



Product Bulletin, No. 3035

Cisco IOS Software Release 12.2(25)SG for Cisco Catalyst 4500 Series Switches

This product bulletin describes the hardware and software features supported by Cisco IOS® Software Release 12.2(25)SG for the Cisco® Catalyst® 4500 Series Supervisor Engine II-Plus, II-Plus-TS, II-Plus-10GE, IV, V, and Supervisor Engine V-10GE. The Cisco Catalyst 4500 Series Supervisor Engine III is not supported in this software release.

NEW HARDWARE FEATURES

Cisco Catalyst 4500 Series Supervisor Engine II-Plus-10GE

The Cisco Catalyst 4500 Series Supervisor Engine II-Plus-10GE is the next generation Supervisor Engine II-Plus providing added bandwidth and functionality. Two 10 Gigabit Ethernet and four 1 Gigabit Ethernet uplinks are supported along with enhanced features (e.g. QinQ, Broadcast/Multicast Suppression). Additionally, please note that the Supervisor Engine II-Plus-10GE will now support Layer 3 routing capabilities via EIGRP-stub in the 12.2(25)SG IP Base image at no extra cost. Supported on the Cisco Catalyst 4503, 4506, and 4507R, the Supervisor Engine II-Plus-10GE increases the bandwidth switching capacity up to 108 Gbps at 81 mpps.

Cisco Catalyst 4500 Series 48-Port 100BASE-X, SFP Line Card

The Cisco Catalyst 4500 Series 48-port, nonblocking, 100BASE-X line card provides customers the ability to mix and match various Small Form-Factor Pluggable (SFP) optics, based on the network need. One to forty-eight 100BASE-X SFP optics can be populated on a single line card, as 100BASE-X SFP optics are optional. In Cisco IOS 12.25(SG) supported SFP optics include FX, LX10, BX-D, and BX-U. This line card is compatible with any Cisco Catalyst 4500 Series chassis.

NEW SOFTWARE FEATURES

NAC L2 IP

NAC L2 IP is an integral part of Cisco Network Admission Control. It offers the first line of defense for infected hosts (PCs and other devices attached to a LAN port) attempting to connect to the corporate network. NAC L2 IP on the Cisco Catalyst 4500 Series performs posture validation at the Layer 2 edge of the network for non-802.1x-enabled host devices. Host device posture validation includes anti-virus state and OS patch levels. Depending on the corporate access policy and host device posture, a host may be unconditionally admitted, admitted with restricted access, or quarantined to prevent the spread of viruses across the network.

NAC L2 802.1x

The Cisco Catalyst 4500 Series extends NAC support to 802.1x-enabled devices. Like NAC L2 IP, the NAC L2 802.1x feature determines the level of network access based on endpoint information.

Time Domain Reflectometry

Time Domain Reflectometry (TDR) is a technology used for diagnosing copper cable state. TDR detects impedance changes along an attached cable (for example, Category V) to determine opens, shorts, and terminated states. The fault distance from the switch is also supported. TDR is supported on the following Cisco Catalyst 4500 Series 1000BASE-T hardware products: the Enhanced 48-port 10/100/1000 line card, the 48-port 10/100/1000, 802.3af Power over Ethernet (PoE) line card; the 24-port PoE, 802.3af 10/100/1000 line card; and the Supervisor Engine II-Plus-TS. TDR is also supported on the Catalyst 4948 and Catalyst 4948-10GE switches.

Microflow Policing Full Flow Match

Microflow Policing Full IP Flow Match is typically used to offer granular flow rate limiting, such as different outbound flow and inbound flow rates. The full IP flow match extends classification granularity from source/destination IP addresses to the full IP flow label. When enabled, each flow is policed at a specified rate based on a unique group of Layer 3 and Layer 4 information: IP source address, IP destination address, IP protocol, Layer 4 source port, and Layer 4 destination port. Microflow Policing Full Flow Match is only available on the Cisco Catalyst 4500 Series Supervisor Engine V-10GE.

802.1x Authentication Failure

The 802.1x Authentication Failure feature offers certain limited network access to guests with 802.1x supplicants enabled. This differs from the 802.1x guest VLAN feature for those guests without 802.1x supplicants. 802.1x Authentication Failure VLAN is a user-configurable VLAN, aside from the guest VLAN. Guests (contractors, visitors) with 802.1x supplicants enabled will fail 802.1x authentication. These guest users will be placed into this special failure VLAN, typically with Internet access only. The 802.1x authentication failure VLAN can be configured to provide any type of limited access to network resources, including Internet access.

Cisco Catalyst 4500 Series Supervisor Engine V-10GE Uplink Enhancement

In previous Cisco IOS Software releases, the Cisco Catalyst 4500 Supervisor Engine V-10GE allowed the user to enable either the dual wire-speed 10 Gigabit Ethernet ports (X2 optics), or four alternatively wired Gigabit Ethernet SFP uplink ports. With Release 12.2(25)SG, customers with the Supervisor Engine V-10GE can simultaneously deploy the dual 10 Gigabit Ethernet ports and the four Gigabit Ethernet SFP ports. This capability is supported on the Catalyst 4503, Catalyst 4506, and Catalyst 4507R chassis. When deploying a Catalyst 4510R chassis, one of three configurations is supported:

- Enable the dual 10 Gigabit Ethernet ports (X2 optics) only.
- Enable the four Gigabit Ethernet ports (SFP optics) only.
- Enable both dual 10 Gigabit Ethernet and the four Gigabit Ethernet ports, with the understanding that the tenth slot (Flex-Slot) will only support a 2-port gigabit interface converter (GBIC) line card when in this mode.

OSPF Fast Convergence

OSPF Fast Convergence minimizes system downtime when an unexpected event, such as link failure, occurs. OSPF Fast Convergence consists of the following components:

- **Fast Hellos**—Support for user-configurable, subsecond, Open Shortest Path First (OSPF) hello intervals results in faster convergence in an OSPF network, especially in LAN segments.
- **Incremental Shortest Path First (iSPF)**—Enhances routing to intelligently determine the change in the Shortest Path Tree (SPT) and re-compute only the effected nodes upon SPT update. This increases efficiency and allows faster OSPF convergence on new routing topologies in reaction to network events.
- **LSA Throttling**—OSPF Link-State Advertisement (LSA) throttling provides a dynamic mechanism to slow down LSA updates in OSPF during times of network instability. LSA rate limiting in milliseconds allows faster OSPF convergence.

HTTPS

HTTPS is the secure version of HTTP. It uses Secure Sockets Layer (SSL) to provide device authentication and data encryption. HTTPS is required for secure communications with Cisco Network Assistant.

IS-IS MIB

Intermediate System-to-Intermediate System (IS-IS) is a link-state routing protocol designed for use within a single autonomous system and widely deployed as the Interior Gateway Protocol (IGP) of choice by many service providers. The IS-IS MIB enhances monitoring capabilities of network events for the overall state of the network.

NEW CISCO IOS SOFTWARE PACKAGING FOR THE CISCO CATALYST 4500 SERIES

Cisco Systems® announces a new Cisco IOS Software package for the Cisco Catalyst 4500 Series switches. This package creates a new foundation for features and functionality, and provides consistency across all Catalyst switches. The new Cisco IOS Software release train is designated as 12.2SG.

Prior Cisco IOS Software images for the Catalyst 4500 Series, formally known as “Basic L3” and “Enhanced L3” images, now map to “IP Base” and “Enterprise Services,” respectively. Border Gateway Protocol (BGP) is now included in the “Enterprise Services” image. Unless otherwise specified, all currently shipping Catalyst 4500 software features based on Cisco IOS Software are supported in the 12.2(25)SG, IP Base image with a few points to note:

- The IP Base image will not support the following routing related features: BGP, EIGRP, OSPF, IS-IS, IPX, Apple Talk, Virtual Route Forwarding [VRF]-lite, and Policy-Based Routing [PBR]
- The IP Base image will support EIGRP-Stub for Layer 3 routing on all Catalyst 4500 Series Supervisor Engines. For more information on EIGRP-Stub functionality, go to http://www.cisco.com/en/US/technologies/tk648/tk365/technologies_white_paper0900aecd8023df6f.shtml.

The Enterprise Services image supports all Catalyst 4500 Series software features based on Cisco IOS Software, including enhanced routing. Customers planning to enable BGP on Supervisor Engines IV, V, or V-10GE will no longer need to purchase a separate BGP license (FR-IRC4); BGP capability is included in the Enterprises Services package. Table 1 shows a more detailed description of the feature differences between the IP Base and Enterprise Services (ES) images as they relate to the Catalyst 4500 Series supervisor engines.

Table 1. Feature Comparison for Cisco IOS Software Release 12.2(25)SG IP Base and Enterprise Services

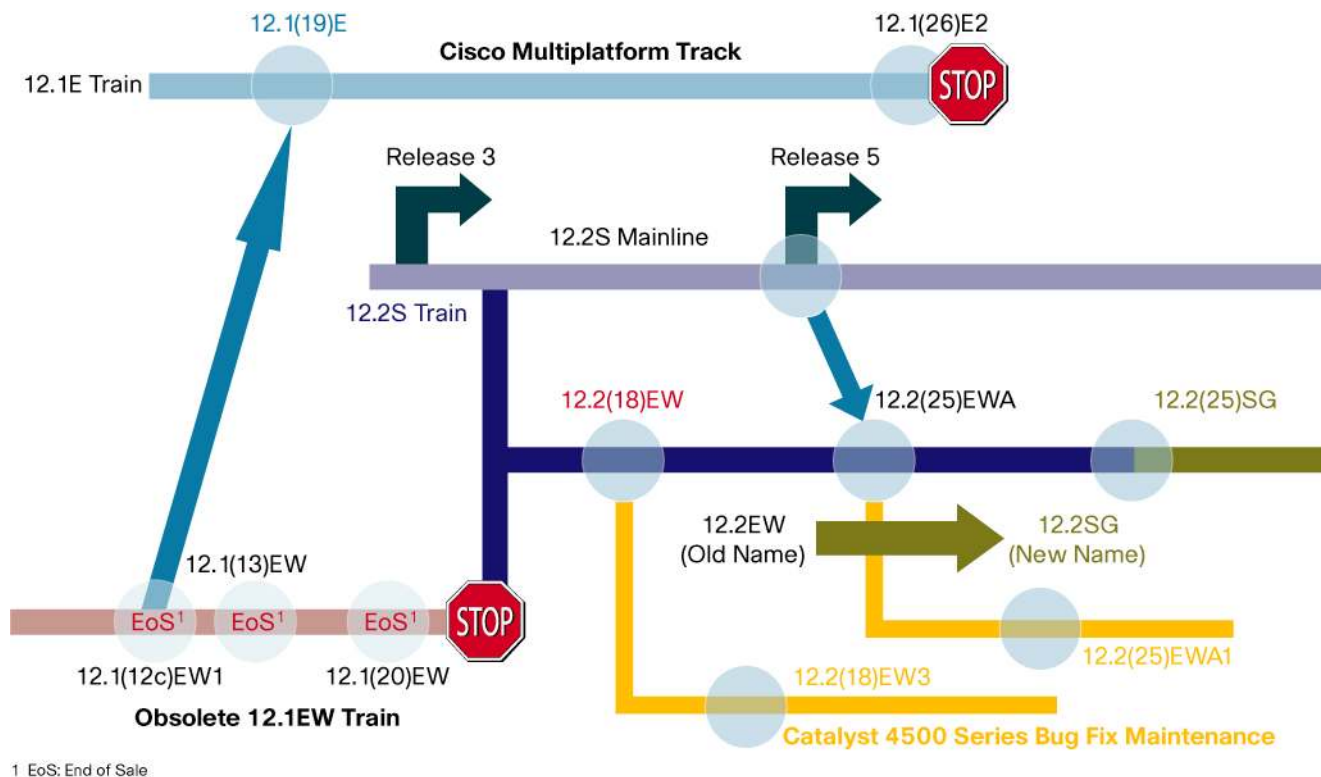
Feature	Supervisor Engine II-Plus, II-Plus-TS, II-Plus-10GE: IP Base	Supervisor Engine IV: IP Base	Supervisor Engine IV: ES	Supervisor Engine V: IP Base	Supervisor Engine V: ES	Supervisor Engine V-10GE: IP Base	Supervisor Engine V-10GE: ES
NACv2.0	Yes	Yes	Yes	Yes	Yes	Yes	Yes
RIP and Static Route	Yes	Yes	Yes	Yes	Yes	Yes	Yes
NetFlow v1, v5, and v8	No	Yes	Yes	Yes	Yes	Yes	Yes
EIGRP	No	No	Yes	No	Yes	No	Yes
EIGRP-Stub	Yes	Yes	Yes	Yes	Yes	Yes	Yes
OSPF/IS-IS	No	No	Yes	No	Yes	No	Yes
BGP	No	No	Yes	No	Yes	No	Yes
VRF-lite	No	No	Yes	No	Yes	No	Yes
Apple Talk	No	No	Yes	No	Yes	No	Yes
IPX	No	No	Yes	No	Yes	No	Yes
PBR	No	No	Yes	No	Yes	No	Yes

Note: Please note that the Cisco Catalyst 4500 Series Supervisor Engine III is not supported in Cisco IOS Software Release 12.2(25)SG.

CISCO IOS SOFTWARE MIGRATION GUIDE

Figure 1 displays the Cisco IOS Software Release 12.2(25)SG plan relative to the 12.2S and 12.1 releases, and identifies the recommended migration path.

Figure 1. Cisco IOS Software Release Plan for the Cisco Catalyst 4500 Series



Summary of Migration Plan

- Customers requiring the latest Cisco Catalyst 4500 Series hardware and software features should migrate to Cisco IOS Software Release 12.2(25)SG. In the new Cisco IOS Software package, the 12.2EW designation is replaced by 12.2SG. Both software release trains are based on 12.2S Release 5.
- Releases 12.2(18)EW and 12.2(25)EWA will continue offering maintenance releases.
- The 12.1 EW train will reach end of sale on October 4, 2005.
- Cisco IOS Software 12.1 releases will stop at 12.1(26)E2 because of limited hardware and software support.

SUPPORT

Support for Cisco IOS Software Release 12.2(25)SG follows the standard Cisco support policy, available at http://www.cisco.com/en/US/products/products_end-of-life_policy.html.

For more information about the Cisco Catalyst 4500 Series, visit <http://www.cisco.com/univercd/cc/td/doc/product/lan/cat4000/index.htm>.

ORDERING INFORMATION

Tables 2 and 3 provide product numbers and ordering information for Cisco IOS Software Release 12.2(25)SG and for supporting hardware.

Table 2. Cisco IOS Software Release 12.2(25)SG Product Number and Images

Product Number	Description	Image
S45IPB-12225SG	Cisco IOS Software for the Cisco Catalyst 4500 Series (IP Base image with EIGRP-stub support)	cat4500-ipbase-mz
S45IPBK9-12225SG	Cisco IOS Software for the Cisco Catalyst 4500 Series (IP Base image with Triple Data Encryption Standard [3DES] and EIGRP-stub support)	cat4500-ipbasek9-mz
S45ES-12225SG	Cisco IOS Software for the Cisco Catalyst 4500 Series Supervisor Engines IV, V, and V-10GE (Enterprise Services image with BGP support)	cat4500-entservices-mz
S45ESK9-12225SG	Cisco IOS Software for the Cisco Catalyst 4500 Series Supervisor Engines IV, V, and V-10GE (Enterprise Services image with 3DES and BGP support)	cat4500-entservicesk9-mz

Table 3. Cisco IOS Software Release 12.2(25)SG Hardware Support

Product Number	Description
WS-X4013+	Cisco Catalyst 4500 Series Supervisor Engine II-Plus
WS-X4013+TS	Cisco Catalyst 4500 Series Supervisor Engine II-Plus-TS
WS-X4013+10GE	Cisco Catalyst 4500 Series Supervisor Engine II-Plus-10GE NEW
WS-X4515	Cisco Catalyst 4500 Supervisor Engine IV
WS-X4516	Cisco Catalyst 4500 Supervisor Engine V
WS-X4516-10GE	Cisco Catalyst 4500 Series Supervisor Engine V-10GE
WS-C4503	Cisco Catalyst 4503 Switch chassis
WS-C4506	Cisco Catalyst 4506 Switch chassis
WS-C4507R	Cisco Catalyst 4507R Switch chassis
WS-C4510R	Cisco Catalyst 4510R Switch chassis
WS-X4124-FX-MT(=)	Cisco Catalyst 4500 Series 24-port Fast Ethernet switching module, 100BASE-FX multimode fiber (MMF). MTRJ
WS-X4124-RJ45(=)	Cisco Catalyst 4500 Series 24-port 10/100 module (RJ-45)
WS-X4148-FX-MT(=)	Cisco Catalyst 4500 Series 48-port Fast Ethernet switching module, 100BASE-FX, MMF, MTRJ
WS-X4148-FE-LX-MT(=)	Cisco Catalyst 4500 Series 48-port Fast Ethernet switching module, 100BASE-LX10 single-mode fiber, MTRJ
WS-X4148-RJ(=)	Cisco Catalyst 4500 Series 48-port 10/100 module (RJ-45)
WS-X4148-RJ21(=)	Cisco Catalyst 4500 Series 48-port 10/100 module, telco (4xRJ-21)
WS-X4148-RJ45V(=)	Cisco Catalyst 4500 Series 48-port inline power 10/100 module (RJ-45)
WS-X4148-FE-BD-LC(=)	Cisco Catalyst 4500 Series 48-port 100BASE-BX10-D line card
WS-X4224-RJ45V(=)	Cisco Catalyst 4500 Series 24-port Power over Ethernet (PoE) 10/100 module (RJ-45)
WS-X4232-GB-RJ(=)	Cisco Catalyst 4500 Series 32-port 10/100 (RJ-45), 2-port Gigabit Ethernet module (GBIC)
WS-X4232-RJ-XX(=)	Cisco Catalyst 4500 Series 32-port 10/100 (RJ-45) with modular uplink slot
WS-X4248-FE-SFP(=)	Cisco Catalyst 4500 Series 48-port 100BASE-X line card (SFP optics optional) NEW

Product Number	Description
GLC-FE-100FX24	24 units of GLC-FE-100FX NEW
GLC-FE-100FX48	48 units of GLC-FE-100FX NEW
GLC-FE-100LX48	48 units of GLC-FE-100LX NEW
GLC-FE-100BX-D48	48 units of GLC-FE-100BX-D NEW
WS-X4248-RJ45V(=)	Cisco Catalyst 4500 Series 48-port PoE 10/100 (RJ-45)
WS-X4248-RJ21V(=)	Cisco Catalyst 4500 Series 48-port PoE 10/100, telco (4xRJ-21)
WS-X4424-GB-RJ45(=)	Cisco Catalyst 4500 Series 24-port 10/100/1000 module (RJ-45)
WS-X4306-GB (=)	Cisco Catalyst 4500 Series 6-port Gigabit Ethernet module (GBIC)
WS-X4302-GB (=)	Cisco Catalyst 4500 Series 2-port Gigabit Ethernet line card (GBIC)
WS-X4412-2GB-T (=)	Cisco Catalyst 4500 Series 12-port Gigabit Ethernet module, 1000BASE-T (RJ-45) with two 1000BASE-X GBICs
WS-X4418-GB (=)	Cisco Catalyst 4500 Series 18-port Gigabit Ethernet module, server switching (GBIC)
WS-X4448-GB-RJ45 (=)	Cisco Catalyst 4500 Series 48-port 10/100/1000 module (RJ45)
WS-X4448-GB-SFP (=)	Cisco Catalyst 4500 Series 48-port 1000BASE-X (SFP optics optional)
WS-X4506-GB-T (=)	Cisco Catalyst 4500 Series 6-port alternatively wired 10/100/1000 PoE or 1000BASE-X, SFP optics
WS-X4524-GB-RJ45V (=)	Cisco Catalyst 4500 Series 24-port PoE 10/100/1000 line card (RJ-45)
WS-X4548-GB-RJ45 (=)	Cisco Catalyst 4500 Series 48-port 10/100/1000 line card (RJ45)
WS-X4548-GB-RJ45V (=)	Cisco Catalyst 4500 Series 48-port PoE 10/100/1000 line card (RJ45)
WS-U4504-FX-MT (=)	Cisco Catalyst 4500 Series 4-port uplink daughter card 100BASE-FX (MTRJ)
GLC-FE-100FX	FE SFP, LC connector FX transceiver, 2 kilometers
GLC-FE-100LX	FE SFP, LC connector LX10 transceiver, 10 kilometers
GLC-FE-100BX-D	FE SFP, LC connector BX-D transceiver, 10 kilometers
GLC-FE-100BX-U	FE SFP, LC connector BX-U transceiver, 10 kilometers
WS-G5483=	1000BASE-T GBIC
WS-G5484 (=)	1000BASE-SX short-wavelength GBIC (multimode only)
WS-G5486 (=)	1000BASE-LX/LH long-haul GBIC (single-mode or multimode)
WS-G5487 (=)	1000BASE-ZX extended-reach GBIC (single-mode)
MEM-C4K-FLD64M (=)	Cisco Catalyst 4500 Series Compact Flash, 64-MB option
MEM-C4K-FLD128M (=)	Cisco Catalyst 4500 Series Compact Flash, 128-MB option
PWR-C45-4200ACV	Cisco Catalyst 4500 4200W AC dual input power supply (data + PoE)
PWR-C45-2800ACV	2800W AC power supply for Cisco Catalyst 4503, 4506, and 4507R chassis
PWR-C45-1400DC	Cisco Catalyst 4500 Series 1400W DC power supply
PWR-C45-1400DC-P	Cisco Catalyst 4500 Series 1400W DC power supply with integrated PEM
PWR-C45-1400AC	Cisco Catalyst 4500 Series 1400W AC power supply (data only)
PWR-C45-1300ACV	1300W AC power supply for Cisco Catalyst 4503, 4506, and 4507R chassis
PWR-C45-1000AC	1000W AC power supply for Cisco Catalyst 4503, 4506, and 4507R chassis (data only)
CWDM-GBIC-xxxx	Cisco 1000BASE coarse wavelength-division multiplexing (CWDM) xxxx nm GBIC, where xxxx is the number 1470, 1490, 1510, 1530, 1550, 1570, 1590, or 1610

Product Number	Description
DWDM-GBIC-xx.yy	Cisco 1000BASE dense wavelength-division multiplexing (DWDM) ITU 100-GHz grid 15xx.yy nm GBIC
WDM-GBIC-REC=	Cisco receive-only 1000BASE-WDM GBIC
WS-F4531(=)	NetFlow Services Card for Cisco Catalyst 4500 Series Supervisor Engines IV and V



Corporate Headquarters

Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
www.cisco.com
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 526-4100

European Headquarters

Cisco Systems International BV
Haarlerbergpark
Haarlerbergweg 13-19
1101 CH Amsterdam
The Netherlands
www-europe.cisco.com
Tel: 31 0 20 357 1000
Fax: 31 0 20 357 1100

Americas Headquarters

Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
www.cisco.com
Tel: 408 526-7660
Fax: 408 527-0883

Asia Pacific Headquarters

Cisco Systems, Inc.
168 Robinson Road
#28-01 Capital Tower
Singapore 068912
www.cisco.com
Tel: +65 6317 7777
Fax: +65 6317 7799

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