



Release Notes for the Catalyst 4500E Series Switch, Cisco IOS XE Release 3.6.xE

Current release
IOS XE 3.6.10E—May 31, 2019

Prior releases
IOS XE 3.6.9E—September 12, 2018, IOS XE 3.6.8E—January 31, 2018, IOS XE 3.6.7E—July 10, 2017, IOS XE 3.6.6E—December 23, 2016, IOS XE 3.6.5aE, IOS XE 3.6.5E, IOS XE 3.6.4E, IOS XE 3.6.3E, IOS XE 3.6.2E, IOS XE 3.6.1E, IOS XE 3.6.0E

This release note describes the features, modifications, and caveats for the Cisco IOS XE 3.6.xE software on the Catalyst 4500E series switch with Supervisor Engine 7-E, 7L-E, and 8-E.



Note

For the Supervisor Engine 8-E to support IOS XE 3.6.0E, the ROMMON version must be upgraded to 15.1(1r)SG4. (Refer to [Upgrading the System Software, page 43](#)).

Cisco IOS XE 3.6.0E is a feature rich new software feature release for IOS and IOS-XE based Catalyst Access Switching products (Cat4500E/X, 3850/3650, 3K-X, Cat2K and 2K/3K Compact switches) which brings new innovations for Converged Access in wired and wireless topologies, IT Simplicity, Application Experience, and Mobility. This release will provide long-lived extended maintenance with planned rebuilds. It will also have all the Govt. certifications for IOS-XE and currently shipping IOS platforms.

Cisco IOS XE 3.6.0E provides VSS support on Supervisor Engine 8-E with complete feature parity with Supervisor Engine 7-E.

Support for Cisco IOS XE Release 3.6.0E follows the standard Cisco Systems® support policy, available at

http://www.cisco.com/en/US/products/products_end-of-life_policy.html

For more information on the Catalyst 4500E series switches, visit the following URL:

<http://www.cisco.com/en/US/products/hw/switches/ps4324/index.html>



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**Note**

Although this release note and those for the Catalyst 4900M, Catalyst 4948E, Catalyst 4948E-F Series Switches, Catalyst 4500 Series Switches, and the Catalyst 4500-X Series Switches differ, each leverages the same *Software Configuration Guide*, *Command Reference Guide*, and *System Message Guide*.

Contents

This publication consists of these sections:

- [Cisco IOS Software Packaging, page 2](#)
- [Cisco XE Release Strategy, page 2](#)
- [System Requirements, page 3](#)
- [New and Changed Information, page 33](#)
- [Cisco IOS XE to Cisco IOS Version Number Mapping, page 43](#)
- [Upgrading the System Software, page 43](#)
- [Limitations and Restrictions, page 45](#)
- [Caveats, page 49](#)
- [Related Documentation, page 58](#)
- [Notices, page 60](#)

Cisco IOS Software Packaging

The Enterprise Services image supports all Cisco Catalyst 4500E Series software features based on Cisco IOS Software, including enhanced routing.

The IP Base image supports Open Shortest Path First (OSPF) for Routed Access, Enhanced Interior Gateway Routing Protocol (EIGRP) "limited" Stub Routing, Nonstop Forwarding/Stateful Switchover (NSF/SSO), and RIPv1/v2. The IP Base image does not support enhanced routing features such as BGP, Intermediate System-to-Intermediate System (IS-IS), Full OSPF, Full Enhanced Interior Gateway Routing Protocol (EIGRP) & Virtual Routing Forwarding (VRF-lite).

The LAN Base image complements the existing IP Base and Enterprise Services images. It is focused on customer access and Layer 2 requirements and therefore many of the IP Base features are not required. The IP upgrade image is available if at a later date you require some of those features

Starting with Cisco IOS Release XE 3.5.0E, OSPF Routed Access in IP Base support rose to 1000 routes.

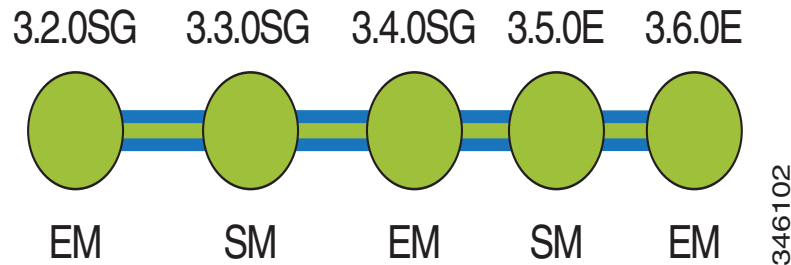
Cisco XE Release Strategy

Customers with Catalyst 4500 Series Switches who need the latest hardware and software features should migrate to Cisco IOS Release XE 3.6.0E.

IOS XE 3.2.xSG is an active maintenance train that supports Sup7E only. IOS XE 3.4.xSG is a maintenance train supporting Sup7E and Sup7L-E. IOS XE 3.6.xSG is a maintenance train supporting Sup7E, Sup7L-E and Sup8-E. IOS XE 3.6.xE, 3.4.xSG, and 3.2.xSG are extended maintenance (EM) releases. IOS XE 3.5.xE and 3.3.0SG are standard releases (SM).

Figure 1 displays the release strategy.

Figure 1 Software Release Strategy for the Catalyst 4500E Series Switch



Support

Support for Cisco IOS Software Release XE 3.6.0E follows the standard Cisco Systems® support policy, available at

http://www.cisco.com/en/US/products/products_end-of-life_policy.html

System Requirements

This section describes the system requirements:

- [Supported Hardware on the Catalyst 4500E Series Switch, page 3](#)
- [Supported E Series Hardware on Cisco IOS XE Release 3.6.0E, page 9](#)
- [Feature Support by Image Type, page 10](#)
- [MIB Support, page 32](#)
- [Features Not Supported on the Cisco Catalyst 4500E Series Switch, page 32](#)
- [Orderable Product Numbers, page 32](#)

Supported Hardware on the Catalyst 4500E Series Switch

Table 1 lists the hardware supported on the Catalyst 4500E Series Switch.

Table 1 Supported Hardware on Cisco Catalyst 4500E Supervisor Engine 7-E, Supervisor Engine 7L-E, and Supervisor Engine 8-E

Product Number (append with “=” for spares)	Product Description
Supervisor Engines	
WS-X45-Sup7-E	Catalyst 4500E-series switch Supervisor Engine 7-E Note This engine is supported on E-series, R-E, and R+E chassis.

Table 1 Supported Hardware on Cisco Catalyst 4500E Supervisor Engine 7-E, Supervisor Engine 7L-E, and Supervisor Engine 8-E

Product Number (append with “=” for spares)	Product Description
WS-X45-Sup7L-E	Catalyst 4500E-series switch Supervisor Engine 7L-E Note This engine is supported on E-series, R-E, and R+E chassis.
WS-X45-Sup8-E	Catalyst 4500E-series switch Supervisor Engine 8-E Note This engine is supported on E-series and R+E chassis.
10 Gigabit Ethernet Switching Modules	
WS-X4712-SFP+E	12-port 10 Gigabit Ethernet (SFP+) line card Not supported on 4507R-E and 4510R-E chassis.
WS-X4606-X2-E	6-port X2 line card
Gigabit Ethernet Switching Modules	
WS-X4302-GB	2-port 1000BASE-X (GBIC) Gigabit Ethernet module
WS-X4306-GB	6-port 1000BASE-X (GBIC) Gigabit Ethernet switching module
WS-X4418-GB	18-port 1000BASE-X (GBIC) Gigabit Ethernet server switching module
WS-X4412-2GB-T	12-port 1000BASE-T Gigabit Ethernet and 2-GBIC ports switching module
WS-X4424-GB-RJ45	24-port 10/100/1000BASE-T Gigabit Ethernet RJ-45 switching module This linecard is not supported on Supervisor Engine 8-E.
WS-X4448-GB-LX	48-port 1000BASE-LX (small form-factor pluggable) Gigabit Ethernet fiber optic interface switching module
WS-X4448-GB-RJ45	48-port 10/100/1000BASE-T Gigabit Ethernet switching module
WS-X4448-GB-SFP	48-port 1000BASE-X (small form-factor pluggable) module
WS-X4506-GB-T	6-port Alternately-Wired 10/100/1000BASE-T Catalyst 4500 series Power over Ethernet (PoE) 802.3af or 1000BASE-X SFP
WS-X4524-GB-RJ45V	24-port 10/100/1000BASE-T RJ-45 Catalyst 4500 series PoE 802.3af
WS-X4548-GB-RJ45	48-port 10/100/1000BASE-T Gigabit Ethernet module
WS-X4548-GB-RJ45V	48-port 10/100/1000BASE-T RJ-45 Catalyst 4500 series PoE 802.3af
WS-X4548-RJ45V+	48-port 10/100/1000 Premium PoE line card
WS-X4612-SFP-E	12-port 1000BASE-X (small form factor pluggable) module with jumbo frame support
WS-X4624-SFP-E	Non-blocking 24-port 1000BASEX (small form factor pluggable) module
WS-X4640-CSFP-E	80 ports with Gigabit compact SFP (4:1 oversubscribed); 40 modules of Gigabit SFP line card (1000BaseX), providing 24 gigabits per-slot capacity (SFP optional) (2:1 oversubscribed)
WS-X4648-RJ45-E	48 port 10/100/1000BT with 2 to 1 oversubscription and jumbo frame support
WS-X4648-RJ45V-E	48 port 10/100/1000 Mb with 2 to 1 oversubscription PoE 802.3af providing up to 20 Watts power/port
WS-X4648-RJ45V+E	48 port 10/100/1000 Mb with 2 to 1 oversubscription PoE 802.3at providing up to 30 Watts power/port
WS-X4748-RJ45V+E	48-port 10/100/1000 line card nonblocking PoE 802.3at providing up to 30 Watts power/port

Table 1 Supported Hardware on Cisco Catalyst 4500E Supervisor Engine 7-E, Supervisor Engine 7L-E, and Supervisor Engine 8-E

Product Number (append with “=” for spares)	Product Description
WS-X4748-UPOE+E	48-port 10/100/1000 line card nonblocking PoE 802.3at and 60 watt UPOE PoE linecard with Ethernet Energy Efficient feature.
WS-X4748-RJ45-E	48-port 10/100/1000 nonblocking line card with the Ethernet Energy Efficient feature
WS-X4748-SFP-E	48-port 1000Base-X SFP (small form factor pluggable) line card
WS-X4724-SFP-E	24-port 1000Base-X SFP (small form factor pluggable) line card
WS-X4712-SFP-E	12-port 1000Base-X SFP (small form factor pluggable) line card
Fast Ethernet Switching Modules	
WS-X4124-FX-MT	24-port 100BASE-FX Fast Ethernet MT-RJ multimode fiber switching module
WS-X4148-FX-MT	48-port 100BASE-FX Fast Ethernet MT-RJ multimode fiber switching module
WS-X4148-FE-LX-MT	48-port 100BASE-LX10 Fast Ethernet MT-RJ single-mode fiber switching module
WS-X4148-FE-BD-LC	48-port 100BASE-BX10-D module
WS-X4248-FE-SFP	48-port 100BASE-X SFP switching module
WS-U4504-FX-MT	4-port 100BASE-FX (MT-RF) uplink daughter card
Ethernet/Fast Ethernet (10/100) Switching Modules	
WS-X4124-RJ45	24-port 10/100 RJ-45 module
WS-X4148-RJ	48-port 10/100 RJ-45 switching module
WS-X4148-RJ21	48-port 10/100 4xRJ-21 (telco connector) switching module
WS-X4148-RJ45V	48-port Pre-standard PoE 10/100BASE-T switching module
WS-X4224-RJ45V	24-port 10/100BASE-TX RJ-45 Cisco Catalyst 4500 series PoE 802.3af
WS-X4232-GB-RJ	32-port 10/100 Fast Ethernet RJ-45, plus 2-port 1000BASE-X (GBIC) Gigabit Ethernet switching module
WS-X4248-RJ45V	48-port 10/100BASE-T RJ-45 Cisco Catalyst 4500 series PoE 802.3af
WS-X4248-RJ21V	48-port 10/100 Fast Ethernet RJ-21 Cisco Catalyst 4500 series PoE 802.3af telco
WS-X4232-RJ-XX	32-port 10/100 Fast Ethernet RJ-45 modular uplink switching module
Small Form-Factor Pluggable 100 Megabit Ethernet Modules	
GLC-FE-100LX	100BASE-LX, 1310 nm wavelength, 10 km over SMF
GLC-FE-100BX-D	100BASE-BX10-D, 1550 nm TX/1310 nm RX wavelength
GLC-FE-100BX-U	100BASE-BX10-U, 1310 nm TX/1550 nm RX wavelength
GLC-FE-100EX	100BASE-EX for Fast Ethernet SFP Ports
GLC-FE-100ZX	100BASE-ZX for Fast Ethernet SFP Ports
GLC-FE-100FX	100BASE-FX SFP for Fast Ethernet SFP ports
GLC-GE-100FX	100BASE-FX SFP for Gigabit Ethernet SFP ports
Small Form-Factor Pluggable Gigabit Ethernet Modules	
GLC-BX-D	1000BASE-BX10-D small form-factor pluggable module
GLC-BX-U	1000BASE-BX10-U small form-factor pluggable module

Table 1 Supported Hardware on Cisco Catalyst 4500E Supervisor Engine 7-E, Supervisor Engine 7L-E, and Supervisor Engine 8-E

Product Number (append with “=” for spares)	Product Description
GLC-EX-SMD	1000BASE-EX GE SFP ports
GLC-SX-MM	1000BASE-SX small form-factor pluggable module
GLC-SX-MMD	1000BASE-SX small form-factor pluggable module with DOM support
GLC-LH-SM	1000BASE-LX/LH small form-factor pluggable module
GLC-LH-SMD	1000BASE-LX/LH small form-factor pluggable module with DOM support
GLC-ZX-SMD	1000BASE-ZX small form-factor pluggable module with DOM support
GLC-T	1000BASE-T small form-factor pluggable module
CVR-X2-SFP	TwinGig Converter Module; converts a 10 Gigabit Ethernet X2 interface into two Gigabit Ethernet Small Form-Factor Pluggable (SFP) ports.
CWDM-SFP-xxxx	CWDM small form-factor pluggable module (See Table 2 on page 7 for a list of supported wavelengths.)
SFP-DWDM	Dense Wavelength-Division Multiplexing (DWDM) Small Form Factor Pluggable (SFP) module
10 Gigabit Ethernet X2 Pluggable Modules	
X2-10GB-LR	10GBASE-LR X2 transceiver module for SMF, 1310-nm wavelength, SC duplex connector
X2-10GB-ER	10GBASE-ER X2 transceiver module for SMF, 1550-nm wavelength, SC duplex connector
X2-10GB-CX4	10GBASE-CX4 X2 transceiver module for CX4 cable, copper, Infiniband 4X connector
X2-10GB-LX4	10GBASE-LX4 X2 transceiver module for MMF, 1310-nm wavelength, SC duplex connector
X2-10GB-LRM	10GBASE-LRM X2 transceiver module for MMF, 1310-nm wavelength, SC duplex connector
X2-10GB-SR	10GBASE-SR X2 transceiver module for MMF, 850-nm wavelength, SC duplex connector
X2-10GB-T	10GBASE-T X2 transceiver module, up to 100m wavelength on CAT6A or CAT7 copper cables
X2-10GB-ZR	10GBASE-ZR X2 transceiver module for SMF, 1550 nm wavelength up to 80 km. DOM is not supported.
X2-10GB-DWDM	10GBASE-ZR X2 transceiver module for SMF, 32 nontunable ITU 100-GHz wavelengths up to 80 km are supported. DOM is supported. Dual SC/PC connectors are supported.
CVR-X2-SFP10G	Hot-swappable input/output (I/O) converter module that fits into a 10-Gigabit Ethernet X2 slot on a switch or line card module. Hosts one 10-Gigabit Ethernet SFP+ transceiver module.
SFP+-DWDM	10GBASE Dense Wavelength-Division Multiplexing (DWDM) SFP+ Module
SFP+ Modules	
SFP-10G-SR	Cisco 10GBASE-SR SFP+ Module for MMF
SFP-10G-LR	Cisco 10GBASE-LR SFP+ Module for SMF
SFP-10G-LRM	Cisco 10GBASE-LRM SFP+ Module for MMF
SFP-H10GB-CU1M	10GBASE-CU SFP+ Cable 1 Meter
SFP-H10GB-CU3M	10GBASE-CU SFP+ Cable 3 Meter
SFP-H10GB-CU5M	10GBASE-CU SFP+ Cable 5 Meter
SFP-10G-ER	Cisco 10GBASE-ER SFP+ Module for SMF
SFP-10G-ZR	Cisco 10GBASE-ZR SFP+ Module for SMF

Table 1 Supported Hardware on Cisco Catalyst 4500E Supervisor Engine 7-E, Supervisor Engine 7L-E, and Supervisor Engine 8-E

Product Number (append with “=” for spares)	Product Description
SFP+-10GE-DWDM	10GBASE Dense Wavelength-Division Multiplexing (DWDM) SFP+ Module
Gigabit Interface Converter	
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-handed)
CWDM-GBIC-xxxx	CWDM gigabit interface converter (See Table 2 on page 7 for a list of supported wavelengths.)
DWDM-GBIC-xx.yy	Dense Wavelength-Division Multiplexing ITU 100-Ghz grid 15xx.yy nm GBIC.
WDM-GBIC-REC	Receive-only 1000BASE-WDM GBIC
Other Modules	
MEM-X45-2GB-E	SD Card, 2G
USB-X45-4GB-E	USB Thumb Drive, 4G
PWR-C45-1000AC	Catalyst 4500 series switch 1000 Watt AC power supply for chassis 4503, 4506, and 4507R (data only)
PWR-C45-1400DC	Catalyst 4500 series switch 1400 Watt DC triple input power supply (data-only)
PWR-C45-1400DC-P	Catalyst 4500 series switch 1400 Watt DC power supply with integrated PEM
PWR-C45-1400AC	Catalyst 4500 series switch 1400 Watt AC power supply (data-only)
PWR-C45-1300ACV	Catalyst 4500 series switch 1300 Watt AC power supply with integrated voice for chassis 4503, 4506, and 4507R
PWR-C45-2800ACV	Catalyst 4500 series switch 2800 Watt AC power supply with integrated voice (data and PoE) for chassis 4503, 4506, and 4507R
PWR-C45-4200ACV	Catalyst 4500 series switch 4200 Watt AC dual input power supply with integrated voice (data and PoE)
WS-P4502-1PSU	Catalyst 4500 series switch auxiliary power shelf (25-slot), including one PWR-4502
PWR-4502	Catalyst 4500 series switch auxiliary power shelf redundant power supply
PWR-C45-6000ACV	Catalyst 4500 Series Switch 6000 W AC power supply
PWR-C45-9000ACV	Catalyst 4500 Series Switch 9000 W AC power supply

[Table 2](#) briefly describes the supported CWDM wavelengths in the Catalyst 4500E Series Switch.

Table 2 CWDM GBIC and SFP Supported Wavelengths on Cisco Catalyst 4500E Supervisor Engine 7-E, Supervisor Engine 7L-E, and Supervisor Engine 8-E

Product Number (append with “=” for spares)	Product Description
CWDM-GBIC (or SFP) -1470	Longwave 1470 nm laser single-mode
CWDM-GBIC (or SFP) -1490	Longwave 1490 nm laser single-mode

Table 2 CWDM GBIC and SFP Supported Wavelengths on Cisco Catalyst 4500E Supervisor Engine 7-E, Supervisor Engine 7L-E, and Supervisor Engine 8-E

Product Number (append with "=" for spares)	Product Description
CWDM-GBIC (or SFP) -1510	Longwave 1510 nm laser single-mode
CWDM-GBIC (or SFP) -1530	Longwave 1530 nm laser single-mode
CWDM-GBIC (or SFP) -1550	Longwave 1550 nm laser single-mode
CWDM-GBIC (or SFP) -1570	Longwave 1570 nm laser single-mode
CWDM-GBIC (or SFP) -1590	Longwave 1590 nm laser single-mode
CWDM-GBIC (or SFP) -1610	Longwave 1610 nm laser single-mode

Table 3 briefly describes the supported DWDM wavelengths in the Catalyst 4500E Series Switch.

Table 3 DWDM SFP Supported Wavelengths on Cisco Catalyst 4500E Supervisor Engine 7-E, Supervisor Engine 7L-E, WS-4712-SFP+E, and Supervisor Engine 8-E

Product Number (append with "=" for spares)	Product Description
DWDM-SFP-6061=	Cisco 1000BASE-DWDM SFP 1560.61 nm
DWDM-SFP-5979=	Cisco 1000BASE-DWDM SFP 1559.79 nm
DWDM-SFP-5898=	Cisco 1000BASE-DWDM SFP 1558.98 nm
DWDM-SFP-5817=	Cisco 1000BASE-DWDM SFP 1558.17 nm
DWDM-SFP-5655=	Cisco 1000BASE-DWDM SFP 1556.55 nm
DWDM-SFP-5575=	Cisco 1000BASE-DWDM SFP 1555.75 nm
DWDM-SFP-5413=	Cisco 1000BASE-DWDM SFP 1554.13 nm
DWDM-SFP-5494=	Cisco 1000BASE-DWDM SFP 1554.94 nm
DWDM-SFP-5252=	Cisco 1000BASE-DWDM SFP 1552.52 nm
DWDM-SFP-5172=	Cisco 1000BASE-DWDM SFP 1551.72 nm
DWDM-SFP-5092=	Cisco 1000BASE-DWDM SFP 1550.92 nm
DWDM-SFP-5012=	Cisco 1000BASE-DWDM SFP 1550.12 nm
DWDM-SFP-4851=	Cisco 1000BASE-DWDM SFP 1548.51 nm
DWDM-SFP-4772=	Cisco 1000BASE-DWDM SFP 1547.72 nm
DWDM-SFP-4692=	Cisco 1000BASE-DWDM SFP 1546.92 nm
DWDM-SFP-4612=	Cisco 1000BASE-DWDM SFP 1546.12 nm
DWDM-SFP-4453=	Cisco 1000BASE-DWDM SFP 1544.53 nm
DWDM-SFP-4373=	Cisco 1000BASE-DWDM SFP 1543.73 nm
DWDM-SFP-4694=	Cisco 1000BASE-DWDM SFP 1542.94 nm
DWDM-SFP-4614=	Cisco 1000BASE-DWDM SFP 1542.14 nm
DWDM-SFP-4056=	Cisco 1000BASE-DWDM SFP 1540.56 nm
DWDM-SFP-3977=	Cisco 1000BASE-DWDM SFP 1539.77 nm

Table 3 *DWDM SFP Supported Wavelengths on Cisco Catalyst 4500E Supervisor Engine 7-E, Supervisor Engine 7L-E, WS-4712-SFP+E, and Supervisor Engine 8-E*

Product Number (append with “=” for spares)	Product Description
DWDM-SFP-3898=	Cisco 1000BASE-DWDM SFP 1539.98 nm
DWDM-SFP-3819=	Cisco 1000BASE-DWDM SFP 1538.19 nm
DWDM-SFP-3661=	Cisco 1000BASE-DWDM SFP 1536.61 nm
DWDM-SFP-3582=	Cisco 1000BASE-DWDM SFP 1535.82 nm
DWDM-SFP-3504=	Cisco 1000BASE-DWDM SFP 1535.04 nm
DWDM-SFP-3425=	Cisco 1000BASE-DWDM SFP 1534.25 nm
DWDM-SFP-3268=	Cisco 1000BASE-DWDM SFP 1532.68 nm
DWDM-SFP-3190=	Cisco 1000BASE-DWDM SFP 1531.90 nm
DWDM-SFP-3112=	Cisco 1000BASE-DWDM SFP 1531.12 nm
DWDM-SFP-3033=	Cisco 1000BASE-DWDM SFP 1530.33 nm

For details on transceiver module compatibility information, please refer to the URL:

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

Supported E Series Hardware on Cisco IOS XE Release 3.6.0E

A brief list of primary E-Series hardware supported by Cisco IOS XE Release 3.6.0E is shown in [Table 4](#).

Table 4 *Supported E-Series Hardware*

Product Number	Description
WS-C4503-E	Cisco Catalyst 4500E Series 3-Slot Chassis <ul style="list-style-type: none"> Fan tray No Power Supply
WS-C4506-E	Cisco Catalyst 4500E Series 6-Slot Chassis <ul style="list-style-type: none"> Fan tray No Power Supply
WS-C4507R-E	Cisco Catalyst 4500E Series 7-Slot Chassis <ul style="list-style-type: none"> Fan tray No Power Supply Redundant supervisor engine capability In this chassis, supervisor engines must sit in slots 3 and/or 4; the backplane will enforce this restriction.

Table 4 Supported E-Series Hardware

Product Number	Description
WS-C4507R+E	Cisco Catalyst 4500E Series 7-Slot 48 GB-ready Chassis <ul style="list-style-type: none"> • Fan tray • No Power Supply • Redundant supervisor engine capability • In this chassis, supervisor engines must sit in slots 3 and/or 4; the backplane will enforce this restriction.
WS-C4510R-E	Cisco Catalyst 4500E Series 10-Slot Chassis <p>Note This chassis does not support the Supervisor Engine 7L-E.</p> <ul style="list-style-type: none"> • Fan tray • No Power Supply • Redundant supervisor engine capability • In this chassis, supervisor engines must sit in slots 5 and/or 6; the backplane will enforce this restriction.
WS-C4510R+E	Cisco Catalyst 4500E Series 10-Slot 48 GB-ready Chassis <p>Note This chassis does not support the Supervisor Engine 7L-E.</p> <ul style="list-style-type: none"> • Fan tray • No Power Supply • Redundant supervisor engine capability • In this chassis, supervisor engines must sit in slots 5 and/or 6; the backplane will enforce this restriction.

Feature Support by Image Type

Table 5 is a detailed list of features supported on Catalyst 4500E Supervisor Engine 7-E, Supervisor Engine 7L-E, and Supervisor Engine 8-E running Cisco IOS XE Software Release 3.6.0E categorized by image type. Please visit Feature Navigator for package details:

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

Table 5 LAN Base, IP Base, and Enterprise Services Image Support on Cisco Catalyst 4500E Supervisor Engine 7-E, Supervisor Engine 7L-E, and Supervisor Engine 8-E

Feature	LAN Base	IP Base	Enterprise Services
2-way Community Private VLANs	No	Yes	Yes
8-Way CEF Load Balancing	Yes	Yes	Yes
10 Gigabit Uplink Use	Yes	Yes	Yes

Table 5 LAN Base, IP Base, and Enterprise Services Image Support on Cisco Catalyst 4500E Supervisor Engine 7-E, Supervisor Engine 7L-E, and Supervisor Engine 8-E

Feature	LAN Base	IP Base	Enterprise Services
AAA Server Group	Yes	Yes	Yes
AAA Server Group Based on DNIS	Yes	Yes	Yes
ACL - Improved Merging Algorithm	Yes	Yes	Yes
ACL Logging	Yes	Yes	Yes
ACL Policy Enhancements	Yes	Yes	Yes
ACL Sequence Numbering	Yes	Yes	Yes
Address Resolution Protocol (ARP)	Yes	Yes	Yes
ANCP Client	No	Yes	Yes
ANSI TIA-1057 LLDP - MED Location Extension	Yes	Yes	Yes
ANSI TIA-1057 LLDP - MED Support	Yes	Yes	Yes
ARP Optimization	Yes	Yes	Yes
Auto Configuration	Yes	Yes	Yes
Auto QoS	Yes	Yes	Yes
Auto Security	Yes	Yes	Yes
Auto SmartPorts	Yes	Yes	Yes
Auto-MDIX	Yes	Yes	Yes
Auto-Voice VLAN (part of Auto QoS)	Yes	Yes	Yes
AutoInstall Using DHCP for LAN Interfaces	Yes	Yes	Yes
AutoQoS - VoIP	Yes	Yes	Yes
AutoRP Enhancement	No	Yes	Yes
Banner Page and Inactivity timeout for HTTP/S connections	Yes	Yes	Yes
BGP	No	No	Yes
BGP 4	No	No	Yes
BGP 4 4Byte ASN (CnH)	No	No	Yes
BGP 4 Multipath Support	No	No	Yes

Table 5 LAN Base, IP Base, and Enterprise Services Image Support on Cisco Catalyst 4500E Supervisor Engine 7-E, Supervisor Engine 7L-E, and Supervisor Engine 8-E

Feature	LAN Base	IP Base	Enterprise Services
BGP 4 Prefix Filter and In-bound Route Maps	No	No	Yes
BGP 4 Soft Config	No	No	Yes
BGP Conditional Route Injection	No	No	Yes
BGP Configuration Using Peer Templates	No	No	Yes
BGP Dynamic Update Peer-Groups	No	No	Yes
BGP Increased Support of Numbered as-path Access Lists to 500	No	No	Yes
BGP Link Bandwidth	No	No	Yes
BGP Neighbor Policy	No	No	Yes
BGP Prefix-Based Outbound Route Filtering	No	No	Yes
BGP Restart Neighbor Session After max-prefix Limit Reached	No	No	Yes
BGP Route-Map Continue	No	No	Yes
BGP Route-Map Continue Support for Outbound Policy	No	No	Yes
BGP Soft Rest	No	No	Yes
BGP Wildcard	No	No	Yes
Bidirectional PIM (IPv4 only)	No	Yes	Yes
Bidirectional SXP support	Yes	Yes	Yes
Boot Config	Yes	Yes	Yes
Broadcast/Multicast Suppression	Yes	Yes	Yes
Call Home	No	Yes	Yes
CDP (Cisco Discovery Protocol) Version 2	Yes	Yes	Yes
CDP Bypass	Yes	Yes	Yes
CDP Enhancement - Host presence TLV	Yes	Yes	Yes
CEF/dCEF - Cisco Express Forwarding	Yes	Yes	Yes
CEFv6 Switching for 6to4 Tunnels	No	Yes	Yes
CEFv6/dCEFv6 - Cisco Express Forwarding	Yes	Yes	Yes

Table 5 LAN Base, IP Base, and Enterprise Services Image Support on Cisco Catalyst 4500E Supervisor Engine 7-E, Supervisor Engine 7L-E, and Supervisor Engine 8-E

Feature	LAN Base	IP Base	Enterprise Services
CFM/IEEE 802.1ag - D8.1 standard Compliant CFM, Y.1731 multicast LBM / AIS / RDI / LCK, IP SLA for Ethernet	Yes	Yes	Yes
CGMP - Cisco Group Management Protocol	No	Yes	Yes
Cisco IOS Scripting w/Tcl	Yes	Yes	Yes
Cisco Service Discovery Gateway Support	Yes	Yes	Yes
CiscoView Autonomous Device Manager (ADP)	No	Yes	Yes
Class Based Ethernet CoS Matching & Marking (802.1p & ISL CoS)	Yes	Yes	Yes
Class-Based Marking	Yes	Yes	Yes
Class-Based Policing	Yes	Yes	Yes
Class-Based Shaping	Yes	Yes	Yes
Clear Counters Per Port	Yes	Yes	Yes
CLI String Search	Yes	Yes	Yes
CNS	Yes	Yes	Yes
CNS - Configuration Agent	Yes	Yes	Yes
CNS - Event Agent	Yes	Yes	Yes
CNS - Image Agent	Yes	Yes	Yes
CNS - Interactive CLI	Yes	Yes	Yes
CNS Config Retrieve Enhancement with Retry and Interval	Yes	Yes	Yes
Command Scheduler (Kron)	Yes	Yes	Yes
Command Scheduler (Kron) Policy for System Startup	Yes	Yes	Yes
Commented IP Access List Entries	Yes	Yes	Yes
Community Private VLAN	No	Yes	Yes
Configuration Change Tracking Identifier	Yes	Yes	Yes
Configuration Change Notification and Logging	No	Yes	Yes
Configuration Replace and Configuration Rollback	Yes	Yes	Yes

Table 5 LAN Base, IP Base, and Enterprise Services Image Support on Cisco Catalyst 4500E Supervisor Engine 7-E, Supervisor Engine 7L-E, and Supervisor Engine 8-E

Feature	LAN Base	IP Base	Enterprise Services
Configuration Rollback Confirmed Change	Yes	Yes	Yes
Configuring FQDN ACL	Yes	Yes	Yes
Contextual Configuration Diff Utility	Yes	Yes	Yes
Control Plane Policing (Copp)	Yes	Yes	Yes
CPU Optimization for Layer 3 Multicast Control Packets	Yes	Yes	Yes
Critical Authorization for Voice and Data	Yes	Yes	Yes
DAI (Dynamic ARP inspection)	Yes	Yes	Yes
DBL (Dynamic Buffer Limiting) - Selective DBL	Yes	Yes	Yes
Debounce Timer per Port	Yes	Yes	Yes
Default Passive Interface	No	Yes	Yes
DHCP Client	Yes	Yes	Yes
DHCP Configurable DHCP Client	Yes	Yes	Yes
DHCP Gleaning	No	Yes	Yes
DHCPv6 Relay Agent notification for Prefix Delegation	Yes	Yes	Yes
DHCP Option 82, Pass Through	Yes	Yes	Yes
DHCP Server	Yes	Yes	Yes
DHCP Snooping	Yes	Yes	Yes
DHCPv6 Ethernet Remote ID option	Yes	Yes	Yes
DHCPv6 Relay - Reload persistent Interface ID option	Yes	Yes	Yes
DHCPv6 Repackaging	Yes	Yes	Yes
Diffserv MIB	Yes	Yes	Yes
DSCP/CoS via LLDP	Yes	Yes	Yes
Duplication Location Reporting Issue	No	Yes	Yes
Dynamic Trunking Protocol (DTP)	Yes	Yes	Yes
Easy Virtual Network (EVN)	No	No	Yes

Table 5 LAN Base, IP Base, and Enterprise Services Image Support on Cisco Catalyst 4500E Supervisor Engine 7-E, Supervisor Engine 7L-E, and Supervisor Engine 8-E

Feature	LAN Base	IP Base	Enterprise Services
Easy VSS ¹	No	Yes (SUP7E and SUP8E only)	Yes (SUP7E, SUP7LE, and SUP8E)
EIGRP	No	No	Yes
EIGRP Service Advertisement Framework	Yes	Yes	Yes
EIGRP Stub Routing	No	Yes	Yes
Embedded Event Manager (EEM) 3.2	No	Yes	Yes
Embedded Syslog Manager (ESM)	Yes	Yes	Yes
Enable Bidirectional SXP support	Yes	Yes	Yes
Enable of Security Group ACL at Interface Level	Yes	Yes	Yes
Energywise Agentless SNMP support	Yes	Yes	Yes
Energywise Wake-On-Lan Support	Yes	Yes	Yes
Enhanced PoE Support (Additional Wattage Range)	Yes	Yes	Yes
Entity API for Physical and Logical Mgd Entities	Yes	Yes	Yes
ErrDisable timeout	Yes	Yes	Yes
EtherChannel	Yes	Yes	Yes
EtherChannel Flexible PAgP	Yes	Yes	Yes
EtherChannel Single Port Channel	Yes	Yes	Yes
Ethernet Virtual Connections (EVC)-Lite	No	Yes	Yes
Fast EtherChannel (FEC)	Yes	Yes	Yes
FHRP - Enhanced Object Tracking of IP SLAs	Yes	Yes	Yes
FHRP - Enhanced Object Tracking integration with EEM	Yes	Yes	Yes
FHRP - GLBP - IP Redundancy API	No	Yes	Yes
FHRP - HSRP - Hot Standby Router Protocol V2	No	Yes	Yes
FHRP - Object Tracking List	No	Yes	Yes
Filter-ID Based ACL Application	Yes	Yes	Yes

Table 5 LAN Base, IP Base, and Enterprise Services Image Support on Cisco Catalyst 4500E Supervisor Engine 7-E, Supervisor Engine 7L-E, and Supervisor Engine 8-E

Feature	LAN Base	IP Base	Enterprise Services
FIPS 140-2/3 Level 2 Certification	Yes	Yes	Yes
FIPS/CC Compliance for NMSP	Yes	Yes	Yes
Flexible NetFlow - Application ID	No	Yes	Yes
Flexible NetFlow - CTS Fields	No	Yes	Yes
Flexible NetFlow - Device type	No	Yes	Yes
Flexible NetFlow - Ethertype	No	Yes	Yes
Flexible NetFlow - Full Flow support	No	Yes	Yes
Flexible NetFlow - Ingress support	No	Yes	Yes
Flexible NetFlow - IPv4 Unicast Flows	No	Yes	Yes
Flexible NetFlow - IPv6 Unicast Flows	No	Yes	Yes
Flexible NetFlow - Layer 2 Fields	No	Yes	Yes
Flexible NetFlow - Multiple User Defined Caches	No	Yes	Yes
Flexible NetFlow - NetFlow Export over IPv4	No	Yes	Yes
Flexible NetFlow - NetFlowV5 Export protocol	No	Yes	Yes
Flexible NetFlow - NetFlow v9 Export Format	No	Yes	Yes
Flexible NetFlow - Power Reading	No	Yes	Yes
Flexible NetFlow - Username	No	Yes	Yes
Flexible NetFlow - VLAN ID support	No	Yes	Yes
Flexible NetFlow - Export to an IPv6 address	No	Yes	Yes
Flexible NetFlow - IPFIX	No	Yes	Yes
Flex Links+(VLAN Load balancing)	Yes	Yes	Yes
Forced 10/100 Autonegotiation	Yes	Yes	Yes
FQDN	Yes	Yes	Yes
FTP Support for Downloading Software Images	Yes	Yes	Yes
Gateway Load Balancing Protocol (GLBP)	No	Yes	Yes
Generic Routing Encapsulation (GRE)	No	Yes	Yes

Table 5 LAN Base, IP Base, and Enterprise Services Image Support on Cisco Catalyst 4500E Supervisor Engine 7-E, Supervisor Engine 7L-E, and Supervisor Engine 8-E

Feature	LAN Base	IP Base	Enterprise Services
GOLD Online Diagnostics	Yes	Yes	Yes
HSRP: Global IPv6 Address	No	Yes	Yes
HSRP - Hot Standby Router Protocol	No	Yes	Yes
HSRPv2 for IPv6 Global Address Support	No	Yes	Yes
HTTP Gleaning	No	Yes	Yes
HTTP Security	Yes	Yes	Yes
HTTP TACAC+ Accounting support	Yes	Yes	Yes
IEEE 802.1ab LLDP (Link Layer Discovery Protocol)	Yes	Yes	Yes
IEEE 802.1ab LLDP/LLDP-MED	Yes	Yes	Yes
IEEE 802.1ab LLDP enhancements (PoE+Layer 2 COS)	Yes	Yes	Yes
IEEE 802.1p Support	Yes	Yes	Yes
IEEE 802.1Q VLAN Trunking	Yes	Yes	Yes
IEEE 802.1s Multiple Spanning Tree (MST) Standard Compliance	Yes	Yes	Yes
IEEE 802.1s VLAN Multiple Spanning Trees	Yes	Yes	Yes
IEEE 802.1t ²	Yes	Yes	Yes
IEEE 802.1w Spanning Tree Rapid Reconfiguration	Yes	Yes	Yes
IEEE 802.1x Auth Fail Open (Critical Ports)	Yes	Yes	Yes
IEEE 802.1x Auth Fail VLAN	Yes	Yes	Yes
IEEE 802.1x Flexible Authentication	Yes	Yes	Yes
IEEE 802.1x Multiple Authentication	Yes	Yes	Yes
IEEE 802.1x Open Authentication	Yes	Yes	Yes
IEEE 802.1X with User Distribution	Yes	Yes	Yes
IEEE 802.1x VLAN Assignment	Yes	Yes	Yes
IEEE 802.1x VLAN User Group Distribution	Yes	Yes	Yes
IEEE 802.1x Wake on LAN Support	Yes	Yes	Yes

Table 5 LAN Base, IP Base, and Enterprise Services Image Support on Cisco Catalyst 4500E Supervisor Engine 7-E, Supervisor Engine 7L-E, and Supervisor Engine 8-E

Feature	LAN Base	IP Base	Enterprise Services
IEEE 802.1x Authenticator	Yes	Yes	Yes
IEEE 802.1x Fallback support	Yes	Yes	Yes
IEEE 802.1x Guest VLAN	Yes	Yes	Yes
IEEE 802.1x Multi-Domain Authentication	Yes	Yes	Yes
IEEE 802.1x Private Guest VLAN	Yes	Yes	Yes
IEEE 802.1x Private VLAN Assignment	Yes	Yes	Yes
IEEE 802.1x RADIUS Accounting	Yes	Yes	Yes
IEEE 802.1x RADIUS-Supplied Session Timeout	Yes	Yes	Yes
IEEE 802.1x with ACL Assignments	Yes	Yes	Yes
IEEE 802.1x with Port Security	Yes	Yes	Yes
IEEE 802.3ad Link Aggregation (LACP)	Yes	Yes	Yes
IEEE 802.3ad Link Aggregation (LACP) Port-Channel Standalone Disable	Yes	Yes	Yes
IEEE 802.3af PoE (Power over Ethernet)	Yes	Yes	Yes
IEEE 802.3x Flow Control	Yes	Yes	Yes
IGMP Fast Leave	Yes	Yes	Yes
IGMP Filtering	Yes	Yes	Yes
IGMP Snooping	Yes	Yes	Yes
IGMP Version 1	Yes	Yes	Yes
IGMP Version 2	Yes	Yes	Yes
IGMP Version 3	Yes	Yes	Yes
IGMP Version 3 - Explicit Tracking of Hosts, Groups, and Channels	Yes	Yes	Yes
IGMPv3 Host Stack	Yes	Yes	Yes
IGMPv3 Snooping: Full Support	Yes	Yes	Yes
Image Verification	Yes	Yes	Yes
Individual SNMP Trap Support	Yes	Yes	Yes

Table 5 LAN Base, IP Base, and Enterprise Services Image Support on Cisco Catalyst 4500E Supervisor Engine 7-E, Supervisor Engine 7L-E, and Supervisor Engine 8-E

Feature	LAN Base	IP Base	Enterprise Services
Inline Power Auto Negotiation	Yes	Yes	Yes
Inline Power Management	Yes	Yes	Yes
Interface Index Persistence	Yes	Yes	Yes
Interface Range Specification	Yes	Yes	Yes
Interface Templates	Yes	Yes	Yes
IOS Based Device Profiling	No	Yes	Yes
IP Enhanced IGRP Route Authentication	No	No	Yes
IP Event Dampening	No	Yes	Yes
IP Multicast Load Splitting - Equal Cost Multipath (ECMP) using S, G and Next-hop	No	No	Yes
IP Multicast Load Splitting across Equal-Cost Paths	No	Yes	Yes
IP Named Access Control List	Yes	Yes	Yes
IPv6 Tunnels (in software)	No	Yes	Yes
IP Routing	Yes	Yes	Yes
IP SLAs - DHCP Operations	No	Yes	Yes
IP SLAs - Distribution of Statistics	No	Yes	Yes
IP SLAs - DNS Operation	No	Yes	Yes
IP SLAs - FTP Operation	No	Yes	Yes
IP SLA - HTTP Operation	No	Yes	Yes
IP SLAs - ICMP Echo Operation	No	Yes	Yes
IP SLAs - ICMP Path Echo Operation	No	Yes	Yes
IP SLAs - Multi Operation Scheduler	No	Yes	Yes
IP SLAs - One Way Measurement	No	Yes	Yes
IP SLAs - Path Jitter Operation	No	Yes	Yes
IP SLAs - Random Scheduler	No	Yes	Yes
IP SLAs - Reaction Threshold	No	Yes	Yes

Table 5 LAN Base, IP Base, and Enterprise Services Image Support on Cisco Catalyst 4500E Supervisor Engine 7-E, Supervisor Engine 7L-E, and Supervisor Engine 8-E

Feature	LAN Base	IP Base	Enterprise Services
IP SLAs - Responder	Yes	Yes	Yes
IP SLAs - Scheduler	No	Yes	Yes
IP SLAs - Sub-millisecond Accuracy Improvements	No	Yes	Yes
IP SLAs - TCP Connect Operation	No	Yes	Yes
IP SLAs - UDP Based VoIP Operation	No	Yes	Yes
IP SLAs - UDP Echo Operation	No	Yes	Yes
IP SLAs - UDP Jitter Operation	No	Yes	Yes
IP SLAs - Video Operations	No	Yes	Yes
IP SLAs - VoIP Threshold Traps	No	Yes	Yes
IP Summary Address for RIPv2	No	Yes	Yes
IP Unnumbered for VLAN-SVI interfaces	No	Yes	Yes
IPSG (IP Source Guard) v4	Yes	Yes	Yes
IPSG (IP Source Guard) v4 for Static Hosts	Yes	Yes	Yes
IPv4 Policy-Based Routing	No	No	Yes
IPv4 Policy-Based Routing with recursive next hop	No	No	Yes
IPv4 Routing: Static Hosts/Default Gateway	Yes	Yes	Yes
IPv6 / v4 BFD with OSPF/ BGP/ EIGRP and Static	No	Yes	Yes
IPv6 BGP	No	No	Yes
IPv6 Bootstrap Router (BSR) Scoped Zone Support	No	No	Yes
IPv6 CNS Agents	Yes	Yes	Yes
IPv6 Config Logger	Yes	Yes	Yes

Table 5 LAN Base, IP Base, and Enterprise Services Image Support on Cisco Catalyst 4500E Supervisor Engine 7-E, Supervisor Engine 7L-E, and Supervisor Engine 8-E

Feature	LAN Base	IP Base	Enterprise Services
IPv6 First Hop Security (FHS): DHCPv6 Guard IPv6 Destination Guard IPv6 Snooping (Data Gleaning, per-limit Address Limit) IPv6 Neighbor Discovery Multicast Suppression IPv6 Router Advertisement (RA) Guard	Yes	Yes	Yes
IPv6 First Hop Security (FHS) Phase 2: Binding table recovery Lightweight DHCPv6 Relay Agent (LDRA) Neighbor Discovery (ND) Multicast Suppress Source and Prefix Guard ³	Yes	Yes	Yes
IPv6 HSRP	No	Yes	Yes
IPv6 HTTP(S)	Yes	Yes	Yes
IPv6 ICMPv6	Yes	Yes	Yes
IPv6 ICMPv6 Redirect	Yes	Yes	Yes
IPv6 Interface Statistics	Yes	Yes	Yes
IPv6 IP SLAs (UDP Jitter, UDP Echo, ICMP Echo, TCP Connect)	No	Yes	Yes
IPv6 Static Route support for Object Tracking	Yes	Yes	Yes
IPv6 TCL	Yes	Yes	Yes
IPv6 (Internet Protocol Version 6)	Yes	Yes	Yes
IPv6 Interface Statistics	Yes	Yes	Yes
IPv6 Access Services: DHCPv6 Relay Agent	No	Yes	Yes
IPv6: Anycast Address	Yes	Yes	Yes
IPv6 MLD Snooping v1 and v2	Yes	Yes	Yes
IPv6 MTU Path Discovery	Yes	Yes	Yes
IPv6 Multicast	No	Yes	Yes
IPv6 Multicast: Bootstrap Router (BSR)	No	Yes	Yes

Table 5 LAN Base, IP Base, and Enterprise Services Image Support on Cisco Catalyst 4500E Supervisor Engine 7-E, Supervisor Engine 7L-E, and Supervisor Engine 8-E

Feature	LAN Base	IP Base	Enterprise Services
IPv6 Multicast: Explicit Tracking of Receivers	No	Yes	Yes
IPv6 Multicast: MLD Access Group	No	Yes	Yes
IPv6 Multicast: Multicast Listener Discovery (MLD) Protocol, Versions 1 and 2	No	Yes	Yes
IPv6 Multicast: PIM Accept Register	No	Yes	Yes
IPv6 Multicast: PIM Embedded RP Support	No	Yes	Yes
IPv6 Multicast: PIM Source-Specific Multicast (PIM-SSM)	No	Yes	Yes
IPv6 Multicast: PIM Sparse Mode (PIM-SM)	No	Yes	Yes
IPv6 Multicast: Routable Address Hello Option	No	Yes	Yes
IPv6 Multicast: RPF Flooding of Bootstrap Router (BSR) Packets	No	Yes	Yes
IPv6 Multicast: Scope Boundaries	No	Yes	Yes
IPv6 Neighbor Discovery Duplicate Address Detection	Yes	Yes	Yes
IPv6 OSPFv3 NSF/SSO	No	Yes ⁵	Yes
IPv6 OSPFv3 Fast Convergence	No	Yes ⁵	Yes
IPv6 PACL	Yes	Yes	Yes
IPv6 Policy-Based Routing ⁴	No	No	Yes
IPv6 RA Guard (Host Mode)	Yes	Yes	Yes
IPv6 Routing - EIGRP Support	No	No	Yes
IPv6 Routing: OSPF for IPv6 (OSPFv3)	No	Yes ⁵	Yes
IPv6 Routing: RIP for IPv6 (RIPng)	No	Yes	Yes
IPv6 Routing: Route Redistribution	No	Yes	Yes
IPv6 Routing: Static Routing	Yes	Yes	Yes
IPv6 Security: Secure Shell SSH support over IPv6	Yes	Yes	Yes
IPv6 Services: AAAA DNS Lookups over an IPv4 Transport	No	Yes	Yes

Table 5 LAN Base, IP Base, and Enterprise Services Image Support on Cisco Catalyst 4500E Supervisor Engine 7-E, Supervisor Engine 7L-E, and Supervisor Engine 8-E

Feature	LAN Base	IP Base	Enterprise Services
IPv6 Services: Cisco Discovery Protocol (CDP) - IPv6 Address Family Support for Neighbor Information	Yes	Yes	Yes
IPv6 Services: DNS Lookups over an IPv6 Transport	Yes	Yes	Yes
IPv6 Services: Extended Access Control Lists	Yes	Yes	Yes
IPv6 Services: Standard Access Control Lists	Yes	Yes	Yes
IPv6 Stateless Auto-configuration	Yes	Yes	Yes
IPv6 Static Routing: Support for Tracking Objects	Yes	Yes	Yes
IPv6 Support for SGT/SGACL	Yes	Yes	Yes
IPv6 Switching: CEF Support	No	Yes	Yes
IPv6 Switching: CEFv6 Switched Automatic IPv4-compatible Tunnels (in software)	No	Yes	Yes
IPv6 Switching: CEFv6 Switched ISATAP Tunnels (in software)	No	Yes	Yes
IPv6 Tunneling: Automatic 6to4 Tunnels (in software)	No	Yes	Yes
IPv6 Tunneling: Automatic IPv4-compatible Tunnels (in software)	No	Yes	Yes
IPv6 Tunneling: IPv6 over IPv4 GRE Tunnels (in software)	No	Yes	Yes
IPv6 Tunneling: ISATAP Tunnel Support (in software)	No	Yes	Yes
IPv6 Tunneling: Manually Configured IPv6 over IPv4 Tunnels (in software)	No	Yes	Yes
IPv6 Virtual LAN Access Control List (VACL)	Yes	Yes	Yes
IPsecv3/IKEv2 (for management traffic only)	Yes	Yes	Yes
IS-IS for IPv4 and IPv6	No	No	Yes
ISSU (IOS In-Service Software Upgrade)	No	Yes	Yes
Jumbo Frames	Yes	Yes	Yes
Layer 2 Control Packet	Yes	Yes	Yes
Layer 2 Protocol Tunneling (L2PT)	No	Yes	Yes
Layer 2 Traceroute	No	Yes	Yes

Table 5 LAN Base, IP Base, and Enterprise Services Image Support on Cisco Catalyst 4500E Supervisor Engine 7-E, Supervisor Engine 7L-E, and Supervisor Engine 8-E

Feature	LAN Base	IP Base	Enterprise Services
Layer 3 Multicast Routing (PIM SM, SSM, Bidir)	No	Yes	Yes
Link State Tracking	Yes	Yes	Yes
Loadsharing IP packets over more than six parallel paths	Yes	Yes	Yes
Local Proxy ARP	Yes	Yes	Yes
Location MIBs	Yes	Yes	Yes
MAB with Configurable User Name/Password	Yes	Yes	Yes
MAB for Voice VLAN	Yes	Yes	Yes
MAC Address Notification	Yes	Yes	Yes
MAC Authentication Bypass	Yes	Yes	Yes
MAC Move and Replace	Yes	Yes	Yes
Medianet: AutoQoS SRND4 Macro	No	Yes	Yes
Medianet: Integrated Video Traffic Simulator (hardware-assisted IP SLA); IPSLA generator and responder	No	Yes	Yes
Medianet: Flow Metadata	No	Yes	Yes
Medianet: Media Service Proxy	No	Yes	Yes
Medianet: Media Monitoring (Performance Monitoring and Mediatrace)	No	Yes	Yes
Memory Threshold Notifications	Yes	Yes	Yes
Microflow policers	No	Yes	Yes
Modular QoS CLI (MQC)	Yes	Yes	Yes
Multi-authentication and VLAN Assignment	Yes	Yes	Yes
Multi-VRF Support (VRF lite)	No	No	Yes
Multicast BGP (MBGP)	No	No	Yes
Multicast Fast Switching Performance Improvement	No	Yes	Yes
Multicast HA (NSF/SSO) for IPv4&IPv6	No	Yes	Yes
Multicast Routing Monitor (MRM)	No	No	Yes

Table 5 LAN Base, IP Base, and Enterprise Services Image Support on Cisco Catalyst 4500E Supervisor Engine 7-E, Supervisor Engine 7L-E, and Supervisor Engine 8-E

Feature	LAN Base	IP Base	Enterprise Services
Multicast Source Discovery Protocol (MSDP)	No	Yes	Yes
Multicast Subsecond Convergence	No	Yes	Yes
Multicast VLAN Registration (MVR)	Yes	Yes	Yes
NAC - L2 IEEE 802.1x	Yes	Yes	Yes
NAC - L2 IP	Yes	Yes	Yes
ND Cache Limit/Interface	No	Yes	Yes
NEAT Enhancement: Re-Enabling BPDU Guard Based on User Configuration	Yes	Yes	Yes
NETCONF over SSHv2	Yes	Yes	Yes
Network Edge Access Topology (NEAT)	Yes	Yes	Yes
Network Time Protocol (NTP)	Yes	Yes	Yes
Network Time Protocol (NTP) master	Yes	Yes	Yes
NMSP Enhancements <ul style="list-style-type: none"> • GPS support for location • Location at switch level • Local timezone change • Name value pair • Priority settings for MIBs 	No	Yes	Yes
No Service Password Recovery	Yes	Yes	Yes
No. of VLAN Support	2048	4096	4096
NSF - BGP	No	No	Yes
NSF - EIGRP	No	Yes	Yes
NSF - OSPF (version 2 only)	No	Yes	Yes
NSF/SSO (Nonstop Forwarding with Stateful Switchover)	No	Yes	Yes
NTP for IPv6	Yes	Yes	Yes
NTP for VRF aware	No	No	Yes
Object Tracking: IPv6 Route Tracking	No	Yes	Yes

Table 5 LAN Base, IP Base, and Enterprise Services Image Support on Cisco Catalyst 4500E Supervisor Engine 7-E, Supervisor Engine 7L-E, and Supervisor Engine 8-E

Feature	LAN Base	IP Base	Enterprise Services
Onboard Failure Logging (OBFL)	Yes	Yes	Yes
Open Plug-N-Play Agent	Yes	Yes	Yes
OSPF	No	Yes ⁵	Yes
OSPF v3 Authentication	No	Yes ⁵	Yes
OSPF Flooding Reduction	No	Yes ⁵	Yes
OSPF for Routed Access ⁶	No	Yes	Yes
OSPF Incremental Shortest Path First (i-SPF) Support	No	Yes ⁵	Yes
OSPF Link State Database Overload Protection	No	Yes ⁵	Yes
OSPF Not-So-Stubby Areas (NSSA)	No	Yes ⁵	Yes
OSPF Packet Pacing	No	Yes ⁵	Yes
OSPF Shortest Paths First Throttling	No	Yes ⁵	Yes
OSPF Stub Router Advertisement	No	Yes ⁵	Yes
OSPF Support for Fast Hellos	No	Yes ⁵	Yes
OSPF Support for Link State Advertisement (LSA) Throttling	No	Yes ⁵	Yes
OSPF Support for Multi-VRF on CE Routers	No	Yes ⁵	Yes
OSPF Update Packet-Pacing Configurable Timers	No	Yes ⁵	Yes
Per Intf IGMP State Limit	Yes	Yes	Yes
Per Intf MrouteState Limit	Yes	Yes	Yes
Per Port Per VLAN Policing	Yes	Yes	Yes
Per-User ACL Support for 802.1X/MAB/Webauth users	Yes	Yes	Yes
Per-VLAN Learning	Yes	Yes	Yes
Permanent Right-to-Use (PRTU) license	Yes	Yes	Yes
PIM Dense Mode State Refresh	No	Yes	Yes
PIM Multicast Scalability	No	Yes	Yes
PIM Version 1	No	Yes	Yes

Table 5 LAN Base, IP Base, and Enterprise Services Image Support on Cisco Catalyst 4500E Supervisor Engine 7-E, Supervisor Engine 7L-E, and Supervisor Engine 8-E

Feature	LAN Base	IP Base	Enterprise Services
PIM Version 2	No	Yes	Yes
PnP Agent	Yes	Yes	Yes
PoEP via LLDP	Yes	Yes	Yes
Port Security	Yes (supports 1024 MACs)	Yes (supports 3072 MACs)	Yes (supports 3072 MACs)
Port Security on Etherchannel Trunk Port	Yes	Yes	Yes
Pragmatic General Multicast (PGM)	No	Yes	Yes
Priority Queueing (PQ)	Yes	Yes	Yes
Private VLAN Promiscuous Trunk Port	Yes	Yes	Yes
Private VLAN Trunk Ports	Yes	Yes	Yes
Private VLANs	Yes	Yes	Yes
Propagation of Location Info over CDP	Yes	Yes	Yes
PVLAN over EtherChannel	Yes	Yes	Yes
PVST+ (Per VLAN Spanning Tree Plus)	Yes	Yes	Yes
Q-in-Q	Yes	Yes	Yes
QoS Packet Marking	Yes	Yes	Yes
QoS Priority Percentage CLI Support	Yes	Yes	Yes
RADIUS	Yes	Yes	Yes
RADIUS Attribute 44 (Accounting Session ID) in Access Requests	Yes	Yes	Yes
RADIUS Change of Authorization	Yes	Yes	Yes
Rapid PVST+ Dispute Mechanism	Yes	Yes	Yes
Rapid-Per-VLAN-Spanning Tree (Rapid-PVST)	Yes	Yes	Yes
Reduced MAC Address Usage	Yes	Yes	Yes
Redundancy Facility Protocol	Yes	Yes	Yes
Remote SPAN (RSPAN)	Yes	Yes	Yes
REP (Resilient Ethernet Protocol)	Yes	Yes	Yes

Table 5 LAN Base, IP Base, and Enterprise Services Image Support on Cisco Catalyst 4500E Supervisor Engine 7-E, Supervisor Engine 7L-E, and Supervisor Engine 8-E

Feature	LAN Base	IP Base	Enterprise Services
REP - No Edge Neighbor Enhancement	Yes	Yes	Yes
RIP v1	No	Yes	Yes
RMON events and alarms	Yes	Yes	Yes
Secure CDP	Yes	Yes	Yes
Secure Copy (SCP)	Yes	Yes	Yes
Secure Shell SSH Version 1 Integrated Client	Yes	Yes	Yes
Secure Shell SSH Version 1 Server Support	Yes	Yes	Yes
Secure Shell SSH Version 2 Client Support	Yes	Yes	Yes
Secure Shell SSH Version 2 Server Support	Yes	Yes	Yes
Security Group ACL at Interface Level	Yes	Yes	Yes
Single Rate 3-Color Marker for Traffic Policing	Yes	Yes	Yes
Smart Install Director—Configuration-only Deployment and Smooth Upgrade	Yes	Yes	Yes
Smart Port	Yes	Yes	Yes
SMI Catalyst 4K Client	Yes	Yes	Yes
SNMP (Simple Network Management Protocol)	Yes	Yes	Yes
SNMP Inform Request	Yes	Yes	Yes
SNMP Manager	Yes	Yes	Yes
SNMPv2C	Yes	Yes	Yes
SNMPv3 - 3DES and AES Encryption Support	Yes	Yes	Yes
SNMPv3 (SNMP Version 3)	Yes	Yes	Yes
Source Specific Multicast (SSM)	No	Yes	Yes
Source Specific Multicast (SSM) - IGMPv3,IGMP v3lite, and URD	No	Yes	Yes
Source Specific Multicast (SSM) Mapping	No	Yes	Yes
SPAN (# of sessions) – Port Mirroring	Yes (4 sessions)	Yes (16 bidirectional sessions)	Yes (16 bidirectional sessions)

Table 5 LAN Base, IP Base, and Enterprise Services Image Support on Cisco Catalyst 4500E Supervisor Engine 7-E, Supervisor Engine 7L-E, and Supervisor Engine 8-E

Feature	LAN Base	IP Base	Enterprise Services
SPAN ACL Filtering for IPv6	Yes	Yes	Yes
Span Enhancement: Packet Type and Address Type Filtering	Yes	Yes	Yes
Spanning Tree Protocol (STP)	Yes	Yes	Yes
Spanning Tree Protocol (STP) - Backbone Fast Convergence	Yes	Yes	Yes
Spanning Tree Protocol (STP) - Loop Guard	Yes	Yes	Yes
Spanning Tree Protocol (STP) - Portfast	Yes	Yes	Yes
Spanning Tree Protocol (STP) - PortFast BPDU Filtering	Yes	Yes	Yes
Spanning Tree Protocol (STP) - Portfast BPDU Guard	Yes	Yes	Yes
Spanning Tree Protocol (STP) - Portfast Support for Trunks	Yes	Yes	Yes
Spanning Tree Protocol (STP) - Root Guard	Yes	Yes	Yes
Spanning Tree Protocol (STP) - Uplink Fast Convergence	Yes	Yes	Yes
Spanning Tree Protocol (STP) - Uplink Load Balancing	Yes	Yes	Yes
Spanning Tree Protocol (STP) Extension	Yes	Yes	Yes
Stateful Switchover	No	Yes	Yes
Standard IP Access List Logging	Yes	Yes	Yes
Standby Supervisor Port Usage	Yes	Yes	Yes
Sticky Port Security	Yes	Yes	Yes
Sticky Port Security on Voice VLAN	Yes	Yes	Yes
Storm Control - Per-Port Multicast Suppression	Yes	Yes	Yes
STP Syslog Messages	Yes	Yes	Yes
Stub IP Multicast Routing	No	Yes	Yes
Sub-second UDLD	Yes	Yes	Yes
SVI (Switch Virtual Interface) Autostate Exclude	Yes	Yes	Yes
Switch and IP Phone Security Interaction	Yes	Yes	Yes
Switch Port Analyzer (SPAN)	Yes	Yes	Yes

Table 5 LAN Base, IP Base, and Enterprise Services Image Support on Cisco Catalyst 4500E Supervisor Engine 7-E, Supervisor Engine 7L-E, and Supervisor Engine 8-E

Feature	LAN Base	IP Base	Enterprise Services
Switch Port Analyzer (SPAN) - CPU Source	Yes	Yes	Yes
Syslog over IPV6	Yes	Yes	Yes
System Logging - EAL4 Certification Enhancements	No	Yes	Yes
TACACS SENDAUTH function	Yes	Yes	Yes
TACACS Single Connection	Yes	Yes	Yes
TACACS+	Yes	Yes	Yes
TACACS+ and Radius for IPv6-	Yes	Yes	Yes
TCAM4 - Dynamic Multi-Protocol	Yes	Yes	Yes
TCAM4 - Service-Aware Resource Allocation	Yes	Yes	Yes
Time Domain Reflectometry (TDR) ⁷	Yes	Yes	Yes
Time-Based Access Lists	Yes	Yes	Yes
Time-Based Access Lists Using Time Ranges (ACL)	Yes	Yes	Yes
Trusted boundary (extended trust for CDP devices)	Yes	Yes	Yes
TrustSec: IEEE 802.1ae MACSec Layer 2 encryption	No	Yes	Yes
TrustSec: IEEE 802.1ae MACSec encryption on user facing ports	No	Yes	Yes
TrustSec: IEEE 802.1ae MACSec encryption on user facing ports SSO	No	Yes	Yes
TrustSec: IEEE 802.1ae MACSec encryption between switch-to-switch links using Cisco SAP (Security Association Protocol)	No	Yes	Yes
TrustSec Critical Authentication	Yes	Yes	Yes
TrustSec SGT Exchange Protocol (SXP) IPv4	No	Yes	Yes
TrustSec SGT/ SGA	No	Yes	Yes
UDI - Unique Device Identifier	Yes	Yes	Yes
Uni-Directional Link Routing (UDLR)	No	Yes	Yes
Unicast Mac Filtering	Yes	Yes	Yes
Unicast Reverse Path Forwarding (uRPF)	No	Yes	Yes

Table 5 LAN Base, IP Base, and Enterprise Services Image Support on Cisco Catalyst 4500E Supervisor Engine 7-E, Supervisor Engine 7L-E, and Supervisor Engine 8-E

Feature	LAN Base	IP Base	Enterprise Services
Unidirectional Ethernet	Yes	Yes	Yes
UniDirectional Link Detection (UDLD)	Yes	Yes	Yes
Virtual Router Redundancy Protocol (VRRP) for IPv4	No	Yes	Yes
Virtual Switching System (VSS)	No	Yes (SUP7E and SUP8E)	Yes (SUP7E, SUP7LE, and SUP8E)
Virtual Trunking Protocol (VTP) - Pruning	Yes	Yes	Yes
VLAN Access Control List (VACL)	Yes	Yes	Yes
VLAN MAC Address Filtering	Yes	Yes	Yes
VLAN Mapping (VLAN Translation)	No	Yes	Yes
VRF-aware TACACS+	No	No	Yes
VRF-lite for IPv6 on OSPF/ BGP/ EIGRP	No	No	Yes
VRRPv3: Object Tracking Integration	No	Yes	Yes
VRRPv3 Protocol Support	No	Yes	Yes
VTP (Virtual Trunking Protocol) Version 2	Yes	Yes	Yes
VTP Version 3	Yes	Yes	Yes
WCCP Version 2	No	Yes	Yes
Web Authentication Proxy	Yes	Yes	Yes
Web Authentication Redirection to Original URL	Yes	Yes	Yes
Webauth Enhancements	Yes	Yes	Yes
Wireshark-based Ethernet Analyzer	No	Yes	Yes
XML-PI	Yes	Yes	Yes

1. Catalyst 4500-X, Supervisor Engine 7-E, and Supervisor Engine 8-E; IP Base. Supervisor Engine 7L-Ent Services
2. IEEE 802.1t—An IEEE amendment to IEEE 802.1D that includes extended system ID, long path cost, and PortFast.
3. When either Source or Prefix Guard for IPv6 is enabled, ICMPv6 packets are unrestricted on all Catalyst 4500 series switch platforms running IOS Cisco Release 15.2(1)E. All other traffic types are restricted.
4. With IOS XE Release 3.6.0E and IOS 15.2(2)E, IPv6 PBR is not supported on Supervisor Engine 8-E.
5. IP Base supports only one OSPFv2 and one OSPFv3 instance with a maximum number of 200 dynamically learned routes.
6. OSPF for Routed Access supports only one OSPFv2 and one OSPFv3 instance with a maximum number of 1000 dynamically learned routes.

7. TDR is not supported on 46xx linecards.

MIB Support

For information on MIB support, please refer to this URL:

<ftp://ftp.cisco.com/pub/mibs/supportlists/cat4000/cat4000-supportlist.html>

Features Not Supported on the Cisco Catalyst 4500E Series Switch

The following features are not supported on a Catalyst 4500E Series Switch with Supervisor Engine 7-E and Supervisor Engine 7L-E:

- CISCO-IETF-IP-FORWARD-MIB
- CISCO-IETF-IP-MIB
- LLDP HA
- SMI Proxy
- WCCP Version 1
- **isis network point-to-point** command

Orderable Product Numbers

Table 6 Cisco IOS XE Software Release 3.6.0E Product Numbers and Images for the Catalyst 4500E Series Switch

Product Number	Description	Image
S45EUT-36-1522E S45EUT-S7-36E	CAT4500e SUP7-E/SUP7L-E Universal Image	cat4500e-universal.tar
S45EU-36-1522E S45EU-S7-36E	CAT4500e SUP7-E/SUP7L-E Universal Image	cat4500e-universal.bin
S45EUNT-36-1522E S45EUNT-S7-36E	CAT4500e SUP7-E/SUP7L-E Universal No MACSEC Image	cat4500e-universalk9npe.tar
S45EUN-36-1522E S45EUN-S7-36E	CAT4500e SUP7-E/SUP7L-E Universal No MACSEC Image	cat4500e-universalk9npe.bin
S45EUK9T-33-1522E S45EUK9T-S7-36E	CAT4500e SUP7-E/SUP7L-E Universal Crypto Image	cat4500e-universalk9.tar
S45EUK9-33-1522E S45EUK9-S7-36E	CAT4500e SUP7-E/SUP7L-E Universal Crypto Image	cat4500e-universalk9.bin
S8EULPET-36-1522E S45EULPET-S8-36E	CAT4500e SUP8e Universal LPE Image	cat4500es8-universalk9npe.tar

Table 6 Cisco IOS XE Software Release 3.6.0E Product Numbers and Images for the Catalyst 4500E Series Switch

Product Number	Description	Image
S8EULPE-36-1522E S45EULPE-S8-36E	CAT4500e SUP8e Universal LPE Image	cat4500es8-universalk9npe.bin
S8EUK9T-36-1522E S45EUK9T-S8-36E	CAT4500e SUP8e Universal Crypto Image	cat4500es8-universalk9.tar
S8EUK9-36-1522E S45EUK9-S8-36E	CAT4500e SUP8e Universal Crypto Image	cat4500es8-universalk9.bin
S8EU-36-1522E S45EU-S8-36E	CAT4500e SUP8e Universal Image	cat4500es8-universal.bin
S8EUT-36-1522E S45EUT-S8-36E	CAT4500e SUP8e Universal Image	cat4500es8-universal.tar

New and Changed Information

These sections describe the new and changed information for the Catalyst 4500 series switch running Cisco IOS XE software:

- [New Software Features in Release IOS XE 3.6.10E, page 33](#)
- [New Software Features in Release IOS XE 3.6.8E, page 33](#)
- [New Software Features in Release IOS XE 3.6.7E, page 33](#)
- [New Software Features in Release IOS XE 3.6.6E, page 34](#)
- [New Hardware Features in Release IOS XE 3.6.2E, page 34](#)
- [New Software Features in Release IOS XE 3.6.2E, page 35](#)
- [New Software Features in Release IOS XE 3.6.1E, page 35](#)
- [New Hardware Features in Release IOS XE 3.6.0E, page 35](#)
- [New Software Features in Release IOS XE 3.6.0E, page 35](#)

New Software Features in Release IOS XE 3.6.10E

There are no new features in this release.

New Software Features in Release IOS XE 3.6.8E

There are no new features in this release.

New Software Features in Release IOS XE 3.6.7E

There are no new features in this release.

New Software Features in Release IOS XE 3.6.6E

There are no new features in this release.

New Software Features in Release IOS XE 3.6.5aE

There are no new features in this release.

New Software Features in Release IOS XE 3.6.5E

There are no new features in this release.

New Software Features in Release IOS XE 3.6.4E

There are no new features in this release.

New Software Features in Release IOS XE 3.6.3E

Feature Name	Description
CDP Bypass	<p>Authentication sessions are established in single and multi-host modes for IP Phones. However, if voice VLAN and 802.1x on an interface port is enabled, then CDP Bypass is enabled when the host mode is set to single or multi-host mode.</p> <p>Note By default the host mode is set to single mode in legacy mode and multi-authentication in the eedge mode.</p> <p>Use the following commands to configure CDP bypass:</p> <pre>Switch> enable Switch# configure terminal Switch(config)# interface interface-id Switch(config-if)# switchport mode access Switch(config-if)# switchport voice vlan vlan-id Switch(config-if)# authentication port-control auto Switch(config-if)# authentication host-mode {single multi-host} Switch(config-if)# dot1x pae authenticator</pre> <p>(IP Base and Enterprise Services)</p>
Flexible NetFlow - CTS Fields	<p>Support for Cisco TrustSec (CTS) fields, to monitor and troubleshoot the CTS network, and to segregate traffic based on source group tag (SGT) values.</p> <p>(IP Base and Enterprise Services)</p>

New Hardware Features in Release IOS XE 3.6.2E

Support for USB ports on Supervisor Engine 8-E, with hardware revision 1.1 or higher.

New Software Features in Release IOS XE 3.6.2E

USB Support on Supervisor Engine8-E - Software support for USB ports on Supervisor Engine 8-E.

New Software Features in Release IOS XE 3.6.1E

The following table list the new features for Release IOS XE 3.6.1E.

Feature Name	Description
Device Sensor	(LAN Base)
Policy Based Routing (PBR)	(IP Base)
Supervisor Engine 7-E uplink mode support for Supervisor Engine 8-E	

New Hardware Features in Release IOS XE 3.6.0E

Feature Name	Description
Passive CX1 assemblies	SFP-H10GB-CU1-5M, SFP-H10GB-CU2M, SFP-H10GB-CU2-5M
Active CX1 cable assemblies	SFP-H10GB-ACU7M, SFP-H10GB-ACU10M
Breakout cable on the 10 GbEnd	Support for QSFP-4SFP10G-CU1M, QSFP-4SFP10G-CU3M, QSFP-4SFP10G-CU5M
Cisco SFP+ Active Optical Cables	Support for Cisco SFP-10G-AOC1M Cisco SFP-10G-AOC2M Cisco SFP-10G-AOC3M, Cisco SFP-10G-AOC5M, Cisco SFP-10G-AOC7M, Cisco SFP-10G-AOC10M
Supervisor Engine 8-E	Support for WS-X4748-SFP-E, WS-X4724-SFP-E, WS-X4712-SFP-E, WS-X4148-RJ

New Software Features in Release IOS XE 3.6.0E

The following table list the new features for Release IOS XE 3.6.0E.

Feature Name	Description
Use this URL for the Cisco IOS XE Release 3E Documentation Roadmap	Provides quick and easy access to all relevant documentation for specific platforms. Look for <i>Quick Links to Platform Documentation</i> on the respective platform documentation pages. : http://www.cisco.com/c/en/us/support/ios-nx-os-software/ios-xe-3e/tsd-products-support-series-home.html
Use this URL for the Cisco IOS Release 15E Documentation Roadmap	: http://www.cisco.com/c/en/us/support/ios-nx-os-software/ios-15-2e/tsd-products-support-series-home.html
Auto Conf	Determines the level of network access provided to an endpoint based on the type of the endpoint device. This feature also permits hardbinding between the end device and the interface. Autoconfig falls under the umbrella of Smart Operations solution.
Auto Security	Provides a single line CLI, to enable base line security features (Port Security, DHCP snooping, DAI).
Banner Page and Inactivity timeout for HTTP/S connections	Banner Page and Inactivity timeout for HTTP/S connections—Allows you to create a banner page and set an inactivity timeout for HTTP or HTTP Secure (HTTPS) connections. The banner page allows you to logon to the server when the session is invalid or expired.
Bidirectional SXP Support	Enhances the functionality of Cisco TrustSec with SXP version 4 by adding support for Security Group Tag (SGT) Exchange Protocol (SXP) bindings that can be propagated in both directions between a speaker and a listener over a single connection.
DHCP Gleaning	This is a read-only DHCP functionality that allows components to register and glean DHCP packets.
Easy VSS	Enables you to configure VSS with a single command on the active switch and no action on the VSS standby switch. With IOS XE 3.6.0E, Easy VSS is supported only on IP Base (Sup7E and Sup8E) and Enterprise Services (Sup7LE and Sup8E).
EVC-Lite	Involves the definition of a Layer 2 bridging architecture that supports Ethernet services. The switch supports a lite version of the EVC feature on Supervisor Engine 7L-E.
FIPS/CC Compliance for NMSP	The NMSP Strong Cipher enhancement enables strong ciphers for new NMSP connections. The existing NMSP connections will use the default cipher
FQDN ACL	Helps to resolve the destination domain name to an IP address, which is provided to the client as a part of the domain name system (DNS) response.
Gateway Load Balancing Protocol	Protects data traffic from a failed router or circuit while allowing packet load sharing between a group of redundant routers.
HSRP: Global IPv6 Address	Allows users to configure multiple non-link local addresses as virtual addresses. The Hot Standby Router Protocol (HSRP) ensures host-to-router resilience and failover, in case the path between a host and the first-hop router fails, or the first-hop router itself fails.
HTTP Gleaning	Allows the device-sensor to extract the HTTP packet Type-Length-Value (TLV) to derive useful information about the end device type.

Feature Name	Description
Interface Templates	Provides a mechanism to configure multiple commands at the same time and associate it with a target such as an interface. An interface template is a container of configurations or policies that can be applied to specific ports
IPv6 PBR	Allows you to manually configure how the received packets should be routed. PBR allows you to identify packets by using several attributes and to specify the next hop or the output interface to which the packet should be sent. Note With IOS XE Release 3.6.0E and IOS 15.2(2)E, IPv6 PBR is not supported on Supervisor Engine 8-E.
IPv6 Static Routing: Support for Tracking Objects	Allows an IPv6 Static Route to be associated with a tracked-object.
IPv6 Support for SGT/SGACL	Introduces dynamic learning of IP-SGT mappings for IPv6 addresses.
In-Service Software Upgrade ¹	Allows Cisco software to be upgraded or downgraded, at a router level.
MediaTrace 1.0	Provides the capability to diagnose Media Stream on top of various instrumentations in Cisco routers/switches and endpoints. Also addresses the MediaNet Video monitoring requirement to discover the signaling path and provides end-to-end diagnostics along the media stream routes.
Object Tracking: IPv6 Route Tracking	Expands the Enhanced Object Tracking (EOT) functionality to allow the tracking of IP version 6 (IPv6) routes.
Open Plug-N-Play Agent	Switch based agent support for zero touch automated device installation solution called NG-PNP.
OSPFv3 Authentication Trailer	Provides a mechanism to authenticate Open Shortest Path First version 3 (OSPFv3) protocol packets as an alternative to existing OSPFv3 IPsec authentication.
Policy Based Routing: Recursive Next Hop	Enhances route maps to enable configuration of a recursive next-hop IP address that is used by policy-based routing (PBR).
Secure CDP	Allows users to select the type, length, value (TLV) fields that are sent on a particular interface to filter information sent through Cisco Discovery Protocol packets.
Security Group ACL at Interface Level	Controls and manages the Cisco TrustSec access control on a network device based on an attribute-based access control list. When a security group access control list (SGACL) is enabled globally, the SGACL is enabled on all interfaces in the network by default; use Security Group ACL at Interface Level feature to disable the SGACL on a Layer 3 interface.
SMI Catalyst 4K Client	Enables a Catalyst 4k standalone switch acting as Smart Install Client. Note SMI Proxy is not supported.
TrustSec Critical Authentication	Ensures that the Network Device Admission Control (NDAC)-authenticated 802.1X links between Cisco TrustSec devices are in open state even when the Authentication, Authorization, and Accounting (AAA) server is not reachable.
VRRPv3: Object Tracking Integration	Allows you to track the behavior of an object and receive notifications of changes. This feature explains how object tracking, in particular the tracking of IPv6 objects, is integrated into VRRP version 3 (VRRPv3) and describes how to track an IPv6 object using a VRRPv3 group.
VRRPv3 Protocol Support	Enables a group of routers to form a single virtual router to provide redundancy. This feature also provides the capability to support IPv4 and IPv6 addresses.

Feature Name	Description
VSS Support on Supervisor Engine 8-E	IOS XE 3.6.0E and Enterprise Services enables VSS support on Supervisor Engine 8-E with complete feature parity with Supervisor Engine 7-E.
Web Authentication Redirection to Original URL	Enables networks to redirect guest users to the URL they had originally requested. This feature is enabled by default and requires no configuration.

1. Beginning with Release IOS XE 3.6.0E, support extended to Supervisor Engine 8-E.

New and Modified IOS Software Features Supported in Cisco IOS XE 3.5.0E

The following new and modified software features function as a unified agent and adds functionality to enhance the current solutions.

IPv6 Static Routing: Support for Tracking Objects—Allows an IPv6 Static Route to be associated with a tracked-object.

Object Tracking: IPv6 Route Tracking—Expands the Enhanced Object Tracking (EOT) functionality to allow the tracking of IP version 6 (IPv6) routes.

New Features:

eEdge integration with MACSEC

<http://www.cisco.com/en/US/docs/ios-xml/ios/san/configuration/15-e/san-macsec.html>

DHCP Gleaning

http://www.cisco.com/en/US/docs/ios-xml/ios/ipaddr_dhcp/configuration/15-e/dhcp-gleaning.html

http://www.cisco.com/en/US/docs/ios-xml/ios/ipaddr_dhcp/configuration/x3e/dhcp-xe-3e-book.html

Service Discovery Gateway

http://www.cisco.com/en/US/docs/ios-xml/ios/ipaddr_dns/configuration/15-e/dns-15-e-book.html

802.1X support for trunk ports

http://www.cisco.com/en/US/docs/ios-xml/ios/sec_usr_8021x/configuration/15-e/config-ieee-802x-pba.html

http://www.cisco.com/en/US/docs/ios-xml/ios/sec_usr_8021x/configuration/x3e/sec-usr-8021x-xe-3e-book.html

Enhancements/Respins:

Commented IP Access List Entries

http://cisco.com/en/US/docs/ios-xml/ios/sec_data_acl/configuration/15-e/sec-acl-comm-ipacl.html

http://cisco.com/en/US/docs/ios-xml/ios/sec_data_acl/configuration/x3e/sec-acl-comm-ipacl.html

IPv6 ACL Extensions for Hop by Hop Filtering

http://cisco.com/en/US/docs/ios-xml/ios/sec_data_acl/configuration/15-e/ip6-acl-ext-hbh.html

ACL Sequence Numbering

http://cisco.com/en/US/docs/ios-xml/ios/sec_data_acl/configuration/15-e/sec-acl-seq-num.html

http://cisco.com/en/US/docs/ios-xml/ios/sec_data_acl/configuration/xe-3e/sec-acl-seq-num.html

ACL Support for Filtering IP Options

http://cisco.com/en/US/docs/ios-xml/ios/sec_data_acl/configuration/15-e/sec-acl-support-filter-ip-option.html

http://cisco.com/en/US/docs/ios-xml/ios/sec_data_acl/configuration/xe-3e/sec-acl-support-filter-ip-option.html

ACL - TCP Flags Filtering

http://cisco.com/en/US/docs/ios-xml/ios/sec_data_acl/configuration/15-e/sec-create-filter-tcp.html

http://cisco.com/en/US/docs/ios-xml/ios/sec_data_acl/configuration/xe-3e/sec-create-filter-tcp.html

ACL - Named ACL Support for Noncontiguous Ports on an Access Control Entry

http://cisco.com/en/US/docs/ios-xml/ios/sec_data_acl/configuration/15-e/sec-named-acl-support-for-non-contiguous-ports.html

http://cisco.com/en/US/docs/ios-xml/ios/sec_data_acl/configuration/xe-3e/sec-named-acl-support-for-non-contiguous-ports.html

IP Access List Entry Sequence Numbering

http://cisco.com/en/US/docs/ios-xml/ios/sec_data_acl/configuration/15-e/sec-acl-seq-num.html

http://cisco.com/en/US/docs/ios-xml/ios/sec_data_acl/configuration/xe-3e/sec-acl-seq-num.html

IOS ACL Support for filtering IP Options

http://cisco.com/en/US/docs/ios-xml/ios/sec_data_acl/configuration/15-e/sec-acl-support-filter-ip-option.html

ACL syslog Correlation

http://cisco.com/en/US/docs/ios-xml/ios/sec_data_acl/configuration/15-e/sec-acl-syslog.html

IP Named Access Control List

http://cisco.com/en/US/docs/ios-xml/ios/sec_data_acl/configuration/15-e/sec-acl-named.html

http://cisco.com/en/US/docs/ios-xml/ios/sec_data_acl/configuration/xe-3e/sec-acl-named.html

IPv6 PACL support

http://cisco.com/en/US/docs/ios-xml/ios/sec_data_acl/configuration/15-e/ip6-pacl-supp.html

Cisco Data Collection Manager

<http://www.cisco.com/en/US/docs/ios-xml/ios/bsdcm/configuration/15-e/bsdcm-15-e-book.html>

SNMPv3 Community MIB Support

<http://www.cisco.com/en/US/docs/ios-xml/ios/snmp/configuration/15-e/snmp-15-e-book.html>

<http://www.cisco.com/en/US/docs/ios-xml/ios/snmp/configuration/xe-3e/snmp-xe-3e-book.html>

NETCONF XML PI

<http://www.cisco.com/en/US/docs/ios-xml/ios/cns/configuration/15-e/cns-15-e-book.html>

IPv6 PIM Passive

http://www.cisco.com/en/US/docs/ios-xml/ios/ipmulti_pim/configuration/15-e/ip6-mcast-pim-pass.html

HSRP aware PIM

http://www.cisco.com/en/US/docs/ios-xml/ios/ipmulti_pim/configuration/15-e/imc_hsrp_aware.html

OSPFv3 ABR Type 3 LSA Filtering

http://www.cisco.com/en/US/docs/ios-xml/ios/iproute_ospf/configuration/15-e/iro-abr-type-3.html

http://www.cisco.com/en/US/docs/ios-xml/ios/iproute_ospf/configuration/15-e/iro-ospfv3-dc-ignore.html

Graceful Shutdown Support for OSPFv3

http://www.cisco.com/en/US/docs/ios-xml/ios/iproute_ospf/configuration/15-e/iro-ospfv3-gshutdown.html

OSPF Support for BFD over IPv4

http://www.cisco.com/en/US/docs/ios-xml/ios/iproute_bfd/configuration/15-e/irbfd-bfd-ospf-ipv4-supp.html

BFD - VRF Support

http://www.cisco.com/en/US/docs/ios-xml/ios/iproute_bfd/configuration/15-e/irbfd-vrf-supp.html

BFD - Static Route Support

http://www.cisco.com/en/US/docs/ios-xml/ios/iproute_bfd/configuration/15-e/irbfd-bfd-static-route-supp.html

Static Route Support for BFD over IPv6

http://www.cisco.com/en/US/docs/ios-xml/ios/iproute_bfd/configuration/15-e/ip6-bfd-static.html

BFD - EIGRP Support

http://www.cisco.com/en/US/docs/ios-xml/ios/iproute_bfd/configuration/15-e/irbfd-bfd-eigrp-supp.html

OSPFv3 BFD

http://www.cisco.com/en/US/docs/ios-xml/ios/iproute_bfd/configuration/15-e/ip6-route-bfd-ospfv3.html

TACACS+ Per VRF

http://www.cisco.com/en/US/docs/ios-xml/ios/sec_usr_tacacs/configuration/15-e/sec-usr-tacacs-15-e-book.html

SSHv2 Enhancements

http://www.cisco.com/en/US/docs/ios-xml/ios/sec_usr_ssh/configuration/15-e/sec-secure-shell-v2.html

Client Information Signalling Protocol (CISP)

http://www.cisco.com/en/US/docs/ios-xml/ios/sec_usr_8021x/configuration/15-e/sec-ieee-neat.html

OSPFv3 MIB

http://www.cisco.com/en/US/docs/ios-xml/ios/iproute_ospf/configuration/15-e/iro-ospfv3-mib.html

OSPF Non-stop Routing

http://www.cisco.com/en/US/docs/ios-xml/ios/iproute_ospf/configuration/15-e/iro-nsr-ospf.html

OSPFv3 Max-Metric Router-Lsa

http://www.cisco.com/en/US/docs/ios-xml/ios/iproute_ospf/configuration/15-e/ip6-route-ospfv3-max-lsa.html

OSPFv3 VRF-Lite/PE-CE

http://www.cisco.com/en/US/docs/ios-xml/ios/iproute_ospf/configuration/15-e/iro-vrf-lite-pe-ce.html

VRRPv3 Protocol Support

http://www.cisco.com/en/US/docs/ios-xml/ios/ipapp_fhrp/configuration/15-e/fhp-15-e-book_chapter_0100.html

IPv6 Source/Prefix Guard

http://www.cisco.com/en/US/docs/ios-xml/ios/ipv6_fhsec/configuration/15-e/ip6f-15-e-book_chapter_0110.html

IPv6 Router Advertisement Throttler

http://www.cisco.com/en/US/docs/ios-xml/ios/ipv6_fhsec/configuration/15-e/ip6f-15-e-book_chapter_0111.html

IPv6 Neighbor Discovery Multicast Suppress

http://www.cisco.com/en/US/docs/ios-xml/ios/ipv6_fhsec/configuration/15-e/ipv6-nd-mcast-supp.html

IPv6 Destination Guard

http://www.cisco.com/en/US/docs/ios-xml/ios/ipv6_fhsec/configuration/15-e/ipv6-dest-guard.html

DHCPv6 Relay - Lightweight DHCPv6 Relay Agent

http://www.cisco.com/en/US/docs/ios-xml/ios/ipaddr_dhcp/configuration/15-e/dhcp-ldra.html

DNS - VRF aware DNS

http://www.cisco.com/en/US/docs/ios-xml/ios/ipaddr_dns/configuration/15-e/dns-15-e-book_chapter_01.html

DHCPv6 - Relay chaining for Prefix Delegation

http://www.cisco.com/en/US/docs/ios-xml/ios/ipaddr_dhcp/configuration/15-e/dhcp-15e-book_chapter_010.html

OSPFv3 Retransmission Limits

http://www.cisco.com/en/US/docs/ios-xml/ios/iproute_ospf/command/ospf-i1.html

OSPFv3 RFC 3101 Support

http://www.cisco.com/en/US/docs/ios-xml/ios/iproute_ospf/configuration/15-e/iro-ospfv3-nssa-cfg.html

OSPF support for NSSA RFC 3101

http://www.cisco.com/en/US/docs/ios-xml/ios/iproute_ospf/configuration/15-e/iro-ospfv2-nssa-cfg.html

TFTP IPv6 support

http://www.cisco.com/en/US/docs/ios-xml/ios/ipv6_nman/configuration/15-e/ip6-tftp-supp.html

Capabilities Manager

<http://www.cisco.com/en/US/docs/ios-xml/ios/saf/configuration/15-e/saf-capman.html>

Extensible Messaging Client Protocol (XMCP) 2.0

<http://www.cisco.com/en/US/docs/ios-xml/ios/saf/configuration/15-e/saf-xmcp.html>

Cisco IOS XE to Cisco IOS Version Number Mapping

As [Table 7](#) shows, each version of Cisco IOS XE has an associated Cisco IOS version:

Table 7 Cisco IOS XE to Cisco IOS Version Number Mapping

Cisco IOS XE Version	Cisco IOS Version
03.1.0SG	15.0(1)XO
03.1.1SG	15.0(1)XO1
03.2.0SG	15.0(2)SG
03.3.0SG	15.1(1)SG
03.3.1SG	15.1(1)SG1
03.4.0SG	15.1(2)SG
03.5.0E	15.2(1)E
03.6.0E	15.2(2)E

Upgrading the System Software

- Before upgrading to Cisco IOS XE Release 3.6.6E, you need to upgrade the Prime Infrastructure software to Release 3.1.4 with Device Pack(DP) 6.

For details on how to upgrade ROMMON, refer to:

http://www.cisco.com/c/en/us/td/docs/switches/lan/catalyst4500/release/note/OL_30306-01.html

- If you are upgrading to Cisco IOS XE 3.6.0E and using Supervisor Engine 7-E or 7L-E, you must use ROMMON version 15.0(1r)SG10 or a higher version (if available).



Note

If dual supervisor engines are present, first upgrade your software to Cisco IOS XE 3.2.0SG or higher, then upgrade your ROMMON to IOS Version 15.0(1r)SG7 to avoid an uplinks issue (CSCtj54375).



Note

When you upgrade to Cisco IOS XE Release 3.6.5E, SSH access is lost, because it cannot use the CISCO_IDEVID_SUDI_LEGACY RSA server key. Before upgrade, generate the server key using the **crypto key generate rsa** command in global configuration mode. To verify whether the RSA server key is available on your device, run the **show crypto key** command.

- If you are upgrading to Cisco IOS XE Version 3.5.0E and plan to use VSS, you must upgrade your ROMMON to version 15.0(1r)SG10. Otherwise, you must upgrade your ROMMON to at least IOS Version 15.0(1r)SG2.

Manual Field Programmable Gate Array Upgrades

If you have installed WS-X4748-UPOE in the chassis, note the following:

With Cisco IOS XE Release 3.6.xE, after an ISSU upgrade, you may have to manually upgrade the Field Programmable Gate Array (FPGA) for WS-X4748-UPOE+E line cards that have version ID (VID) 03 or later versions. (To check the VID, enter the show inventory command in privileged EXEC mode).

The required FPGA upgrades are not triggered automatically after an ISSU upgrade. This may result in an unexpected FPGA upgrade of all applicable linecards if a linecard is inserted online (OIR), after ISSU upgrade. The solution to this problem is to manually perform an FPGA upgrade during a maintenance window.

Follow these steps for all WS-X4748-UPOE+E linecards in the chassis:

```
Switch(config)# service internal
Switch(config)# end
Switch# hw-module module-number upgrade-fpga-all
```

Upgrading ROMMON Image for Supervisor Engine 8-E

For IOS XE Release 3.6.0E, the ROMMON image must be upgraded to use the 3.6.0XE image (15.1(1r)SG4). The IOS XE Bundle format for Supervisor Engine 8-E has changed, necessitating a new ROMMON image.

The following [error] messages might be observed if IOS XE 3.6.0XE images are booted with older ROMMON images:

```
rommon 1 > boot bootflash:cat4500es8-universalk9.SPA.03.06.00.E.152-2.E.bin
File has bad file magic number:      0x0. Is it a valid file?
boot: cannot load "bootflash:cat4500es8-universalk9.SPA.03.06.00.E.152-2.E.bin?;

rommon 10 > boot tftp://172.18.121.121/cat4500es8-universalk9.SPA.03.06.00.E.152-2.E.bin
Link Speed      : 100Mb Full Duplex
Filename        : /cat4500es8-universalk9.SPA.03.06.00.E.152-2.E.bin
IpAddress       : 10.122.161.35
TftpServer      : 172.18.121.121
TftpBlkSize     : 1468
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!*
File Size       : 199051336
MD5             : a32df24fdfc54776f20d83c092f24496

Unsigned image, or verification is disabled!
Image Error!!!!
```

Identifying an +E Chassis and ROMMON

When supervisor engine 1 (sup1) is in ROMMON and supervisor engine 2 (sup2) is in IOS, only sup2 can read the idprom contents of chassis' idprom. Chassis type is displayed as "+E" in the output of the **show version** command. Conversely, sup1 can only display the chassis type as "E."

When both sup1 and sup2 are in ROMMON, both engines can read the chassis' idprom. Chassis type is displayed correctly as "+E" in the output of the **show version** command.

When both sup1 and sup2 are in IOS, both engines can read the chassis' idprom. Chassis type is displayed correctly as "+E" in the output of the **show version** command.

Limitations and Restrictions

- If WLAN applied client policy is invalid, the client is excluded with the exclusion reason being 'Client QoS Policy failure'.
- The **show exception files all** command lists only crashinfo files from the active supervisor engine. You must issue the **dir slavecrashinfo:** and **dir slvecrashinfo-dc:** commands to obtain lists of crashinfo files from the standby supervisor engine.
- Performing an ISSU from a prior release to IOS XE 3.6.0E is unsupported.
- We recommend that you configure the **access-session interface-template sticky timer** *timer-value* command at the global or interface configuration mode, and not within the template.
- The WS-X4712-SFP+E module is not supported in the WS-C4507R-E or WS-C4510R-E chassis and does not boot. This module is supported in the WS-C4503-E, WS-C4506-E, WS-C4507R+E, and WS-C4510R+E chassis.
- More than 16K QoS policies can be configured in software. Only the first 16K are installed in hardware.
- Adjacency learning (through ARP response frames) is restricted to roughly 1000 new adjacencies per second, depending on CPU utilization. This should only impact large networks on the first bootup. After adjacencies are learned they are installed in hardware.
- Multicast fastdrop entries are not created when RPF failure occurs with IPv6 multicast traffic. In a topology where reverse path check failure occurs with IPv6 multicast, this may cause high CPU utilization on the switch.
- The SNMP ceImageFeature object returns a similar feature list for all the three license levels (LAN Base, IP Base, and EntServices). Although the activated feature set for a universal image varies based on the installed feature license, the value displayed by this object is fixed and is not based on the feature license level.
- Standard TFTP implementation limits the maximum size of a file that can be transferred to 32 MB. If ROMMON is used to boot an IOS image that is larger than 32 MB, the TFTP transfer fails at the 65,xxx datagram.

TFTP numbers its datagrams with a 16 bit field, resulting in a maximum of 65,536 datagrams. Because each TFTP datagram is 512 bytes long, the maximum transferable file is $65536 \times 512 = 32$ MB. If both the TFTP client (ROMMON) and the TFTP server support block number wraparound, no size limitation exists.

Cisco has modified the TFTP client to support block number wraparound. So, if you encounter a transfer failure, use a TFTP server that supports TFTP block number wraparound. Because most implementations of TFTP support block number wraparound, updating the TFTP daemon should fix the issue.

- A XML-PI specification file entry does not return the desired CLI output.

The outputs of certain commands, such as **show ip route** and **show access-lists**, contain non-deterministic text. While the output is easily understood, the output text does not contain strings that are consistently output. A general purpose specification file entry is unable to parse all possible output.

Workaround (1):

While a general purpose specification file entry may not be possible, a specification file entry might be created that returns the desired text by searching for text that is guaranteed to be in the output. If a string is guaranteed to be in the output, it can be used for parsing.

For example, the output of the **show ip access-lists SecWiz_Gi3_17_out_ip** command is this:

```
Extended IP access list SecWiz_Gi3_17_out_ip
 10 deny ip 76.0.0.0 0.255.255.255 host 65.65.66.67
 20 deny ip 76.0.0.0 0.255.255.255 host 44.45.46.47
 30 permit ip 76.0.0.0 0.255.255.255 host 55.56.57.57
```

The first line is easily parsed because access list is guaranteed to be in the output:

```
<Property name="access list" alias="Name" distance="1.0" length="-1" type="String"
/>
```

The remaining lines all contain the term host. As a result, the specification file may report the desired values by specifying that string. For example, this line

```
<Property name="host" alias="rule" distance="s.1" length="1" type="String" />
```

will produce the following for the first and second rules

```
<rule>
  deny
</rule>
```

and the following for the third statement

```
<rule>
  permit
</rule>
```

Workaround (2):

Request the output of the **show running-config** command using NETCONF and parse that output for the desired strings. This is useful when the desired lines contain nothing in common. For example, the rules in this access list do not contain a common string and the order (three permits, then a deny, then another permit), prevent the spec file entry from using permit as a search string, as in the following example:

```
Extended MAC access list MACCOY
 permit 0000.0000.ffef ffff.ffff.0000 0000.00af.bcef ffff.ff00.0000 appletalk
 permit any host 65de.edfe.fefe xns-idp
 permit any any protocol-family rarp-non-ipv4
 deny host 005e.1e5d.9f7d host 3399.e3e1.ff2c dec-spanning
 permit any any
```

The XML output of **show running-config** command includes the following, which can then be parsed programmatically, as desired:

```
<mac><access-list><extended><ACLName>MACCOY</ACLName></extended></access-list></mac>
  <X-Interface> permit 0000.0000.ffef ffff.ffff.0000 0000.00af.bcef ffff.ff00.0000
  appletalk</X-Interface>
  <X-Interface> permit any host 65de.edfe.fefe xns-idp</X-Interface>
  <X-Interface> permit any any protocol-family rarp-non-ipv4</X-Interface>
  <X-Interface> deny host 005e.1e5d.9f7d host 3399.e3e1.ff2c
  dec-spanning</X-Interface>
  <X-Interface> permit any any</X-Interface>
```

CSCtg93278

- When attaching a existing policy-map (that is already applied to a control-port) to another front-panel port, the following message displays:

```
The policymap <policy-map name> is already attached to control-plane and cannot be
shared with other targets.
```

Workaround: Define a policy-map with a different name and then reattach. CSCti26172

- If the number of unique FNF monitors attached to target exceeds 2048 (one per target), a switch responds slowly:

Workarounds:

- Decrease the number of monitors.
- Attach the same monitor to multiple targets. CSCti43798

- **ciscoFlashPartitionFileCount** object returns an incorrect file count for **bootflash:**, **usb0:**, **slot0:**, **slaveslot0:**, **slavebootflash:**, and **slaveusb0:**.

Workaround: Use the **dir device** command (for example, **dir bootflash:**) to obtain the correct file count. CSCti74130

- If multicast is configured and you make changes to the configuration, Traceback and CPUHOG messages are displayed if the following conditions exist:

- At least 10K groups and roughly 20K mroutes exist.
- IGMP joins with source traffic transit to all the multicast groups.

This is caused by the large number of updates generating SPI messages that must be processed by the CPU to ensure that the platform is updated with the changes in all the entries.

Workaround: None. CSCti20312

- With traffic running, entering **clear ip mroute *** with larger number of mroutes and over 6 OIFs will cause Malloc Fail messages to display.

You cannot clear a large number of mroutes at one time when traffic is still running.

Workaround: Do not clear all mroutes at once.

CSCtn06753

- Although you can configure subsecond PIM query intervals on Catalyst 4500 platforms, such an action represents a compromise between convergence (reaction time) and a number of other factors (number of mroutes, base line of CPU utilization, CPU speed, processing overhead per 1 m-route, etc.). You must account for those factors when configuring subsecond PIM timers. We recommend that you set the PIM query interval to a minimum of 2 seconds. By adjusting the available parameters, you can achieve flawless operation; that is, a top number of multicast routes per given convergence time on a specific setup.

- Energywise WOL is not “waking up” a PC in hibernate or standby mode.

Workaround: None. CSCtr51014

- The ROMMON version number column in the output of **show module** command is truncated.

Workaround: Use the **show version** command. CSCtr30294

- IP SLA session creation fails randomly for various 4-tuples.

Workaround: Select an alternate destination or source port. CSCty05405

- The system cannot scale to greater than 512 SIP flows with MSP and metadata enabled.

Workaround: None. CSCty79236

- On the following linecards running IOS XE Release 3.2.3:

- 10/100/1000BaseT Premium POE E Series WS-X4648-RJ45V+E (JAE1348OY52)
- 4 Sup 7-E 10GE (SFP+), 1000BaseX (SFP) WS-X45-SUP7-E (CAT1434L0G4)

the following restrictions apply:

- Sub-interfaces are not supported on 1 Gigabit and Ten-Gigabit interfaces.

- Port-channel members do not support multiple classification criteria for a QoS policy.
- CEF is disabled automatically when uRFP is enabled and TCAM is fully utilized.
- When either the RADIUS-server test feature is enabled or RADIUS-server dead-criteria is configured, and either RADIUS-server deadtime is set to 0 or not configured, the RADIUS-server status is not properly relayed to AAA.

Workaround: Configure both dead-criteria and deadtime.

```
radius-server dead-criteria
radius-server deadtime
```

CSCt106706

- If you use the **quick** option in the **issu changeversion** command, the following might occur:
 - Links flap for various Layer 3 protocols.
 - A traffic loss of several seconds is observed during the upgrade process.

Workaround: Do not use the **quick** option with the **issu changeversion** command. CSCt051562

- While configuring an IPv6 access-list, if you specify **hardware statistics** as the first statement in v6 access-list mode (i.e. before issuing any other v6 ACE statement), it will not take effect. Similarly, your hardware statistics configuration will be missing from the output of the **show running** command.

You will not experience this behavior with IPv4 access lists.

Workaround: During IPv6 access-list configuration, configure at least one IPv6 ACE before the "hardware statistics" statement. CSCuc53234

- Routed packets that are fragmented are not policed if the egress interface is on the VSS Standby switch. However, if the egress interface is on the VSS Active switch, these packets are policed.

This applies to QoS policing only. QoS marking, shaping and sharing behave as expected.

Workaround: None. CSCub14402

- When an IPv6 FHS policy is applied on a VLAN and an EtherChannel port is part of that VLAN, packets received by EtherChannel (from neighbors) are not bridged across the local switch.

Workaround: Apply FHS policies on a non EtherChannel port rather than a VLAN. CSCua53148

- During VSS conversion, the switch intended as the Standby device may require up to 9 minutes to reach an SSO state. The boot up time depends on the configuration and on the number of line cards in the system.

Workaround: None. CSCua87538

- Dual connectors (like, an SFP+ transceiver inserted into a CVR-X2-SFP10G module) on the WS-X4606-X2-E line card are not supported as a VSL.

Workaround: Use any X2-pluggable module on its own in the WS-X4606-X2-E line card. CSCuc70321

- Memory allocation failures can occur if more than 16K IPv6 multicast snooping entries are present.

Workaround: None. CSCuc77376

- The **show interface capabilities** command output does not show the correct linecard model.

Workaround: Observe the **show module** command output. CSCua79513

- Beginning with IOS Release XE 3.5.0E, error messages that occur when a QoS policy is applied will no longer appear directly on the console when **no logging console** is configured. They will appear only when a logging method is active (e.g., logging buffered, logging console, ...).

Workaround: None. CSCuf86375

- Setting a cos value based on QoS group triggers the following error message in a VSS system

```
set action fail = 9
```

Workaround: None. QoS groups are not supported in VSS. CSCuc84739

- Auto negotiation cannot be disabled on the Fa1 port. It must be set to auto/auto, or fixed speed with duplex auto.
- The following messages are seen during boot up after POST check.

```
Rommon reg: 0x00004F80
Reset2Reg: 0x00000F00

Image load status: 0x00000000
####
Snowtrooper 220 controller 0x0430006E..0x044E161D Size:0x0057B4C5 Program Done!
#####
[ 6642.974087] pci 0000:00:00.0: ignoring class b20 (doesn't match header type 01)
Starting System Services
Calculating module dependencies ...
Loading rtc-ds1307
RTNETLINK answers: Invalid argument
No Mountpoints DefinedJan 17 09:48:14 %IOSXE-3-PLATFORM: process sshd[5241]: error:
Bind to port

22 on :: failed: Address already in use
Starting IOS Services
Loading virtuclock as vuclock
Loading gsbu64atomic as gdb64atomic
/dev/fd/12: line 267: /sys/devices/system/edac/mc/edac_mc_log_ce: No such file or
directory
Aug 8 20:30:29 %IOSXE-3-PLATFORM: process kernel: mmc0: Got command interrupt
0x00030000 even though no command operation was in progress.

Aug 8 20:30:29 %IOSXE-3-PLATFORM: process kernel: PME2: fsl_pme2_db_init: not on
ctrl-plane
```

These messages are cosmetic only, and no ssh services are available unless configured within IOS.

Workaround: None CSCue15724

- 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 (CSCur45606, CSCur28336).

Caveats

Caveats describe unexpected behavior in Cisco IOS releases. Caveats listed as open in a prior release are carried forward to the next release as either open or resolved.



Note

For the latest information on PSIRTS, refer to the Security Advisories on CCO at the following URL:

http://www.cisco.com/en/US/products/products_security_advisories_listing.html

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, page 50](#)
 - [Resolved Caveats for Cisco IOS XE Release 3.6.10E, page 50](#)
 - [Resolved Caveats for Cisco IOS XE Release 3.6.9E, page 51](#)
 - [Resolved Caveats for Cisco IOS XE Release 3.6.8E, page 51](#)
 - [Resolved Caveats for Cisco IOS XE Release 3.6.7E, page 52](#)
 - [Resolved Caveats for Cisco IOS XE Release 3.6.6E, page 52](#)
 - [Resolved Caveats for Cisco IOS XE Release 3.6.5E, page 53](#)
 - [Resolved Caveats for Cisco IOS XE Release 3.6.4E, page 54](#)
 - [Resolved Caveats for Cisco IOS XE Release 3.6.3E, page 55](#)
 - [Resolved Caveats for Cisco IOS XE Release 3.6.2E, page 57](#)
 - [Resolved Caveats for Cisco IOS XE Release 3.6.1E, page 57](#)
 - [Resolved Caveats for Cisco IOS XE Release 3.6.0E, page 58](#)

Open Caveats

Bug ID	Headline
CSCuz75030	license feature display issue after IOS upgrade.
CSCvc53252	crash due to corrupted magic value. Last function JobReviewBody.
CSCuv15017	VSS Active Reload causes CTS Ether-channel links on standby to flap.
CSCvk16783	Standby Supervisor is continuously crashing after upgrading to throttle build.

Resolved Caveats for Cisco IOS XE Release 3.6.10E

Bug ID	Headline
CSCvn72973	Device is getting crashed on the "cts role-based enforcement"
CSCvo09436	Active supervisor crashing while DFE training on Standby SUP
CSCvp19855	Crash when removing police action from policy-map

Resolved Caveats for Cisco IOS XE Release 3.6.9E

Bug ID	Headline
CSCvb59372	Double-free of VTY context causes a software-forced crash
CSCvd78456	Span config lost after reboot when using interface ranges
CSCvd96099	DOT1X %DATACORRUPTION-1-DATAINCONSISTENCY: copy error session_mgr
CSCve58352	Crash at the Ethernet Bridge Management Port
CSCvg74926	Invalid LACP mac-ID, generates MULTIPLE_NEIGHBORS upstream
CSCvg79459	Automate-tester does not send probes when the server is dead
CSCvh04891	VSS Switch crash at boot time when CR (i.e. 'r') character is present in the startup-configuration
CSCvh79168	Crash on numPolicersPerBank with Invalid policerBaseIndex
CSCvh89534	DAACL applied to the incorrect interface.
CSCvh95816	crash due to access list changes
CSCvi06070	OSPF and BGP keeps flapping ever few seconds when BFD is enabled
CSCvj25236	IPDT flapping after upgrade
CSCvj29126	RADIUS client on network fails to solicit PAC key from CTS even though the device has a valid PAC

Resolved Caveats for Cisco IOS XE Release 3.6.8E

Bug ID	Headline
CSCuw48618	NOVA: Switch crash in FFM with abort called from fib_entry_create_fed_version.
CSCve40729	Cat 4500x 3.6.2 - crash on Cat4k Mgmt HiPri with Interrupt level Malloc.
CSCve37653	4500 in RPR causing SNMP Input queue full errors and eicore timeouts
CSCve54486	Crash when attempting to assign nonexistent/shutdown VLAN to 802.1x port.
CSCve80873	Service Policy disappears from 10G interface when neighbor port flaps, from 03.06.05.E & onwards,
CSCve37498	Switch sends duplicate accounting message, that causing ISE to generate Misconfigured NAS Alarms.
CSCvf02423	C4500 - 03.06.06.E / 15.2(2)E6 - High CPU due to KxAclPathMan reprogr, KxAclPathMan update.
CSCvf76512	option 82 circuit-id-tag restricted by 6 bytes.
CSCvf83057	Interface flaps once after the port change status from admin down to up
CSCvf96579	2960:AAARadius authentication fails with "switchport voice vlan dot1p" command
CSCvg70852	Unknown MAC addresses appear on port when trying to authenticate using dot1x.
CSCvf18046	sticky timer stops if connected device moved from one port to other within timer expiry.

Resolved Caveats for Cisco IOS XE Release 3.6.7E

Bug ID	Headline
CSCvc88353	QoS TCAM does not share labels with CTS applied .
CSCty18171	SNMP poll of CISCO-PROCESS-MIB may cause high CPU and SNMP poll timeout.
CSCuu34535	Standby reloads on removing flow monitor.
CSCuv22571	Memory corruption crash in slaJitterPacketBuild.
CSCuw15256	IOS PKI: Certificate validation fails after reload.
CSCux81234	C4500 VSS port mapped to Drop aggport when the Aggregate port id 656.
CSCuz89309	WS-X4648-RJ45V+E interface becomes unusable after INLINEPOWEROVERDRAWN.
CSCvb76862	4500VSS: Traffic Dropped on VSL due to SPTDROP.
CSCvb97901	4500X 3.8.2 TX-Queue's zero out after multiple reloads.
CSCvc47741	Multiple FFM Crashes on 4500 VSS Setup.
CSCvc53017	Inconsistent application of 'no cdp enable' on VSL links during VSS setup.
CSCvd01598	Tacacs+ Timeout Retransmission is done 3 times prior marking server down.
CSCvd32541	4500 :: next hop for static route mis-programmed.
CSCvd35291	Removal of "access-session template monitor" creates Drop MAC entries in CAM table.
CSCvd66637	VSS Cat4500 Standby Supervisor memory leak in EICORED process.
CSCve04704	Session blocked in Pending Deletion state due to SM Accounting Feature.

Resolved Caveats for Cisco IOS XE Release 3.6.6E

Identifier	Description
CSCuz30314	Memory leak in DSensor Cache PROTO and epm authz_sess_info.
CSCum58148	Switch crashes when you modify policer rates of QoS policy.
CSCuz24063	Storm-control configured on port-channel cannot reflect to member link.
CSCuz42775	Cisco Catalyst 4500: PoE devices not granted power by WS-X4748-UPOE module.
CSCuz68659	unexpected packets seen while learning the mcast traffic.
CSCuz72531	PC MAC deleted from port-security table even with sticky config.
CSCva40478	IP DHCP snooping trust on port-channel does not reflect on member link.
CSCvb04162	Cisco Catalyst 4500 IPv6 QoS Policy w/ L4Ops intermittently not installing on interface.

Resolved Caveats for Cisco IOS XE Release 3.6.5Ea

Bug ID	Headline
CSCvb19326	NTP leap second addition is not working during leap second event
CSCuv87976	CLI Knob for handling leap second add/delete ignore/ handle
CSCvb29204	BenignCertain on IOS and IOS-XE

Resolved Caveats for Cisco IOS XE Release 3.6.5E

Identifier	Description
CSCut93424	CAT4500 - Flexible Netflow start/end time inaccuracy
CSCur57853	4500 VSS cannot send snmp trap when active is down
CSCuy23874	4500: Auto-negotiation issue: port going to 100Mbps instead of 1Gbps
CSCuy52010	7940G phones learn mac in data vlan when EEE is disabled
CSCuw17135	Cat4k SUP7L-E CPU temperature sensor failed
CSCuy29078	5760 WLC FED crash
CSCuy01628	NGWC ssid output qos shaper could drop capwap fragments
CSCuy01942	wBulk dACL causes intermittent MAB Authentication with 4506 SUP_6
CSCuv50017	Airties WGB not getting Ip address when connecting to 5760
CSCux65356	NGWC AP join failure due to ap_index out of sync between IOS and FED
CSCuv08570	Lightweight access point loses all config at times after power cycle
CSCut85027	AP is generating corrupted coredump
CSCut56741	AP1600: Radio reset with "STOPPING CPQ FWD TRACE ON Bad CPQ removal"
CSCut39010	Multiple APs Reset with Beacons Stuck
CSCuw57588	C3600 AP crash on am_xml_GetChildCount
CSCuy19990	IOS 15.2 802.1x critical vlan feature - reinitialize is not working
CSCuw78795	NGWC REPLAY_ERR msg showing WLAN ID as VLAN ID of the AP
CSCuz16907	inversion issue of "wireless broadcast vlan x" command
CSCuv62540	Adding -S domain support for Hong Kong, Macau, Thailand and Veitnam
CSCuv73422	IOS-UX AP:NDP propagation for US country uses UX domain
CSCuw09327	Crash while config ACL- invalid mem access K5CpuEventCodeInputAclCopy
CSCuy33187	Need FCC B domain DFS support on Skyros/AP1600
CSCuy81218	AP support of DFS detection in 100% transmission BW
CSCuy32363	NGWC MDNS leaking when roaming to foreign in L2 sticky-anchor
CSCuz02962	Increasing acl-ack-contexts for auth sessions causing memory exhaustion

Resolved Caveats for Cisco IOS XE Release 3.6.4E

Bug ID	Headline
CSCuv39850	Switch crashes @auth_mgr_show_method_status_list
CSCuv87875	Crash seen@Galios_newIosHeapMemoryRef on assigning DACL on reauth
CSCuw58095	AMUR MR3: SUP8E crash at dot1x_switch_handle_vlan_removal
CSCuu97550	FB 4500X - SNMP dot1dTpFdbPort retuning incorrect value
CSCus13479	4500X VSS: multicast traffic blackholed on orphan L3 egress portchannel
CSCut57300	With sec ip in SVI, routed packet is not flooded back on incoming port
CSCut71405	IGMP packet not matched by ingress QoS policy if IGMP Snooping enabled
CSCuu43197	C4500X high CPU due to execute show command continuously
CSCuu85298	FIB/LFIB inconsistency after BGP flap
CSCuv07111	IOS and IOS-XE devices changing the next-hop on BGP route with own IP
CSCuv07620	4500X VSS won't notify about license mismatch
CSCuu21448	ISIS Metric with Multiple instances using ciiCircLevelMetric OID
CSCuu42267	vstack status shows duplicate entries for a single PID
CSCuv23475	CPUHOG and crash on "no network 0.0.0.0" with vnet configuration on intf
CSCuu68776	Multicast boundary filter-autorp broken / WS-C4500X / 15.2(1)E 15.2(3)E1
CSCuv00910	bgp afi1/safi1 and afi1/saf4 only peers in the same update-group
CSCuv16769	ISIS: Old path not deleted in Global RIB when new path is filtered out
CSCuv19773	"nmsp attach suppress" not being added into run-config on WS-C3850-24P
CSCuv31135	Disable connected-check in one side only makes route as unreachable
CSCuv32845	no message display even unable to allocate memory for vlan mapping
CSCuv46710	Segmentation Fault in Auth Manager
CSCuv50834	High CPU due to hung NMSP Session
CSCuw21115	4500/WS-X4724-SFP-E port flaps when GLC-GE-100FX is inserted
CSCuw36865	L2 switched traffic matched by L3 SVI VACL in the output direction
CSCuw39020	access-session vlan-assignment ignore-errors breaks dynamic vlan assign
CSCuv76906	"bfd" disappears after issuing "snmp-server host x.x.x.x ABC bfd"
CSCuw09006	Voice Vlan bocked with NEAT Configuration
CSCuw48407	47xx line card failing complete diagnostics after temp sensor failure
CSCuw73525	3650 DHCPv6 Guard does not block rogue DHCP server to provide IPv6 addr
CSCtz92812	"ip vrf Liin-vrf" in running-config on a VSS system
CSCub56668	Handle C4K_HWFLOWMAN-3-NFEINTERRUPTSTATUS: module: fi InterruptStatus:
CSCuj81067	memory leak in crypto_create_pkcs7_msg
CSCum41167	Importing multipath routes changes next-hop to 0.0.0.0 and traffic fails
CSCuw06202	Vstack Download-Config causes 4500 to become unresponsive
CSCuq36627	WAAS Express:Failed to create SSL session. (no available resources)

CSCuo93205	Enable SSL Server Identity Check during SSL handshake
CSCur28336	Memory leak and possible crash when using a logging discriminator
CSCtg15739	Failed sessions are not removed in multi-auth mode
CSCur45606	logging discriminator doesn't work
CSCtb44674	High CPU due to SA-MISS event caused by own mac address packets received
CSCuq46932	Crash on dhcpd_find_binding_by_hw
CSCuv19258	DAACL may not work under IBNS 2.0
CSCuv47729	Packet gets flooded back to the ingress port, when a MEC port is down
CSCuv50669	Port-security blocks X/Y/38 port due to incorrect MAC address
CSCuw52729	Enabling auto qos causes "line vty 0 4" length set to 0
CSCux18867	4500 3.6.0 False port-security alarms on standby supervisor
CSCux38988	redundancy config-sync failures mcl define interface range adds fifth ,

Resolved Caveats for Cisco IOS XE Release 3.6.3E

Bug ID	Headline
CSCui35423	DHCP bindings are not happening at first try
CSCul73513	Server-client clock not in sync after leap configuration
CSCum17258	EPM_SESS_ERR: Error in activating feature (EPM ACL PLUG-IN)
CSCum56902	Device crashes when classes removed from a policy-map
CSCum65703	Inconsistency on config "privilege" commands as seen in running-config
CSCun14713	Create new accounting session whenever the principal identity changes
CSCun33897	4500 IOS-XE: Crash on ACL/PBR configuration
CSCuo67491	c4500X after enabling MACSEC on the interface IS-IS does not work
CSCuo69316	Console hung for 4+ mnt on issuing 'no int vlan' with ipv6 config
CSCup25176	Sup8E: ip verify source command lost on linecard OIR
CSCup66629	Traceback @psecure_platform_delete_all_addrs on executing neg events
CSCup81878	Line by Line Sync fails while deleting dynamic NTP peer
CSCuq31722	The show platform software flood profile command caused SUP8 to crash
CSCuq53140	High cpu seen while sending IPV6 traffic
CSCuq54573	Service Policy disappears from Running Configuration of the interface
CSCuq62007	IOSd crash occurred on 4500E platform after syncing it with MSE
CSCuq66263	Switch crashes when ACL add entry
CSCur09175	IPDT is turned on automatically even when dot1x configs are disabled
CSCur58372	snmp-server enable traps syslog shows in "show run all" output after removal

CSCur59242	Crash due to tplus_client_stop_timer
CSCus09761	IOS-Phone not placed in critical voice VLAN when AAA server is not reachable
CSCus13476	CSR handled only one MACSec interface's authentication
CSCus13924	Device crashes while configuring 'Identity' commands
CSCus23125	MAC not learnt after removal of auth config
CSCus32213	CTS manual link does not come up
CSCus43462	Traffic convergence is high with 12 portchannel during SUP-8E OIR
CSCus46741	Service Policy disappears from running configuration of a 10G iinterface
CSCus47009	Switch does not increment the "Received on untrusted ports" DHCP counter
CSCus79132	Dot1x authentication legacy behaviour broken
CSCut05808	UDP(1975) causes Error msg %IPC-2-INVALIDZONE
CSCut10251	Some commands are not in running-config after AUTOINSTALL finishes
CSCut11679	FFM memory leak is observed when WCCP flaps
CSCut13064	BPDU filter does not work on output port when STP is disabled
CSCut13753	ACLs not syncing to the member switches on stack reload or member reload
CSCut20271	C3560X responds to ARP request from management port
CSCut27272	CPUHOG and crash due to Auth Manager process
CSCut64070	High CPU utilization by cli_agent
CSCut64189	Device TELNET can enter Privileged Mode without Enable Password
CSCut79680	ip default-gateway is not seen in running-config after AUTOINSTALL
CSCut87425	CPU hog in "EEM TCL Proc" after TCL script termination with long runtime
CSCuu22144	Vlan1 IP apply method inconsistencies across Static / DHCP / TFTP
CSCuu25770	IOSd crash triggered by certain CDP packet
CSCuu48400	HW CoPP counters are not incrementing.
CSCuu50392	Auth Manager memory leak with ISE authentication
CSCuu82134	IBC:VSS-Predator: Active Predator went SMI upgrade but not standby
CSCuu90639	IP address is missing by end of Autoinstall
CSCuu92251	Removing auth mgr configs stops MAC learning on port (no MACs on MATM)
CSCuu92757	4500 Sup8 MAB not triggered with "authentication control-direction in"
CSCuu97116	Acct messages should include Class attribute from authentication
CSCuv06451	IOSd crash in eap_auth_terminal_state calling free_internal

Resolved Caveats for Cisco IOS XE Release 3.6.2E

Bug ID	Headline
CSCus75890	Switch does not resync to NTP server after clock set command or reload
CSCur20444	I/O memory leak due to DHCPv6 packets
CSCur48634	HA fails due to bulk synch failure with encrypted password
CSCus57511	Switch detects high temp, and SNMP trap causes shutdown
CSCug90126	Switch returns incorrect ciscoEnvMonSupplyState SNMP values for 6000/4200 W PSUU.
CSCul29298	Delayed detection of LinkDown message on peer interfaces
CSCuq80812	Incomplete ARP reply received on an active Flex Link port
CSCsv36934	BRIDGE-MIB query does not return information for inactive ports
CSCus32292	4506-E SUP7L-E 03.06.00.E Crash - ffm ACL
CSCui99162	When IP device tracking is enabled, ARP probe response floods the VLAN
CSCtf75400	Wrong output for show platform software etherchannel port-channel n map
CSCup24975	Outage due to inconsistent software and hardware RX MTU threshold
CSCur58074	Some SFPs are not recognized when inserted into random ports on a switch
CSCuq04533	Cost for secondary VLANs is lost after each reload
CSCur21848	WCCP stops redirecting traffic when eighth port added to service group
CSCur11299	Switch crashes when policy-maps are modified
CSCur84243	WS-X4640-CSFP-E ports (Tx) are disabled on start-up

Resolved Caveats for Cisco IOS XE Release 3.6.1E

Bug ID	Headline
CSCuc03836	Switch reports SYS-2-MALLOCFAIL error for a very large amount of memory
CSCun43007	(4500E-Sup7-E) Sup7E IOSd Crash in GalK5DfeMan.cxx with 3.6.0
CSCum47115	EtherType 888e unicast can not pass 2960 with new releases
CSCum54321	(4500E-Sup6-E, 4500E-Sup6L-E) 4500E crashfile not saved
CSCum80951	TCAM is not sharing when same policy is applied to multiple interfaces
CSCun21714	(4500E-Sup8-E) Sup8E- C4K_CHASSIS-5-PORTSPOERESTARTED being seen with old modules
CSCun80959	Desg port on the RootBridge experienced block forward for 30 sec
CSCuo51767	REP preemption is not triggered with link state change
CSCuo80260	Call-home message fails; returns "Unknown" serial number
CSCuo89407	Problem with adding new ports to a channel group.
CSCup17529	(4500E-Sup7L-E) Cat4k crashes at EPM after executing show ip device tracking all
CSCup48832	Identical IPv6 DHCP remote ID for L2 ports running source-guard/snooping
CSCup96299	IPv6 Multicast RIB entry refer to wrong distance
CSCuq02796	4500X VSS failure after adding members to port-channel

Bug ID	Headline
CSCuq03562	PBR: Not working in XE 3.5.0E under IPBASE license
CSCuq09636	(4500E-Sup7-E) Single bit error corrected on Sup7-E is inadvertently logged in syslog
CSCuq10827	C3560X cHsrpGrpStandbyState is incorrect
CSCuq32728	3.6.0 - IP phones reboots continuously
CSCuq39071	Mcast packet loss when other receiver leaves group in IGMPv3
CSCuq44784	Mingla2: Storm-control on EC suspended post reload
CSCuq75936	4500 SUP 8E port goes to unauthorized for certain DACL lengths
CSCur00722	Hard Reset of the Active Sup cause switch to power cycle

Resolved Caveats for Cisco IOS XE Release 3.6.0E

Bug ID	Headline
CSCty67871	Baseboard links remain up on improper uplink module removal
CSCub44553	CPU spike seen while sending the multicast traffic to 10k Groups.
CSCub63571	AdjSameIfFail packets in a user defined vnet are dropped
CSCuc49150	User can attach input QoS policy to VSL ports, but cannot dettach it
CSCuf08112	Cat4k Active Sup crash with multi telnet session cli show power module
CSCtk68692	kron-initiated 'write mem' locks nvram indefinitely

Related Documentation

Refer to the following documents for additional Catalyst 4500 series information:

- Catalyst 4500 Series Switch Documentation Home
<http://www.cisco.com/en/US/products/hw/switches/ps4324/index.html>

Hardware Documents

Installation guides and notes including specifications and relevant safety information are available at the following URLs:

- *Catalyst 4500 E-series Switches Installation Guide*
<http://www.cisco.com/en/US/docs/switches/lan/catalyst4500/hardware/catalyst4500e/installation/guide/Eseries.html>
- For information about individual switching modules and supervisors, refer to the *Catalyst 4500 Series Module Installation Guide* at:
http://www.cisco.com/en/US/docs/switches/lan/catalyst4500/hardware/configuration/notes/OL_25315.html
- *Regulatory Compliance and Safety Information for the Catalyst 4500 Series Switches*

http://www.cisco.com/en/US/docs/switches/lan/catalyst4500/hardware/regulatory/compliance/78_13233.html

- Installation notes for specific supervisor engines or for accessory hardware are available at:
http://www.cisco.com/en/US/products/hw/switches/ps4324/prod_installation_guides_list.html

Software Documentation

Software release notes, configuration guides, command references, and system message guides are available at the following URLs:

- Catalyst 4500E release notes are available at:
http://www.cisco.com/en/US/products/hw/switches/ps4324/prod_release_notes_list.html

Software documents for the Catalyst 4500 Classic, Catalyst 4500 E-Series, Catalyst 4900 Series, and Catalyst 4500-X Series switches are available at the following URLs:

- *Catalyst 4500 Series Software Configuration Guide*
http://www.cisco.com/en/US/products/hw/switches/ps4324/products_installation_and_configuration_guides_list.html
- *Catalyst 4500 Series Software Command Reference*
http://www.cisco.com/en/US/products/hw/switches/ps4324/prod_command_reference_list.html
- *Catalyst 4500 Series Software System Message Guide*
http://www.cisco.com/en/US/products/hw/switches/ps4324/products_system_message_guides_list.html

Cisco IOS Documentation

Platform-independent Cisco IOS documentation may also apply to the Catalyst 4500 and 4900 switches. These documents are available at the following URLs:

- Cisco IOS configuration guides, Release 12.x

http://www.cisco.com/en/US/products/ps6350/products_installation_and_configuration_guides_list.html

- Cisco IOS command references, Release 12.x

http://www.cisco.com/en/US/products/ps6350/prod_command_reference_list.html

You can also use the Command Lookup Tool at:

<http://tools.cisco.com/Support/CLILookup/cltSearchAction.do>

- Cisco IOS system messages, version 12.x

http://www.cisco.com/en/US/products/ps6350/products_system_message_guides_list.html

You can also use the Error Message Decoder tool at:

<http://www.cisco.com/cgi-bin/Support/Errordecoder/index.cgi>

Commands in Task Tables

Commands listed in task tables show only the relevant information for completing the task and not all available options for the command. For a complete description of a command, refer to the command in the *Catalyst 4500 Series Switch Cisco IOS Command Reference*.

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