



Release Notes for Cisco IOS Release 12.2SX

August 25, 2015

This publication applies to these releases:

- Release 12.2(33)SXJ and rebuilds
- Release 12.2(33)SXI and rebuilds
- Release 12.2(33)SXH and rebuilds

This publication applies to these platforms:

- CAT6000-VS-S720-10G/MSFC3
- CAT6000-SUP720/MSFC3
- CAT6000-SUP32/MSFC2A
- ME6524 (not supported in Release 12.2(33)SXJ and later releases)

See this product bulletin for information about the standard maintenance and extended maintenance 12.2SX releases:

http://www.cisco.com/en/US/prod/collateral/switches/ps5718/ps708/prod_bulletin0900aecd804f0694.html

These release notes are for Cisco IOS Release 12.2(33)SXH and later releases. If you are running a release earlier than Release 12.2(33)SXH, refer to this publication:

http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/ios/12.2SXF/native/release/notes/OL_4164.html

The most current version of this document is available at this URL:

http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/ios/12.2SX/release/notes/ol_14271.html



Caution

Cisco IOS running on the switch processor and the route processor supports redundant configurations where the switch processor and the route processor are identical. If they are not identical, one switch processor and the route processor will boot first and become active and hold the other in a reset condition.



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Chronological List of Releases

**Note**

See the [“Hierarchical List of Releases”](#) section on page 3 for information about parent releases.

This is a chronological list of the 12.2SX releases ending with Release 12.2(33)SXH:

- 25 August 2015—Release 12.2(33)SXJ10
- 25 March 2015—Release 12.2(33)SXJ9
- 22 September 2014—Release 12.2(33)SXI14
- 2 September 2014—Release 12.2(33)SXJ8
- 15 Mar 2014—Release 12.2(33)SXI13
- 14 Feb 2014—Release 12.2(33)SXJ7
- 13 Sep 2013—Release 12.2(33)SXI12
- 23 Jul 2013—Release 12.2(33)SXJ6
- 25 Feb 2013—Release 12.2(33)SXI11
- 08 Feb 2013—Release 12.2(33)SXJ5
- 18 Sep 2012—Release 12.2(33)SXI10
- 31 Aug 2012—Release 12.2(33)SXJ4
- 25 Apr 2012—Release 12.2(33)SXJ3
- 02 Mar 2012—Release 12.2(33)SXI9
- 19 Dec 2011—Release 12.2(33)SXJ2
- 07 Dec 2011—Release 12.2(33)SXI8a
- 03 Nov 2011—Release 12.2(33)SXI8
- 23 Sep 2011—Release 12.2(33)SXH8b
- 26 Jul 2011—Release 12.2(33)SXI7
- 30 Jun 2011—Release 12.2(33)SXJ1
- 31 Mar 2011—Release 12.2(33)SXI6
- 23 Mar 2011—Release 12.2(33)SXH8a
- 21 Mar 2011—Release 12.2(33)SXJ
- 29 Oct 2010—Release 12.2(33)SXI5
- 05 Oct 2010—Release 12.2(33)SXH8
- 22 Jul 2010—Release 12.2(33)SXI4a
- 09 Jun 2010—Release 12.2(33)SXI4
- 15 Mar 2010—Release 12.2(33)SXH7
- 04 Nov 2009—Release 12.2(33)SXI3
- 21 Oct 2009—Release 12.2(33)SXH6
- 03 Sep 2009—Release 12.2(33)SXI2a
- 17 Jul 2009—Release 12.2(33)SXI2
- 20 Apr 2009—Release 12.2(33)SXH5

- 31 Mar 2009—Release 12.2(33)SXI1
- 14 Nov 2008—Release 12.2(33)SXH4
- 11 Nov 2008—Release 12.2(33)SXI
- 29 Sep 2008—Release 12.2(33)SXH3a
- 29 Jul 2008—Release 12.2(33)SXH3
- 28 Apr 2008—Release 12.2(33)SXH2a
- 31 Mar 2008—Release 12.2(33)SXH2
- 18 Jan 2008—Release 12.2(33)SXH1
- 20 Aug 2007—Release 12.2(33)SXH

Hierarchical List of Releases

This list shows the relationship between releases:

- Release 12.2(33)SXJ10:
 - Date of release: 25 August 2015
 - Based on Release 12.2(33)SXJ9
- Release 12.2(33)SXJ9:
 - Date of release: 25 March 2015
 - Based on Release 12.2(33)SXJ8
- Release 12.2(33)SXI14:
 - Date of release: 22 September 2014
 - Based on Release 12.2(33)SXI13
- Release 12.2(33)SXJ8:
 - Date of release: 2 September 2014
 - Based on Release 12.2(33)SXJ7
- Release 12.2(33)SXI13:
 - Date of release: 15 Mar 2014
 - Based on Release 12.2(33)SXI12
- Release 12.2(33)SXJ7:
 - Date of release: 14 Feb 2014
 - Based on Release 12.2(33)SXJ6
- Release 12.2(33)SXJ6:
 - Date of release: 23 Jul 2013
 - Based on Release 12.2(33)SXJ5
- Release 12.2(33)SXJ5:
 - Date of release: 08 Feb 2013
 - Based on Release 12.2(33)SXJ4

- Release 12.2(33)SXJ4:
 - Date of release: 31 Aug 2012
 - Based on Release 12.2(33)SXJ3
- Release 12.2(33)SXJ3:
 - Date of release: 25 Apr 2012
 - Based on Release 12.2(33)SXJ2
- Release 12.2(33)SXJ2:
 - Date of release: 19 Dec 2011
 - Based on Release 12.2(33)SXJ1 and 12.2(33)SXI8a
- Release 12.2(33)SXJ1:
 - Date of release: 30 Jun 2011
 - Based on Release 12.2(33)SXJ and 12.2(33)SXI6
- Release 12.2(33)SXJ:
 - Date of release: 21 Mar 2011
 - Based on Release 12.2(33)SXI5
- Release 12.2(33)SXI12:
 - Date of release: 13 Sep 2013
 - Based on Release 12.2(33)SXI11
- Release 12.2(33)SXI11:
 - Date of release: 25 Feb 2013
 - Based on Release 12.2(33)SXI10
- Release 12.2(33)SXI10:
 - Date of release: 18 Sep 2012
 - Based on Release 12.2(33)SXI9
- Release 12.2(33)SXI9:
 - Date of release: 02 Mar 2012
 - Based on Release 12.2(33)SXI8a
- Release 12.2(33)SXI8a:
 - Date of release: 07 Dec 2011
 - Based on Release 12.2(33)SXI8
- Release 12.2(33)SXI8:
 - Date of release: 03 Nov 2011
 - Based on Release 12.2(33)SXI7
- Release 12.2(33)SXI7:
 - Date of release: 26 Jul 2011
 - Based on Release 12.2(33)SXI6

- Release 12.2(33)SXI6:
 - Date of release: 31 Mar 2011
 - Based on Release 12.2(33)SXI5
- Release 12.2(33)SXI5:
 - Date of release: 29 Oct 2010
 - Based on Release 12.2(33)SXI4a
- Release 12.2(33)SXI4a:
 - Date of release: 22 Jul 2010
 - Based on Release 12.2(33)SXI4
- Release 12.2(33)SXI4:
 - Date of release: 09 Jun 2010
 - Based on Release 12.2(33)SXI3
- Release 12.2(33)SXI3:
 - Date of release: 04 Nov 2009
 - Based on Release 12.2(33)SXI2a
- Release 12.2(33)SXI2a:
 - Date of release: 03 Sep 2009
 - Based on Release 12.2(33)SXI2
- Release 12.2(33)SXI2:
 - Date of release: 17 Jul 2009
 - Based on Release 12.2(33)SXI1
- Release 12.2(33)SXI1:
 - Date of release: 31 Mar 2009
 - Based on Release 12.2(33)SXI
- Release 12.2(33)SXI:
 - Date of release: 11 Nov 2008
 - Based on Release 12.2(33)SXH3a
- Release 12.2(33)SXH8b:
 - Date of release: 23 Sep 2011
 - Based on Release 12.2(33)SXH8a
- Release 12.2(33)SXH8a:
 - Date of release: 23 Mar 2011
 - Based on Release 12.2(33)SXH8
- Release 12.2(33)SXH8:
 - Date of release: 05 Oct 2010
 - Based on Release 12.2(33)SXH7

- Release 12.2(33)SXH7:
 - Date of release: 15 Mar 2010
 - Based on Release 12.2(33)SXH6
- Release 12.2(33)SXH6:
 - Date of release: 21 Oct 2009
 - Based on Release 12.2(33)SXH5
- Release 12.2(33)SXH5:
 - Date of release: 20 Apr 2009
 - Based on Release 12.2(33)SXH4
- Release 12.2(33)SXH4:
 - Date of release: 14 Nov 2008
 - Based on Release 12.2(33)SXH3a
- Release 12.2(33)SXH3a:
 - Date of release: 29 Sep 2008
 - Based on Release 12.2(33)SXH3
- Release 12.2(33)SXH3:
 - Date of release: 29 Jul 2008
 - Based on Release 12.2(33)SXH2a
- Release 12.2(33)SXH2a:
 - Date of release: 28 Apr 2008
 - Based on Release 12.2(33)SXH2
- Release 12.2(33)SXH2:
 - Date of release: 31 Mar 2008
 - Based on Release 12.2(33)SXH1 and Release 12.2(18)SXF13
- Release 12.2(33)SXH1:
 - Date of release: 18 Jan 2008
 - Based on Release 12.2(33)SXH and Release 12.2(18)SXF12
- Release 12.2(33)SXH:
 - Date of release: 20 Aug 2007
 - Based on Release 12.2(18)SXF10

This publication does not describe features that are available in Release 12.2, Release 12.2 T, Release 12.2 S, or other Release 12.2 early deployment releases.

For a list of the Release 12.2 caveats that apply to Release 12.2SX, see this publication:

http://www.cisco.com/en/US/products/sw/iosswrel/ps1835/prod_release_notes_list.html

For a list of the Release 12.2 S caveats that apply to Release 12.2SX, see this publication:

http://www.cisco.com/en/US/docs/ios/12_2s/release/notes/122Srn.html

Universal Boot Loader Image

A new supervisor engine contains one of the following initial software images:

- Cisco IOS software
- Catalyst operating system software
- Universal Boot Loader (UBL) software

The UBL software is a minimal network-aware image that can download and install either a Cisco IOS image or a Catalyst operating system image from a running active supervisor engine in the same chassis.

When newly installed as a standby supervisor engine in a redundant application, a supervisor engine running the UBL software automatically attempts to copy the image of the running active supervisor engine in the same chassis. This feature requires the active supervisor engine to be running either Cisco IOS software Release 12.2SXH or later, or Catalyst operating system software Release 8.6(1) or later.

**Note**

When a standby supervisor engine copies a Catalyst operating system software image using UBL, the downloaded image will not include the Multilayer Switch Feature Card (MSFC) software. A Cisco IOS software image that is downloaded using UBL will include the MSFC software.

FPD Image Packages

**Note**

- Field Programmable Device (FPD) image packages were first introduced on the Catalyst 6500 series switches and Cisco 7600 series routers in Release 12.2(18)SXE.
- FPD image packages update FPD images. If a discrepancy exists between an FPD image and the Cisco IOS image, the module that has the FPD discrepancy is deactivated until the discrepancy is resolved.

These sections describe FPD packages:

- [FPD-Image Dependant Modules, page 8](#)
- [FPD Upgrades, page 8](#)

FPD-Image Dependant Modules

These modules use FPD images:

- Shared Port Adapter (SPA) Interface Processors (SIPs)
- Shared Port Adapters

FPD Upgrades

See this publication:

http://www.cisco.com/en/US/docs/interfaces_modules/shared_port_adapters/configuration/6500series/sipspasw.html

Cisco IOS Software Modularity



Note

- Release 12.2(33)SXJ and later releases do not support Cisco IOS Software Modularity.
- With redundant supervisor engines, eFSU upgrade from a Cisco IOS Software Modularity image to a Release 12.2(33)SXJ image might result in a significant delay before the switch becomes active; the switch will be in the RPR redundancy mode.

These sections describe Cisco IOS Software Modularity:

- [Cisco IOS Software Modularity Documentation, page 8](#)
- [Cisco IOS Software Modularity Unsupported Features, page 8](#)

Cisco IOS Software Modularity Documentation

See these publications for information about Cisco IOS Software Modularity:

- Cisco IOS Software Modularity Installation and Configuration:
http://www.cisco.com/en/US/docs/ios/swmod/configuration/guide/sw_mod_instl_cfg.html
- Cisco IOS Software Modularity Command Reference:
http://www.cisco.com/en/US/docs/ios/swmod/command/reference/sm_book.html
- Embedded Event Manager:
http://www.cisco.com/en/US/docs/ios/12_4t/netmgmt/configuration/guide/t_eemo.html

Cisco IOS Software Modularity Unsupported Features

Release 12.2(33)SX14 and later releases do not support Cisco IOS Software Load Balancing (SLB) with Cisco IOS Modularity images.

See the *Cisco IOS Software Modularity Command Reference* “[Introduction](#)” for detailed information about specific commands that are not supported in Cisco IOS Software Modularity images.

Troubleshooting

These sections describes troubleshooting guidelines for the Catalyst 6500 series switch configuration:

- [System Troubleshooting, page 9](#)
- [Module Troubleshooting, page 9](#)
- [VLAN Troubleshooting, page 9](#)
- [Spanning Tree Troubleshooting, page 10](#)
- [Additional Troubleshooting Information, page 11](#)



Note

To attempt recovery from MSFC ROMMON, enter the **confreg 0x2102** and **reset** ROMMON commands.

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 redundant 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.
- If you have an interface whose speed is set to **auto** connected to another interface whose speed is set to a fixed value, configure the interface whose speed is set to a fixed value for half duplex. Alternately, you can configure both interfaces to a fixed-value speed and full duplex.

Module Troubleshooting

This section contains troubleshooting guidelines for module problems:

- When you hot insert a module into a 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. For module installation instructions, refer to the *Catalyst 6500 Series Module Installation Guide*.
- Whenever you connect an interface that has duplex 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



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 6500 series switch is configured as a VTP server, you can configure Token Ring VLANs from the switch.

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 interfaces connected to devices that do not support DTP, in which trunking is not currently being used, configure interfaces with the **switchport mode access** command, which puts the interface into access mode and sends no DTP frames.
- When manually enabling trunking on a link to devices that do not support DTP, use the **switchport nonegotiate** and **switchport mode trunk** commands, which puts the interface into trunking mode without sending DTP frames.

Spanning Tree Troubleshooting

The Spanning Tree Protocol (STP) blocks certain ports to prevent physical loops in a redundant topology. On a blocked port, switches receive spanning tree bridge protocol data units (BPDUs) periodically from neighboring switches. You can configure the frequency with which BPDUs are received by entering the **spanning-tree vlan *vlan_ID* hello-time** command (the default frequency is set to 2 seconds). If a switch does not receive a BPDU in the time period defined by the **spanning-tree vlan *vlan_ID* max-age** 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 **spanning-tree vlan *vlan_ID* forward-time** command (15 seconds by default) in each of these intermediate states. If a blocked spanning tree interface does not receive BPDUs from its neighbor within 50 seconds, it moves into the forwarding state.



Note

We do not recommend using the UplinkFast feature on switches with more than 20 active VLANs. The convergence time might be unacceptably long with more than 20 active VLANs.

To debug STP problems, follow these guidelines:

- The **show vlan virtual-port** command displays the number of virtual interfaces.
- These maximum numbers of virtual interfaces are supported:

Per-switch limits:	MST	RPVST+	PVST+
<ul style="list-style-type: none"> • These per-switch limits apply to the following: <ul style="list-style-type: none"> – Release 12.2(33)SXI and later releases – Supervisor Engine 720-10GE – Supervisor Engine 720 	100,000 total	12,000 total	15,000 total
	Note Messages with the per-switch limits from earlier releases are still displayed in Release 12.2(33)SXI. Messages for the per-switch limits in effect in Release 12.2(33)SXI are displayed in Release 12.2(33)SXI1 and later releases. (CSCsx62912)		
<ul style="list-style-type: none"> • All other releases and supervisor engines: 	50,000 total	10,000 total	13,000 total

Per-module limits:	6,000	1,800	1,800
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Note

- In Release 12.2(33)SXII and later releases, these limits do not apply to WS-X67xx and WS-X65xx switching modules. (CSCsu30263)
- 10/100 Mb and 100 Mbps switching modules support a maximum of 1,200 logical interfaces per module

**Note**

Cisco IOS software displays a message if you exceed the maximum number of virtual interfaces.

- After a switchover from the active to the redundant supervisor engine, the ports on the redundant supervisor engine take longer to come up than other ports.
- Record all spanning tree-blocked ports in each switch in your network. For each of the spanning tree-blocked ports, record the output of the **show interface** command. Check to see if the port has registered many alignment, FCS, or any other type of line errors. If these errors are incrementing continuously, the port might drop input BPDUs. If the input queue 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 trunks, make sure that the trunk configuration is set properly on both sides of the link.
- On trunks, if the neighboring device supports it, set duplex to full on both sides of the link to prevent any collisions under heavy traffic conditions.

Additional Troubleshooting Information

For additional troubleshooting information, refer to the publications at this URL:

http://www.cisco.com/en/US/products/hw/switches/ps708/tsd_products_support_troubleshoot_and_alerts.html

System Software Upgrade Instructions

See this publication:

http://www.cisco.com/en/US/products/hw/switches/ps708/products_configuration_example09186a0080116ff0.shtml

Cisco Feature Navigator

Cisco Feature Navigator is a web-based tool that enables you to quickly determine which Cisco IOS software images support a specific set of features and which features are supported in a specific Cisco IOS image. You can search by feature or release. Under the release section, you can compare releases side by side to display both the features unique to each software release and the features in common.

To access Cisco Feature Navigator, you must have an account on Cisco.com. If you have forgotten or lost your account information, send a blank e-mail to cco-locksmith@cisco.com. An automatic check will verify that your e-mail address is registered with Cisco.com. If the check is successful, account details with a new random password will be e-mailed to you. Qualified users can establish an account on Cisco.com by following the directions found at this URL:

<http://tools.cisco.com/RPF/register/register.do>

Cisco Feature Navigator is updated regularly when major Cisco IOS software releases and technology releases occur. For the most current information, go to the Cisco Feature Navigator home page at the following URL:

<http://tools.cisco.com/ITDIT/CFN/jsp/index.jsp>

Notices

The following notices pertain to this software license.

OpenSSL/Open SSL Project

This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (<http://www.openssl.org/>).

This product includes cryptographic software written by Eric Young (ey@cryptsoft.com).

This product includes software written by Tim Hudson (tjh@cryptsoft.com).

License Issues

The OpenSSL toolkit stays under a dual license, i.e. both the conditions of the OpenSSL License and the original SSLeay license apply to the toolkit. See below for the actual license texts. Actually both licenses are BSD-style Open Source licenses. In case of any license issues related to OpenSSL please contact openssl-core@openssl.org.

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This product includes cryptographic software written by Eric Young (eay@cryptsoft.com). This product includes software written by Tim Hudson (tjh@cryptsoft.com).

Original SSLeay License:

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This package is an SSL implementation written by Eric Young (eay@cryptsoft.com).

The implementation was written so as to conform with Netscapes SSL.

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<http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html>

This document is to be used in conjunction with the *Catalyst 6500 Series Cisco IOS Software Configuration Guide* and the *Catalyst 6500 Series Cisco IOS Command Reference* publications.

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