not marking protocol packets—This Cisco CallManager issue is similar to the above issue (CSCdy62735). If uplink ports are oversubscribed, TFTP packets from the Cisco CallManager are dropped by the switch.

  Workaround: Use custom QoS ACLs instead of automatic QoS on the switch.

- Cisco IP Phone 79xx phone reset problem—The Cisco IP Phone 79xx resets when the IP phone's PC port is oversubscribed. This problem is seen in rare circumstances; the IP phone's PC port should not get oversubscribed unless there is a broadcast storm or some other outage in the network. This problem was addressed with caveat CSCdy50584 and has been resolved in Cisco CallManager release 3.3(2) SPC.
- CDP issue—CDP protocol packets are not CoS labeled correctly. This problem prevents the switch from properly prioritizing the “hello” packets being sent to and from the IP phone. Under heavy traffic conditions, this results in loosing the IP phone from the CDP perspective. This problem was addressed with caveat CSCdy53339 and has been resolved in software release 7.6(1) and later releases.
- Cisco SoftPhone does not tag any voice signaling packets—With this problem, voice signaling packets from Cisco SoftPhones get dropped and Cisco Soft Phones fail to connect to the Cisco CallManager and the user cannot make or receive calls if the switch uplink ports are oversubscribed.

  Workaround: Use custom QoS ACLs instead of automatic QoS on the switch. For this problem, caveat CSCdy60186 has been logged against Cisco SoftPhone.

Multicast

This section contains usage guidelines, restrictions, and troubleshooting information that apply to multicast protocols and traffic on the switch:

- Support for multicast sources protected by the IDSM-2 module requires using Cisco IOS as the software on the Catalyst 6500 series switch with the SPAN reflector feature (monitor session service module) enabled. Using the Catalyst operating system on the Catalyst 6500 series switch with the IDSM-2 module does not allow multicast switching in hardware for multicast sources protected by the IDSM-2 module.
- With bidirectional PIM enabled, a TTL=1 multicast packet is not bridged to the ingress VLAN when rate limiting of TTL failure is enabled and index redirection of TTL failure is configured. This problem is seen with PFC, PFC2, and PFC3A. It is not seen with PFC3BXL. (CSCed66503)
- The Cisco IOS **last-member-query-interval** command allows you to increase the time that the router waits for host responses to IGMP GS queries (group-specific queries). The switch implements this interval statically, as defined in RFC 2236 (the default is 1000 ms). If you configure a router that is connected to the switch with a "last-member-query-interval" that is greater than the default interval as defined in RFC 2236, and you enable IGMP snooping on the switch, then hosts connected to the switch might have packets discarded if these hosts are unable to respond to GS queries within the interval implemented on the switch. The supervisor engine software does not modify its behavior based on the last-member-query-interval that is configured on the connected routers. Do not modify the last-member-query-interval on the routers that are connected to the switch if IGMP snooping is enabled.

  Workaround: Disable IGMP snooping on the switch. (CSCdu72041)
- A new command, **set igmp ratelimit** [**disable** | **enable**], has been added to the 6.x, 7.x, and 8.x software releases starting with the following releases:
  - 6.4(7)
  - 7.6(5)
  - 8.2(1)

  IGMP rate limiting is disabled by default. In the 6.4(x) software release, rate-limit counters are supported only in text configuration mode. The **set igmp ratelimit** [**disable** | **enable**] command is supported in both text and binary configuration modes in all software release trains.

  If IGMP rate limiting and multicast are enabled, multicast router ports might age out sporadically because the rate of the multicast control packets (such as PimV2-hellos or IGMP-General Queries) exceed the IGMP rate-limit watermarks that were configured. The default values for these watermarks is 100. The workaround (documented in CSCea44331) is to increase the PimV2-hellos rate limit; we recommend that you set the value to 3000 using the **set igmp ratelimit pimv2 3000** command. You can also increase the IGMP-General Queries rate limit; we recommend that you set the value to 500 using the **set igmp ratelimit general-query 500** command.
- In software release 8.3(1) and later releases, IGMP rate-limiting commands are deprecated and a multicast rate-limiting mechanism is introduced. Through this mechanism, IGMP control packets are rate limited. Because the IGMP rate-limiting mechanism is deprecated and a new multicast rate-limiting mechanism is introduced, all caveats specific to IGMP rate limiting do not apply to software release 8.3(1) and later releases. The new commands introduced in software release 8.3(1) are the **set multicast ratelimit** commands and the **show multicast ratelimit-info** command. For details on these commands, see the *Catalyst 6500 Series Switch Command Reference*, software release 8.3(1).

- The maximum number of supported user-configured multicast CAM entries is 256. After adding 256 permanent or static multicast CAM entries, the switch produces the error "Failed to add CAM entry." After adding 256 static or permanent CAM entries, all attempts to add more static or permanent multicast entries fail. This is true for the same port/same VLAN, different port/same VLAN, and different port/different VLAN.
- If you install an MSFC2 and the VLAN interface that is defined on the MSFC2 is in shutdown mode, bridged IP multicast traffic will not be policed. (CSCdu12731)
- The only ports that send out the GMRP LeaveAll messages are the ports that have previously received GMRP joins.
- With software releases 7.1(1) and later, the maximum number of Layer 2 multicast entries is 15488.
- If RGMP-enabled routers connected to an RGMP-enabled Catalyst 6500 series switch join many groups, the switch might run out of memory. Ensure that the total number of entries displayed by the **show rgmp group count** command is fewer than 800. The actual maximum number of entries will vary depending on the features enabled on the Catalyst 6500 series switch and the amount of memory installed.
- When a multicast goes to both bridged and routed addresses, the multicast packets going to the routed addresses are Layer 3 switched, and the multicast matches an ACL so that QoS rewrites the ToS byte in the multicast packet. QoS does not rewrite the ToS byte for the multicast packets that are bridged.
- We recommend that you do not use more than 1500 multicast groups with GMRP. This restriction does not apply to IGMP.
- In extremely rare conditions, multicast traffic might be blocked due to a mismatch between hardware and software entries. (CSCdp81324)
- SPAN, RSPAN, Private VLANs, and RGMP are not supported with IGMP version 3 snooping.
- Be aware of the following multicast traffic caveats specific to Supervisor Engine 2 (these caveats apply to *all* software releases supporting Supervisor Engine 2):
  - If an outgoing IOS ACL is configured on an interface, Supervisor Engine 2 based systems will match/apply the IOS ACL in software. This results in *all* outgoing multicast flows for that interface being handled in software (based upon specific **deny/permit all** statements). MMLS is effectively disabled for the interface. Be aware that handling outgoing IOS ACLs in software increases CPU utilization.
  - Outgoing VACLs are not applied to multicast traffic with Supervisor Engine 2.
- IGMP version 3 reports are flooding on VLANs. The reports should be sent only to IGMP version 3 router ports and IGMP version 3 hosts. This problem only occurs with PFC2. There is no problem with PFC3. (CSCdx51216)
- Under conditions of severe load on the switch, such as either a large number of VLAN ports and their port-state changes or a high rate of multicast control traffic, IGMP snooping may get automatically disabled for approximately 2 minutes. When IGMP snooping is automatically disabled, a syslog is generated and the **show igmp mode** command and the **show multicast protocol status** command show that IGMP is operationally disabled.

IGMP Version 3 with MMLS

This subsection contains usage guidelines, restrictions, and troubleshooting information that apply to IGMP version 3 with MMLS on the switch:

- IGMP version 3 with MMLS applies *only* to Supervisor Engine 720. On Supervisor Engine 2, IGMP version 3 snooping cannot be performed for MMLS-switched flows; therefore, MMLS cannot be enabled when IGMP version 3 is enabled.
- IGMP version 3 with MMLS applies to the SSM-Range configured on the MSFC. The SSM-Range should be either the default, or the ACL that you use to configure a range should have ACEs with the action as permit only.
- On Supervisor Engine 720, IGMP version 3 snooping works only with MMLS hardware-switched flows (as documented in CSCin51214). Therefore, IGMP version 3 snooping should be enabled if MMLS is enabled.
- With software release 8.3(3) and later releases, IGMP version 3 snooping does not work with static multicast CAM entries configured. If there are user-configured static multicast CAM entries that correspond to a multicast group operating in IGMP version 3, the multicast traffic directed to the multicast group does not reach the ports that are configured in the static multicast CAM entry. A symptom of this problem is when ports that are configured in the static multicast CAM entry do not receive traffic destined for that GDA MAC address.

  Workaround: Disable IGMP version 3 snooping by entering the **set igmp v3-processing disable** command. (CSCee36768)

Spanning Tree

This section contains usage guidelines, restrictions, and troubleshooting information that apply to Spanning Tree:

- On a Catalyst 6500 series switch that runs software release 8.7(3), with an MST multiregion topology, a topology change in a region removes the CAM table of the other regions even if the VLANs / instances are pruned on the border switch links. This problem occurs when spanning tree is set in the MST mode.

  Workaround: None. (CSCsz18147)
- On a Catalyst 6500 series switch that runs software release 8.7(3), a linkdown/up traffic convergence can occur within a leaveall timer period. This problem occurs when the spanning tree mode is PVST+.

  Workaround: None. (CSCta68861)
- On a Catalyst 6500 series switch that runs software release 8.7(3), when you enter the **show spantree** [*vlan* | *mst*] and **show spantree statistics** *mod/port* [*vlan* | *mst*] command, the spanning tree variable last topology change occurrs but the topology change initiator does not get updated. This problem occurs when the topology change propagates in the network at a node that is not local to a switch. However, the variable fields display the correct values when the topology change is initiated by a switch.

  Workaround: None. (CSCsd 84159)
- On Catalyst 6500 series switches that runs software release 8.5(7) in the same region, if two switches that are configured with MST and VLANs are mapped, and a third switch is configured with PVST+, then the output of the command **show spantree statistics** *mod/port* **mst** *num* displays invalid MAC addresses including zeros.

  Workaround: Allow the native VLAN on the trunk port of MST that is connected to the other region of MST or to PVST+. (CSCs63901)

- In rare circumstances with a topology that we do not recommend, when you have a root switch with high availability enabled running MST, additional switches running Rapid-PVST+ connected to the root switch, and the switches running Rapid-PVST+ are also connected to each other, the switches running Rapid-PVST+ reconverge when a high-availability switchover occurs on the root switch running MST. This problem occurs only when the Rapid-PVST+ switches are connected with each other (such as in a triangular topology).

  Workaround: Do not connect the leaf switches. The Rapid-PVST+ switches should connect directly to the MST switches (we recommend this topology). (CSCee02592)

Note With software release 8.1(1) and later releases, Rapid-PVST+ is the default spanning tree protocol.

- After upgrading from software release 5.x to software release 8.3(1), the switch comes up with Rapid-PVST+ as the default spanning tree protocol which is expected as Rapid-PVST+ is the default spanning tree protocol in software release 8.1(1) and later releases. However, prior to the upgrade, the default spanning tree protocol was IEEE 802.1D bridge spanning tree protocol. With IEEE 802.1D, the **show spantree summary** command shows the listening port count as 0 and constant. With Rapid-PVST+, the **show spantree summary** command shows the listening port count fluctuating. Resetting the switch does not correct the problem.

  Workaround: Upgrade to software release 6.x and then upgrade to software release 8.3(1). (CSCee43648)

- MST problem—Powering down the Switch Fabric Module usually takes between 3 and 5 seconds. During this time, traffic and protocol packets are disrupted. The MST root port does not receive BPDUs during this period and the re-root mechanism is called (the re-root mechanism causes the root port to go to the blocking state). As soon as the MST port starts receiving BPDUs, the topology reconverges. (CSCdv86120)

- If the **forward delay**, **max age**, and **hello time** Spanning Tree Protocol (STP) parameters are reduced in value, ensure that the number of instances of STP are also reduced proportionally to avoid STP loops in the network.

- Occasionally (less than once in every 100 attempts), the console process might lock when an STP mode changes from PVST+ to MISTP.

  Workaround: Reset the switch. (CSCds20952)

- If you have a Catalyst switch in your network with MAC address reduction enabled, you should also enable MAC address reduction on all other Layer-2 connected switches to avoid undesirable root election and spanning tree topology issues.

  When MAC address reduction is enabled, the root bridge priority becomes a multiple of 4096 plus the VLAN ID. With MAC address reduction enabled, a switch bridge ID (used by the spanning-tree algorithm to determine the identity of the root bridge, the lowest being preferred) can only be specified as a multiple of 4096. Only the following values are possible: 0, 4096, 8192, 12288, 16384, 20480, 24576, 28672, 32768, 36864, 40960, 45056, 49152, 53248, 57344, and 61440.

  Therefore, if another bridge in the same spanning-tree domain does not run the MAC address reduction feature, it could claim and win root bridge ownership because of the finer granularity in the selection of its bridge ID.

Note The MAC address reduction feature is enabled by default on Cisco switches that have 64 MAC addresses (Cisco 7606, CISCO7603, WS-C6503, and WS-C6513).

Access Control

This section contains usage guidelines, restrictions, and troubleshooting information that apply to security:

- When you are running Cisco IOS Release 12.2(17a)SX and later releases on the MSFC *and* Catalyst software release 8.5(1) and later releases on the supervisor engine, if you enable QoS microflow policing on a VLAN and have a reflexive ACL configured on the VLAN, the reflexive ACL traffic will be software switched.

  Workaround: If you use the reflexive ACL in combination with QoS microflow policing and you want this traffic to be hardware switched, you must upgrade your MSFC to Cisco IOS Release 12.2(18)SXF and later releases. (CSCsb89613)

- A security ACL will not take effect for sources that are present in the INCLUDE list if the IGMP version 3 state is in INCLUDE mode and the multicast source and receiver are in the same VLAN. (CSCdy15849)

- Note that the VACLs access-control **all** traffic passing through a VLAN. This includes broadcast traffic and packets going to and from the router. Therefore, you must use care when defining a VACL.

  For example, to allow traffic from a local IPX client (daf11511) to a remote server (daf00402), the following VACL is configured (remote server is learned through a routing protocol):

```
set security acl ipx jg_ipx_permit
 ------------------------------------------------
 1. permit any DAF00402 DAF11511
 2. permit any DAF11511 DAF00402
 3. permit any DAF01023 DAF01023
 4. permit any DAF11511 0
 5. permit any 0 0
 6. permit any DAF11511 DAF11511
```

  The VACL description is as follows:

  - 1, 2. Allow IPX between client and server.
  - 3. The router needs to see the RIP/SAP packets.
  - 4. If packets are dropped during a connection, the client tries to find another route to the server by sending out RIP requests to IPX network 0.ffff.ffff.ffff. Not doing this results in a lost connection after packet drop.
  - 5. Upon startup, a client sends its first packets to 0.ffff.ffff.ffff and uses 0.ffff.ffff.ffff as its one IPX address.
  - 6. When a server connection socket is timed out, the client reconnects by sending a request to its local network to find its server.

  As the example shows, just 1 and 2 is not enough; you also have to define 3 through 6 to achieve the goal. (CSCdm55828)

- Make sure that the redirect port defined in a VACL is on the same VLAN as the “incoming” VLAN for the packet that is to be redirected. Otherwise, the redirected packet will be dropped.

  For example, a redirect VACL is defined on VLAN 5 and the redirect destination port is also on VLAN 5. If an MLS entry is destined to VLAN 5, packets that are coming from VLAN 2 hit this MLS entry and also hit the VACL redirect ACE (both VLAN 2 and VLAN 5 ACLs will be checked) and are redirected in the incoming VLAN, VLAN 2. The redirect destination port will drop them on VLAN 5 rather than on VLAN 2.

- In a Catalyst 6500 series switch with two Supervisor Engine 2s, if you have more than 300 QoS ACLs and each QoS ACL is mapped to a different VLAN, the active supervisor engine might reset after clearing all the QoS ACLs and then committing the change. (CSCdu85021)

High Availability

This section contains usage guidelines, restrictions, and troubleshooting information that apply to high availability:

- With software release 8.5(1) and later releases, supervisor engine high availability is enabled by default.
- In single router mode (SRM) or dual router mode, when configuration changes are made in the running configuration of the designated router while the nondesignated router is either not fully up or has not completed the high-availability handshakes, negate (**no**) commands (such as **no shut** and **no ip address**) may not show up on the nondesignated router once the running configuration synchronization completes. After the high-availability switchover, the affected negate commands do not show up in the running configuration of the designated router either. This problem is documented in caveat CSCeg19764.
- MSFC configuration synchronization is only supported for IP and IPX configurations. Before enabling synchronization, you must ensure that both MSFCs have identical configurations for all protocols. If you are using AppleTalk, DECnet, VINES, or any other routing, you must manually ensure that identical configurations are on both MSFCs for all protocols.
- Redundant supervisor engines must be of the same type with the same model feature card. Note that WS-X6K-SUP1-2GE and 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 or two PFC2s).
- High availability does not support use of the Reset button. Pressing the Reset button to initiate a switchover results in a high-availability switchover failure.

  Workaround: Make the active supervisor engine the standby supervisor engine first, and then remove it from the chassis. (CSCdp76806)
- NVRAM synchronization and high-availability synchronization does not work between supervisor engine software release 6.3(1) and any later version. (CSCdv43206)

Multilayer Switching

This section contains usage guidelines, restrictions, and troubleshooting information that apply to MLS:

- If you have routed flows with MLS disabled (no shortcuts created), candidate entries age out rapidly to ensure that the forwarding table is used as much as possible by shortcut flows. A side effect of this rapid aging of candidate entries is that the microflow policer does not work accurately because its policing history is lost when the entries age out. When the same flow creates a new entry, it gets the entire traffic contract again even if it had exceeded the contract before the entry aged out. (CSCdp59086)
- Layer 3 switching on the Catalyst 6500 series switches does not support full or destination-source flows for IPX traffic. With Supervisor Engine 1 and PFC, when the MLS flow mask is destination-source or full-flow, the **show mls entry ipx destination** command that should select a specific destination displays all IPX Layer 3 entries rather than just those for a specific destination IPX address. (CSCdm46984)

MIBs

This section contains usage guidelines, restrictions, and troubleshooting information that apply to SNMP MIBs, RMON groups, and traps:

Note For information on MIBs, RMON groups, and traps, refer to the Cisco public MIB directory located at this URL:http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml

- You cannot use the tftpGrp MIB object to download Catalyst 6000 ATM software. (CSCdp16574)

VLANs, VTP, MVRP, and VLAN Trunks

This section contains usage guidelines, restrictions, and troubleshooting information that apply to VTP, VLANs, MVRP, and VLAN trunks:

- On a Catalyst 6500 series switch that runs software release 8.7(3), toggling the VTP trunk stops VLAN declarations from 1001 to 4094 on MVRP-enabled trunks. This problem occurs when the switches are connected in the following topology:

  IXIA-----SW1----------SW2----------SW3

  - SW1 is a VTP switch and pruning enabled.
  - SW2 is a VTP to MVRP Interop switch and pruning is enabled.
  - SW3 is an MVRP switch.

  Toggle the trunk on SW2 facing SW1 and observe that the trunk facing SW3, stop propagating the VLAN declarations from 1001 to 4094.

  Workaround: None. (CSCsv02479)

Note VTP Pruning and MVRP interop is not supported in software release 8.7(3).

- On a Catalyst 6500 series switch that runs software release 8.7(3), the VLAN declaration propagates on the forwarding MVRP trunks/channels when you move from the normal registration mode to the fixed registration mode on the blocked port. This problem occurs when MVRP is enabled.

  Workaround: None. (CSCsv62190)

- On a Catalyst 6500 series switch that runs software release 8.7(3), creating bulk VLANs on VTP server affects VLAN propagation from the edge switches that have a VTP to MVRP scenario, with VTP trunks at the edge of the network. Some random declarations are seen on MVRP trunks. For example, more than 2000 VLANs are created during a bulk VLAN creation.

  Workaround: Create VLANs incrementally in sets of 500 or 1000 VLANs. (CSCsz42975)

- On a Catalyst 6500 series switch that runs software release 8.7(3), the path discovery of the fault isolation of Link Trace Messages (LTMs) is not possible in the MVRP network. This problem occurs when MVRP is enabled on all the trunks. The link failure occurs and causes VLANs to be pruned on the trunk links.

  Workaround: None. (CSCsz55416)

- On a Catalyst 6500 series switch that runs software release 8.7(3), when VTP pruning is enabled with MVRP Interop in place, then VLANs 1 to 1000 move to the Quiet Active (QA) state. This problem occurs when MVRP is enabled and then disabled on the VTP domain that faces the trunk port.

Note QA is one of the states in the Applicant State Machine (ASM).

Workaround: Toggle the VTP domain that faces the trunk. (CSCsq06760)

- On a Catalyst 6500 series switch that runs software release 8.7(3), in following topology,

  sw1 ---------- sw2

  when VTP pruning is enabled on sw1, the VLANs on sw2 get pruned. This problem occurs when VTP pruning is disabled on sw2.

  Workaround: Toggle VTP pruning globally on the switch (sw2) by using the **set vtp pruning** {**enable | disable**} command. (CSCsy26407)

- On a Catalyst 6500 series switch that runs software release 8.7(2), all dot1q-all-tagged MVRP PDUs get dropped by some Inter-Switch Link (ISL) trunks. This problem causes all the VLANs to be pruned by MVRP.

  Workaround: Disable dot1q-all-tagged on ISL trunks on both ends when MVRP is enabled. (CSCsq26579)

- On a Catalyst 6500 series switch that runs software release 8.7(2), when MVRP is enabled, the VLAN registration does not occur on blocked ports. This problem causes the blocked port to move to the forwarding state and the registration takes place only in the leave all timer expiry.

  Workaround: None. (CSCsu59109)

- The SPT port state transitions to the PVID inconsistent state when there are native VLANs on the trunk links. This problem occurs when the native VLANs of the trunk ports are changed over a span of a few seconds or less.

  Workaround: Flap the link on the other side of the trunk to reconverge to the original topology. (CSCsj55292)

- A Traffic outage occurs for a few seconds with LACP channels. This problem occurs with the default values of MVRP timers and when the number of VLANs is greater than 1500.

  Workaround: MVRP timer values need to be increased proportionally as the number of VLANs increase. With higher timer values, there is no traffic outage. (CSCso89647)

- When a switch running IEEE MVRP Standard, the Registrar Admin Control should be per participant per VLAN. The current implementation is for per trunk ports only. This condition occurs when the switch is running software release 8.7(1). (CSCsm02521)

- On MVRP enabled switches, with VTP Interop in place, a PVLAN on the VTP side is created as a regular VLAN on a MVRP side. This condition occurs when the switch is running software release 8.7(1).

  Workaround: PVLAN is not supported with MVRP as they are mutually exclusive. PVLANs should not be used in MVRP to VTP Interop. (CSCsm09604)

Scalability Data for MVRP

- On a Catalyst 6500 series switch with Supervisor Engine 720, that runs software release 8.7(3), the switch supports the following within an optimal operational CPU utilization:

- MVRP pruning for 4094 VLANs on 6 trunks/channels.
- MVRP pruning for 2500 VLANs on 11 trunks/channels

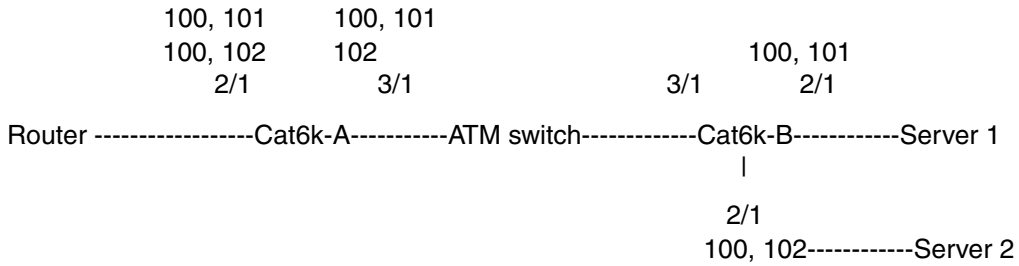
The default timer values are Join- 20 Centi-seconds, Leave-150 Centi-seconds, and Leave All-6000 Centi-seconds.

Caution Increase in number of VLANs and decreased timer values from the set default, results in high CPU utilization.

- Same MAC address being seen on different VLANs. CAM table shows the MAC as a duplicate entry. This condition occurs when the same MAC address received on the switch on separate VLANs it appears as duplicate entries in the CAM table and the dot1x enabled port does not shut down. (CSCsi97845)
- Configuring private VLANs for any bidirectional PIM group is not supported in software release 8.3(x) and 8.4(x). (CSCin64195)
- IGMP version 3 does not support private VLANs. Support for private VLANs will be added in a future release. (CSCdx08912)
- When manually pruning VLANs on trunks, if you have more than 64 trunks you need to run in text configuration mode; you cannot manually prune VLANs in binary configuration mode if there are more than 64 trunks.

Note All Catalyst 6500 switches running software release 8.4 and above with supervisor engine 720 and supervisor engine 32, the restriction of number of trunks can be increased from 64 to 128.

- The VLAN locking feature causes configuration loss in text configuration mode. Therefore, the VLAN locking feature is not supported in text configuration mode. This problem is resolved in software release 8.5(1). (CSCeb34004)
- Use caution when including the sc0 interface in a normal or private VLAN. Under heavy traffic conditions, there is a risk of losing connectivity with the interface. We recommend that you do not configure the sc0 interface in any VLAN with user data. (CSCdv12023)
- This problem is related to the following configuration:



The Cat6k-A configuration is as follows:

- 100—Primary VLAN
- 101—Secondary VLAN (isolated/community/two-way community)
- 102—Secondary VLAN (isolated/community/two-way community)

  - 2/1—Promiscuous port carrying the mapping from VLAN 101 to VLAN 100 and VLAN 102 to VLAN 100
  - 3/1—ATM trunk port carrying VLANs 100, 101, 102, 200, 300

  The Cat6k-B configuration is as follows:

  - 100—Primary VLAN
  - 101—Secondary VLAN (isolated/community/two-way community)
  - 102—Secondary VLAN (isolated/community/two-way community)
  - 3/1—ATM trunk port carrying VLANs 100, 101, 102
  - 2/1—Private port with VLAN 101 to VLAN 100 association
  - 2/2—Private port with VLAN 102 to VLAN 100 association

  In this configuration, assume that Server 1 is interacting with the router and there is no traffic between Server 2 and the router. If Server 2 suddenly starts interacting with the router, the traffic between Server 1 and the router might stop. This happens when the Cat6k-A 3/1 port is on the WS-X6101-OC12-MMF ATM module.

  In summary, do not have a configuration with a promiscuous port on switch A and secondary ports on switch B connected through an ATM trunk on the WS-X6101-OC12-MMF module. (CSCdy03515)

- When using a VLAN interface other than the VLAN 1 interface, a VLAN added on a Catalyst 3500XL running 120.5.1-XP does not appear in the Catalyst 6500 series switch database. As soon as management interfaces are put back in VLAN 1, a VLAN configured on the 3500XL is sent properly to the Catalyst 6500 series switch through VTP. Check the status of CSCdr80902 in your Cisco IOS release. (CSCdr66376)
- In a redundant configuration, if you modify the VLAN mapping on the active supervisor engine and a high-availability switchover occurs before the VLAN mapping is synchronized between the supervisor engines, you might experience a mapping inconsistency (VLANs claimed by two different instances) if you reenter the mapping command.

  Workaround: Recreate a new mapping on a different instance after the switchover. On the newly active supervisor engine, enter the **set vlan** *vlan_num* **mistp none** command and reenter the mapping. (CSCds27902)

Authentication, Authorization, and Accounting

This section contains usage guidelines, restrictions, and troubleshooting information that apply to authentication, authorization, and accounting (AAA):

- For login authentication, starting from software releases 5.5(15), 6.3(7), and 7.3(1), if you press the Enter key and then type in your password (<Enter> <password>) the ACS TACACS+ server will treat it as an indication that you are attempting to change your password. This behavior is related to CSCdx08395. Before the CSCdx08395 fix, the user privilege level was hard coded to 15 in the TACACS+ authentication request packet. With the CSCdx08395 fix, the user privilege level is set based on the privilege level that the user is authenticated as. For example, if the user is doing a login authentication, the privilege level would be 1. If the user is doing an enable authentication, the privilege level would be 15.

  The Cisco ACS TACACS+ server acts differently for <Enter> <password>. For login authentication, if the user priv-lvl is hard coded to 15, <Enter> <password> is treated as a regular password attempt. If the user priv-lvl is set to 1 (CSCdx08395) during login authentication, then <Enter> <password>

is treated as an indication of a changing password. The latter case is a behavior consistent with TACACS+ enable authentication and Cisco IOS software handling of <Enter> <password>. (CSCdy35129)

TDR

This section contains usage guidelines, restrictions, and troubleshooting information that applies to the time domain reflectometer (TDR) feature:

- The TDR test can only be run on 16 ports at a time. (CSCea46739)
- The TDR test does not provide accurate results if it is run on a link where the remote link partner is configured at 100-Mbps fixed speed (CSCea70930). 10 Mbps, 1000 Mbps, and auto speeds on the remote link partner will not interfere with the TDR test. Also, a 100-Mbps port without a link partner will complete the TDR test successfully.
- The WS-X6148 and WS-X6548 GE-TX modules have the following cable restrictions with the TDR test: If a Revision B0 Marvell PHY is used, the maximum cable length that can be detected is 115 meters. If a Revision C0 Marvell PHY is used, the maximum length that can be detected is 168 meters. (CSCea76395)

Auto-MDI/MDIX

With auto-MDI/MDIX you can use either a straight or crossover cable, and the module will automatically detect and adjust for the cable type. Auto-MDI/MDIX works with the speed set to auto/1000 Mbps, but not with the speed set to 10 Mbps or 100 Mbps. This means that the link will come up with either a straight or crossover cable if the speed is set to auto/1000 using the **set port speed** *mod/port* **auto** command or the **set port speed** *mod/port* **1000** command. The link comes up even if the speed is autonegotiated at 10 Mbps or 100 Mbps in **auto** mode. However, if you enter the **set port speed** *mod/port* **10** command or the **set port speed** *mod/port* **100** command, the link fails to come up if the wrong cable is used.

Auto-MDI/MDIX has always been enabled on the following modules:

- WS-X6548-RJ-45, WS-X6548-RJ-21, WS-X6148-GE-TX, WS-X6548-GE-TX

  Auto-MDI/MDIX works in 10-, 100-, and 1000-Mbps modes with autonegotiated and fixed speeds.
- WS-X6516-GE-TX

  Auto-MDI/MDIX works with the speed set to auto/1000 Mbps, but not with the speed set to 10 Mbps or 100 Mbps.
- WS-X6316-GE-TX

With software release 8.2(1) and later releases, auto-MDIX is also enabled on the following modules:

- WS-X6748-GE-TX, Supervisor Engine 720 port 2 (RJ-45)

  Auto-MDI/MDIX works with the speed set to auto/1000, but not with the speed set to 10 Mbps or 100 Mbps
- WS-X6148X2-RJ-45, WS-X6148X2-45AF

  Auto-MDI/MDIX works with the speed set to auto, but not with the speed set to 10 Mbps or 100 Mbps.

Note Auto-MDI/MDIX is not supported on any other 10/100-Mbps Ethernet modules or GBIC, SFP, and XENPAK ports.

With software release 8.3(1) and later releases, the **set port auto-mdix** *mod/port* {**enable** | **disable**} command is introduced to disable auto-MDI/MDIX on all the modules that currently have this feature enabled by default. Use the **show port auto-mdix** [*mod*[/*port*]] command to display auto-MDI/MDIX settings.

Bidirectional PIM

This section contains usage guidelines, restrictions, and troubleshooting information that apply to bidirectional PIM:

- Bidirectional PIM is supported on Supervisor Engine 720 and Supervisor Engine 32 (with WS-SUP32-GE-3, the minimum Cisco IOS Release is 12.2(17d)SXB8 and with WS-SUP32-10GE-3B, the minimum Cisco IOS Release is 12.2(17d)SXB9).
- When configuring bidirectional PIM group ACEs, a deny is not accepted. Groups can only be included.
- (*,G/m) entries are installed on a best-effort basis as an optimization on source-only networks. There are several conditions where (*,G) may be installed on a source-only network.
- Bidirectional PIM flows related to only four rendezvous points are hardware switched.
- With multiple bidirectional PIM rendezvous points, flows related to only four rendezvous points are hardware switched and these four rendezvous points are chosen depending on the order in which they come up.

Binary and Text File Configuration Modes

The main purpose of storing configuration information in NVRAM blocks is to restore the system configuration when the switch comes up after a reset. The supervisor engine bring-up process includes reading the NVRAM blocks and using the configuration information in the blocks to configure the system. Before restoring the configuration from an NVRAM block, a new checksum is generated on the data in the block and the new checksum is compared with the checksum stored in the block itself. If both the checksums match, the data is determined to be valid and the data in the block is used to restore the configuration. If the checksum matching fails, the NVRAM block is deallocated and the default configuration is used.

There are two modes for storing the configuration file, binary configuration mode and text file configuration mode. These modes are described in the following sections.

Binary Configuration Mode

In binary configuration mode, the NVRAM configuration model uses binary data structures to save information. The NVRAM is allocated in blocks, and each data structure is stored as an NVRAM block as follows:

- A global block is statically allocated for saving global configuration information.
- Per-module NVRAM blocks are allocated for each module to store information for every module and port.

- Other NVRAM blocks include blocks for SNMP,VTP, SSH, NVRAM logging, and so on.

When you enter a command to configure a feature, the information is stored immediately in one of the NVRAM blocks. Some blocks are allocated at startup, such as the global block, the SNMP block, and the VTP block. Other blocks are allocated as needed. For example, a module block is only allocated when a nondefault setting is configured for the module or configured for a port on the module. Some NVRAM blocks also grow dynamically. The VTP block, by default, allows for 256 VLANs to be configured. If more than 256 VLANs are configured, the VTP block is expanded to allow 256 additional VLANs. Binary configuration mode provides an easy way to store the configuration immediately without the need for a **write memory** command to commit the configuration to NVRAM.

Binary storage of data is also space efficient. For example, remembering if a feature is enabled or not requires a single bit of NVRAM.

Text File Configuration Mode

A disadvantage of the binary configuration mode is that although configured features can be stored efficiently, a lot of NVRAM space can be wasted by features that are not configured by the user. For example, the global block currently requires approximately 150 KB, but users may have configured only a few features. Similarly, a 48-port module consumes approximately 25 KB of NVRAM space (about 0.5 KB per port) even if only a single port on the module has been configured with a nondefault setting.

With software release 6.3(1) and later releases, the text file configuration mode was introduced to support the new 13-slot chassis and all the configurable options on the switch. With text file configuration mode, you can store the configuration as a text file in Flash memory or NVRAM. In text file configuration mode, the binary NVRAM data structures are deleted from NVRAM. The only blocks not deleted from NVRAM are those that contain information not stored in the configuration file. These blocks include the following:

- Boot block (B_BOOTAREA)—This block must stay in NVRAM. It contains information about the location of configuration blocks (NVRAM or DRAM).
- Option block (B_OPTION)—Contains the configuration for hidden commands.
- Module logging block (B_MODULELOG)—Contains the NVRAM log traces (NVLOG).
- Command logging block (B_CMDLOG)—Contains the command history log.
- RSAKEY (B_RSAKEY)—Contains encrypted key information that should not be regenerated every time.
- I/F index block (B_MODULEIFINDEX)—Contains SNMP interface index information that is not in the text configuration file.
- RMON blocks (B_RMON, B_RMON2, and B_EXTENDEDRMON)—Contains RMON information that is not in the text configuration file.
- SNMP block (B_SNMP)—Contains SNMP-related information that is not in the text configuration file. Additionally, fields in this block can be specified as non-volatile by the user through SNMP; those fields must be saved immediately to non-volatile storage.
- VTP blocks—Need to stay in NVRAM to be compliant with the VTP specification in VTP server mode.

The NVRAM blocks are copied to DRAM before being deleted. Except for some isolated code dealing with the copying of the NVRAM blocks into DRAM, this change is transparent to the rest of the software. The data structures are manipulated and accessed as before, the only difference being that they are now stored in the DRAM instead of the NVRAM memory region.

A new B_GENERAL NVRAM block is also created when operating in text configuration mode. This block contains any configuration from a deleted block that must still be saved in NVRAM. For example, there are time zone and encryption-related fields in the global block that must be stored in NVRAM. These fields are moved to the new B_GENERAL block whenever text configuration mode is selected. The B_GENERAL block is deleted when moving back to binary configuration mode.

When operating in text file configuration mode, most user settings are no longer saved immediately to NVRAM. Configuration changes instead are only written to DRAM. You must enter the **write memory** command to store the configuration in non-volatile storage. The non-volatile storage may be either the Flash file system or NVRAM. Because the text file configuration file in most cases requires less space than the binary data structures, NVRAM is a good place for the configuration file. Alternatively, you may specify a file in the Flash file system.

Note When a new VLAN is added (created), the VTP domain information fields (such as VtpDomainName, VtpPassword, VtpMode, VtpInterval, VtpRevisionNo, VtpVlanCount, VtpUdpater, VtpDomainIindex, VtpPruningMode, and VtpV2Enabled) are updated if their values are different from the current values in NVRAM. Out of all of these information fields, the VtpVlanCount field is the only one that is changed when a VLAN is added or deleted. When the VtpVlanCount field is changed, the global block in NVRAM is changed resulting in the following trap being sent: "Global block changed by Console//." This behavior is documented in caveat CSCea23160.

802.1X Authentication

This section contains usage guidelines, restrictions, and troubleshooting information that apply to 802.1X authentication:

- On a Catalyst 6500 series switches, when dot1x is enabled on a multi-host port the IP address is not obtained for the host.

  ```
  show dot1x user all --- shows IP as 0.0.0.0
  ```

  As the IP address is not stored for the first host, IP device tracking will not work for multihost ports. This condition occurs when both dot1x and IP device tracking are enabled on multihost ports.

  Workaround: None. (CSCsm68672)

- A problem is seen when Microsoft IAS is configured as the authentication server for 802.1X user authentication purposes. If the username does not exist in the active directory, the supplicant is not providing a popup window for entering the username and password. Instead, if the user enters the nonexisting username for the first time, the supplicant sends the stored username with every response for the request. This problem is not an issue with the switch or the authenticator. The problem is with the supplicant or active directory configuration that is used for creating the usernames in the domain.

  Workaround: Create the username in the active directory so that the popup window for entering the username and password appears.

NetFlow Data Export

This section contains usage guidelines, restrictions, and troubleshooting information that apply to NetFlow Data Export (NDE):

- In software release 8.5(1) and later releases, with a large number of NetFlow entries in the NetFlow table, statistics may not be received by the MSFC if the Network Address Translation (NAT) timeout value expires. The configurable timeout value determines when a translation times out after a period of nonuse. If the NAT timeout value expires, NetFlow entries are dropped resulting in shortcuts needing to be reinstalled.

  The recommended value for the NAT timer on the MSFC is 600 seconds and is configured using the following commands:

  - **ip nat translation timeout** *value*
  - **ip nat translation tcp-timeout** *value*
  - **ip nat translation udp-timeout** *value*

  With the NetFlow table full and a 600 second timeout value configured on the MSFC, there should be no dropped NetFlow entries.

- Cisco IOS Release 12.2(18)SXF includes the hardware-accelerated NAT feature. Because of flow mask resolution requirements in NDE and NAT, if the NDE flow mask has been configured and you need to use hardware-accelerated NAT, the NDE flow mask must be cleared. To clear the flow mask, enter the **set mls flow null** command.

  For detailed information on using the **set mls flow null** command, refer to the "Configuring MLS" chapter of the *Catalyst 6500 Series Software Configuration Guide* at this URL: http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/catos/8.x/configuration/guide/nde.html

  For detailed information on using NDE, refer to the "Configuring NDE" chapter of the *Catalyst 6500 Series Software Configuration Guide* at this URL: http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/catos/8.x/configuration/guide/nde.html

Network Admission Control

This section contains usage guidelines, restrictions, and troubleshooting information that apply to Network Admission Control (NAC):

- When the NAC server performs a posture validation on the host by verifying the LAN port IP address, the ACL manager process might cause high CPU utilization in the switch.

  Workaround: None. This condition is transient and is to be expected. (CSCei90699)

- With LAN port IP, if a PC connected to the switch has more than one NIC, only one of the NICs will be posture validated.

  Workaround: None. (CSCei15212)

Connectivity Fault Management

This section contains usage guidelines, restrictions, and troubleshooting information that apply to Connectivity Fault Management (CFM):

- On a Catalyst 6500 series switch that runs software release 8.7(3), the Continuity Check (CC) does not start if the domain name and the Maintenance Association (MA) name exceed 21 characters. The domain name and the MA name in the CLI configuration can have a maximum of 21 characters.

  Workaround: None. (CSCsr03859)

- On a Catalyst 6500 series switch that runs software release 8.7(3), when the Server MEP detects a Link-OAM fault condition, it sends the Alarm Indication Signal protocol data units (AIS PDUs) for all the affected VLANs at a specific maintenance domain level. This problem occurs when Ethernet-CFM AIS is enabled.

  Workaround: None. (CSCsy77929)

- On a Catalyst 6500 series switch that runs software release 8.7(3), the active VLANs that are configured with an MA, generate Alarm Indication Signal protocol data units (AIS PDUs). The AIS PDUs are transmitted at 1 packet/sec (default). The periodic transmission value cannot be changed to one minute. This problem occurs when the Ethernet-CFM AIS is enabled.

  Workaround: None. (CSCsy79352)

- On a Catalyst 6500 series switch that runs software release 8.7(3), when the MEPs detect an AIS, they will not send SNMP traps to the network management system. This problem occurs when Ethernet-CFM is enabled.

Note Standard MIB does not support the AIS specific trap. A syslog will be generated for the SNMP.

  Workaround: None. (CSCsy81369)

- On a Catalyst 6500 series switch that runs software release 8.7(3), the Server MEP that is configured with MIP will genearate AIS PDUs only for the MIP-configured VLANs. This problem occurs when the AIS level is set to default, and when Ethernet-CFM is enabled on a switch.

Note The default AIS level is 8.

  Workaround: None. (CSCsy89248)

- On a Catalyst 6500 series switch that runs software release 8.7(3), with CFM AIS enabled, the Remote Defect Indication (RDI) (Dying Gasp, Link Fault, and Critical Event) from a peer on a spanning tree redundant path generates AIS PDUs at the configured maintenance domain level for all the active VLANs.

  In this case, the AIS trigger cannot be stopped because the AIS is generated prior to the spanning tree convergence.

  Workaround: Use the **set port ethernet-cfm** {*mod* | *port*} **ais disable** command to stop the AIS PDU transmission. (CSCsy75976)

- On a Catalyst 6500 series switch with Supervisor Engine 720 that runs software release 8.7(3), when you toggle the Alarm Indication Signal (AIS) defect status on the remote local Maintenance End Points (MEPs), the AIS is enabled, and the switchover is executed on the server MEP that transmits the AIS with a one-second AIS interval.

  Workaround: Change the server MEP AIS interval to one minute to prevent AIS flaps on the remote MEP side. (CSCsz45479)

- On a Catalyst 6500 series switch that runs software release 8.7(3) with CFM enabled, the CPU utilization increases up to 100 percent. This problem occurs when the number of links in a channel increases with a larger number of MEPs and MIPs configured.

  Workaround: Reduce the number of MEPs and MIPs configured on the channel link. (CSCsv62168)

- Remote MPDB entries time out occasionally for a short period when the Continuity Check (CC) interval is changed from a smaller to a larger value for a level or for a set of VLANs in a level. The aging time continues to increase for these entries in the Maintenance Domain Intermediate Points (MIPs) Connectivity Check database (CCDB). This problem occurs when a user modifies the CC interval settings from a smaller value to a larger value for a level or for a set of VLANs in a level. This problem is fixed, once the next CC message is received from the remote end for that VLAN/set of VLANs and a match is found in the MIP CCDB.

  Workaround: None. (CSCsr26738)

- On a Catalyst 6500 series switch that runs software release 8.7(2), with Connectivity Fault Management (CFM) enabled, the **traceroute** command fails to report egress port details of the intermediate switches consistently. This problem occurs when you configure Maintenance Domain Intermediate Points (MIPs) on an interface for that level and the ingress and egress ports that receive and forward link trace messages (LTMs).

  Workaround: Configure MIPS for the level where MIPs are configured and VLAN on the ingress and egress ports which receive and forward link trace messages (LTM) messages. (CSCsr41045)

- On a Catalyst 6500 series switch that runs software release 8.7(2), with CFM enabled, a outward MEP configured on a spanning tree blocking port, and trace route initiated, the LTM for the outward MEP fails. However, LTR's are received through blocked ports.

  Workaround: None. (CSCsr72098)

- On a Catalyst 6500 series switch that runs software release 8.7(2), with CFM enabled, the software does not support the configuration of Continuity Check message intervals of 3.3 milliseconds, 10 milliseconds, 100 milliseconds, and 1 second intervals.

Note The software does not support a subsecond CC interval due to a platform limitation. The CC interval has three configurable values for CC interval:10 seconds, 1 minute and 10 minutes.

Workaround: None. (CSCso59138)

- On a Catalyst 6500 series switch that runs software release 8.7(2), the Maintenance Association (MA) is removed when a user creates two domains at the same level and same VLAN. This problem occurs when two domains are at the same level within the common VLAN.

  Workaround: Create two domains at the same level with unique VLANs. (CSCso65215)

Note On Catalyst 6500 series switches that run software release 8.x, the fast lookup and dynamic data structures store the CFM configuration. When CFM is configured in binary mode, the fast lookup structures are used to cache the CFM configuration. When CFM is globally enabled, the configuration is applied from the fast lookup structures to the dynamic data structures. The fast lookup for MA or VLAN is designed per VLAN and level and is updated for just that level and VLAN. Any lookup that would hold another entry at the same level and within VLAN are not maintained. When two domains are at the same level and same VLAN, the new MA entry overwrites the old entry.

- On a Catalyst 6500 series switch that runs software release 8.7(2), a link trace from a MEP to a MIP at the same level fails if the MIP entry is not present in the Forwarding database (FDB). This condition occurs when CFM is enabled and when a link trace is initiated from a MEP to a MIP that is configured at the same level.

  Workaround: Initiate a loopback/ping from the local MEP to the MIP or a linktrace from the local MEP to the remote MEP at the same level. Ensure that the MIP entry at the same level will now be present in the FDB. (CSCso68264)

- On a Catalyst 6500 series switch, that runs software release 8.7(2) with CFM enabled, untagged MAs and MEPs are not supported.

  Workaround: None. (CSCsq17877)

- On a Catalyst 6500 series switch that runs software release 8.7(2) with CFM enabled, the CLI **show ethernet-cfm maintenance-point remote** is not sorted based on the MPID or VLAN.

  Workaround: None. (CSCsq90852)

- On a Catalyst 6500 series switch that runs software release 8.7(2), with CFM enabled and when the MEP direction is changed at the local end with the same MPID, REMOTE MEPCCDB cataloging fails at the remote end.

  Workaround: Enable and disable CFM on the switch globally. This will clear out all entries from the database so that the switch can relearn all the new entries. (CSCsr64576)

- On a Catalyst 6500 series switch that runs on software release 8.7(2), traceroute hops are not displayed ina sequential order. When there are more number of MIPs configured between MEPs. This condition occurs when CFM is enabled and the traceroute is initiated.

  Workaround: None. (CSCsr46137)

- On a Catalyst 6500 series switch that run software release 8.7(2), remote MEP entry is seen on forwarding or blocking port. This condition occurs when the spanning tree state changes to blocking and when ingress port is not updated for DOWN MEP. If this Continuity Check Messages (CCM) is seen on the blocked port and if it is redundant on MEP CCDB, the CCM is ignored.

  Workaround: Disable and enable the CFM, which will cause the existing entry to flush. The new entry is seen on the forwarding port or blocked port depending upon where CCM is first received. (CSCsv56848)

  On a Catalyst 6500 series switch that runs software release 8.7(2), with both CFM and ELMI enabled, some CE implementations are not processing ELMI frames when a null UNI id is configured. This brings down the ELMI link status on the PE device.

  Workaround: By default, configure UNI on the port where ELMI is enabled. (CSCsu82587)

Scalability Data for Connectivity Fault Management and Alarm Indication Signal

- On a Catalyst 6500 series switch with Supervisor Engine 720 that runs software release 8.7(3), when CFM or CFM with MVRP are enabled together on dot1q trunk ports with a 10 second CC interval, the switch supports the following:
  - The CCM traffic up to 2000 services or VLANs.
  - The Customer Edge (CE) switch supports 2000 customer level MIPs, and 2000 higher-level flood traffic (traffic coming at the level higher than the maximum Maintenance level configured on the switch).
  - The Provider Edge (PE) switch up to 200 upward MEPs.

Caution An increase in number of MIPs, provider level MEPs or higher level flood traffic will increase the CPU utilization, and might degrade performance of the system.

- On a Catalyst 6500 series switch with Supervisor Engine 720 that runs software release 8.7(3), when CFM or CFM with MVRP enabled together on the EtherChannel ports (4 ports in a bundle) and with a 10 seconds CC interval, the switch supports the following:
  - The CCM traffic up to 1000 services or VLANs.

  - 1000 customer level MIPs and 1000 higher-level flood traffic (traffic coming at the level higher than the maximum Maintenance level configured on the switch).
  - 200 Provider Level Up MEPs.

Caution An increase in the number of ports to the EtherChannel or increase in the number of MIPs on a bundled port, will increase the CPU utilization. This may result in CC lifetime expiry for the remote MEPs, and trigger false indication of fault in the network.

- On a Catalyst 6500 series switch with Supervisor Engine 720 that runs software release 8.7(3), when CFM-AIS or CFM-AIS and MVRP are enabled together on dot1q trunk/EtherChannel ports with 10 second CC interval the switch supports the following:
  - In the event of link failure, the switch supports CCM traffic for up to 2000 services in the normal state.
  - The switch supports 2000 customer level MIPs and 2000 higher-level flood traffic (traffic coming at the level higher than the maximum Maintenance level configured.
  - Up to 200 Provider level Up MEPs.

Note In the event of link failure, a CPU spike occurs at every one minute time interval because of the AIS timer spread logic.

Caution An increase in the number of MIPs, provider level MEPs or higher level flood traffic will increase the CPU utilization and may degrade system performance.

Note On a Catalyst 6500 series switch that runs software release 8.7(3), when an AIS detects the link fault condition occurs the configured number of AIS PDUs will be sent (default 5) at 1 second transmission interval for each of the affected VLAN on the failed trunk. Then the AIS transmission period is changed to 1 minute automatically in the software (timer spread logic). This will increase the CPU utilization at every 1 minute until the fault condition is cleared, which is an expected behavior.

CiscoView

This section contains usage guidelines, restrictions, and troubleshooting information that apply to CiscoView:

- With software releases 8.3(x), 8.4(x), and 8.5(x) the CiscoView image cannot be launched on HP-UX platforms. (CSCsa21515)
- With CiscoView, the Firewall Services Module, Content Services Module, and SSL Services Module features might not work consistently with Windows NT. When you try to launch CiscoView ADP on Windows NT, the progress dialog either runs for a long time and then stops or it might launch suddenly. This problem is occurring only with Windows NT with Internet Explorer and Netscape browsers. There is no problem with Windows 2000 or Solaris platforms.

  Workaround: Because the problem is intermittent, the workaround is to close the dialog and try launching the application again. (CSCin41067)

- In rare occurrences, when trying to launch the CiscoView image with the FWSM, CSM, and SSL service module features, the progress dialog might occasionally hang.

  The frequency of the problem varies by platform as follows:

  - Windows NT, approximately 30 percent to 40 percent of the time
  - Windows 2000, approximately 2 percent to 5 percent of the time
  - Solaris, approximately 2 percent to 5 percent of the time

  Workaround: Close the progress dialog and try launching again. (CSCin42718)

- In rare occurrences with CiscoView, you might experience the following two problems:

  Case 1: Clicking the "Cancel" button causes an exception when you perform this procedure: When you launch any FWSM, CSM, or SSL dialog, such as "FWSM - Assign Vlans to Firewall blade," the progress dialog bar displays. Then, if you click the cancel button, the "Aborting the operation. Please wait" message displays. After a period of time, the "Failed to retrieve category: Assign VLANs to Firewall Blade.java.lang.NullPointerException" window displays. If you close this window, the "Aborting the operation, please wait" main window closes. Although this problem occurs intermittently, the cancel operation for the VLAN flows dialogs works correctly.

  Workaround: Close the exception and try to launch the dialog again.

  Case 2: Close the progress dialog bar by clicking the asterisk (*) button (this is not applicable for Solaris platforms) then launch any dialog such as "FWSM - Assign Vlan to blade." The progress bar appears, now close the progress bar by clicking the "X" button. This results in a "Ciscoview Error" message and the application might hang.

  Workaround: Close the session and try launching it again. Instead of using the "X" button to close the progress bar, use the cancel button. (CSCin43633)

- CiscoView device discovery fails when Supervisor Engine 1 in slot 1 is in ROMMON mode and Supervisor Engine 2 in slot 2 is active. This problem is resolved in software release 8.1(2). (CSCin43526)

- The 7.1(1) and 7.1(2) CiscoView + SSH images may fail to boot on Supervisor Engine 1 systems with 64-MB DRAM. This problem applies to all models of Supervisor Engine 1 (WS-X6K-SUP1-2GE, WS-X6K-SUP1A-2GE, WS-X6K-SUP1A-PFC, WS-X6K-SUP1A-MSFC, WS-X6K-S1A-MSFC2). Due to this problem, the cat6000-supcvk9.7-1-1.bin and cat6000-supcvk9.7-1-2.bin CCO images have been deferred. As an alternative, the cat6000-supcvk8.7-1-1.bin or the cat6000-supcvk8.7-1-2.bin images may be used if SSH support is not required. If both CiscoView and SSH support is required, the 6.3(x) supcvk9 images or the 7.2(x) and later supcvk9 images should be used. This issue is documented in open caveat CSCdw70549.

- The supported client platforms, browsers, and Java Plug-in versions supported by CiscoView are as follows:

Client Platform	Web Browser	Java Plug-in
Solaris 2.7/2.8	Netscape Navigator 4.76, 4.77, 4.78, 4.79	Java Plug-in 1.3.0 (JRE 1.3.0) Java Plug-in 1.3.1 (JRE 1.3.1)
Windows 98 Windows NT 4.0 Windows 2000	Internet Explorer 5.5 Netscape Navigator 4.76, 4.77, 4.78, 4.79	Java Plug-in 1.3.0-C (JRE 1.3.0) Java Plug-in 1.3.1 (JRE 1.3.1)

Client Platform	Web Browser	Java Plug-in
HPUX 11.0	Netscape Navigator 4.77, 4.78, 4.79	Java Plug-in 1.2.2 (JRE 1.2.2) Java Plug-in 1.3.1 (JRE 1.3.1)
AIX 4.3.3	Netscape Navigator 4.77, 4.78, 4.79	Java Plug-in 1.3.0 (JRE 1.3.0) Java Plug-in 1.3.1 (JRE 1.3.1)

Note The Java Plug-in can be downloaded from http://www.cisco.com/cgi-bin/tablebuild.pl/cview-plugin

Note Java Plug-in versions 1.3.0_01 and 1.3.0_02 do not work with CiscoView.

Note Java Plug-in versions 1.3.1_01 and later are not supported by CiscoView.

- If the CiscoView chassis scroll bar does not appear, resize the browser window. Another workaround is to right-click on the chassis and select "Resize" to decrease the size of the chassis view.

  On Windows NT machines with Java Plug-in 1.3.0 installed and Netscape running, the CiscoView chassis scroll bar does not appear, even after resizing it. To correct the problem, upgrade to Java Plug-in 1.3.1. (CSCdw58407)

- On Solaris machines with Java Plug-in 1.3.1 installed, if you are running either Netscape Navigator 4.77, 4.78, or 4.79, you might see a blank screen after launching CiscoView. (CSCdw13384)

To correct the problem, perform these steps:

Step 1 Uninstall the current Java Plug-in from your machine.1

Step 2 Download the Java Plug-in from the following location and install it on your machine:

http://www.cisco.com/cgi-bin/tablebuild.pl/cview-plugin

Step 3 Clear the cache by entering the following CLI command: **rm -rf ~/.netscape**

Step 4 Enter the following CLI command: **export NPX_PLUGIN_PATH = /usr/j2se/jre/plugin/sparc/ns4**

Step 5 Launch Netscape Navigator.

Step 6 Select **Edit > Preferences,** and then click **Advanced** in the navigation tree.

Step 7 Make sure the **Enable Java** checkbox is *not* selected.

Step 8 Specify the IP address of the device you want to access and launch CiscoView. The Java console is displayed, but the chassis view does not appear.

Step 9 Select **Edit > Preferences**, and then click **Advanced** in the navigation tree.

Step 10 Select the "Enable Java" checkbox.

Step 11 Specify the IP address of the device you want to access and launch CiscoView. Both the Java console and chassis view should now be displayed.

- If you are running Netscape and have a Java Plug-in installed that is an earlier version than version 1.3.0, you might get a blank screen when you launch CiscoView. (CSCdw59601)

  To correct the problem, download Java Plug-in 1.3.0 or later from the following location: http://www.cisco.com/cgi-bin/tablebuild.pl/cview-plugin

- If your machine is running Windows 2000, Windows NT, or Windows 98 and the chassis view does not appear, you should disable the Java Plug-in's JAR caching feature, as follows:
  - For Java Plug-in 1.3.1:

    1) Select **Start > Settings > Control Panel > Java Plug-in 1.3.1**.

    2) Click the **Cache** tab.

    3) Click **Clear JAR Cache**.
  - For Java Plug-in 1.3.0:

    1) Select **Start > Settings > Control Panel > Java Plug-in**.

    2) Click the **Basic** tab.

    3) Make sure the "Cache JARs In Memory" checkbox is not selected.

    4) Click **Apply**.
- If your machine runs on the HP-UX platform, we recommend that you use the HP release of Netscape. The HP release of Netscape can be downloaded from the following location: http://www.hp.com/workstations/products/unix/software/netscape/index.html (CSCdw59617)
- CiscoView images take approximately 12 minutes to download from a TFTP server to a Flash PC card. (CSCdr14437)
- In the VLAN & Bridge dialog box (**Device > Configure > VLAN & Bridge**), deleting the primary VLAN after unbinding the secondary VLAN returns an error message.

  Workaround: Close and reopen the dialog box and then delete the primary VLAN.

  After binding a secondary VLAN to the primary VLAN, delete the primary VLAN and the following error message is displayed: "Set failed due to snmpRspGenErr for vtpVlanEditRowStatus.1.199."

  Workaround: Close and then reopen the dialog box. You should now see the correct error message: "`The Primary is bounded ...`" (CSCdt65530)
- The Carrier Alarm LED status on WAN modules is not supported by SNMP. (CSCdw50111)
- CWDM GBICs and 1000BASE-TX (copper) GBICs installed in WAN modules display as normal GBIC ports in CiscoView. (CSCdy18652)
- If you have configured Internet Explorer to bypass certain addresses in the proxy server (such as the IP address of the switch), the Java applet on the PC will still try to connect to the switch through the proxy server. For security reasons, this may cause the CiscoView GUI to fail if the proxy server cannot talk to the switch directly. (CSCdw48852)
- In the EtherChannel dialog box (**Port > Configure > Ether Channel**), when EtherChannel Operation Mode is changed from "pagpOn" to "off/manual," click **Refresh** and the PAgP dialog box displays "N/A" for every field. To work around the problem, close and reopen the dialog box. (CSCdw76309)
- If you use QoS Device Management to create a policy name and try to delete the policy name, the following incorrect error message appears:

  ```
  Unable to set row status
  ```

(CSCdu11333)

- If you use QoS Device Management to add an IP ACL, select the **Add/Edit ACE** option, select an entry and make some changes, and then either click **Cancel** or **OK**. The configuration fails due to misconfigurations when you select **OK**; the previously entered values will appear as defaults when you attempt to edit your configuration.

  Workaround: Overwrite the values in the fields if necessary.

  (CSCdu05678 and CSCdu15066)

- If you use QoS Device Management to add or edit an IP/IPX/MAC ACL, no buttons are available to move ACE entries up and down.

  Workaround: Select the entry that needs to be moved and click on **Edit** and select **OK**. This entry is then moved to the bottom of the ACE list. (CSCdt64023)

- If you use QoS Device Management and select **Policy Selection**, **Add/Edit Policies >Change**, and then select a policy and click OK, selecting **Cancel** when the confirmation window displays will not cancel the operation. The policy is still added to the Policy Selection.

  Workaround: Delete the policy selection entry that was added. (CSCdu43690)

- The Catalyst 6000 CiscoView (CV) images do not support the Carrier Alarm LED for WAN modules. (CSCdt52011)

- There is a problem when you highlight the MultiChannel DS3 Port Adapter in the WS-X6182-PA module, and then select **Configure > Interface**. The dialog box displays "n/a" or the incorrect values in every field. Also, if you select **Monitor > Interface**, the charts in the resulting dialog box do not get updated, and an error message is displayed in the status bar. This problem is corrected in MSFC Cisco IOS Releases 12.1(13)E, E1, and E2. (CSCdr39591)

- Disabled WAN modules are placed in the power-down state. This problem is resolved in software release 7.2(2). (CSCdw50083)

- 802.1X Authentication timer fields are available in the port-level PAE dialog box (**Port > Config > PAE > Port Authenticator**). This problem is resolved in software release 7.3(1). (CSCdw86044)

- The Redetect Protocol function in the MST Port Status dialog box (**Port > Configure > Spanning Tree > MST Port Status**) does not work on voice ports. This problem is resolved in software release 7.3(1). (CSCdx04800)

- When a device is set to MST Spanning Tree mode, the "Path Cost" and "Priority" fields in the Bridge Details dialog box (**Port > Configure > Bridge > Bridge Details**) cannot be set on a channeling port that is using PAGP or LACP. This problem is resolved in software release 7.3(1). (CSCdx23200 and CSCdx23217)

- With CiscoView, the SVI configuration dialog box is still shown under **Device -> Configure -> VLAN&Bridge** for the Firewall Services Module, Content Services Module, and SSL Services Module when a Supervisor Engine 1 module is installed. Because these modules require a Supervisor Engine 2, the dialog box should not be displayed. (CSCin43687)

Open and Resolved Caveats in Software Release 8.7(3)

These sections describe open and resolved caveats in supervisor engine software release 8.7(3):

- Open Caveats in Software Release 8.7(3), page 102
- Resolved Caveats in Software Release 8.7(3), page 102

Open Caveats in Software Release 8.7(3)

This section describes open caveats in supervisor engine software release 8.7(3):

- On a Catalyst 6500 series switch that runs software release 8.7(3), with CFM enabled, on an HA switchover from active to standby, the trunk mode and encapsulation of ports changes from desirable dot1q to auto-negotiate (default mode). This problem occurs after you load the configuration on the active supervisor engine by copying it from a file. Also, the trunk mode and encapsulation of ports enabled with CFM do not synchronize with the standby supervisor engine.

  Workaround:

1. After a switchover, on the new active supervisor engine, manually reconfigure the trunk mode and encapsulation of the CFM-enabled port.
2. Manually configure the trunk mode and encapsulate the CFM-enabled port before the switchover.
3. Boot the switch with auto configuration; the trunk mode synchronizes with the standby supervisor engine. (CSCsv85531)

- On a Catalyst 6500 series switch with a redundant Supervisor Engine 32 that runs software release 8.7(3), an error message “No clusters left while allocating for address 0x2ce81200” displays when you create 1000 outward MEPs. This inband failure occurs when CFM is enabled and the switch has been configured with 200 or more MEPs.

  Workaround: Configure the switch with less than 200 MEPs. (CSCta48612)

- On a Catalyst 6500 series switch that runs software release 8.7(3), the random VLANs get stuck in the listening or learning state of spanning tree and fails to move to the final forwarding or blocking state. This problem occurs when a Rapid-PVST + is configured in spanning tree mode and when a large set of VLANs are created in the primary server using the command **set vlan 2-4094**.

  Workaround: Create a smaller set of VLANs using the command **set vlan 2-500**. (CSCta62870)

- On a Catalyst 6500 series switch that runs software release 8.7(3), when the Alarm Indication Signal (AIS) gets detected, a clear syslog message is generated for all the links that are part of a channel for the same MEPs. This problem occurs when both CFM and AIS are enabled.

  Workaround: None. (CSCtb30848)

- On a Catalyst 6500 series switch that runs software release 8.7(3), the Link Trace Response (LTR) is sent out without the Ingress/Egress Type-Length-Value (TLV), in response to Link Trace Messages (LTM). This problem occurs when CFM is enabled and when a MIP is configured on the port other than an Ingress/Egress ports.

  Workaround: None. (CSCtb32987)

- On a Catalyst 6500 series switch that runs software release 8.7(3), and when MVRP enabled, random VLANs declaration is seen with the redundant channels. This happens when a channel's spanning tree state moves from alternate to root.

  Workaround: Disable and Enable MVRP. (CSCtb78713)

Resolved Caveats in Software Release 8.7(3)

This section describes resolved caveats in supervisor engine software release 8.7(3):

- On a Catalyst 6500 series switch that runs software release 8.7(3), when a spanning tree blocked port moves to the forwarding state, the traffic convergence over the link with 4094 VLANs on a topology change takes approximately 20 seconds. Similarly, the traffic convergence over the 3- port channel takes approximately 22 seconds. These values are subject to the topology being used and the position of the link failures in the network.

Note Traffic convergence is faster when you have a fewer VLANs.

This problem occurs when MVRP is enabled with 4094 VLANs.

Workaround: None. (CSCsv89137)

- On a Catalyst 6500 series switch that runs software release 8.7(3) with MVRP enabled, the MVRP leave timer value can be configured greater than leave all timer value. The restriction imposed on leave all timer value to be twice greater than join timer.

  Workaround: None. (CSCta68895)

- On a Catalyst 6500 series switch that runs software release 8.7(2) with CFM enabled, when you receive a valid CC message with an interval of one second, the CC message is dropped. Also, in the reply ingress Type-Length-Value (TLV), the value field contains a value of 12 bytes while the expected value is 13. This problem is observed during the end-to-end 802.1 ag CFM interoperability test during CFM implementation.

Note Numeric codes provided in software release 8.7(2) are 1 = 10 seconds, 2 = 1 minute, and 3 = 10 minutes. The new numeric codes provided in software release 8.7(3) will read as 5 = 10 seconds, 6 = 1 minute, and 7 = 10 minutes.

Workaround: None. This problem is resolved in software release 8.7(3). (CSCsw75537)

- On a Catalyst 6500 series switch that runs software release 8.7(3), the Server MEP generates the AIS at the highest level MIP. This problem occurs when there are multiple level MIPs configured for the same VLAN across different interfaces and when the Server MEP detects the link failure condition.

  Workaround: Configure the highest level MIP on the port that has a smaller interface index than the lower level MIP. This problem is resolved in software release 8.7(3). (CSCsz27904)

- On a Catalyst 6500 series switch that runs software release 8.7(3), A VTP trunk in a split channel condition regroups to form a single channel. Further, the VLAN declaration stops on all the MVRP enabled trunks/channels for all the allowed VLANs, that are part of the VTP channel. This problem occurs when MVRP to VTP interop condition exist on the switch.

  Workaround: Enable MVRP on the VTP channel and configure the registration mode in fixed state by using **set port mvrp** *mod* | *port* **enable** and **set port mvrp** *mod* | *port* **registration fixed** commands. (CSCtb37282)

- On a Catalyst 6500 series switch, the Server MEP and Local MEP AIS defect condition and AIS period configuration synchronization do not occur on a HA switchover from the active to standby supervisor engine. This problem occurs only if the HA is enabled and the redundant supervisor engine configuration operational status is ON.

  Workaround: None. This problem is resolved in software release 8.7(3). (CSCsy78946)

- On a Catalyst 6500 series switch that runs software release 8.7(3), a large number of CC messages increases CPU utilization. The CPU utilization increases up to 99 percent. This problem occurs when CFM is globally enabled and when the MEPs are configured for a large number of VLANs with Continuity Check (CC) enabled.

  Workaround: None. This problem is resolved in software release 8.7(3). (CSCsx43546)

- On a Catalyst 6500 series switch that runs software release 8.7(3), the **show mvrp trunk** and **show trunk** command output includes additional information such as pruned VLANs, declared VLANs, registered VLANs, and registered and spanning tree forwarding VLANs list for each MVRP enabled trunks/channels.

Note This is an enhancement to the existing CLI **show mvrp trunk** and **show trunk** commands.

  Workaround: None. This has been resolved in software release 8.7(3). (CSCsx16646)

- On a Catalyst 6500 series switch that runs software release 8.7(3), the traffic convergence at the newly configured link-up spanning tree forwarding port takes approximately15 seconds for 4094 VLANs. Similarly, the traffic convergence at the 3-port channel takes approximately 35 seconds. These values are subject to the topology being used and the position of the link failures in the network. This problem occurs when MVRP is enabled with 4094 VLANs in MST spanning tree mode.

  Workaround: None. (CSCsz03210)

Open and Resolved Caveats in Software Release 8.7(2)

These section describes open and resolved caveats in supervisor engine software release 8.7(2):

- Open Caveats in Software Release 8.7(2), page 104
- Resolved Caveats in Software Release 8.7(2), page 106

Open Caveats in Software Release 8.7(2)

This section describes open caveats in supervisor engine software release 8.7(2):

- On a Catalyst 6500 series switch that runs software release 8.7(2), the switch that is reset on one of the switches in the network may activate the reset of the standby supervisor engine of the adjacent switch that is connected through the EtherChannels. This problem occurs when the HA-enabled switch with active and standby supervisor engine is plugged in and MVRP is enabled.

  Workaround: None. (CSCsv67215)

- On a Catalyst 6500 series switch that runs software release 8.7(2), the CLI command **clear mvrp statistics** *mod/port* may fail with a message “Failed to clear MVRP statistics. Trunk is not MVRP enabled”. This problem occurs when you try to enter the command on the first port of the MVRP-enabled channel.

  Workaorund:

1. Enter the CLI command **clear mvrp statistics** *mod/port* on all the ports of the channel individually.
2. Enter the CLI command **clear mvrp statistics all**. (CSCsw19333)

- On a Catalyst 6500 series switch that runs software release 8.7(2), the Layer 2 traceroute database in the Ethernet-CFM protocol displays all the entries with the maximum number of hops in each traceroute entry to be equal or less than the Time-to-live (TTL) in the recent Layer 2 traceroute execution.

  Workaorund: Enter the **traceroute** command without specifying the number of TTL hops before check the traceroute database. (CSCsv99804)

- On a Catalyst 6500 series switch that runs software release 8.7(2), the nonoperational channels display MVRP pruning information when you enter the **show mvrp trunk** and **show trunk** commands and MVRP is enabled.

  Workaround: None. (CSCsv84776)

- On a Catalyst 6500 series switch that runs software release 8.7(2), when MVRP is enabled on all the trunks, the VLAN traffic is disrupted for 40 seconds during an HA switchover from the active to the standby supervisor engine and there are more than 1000 VLANs.

  Workaround: None. (CSCsv91026)

- On a Catalyst 6500 series switch that runs software release 8.7(2), the LTM initiated through the CLI is restrained by the traceroute database size. But, the LTM initiated through SNMP is not restrained by traceroute database size. This problem occurs when CFM is enabled and LTM is initiated through SNMP with a traceroute database size that is set to less.

  Workaround: None. (CSCsv37479)

- On a Catalyst 6500 series switch that runs software release 8.7(2), with CFM enabled, on an HA switchover from active to standby, the trunk mode and encapsulation of ports changes from desirable dot1q to autonegotiate(default mode). This problem occurs after you load the configuration on the active supervisor engine by copying it from a file. Also, the trunk mode and encapsulation of ports enabled with CFM do not synchronize with the standby supervisor engine.

  Workaround:

1. After a switchover, on the new active supervisor engine, manually reconfigure the trunk mode and encapsulation of the CFM-enabled port.
2. Manually configure the trunk mode and encapsulate the CFM-enabled port before the switchover.
3. Boot the switch with autoconfiguration; the trunk mode synchronizes with the standby supervisor engine. (CSCsv85531)

- On a Catalyst 6500 series switch that runs software release 8.7(2) with CFM enabled, the **dot1agCfmLtrRelay** command returns a value 4, which is not defined in a MIB. This problem occurs when the FDB sends a traceroute message and no corresponding entry in present in the FDB at the remote end device.

  Workaround: None. (CSCsv92187)

- On a Catalyst 6500 series switch that runs software release 8.7(2), 801.1X for a host, in port based mode with no ACL mapping on the port if the RADIUS sends a VLAN that is mapped statically to an ACL on the switch the host will get stuck in IP waiting state.

  Workaround: Map ACL on the port or change the port to VLAN-based mode and send ACL dynamically from radius. (CSCsv57441)

- On a Catalyst 6500 series switch that runs software release 8.7(2), the Ethernet OAM feature error block option is not supported on EtherChannels. This problem occurs when Ethernet OAM and trunking are enabled on ports and when the port is set as an EtherChannel group.

  Workaround: None. (CSCsm77810)

- Loop trap Error is not cleared on switches that runs catalyst operating system software release 8.7(2).

  In the following scenario,

  3/1 3/1 3/2 3/1

  SW1----------SW2----------SW3

1. Check that the switches are in spanning tree MST mode.
2. Check that SW1 and SW3 and its trunks are enabled with CFM.
3. Check that SW2 and its trunks are enabled with CFM transparent mode.
4. Configure MEPs on both the SW1 and SW3 trunks with CC enabled and ensure that the MEPs are cataloged on either end.
5. Change the spanning tree mode of SW2 to PVST+ and observe that all the MEPs get a "Loop Trap Error" message reported in both SW1 and SW3.
6. Change back the STP mode to MST on SW2 and observe that all the MEPs entries get cataloged back correctly. Note that the Loop Trap Error is not cleared.

   Workaround: None. (CSCsr15987)

Resolved Caveats in Software Release 8.7(2)

This section describes resolved caveats in supervisor engine software release 8.7(2):

- On a Catalyst 6500 series switch that runs software release 8.7(2), when CFM and MVRP are enabled on modules that have two match registers, CFM will not be supported on two match register modules, unless earl-match-register is enabled to support CFM on the forwarding ports.

  Workaround: Use the **set ethernet-cfm earl-match-reg** [**enable | disable**] command and the **show ethernet-cfm earl-match-status** command to support CFM on the forwarding ports. This problem is resolved in software release 8.7(2). (CSCsr91231)

- On a Catalyst 6500 series switch that runs software release 8.7(2), dropped packets and sequence number errors occur when ELMI PDUs are sent untagged to the CE-ISR 3845.

  Workaround: Enable dot1q-all-tagged globally and then disable dot1q-all-tagged explicitly on the UNI PE port that connects to the CE-ISR 3845. This problem is resolved in software release 8.7(2). (CSCsq95350)

- On a Catalyst 6500 series switch with the Supervisor Engine 720 that runs software release 8.7 (2), in a redundant link setup, when inward/outward MEPs and MIPs are configured at various levels, Connectivity Check Message (CCM) storms occur in the network. These storms cause high CPU usage and traceroute to fail. This problem occurs only when the user has MIPs and outward MEPs configured on the blocked or redundant links.

  Workaround: Remove the MIPs from the blocked port and configure the MIPs on the forwarding port. Remove the outward MEPs from the redundant link. This problem is resolved in software release 8.7(2). (CSCsq77245)

- On a Catalyst 6500 series switch that run software release 8.7(2), when a VLAN is configured, using the **traceroute** command fails to report egress port details of the intermediate switches. This condition occurs when CFM is enabled, MIPs are configured on intermediate switches, and the **traceroute** command is initiated from MEP on one end to the other end of the port.

Workaround: None. This problem is resolved in software release 8.7(2). (CSCsr43049)

- On a Catalyst 6500 series switch that runs software release 8.7(2), when CFM is enabled on a channel that has a minimum of two ports, the ping fails on an outward Maintenance End Point (MEP), when the first active port of the channel is disabled and the switch is reset. This condition is seen when the outward MEP is configured and you enter the **set ethernet-cfm port-mac-enabled** for the first active port of the channel.

  Workaround: After the switch reset, set the MAC port for the first active port of the channel using the **set ethernet-cfm port-mac-enable** *mod/port vlan* command. This problem is resolved in software release 8.7(2). (CSCsr60352)

- On a Catalyst 6500 series switch that runs software release 8.7(2) with CFM and MVRP enabled on two match register modules, MVRP fails to program the match register with the syslog.

  Workaround: Disable MVRP globally and enable it again. This problem is resolved in software release 8.7(2). (CSCsr91125)

Open and Resolved Caveats in Software Release 8.7(1)

These sections describe open and resovled caveats in the supervisor engine software release 8.7(1):

- Open Caveats in Software Release 8.7(1), page 107
- Resolved Caveats in Software Release 8.7(1), page 109

Open Caveats in Software Release 8.7(1)

This section describes open caveats in the supervisor engine software release 8.7(1):

- After disabling/enabling two ports of a channel in the quick succession, the spanning tree gets re-initialized. This problem is observed when show spantree mod/port is executed. This condition is observed only when the LACP channel mode is active or while disabling and enabling two ports of a channel in a time span of around 5-10 seconds.

  Workaround: Do not enable the ports in quick succession. Allow the first port to join the LACP channel and then enable the second port after 15-20 seconds. (CSCso25187)

- Channels take too long to come up with MVRP enabled switch during boot up. The time taken to boot up increases as the number of trunks and VLANs increase.This condition occurs when the switch is running with software release 8.7(1).

  Workaround: None. (CSCso74278)

- Enabling MVRP periodic timer increases the CPU utilization on the switch. This condition is observed when an HA-enabled Supervisor Engine running on software release 8.7(1) has more that 2000 VLANs.

  Workaround: Disable periodic timer if HA is enabled and when the number of VLANs are greater than 2000. (CSCso58988)

- On a Catalyst 6500 series switch running software release 8.7(1), enabling MVRP globally holds the console for a longer period of time. This causes the console delay that increases with the number of trunks, channels and VLANs added.

  Workaround: None. (CSCso28767)

- When MVRP is enabled, the overall total convergence is impacted, except for MST STP convergence. This condition occurs when the switch is running software release 8.7(1) and when the spanning tree mode is set to MST and is MVRP-enabled.

  Workaround: Tune the MVRP-related timers based on topology and the number of trunk (number of MST instances) to improve the overall convergence. (CSCsq14830)

Note With MVRP- enabled, the convergence time is: Total Convergence = Spantree Convergence + MVRP Convergence

- On a catalyst 6500 series switch running software release 8.7(1), bulk creation/deletion of VLANs on a VTP primary server may cause high CPU utilization when an MVRP enabled in that VTP domain. This condition is observed typically when more than 1000 VLANs is created or deleted simultaneously.

  Workaround: Enable MVRP and reduce the number of VLANs creation/deletion in single command **set vlan <vlan>**. (CSCsm77504)

  For example:

```
Console (enable) set vlan 100-110
VTP advertisements transmitting temporarily stopped,
and will resume after the command finishes.
Vlan 100 configuration successful
Vlan 101 configuration successful
Vlan 102 configuration successful
Vlan 103 configuration successful
Vlan 104 configuration successful
Vlan 105 configuration successful
Vlan 106 configuration successful
Vlan 107 configuration successful
Vlan 108 configuration successful
Vlan 109 configuration successful
Vlan 110 configuration successful
```

- On a switch running software release 8.7(1) with a MVRP dynamic VLAN creation enabled, where the native VLAN assigned to the trunk is not present on the switch, the MVRP PDU's received are dropped without processing. This condition occurs only when an MVRP dynamic VLAN creation is enabled and native VLANs of trunks are not present.

  Workaround: Create native VLANs manually on the switch. (CSCsq09170)

- On a dot1x authenticated host whenthe "re-auth period server" is enabled, the re-auth timer is disabled, and no re-auth/initialize action takes place. This condition occurs if the "re-auth period server" is enabled and from the radius and no session-timeout (IETF 27) is sent.

Note This is a misconfiguration. Ensure to send session timeout from the radius when re-auth period server is enabled.

  Workaround: Ensure the session timeout is sent from theradius when "re-auth period" server is enabled. (CSCso49904)

- On a Catalyst 6500 series switch with redundant Supervisor engine, running on software release 8.6(2), the PBF client and gateway cofiguration are absent only from the standby supervisor, only if a map between the PBF client and gateway is attempted after clearing the same map. This condition occurs if more than 160 PBF clients are mapped to the same gateway.

  Workaround: None. (CSCsq05015)

- On a switch running software release 8.7(1), the MVRP module reset programs LTLs for all the MVRP pruned VLANs. This condition occurs when the MVRP - enabled trunks present on the specific module and the module are reset.

  Workaround: Toggle the MVRP state of the specific trunk. (CSCsq18717)

  When MVRP is enabled, the overall total convergence is impacted. But Rapid PVST + STP convergence is not affected. This condition occurs when the switch is running software release 8.7(1) and when the spanning tree mode is set to Rapid PVST + STP.

  Workaround: Tune the MVRP-related timers based on topology and the number of trunk to improve the overall convergence. (CSCso99273)

Note With MRRP-enabled, the convergence time is: Total Convergence = Spantree Convergence + MVRP Convergence. MVRP starts after the spanning tree protocol enables the ports in the forwarding state and make the MVRP convergence time additive.

- On a Catalyst 6500 series switch running software release 8.7(1) when MVRP is enabled on a port, the MVRP non participant applicant state is not supported.

  Workaround: None. (CSCsk69185)

- When MVRP and VTP pruning are enabled in a VTP Interop situation, then disable MVRP on the trunk facing the VTP domain, which causes all VLANs to move to QA. This condition is observed when the MVRP is enabled and disabled on the trunk port facing the VTP domain.

  Workaround: Toggle the VTP domain facing trunk. When the trunk comes up, VTP pruning is enabled for VLANs below 1k. VLANs above 1k are declared on MVRP trunks and moved to QA.(CSCsq06760)

- On a switch running software release 8.7(1), upon switch reset, the LTLs are programmed for pruned VLANs. This condition occurs when MVRP is enabled.

  Workaround: Enable and disable the MVRP on those trunks. (CSCsq21359)

- Configuring a new trunk or channel on an MVRP enabled switch causes momentary (10 seconds) traffic outage for the existing VLAN. This condition occurs when MVRP is enabled on the switch.

  Workaround: Enable MVRP on the trunk, before configuring a trunk or channel. (CSCsq28711)

- When the switch is running on software release 8.7(1), upon executing “clear mvrp configuration all” the default action performed by the confirmation message is “n”, but the default action displayed is “[y]” as shown below:

```
Console> (enable) clear mvrp statistics all
Warning:MVRP statistics will be cleared.
Do you want to continue (y/n) [y]?
```

  Workaround: Specify the action which needs to be performed for the confirmation message either “n” or “y” explicitly. (CSCso31117)

Resolved Caveats in Software Release 8.7(1)

This section describes resolved caveats in supervisor engine software release 8.7(1):

- Artemis crashes when port channel interface, WS-X6502-10GEs are reset using the **shut/no shut** command repetitively.

Workaround: None. This problem is resolved in software release 8.7(1). (CSCsg74212)

- Centaurus links connected in loopback on the same switch remain in down state even after reset. This condition occurs when either 100base-BX10-D/U or 100base-FX SFP is connected in loopback on a Centaurus linecard. The ports may result in a down state, if one or both of the ports toggle the link.

  Workaround: Physically remove the fiber cable and reconnect to establish the link again. This problem is resolved in software release 8.7(1). This problem is resolved in software release 8.7(1). (CSCsk83636)

- On WS-X6548-RJ-45 trunk interface, packets received on VLAN causes the input-drops counter to increment if the packets are also allowed on trunk.

  Workaround: Enable auto-negotiation. This problem is resolved in software release 8.7(1). (CSCsj52192)

- Under certain conditions, when VTP pruning is enabled, multicast traffic may stop forwarding out of the switch on a trunk connection (which could be a single connection or a port-channel). This problem that affects multicast traffic, not unicast traffic. This condition seen with VTP pruning enabled, multicast traffic and may stop egressing out on a trunk connection.

  During the problem, unicast traffic is not affected and **show trunk** still showing the correct output that the VLAN which should receive the multicast traffic is still listed under "VLANs in spanning tree forwarding state and not pruned" under **show trunk** state.

  Workaround: None. This problem is resolved in software release 8.7(1). (CSCsk7575Changing the system time manually has no effect on summertime.

  For example:

  If system time is Nov 4, 01:30:00 AM and the Summertime is enabled then when the system time ticks to 02:00 AM the summtertime ends and falls back by one hour to 01:00 AM. Now the s**how summertime** shows 2008 summertime period which is correct.

  When, the system time is changed to March 3, 2007 09:00:00 AM, the **show summertime** still shows 2008 summer time period. It should show the summertime for the year reflected in the current time.

  Workaround: Set the summertime manually. This problem is resolved in software release 8.7(1). (CSCsi15955)

- Catalyst 6500 series switch fails to clear VLAN- ACL mapping when switching to the standby Supervisor Engine . This condition is observed only when dot1x is enabled.

  Workaround: None. This problem is resolved in software release 8.7(1). (CSCso08889)

- On a Catalyst 6500 series switch running Catalyst operating system, CGMP may not work as expected. If the IGMP mode is set to"auto", the operational mode may remain IGMP - only even when a CGMP router is connected to the switch.

  Workaround:

1. Change the IGMP mode from "auto" to "igmp-cgmp" by using the command **"set igmp mode igmp-cgmp".**
2. Place the sc0 interface in a VLAN in which a CGMP- enabled router exists.This problem is resolved in software release 8.7(1). (CSCsg82446)

- When a channel spans multiple modules and one of the links goes down and comes up, the ifindex related to that EtherChannel may be lost. This condition does not impact the etherchannel in form or function.

Workaround: Disabe all the ports in the channel and enable them again should resolve this issue. This problem is resolved in software release 8.7(1). (CSCsh23570)

Open and Resolved Caveats in Software Release 8.6(6)

These sections describe open and resolved caveats in supervisor engine software release 8.7(1):

- Open Caveats in Software Release 8.6(6), page 111
- Resolved Caveats in Software Release 8.6(6), page 111

Open Caveats in Software Release 8.6(6)

This section describes open caveats in supervisor engine software release 8.6(6):

- EAPOL is not rate-limited when 802.1X is enabled on a port. All EAPOL BPDU packets that are received by the port are sent to the switch processor.

  Workaround: None. (CSCsl09177)

- Link Layer Discovery Protocol (LLDP) is processed regardless of 802.1state on a port.

  Workaround: None. (CSCsl01711)

- Online diagnostics fail on most modules after they are upgraded to software release 8.6(4).

  Workaround: None. (CSCsl42629)

- On a Catalyst 6500 series switch running software release 8.6(6), after sending an EAP-start packet, if a dot1x-enabled supplicant host connected to an IP phone, , is disconnected without authentication and another nonsupplicant host is connected to the IP phone, the host does not fall to MAB(MAC Authentication Bypass) and the port gets locked in dot1x.

  Workaround: Authenticate the dot1x enabled supplicant host, log off and then connect to a nonsupplicant host. (CSCsq93015)

Resolved Caveats in Software Release 8.6(6)

This section describes resolved caveats in supervisor engine software release 8.6(6):

- On Catalyst 6500 series switches running on software release 8.6(5) and redundant Supervisor Engine 720 with MSFC, CPU hog is encountered on the switch processor when WCCP is diabled. This problem occurs because WCCP fails to find the cache engine before WCCP is disabled. This problem also leads to a NetFlow CPU hike nearly 100 percent indefinitely.

  Workaround: Reset the switch or activate the standby supervisor engine. This problem is resolved in software release 8.6(6). (CSCso68324)

- On a Catalyst 6500 series switch running software release 8.6(6), if you execute a file transfer using FTP and AAA authentication, the console locks up.

  Workaround: Reload the switch. This problem is resolved in software release 8.6(6). (CSCso88314)

- On a Catalyst 6500 series switch running software release 8.5(2) multiple WS-X6148A-GE-45AF linecards generate the following error:

```
%SYS-2-MOD_TEMPSENSORFAIL:Module # temperature sensors failed, please %powercycle the
module
```

Workaround: Power cycle the module as per the error message. This problem is resolved in software release 8.6(6). (CSCsl37513)

- PIM hellos are not reaching the Supervisor Engine 2 after an interface down event occurs on the last active port of a module. This condition is observed when a switch running on Catalyst Operating System 8.6(4) on Supervisor Engine 2 and MSFC2 on IOS 12.2(18)SXF11).

  Workaround:

  - Do not shut or disconnect the last link on an interface module.
  - Power down the interface module and if the last active link on it needs to be removed or disconnected enter**"set module power {up| down}** <*mod*>**"**command. This problem is resolved in software release 8.6(6). (CSCsq01258)

- When a Rapid-PVST + is configured in spanning tree mode dot1q trunk is not formed properly on the connected ports after a VTP domain mismatch. The dot1q trunk fails to form dynamically even after associated trunk ports are disabled and reenabled. This condition occurs when Rapid-PVST+ is enabled even in a transparent VTP mode.

  Workaround: Correct the VTP domain mismatch and powercycle the affected switch, which will allow the dot1q trunk to form properly. This problem is resolved in software release 8.6(6). (CSCso07238)

Open and Resolved Caveats in Software Release 8.6(5)

These sections describe open and resolved caveats in supervisor engine software release 8.6(5):

- Open Caveats in Software Release 8.6(5), page 112
- Resolved Caveats in Software Release 8.6(5), page 113

Open Caveats in Software Release 8.6(5)

This section describes open caveats in supervisor engine software release 8.6(5):

- Link Layer Discovery Protocol (LLDP) is processed irrespective of 802.1X state on a port.

  Workaround: None. (CSCsl01711)

- EAPOL is not rate-limited when 802.1X is enabled on a port. All EAPOL BPDU packets that are received by the port are sent to the switch processor.

  Workaround: None.(CSCsl09177)

- Online diagnostics fail on most cards after upgrading to 8.6(4).

  Workaround: None. (CSCsl42629)

- SPT port state transitions to PVID-Inconsistent state on change of native VLANs on the trunk links. This conditions is seen when the native VLANs of the trunk ports are to be changed over a span of few seconds or less.

  Workaround: Flap the link on the other side of the trunk to reconverge to original topology. (CSCsj55292)

- On Catalyst 6500 Series Switches running on software release 8.6(5) and hybrid redundant Supervisor Engine 720 with MSFC, CPU Hog is encountered on SP when disabling WCCP. This problem occurs because WCCP fails to find the Cache Engine before WCCP is disabled. This problem also leads to NetFlow CPU hike nearly 100% indefinitely.

  Workaround: Reset the switch or activate the standby supervisor module. (CSCso68324)

Resolved Caveats in Software Release 8.6(5)

This section describes resolved caveats in supervisor engine software release 8.6(5):

- When the configuration is fully loaded in the 13 Slot Catalyst 6500 switch with redundant Supervisor Engine 32 running software release 8.6(4), the following diagnostic test message appears after resetting the switch.

  ```
  DIAG-3-CARD_ABSENT: Module 14 is not detected.
  ```

  This symptom appears irrespective of one or multiple port-channels are configured on the system. This is misleading as if Catalyst 6500 switch with redundant Supervisor Engine 32 supports only 13 modules.

  Workaround: None. This problem is resolved in software release 8.6(5). (CSCsl62029)

- After HA, 802.1X reauth timer value is set to the reauth value instead of the session timeout value. This condition occurs in Catalyst 8.6(2) operating system.

  Workaround: None. This problem is resolved in software release 8.6(5). (CSCsk23245)

- The **show port mac-auth-bypass** command displays a port in authenticated state on reauth when the critical feature is enabled on the port and RADIUS is unreachable.

  Workaround: None. This problem is resolved in software release 8.6(5). (CSCsl47391)

- When upgrading from 7.6(9) to 8.6(3), the QoS ACL is lost. This condition occurs when the switch running 7.x image has low free NVRAM memory and is upgraded to 8.3 or post 8.3 image in binary configuration mode.

  Workaround: Change the configurationmode to text and upgrade.

  This problem is resolved in software release 8.6(5). (CSCsl17301)

- A Catalyst 6000 series switch may experience a memory leak in general message handler process when disabling or enabling a port connected to an access point on a WS-X6148A-GE-45AF with WS-F6K-48-AF submodel. This condition occurs only with VDB Police capable cards with inline power daughter board.

  Workaround: None.

  This problem is resolved in software release 8.6(5). (CSCsm26682)

- A very slow memory leak occurs with dot1x and EAP-TTLS authentication mechanism enabled on a switch running 8.6(3). This causes the switch to run out of memory clusters and display the following log message:

  ```
  SYS-3-SYS_MEMLOW: MCluster usage exceeded 90%
  ```

  Workaround: Reboot the switch.

  This problem is resolved in software release 8.6(5). (CSCsm81461)

- The connectivity to the switch may be lost between a secondary PVLAN and its associated primay PVLANs promiscuous port after a reset occurs. But the connectivity between clients in the same community VLAN is not lost. This condition occurs when PVLAN mapping is created on the reset of switch.

  Workaround: Clear the PVLAN mapping with the **clear pvlan mapping <***x***>** command and then reconfigure the mappings appropriately.

  This problem is resolved in software release 8.6 (5). (CSCsi23783)

- On Catalyst 6500 series switches running on software release 8.6(3), both Firewall Service Modules become active. This condition occurs when you upgrade to software release 8.6(4). The switch would be utilizing configuration mode text with auto-save at the default of 30 minutes. The EtherChannel dynamically formed for the FWSM may show 5 of 6 trunks in an error disabled state due to misconfiguration. This can be seen in the output of **showport errdisable channel-misconfig**.

  Workaround: Manually reset the slot where the FSWSM is resident.

  This problem is resolved in software release 8.6(5). (CSCsm77097)

- The **show envi temp command** displays N/A for MSFC3 intake and exhaust temperature on Supervisor Engine 720.

  Workaround: None. This problem is resolved in software release 8.6(5). (CSCsk59113)

- The switch becomes non-responsive and eventually reloads after the following sequence of commands:

  #set trace tacacs

  #show config all | include

  Workaround: Turn off tacacs trace before issuing **show config #set trace tacacs 0**

  This problem is resolved is software release 8.6(5). (CSCsl09481)

Open and Resolved Caveats in Software Release 8.6(4)

These sections describe open and resolved caveats in software release 8.6(4):

Open Caveats in Software Release 8.6(4)

This sections describe open caveats in supervisor engine software release 8.6(4):

- After HA, 802.1X reauth timer value is set to the reauth value instead of the session timeout value. This condition occurs in Catalyst 8.6.2 operating system.

  Workaround: None.(CSCsk23245)

- DAI is enabled on few VLANs after a system reset.

  Workaround: None.(CSCsh64209)

- Four-port Gigabit Interface out of sync on all LC after non-HA with traffic.

  Workaround: Enable HA before performing switchover. (CSCsl65788)

- Online diagnostics fail on most cards after upgrading to 8.6 (3.28).

  Workaround: None. (CSCsl42629)

- When the configuration is fully loaded in the 13 Slot Catalyst 6500 with redundant Supervisor Engine 32 running software release 8.6(3.32). It is observed that the following diagnostic test message appears after resetting the switch. This symptom seems to appear only if one or multiple port-channels are configured on the system.

  ```
  DIAG-3-CARD_ABSENT: Module 14 is not detected.
  ```

  Workaround: None. (CSCsl62029)

- Link Layer Discovery Protocol (LLDP) is processed irrespective of 802.1X state on a port.

  Workaround: None. (CSCsl01711)

- EAPOL is not rate-limited,when 802.1X is enabled on a port. All EAPOL BPDU packets that are received by the port are sent to the switch processor and are not rate-limited.

  Workaround: None.(CSCsl09177)

- The command **"show port mac-auth-bypass"** displays port in authenticated state on reauth when critical feature enabled on port and RADIUS unreachable.

  Workaround: None.(CSCsl47391)

- When 802.1X is enabled on a port, violation is not triggered with Voice-VLAN-ID

  Workaround: None. (CSCsl64046)

Resolved Caveats in Software Release 8.6(4)

This section describes resolved caveats in supervisor engine software release 8.6(4):

- In Catalyst operating system supervisor running on software release 8.6(1), DACL cannot be applied when parsing of other VSAs fail. When DACL is sent along VSAs, like QOS vacl and port is in port-based qos mode, the port does not move to auth-fail, it goes in an connecting->authenticating->policy-config->waiting loop.

  Workaround: None. This problem is resolved in software release 8.6(4). (CSCsj14165)

- In Catalyst 8.6.1 operating system, ports authenticated with IEEE 8021x that had HA subsequently enabled, sometimes saw an IEEE 8021x authentication error

  Workaround: Disable/enable the port . This problem is resolved in software release 8.6(4). (CSCsj28712)

- In Catalyst 8.6.1 operating system, the aux port in a VLAN configured with IEEE 802.1X authentication, shuts down when EAPOL or EPOL encapsulation over LAN-Start of a different MAC address is seen.

  Workaround: None . This problem is resolved in software release 8.6(4).(CSCsh22945)

- Pings or other traffic destined for the FE interface of a 128-port Adhoc conferencing, and transcoding (ACT) port adapter (WS-SVC-CMM-ACT), whic is installed in a Cisco Communication Media Module (CMM), may not go through, and the following error messages appear:

  ```
  "SYNDIAGS:Minor hardware problem in Module" or

  "%SYS-1-MOD_MINORFAIL:Minor problem in module" or

  "%SYS-4-NVLOG:SYNDIAGS:Minor hardware problem in Module"
  ```

  These messages indicates the module number of the CMM. The output of the show diagnostic result module and module-number command shows "F" for both the Gigabit and Fast Ethernet interfaces of the WS-SVC-CMM-ACT. These symptoms are observed on a Cisco Catalyst 6000 series switch and Cisco 7600 series router that have a Supervisor Engine 32 in which a CMM is installed. The symptoms occur in Cisco IOS Release 12.4(12) but may also affect other releases.

  Workaround: During the boot process, the supervisor engine performs a diagnostic test for line cards. If the diagnostics test fails for the WS-SVC-CMM-ACT, the error messages that are mentioned above appear. The supervisor engine places the WS-SVC-CMM-ACT in the "**err-disabled**" state. To bypass the diagnostic test for line cards, enter the following commands:

  For the Cisco IOS software image:

  ```
  router(config)#diagnostic bootup level bypass
  ```

  For the CatOS software image:

  ```
  Console>(enable)set test diaglevel bypass
  ```

  This problem is resolved in software release 8.6(4). (CSCsi29144)

- After failing over from active to standby Supervisor in a redundant Supervisor Engine 720-3b system running 8.5(8), allmodules have incorrect fpoe programmed for management.

  Workaround:None. This problem is resolved in software release 8.6(4). (CSCsk34156)

- Link flaps may intermittently occur on 10Gigabit Ethernet interfaces with certain XENPAK transceivers.This problem only occurs on 10GBase-SR . As DOM is not supported for this XENPAK type by IOS, the interaction between the XENPAK DOM hardware and the IOS DOM polling mechanism may cause the link to flap.

  Workaround: None. This problem is resolved in software release 8.6(4). (CSCsj73669)

- A Catalyst 6500 switch with WS-6704-10GE or SUP32-10GE cards using XENPAK transceivers, may not enable the XENPAK's transmitter upon module reload or live-insertion of the XENPAK transceiver. As a result, the partner port reports that the link is down. The XENPAK transceiver's transmitter might not get turned on, upon XENPAK live-insertion, or after the module is reloaded.

  Workaround: Execute shut/ no shut, will recover the interface. This problem is resolved in software release 8.6(4). (CSCsi94863)

- If an interface that is in"notconnect" state and is linked up incorrectly because of removing and inserting in very short period of time peer XENPAK, which is in"disabled" state.One is "disabled" (shut), the other is "notconnect" (no shut). It does not depend on the type of XENPAK. Remove XENPAK on "**disabled**" port and reinsert it in very short a period of time. The "notconnect"port is to be linked up even though the other side is "disabled".

  ```
  Xenpak (disabled) -------- Xenpak (notconnect)
  ```

  Workaround: Enter "no shut" then "shut" on the "disabled" port. This problem is resolved in software release 8.6(4).(CSCsh18773)

- After enabling DHCP IPSG on a port that is in port-based security-acl mode and then disabling IPSG, it is not possible to set the port back to VLAN-based security-acl mode. An error message appears indicating that you cannot change the mode to VLAN-based while there is an ACL mapped to the port. In addition, a "show security acl tcam [port]" prints one line reading "Input," rather than stating "No ACL programmed on this interface." Resetting the supervisor engine resolves the issue. Conditions:

  ```
  set port security-acl [mod/port] port-based
  set port dhcp-snooping [mod/port] source-guard enable
  ```

  Workaround: Reset the supervisor.This problem is resolved in software release 8.6(4). (CSCsg40658)

- When VTP pruning is enabled, multicast traffic sourced from vlan may still get forwarded out of the port-channel, which should be pruned off the port-channel due to VTP pruning.This problem happens after one of the member ports in the port-channel goes up anddown. During the problem, "VLANs in spanning tree forwarding state and not pruned" under "show trunk" does not show the problem in the output and shows only the VLAN, that the multicast traffic is sourced from,and is pruned correctly.

  Workaround: Disable all ports in the channel and then re-enable them all. This problem is resolved in software release 8.6(4). (CSCsj82593)

- Removing a port from a vlan will cause the entire vlan's multicast cam table to flush, even if that port is not the source or the receiver of the traffic. This condition occurs when Layer 2 Multicast with no PIM is configured on a Catalyst operating system software on the supervisor engine and Cisco IOS software on the MSFC.

  Workaround: 1) Disable igmp flooding:*set igmp flooding disable.* 2) Force PIM to be the IGMP querier, enable PIM on VLAN interface. This problem is resolved in software release 8.6(4). (CSCsk07136)

- After configuring 'set spantree global-default portfast enable' and 'set spantree global-default bpdu-guard enable' on the SP, port 15/1 went into err-disable.However,could not recover the port status since 15/1 is not configurable. You need to reload the switch. This condition occurs when doing fallback bridging on the MSFC for design reasons.

  Workaround: Disable BPDU guard and BPDU filter explicitly for MSFC ports. This problem is resolved in software release 8.6(4). (CSCsk15951)

- Serial Link Protocol (SLP) communication sent through EOBC between the two Supervisor Engine 2 fails to send packets. The message is observed periodically on the console port.

  Workaround: Remove the standby Supervisor Engine Module. This problem is resolved in software release 8.6(4). (CSCsk62773)

- A Catalyst 6500 series switch running on software release 8.6(3), stops responding when copying a file to an SCP server, when using SCP copy. For example, entering **switch> (enable) copy config scp all** command may lead to this condition.

  Workaround: Use a different method to transfer files to/from the switch. For example, use TFTP on your network. This problem is resolved in software release 8.6(4). (CSCsk63863)

- Port channel configuration loss occurs in text configuration mode after a reset/upgrade. The problem might not happen after every reset/upgrade.This problem can happen for PAGP and LACP and it is time related.

  Workaround: Change the configuration mode to binary. This problem is resolved in software release 8.6(4). (CSCsl02526)

- The switch may exhibit SPANTREE-2-LOOPGUARDBLOCK error message on a port channel interface. The spanning tree message will note: **moved to loop-inconsistent state.** This condition is seen when a FWSM is set to shutdown (not powered down) other port channels on the switch. It may exhibit loop-inconsistent state and fail to come back to operation for long periods of time or not come back to operation at all. The affected VLANs are associated with the external and internal port channels used by the FWSM.

  Workaround: Alternate to using shutdown command to disable the FWSM, would be to use **`set module power down <slot_num>`**

  This problem is resolved in software release 8.6(4). (CSCsl24220)

Caution If configuration auto save is enabled then the configuration for the FWSM slot may be lost after the auto save time period or the write memory command is issued.

- After upgrading from software release 7.x to 8.6(4), the image sync timer is changed from 120 seconds to 2 seconds. This condition is observed in a dual supervisor configuration.

  Workaround: Reconfigure it back to120 by entering **`set boot sync timer 120`** command. This problem is resolved in software release 8.6(4). (CSCsl34565)

- When the spanning tree protocol is changed on a root bridge from PVST+ to Rapid-PVST+ and if the loop guard is present on the ports attached to other PVST+ bridges, the VLAN goes into an inconsistent state. This symptom is observed when spanning tree loop guard is present on ports interconnecting PVST+ bridges and subsequently the spanning tree protocol is changed to Rapid-PVST+ on the root bridge.

  Workaround: Disabling spanning tree loop guard will prevent the VLAN from going into a loop-inconsistent state. When both bridges' spanning tree protocol are set to Rapid-PVST+, loop guard can be enabled again. This problem is resolved in software release 8.6(4). (CSCsl34983)

- With large amounts of unicast or multicast traffic, the following error message may be generated on a Supervisor Engine 2 or a line card that functions in bus/flow through mode:

  ```
  Bus Asic #0 out of sync error: Module needs troubleshooting
  ```

  This symptom is observed on a Cisco Catalyst 6500 series switch and Cisco 7600 series router and may occur on one of the following cards.

  - Sup2
  - WS-SVC-FWM-1
  - 6516-GBIC
  - 6516-GE-TX
  - 6501-10GEX4
  - 6502-10GE
  - 6548-RJ-45
  - 6548-RJ-21
  - 6524-100FX-MM

- These cards must be operating in bus/flow through. In order to not operate in bus/flow through mode an SFM (WS-C6500-SFM) module must be installed or a Sup720 must be used. To determine which mode your module is operating in you can verify with the **show fabric** command. If you are not in bus/flow through mode this is not an issue. Catalyst software releases 8.6(1) through 8.6(3) are affected.

  Workaround: There is no configurable workaround. The only options are to upgrade or operate in a mode other than bus/flow through with the use of an SFM or a Supervisor Engine 720. This problem is resolved in software release 8.6(4). (CSCsl48923)

- High CPU utilization in the SUPERVISOR running 8.5(x) in the FIB process, when a large number of recursive routes in iBGP. Conditions: Issue was found on a switch running SUP2/MSFC2 with 8.5(x) + 12.1E IOS with FLEXWAN and PA-A3-T3 + Two Equal cost path to the iBGP NEXT HOP which MUST include the ATM link. + The two equal cost path can be:

  - external EIGRP/OSPF routes
  - the static routes

  For example:

  ```
  ip route 172.16.99.1 255.255.255.255 20.20.20.20  ---> out VLAN2
  ip route 172.16.99.1 255.255.255.255 30.30.30.30  ---> out ATM interface on FLEXWAN
  ```

  Workaround: The issue does not occur if the two equal cost paths are pointing out VLAN interfaces

  ```
  For example:
  #ip route 172.16.99.1 255.255.255.255 10.10.10.10  ---> out VLAN1
  #ip route 172.16.99.1 255.255.255.255 20.20.20.20  ---> out VLAN2
  ```

  This problem is resolved in software release 8.6(4). (CSCsk19133)

- When connecting to the device via ssh, you are automatically put in enable mode to execute all commands. However, when doing a remote execution of commands using SSH, you can only execute priv1 commands. Both cases you can use the same username.

  ```
  ssh -l username 1.1.1.1 "show ver"  -> will work (priv level is 1)
  ssh -l username 1.1.1.1 "show run"  -> fails (priv level 15)
  ```

  This symptom is observed when:

  - Using TACACS+ authentication on the switch
  - Using SSH to remotely execute commands on the switch

  Workaround: Use local authentication or login to the switch through SSH and manually execute the command. This problem is resolved in software release 8.6(4).(CSCsk87443)

- On a Catalyst 6500 series switch with Supervisor Engine-720 running 8.6(1), if the switch is configured for re authenticating an Odyssey Client either by using the value set by RADIUS server or locally setting the timeout, the switch adds a slight drift delaying the time the Request Identity is sent out.

  Further, this drift increases linearly with session-timeout value. For example, if the session timeout is set to 4mins (240 secs), the switch initiates an Identity Request around 4 mins 44 secs (274 secs-284). If this timeout is increased to 5 mins, the switch sends the request at 5 mins 55 second. Roughly the drift increases by 10 seconds for increase of 1 min in the timeout value.

  For this particular client, it expects an Identity Request within 120 seconds from the timeout. For example, if timeout=4 mins, client expects Id Req within 6 mins. So, when timeout = 12 mins, the reauthentication never happens within 120 seconds causing the client to drop off the network.

  Conditions: Server --- Switch -- Client

  Steel Belted Radius Server and an Odyssey Client which implement the EAP-TTLS authentication protocol. Seen with 8-6-1 release with session-timeout set locally or obtained from the RADIUS server.

  Workaround: For the Odyssey client, to set the session-timeout to less than 12 minutes. This problem is resolved in software release 8.6(4). (CSCsi80855)

- A Catalyst 6500 series switch running on a Catalyst operating system release 8.6(4), it is observed that during bootflash squeeze operation, the process lockup. As a result, bootflash is not accessible or usable. Also a reboot of the system in this status will give as a result a corrupted image, the system would need to boot from external compact flash image.

  Other symptoms observed on the same switches (when bootflash is locked up):

  - show conf command is not able to be performed, since shows up:
  - TFTP session in progress. Try again later.
  - logging functionality stops working (no more messages generated into the logging buffer)

  This condition is triggered when DHCP snooping is also enabled on the box, and binding database being written on the bootflash.

  Workaround: Reload the system from external disk. This problem is resolved in software release 8.6(4). (CSCsj64000)

- In Catalyst operating system software release 8.6 (2), ports with IEEE802.1X and configured with QoS acl result in map not being applied in HA scenario.

  Workaround: None. This problem is resolved in software release 8.6(4). (CSCsj12739)

- With 802.1X is configured on a port, and the port gets a PVLAN from the ACS server, all ports in the ASIC group automatically have their trunk mode set to off. For the ports in the ASIC group that are affected by PVLANs having their trunk mode not set to off , 802.1X authentication should fail.

  Workaround: Fail the authentication if any port's trunk status is not set to off in the same ASIC. This problem is resolved in software release 8.6(4). (CSCsg86688)

- Configuration loss occurs on critical auth on an upgrade from software release 8.5.8 to 8.6.1.

  Workaround: Reconfigure critical auth. The command line interface on software release 8.5.8 for critical auth is deprecated. This problem is resolved in software release 8.6(4)(CSCsh75713)

- DHCP-snooping bindings are not created for ports in a channel.

  Workaround: None. This problem is resolved in software release 8.6 (4)(CSCsh72616)

Open and Resolved Caveats in Software Release 8.6(3)

These sections describe open and resolved caveats in supervisor engine software release 8.6(3):

Open Caveats in Software Release 8.6(3)

This section describes open caveats in supervisor engine software release 8.6(3):

- Tracebacks and alignment errors may occur after an asynchronous PPP call disconnects.

  Workaround: None.

- The Link Aggregation Control Protocol (LACP) channel breaks after several non-HA switchovers.

  Workaround: None. (CSCsd61508)

- Configuration loss occurs on critical auth on an upgrade from software release 8.5.8 to 8.6.1.

  Workaround: Reconfigure critical auth. The command line interface on software release 8.5.8 for critical auth is deprecated. (CSCsh75713)

- DHCP-snooping bindings are not created for ports in a channel.

  Workaround: None. (CSCsh72616)

- DAI is enabled on few VLANs after a system reset.

  Workaround: None. (CSCsh64209)

- The IP Phone ACE is not present in the TCAM after a system reset configured for auto-save.

  Workaround: None. (CSCsh52990)

- DAI on switch ports is not functioning with IPSG when DAI is enabled first.

  Workaround: None. (CSCsh48166)

- MAB ports are in forwarding state on multiple VLANs.

  Workaround: This is a display problem. Traffic is not affected. (CSCsg94068)

- Port shutdown occurs on the second MAC address on a port security-enabled port configured with an auxiliary VLAN and dot1x.

  Workaround: None. (CSCsg78223)

- URL redirect is not working with a different HTTP server port.

  Workaround: None. URL redirection is supported on HTTP port 80 only. (CSCsd43177)

- On a switch with PVLANs configured, the active supervisor engine crashes after a non-high availability switchover.

  Workaround: None. (CSCsh55379)

- A new PVLAN map cannot be configured on a port unless the port is in OFF mode.

  Workaround: None. (CSCsh65474)

- Packet capture can result in dropped protocol packets (for example, STP, UDLD, and PAGP), which results in network instability. The dropped packets can also affect system performance or inband connectivity when sc0/sc1 interface packets are dropped without warning.

  Workaround: None. (CSCsh19826)

- Unknown unicast traffic floods the VLAN. Multicast or flood traffic is not captured in the transmit direction in MPA. The traffic comes on broadcast and multicast LTLs and therefore cannot be rate-limited and can cause the inband to choke and crash.

  Workaround: None. (CSCsg88097)

- The destination device may receive twice the number of packets actually transmitted from the switch. In addition, the dump file may not reflect proper statistics. This might happen when the switch is operating in truncated mode. This is a hardware limitation.

  Workaround: None. (CSCsf19014)

- Multicast or flood traffic is not captured in the transmit direction in MPA. This occurs because the traffic comes on broadcast and multicast LTLs and therefore cannot be rate-limited and can cause the inband to choke and crash.

  Workaround: None. (CSCsh23980)

- CFM Continuity Check (CC) messages are not reaching the NMP if the receive port is on a WS-6148X2-RJ-45.

  Note CFM is not supported on the WS-6148X2-RJ-45 and WS-6548-RJ-45.

  Workaround: None. (CSCsd25109)

- CFM loopback and traceroute fails if forwarding link is an ISL trunk.

  Workaround: None. (CSCsd13642)

- You cannot enable CFM on an RSPAN VLAN.

  Workaround: None. (CSCsd26451)

- The **show qos statistics l3stats** command is supported in Supervisor Engine 2s equipped with a WS-F6K-PFC2. However, peak and average rate counters are broken and/or inaccurate for non-IP packets with COS changed.

  Workaround: None. (CSCse17681)

- The **show qos statistics l3stats** command indicates that the peak rate for “non-IP packets with TOS changed” is inaccurate at times.

  Workaround: None. (CSCsg86633)

- The **show qos statistics l3stats** command in all supported supervisor engines indicates that the peak rate, average rate, and total packets for “Packets dropped due to policing” is inaccurate.

  Workaround: None. (CSCsd82861)

- If an aux vlan is configured and port security is enabled with maximum MAC 3, phone traffic on native vlan after port security is enabled, shuts down the port.

  Workaround: Power off and power on the phone. (CSCsg79868)

- In Catalyst 8.6.1 operating system, when the MAC address mask is configured with values in the mask field the host goes into exception state and the URL-Redirect string and group policies are not applied. For instance, when MAC address and mask is 00-12-79-cd-88-69 00-00-00-00-00-FF, host goes to exception state.

Workaround: For above mac mask, the correct mask is 00-12-79-cd-88-00 00-00-00-00-00-FF (the last 2 bytes of mac address should be 00). (CSCsh72654)

- In Catalyst 8.6.1 operating system, the aux port in a VLAN configured with IEEE 802.1X authentication, shuts down when EAPOL or EPOL encapsulation over LAN-Start of a different MAC address is seen.

  Workaround: None (CSCsh22945)

- In Catalyst 8.6.1 operating system, ports authenticated with IEEE 8021x that had HA subsequently enabled, sometimes saw an IEEE 8021x authentication error

  Workaround: Disable/enable the port (CSCsj28712)

- In Catalyst 8.6.1 operating system, DACL cannot be applied when parsing of other VSAs fail. When DACL is sent along VSAs, like QOS vacl and port is in port-based qos mode, the port does not move to auth-fail, it goes in an connecting->authenticating->policy-config->waiting loop.

  Workaround: None (CSCsj14165)

- Port authenticated with IEEE 802.1X does not move to auth fail, if there is configuration mismatch on the switch. This is seen only when QOS ACL is assigned from the Radius

  Workaround: Configure the switch with proper configuration. QOS ACL should not be sent from Radius (CSCsj07424)

- In Catalyst 8.6.2 operating system, IEEE 802.1X radius-keepalive when disabled is shown in show config. output but not in show dot1x output.

  Workaround: None. (CSCsi75267)

- In Catalyst 8.6.2 operating system, if you map a vacl to the port with the same deny arp-inspection ace in the vacl, it gets denied and port remains in ipwaiting state. Deny arp-inspection ace does not work in pacl.

  Workaround: Map vacl with deny arp-inspection ace or use DAI on port. (CSCsi88922)

- In Catalyst 8.6.2 operating system, portsauthenticated with IEE802.1X and configured have Qos acl and security acl mapped to same vlan, the acl goes to non committed state when an HA switch over takes place.

  Workaround: Unmap qos acl from vlan and map it after the HA switchover. (CSCsj12624)

- In Catalyst 8.6.2 operating system, ports with IEEE802.1X and configured with QoS acl result in map not being applied in HA scenario.

  Workaround: None (CSCsj12739)

- Secondary vlan traffic seen on Prom trunk after switch reset. The switch is configured with pvlan Prom trunks and traffic flows on primary vlan as expected before switch reset. After a reset, the traffic is seen on secondary vlan on prom trunk. Switch must be configured with pvlan prom trunks and the behavior is observed after system reset.

  Workaround: Clear pvlan mapping config on the prom trunk and reconfiguring will solve the problem. Or enable/disable the prom trunk. (CSCsi84971)

Resolved Caveats in Software Release 8.6(3)

This section describes resolved caveats in supervisor engine software release 8.6(3):

- CFM CC messages are not generated during a supervisor engine switchover if there are multiple CFM domains mapped to one CFM level.

  This problem is resolved in software release 8.6(3). (CSCsh81272)

- On switches with a Supervisor Engine 2 and MSFC 2 that are running hybrid software (Catalyst operating system and MSFC Cisco IOS), the supervisor engine might crash due to a watchdog timeout on the ACL manager shortly after a large RACL (contains 2,000 or more ACEs) is applied to one of the switch virtual interfaces (SVIs) on the MSFC.

  This problem is resolved in software release 8.6(3). (CSCse44785)

- In the Catalyst operating system software release 8.6.2, a change in the IP address on ports authenticated with IEEE 802.1X, causes the reauth-timer to restart.

  This problem is resolved in software release 8.6(3). (CSCsj19840)

- The switch might fail to forward multicast traffic.

  This problem is resolved in software release 8.6(3). (CSCsc75774)

- If daylight saving time is enabled on a switch with active and standby supervisor engines, the time displayed by the standby supervisor engine does not change to one hour earlier when daylight saving time ends. If a switchover occurs, and the standby supervisor engine becomes the new active supervisor engine, the time displayed by the new active supervisor engine also does not change to one hour earlier when daylight saving time ends.

  This problem is resolved in software release 8.6(3). (CSCsi86485)

- If daylight saving time is enabled using the **set summertime recurring** command on a switch with active and standby supervisor engines, and daylight saving time ends after a switchover has occurred, the time displayed by the new active supervisor engine changes to one hour earlier. However, the year value used to calculate the start and end dates for daylight saving time does not increment.

  This problem is resolved in software release 8.6(3). (CSCsi89867)

- When using DTP for trunking when the native VLAN is not VLAN 1 and the ports are in a channel, if you change the channel mode from desirable/nonegotiate dot1q to off, and then back again, the root bridge periodically fails to send configured BPDUs.

  Forwarding loops are introduced across the channel links, and eventually are errdisabled due to channel misconfiguration.

  This problem is resolved in software release 8.6(3). (CSCsj26890)

- On Catalyst 6500 series switches running software release 8.5(x), if you upgrade the EPLD on the WS-X6548-GE-TX module (**download epld** command), the switch can fail.

  Workaround: Use a Catalyst OS software release other than software release 8.5(x) to upgrade the EPLD.

  This problem is resolved in software release 8.6(3). (CSCsd29099)

- When switching from binary mode to text mode and enabling the autosave feature using the **set config mode text auto-save enable** command, the autosave feature does not function.

  Workaround:

  - Change the config mode to text mode and reboot before you enable the autosave feature.
  - Reboot the switch to trigger the auto-save timer if you are changing to text mode and enabling auto-save at the same time.

  This problem is resolved in software release 8.6(3). (CSCsh72411)

- When receiving a BPDU timeout change referring to a single instance only, the CAM contents of all MST instances are removed. This occurs in software releases 8.5(7) and 8.5(8).

  Workaround: None.

  This problem is resolved in software release 8.6(3). (CSCsi15394)

- The Catalyst 6500 series switch generates the newRoot trap even if it never becomes a root bridge.

  Workaround: Disable the newRoot traps.

  This problem is resolved in software release 8.6(3). (CSCsi40326)

- When you set up a SPAN session and an MSFC ports (15/1 or 16/1) is the source port, the unicast flood packets are sent out the destination port on the SPAN. The supervisor engine does not allow unicast flood packets to be sent to the MSFC on VLANs that are on the trunk that is going to the MSFC. Traffic is sent out of the SPAN destination port that is not going to the MSFC.

  Workaround: None.

  This problem is resolved in software release 8.6(3). (CSCsi53648)

- When configuring the spanning-tree mode to MISTP, channel flapping occurs.

  Workaround:

  - Configure the spanning-tree mode to other than MISTP.
  - Configure the channel mode to on instead of desirable mode.

  This problem is resolved in software release 8.6(3). (CSCsj06480)

- When entering **show** commands with a network management tool that is connected to the Catalyst 6500 series switch with SSH version 2, a system failure occurs. A regular SSH session to the switch does not cause a system failure.

  Workaround: Use SSH version 1 or telnet to the switch.

  This problem is resolved in software release 8.6(3). (CSCsj47769)

Open and Resolved Caveats in Software Release 8.6(2)

These sections describe open and resolved caveats in supervisor engine software release 8.6(2):

- Open Caveats in Software Release 8.6(2), page 125
- Resolved Caveats in Software Release 8.6(2), page 128

Open Caveats in Software Release 8.6(2)

This section describes open caveats in supervisor engine software release 8.6(2):

- Tracebacks and alignment errors may occur after an asynchronous PPP call disconnects.

  Workaround: None.

- The Link Aggregation Control Protocol (LACP) channel breaks after several non-HA switchovers.

Workaround: None. (CSCsd61508)

- Configuration loss occurs on critical auth on an upgrade from software release 8.5.8 to 8.6.1.

  Workaround: Reconfigure critical auth. The command line interface on software release 8.5.8 for critical auth is deprecated. (CSCsh75713)

- DHCP-snooping bindings are not created for ports in a channel.

  Workaround: None. (CSCsh72616)

- DAI is enabled on few VLANs after a system reset.

  Workaround: None. (CSCsh64209)

- The IP Phone ACE is not present in the TCAM after a system reset configured for auto-save.

  Workaround: None. (CSCsh52990)

- DAI on switch ports is not functioning with IPSG when DAI is enabled first.

  Workaround: None. (CSCsh48166)

- MAB ports are in forwarding state on multiple VLANs.

  Workaround: This is a display problem. Traffic is not affected. (CSCsg94068)

- Port shutdown occurs on the second MAC address on a port security-enabled port configured with an auxiliary VLAN and dot1x.

  Workaround: None. (CSCsg78223)

- URL redirect is not working with a different HTTP server port.

  Workaround: None. URL redirection is supported on HTTP port 80 only. (CSCsd43177)

- On a switch with PVLANs configured, the active supervisor engine crashes after a non-high availability switchover.

  Workaround: None. (CSCsh55379)

- A new PVLAN map cannot be configured on a port unless the port is in OFF mode.

  Workaround: None. (CSCsh65474)

- CFM CC messages are not generated upon a supervisor engine switchover if there are multiple CFM domains mapped to one CFM level.

  Workaround: Do not map multiple CFM domains to the same CFM level. Alternatively, disable and re-enable CFM globally on the new active supervisor engine after the supervisor engine switch over. (CSCsh81272)

- Packet capture can result in dropped protocol packets (for example, STP, UDLD, and PAGP), which results in network instability. The dropped packets can also affect system performance or inband connectivity when sc0/sc1 interface packets are dropped without warning.

  Workaround: None. (CSCsh19826)

- Unknown unicast traffic floods the VLAN. Multicast or flood traffic is not captured in the transmit direction in MPA. The traffic comes on broadcast and multicast LTLs and therefore cannot be rate-limited and can cause the inband to choke and crash.

  Workaround: None. (CSCsg88097)

- The destination device may receive twice the number of packets actually transmitted from the switch. In addition, the dump file may not reflect proper statistics. This might happen when the switch is operating in truncated mode. This is a hardware limitation.

  Workaround: None. (CSCsf19014)

- Multicast or flood traffic is not captured in the transmit direction in MPA. This occurs because the traffic comes on broadcast and multicast LTLs and therefore cannot be rate-limited and can cause the inband to choke and crash.

  Workaround: None. (CSCsh23980)

- CFM Continuity Check (CC) messages are not reaching the NMP if the receive port is on a WS-6148X2-RJ-45

  Note CFM is not supported on the WS-6148X2-RJ-45 and WS-6548-RJ-45.

  Workaround: None. (CSCsd25109)

- CFM loopback and traceroute fails if forwarding link is an ISL trunk.

  Workaround: None. (CSCsd13642)

- You cannot enable CFM on an RSPAN VLAN.

  Workaround: None. (CSCsd26451)

- The **show qos statistics l3stats** command is supported in Supervisor Engine 2s equipped with a WS-F6K-PFC2. However, peak and average rate counters are broken and/or inaccurate for non-IP packets with COS changed.

  Workaround: None. (CSCse17681)

- The **show qos statistics l3stats** command indicates that the peak rate for “non-IP packets with TOS changed” is inaccurate at times.

  Workaround: None. (CSCsg86633)

- The **show qos statistics l3stats** command in all supported supervisor engines indicates that the peak rate, average rate, and total packets for “Packets dropped due to policing” is inaccurate.

  Workaround: None. (CSCsd82861)

- If an aux vlan is configured and port security is enabled with maximum MAC 3, phone traffic on native vlan after port security is enabled, shuts down the port.

  Workaround: Power off and power on the phone. (CSCsg79868)

- In Catalyst 8.6.1 operating system, when the MAC address mask is configured with values in the mask field the host goes into exception state and the URL-Redirect string and group policies are not applied. For instance, when MAC address and mask is 00-12-79-cd-88-69 00-00-00-00-00-FF, host goes to exception state.

  Workaround: For above mac mask, the correct mask is 00-12-79-cd-88-00 00-00-00-00-00-FF (the last 2 bytes of mac address should be 00). (CSCsh72654)

- In Catalyst 8.6.1 operating system, the aux port in a VLAN configured with IEEE 802.1X authentication, shuts down when EAPOL or EPOL encapsulation over LAN-Start of a different MAC address is seen.

  Workaround: None (CSCsh22945)

- In Catalyst 8.6.1 operating system, ports authenticated with IEEE 8021x that had HA subsequently enabled, sometimes saw an IEEE 8021x authentication error

  Workaround: Disable/enable the port (CSCsj28712)

- In Catalyst 8.6.1 operating system, DACL cannot be applied when parsing of other VSAs fail. When DACL is sent along VSAs, like QOS vacl and port is in port-based qos mode, the port does not move to auth-fail, it goes in an connecting->authenticating->policy-config->waiting loop.

Workaround: None (CSCsj14165)

- In Catalyst 8.6.2 operating system, a change in the IP address on ports authenticated with IEEE 802.1X, results in the reauth-timer is restarting. DHCP-Snooping [timeout/clear bindings] ->ARP, the reauth-timer is restarted.

  Workaround: None (CSCsj19840)

- Port authenticated with IEEE 802.1X does not move to auth fail, if there is configuration mismatch on the switch. This is seen only when QOS ACL is assigned from the Radius

  Workaround: Configure the switch with proper configuration. QOS ACL should not be sent from Radius (CSCsj07424)

- In Catalyst 8.6.2 operating system, IEEE 802.1X radius-keepalive when disabled is shown in show config. output but not in show dot1x output.

  Workaround: None. (CSCsi75267)

- In Catalyst 8.6.2 operating system, if you map a vacl to the port with the same deny arp-inspection ace in the vacl, it gets denied and port remains in ipwaiting state. Deny arp-inspection ace does not work in pacl.

  Workaround: Map vacl with deny arp-inspection ace or use DAI on port. (CSCsi88922)

- In Catalyst 8.6.2 operating system, portsauthenticated with IEE802.1X and configured have Qos acl and security acl mapped to same vlan, the acl goes to non committed state when an HA switch over takes place.

  Workaround: Unmap qos acl from vlan and map it after the HA switchover. (CSCsj12624)

- In Catalyst 8.6.2 operating system, ports with IEEE802.1X and configured with QoS acl result in map not being applied in HA scenario.

  Workaround: None (CSCsj12739)

- Secondary vlan traffic seen on Prom trunk after switch reset. The switch is configured with pvlan Prom trunks and traffic flows on primary vlan as expected before switch reset. After a reset, the traffic is seen on secondary vlan on prom trunk. Switch must be configured with pvlan prom trunks and the behavior is observed after system reset.

  Workaround: Clear pvlan mapping config on the prom trunk and reconfiguring will solve the problem. Or enable/disable the prom trunk. (CSCsi84971)

Resolved Caveats in Software Release 8.6(2)

This section describes resolved caveats in supervisor engine software release 8.6(2):

- 100BASE-T SFPs (GLC-T) do not support features such as UDLD and auto-mdix disable. We recommend that you do not enable UDLD on these SFPs. Auto-mdix is always enabled on these SFPs and cannot be disabled.

  This problem is resolved in software release 8.6(2). (CSCec26310)

- The URL-redirect string in a policy is not accepting “?”.

  Workaround: Set editing disable.

  This problem is resolved in software release 8.6(2). (CSCse29446)

- 802.1X URL-redirect entries are not cleared in port-based mode.

  Workaround: Clear url-redirect entries manually.

  This problem is resolved in software release 8.6(2). (CSCsf01060)

- A memory leak occurs when L2IP is enabled. With EOU RADIUS accounting enabled , there is a memory leak of 2K bytes in the NacSMProc process during the DHCP IP release/renew.

  Workaround: Disable EOU RADIUS accounting.

  This problem is resolved in software release 8.6(2). (CSCsg92525)

- You can disable the summertime setting by using the set summertime disable command when you are actually in summertime. This command will cause the clock to be set back to offset time. You can define the offset by using the set summertime recurring command or the offset will be set to a default of 60 minutes. (CSCsh11577)

  This problem is resolved in software release 8.6(2). (CSCse79110)

- MAB remains in the authenticated critical state after reauthentication.

  Workaround: None.

  This problem is resolved in software release 8.6(2). (CSCsh34895)

- Clearing a primary or secondary VLAN on a dot1x- or MAB-authenticated port might cause the system to crash.

  Workaround: Clear the mapping of the PVLAN to the port before clearing the PVLAN.

  This problem is resolved in software release 8.6(2). (CSCsh70693, CSCsh46541)

- CAM static entries are not cleared when a switching module is powered down.

  Workaround: None.

  This problem is resolved in software release 8.6(2). (CSCsh69300)

- DHCP-snooping bindings are not created for ports in a channel.

  Workaround: None.

  This problem is resolved in software release 8.6(2). (CSCsh72616)

- In Software Release 8.5(9), a new ignore keyword has been added. This option will detect the packet buffer failure and log a syslog message. During the detection process, traffic forwarding will stop for a few seconds. Once this process is complete, an attempt is made to resume traffic while leaving the packet buffer in this error state. This situation may result in the affected ports experiencing some indeterminate amount of packet loss.

  This problem is resolved in software release 8.6(2). (CSCsi26386)

- The output of the show logging buffer command displays some messages that do not conform to the standard message format. The messages include a date/time stamp at the beginning of the message. This situation prevents some syslog servers from correctly interpreting messages and notifying customers when necessary.

  Workaround: None.

  This problem is resolved in software release 8.6(2). (CSCsh86516)

- When you use the set summertime date command to enable a change to daylight saving time (during the summertime), the switch may reset (or switch over to the standby supervisor engine if one is present) when the end of daylight saving time is reached.

  This problem is resolved in software release 8.6(2). (CSCsi00968)

- Small percentage of packet drops were observed in Queue3 after configuring wrr-queue to cos-mapping on a 6148A-GE-TX. Packets serviced in other queues were not affected.

- **Workaround:** Reset the module affected or disable and enable a port that belongs to the same ASIC channel internally. Note that each internal channel has 8 external ports associated with it. This problem is resolved in software release 8.6(2).(CSCsh49043)

- When running 7.6(3a) and rebooting a redundant SUP2 (due to an exception) with HA enabled, a packet drop is observed for few seconds.

  Workaround: Disable diagnostic using the set test diaglevel bypass command. This problem is resolved in software release 8.6(2).(CSCsd89614)

- The Catalyst 6000 system, is not sent a TC message during the uplinkfast routine the is being moved from forwarding to blocking ona later port. However, TC message is sent move from forwarding to blocking on previous port. This occurs on with software release 8.5(6) or earlier

  Workaround: None. This problem is resolved in software release 8.6(2).(CSCsg24290)

- When a Catalyst 6500 system is running on a single supervisor running CatOS and a supervisor running IOS is inserted or removed (OIR- online insertion removal) in the redundant slot, the system crashes. The behavior should either be that the second supervisor running an IOSsoftware release should either be disabled / powered down or should not crash the system. The symptom are consistently reproducible with system running 8.5(6).

  Workaround: Do not install the redundant supervisor with IOS in a system that is already running on a supervisor with CatOS. This problem is resolved in software release 8.6(2). (CSCsg28478)

- With a hybrid Supervisor Engine 2 configured to use configuration mode "text", the firewall services module (FWSM) module may not recover properly on reload of the entire switch. The startup configuration for this module does not get copied into the running config. Also, the port-channel between the FWSM and the backplane can come up as 2 separate port-channel groups instead of the proper single port-channel group.

  Workaround: There are a couple ways to recover. 1) Change to configuration mode "binary" to no longer see this problem with the FWSM. 2) Reset the FWSM individually. This problem is resolved in software release 8.6(2). (CSCsg64817)

- Under certain conditions with EtherChannel configured for desirable, a channel can take longer than a power up/down or a reset of the switch. Periods of up to 8 hours have been seen during testing. During this time, the trunk shows up, but no VLANs are in the not pruned list, spanning-tree has no state, and connectivity is broken. One side may also show the port channel up with one or multiple ports in the channel. CDP and DTP appear to work ok. Problem was seen on sup32 uplink ports, with QOS enabled.

  Workaround: Configure channel mode “on”. Disabling QoS fixes the problem immediately. This problem is not consistent in approximately 3/5 reloads. This problem is resolved in software release 8.6(2). (CSCsh17514)

- On a Catalyst 6500 switch running Native IOS an interface configured to for full duplex may show up as half duplex in the output of the show int command. This is a cosmetic issue and some modules it has been seen on are: WS-X6248-RJ-45, WS-X6348-RJ-45 WS-X6148A-GE-TX

  Workaround: None This problem is resolved in software release 8.6(2). (CSCsh38728)

- When the supervisor crashes -a syslog message is displayed: * Cause: Breakpoint Exception. * CPU Hog. - Stack Decode: printf function Conditions: Supervisor crashes due to a printf (trace) function called on the DHCP Snooping packet processing routine. This function is being called in the code in the interrupt context.

  Workaround: None.This problem is resolved in software release 8.6(2). (CSCsh52934)

- On a Catalyst 6500 switch running in hybrid mode when a port in an etherchannel is disabled/enabled, rxOversizedPkts and ifInErrors counters count up. This symptom is seen even when there is no traffic traversing the link. The problem has been seen with the switch running CatOS release 8.5x.

  Workaround: None. This problem is resolved in software release 8.6(2).(CSCsh68327)

- Whenthe system is not in a redundant setup the supervisor and the corresponding MSFC show different states for the moduleStandbyStatus OID. The moduleStandbyStatus shows the value of "active" for the supervisor and shows the value of "other" for the MSFC. This occurs on a supervisor running CatOS 8.5(7) and a MSFC running 12.1(26) E6 when supervisor and MSFC are not in redundant setup.

  Workaround: None. This problem is resolved in software release 8.6(2). (CSCsh88540)

- Catalust 6500 running 8.5 and 8.6 on a SUP2 system crashes with TLB exception when certain aces with fragment keyword are applied. When an icmp or ip ace with fragment keyword is configured the box might crash with TLB exception.

  Workaround: icmp or ip aces should not have fragment keyword configured in the CLI. This problem is resolved in software release 8.6(2). (CSCsi34126)

- The cpaeUserGroupEntry is disappears ona port configureed IEEE 802.1X that has dACL enabled. This is because the entry is only populated with GroupManager feature, while GroupManager and dACL are mutually exclusive. cpaeHostInfoUserName, cpaeHostInfoAddrType, and cpaeHostInfoAddr were introduced to provide user name and it's IP address regardless the type of ACL currently used. The problem occurs in CatOS software release 8.6(1). Fix of this problem is applied to CatOS software 8.6(2) and later release.

  Workaround: None This problem is resolved in software release 8.6(2). (CSCsi52821)

- In a specific scripted environment, the switch will crash when running the clear pbf client command. Running this command on the CLI manually will not produce the problem. Running the command through some scripts will not produce the problem. The problem is seen in one specific scripted scenario and is considered a rare occurrence.

  Workaround: Do not script this command, type it in manually through the CLI when it is time for that command to be run. This problem is resolved in software release 8.6(2). (CSCsi76364)

- Egress traffic on wrong vlan port occurs upon module reset when the promiscuous trunk port is configured with more than 32 mappings. Switch must be running 8.6(2) or later image and PVLAN Promiscuous Trunk port must be configured with more than 32 pvlan mappings and the symptom is observed only after switch reset.

  Workaround: The prom trunk needs to be configured with less than 32 pvlan mappings. Or after a switch reset, user need to clear the pvlan mapping on the port by using CLI clear pvlan mapping mod/port CLI and reconfigure the pvlan mappings. This problem is resolved in software release 8.6(2). (CSCsh55275)

- In software release 8.2(1), the **set errordetection packet-buffer** command was added to detect packet buffer memory errors. You can use the **set errordetection packet-buffer** command to configure the switch to take one of three actions:

  Use the **set errordetection packet-buffer ignore** command to detect an ecc error and log a syslog for packet buffer failures. The switch will continue to try to forward traffic.

Caution Do not use the ignore option in production networks. It is intended for debugging only.

Use the **set errordetection packet-buffer power-cycle** command to automatically power cycle the module when errors are detected. A power cycle of the module will disable all 48 ports for 30-40 seconds if the Rapid Boot feature is not used, or for 10 seconds if the Rapid Boot feature is used. A power cycle of the line module is necessary in order to fully recover all failed ports.

Use the **set errordetection packet-buffer errdisable** command (enabled by default) to automatically put the ports with this error condition in errdisable state. This command error-disables 12 or 24 or 48 ports depending upon where an error condition is detected.When you enter the

errdisable detect cause packet-buffer-error command, the packet buffer error error-disables all the ports controlled by the port ASIC, and in some cases, all the ports on a module. A syslog message is displayed when a port experiences the error condition.

This option has the least impact on the network service during production hours. If possible, move the connection that is affected by the error-disabled ports to other available switch ports in order to restore service. Schedule a manual power cycle of the line card during the maintenance window.

The ports controlled by the port ASIC are as follows:

- Supervisor Engine 720

  WS-SUP720-3BXL—Port ranges per port group: 1-2
  WS-SUP720-3B—Port ranges per port group: 1-2
  WS-SUP720—Port ranges per port group: 1-2

- Supervisor Engine 2

  WS-X6K-S2U-MSFC2—Port ranges per port group: 1-2
  WS-X6K-S2-MSFC2—Port ranges per port group: 1-2

- 10-Gigabit Ethernet Switching Modules

  WS-X6708-10G-3C (WS-X6708-10GE with WS-F6700-DFC3C)—Port ranges per port group: 1 port in each group
  WS-X6708-10G-3CXL (WS-X6708-10GE with WS-F6700-DFC3CXL)—Port ranges per port group: 1 port in each group
  WS-X6704-10GE—Port ranges per port group: 1 port in each group
  WS-X6502-10GE—Port ranges per port group: 1 port in 1 group

- Gigabit Ethernet Switching Modules

  WS-X6748-SFP—Port ranges per port group: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48
  WS-X6724-SFP—Port ranges per port group: 1-12, 13-24
  WS-X6816-GBIC—Port ranges per port group: 1-8, 9-16
  WS-X6516A-GBIC—Port ranges per port group: 1-8, 9-16
  WS-X6516-GBIC—Port ranges per port group: 1-8, 9-16
  WS-X6416-GBIC—Port ranges per port group: 1-8, 9-16
  WS-X6416-GE-MT—Port ranges per port group: 1-8, 9-16
  WS-X6316-GE-TX—Port ranges per port group: 1-8, 9-16
  WS-X6408A-GBIC—Port ranges per port group: 1-8
  WS-X6408-GBIC—Port ranges per port group: 1-8

- 10/100/1000 Ethernet Switching Modules

  WS-X6748-GE-TX—Port ranges per port group: 1-12, 13-24, 25-36, 37-48
  WS-X6548-GE-TX—Port ranges per port group: 1-24, 25-48
  WS-X6548V-GE-TX—Port ranges per port group: 1-24, 25-48
  WS-X6548-GE-45AF—Port ranges per port group: 1-24, 25-48
  WS-X6148A-GE-TX—Port ranges per port group: 1-8, 9-16, 17-24, 25-32, 33-40, 41-48
  WS-X6148A-GE-45AF—Port ranges per port group: 1-8, 9-16, 17-24, 25-32, 33-40, 41-48
  WS-X6516-GE-TX—Port ranges per port group: 1-8, 9-16

- Fast Ethernet Switching Modules

  WS-X6148-FE-SFP—Port ranges per port group: 1-16, 17-32, and 33-48
  WS-X6524-100FX-MM—Port ranges per port group: 1-24
  WS-X6324-100FX-SM—Port ranges per port group: 1-12, 13-24
  WS-X6324-100FX-MM—Port ranges per port group: 1-12, 13-24
  WS-X6224-100FX-MT—Port ranges per port group: 1-12, 13-24

- Ethernet/Fast Ethernet (10/100) Switching Modules

  WS-X6548-RJ-45—Port ranges per port group: 1-48
  WS-X6548-RJ-21—Port ranges per port group: 1-48
  WS-X6348-RJ-45—Port ranges per port group: 1-12, 13-24, 25-36, 37-48
  WS-X6348-RJ-45V—Port ranges per port group: 1-12, 13-24, 25-36, 37-48
  WS-X6348-RJ-21V—Port ranges per port group: 1-12, 13-24, 25-36, 37-48
  WS-X6248-RJ-45—Port ranges per port group: 1-12, 13-24, 25-36, 37-48
  WS-X6248A-TEL—Port ranges per port group: 1-12, 13-24, 25-36, 37-48
  WS-X6248-TEL—Port ranges per port group: 1-12, 13-24, 25-36, 37-48
  WS-X6148A-RJ-45—Port ranges per port group: 1-8, 9-16, 17-24, 25-32, 33-40, 41-48
  WS-X6148A-45AF—Port ranges per port group: 1-8, 9-16, 17-24, 25-32, 33-40, 41-48
  WS-X6148-RJ-45—Port ranges per port group: 1-12, 13-24, 25-36, 37-48
  WS-X6148-RJ-45V—Port ranges per port group: 1-12, 13-24, 25-36, 37-48
  WS-X6148-45AF—Port ranges per port group: 1-12, 13-24, 25-36, 37-48
  WS-X6148-RJ-21—Port ranges per port group: 1-12, 13-24, 25-36, 37-48
  WS-X6148-RJ-21V—Port ranges per port group: 1-12, 13-24, 25-36, 37-48
  WS-X6148-21AF —Port ranges per port group: 1-12, 13-24, 25-36, 37-48

- Ethernet Switching Modules

  WS-X6024-10FL-MT—Port ranges per port group: 1-12, 13-24

Workaround: None. (CSCse00944)

Open and Resolved Caveats in Software Release 8.6(1)

These sections describe open and resolved caveats in supervisor engine software release 8.6(1):

- Open Caveats in Software Release 8.6(1), page 133
- Resolved Caveats in Software Release 8.6(1), page 135

Open Caveats in Software Release 8.6(1)

This section describes open caveats in supervisor engine software release 8.6(1):

- Tracebacks and alignment errors may occur after an asynchronous PPP call disconnects.

  Workaround: None.

- The Link Aggregation Control Protocol (LACP) channel breaks after several non-HA switchovers.

  Workaround: None. (CSCsd61508)

- Clearing a primary or secondary VLAN on a dot1x- or MAB-authenticated port might cause the system to crash.

Workaround: Clear the mapping of the PVLAN to the port before clearing the PVLAN. (CSCsh70693, CSCsh46541)

- Configuration loss occurs on critical auth on an upgrade from software release 8.5.8 to 8.6.1.

  Workaround: Reconfigure critical auth. The command line interface on software release 8.5.8 for critical auth is deprecated. (CSCsh75713)

- DHCP-snooping bindings are not created for ports in a channel.

  Workaround: None. (CSCsh72616)

- CAM static entries are not cleared when a switching module is powered down.

  Workaround: None. (CSCsh69300)

- DAI is enabled on few VLANs after a system reset.

  Workaround: None. (CSCsh64209)

- The IP Phone ACE is not present in the TCAM after a system reset configured for auto-save.

  Workaround: None. (CSCsh52990)

- DAI on switch ports is not functioning with IPSG when DAI is enabled first.

  Workaround: None. (CSCsh48166)

- MAB remains in the authenticated critical state after reauthentication.

  Workaround: None. (CSCsh34895)

- MAB ports are in forwarding state on multiple VLANs.

  Workaround: This is a display problem. Traffic is not affected. (CSCsg94068)

- Port shutdown occurs on the second MAC address on a port security-enabled port configured with an auxiliary VLAN and dot1x.

  Workaround: None. (CSCsg78223)

- The URL-redirect string in a policy is not accepting “?”.

  Workaround: Set editing disable. (CSCse29446)

- 802.1X URL-redirect entries are not cleared in port-based mode.

  Workaround: Clear url-redirect entries manually. (CSCsf01060)

- URL redirect is not working with a different HTTP server port.

  Workaround: None. URL redirection is supported on HTTP port 80 only. (CSCsd43177)

- On a switch with PVLANs configured, the active supervisor engine crashes after a non-high availability switchover.

  Workaround: None. (CSCsh55379)

- A new PVLAN map cannot be configured on a port unless the port is in OFF mode.

  Workaround: None. (CSCsh65474)

- CFM CC messages are not generated upon a supervisor engine switchover if there are multiple CFM domains mapped to one CFM level.

  Workaround: Do not map multiple CFM domains to the same CFM level. Alternatively, disable and re-enable CFM globally on the new active supervisor engine after the supervisor engine switchover. (CSCsh81272)

- Packet capture can result in dropped protocol packets (for example, STP, UDLD, and PAGP), which results in network instability. The dropped packets can also affect system performance or inband connectivity when sc0/sc1 interface packets are dropped without warning.

  Workaround: None. (CSCsh19826)

- Unknown unicast traffic floods the VLAN. Multicast or flood traffic is not captured in the transmit direction in MPA. The traffic comes on broadcast and multicast LTLs and therefore cannot be rate-limited and can cause the inband to choke and crash.

  Workaround: None. (CSCsg88097)

- The destination device may receive twice the number of packets actually transmitted from the switch. In addition, the dump file may not reflect proper statistics. This might happen when the switch is operating in truncated mode. This is a hardware limitation.

  Workaround: None. (CSCsf19014)

- Multicast or flood traffic is not captured in the transmit direction in MPA. This occurs because the traffic comes on broadcast and multicast LTLs and therefore cannot be rate-limited and can cause the inband to choke and crash.

  Workaround: None. (CSCsh23980)

- CFM Continuity Check (CC) messages are not reaching the NMP if the receive port is on a WS-6148X2-RJ-45

  Note CFM is not supported on the WS-6148X2-RJ-45 and WS-6548-RJ-45.

  Workaround: None. (CSCsd25109)

- CFM loopback and traceroute fails if forwarding link is an ISL trunk.

  Workaround: None. (CSCsd13642)

- You cannot enable CFM on an RSPAN VLAN.

  Workaround: None. (CSCsd26451)

- The **show qos statistics l3stats** command is supported in Supervisor Engine 2s equipped with a WS-F6K-PFC2. However, peak and average rate counters are broken and/or inaccurate for non-IP packets with COS changed.

  Workaround: None. (CSCse17681)

- The **show qos statistics l3stats** command indicates that the peak rate for “non-IP packets with TOS changed” is inaccurate at times.

  Workaround: None. (CSCsg86633)

- The **show qos statistics l3stats** command in all supported supervisor engines indicates that the peak rate, average rate, and total packets for “Packets dropped due to policing” is inaccurate.

  Workaround: None. (CSCsd82861)

Resolved Caveats in Software Release 8.6(1)

This section describes resolved caveats in supervisor engine software release 8.6(1):

- The IP phone is switched off when link goes down during a TDR cable test. This causes TDR test signals to get incorrect results when the length of cable connected is short (approximately three to six meters).

Note Cisco does not currently support TDR when inline power is being used.

Workaround: Keep the phone on during the TDR test. When the TDR test is not finished the phone will behave normally (when a link goes down, power to the phone is switched off). Alternatively, use a longer cable. When the cable length is long (approximately 80m or more), this problem does not occur.

This problem is resolved in software release 8.6(1). (CSCeb83155)

- When the **show polaris fib tcam** command is given incorrect register parameters, the switch will lock up (for example, no console access will be available) while still passing traffic at L2 to some extent. This might cause a network outage. A hard reset by power-cycling the switch is required to recover from this state.

  Workaround: Make sure to enter the correct register range when using this command.

  This problem is resolved in software release 8.6(1). (CSCed21794)

- When you change the root port of an edge switch with uplinkfast, the channel port cannot send a TCN trap. If you do not use the channel port, the software will send a TCN trap to only one port. The following conditions must be present for this situation to occur:
  - The STP mode is MISTP
  - Uplinkfast is used

  CatOS 7.1(1) and 7.6(3) or later experiences the same behavior.

  Workaround: None.

  This problem is resolved in software release 8.6(1). (CSCed52709)

- In rare circumstances, a group of four ports (1 to 4, 5 to 8, 9- to 12, or 13 to 16) on the WS-X6516-GE-TX module may experience connectivity problems. If this problem occurs, the following syslog messages might be seen:

  ```
  %PM_SCP-SP-6-LCP_FW_ERR_INFORM: Module 4 is experiencing the following error: Pinnacle
  #0 Frames with Bad Packet CRC Error (PI_CI_S_PKTCRC_ERR - 0xC7) = 110
  ```

  This problem is resolved in software release 8.6(1). (CSCef46923)

- If you enter the show power command when a WS-F6K-PWR power module is installed in slot 8 or slot 9, the command displays “Unknown.” This problem does not affect operation.

  This problem is resolved in software release 8.6(1). (CSCsb81734)

- Automatic detection of inline power does not work on WS-X6196-RJ-21 switching modules, and the following message is displayed:

  ```
  %C6K_POWER-SP-4-PD_NOLINKUP: The device connected to 1/37 is powered up but its link
  is not up in 5 seconds. Therefore, power is withdrawn from the port.
  ```

  This problem is resolved in software release 8.6(1). (CSCek30589)

- A connection between two WS-X6704-10GE switching module ports equipped with 10GBASE-LR XENPAKs occasionally stops transmitting and receiving, but the interface state always remains “up/up.”

  This problem is resolved in software release 8.6(1). (CSCef96465)

- The source MAC addresses of traffic received on a Layer 2 distributed EtherChannel (DEC) might be learned in multiple VLANs.

  This problem is resolved in software release 8.6(1). (CSCeh40945)

- With a Supervisor Engine 720, egress traffic loss might occur if you configure the **wrr queue-limit** and **wrr random-detect max-threshold** commands to nondefault values.

  This problem is resolved in software release 8.6(1). (CSCei33393)

- In a PE router configuration, per-VLAN spanning tree (PVST) bridge protocol data units (BPDUs) are incorrectly untagged.

  This problem is resolved in software release 8.6(1). (CSCsa57079)

- With the default flow control configuration, the ports in an unstable link between a Supervisor Engine 720 equipped with a copper SFP and a port in a chassis with a Supervisor Engine 2 remain in the "up/down" state.

  This problem is resolved in software release 8.6(1). (CSCsa61788)

- Ports on a WS-X6748-GE-TX switching module, hardware revision 2.1, stop sending traffic when configured to operate only at 10 Mbps or only at 100 Mbps.

  This problem is resolved in software release 8.6(1). (CSCsa76031)

- There is reduced performance for traffic between non-DFC-equipped switching modules and DFC-equipped switching modules, and some additional Layer 2-traffic flooding occurs.

  This problem is resolved in software release 8.6(1). (CSCsa76290)

- A WS-X6548-GE-TX port might stop forwarding unicast traffic. This problem occurs when WS-X6548-GE-TX ports are configured as Layer 2 switch ports, are not part of an EtherChannel, and the LTL consistency checker is enabled, which is the default state.

  Workaround: Disable the LTL consistency checker by entering the no ip cef table consistency-check command.

  This problem is resolved in software release 8.6(1). (CSCsb08512)

  A system might drop Rx SPAN packets when there is an outbound ACL applied on the source interface of the SPAN session.

  This problem is resolved in software release 8.6(1). (CSCsb21148)

- The port ASIC ISR message rate limiter is set to an inappropriate value and allows high CPU usage.

  This problem is resolved in software release 8.6(1). (CSCsb60409)

- AToM packets with small frame replay packets (11 bytes) that are sent from an Enhanced FlexWAN module are dropped when sent to a WS-X6548-GE-TX or a WS-X6148-GE-TX.

  This problem is resolved in software release 8.6(1). (CSCsb90472)

- A system configured with a WS-X6748-SFP or a WS-X6724-SFP switching module and copper SFPs might display the following message during initialization:

  ```
  %SYS-CFC1-3-CPUHOG: Task is running for (4000)msecs, more than (2000)msecs
  (1/0),process = fw_lcp process.
  ```

  This problem is resolved in software release 8.6(1). (CSCsc59332)

- Power may be incorrectly applied to the wrong port of a WS-X6148-21AF or a switching module equipped with a PoE daughter card, when the module is reset. A device that cannot tolerate inline power might get damaged if you plug it into this port.

  This problem is resolved in software release 8.6(1). (CSCsc92114)

- Egress traffic monitoring might stop when RSPAN is enabled and then disabled, and then SPAN is enabled on the same device with the same session number.

  This problem is resolved in software release 8.6(1). (CSCsd42247)

- The link from a PoE Axis Video Camera to a WS-X6148A-RJ-45 switching module with a PoE daughtercard installed does not come up. This problem is an autonegotiation issue between the Broadcom 5248 on the WS-X6148A-RJ-45 switching module and the ASIC in the camera.

  This problem is resolved in software release 8.6(1). (CSCsd67341)

- A VACL might not filter RSPAN traffic if there is an active distributed EtherChannel (DEC) on the system.

  This problem is resolved in software release 8.6(1). (CSCse41963)

- Some service modules (such as FWSM, NAM, or IDS) transmit or retransmit packets without packet recirculation. If these packets pass over VLANs that are configured in a distributed EtherChannel (DEC) or a multi-module EtherChannel, the packets will be lost. For more information, see FN - 61935 located at this URL:

  http://www.cisco.com/en/US/ts/fn/610/fn61935.html

  Workaround: Use the fabric switching-mode force busmode command to force all affected service modules to communicate through the chassis shared bus instead of through the switched fabric.

  This problem is resolved in software release 8.6(1). (CSCse87210)

- Jumbo frames are unable to get through the Firewall Services Module (FWSM).

  This problem is resolved in software release 8.6(1). (CSCse87210)

- Catalyst 6500 series switches equipped with a WS-X6502-10GE switching module are recording few CRC errors on their link to another Catalyst 6500 series switch equipped with a WS-X6704-10GE switching module. No CRCs were recorded when a WS-X6502-10GE switching module was in place on the central switch. (CSCee10844)

- The user may notice a higher usage of labels depending on the order in which port-based security and QoS ACLs are mapped with respect to each other. The effect is more noticeable when label usage approaches the maximum number of allowed labels.

  Workaround: Map PACLs after mapping all QoS ACLs to improve label usage.

  This problem is resolved in software release 8.6(1). (CSCee61775)

- A Catalyst 6500 switch configured with DHCP snooping with MAC address matching enabled might log some errors indicating that it is dropping DHCP NAK packets with the source MAC address of the DHCP relay interface. This condition does not impact service on lease grants and renewals on DHCP clients.

  Workaround: None.

  This problem is resolved in software release 8.6(1). (CSCef73277)

  The 6316-GE-TX switching module might have difficulty linking to non-Cisco Ethernet switches. In particular there may be problems with the Allied Telesis (Telesyn) 8624XL.
  Workaround: None.

  This problem is resolved in software release 8.6(1). (CSCef79662)

- Firmware for x6724, x6748, and x6704 might be sending too many messages to the supervisor engine due to some non-fatal internal events, causing the supervisor engine software to run out of memory and therefore crashing.

  Workaround: Replace the switching module that is causing this.

  This problem is resolved in software release 8.6(1). (CSCeg18179)

- A Supervisor Engine 720 system in which the majority of modules are of type WS-X67xx may experience system traffic flow degradation under certain traffic profiles. Typically this would include meshed communication among hosts connected to all switching modules in the system and many-to-one communications. The symptoms seen under this condition include:
  - Overruns on almost all active interfaces
  - Lbus drops associated with the supervisor engine slot (seen using the **show fabric channel-counters** command)
  - TestMacNotification test failed messages seen repeatedly using the **show log** command for switching modules with DFCs installed
  - Ports leaving and re-joining an EtherChannel
  - Routing protocol flaps (HRSP, OSPF, etc.)
  - Line protocols for multiple interfaces becoming inoperative

  Typically the time interval between occurrences of this problem fluctuates greatly. When this problem occurs, the overall PPS (packets-per-second) performance is drastically reduced through the system as (use the **show mls statistics** command).

  Workaround: Reduce the amount of traffic flowing through the switch, particularity on interfaces seeing the most overruns.

  This problem is resolved in software release 8.6(1). (CSCeg49196)
- In some instances, on a Catalyst 6500 switch with a Supervisor Engine 720 and a 10-Gigabit Ethernet switching module, the **show counter interface TenGigabitEthernet x/x** command will show rxHCDropEvents counter incrementing with no other indication of errors by the device.

  Workaround: None.

  This problem is resolved in software release 8.6(1). (CSCeg62365)
- SNMP:ciscoMemoryPoolUsed/Free returns an incorrect value.

  This problem is resolved in software release 8.6(1). (CSCeg85768)
- After a system reset has been scheduled for a future time with a valid reason (with reset at command), executing commands such as **set autoshut** and **show autoshut** will cause the switch to crash. A system reset must have been scheduled previously with a valid reason. It does not matter if it has been subsequently cancelled.
- **Workaround:** Avoid using both scheduled resets and the module autoshut feature.

  This problem is resolved in software release 8.6(1). (CSCeh38557)
- The Catalyst 6500 switch is transmitting garbage or DLC link frames on a port that is in a shutdown state.

  Workaround: Set the ports on both sides of the connection to shutdown state.

  This problem is resolved in software release 8.6(1). (CSCeh39470)
- When a switch is running VTP version 3 and auto configuration (config mode) is configured with the “overwrite” option, the switch may lose all the VLAN-, trunk-, and channel-related configuration during system reset.

  Workaround: Configure the switch for auto configuration only with the “append” option.

  This problem is resolved in software release 8.6(1). (CSCei17832)
- The switch crashes when configuring csilCommandsTable using createAndGo. There is no problem when configuring using createAndWait or the CLI.

Workaround: None

This problem is resolved in software release 8.6(1). (CSCei20622)

- A Catalyst 6500 switch with WS-X6748-SFP or WS-X6724-SFP switching module and copper SFPs may repeatedly log the following error messages:
  - ant48_cu_sfp_phy_rd_reg: port=22 err
  - ant48_cu_sfp_phy_wr_reg error: port=22 rc = 80

  The actual port number may vary, but the errors always correspond to ports with copper SFPs installed (port numbers here are 0-based). The copper SFP ports fail internal power-up diagnostics.

  Workaround: Reset the switching module or remove and reinsert the SFP.

  This problem is resolved in software release 8.6(1). (CSCei21965)

- When using the **show cbl** *mod_num/port* * [*start_index*[-]*end_index*] debugging command to display the CBL table for a port, it is displayed incorrectly.

  Workaround: Use the **show cbl** *mod_num index* **[count]** command instead.

  This problem is resolved in software release 8.6(1). (CSCei39029)

- Reception of BPDUs is not guaranteed when enabling multicast suppression on the following switching modules:
  - WS-X6724-SFP
  - WS-X6748-GE-TX
  - WS-X6748-SFP
  - WS-X6704
  - WS-XSUP32

  This can also cause BPDUs to be suppressed on the ports of the above switching modules when multicast suppression is enabled and the multicast suppression threshold has been exceeded.

  Workaround: Avoid using multicast suppression on ports that need to receive BPDUs. Potential side effects include root port loss or spanning tree loops when the suppression threshold has been exceeded.

  This problem is resolved in software release 8.6(1). (CSCei52323)

- When an IP exception list is configured with IP mask, the SET EOU AUTH MAC addresses and IP addresses are not displayed as configured.

  Workaround: None.

  This problem is resolved in software release 8.6(1). (CSCei69405)

- The **set port description** command is supported only in the text mode configuration.

  This problem is resolved in software release 8.6(1). (CSCei78613)

- Whena link is up and fixed at 10Mbps and the port speed is changed to 100Mbps and then back to 10Mbps, the port might remain at 100Mbps. This only happens with the 6548A-RJ-45 switching module with inline power enabled.

  Workaround: Disable and reenable the port.

  This problem is resolved in software release 8.6(1). (CSCej21495)

- When the switch receives a PIMv1 RP Reachability packet using IGMP, it will resort to the NMP when IGMP snooping is enabled. The NMP will discover that the packet is not a real IGMP packet and will then flood it to all ports in the VLAN (except the port where it was received). This is

normal. However, NMP might send it back on the port where it was received. If this happens, the packet is looped at Layer 2, causing the switch to become unusable. PIMv1 uses IGMP for control messages and those are forwarded to 224.0.0.2 (to all MCAST routers and not to all PIM routers).

Workaround: Reset the switch.

This problem is resolved in software release 8.6(1). (CSCej25077)

- If a port is hard coded to 10 or 100 Mbps upon initialization of a WS-X6748-GE-TX switching module, receive traffic will stop. The interface counters will show traffic for transmit, but not receive and no CAM entry will be learned on the port.

  Workaround: Set the port speed back to auto and then return it to the hard-coded value. This will resolve the stopped condition until the card or switch is reset.

  This problem is resolved in software release 8.6(1). (CSCsa40955)

- Optical transmit power is output from a WS-X6704-10GE switching module 10-GB interface while the switching module is administratively down after system restart.

  This problem is resolved in software release 8.6(1). (CSCsa65200)

- The switch may take up to 15 seconds to detect a link when set to auto speed.

  Workaround: Manually hard code the speed.

  This problem is resolved in software release 8.6(1). (CSCsb26429)

- Packet loss may occur when a high rate of traffic is received before a multicast protocol state is created. This is caused by incorrectly programming the first entry in the multicast expansion table (MET). The incorrect programming can occur due to a race condition between incoming multicast traffic and local CPU processing as both processes require access to the local multicast replication ASIC. This ASIC is responsible for packet switching and multicast replication. The current hardware implementation sets multicast replication at a high priority to allow high performance switching of packets. CPU processing is implemented at a lower priority requiring only processing for the first packet received to build a multicast protocol state. All priorities associated to ASIC functions are permanently set in hardware.

  This problem is resolved in software release 8.6(1). (CSCsb46887)

- When Source Guard and dot1x are enabled on a port, an IP phone on the port can not obtain a DHCP address.

  Workaround: Apply port-security on the port to enable the IP phone to get an IP address.

  This problem is resolved in software release 8.6(1). (CSCsb90670)

- One or more WS-X6548-GE-TX switching module ports are not transmitting unicast or broadcast traffic. Multicast and ingress traffic is transmitted normally. This can affect any WS-X6548-GE switching module, including the WS-X6548-GE-TX and WS-X6548-GE-45AF. This problem does not affect all ports on the switching module. The OutUcastPkts counters will display 0 when the show interface GigabitEthernet x/y counters are issued.

  This problem can be seen after starting up on both single and redundant supervisor systems. This problem might be more likely to appear following a supervisor failover in a dual-supervisor system running RPR+ redundancy protocol. The problem may be seen regardless of where the WS-X6548-GE switching module is placed in the system.

  This problem is resolved in software release 8.6(1). (CSCsc13676)

- Enhancements to SPRP inband ping monitoring test should include additional information when there are test failures.

  This problem is resolved in software release 8.6(1). (CSCsc35405)

- SSH version 2 does not handle password padding from a client.

  Workaround: Use a different client without the password padding feature.

  This problem is resolved in software release 8.6(1). (CSCsc41737)

- The output of a **show counters** *mod/port* command will report ifInDiscards when jumbo frames are enabled on the switch and a frame larger than 1518 bytes is received on a WS-X6148A-GE-TX switching module. The jumbo packets are recorded as ifInDiscards. The packets are succesfully processed by the switch and are not dropped.

  Workaround: None.

  This problem is resolved in software release 8.6(1). (CSCsc60909)

- The interface state is unchanged upon removal of a unidirectional (single fiber) XENPAK.

  Workaround: None.

  This problem is resolved in software release 8.6(1). (CSCsc62786)

- The deferred transmit counts of only Gigabit Ethernet on a Supervisor Engine 720 are incremented regardless of the flow control setting.

  Workaround: None.

  This problem is resolved in software release 8.6(1). (CSCsc64991)

- When you enter the **show fabric channel counters** command, the system displays “rx errrors” either on the supervisor engine slot (Supervisor Engine 720) or on slots that have a 10-GB switching module installed. There is no traffic impact.

  Workaround: None.

  This problem is resolved in software release 8.6(1). (CSCsd23452)

- Errors will be categorized as minor and major. All major errors are reported immediately. Minor alarms are reported if, at the end of a 10-second interval, there is non-zero occurrence of the event that initiated the alarm.

  This problem is resolved in software release 8.6(1). (CSCsd25879)

- Switches with WS-6724-SFP or WS-6748-SFP switching modules may flap on copper SFP ports during a neighboring switch’s reboot due to a loss of Etherchannel negotiation messages. This may cause the switch to suspend the ports. The ports should be unsuspended when the neighbor switch finishes rebooting. In some cases, the ports might still be suspended. Alternatively, copper SFP ports might intermittantly not have their flow-control advertisement set correctly when the switching module powers up, or after hot insertion of a copper SFP.

  W orkaround: Configure the port’s (and its link-partner’s) flow-control advertisement to **flow rec on** and **flow send on**. Alternatively, a shut/no shut of the port will cause the condition to correct itself.

  This problem is resolved in software release 8.6(1). (CSCsd66082)

- There is a compatibility issue between WS-X6148X2-RJ-45 switching modules and non-Cisco network interface cards (NICs).

  Workaround: None.

  This problem is resolved in software release 8.6(1). (CSCsd88897)

- A port configured for port security with the violation mode set to restrict may error disable the port if a high rate of packets with unique MAC addresses is received by the port.

  Workaround: None.

  This problem is resolved in software release 8.6(1). (CSCse03479)

- Using the shut and no_shut features on an interface may cause the overrun counter to increment on an active interface of a WS-X6748-GE-TX switching module.

  Workaround: None.

  This problem is resolved in software release 8.6(1). (CSCse29076)

- In a switch with redundant supervisor engines, the **set qos enable** command might cause a standby Supervisor Engine 32 to reset.

  Workaround: When configuring the switch for the first time, enable QOS first. The error messages will not appear and the standby supervisor engine will not reset.

  This problem is resolved in software release 8.6(1). (CSCse31932)

- When rx span is configured, NetFlow double counts packets for flows ingressing the switch using an rx span source port. The FIB statistics counter shows the correct number of packets.

  Workaround: There is no workaround other than disabling rx span.

  This problem is resolved in software release 8.6(1). (CSCse31973)

- On switches with a Supervisor Engine 2 and MSFC 2 that are running hybrid software (CatOS and MSFC IOS), the supervisor engine might crash due to a Watchdog Timeout on the AclManager shortly after a large RACL (contain 2,000 or more ACEs) is applied to one of the switch virtual interfaces (SVIs) on the MSFC.

  Workaround: None.

  This problem is resolved in software release 8.6(1). (CSCse44785)

- The output of a **show vtp domain** command will be displayed as a negative value once the configuration revision is higher than 0x7FFFFFFF (2147483647).

  Workaround: To clear the parser error, perform one of the following tasks:

  - Change the VTP mode from server mode to transparent mode and then back to server mode.
  - Change the VTP domain name from its current name to a different name and then back to the original name.
  - Reload the switch.

  This problem is resolved in software release 8.6(1). (CSCse47765)

- A WS-X6148-FE-SFP switching module interface counter increments even if the link is down.

  Workaround: Connect the system cables before booting up the system.

  This problem is resolved in software release 8.6(1). (CSCsf11639)

- On WS-6724-SFP switching modules, all ports with GLC-T adapters do not boot up.

  Workaround: Replace the adapters with adapters that have fiber connectors.

  This problem is resolved in software release 8.6(1). (CSCsf27493)

- When an RSPAN is configured, packets from a source VLAN or source interface that have an inbound QoS policy attached do not get copied properly to the RSPAN remote VLAN. These packets arrive at the sniffer or analyzer unmarked.

  Workaround: Remove the policy from the interface and manually set the markings on the client to preserve the QoS markings. This works provided the inbound interface has MLS QoS trust DSCP configured.

  This problem is resolved in software release 8.6(1). (CSCsg20201)

- The WS-X6148-FE-SFP switching module stops putting out light when it does not detect light from a peer.

Workaround: None.

This problem is resolved in software release 8.6(1). (CSCsg77629)

- Third-party IP phones connected to a switch port enabled with port security might drop calls and might reboot. This occurs when the MAC address of the IP phone secured on the primary VLAN has expired because inactivity has exceeded the port-security inactivity timer. This can occur even when the MAC address of the IP phone is secured on the voice (auxiliary) VLAN.

  This occurs only when IP phones do not have any voice VLAN information cached. No port-security violation is reported by the switch.

  Workaround: Clear port security MAC addresses on affected ports. using the **clear port security** *mod/port* **all** command.

  This problem is resolved in software release 8.6(1). (CSCsg99222)

- Unicast trafficon a Supervisor Engine 2 does not pass from an FWSM (WS-SVC-FWM-1) to ATM (WS-X6101-OC12-MMF) in truncated mode.

  Workaround: Change the global switching mode to bus with the **set system switchmode allow bus-only** command. (CSCsg27928)

- The syslog may send out multiple duplicate traps for the traps which have already been sent out.

  This problem is resolved in software release 8.6(1). (CSCsg80406)

- All Catalyst 6500 switches running software release 5.4 and above have the VMPS push enhancement integrated. This enhancement allows VMPS servers to update VMPS clients when a download VMPS is executed on the VMPS server instead of waiting for the VMPS client to reconfirm the database per the configured reconfirm interval.

  In some specific deployments of VMPS, this may not be the desired behavior and may cause problems.

  Workaround: Downgrade to software release 8.3(7) or earlier on the VMPS server or upgrade to 8.6(1) or greater and use **set vmps auto-push-config disable** command to disable the feature.

  This problem is resolved in software release 8.6(1). (CSCsh55500)

- The Webauth or LPIP feature used alone is prone to a DoS attack. If a second user uses DHCP with the same MAC address as the first user , the DHCP bindings get overwritten and the first user's policies and DACL will be removed resulting in a denial of service.

  Workaround: Use a Layer 2 authentication feature such as 802.1X/MAB/port.

  This problem is resolved in software release 8.6(1). (CSCsd73901)

- The TCP-2-TCP_MAXESTABLISHED system message may appear during simultaneous webauth authentication with a large number of hosts.

  Workaround: None.

  This problem is resolved in software release 8.6(1). (CSCsf14780)

- The **show security acl interface tcam** command does not show the permit tcp any host *hostaddr* range with a DACL.

  Workaround: Enter the **show security acl info all** command to see the permit tcp any host *hostaddr* range with a DACL.

  This problem is resolved in software release 8.6(1). (CSCsf97862)

- The **clear security acl all** command does not clear all the "any acls" when any acl with an include keyword is mapped to a port.

Workaround: Unmap the ACL with the include keyword from the ports before entering the **clear sec acl all** command.

This problem is resolved in software release 8.6(1). (CSCsg87395)

- DHCP snooping bindings are not created when an ACL with a DHCP-snooping ACE is mapped to a server port and the DHCP-snooping ACL is enabled on the port.

  Workaround: When a DHCP-snooping ACL is enabled on a host and server port, enable a DHCP-snooping ACL on the host VLAN. This is applicable when the switch is equipped with an MSFC.

  This problem is resolved in software release 8.6(1). (CSCsd06951)

- Static ARP rules are considered when DAI is enabled on the switch ports.

  Workaround: Make sure that you only have static bindings in the DHCP snooping table.

  This problem is resolved in software release 8.6(1). (CSCsf13447)

- When you have a unidirectional configuration on a port, the transmit counter associated with that port will not increment with traffic. Transmit traffic will continue to flow on that port.

  Workaround: Use the **debug oir** command on the affected switching module.

  This problem is resolved in software release 8.6(1). (CSCef48695)

- After resetting the active supervisor engine, a **show module** command entered while the standby supervisor engine is running does not show the presence of some switching modules.

  Workaround: Reset or power cycle the switch.

  This problem is resolved in software release 8.6(1). (CSCsc00264)

Open and Resolved Caveats in Software Release 8.5(9)

These sections describe open and resolved caveats in supervisor engine software release 8.5(9):

- Open Caveats in Software Release 8.5(9), page 145
- Resolved Caveats in Software Release 8.5(9), page 146

Open Caveats in Software Release 8.5(9)

This section describes open caveats in supervisor engine software release 8.5(9):

- When a packet buffer failure occurs, traffic loss may be experienced on the affected ports. Prior to Software Release 8.5(9), the following actions were available using specific keywords with the **set errordetection packet-buffer** command:
  - Err-disable (default). When you use the **errdisable** keyword, this option will send a syslog message, and disable the affected ports and any ports sharing the same ASIC.
  - Rapid Reboot. When you use the **powercycle** keyword, this option will power-cycle the affected module quickly to recover from the packet buffer failure condition, and send a syslog message.

  In Software Release 8.5(9), a new **ignore** keyword has been added. This option will detect the packet buffer failure and log a syslog message. During the detection process, traffic forwarding will stop for a few seconds. Once this process is complete, an attempt is made to resume traffic while leaving the packet buffer in this errored state. This situation may result in the affected ports experiencing some indeterminate amount of packet loss. (CSCsi26386)

Resolved Caveats in Software Release 8.5(9)

None.

Open and Resolved Caveats in Software Release 8.5(8)

These sections describe open and resolved caveats in supervisor engine software release 8.5(8):

Open Caveats in Software Release 8.5(8)

This section describes the open caveats in supervisor engine software release 8.5(8):

- When Dot1x is enabled on a port, the ACS server sends a VACL nac_acl and VLAN 30 for dot1x authentication. After dot1x is authenticated, nac_acl is assigned to dot1x user *user*. But the output of a **show security acl tcam interface 30** command shows no details.

  Workaround: Reboot the switch and enter the **show security acl tcam interface 30** command, which will then show the proper information.(CSCsg84865)

- Dot1x sysauth enable is not clearing the MAB critical ports. (CSCsg60284)
- A memory leak occurs when L2IP is enabled. With EOU RADIUS accounting enabled , there is a memory leak of 2K bytes in the NacSMProc process during the DHCP IP release/renew.

  Workaround: Disable EOU RADIUS accounting. (CSCsg92525)

- Dot1x critical information must be synchronized with the standby supervisor engine. MAB information is already synchronized. (CSCsg76236)

Resolved Caveats in Software Release 8.5(8)

This section describes resolved caveats in supervisor engine software release 8.5(8):

- The dynamic L2 entry (cam entry) for a particular MAC address in a VLAN may disappear from the L2 table while traffic from that address is still received. The traffic to the missing address may be forwarded to the wrong port instead of being flooded. The **clear cam** *mac_address* command will not restore connectivity.

  Workaround: Establish a static L2 entry for the affected MAC address pointing to the correct port.

  This problem is resolved in software release 8.5(8). (CSCsb29319)

- When loopguard has been enabled, there are some situations in which both sides of a link will stay in loop-inconsistent state if rapid PVST is used and the root bridge gets removed from the network or changes its priority.

  Workaround: Disable loopguard on the designated side of the link.

  This problem is resolved in software release 8.5(8). (CSCsd61118)

- When enabling auto-qos voip ciscoipphone on a port on a 1q4t/2q2t module, ACL_IP-PHONES is not created. Enter the **show port capabilities mod/port** command to determine the module type.

  Workaround: Enable the ACL manually.

This problem is resolved in software release 8.5(8). (CSCse64635)

- Loopback test and netflow inline rewrite online diagnostic tests fail on WS- X6148A-GE-TX and WS-X6148A-45-AF switching modules running CatOS 8.5(6) if port security is enabled on any of the ports.

  Workaround: Disable port security before running online diagnostics. Do not run online diagnostics when port security is enabled.

  This problem is resolved in software release 8.5(8). (CSCsg26584)

- Dot1x response identification comes after the port is moved to the authenticating state. The response identification must be dropped or the challenge-response packet from the supplicant is not handled properly.

  This problem is resolved in software release 8.5(8). (CSCsd63565)

- This problem occurs in configurations on which MSFC is used as a DHCP relay agent on the switch. A PC is connected to the DHCP-snooping-enabled port. The PC has its IP address and the PBACLs on the port VLAN are re-configured with the IP address and polices are applied.

  When the host is moved or the the host performs a renew to get a new IP address, the renew packet might be a unicast packet. This is causing the unicast packet to be hardaware switched as the router is in the switch itself. The binding entry will not be updated till the DHCP packet comes to the software and DHCP snooping software picks up for processing. Since the binding is not updated, the policies are not re-configured with the new IP address. This will consistently happen if the binding is expired on the switch and the end host does a IP renew.

  Workaround: Do a release and renew on the PC. Use the external router instead of the internal MSFC to act as the DHCP relay agent.

  This problem is resolved in software release 8.5(8). (CSCse66480)

Open and Resolved Caveats in Software Release 8.5(7)

These sections describe open and resolved caveats in supervisor engine software release 8.5(7):

- Open Caveats in Software Release 8.5(7), page 147
- Resolved Caveats in Software Release 8.5(7), page 148

Open Caveats in Software Release 8.5(7)

This section describes open caveats in supervisor engine software release 8.5(7):

- When the multispeed (10 MB/100 MB/1 GB) port of the WS-SUP32-10GE-3B supervisor engine is set to the 10-MB speed and you change the default QoS Tx queue ratio sizes, all packets flowing through this interface may be dropped in the appropriate queue. This problem is more frequent with jumbo-sized packets.

  Workaround: Disable and then enable QoS. (CSCeh33526)

- 100BASE-T SFPs (GLC-T) do not support features such as UDLD and auto-mdix disable. We recommend that you do not enable UDLD on these SFPs. Auto-mdix is always enabled on these SFPs and cannot be disabled. (CSCec26310)

- With Supervisor Engine 1, the boot string contains several boot images but only the first image, actually exists in the file system. When you enter the **show system sanity** command, no boot image is reported as invalid (missing). If the one valid image is cleared from the boot string, then all of the remaining (invalid) images are flagged. If the one valid image is added back to the boot string (at the end, instead of the beginning), the missing images are flagged. (CSCed56928)
- A bidirectional PIM ACE configured on the MSFC with a mask of 32 bits may cause traffic to hit the resulting (*,G/m) or (*,G). This situation could result in inconsistent forwarding.

  Workaround: Configure the ACE with a mask of 31 bits. (CSCin62624)
- With 802.1X authentication, if a high-availability switchover occurs during an authentication after the switchover completes, single authentication and port security are in the authenticated state but the port might not get added to the spanning tree. If this situation occurs, then the port would not receive Color Blocking Logic (CBL) or Local Target Logic (LTL) information. When you enter the **show port security** command the port MAC address is shown as secured, but no MAC address is in the CAM table. (CSCin20244)
- When there is continuous traffic through a port, MAC authentication bypass will not work if the following operations are performed on the port in the sequence specified:

  1. MAC authentication bypass is enabled on the port.

  2. Port security is enabled on the port.

  3. The static CAM entry installed by port security on the port is confirmed.

  4. MAC authentication bypass is globally enabled.

  This problem occurs only when MAC authentication bypass is globally enabled after port security has been enabled on the port. There is no problem with enabling or disabling port-level MAC authentication bypass after port security has been enabled.

  Workaround: Disable and then enable port security. (CSCin97632)
- On switches that run the CiscoView image, the Java Plug-in certificate has an expiration date of 6/29/2006. After that date, when you connect to an HTTP server, a Java Plug-in security warning displays the following message:

  ```
  The certificate is expired. Do you want to ignore this warning and proceed?
  ```

  Workaround: Click Yes, and then you can proceed to launch the embedded CiscoView. The expiration does not affect the applet's security or functionality. (CSCse46929)
- If you are running a Catalyst 6500 series switch with dual supervisor engines, you may see a "PWR Deny" on random ports in some modules after you enter the **show log** command.

  Workaround: If all the ports that are denied are disabled/enabled, "partial-deny" status on the module will be cleared. There is no reset required on the module. (CSCse86056)

Resolved Caveats in Software Release 8.5(7)

This section describes resolved caveats in supervisor engine software release 8.5(7):

- When enabling both portfast and bpdu-guard on a port on a Catalyst 6000 series switch, the port does not go into errdisable status.

  Workaround: Enable BPDU guard on the access port.

  This problem is resolved in software release 8.5(7). (CSCsd94558)

- Issuing a `show config` command on a Catalyst 6509 switch that is acting as a distribution switch, may cause loop guard blocking on downstream neighbors (access switches). No error messages are generated on the switch.

  Workaround: None.

  This problem is resolved in software release 8.5(7). (CSCse55490)

- On a Catalyst 6000 series switch running CatOS software release 8.5(5) configured in text mode, ports that are configured to operated at 100Mbps and full duplex may not power up on switch restart and may remain in a disconnected state.

  Workaround: Disable and re-enable the ports.

  This problem is resolved in software release 8.5(7). (CSCsf26400)

- On a Catalyst 6000 series switch running CatOS software release 8.5(x), module configuration might be loaded before global configuration is done.

  Workaround: Reload the missing configuration.

  This problem is resolved in software release 8.5(7). (CSCsf97631)

- On a Catalyst 6000 series switch with the Call Home feature enabled, the Supervisor module reloads with following message:

  ```
  crash decode- (callhome_dispatch_message + 0x6b8) (callhome_dispatch_message + 0x6b8)
  (syslogTask + 0x6c4) (start_process + 0x50)
  ```

  Workaround: Disable the Call Home feature.

  This problem is resolved in software release 8.5(7). (CSCsg12867)

- A Catalyst 6509 switch containing a WS-X6524-100FX-MM module may experience an issue where the module interfaces are receiving traffic but the number of transmitted frames does not increase.

  Workaround: Reset the module to correct this issue. This problem is resolved in software release 8.5(7). (CSCse81638)

- On a Catalyst 6500 series switch, if an ACE already exists in a given QoS ACL with a DSCP field value and you attempt to create an additional ACE for the same ACL with a different DSCP field value, the following message may be displayed:

  ```
  Identical ACE found in IP ACL
  Failed to set qos acl.
  ```

  Workaround: None. This problem is resolved in software release 8.5(7). (CSCsf27155)

- In a Catalyst 6500 series switch with Supervisor Engine 720, a WS-X6704-10GE module may reset under heavy traffic conditions. Before resetting, the online diagnostics display the message, intermittently:

  ```
  MINOR ERROR
  ```

  The following message is displayed on the console:

  ```
  SYS-5-MOD_NOSCPPINGRESPONSE:Module <module#> not responding... resetting module
  ```

  Workaround: None. This problem is resolved in software release 8.5(7). (CSCsf96953)

Open and Resolved Caveats in Software Release 8.5(6)

These sections describe open and resolved caveats in supervisor engine software release 8.5(6):

Open Caveats in Software Release 8.5(6)

This section describes open caveats in supervisor engine software release 8.5(6):

- When the multispeed (10 MB/100 MB/1 GB) port of the WS-SUP32-10GE-3B supervisor engine is set to the 10-MB speed and you change the default QoS Tx queue ratio sizes, all packets flowing through this interface may be dropped in the appropriate queue. This problem is more frequent with jumbo-sized packets.

  Workaround: Disable and then enable QoS. (CSCeh33526)

- 100BASE-T SFPs (GLC-T) do not support features such as UDLD and auto-mdix disable. We recommend that you do not enable UDLD on these SFPs. Auto-mdix is always enabled on these SFPs and cannot be disabled. (CSCec26310)

- With Supervisor Engine 1, the boot string contains several boot images but only the first image, actually exists in the file system. When you enter the **show system sanity** command, no boot image is reported as invalid (missing). If the one valid image is cleared from the boot string, then all of the remaining (invalid) images are flagged. If the one valid image is added back to the boot string (at the end, instead of the beginning), the missing images are flagged. (CSCed56928)

- A bidirectional PIM ACE configured on the MSFC with a mask of 32 bits may cause traffic to hit the resulting (*,G/m) or (*,G). This situation could result in inconsistent forwarding.

  Workaround: Configure the ACE with a mask of 31 bits. (CSCin62624)

- With 802.1X authentication, if a high-availability switchover occurs during an authentication after the switchover completes, single authentication and port security are in the authenticated state but the port might not get added to the spanning tree. If this situation occurs, then the port would not receive Color Blocking Logic (CBL) or Local Target Logic (LTL) information. When you enter the **show port security** command the port MAC address is shown as secured, but no MAC address is in the CAM table. (CSCin20244)

- When there is continuous traffic through a port, MAC authentication bypass will not work if the following operations are performed on the port in the sequence specified:

  1. MAC authentication bypass is enabled on the port.

  2. Port security is enabled on the port.

  3. The static CAM entry installed by port security on the port is confirmed.

  4. MAC authentication bypass is globally enabled.

  This problem occurs only when MAC authentication bypass is globally enabled after port security has been enabled on the port. There is no problem with enabling or disabling port-level MAC authentication bypass after port security has been enabled.

  Workaround: Disable and then enable port security. (CSCin97632)

- On switches that run the CiscoView image, the Java Plug-in certificate has an expiration date of 6/29/2006. After that date, when you connect to an HTTP server, a Java Plug-in security warning displays the following message:

```
The certificate is expired. Do you want to ignore this warning and proceed?
```

Workaround: Click Yes, and then you can proceed to launch the embedded CiscoView. The expiration does not affect the applet's security or functionality. (CSCse46929)

- If you are running a Catalyst 6500 series switch with dual supervisor engines, you may see a "PWR Deny" on random ports in some modules after you enter the **show log** command.

  Workaround: If all the ports that are denied are disabled/enabled, "partial-deny" status on the module will be cleared. There is no reset required on the module. (CSCse86056)

Resolved Caveats in Software Release 8.5(6)

This section describes resolved caveats in supervisor engine software release 8.5(6):

- A Catalyst 6500 series switch running Catalyst operating system release 7.6(14) or later may unexpectedly reload due to a TLB exception.

  Workaround: None.

  This problem is resolved in software release 8.5(6). (CSCsb91548)

- A Catalyst 6000 or 6500 series switch running software release 8.5(3) that is configured for SPAN or RSPAN may not forward frames destined to a multicast MAC address out the SPAN destination port if that MAC address is configured as permanent CAM entry. The switch does forward the traffic out the port configured with the permanent CAM entry.

  Workaround:

  1. Clear the permanent CAM entry from the configuration using either the **clear cam perm [vlan_id]** or the **clear cam perm<B/>** command and then reconfigure it.

  2. Use a permanent multicast CAM entry with the form of 01-00-5e-xx-xx-xx.

  This problem is resolved in software release 8.5(6). (CSCsd68362)

- On a Supervisor Engine 32 running software releases 8.5(1) and 8.5(5), the following message might be seen in the syslog:

  ```
  Can not open destination file disk0:cdomi (File or directory already in use)
  ```

  This situation occurs when you configure DHCP snooping using the following command, and you reload the system:

  set dhcp-snooping bindings-database auto-save 2 set dhcp-snooping bindings-database disk0:cdomi

  Workaround: None.

  This problem is resolved in software release 8.5(6). (CSCse84902)

- If you modify the wildcard mask of an existing ACE in an ACL without modifying the IP address field, the mask is not modified and the old mask value is shown in the TCAM. You must modify the mask along with IP address field in order for it to be programmed properly in TCAM.

  Workaround: None.

  This problem is resolved in software release 8.5(6). (CSCeg54937)

- A Catalyst 6500 series switch running software release 8.4(4) leaves the auxiliary VLAN in an inactive state if the VLAN was not connected when the switch was reloaded.

  Workaround: Unplug the cable and plug it in again, or disable the port and then re-enable it.

  This problem is resolved in software release 8.5(6). (CSCsd20208)

- The standby supervisor engine crashes when the active supervisor is removed from the chassis if high availability is enabled and the Catalyst operating system release supports Generic OnLine Diagnostics (GOLD).

  Workaround: Enter the **clear diagnostic monitor module 15** command, or disable high availability.

  This problem is resolved in software release 8.5(6). (CSCsd46071)

- With Catalyst operating system software release 8.3(1), the system crashes after doing a mibwalk of the portSecurityTable.

  Workaround: None.

  This problem is resolved in software release 8.5(6). CSCse44896

- With Catalyst operating system software release 8.4(1) or later, when attempting to copy the switch configuration from NVRAM to an ATA flash device (disk0), the following error may be displayed:

  ```
  Console> (enable)  copy config flash all<NoCmdBold>
  Flash device [bootflash]? disk0:
  Wrong device.
  ```

  Workaround: Copy the configuration file from NVRAM to bootflash: and then from bootflash: to disk0:

  This problem is resolved in software release 8.5(6). (CSCse79985)

- The MSFC might not be able to ping the sc0 interface on VLAN 1. This is a reoccurrence of the problem seen in CSCeb02380. This problem is resolved in software release 8.5(6). (CSCee66310)

- OSPF hello packets are not being forwarded from the switching module to the MSFC on the standby supervisor engine resulting in OSPF adjacencies going down on the MSFC. This problem is observed when the FPOE consistency checker is enabled.

  Workaround: Disable the FPOE consistency checker. This problem is resolved in software release 8.5(6). (CSCeh74503)

- On a switch running software release 7.6(7), applying the patch/fix for FN29407 fails and reloads the switch instead of just the module(s) that the fix should be applied to. This problem is resolved in software release 8.5(6). (CSCei63548)

- You might experience a TLB (Load/Fetch) exception during booting when the Layer 3 cache is disabled and the diagnostic level is set to complete.

  Workaround: Enable the Layer 3 cache or set the diagnostic level to minimal or bypass instead of complete. This problem is resolved in software release 8.5(6). (CSCsc91179)

- When you initiate and abort a format of a Flash card on any standby supervisor engine, and then attempt to view a directory listing, the standby supervisor engine's file system locks, the disk becomes inaccessible, and you see a "Try again later" message as shown in the example below:

  ```
  Console> (enable) dir 1/disk0:
  File system in use (2). Try again later.
  ```

  Workaround: Reset the supervisor engine.

  This problem is resolved in software release 8.5(6). (CSCse35781)

Open and Resolved Caveats in Software Release 8.5(5)

These sections describe open and resolved caveats in supervisor engine software release 8.5(5):

Open Caveats in Software Release 8.5(5)

This section describes open caveats in supervisor engine software release 8.5(5):

- When the multispeed (10 MB/100 MB/1 GB) port of the WS-SUP32-10GE-3B supervisor engine is set to the 10-MB speed and you change the default QoS Tx queue ratio sizes, all packets flowing through this interface may be dropped in the appropriate queue. This problem is more frequent with jumbo-sized packets.

  Workaround: Disable and then enable QoS. (CSCeh33526)

- 100BASE-T SFPs (GLC-T) do not support features such as UDLD and auto-mdix disable. We recommend that you do not enable UDLD on these SFPs. Auto-mdix is always enabled on these SFPs and cannot be disabled. (CSCec26310)

- With Supervisor Engine 1, the boot string contains several boot images but only one, the first one, actually exists in the file system. When you enter the **show system sanity** command, no boot image is reported as invalid (missing). If the one valid image is cleared from the boot string, then all of the remaining (invalid) images are flagged. If the one valid image is added back to the boot string (at the end, instead of the beginning), the three missing images are flagged. (CSCed56928)

- A bidirectional PIM ACE configured on the MSFC with a mask of 32 bits may result in traffic hitting the resulting (*,G/m) or (*,G). This situation could result in inconsistent forwarding.

  Workaround: Configure the ACE with a mask of 31 bits. (CSCin62624)

- With 802.1X authentication, if a high-availability switchover occurs during an authentication after the switchover completes, single authentication and port security are in the authenticated state but the port might not get added to spanning tree. If this situation occurs, then the port would not receive Color Blocking Logic (CBL) or Local Target Logic (LTL) information. The **show port security** command shows that the port MAC address is secured, but no MAC address is in the CAM table. (CSCin20244)

- With continuous traffic through a port, MAC authentication bypass will fail to work if the following operations are performed on the port in the sequence specified:

  1. MAC authentication bypass is enabled on the port.

  2. Port security is enabled on the port.

  3. The static CAM entry installed by port security on the port is confirmed.

  4. MAC authentication bypass is globally enabled.

  This problem occurs only when MAC authentication bypass is globally enabled after port security has been enabled on the port. There is no problem with enabling or disabling port-level MAC authentication bypass after port security has been enabled.

  Workaround: Disable and then enable port security. (CSCin97632)

- For switches that run the CiscoView image, the Java Plug-in certificate has an expiration date of 6/29/2006. After that date, when you connect to an HTTP server, a Java Plug-in Security Warning displays the following message:

  ```
  The certificate is expired. Do you want to ignore this warning and proceed?
  ```

  Click Yes, then you can proceed to launch the embedded CiscoView. The expiration does not affect the applet's security or functionality. (CSCse46929)

Resolved Caveats in Software Release 8.5(5)

This section describes resolved caveats in supervisor engine software release 8.5(5):

- A Catalyst 6500 switch may disable the SC0 or SC1 interface if both interfaces are configured in the same subnet. Depending on the network topology, this problem might affect switch connectivity but should not affect switch operation.

  Workaround: Do not configure SC0 and SC1 interfaces in the same subnet. This problem is resolved in software release 8.5(5). (CSCsd60686)

- When a packet buffer error is detected, the module powers down instead of being power cycled. This problem is resolved in software release 8.5(5). (CSCsd79236)

- A Catalyst 6500 switch might generate temperature traps indicating that the "Module 1 Switch-Eng Intake" and "Module 1 Switch-Eng Exhaust" temperature sensors are not present:

  ```
  ciscoEnvMonTemperatureStatusDescr=Module 1 Switch-Eng Intake;
  ciscoEnvMonTemperatureStatusValue=0; ciscoEnvMonTemperatureState=6

  ciscoEnvMonTemperatureStatusDescr=Module 1 Switch-Eng Exhaust;
  ciscoEnvMonTemperatureStatusValue=0; ciscoEnvMonTemperatureState=6
  ```

  This problem is most likely due to an issue with the temperature sensors rather than an issue with the trap mechanism. This problem is resolved in software release 8.5(5). (CSCsd95563)

- Some servers that are hardcoded with speed duplex 100M/full are not able to send traffic when they are connected to ports on the WS-X6348-RJ-45 module. The problem occurs after the switch, module, or host is reset.

  Workaround 1: Enable autonegotiation on both the host and the switch port.

  Workaround 2: Disable and then enable the switch ports.

  Workaround 3: Disable inline power with the 100M/Full setting. This problem is resolved in software release 8.5(5). (CSCsd99700)

Open and Resolved Caveats in Software Release 8.5(4)

These sections describe open and resolved caveats in supervisor engine software release 8.5(4):

- Open Caveats in Software Release 8.5(4), page 154
- Resolved Caveats in Software Release 8.5(4), page 155

Open Caveats in Software Release 8.5(4)

This section describes open caveats in supervisor engine software release 8.5(4):

- When the multispeed (10 MB/100 MB/1 GB) port of the WS-SUP32-10GE-3B supervisor engine is set to the 10-MB speed and you change the default QoS Tx queue ratio sizes, all packets flowing through this interface may be dropped in the appropriate queue. This problem is more frequent with jumbo-sized packets.

  Workaround: Disable and then enable QoS. (CSCeh33526)

- 100BASE-T SFPs (GLC-T) do not support features such as UDLD and auto-mdix disable. We recommend that you do not enable UDLD on these SFPs. Auto-mdix is always enabled on these SFPs and cannot be disabled. (CSCec26310)

- With Supervisor Engine 1, the boot string contains several boot images but only one, the first one, actually exists in the file system. When you enter the **show system sanity** command, no boot image is reported as invalid (missing). If the one valid image is cleared from the boot string, then all of the remaining (invalid) images are flagged. If the one valid image is added back to the boot string (at the end, instead of the beginning), the three missing images are flagged. (CSCed56928)
- A bidirectional PIM ACE configured on the MSFC with a mask of 32 bits may result in traffic hitting the resulting (*,G/m) or (*,G). This situation could result in inconsistent forwarding.

  Workaround: Configure the ACE with a mask of 31 bits. (CSCin62624)
- With 802.1X authentication, if a high-availability switchover occurs during an authentication after the switchover completes, single authentication and port security are in the authenticated state but the port might not get added to spanning tree. If this situation occurs, then the port would not receive Color Blocking Logic (CBL) or Local Target Logic (LTL) information. The **show port security** command shows that the port MAC address is secured, but no MAC address is in the CAM table. (CSCin20244)
- With continuous traffic through a port, MAC authentication bypass will fail to work if the following operations are performed on the port in the sequence specified:

  1. MAC authentication bypass is enabled on the port.
  2. Port security is enabled on the port.
  3. The static CAM entry installed by port security on the port is confirmed.
  4. MAC authentication bypass is globally enabled.

  This problem occurs only when MAC authentication bypass is globally enabled after port security has been enabled on the port. There is no problem with enabling or disabling port-level MAC authentication bypass after port security has been enabled.

  Workaround: Disable and then enable port security. (CSCin97632)

Resolved Caveats in Software Release 8.5(4)

This section describes resolved caveats in supervisor engine software release 8.5(4):

- When you use the WS-F6K-FE48X2-AF inline-power daughter card with the WS-X6196-RJ-21 module, IP phones do not receive power using auto detect. When you connect the phone, the following message appears:

  ```
  %C6K_POWER-SP-4-PD_NOLINKUP: The device connected to 1/37 is powered up but its link
  is not up in 5 seconds. Therefore, power is withdrawn from the port.
  ```

  Workaround: Enter the **power inline static** command. This problem is resolved in software release 8.5(4). (CSCek30589)
- Packet loss can occur on a CEF720 module when a high rate of multicast traffic is received before a multicast protocol state is built. This condition occurs only with high levels of traffic when the multicast packet sizes are below a specific threshold (144 bytes), and when there is a topology change. This problem is resolved in software release 8.5(4). (CSCsd33647)
- A Supervisor Engine 2 running software release 8.5(3) with high availability enabled running rapid-PVST+ may show a root bridge ID of 0/00-00-00-00-00-00 after a supervisor engine switchover.

  Workaround 1: Run PVST+ spanning tree instead of rapid-PVST+.

  Workaround 2. Enter the **set system highavailability disable** command to disable high availability. This problem is resolved in software release 8.5(4). (CSCsd69668)

- A Catalyst 6500 switch with Supervisor Engine 720 running software release 8.5(x) may drop packets if a Distributed EtherChannel is configured. The packet loss is dependent on the traffic flow and ports that are in the channel.

  Workaround: Reload the switch with the desired EtherChannel configured. This problem is resolved in software release 8.5(4). (CSCsd54277)

- In binary configuration mode, the QoS MAC ACL configuration is corrupted after upgrading to software release 8.5(3) from any 7.x or later release.

  Workaround: Save the configuration prior to upgrading and then reapply the configuration after the upgrade. This problem is resolved in software release 8.5(4). (CSCsd20162)

- With the SSL-VPN module (WS-SVC-WEBVPN-K9) and SSL module (WS-SVC-SSL-1SSL), after a non-high availability switchover, both modules lose connectivity.

  Workaround: Reset the modules after the switchover. This problem is resolved in software release 8.5(4). (CSCei46039)

- After upgrading from software release 7.6(x) to software release 8.x or from software release 8.4(x) to software release 8.5(x), the FWSM port channel does not always form. The problem occurs only after configuration changes have been made to the FWSM configuration; the problem is not seen with the default FWSM configuration. This problem is resolved in software release 8.5(4). (CSCei72342)

- The switch might crash during the loading of the configuration file if the configuration file used for the system profiles file feature has additional spaces at the end of the last line “end” point.

  Workaround: Make sure that there are no additional spaces at the end of the last line “end” point. The system-generated configuration files do not have this problem unless the file has been edited. This problem is resolved in software release 8.5(4). (CSCsd46020)

- On a Supervisor Engine 2/MSFC2 with PFC hardware version 2.0, you might see high CPU utilization after committing a large VACL that results in spanning tree recalculations. This problem is not seen with PFC hardware version 1.0 or 1.3. This problem is resolved in software release 8.5(4). (CSCeh37782)

- After a high-availability switchover, you might experience a MISTP reconvergence on the newly active supervisor engine and the following message may display:

  ```
  2005 Sep 09 16:00:49 JST +09:00 %SPANTREE-2-SWOVER_TOOLONG: switchover took too much
  time. All STP ports restarted.
  ```

  This problem is resolved in software release 8.5(4). (CSCej37841)

- The supervisor engine might crash after accepting numerous SSH login attempts. This problem is resolved in software release 8.5(4). (CSCsc01175)

- A switch running MST with high availability enabled might have stalled root information and mistakenly reuse the root information.

  Workaround: Disable high availability. This problem is resolved in software release 8.5(4). (CSCsc37456)

- Adding a VLAN to the FWSM may cause inconsistencies in allowed and trunked VLANs. After the FWSM is reset, ports in the FWSM port channel might errdisable due to a channel misconfiguration. When this problem occurs, the following is displayed:

  ```
  %DTP-5-TRUNKPORTON:Port 4/1 has become dot1q trunk %SYS-3-MOD_PORTINTFINSYNC:Port
  Interface in sync for Module 4 %ETHC-5-PORTTOSTP:Port 4/1 joined bridge port 4/1-6
  %DTP-5-TRUNKPORTON:Port 4/2 has become dot1q trunk %DTP-5-TRUNKPORTON:Port 4/3 has
  become dot1q trunk %DTP-5-TRUNKPORTON:Port 4/4 has become dot1q trunk
  %DTP-5-TRUNKPORTON:Port 4/5 has become dot1q trunk %ETHC-3-ONMODEFAIL:Port 4/5
  errdisabled, ON mode attributes mismatch %DTP-5-TRUNKPORTON:Port 4/6 has become dot1q
  trunk %ETHC-3-ONMODEFAIL:Port 4/6 errdisabled, ON mode attributes mismatch
  %ETHC-5-PORTTOSTP:Port 4/2 joined bridge port 4/1-6 %ETHC-5-PORTTOSTP:Port 4/3 joined
  ```

```
bridge port 4/1-6 %ETHC-5-PORTTOSTP:Port 4/4 joined bridge port 4/1-6
%DTP-5-NONTRUNKPORTON:Port 4/5 has become non-trunk %DTP-5-NONTRUNKPORTON:Port 4/6 has
become non-trunk
```

Workaround: Manually add/delete the VLANs to the individual ports. This problem is resolved in software release 8.5(4). (CSCsd15946)

- After a switchover in a redundant system, a syslog message configured to be sent as a trap may not be sent as a trap. This problem is resolved in software release 8.5(4). (CSCsd23319)
- The switch might fail to return the complete Fully Qualified Domain Name (FQDN). The switch returns just the hostname, and the domain is appended to the snmpset. When a management application reads the name, it sees the hostname as being different than the running config. The management application then attempts to set the name by various means and starts a loop. This problem is resolved in software release 8.5(4). (CSCsd37685)
- With PAgP mode set to "on," you might not be able to map a QoS ACL to a channel port when the port's status is "not connected." An example of the problem is as follows:

```
Console> (enable) set qos acl map test-qos 3/9
Transient error. Port state in transition. Please retry command. Failed to map ACL
test-qos to port 3/9.
Console> (enable)
```

Workaround: Use one of the following workarounds:

  - Map the QoS ACL to the port before configuring the channel.
  - Change the PAgP mode to either auto or desirable.
  - Map the QoS ACL only to ports with a status of "connected."

This problem is resolved in software release 8.5(4). (CSCdz89506)

- With QoS, you might see policer configuration corruption after filling the aggregate policer table. This problem is resolved in software release 8.5(4). (CSCec42270)
- The packets hitting a glean adjacency may not be forwarded to the MSFC. When a packet is destined to a next hop that does not have an ARP entry, the packet needs to be sent to the MSFC. When the glean adjacency rate-limiter is enabled, any egress security ACL or egress QoS on the ingress interface is applied to the packets being sent to the MSFC. This problem is resolved in software release 8.5(4). (CSCsd09775)
- The Supervisor Engine 720 might consider channels that are configured on the same supervisor engine to be distributed. This problem should not cause any forwarding issues, but is not the correct behavior. This problem is resolved in software release 8.5(4). (CSCsd53882)
- In rare circumstances, you might see the following behavior with the WS-X6324-100FX modules:
  - Port counters indicate packets received and transmitted.
  - No CDP neighbors are seen on the switch on ports of the affected module.
  - No MAC addresses are learned on ports of the affected module.
  - All incoming (receive) traffic on all ports is lost.
  - Transmit traffic is working.

  Workaround: Reset the affected module. This problem is resolved in software release 8.5(4). (CSCeg60285)
- The WS-SVC-AON-1-K9 module configuration might be overwritten by the NAM configuration when a NAM module is inserted. This problem is resolved in software release 8.5(4). (CSCeh40994)

- With 802.1X authentication, changing the authentication from **auto** to **force-authorized** on a disconnected port breaks connectivity for the host connected to that port.

  Workaround: Change the authentication back to **auto**. This problem is resolved in software release 8.5(4). (CSCei80863)

- With a Supervisor Engine 1, module-specific configurations might be lost after resetting the switch. This problem is seen with the following configuration: The CONFIG_FILE variable is set to load a particular configuration file. The auto-config mode is set to recurring. After resetting the switch and booting up the module, the module-specific configuration is lost. This problem is resolved in software release 8.5(4). (CSCej12354)

- With a Supervisor Engine 720, resolved ARP entries that are mapped to multicast MAC addresses statically configured in the management VLAN will point to ports on module 1 (such as ports 1/5, 1/7, or 1/9). This behavior creates unnecessary confusion when module 1 is not installed, or the ports that these ARP entries pointed to are not active. This behavior is seen: 1) When multicast MAC addresses are configured as either static or permanent in the management VLANs. 2) Resolved ARP entries are mapped to the multicast MAC addresses that are configured as either static or permanent in the management VLANs. This problem is cosmetic. This problem is resolved in software release 8.5(4). (CSCsb87245)

- The output of the **show trunk** command may not show which VLANs are in the spanning tree forwarding state for the trunk going to the MSFC. This problem is cosmetic. This problem is resolved in software release 8.5(4). (CSCsc69568)

- Enabling DHCP snooping may break DHCP for certain clients. These clients will continue to send a DHCP request over and over again and may never fall back to a DHCP discovery. These clients require a DHCPNAK message that is being dropped by the switch when DHCP snooping is enabled. The DHCPNAK, when seen by these clients, puts the client into the discovery process.

  Workaround: Do a release and renew on the client or disable DHCP snooping. This problem is resolved in software release 8.5(4). (CSCsd00256)

- With VTP pruning enabled, VLANs might unexpectedly get pruned. This problem is resolved in software release 8.5(4). (CSCsd02595)

- With the diagnostic bootup level set to complete, inline rewrite tests are not performed on the IDSM data ports, ports 7 and 8. This problem is resolved in software release 8.5(4). (CSCsd17514)

- When a FWSM is installed with a Supervisor Engine 720, the Supervisor Engine 720 might fail to bundle the FWSM 6-Gigabit port channel (trunk) to the backplane of the switch. This problem is resolved in software release 8.5(4). (CSCsd17639)

- Redundant security ACL entries are displayed in the configuration. This situation occurs when you inadvertently add the same ACE more than once.

  Workaround: A specific entry in an ACL can be removed using the **clear security acl** *acl-name editbuffer-index* command. This problem is resolved in software release 8.5(4). (CSCsd27868)

- The supervisor engine might reset when you specify a large number of ports using the **set port auxiliaryvlan** command. This problem is resolved in software release 8.5(4). (CSCsd30799)

- With broadcast suppression enabled and configured to drop packets when the configured threshold is exceeded, a port may be erroneously errdisabled when broadcast traffic exceeds the configured threshold. This problem is resolved in software release 8.5(4). (CSCsd34379)

- If you have an EtherChannel configured with ports from fabric-enabled modules and nonfabric-enabled modules, you might experience packet drops.

  Workaround: Remove the EtherChannel. This problem is resolved in software release 8.5(4). (CSCsd36576)

- With a Supervisor Engine 32 (WS-SUP32-GE-3B), the port 1 Gigabit uplink port stays in a connected state even when there is no SFP installed in the port. This problem is seen only on port 1, only when no SFP is installed, and only with autonegotiation disabled on the port.

  Workaround: Install an SFP or enable autonegotiation on the port (the default setting is port negotiation enabled). This problem is resolved in software release 8.5(4). (CSCsd36914)

- The Microsoft PXE boot client might fail when dynamic ARP inspection is enabled. When this problem occurs, the following message is displayed:

  ```
  %ACL-5-ARPINSPECTIPPKT1:IP packet with source IP 0.0.0.0, destination IP 0.0.0.0, and
  IP protocol ICMP
  %ACL-5-ARPINSPECTIPPKT2:Source MAC xx-xx-xx-xx-xx-xx and received on port x/x on vlan
  xxx. Packet dropped
  ```

  The PXE process fails. This problem occurs when dynamic ARP inspection is untrusted for the PXE client port.

  Workaround: Set the PXE client port to dynamic ARP inspection trusted mode. This problem is resolved in software release 8.5(4). (CSCsd37361)

- With distributed EtherChannel configured, the active Supervisor Engine 720 might reset. This problem is seen with distributed EtherChannel configured using ports on the Supervisor Engine 720 and ports on other Gigabit Ethernet modules.

  Workaround: Configure the EtherChannel using ports in the same module. This problem is resolved in software release 8.5(4). (CSCsd39458)

- For flow control to become active after a port shutdown, the port might need to be toggled on and off. This problem is resolved in software release 8.5(4). (CSCsd44517)

- When using the auxiliary VLAN feature and a RADIUS server to assign the VLAN, the software mistakenly tries to send an EAP success packet to the supplicant before the switch port reaches the forwarding state. The supplicant retries authentication and succeeds but there is a delay of 20 seconds for the port authentication to complete. This problem is due to a timing issue between the Spanning Tree Protocol and 802.1X authentication. This problem is resolved in software release 8.5(4). (CSCsd58158)

- The MIB object vlanTrunkPortTable displays the wrong values for channel trunk interfaces in the vlanTrunkPortTable. This problem is resolved in software release 8.5(4). (CSCsd63741)

- On a switch running software release 8.5(3) with high availability enabled and Rapid PVST+, the switch might display a root bridge ID of 0/00-00-00-00-00-00 after a supervisor engine switchover.

  Workaround: 1) Run PVST+ instead of Rapid PVST+. 2) Disable high availability using the **set system highavailability disable** command. This problem is resolved in software release 8.5(4). (CSCsd69668)

Open and Resolved Caveats in Software Release 8.5(3)

These sections describe open and resolved caveats in supervisor engine software release 8.5(3):

- Open Caveats in Software Release 8.5(3), page 160
- Resolved Caveats in Software Release 8.5(3), page 161

Open Caveats in Software Release 8.5(3)

This section describes open caveats in supervisor engine software release 8.5(3):

- In binary configuration mode, the QoS MAC ACL configuration is corrupted after upgrading to software release 8.5(3) from any 7.x or later release.

  Workaround: Save the configuration prior to upgrading and then reapply the configuration after the upgrade. (CSCsd20162)

- With the SSL-VPN module (WS-SVC-WEBVPN-K9) and SSL module (WS-SVC-SSL-1SSL), after a non-high availability switchover, both modules lose connectivity.

  Workaround: Reset the modules after the switchover. (CSCei46039)

- When the multispeed (10 MB/100 MB/1 GB) port of the WS-SUP32-10GE-3B supervisor engine is set to the 10-MB speed and you change the default QoS Tx queue ratio sizes, all packets flowing through this interface may be dropped in the appropriate queue. This problem is more frequent with jumbo-sized packets.

  Workaround: Disable and then enable QoS. (CSCeh33526)

- 100BASE-T SFPs (GLC-T) do not support features such as UDLD and auto-mdix disable. We recommend that you do not enable UDLD on these SFPs. Auto-mdix is always enabled on these SFPs and cannot be disabled. (CSCec26310)

- With Supervisor Engine 1, the boot string contains several boot images but only one, the first one, actually exists in the file system. When you enter the **show system sanity** command, no boot image is reported as invalid (missing). If the one valid image is cleared from the boot string, then all of the remaining (invalid) images are flagged. If the one valid image is added back to the boot string (at the end, instead of the beginning), the three missing images are flagged. (CSCed56928)

- A bidirectional PIM ACE configured on the MSFC with a mask of 32 bits may result in traffic hitting the resulting (*,G/m) or (*,G). This situation could result in inconsistent forwarding.

  Workaround: Configure the ACE with a mask of 31 bits. (CSCin62624)

- With 802.1X authentication, if a high-availability switchover occurs during an authentication after the switchover completes, single authentication and port security are in the authenticated state but the port might not get added to spanning tree. If this situation occurs, then the port would not receive Color Blocking Logic (CBL) or Local Target Logic (LTL) information. The **show port security** command shows that the port MAC address is secured, but no MAC address is in the CAM table. (CSCin20244)

- With continuous traffic through a port, MAC authentication bypass will fail to work if the following operations are performed on the port in the sequence specified:

  1. MAC authentication bypass is enabled on the port.

  2. Port security is enabled on the port.

  3. The static CAM entry installed by port security on the port is confirmed.

  4. MAC authentication bypass is globally enabled.

  Note that this problem occurs only when MAC authentication bypass is globally enabled after port security has been enabled on the port. There is no problem with enabling or disabling port-level MAC authentication bypass after port security has been enabled.

  Workaround: Disable and then enable port security. (CSCin97632)

Resolved Caveats in Software Release 8.5(3)

This section describes resolved caveats in supervisor engine software release 8.5(3):

- After entering the **set ip unreachable disable** command, “destination unreachable” replies continue to be output from the switch. This problem is resolved in software release 8.5(3). (CSCsb56969)
- In Rapid PVST+ mode, BPDUs might be sent with an incorrect age (1/256 of a second, instead of 1 second). This problem is resolved in software release 8.5(3). (CSCsc77642)
- With redundant Supervisor Engine 1s and high availability enabled, packets spanned with RSPAN might be sent to the wrong destination VLAN.

  Workaround: Disable high availability on the RSPAN source switch. This problem is resolved in software release 8.5(3). (CSCsb23217)
- With a Supervisor Engine 2, when there are multiple, multicast sources (both local and remote), and there is a partial shortcut for multicast forwarding, the OIFs that are switched in hardware may not receive the multicast traffic from the remote sources.

  Workaround: Disable IGMP snooping. This problem is resolved in software release 8.5(3). (CSCsb56854)
- Some SNMP version 3 entries might be missing after performing a reboot or high availability switchover. This problem is resolved in software release 8.5(3). (CSCsc13371)
- The **show trunk** command displays regular VLANs although allowed VLANs were defined. This problem is resolved in software release 8.5(3). (CSCsc30173)
- In the WS-C6509-NEB chassis with the WS-C6509-NEB-FAN version 1, modules that have a cooling requirement of 35 cfm might not be powered up. This problem can only be seen with a Supervisor Engine 1 or a Supervisor Engine 2. The other supervisor engines require a version 2 fan tray where there is no problem.

  Workaround: Replace the version 1 fan tray with a version 2 fan tray. The version 2 fan tray requires a power supply with a rating of at least 2500W. The version 2 fan tray also requires an external power cable from the power supply front panel. This problem is resolved in software release 8.5(3). (CSCsc70468)
- If you have redundant (duplicate) ACL ACEs, additional hardware resources are utilized. To correct this problem, the software has been enhanced to check for matching ACEs when the edit buffer is modified. This problem is resolved in software release 8.5(3). (CSCei60400)
- After powering a module down and up (or disabling and then enabling the module), a customized profile configuration might not be loaded on the module even though it has been configured to load as the default configuration.

  Workaround: Enter the **clear config** *mod* command to load the profile configuration on the module. This problem is resolved in software release 8.5(3). (CSCsd08784)

Open and Resolved Caveats in Software Release 8.5(2)

These sections describe open and resolved caveats in supervisor engine software release 8.5(2):

- Open Caveats in Software Release 8.5(2), page 162
- Resolved Caveats in Software Release 8.5(2), page 163

Open Caveats in Software Release 8.5(2)

This section describes open caveats in supervisor engine software release 8.5(2):

- With the SSL-VPN module (WS-SVC-WEBVPN-K9) and SSL module (WS-SVC-SSL-1SSL), after a non-high availability switchover, both modules lose connectivity.

  Workaround: Reset the modules after the switchover. (CSCei46039)

- When the multispeed (10 MB/100 MB/1 GB) port of the WS-SUP32-10GE-3B supervisor engine is set to the 10-MB speed and you change the default QoS Tx queue ratio sizes, all packets flowing through this interface may be dropped in the appropriate queue. This problem is more frequent with jumbo-sized packets.

  Workaround: Disable and then enable QoS. (CSCeh33526)

- 100BASE-T SFPs (GLC-T) do not support features such as UDLD and auto-mdix disable. We recommend that you do not enable UDLD on these SFPs. Auto-mdix is always enabled on these SFPs and cannot be disabled. (CSCec26310)

- With Supervisor Engine 1, the boot string contains several boot images but only one, the first one, actually exists in the file system. When you enter the **show system sanity** command, no boot image is reported as invalid (missing). If the one valid image is cleared from the boot string, then all of the remaining (invalid) images are flagged. If the one valid image is added back to the boot string (at the end, instead of the beginning), the three missing images are flagged. (CSCed56928)

- A bidirectional PIM ACE configured on the MSFC with a mask of 32 bits may result in traffic hitting the resulting (*,G/m) or (*,G). This situation could result in inconsistent forwarding.

  Workaround: Configure the ACE with a mask of 31 bits. (CSCin62624)

- With 802.1X authentication, if a high-availability switchover occurs during an authentication after the switchover completes, single authentication and port security are in the authenticated state but the port might not get added to spanning tree. If this situation occurs, then the port would not receive CBL or LTL information. The **show port security** command shows that the port MAC address is secured, but no MAC address is in the CAM table. (CSCin20244)

- With continuous traffic through a port, MAC authentication bypass will fail to work if the following operations are performed on the port in the sequence specified:

  1. MAC authentication bypass is enabled on the port.

  2. Port security is enabled on the port.

  3. The static CAM entry installed by port security on the port is confirmed.

  4. MAC authentication bypass is globally enabled.

  Note that this problem occurs only when MAC authentication bypass is globally enabled after port security has been enabled on the port. There is no problem with enabling or disabling port-level MAC authentication bypass after port security has been enabled.

  Workaround: Disable and then enable port security. (CSCin97632)

- This problem occurs in configurations on which MSFC is used as a DHCP relay agent on the switch. A PC is connected to the DHCP-snooping-enabled port. The PC has its IP address and the PBACLs on the port VLAN are re-configured with the IP address and polices are applied.

  When the host is moved or the the host performs a renew to get a new IP address, the renew packet might be a unicast packet. This is causing the unicast packet to be hardaware switched as the router is in the switch itself. The binding entry will not be updated till the DHCP packet comes to the

software and DHCP snooping software picks up for processing. Since the binding is not updated, the policies are not re-configured with the new IP address. This will consistently happen if the binding is expired on the switch and the end host does a IP renew.

Workaround: Do a release and renew on the PC. Use the external router instead of the internal MSFC to act as the DHCP relay agent. (CSCse66480)

Resolved Caveats in Software Release 8.5(2)

This section describes resolved caveats in supervisor engine software release 8.5(2):

- In Catalyst 6506 and Catalyst 6509 chassis, if the power supply from slot 1 (PS1) is removed, the chassis power limit decreases. If the power usage is higher than the new limit and you do not take any action such as powering down ports/modules or inserting a power supply in slot 1within 3 minutes of removing PS1, the power management software should power deny ports/modules to bring the power usage down to within the new limit.

  The problem is that sometimes the power management software does not power deny the ports/modules after PS1 is removed. Instead, after 3 minutes, a message is periodically displayed warning that the power usage was not brought down to within the new limit.

  Workaround: Insert a power supply in slot 1. This action will stop the warning message from being displayed but the power management problem will still exist. This problem is resolved in software release 8.5(2). (CSCej59183)

  Note In older Catalyst 6506 and Catalyst 6509 chassis, when you remove PS1, a redundant current path to PS2 is also removed. This behavior causes a slight temperature increase in the primary path to PS2.

- After a high-availability switchover, the new standby supervisor engine might fail online diagnostics. This problem is resolved in software release 8.5(2). (CSCsb74974)
- In rare circumstances, a Supervisor Engine 32 might reset without providing any crash information. This problem is resolved in software release 8.5(2). (CSCei58072)
- If the configuration mode is changed to text configuration mode after upgrading to software release 8.5(1), new hosts might not be able to connect until the switch is reloaded. The client side will show connected but the switch port status will be “notconnect.”

  Workaround: If the switch.cfg file is not in bootflash: or bootdisk:, clear the auto-config default setting (bootflash:switch.cfg) by entering the **clear boot auto-config** command. This command must be entered before reloading the switch. If you have already reloaded the switch, reload it again. This problem is resolved in software release 8.5(2). (CSCsc39125)
- When configuring a username for web-based proxy authentication, special characters (such as an asterisk) might not be interpreted correctly. This problem is resolved in software release 8.5(2). (CSCsc40592)
- After a switchover, phones that are plugged in will operate correctly but new phones plugged in after the switchover might be power denied. This problem is resolved in software release 8.5(2). (CSCsc54885)

Open and Resolved Caveats in Software Release 8.5(1)

These sections describe open and resolved caveats in supervisor engine software release 8.5(1):

Open Caveats in Software Release 8.5(1)

This section describes open caveats in supervisor engine software release 8.5(1):

- With the SSL-VPN module (WS-SVC-WEBVPN-K9) and SSL module (WS-SVC-SSL-1SSL), after a non-high availability switchover, both modules lose connectivity.

  Workaround: Reset the modules after the switchover. (CSCei46039)

- When the multispeed (10 MB/100 MB/1 GB) port of the WS-SUP32-10GE-3B supervisor engine is set to the 10-MB speed and you change the default QoS Tx queue ratio sizes, all packets flowing through this interface may be dropped in the appropriate queue. This problem is more frequent with jumbo-sized packets.

  Workaround: Disable and then enable QoS. (CSCeh33526)

- 100BASE-T SFPs (GLC-T) do not support features such as UDLD and auto-mdix disable. We recommend that you do not enable UDLD on these SFPs. Auto-mdix is always enabled on these SFPs and cannot be disabled. (CSCec26310)

- With Supervisor Engine 1, the boot string contains several boot images but only one, the first one, actually exists in the file system. When you enter the **show system sanity** command, no boot image is reported as invalid (missing). If the one valid image is cleared from the boot string, then all of the remaining (invalid) images are flagged. If the one valid image is added back to the boot string (at the end, instead of the beginning), the three missing images are flagged. (CSCed56928)

- A bidirectional PIM ACE configured on the MSFC with a mask of 32 bits may result in traffic hitting the resulting (*,G/m) or (*,G). This situation could result in inconsistent forwarding.

  Workaround: Configure the ACE with a mask of 31 bits. (CSCin62624)

- With 802.1X authentication, if a high-availability switchover occurs during an authentication after the switchover completes, single authentication and port security are in the authenticated state but the port might not get added to spanning tree. If this situation occurs, then the port would not receive CBL or LTL information. The **show port security** command shows that the port MAC address is secured, but no MAC address is in the CAM table. (CSCin20244)

- With continuous traffic through a port, MAC authentication bypass will fail to work if the following operations are performed on the port in the sequence specified:

  1. MAC authentication bypass is enabled on the port.

  2. Port security is enabled on the port.

  3. The static CAM entry installed by port security on the port is confirmed.

  4. MAC authentication bypass is globally enabled.

  Note that this problem occurs only when MAC authentication bypass is globally enabled after port security has been enabled on the port. There is no problem with enabling or disabling port-level MAC authentication bypass after port security has been enabled.

  Workaround: Disable and then enable port security. (CSCin97632)

Resolved Caveats in Software Release 8.5(1)

This section describes resolved caveats in supervisor engine software release 8.5(1):

- Supervisor Engine 720 uplink ports may lose their configuration when the switch is in text configuration mode. We recommend that you do not use the Supervisor Engine 720 uplink ports if the system is in text configuration mode. Alternatively, every time that the switch is reset, you can manually configure the uplink ports. Binary configuration mode is not affected. This problem is resolved in software release 8.5(1). (CSCed20712)
- With a PFC3, when you have an EtherChannel with ports spread across fabric-enabled modules *and* non-fabric-enabled modules, you might see a traffic drop when traffic enters the EtherChannel on the fabric-enabled module and goes out of the same EtherChannel through the non-fabric-enabled module.

  Workaround: Do not configure ports in the EtherChannel across fabric-enabled modules and non-fabric-enabled modules. This problem is resolved in software release 8.5(1). (CSCef10952)
- The VLAN locking feature causes configuration loss in text configuration mode. Therefore, the VLAN locking feature is not supported in text configuration mode. This problem is resolved in software release 8.5(1). (CSCeb34004)
- You might experience a TLB Exception in the ProtocolTimer process. This problem is resolved in software release 8.5(1). (CSCef49268)
- Under rare circumstances with a Supervisor Engine 720, the switch might crash when the number of IP routes exceeds the FIB TCAM table.

  Workaround: Set the maximum routes to a nonzero value (the default is zero) using the **set mls cef maximum-routes ip** *routes* command. This problem is resolved in software release 8.5(1). (CSCeg57899)
- The Catalyst software SSH version 2 implementation does not comply with the standard in terms of password changes with TACACS+ authentication. The draft RFC for SSH version 2 requires that implementations include SSH_MSG_USERAUTH_PASSWD_CHANGEREQ and other parameters. But with the Catalyst software SSH version 2 implementation, when user-initiated or server-initiated password changing is attempted, nothing is displayed on the screen. This problem is resolved in software release 8.5(1). (CSCeg77091)
- The NAM might not be able to communicate with the supervisor engine if only SNMP extended community strings are configured on the switch.

  Workaround: Configure the primary SNMP string. This problem is resolved in software release 8.5(1). (CSCeh12102)
- Removing a private VLAN from a promiscuous port using the **clear pvlan mapping** *primary-vlan secondary-vlan mod/port* command breaks connectivity on that promiscuous port for all other mapped secondary VLANs. This problem has been seen with a Supervisor Engine 1A on switches running software release 7.6(11) and later releases with ports configured on the WS-X6148-GE-TX module.

  Workaround: To restore connectivity, add back the VLAN mapping. This problem is resolved in software release 8.5(1). (CSCeh51722)
- In a redundant system with Supervisor Engine 720s, when the supervisor engines switch from active to standby (with active in slot 5 and the standby in slot 6), the switch sends a trap indicating the fans in the power supply have failed. A subsequent SNMP walk indicates that the fans in the power supply are “not present.”

  Workaround: Switch the supervisor engine in slot 6 back to slot 5 to make it the active supervisor engine. This problem is resolved in software release 8.5(1). (CSCeh58468)

- The “out discard” counter on the WS-X6148-GE-TX and WS-X6548-GE-TX modules might display a zero count when a port is oversubscribed. This problem happens when the aggregate rate of a group of eight ports exceeds 1 Gbps.

  Workaround: There is no per-port counter for these drops. There is a counter for the group of eight ports that can be seen by entering the **show qos statistics** command. This problem is resolved in software release 8.5(1). (CSCeh81280)

- In rare circumstances with a Supervisor Engine 2 and UDLD and high availability enabled, you might see a unidirectional link after a high-availability switchover. This problem is resolved in software release 8.5(1). (CSCei12152)

- A Supervisor Engine 32 running software release 8.4(2a) and later releases might inadvertently reset and fail to write a stack trace. This problem is resolved in software release 8.5(1). (CSCei13893)

- When UNIX hosts are configured to 100 Mbps, full-duplex, and no autonegotiate, they might not be able to connect with WS-X6148-21AF, WS-X6148-45AF, and WS-X6348-RJ21 module ports when these ports have inline power set to off.

  Workaround: Set the inline power to auto or enable autonegotiation on both the host and switch ports. This problem is resolved in software release 8.5(1). (CSCei55412)

- An access list created by the **set snmp access-list** command might not appear in the output of the **show running config** and **show config** commands. This problem is resolved in software release 8.5(1). (CSCej06964)

- With a WS-X6101-OC12-SMF/MMF ATM module, you might not be able to copy the ATM module image directly to the ATM module bootflash using TFTP.

  Workaround: Copy the ATM module image onto the supervisor engine bootflash and then copy it to the ATM module bootflash from the supervisor engine. This problem is resolved in software release 8.5(1). (CSCin81645)

- With a Supervisor Engine 2/MSFC2, unicast reverse path forwarding might not work properly for multipath routes after reverse path forwarding is disabled on certain VLANs while other VLANs still have reverse path forwarding enabled.

  Workaround: Disable all reverse path forwarding-enabled VLANs and then enable them. This problem is resolved in software release 8.5(1). (CSCin86197)

- Not all MST topology change events (TCs) are counted in the **show spantree** *mod/port* **mst** *instance* command output. The TCs are needed to determine the source and track the count of topology changes to troubleshoot excessive flooding. This problem is resolved in software release 8.5(1). (CSCsb11469)

- After a reset, you might not be able to send traffic to the MSFC through a bridged VLAN. This problem is resolved in software release 8.5(1). (CSCei55044)

- In redundant systems, when there is a switchover and the active MSFC becomes the standby MSFC, the newly active MSFC might not receive PIM packets from its neighbors.

  Workaround: Disable and then reenable IGMP snooping on the newly active supervisor engine. This problem is resolved in software release 8.5(1). (CSCei55044)

- When the **switch supervisor** command is entered while the system is receiving the SNMP get of caqAggPolicerPackets, the standby supervisor engine might crash and fail to take over. This problem is resolved in software release 8.5(1). (CSCsb24936)

- CBL might be disabled after adding a new VLAN on a trunk port resulting in a loss of connectivity on the new VLAN. This problem is resolved in software release 8.5(1). (CSCsb86395)

Open and Resolved Caveats in Software Release 8.4(6)

These sections describe open and resolved caveats in supervisor engine software release 8.4(6):

Open Caveats in Software Release 8.4(6)

This section describes open caveats in supervisor engine software release 8.4(6):

- When the multispeed (10 MB/100 MB/1 GB) port of the WS-SUP32-10GE-3B supervisor engine is set to the 10-MB speed and you change the default QoS Tx queue ratio sizes, all packets flowing through this interface may be dropped in the appropriate queue. This problem is more frequent with jumbo-sized packets.

  Workaround: Disable and then enable QoS. (CSCeh33526)

- With a PFC3, when you have an EtherChannel with ports spread across fabric-enabled modules *and* non-fabric-enabled modules, you might see a traffic drop when traffic enters the EtherChannel on the fabric-enabled module and goes out of the same EtherChannel through the non-fabric-enabled module.

  Workaround: Do not configure ports in the EtherChannel across fabric-enabled modules and non-fabric-enabled modules. (CSCef10952)

- Supervisor Engine 720 uplink ports may lose their configuration when the switch is in text configuration mode. We recommend that you do not use the Supervisor Engine 720 uplink ports if the system is in text configuration mode. Alternatively, every time that the switch is reset, you can manually configure the uplink ports. Binary configuration mode is not affected. (CSCed20712)

- Occasionally, file system corruption may occur on the compact Flash and ATA drive-based file systems (disk0 on Supervisor Engine 2, disk0/disk1 on Supervisor Engine 720, and disk0 on Supervisor Engine 32). You can use the **fsck** command utility to check for file system errors. If file system corruption occurs again after the **fsck** command utility is run, the file system needs to be reformatted. We recommend that you back up configuration files stored on these file systems to a TFTP server on your network. (CSCed64505)

  Note This problem is not seen in subsequent releases.

- 100BASE-T SFPs (GLC-T) do not support features such as UDLD and auto-mdix disable. We recommend that you do not enable UDLD on these SFPs. Auto-mdix is always enabled on these SFPs and cannot be disabled. (CSCec26310)

- With Supervisor Engine 1, the boot string contains several boot images but only one, the first one, actually exists in the file system. When you enter the **show system sanity** command, no boot image is reported as invalid (missing). If the one valid image is cleared from the boot string, then all of the remaining (invalid) images are flagged. If the one valid image is added back to the boot string (at the end, instead of the beginning), the three missing images are flagged. (CSCed56928)

- A bidirectional PIM ACE configured on the MSFC with a mask of 32 bits may result in traffic hitting the resulting (*,G/m) or (*,G). This situation could result in inconsistent forwarding.

  Workaround: Configure the ACE with a mask of 31 bits. (CSCin62624)

- With 802.1X authentication, if a high-availability switchover occurs during an authentication after the switchover completes, single authentication and port security are in the authenticated state but the port might not get added to spanning tree. If this situation occurs, then the port would not receive CBL or LTL information. The **show port security** command shows that the port MAC address is secured, but no MAC address is in the CAM table. (CSCin20244)

Resolved Caveats in Software Release 8.4(6)

This section describes resolved caveats in supervisor engine software release 8.4(6):

- The following message may be displayed when a Catalyst 6500 module is powering up and a WS-F6K-48-AF, WS-F6K-48-AF, or WS-F6K-FE48X2-AF daughter card is present on the module:

  ```
  SYNDIAGS:Minor hardware problem in Module #4. Use 'show test 4' to see results of
  tests.
  ```

  This situation does not affect the operation of the module.

  Workaround: None. This problem is resolved in software release 8.4(6). (CSCdx25146)

Open and Resolved Caveats in Software Release 8.4(5)

These sections describe open and resolved caveats in supervisor engine software release 8.4(5):

- Open Caveats in Software Release 8.4(5), page 168
- Resolved Caveats in Software Release 8.4(5), page 169

Open Caveats in Software Release 8.4(5)

This section describes open caveats in supervisor engine software release 8.4(5):

- When the multispeed (10 MB/100 MB/1 GB) port of the WS-SUP32-10GE-3B supervisor engine is set to the 10-MB speed and you change the default QoS Tx queue ratio sizes, all packets flowing through this interface may be dropped in the appropriate queue. This problem is more frequent with jumbo-sized packets.

  Workaround: Disable and then enable QoS. (CSCeh33526)

- With a PFC3, when you have an EtherChannel with ports spread across fabric-enabled modules *and* non-fabric-enabled modules, you might see a traffic drop when traffic enters the EtherChannel on the fabric-enabled module and goes out of the same EtherChannel through the non-fabric-enabled module.

  Workaround: Do not configure ports in the EtherChannel across fabric-enabled modules and non-fabric-enabled modules. (CSCef10952)

- Supervisor Engine 720 uplink ports may lose their configuration when the switch is in text configuration mode. We recommend that you do not use the Supervisor Engine 720 uplink ports if the system is in text configuration mode. Alternatively, every time that the switch is reset, you can manually configure the uplink ports. Binary configuration mode is not affected. (CSCed20712)

- Occasionally, file system corruption may occur on the compact Flash and ATA drive-based file systems (disk0 on Supervisor Engine 2, disk0/disk1 on Supervisor Engine 720, and disk0 on Supervisor Engine 32). You can use the **fsck** command utility to check for file system errors. If file system corruption occurs again after the **fsck** command utility is run, the file system needs to be reformatted. We recommend that you back up configuration files stored on these file systems to a TFTP server on your network. (CSCed64505)

  Note This problem is not seen in subsequent releases.

- 100BASE-T SFPs (GLC-T) do not support features such as UDLD and auto-mdix disable. We recommend that you do not enable UDLD on these SFPs. Auto-mdix is always enabled on these SFPs and cannot be disabled. (CSCec26310)
- With Supervisor Engine 1, the boot string contains several boot images but only one, the first one, actually exists in the file system. When you enter the **show system sanity** command, no boot image is reported as invalid (missing). If the one valid image is cleared from the boot string, then all of the remaining (invalid) images are flagged. If the one valid image is added back to the boot string (at the end, instead of the beginning), the three missing images are flagged. (CSCed56928)
- A bidirectional PIM ACE configured on the MSFC with a mask of 32 bits may result in traffic hitting the resulting (*,G/m) or (*,G). This situation could result in inconsistent forwarding.

  Workaround: Configure the ACE with a mask of 31 bits. (CSCin62624)
- With 802.1X authentication, if a high-availability switchover occurs during an authentication after the switchover completes, single authentication and port security are in the authenticated state but the port might not get added to spanning tree. If this situation occurs, then the port would not receive CBL or LTL information. The **show port security** command shows that the port MAC address is secured, but no MAC address is in the CAM table. (CSCin20244)

Resolved Caveats in Software Release 8.4(5)

This section describes resolved caveats in supervisor engine software release 8.4(5):

- With a Supervisor Engine 32, the MSFC SRAM is changing mode during power up. This problem is resolved in software release 8.4(5). (CSCei57493)

Open and Resolved Caveats in Software Release 8.4(4)

These sections describe open and resolved caveats in supervisor engine software release 8.4(4):

- Open Caveats in Software Release 8.4(4), page 170
- Resolved Caveats in Software Release 8.4(4), page 171

Open Caveats in Software Release 8.4(4)

This section describes open caveats in supervisor engine software release 8.4(4):

- When the multispeed (10 MB/100 MB/1 GB) port of the WS-SUP32-10GE-3B supervisor engine is set to the 10-MB speed and you change the default QoS Tx queue ratio sizes, all packets flowing through this interface may be dropped in the appropriate queue. This problem is more frequent with jumbo-sized packets.

  Workaround: Disable and then enable QoS. (CSCeh33526)

- With a PFC3, when you have an EtherChannel with ports spread across fabric-enabled modules *and* non-fabric-enabled modules, you might see a traffic drop when traffic enters the EtherChannel on the fabric-enabled module and goes out of the same EtherChannel through the non-fabric-enabled module.

  Workaround: Do not configure ports in the EtherChannel across fabric-enabled modules and non-fabric-enabled modules. (CSCef10952)

- Supervisor Engine 720 uplink ports may lose their configuration when the switch is in text configuration mode. We recommend that you do not use the Supervisor Engine 720 uplink ports if the system is in text configuration mode. Alternatively, every time that the switch is reset, you can manually configure the uplink ports. Binary configuration mode is not affected. (CSCed20712)

- Occasionally, file system corruption may occur on the compact Flash and ATA drive-based file systems (disk0 on Supervisor Engine 2, disk0/disk1 on Supervisor Engine 720, and disk0 on Supervisor Engine 32). You can use the **fsck** command utility to check for file system errors. If file system corruption occurs again after the **fsck** command utility is run, the file system needs to be reformatted. We recommend that you back up configuration files stored on these file systems to a TFTP server on your network. (CSCed64505)

- 100BASE-T SFPs (GLC-T) do not support features such as UDLD and auto-mdix disable. We recommend that you do not enable UDLD on these SFPs. Auto-mdix is always enabled on these SFPs and cannot be disabled. (CSCec26310)

- With Supervisor Engine 1, the boot string contains several boot images but only one, the first one, actually exists in the file system. When you enter the **show system sanity** command, no boot image is reported as invalid (missing). If the one valid image is cleared from the boot string, then all of the remaining (invalid) images are flagged. If the one valid image is added back to the boot string (at the end, instead of the beginning), the three missing images are flagged. (CSCed56928)

- A bidirectional PIM ACE configured on the MSFC with a mask of 32 bits may result in traffic hitting the resulting (*,G/m) or (*,G). This situation could result in inconsistent forwarding.

  Workaround: Configure the ACE with a mask of 31 bits. (CSCin62624)

- With 802.1X authentication, if a high-availability switchover occurs during an authentication after the switchover completes, single authentication and port security are in the authenticated state but the port might not get added to spanning tree. If this situation occurs, then the port would not receive CBL or LTL information. The **show port security** command shows that the port MAC address is secured, but no MAC address is in the CAM table. (CSCin20244)

Resolved Caveats in Software Release 8.4(4)

This section describes resolved caveats in supervisor engine software release 8.4(4):

- With a Supervisor Engine 2 and a 48-port 10/100BASE-TX RJ-45 module (WS-X6548-RJ-45), when you enter the **show system health** command, there are nonzero counters reported for port ASIC 1 but the values being reported are counters, not error counters. This problem is resolved in software release 8.4(4). (CSCed62522)
- The **show tech-support** command might display configured passwords in text configuration mode. This problem is resolved in software release 8.4(4). (CSCeg17866)
- The switch might not return the values of the cseL2ForwardedLocalOctets MIB counter, although other counters in the cseL2StatsEntry tree are correctly returned. This problem is resolved in software release 8.4(4). (CSCeh16351)
- The Telnet access denied message includes “retry” timer information. The retry timer information has been removed in software release 8.4(4). (CSCeh18221)
- After uploading and downloading both default and nondefault configurations to and from a TFTP server, the “set mmls nonrpf timer 10” entry might mistakenly appear in the **show config all** command output as follows:

  ```
  Console> (enable) show conf all
  /snip/
  #mmls nonrpf
  set mmls nonrpf enable
  set mmls nonrpf timer 60
  set mmls nonrpf window 10
  set mmls nonrpf timer 10   <--- should be interval
  ```

  The second “set mmls nonrpf timer” entry should be “set mmls nonrpf interval.” This problem is resolved in software release 8.4(4). (CSCeh20805)
- With 802.1X, when a host is connected through a hub to a multiple authentication port and then moved to a single authentication port, the single authentication port is shut down due to an 802.1X security violation and the following syslog is displayed:

  ```
  %SECURITY-1-DOT1X_PORT_SHUTDOWN:DOT1X: port [n/m] shutdown because of dot1x security
  violation by [MAC address of HOST]
  ```

  This problem is resolved in software release 8.4(4). (CSCeh22145)
- In rare occurrences, when a root switch is running Rapid PVST+ and a second switch is running in PVST+ mode, if a VLAN is added to the second switch and if the VLAN had been preconfigured for quite some time on the root switch, the second switch might receive malformed BPDUs from the root switch for that VLAN and the secondary root switch might not receive any BPDUs from the root switch on that particular VLAN. This behavior results in ports on the second switch going into forwarding mode causing a spanning tree loop. The loop may cause high CPU utilization on these switches. This problem is seen only when adding a VLAN to a switch that is running in PVST+ mode and only if the VLAN had been preconfigured for quite some time on the root switch that is running Rapid PVST+.

  Workaround: Remove the VLAN from all switches, add it again to all switches, and then reboot the root switch or the secondary root switch. This problem is resolved in software release 8.4(4). (CSCeh53054)
- If the sc1 inband interface receives excessive broadcasts, you might experience a loss of control packets. This problem is resolved in software release 8.4(4). (CSCsa47028)

- When you use the SSH version 2 client to connect to the switch, the PTY request might be rejected by the switch and any passwords typed on this SSH session may be displayed. This problem has been seen with the PuTTY SSH client only. All other clients including Solaris, SSH.com client, and FreeSSH do not have this problem.

  Workaround: Use SSH version 1 with PuTTY or use a non-PuTTY client. This problem is resolved in software release 8.4(4). (CSCed69553)

- You might not get a response to an SNMP client getmany request when the sc1 interface is configured and the sc0 interface is up but is not configured with an IP address. The problem is seen with the following configuration:

  1) The sc1 interface is configured with a valid IP address and the sc0 interface is up but is not configured with an IP address.

  2) The SNMP client getmany request is issued but there is no response because no route is configured.

  3) The host route is configured but the getmany request still fails.

  Workaround: Configure the sc0 interface to "down." This problem is resolved in software release 8.4(4). (CSCed70000)

- For Supervisor Engine 1 and Supervisor Engine 2 with 512 KB of NVRAM space we only support a limited number of the 96-port switching modules (WS-X6196-RJ-21, WS-X6196-21AF, WS-X6148X2-RJ-45, and WS-X6148X2-45AF) in the chassis if the configuration mode is binary. NVRAM space usage is as follows:

```
~150 Kb - Global block
 ~30 Kb - SNMP block
 ~35 Kb - Rmon block
 `16 Kb - I/F Index block
 ------
~230 Kb
```

  The 96-port switching modules block size is 56 KB. The maximum number of 96-port switching modules depends on the system configuration but cannot be more than four.

  Workaround: Use text configuration mode when more than four 96-port switching modules are installed in a chassis. Note that there is no issue with Supervisor Engine 720 because its NVRAM size was increased to 2 MB. This problem is resolved in software release 8.4(4). (CSCef45906)

- The time stamp displayed using the **show cam notification history** command reflects the SNMP sysUptime. The uptime is displayed as the number of 10-ms increments that have occurred since the system came up. This representation is not very user friendly when used within a CLI. This problem is resolved in software release 8.4(4). (CSCef96946)

- The switch might not allow the "deny" form of the ARP inspection security ACL entry. This problem is resolved in software release 8.4(4). (CSCeg79899)

- The 802.1X authentication state might be disturbed if the "multi-host" option is enabled and a second host sends an EAPOL frame.

  Workaround: Use the "multi-auth" mode or make sure only one device on the port sends an EAPOL frame. This problem is resolved in software release 8.4(4). (CSCeh24189)

- With 802.1X, an EAPOL logoff does not clear the EAPOL capable flag of a port when it receives the EAPOL logoff packet from an IP phone or supplicant. This problem is resolved in software release 8.4(4). (CSCeh65263)

- FWSM ports that are channelling get turned off if you enter the **set port channel all mode off** command. To prevent the loss of channeling for the FWSM ports, perform the workaround.

  Workaround: 1) Turn off the channelling using the module-specific **set port channel** *mod/ports ...* **mode off**) command instead of using the **all** keyword. 2) Clear the FWSM configuration and reset the switch. This problem is resolved in software release 8.4(4). (CSCeh33181)

- With a Supervisor Engine 1, entering the **show dot1x vlan all** command causes a watchdog timeout. This problem has been seen in software releases 8.3(4) through 8.3(6).

  Workaround: Use the command to display information for specific VLANs (**show dot1x vlan** *vlan-num*) instead of the **all** keyword. This problem is resolved in software release 8.4(4). (CSCeh36331)

- With the WS-X6724-SFP and WS-X6748-SFP modules, if a port is booted into the disabled state (through OIR or a reboot), you must toggle the negotiation state of that port (disable and enable the port) before the remote end becomes connected. Once the port gets connected, all the normal configuration operations work on the port. If the port is not in the disabled state before it is booted, the port will remain operational even after a reboot.

  Workaround: Disable and enable the port to bring the link up. This problem is resolved in software release 8.4(4). (CSCeh46046)

- MSFC autostate does not work properly when NAM or IDSM modules get powered down or when the NAM/IDSM management port is the first forwarding port on a VLAN.

  Workaround: Manually clear VLANs from trunks to the NAM/IDSM to ensure that these ports are not unnecessarily part of VLANs. This problem is resolved in software release 8.4(4). (CSCeh50560)

- With the WS-X6148V-GE-TX module, ports hardcoded to 100/Full may experience collisions even when the link partner is hardcoded to 100/Full. The end hosts may experience ping and/or traffic drops after the switch is rebooted and the **show port** command displays single-collision, multi-collision, and late-collision counter increments.

  Workaround: Disable and reenable problem ports. This problem is resolved in software release 8.4(4). (CSCeh57601)

- The **set ip default next-hop** statement for policy-based routing (PBR) may forward incorrectly after a supervisor engine failover with single-router mode (SRM). The route map will forward correctly when initially configured. The problem occurs only after a supervisor engine failover and only if the route map has the **set ip default next-hop** command. After a failover, the traffic that matches the access list that corresponds with the **default next-hop** command, and that has the destination IP of a known network in the routing table, may be forwarded to the IP address configured in the **set ip default next-hop** command. This behavior is incorrect as the destination network would be known and the traffic should be forwarded through the routing table.

  Workaround: You can clear this problem immediately by using the **clear ip route *** command on the designated MSFC. Note that this problem is only observed when using the **set ip default next-hop** command. The problem is not seen when using the **set ip next-hop** command. This problem is resolved in software release 8.4(4). (CSCeh63420)

- With the WS-X6148A-RJ-45 or WS-X6148A-45AF modules, if you force the speed to 100 and the duplex to full, you cannot get a link connection.

  Workaround: Use auto mode or turn off the inline power on the port using the **set port speed** *mod/port* **auto** or **set port inlinepower** *mod/port* **off** commands. This problem is resolved in software release 8.4(4). (CSCeh76797)

- The WS-X6148-45AF module might reset due to excessive link changes and display the following error message:

```
2005 May 06 13:02:24 %SYS-5-MOD_NOSCPPINGRESPONSE:Module 9 not responding... resetting
module 2005 May 06 13:02:24 %SYS-5-MOD_RESET:Module 9 reset from Software 2005 May 06
13:04:07 %SYS-5-MOD_OK:Module 9(WS-X6148-45AF,SAL08175TMG) is online
```

This reset is not related to faulty hardware and is caused when ports go up and down at an abnormally high rate.

Workaround: Check the linkChange counter in the output of the **show counters** *mod/port* command. A large number of link changes could cause the module to reset. This problem is resolved in software release 8.4(4). (CSCeh84332)

- With 802.1X, the switch could take a considerable amount of time to finish authenticating over five supplicants if the authentications are done simultaneously. This problem is resolved in software release 8.4(4). (CSCeh95025)
- A switching module's port cost values might not synchronize correctly with the standby supervisor engine after the following configuration steps are performed on the switching module:
  - UplinkFast is enabled.
  - The module's configuration is cleared.

  The problem is seen regardless of the spanning-tree mode. This problem is resolved in software release 8.4(4). (CSCeg78210)
- IEEE BPDUs may be sent from an 802.1Q trunk port even if the native VLAN is cleared from the trunk. When the native VLAN on a trunk is cleared, the IEEE untagged BPDUs should not be sent. If the trunk port reinitializes itself for any reason (such as disabling/enabling the trunk or doing a module or switch reset), the trunk port may start to send IEEE untagged BPDUs.

  Workaround: Add the native VLAN and clear it again as follows:

  set trunk *mod/port NativeVlan_ID*

  clear trunk *mod/port NativeVlan_ID*

  This problem is resolved in software release 8.4(4). (CSCeh28209)
- The SNMP "snmpdm" process is sleeping after running for a long time. This problem is resolved in software release 8.4(4). (CSCeg64313)
- When an indirect failure is introduced in the spanning tree topology causing the message age timer to expire on the edge switches, UplinkFast does not get triggered if loop guard is configured. This problem is resolved in software release 8.4(4). (CSCeh19259)
- With high availability enabled, using one uplink from slot 1 and another uplink from slot 2, and running rapid spanning tree, when slot 1 is pulled out, high availability makes slot 2 active, but rapid spanning tree convergence may fail to negotiate the correct port role on the remaining uplink. The problem has been seen with software releases 8.4(3) and 8.3(7) only when one uplink is the root and the other is designated before the slot 1 module is pulled out. If the uplink from slot 1 was the root port, and the uplink from slot 2 is the alternate (therefore, it is blocking, non-DESG), the problem is not observed and rapid spanning tree convergence occurs normally.

  Workaround: Design the network topology and/or tune the spanning tree port cost to make one uplink the root port or designated port and the other uplink the alternate port. This problem is resolved in software release 8.4(4). (CSCeh97436)
- Netstat TCP displays negative values. This problem is resolved in software release 8.4(4). (CSCei21068)

- With certain hardware configurations, because the MSFC loopback address may not be programmed into the hardware CEF, packet loss and some routing protocols may be affected.

  Workaround: Remove/reconfigure the loopback IP address. This problem is resolved in software release 8.4(4). (CSCei22583)

- You might see a "WRONG_VALUE_ERROR" message when trying to set an SNMP autoDetect10100(2) on a 10/100/1000BASE-T switching module port. This problem is resolved in software release 8.4(4). (CSCsb21689)

- When the **set errordetection portcounters enable** command is entered, you will see two SCP retries every 30 minutes.

  Workaround: Enter the **set errordetection portcounters disable** command. This problem is resolved in software release 8.4(4). (CSCei08970)

- In single authentication mode, an 802.1X port might not reauthenticate when the port security age timer expires. Also, the CAM entry is not getting installed in multi-host mode even though the port is reauthenticated. This problem is resolved in software release 8.4(4). (CSCin91340)

- With a Supervisor Engine 2, if MAC address move notification is turned on and a Layer 2 spanning tree loop is created, the switch might crash. This problem is resolved in software release 8.4(4). (CSCeg47768)

- When an uplink port is part of an EtherChannel and there is a high-availability switchover, the uplink port might not leave the channel immediately after the high-availability switchover. This problem is resolved in software release 8.4(4). (CSCeh28768)

Open and Resolved Caveats in Software Release 8.4(3)

These sections describe open and resolved caveats in supervisor engine software release 8.4(3):

- Open Caveats in Software Release 8.4(3), page 175
- Resolved Caveats in Software Release 8.4(3), page 176

Open Caveats in Software Release 8.4(3)

This section describes open caveats in supervisor engine software release 8.4(3):

- When the multi-speed (10MB/100MB/1GB) port of the WS-SUP32-10GE-3B supervisor engine is set to the 10MB-speed and you change the default QoS Tx queue ratio sizes, all packets flowing through this interface may be dropped in the appropriate queue. This problem is more frequent with jumbo sized packets.

  Workaround: Disable and then enable QoS. (CSCeh33526)

- With a PFC3, when you have an EtherChannel with ports spread across fabric-enabled modules *and* non-fabric-enabled modules, you might see a traffic drop when traffic enters the EtherChannel on the fabric-enabled module and goes out of the same EtherChannel through the non-fabric-enabled module.

  Workaround: Do not configure ports in the EtherChannel across fabric-enabled modules and non-fabric-enabled modules. (CSCef10952)

- With a Supervisor Engine 2 and a 48-port 10/100BASE-TX RJ-45 module (WS-X6548-RJ-45), when you enter the **show system health** command, there are nonzero counters reported for port ASIC 1 but the values being reported are counters, not error counters. (CSCed62522)

- Supervisor Engine 720 uplink ports may lose their configuration when the switch is in text configuration mode. We recommend that you do not use the Supervisor Engine 720 uplink ports if the system is in text configuration mode. Alternatively, every time that the switch is reset, you can manually configure the uplink ports. Binary configuration mode is not affected. (CSCed20712)
- Occasionally, file system corruption may occur on the compact Flash and ATA drive-based file systems (disk0 on Supervisor Engine 2, disk0/disk1 on Supervisor Engine 720, and disk0 on Supervisor Engine 32). You can use the **fsck** command utility to check for file system errors. If file system corruption occurs again after the **fsck** command utility is run, the file system needs to be reformatted. We recommend that you back up configuration files stored on these file systems to a TFTP server on your network. (CSCed64505)
- 100BASE-T SFPs (GLC-T) do not support features such as UDLD and auto-mdix disable. We recommend that you do not enable UDLD on these SFPs. Auto-mdix is always enabled on these SFPs and cannot be disabled. (CSCec26310)
- With Supervisor Engine 1, the boot string contains several boot images but only one, the first one, actually exists in the file system. When you enter the **show system sanity** command, no boot image is reported as invalid (missing). If the one valid image is cleared from the boot string, then all of the remaining (invalid) images are flagged. If the one valid image is added back to the boot string (at the end, instead of the beginning), the three missing images are flagged. (CSCed56928)
- A bidirectional PIM ACE configured on the MSFC with a mask of 32 bits may result in traffic hitting the resulting (*,G/m) or (*,G). This situation could result in inconsistent forwarding.

  Workaround: Configure the ACE with a mask of 31 bits. (CSCin62624)
- With 802.1X authentication, if a high-availability switchover occurs during an authentication after the switchover completes, single authentication and port security are in the authenticated state but the port might not get added to spanning tree. If this situation occurs, then the port would not receive CBL or LTL information. The **show port security** command shows that the port MAC address is secured, but no MAC address is in the CAM table. (CSCin20244)

Resolved Caveats in Software Release 8.4(3)

This section describes resolved caveats in supervisor engine software release 8.4(3):

- With a Supervisor Engine 2 and a FWSM in slot 13 of a 13-slot chassis and with both SFM2s powered down, the FWSM fails online diagnostics (PC loopback) but passes the same tests and comes online if the FWSM is reset after bootup. If the SFM2s are up, the module passes diagnostics and comes online. This problem is resolved in FWSM software release 2.3(2). (CSCed79483)
- With high availability off, an SFP GBIC on the supervisor engine uplink ports might not be recognized after a switchover. Note that this behavior does not affect data traffic through the port.

  Workaround: Remove and then reinstall the SFP GBIC. This problem is resolved in software release 8.4(3). (CSCeh09470)
- You might see a memory leak when MIB walking table cssKeyTable. The problem occurs in software releases 8.4(1), 8.4(2), and 8.4(2a). This problem is resolved in software release 8.4(3). (CSCeh36457)
- With LACP only, if you have EtherChannel ports that span across multiple modules and you shut down a module that has one of the EtherChannel ports, the EtherChannel continues hashing to a link that now does not exist. This problem is resolved in software release 8.4(3). (CSCeh43106)
- When the management VLAN for the sc0 or sc1 interfaces is changed in MST, the local association is lost for the old management VLAN even though it contains access ports. This problem is resolved in software release 8.4(3). (CSCsa43581)

- WS-X6548-GE-TX module ports that are hard coded to “100-full” speed might show “not-connected” after a reboot either due to a power cycling or upgrade where a reload is required.

  Workaround: On the problem port, enter the **set port disable** command followed by the **set port enable** command. You might have to do this more than once. Sometimes rebooting the switch corrects the problem. This problem is resolved in software release 8.4(3). (CSCeg31700)

- When 802.1X is enabled on a port that has an IP phone connected, multicast music-on-hold packets do not get forwarded out of the switch port to the IP phone.

  Workaround: Disable 802.1X on the switch port where the IP phone is connected. This problem is resolved in software release 8.4(3). (CSCeg79376)

- Using 802.1X, simultaneous authentications might fail. This problem is resolved in software release 8.4(3). (CSCeh52596)

- With a Supervisor Engine 720/MSFC3 and software releases 8.1(1) through 8.4(2), Layer 2 MPLS packets are dropped if the MSFC3 is down or the VLAN interface is down or has not been created.

  Workaround: Bring up the MSFC3 and bring up the VLAN interface. This problem is resolved in software release 8.4(3). (CSCeh63636)

Open and Resolved Caveats in Software Release 8.4(2a)

These sections describe open and resolved caveats in supervisor engine software release 8.4(2a):

- Open Caveats in Software Release 8.4(2a), page 177
- Resolved Caveats in Software Release 8.4(2a), page 179

Open Caveats in Software Release 8.4(2a)

This section describes open caveats in supervisor engine software release 8.4(2a):

- With a PFC3, when you have an EtherChannel with ports spread across fabric-enabled modules *and* non-fabric-enabled modules, you might see a traffic drop when traffic enters the EtherChannel on the fabric-enabled module and goes out of the same EtherChannel through the non-fabric-enabled module.

  Workaround: Do not configure ports in the EtherChannel across fabric-enabled modules and non-fabric-enabled modules. (CSCef10952)

- With a Supervisor Engine 2 and a FWSM in slot 13 of a 13-slot chassis and with both SFM2s powered down, the FWSM fails online diagnostics (PC loopback) but passes the same tests and comes online if the FWSM is reset after bootup. If the SFM2s are up, the module passes diagnostics and comes online. (CSCed79483)

- With a Supervisor Engine 2, when you enter the **show system health** command, the output shows nonzero registers for the fabric-bus ASIC on the supervisor engine but the registers being identified are not error counters. (CSCed69903)

- With a Supervisor Engine 2 and a 48-port 10/100BASE-TX RJ-45 module (WS-X6548-RJ-45), when you enter the **show system health** command, there are nonzero counters reported for port ASIC 1 but the values being reported are counters, not error counters. (CSCed62522)

- Supervisor Engine 720 uplink ports may lose their configuration when the switch is in text configuration mode. We recommend that you do not use the Supervisor Engine 720 uplink ports if the system is in text configuration mode. Alternatively, every time that the switch is reset, you can manually configure the uplink ports. Binary configuration mode is not affected. (CSCed20712)
- Occasionally, file system corruption may occur on the compact Flash and ATA drive-based file systems (disk0 on Supervisor Engine 2, disk0/disk1 on Supervisor Engine 720, and disk0 on Supervisor Engine 32). You can use the **fsck** command utility to check for file system errors. If file system corruption occurs again after the **fsck** command utility is run, the file system needs to be reformatted. We recommend that you back up configuration files stored on these file systems to a TFTP server on your network. (CSCed64505)
- If you enter the **set port qos** *m/p* **autoqos voip ciscosoftphone** command or the **set port macro** *m/p* **ciscosoftphone** command on a group of ports, NVRAM corruption may occur. For example, entering the **set port qos 1/1-48,2/2-48 autoqos voip ciscosoftphone** command may cause NVRAM corruption.

  Workaround: Run the command on one port at a time as follows:

  ```
  set port qos 1/1 autoqos voip ciscosoftphone
  set port qos 1/2 autoqos voip ciscosoftphone
  ...
  ...
  ...
  set port qos 2/48 autoqos voip ciscosoftphone
  ```

  (CSCed95002)

  Note This problem is not seen in subsequent releases.

- 100BASE-T SFPs (GLC-T) do not support features such as UDLD and auto-mdix disable. We recommend that you do not enable UDLD on these SFPs. Auto-mdix is always enabled on these SFPs and cannot be disabled. (CSCec26310)
- With Supervisor Engine 1, the boot string contains several boot images but only one, the first one, actually exists in the file system. When you enter the **show system sanity** command, no boot image is reported as invalid (missing). If the one valid image is cleared from the boot string, then all of the remaining (invalid) images are flagged. If the one valid image is added back to the boot string (at the end, instead of the beginning), the three missing images are flagged. (CSCed56928)
- A bidirectional PIM ACE configured on the MSFC with a mask of 32 bits may result in traffic hitting the resulting (*,G/m) or (*,G). This situation could result in inconsistent forwarding.

  Workaround: Configure the ACE with a mask of 31 bits. (CSCin62624)
- With 802.1X authentication, if a high-availability switchover occurs during an authentication after the switchover completes, single authentication and port security are in the authenticated state but the port might not get added to spanning tree. If this situation occurs, then the port would not receive CBL or LTL information. The **show port security** command shows that the port MAC address is secured, but no MAC address is in the CAM table. (CSCin20244)

Resolved Caveats in Software Release 8.4(2a)

This section describes resolved caveats in supervisor engine software release 8.4(2a):

- In redundant systems running software release 8.4(2), the switch might crash after entering the **switch supervisor** command or during system bootup. This problem affects all supervisor engines when the switch is populated with multiple inline power switching modules that contain the WS-F6K-GE48-AF and WS-F6K-48-AF daughter cards.

  Workaround: Reset the system or insert the inline power switching modules one by one. This problem is resolved in software release 8.4(2a). (CSCeh47719)

Open and Resolved Caveats in Software Release 8.4(2)

These sections describe open and resolved caveats in supervisor engine software release 8.4(2):

- Open Caveats in Software Release 8.4(2), page 179
- Resolved Caveats in Software Release 8.4(2), page 180

Open Caveats in Software Release 8.4(2)

This section describes open caveats in supervisor engine software release 8.4(2):

- With a PFC3, when you have an EtherChannel with ports spread across fabric-enabled modules *and* non-fabric-enabled modules, you might see a traffic drop when traffic enters the EtherChannel on the fabric-enabled module and goes out of the same EtherChannel through the non-fabric-enabled module.

  Workaround: Do not configure ports in the EtherChannel across fabric-enabled modules and non-fabric-enabled modules. (CSCef10952)

- With a Supervisor Engine 2 and a FWSM in slot 13 of a 13-slot chassis and with both SFM2s powered down, the FWSM fails online diagnostics (PC loopback) but passes the same tests and comes online if the FWSM is reset after bootup. If the SFM2s are up, the module passes diagnostics and comes online. (CSCed79483)

- With a Supervisor Engine 2, when you enter the **show system health** command, the output shows nonzero registers for the fabric-bus ASIC on the supervisor engine but the registers being identified are not error counters. (CSCed69903)

- With a Supervisor Engine 2 and a 48-port 10/100BASE-TX RJ-45 module (WS-X6548-RJ-45), when you enter the **show system health** command, there are nonzero counters reported for port ASIC 1 but the values being reported are counters, not error counters. (CSCed62522)

- Supervisor Engine 720 uplink ports may lose their configuration when the switch is in text configuration mode. We recommend that you do not use the Supervisor Engine 720 uplink ports if the system is in text configuration mode. Alternatively, every time that the switch is reset, you can manually configure the uplink ports. Binary configuration mode is not affected. (CSCed20712)

- Occasionally, file system corruption may occur on the compact Flash and ATA drive-based file systems (disk0 on Supervisor Engine 2, disk0/disk1 on Supervisor Engine 720, and disk0 on Supervisor Engine 32). You can use the **fsck** command utility to check for file system errors. If file system corruption occurs again after the **fsck** command utility is run, the file system needs to be reformatted. We recommend that you back up configuration files stored on these file systems to a TFTP server on your network. (CSCed64505)

- If you enter the **set port qos** *m/p* **autoqos voip ciscosoftphone** command or the **set port macro** *m/p* **ciscosoftphone** command on a group of ports, NVRAM corruption may occur. For example, entering the **set port qos 1/1-48,2/2-48 autoqos voip ciscosoftphone** command may cause NVRAM corruption.

  Workaround: Run the command on one port at a time as follows:

  ```
  set port qos 1/1 autoqos voip ciscosoftphone
  set port qos 1/2 autoqos voip ciscosoftphone
  ...
  ...
  ...
  set port qos 2/48 autoqos voip ciscosoftphone
  ```

  (CSCed95002)

- 100BASE-T SFPs (GLC-T) do not support features such as UDLD and auto-mdix disable. We recommend that you do not enable UDLD on these SFPs. Auto-mdix is always enabled on these SFPs and cannot be disabled. (CSCec26310)
- With Supervisor Engine 1, the boot string contains several boot images but only one, the first one, actually exists in the file system. When you enter the **show system sanity** command, no boot image is reported as invalid (missing). If the one valid image is cleared from the boot string, then all of the remaining (invalid) images are flagged. If the one valid image is added back to the boot string (at the end, instead of the beginning), the three missing images are flagged. (CSCed56928)
- A bidirectional PIM ACE configured on the MSFC with a mask of 32 bits may result in traffic hitting the resulting (*,G/m) or (*,G). This situation could result in inconsistent forwarding.

  Workaround: Configure the ACE with a mask of 31 bits. (CSCin62624)
- With 802.1X authentication, if a high-availability switchover occurs during an authentication after the switchover completes, single authentication and port security are in the authenticated state but the port might not get added to spanning tree. If this situation occurs, then the port would not receive CBL or LTL information. The **show port security** command shows that the port MAC address is secured, but no MAC address is in the CAM table. (CSCin20244)

Resolved Caveats in Software Release 8.4(2)

This section describes resolved caveats in supervisor engine software release 8.4(2):

- The T1, E1, and FXS voice modules may not come online in text configuration mode.

  Workaround: Manually reset the module after the switch fully boots up. This problem is resolved in software release 8.4(2). (CSCed12999)
- The **show module** command displays the Supervisor Engine 720 firmware version (FW) as version 8.1.3; this version is inconsistent with the other FW versions—the version should be 8.1(3). This problem is resolved in software release 8.4(2). (CSCeg66140)
- QoS-bridged microflow policing may not work in text configuration mode. The command to enable QoS-bridge microflow policing intermittently fails to enable the feature. Binary configuration mode is not affected.

  Workaround: Manually configure the feature each time after the system is reset. This problem is resolved in software release 8.4(2). (CSCee44277)

- The **set mls bridged-flow-statistics enable** *vlanlist* command may not work correctly if the system is in text configuration mode. When the command is run in text configuration mode, it fails to enable the feature on all VLANs.

  Workaround: Use the binary configuration mode or manually run the command each time that the system boots. This problem is resolved in software release 8.4(2). (CSCee44285)

- If you have a configured startup file with the boot environment variable CONFIG_FILE set, the startup file might be read before the modules in the switch are completely online. As a result, the configuration for the modules specified in the startup file is lost. In some cases, the switch might still boot correctly if the diagnostic level is changed to a lower level. This problem is resolved in software release 8.4(2). (CSCec08789)

- In a two-port EtherChannel, when the second port is added to the EtherChannel, the first port leaves and then rejoins the EtherChannel (this leaving and rejoining process occurs twice).

  Workaround: The problem does not occur if the EtherChannel mode is set to "on." This problem is resolved in software release 8.4(2). (CSCee76807)

- With port security enabled on a port, if the port goes up and down during the programming of the secure MAC address, you will lose connectivity. This problem is resolved in software release 8.4(2). (CSCef06707)

- You might experience a problem with an SSH login. The login prompt appears and you enter your login name and get a password login prompt. After entering the password, there is no reply; you see a blank line and pressing Enter again does nothing. If you try to enter a command, there is no echo on the screen *but* the output from the command is displayed on the screen. This problem is not affecting the ability of the switch to function correctly. Once the problem happens, it is continuous. Logging off and back on does not clear the problem. You must reboot the switch to clear the problem. If you attempt an SSH login on an affected switch and it fails, you can immediately do an SSH login to an unaffected switch from the same session without a problem. This problem is resolved in software release 8.4(2). (CSCef54438)

- You might see a VTP pruning failure with spanning tree PortFast enabled. This problem is resolved in software release 8.4(2). (CSCef86022)

- The system passwords (both console and enable passwords) might not work after loading the passwords from a previously saved password configuration file. This problem is resolved in software release 8.4(2). (CSCeg05183)

- If a port in a Gigabit EtherChannel goes down, you might experience packet loss for 5 or 6 seconds. This problem is resolved in software release 8.4(2). (CSCeg28124)

- Out-Discard and Rcv-Octet counters increment on GBIC ports that are showing a "notconnect" status. This problem is resolved in software release 8.4(2). (CSCeg48512)

- With port security, when a port is shut down due to a security violation, the offending MAC address is not displayed in the syslog. This problem is resolved in software release 8.4(2). (CSCeg76020)

- Under certain conditions when using PAgP, the EtherChannel might go down resulting in traffic loss. This problem is resolved in software release 8.4(2). (CSCef32238)

- On a switch with a large number of ports, the switch might reset with a "Watchdog Timeout" exception after entering the **set cam notification** {**added** | **removed**} **enable** command on a range of ports that are part of an EtherChannel.

  Workaround: Do not enter the command on a range of ports; enter the command on individual ports, one by one. This problem is resolved in software release 8.4(2). (CSCef42167)

- In rare circumstances, a group of four ports (1–4, 5–8, 9–12, or 13–16) on the WS-X6516-GE-TX module may experience connectivity problems. If this problem occurs, the following syslog messages might be seen:

  ```
  %PM_SCP-SP-6-LCP_FW_ERR_INFORM: Module 4 is experiencing the following error:
  Pinnacle #0 Frames with Bad Packet CRC Error (PI_CI_S_PKTCRC_ERR - 0xC7) = 110
  ```

  Workaround: Reset the module (hard reset). This problem is resolved in software release 8.4(2). (CSCef46923)

- When CoS output scheduling is set on an egress WS-X6548-GE-TX module port, the following is seen:
  - 64-byte long CoS 0 traffic is stored in WRR high Q or WRR low Q
  - 65-byte long CoS 0 traffic is stored only in WRR low Q

  This problem is resolved in software release 8.4(2). (CSCef47548)

- ARP is not being resolved on the MSFC. The glean adjacency in the supervisor engine hardware is not being forwarded to the MSFC which prevents ARP from being resolved. This problem is seen only when **no ip redirect** and **no ip unreachable** are configured on the MSFC ingress VLAN interface.

  Workaround: Configure at least one of the following on the MSFC ingress VLAN interface:
  - **ip redirect**
  - **ip verify unicast reverse-path**

  This problem is resolved in software release 8.4(2). (CSCeg01772)

- An IEEE BPDU may be sent from an 802.1Q trunk port even if the native VLAN is cleared from the trunk. When the native VLAN on a trunk is cleared, the IEEE untagged BPDU should not be sent. If the trunk port reinitializes itself for any reason (such as disabling/enabling, module reset, and switch reset), the trunk port may start to send IEEE untagged BPDUs.

  Workaround: Add the native VLAN and clear it again as follows:

  1) **set trunk** *mod/port NativeVlan_ID*

  2) **clear trunk** *mod/port NativeVlan_ID*

  This problem is resolved in software release 8.4(2). (CSCeg29195)

- A dynamic port in the management VLAN does not pass traffic though the switch after its MAC address ages out. The dynamic port is assigned to the correct VLAN. If there is no traffic during the CAM aging time, the MAC address is removed from the table. After it has been removed, and traffic generated again, the MAC address does not appear in the table and traffic is not passed though the switch from that port.

  Workaround: Use a dynamic VLAN that is different from the management VLAN or disable and enable the dynamic port. This problem is resolved in software release 8.4(2). (CSCeg30314)

- After a supervisor engine switchover, if you add a VLAN to a trunk port, the VLAN is not displayed in the "Vlans in spanning tree forwarding state and not pruned" field of the **show trunk** command. This problem is resolved in software release 8.4(2). (CSCeg47658)

- Several different models of IP phones intermittently do not power up when attached to the WS-X6148-45AF module. This problem is seen when the power is set to "auto" and the speed is set to "full." This problem is resolved in software release 8.4(2). (CSCeg55432)

- The switch may not be able to communicate with a connected device on a secure port in a different VLAN. This problem does not impact the other traffic of the connected devices.

  Workaround: Disable port security on desired ports using the **set port security** *mod/port* **disable** command. This problem is resolved in software release 8.4(2). (CSCeg71622)

- With a Supervisor Engine 2, packets with an unresolved destination MAC address may be dropped instead of being forwarded to the MSFC for the triggering of ARP requests.

  Workarounds: 1) Ping the destination from the supervisor engine or the MSFC. 2) Add a static ARP entry on the MSFC. This problem is resolved in software release 8.4(2). (CSCeg73090)

- If you use the **show trunk** [*mod*[/*port*]] **extended-range** command, the system might display all the ports without releasing the CPU for other processes. During this period, BPDU processing might stop. This problem is resolved in software release 8.4(2). (CSCeg73646)

- With certain topologies where 802.1X is being used and UplinkFast is enabled, you might experience a transient loop that could affect the passing of traffic on 802.1X-enabled ports.

  Workaround: Disable UplinkFast. This problem is resolved in software release 8.4(2). (CSCeg75736)

- When a Supervisor Engine 2 has an EtherChannel configured in "desirable mode," the EtherChannel might randomly unbundle due to PAgP corruption. This problem is seen only when voice ports on the WS-X6608 modules are going up and down.

  Workaround: Configure the trunking and EtherChannel modes to "on." We also recommend that you enable UDLD on all trunks in the EtherChannel on both switches. Doing this allows you to monitor and detect any unidirectional links that "desirable mode" EtherChannel would normally detect and recover from. This problem is resolved in software release 8.4(2). (CSCeg78848)

- With IGMP snooping enabled, the switch might fail to relay the DVMRP messages to the other DVMRP routers in that VLAN.

  Workaround: Disable IGMP snooping. This problem is resolved in software release 8.4(2). (CSCin84014)

- With redundant supervisor engines, the status and configuration of port 1/1 and port 2/1 is changed after a switchover. The first supervisor engine port on the newly active supervisor engine gets enabled even if the default is set to disable. This problem is only seen in text configuration mode.

  Workaround: Use binary configuration mode. This problem is resolved in software release 8.4(2). (CSCsa42331)

- The MIB object "snmpEngineTime" does not report the correct value if the SNMP engine has been active for more than 496 days. This problem is resolved in software release 8.4(2). (CSCeg61577)

- When a switch running IEEE standard MST is connected to a switch running pre-standard MST, the port on the pre-standard MST switch might occasionally come up as a boundary port even though both switches have the same MST configurations.

  Workaround: Redetect the protocol on the port that comes up as the boundary port by entering the **set spantree mst** *mod/port* **redetect-protocol** command. This problem is resolved in software release 8.4(2). (CSCeg01881)

- For IDSM and NAM modules, the default behavior of the SPAN destination port was changed in software release 8.4(1). If the SPAN destination port is a trunk, the spanned source VLAN must be in the SPAN destination port's "trunk allow list." Note that this behavior is corrected in software release 8.4(2); in software release 8.4(2), the behavior is as it was in software releases prior to release 8.4(1).

  Workaround: Specify the VLANs that you are interested in spanning on the IDSM or NAM module trunk port. This problem is resolved in software release 8.4(2). (CSCeh02836)

- With software release 8.4(2) and later releases, a new global CLI command has been introduced to control the use of ACL trust over port trust to mark packets. Prior to software release 8.4(2), there was no way to set DSCP with the **set qos acl** command set. With software release 8.4(2) and later releases, a new CLI command, **set qos acl default-action trust-override** [**enable** | **disable**], is available to toggle the ACL trust to override the port trust. (CSCeh14320)
- You might see ports go into the "notconnect" state after disabling and then enabling the port status.

  Workaround: If the port goes into the "notconnect" state after disabling and enabling the port status, you can attempt to get the port back to the "connected" state by entering the **set port negotiation** *mod/port* **enable** command followed by the **set port negotiation** *mod/port* **disable** command. This problem is resolved in software release 8.4(2). (CSCeh25262)
- With software release 8.4(2) and later releases, support for service modules (CSM, SSL, FWSM, VPN, and so on) has been enhanced as follows:
  - Service modules that pass traffic will now participate in spanning tree.
  - PortFast and TrunkFast are enabled on the service modules by default.
  - All STP parameters are configurable on these service modules.
  - BPDU guard and BPDU filter are set as "default" by default on the service modules and are user-configurable. (CSCed73352)

Open and Resolved Caveats in Software Release 8.4(1)

These sections describe open and resolved caveats in supervisor engine software release 8.4(1):

- Open Caveats in Software Release 8.4(1), page 184
- Resolved Caveats in Software Release 8.4(1), page 186

Open Caveats in Software Release 8.4(1)

This section describes open caveats in supervisor engine software release 8.4(1):

- For IDSM and NAM modules, the default behavior of the SPAN destination port has changed in software release 8.4(1). If the SPAN destination port is a trunk, the spanned source VLAN must be in the SPAN destination port's "trunk allow list." Note that this behavior will be corrected in software release 8.4(2); in software release 8.4(2), the behavior will be as it was in software releases prior to release 8.4(1).

  Workaround: Specify the VLANs that you are interested in spanning on the IDSM or NAM module trunk port. (CSCeh02836)
- With software release 8.1(1) through software release 8.4(1), if the MSFC on the active supervisor engine is specified as the nondesignated router (NDR) and the MSFC on the standby supervisor engine is specified as the designated router (DR), the MSFC that is specified as the NDR does not take over when the standby supervisor engine is removed.

  Workaround: Reset the supervisor engine. (CSCeg09491)

- With a PFC3, when you have an EtherChannel with ports spread across fabric-enabled modules *and* non-fabric-enabled modules, you might see a traffic drop when traffic enters the EtherChannel on the fabric-enabled module and goes out of the same EtherChannel through the non-fabric-enabled module.

  Workaround: Do not configure ports in the EtherChannel across fabric-enabled modules and non-fabric-enabled modules. (CSCef10952)

- With a Supervisor Engine 2 and a FWSM in slot 13 of a 13-slot chassis and with both SFM2s powered down, the FWSM fails online diagnostics (PC loopback) but passes the same tests and comes online if the FWSM is reset after bootup. If the SFM2s are up, the module passes diagnostics and comes online. (CSCed79483)

- With a Supervisor Engine 2, when you enter the **show system health** command, the output shows nonzero registers for the fabric-bus ASIC on the supervisor engine but the registers being identified are not error counters. (CSCed69903)

- With a Supervisor Engine 2 and a 48-port 10/100BASE-TX RJ-45 module (WS-X6548-RJ-45), when you enter the **show system health** command, there are nonzero counters reported for port ASIC 1 but the values being reported are counters, not error counters. (CSCed62522)

- The T1, E1, and FXS voice modules may not come online in text configuration mode.

  Workaround: Manually reset the module after the switch fully boots up. (CSCed12999)

- Supervisor Engine 720 uplink ports may lose their configuration when the switch is in text configuration mode. We recommend that you do not use the Supervisor Engine 720 uplink ports if the system is in text configuration mode. Alternatively, every time that the switch is reset, you can manually configure the uplink ports. Binary configuration mode is not affected. (CSCed20712)

- Occasionally, file system corruption may occur on the compact Flash and ATA drive-based file systems (disk0 on Supervisor Engine 2, disk0/disk1 on Supervisor Engine 720, and disk0 on Supervisor Engine 32). You can use the **fsck** command utility to check for file system errors. If file system corruption occurs again after the **fsck** command utility is run, the file system needs to be reformatted. We recommend that you back up configuration files stored on these file systems to a TFTP server on your network. (CSCed64505)

- The **show module** command displays the Supervisor Engine 720 firmware version (FW) as version 8.1.3; this is inconsistent with the other FW versions - the version should be 8.1(3). (CSCeg66140)

- If you enter the **set port qos** *m/p* **autoqos voip ciscosoftphone** command or the **set port macro** *m/p* **ciscosoftphone** command on a group of ports, NVRAM corruption may occur. For example, entering the **set port qos 1/1-48,2/2-48 autoqos voip ciscosoftphone** command may cause NVRAM corruption.

  Workaround: Run the command on one port at a time as follows:

  ```
  set port qos 1/1 autoqos voip ciscosoftphone
  set port qos 1/2 autoqos voip ciscosoftphone
  ...
  ...
  ...
  set port qos 2/48 autoqos voip ciscosoftphone
  ```

  (CSCed95002)

- QoS-bridged microflow policing may not work in text configuration mode. The command to enable QoS-bridge microflow policing intermittently fails to enable the feature. Binary configuration mode is not affected.

  Workaround: Manually configure the feature each time after the system is reset. (CSCee44277)

- 100BASE-T SFPs (GLC-T) do not support features such as UDLD and auto-mdix disable. We recommend that you do not enable UDLD on these SFPs. Auto-mdix is always enabled on these SFPs and cannot be disabled. (CSCec26310)
- The **set mls bridged-flow-statistics enable** *vlanlist* command may not work correctly if the system is in text configuration mode. When the command is run in text configuration mode, it fails to enable the feature on all VLANs.

  Workaround: Use the binary configuration mode or manually run the command each time that the system boots. (CSCee44285)
- With Supervisor Engine 1, the boot string contains several boot images but only one, the first one, actually exists in the file system. When you enter the **show system sanity** command, no boot image is reported as invalid (missing). If the one valid image is cleared from the boot string, then all of the remaining (invalid) images are flagged. If the one valid image is added back to the boot string (at the end, instead of the beginning), the three missing images are flagged. (CSCed56928)
- A bidirectional PIM ACE configured on the MSFC with a mask of 32 bits may result in traffic hitting the resulting (*,G/m) or (*,G). This situation could result in inconsistent forwarding.

  Workaround: Configure the ACE with a mask of 31 bits. (CSCin62624)
- With 802.1X authentication, if a high-availability switchover occurs during an authentication after the switchover completes, single authentication and port security are in the authenticated state but the port might not get added to spanning tree. If this situation occurs, then the port would not receive CBL or LTL information. The **show port security** command shows that the port MAC address is secured, but no MAC address is in the CAM table. (CSCin20244)

Resolved Caveats in Software Release 8.4(1)

This section describes resolved caveats in supervisor engine software release 8.4(1):

- With a Supervisor Engine 1, IGMP snooping enabled, a host at port 5/8, a statically configured router at port 5/1, a source at port 5/4, and IGMP querier enabled in the VLAN, when the host sends a report and the source sends traffic, a multicast-configured CAM entry is created with the LTL correctly set sending the traffic to the router and the host. When the user configures a QoS MAC-CoS for the GDA and assigns CoS 7, the source and host are stopped, the GDA is deleted, and the CAM entry changes to user-cgfd with an LTL flood to the VLAN. When the source is started, the traffic floods to all ports in the VLAN (99) and the CoS is correct. However, when the host (port 5/8) starts sending reports again and the CAM entry is changed back to multicast configured, the LTL is not set for any ports (router or host) and the traffic is dropped. This problem is resolved in software release 8.4(1). (CSCee16301) (CSCee16301 was fixed in CSCee89331)
- You might not be able to statically configure a multicast router port when the spanning tree mode is set to MST. This problem is resolved in software release 8.4(1). (CSCee02221)
- With a Supervisor Engine 720 and a 96-port 10/100BASE-TX RJ-45 module (WS-X6148X2-RJ-45), the **show system health** command displays several nonzero registers for the bus ASIC on the WS-X6148X2-RJ-45. One register displays as “SP_TI_CFG.” As a configuration register, it should not be showing in the **show system health** command output. There are also problems in the register decodes; they seem to be off by one from the specifications. This problem is resolved in software release 8.4(1). (CSCed70239)
- At system bootup, secure VLANs associated with the FWSM may not get secured. This problem occurs only in text configuration mode.

  Workaround: Manually configure the FWSM each time that the system boots. This problem is resolved in software release 8.4(1). (CSCee10706)

- With high availability enabled, port security is enabled on a port using the **violation restrict** mode. On repeatedly clearing the secured addresses under continuous traffic, the secured port on the standby supervisor engine might shut down. (CSCin25168)

  Note This problem was seen in earlier software releases but is not seen in the 8.4(1) software release.

- With a Supervisor Engine 1, you might see some Layer 3 table parity errors. These are non-fatal errors (packets are still forwarded in software). This problem is resolved in software release 8.4(1). (CSCdy41174)
- With the WS-X6502-10GE module, the **set qos map** command maps CoS values to the WRED thresholds only and not to the tail-drop thresholds. This problem is resolved in software release 8.4(1). (CSCdy79506)
- A VACL filter might not have any effect on spanned traffic. If there is an RSPAN session where the source and destination are present on the same switch, applying a VACL filter to the RSPAN VLAN might not create a filter effect on the spanned traffic. This problem is resolved in software release 8.4(1). (CSCee74248)
- After a non-high availability failover, the non-designated MSFC might repeatedly reset. The system does not display a specific reason for the reset. The following syslog messages are displayed:

  ```
  2004 May 28 23:18:21 %SYS-1-MOD_MINORFAIL:Minor problem in module 15
  2004 May 28 23:18:21 %SYS-4-NVLOG:SYNDIAGS:Minor hardware problem in Module #15. Use
  'show test 15' to see results of tests.
  2004 May 28 23:18:23 %SYS-5-MOD_OK:Module 15 is online
  2004 May 28 23:23:48 %SYS-5-MOD_RESET:Module 15 reset from Status Poll
  ```

  Workaround: Reboot the chassis. This problem is resolved in software release 8.4(1). (CSCef24069)
- In software release 8.3(3) with the WS-X6704-10GE module, CoS-to-CoS mapping might not work properly. This problem is resolved in software release 8.4(1). (CSCef54500)
- With software release 8.3(3), the switch might perform a reverse DNS query before each new command in a Telnet or SSH session if DNS lookups are enabled.

  Workaround: Disable DNS lookups by entering the **set ip dns disable** command. This problem is resolved in software release 8.4(1). (CSCef61776)
- If you configure a SPAN session on a module and then replace the module with a different type of module, the switch disables the SPAN session because a different type of module was inserted. This is normal behavior. The problem is that if you configure a new SPAN session on the newly installed module and then perform a high-availability switchover, the newly configured SPAN session is lost after the switchover.

  Workaround: Reconfigure the SPAN session after the high-availability switchover. This problem is resolved in software release 8.4(1). (CSCef67073)
- With IGMP snooping enabled, PIM hellos might not be going out of the ATM LANE modules.

  Workaround: Disable and then reenable IGMP snooping. This problem is resolved in software release 8.4(1). (CSCef81723)
- The **set snmp ifalias** command fails on FlexWAN interfaces. The FlexWAN module does not have any ifIndexes (“0” ports); therefore, you should not be allowed to set the SNMP ifalias on FlexWAN module interfaces. Additionally, the system should not display a FlexWAN module entry when the **show snmp ifalias** command is entered. This problem is resolved in software release 8.4(1). (CSCef82995)

- The **show tech** command should not display password information as this could create a security vulnerability. This problem is resolved in software release 8.4(1). (CSCef86581)
- For a Supervisor Engine 2/MSFC2 with more than 255 VLANs assigned to the same HSRP group ID, the HSRP MAC address may be deleted mistakenly, resulting in Layer 3 packets being forwarded to the MSFC2 for software switching.

  Workaround: Limit the number of VLANs with the same HSRP group ID to no more than 255. If necessary, use other HSRP group IDs. This problem is resolved in software release 8.4(1). (CSCef88220)
- When port security is configured with the violation mode set to **restrict**, traffic from insecure addresses is dropped. This behavior is achieved by installing a special "trap" CAM entry in the CAM table. While this special CAM entry is suppressed in the **show cam dynamic** command output, the insecure address is still registered in the CAM notification history and is shown in the **show cam notification history** command output. Functionality is not affected. This problem is resolved in software release 8.4(1). (CSCef98123)
- With software releases 8.1(1) and later releases, the switch might drop tagged packets on the 802.1Q access port. A symptom of this problem is that while the **show cam dynamic** command does show the untagged users MAC address, the command does not show the other tagged VLAN users that are being tagged.

  Workaround: Enter the following commands:

  set port dot1qtunnel *mod/port* **disable**

  set port dot1qtunnel *mod/port* **access**

  This problem is resolved in software release 8.4(1). (CSCeg04084)
- When you poll the cpsSecureMacAddrType MIB object, it does not return anything. In software release 8.3(3), the cpsSecureMacAddrType MIB object was deprecated and the replacement was the cpsIfVlanSecureMacAddrType MIB object. The problem is that the cpsIfVlanSecureMacAddrType MIB object output is not the same as the output from the **show port security** command. This problem is resolved in software release 8.4(1). (CSCeg07733)
- With software release 8.3(3) and SSH enabled, the switch might unexpectedly reset. This problem is resolved in software release 8.4(1). (CSCeg00623)
- With software release 8.3(3), when the inband interface is added to the ifTable, the MIB object ifNumber is not incremented. This problem results in the ifNumber being 1 less than the number of instances in the ifIndex. This problem is resolved in software release 8.4(1). (CSCeg26260)
- With VACLs in previous software releases, due to inconsistencies between the hardware configuration and the NVRAM configuration, you might have experienced the following problems when configuring VACLs:
  - ACL name commit failure
  - ACL name commit ok, ACEs commit failure
  - ACL mapping failure

  These problems have been resolved by ensuring that the hardware configuration and the NVRAM configuration are consistent. This problem is resolved in software release 8.4(1). (CSCee69181)

Open and Resolved Caveats in Software Release 8.3(7)

These sections describe open and resolved caveats in supervisor engine software release 8.3(7):

Open Caveats in Software Release 8.3(7)

This section describes open caveats in supervisor engine software release 8.3(7):

- With a PFC3, when you have an EtherChannel with ports spread across fabric-enabled modules *and* non-fabric-enabled modules, you might see a traffic drop when traffic enters the EtherChannel on the fabric-enabled module and goes out of the same EtherChannel through the non-fabric-enabled module.

  Workaround: Do not configure ports in the EtherChannel across fabric-enabled modules and non-fabric-enabled modules. (CSCef10952)

- With a Supervisor Engine 1, IGMP snooping enabled, a host at port 5/8, a statically configured router at port 5/1, a source at port 5/4, and IGMP querier enabled in the VLAN, when the host sends a report and the source sends traffic, a multicast-configured CAM entry is created with the LTL correctly set sending the traffic to the router and the host. When the user configures a QoS MAC-CoS for the GDA and assigns CoS 7, the source and host are stopped, the GDA is deleted, and the CAM entry changes to user-cgfd with an LTL flood to the VLAN. When the source is started, the traffic floods to all ports in the VLAN (99) and the CoS is correct. However, when the host (port 5/8) starts sending reports again and the CAM entry is changed back to multicast configured, the LTL is not set for any ports (router or host) and the traffic is dropped. (CSCee16301)

- You might not be able to statically configure a multicast router port when the spanning tree mode is set to MST. (CSCee02221)

- With a Supervisor Engine 2 and a FWSM in slot 13 of a 13-slot chassis and with both SFM2s powered down, the FWSM fails online diagnostics (PC loopback) but passes the same tests and comes online if the FWSM is reset after bootup. If the SFM2s are up, the module passes diagnostics and comes online (although if diagnostic traces are set to 1, there are still some failure messages coming out of TestKomodoPlusPorts). (CSCed79483)

- With a Supervisor Engine 720 and a 96-port 10/100BASE-TX RJ-45 module (WS-X6148X2-RJ-45), the **show system health** command displays several nonzero registers for the bus ASIC on the WS-X6148X2-RJ-45. One register displays as “SP_TI_CFG.” As a configuration register, it should not be showing in the **show system health** command output. There are also problems in the register decodes; they seem to be off by one from the specifications. (CSCed70239)

- With a Supervisor Engine 2, when you enter the **show system health** command, the output shows nonzero registers for the fabric-bus ASIC on the supervisor engine but the registers being identified are not error counters. (CSCed69903)

- With a Supervisor Engine 2 and a 48-port 10/100BASE-TX RJ-45 module (WS-X6548-RJ-45), when you enter the **show system health** command, there are nonzero counters reported for port ASIC 1 but the values being reported are counters, not error counters. (CSCed62522)

- The T1, E1, and FXS voice modules may not come online in text configuration mode.

  Workaround: Manually reset the module after the switch fully boots up. (CSCed12999)

- Supervisor Engine 720 uplink ports may lose their configuration when the switch is in text configuration mode. We recommend that you do not use the Supervisor Engine 720 uplink ports if the system is in text configuration mode. Alternatively, every time that the switch is reset, you can manually configure the uplink ports. Binary configuration mode is not affected. (CSCed20712)
- Occasionally, file system corruption may occur on the compact Flash and ATA drive-based file systems (disk0 on Supervisor Engine 2, disk0/disk1 on Supervisor Engine 720, and disk0 on Supervisor Engine 32). You can use the **fsck** command utility to check for file system errors. If file system corruption occurs again after the **fsck** command utility is run, the file system needs to be reformatted. We recommend that you back up configuration files stored on these file systems to a TFTP server on your network. (CSCed64505)
- If you enter the **set port qos** *m/p* **autoqos voip ciscosoftphone** command or the **set port macro** *m/p* **ciscosoftphone** command on a group of ports, NVRAM corruption may occur. For example, entering the **set port qos 1/1-48,2/2-48 autoqos voip ciscosoftphone** command may cause NVRAM corruption.

  Workaround: Run the command on one port at a time as follows:

  ```
  set port qos 1/1 autoqos voip ciscosoftphone
  set port qos 1/2 autoqos voip ciscosoftphone
  ...
  ...
  ...
  set port qos 2/48 autoqos voip ciscosoftphone
  ```

  (CSCed95002)
- QoS-bridged microflow policing may not work in text configuration mode. The command to enable QoS-bridge microflow policing intermittently fails to enable the feature. Binary configuration mode is not affected.

  Workaround: Manually configure the feature each time after the system is reset. (CSCee44277)
- At system bootup, secure VLANs associated with the FWSM may not get secured. This problem occurs only in text configuration mode.

  Workaround: Manually configure the FWSM each time that the system boots. (CSCee10706)
- 100BASE-T SFPs (GLC-T) do not support features such as UDLD and auto-mdix disable. We recommend that you do not enable UDLD on these SFPs. Auto-mdix is always enabled on these SFPs and cannot be disabled. (CSCec26310)
- The **set mls bridged-flow-statistics enable** *vlanlist* command may not work correctly if the system is in text configuration mode. When the command is run in text configuration mode, it fails to enable the feature on all VLANs.

  Workaround: Use the binary configuration mode or manually run the command each time that the system boots. (CSCee44285)
- With Supervisor Engine 1, the boot string contains several boot images but only one, the first one, actually exists in the file system. When you enter the **show system sanity** command, no boot image is reported as invalid (missing). If the one valid image is cleared from the boot string, then all of the remaining (invalid) images are flagged. If the one valid image is added back to the boot string (at the end, instead of the beginning), the three missing images are flagged. (CSCed56928)
- A bidirectional PIM ACE configured on the MSFC with a mask of 32 bits may result in traffic hitting the resulting (*,G/m) or (*,G). This situation could result in inconsistent forwarding.

  Workaround: Configure the ACE with a mask of 31 bits. (CSCin62624)

- With 802.1X authentication, if a high-availability switchover occurs during an authentication after the switchover completes, single authentication and port security are in the authenticated state but the port might not get added to spanning tree. If this situation occurs, then the port would not receive CBL or LTL information. The **show port security** command shows that the port MAC address is secured, but no MAC address is in the CAM table. (CSCin20244)
- With high availability enabled, port security is enabled on a port using the **violation restrict** mode. On repeatedly clearing the secured addresses under continuous traffic, the secured port on the standby supervisor engine might shut down. (CSCin25168)
- The broadcast suppression counter undercounts packets that have a size evenly divisible by 16:
  - A 64-byte packet should be counted as 4 but is counted as 3
  - 65- to 79-byte packets are correctly counted as 4
  - An 80-byte packet should be counted as 5 but is counted as 4
  - 81- to 95-byte packets are correctly counted as 5
  - A 96-byte packet should be counted as 6 but is counted as 5

  (CSCdr56784)

Resolved Caveats in Software Release 8.3(7)

This section describes resolved caveats in supervisor engine software release 8.3(7):

- In redundant systems running software release 8.3(6), the switch might crash after entering the **switch supervisor** command or during system bootup. This problem affects all supervisor engines supported in software release 8.3(x) when the switch is populated with multiple inline power switching modules that contain the WS-F6K-GE48-AF and WS-F6K-48-AF daughter cards.

  Workaround: Reset the system or insert the inline power switching modules one by one. This problem is resolved in software release 8.3(7). (CSCeh47719)

Open and Resolved Caveats in Software Release 8.3(6)

These sections describe open and resolved caveats in supervisor engine software release 8.3(6):

- Open Caveats in Software Release 8.3(6), page 191
- Resolved Caveats in Software Release 8.3(6), page 194

Open Caveats in Software Release 8.3(6)

This section describes open caveats in supervisor engine software release 8.3(6):

- With a PFC3, when you have an EtherChannel with ports spread across fabric-enabled modules *and* non-fabric-enabled modules, you might see a traffic drop when traffic enters the EtherChannel on the fabric-enabled module and goes out of the same EtherChannel through the non-fabric-enabled module.

  Workaround: Do not configure ports in the EtherChannel across fabric-enabled modules and non-fabric-enabled modules. (CSCef10952)

- With a Supervisor Engine 1, IGMP snooping enabled, a host at port 5/8, a statically configured router at port 5/1, a source at port 5/4, and IGMP querier enabled in the VLAN, when the host sends a report and the source sends traffic, a multicast-configured CAM entry is created with the LTL correctly set sending the traffic to the router and the host. When the user configures a QoS MAC-CoS for the GDA and assigns CoS 7, the source and host are stopped, the GDA is deleted, and the CAM entry changes to user-cgfd with an LTL flood to the VLAN. When the source is started, the traffic floods to all ports in the VLAN (99) and the CoS is correct. However, when the host (port 5/8) starts sending reports again and the CAM entry is changed back to multicast configured, the LTL is not set for any ports (router or host) and the traffic is dropped. (CSCee16301)
- You might not be able to statically configure a multicast router port when the spanning tree mode is set to MST. (CSCee02221)
- With a Supervisor Engine 2 and a FWSM in slot 13 of a 13-slot chassis and with both SFM2s powered down, the FWSM fails online diagnostics (PC loopback) but passes the same tests and comes online if the FWSM is reset after bootup. If the SFM2s are up, the module passes diagnostics and comes online (although if diagnostic traces are set to 1, there are still some failure messages coming out of TestKomodoPlusPorts). (CSCed79483)
- With a Supervisor Engine 720 and a 96-port 10/100BASE-TX RJ-45 module (WS-X6148X2-RJ-45), the **show system health** command displays several nonzero registers for the bus ASIC on the WS-X6148X2-RJ-45. One register displays as "SP_TI_CFG." As a configuration register, it should not be showing in the **show system health** command output. There are also problems in the register decodes; they seem to be off by one from the specifications. (CSCed70239)
- With a Supervisor Engine 2, when you enter the **show system health** command, the output shows nonzero registers for the fabric-bus ASIC on the supervisor engine but the registers being identified are not error counters. (CSCed69903)
- With a Supervisor Engine 2 and a 48-port 10/100BASE-TX RJ-45 module (WS-X6548-RJ-45), when you enter the **show system health** command, there are nonzero counters reported for port ASIC 1 but the values being reported are counters, not error counters. (CSCed62522)
- The T1, E1, and FXS voice modules may not come online in text configuration mode.

  Workaround: Manually reset the module after the switch fully boots up. (CSCed12999)
- Supervisor Engine 720 uplink ports may lose their configuration when the switch is in text configuration mode. We recommend that you do not use the Supervisor Engine 720 uplink ports if the system is in text configuration mode. Alternatively, every time that the switch is reset, you can manually configure the uplink ports. Binary configuration mode is not affected. (CSCed20712)
- Occasionally, file system corruption may occur on the compact Flash and ATA drive-based file systems (disk0 on Supervisor Engine 2, disk0/disk1 on Supervisor Engine 720, and disk0 on Supervisor Engine 32). You can use the **fsck** command utility to check for file system errors. If file system corruption occurs again after the **fsck** command utility is run, the file system needs to be reformatted. We recommend that you back up configuration files stored on these file systems to a TFTP server on your network. (CSCed64505)
- If you enter the **set port qos** *m/p* **autoqos voip ciscosoftphone** command or the **set port macro** *m/p* **ciscosoftphone** command on a group of ports, NVRAM corruption may occur. For example, entering the **set port qos 1/1-48,2/2-48 autoqos voip ciscosoftphone** command may cause NVRAM corruption.

  Workaround: Run the command on one port at a time as follows:

```
set port qos 1/1 autoqos voip ciscosoftphone
set port qos 1/2 autoqos voip ciscosoftphone
...
...
...
```

```
set port qos 2/48 autoqos voip ciscosoftphone
```

(CSCed95002)

- QoS-bridged microflow policing may not work in text configuration mode. The command to enable QoS-bridge microflow policing intermittently fails to enable the feature. Binary configuration mode is not affected.

  Workaround: Manually configure the feature each time after the system is reset. (CSCee44277)

- At system bootup, secure VLANs associated with the FWSM may not get secured. This problem occurs only in text configuration mode.

  Workaround: Manually configure the FWSM each time that the system boots. (CSCee10706)

- 100BASE-T SFPs (GLC-T) do not support features such as UDLD and auto-mdix disable. We recommend that you do not enable UDLD on these SFPs. Auto-mdix is always enabled on these SFPs and cannot be disabled. (CSCec26310)

- The **set mls bridged-flow-statistics enable** *vlanlist* command may not work correctly if the system is in text configuration mode. When the command is run in text configuration mode, it fails to enable the feature on all VLANs.

  Workaround: Use the binary configuration mode or manually run the command each time that the system boots. (CSCee44285)

- With Supervisor Engine 1, the boot string contains several boot images but only one, the first one, actually exists in the file system. When you enter the **show system sanity** command, no boot image is reported as invalid (missing). If the one valid image is cleared from the boot string, then all of the remaining (invalid) images are flagged. If the one valid image is added back to the boot string (at the end, instead of the beginning), the three missing images are flagged. (CSCed56928)

- A bidirectional PIM ACE configured on the MSFC with a mask of 32 bits may result in traffic hitting the resulting (*,G/m) or (*,G). This situation could result in inconsistent forwarding.

  Workaround: Configure the ACE with a mask of 31 bits. (CSCin62624)

- With 802.1X authentication, if a high-availability switchover occurs during an authentication after the switchover completes, single authentication and port security are in the authenticated state but the port might not get added to spanning tree. If this situation occurs, then the port would not receive CBL or LTL information. The **show port security** command shows that the port MAC address is secured, but no MAC address is in the CAM table. (CSCin20244)

- With high availability enabled, port security is enabled on a port using the **violation restrict** mode. On repeatedly clearing the secured addresses under continuous traffic, the secured port on the standby supervisor engine might shut down. (CSCin25168)

- The broadcast suppression counter undercounts packets that have a size evenly divisible by 16:
  - A 64-byte packet should be counted as 4 but is counted as 3
  - 65- to 79-byte packets are correctly counted as 4
  - An 80-byte packet should be counted as 5 but is counted as 4
  - 81- to 95-byte packets are correctly counted as 5
  - A 96-byte packet should be counted as 6 but is counted as 5

  (CSCdr56784)

Resolved Caveats in Software Release 8.3(6)

This section describes resolved caveats in supervisor engine software release 8.3(6):

- In software release 8.3(6), the number of TCP-established sessions has been increased from the current limit of 64 to 128. (CSCeg85630)

Open and Resolved Caveats in Software Release 8.3(5)

These sections describe open and resolved caveats in supervisor engine software release 8.3(5):

- Open Caveats in Software Release 8.3(5), page 194
- Resolved Caveats in Software Release 8.3(5), page 196

Open Caveats in Software Release 8.3(5)

This section describes open caveats in supervisor engine software release 8.3(5):

- With a PFC3, when you have an EtherChannel with ports spread across fabric-enabled modules *and* non-fabric-enabled modules, you might see a traffic drop when traffic enters the EtherChannel on the fabric-enabled module and goes out of the same EtherChannel through the non-fabric-enabled module.

  Workaround: Do not configure ports in the EtherChannel across fabric-enabled modules and non-fabric-enabled modules. (CSCef10952)

- With a Supervisor Engine 1, IGMP snooping enabled, a host at port 5/8, a statically configured router at port 5/1, a source at port 5/4, and IGMP querier enabled in the VLAN, when the host sends a report and the source sends traffic, a multicast-configured CAM entry is created with the LTL correctly set sending the traffic to the router and the host. When the user configures a QoS MAC-CoS for the GDA and assigns CoS 7, the source and host are stopped, the GDA is deleted, and the CAM entry changes to user-cgfd with an LTL flood to the VLAN. When the source is started, the traffic floods to all ports in the VLAN (99) and the CoS is correct. However, when the host (port 5/8) starts sending reports again and the CAM entry is changed back to multicast configured, the LTL is not set for any ports (router or host) and the traffic is dropped. (CSCee16301)

- You might not be able to statically configure a multicast router port when the spanning tree mode is set to MST. (CSCee02221)

- With a Supervisor Engine 2 and a FWSM in slot 13 of a 13-slot chassis and with both SFM2s powered down, the FWSM fails online diagnostics (PC loopback) but passes the same tests and comes online if the FWSM is reset after bootup. If the SFM2s are up, the module passes diagnostics and comes online (although if diagnostic traces are set to 1, there are still some failure messages coming out of TestKomodoPlusPorts). (CSCed79483)

- With a Supervisor Engine 720 and a 96-port 10/100BASE-TX RJ-45 module (WS-X6148X2-RJ-45), the **show system health** command displays several nonzero registers for the bus ASIC on the WS-X6148X2-RJ-45. One register displays as “SP_TI_CFG.” As a configuration register, it should not be showing in the **show system health** command output. There are also problems in the register decodes; they seem to be off by one from the specifications. (CSCed70239)

- With a Supervisor Engine 2, when you enter the **show system health** command, the output shows nonzero registers for the fabric-bus ASIC on the supervisor engine but the registers being identified are not error counters. (CSCed69903)

- With a Supervisor Engine 2 and a 48-port 10/100BASE-TX RJ-45 module (WS-X6548-RJ-45), when you enter the **show system health** command, there are nonzero counters reported for port ASIC 1 but the values being reported are counters, not error counters. (CSCed62522)
- The T1, E1, and FXS voice modules may not come online in text configuration mode.

  Workaround: Manually reset the module after the switch fully boots up. (CSCed12999)
- Supervisor Engine 720 uplink ports may lose their configuration when the switch is in text configuration mode. We recommend that you do not use the Supervisor Engine 720 uplink ports if the system is in text configuration mode. Alternatively, every time that the switch is reset, you can manually configure the uplink ports. Binary configuration mode is not affected. (CSCed20712)
- Occasionally, file system corruption may occur on the compact Flash and ATA drive-based file systems (disk0 on Supervisor Engine 2, disk0/disk1 on Supervisor Engine 720, and disk0 on Supervisor Engine 32). You can use the **fsck** command utility to check for file system errors. If file system corruption occurs again after the **fsck** command utility is run, the file system needs to be reformatted. We recommend that you back up configuration files stored on these file systems to a TFTP server on your network. (CSCed64505)
- If you enter the **set port qos** *m/p* **autoqos voip ciscosoftphone** command or the **set port macro** *m/p* **ciscosoftphone** command on a group of ports, NVRAM corruption may occur. For example, entering the **set port qos 1/1-48,2/2-48 autoqos voip ciscosoftphone** command may cause NVRAM corruption.

  Workaround: Run the command on one port at a time as follows:

  ```
  set port qos 1/1 autoqos voip ciscosoftphone
  set port qos 1/2 autoqos voip ciscosoftphone
  ...
  ...
  ...
  set port qos 2/48 autoqos voip ciscosoftphone
  ```

  (CSCed95002)
- QoS-bridged microflow policing may not work in text configuration mode. The command to enable QoS-bridge microflow policing intermittently fails to enable the feature. Binary configuration mode is not affected.

  Workaround: Manually configure the feature each time after the system is reset. (CSCee44277)
- At system bootup, secure VLANs associated with the FWSM may not get secured. This problem occurs only in text configuration mode.

  Workaround: Manually configure the FWSM each time that the system boots. (CSCee10706)
- 100BASE-T SFPs (GLC-T) do not support features such as UDLD and auto-mdix disable. We recommend that you do not enable UDLD on these SFPs. Auto-mdix is always enabled on these SFPs and cannot be disabled. (CSCec26310)
- The **set mls bridged-flow-statistics enable** *vlanlist* command may not work correctly if the system is in text configuration mode. When the command is run in text configuration mode, it fails to enable the feature on all VLANs.

  Workaround: Use the binary configuration mode or manually run the command each time that the system boots. (CSCee44285)
- With Supervisor Engine 1, the boot string contains several boot images but only one, the first one, actually exists in the file system. When you enter the **show system sanity** command, no boot image is reported as invalid (missing). If the one valid image is cleared from the boot string, then all of the remaining (invalid) images are flagged. If the one valid image is added back to the boot string (at the end, instead of the beginning), the three missing images are flagged. (CSCed56928)

- A bidirectional PIM ACE configured on the MSFC with a mask of 32 bits may result in traffic hitting the resulting (*,G/m) or (*,G). This situation could result in inconsistent forwarding.

  Workaround: Configure the ACE with a mask of 31 bits. (CSCin62624)

- With 802.1X authentication, if a high-availability switchover occurs during an authentication after the switchover completes, single authentication and port security are in the authenticated state but the port might not get added to spanning tree. If this situation occurs, then the port would not receive CBL or LTL information. The **show port security** command shows that the port MAC address is secured, but no MAC address is in the CAM table. (CSCin20244)

- With high availability enabled, port security is enabled on a port using the **violation restrict** mode. On repeatedly clearing the secured addresses under continuous traffic, the secured port on the standby supervisor engine might shut down. (CSCin25168)

- The broadcast suppression counter undercounts packets that have a size evenly divisible by 16:
  - A 64-byte packet should be counted as 4 but is counted as 3
  - 65- to 79-byte packets are correctly counted as 4
  - An 80-byte packet should be counted as 5 but is counted as 4
  - 81- to 95-byte packets are correctly counted as 5
  - A 96-byte packet should be counted as 6 but is counted as 5

  (CSCdr56784)

Resolved Caveats in Software Release 8.3(5)

This section describes resolved caveats in supervisor engine software release 8.3(5):

- With software release 8.3(3), the switch might perform a reverse DNS query before each new command in a Telnet or SSH session if DNS lookups are enabled.

  Workaround: Disable DNS lookups by entering the **set ip dns disable** command. This problem is resolved in software release 8.3(5). (CSCef61776)

Open and Resolved Caveats in Software Release 8.3(4)

These sections describe open and resolved caveats in supervisor engine software release 8.3(4):

- Open Caveats in Software Release 8.3(4), page 196
- Resolved Caveats in Software Release 8.3(4), page 198

Open Caveats in Software Release 8.3(4)

This section describes open caveats in supervisor engine software release 8.3(4):

- With a PFC3, when you have an EtherChannel with ports spread across fabric-enabled modules *and* non-fabric-enabled modules, you might see a traffic drop when traffic enters the EtherChannel on the fabric-enabled module and goes out of the same EtherChannel through the non-fabric-enabled module.

  Workaround: Do not configure ports in the EtherChannel across fabric-enabled modules and non-fabric-enabled modules. (CSCef10952)

- With a Supervisor Engine 1, IGMP snooping enabled, a host at port 5/8, a statically configured router at port 5/1, a source at port 5/4, and IGMP querier enabled in the VLAN, when the host sends a report and the source sends traffic, a multicast-configured CAM entry is created with the LTL correctly set sending the traffic to the router and the host. When the user configures a QoS MAC-CoS for the GDA and assigns CoS 7, the source and host are stopped, the GDA is deleted, and the CAM entry changes to user-cgfd with an LTL flood to the VLAN. When the source is started, the traffic floods to all ports in the VLAN (99) and the CoS is correct. However, when the host (port 5/8) starts sending reports again and the CAM entry is changed back to multicast configured, the LTL is not set for any ports (router or host) and the traffic is dropped. (CSCee16301)
- You might not be able to statically configure a multicast router port when the spanning tree mode is set to MST. (CSCee02221)
- With a Supervisor Engine 2 and a FWSM in slot 13 of a 13-slot chassis and with both SFM2s powered down, the FWSM fails online diagnostics (PC loopback) but passes the same tests and comes online if the FWSM is reset after bootup. If the SFM2s are up, the module passes diagnostics and comes online (although if diagnostic traces are set to 1, there are still some failure messages coming out of TestKomodoPlusPorts). (CSCed79483)
- With a Supervisor Engine 720 and a 96-port 10/100BASE-TX RJ-45 module (WS-X6148X2-RJ-45), the **show system health** command displays several nonzero registers for the bus ASIC on the WS-X6148X2-RJ-45. One register displays as "SP_TI_CFG." As a configuration register, it should not be showing in the **show system health** command output. There are also problems in the register decodes; they seem to be off by one from the specifications. (CSCed70239)
- With a Supervisor Engine 2, when you enter the **show system health** command, the output shows nonzero registers for the fabric-bus ASIC on the supervisor engine but the registers being identified are not error counters. (CSCed69903)
- With a Supervisor Engine 2 and a 48-port 10/100BASE-TX RJ-45 module (WS-X6548-RJ-45), when you enter the **show system health** command, there are nonzero counters reported for port ASIC 1 but the values being reported are counters, not error counters. (CSCed62522)
- The T1, E1, and FXS voice modules may not come online in text configuration mode.

  Workaround: Manually reset the module after the switch fully boots up. (CSCed12999)
- Supervisor Engine 720 uplink ports may lose their configuration when the switch is in text configuration mode. We recommend that you do not use the Supervisor Engine 720 uplink ports if the system is in text configuration mode. Alternatively, every time that the switch is reset, you can manually configure the uplink ports. Binary configuration mode is not affected. (CSCed20712)
- Occasionally, file system corruption may occur on the compact Flash and ATA drive-based file systems (disk0 on Supervisor Engine 2, disk0/disk1 on Supervisor Engine 720, and disk0 on Supervisor Engine 32). You can use the **fsck** command utility to check for file system errors. If file system corruption occurs again after the **fsck** command utility is run, the file system needs to be reformatted. We recommend that you back up configuration files stored on these file systems to a TFTP server on your network. (CSCed64505)
- If you enter the **set port qos** *m/p* **autoqos voip ciscosoftphone** command or the **set port macro** *m/p* **ciscosoftphone** command on a group of ports, NVRAM corruption may occur. For example, entering the **set port qos 1/1-48,2/2-48 autoqos voip ciscosoftphone** command may cause NVRAM corruption.

  Workaround: Run the command on one port at a time as follows:

```
set port qos 1/1 autoqos voip ciscosoftphone
set port qos 1/2 autoqos voip ciscosoftphone
...
...
...
```

```
set port qos 2/48 autoqos voip ciscosoftphone
```

(CSCed95002)

- QoS-bridged microflow policing may not work in text configuration mode. The command to enable QoS-bridge microflow policing intermittently fails to enable the feature. Binary configuration mode is not affected.

  Workaround: Manually configure the feature each time after the system is reset. (CSCee44277)

- At system bootup, secure VLANs associated with the FWSM may not get secured. This problem occurs only in text configuration mode.

  Workaround: Manually configure the FWSM each time that the system boots. (CSCee10706)

- 100BASE-T SFPs (GLC-T) do not support features such as UDLD and auto-mdix disable. We recommend that you do not enable UDLD on these SFPs. Auto-mdix is always enabled on these SFPs and cannot be disabled. (CSCec26310)

- The **set mls bridged-flow-statistics enable** *vlanlist* command may not work correctly if the system is in text configuration mode. When the command is run in text configuration mode, it fails to enable the feature on all VLANs.

  Workaround: Use the binary configuration mode or manually run the command each time that the system boots. (CSCee44285)

- With Supervisor Engine 1, the boot string contains several boot images but only one, the first one, actually exists in the file system. When you enter the **show system sanity** command, no boot image is reported as invalid (missing). If the one valid image is cleared from the boot string, then all of the remaining (invalid) images are flagged. If the one valid image is added back to the boot string (at the end, instead of the beginning), the three missing images are flagged. (CSCed56928)

- A bidirectional PIM ACE configured on the MSFC with a mask of 32 bits may result in traffic hitting the resulting (*,G/m) or (*,G). This situation could result in inconsistent forwarding.

  Workaround: Configure the ACE with a mask of 31 bits. (CSCin62624)

- With 802.1X authentication, if a high-availability switchover occurs during an authentication after the switchover completes, single authentication and port security are in the authenticated state but the port might not get added to spanning tree. If this situation occurs, then the port would not receive CBL or LTL information. The **show port security** command shows that the port MAC address is secured, but no MAC address is in the CAM table. (CSCin20244)

- With high availability enabled, port security is enabled on a port using the **violation restrict** mode. On repeatedly clearing the secured addresses under continuous traffic, the secured port on the standby supervisor engine might shut down. (CSCin25168)

Resolved Caveats in Software Release 8.3(4)

This section describes resolved caveats in supervisor engine software release 8.3(4):

- In text configuration mode, the SPAN sessions on the NAM, IDS module, and other service modules are not reconfigured after a reset.

  Workaround: Manually configure the SPAN sessions on a service module each time that the switch is reset. This problem is resolved in software release 8.3(4). (CSCed65635)

- Disaster recovery cannot be done for CMM modules from the Catalyst operating system because the commands that are documented are not available to end users. This problem is resolved in software release 8.3(4) and later releases through the following commands:

  – **set poll** {**enable** | **disable**}

  Use this command to enable or disable system polling. System polling is enabled by default. This command allows you to enable or disable polling on the entire system. When set to disable, the supervisor engine stops polling all the modules in the chassis. Use the **show poll** command to display polling status.

  – **set module power** {**up** | **down**} *mod_num* [*pm_option*]

  This command is used for setting the power management bit to do disaster recovery. The *pm_option* is set to zero by default. This command allows you to set the power management bit for the module on which disaster recovery needs to be done. Setting the power management bit triggers the download mechanism (downloading an image from the supervisor engine Flash memory to the CMM) every time the CMM is reset. Refer to the CMM disaster recovery section in the *Catalyst 6500 Series Switch and Cisco 7600 Series Router CMM Installation and Verification Note* at this URL:

  http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/hardware/Config_Notes/78_14107.html

  (CSCee06730)

- A FWSM and possibly other service modules may not be able to communicate if the dot1q-all-tagged feature is enabled. You cannot use the dot1q-all-tagged feature if a service module is present in the switch.

  Workaround: Enter the **set dot1q-all-tagged disable** command and then reset the switch. This problem is resolved in software release 8.3(4). (CSCed18049)

- When the EOBC out-of-band management bus fault detection code tries to power a module that is in the "power-deny" state, the switch may crash. This problem is resolved in software release 8.3(4). (CSCee59418)

- With a Supervisor Engine 2 or Supervisor Engine 720, traffic might be switched matching a policy map using the hardware CEF table instead of the next hop as set by the policy map. This problem has been observed only when you have a policy map with a large number of sequences and different next hops for each sequence. This problem is resolved in software release 8.3(4). (CSCef38462)

- With redundant supervisor engines/MSFCs, MSFCs configured in DRM with both MSFCs using an administered MAC address on the VLAN interface, and MSFCs configured with HSRP and OSPF, there is no problem as long as both supervisor engines remain in the same chassis. If you remove the standby supervisor engine and install it in another chassis with a link between the two switches, you lose unicast communication between the MSFCs, as evidenced by the following problems:

  – Cannot ping between the physical IP addresses

  – OSPF does not come up

  – Problems with HSRP

  When you enter the **show cam system** command on the initial chassis, you can see that the MAC address configured on the removed MSFC still points to port 16/1. As soon as the administered MAC address is removed from the VLAN interfaces on the removed MSFC, communication returns. This problem is resolved in software release 8.3(4). (CSCed20984)

- If a port is moved from VLAN X to VLAN Y, permanent CAM entries might be lost. For example, if you have port group 1/1-8 with port 1/2 and port 1/7 in VLAN 10 and a permanent CAM entry configured on port 1/2, if port 1/7 is moved from VLAN 10 to VLAN 20, the permanent CAM entry on port 1/2 might be deleted.

  Workaround: After moving a port to a different VLAN, reconfigure the permanent CAM entry. This problem is resolved in software release 8.3(4). (CSCef66696)

- With **cdpverify** enabled, the auxiliary VLAN might not come up on a Cisco IP conference station 7936 IP phone and the phone might not boot.

  Workaround: Disable **cdpverify** on that port using the **set port auxiliaryvlan** *mod/port* **cdpverify disable** command. This problem is resolved in software release 8.3(4). (CSCef23681)

- Doing a minimal entry (entering only the first part of a command's syntax) on the following commands: **set errdisable**, **set option**, and **show cdp port** *mod/port*, results in either a missing key word or no error message. This problem is resolved in software release 8.3(4). (CSCed92864)

- The **show tech-support** command does not display "outband counters." This problem is resolved in software release 8.3(4). (CSCef81144)

- If you set the text configuration autosave interval to greater than 25 days or above 35000 minutes using the **set config mode text auto-save interval** *interval* command, you might see the following error message: "Failed to start text configuration auto-save timer."

  Workaround: Do not set the autosave interval to greater than 25 days or above 35000 minutes. We have stopped supporting timers with intervals greater than 25 days or 35000 minutes in software release 7.6(10) and later releases, 8.3(4) and later releases, and 8.4(1) and later releases. Any commands configured with an interval greater than 35000 minutes (or 25 days) in the configuration file are automatically set to 35000 minutes (or 25 days) when the configuration file is loaded on the switch. The same behavior applies to the **set system info-log interval** *interval* command and all other commands that support an interval configuration. (CSCee17413)

- After upgrading from software release 8.2(1) to software release 8.3(3) in the text configuration mode, the system incorrectly allows you to enter the **write memory** command during the sync up; the system does not allow you to use other **set** commands during the sync up. This problem results in a configuration loss. This problem is resolved in software release 8.3(4). (CSCef36602)

- If you set the system information logging interval to greater than 25 days or above 35000 minutes using the **set system info-log interval** *interval* command, you might experience a Breakpoint Exception in the StartupConfig process.

  Workaround: Do not set the system information logging interval to greater than 25 days or above 35000 minutes. This problem is resolved in software release 8.3(4). (CSCef36760)

- You might experience a TLB Exception when trying to write the system info-log to an FTP server. This problem is seen when the output of the system information logging feature is transferred using the FTP protocol and no FTP username or password has been configured.

  Workaround: Set the FTP username and password before using the FTP protocol. This problem is resolved in software release 8.3(4). (CSCef56255)

- You might experience a TLB Exception when trying to write the system info-log to a TFTP server. This problem is seen when the **show top** commands are included in the system information logging feature. This problem is resolved in software release 8.3(4). (CSCef56408)

- You might experience a TLB Exception when a **show topn** command is configured in the system information logging feature and the system information logging feature is enabled from a TCLSH prompt.

  Workaround: Do not enable the system information logging feature from a TCLSH prompt when a **show topn** command is included in the feature. This problem is resolved in software release 8.3(4). (CSCef69100)

- An 802.1X client might time out when attempting to authenticate to a Radius server when a primary and backup Radius server is configured and a Radius server failover occurs. The 802.1X configuration should be able to survive a Radius server failover. This problem is resolved in software release 8.3(4). (CSCef52229)

- The switch might drop all EtherChannels configured to "desirable" mode for approximately 10 minutes. Depending on the topology, connectivity may be affected for the entire period of the outage.

  Workaround: Configure EtherChannels to "ON" mode using the **set port channel** *mod/port* **mode on** command. This problem is resolved in software release 8.3(4). (CSCef02710)

- After experiencing a fabric sync error (%SYS-3-FAB_SYNCERR), some modules might have problems receiving control traffic such as UDLD packets (there is no problem with transmitting traffic).

  Workaround: Reset the switch. This problem is resolved in software release 8.3(4). (CSCef06375)

- In software release 8.3(4), to facilitate the troubleshooting of fabric-related problems, the FPOE mismatch count (error counter) has been added to the **show fabric channel counters** command. Additionally, a syslog has been added to indicate that this error counter is incrementing. (CSCef25518)

- A problem is seen after an IP address is changed on a workstation or server; the address change can happen statically or due to DHCP after a reboot. The problem is that a drop adjacency is created for the IP address with a /32 mask on the switch. It is possible to ping the workstation from the switch but pings from a directly connected redundant switch fail (if Layer 3 CEF is traversed).

  Workaround: A ping from the MSFC in the same chassis as the switch with the drop adjacency clears the drop adjacency. This problem is resolved in software release 8.3(4). (CSCec23277)

- With redundant Supervisor Engine 2s/MSFC2s and dual router mode (DRM) enabled, resetting the designated MSFC2 might cause loss of connectivity to/from the MSFC2 when it boots up again. The newly designated MSFC2 is not affected. This problem is seen in the following software releases:

  – 1) If the MLS rate limiter is not enabled, the problem is seen in software releases 7.6(5) through 7.6(8).

  – 2) If the MLS rate limiter is enabled, the problem is seen in software releases up to 8.3(3) in the 8.x software train.

  Workaround: There are two ways to restore connectivity to the affected MSFC2: 1) Disable the MLS rate limiter by entering the **set mls rate 0** command. Note that if the problem is seen in software releases 7.6(5) through 7.6(8), even if the MLS rate limiter is not enabled, entering the **set mls rate 0** command restores connectivity. 2) Reset the affected MSFC2. This problem is resolved in software release 8.3(4). (CSCef32204)

- A WS-C6509-NEB-A chassis with only one fan in the chassis reports the second FanStatus as "fail." This problem is resolved in software release 8.3(4). (CSCef57840)

- A WS-C6513 chassis with fan tray version 1 allocates 126W to the fan tray but does not account for it in the output of the **show environment power** command. Fan tray version 1 should not have the 126W allocated to it. This problem is resolved in software release 8.3(4). (CSCef69633)

- If the switch is peering with a multicast router through an ATM interface (either LANE or RFC 1483 with PVC binding), you might experience high CPU utilization with the multicast receive process.

  Workaround: Disable IGMP or enable the multicast rate-limit feature and set the rate to a value that alleviates the problem. This problem is resolved in software release 8.3(4). (CSCef27349)

- The sc1 interface might appear on the same VLAN as the sc0 interface after a software upgrade. This problem is related to upgrading from non-supported sc1 interface trains to sc1 supported trains. This problem is resolved in software release 8.3(4). (CSCef06801)

- The following syslog error message indicates an ASIC error with the WS-X6548-RJ-45 module and the recommended action is to replace the module:

  ```
  SYS-6-SYS_LCPERR6:Module [dec]: Pentamak Ddr Sync Error
  ```

  This message has a logging level of 6 but the severity of the error dictates that the logging level should be a 3. This problem is resolved in software release 8.3(4). (CSCef18763)

- LTL indexes for configured multicast CAM entries that point to an EtherChannel that is configured in desirable mode are lost when the EtherChannel link goes up and down.

  Workarounds: 1) Clear the configured CAM table entry and reenter it. 2) Configure the EtherChannel to "ON" mode. This problem is resolved in software release 8.3(4). (CSCef51905)

- If the system banner size is over approximately 3072 characters, the switch might crash when you enter the **show banner** command through a Telnet session. This problem is resolved in software release 8.3(4). (CSCef44617)

- With MISTP enabled and the EtherChannel mode set to "ON," if you configure more than one EtherChannel and trunk in a short period of time, all of the newly configured channels might not join the trunk. With this configuration scenario, the problem has also been seen after the switch is reset. This problem is resolved in software release 8.3(4). (CSCee95922)

- When a switch running standard MST (software releases 8.3[1] and later) is connected to a switch running pre-standard MST (software releases prior to 8.3[1]), MST might not converge in some instances other than IST.

  Workaround: Run either standard MST or pre-standard MST on both switches. This problem is resolved in software release 8.3(4). (CSCef69689)

- With PAgP, it might take an unusually long time for a trunk port to join an EtherChannel. This problem is resolved in software release 8.3(4). (CSCee95479)

- The portSecuritySecureSrcAdd field, defined in the CISCO-STACK-MIB, incorrectly displays 00 00 00 00 00 00 when you enable port security, and the MAC address is learned from the port, instead of being configured manually. The portSecuritySecureSrcAdd field displays the correct information for the configured MAC addresses.

  Workaround: Configure the secured MAC address manually using the **set port security** *mod/port* **enable** *mac_addr* command. This problem is resolved in software release 8.3(4). (CSCee56936)

- Enabling and disabling the SPAN feature might generate control characters in your Telnet window during an open Telnet session to the switch. This problem is resolved in software release 8.3(4). (CSCeb62318)

- Gigabit fiber-based modules (and under some conditions, copper-based modules) might experience high latency on ports when a SPAN destination session is configured on the same module. If a SPAN destination port goes up and down, there is the possibility that ports that are connected to the same port ASIC might experience latency (or possibly total lockup) in the receive direction. The latency, if present, is noticeable when low amounts of traffic are being sent through the system and/or if the received packet size on ports adjacent to the SPAN port are small or of average size.

  This problem is resolved in software release 8.3(4). (CSCef39614)

- Spanning tree status information for MST instance 1 might disappear from the **show spantree** *mod/port* display after a high-availability switchover. Connectivity is not affected.

  Workaround: Disable high availability. This problem is resolved in software release 8.3(4). (CSCee34858)

- A switch running rapid spanning tree (the switch is not the root bridge), may log the following events in the syslog if it received a corrupt BPDU:

```
2001 Apr 07 23:40:16 %SPANTREE-2-LOOPGUARDUNBLOCK: Port 4/2 restored in MST instance 1
2001 Apr 07 23:40:28 %SPANTREE-2-LOOPGUARDBLOCK: No BPDUs were received on port 4/2 in
MST instance 1. Moved to loop-inconsistent state
2001 Apr 07 23:40:28 %SPANTREE-2-LOOPGUARDUNBLOCK: Port 4/2 restored in MST instance 1
2001 Apr 07 23:40:42 %SPANTREE-2-LOOPGUARDBLOCK: No BPDUs were received on port 4/2 in
MST instance 1. Moved to loop-inconsistent state
2001 Apr 07 23:40:42 %SPANTREE-2-LOOPGUARDUNBLOCK: Port 4/2 restored in MST instance 1
2001 Apr 07 23:40:59 %SPANTREE-2-LOOPGUARDBLOCK: No BPDUs were received on port 4/2 in
MST instance 1. Moved to loop-inconsistent state
2001 Apr 07 23:40:59 %SPANTREE-2-LOOPGUARDUNBLOCK: Port 4/2 restored in MST instance 1
2001 Apr 07 23:41:13 %SPANTREE-2-LOOPGUARDBLOCK: No BPDUs were received on port 4/2 in
MST instance 1. Moved to loop-inconsistent state
2001 Apr 07 23:41:13 %SPANTREE-2-LOOPGUARDUNBLOCK: Port 4/2 restored in MST instance 1
```

  These symptoms are usually seen when there is more than one MST instance configured. This problem is resolved in software release 8.3(4). (CSCee77039)

- With Rapid PVST+ enabled, a port might get stuck in the listening state after STP is enabled on a given VLAN.

  Workaround: Disable and then reenable the affected port. This problem is resolved in software release 8.3(4). (CSCef28337)

- CMM ports might come up disabled and cannot be enabled. This problem usually occurs in text configuration mode with the default port status “disabled.”

  Workaround: Enter the **set default portstatus enable** command, the **set config mode binary** command, and then reset the CMM module. This problem is resolved in software release 8.3(4). (CSCee63050)

- After a switchover, the first module/link trap for any module/link might not be sent. This problem is resolved in software release 8.3(4). (CSCef27093)

- The switch does not respond properly when the logout timer is set to 3 (**set logout 3**) if you are accessing the switch through a Telnet session and the screen is either holding the display at the “More” prompt, the “Enter Password” prompt, or the “Username” prompt. The logout timer is ignored during these conditions, allowing the connection to remain open beyond the configured logout timer setting. This problem is resolved in software release 8.3(4). (CSCef15158)

- In rare circumstances, a switch running the K9 software image may crash when an SSH client tries to connect. The problem might be seen when establishing the SSH connection to the client.

  Workaround: Use Telnet or SSH version 1. This problem is resolved in software release 8.3(4). (CSCef42764)

- The **help** command for **set trunk all** shows the wrong descriptions for available commands. This problem is resolved in software release 8.3(4). (CSCef61890)

- VTP configuration details can be lost from the configuration when switching from binary to text configuration mode. The details are restored when switching back.

  Workaround: Switch to binary mode to store configurations. This problem is resolved in software release 8.3(4). (CSCef64385)

- In rare circumstances, when versioning up or down to a different software release, the switch does not boot with the software that is configured to boot.

  Workarounds: 1) Verify the bootstring and reset the system one more time. 2) After the reset, if the switch is booting with the wrong image, break the autoboot process and enter into the ROMMON mode by sending a Break. From ROMMON, execute the **boot** command to boot the switch with the correct image. This problem is resolved in software release 8.3(4). (CSCef43494)

- The switch displays the following syslog message when the system is under a Denial of Service attack:

  ```
  TCP-2-TCP_MAXESTABLISHED:Possible TCP ACK attack. . Maximum established connection
  limit 64 reached. Will drop unused connection
  ```

  However, under some circumstances, the syslog might be generated when the system is not under attack. The system functionality is not affected. This problem is resolved in software release 8.3(4). (CSCef77162)

- The dot1dStpPortDesignatedPort MIB might return the wrong value as compared to the **show spantree statistics** *mod/port* command output. This problem is resolved in software release 8.3(4). (CSCef79667)

Open and Resolved Caveats in Software Release 8.3(3)

These sections describe open and resolved caveats in supervisor engine software release 8.3(3):

- Open Caveats in Software Release 8.3(3), page 204
- Resolved Caveats in Software Release 8.3(3), page 206

Open Caveats in Software Release 8.3(3)

This section describes open caveats in supervisor engine software release 8.3(3):

- With a PFC3, when you have an EtherChannel with ports spread across fabric-enabled modules *and* non-fabric-enabled modules, you might see a traffic drop when traffic enters the EtherChannel on the fabric-enabled module and goes out of the same EtherChannel through the non-fabric-enabled module.

  Workaround: Do not configure ports in the EtherChannel across fabric-enabled modules and non-fabric-enabled modules. (CSCef10952)

- With a Supervisor Engine 1, IGMP snooping enabled, a host at port 5/8, a statically configured router at port 5/1, a source at port 5/4, and IGMP querier enabled in the VLAN, when the host sends a report and the source sends traffic, a multicast-configured CAM entry is created with the LTL correctly set sending the traffic to the router and the host. When the user configures a QoS MAC-CoS for the GDA and assigns CoS 7, the source and host are stopped, the GDA is deleted, and the CAM entry changes to user-cgfd with an LTL flood to the VLAN. When the source is started, the traffic floods to all ports in the VLAN (99) and the CoS is correct. However, when the host (port 5/8) starts sending reports again and the CAM entry is changed back to multicast configured, the LTL is not set for any ports (router or host) and the traffic is dropped. (CSCee16301)

- You might not be able to statically configure a multicast router port when the spanning tree mode is set to MST. (CSCee02221)

- With a Supervisor Engine 2 and a FWSM in slot 13 of a 13-slot chassis and with both SFM2s powered down, the FWSM fails online diagnostics (PC loopback) but passes the same tests and comes online if the FWSM is reset after bootup. If the SFM2s are up, the module passes diagnostics and comes online (although if diagnostic traces are set to 1, there are still some failure messages coming out of TestKomodoPlusPorts). (CSCed79483)
- With a Supervisor Engine 720 and a 96-port 10/100BASE-TX RJ-45 module (WS-X6148X2-RJ-45), the **show system health** command displays several nonzero registers for the bus ASIC on the WS-X6148X2-RJ-45. One register displays as "SP_TI_CFG." As a configuration register, it should not be showing in the **show system health** command output. There are also problems in the register decodes; they seem to be off by one from the specifications. (CSCed70239)
- With a Supervisor Engine 2, when you enter the **show system health** command, the output shows nonzero registers for the fabric-bus ASIC on the supervisor engine but the registers being identified are not error counters. (CSCed69903)
- With a Supervisor Engine 2 and a 48-port 10/100BASE-TX RJ-45 module (WS-X6548-RJ-45), when you enter the **show system health** command, there are nonzero counters reported for port ASIC 1 but the values being reported are counters, not error counters. (CSCed62522)
- The T1, E1, and FXS voice modules may not come online in text configuration mode.

  Workaround: Manually reset the module after the switch fully boots up. (CSCed12999)
- Supervisor Engine 720 uplink ports may lose their configuration when the switch is in text configuration mode. We recommend that you do not use the Supervisor Engine 720 uplink ports if the system is in text configuration mode. Alternatively, every time that the switch is reset, you can manually configure the uplink ports. Binary configuration mode is not affected. (CSCed20712)
- Occasionally, file system corruption may occur on the compact Flash and ATA drive-based file systems (disk0 on Supervisor Engine 2, disk0/disk1 on Supervisor Engine 720, and disk0 on Supervisor Engine 32). You can use the **fsck** command utility to check for file system errors. If file system corruption occurs again after the **fsck** command utility is run, the file system needs to be reformatted. We recommend that you back up configuration files stored on these file systems to a TFTP server on your network. (CSCed64505)
- In text configuration mode, the SPAN sessions on the NAM, IDS module, and other service modules are not reconfigured after a reset.

  Workaround: Manually configure the SPAN sessions on a service module each time that the switch is reset. (CSCed65635)
- If you enter the **set port qos** *m/p* **autoqos voip ciscosoftphone** command or the **set port macro** *m/p* **ciscosoftphone** command on a group of ports, NVRAM corruption may occur. For example, entering the **set port qos 1/1-48,2/2-48 autoqos voip ciscosoftphone** command may cause NVRAM corruption.

  Workaround: Run the command on one port at a time as follows:

  ```
  set port qos 1/1 autoqos voip ciscosoftphone
  set port qos 1/2 autoqos voip ciscosoftphone
  ...
  ...
  ...
  set port qos 2/48 autoqos voip ciscosoftphone
  ```

  (CSCed95002)
- Disaster recovery cannot be done for CMM modules from the Catalyst operating system because the commands that are documented are not available to end users. Call TAC for further assistance if disaster recovery needs to be performed on a CMM. (CSCee06730)

- QoS-bridged microflow policing may not work in text configuration mode. The command to enable QoS-bridge microflow policing intermittently fails to enable the feature. Binary configuration mode is not affected.

  Workaround: Manually configure the feature each time after the system is reset. (CSCee44277)

- A FWSM and possibly other service modules may not be able to communicate if the dot1q-all-tagged feature is enabled. You cannot use the dot1q-all-tagged feature if a service module is present in the switch.

  Workaround: Enter the **set dot1q-all-tagged disable** command and then reset the switch. (CSCed18049)

- At system bootup, secure VLANs associated with the FWSM may not get secured. This problem occurs only in text configuration mode.

  Workaround: Manually configure the FWSM each time that the system boots. (CSCee10706)

- 100BASE-T SFPs (GLC-T) do not support features such as UDLD and auto-mdix disable. We recommend that you do not enable UDLD on these SFPs. Auto-mdix is always enabled on these SFPs and cannot be disabled. (CSCec26310)

- The **set mls bridged-flow-statistics enable** *vlanlist* command may not work correctly if the system is in text configuration mode. When the command is run in text configuration mode, it fails to enable the feature on all VLANs.

  Workaround: Use the binary configuration mode or manually run the command each time that the system boots. (CSCee44285)

- With Supervisor Engine 1, the boot string contains several boot images but only one, the first one, actually exists in the file system. When you enter the **show system sanity** command, no boot image is reported as invalid (missing). If the one valid image is cleared from the boot string, then all of the remaining (invalid) images are flagged. If the one valid image is added back to the boot string (at the end, instead of the beginning), the three missing images are flagged. (CSCed56928)

- A bidirectional PIM ACE configured on the MSFC with a mask of 32 bits may result in traffic hitting the resulting (*,G/m) or (*,G). This situation could result in inconsistent forwarding.

  Workaround: Configure the ACE with a mask of 31 bits. (CSCin62624)

- With 802.1X authentication, if a high-availability switchover occurs during an authentication after the switchover completes, single authentication and port security are in the authenticated state but the port might not get added to spanning tree. If this situation occurs, then the port would not receive CBL or LTL information. The **show port security** command shows that the port MAC address is secured, but no MAC address is in the CAM table. (CSCin20244)

- With high availability enabled, port security is enabled on a port using the **violation restrict** mode. On repeatedly clearing the secured addresses under continuous traffic, the secured port on the standby supervisor engine might shut down. (CSCin25168)

Resolved Caveats in Software Release 8.3(3)

This section describes resolved caveats in supervisor engine software release 8.3(3):

- There is an inconsistency between the default signaling DSCP value used by the switch and the Cisco CallManager. Cisco CallManager release 4.x uses DSCP 24 by default for IP phone and Cisco Softphone signaling. However, automatic QoS on the switch uses DSCP 26. This situation can cause the IP phone packets to egress the switch with an incorrect DSCP value and the Softphone/Communicator packets not getting the appropriate QoS value. This problem is resolved in software release 8.3(3). (CSCee61555)

- Module boot ROM upgrades fail to download to modules supporting the rapid boot feature. As a result, the rapid boot feature is not supported in software release 8.3(1) or software release 8.3(2). This problem is resolved in software release 8.3(3). (CSCee44205)
- If you enter the **show port** command on a switch with voice modules (such as WS-X6624-FXS and WS-X6608-T1), the **show port** command appears to hang and port information for the voice module is not printed. Sometimes the DSP on the voice module may also reset. We recommend that you do not run the **show port** or **show port status** commands on switches with FXS or T1/E1 ports. This problem is resolved in software release 8.3(3). (CSCed91778, CSCec01126)
- If a service module such as a FWSM or a NAM is configured to boot from a nondefault partition with the supervisor engine in text configuration mode, the service module may fail to come online. In text configuration mode, the boot strings for service modules are not saved correctly at bootup.

  Workaround: Manually set the boot string and reset the service module each time that the system is reset. Alternately, you can configure service modules to boot from their default partition. This problem is resolved in software release 8.3(3). (CSCed11214)
- If a multicast entry is configured through the CLI by entering the **set cam** command, it does not get synchronized to the standby supervisor engine in the following cases:
  - When the standby supervisor engine is reloaded after configuring the entry.
  - When high availability is disabled and then reenabled after configuring the entry.

  Whenever high availability global synchronization is involved in the presence of the entry, it is not synchronized to the standby supervisor engine. When a switchover occurs, the new active supervisor engine is not aware of the multicast entry and it does not show the entry in the **show cam** command output.

  Workaround: Ensure that high availability is enabled and "ON" by entering the **show system highavailability** command before creating any multicast entries using the **set cam** command. This problem is resolved in software release 8.3(3). (CSCee27955)
- In text configuration mode, the auto-mdix disable feature fails to work correctly on some modules. If you enter the **set port auto-mdix** *m/p* **disable** command and then reset the switch, the feature will be enabled after the switch comes back online. Binary configuration mode is not affected.

  Workaround: Manually configure the feature each time that the system boots. This problem is resolved in software release 8.3(3). (CSCed64515)
- In Rapid-PVST+ mode, the STP runtime timers hello, max_age, and fwd_delay are not set correctly after a high-availability switchover. This problem exists in software releases 8.1(x), 8.2(x), and 7.6(x).

  Workaround: Reset the supervisor engine to get newer values. This problem is resolved in software release 8.3(3). (CSCee41527)
- With Supervisor Engine 1A, all copy tasks such as downloads, copying between devices (Flash and PCMCIA), and redundant boot image synchronizations are extremely slow and take approximately 25 minutes for a 10-MB file. This problem is resolved in software release 8.3(3). (CSCee24444)
- Inserting a single-port OC-12 ATM module in a switch where all switching modules are fabric enabled causes the module diagnostics to fail on the ATM module. To put the ATM module into service, enter the **reset** *slot_number* command. This problem is resolved in software release 8.3(3). (CSCds12349)
- The switch might reset (%SYS-5-MOD_NOSCPPINGRESPONSE) when getting CBL information through a PERL script. This problem is resolved in software release 8.3(3). (CSCee62021)
- After running the Pseudo-Random Bit Sequence (PRBS) test on the WS-X6704-10GE module (starting and stopping the PRBS test), the module port does not come up.

Workaround: Reset the module. The PRBS test is not supported on this module. The software has been modified to reject the PRBS command if it is run on an unsupported module. This problem is resolved in software release 8.3(3). (CSCee86424)

- The IP phone traffic received on an untrusted port should match the configured QoS ACL but the DSCP that is based on the ACL is not rewritten. This problem is due to the wrong mask being used in the QoS ACL. The CLI asks for the IP mask but it should ask for a wildcard. The problem is resolved by making the CLI consistent with the Cisco IOS CLI:
  - Catalyst operating system CLI:

```
Console> (enable) set qos acl ip ipacl1 dscp 32 ip 10.1.3.0 ?
<ip_addr>                 Source IP Mask
Console> (enable)
```

  - Cisco IOS CLI:

```
msfc2(config)# access-list 199 permit ip 10.1.3.0 ?
A.B.C.D  Source wildcard bits
```

  This problem is resolved in software release 8.3(3). (CSCec68825)
- The FWSM ports are not allowed to be configured as SPAN source ports. This problem is resolved in software release 8.3(3). (CSCed81400)
- Spanning tree does not block ports that are looped with a Balun cable. If a port is looped through a Balun cable or a loop-back adapter, spanning tree will initially block the port. If a topology change occurs, the port is put into forwarding state. This problem is resolved in software release 8.3(3). (CSCed84323)
- The EthChnlConfig process might cause high CPU utilization when trunk ports are added or deleted due to a link up/down condition or a reboot. This situation causes a loss of control packets, including VTP joins. This problem is resolved in software release 8.3(3). (CSCdu44453)
- A watchdog timeout might occur when you clear a large ACL (the problem was seen with an ACL that had 2000 ACEs). This problem is resolved in software release 8.3(3). (CSCee88608)
- Disabling or enabling port negotiation does not work correctly if you specify more than a single port or single range of ports. For example, if you enter **set port negotiation** 3/1,3/5-6 **disable**, ports 1 through 6 are disabled. This problem is resolved in software release 8.3(3). (CSCee52831)
- After upgrading Catalyst software to a version that supports the **set msfcautostate** command from a software release that did not support the command, **set msfcautostate disable** is automatically configured even though the default option for this command is enabled. This problem is resolved in software release 8.3(3). (CSCee62169)
- A UNIX script might get stuck at the Telnet prompt.

  Workaround: Press **Enter** when the script gets stuck to start the script again. This problem is resolved in software release 8.3(3). (CSCeb69513)
- You might not be able to save your configuration to a 64-MB ATA Flash card if the filename starts with an upper case “N” and the length is more than eight characters. This problem is resolved in software release 8.3(3). (CSCee47457)
- The **set option** command set was inadvertently removed from software releases 7.6(7) and 8.3(1). The **set option** command set will be available again (engineering mode only) in software releases 7.6(8) and 8.3(3). (CSCee67932)
- The **show image-verification** command should not accept any additional input, but it does accept additional input and ignores it. The correct command response to any additional input for this command is to return a “Usage: Unrecognized command!” message. This problem is resolved in software release 8.3(3). (CSCee68770)

- You cannot use the **set security acl capture-ports** *mod/port* command for both NAM and IDS modules. You can only add either the NAM port or the IDS port with that command. This problem is resolved in software release 8.3(3). (CSCed83584)
- If you have an EtherChannel configured across modules, the EtherChannel configuration might change after you disable PortFast, BPDU filter, and BPDU guard and then reset the switch. This problem is resolved in software release 8.3(3). (CSCee67595)
- The supervisor engine might fail to power down the SFM after a synchronization error or hardware failure.

  Workaround: Remove the defective SFM. This problem is resolved in software release 8.3(3). (CSCee34175)
- There is a vulnerability in the Transmission Control Protocol (TCP) specification (RFC793). All Cisco products that contain TCP stack are susceptible to this vulnerability. This advisory is available at these URLs:
  - http://www.cisco.com/warp/public/707/cisco-sa-20040420-tcp-ios.shtml

    This URL describes this vulnerability as it applies to Cisco products that run Cisco IOS software.
  - http://www.cisco.com/warp/public/707/cisco-sa-20040420-tcp-nonios.shtml

    This URL describes this vulnerability for products that do not run Cisco IOS software.

  This problem is resolved in software release 8.3(3). (CSCed32349)
- With the **ip verify unicast reverse-path** command configured on an MSFC interface, the interface fails to drop packets when there is a default route without a more specific route.

  Workaround: Configure the MSFC interface using the **ip verify unicast source reachable-via rx** command. This problem is resolved in software release 8.3(3). (CSCec50151)
- Ping packets to the MSFC loopback interface are rate limited by the MLS CEF glean rate limiter.

  Workarounds:
  - 1) Disable the MLS CEF glean rate limiter as follows:

    Router(config)# **no mls rate-limit unicast cef glean**

    One side effect of this workaround is that packets hitting the glean adjacency (destined to an unresolved ARP host of a directly connected network) are not rate limited and are all sent to the MSFC for software processing. In general, the number of packets that are affected is small.
  - 2) Set the glean rate limiter to a large number. This workaround retains the rate limiter, and is implemented as follows:

    Router(config)# **mls rate-limit unicast cef glean 10000 255**

  This problem is resolved in software release 8.3(3). (CSCee12132)
- With a Supervisor Engine 2/MSFC2 and port security enabled, the switch might display the following message: “Unable to add entry to earl on port 15/1, rc : -1.” If the MSFC2 in slot 2 is active, the switch might display the following message: “Unable to add entry to earl on port 16/1, rc : -1.” This problem is resolved in software release 8.3(3). (CSCeb86233)
- When upgrading from an earlier software release to release 8.3(x), the switch adds VLAN 1 for the static secure MAC address configuration. The switch should add the port native VLAN instead.

  Workaround: Manually reconfigure the static secure MAC address. An example of the problem follows:

  The following is the configuration in the earlier software release:

set vlan 2 9/48
set port security 9/48 00-e0-18-b4-eb-20

After upgrading to software release 8.3(x), VLAN 1 is automatically added to the port security configuration that blocks the original device as shown below:

set vlan 2 9/48
set port security 9/48 00-e0-18-b4-eb-20 1 (it should be "set port security 9/48 00-e0-18-b4-eb-20 2"

This problem is resolved in software release 8.3(3). (CSCef01268)

- With a Supervisor Engine 1/MSFC, an input Cisco IOS ACL on the MSFC can cause Layer 2 traffic to be dropped in a VLAN. This problem is seen when no ip unreachables are configured and protocol filtering is enabled.

  Workaround: Reset the switch to clear the problem. This problem is resolved in software release 8.3(3). (CSCee69960)

- An SNMP query for cvbStpForwardingMap might return an invalid port state. This problem is not resolved by a power cycle, module reset, disabling and enabling the port, or swapping modules. This problem is resolved in software release 8.3(3). (CSCee58481)

- If the default community strings are cleared, the community strings configured by entering the **set snmp community-ext** command do not work after resetting the switch. This problem is resolved in software release 8.3(3). (CSCee66094)

- In text configuration mode, with the switch configured to send a "cold start" trap when the switch is reloaded, the switch does not send the trap after a reload. This problem is not seen when the configuration mode is set to binary. This problem is resolved in software release 8.3(3). (CSCee81130)

- The value of dot1dStpPortDesignatedPort is not correct when queried from SNMP. This problem is resolved in software release 8.3(3). (CSCee94422)

- With a Supervisor Engine 2, when a redirect error interrupt occurs, the Supervisor Engine 2 might crash. The Supervisor Engine 2 should recover from the interrupt without crashing. This problem is resolved in software release 8.3(3). (CSCee57837)

- The traffic monitor feature is not supported on Supervisor Engine 720. That is, the **set traffic monitor ...** command has no effect. This problem is resolved in software release 8.3(3). (CSCee65262)

- With a Supervisor Engine 720 in a 6-slot chassis, fan detection/status might not be properly indicated. This problem is resolved in software release 8.3(3). (CSCee73822)

- The switch might crash while performing a high-availability task. This problem might happen if the VTP version is version 1 or version 2 and the VTP version was changed from version 3 to version 1 or version 2 in a redundant configuration while the standby supervisor engine was coming online. This problem is resolved in software release 8.3(3). (CSCee41005)

- After booting a switch with the auto-config option, the MST region configuration commit fails and the region configuration edit buffer locks with StartUpConfig. Subsequent commits fail too.

  Workaround: Downgrade to the previous software release and set and commit the region configuration. This problem is resolved in software release 8.3(3). (CSCee84087)

- A Supervisor Engine 720 might crash when CiscoWorks 2000 LMS is enabled.

  Workaround: Do not enable CiscoWorks 2000 LMS. This problem is resolved in software release 8.3(3). (CSCee73017)

- A large number of Watchdog timer interrupt crashes are due to ECC errors. In software release 8.3(3) and later releases, software has been enhanced to better deal with these ECC errors. (CSCed55259)
- You might lose the VLAN configuration when upgrading from a pre-8.3(1) software release to software release 8.3(1) or software release 8.3(2). This problem is only seen in text configuration mode. This problem is resolved in software release 8.3(3). (CSCef20392)
- To enable RSVP with a Supervisor Engine 720 running any 8.3(x) software release, you need to do the following:

  1) Disable IGMP snooping.

  2) Enable RSVP.

  3) Enable IGMP snooping.

  If the above steps are not followed, RSVP does not work. With RSVP enabled following the above steps, the IP multicast addresses that map to MAC addresses 01-00-5e-00-00-10 and 01-00-5e-00-00-11 cannot be used. If used, there will be data outages for those groups.

  The following symptoms are seen if RSVP is not enabled following the above steps: 1) RSVP does not receive any RSVP packets (no RSVP flows are created). 2) There are data outages to the IP multicast addresses that map to MAC addresses 01-00-5e-00-00-10 and 01-00-5e-00-00-11.

  Workaround: For both RSVP and IGMP snooping to function correctly, disable RSVP, disable IGMP snooping, enable RSVP, and then enable IGMP snooping. Even with this workaround, IP multicast addresses that map to MAC addresses 01-00-5e-00-00-10 and 01-00-5e-00-00-11 cannot be used if RSVP is enabled. (CSCee49515)

  Note If the intermediate switch for RSVP traffic is a Supervisor Engine 720 running any 8.3(x) software release, for RSVP to function correctly, you must either disable IGMP snooping or enable RSVP on all the transit switches for the RSVP traffic.

- In a redundant system, the standby supervisor engine might crash in syncTask while unpacking data for instance/VLAN 17 (not active) during change mode and the user has changed STP mode from MISTP to MST prior to the current change mode. (That is, the problem is visible in the second change mode.)

  Workaround: Reset the standby supervisor engine. This problem is resolved in software release 8.3(3). (CSCef23135)
- After several spanning tree mode changes, you might receive “HADISABLED” syslogs indicating that high availability is being disabled due to a lack of system resources. This problem is resolved in software release 8.3(3). (CSCef25050)

Open and Resolved Caveats in Software Release 8.3(2)

These sections describe open and resolved caveats in supervisor engine software release 8.3(2):

- Open Caveats in Software Release 8.3(2), page 212
- Resolved Caveats in Software Release 8.3(2), page 215

Open Caveats in Software Release 8.3(2)

This section describes open caveats in supervisor engine software release 8.3(2):

- There is an inconsistency between the default signaling DSCP value used by the switch and the Cisco CallManager. Cisco CallManager release 4.x uses DSCP 24 by default for IP phone and Cisco Softphone signaling. However, automatic QoS on the switch uses DSCP 26. This results in IP phone packets egressing the switch with an incorrect DSCP value. This also results in Softphone/Communicator packets not getting the appropriate QoS value. (CSCee61555)
- With a Supervisor Engine 1, IGMP snooping enabled, a host at port 5/8, a statically configured router at port 5/1, a source at port 5/4, and IGMP querier enabled in the VLAN, when the host sends a report and the source sends traffic, a multicast-configured CAM entry is created with the LTL correctly set sending the traffic to the router and the host. When the user configures a QoS MAC-CoS for the GDA and assigns CoS 7, the source and host are stopped, the GDA is deleted, and the CAM entry changes to user-cgfd with an LTL flood to the VLAN. When the source is started, the traffic floods to all ports in the VLAN (99) and the CoS is correct. However, when the host (port 5/8) starts sending reports again and the CAM entry is changed back to multicast configured, the LTL is not set for any ports (router or host) and the traffic is dropped. (CSCee16301)
- You might not be able to statically configure a multicast router port when the spanning tree mode is set to MST. (CSCee02221)
- With a Supervisor Engine 2 and a FWSM in slot 13 of a 13-slot chassis and with both SFM2s powered down, the FWSM fails online diagnostics (PC loopback) but passes the same tests and comes online if the FWSM is reset after bootup. If the SFM2s are up, the module passes diagnostics and comes online (although if diagnostic traces are set to 1, there are still some failure messages coming out of TestKomodoPlusPorts). (CSCed79483)
- With a Supervisor Engine 720 and a 96-port 10/100BASE-TX RJ-45 module (WS-X6148X2-RJ-45), the **show system health** command displays several nonzero registers for the bus ASIC on the WS-X6148X2-RJ-45. One register displays as “SP_TI_CFG.” As a configuration register, it should not be showing in the **show system health** command output. There are also problems in the register decodes; they seem to be off by one from the specifications. (CSCed70239)
- With a Supervisor Engine 2, when you enter the **show system health** command, the output shows nonzero registers for the fabric-bus ASIC on the supervisor engine but the registers being identified are not error counters. (CSCed69903)
- With a Supervisor Engine 2 and a 48-port 10/100BASE-TX RJ-45 module (WS-X6548-RJ-45), when you enter the **show system health** command, there are nonzero counters reported for port ASIC 1 but the values being reported are counters, not error counters. (CSCed62522)
- The T1, E1, and FXS voice modules may not come online in text configuration mode.

  Workaround: Manually reset the module after the switch fully boots up. (CSCed12999)
- Supervisor Engine 720 uplink ports may lose their configuration when the switch is in text configuration mode. We recommend that you do not use the Supervisor Engine 720 uplink ports if the system is in text configuration mode. Alternatively, every time that the switch is reset, you can manually configure the uplink ports. Binary configuration mode is not affected. (CSCed20712)
- Occasionally, file system corruption may occur on the compact Flash and ATA drive-based file systems (disk0 on Supervisor Engine 2, disk0/disk1 on Supervisor Engine 720, and disk0 on Supervisor Engine 32). You can use the **fsck** command utility to check for file system errors. If file system corruption occurs again after the **fsck** command utility is run, the file system needs to be reformatted. We recommend that you back up configuration files stored on these file systems to a TFTP server on your network. (CSCed64505)

- In text configuration mode, the SPAN sessions on the NAM, IDS module, and other service modules are not reconfigured after a reset.

  Workaround: Manually configure the SPAN sessions on a service module each time that the switch is reset. (CSCed65635)

- If you enter the **set port qos** *m/p* **autoqos voip ciscosoftphone** command or the **set port macro** *m/p* **ciscosoftphone** command on a group of ports, NVRAM corruption may occur. For example, entering the **set port qos 1/1-48,2/2-48 autoqos voip ciscosoftphone** command may cause NVRAM corruption.

  Workaround: Run the command on one port at a time as follows:

  ```
  set port qos 1/1 autoqos voip ciscosoftphone
  set port qos 1/2 autoqos voip ciscosoftphone
  ...
  ...
  ...
  set port qos 2/48 autoqos voip ciscosoftphone
  ```

  (CSCed95002)

- Disaster recovery cannot be done for CMM modules from the Catalyst operating system because the commands that are documented are not available to end users. Call TAC for further assistance if disaster recovery needs to be performed on a CMM. (CSCee06730)

- Module boot ROM upgrades fail to download to modules supporting the rapid boot feature. As a result, the rapid boot feature is not supported in software release 8.3(1). (CSCee44205)

- If you enter the **show port** command on a switch with voice modules (such as WS-X6624-FXS and WS-X6608-T1), the **show port** command appears to hang and port information for the voice module is not printed. Sometimes the DSP on the voice module may also reset. We recommend that you do not run the **show port** or **show port status** commands on switches with FXS or T1/E1 ports. (CSCed91778, CSCec01126)

- If a service module such as a FWSM or a NAM is configured to boot from a nondefault partition with the supervisor engine in text configuration mode, the service module may fail to come online. In text configuration mode, the boot strings for service modules are not saved correctly at bootup.

  Workaround: Manually set the boot string and reset the service module each time that the system is reset. Alternately, you can configure service modules to boot from their default partition. (CSCed11214)

- QoS-bridged microflow policing may not work in text configuration mode. The command to enable QoS-bridge microflow policing intermittently fails to enable the feature. Binary configuration mode is not affected.

  Workaround: Manually configure the feature each time after the system is reset. (CSCee44277)

- A FWSM and possibly other service modules may not be able to communicate if the dot1q-all-tagged feature is enabled. You cannot use the dot1q-all-tagged feature if a service module is present in the switch.

  Workaround: Enter the **set dot1q-all-tagged disable** command and then reset the switch. (CSCed18049)

- At system bootup, secure VLANs associated with the FWSM may not get secured. This problem only happens in text configuration mode.

  Workaround: Manually configure the FWSM each time that the system boots. (CSCee10706)

- 100BASE-T SFPs (GLC-T) do not support features such as UDLD and auto-mdix disable. We recommend that you do not enable UDLD on these SFPs. Auto-mdix is always enabled on these SFPs and cannot be disabled. (CSCec26310)

- In text configuration mode, the auto-mdix disable feature fails to work correctly on some modules. If you enter the **set port auto-mdix** *m/p* **disable** command and then reset the switch, the feature will be enabled after the switch comes back online. Binary configuration mode is not affected.

  Workaround: Manually configure the feature each time that the system boots. (CSCed64515)

- The **set mls bridged-flow-statistics enable** *vlanlist* command may not work correctly if the system is in text configuration mode. When the command is run in text configuration mode, it fails to enable the feature on all VLANs.

  Workaround: Use the binary configuration mode or manually run the command each time that the system boots. (CSCee44285)

- With Supervisor Engine 1, the boot string contains several boot images but only one, the first one, actually exists in the file system. When you enter the **show system sanity** command, no boot image is reported as invalid (missing). If the one valid image is cleared from the boot string, then all of the remaining (invalid) images are flagged. If the one valid image is added back to the boot string (at the end, instead of the beginning), the three missing images are flagged. (CSCed56928)

- If a multicast entry is configured through the CLI by entering the **set cam** command, it does not get synchronized to the standby supervisor engine in the following cases:
  - When the standby supervisor engine is reloaded after configuring the entry.
  - When high availability is disabled and then reenabled after configuring the entry.

  Whenever high availability global synchronization is involved in the presence of the entry, it is not synchronized to the standby supervisor engine. When a switchover is done, the new active supervisor engine is not aware of the multicast entry and it does not show the entry in the **show cam** command output.

  Workaround: Ensure that high availability is enabled and "ON" by entering the **show system highavailability** command before creating any multicast entries using the **set cam** command. (CSCee27955)
- In Rapid-PVST+ mode, the STP runtime timers hello, max_age, and fwd_delay are not set correctly after a high-availability switchover. This problem exists in software releases 8.1(x), 8.2(x), and 7.6(x).

  Workaround: Reset the supervisor engine to get newer values. (CSCee41527)
- A bidirectional PIM ACE configured on the MSFC with a mask of 32 bits may result in traffic hitting the resulting (*,G/m) or (*,G). This situation could result in inconsistent forwarding.

  Workaround: Configure the ACE with a mask of 31 bits. (CSCin62624)
- With Supervisor Engine 1A, all copy tasks such as downloads, copying between devices (Flash and PCMCIA), and redundant boot image synchronizations are extremely slow and take approximately 25 minutes for a 10-MB file. (CSCee24444)
- With 802.1X authentication, if a high-availability switchover occurs during an authentication after the switchover completes, single authentication and port security are in the authenticated state but the port might not get added to spanning tree. If this situation occurs, then the port would not receive CBL or LTL information. The **show port security** command shows that the port MAC address is secured, but no MAC address is in the CAM table. (CSCin20244)
- With high availability enabled, port security is enabled on a port using the **violation restrict** mode. On repeatedly clearing the secured addresses under continuous traffic, the secured port on the standby supervisor engine might shut down. (CSCin25168)
- Inserting a single-port OC-12 ATM module in a switch where all switching modules are fabric enabled causes the module diagnostics to fail on the ATM module. To put the ATM module into service, enter the **reset** *slot_number* command. (CSCds12349)

Resolved Caveats in Software Release 8.3(2)

This section describes resolved caveats in supervisor engine software release 8.3(2):

- In a redundant system, after a reset or switchover, you might not be able to view the error log on the standby supervisor engine. Entering the **show log** command results in an error message. This problem is seen only when Network Time Protocol (NTP) is configured.

  Workaround: Reset the switch or perform a supervisor engine failover. This problem is resolved in software release 8.3(2). (CSCee54278)

- On a Supervisor Engine 2 with diagnostics set to complete, after a high-availability switchover the following NVLOG is printed on the console for the new standby supervisor engine:

  ```
  2004 Apr 30 09:19:49 %SYS-4-NVLOG:SYNDIAGS:Module 2 detected Local Bus stall. Source:
  B/P. Status Register = 0x0
  ```

  This message is harmless and can be ignored (it will be removed in subsequent software releases). This problem is resolved in software release 8.3(2). (CSCin74096)

- WS-X6380-NAM ports do not come online. These ports stay errdisabled. Therefore, the WS-X6380-NAM module is not supported in software release 8.3(1) and software release 7.6(7). This problem is resolved in software release 8.3(2). (CSCee09474)

- The traffic monitor feature is not supported on the Supervisor Engine 720. Entering the **set traffic monitor** *threshold* command does not have any effect. This problem is resolved in software release 8.3(2). (CSCeb66075)

- Command logs are not updated properly after a software upgrade. This problem is seen only when the following conditions are satisfied: 1) The command log buffer in a pre-8.3 software release wrapped around. 2) The switch is upgraded from a pre-8.3 software release to software release 8.3.

  Workaround: Because there are no commands to determine whether the command log buffer has wrapped around, the following workaround is suggested if you are upgrading to software release 8.3. From enable mode, perform the following: 1) Enter the **clear log command** command on the active supervisor engine before beginning the upgrade process. 2) Enter the **clear log command** command on the active supervisor engine immediately after the switch has booted software release 8.3. This problem is resolved in software release 8.3(2). (CSCee42423)

- After performing the following tasks, the standby supervisor engine does not transition to active after a high-availability switchover and both supervisor engines end up in standby mode:
  - Globally disable 802.1X on the switch.
  - Reboot the switch and globally enable 802.1X.
  - Allow at least one port to be “Authenticated” while enabling 802.1X. This could be the port that was “Authenticated” or this could be a port that was moved to a guest VLAN because the PC connected to the port was not 802.1X-capable.
  - Enable high availability.
  - Allow the synchronization to occur and then enter the **show system highavailability** command to verify if high availability is enabled.
  - Enter the **switch supervisor** command to switch over to the standby supervisor engine.

  This problem is resolved in software release 8.3(2). (CSCee44569)

- When security and QoS ACLs are mapped together, modifying the security ACL might cause the QoS ACL to be removed from the TCAM. This problem is resolved in software release 8.3(2). (CSCee44654)

- IPX unicast packets may be dropped on the ingress MSFC interface when IP ACLs, VACLs, and no IP redirects are configured. The problem is seen on the Supervisor Engine 720 running software release 8.2(1) with Cisco IOS Release 12.2(17a)SX4 running on the MSFC. The problem only occurs when you have the following three configuration components: An IP ACL configured on a VLAN interface, "no ip redirects" configured on the MSFC, and a VACL configured for the corresponding VLAN on the switch side. The problem is seen once the interface comes up. Only broadcast IPX traffic actually reaches the MSFC. If either the access group is removed or IP redirects are enabled on the VLAN interface on the MSFC, the problem is cleared immediately, but if the configuration is added back and the interface is brought down and then back up by entering the **shutdown** command followed by the **no shutdown** command, the problem returns.

  Workaround: Remove one of the three components that causes the problem. This problem is resolved in software release 8.3(2). (CSCee51617)

- When an EtherChannel port is disabled or enabled in MST mode, the LTL is cleared after convergence. The CBL reflects the correct port state.

  Workaround: Disable and then reenable all ports of the channel. This problem is resolved in software release 8.3(2). (CSCee19795)

- During a RADIUS request, the switch sends a "NAS-Port" attribute with a length of 5 bytes. According to RFC 2138 and RFC 2865, this attribute should be 6 bytes. Sending 5 bytes triggers a reject on the RADIUS server side. This problem is resolved in software release 8.3(2). (CSCee55667)

- If VTP pruning is disabled, an EtherChannel trunk might show previously pruned VLANs as forwarding but the port LTL does not change to reflect that. As a result, unicast and broadcast traffic for those VLANs on the EtherChannel trunk may not be forwarded.

  Workaround: Disable and then reenable the EtherChannel trunk. This problem is resolved in software release 8.3(2). (CSCed95274)

- With redundant Supervisor Engine 2s and high availability enabled, simulated system crashes result in problems with the core-dump and syslog-dump files. With the syslog-dump file, the following printf is displayed on the crashing supervisor engine's console:

  ```
  Syslog dump: InterruptStatus: 0x0
  Opening syslog file bootflash:sysloginfo_040412-074129.
  atexit: couldn't allocate exit hook
  ```

  However, the file does seem to be created properly and can be dumped by entering the **show file** [*device*:]*filename* [**dump**] command. With the core-dump file, the same printf is displayed along with this message:

  ```
  ÿeflateInit fail
  ```

  In this case, a zero byte core-dump file is created. This problem is resolved in software release 8.3(2).(CSCee27511)

- The supervisor engine might repeatedly send FIB reload SCP messages. This problem is resolved in software release 8.3(2). (CSCee40322)

- With redundant Supervisor Engine 2s and high availability disabled, the switch can boot up normally. However, when a non-high-availability switchover is performed, the new standby supervisor engine fails to synchronize in local test mode. Several critical failures are then reported and the module fails the boot process and ends up with an error on the console. This problem does not happen when the number of VLAN mappings for a security ACL are reduced to approximately 250 VLANs. This problem is resolved in software release 8.3(2). (CSCee43443)

- After powering down a module, you might see switching bus sequence errors and an RxSBIF_SEQ_NUM_ERROR message. This problem is resolved in software release 8.3(2). (CSCee66999)

Open and Resolved Caveats in Software Release 8.3(1)

These sections describe open and resolved caveats in supervisor engine software release 8.3(1):

Open Caveats in Software Release 8.3(1)

This section describes open caveats in supervisor engine software release 8.3(1):

- On a Supervisor Engine 2 with diagnostics set to complete, after a high-availability switchover the following NVLOG is printed on the console for the new standby supervisor engine:

  ```
  2004 Apr 30 09:19:49 %SYS-4-NVLOG:SYNDIAGS:Module 2 detected Local Bus stall. Source:
  B/P. Status Register = 0x0
  ```

  This message is harmless and can be ignored (it will be removed in subsequent software releases). (CSCin74096)

- With redundant Supervisor Engine 2s and high availability disabled, the switch can boot up normally. However, when a non-high-availability switchover is performed, the new standby supervisor engine fails to synchronize in local test mode. Several critical failures are then reported and the module fails the bring-up process and ends up with an error on the console. This problem does not happen when the number of VLAN mappings for a security ACL are reduced to approximately 250 VLANs. (CSCee43443)

- With redundant Supervisor Engine 2s and high availability enabled, simulated system crashes result in problems with the core-dump and syslog-dump files. With the syslog-dump file, the following printf is displayed on the crashing supervisor engine's console:

  ```
  Syslog dump: InterruptStatus: 0x0
  Opening syslog file bootflash:sysloginfo_040412-074129.
  atexit: couldn't allocate exit hook
  ```

  However, the file does seem to be created properly and can be dumped by entering the **show file** [*device*:]*filename* [**dump**] command. With the core-dump file, the same printf is displayed along with this message:

  ```
  ÿeflateInit fail
  ```

  In this case, a zero byte core-dump file is created. (CSCee27511)

- With a Supervisor Engine 1, IGMP snooping enabled, a host at port 5/8, a statically configured router at port 5/1, a source at port 5/4, and IGMP querier enabled in the VLAN, when the host sends a report and the source sends traffic, a multicast-configured CAM entry is created with the LTL correctly set sending the traffic to the router and the host. When the user configures a QoS MAC-CoS for the GDA and assigns CoS 7, the source and host are stopped, the GDA is deleted, and the CAM entry changes to user-cgfd with an LTL flood to the VLAN. When the source is started, the traffic floods to all ports in the VLAN (99) and the CoS is correct. However, when the host (port 5/8) starts sending reports again and the CAM entry is changed back to multicast configured, the LTL is not set for any ports (router or host) and the traffic is dropped. (CSCee16301)

- You might not be able to statically configure a multicast router port when the spanning tree mode is set to MST. (CSCee02221)
- With a Supervisor Engine 2 and a FWSM in slot 13 of a 13-slot chassis and with both SFM2s powered down, the FWSM fails online diagnostics (PC loopback) but passes the same tests and comes online if the FWSM is reset after bootup. If the SFM2s are up, the module passes diagnostics and comes online (although if diagnostic traces are set to 1, there are still some failure messages coming out of TestKomodoPlusPorts). (CSCed79483)
- With a Supervisor Engine 720 and a 96-port 10/100BASE-TX RJ-45 module (WS-X6148X2-RJ-45), the **show system health** command displays several nonzero registers for the bus ASIC on the WS-X6148X2-RJ-45. One register displays as "SP_TI_CFG." As a configuration register, it should not be showing in the **show system health** command output. There are also problems in the register decodes, in general, they seem to be off by one from the specifications. (CSCed70239)
- With a Supervisor Engine 2, when you enter the **show system health** command, the output shows nonzero registers for the fabric-bus ASIC on the supervisor engine but the registers being identified are not error counters. (CSCed69903)
- With a Supervisor Engine 2 and a 48-port 10/100BASE-TX RJ-45 module (WS-X6548-RJ-45), when you enter the **show system health** command, there are nonzero counters reported for port ASIC 1 but the values being reported are counters, not error counters. (CSCed62522)
- The T1, E1, and FXS voice modules may not come online in text configuration mode.

  Workaround: Manually reset the module after the switch fully boots up. (CSCed12999)
- Supervisor Engine 720 uplink ports may lose their configuration when the switch is in text configuration mode. We recommend that you do not use the Supervisor Engine 720 uplink ports if the system is in text configuration mode. Alternatively, every time that the switch is reset, you can manually configure the uplink ports. Binary configuration mode is not affected. (CSCed20712)
- Occasionally, file system corruption may occur on the compact Flash and ATA drive-based file systems (disk0 on Supervisor Engine 2, disk0/disk1 on Supervisor Engine 720, and disk0 on Supervisor Engine 32). You can use the **fsck** command utility to check for file system errors. If file system corruption occurs again after the **fsck** command utility is run, the file system needs to be reformatted. We recommend that you back up configuration files stored on these file systems to a TFTP server on your network. (CSCed64505)
- In text configuration mode, SPAN sessions on service cards such as a NAM and IDS module are not reconfigured after a reset.

  Workaround: Manually configure the SPAN sessions on a NAM or IDS each time that the switch is reset. (CSCed65635)
- If you enter the **set port qos** *m/p* **autoqos voip ciscosoftphone** command or the **set port macro** *m/p* **ciscosoftphone** command on a group of ports, NVRAM corruption may occur. For example, entering the **set port qos 1/1-48,2/2-48 autoqos voip ciscosoftphone** command may cause NVRAM corruption.

  Workaround: Run the command on one port at a time as follows:

```
set port qos 1/1 autoqos voip ciscosoftphone
set port qos 1/2 autoqos voip ciscosoftphone
...
...
...
set port qos 2/48 autoqos voip ciscosoftphone
```

  (CSCed95002)

- Disaster recovery cannot be done for CMM modules from the Catalyst operating system because the commands that are documented are not available to end users. Call TAC for further assistance if disaster recovery needs to be performed on a CMM. (CSCee06730)
- WS-X6380-NAM ports do not come online. These ports stay errdisabled. Therefore, the WS-X6380-NAM module is not supported in software release 8.3(1) and software release 7.6(7). (CSCee09474)
- Module boot ROM upgrades fail to download to modules supporting the rapid boot feature. As a result, the rapid boot feature is not supported in software release 8.3(1). (CSCee44205)
- If you enter the **show port** command on a switch with voice modules (such as WS-X6624-FXS and WS-X6608-T1), the **show port** command appears to hang and port information for the voice module is not printed. Sometimes the DSP on the voice module may also reset. We recommend that you do not run the **show port** or **show port status** commands on switches with FXS or T1/E1 ports. (CSCed91778, CSCec01126)
- If a service module such as a FWSM or a NAM is configured to boot from a nondefault partition with the supervisor engine in text configuration mode, the service module may fail to come online. In text configuration mode, the boot strings for service modules are not saved correctly at bootup.

  Workaround: Manually set the boot string and reset the service module each time the system is reset. Alternately, you can configure service modules to boot off their default partition. (CSCed11214)
- QoS-bridged microflow policing may not work in text configuration mode. The command to enable QoS-bridge microflow policing intermittently fails to enable the feature. Binary configuration mode is not affected.

  Workaround: Manually configure the feature each time after the system is reset. CSCee44277)
- A FWSM and possibly other service modules may not be able to communicate if the dot1q-all-tagged feature is enabled. You cannot use the dot1q-all-tagged feature if a service module is present in the switch.

  Workaround: Enter the **set dot1q-all-tagged disable** command and then reset the switch. (CSCed18049)
- At system bootup, secure VLANs associated with the FWSM may not get secured. This problem only happens in text configuration mode.

  Workaround: Manually configure the FWSM each time the system boots. (CSCee10706)
- The traffic monitor feature is not supported on the Supervisor Engine 720. Entering the **set traffic monitor** *threshold* command does not have any effect. (CSCeb66075)
- 100BASE-T SFPs (GLC-T) do not support features such as UDLD and auto-mdix disable. We recommend that you do not enable UDLD on these SFPs. Auto-mdix is always enabled on these SFPs and cannot be disabled. (CSCec26310)
- In text configuration mode, the auto-mdix disable feature fails to work correctly on some modules. If you enter the **set port auto-mdix** *m/p* **disable** command and then reset the switch, the feature will be enabled after the switch comes back online. Binary configuration mode is not affected.

  Workaround: Manually configure the feature each time the system boots. (CSCed64515)
- The **set mls bridged-flow-statistics enable** *vlanlist* command may not work correctly if the system is in text configuration mode. When the command is run in text configuration mode, it fails to enable the feature on all VLANs.

  Workaround: Use the binary configuration mode or manually run the command each time the system boots. (CSCee44285)

- With Supervisor Engine 1, the boot string contains several boot images but only one, the first one, actually exists in the file system. When you enter the **show system sanity** command, no boot image is reported as invalid (missing). If the one valid image is cleared from the boot string, then all of the remaining (invalid) images are flagged. If the one valid image is added back to the boot string (at the end, instead of the beginning), the three missing images are flagged. (CSCed56928)
- If a multicast entry is configured through the CLI by entering the **set cam** command, it does not get synchronized to the standby supervisor engine in the following cases:
  - When the standby supervisor engine is reloaded after configuring the entry.
  - When high availability is disabled and then reenabled after configuring the entry.

  In general, whenever high availability global synchronization is involved in the presence of the entry, it is not synchronized to the standby supervisor engine. When a switchover is done, the new active supervisor engine is not aware of the multicast entry and it does not show the entry in the **show cam** command output.

  Workaround: Ensure that high availability is enabled and "ON" by entering the **show system highavailability** command before creating any multicast entries using the **set cam** command. (CSCee27955)
- In Rapid-PVST+ mode, the STP runtime timers hello, max_age, and fwd_delay are not set correctly after a high-availability switchover. This problem exists in software releases 8.1(x), 8.2(x), and 7.6(x).

  Workaround: Reset the supervisor engine to get newer values. (CSCee41527)
- Command logs are not updated properly after a software upgrade. This problem is seen only when the following conditions are satisfied: 1) The command log buffer in a pre-8.3 software release wrapped around. 2) The switch is upgraded from a pre-8.3 software release to software release 8.3.

  Workaround: Because there are no commands to determine whether the command log buffer has wrapped around, the following workaround is suggested if you are upgrading to software release 8.3. From enable mode, perform the following: 1) Enter the **clear log command** command on the active supervisor engine before beginning the upgrade process. 2) Enter the **clear log command** command on the active supervisor engine immediately after the switch has booted software release 8.3. (CSCee42423)
- A bidirectional PIM ACE configured on the MSFC with a mask of 32 bits may result in traffic hitting the resulting (*,G/m) or (*,G). This situation could result in inconsistent forwarding.

  Workaround: Configure the ACE with a mask of 31 bits. (CSCin62624)
- With Supervisor Engine 1A, all copy tasks such as downloads, copying between devices (Flash and PCMCIA), and redundant boot image synchronizations are extremely slow and take approximately 25 minutes for a 10-MB file. (CSCee24444)
- With 802.1X authentication, if a high-availability switchover occurs during an authentication after the switchover completes, single authentication and port security are in the authenticated state but the port might not get added to spanning tree. If this situation occurs, then the port would not receive CBL or LTL information. The **show port security** command shows that the port MAC address is secured, but no MAC address is in the CAM table. (CSCin20244)
- With high availability enabled, port security is enabled on a port using the **violation restrict** mode. On repeatedly clearing the secured addresses under continuous traffic, the secured port on the standby supervisor engine might shut down. (CSCin25168)
- Inserting a single-port OC-12 ATM module in a switch where all switching modules are fabric enabled causes the module diagnostics to fail on the ATM module. To put the ATM module into service, enter the **reset** *slot_number* command. (CSCds12349)

Resolved Caveats in Software Release 8.3(1)

This section describes resolved caveats in supervisor engine software release 8.3(1):

- The switch might incorrectly report an STP root change with the following message:

  ```
  2003 Jun 09 11:42:28 EST -04:00 %SPANTREE-5-ROOTCHANGE:Root changed for Vlan Y:New
  root port n/m. New Root mac address is XX-XX-XX-XX-XX-XX.
  ```

  This is an informational message only and should not affect the operation of your switch.

  Workaround: Change the logging level on the SPANTREE facility down to level 4. This problem is resolved in software release 8.3(1). (CSCeb78548)

- With 802.1X authentication, when a configured supplicant logs off, the supplicant's MAC address is removed from the configured list. This problem is resolved in software release 8.3(1). (CSCin25663)
- Temperature values might not be updating properly as seen in the **show environment temperature** command. This problem is resolved in software release 8.3(1). (CSCdy30696)
- When the cache error handler is called on a Supervisor Engine 2, the status register shows the wrong value (0xffffff83). This behavior hides the real register value and prevents debugging. This problem is resolved in software release 8.3(1). (CSCed79489)
- Booting the MSFC image from slot0: might cause problems with VLANs and trunks. This problem is resolved in software release 8.3(1). (CSCed59675)
- With 802.1X authentication, the authenticator will not be able to communicate through the sc1 interface to the RADIUS server if the authenticator address configured on the RADIUS server is the sc1 interface IP address. This problem is resolved in software release 8.3(1). (CSCin14627)
- With an IDSM module (WS-X6381-IDS), private VLAN configurations are lost after a reboot. You can add an interface of the IDSM module to a private VLAN but the configuration is lost after the reboot.

  Workarounds: 1) Reconfigure the private VLAN after a reboot. 2) Use text configuration mode instead of the default binary configuration mode. This problem is resolved in software release 8.3(1). (CSCee13253)

- The unicast packet count is not shown correctly if a port in an EtherChannel is disabled. After you clear the port counters on two directly connected switches, with traffic still running, shut down one port in the channel connecting the switches. When you enter the **show mac** command on the downed port, the port shows zero packets, although some packets were sent in the period between entering the **clear counters** command and the shutdown. These packets are seen in the Rcv-Unicast statistic on the neighboring port. If you enter the **show mac** command in the period between entering the **clear counters** command and the shutdown, you will see Xmit-Unicast incrementing. After shutting down the port, the count is slightly higher than previously shown but considerably less than the Rcv-Unicast statistic shown on the connecting port. The receive side counters are not incrementing after the port shut down. All the packets that passed across the link between the time the counters were cleared and the time the port was shut down are not seen on the sending side. The sending side still shows zero packets as if the port was shut down when the counters were cleared. The counters were cleared before the port was shut down, so there should be outgoing traffic seen on the port. This problem is resolved in software release 8.3(1). (CSCed46961)
- With a high number of unicast flows and several hundred multicast flows, after inducing a Multicast Source Discovery Protocol (MSDP) failover by shutting down a loopback interface on the MSFC2 in slot 15, the switch might crash with a FIB exception. This problem is triggered by entering the

shutdown command followed by the **no shutdown** command on the loopback interface tied to the anycast route processor (such as when you are testing the anycast router processor failover). This problem is resolved in software release 8.3(1). (CSCea50206)

- The permanent multicast CAM entries might not work after a high-availability switchover.

  Workaround: Clear the permanent multicast CAM entries and then enter the entries manually. This problem is resolved in software release 8.3(1). (CSCed87627)

  Note While caveat CSCed87627 is resolved in software release 8.3(1), caveat CSCee27955 is open in software release 8.3(1) and CSCee27955 prevents permanent multicast CAM entries from working after a high-availability switchover. For a description of CSCee27955, see the "Open Caveats in Software Release 8.3(1)" section on page 218. (CSCee27955 is resolved in software release 8.3[3].)

- After a high-availability switchover, when the standby supervisor engine becomes the active supervisor engine, channeling ports may receive different QoS attributes and break the EtherChannel due to timing issues. This problem is resolved in software release 8.3(1). (CSCee02504)
- IP phones might not power up after a switchover. This problem is not seen if high availability is enabled. This problem is resolved in software release 8.3(1). (CSCed93870)
- A cluster leak might result in high-availability toggling between enable and disable states. This problem is resolved in software release 8.3(1). (CSCee06373)
- The IGMP-General Query rate-limit feature is not supported on Supervisor Engine 720. The feature can cause a high supervisor engine CPU load and can disrupt multicast switching. This problem is resolved in software release 8.3(1). (CSCin42511)
- After a non-high-availability switchover, you might see an error message similar to the following:

  ```
  2003 Dec 02 18:43:37 %SYS-2-DTP_MODDOWN:Module Down: cfg port trunk-hw failed 9/2.
  ```

  Entering the **show port** command for the trunk ports show the ports as connected but the **show spantree** command shows them as not connected.

  Workarounds: 1) Disable and then enable the port. 2) Reset the module. 3) Upgrade to software release 8.3(1) or later. This problem is resolved in software release 8.3(1). (CSCed14215)
- Trunking inconsistencies were seen when the following actions were taken on a switch: 1) An EtherChannel was configured using two modules. 2) One of the modules was removed from the switch. 3) An existing VLAN on the switch was added to trunks that were members of the EtherChannel. 4) The removed module was reinserted resulting in trunking inconsistencies. This problem is resolved in software release 8.3(1). (CSCed44129)
- With a Supervisor Engine 1/1A or Supervisor Engine 2, the switch might reload with the following log message:

  ```
  ProcessStatusPing:Module 1 local SCP error detected... resetting module
  ```

  Workaround: Remove the faulty module.

  Note The fix for this problem involves running a background task to intelligently detect modules that could be causing the SCP errors. When a faulty module is detected, it is automatically shut down.

  This problem is resolved in software release 8.3(1). (CSCea38268)

Open and Resolved Caveats in Software Release 8.2(2)

These sections describe open and resolved caveats in supervisor engine software release 8.2(2):

Open Caveats in Software Release 8.2(2)

This section describes open caveats in supervisor engine software release 8.2(2):

- The IGMP-General Query rate-limit feature is not supported on Supervisor Engine 720. The feature can cause a high supervisor engine CPU load and can disrupt multicast switching. (CSCin42511)
- With 802.1X authentication, the authenticator will not be able to communicate through the sc1 interface to the RADIUS server if the authenticator address configured on the RADIUS server is the sc1 interface IP address. (CSCin14627)
- With 802.1X authentication, if a high-availability switchover occurs during an authentication after the switchover completes, single authentication and port security are in the authenticated state but the port might not get added to spanning tree. If this situation occurs, then the port would not receive CBL or LTL information. The **show port security** command shows that the port MAC address is secured, but no MAC address is in the CAM table. (CSCin20244)
- With high availability enabled, port security is enabled on a port using the **violation restrict** mode. On repeatedly clearing the secured addresses under continuous traffic, the secured port on the standby supervisor engine might shut down. (CSCin25168)
- With 802.1X authentication, when a configured supplicant logs off, the supplicant's MAC address is removed from the configured list. (CSCin25663)
- After a high-availability switchover, the MSFC2 LTL is not set when the standby router becomes the designated router. (CSCdy83322)

  Note This problem is not seen in subsequent releases.

- An IGMP version 3 client may receive traffic from unwanted sources. This problem might occur when the IGMP version 3 client abruptly stops sending the IGMP version 3 report and starts sending the IGMP version 3 report to receive traffic from sources that it does not want to receive (before it abruptly stops sending the IGMP version 3 report). (CSCdx53609)

  Note This problem is not seen in subsequent releases.

- Inserting a single-port OC-12 ATM module in a switch where all switching modules are fabric enabled causes the module diagnostics to fail on the ATM module. To put the ATM module into service, enter the **reset** *slot_number* command. (CSCds12349)

Resolved Caveats in Software Release 8.2(2)

This section describes resolved caveats in supervisor engine software release 8.2(2):

- When you enter the **show qos info runtime** command on a trust-dscp port, the Rx mapping shows all values mapped to a single queue but the Rx Drop Threshold information is displayed. This problem is resolved in software release 8.2(2). (CSCec02299, CSCeb73117)
- TCP flags are not shared correctly. This problem is resolved in software release 8.2(2). (CSCee12831)
- The **set boot system flash Disk0:** command does not work on Supervisor Engine 720. This problem is resolved in software release 8.2(2). (CSCed56322)
- When the cache error handler is called on a Supervisor Engine 2, the status register shows the wrong value (0xffffff83). This behavior hides the real register value and prevents debugging. This problem is resolved in software release 68.2(2). (CSCed79489)
- When a Catalyst 6506 with a Supervisor Engine 1A running software image cat6000-supk9.7-6-4 on the supervisor engine and an MSFC2 running Cisco IOS image MSFC IOS C6MSFC-PK2SV-M 12.1(20)E2 is connected to an Windows XP host that runs IGMP version 3, the Windows XP host stops receiving traffic after approximately 5 minutes. This problem is resolved in software release 8.2(2). (CSCee08209)
- If high-availability versioning is enabled, the Content Services Gateway (CSG) module and the Content Switching Module (CSM) display as "incompatible" when entering the **show system highavailability** command. This results in these modules being reset when there is a high-availability switchover.

  Workaround: Do not enable high-availability versioning and the CSG and CSM will not reset during the high-availability switchover. This problem is resolved in software release 8.2(2). (CSCeb25296)
- A port on the WS-X6748-GE-TX module might take longer to start forwarding than is normal. This problem occurs only on the very first link up event after the switch or WS-X6748-GE-TX module comes up. This problem is not seen with subsequent reconnections to the same port.

  Workaround: Disconnect and then reconnect the port. This problem is resolved in software release 8.2(2). (CSCec78431)
- Under rare conditions, when a **show** command being filtered with a pipe (|) is aborted with a **Ctrl-C**, the system will leak 480 bytes of memory. This condition occurs when the screen length is restricted with the **set length** command, and the **show** command output is aborted after the output has started but before the "-More-" prompt appears.

  Workaround: Wait for the "-More-" prompt to appear before aborting, and then abort normally by either pressing "**q**" or **Ctrl-C**. This problem is resolved in software release 8.2(2). (CSCec10277)
- The standby supervisor engine uplink ports are not configured correctly in text configuration mode. The standby supervisor engine uplink ports are not configured correctly because the configuration is applied when the ports are not up. To correct this problem, the execution of the text configuration file was delayed for the standby supervisor engine until the standby supervisor engine uplink ports are up. This problem is resolved in software release 8.2(2). (CSCeb15672)
- A Switch Fabric Module switchover might take 8 seconds when the chassis is populated with fabric-enabled modules. This problem is resolved in software release 8.2(2). (CSCed08827)

- When a FlexWAN interface (such as ATM, HSSI, or any port adapter) is created in a system running single router mode (SRM), and the designated MSFC is reloaded (either using the **reload** command from the MSFC or using the **reset** command from the switch CLI), some of the interface/subinterface IP addresses of the FlexWAN interface are no longer pingable. This results in the MLS receive entry on the switch side missing for the IP address.

  Workaround: Enter the **shutdown** command followed by the **no shutdown** command on the interface/subinterface. This action fixes the problem until the next SRM switchover. This problem is resolved in software release 8.2(2). (CSCed30949)

- Supervisor Engine 1A might reset when entering the **copy config flash** command. This problem is resolved in software release 8.2(2). (CSCdy21260)

- With the Supervisor Engine 720/MSFC3, the IGMP reports might not be sent to the MSFC3 ports when the MSFC3 is down. This problem might occur when the MSFC3 (both MSFC3s in a redundant system) is in ROMMON. When the MSFC3 is in ROMMON, IGMP snooping may not relay the IGMP reports to the external MSFC3 ports. This problem is resolved in software release 8.2(2). (CSCin47303)

- When enabling IGMP version 3 processing in IGMP snooping with IGMP version 3 hosts and routers, when the IGMP version 3 processing is disabled, the corresponding forwarding entries do not clear immediately. The entries clear after a maximum of three general queries occur. As a result, between the time that the IGMP version 3 processing is disabled and the IGMP version 3 forwarding entries are cleared, the forwarded multicast traffic is based on stale IGMP version 3 forwarding entries. This problem also might impact the hardware switching of the corresponding multicast traffic during this interval. This problem is only present in software release 8.2(1). This problem is resolved in software release 8.2(2). (CSCin63429)

- The MST command **set spantree mst config name** does not have a carriage return (\n) if the revision number is set to zero in the **show config** command output. This action causes the next command that you enter to merge with this command. This problem is resolved in software release 8.2(2). (CSCed05362)

- When two trunks are enabled one by one with a small delay in between, and with spanning tree disabled for the VLANs, there could be a race condition between the first port going to forwarding state in a particular VLAN and the second trunk port join the spanning tree. Therefore, when more than one port is established as a trunk in a short time period, several VLANs are not allowed. This problem is resolved in software release 8.2(2). (CSCed12056)

- On a port security enabled port, the auto-learned addresses are displayed in the **show config** output. If you enter the **write memory** command, these addresses should be written to the NVRAM, but the auto-learned addresses are not written to the NVRAM.

  Workaround: If you want to retain the auto-learned addresses, enable the **set port security auto-configure** option. This problem is resolved in software release 8.2(2). (CSCed46765)

- After a high-availability switchover, an 802.1X port security-enabled port shuts down due to a security violation. This problem occurs if the supplicant that is connected to a port through an IP phone was previously in a guest VLAN when the port was authenticated. The problem seems to occur only with externally powered IP phones. This problem is resolved in software release 8.2(2). (CSCdz60394)

- When the MSFC is reloaded, some VLANs between the MSFC and the supervisor engine might be pruned. This problem is seen with the MSFC VLAN interfaces in the “up/up” state but the MSFC does not respond to the supervisor engine or clients.

  Workaround: Enter the **shutdown** command followed by the **no shutdown** command on the VLAN interfaces. This problem is resolved in software release 8.2(2). (CSCec43550)

- Under rare conditions, the following modules might reset when a link is rapidly going up and down: WS-6248-RJ45, WS-6248-TEL, WS-6348-RJ45, WS-6348-RJ21, WS-6148-RJ45, WS-6148-RJ21, and WS-6348-100FX. This problem occurs when the link goes from down to up to down within 300 ms.

  Workaround: Disable the port that is going up and down, or fix the root cause of the link problem. This problem is resolved in software release 8.2(2). (CSCed17719)

- The WS-X6608-T1 and WS-X6608-E1 voice modules might not get configured correctly if the switch is in text configuration mode; some commands could be missing from the running configuration.

  Workaround: Manually configure the voice modules after the switch comes online. This problem is resolved in software release 8.2(2). (CSCec00993)

- The RADIUS NAS-Port attribute for an EAP request is padded at the end with a null character, making the attribute 7 bytes long instead of the normal length of 6 bytes as defined in RFC 2865. This problem is resolved in software release 8.2(2). (CSCed47220)

- A switch might not save the configuration for the IGMP rate limit after a reload. This problem is resolved in software release 8.2(2). (CSCed09426)

- With 802.1X authentication, the authenticated 802.1X-enabled port goes to the connecting state after a high-availability switchover if the nonsupplicant in the guest VLAN behind an IP phone is replaced with a supplicant before the switchover. This problem is resolved in software release 8.2(2). (CSCdz60484)

- HTTP authentication bypasses the IP permit list. If you have the IP permit list configured with the HTTP server enabled on the switch, a user can cause a denial of service attack by repeatedly attempting to open an HTTP session to the switch.

  Workaround: Configure access control lists (ACLs) on the supervisor engines that support them. On the switches that do not support ACLs, use an external device for access controlling HTTP traffic to the switch or disable the HTTP server on the switch. This problem is resolved in software release 8.2(2). (CSCdw46637)

- When sending TCP or UDP traffic with a Supervisor Engine 2, the output for the **show mls entry** command might be empty when the MLS flow is set to full. When the flow is set to destination or destination-source, the entries are correct.

  Workaround: Use the **show mls entry ip protocol tcp** or **show mls entry ip protocol udp** commands to show the details of the TCP or UDP traffic. This problem is resolved in software release 8.2(2). (CSCin59452)

- The MMLS shortcuts between the supervisor engine and the MSFC might not be consistent. This problem is resolved in software release 8.2(2). (CSCec65498)

- You might receive traps indicating configuration revision errors, and entering the **show vtp statistics** command might show the number of configuration revision errors increasing and the revision number matching for all the switches in the VTP domain. To correct the problem, all the switches in the VTP domain need to be upgraded to software release 8.2(2) and then you need to add and delete a VLAN. This problem is resolved in software release 8.2(2). (CSCdy11099)

- When you start a Telnet session to the Catalyst switch using certain Telnet clients, the Catalyst switch prompt is not displayed until you press the **Enter** (return) key.

  Workaround: Press the **Enter** key to get to the Catalyst switch prompt. This problem is resolved in software release 8.2(2). (CSCed45576)

- After performing a software upgrade, the switch might experience an exception and reset. If this problem occurs, the **show log** command displays the following error message:

  ```
  Error Msg: mfree 2: m=0x8c994080 PID = 0 Kernel an
  ```

  This problem is resolved in software release 8.2(2). (CSCed48590)

- When you configure a WS-X6548-GE-TX port as a SPAN destination and the aggregate bandwidth of the spanned traffic exceeds the SPAN destination port's capacity, you can see performance issues on other ports within the same group. A group of ports is defined as a group of 8-ports (such as 1-8, 9-16, and 17-24).

  Workaround: Disable the destination SPAN to ports on the WS-X6548-GE-TX module or put the SPAN destination port in a group where there is nothing connected. This problem is resolved in software release 8.2(2). (CSCed25278)

- When using Rapid STP/MST, a spanning tree loop might occur when you change the bridge priority at the root bridge. This problem is resolved in software release 8.2(2). (CSCed33849)

- After upgrading from software release 6.4(4a) to software release 8.1(1), several LAN modules on some switches might show up as power-bad or power-deny.

  Workaround: Reset the switch. This problem is resolved in software release 8.2(2). (CSCec02255)

- When logging into a switch and with TACACS authentication configured, if the TACACS server is unavailable, the user is still prompted for a username. This condition is confusing to users who are not aware that the TACACS server is unavailable and they might keep trying to enter a valid username/password combination.

  Workaround: Enter any value as a username. As long as the switch enable password is used as the password, the authentication will be successful. This problem is resolved in software release 8.2(2). (CSCdz16477)

- With 802.1X authentication, a reauthentication might occur every 30 seconds for the supplicant even if reauthentication is disabled and the reauthentication period is set to a higher value. After the supplicant is authenticated, a manual reauthentication causes the reauthentication to occur every 30 seconds. If no manual reauthentication is done, it works correctly. This problem is resolved in software release 8.2(2). (CSCed29480)

- In software releases 7.6(4), 7.6(5), and 8.2(1) after you successfully enable RMON from either SNMP or the CLI, the **show snmp** command shows RMON as disabled. This problem is resolved in software release 7.6(6) and software release 8.2(2) and later releases. (CSCed77175)

- Attempting to upgrade the EPLDs on a module with a voice daughter card attached fails, as the system is unable to read the SPROM of the module.

  Workaround: Run the upgrade on the module with the daughter card removed. This problem is resolved in software release 8.2(2). (CSCed84492)

- A switch equipped with a Supervisor Engine 720 may stop forwarding traffic over a WS-X6548-GE-TX module. If this condition occurs, the **show port** command displays the port as connected, and the **show mac** command does not show any transmitted traffic. This problem is resolved in software release 8.2(2). (CSCed68821)

- The switch has multipath BGP with recursive lookup configured with per-prefix statistics disabled. With this configuration, the hardware counters show an inaccurate number of packets/bytes transmitted through all adjacencies in the TCAM. When traffic is sent through the adjacency, the counters keep showing inaccurate/random numbers. Once traffic stops, the counters return to the initial inaccurate state. This problem is resolved in software release 8.2(2). (CSCea13680)

- The switch might crash with RADIUS authentication enabled. The problem might occur after you do the following:
  - Configure RADIUS authentication with the all option.
  - Set the enable password for console.
  - Enable the local login authentication.
  - Log in to the switch and enter a valid RADIUS username and password at the prompt.

After you do the preceding steps, the switch might respond that the account is disabled for both valid and invalid passwords after you try to enter the enable mode. After repeated attempts, the switch might go into an idle state and then reset. This problem is resolved in software release 8.2(2). (CSCed76069)

- When you enter the **squeeze slot0:** command, the supervisor engine CPU might spike above 95 percent for about 30 seconds. This problem is resolved in software release 8.2(2). (CSCec25582)
- Sometimes, a dynamic VLAN is not assigned on the ports with the configured auxiliary VLAN. Initially, the dynamic VLAN for the port works. After the port link goes up and down 50 times, the port stops working. The port displays as a connected port but the status is inactive. This problem is resolved in software release 8.2(2). (CSCec29415)
- Depending on the location of the **capture** lines in a VACL, the capture function might not work. This problem does not impact VACL filtering. This problem is resolved in software release 8.2(2). (CSCec57893)
- After accessing the switch through a Telnet session and entering the **clear vlan** command to clear a large number of VLANs, if the Telnet session automatically logs you out before all the VLANs are cleared, the VLAN database might be left in an inconsistent state.

  Workarounds: 1) Reset the switch. 2) If you need to clear a large number of VLANs, do it through the switch console rather than a Telnet session. 3) If you choose to clear a large number of VLANs through a Telnet session, use the **set logout 0** command, and then clear the VLANs. This problem is resolved in software release 8.2(2). (CSCec19091)
- A TACACS+ server might not record accounting information if you input two consecutive commands by copy and paste. This problem is resolved in software release 8.2(2). (CSCec63892)
- When running MMLS on a Supervisor Engine 1/MSFC with partial-SCs, clearing the mroute table or disabling and then reenabling MLS on the MSFC causes packets to stop getting switched on the partial-SC because no packets are received by the MSFC. After a period of time, the corresponding (S,G) entry times out. This problem seems to affect only partial-SC mroute entries with the no “H” flag set. This problem is resolved in software release 8.2(2). (CSCed41953)
- For Supervisor Engine 1 or Supervisor Engine 2, in a redundant system with DRM on the MSFC and high availability enabled on the supervisor engine, packets may be dropped during an MSFC/supervisor engine switchover until the nondesignated MSFC is up. This problem is resolved in software release 8.2(2). (CSCed91504)
- Auxiliary VLANs and VTP pruning might not work together in all instances. This problem is resolved in software release 8.2(2). (CSCed05516)
- The Network Analysis Module (WS-X6380-NAM) management VLAN does not match the switch sc0 interface VLAN. These VLANs should match.

  Workaround: Leave the sc0 interface in VLAN 1. This problem is resolved in software release 8.2(2). (CSCed47510)
- There is a memory leak in the DVLAN_RECONF process when you run a heavy CPU load. This problem is resolved in software release 8.2(2). (CSCeb85102)
- With a Supervisor Engine 2, the high-availability switchover time might be different for the 6-slot and 13-slot chassis. The 13-slot chassis switchover time might be greater than the 6-slot chassis. This problem is resolved in software release 8.2(2). (CSCed68109)
- When you have a VMPS database downloading to the switch (initiated by entering the **download vmps** command), the switch might crash during the “VMPSDownload” process. This problem is due to the vmps-port-group field not being specified in the VMPS configuration file. This problem is resolved in software release 8.2(2). (CSCed43310)

- You might experience a memory leak related to the “Kernel and Idle” process if you enter the **show proc mem** command. This problem is resolved in software release 8.2(2). (CSCed60959)
- With a Supervisor Engine 720/MSFC3, any traffic matching the MLS exclude protocol might be incorrectly sent to the MSFC3 for processing. This problem is resolved in software release 8.2(2). (CSCee09339)
- With Supervisor Engine 1 running software release 8.x, ping packets sent to NDR interfaces that are different from the source VLAN fail after the first packet. This problem is resolved in software release 8.2(2). (CSCed59834)
- On a switch running cryptographic (k9) images, if the value of sshPublicKeySize is nonzero, the SNMP_THREAD process might have a memory leak when sshPublicKeySize is polled. This problem is resolved in software release 8.2(2). (CSCed95950)

Open and Resolved Caveats in Software Release 8.2(1)

These sections describe open and resolved caveats in supervisor engine software release 8.2(1):

- Open Caveats in Software Release 8.2(1), page 230
- Resolved Caveats in Software Release 8.2(1), page 231

Open Caveats in Software Release 8.2(1)

This section describes open caveats in supervisor engine software release 8.2(1):

- When enabling IGMP version 3 processing in IGMP snooping with IGMP version 3 hosts and routers, when the IGMP version 3 processing is disabled, the corresponding forwarding entries do not clear immediately. The entries clear after a maximum of three general queries occur. As a result, between the time that the IGMP version 3 processing is disabled and the IGMP version 3 forwarding entries are cleared, the forwarded multicast traffic is based on stale IGMP version 3 forwarding entries. This problem also might impact the hardware switching of the corresponding multicast traffic during this interval. This problem is only present in software release 8.2(1). (CSCin63429)
- When you enter the **show qos info runtime** command on a trust-dscp port, the Rx mapping shows all values mapped to a single queue but the Rx Drop Threshold information is displayed. (CSCec02299)
- The IGMP-General Query rate-limit feature is not supported on Supervisor Engine 720. The feature can cause a high supervisor engine CPU load and can disrupt multicast switching. (CSCin42511)
- With 802.1X authentication, the authenticated 802.1X-enabled port goes to the connecting state after a high-availability switchover if the nonsupplicant in the guest VLAN behind an IP phone is replaced with a supplicant before the switchover. (CSCdz60484)
- With 802.1X authentication, the authenticator will not be able to communicate through the sc1 interface to the RADIUS server if the authenticator address configured on the RADIUS server is the sc1 interface IP address. (CSCin14627)
- After a high-availability switchover, an 802.1X port security-enabled port will shut down due to a security violation. This problem occurs if the supplicant that is connected to a port through an IP phone was previously in a guest VLAN when the port was authenticated. The problem seems to happen only with externally powered IP phones. (CSCdz60394)

- With 802.1X authentication, if a high-availability switchover occurs during an authentication after the switchover completes, single authentication and port security are in the authenticated state but the port might not get added to spanning tree. If this situation occurs, then the port would not receive CBL or LTL information. The **show port security** command shows that the port MAC address is secured, but there is no MAC address in the CAM table. (CSCin20244)
- With high availability enabled, port security is enabled on a port using the **violation restrict** mode. On repeatedly clearing the secured addresses under continuous traffic, the secured port on the standby supervisor engine might shut down. (CSCin25168)
- With 802.1X authentication, when a configured supplicant logs off, the supplicant's MAC address is removed from the configured list. (CSCin25663)
- After a high-availability switchover, the MSFC2 LTL is not set when the standby router becomes the designated router. (CSCdy83322)
- An IGMP version 3 client may receive traffic from unwanted sources. This problem might occur when the IGMP version 3 client abruptly stops sending the IGMP version 3 report and starts sending the IGMP version 3 report to receive traffic from sources that it does not want to receive (before it abruptly stops sending the IGMP version 3 report). (CSCdx53609)
- HTTP authentication bypasses the IP permit list. If you have the IP permit list configured with the HTTP server enabled on the switch, a user can cause a denial of service attack by repeatedly attempting to open an HTTP session to the switch.

  Workaround: Configure access control lists (ACLs) on the supervisor engines that support them. On the switches that do not support ACLs, use an external device for access controlling HTTP traffic to the switch or disable the HTTP server on the switch. (CSCdw46637)
- With the Supervisor Engine 720/MSFC3, the IGMP reports might not be sent to the MSFC3 ports when the MSFC3 is down. This problem might occur when the MSFC3 (both MSFC3s in a redundant system) is in ROMMON. When the MSFC3 is in ROMMON, IGMP snooping may not relay the IGMP reports to the external MSFC3 ports. (CSCin47303)
- Inserting a single-port OC-12 ATM module in a switch where all switching modules are fabric enabled causes the module diagnostics to fail on the ATM module. To put the ATM module into service, enter the **reset** *slot_number* command. (CSCds12349)
- On a port security enabled port, the auto-learned addresses are displayed in the **show config** output. If you enter the **write memory** command, these addresses should be written to the NVRAM, but the problem is that the auto-learned addresses are not written to the NVRAM.

  Workaround: If you want to retain the auto-learned addresses, enable the **set port security auto-configure** option. (CSCed46765)

Resolved Caveats in Software Release 8.2(1)

This section describes resolved caveats in supervisor engine software release 8.2(1):

- When a linkdown trap is sent for a security violation, the value of portSecurityLastSrcAddr might be wrong. If port security is configured using static addresses and a security violation occurs, the configured address is sent in the trap and not the address that actually caused the violation. If port security is configured dynamically and the port is shut down due to a security violation, the linkdown trap contains an invalid MAC address. This problem is resolved in software release 8.2(1). (CSCeb49723)

- When there is an MSFC switchover, it is possible that multicast entries at the supervisor engine will be deleted immediately causing a short disruption in traffic forwarding. This behavior is identical to what happens during a supervisor engine switchover. This problem is resolved in software release 8.2(1). (CSCeb52670)
- With a Supervisor Engine 1/PFC and the following security ACL configured:

```
Cat6k> (enable) show sec acl info ACL_TEST
set security acl ip ACL_TEST
------------------------------------------------
1. deny icmp any any fragment
2. permit ip any any
```

  Both unfragmented and fragmented ICMP packets are denied (the keyword **fragment** is ignored). This problem is not seen with other supervisor engines. This problem is resolved in software release 8.2(1). (CSCea51346)
- A VACL might not filter flows when the UDP source and destination equal 0.

  Workaround: Apply an inbound Cisco IOS ACL in hardware. Note that the MSFC must run a recent Cisco IOS Release (Release 12.1(13)E4 was tested and works fine). This problem is resolved in software release 8.2(1). (CSCea65662)
- If you use the maximum character length for a VACL name (31 characters), the switch might reset with a TLB exception after entering the **show config** command. This problem is resolved in software release 8.2(1). (CSCeb37804)
- With software release 8.1(2), command authorization might fail in the TCL shell. This problem is resolved in software release 8.2(1). (CSCec23736)
- When booting a Supervisor Engine 2 or Supervisor Engine 720 with Catalyst software release 8.1(1) in a 6503 chassis with PWR-950-DC power supplies, the system denies power to the remaining slots. The **show env power** command reports PS1 and PS2 at 0 Watts with no available power. This problem is resolved in software release 8.2(1). (CSCec18414)
- With a few hundred secure addresses on a port with a large amount of continuous traffic through the port, and aging enabled, it takes a long time for the addresses to clear out and then be resecured. This problem is resolved in software release 8.2(1). (CSCeb22295)
- With diagnostics set to complete and text configuration mode specified, after a switch over to the redundant supervisor engine, some items in the standby supervisor engine configuration might not be operational. This problem is resolved in software release 8.2(1). (CSCea63643)
- With Supervisor Engine 1, the console might lock up when the switch is reset. This problem has not been seen on switches with redundant Supervisor Engine 1s. This problem is resolved in software release 8.2(1). (CSCea60922)
- When you attempt to establish a console connection and are prompted for the username, if you inadvertently cut and paste a large file (over 100 KB) into the CLI username prompt instead of the correct username, you will see many "%MGMT-5-LOGIN_FAIL:User log" messages. Then after 10 to 14 minutes, the switch will reset with a Breakpoint Exception. This problem is resolved in software release 8.2(1). (CSCea72986)
- After entering the **switch supervisor** command and letting traffic run, when you enter the **show mac** command, the Xmit-Unicast data column is always 0. Additionally, the **show count** command does not display the txHCUnicastPkts data and, the field is always 0. This problem is resolved in software release 8.2(1). (CSCeb60675)

- When a port is configured for a host connection using the **set port host** *mod/port* command, its CBL should remain in forwarding state when the port is disconnected. This assures that when the link comes up, traffic is switched immediately. When the port is disconnected, spanning tree sends the correct CBL state but dot1x authorization sets the CBL to disable. This problem is resolved in software release 8.2(1). (CSCeb52364)
- When configuring an EtherChannel with ports on separate modules with the jumbo frames and 802.1Q tunneling features configured, the channel configuration may get lost on a member port when using text configuration mode.

  Workaround: Use "desirable" mode or binary configuration mode. This problem is resolved in software release 8.2(1). (CSCec06429)
- The WS-X6502-10GE module might form a unidirectional link with the port transmit side functioning but the receive side not functioning.

  Workaround: Configure UDLD and/or loop guard to prevent a unidirectional link. This problem is resolved in software release 8.2(1). (CSCeb59325)
- A WS-X6248-TEL module port displays as "connected" when it is manually enabled even though it is connected to a WS-X6248-TEL module port in another switch that is manually disabled.

  Workaround: Reset the system. This problem is resolved in software release 8.2(1). (CSCea19802)
- With a Firewall Services Module (FWSM), the LTL might not be set properly if VTP pruning is enabled. This problem is resolved in software release 8.2(1). (CSCea04936)
- With the spanning tree mode set to MISTP-PVST+, when a port leaves or joins a channel, the color blocking logic (CBL) for that port might not be set, resulting in no traffic going through that port. This problem occurs with an 8-port channel that has the channel mode set to on. The ports in the channel were enabled and then disabled, or the module was reset.

  Workaround: Disable and then reenable the port (this action might not always work), or change the channel mode to "desirable." This problem is resolved in software release 8.2(1). (CSCea48516)
- It might not be possible to configure port security on a dot1q tunnel access port. This problem is resolved in software release 8.2(1). (CSCeb54461)
- You should not be able to set ports belonging to the same port ASIC as follows: One port set to trunking mode or a SPAN destination, and another port set to a promiscuous, isolated, or community port. However, on the WS-X6148-GE-TX and WS-X6548-GE-TX modules, you are allowed to set a private VLAN on the same port ASIC where a trunk/SPAN is configured. This problem is resolved in software release 8.2(1). (CSCea77251)
- The maximum burst value that could be configured for a policer was 32,000 kb. The maximum burst rate should have been 256,000 kb. This problem is resolved in software release 8.2(1). (CSCeb22622)
- Configuring trust-cos (for example, **set port qos 3/1 trust trust-cos**) on WS-X6502-10GE ports might result in poor unicast traffic performance. This problem is resolved in software release 8.2(1). (CSCeb30334)
- New vulnerabilities in the OpenSSH implementation for SSH servers have been announced. An affected network device, running an SSH server based on the OpenSSH implementation, may be vulnerable to a Denial of Service (DoS) attack when an exploit script is repeatedly executed against the same device.

  Workaround: There are workarounds available to mitigate the effects of these vulnerabilities. Refer to the advisory at this URL:

  http://www.cisco.com/warp/public/707/cisco-sa-20030917-openssh.shtml

  This problem is resolved in software release 8.2(1). (CSCec33092)

- A Supervisor Engine 1 or 1A may reload with the following log message:

  ```
  ProcessStatusPing:Module 1 local SCP error detected... resetting module
  ```

  Workaround: Remove the faulty module.

- The switch fails to return the complete Fully Qualified Domain Name (FQDN) when polled for the following:

  sysName

  .1.3.6.1.2.1.1.5

  The switch returns the host name only. This situation is not compliant with the definition of sysName stated in RFC-1907. This problem has a tendency to break NMS applications that expect the switch to respond back with the correct sysName.

  Workaround: Specify the complete FQDN on the switch so that sysName returns the complete FQDN:

  Enter the following on the switch:

  ```
  nms-6506a> (enable) set system name nms-6506a.sys.etc
  System name set.
  nms-6506a> (enable) exit
  Connection closed by foreign host.
  ```

  Enter the following on the NMS:

  ```
  nms-server2> snmpwalk -c public nms-6506a sysName
  SNMPv2-MIB::sysName.0 = STRING: nms-6506a.sys.etc
  ```

  This problem is resolved in software release 8.2(1). (CSCeb37492)

- Different VLANs on a switch might have the same VlanIfIndex. This problem usually occurs after a high-availability switchover that is caused by an exception on the active supervisor engine. This problem is resolved in software release 8.2(1). (CSCeb61525)

- Using the **show snmp ifalias** command might cause a memory leak. This problem is resolved in software release 8.2(1). (CSCeb86760)

- A switch with either a WS-X6K-SUP1A-2GE or WS-X6K-S2U-2GE supervisor engine and a WS-F6K-MSFC2 running boot loader image version 12.1(19)E with the main image on the PCMCIA Flash card in slot0: may not pass traffic to or from the MSFC on VLAN 1 after a reload. This situation affects only traffic that is routed to or from VLAN 1. Traffic being switched within VLAN 1 is not affected by this issue. This issue may be seen when running any version of Catalyst software on the supervisor engine and Cisco IOS boot loader version 12.1(19)E on the MSFC2. Traffic will still pass to and from the MSFC2 for all other VLANs.

  Workarounds: 1) Enter the **shutdown** and the **no shutdown** commands on the VLAN 1 virtual interface on the MSFC2. This action will fix the problem until the next reload of the MSFC2 or supervisor engine. 2) If MSFC2 redundancy is not being provided by single router mode (SRM), this issue can be avoided by downgrading only the boot loader image to 12.1(13)E. This problem is resolved in software release 8.2(1). (CSCeb02380)

- A spanning tree loop could be created when you use the **show spantree mst config** or **show spantree mst** *instance* commands to display a large console output for a MST instance/VLAN mapping.

  Workaround: Use the **set length** command to set the screen length to less than 50. This problem is resolved in software release 8.2(1). (CSCec16775)

- Polarization occurs when a switch and its downstream switch have an even number of paths for a prefix. Traffic received on the downstream switch may not be distributed across all paths. This problem is resolved in software release 8.1(2). (CSCeb40304)
- The switch might crash in the getPermTypeValue function. This problem is resolved in software release 8.2(1). (CSCea11480)
- With a WS-X6381-IDS module installed, you might experience a memory leak over a period of weeks.

  Workaround: Reload the switch every few weeks to regain lost memory. This problem is resolved in software release 8.2(1). (CSCeb59206)
- When you specify the destination device as slot0:, slot1:, disk0:, or disk1: for the syslog dump feature using the **set system syslog-file** *device*:[*filename*] command, the system will hang during the system failure and will not reload. You must power cycle the system. Note that the system will hang only if there is a system failure.

  Workaround: Write the file to bootflash. This problem is resolved in software release 8.2(1). (CSCeb51638)
- With MISTP and EtherChannel between switches, when channel ports are disabled and then enabled, some VLANs of the MISTP instance may still show a CBL disable status. This problem is resolved in software release 7.6(3a). (CSCec19186)
- A Supervisor Engine 2 might crash after "%ACL-3-TCAMFULL:Acl engine TCAM table is full" messages are seen during the updating of large Cisco IOS ACLs. This problem is resolved in software release 8.2(1). (CSCec04515)
- With software release 7.6(3a) and later releases, the NVRAM monitor is disabled by default at bootup. This feature should be enabled by default. This problem is resolved in software release 8.2(1). (CSCec62324)
- The LTL for multicast and broadcast might not be set after a MST topology change. This problem is resolved in software release 8.2(1). (CSCec23939)
- The 12.1(19)E boot loader on an MSFC fails to work correctly if the MSFC runtime image is on sup-slot0: and text configuration mode is configured. This problem is resolved in software release 8.2(1). (CSCeb36759)
- When two MST switches are connected and if one of the switch ports goes into root inconsistent state, the port does not transmit BPDUs. This problem can cause a loop in the network.

  Workaround: Clear the root inconsistency. This problem is resolved in software release 8.2(1). (CSCec67810)
- The port ifIndex on a Supervisor Engine 1 might become 0 after a high-availability switchover. This problem is resolved in software release 8.2(1). (CSCec44842)
- In rare circumstances, upgrading a supervisor engine or switching module EPLD may fail with the message: "Error: Programming EPLD. Error code = 16." This problem may leave the supervisor engine or switching module inoperable. This problem is resolved in software release 8.2(1). (CSCec77150)
- In a redundant system with WS-X6516 modules configured for channel mode, a reset of one of the modules might cause traffic forwarded through the channel to be dropped. This problem is resolved in software release 8.2(1). (CSCec18911)
- The maximum number of 128 permanent CAM entries needs to be increased. With software release 8.2(1), the number of permanent CAM entries has been increased to 256. (CSCdz35901)

- This problem was seen on a switch running software release 6.4(4a) on a Supervisor Engine 2 and Cisco IOS Release 12.1(13)E19 on the MSFC2. MLS entries in the supervisor engine forwarding information base are not updated after a server failover although the ARP entry is correct. This problem is resolved in software release 8.2(1). (CSCec27027)
- Disabling and enabling ports that belong to two channels may cause ports in one channel to remain in spanning tree blocking state and traffic going through the channel to be dropped.

  Workaround: Enable and disable the ports again. This problem is resolved in software release 8.2(1). (CSCec63559)
- The **show version** command does not display the correct memory (DRAM) usage if the supervisor engine (Supervisor Engine 2 and Supervisor Engine 720) has more than 256-MB DRAM. This problem is resolved in software release 8.2(1). (CSCdz46084)
- With Supervisor Engine 720s, the second uplink ports of the active and standby Supervisor Engine 720s might not link up the first time you boot the switch and change the media type to RJ-45.

  Workaround: Disable and enable the ports to bring the link up. This problem is resolved in software release 8.2(1). (CSCeb48056)
- When you enter the **clear cam static** command, the following message is displayed:

  %EARL-3-LTL:Failure to set LTL for module *n*

  The message is printed only when the EARL logging level is set to 3 or higher. This problem is resolved in software release 8.2(1). (CSCed05566)
- The MLS table is empty when using SRM with a Supervisor Engine 1/MSFC with the c6msfc image. This problem is seen only when booting from sup-slot0:, there is no problem when booting from bootflash:. You see this problem because the ROMMON of the MSFC (as opposed to the ROMMON of the MSFC2) does not support TFTP which is required to boot from sup-slot0: The boot image is loaded first and the boot image is not SRM enabled. You end up with one MSFC running in SRM mode and other running in DRM mode.

  Workaround: Use an image that supports SRM (such as c6msfc-isv-mz or c6msfc-is-mz) as the boot image in the bootflash when booting an image from sup-slot0:. This problem is resolved in software release 8.2(1). (CSCec38119)
- MLS IP fast-aging time might not work correctly. This problem is resolved in software release 8.2(1). (CSCec70012)
- When there is a high-availability switchover with the spanning-tree mode set to MSTP or MISTP, and there are at least 50,000 instances, it is possible for the switch to experience flooding of multicast control packets. This problem results in IGMP snooping experiencing a lot of port/VLAN up/down events and IGMP control packets causing CPU utilization to go up. Whenever this happens, IGMP snooping gets disabled for a period of 5 minutes and gets reenabled again automatically. Therefore, IGMP snooping will not be usable for 5 minutes and states are started afresh when it is reenabled. This problem is resolved in software release 8.2(1). (CSCec69290)
- ARP requests or responses with a length of 60 bytes that are received by the switch and sent to the CPU of the switch for ARP inspection are padded by the switch with an additional 8 bytes, causing 68-byte ARPs. This problem is resolved in software release 8.2(1). (CSCec65991)
- Microsoft has released KB article 826942 to allow VLAN assignment with DHCP interoperability. Assuming proper VLAN assignment, the code sends three ICMP echos to the current default gateway. If the echoes are not answered, a broadcast is renewed for the DHCP address. The result is that the pings are answered and the tested end point does not request a new IP address. This problem is resolved in software release 8.2(1). (CSCec70893)

- When using SSH to the switch using external authentication, if you enter a blank username (when you press Enter at the username prompt without typing in a username), no matter what password you enter, the session might hang. Additionally, if you enter an incorrect username, you are prompted for the password three times and then the session disconnects. This problem is resolved in software release 8.2(1). (CSCea89170)
- On a Catalyst 6500 series switch or Cisco 7600 series router, an SSH authentication failure may result in 32 bytes of memory leakage. If this condition is repeated it may cause denial of service symptoms on the switch.

  Workaround: Permit SSH access only to authorized hosts. An example may look like this display:

  ```
  set ip permit <authorized host #1> ssh
  set ip permit <authorized host #2> ssh
  set ip permit enable
  ```

  This problem is resolved in software release 8.2(1). (CSCeb49724)
- A VLAN value might not be returned for NAM and IDS module ports. This problem is resolved in software release 8.2(1). (CSCin51922)

Open and Resolved Caveats in Software Release 8.1(3)

These sections describe open and resolved caveats in supervisor engine software release 8.1(3):

- Open Caveats in Software Release 8.1(3), page 237
- Resolved Caveats in Software Release 8.1(3), page 239

Open Caveats in Software Release 8.1(3)

This section describes open caveats in supervisor engine software release 8.1(3):

- When you enter the **show qos info runtime** command on a trust-dscp port, the Rx mapping shows all values mapped to a single queue but the Rx Drop Threshold information is displayed. (CSCec02299)
- The IGMP-General Query rate-limit feature is not supported on Supervisor Engine 720. The feature can cause a high supervisor engine CPU load and can disrupt multicast switching. (CSCin42511)
- The **show version** command does not display the correct memory (DRAM) usage if the supervisor engine (Supervisor Engine 2 and Supervisor Engine 720) has more than 256-MB DRAM. (CSCdz46084)
- With 802.1X authentication, the authenticated 802.1X-enabled port goes to the connecting state after a high-availability switchover if the nonsupplicant in the guest VLAN behind an IP phone is replaced with a supplicant before the switchover. (CSCdz60484)
- With 802.1X authentication, the authenticator will not be able to communicate through the sc1 interface to the RADIUS server if the authenticator address configured on the RADIUS server is the sc1 interface IP address. (CSCin14627)
- After a high-availability switchover, an 802.1X port security-enabled port will shut down due to a security violation. This problem occurs if the supplicant that is connected to a port through an IP phone was previously in a guest VLAN when the port was authenticated. The problem seems to happen only with externally powered IP phones. (CSCdz60394)

- With 802.1X authentication, if a high-availability switchover occurs during an authentication after the switchover completes, single authentication and port security are in the authenticated state but the port might not get added to spanning tree. If this situation occurs, then the port would not receive CBL or LTL information. The **show port security** command shows that the port MAC address is secured, but there is no MAC address in the CAM table. (CSCin20244)
- With high availability enabled, port security is enabled on a port using the **violation restrict** mode. On repeatedly clearing the secured addresses under continuous traffic, the secured port on the standby supervisor engine might shut down. (CSCin25168)
- With 802.1X authentication, when a configured supplicant logs off, the supplicant's MAC address is removed from the configured list. (CSCin25663)
- After a high-availability switchover, the MSFC2 LTL is not set when the standby router becomes the designated router. (CSCdy83322)
- An IGMP version 3 client may receive traffic from unwanted sources. This problem might occur when the IGMP version 3 client abruptly stops sending the IGMP version 3 report and starts sending the IGMP version 3 report to receive traffic from sources that it does not want to receive (before it abruptly stops sending the IGMP version 3 report). (CSCdx53609)
- HTTP authentication bypasses the IP permit list. If you have the IP permit list configured with the HTTP server enabled on the switch, a user can cause a denial of service attack by repeatedly attempting to open an HTTP session to the switch.

  Workaround: Configure access control lists (ACLs) on the supervisor engines that support them. On the switches that do not support ACLs, use an external device for access controlling HTTP traffic to the switch or disable the HTTP server on the switch. (CSCdw46637)
- Inserting a single-port OC-12 ATM module in a switch where all switching modules are fabric enabled causes the module diagnostics to fail on the ATM module. To put the ATM module into service, enter the **reset** *slot_number* command. (CSCds12349)
- With Supervisor Engine 720s, the second uplink ports of the active and standby Supervisor Engine 720s might not link up the first time that you boot the switch and change the media-type to RJ-45.

  Workaround: Disable and enable the ports to bring the link up. (CSCeb48056)
- With software release 8.1(3), only one MSFC MAC entry is seen in the Layer 2 CAM table with dual-router mode (DRM) high availability enabled at boot time.

  Note This problem is not seen in any later software releases.

  Workaround: Enter the **shutdown** followed by **no shutdown** commands on the interfaces.
- With the Supervisor Engine 720/MSFC3, IGMP reports might not be sent to the MSFC3 ports when the MSFC3 is down. This problem might occur when the MSFC3 (both MSFC3s in a redundant system) is in ROMMON. When the MSFC3 is in ROMMON, IGMP snooping may not relay the IGMP reports to the external MSFC3 ports. (CSCin47303)
- On a port security enabled port, the auto-learned addresses are displayed in the **show config** output. If you enter the **write memory** command, these addresses should be written to the NVRAM, but the problem is that the auto-learned addresses are not written to the NVRAM.

  Workaround: If you want to retain the auto-learned addresses, enable the **set port security auto-configure** option. (CSCed46765)

Resolved Caveats in Software Release 8.1(3)

This section describes resolved caveats in supervisor engine software release 8.1(3):

- An affected network device, running an SSH server based on the OpenSSH implementation, may be vulnerable to a Denial of Service (DoS) attack when an exploit script is repeatedly executed against the same device. There are workarounds available to mitigate the effects of these vulnerabilities. This advisory will be posted at http://www.cisco.com/warp/public/707/cisco-sa-20030917-openssh.shtml

  This problem is resolved in software release 8.1(3). (CSCec33092)

Open and Resolved Caveats in Software Release 8.1(2)

These sections describe open and resolved caveats in supervisor engine software release 8.1(2):

- Open Caveats in Software Release 8.1(2), page 239
- Resolved Caveats in Software Release 8.1(2), page 240

Open Caveats in Software Release 8.1(2)

This section describes open caveats in supervisor engine software release 8.1(2):

- When you enter the **show qos info runtime** command on a trust-dscp port, the Rx mapping shows all values mapped to a single queue but the Rx Drop Threshold information is displayed. (CSCec02299)
- The IGMP-General Query rate-limit feature is not supported on Supervisor Engine 720. The feature can cause a high supervisor engine CPU load and can disrupt multicast switching. (CSCin42511)
- The **show version** command does not display the correct memory (DRAM) usage if the supervisor engine (Supervisor Engine 2 and Supervisor Engine 720) has more than 256-MB DRAM. (CSCdz46084)
- With 802.1X authentication, the authenticated 802.1X-enabled port goes to the connecting state after a high-availability switchover if the nonsupplicant in the guest VLAN behind an IP phone is replaced with a supplicant before the switchover. (CSCdz60484)
- With 802.1X authentication, the authenticator will not be able to communicate through the sc1 interface to the RADIUS server if the authenticator address configured on the RADIUS server is the sc1 interface IP address. (CSCin14627)
- After a high-availability switchover, an 802.1X port security-enabled port will shut down due to a security violation. This problem occurs if the supplicant that is connected to a port through an IP phone was previously in a guest VLAN when the port was authenticated. The problem seems to happen only with externally powered IP phones. (CSCdz60394)
- With 802.1X authentication, if a high-availability switchover occurs during an authentication after the switchover completes, single authentication and port security are in the authenticated state but the port might not get added to spanning tree. If this situation occurs, then the port would not receive CBL or LTL information. The **show port security** command shows that the port MAC address is secured, but there is no MAC address in the CAM table. (CSCin20244)
- With high availability enabled, port security is enabled on a port using the **violation restrict** mode. On repeatedly clearing the secured addresses under continuous traffic, the secured port on the standby supervisor engine might shut down. (CSCin25168)

- With 802.1X authentication, when a configured supplicant logs off, the supplicant's MAC address is removed from the configured list. (CSCin25663)
- After a high-availability switchover, the MSFC2 LTL is not set when the standby router becomes the designated router. (CSCdy83322)
- An IGMP version 3 client may receive traffic from unwanted sources. This problem might occur when the IGMP version 3 client abruptly stops sending the IGMP version 3 report and starts sending the IGMP version 3 report to receive traffic from sources that it does not want to receive (before it abruptly stops sending the IGMP version 3 report). (CSCdx53609)
- HTTP authentication bypasses the IP permit list. If you have the IP permit list configured with the HTTP server enabled on the switch, a user can cause a denial of service attack by repeatedly attempting to open an HTTP session to the switch.

  Workaround: Configure access control lists (ACLs) on the supervisor engines that support them. On the switches that do not support ACLs, use an external device for access controlling HTTP traffic to the switch or disable the HTTP server on the switch. (CSCdw46637)
- Inserting a single-port OC-12 ATM module in a switch where all switching modules are fabric enabled causes the module diagnostics to fail on the ATM module. To put the ATM module into service, enter the **reset** *slot_number* command. (CSCds12349)
- With Supervisor Engine 720s, the second uplink ports of the active and standby Supervisor Engine 720s might not link up the first time that you boot the switch and change the media-type to RJ-45.

  Workaround: Disable and enable the ports to bring the link up. (CSCeb48056)
- With the Supervisor Engine 720/MSFC3, the IGMP reports might not be sent to the MSFC3 ports when the MSFC3 is down. This problem might occur when the MSFC3 (both MSFC3s in a redundant system) is in ROMMON. When the MSFC3 is in ROMMON, IGMP snooping may not relay the IGMP reports to the external MSFC3 ports. (CSCin47303)
- On a port security enabled port, the auto-learned addresses are displayed in the **show config** output. If you enter the **write memory** command, these addresses should be written to the NVRAM, but the auto-learned addresses are not written to the NVRAM.

  Workaround: If you want to retain the auto-learned addresses, enable the **set port security auto-configure** option. (CSCed46765)

Resolved Caveats in Software Release 8.1(2)

This section describes resolved caveats in supervisor engine software release 8.1(2):

- When there is an MSFC switchover, it is possible that multicast entries at the supervisor engine will be deleted immediately causing a short disruption in traffic forwarding. The behavior is identical to what happens during a supervisor engine switchover. This problem is resolved in software release 8.1(2). (CSCeb52670)
- On the WS-X6502-10GE module, the channel mode is automatically configured to "off." This problem is resolved in software release 8.1(2). (CSCeb24990)
- Packets to be sent out the WS-X6548-GE-TX or WS-X6148-GE-TX modules that are less than 64 bytes are dropped. This occurs when a device forwards a packet that is 60 bytes and the 4-byte dot1q tag is added to create a valid 64-byte packet. When the tag is removed, the packet is 60 bytes. If the destination is out a port on the WS-X6548-GE-TX or WS-X6148-GE-TX modules, the packet is dropped by the module. This problem is resolved in software release 8.1(2). (CSCeb67650)

- With MISTP configured, when a nonroot switch attempts to be the root switch, a TLB exception might occur. This problem is resolved in software release 8.1(2). (CSCeb60477)
- The switch fails to return the complete Fully Qualified Domain Name (FQDN) when polled for the following:

  sysName

  .1.3.6.1.2.1.1.5

  The switch returns the host name only. This situation is not compliant with the definition of sysName stated in RFC 1907. This problem can break NMS applications that expect the switch to respond back with the correct sysName.

  Workaround: Specify the complete FQDN on the switch so that the sysName returns the complete FQDN:

  Enter the following on the switch:

  ```
  nms-6506a> (enable) set system name nms-6506a.sys.etc
  System name set.
  nms-6506a> (enable) exit
  Connection closed by foreign host.
  ```

  Enter the following on the NMS:

  ```
  nms-server2> snmpwalk -c public nms-6506a sysName
  SNMPv2-MIB::sysName.0 = STRING: nms-6506a.sys.etc
  ```

  This problem is resolved in software release 8.1(2). (CSCeb37492)
- If you use the maximum character length for a VACL name (31 characters), the switch might reset with a TLB exception after entering the **show config** command. This problem is resolved in software release 8.1(2). (CSCeb37804)
- With a Supervisor Engine 720 in flow-through mode and after a high-availability switchover, unicast traffic is restored but multicast traffic stops. This problem only happens when the switch is in flow-through mode.

  Workaround: Reset the switch. This problem is resolved in software release 8.1(2). (CSCeb61207)
- Polarization occurs when a switch and its downstream switch have an even number of paths for a prefix. Traffic received on the downstream switch may not be distributed across all paths. This problem is resolved in software release 8.1(2). (CSCeb40304)
- In IGMP fallback mode, the switch might only forward UDP packets destined to address 224.0.0.9 to a multicast router port. This behavior could break the exchange of RIP version 2 update packets between RIP version 2 routers in the VLAN when the IGMP mode goes to fallback.

  Workaround: Configure a static multicast MAC entry for 01-00-5e-00-00-09 on ports connected to RIP version 2 routers. This problem is resolved in software release 8.1(2). (CSCeb53428)
- The WS-X6348-RJ-45 module might repeatedly reset. When this particular reset occurs, the logging buffer contains a message indicating that the module is online but *does not* contain a preceding message showing the module resetting. This problem is resolved in software release 8.1(2). (CSCeb35612)
- On a switch with a Supervisor Engine 1, RSPAN source ports might not work in the Rx or TX directions on any port in the switch. RSPAN destination ports work properly. This problem is resolved in software release 8.1(2). (CSCeb80640)
- If an ECC error is detected, you may see more ECC errors generated as a result of the first ECC error. This problem is resolved in software release 8.1(2). (CSCeb72947)

Open and Resolved Caveats in Software Release 8.1(1)

These sections describe open and resolved caveats in supervisor engine software release 8.1(1):

Open Caveats in Software Release 8.1(1)

This section describes open caveats in supervisor engine software release 8.1(1):

- When you enter the **show qos info runtime** command on a trust-dscp port, the Rx mapping shows all values mapped to a single queue but the Rx Drop Threshold information is displayed. (CSCec02299, CSCeb73117)
- The IGMP-General Query ratelimit feature is not supported on Supervisor Engine 720. The feature can cause a high supervisor engine CPU load and can disrupt multicast switching. (CSCin42511)
- When there is an MSFC switchover, it is possible that multicast entries at the supervisor engine will be deleted immediately causing a short disruption in traffic forwarding. The behavior is identical to what happens during a supervisor engine switchover. (CSCeb52670)
- The **show version** command does not display the correct memory (DRAM) usage if the supervisor engine (Supervisor Engine 2 and Supervisor Engine 720) has more than 256-MB DRAM. (CSCdz46084)
- With 802.1X authentication, the authenticated 802.1X-enabled port goes to the connecting state after a high-availability switchover if the nonsupplicant in the guest VLAN behind an IP phone is replaced with a supplicant before the switchover. (CSCdz60484)
- With 802.1X authentication, the authenticator will not be able to communicate through the sc1 interface to the RADIUS server if the authenticator address configured on the RADIUS server is the sc1 interface IP address. (CSCin14627)
- After a high-availability switchover, an 802.1X port security-enabled port will shut down due to a security violation. This problem occurs if the supplicant that is connected to a port through an IP phone was previously in a guest VLAN when the port was authenticated. The problem seems to happen only with externally powered IP phones. (CSCdz60394)
- With 802.1X authentication, if a high-availability switchover occurs during an authentication, after the switchover completes, single authentication and port security are in the authenticated state but the port might not get added to spanning tree. If this situation occurs, then the port would not receive CBL or LTL information. The **show port security** command shows the port MAC address is secured but there is no MAC address in the CAM table. (CSCin20244)
- With high availability enabled, port security is enabled on a port using the **violation restrict** mode. On repeatedly clearing the secured addresses under continuous traffic, the secured port on the standby supervisor engine might shut down. (CSCin25168)
- With 802.1X authentication, when a configured supplicant logs off, their MAC address is removed from the configured list. (CSCin25663)
- After a high-availability switchover, the MSFC2 LTL is not set when the standby router becomes the designated router. (CSCdy83322)

- HTTP authentication bypasses the IP permit list. If you have the IP permit list configured with the HTTP server enabled on the switch, a user can cause a denial of service attack by repeatedly attempting to open an HTTP session to the switch.

  Workaround: Configure access control lists (ACLs) on the supervisor engines that support them. On the switches that do not support ACLs, use an external device for access controlling HTTP traffic to the switch or disable the HTTP server on the switch. (CSCdw46637)

- Inserting a single-port OC-12 ATM module in a switch where all switching modules are fabric enabled causes the module diagnostics to fail on the ATM module. To put the ATM module into service, enter the **reset** *slot_number* command. (CSCds12349)

- With Supervisor Engine 720s, the second uplink ports of the active and standby Supervisor Engine 720s might not link up the first time that you boot the switch and change the media-type to RJ-45.

  Workaround: Disable and enable the ports to bring the link up. (CSCeb48056)

- With the Supervisor Engine 720/MSFC3, the IGMP reports might not be sent to the MSFC3 ports when the MSFC3 is down. This problem might occur when the MSFC3 (both MSFC3s in a redundant system) is in ROMMON. When the MSFC3 is in ROMMON, IGMP snooping may not relay the IGMP reports to the external MSFC3 ports. (CSCin47303)

- On a port security enabled port, the auto-learned addresses are displayed in the **show config** output. If you enter the **write memory** command, these addresses should be written to the NVRAM, but the auto-learned addresses are not written to the NVRAM.

  Workaround: If you want to retain the auto-learned addresses, enable the **set port security auto-configure** option. (CSCed46765)

Resolved Caveats in Software Release 8.1(1)

This section describes resolved caveats in supervisor engine software release 8.1(1):

- All VLANs come up in the “down” state after a Supervisor Engine 1 or Supervisor Engine 2 is reset/upgraded. This problem is seen when the following conditions are present:
  - The MSFC/MSFC2 is loaded from slot0: or disk0:
  - Single router mode (SRM) redundancy is enabled
  - Switches are running software release 7.5(1) or 7.6(1)

  Workarounds:

  - Load the MSFC/MSFC2 images from the MSFC/MSFC2 bootflash:
  - After both MSFCs/MSFC2s come online, reset the active MSFC/MSFC2. The standby MSFC/MSFC2 will come up with the correct VLAN status.
  - Do a shut/no shut on each VLAN interface on the active MSFC/MSFC2.

  (CSCdy51093, CSCea72554)

Note The problems documented in caveats CSCdy51093 and CSCea72554 require software release 8.1(1) *and* one of the following bootloader images on the MSFC/MSFC2:

MSFC2 boot loader: c6msfc2-boot-mz.121-13.E10
MSFC boot loader: c6msfc-boot-mz.121-13.E10

- Running the TDR test on a 1-Gbps link gives the wrong cable length. This problem is resolved in software release 8.1(1). (CSCeb25429)
- The TDR test gives the wrong result and shows that a shorted cable has a status of “terminated” instead of “shorted.” This problem is resolved in software release 8.1(1). (CSCea90053)
- On a port that has port security enabled, a nonzero age time, a manually configured MAC address, and dynamically learned MAC addresses, when the age time expires, you will lose all the MAC addresses that you manually configured. This problem is resolved in software release 8.1(1). (CSCdy30515)
- A Catalyst 6500 series switch or Cisco 7600 series router, packets that are forwarded in hardware might have an incorrect source MAC or might be forwarded to an incorrect next-hop destination. This problem is resolved in software release 8.1(1). (CSCdy87433)
- The Content Switching Module (CSM) needs online diagnostics support.
  This problem is resolved in software release 8.1(1). Online diagnostics are available for the CSM but require CSM software release 3.2 and later. (CSCdy80144)
- Support is needed for changing the flow statistics timer for IP multicast.
  This problem is resolved in software release 8.1(1). (CSCdz71638)
- The TTL of 32 may decrement before the packets exit an MPLS network. This can cause problems with any IP-based application. This problem is resolved in software release 8.1(1). (CSCea48092)
- Some QoS ACL names may cause the system to fail to commit them to run time and will fail to clear them. For example, configuring and committing a QoS ACL named “ipphone” and then, a second ACL named “ipphone17-18” may cause this problem. As a consequence, the ACL named “ipphone17-18” will not be committed to run time and will not be cleared.

  Workaround: Clear the first ACL (in the example, “ipphone”), clear the second ACL (in the example, “ipphone17-18”), and then reapply the first ACL (“ipphone”). Also avoid using number 1 after a letter in an ACL names.

  This problem is resolved in software release 8.1(1). (CSCea18569)
- In a system with an MSFC2 and Multiple Spanning Tree (MST) configured, when a cable is disconnected and then reconnected, packets are not forwarded over the trunk. Although the output for the **show spantree mst** command may indicate that traffic is being forwarded, the ports remain in blocking mode. This problem is resolved in software release 8.1(1). (CSCea08501)
- When a Catalyst 6500 series switch is functioning as a distribution switch with two uplink ports to the core and UplinkFast is configured on the ports, a timing error may occur after a forwarding port goes down. If the first port goes down, traffic forwarding moves to the second uplink port, but if the second port goes down, the CAM table still points to the second port, which is still in blocking mode. It may take up to 20 seconds for the system to update the CAM table and start forwarding traffic. This problem is resolved in software release 8.1(1). (CSCdx45222)
- Support is needed for flow statistics sent from the route processor in response to the **show mls ip multicast stat group** *source* command. This problem is resolved in software release 8.1(1). (CSCdz71626)
- A WS-X6348 module port connected to a PC with a 60-meter cable may experience continuous link state changes. These changes occur when a PC has a NIC that does not conform to the IEEE 802.3 pulse shape mask for MLT3. This problem is resolved in software release 8.1(1). (CSCdz46928)
- The ciscoMemoryPoolUsed and ciscoMemoryPoolFree MIB objects report values for the NVRAM that are inconsistent with the **show version** command output. This problem is resolved in software release 8.1(1). (CSCea46369)
- Ports on the WS-X6148-GE-TX modules cannot be configured as VACL capture ports. This problem is resolved in software release 8.1(1). (CSCeb31718)

- In a redundant configuration, you might see the following messages:

```
2001 Nov 06 13:23:59 met +01:00 %SYS-2-MOD_NOINBANDRESPONSE:Module 2 not responding
over inband

2001 Nov 06 13:24:09 met +01:00%SYS-2-MOD_INBANDOK:Module 2 inband ok
```

  These messages indicate that the active supervisor engine is polling the redundant supervisor engine but is not able to get a timely response. This problem may occur when a feature on the switch is incorrectly configured, and the destination host replies with excessive ICMP messages. These ICMP messages may interfere with the supervisor engine inband ping process. This problem is resolved in software release 8.1(1). (CSCdx03048)

Catalyst Software Image Upgrade Procedure

The high-availability image versioning feature allows you to perform a software upgrade with the minimal downtime associated with the high-availability feature. Compatibility between the software images is determined during the procedure in Step 12.

Note Enable high-availability versioning only when upgrading Catalyst software. Implement image synchronization (high-availability versioning is disabled) for normal operating conditions.

Image versioning is supported in supervisor engine software releases 5.4(1) and later. Image versioning is not supported with images prior to release 5.4(1). Therefore, when you enable high-availability versioning, you can have active and standby supervisor engines run different images as long as both images are release 5.4(1)or later.

The high-availability versioning feature and Catalyst software upgrade should only be used when applying a maintenance release of Catalyst software. A maintenance release is a new version of software with incremental feature upgrades and bug fixes such as upgrading from software release 5.5.(1) to 5.5.(2). Major releases might not be high-availability compatible.

Versioning is feature dependent requiring that the high-availability feature is enabled in a dual supervisor engine configuration. Versioning allows different but compatible images to run on the active and standby supervisor engines, disabling the default supervisor engine image synchronization process. Versioning allows you to upgrade the supervisor engine software while the system is running using the stateful supervisor engine switchover of the high-availability feature.

You also have the ability to maintain a previously used and tested version of Catalyst software on the standby supervisor engine as a fallback if anything goes wrong with the software upgrade.

There are no restrictions as to which supervisor engine (active or standby) can be running a newer or older image version allowing you to upgrade or downgrade the Catalyst software images. However, the two versions of Catalyst software must be high-availability compatible to make possible a stateful software upgrade. The active and standby supervisor engines exchange image version information to determine if the two software images are compatible.

Image versions are defined to be one of three options: compatible, incompatible, or upgradable:

- Compatible versions support stateful protocol redundancy between the different images. All configuration settings made to the NVRAM on the active supervisor engine are sent to the standby supervisor engine. Two Catalyst software releases are incompatible if synchronizing the protocol state databases between the two versions is not possible.

- Incompatible software releases impact system operation because they require greater than a one to three second switchover time of a high-availability switchover and no NVRAM configuration changes are synchronized between supervisor engines in the software upgrade process.
- The upgradable option is a special case of incompatible versions. The high-availability supervisor engine switchover is not available, but configuration changes to the NVRAM on the active supervisor engine can be synchronized to the standby supervisor engine. Therefore, the option allows two different software releases to be run with synchronized configurations but without the ability for a high-availability failover.

If the Catalyst software images are not compatible, the high-availability switchover is not possible. The operation status output from the command **show system highavailability** should be monitored to determine the high-availability compatibility of two Catalyst software images. The operational status can either be **ON** or **OFF** (with some system specific status messages). The following shows that high availability is enabled and that the Catalyst software releases are high-availability compatible (**Operational status: ON**).

```
Console-A> (enable) show system highavailability
Highavailability: enabled
Highavailability versioning: enabled
Highavailability Operational-status: ON
```

Refer to Chapter 22, "Configuring Redundancy," in the *Catalyst 6500 Series Switch Software Configuration Guide*.

Caution You must follow these steps in this section exactly to successfully upgrade your system. Failure to follow these instructions exactly might result in an unusable system.

Perform these steps with the supervisor engine in slot 1 as the active supervisor engine and the supervisor engine in slot 2 in the standby mode:

Note You must have a console connection available for both supervisor engines in this procedure.

Step 1 Disable the high-availability feature on the active supervisor engine:

```
Console_A> (enable) set system highavailability disable
System high availability disabled.
Console _A> (enable)
```

Note The high-availability feature is disabled by default.

Step 2 Load the new Catalyst software image into the bootflash (via slot0, disk0, TFTP, etc.) of the active supervisor engine only.

Note In the following steps, the software releases are shown as a variable (**x**). When performing these procedures, use the image numbers you are using for your system. For available software releases, see the "Orderable Software Images" section on page 30 of these release notes.

```
Console_A> (enable) copy slot0:cat6000-sup2.6-1-X.bin bootflash:cat6000-sup2.6-1-X.bin

5786532 bytes available on device bootflash, proceed (y/n) [n]? y

... display text truncated
Console_A> (enable)
```

Step 3 Verify that the new image is now located in the bootflash of the active supervisor engine.

```
Console_A> (enable) dir bootflash:
```

Step 4 Set the boot variable to boot the new image.

```
Console_A> (enable) set boot system flash bootflash:cat6000-sup2.6-1-X.bin prepend
```

Step 5 Synchronize the configuration files automatically to the standby supervisor engine.

```
Console_A> (enable) set boot sync now
```

Step 6 Verify that the new image is located on the standby supervisor engine and the boot variable is properly set.

```
Console_A> (enable) dir 2/bootflash:
Console_A> (enable) show boot 2
```

The new Catalyst software image is on both supervisor engines.

Step 7 Enable high-availability versioning on the active supervisor engine.

```
Console_A> (enable) set system highavailability versioning enable
```

Before the standby supervisor engine becomes active running the new software, you must enable high-availability versioning to allow the standby supervisor engine to reboot under the new version of Catalyst software while remaining the standby supervisor engine.

Note These upgrade procedures allow for a fallback plan using the old Catalyst software image if problems occur. The now-active supervisor engine must maintain that older image (even after an accidental reboot).

Step 8 Enable high-availability on the active supervisor engine.

```
Console_A> (enable) set system highavailability enable
```

Step 9 Change the boot variable on the active supervisor engine back to its original setting (this setting should still be stored in the bootflash):

```
Console_A> (enable) set boot system flash bootflash:cat6000-sup2.old.bin prepend
```

Note Because high-availability versioning is enabled, setting the boot variable on the active supervisor engine does not cause an image synchronization.

Step 10 Reset the standby supervisor engine.

```
Console_A> (enable) reset 2
This command will reset the system.
Do you want to continue (y/n) [n]? y

... display text truncated
Console_A> (enable)
```

The standby supervisor engine reboots with the new Catalyst software image. The standby supervisor engine remains the standby supervisor engine and does not affect the operation of the active supervisor engine.

Step 11 After the standby supervisor engine reboots, verify that the standby supervisor engine is running the new Catalyst software image.

```
Console_A> (enable) show module
```

The standby supervisor engine should show that the new software release is different from the active supervisor engine's software release.

Step 12 Verify that the two different Catalyst software images are high-availability compatible.

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

For the high-availability switchover to occur, it is critical that the operational status of high-availability is **ON**. If not, the system will be upgraded with a fast switchover (non-stateful) and the protocols will need to be restarted. This is the "Go, No-Go" decision point for continuing the upgrade.

If the Catalyst software images are not high-availability compatible, you cannot proceed with the upgrade. Individual modules might be compatible or incompatible and get reset (even during an otherwise high-availability switchover).

Step 13 Reset the active supervisor engine. Change the console connection to the supervisor engine in slot 2 (Sup-B) to maintain command line operation.

```
Console_A> (enable) reset 1
```

The standby supervisor engine takes over as the active supervisor engine (running the new software). The previously active supervisor engine is now rebooted as the new standby supervisor engine. The switchover should take under 3 seconds.

Step 14 Verify that the system is performing as expected. The supervisor engine in slot 2 is now the active supervisor engine running the new version of Catalyst software. The supervisor engine in slot 1 is now the standby supervisor engine running the old software release. The standby supervisor engine can be used as a fallback to revert to the old version of Catalyst software.

Step 15 If the system is operating as expected, then you must update the boot configuration on the standby supervisor engine (now, supervisor engine B) by disabling high-availability versioning on the new active supervisor engine, which automatically enables the image synchronization feature.

```
Console_B> (enable) set system highavailability versioning disable
```

Wait for the sync to occur before you reset.

```
Console_B> (enable) reset 1
```

This completes the Catalyst software upgrade procedure.

Troubleshooting

This section describes troubleshooting guidelines for the Catalyst 6500 series switch configuration and is divided into the following subsections:

- VLAN Troubleshooting, page 250
- STP Troubleshooting, page 251

Note Refer to the *Release Notes for Catalyst 6500 Series Switch Multilayer Switch Feature Card—Cisco IOS Release 12.0(3)XE* publication for information about how caveat CSCdm83559 affects the MLS feature. CSCdm83559 is resolved in Release 12.1(2)E.

System Troubleshooting

This section contains troubleshooting guidelines for system-level problems:

- When the system is booting and running power-on diagnostics, do not reset the switch.
- After you initiate a switchover from the active supervisor engine to the standby supervisor engine, or when you insert a redundant supervisor engine in an operating switch, always wait until the supervisor engines have synchronized and all modules are online before you remove or insert modules or supervisor engines or perform another switchover.
- After you download a new Flash image, the next reboot might take longer than normal if Erasable Programmable Logic Devices (EPLDs) on the supervisor engine need to be reprogrammed. Whether this happens depends on which software release was running on the supervisor engine before the download and which software release is downloaded. This can add up to 15 minutes to the normal reboot time.
- If you have a port whose port speed is set to **auto** connected to another port whose speed is set to a fixed value, configure the port whose speed is set to a fixed value for half duplex. Alternately, you can configure both ports to a fixed-value port speed and full duplex.

Module Troubleshooting

This section contains troubleshooting guidelines for module problems:

- When you hot insert a module, be sure to use the ejector levers on the front of the module to seat the backplane pins properly. Inserting a module without using the ejector levers might cause the supervisor engine to display incorrect messages about the module. For module installation instructions, refer to the *Catalyst 6500 Series Switch Module Installation Guide*.
- The Catalyst 6500 series chassis has an EMI gasket on top of the frame member above the power supply, and each module has an EMI gasket on the top of its faceplate. (Blank slot covers also have EMI gaskets.) These EMI gaskets must contact the adjacent module to be effective. The EMI gasket is made from a flat spring material, folded and cut so that it looks like many parallel strips across the top of the faceplate.

  When you insert a module, it must compress its own EMI gasket and the EMI gasket on the module below it. Some force is required to compress each EMI gasket. When a majority of the slots in any chassis are filled, the pressure from the EMI gaskets forces the modules toward empty slots, making insertion of the last module difficult. This effect can also cause the top of the faceplate to interfere slightly with the module above.

When assembling a system, use Solution 1. When replacing a module on an active system, use Solution 2.

Note In all cases, use proper ESD protection.

- Solution 1, when assembling a system:

  Start from the top of the chassis and work toward the bottom. When inserting the last module, press the faceplate down approximately 1 mm (~.040") when interference is encountered. Tighten all the thumb screws after the last card is inserted.

- Solution 2, when replacing or troubleshooting a module on an active switch:

  1. First, before removing any module, make sure the thumbscrews on all modules in the chassis are tight. This action will assure that the space for the module that is removed will be maintained. If the thumbscrews are not tightened, the EMI gaskets on the remaining modules will push them toward the open space created by removing the module, reducing the size of the space needed for the replacement module.

  2. Next, loosen the thumbscrews on the module to be removed and use the extractors to unseat the connectors. Remove the module and put it in an antistatic bag.

  3. Finally, open the extractors and insert the replacement module with a slight downward force against the top edge of the faceplate, deflecting it approximately 1 mm (~.040") when it engages the adjacent module. Once the extractors begin to close, use them to fully engage the connectors.

  4. Tighten the thumbscrews.

- If the switch detects a port-duplex misconfiguration, the misconfigured switch port is disabled and placed in the "errdisable" state. The following syslog message is reported to the console indicating that the misconfigured port has been disabled due to a late collision error:

```
SYS-3-PORT_COLL:Port 8/24 late collision (0) detected
%SYS-3-PORT_COLLDIS:Port 8/24 disabled due to collision
%PAGP-5-PORTFROMSTP:Port 8/24 left bridge port 8/24
```

  Reconfigure the port-duplex setting and use the **set port enable** command to reenable the port.

- Whenever you connect a port that is set to autonegotiate to an end station or another networking device, make sure that the other device is configured for autonegotiation as well. If the other device is not set to autonegotiate, the autonegotiating port will remain in half-duplex mode, which can cause a duplex mismatch resulting in packet loss, late collisions, and line errors on the link.

VLAN Troubleshooting

This section contains troubleshooting guidelines for VLAN problems.

Note Catalyst 6500 series switches do not support ISL-encapsulated Token Ring frames. To support trunked Token Ring traffic in your network, make trunk connections directly between switches that support ISL-encapsulated Token Ring frames. When a Catalyst switch is configured as a VTP server, you can configure Token Ring VLANs from the switch.

Catalyst 6500 series switches ship with ports in a nontrunking state and the Dynamic Trunking Protocol (DTP) feature in the **auto** mode. In this mode, if a port sees a DTP **on** or DTP **desired** frame, it transitions into the trunking state. Although DTP is a point-to-point protocol, some internetworking devices might forward DTP frames. To avoid connectivity problems that might be caused by a switch acting on these forwarded DTP frames, do the following:

- For ports connected to non-Catalyst family devices in which trunking is not currently being used, configure Catalyst ports to **off** by entering the **set trunk** *mod_num/port_num* **off** command.
- When manually enabling trunking on a link to a Cisco router, use the **set trunk** *mod_num/port_num* **nonegotiate** command. The **nonegotiate** keyword transitions a link into trunking mode without sending DTP frames.

STP Troubleshooting

This section contains troubleshooting guidelines for spanning tree problems:

The Spanning Tree Protocol (STP) blocks certain ports to prevent physical loops in a redundant topology. On a blocked port, the switch receives spanning tree bridge protocol data units (BPDUs) periodically from its neighboring device. You can configure the frequency with which BPDUs are received by entering the **set spantree hello** command (the default frequency is set to 2 seconds). If a switch does not receive a BPDU in the time period defined by the **set spantree maxage** command (20 seconds by default), the blocked port transitions to the listening state, the learning state, and to the forwarding state. As it transitions, the switch waits for the time period specified by the **set spantree fwddelay** command (15 seconds by default) in each of these intermediate states. Therefore, a blocked spanning tree port moves into the forwarding state if it does not receive BPDUs from its neighbor within approximately 50 seconds.

Note With Supervisor Engine 720, spanning tree supports up to 2000 BPDUs per second. If that rate is exceeded, spanning tree starts dropping BPDUs which causes a reconvergence. In your network topology, you should make sure that a switch does not receive more than 2000 BPDUs per second (from all the links). Use the **show spantree statistics bpdu** command to display all transmitted, received, processed, and dropped BPDUs. The system also displays the rate of these BPDUs in seconds. All BPDU counters give BPDU statistics from the last time that the counters were cleared or from the time that the system was booted up. Use the **clear spantree statistics bpdu** command to clear the counters. After clearing the counters, if you still see the dropped BPDU counter going up, that is an indication of spanning tree instability.

Use the following guidelines to debug STP problems:

Note For a given topology, MST converges faster than PVST+ and MISTP.

- On a Catalyst 6500 series switch with default STP parameters:
  - With Supervisor Engine 32 (WS-SUP32-GE-3B) configured for MST only, ensure that the sum of the logical ports across all instances of spanning tree for different VLANs does not exceed 74,000 (with or without the high-availability feature enabled).
  - With Supervisor Engine 32 (WS-SUP32-GE-3B) configured for MISTP only, ensure that the sum of the logical ports across all instances of spanning tree for different VLANs does not exceed 74,000 (with or without the high-availability feature enabled).
  - With Supervisor Engine 32 (WS-SUP32-GE-3B) configured for PVST+ only, ensure that the sum of the logical ports across all instances of spanning tree for different VLANs does not exceed 11,000 (with or without the high-availability feature enabled).
  - With Supervisor Engine 32 (WS-SUP32-GE-3B) configured for Rapid-PVST+ only, ensure that the sum of the logical ports across all instances of spanning tree for different VLANs does not exceed 11,000 (with or without the high-availability feature enabled).
  - With Supervisor Engine 32 (WS-SUP32-GE-3B) configured for MISTP-PVST+ with PVST+, ensure that the sum of the logical ports across all instances of spanning tree for different VLANs does not exceed 5,000 (with or without the high-availability feature enabled).
  - With Supervisor Engine 720 configured for MST only, ensure that the sum of the logical ports across all instances of spanning tree for different VLANs does not exceed 130,000 (with or without the high-availability feature enabled).
  - With Supervisor Engine 720 configured for MISTP only, ensure that the sum of the logical ports across all instances of spanning tree for different VLANs does not exceed 130,000 (with or without the high-availability feature enabled).
  - With Supervisor Engine 720 configured for PVST+ only, ensure that the sum of the logical ports across all instances of spanning tree for different VLANs does not exceed 14,000 (with or without the high-availability feature enabled).
  - With Supervisor Engine 720 configured for Rapid-PVST+ only, ensure that the sum of the logical ports across all instances of spanning tree for different VLANs does not exceed 15,000 (with or without the high-availability feature enabled).
  - With Supervisor Engine 2 configured for MST only, ensure that the sum of the logical ports across all instances of spanning tree for different VLANs does not exceed 127,000 (with or without the high-availability feature enabled).
  - With Supervisor Engine 2 configured for MISTP only, ensure that the sum of the logical ports across all instances of spanning tree for different VLANs does not exceed 127,000 (with or without the high-availability feature enabled).
  - With Supervisor Engine 2 configured for PVST+ only, ensure that the sum of the logical ports across all instances of spanning tree for different VLANs does not exceed 8,400 (with or without the high-availability feature enabled).
  - With Supervisor Engine 2 configured for Rapid-PVST+ only, ensure that the sum of the logical ports across all instances of spanning tree for different VLANs does not exceed 8,400 (with or without the high-availability feature enabled).

Note For Supervisor Engine 2 running Rapid-PVST+ in a combined Catalyst 6000/Catalyst 4000 network with the Catalyst 4000 switch in the leaf, the maximum supported instances is 7,000 instead of 8,400.

  - With Supervisor Engine 2 configured for MISTP-PVST+ with PVST+, ensure that the sum of the logical ports across all instances of spanning tree for different VLANs does not exceed 8,000 (with or without the high-availability feature enabled).
  - With software release 8.x you need 128-MB DRAM for Supervisor Engine 1. For upgrade information, see the "Release 8.x DRAM Memory Requirements" section on page 5.
  - With Supervisor Engine 1 configured for MISTP only and with the high-availability feature enabled, ensure that the sum of the logical ports across all instances of spanning tree for different VLANs does not exceed 35,000 (28,000 without high availability).
  - With Supervisor Engine 1 configured for MST only and with the high-availability feature enabled, ensure that the sum of the logical ports across all instances of spanning tree for different VLANs does not exceed 40,000 (32,000 without high availability).
  - With Supervisor Engine 1 configured for PVST+, ensure that the sum of the logical ports across all instances of spanning tree for different VLANs does not exceed 2000 (with or without the high-availability feature enabled).
  - With Supervisor Engine 1 configured for MISTP-PVST+ with PVST+, ensure that the sum of the logical ports across all instances of spanning tree for different VLANs does not exceed 1600 (with or without the high-availability feature enabled).
  - With Supervisor Engine 1 configured for Rapid-PVST+, ensure that the sum of the logical ports across all instances of spanning tree for different VLANs does not exceed 2000 (with or without the high-availability feature enabled).

The sum of all logical ports equals the number of trunks on the switch times the number of active VLANs on the trunks, plus the number of nontrunking ports on the switch.

Caution Lowering the values of any STP timers reduces the number of STP instances that can be supported. When numerous protocol features (such as VTP pruning, Fast EtherChannel, and RMON) are enabled concurrently, the number of supported logical spanning tree ports are reduced. Also, to achieve these numbers, we recommend that you keep switched traffic off the management VLAN.

- After a switchover from the active to the standby supervisor engine, the uplink ports on the standby supervisor engine take longer to come up than other switch ports.
- Keep track of all blocked spanning tree ports in each switch in your network. For each of the blocked spanning tree ports, keep track of the output of the following commands:
  - **show port**—Check to see if the port has registered a lot of alignment, FCS, or any other type of line errors. If these errors are incrementing continuously, the port might drop input BPDUs.
  - **show mac**—If the Inlost counter is incrementing continuously, the port is losing input packets because of a lack of receive buffers. This problem can also cause the port to drop incoming BPDUs.
- On a blocked spanning tree port, check the duplex configuration to ensure that the port duplex is set to the same type as the port of its neighboring device.
- On trunk ports, make sure that the trunk configuration is set properly on both sides of the link.
- On trunk ports, make sure that the duplex is set to full on both sides of the link to prevent any collisions under heavy traffic conditions.

Related Documentation

The following documents are available for the Catalyst 6500 series switches:

- *Catalyst 6500 Series Switch Quick Software Configuration*
- *Catalyst 6500 Series Switch Installation Guide*
- *Catalyst 6500 Series Switch Module Installation Guide*
- *Catalyst 6500 Series Switch Software Configuration Guide*
- *Catalyst 6500 Series Switch Command Reference*
- *Catalyst 6500 Series Switch System Message Guide*
- *ATM Configuration Guide and Command Reference*

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