Release Notes for Catalyst 3560-CX and 2960-CX Series Switches, Cisco IOS Release 15.2(6)E3

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This release note describes the features and caveats for the Cisco IOS Release 15.2(6)E3 software on the Catalyst 3560-CX and the Catalyst 2960-CX family of switches.

Verify that these release notes are correct for your switch:

- If you are installing a new switch, see the Cisco IOS release label on the rear panel of the switch.
- If your switch is on, use the **show version** privileged EXEC command. See the "Upgrading the Switch Software" section on page 4.
- If you are upgrading to a new release, see the software upgrade filename for the software version. See the "Software Image" section on page 5.

You can download the switch software from this site (registered Cisco.com users with a login password):

https://software.cisco.com/download/navigator.html

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Cisco Systems, Inc.
www.cisco.com

Introduction

The Catalyst 3560-CX and Catalyst 2960-CX switches are compact Gigabit Ethernet (GE) switches that have features comparable to high-end Cisco switches but in smaller form factors. Some of the key features are:

- Up to 10 Gigabit uplinks for high-bandwidth applications and business growth
- Cisco Catalyst Instant Access mode (on 3560cx-12PD-S and 3560CX-8XPD-S switches) for management simplicity on switches with 10G uplink. See Instant Access FAQ here.
- Support for Cisco Application Policy Infrastructure Controller Enterprise Module (APIC-EM) for software-defined networking (SDN) and programmability
- Integration with Cisco TrustSec® for identity, segmentation, and security
- Up to 240W of available power for PoE+ per switch — twice the available power of previous generation switches — for supporting more PoE devices
- Switch Hibernation Mode and Energy Efficient Ethernet (EEE) for lower energy costs
- NetFlow Lite for end-to-end visibility to the flows in the network

Supported Hardware

Switch Models

Table 1 Catalyst 3560-CX Switch Models

Switch Model	Cisco IOS Image	Description
WS-C3560CX-8TC-S	IP Base IP Services	Non-PoE, 8 downlink ports, 8 access ports of 1G access ports, 2 SFP uplink ports of 1G, 2 uplink Cu ports of 1G[1]
WS-C3560CX-8PC-S	IP Base IP Services	240W PoE+, 8 downlink ports, 8 access ports of 1G access ports, 2 SFP uplink ports of 1G, 2 uplink Cu ports of 1G
WS-C3560CX-12TC-S	IP Base IP Services	Non-PoE, 12 downlink ports, 12 access ports of 1G, 2 SFP uplink ports of 1G, 2 uplink Cu ports of 1G
WS-C3560CX-12PC-S	IP Base IP Services	240W PoE+, 12 downlink ports, 12 access ports of 1G, 2 SFP uplink ports of 1G, 2 uplink Cu ports of 1G
WS-C3560CX-12PD-S	IP Base IP Services	240W PoE+, 12 downlink ports, 12 access ports of 1G, 2 SFP+ uplink ports of 10G, 2 uplink Cu ports of 1G

Table 1 Catalyst 3560-CX Switch Models (continued)

Switch Model	Cisco IOS Image	Description
WS-C3560CX-8PT-S	IP Base IP Services	146W PoE+, 8 downlink ports, 8 access ports of 1G, 2 uplink UPoE+ ports of 1G
WS-C3560CX-8XPD-S	IP Base IP Services	240W PoE+, 8 downlink ports, 6 access ports of 1G, 2 access ports of 100M/1G/2.5G/5G/10G, 2 SFP+ uplink ports of 10G

1. For all switch models, the SFP ports and Cu ports are usable concurrently.

Table 2 Catalyst 2960-CX Switch Models

Switch Model	Cisco IOS Image	Description
WS-C2960CX-8TC-L	LAN Base	Non-PoE, 8 downlink ports, 8 access ports of 1G, 2 SFP uplink ports of 1G, 2 uplink Cu ports of 1G[1]
WS-C2960CX-8PC-L	LAN Base	124W PoE+, 8 downlink ports, 8 access ports of 1G, 2 SFP uplink ports of 1G, 2 uplink Cu ports of 1G

1. For all switch models, the SFP ports and Cu ports are usable concurrently.

Optics Modules

The Catalyst 3560-CX and 2960-CX switches support a wide range of optics. Because the list of supported optics is updated on a regular basis, consult the tables at this URL for the latest SFP+ and SFP module compatibility information:

http://www.cisco.com/en/US/products/hw/modules/ps5455/products_device_support_tables_list.html

Device Manager System Requirements

Hardware Requirements

Table 3 Minimum Hardware Requirements

Processor Speed	DRAM	Number of Colors	Resolution	Font Size
233 MHz minimum[1]	512 MB[2]	256	1024 x 768	Small

1. We recommend 1 GHz.
2. We recommend 1 GB DRAM.

Software Requirements

- Windows 2000, XP, Vista, Windows 7, and Windows Server 2003.
- Internet Explorer 6.0, 7.0, Firefox up to version 26.0 with JavaScript enabled.

Cisco Network Assistant Compatibility

For Cisco IOS Release 15.2(4)E, Cisco Network Assistant support is available on release Version 5.8.9 and later.

You can download Cisco Network Assistant from this URL:
http://www.cisco.com/pcgi-bin/tablebuild.pl/NetworkAssistant

For more information about Cisco Network Assistant, see the *Release Notes for Cisco Network Assistant* on Cisco.com.

Upgrading the Switch Software

Finding the Software Version and Feature Set

The Cisco IOS image is stored as a bin file in a directory that is named with the Cisco IOS release number. The files necessary for web management are contained in a subdirectory. The image is stored on the system board flash device (flash:).

You can use the **show version** privileged EXEC command to see the software version that is running on your switch.

Note Although the **show version** output always shows the software image running on the switch, the model name shown at the end of this display is the factory configuration and does not change if you upgrade the software license.

You can also use the **dir** *filesystem***:** privileged EXEC command to see the directory names of other software images that you might have stored in flash memory.

Software Image

If you have a service support contract and order a software license or if you order a switch, you receive the universal software image and a specific software license.

Table 4 Software Image for Cisco Catalyst 3560-CX

Image	Filename	Description
Universal image	c3560cx-universalk9-mz.152-6.E.bin	IP Base and IP Services images.
Universal image	c3560cx-universalk9-tar.152-6.E.tar	IP Base and IP Services cryptographic images with Device Manager.

Table 5 Software Image for Cisco Catalyst 3560-CX

Image	Filename	Description
Universal image	c2960cx-universalk9-mz.152-6.E.bin	LAN Base image.
Universal image	c2960cx-universalk9-tar.152-6.E.tar	LAN Base cryptographic image with Device Manager.

Features of the Switch

Cisco Catalyst 3560-CX switches features:

- PoE+ and non-PoE, 8 and 12 downlink ports, 1G SFP and 10G SFP+ uplink port models
- IPv4 and IPv6 routing, Multicast routing, advanced quality of service (QoS), and security features in hardware
- Cisco Catalyst Instant Access mode (on WS-C3560CX-12PD-S and WS-C3560CX-8XPD-S switches) for management simplicity on switches with 10G uplink
- Up to 240W of available power for PoE+ per switch
- Switch Hibernation Mode and Energy Efficient Ethernet (EEE) for lower energy costs
- Horizontal Stacking (on WS-C3560CX-12PD-S and WS-C3560CX-8XPD-S switches
- Enhanced Limited Lifetime Warranty (E-LLW) with next business day (NBD) advance hardware replacement and 90 day access to Cisco Technical Assistance Center (TAC) support
- Enhanced Cisco EnergyWise for operational cost optimization by measuring actual power consumption of the PoE devices, reporting, and reducing energy consumption across the network
- USB Type-A and Type-B ports for storage and console respectively
- Application visibility and capacity planning with integrated NetFlow Lite
- Hardware support for Secure Group Access Control lists (SGACL) and IEEE 802.1AE MACsec.
- Software support for IEEE 802.1AE MACsec from Cisco IOS Release 15.2(4)E.

Cisco Catalyst 2960-CX switches features:

- PoE+ and non-PoE models, 8 downlink ports, 1G SFP uplink port models
- Reduced power consumption and advanced energy management features
- USB Type-A and Type-B ports for storage and console respectively

- Application visibility and capacity planning with integrated NetFlow Lite
- Switch Hibernation Mode and Energy Efficient Ethernet (EEE) for lower energy costs
- Enhanced Limited Lifetime Warranty (E-LLW) with next business day (NBD) advance hardware replacement and 90 day access to Cisco Technical Assistance Center (TAC) support
- Enhanced Cisco EnergyWise for operational cost optimization by measuring actual power consumption of the PoE devices, reporting, and reducing energy consumption across the network

New Software Features

Features Introduced in Cisco IOS Release 15.2(6)E3

None.

Features Introduced in Cisco IOS Release 15.2(6)E2

- Flexible NetFlow–This feature, using flows, allows you to gather statistics for accounting, network monitoring, and network planning to perform traffic analysis and data export.
- SSHv2 allows use of digital certificates for authentication between user and server.
- Multiple routed access protocols such as follows are supported:
  - Routing Information Protocol (RIP)
  - Open Shortest Path First (OSPF)
  - EIGRP Stub
  - Policy Based Routing (PBR)
  - Protocol Independent Multicast (PIM)

Features Introduced in Cisco IOS Release 15.2(6)E1

- AAA command authorization is supported in Plug-n-Play (PnP) Agent: The PnP agent is enhanced to use credentials passed from the PnP server for TACACS or RADIUS authorization to complete PnP provisioning successfully.
- Flexible NetFlow (FNF): This feature enables your network for enhanced security and detection of network anomalies. Using flows, you can gather improved statistics for accounting, network monitoring, and network planning.
- Improved security with MACsec: Supports MACsec encryption for switch-to-switch (inter-network device) security using MACsec Key Agreement (MKA) Pre Shared Key (PSK) framework or by using the 802.1x Extensible Authentication Protocol (EAP-TLS) method.
- Supports up to 80km of fiber optic network length over a single cable for long haul locations.
- Supports IEEE Standard 802.3bz with multi-gigabit (mGig) Ethernet that allows:
  - 2.5 Gbit/s up to 100 m of Cat 5e cable.
  - 5 Gbit/s up to 100 m of Cat 5ec cable.
  - 5 Gbit/s up to 100 m of Cat 6 cable.

Features Introduced in Cisco IOS Release 15.2(6)E

- DNA-SA Licensing

Service and Support

Information About Caveats

If you need information about a specific caveat that does not appear in these release notes, you can use the Cisco Bug Toolkit to find caveats of any severity. Click this URL to browse to the Bug Toolkit:

http://tools.cisco.com/Support/BugToolKit/

If you request a defect that cannot be displayed, the defect number might not exist, the defect might not yet have a customer-visible description, or the defect might be marked Cisco Confidential.

Troubleshooting

For the most up-to-date, detailed troubleshooting information, see the Cisco TAC website at this URL:

http://www.cisco.com/en/US/support/index.html

Click **Product Support > Switches**. Choose your product and click **Troubleshooting** to find information on the problem you are experiencing.

Limitations and Restrictions

- Starting with Cisco IOS Release 15.2(6)E, Secure Shell (SSH) Version 1 is deprecated. Use SSH Version 2 instead.
- When a logging discriminator is configured and applied to a device, memory leak is seen under heavy syslog or debug output. The rate of the leak is dependent on the quantity of logs produced. In extreme cases, the device may crash. As a workaround, disable the logging discriminator on the device.
- Standalone web-based authentication fails if the switch port is configured without any port ACL. (CSCuu91975)

Caveats

Cisco Bug Search Tool

The Bug Search Tool (BST), which is the online successor to Bug Toolkit, is designed to improve the effectiveness in network risk management and device troubleshooting. The BST allows partners and customers to search for software bugs based on product, release, and keyword, and aggregates key data such as bug details, product, and version. The tool has a provision to filter bugs based on credentials to provide external and internal bug views for the search input.

To view the details of a caveat listed in this document:

1. Access the BST (use your Cisco user ID and password) at https://tools.cisco.com/bugsearch/.
2. Enter the bug ID in the **Search For:** field.

Open Caveats

None.

Caveats Resolved in Cisco IOS Release 15.2(6)E3

None.

Caveats Resolved in Cisco IOS Release 15.2(6)E2

Table 6 Resolved Caveats in Cisco IOS Release 15.2(6)E2

Bug ID	Headline
CSCvj87844	PnP over non-vlan1 in flo_dsgs7

Caveats Resolved in Cisco IOS Release 15.2(6)E1

Table 7 Resolved Caveats in Cisco IOS Release 15.2(6)E1

Bug ID	Headline
CSCvf42850	‘ACLRESOURCEFULL” is not showing in logging info.

Caveats Resolved in Cisco IOS Release 15.2(6)E

Table 8 Resolved Caveats in Cisco IOS Release 15.2(6)E

Bug ID	Headline
CSCvd36820	Smart Install client feature should auto-disable when not in use.
CSCvd37517	Cisco Discovery Protocol will keep sending untagged frames after certain switchport interface configuration order.
CSCvd68472	CPU on 2960X pegged at 100% after configuring privilege configure level 7 switch.
CSCve54486	Crash when attempting to assign nonexistent/shutdown VLAN to 802.1x port.
CSCvd88213	Crash while polling cafSessionEntry.
CSCva74457	Sticky Interface template not working as per requirement.
CSCvd13306	“no default-information originate” does not work unless “default-information originate” is added first.
CSCvb64727	The **no ntp allow mode control** command is not working.
CSCva38391	CVE-2016-1550: NTP security against buffer comparison timing attacks.
CSCve53519	Tracebacks generated with IPv6 policy attached to the interface.
CSCve60467	SNMP crash if we remove one of the informs host CLI when traps are pending for that host.

Related Documentation

- Catalyst 3560-CX and Catalyst 2960-CX switch documentation at these URLs:

  http://www.cisco.com/c/en/us/support/switches/catalyst-2960-cx-series-switches/tsd-products-support-series-home.html

  http://www.cisco.com/c/en/us/support/switches/catalyst-3560-cx-series-switches/tsd-products-support-series-home.html
- Cisco SFP and SFP+ modules documentation, including compatibility matrices at this URL:

  http://www.cisco.com/en/US/products/hw/modules/ps5455/tsd_products_support_series_home.html
- Cisco Validated Designs documents at this URL:

  http://www.cisco.com/go/designzone

Communications, Services, and Additional Information

- To receive timely, relevant information from Cisco, sign up at Cisco Profile Manager.
- To get the business impact you're looking for with the technologies that matter, visit Cisco Services.
- To submit a service request, visit Cisco Support.
- To discover and browse secure, validated enterprise-class apps, products, solutions and services, visit Cisco Marketplace.
- To obtain general networking, training, and certification titles, visit Cisco Press.
- To find warranty information for a specific product or product family, access Cisco Warranty Finder.

Cisco Bug Search Tool

Cisco Bug Search Tool (BST) is a web-based tool that acts as a gateway to the Cisco bug tracking system that maintains a comprehensive list of defects and vulnerabilities in Cisco products and software. BST provides you with detailed defect information about your products and software.