

## Cisco IOS Software Release 15.0(1)SE for Cisco Catalyst 3750-X, 3560-X, 3750-E, 3560-E, 3750G, 3560G, 2960, and 2960-S Series Switches and Cisco Catalyst 3750V2 and 3560V2 Switches

Cisco announces a Cisco IOS<sup>®</sup> Software update for Cisco<sup>®</sup> Catalyst<sup>®</sup> 3750-X, 3560-X, 3750-E, 3750G, 3560-E, 3560G, 2960, and 2960-S Series Switches and Cisco Catalyst 3750V2 and 3560V2 Switches.

This product bulletin contains content and delivery information for Cisco IOS Software Release 15.0(1)SE.

Cisco IOS Software Release 15 provides a more consistent user experience resulting from the evolution of Cisco's software development model.

This new model accelerates the sharing of features and applications, improves Cisco IOS Software quality and enables Borderless Network services. There are no new memory requirements to upgrade from Release 12.2SE to Release 15.0SE and the same software update policy is applicable for Cisco Catalyst 2K and 3K products as below: [http://www.cisco.com/en/US/prod/collateral/switches/ps5718/ps5528/product\\_bulletin\\_c25-534872\\_ps7077\\_Products\\_Bulletin.html](http://www.cisco.com/en/US/prod/collateral/switches/ps5718/ps5528/product_bulletin_c25-534872_ps7077_Products_Bulletin.html).

Note that the following models (which have reached end of sale) are no longer supported in this release and in Cisco IOS Software Release 12.2(58)SE1: WS-C3550-24-DC-SMI, WS-C3560-24TS, WS-C3560-24PS, WS-C3560-48PS, WS-C3560-48TS, WS-C3750-24PS, WS-C3750-24TS, WS-C3750-48PS, WS-C3750-48TS, WS-C3750G-24TS, and WS-C3750G-16TD. The Cisco Catalyst 2350 Series has also reached end of sale and is no longer supported in this release. Moreover, the following models and series are no longer supported in this release: Cisco Catalyst 2975, WS-C3750G-24T (16 MB flash), and WS-C3750G-12S (16 MB flash). For ongoing maintenance rebuilds for these products, refer to Cisco IOS Software Release 12.2(55)SE.

Cisco IOS Software Release 15 uses a slightly more granular naming scheme than Release 12 (in which the minor release number was usually fixed). This more flexible numbering scheme (see diagram below) can be leveraged to change the minor release number for example to reflect a "significant" transition, such as the one from an extended maintenance release to the next feature release:

**Figure 1.** Cisco IOS Software Release Naming Scheme



Release 15.0(1)SE is an extension of the Cisco IOS Software Release 12.2SE code base and thus inherits all the features from Release 12.2(58)SE1 and adds support for various Smart Operations and TrustSec enhancements.

For train continuity and release migration information, see the “Software Image Migration Guide” section below.

## Cisco Smart Operations and TrustSec Enhancements

The following ease-of-use and security enhancements are included in this release:

- **Device Classifier (DC) for AutoSmartPorts (ASP):** This new classifier infrastructure module will provide increased device visibility on the switch. The improvements in device classification capabilities are also provided to features such as ASP. The switch now gleans endpoint device data information from protocols such as MAC OUI, Cisco Discovery Protocol, Link Layer Discovery Protocol (LLDP), and Dynamic Host Configuration Protocol (DHCP) and passes the attributes of device information to Device Classifier (DC). The Device Classifier uses these attributes and pre-defined classification rules/profiles to identify the endpoint device and stores the device information in a database.

The enhanced Device Classifier provides increased device visibility for the following new devices: Apple devices, 3<sup>rd</sup> party phones and APs, 3<sup>rd</sup> party printers, Cisco phones and conference systems, Cisco wireless LAN controllers, Cisco IP cameras, Cisco APs, Cisco digital media players, gaming consoles, smart phones among others.

AutoSmartPorts (ASP) automates the process of interface configuration by applying pre-defined configuration on an interface when a device is connected to the interface, and removing the configuration when the device is disconnected. ASP can now leverage Device Classifier (DC) for device classification and execute the configuration macro associated with it for these new device types.

- **Critical VLAN support for voice devices:** Under normal circumstances, when an IP phone successfully authenticates on a port, the authentication server puts the phone into the voice domain. If the authentication server becomes unreachable, IP phones cannot authenticate and therefore do not have connectivity. Critical VLAN support for voice devices allows a fallback mechanism when the authentication server is unreachable, for example, when the WAN link is down. The phones gain access via a user-configured voice VLAN and can perform critical voice function, such as calling help desk, etc.

- **Network Edge Access Topology (NEAT) enhancement:** In the default state, when a supplicant switch is connected to an authenticator switch that has BPDU guard enabled, the authenticator port could be error-disabled if it receives a Spanning Tree Protocol (STP) bridge protocol data unit (BPDU) packets before the supplicant switch has authenticated. Beginning with Cisco IOS Release 15.0(1)SE, you can control traffic exiting the supplicant port during the authentication period by entering the **dot1x supplicant controlled transient** global configuration command. It temporarily blocks the supplicant port during authentication to ensure that the authenticator port does not shut down before authentication completes. Note that this command is also available in Cisco IOS Software Release 12.2(55)SE3 (and later rebuilds).
- **Support for Cisco TrustSec Security Group Tag (SGT) Exchange Protocol (SXP) version 2 and Enhancements:** Tagging packets with SGTs requires hardware support. You might have devices in your network that, while capable of participating in Cisco TrustSec authentication, lack the hardware capability to tag packets with SGTs. By using the SGT Exchange Protocol (SXP), these devices can pass IP-address-to-SGT mappings to a Cisco TrustSec peer device that has Cisco TrustSec-capable hardware thus enabling role-based security solutions across the network. SXPv2 provides the enhancements by supporting SXP version negotiation. In addition, Syslog message generation and SXP SNMP MIBs are supported. The SXP Syslog feature allows the switch to send SXP logging messages, like SXP state changes, connection status updates, error messages and binding updates to various destinations, such as the syslog server. SXP version negotiation allows backward compatibility with the peers running SXP version 1.

## Product Support for New Features and Enhancements

Table 1 summarizes product support for new features of Cisco IOS Software Release 15.0(1)SE for the Cisco Catalyst 3750-X, 3750-E, 3560-X, and 3560-E Series Switches.

**Table 1.** New Features in Cisco IOS Software Release 15.0(1)SE for the Cisco Catalyst 3750-X, 3750-E, 3560-X, and 3560-E Series Switches

Feature	Cisco Catalyst 3750-X LAN Base Feature Set	Cisco Catalyst 3750-X IP Base Feature Set	Cisco Catalyst 3750-E IP Base Feature Set	Cisco Catalyst 3750-X IP Services Feature Set	Cisco Catalyst 3750-E IP Services Feature Set	Cisco Catalyst 3560-X LAN Base Feature Set	Cisco Catalyst 3560-X IP Base Feature Set	Cisco Catalyst 3560-E IP Base Feature Set	Cisco Catalyst 3560-X IP Services Feature Set	Cisco Catalyst 3560-E IP Services Feature Set
Device Classifier for AutoSmartPorts	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Critical VLAN support for voice devices	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
NEAT enhancement	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SXP enhancements	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes

Table 2 summarizes product support for new features of Cisco IOS Software Release 15.0(1)SE for the Cisco Catalyst 3750G and 3560G Series and Cisco Catalyst 3750V2 and 3560V2 switches.

**Table 2.** New Features in Cisco IOS Software Release 15.0(1)SE for the Cisco Catalyst 3750G and 3560G Series and Cisco Catalyst 3750V2 and 3560V2 Switches

Feature	Cisco Catalyst 3750G IP Base Feature Set	Cisco Catalyst 3750V2 IP Base Feature Set	Cisco Catalyst 3750G IP Services Feature Set	Cisco Catalyst 3750V2 IP Services Feature Set	Cisco Catalyst 3560G IP Base Feature Set	Cisco Catalyst 3560V2 IP Base Feature Set	Cisco Catalyst 3560G IP Services Feature Set	Cisco Catalyst 3560V2 IP Services Feature Set
Device Classifier for AutoSmartPorts	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Critical VLAN support for voice devices	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
NEAT enhancement	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SXP enhancements	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 3 summarizes product support for new features of Cisco IOS Software Release 15.0(1)SE for the Cisco Catalyst 2960 and 2960-S Series.

**Table 3.** New Features in Cisco IOS Software Release 15.0(1)SE for the Cisco Catalyst 2960 and 2960-S Series

Feature	Cisco Catalyst 2960 Series LAN Base Feature Set	Cisco Catalyst 2960 Series LAN Lite Feature Set	Cisco Catalyst 2960-S Series LAN Base Feature Set	Cisco Catalyst 2960-S Series LAN Lite Feature Set
Device Classifier for AutoSmartPorts	Yes	Yes	Yes	Yes
Critical VLAN support for voice devices	Yes	No	Yes	No
NEAT enhancement	Yes	No	Yes	No

## Part Numbers for Supported Products

Table 4 lists the part numbers for the switches supported by Cisco IOS Software Release 15.0(1)SE.

**Table 4.** Part Numbers for Cisco Catalyst Switches Software Licenses Supported by Cisco IOS Software Release 15.0(1)SE

Cisco Catalyst 3560-X Series License Upgrade Part Numbers	Cisco Catalyst 3750-X Series License Upgrade Part Numbers	Cisco Catalyst 3560-X and Cisco Catalyst 3750-X Series LAN Base Part Numbers	Cisco Catalyst 3560-X and 3750-X Series IP Base Part Numbers	Cisco Catalyst 3750-X Series IP Services Part Numbers
<ul style="list-style-type: none"> <li>• C3560X-LIC= <ul style="list-style-type: none"> <li>◦ C3560X-24-L-S</li> <li>◦ C3560X-24-S-E</li> <li>◦ C3560X-24-L-E</li> <li>◦ C3560X-48-L-S</li> <li>◦ C3560X-48-S-E</li> <li>◦ C3560X-48-L-E</li> </ul> </li> <li>• L-C3560X-LIC= <ul style="list-style-type: none"> <li>◦ L-C3560X-24-L-S</li> <li>◦ L-C3560X-24-S-E</li> <li>◦ L-C3560X-24-L-E</li> <li>◦ L-C3560X-48-L-S</li> <li>◦ L-C3560X-48-S-E</li> <li>◦ L-C3560X-48-L-E</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• C3750X-LIC= <ul style="list-style-type: none"> <li>◦ C3750X-24-L-S</li> <li>◦ C3750X-24-S-E</li> <li>◦ C3750X-24-L-E</li> <li>◦ C3750X-48-L-S</li> <li>◦ C3750X-48-S-E</li> <li>◦ C3750X-48-L-E</li> <li>◦ C3750X-12S-S-E</li> <li>◦ C3750X-24S-S-E</li> </ul> </li> <li>• L-C3750X-LIC= <ul style="list-style-type: none"> <li>◦ L-C3750X-24-L-S</li> <li>◦ L-C3750X-24-S-E</li> <li>◦ L-C3750X-24-L-E</li> <li>◦ L-C3750X-48-L-S</li> <li>◦ L-C3750X-48-S-E</li> <li>◦ L-C3750X-48-L-E</li> <li>◦ L-C3750X-12S-S-E</li> <li>◦ L-C3750X-24S-S-E</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• 3560X-48T-L</li> <li>• 3560X-24P-L</li> <li>• 3560X-48P-L</li> <li>• 3560X-48PF-L</li> <li>• 3750X-48T-L</li> <li>• 3750X-24P-L</li> <li>• 3750X-48P-L</li> <li>• 3750X-48PF-L</li> </ul>	<ul style="list-style-type: none"> <li>• 3560X-24T-S</li> <li>• 3560X-48T-S</li> <li>• 3560X-24P-S</li> <li>• 3560X-48P-S</li> <li>• 3560X-48PF-S</li> <li>• 3750X-24T-S</li> <li>• 3750X-48T-S</li> <li>• 3750X-24P-S</li> <li>• 3750X-48P-S</li> <li>• 3750X-48PF-S</li> <li>• 3750X-12S-S</li> <li>• 3750X-24S-S</li> </ul>	<ul style="list-style-type: none"> <li>• 3750X-12S-E</li> <li>• 3750X-24S-E</li> </ul>
Cisco Catalyst 3560-E Series Upgrade License Part Numbers	Cisco Catalyst 3750-E Series Upgrade License Part Numbers	Cisco Catalyst 3560-E and Cisco Catalyst 3750-E Series IP Services Part Numbers	Cisco Catalyst 3560-E and 3750-E Series IP Base Part Numbers	Cisco Catalyst 3750 and 3560 Series License CD Part Numbers
<ul style="list-style-type: none"> <li>• 3560E-LIC= <ul style="list-style-type: none"> <li>◦ 3560E-IPSLCB-QTY</li> <li>◦ 3560E12D-SLB-QTY</li> <li>◦ 3560E12SD-SLB-QT</li> </ul> </li> <li>• L-3560E-LIC= <ul style="list-style-type: none"> <li>◦ L-3560E-IPSLCB-QTY</li> <li>◦ L-3560E12D-SLB-QTY</li> <li>◦ L-3560E12SD-SLB-QT</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• 3750E-LIC= <ul style="list-style-type: none"> <li>◦ 3750E-IPSLCB-QTY</li> <li>◦ 3750E48-IPSLCB-QTY</li> </ul> </li> <li>• L-3750E-LIC= <ul style="list-style-type: none"> <li>◦ L-3750E-IPSLCB-QTY</li> <li>◦ L-3750E48-IPSLCB-Q</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• 3560E-24TD-E</li> <li>• 3750E-24PD-E</li> <li>• 3560E-48TD-E</li> <li>• 3560E-48PD-E</li> <li>• 3560E-48PD-EF</li> <li>• 3560E-12D-E</li> <li>• 3560E-12SD-E</li> <li>• 3750E-24TD-E</li> <li>• 3750E-24PD-E</li> <li>• 3750E-48TD-E</li> <li>• 3750E-48PD-E</li> <li>• 3750E-48PD-EF</li> </ul>	<ul style="list-style-type: none"> <li>• 3750E-24TD-S</li> <li>• 3750E-24PD-S</li> <li>• 3750E-48TD-S</li> <li>• 3750E-48PD-S</li> <li>• 3750E-48PD-SF</li> <li>• 3560E-24TD-S</li> <li>• 3560E-24PD-S</li> <li>• 3560E-48TD-S</li> <li>• 3560E-48TD-SD</li> <li>• 3560E-48PD-S</li> <li>• 3560E-48PD-SF</li> <li>• 3560E-12D-S</li> <li>• 3560E-12SD-S</li> </ul>	<ul style="list-style-type: none"> <li>• CD-3750-EMI=</li> <li>• CD-3750G-EMI=</li> <li>• CD-3750G-48EMI=</li> <li>• CD-3560-EMI=</li> <li>• CD-3560G-EMI=</li> </ul>

Cisco Catalyst 3750 Series IP Services Part Numbers	Cisco Catalyst 3750 Series IP Base Part Numbers	Cisco Catalyst 3560 Series IP Services Part Numbers	Cisco Catalyst 2960 Series Part Numbers	Cisco Catalyst 2960-S Series LAN Base and LAN Lite License Part Numbers
<ul style="list-style-type: none"> <li>• 3750-48TS-E</li> <li>• 3750-24TS-E</li> <li>• 3750G-24T-E</li> <li>• 3750G-48TS-E</li> <li>• 3750G-24TS-E</li> <li>• 3750G-12S-E</li> <li>• 3750G-16TD-E</li> <li>• 3750-48PS-E</li> <li>• 3750-24PS-E</li> <li>• 3750G-24TS-1U-E</li> <li>• 3750G-24PS-E</li> <li>• 3750G-48PS-E</li> <li>• 3750V2-48TS-E</li> <li>• 3750V2-24TS-E</li> <li>• 3750V2-48PS-E</li> <li>• 3750V2-24PS-E</li> </ul>	<ul style="list-style-type: none"> <li>• 3750-48TS-S</li> <li>• 3750-24TS-S</li> <li>• 3750G-24T-S</li> <li>• 3750-24FS-S</li> <li>• 3750G-48TS-S</li> <li>• 3750G-24TS-S</li> <li>• 3750G-12S-S</li> <li>• 3750G-16TD-S</li> <li>• 3750-48PS-S</li> <li>• 3750-24PS-S</li> <li>• 3750G-24TS-1U-S</li> <li>• 3750G-24PS-S</li> <li>• 3750G-48PS-S</li> <li>• 3750G-24WS-S50</li> <li>• 3750G-24WS-S25</li> <li>• 3750V2-48TS-S</li> <li>• 3750V2-24TS-S</li> <li>• 3750V2-48PS-S</li> <li>• 3750V2-24PS-S</li> </ul>	<ul style="list-style-type: none"> <li>• 3560-24TS-E</li> <li>• 3560-48TS-E</li> <li>• 3560-48PS-E</li> <li>• 3560-24PS-E</li> <li>• 3560G-48PS-E</li> <li>• 3560G-24PS-E</li> <li>• 3560G-48TS-E</li> <li>• 3560G-24TS-E</li> <li>• 3560V2-24TS-E</li> <li>• 3560V2-48TS-E</li> <li>• 3560V2-24PS-E</li> <li>• 3560V2-48PS-E</li> </ul>	<ul style="list-style-type: none"> <li>• 2960PD-8TT-L</li> <li>• 2960-8TC-L</li> <li>• 2960-24TT-L</li> <li>• 2960-24TC-L</li> <li>• 2960-24PC-L</li> <li>• 2960-24LT-L</li> <li>• 2960-48TT-L</li> <li>• 2960-48TC-L</li> <li>• 2960-48PST-L</li> <li>• 2960G-8TC-L</li> <li>• 2960G-24TC-L</li> <li>• 2960G-48TC-L</li> <li>• 2960-24-S</li> <li>• 2960-24TC-S</li> <li>• 2960-48TC-S</li> <li>• 2960-48TT-S</li> <li>• 2960-8TC-S</li> <li>• 2960-24LC-S</li> <li>• 2960-24PC-S</li> <li>• 2960-48PST-S</li> <li>• 2975GS-48PS-L</li> </ul>	<ul style="list-style-type: none"> <li>• 2960S-48FPD-L</li> <li>• 2960S-48LPD-L</li> <li>• 2960S-24PD-L</li> <li>• 2960S-48TD-L</li> <li>• 2960S-24TD-L</li> <li>• 2960S-48FPS-L</li> <li>• 2960S-48LPS-L</li> <li>• 2960S-24PS-L</li> <li>• 2960S-48TS-L</li> <li>• 2960S-24TS-L</li> <li>• 2960S-48TS-S</li> <li>• 2960S-24TS-S</li> </ul>

## Additional Resources

### Software Downloads

Software is available for download from the following sites:

- Cisco IOS Software upgrade planner: <http://www.cisco.com/cgi-bin/Software/Iosplanner/Planner-tool/iosplanner.cgi?majorRel=>
- Guest-level access planner: <http://www.cisco.com/kobayashi/sw-center/index.shtml>

You must purchase the IP Services (formerly called EMI) software upgrade kit when upgrading a switch from IP Base (formerly called SMI) to IP Services software. Downloads of IP Base and IP Services files are monitored for adherence to this requirement. The Cisco Catalyst 3750-X, 3560-X, 3750-E, and 3560-E Series Switches support the new Cisco IOS Software licensing infrastructure, which authorizes and enables the use of the existing Cisco IOS Software feature sets. A special file contained in the switch's flash memory, called a license file, is examined by Cisco IOS Software when the switch is powered on. On the basis of the license type, Cisco IOS Software enables the appropriate Cisco IOS Software feature set (for more information on packaging and licensing, refer to [http://www.cisco.com/en/US/prod/collateral/switches/ps5718/ps6406/white\\_paper\\_c11-579326\\_ps10745\\_Products\\_White\\_Paper.html](http://www.cisco.com/en/US/prod/collateral/switches/ps5718/ps6406/white_paper_c11-579326_ps10745_Products_White_Paper.html)).

Note that the Advanced IP Services license has reached end-of-life status since Cisco IOS Software Release 12.2(50)SE.

Because of export restrictions on strong cryptography software, a separate image is required for the cryptographic features (Secure Shell [SSH] Protocol, Simple Network Management Protocol Version 3 [SNMPv3], and Kerberos Protocol). These software images can be downloaded from the corresponding Triple Data Encryption Standard (3DES) area of the links provided in this section.

## Product Information

Additional product information is available at the following sites:

- Cisco Catalyst 3750-X Series Switches: <http://www.cisco.com/go/3750x>
- Cisco Catalyst 3560-X Series Switches: <http://www.cisco.com/go/3560x>
- Cisco Catalyst 3750-E Series Switches: <http://www.cisco.com/go/3750e>
- Cisco Catalyst 3750 Series Switches: <http://www.cisco.com/go/3750e>
- Cisco Catalyst 3560-E Series Switches: <http://www.cisco.com/go/3560e>
- Cisco Catalyst 3560 Series Switches: <http://www.cisco.com/go/3560e>
- Cisco Catalyst 2960-S Series Switches: <http://www.cisco.com/go/2960s>
- Cisco Catalyst 2960 Series Switches: <http://www.cisco.com/go/2960s>
- Cisco Catalyst 3750-X, 3560-X, 3750-E, 3560-E, 3750, 3560, 2960-S, and 2960 Series release notes:
  - [http://www.cisco.com/en/US/products/ps7077/prod\\_release\\_notes\\_list.html](http://www.cisco.com/en/US/products/ps7077/prod_release_notes_list.html)
  - [http://www.cisco.com/en/US/products/ps7078/prod\\_release\\_notes\\_list.html](http://www.cisco.com/en/US/products/ps7078/prod_release_notes_list.html)
  - [http://www.cisco.com/en/US/products/hw/switches/ps5023/prod\\_release\\_notes\\_list.html](http://www.cisco.com/en/US/products/hw/switches/ps5023/prod_release_notes_list.html)
  - [http://www.cisco.com/en/US/products/hw/switches/ps5528/prod\\_release\\_notes\\_list.html](http://www.cisco.com/en/US/products/hw/switches/ps5528/prod_release_notes_list.html)
  - [http://www.cisco.com/en/US/products/ps6406/prod\\_release\\_notes\\_list.html](http://www.cisco.com/en/US/products/ps6406/prod_release_notes_list.html)

## Support

Cisco IOS Software Release 15.0(1)SE follows the standard Cisco support policy. For more information, visit [http://www.cisco.com/en/US/products/products\\_end-of-life\\_policy.html](http://www.cisco.com/en/US/products/products_end-of-life_policy.html).

## Software Image Migration Guide

Figure 4 displays Cisco IOS Software Release 15.0(1)SE functions relative to Releases 12.2S and 12.2SE and identifies the recommended migration path.

**Figure 2.** Cisco IOS Software 12.2 Release Train





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