Release Notes for Catalyst 4900M, Catalyst 4948E and Catalyst 4948E-F Series Switches, Cisco IOS Release 15.2(4)Ex

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These release notes describe the features, modifications, and caveats for Cisco IOS Release 15.2(4)E on the Catalyst 4900M switch, the Catalyst 4948E Ethernet Switch, and the Catalyst 4948E-F Ethernet Switch.

Cisco Catalyst 4900M Series is a premium extension to the widely deployed Catalyst 4948 Series top of rack Ethernet switches for data center server racks. Optimized for ultimate deployment flexibility, the Catalyst 4900M Series can be deployed for 10/100/1000 server access with 1:1 uplink to downlink oversubscription, mix of 10/100/1000 and 10 Gigabit Ethernet servers or all 10 Gigabit Ethernet servers in the same rack. The Catalyst 4900M is a 320Gbps, 250Mpps, 2RU fixed configuration switch with 8 fixed wire speed X2 ports on the base unit and 2 optional half card slots for deployment flexibility and investment protection. Low latency, scalable buffer memory and high availability with 1+1 hot swappable AC or DC power supplies and field replaceable fans optimize the Catalyst 4900M for any size of data center.

With Cisco IOS Release 12.2(54)XO, Cisco introduced the Catalyst 4948E Ethernet Switch, which is the first Cisco Catalyst E-Series data center switch built from the start to deliver class-leading, full-featured server-access switching. The switch offers forty-eight 10/100/1000-Gbps RJ45 downlink ports and four 1/10 Gigabit Ethernet uplink ports and is designed to simplify data center architecture and operations by offering service provider-grade hardware and software in a one rack unit (1RU) form factor optimized for full-featured top-of-rack (ToR) data center deployments.

The Cisco Catalyst 4948E Ethernet Switch builds on the advanced technology of the Cisco Catalyst 4948 Switches, the most deployed ToR switch in the industry, with more than 10 million ports deployed worldwide. The Cisco Catalyst E-Series doubles the uplink bandwidth and offers true front-to-back airflow with no side or top venting. Stringent airflow management reduces data center operating costs by providing strict hot-aisle and cold-aisle isolation. Exceptional reliability and serviceability are delivered with optional internal AC and DC 1+1 hot-swappable power supplies and a hot-swappable fan tray with redundant fans.

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With Cisco IOS Software Release 12.2(54)WO, Cisco extended the widely deployed Cisco Catalyst® 4948E Ethernet Switch to offer back-to-front airflow with the Cisco Catalyst 4948E-F Switch.

For more information on the Catalyst 4900M, Catalyst 4948E and Catalyst4948E-F Ethernet Switches, visit:
http://www.cisco.com/en/US/products/ps9310/index.html.

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

The Enterprise Services image supports Cisco Catalyst 4948E, Catalyst 4948E-F and Catalyst 4900M Ethernet Switch Series software features based on Cisco IOS Software 15.1(2)SG, including enhanced routing. BGP capability is included in the Enterprises Services package.

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. The Cisco Catalyst 4900M Switch Series only supports the IP Base and Enterprise Services images.

Starting with Cisco IOS Release 15.0(2)SG, on Catalyst 4900M, Catalyst 4948E and Catalyst 4948E-F, support for NEAT feature has been extended from IP Base to LAN Base and support for HSRP v2 IPV6 has been extended from Enterprise Services to IP Base.

Starting with Cisco IOS Release 15.2(1)E, OSPF Routed Access in IP Base support rose to 1000 routes.

Note The default image for WS-4900M, WS-C4948E, and WS-C4948E-F is IP Base.

Cisco IOS Release Strategy

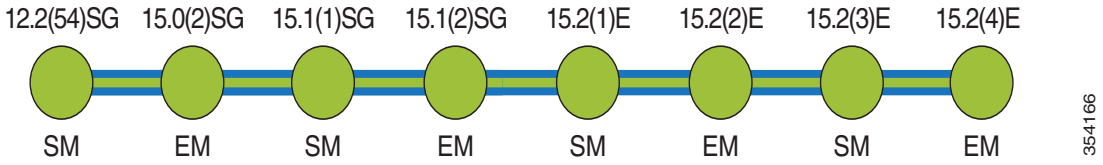
Customers with Catalyst 4948E, Catalyst 4948E-F and Catalyst 4900M series switches who need the latest hardware support and software features should migrate to Cisco IOS Release 15.2(4)E.

The Catalyst 4900M Series Switch have these maintenance trains: 15.0(2)SGx, 15.1(2)SGx,15.2(3)E, and 15.2(4)E. The Catalyst 4948E/E-F switches have these maintenance trains: 15.0(2)SGx, 15.1(2)SGx, 15.2(3)E, and 15.2(4)E.

Figure 1 displays the active trains, 12.2(53)SG, 15.0(2)SG, and 15.1(2)SG, .

Note Support for the Catalyst 4900M platform was introduced in Cisco IOS 12.2(40)XO. Support for the Catalyst 4948E platform was introduced in Cisco IOS 12.2(54)XO. Support for the Catalyst 4948E-F platform was introduced in Cisco IOS 12.2(54)SG1.

Figure 1 Software Release Strategy for the Catalyst 4900M, Catalyst 4948E, Catalyst 4948E-F Series Switches



Support

Support for Cisco IOS Release 15.2(4)E 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 on the Catalyst 4948E, Catalyst 4948E-F, and Catalyst 4900M Series Switches:

Supported Hardware on Catalyst 4948E, Catalyst 4948E-F, and Catalyst 4900M Series Switches

The following tables list the hardware supported on the Catalyst 4900M, Catalyst 4948E, and Catalyst 4948E-F Series Switches:

Table 1 Supported Hardware for Catalyst 4900M Series Switch

Product Number (append with "=" for spares)	**Product Description**
WS-C4900M	Catalyst 4900M 8-port base system
WS-X4908-10G-RJ45	8-Port Wire-Speed 10 Gigabit Ethernet (RJ-45) **Note** This linecard is not supported on the Catalyst 4948E Ethernet Switch.
WS-X4920-GB-RJ45 (=)	Catalyst 4900M 20-port 10/100/1000 RJ-45 half card
WS-X4904-10GE (=)	Catalyst 4900M 4 port 10GbE half card with X2 interfaces
WS-X4908-10GE (=)	Catalyst 4900M 8 port 10GbE half card with X2 interfaces
WS-X4908-10G-RJ45	8 port 10 Gigabit linecard with 2 to 1 oversubscription
WS-X4994	Blank PS Cover
WS-X4994=	Blank PS Cover Spare
WS-X4993=	Spare Fan Tray
PWR-C49M-1000AC(=)	Catalyst 4900M AC Power Supply
PWR-C49M-1000AC/2	Catalyst 4900M AC Power Supply Redundant
PWR-C49M-1000DC(=)	Catalyst 4900M DC Power Supply
PWR-C49M-1000DC/2	Catalyst 4900M DC Power Supply Redundant
WS-X4992=	Catalyst 4900M Spare Fan Tray
WS-X4994	Blank PS Cover
WS-X4994=	Blank PS Cover Spare
WS-X4993=	Spare Fan Tray
CVR-X2-SFP=	TwinGig converter module

Table 2 Supported Hardware for Catalyst 4948E Ethernet Switch

Product Number (append with "=" for spares)	**Product Description**
WS-C4948E	48x 10/100/1000(RJ45)+4x 10GbE(SFP+), no p/s
WS-C4948E-S	48x 10/100/1000(RJ45)+4x10GbE(SFP+), IP Base IOS, AC p/s

Table 2 Supported Hardware for Catalyst 4948E Ethernet Switch

Product Number (append with "=" for spares)	**Product Description**
WS-C4948E-E	48x 10/100/1000(RJ45)+4x10GbE(SFP+), Ent Ser IOS, AC p/s
WS-C4948E-BDL	Green Bundle 10x WS-C4948E
PWR-C49E-300AC-R=	Catalyst 4948E 300WAC power supply (spare)
PWR-C49E-300AC-R/2	Catalyst 4948E 300WAC redundant power supply
PWR-C49-300DC=	Catalyst 4948E 300WDC power supply (spare)
PWR-C49-300DC/2	Catalyst 4948E 300WDC redundant power supply (spare)
WS-X4993-F(=)	Cisco Catalyst 4948E spare fan tray rear exhaust

Table 3 Supported Hardware for Catalyst 4948E-F Ethernet Switch

Product Number (append with "=" for spares)	**Product Description**
WS-C4948E-F	48x 10/100/1000(RJ45)+4x 10GbE(SFP+), no p/s
WS-C4948E-F-S	48x 10/100/1000(RJ45)+4x10GbE(SFP+), IP Base IOS, AC p/s
WS-C4948E-F-E	48x 10/100/1000(RJ45)+4x10GbE(SFP+), Ent Ser IOS, AC p/s
WS-C4948E-F- BDL	Green Bundle 10x WS-C4948E
PWR-C49E-300AC-F=	Catalyst 4948E 300WAC power supply (spare)
PWR-C49E-300AC-F/2	Catalyst 4948E 300WAC redundant power supply
WS-X4993-F(=)	Cisco Catalyst 4948E spare fan tray rear exhaust

The following table lists where you can find information about supported pluggable transceiver modules and the minimum Cisco IOS Software release required:

Table 4 Supported Pluggables

Module Type	**URL**
Cisco 10-Gigabit Ethernet Transceiver Modules Compatibility Matrix	http://www.cisco.com/c/en/us/td/docs/interfaces_modules/transceiver_modules/compatibility/matrix/10GE_Tx_Matrix.html
Cisco Gigabit Ethernet Transceiver Modules Compatibility Matrix	http://www.cisco.com/c/en/us/td/docs/interfaces_modules/transceiver_modules/compatibility/matrix/GE_Tx_Matrix.html
Cisco 100-Megabit Ethernet SFP Modules Compatibility Matrix	http://www.cisco.com/c/en/us/td/docs/interfaces_modules/transceiver_modules/compatibility/matrix/100MB_Tx_Matrix.html
Cisco Wavelength Division Multiplexing Transceivers Compatibility Matrix	http://www.cisco.com/c/en/us/td/docs/interfaces_modules/transceiver_modules/compatibility/matrix/OL_6982.html

Feature Support by Image Type

Note The default image for the Catalyst 4900M Series Switch is Cisco IOS Release 12.2(53)SG4. The default image for the Catalyst 4948E Ethernet Switch and the Catalyst 4948E-F Ethernet Switch is 12.2(54)SG1.

Table 5 lists the Cisco IOS software features for the Catalyst 4948E, Catalyst 4948E-F and Catalyst 4900M series switches. For the full list of supported features, check the Feature Navigator application:

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

Table 5 LAN Base, IP Base, and Enterprise Services Image Support on the Catalyst 4900M, Catalyst 4948E, and Catalyst 4948E-F Switches (The Cisco Catalyst 4900M Switch Series does not support the LAN Base license)

Feature	LAN Base	IP Base	Enterprise Services
2-way Community Private VLANs	Yes	Yes	Yes
8-Way CEF Load Balancing	Yes	Yes	Yes
10G Uplink Use	Yes	Yes	Yes
AAA Server Group	Yes	Yes	Yes
ACL Logging	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
AppleTalk 1 and 2 (not supported on Sup 6-E and 6L-E)	No	No	Yes
Auto Configuration	Yes	Yes	Yes
Auto SmartPorts	Yes	Yes	Yes
Auto-QoS	Yes	Yes	Yes
Auto-QoS Compact	Yes	Yes	Yes
Auto-QoS VoIP	Yes	Yes	Yes
Auto-MDIX	Yes	Yes	Yes
Auto-Voice VLAN (part of Auto QoS)	No	Yes	Yes
Bidirectional Forwarding Detection (BFD) Hardware Offload Support	No	Yes	Yes
BFD - EIGRP Support	No	Yes	Yes

Table 5 LAN Base, IP Base, and Enterprise Services Image Support on the Catalyst 4900M, Catalyst 4948E, and Catalyst 4948E-F Switches (The Cisco Catalyst 4900M Switch Series does not support the LAN Base license)

Feature	LAN Base	IP Base	Enterprise Services
BFD - Static Route Support over IPv4	No	Yes	Yes
BFD IPv6 Encapsulation Support	No	Yes	Yes
BGP Support for BFD	No	No	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
BGP 4 Prefix Filter and In-bound Route Maps	No	No	Yes
BGP Conditional Route Injection	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 Route-Map Continue	No	No	Yes
BGP Route-Map Continue Support for Outbound Policy	No	No	Yes
BGP Route-Map Policy List Support	No	No	Yes
BGP Soft Reset	No	No	Yes
BGP Wildcard	No	No	Yes
Bidirectional PIM (IPv4 only)	No	Yes	Yes
BOOTP	Yes	Yes	Yes
Bootup GOLD	No	Yes	Yes
Broadcast/Multicast Suppression	Yes	Yes	Yes
Call Home	No	Yes	Yes
CDP/CDPv2	Yes	Yes	Yes
CFM	Yes	Yes	Yes
CGMP - Cisco Group Management Protocol	Yes	Yes	Yes

Table 5 LAN Base, IP Base, and Enterprise Services Image Support on the Catalyst 4900M, Catalyst 4948E, and Catalyst 4948E-F Switches (The Cisco Catalyst 4900M Switch Series does not support the LAN Base license)

Feature	LAN Base	IP Base	Enterprise Services
Cisco IOS Scripting w/Tcl	Yes	Yes	Yes
CiscoView Autonomous Device Manager (ADP)	Yes	Yes	Yes
Cisco TrustSec—SGT/ SGA	No	Yes	Yes
Cisco TrustSec—SGACL Logging and Statistics	No	Yes	Yes
CNS	Yes	Yes	Yes
Command Scheduler (Kron)	Yes	Yes	Yes
Community PVLAN support	No	Yes	Yes
Config File	Yes	Yes	Yes
Configuration Replace and Configuration Rollback	Yes	Yes	Yes
Configuration Rollback Confirmed Change	Yes	Yes	Yes
Copy Command	Yes	Yes	Yes
Console Access	Yes	Yes	Yes
Control Plane Policing (CoPP)	Yes	Yes	Yes
CoS to DSCP Map	Yes	Yes	Yes
CPU Optimization for Layer 3 Multicast Control Packets	Yes	Yes	Yes
Crashdump Enhancement[1]	Yes	Yes	Yes
DAI (Dynamic ARP Inspection)	Yes	Yes	Yes
DBL (Dynamic Buffer Limiting) - Active Queue Management	Yes	Yes	Yes
Debug Commands	Yes	Yes	Yes
Device Management	Yes	Yes	Yes
DHCPv6 Relay Agent notification for Prefix Delegation	No	Yes	Yes
DHCP Client	Yes	Yes	Yes
DHCP Gleaning	No	Yes	Yes
DHCP Server	Yes	Yes	Yes
DHCP Snooping	Yes	Yes	Yes

Table 5 LAN Base, IP Base, and Enterprise Services Image Support on the Catalyst 4900M, Catalyst 4948E, and Catalyst 4948E-F Switches (The Cisco Catalyst 4900M Switch Series does not support the LAN Base license)

Feature	LAN Base	IP Base	Enterprise Services
DHCPv6 Ethernet Remote ID option	No	Yes	Yes
Diagnostics Tools	Yes	Yes	Yes
Digital Optical Monitoring (DOM)	Yes	Yes	Yes
Dot1x - VLAN Radius Attributes in Access Requests	Yes	Yes	Yes
DSCP to CoS Map	Yes	Yes	Yes
DSCP to egress queue mapping	Yes	Yes	Yes
DSCP/CoS via LLDP	Yes	Yes	Yes
Duplication Location Reporting Issue	No	Yes	Yes
Easy Virtual Network (EVN)	No	No	Yes
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 Event Manager and EOT integration	No	Yes	Yes
Energywise Agentless SNMP support	Yes	Yes	Yes
Energywise Wake-On-Lan Support	Yes	Yes	Yes
EPoE	Yes	Yes	Yes
EtherChannel	Yes	Yes	Yes
Ethernet Management Port (Fa1 interface)[2]	Yes	Yes	Yes
Ethernet Operations, Administration, and Maintenance (OAM)	Yes	Yes	Yes
Event Log	Yes	Yes	Yes
FHRP - Enhanced Object Tracking of IP SLAs	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

Table 5 LAN Base, IP Base, and Enterprise Services Image Support on the Catalyst 4900M, Catalyst 4948E, and Catalyst 4948E-F Switches (The Cisco Catalyst 4900M Switch Series does not support the LAN Base license)

Feature	LAN Base	IP Base	Enterprise Services
FIPS 140-2/3 Level 2 Certification	Yes	Yes	Yes
File Management	Yes	Yes	Yes
Flex Links+ (VLAN Load balancing)	Yes	Yes	Yes
Gateway Load Balancing Protocol (GLBP)	No	Yes	Yes
GOLD Online Diagnostics	Yes	Yes	Yes
HSRP - Hot Standby Router Protocol	No	Yes	Yes
HSRPv2 for IPv6 Global Address Support	No	Yes	Yes
HTTP TACAC+ Accounting support	Yes	Yes	Yes
Identity 4.1 ACL Policy Enhancements	Yes	Yes	Yes
Identity 4.2: MAB with Configurable User Name/Password	Yes	Yes	Yes
Identity 4.1 Network Edge Access Topology	Yes	Yes	Yes
ID 4.0 Voice VLAN assignment	Yes	Yes	Yes
ID 4.1 Filter ID and per use ACL	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 (Layer 2 COS)	Yes	Yes	Yes
IEEE 802.1ag D8.1 standard Compliant CFM, Y.1731 multicast LBM / AIS / RDI / LCK, IP SLA for Ethernet	Yes	Yes	Yes
IEEE 802.1p Support	Yes	Yes	Yes
IEEE 802.1p Prioritization	Yes	Yes	Yes
IEEE 802.1p/802.1q	Yes	Yes	Yes
IEEE 802.1Q Tunneling	Yes	Yes	Yes
IEEE 802.1Q VLAN Trunking	Yes	Yes	Yes
IEEE 802.1s Multiple Spanning Tree (MST) Standard Compliance	Yes	Yes	Yes
IEEE 802.1w Spanning Tree Rapid Reconfiguration	Yes	Yes	Yes

Table 5 LAN Base, IP Base, and Enterprise Services Image Support on the Catalyst 4900M, Catalyst 4948E, and Catalyst 4948E-F Switches (The Cisco Catalyst 4900M Switch Series does not support the LAN Base license)

Feature	LAN Base	IP Base	Enterprise Services
IEEE 802.1x (Auth-Fail VLAN, Accounting)	Yes	Yes	Yes
IEEE 802.1x Critical Authorization for Voice and Data	Yes	Yes	Yes
IEEE 802.1x Flexible Authentication	Yes	Yes	Yes
IEEE 802.1x with Multiple authenticated, multi-host	Yes	Yes	Yes
IEEE 802.1x Open Authentication	Yes	Yes	Yes
IEEE 802.1x with User Distribution	Yes	Yes	Yes
IEEE 802.1x User Port Description	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	Yes	Yes	Yes
IEEE 802.1x Agentless Audit Support	Yes	Yes	Yes
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 MIB Support	Yes	Yes	Yes
IEEE 802.1x Multi-Domain Auth with Voice VLAN Assignment	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 and MAB with ACL assignment	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 802.3ah and CFM Interworking	No	Yes	Yes

Table 5 LAN Base, IP Base, and Enterprise Services Image Support on the Catalyst 4900M, Catalyst 4948E, and Catalyst 4948E-F Switches (The Cisco Catalyst 4900M Switch Series does not support the LAN Base license)

Feature	LAN Base	IP Base	Enterprise Services
IEEE 802.3x Flow Control	Yes	Yes	Yes
IEEE 802.1x Web-Auth	Yes	Yes	Yes
IGMP Filtering	Yes	Yes	Yes
IGMP Querier	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
IGMPv3 Host Stack	Yes	Yes	Yes
Ingress Policing	Yes	Yes	Yes
Interface Access (Telnet, Console/Serial, Web)	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	Yes	Yes	Yes
IP Multicast Load Splitting across Equal-Cost Paths	No	Yes	Yes
IP Named Access Control List	Yes	Yes	Yes
IPv6 Tunnels (in software)	Yes	Yes	Yes
IP Routing	Yes	Yes	Yes
IP SLAs DHCP Operation	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 SLAs History Statistics	No	Yes	Yes
IP SLAs HTTP Operation	No	Yes	Yes

Table 5 LAN Base, IP Base, and Enterprise Services Image Support on the Catalyst 4900M, Catalyst 4948E, and Catalyst 4948E-F Switches (The Cisco Catalyst 4900M Switch Series does not support the LAN Base license)

Feature	LAN Base	IP Base	Enterprise Services
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
IP SLAs Responder	Yes	Yes	Yes
IP SLAs Scheduler	No	Yes	Yes
IP SLAs SNMP Support	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 Unnumbered for VLAN-SVI interfaces	No	Yes	Yes
IPsecv3/IKEv2 (for management traffic only)	Yes	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	Yes	Yes
IPv4 Policy-Based Routing with recursive next hop	No	Yes	Yes
IPv6 / v4 BFD with OSPF/ BGP/ EIGRP and Static	No	Yes	Yes
IPv6 Bootstrap Router (BSR) Scoped Zone Support	No	No	Yes

Table 5 LAN Base, IP Base, and Enterprise Services Image Support on the Catalyst 4900M, Catalyst 4948E, and Catalyst 4948E-F Switches (The Cisco Catalyst 4900M Switch Series does not support the LAN Base license)

Feature	LAN Base	IP Base	Enterprise Services
IPv6 First Hop Security (FHS): DHCPv6 Guard Lightweight DHCPv6 Relay Agent IPv6 Destination Guard IPv6 Snooping IPv6 Neighbor Discovery Multicast Suppression IPv6 Router Advertisement (RA) Guard IPv6 Neighbor Discovery (ND) Inspection	Yes	Yes	Yes
IPv6 First Hop Security (FHS) Phase 2: Binding table recovery Bulk Lease Query support from Lightweight DHCPv6 Relay Agent (LDRA) Neighbor Discovery (ND) Multicast Suppress Source and Prefix Guard[3]	Yes	Yes	Yes
IPv6 HSRP	No	Yes	Yes
IPv6 Interface Statistics	Yes	Yes	Yes
IPv6 IP SLAs (UDP Jitter, UDP Echo, ICMP Echo, TCP Connect)	No	Yes	Yes
IPv6 (Internet Protocol Version 6)	Yes	Yes	Yes
IPV6 MLD snooping V1 and V2	Yes	Yes	Yes
IPv6 Multicast	No	Yes	Yes
IPv6 Multicast: Bootstrap Router (BSR)	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 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 Neighbor Discovery	No	Yes	Yes
IPv6 OSPFv3 Fast Convergence	No	Yes[4]	Yes

Table 5 LAN Base, IP Base, and Enterprise Services Image Support on the Catalyst 4900M, Catalyst 4948E, and Catalyst 4948E-F Switches (The Cisco Catalyst 4900M Switch Series does not support the LAN Base license)

Feature	LAN Base	IP Base	Enterprise Services
IPv6 OSPFv3 NSF/SSO	No	Yes[4]	Yes
IPv6 Policy-Based Routing	No	No	Yes
Identity 4.1 Network Edge Access Topology	Yes	Yes	Yes
IPv6 RA Guard (Host Mode)	Yes	Yes	Yes
IPv6 Reformation	NA	Yes	Yes
IPv6 Routing - EIGRP Support	No	No	Yes
IPv6 Routing: OSPF for IPv6 (OSPFv3)	No	Yes[4]	Yes
IPv6 Routing: RIP for IPv6 (RIPng)	No	Yes	Yes
IPv6 Switching: CEFv6 Switched Automatic IPv4-compatible Tunnels (in software)	No	Yes	Yes
IPv6 Switching: CEFv6 Switched Configured IPv6 over IPv4 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	Yes	Yes	Yes
ISIS for IPv4 and IPv6	No	No	Yes
ISL Trunk	Yes	Yes	Yes
Jumbo Frames	Yes	Yes	Yes
LACP Min-Links	Yes	Yes	Yes
LACP Rate Fast	Yes	Yes	Yes
Layer 2 Control Packet	Yes	Yes	Yes

Table 5 LAN Base, IP Base, and Enterprise Services Image Support on the Catalyst 4900M, Catalyst 4948E, and Catalyst 4948E-F Switches (The Cisco Catalyst 4900M Switch Series does not support the LAN Base license)

Feature	LAN Base	IP Base	Enterprise Services
Layer 2 Protocol Tunneling (L2PT)	No	Yes	Yes
L2PT for LACP and PAgP	No	Yes	Yes
L2PT for UDLD	No	Yes	Yes
Layer 2 Traceroute	Yes	Yes	Yes
Layer 3 Multicast Routing (PIM SM, SSM, Bidir)	No	Yes	Yes
Link State Group	No	Yes	Yes
Link State Tracking	Yes	Yes	Yes
Local Web Auth	Yes	Yes	Yes
MAB (MAC Authentication Bypass) for Voice VLAN	Yes	Yes	Yes
MAC Address Filtering	Yes	Yes	Yes
MAC Based Access List	Yes	Yes	Yes
MAC Move and Replace	Yes	Yes	Yes
Medianet 2.0: AutoQoS SRND4 Macro	No	Yes	Yes
Medianet 2.0: Integrated Video Traffic Simulator (hardware-assisted IP SLA); IPSLA responder only	No	Yes	Yes
Medianet 2.0: Flow Metadata	No	Yes	Yes
Medianet 2.0: Media Service Proxy	No	Yes	Yes
Medianet 2.0: Media Monitoring (Performance Monitoring and Mediatrace)	No	Yes	Yes
Medianet: MSP and Metadata	No	No	Yes
Multicast BGP (MBGP)	No	No	Yes
Multicast HA (NSF/SSO) for IPv4&IPv6	No	Yes	Yes
Multicast Routing Monitor (MRM)	No	Yes	Yes
Multicast Source Discovery Protocol (MSDP)	Yes	Yes	Yes
Multicast VLAN Registration (MVR)	Yes	Yes	Yes
Multi-authentication and VLAN Assignment	Yes	Yes	Yes

Table 5 LAN Base, IP Base, and Enterprise Services Image Support on the Catalyst 4900M, Catalyst 4948E, and Catalyst 4948E-F Switches (The Cisco Catalyst 4900M Switch Series does not support the LAN Base license)

Feature	LAN Base	IP Base	Enterprise Services
Multi-VRF Support (VRF lite)	No	No	Yes
NAC - L2 IEEE 802.1x	Yes	Yes	Yes
NAC - L2 IP	Yes	Yes	Yes
Named VLAN	Yes	Yes	Yes
ND Cache Limit/Interface	No	Yes	Yes
NEAT Enhancement: Re-Enabling BPDU Guard Based on User Configuration	Yes	Yes	Yes
Network Edge Access Topology (NEAT)	Yes	Yes	Yes
Network Time Protocol (NTP)	Yes	Yes	Yes
NMSP Enhancements • GPS support for location • Location at switch level • Local timezone change • Name value pair • Priority settings for MIBs	No	Yes	Yes
Time Protocols (SNTP, TimeP) primary (formerly known as Time Protocols (SNTP, TimeP) master)	Yes	Yes	Yes
No. of QoS Filters No. of Security ACE	Yes (4K entries)	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
NTP for IPv6	Yes	Yes	Yes
NTP for VRF aware	No	No	Yes
On Demand Routing (ODR)	No	No	Yes
OSPF	No	Yes[4]	Yes

Table 5 LAN Base, IP Base, and Enterprise Services Image Support on the Catalyst 4900M, Catalyst 4948E, and Catalyst 4948E-F Switches (The Cisco Catalyst 4900M Switch Series does not support the LAN Base license)

Feature	LAN Base	IP Base	Enterprise Services
OSPF v3 Authentication	No	Yes[4]	Yes
OSPF Flooding Reduction	No	Yes[4]	Yes
OSPF for Routed Access[5]	No	Yes	Yes
OSPF Incremental Shortest Path First (i-SPF) Support	No	Yes[4]	Yes
OSPF Link State Database Overload Protection	No	Yes[4]	Yes
OSPF Not-So-Stubby Areas (NSSA)	No	Yes[4]	Yes
OSPF Packet Pacing	No	Yes[4]	Yes
OSPF Shortest Paths First Throttling	No	Yes[4]	Yes
OSPF Stub Router Advertisement	No	Yes[4]	Yes
OSPF Support for BFD over IPv4	No	Yes[4]	Yes
OSPF Support for Fast Hellos	No	Yes[4]	Yes
OSPF Support for Link State Advertisement (LSA) Throttling	No	Yes[4]	Yes
OSPF Support for Multi-VRF on CE Routers	No	Yes[4]	Yes
OSPF Update Packet-Pacing Configurable Timers	No	Yes[4]	Yes
OSPFv3 BFD	No	Yes[4]	Yes
Out-of-band Management Port	Yes	Yes	Yes
Out-of-band Management Port - IPv6	Yes	Yes	Yes
PAgP	Yes	Yes	Yes
Passwords Password clear protection	Yes	Yes	Yes
PBR with Object Tracking	No	Yes	Yes
Per Intf IGMP State Limit	Yes	Yes	Yes
Per Intf MrouteState Limit	Yes	Yes	Yes
Per-User ACL Support for 802.1X/MAB/Webauth users	Yes	Yes	Yes
Per-VLAN Learning	Yes	Yes	Yes
PIM Sparse Mode Version4	No	No	Yes

Table 5 LAN Base, IP Base, and Enterprise Services Image Support on the Catalyst 4900M, Catalyst 4948E, and Catalyst 4948E-F Switches (The Cisco Catalyst 4900M Switch Series does not support the LAN Base license)

Feature	LAN Base	IP Base	Enterprise Services
PIM Version 1	No	Yes	Yes
PM Version 2	No	Yes	Yes
PnP Agent	Yes	Yes	Yes
PnP Smart Install Proxy	Yes	Yes	Yes
Port Access Control List (PACL)	Yes	Yes	Yes
Port Monitoring (interface Stats)	Yes	Yes	Yes
Port Security	Yes (supports 1024 MACs)	Yes (supports 3072 MACs)	Yes (supports 3072 MACs)s
Port Security MAC Address Filtering	Yes	Yes	Yes
Post Status	Yes	Yes	Yes
Pragmatic General Multicast (PGM)	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
RACL	Yes	Yes	Yes
RADIUS/TACACS+ (AAA)	Yes	Yes	Yes
RADIUS Attribute 44 (Accounting Session ID) in Access Requests	Yes	Yes	Yes
RADIUS Change of Authorization	Yes	Yes	Yes
Rapid-Per-VLAN-Spanning Tree (Rapid-PVST)	Yes	Yes	Yes
Rapid-Per-VLAN-Spanning Tree Plus (Rapid-PVST+)	Yes	Yes	Yes
Remote SPAN (RSPAN)	Yes	Yes	Yes
REP (Resilient Ethernet Protocol)	Yes	Yes	Yes
REP - No Edge Neighbor Enhancement	Yes	Yes	Yes

Table 5 LAN Base, IP Base, and Enterprise Services Image Support on the Catalyst 4900M, Catalyst 4948E, and Catalyst 4948E-F Switches (The Cisco Catalyst 4900M Switch Series does not support the LAN Base license)

Feature	LAN Base	IP Base	Enterprise Services
RIP v1	No	Yes	Yes
RMON	Yes	Yes	Yes
Role-Based Access Control CLI commands (RBAC)	Yes	Yes	Yes
RPVST+	Yes	Yes	Yes
RSPAN	Yes	Yes	Yes
Secure Copy (SCP)	Yes	Yes	Yes
Secure Shell SSH Version 2 Server Support	Yes	Yes	Yes
Secure Shell SSH Version 2 Client Support	Yes	Yes	Yes
Service Advertisement Framework (SAF)	No	No	Yes
Smart Install Director—Configuration-only Deployment and Smooth Upgrade	Yes	Yes	Yes
SmartPorts (Role based MACRO)	Yes	Yes	Yes
SMI Catalyst 4K Client	Yes	Yes	Yes
SNMP (Simple Network Management Protocol)	Yes	Yes	Yes
SNMPv3 (SNMP Version 3)	Yes	Yes	Yes
Source Port Filtering (Private VLAN)	Yes	Yes	Yes
Source Specific Multicast (SSM)	No	Yes	Yes
Source Specific Multicast (SSM) - IGMPv3,IGMP v3lite, and URD	Yes	Yes	Yes
Source Specific Multicast (SSM) Mapping	Yes	Yes	Yes
SPAN (# of bidirectional sessions) – Port Mirroring	Yes (4 bidirectional sessions)	Yes (16 bidirectional sessions)	Yes (16 bidirectional sessions)
SPAN ACL Filtering for IPv6	Yes	Yes	Yes
Spanning Tree Protocol (STP) • Bridge Assurance • Dispute Mechanism • PVST+ Simulation	Yes	Yes	Yes

Table 5 LAN Base, IP Base, and Enterprise Services Image Support on the Catalyst 4900M, Catalyst 4948E, and Catalyst 4948E-F Switches (The Cisco Catalyst 4900M Switch Series does not support the LAN Base license)

Feature	LAN Base	IP Base	Enterprise Services
SSHv2/Secure Copy, FTP, SSL, Syslog, Sys Information	Yes	Yes	Yes
Static Route Support for BFD over IPv6	No	No	Yes
Static Routing (IPv4/IPv6)	Yes	Yes	Yes
Storm Control	Yes	Yes	Yes
Storm Control - Per-Port Multicast Suppression	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
TACACS+	Yes	Yes	Yes
TACACS+ and Radius for IPv6-	Yes	Yes	Yes
Time-Based Access Lists	Yes	Yes	Yes
Time Domain Reflectometry (TDR)[6]	No	Yes	Yes
Time Protocols (SNTP, TimeP)	Yes	Yes	Yes
Traffic Mirroring (SPAN)	Yes	Yes	Yes
Trusted Boundary (LLDP & CDP Based)	Yes	Yes	Yes
Unicast Reverse Path Forwarding (uRPF)	Yes	Yes	Yes
UniDirectional Link Detection (UDLD)	Yes	Yes	Yes
Virtual Router Redundancy Protocol (VRRP) for IPv4	No	Yes	Yes
VLAN Access Control List (VACL)	Yes	Yes	Yes
VLAN Mapping (VLAN Translation)[7]	No	Yes	Yes
Vlan Switching and Selective QinQ on the Same Port	No	Yes	Yes
Voice VLAN	Yes	Yes	Yes
VRF-aware TACACS+	No	No	Yes
VRF-aware PBR	No	No	Yes
VRF-lite for IPv6 on OSPF/ BGP/ EIGRP	No	No	Yes

Table 5 LAN Base, IP Base, and Enterprise Services Image Support on the Catalyst 4900M, Catalyst 4948E, and Catalyst 4948E-F Switches (The Cisco Catalyst 4900M Switch Series does not support the LAN Base license)

Feature	LAN Base	IP Base	Enterprise Services
VTP (Virtual Trunking Protocol) Version 2	Yes	Yes	Yes
VTP version 3	Yes	Yes	Yes
WCCP Redirection on Inbound Interfaces	No	Yes	Yes
WCCP Version 2	No	Yes	Yes
WCCP Version 2 for IPv6	No	No	Yes
XML-PI	Yes	Yes	Yes

1. Supported only on Supervisor Engine 6-E and Supervisor Engine 6L-E
2. Starting with Cisco IOS Release 12.2(46)SG
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. IP Base supports only one OSPFv2 and one OSPFv3 instance with a maximum number of 200 dynamically learned routes.
5. OSPF for Routed Access supports only one OSPFv2 and one OSPFv3 instance with a maximum number of 1000 dynamically learned routes.
6. TDR is supported on 4948E(F) and WS-X4908-10GB-R.
7. WS-C4948E-10GE does not support VLAN mapping.

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 Catalyst 4900M, Catalyst 4948E, and Catalyst 4948E-F Series Switches

- The following ACL types:
  - Standard Xerox Network System (XNS) access list
  - Extended XNS access list
  - DECnet access list
  - Protocol type-code access list
- ADSL and Dial access for IPv6
- AppleTalk EIGRP
- Auto RP
- Bridge groups
- CEF Accounting
- CER for E-911 Support

- CFM CoS
- Cisco-Port-QoS-MIB
- Cisco IOS software IPX ACLs:
  - <1200-1299> IPX summary address access list
- Cisco IOS software-based transparent bridging (also called “fallback bridging”)
- Connectionless (CLNS) routing; including IS-IS routing for CLNS. IS-IS is supported for IP routing only.
- DLSw (data-link switching)
- HTTP Software Upgrade
- IGRP (use EIGRP instead)
- ISSU
- Kerberos support for access control
- LLDP HA
- Lock and key
- NAC L2 IP - Inaccessible authentication bypass
- NAT-PT for IPv6
- NSF with SSO
- Packet Based Storm Control
- Reflexive ACLs
- MPLS and routing IP over an MPLS network
- RPR
- SMI Proxy
- UniDirectional Link Routing (UDLR)
- SSH Version 1

Orderable Product Numbers

Table 6 Orderable Product Numbers for the Catalyst 4900M, Catalyst 4948E, and Catalyst 4948E-F Switches

Product Number	Description	Image
S49MES-15203E	Cisco Catalyst 4900 IOS ENTERPRISE SERVICES W/O CRYPTO	cat4500e-entservices-mz
S49EES-15203E	Cisco Catalyst 4900 IOS ENTERPRISE SERVICES W/O CRYPTO	cat4500e-entservices-mz
S49MESK9-15203E	Cisco CAT4900M IOS ENTERPRISE SERVICES SSH	cat4500e-entservicesk9-mz
S49EESK9-15203E	Cisco CAT4900 IOS ENTERPRISE SERVICES SSH	cat4500e-entservicesk9-mz
S49MIPB-15203E	Cisco CAT4900M IOS IP BASE W/O CRYPTO	cat4500e-ipbase-mz
S49EIPB-15203E	Cisco CAT4900 IOS IP BASE W/O CRYPTO	cat4500e-ipbase-mz

Table 6 Orderable Product Numbers for the Catalyst 4900M, Catalyst 4948E, and Catalyst 4948E-F Switches

Product Number	Description	Image
S49MIPBK9-15203E	Cisco CAT4900M IOS IP BASE SSH	cat4500e-ipbasek9-mz
S49EIPBK9-15203E	Cisco CAT4900 IOS IP BASE SSH	cat4500e-ipbasek9-mz
S49ELB-15203E	Cisco CAT4900 IOS LAN BASE W/O CRYPTO	cat4500e-lanbase-mz
S45ELBK9-15203E	Cisco CAT4900 IOS LAN BASE SSH	cat4500e-lanbasek9-mz

New and Changed Information

The Cisco IOS Release 15.2(4)E Documentation Roadmap provides quick and easy access to all relevant documentation for specific platforms. Look for Quick Links to Platform Documentation on the respective platform documentation pages. For more information, see: http://www.cisco.com/c/en/us/support/ios-nx-os-software/ios-15-2e/tsd-products-support-series-home.html

These sections describe the new and changed information for the Catalyst 4948E, Catalyst 4948E-F and the Catalyst 4900M series switches running Cisco IOS software:

- New Features in Cisco IOS Release 15.2(4)E10, page 24
- New Features in Cisco IOS Release 15.2(4)E9, page 24
- New Features in Cisco IOS Release 15.2(4)E8, page 24
- New Features in Cisco IOS Release 15.2(4)E7, page 25
- New Features in Cisco IOS Release 15.2(4)E6, page 25
- New Features in Cisco IOS Release 15.2(4)E5, page 25
- New Features in Cisco IOS Release 15.2(4)E4, page 25
- New Features in Cisco IOS Release 15.2(4)E3, page 25
- New Features in Cisco IOS Release 15.2(4)E2, page 25
- New Features in Cisco IOS Release 15.2(4)E1, page 25
- New Features in Cisco IOS Release 15.2(4)E, page 26

New Features in Cisco IOS Release 15.2(4)E10

No new features were introduced in Cisco IOS Release 15.2(4)E10.

New Features in Cisco IOS Release 15.2(4)E9

No new features were introduced in Cisco IOS Release 15.2(4)E9.

New Features in Cisco IOS Release 15.2(4)E8

No new features were introduced in Cisco IOS Release 15.2(4)E8.

New Features in Cisco IOS Release 15.2(4)E7

No new features were introduced in Cisco IOS Release 15.2(4)E7.

New Features in Cisco IOS Release 15.2(4)E6

No new features were introduced in Cisco IOS Release 15.2(4)E6.

New Features in Cisco IOS Release 15.2(4)E5

No new features were introduced in Cisco IOS Release 15.2(4)E5.

New Features in Cisco IOS Release 15.2(4)E4

No new features were introduced in Cisco IOS Release 15.2(4)E4.

New Features in Cisco IOS Release 15.2(4)E3

No new features were introduced in Cisco IOS Release 15.2(4)E3.

New Features in Cisco IOS Release 15.2(4)E2

No new features were introduced in Cisco IOS Release 15.2(4)E2.

New Features in Cisco IOS Release 15.2(4)E1

Table 7 New Software Features in this Release

Feature Name	Description
Limiting Login	The Limiting Login feature helps network administrators to limit the login attempt of users to a network. When a user fails to successfully login to a network within a configurable number of attempts within a configurable time limit, the user can be blocked. This feature is enabled only for local users and not for remote users. You need to configure the **aaa authentication rejected** command in global configuration mode to enable this feature.
x.509v3 with SSH Authentication	This feature uses the public key algorithm (PKI) for server and user authentication, and allows the Secure Shell (SSH) protocol to verify the identity of the owner of a key pair via digital certificates, signed and issued by a Certificate Authority (CA).

New Features in Cisco IOS Release 15.2(4)E

New Hardware Features

Table 8 New Hardware Features in this Release

Feature Name	Description
Support for BX SFP and SFP+ Transceivers	The following new BX SFP and SFP+ transceivers are supported on the WS-X4908-10GE and WS-X4904-10GE modules on Cisco Catalyst 4900-M switches[1], and on Cisco Catalyst 4948-E and Cisco Catalyst 4948-F switches on SFP and SFP+ ports: • SFP-10G-BXD-I • SFP-10G-BXU-I • SFP-10G-BX40D-I • SFP-10G-BX40U-I • GLC-BX40-D-I • GLC-BX80-D-I • GLC-BX40-U-I • GLC-BX80-U-I • GLC-BX40-DA-I

1. Using a Cisco TwinGig Converter Module for 1G and a Cisco OneX Converter Module for 10G.

New Software Features

Table 9 New Software Features in this Release

Feature Name	Description
Cisco TrustSec—SGACL Logging and Statistics	Option to enable logging of Security Group-Based Access Control (SGACL) information and Access Control Entry (ACE) statistics. The logged information includes the source and destination security group tag, the SGACL policy name, packet protocol type, the action performed on the packet, and ACE matches. For more information, see the *Cisco TrustSec Switch Configuration Guide* on cisco.com. (IP Base and Enterprise Services)
LACP Min-Links	Allows you to specify the minimum number of active ports that must be in the link-up state and bundled in an EtherChannel for the port channel interface to transition to the link-up state. (LAN Base, IP Base, and Enterprise Services)
Link State Group	The upper limit of the link state group number value is now increased (from 10) to 20. You can configure upto 20 link state groups per switch. (IP Base, and Enterprise Services)
Named VLAN	Option to specify a VLAN name for access and voice VLAN. (LAN Base, IP Base, and Enterprise Services)

Table 9 New Software Features in this Release

Feature Name	Description
Policy-Based Routing (PBR) with Object Tracking	Support for a new command **set ip next-hop verify-availability**, to use PBR with object tracking, to verify the reachability of the next-hop IP address to which to forward packets, using an Internet Control Message Protocol (ICMP) ping as the verification method. This feature is supported only on IPv4 PBR and is not supported on IPv6 PBR, and PBR on VSS and VRF. (IP Base and Enterprise Services)
Private VLAN (PVLAN) Support on LAN Base	PVLAN is now supported on LAN Base images. (LAN Base)
Rapid PVST+ as Default	Rapid PVST+ is now the default spanning-tree mode used on all Ethernet port-based VLANs. (LAN Base, IP Base, and Enterprise Services)
Resilient Ethernet Protocol (REP) Enhancements	Option to configure an administrative VLAN for each segment. (LAN Base, IP Base, Enterprise Services)
Spanning Tree Protocol (STP) Enhancements	Bridge Assurance—Protects the network from bridging loops that are caused by that are caused by unidirectional links, or a malfunctioning switch. Bridge Assurance is enabled only on PortFast network ports. Detecting UniDirectional Link Failures (or the STP Dispute Mechanism)—The switch port detects unidirectional link failures by checking the consistency of the port role and state of the BPDUs received. When a conflict is detected, the designated port reverts to a blocking state. This feature does not require any user configuration. PVST+ Simulation—This is now user-configurable. You can enable or disable this per port, or globally. PVST+ simulation is enabled by default. It allows seamless interoperability between MST and Rapid PVST+. (LAN Base, IP Base, Enterprise Services - Yes)
Storm Control Enhancements	Option to specify the threshold level for broadcast traffic in bits per second (bps) and packets per second (pps). (LAN Base, IP Base, and Enterprise Services)
Vlan Switching and Selective QinQ on the Same Port	Option to disable default behavior of dropping non-translated VLANs. When configuring VLAN mapping for selective Q-in-Q on a trunk port, you now have the option to specify that packets that do not match, should not be dropped (Enter the **no switchport vlan mapping default drop** command). (IP Base, and Enterprise Services)
WCCP Version 2 for IPv6	WCCPv2 now supports IPv6 traffic. (Enterprise Services)

Minimum and Recommended ROMMON Release

Table 10 lists the minimum and recommended ROMMON releases for the Catalyst 4900M Series Switch, Catalyst 4948E Ethernet Switch, and Catalyst 4948E-F Ethernet Switch.

Table 10 Minimum and Recommended ROMMON Release for Catalyst 4900M, Catalyst 4948E, and Catalyst 4948E-F

	Minimum ROMMON Release	Recommended ROMMON Release
Catalyst 4900M Switch	12.2(40r)XO	12.2(44r)SG10
Catalyst 4948E Ethernet Switch	12.2(44r)SG8	12.2(44r)SG10
Catalyst 4948E-F Ethernet Switch	12.2(44r)SG9	12.2(44r)SG10

Note ROMMON Release 12.2(44r)SG5 is the minimum required to run Cisco IOS Release 15.0(2)SG and is recommended for other releases.

Limitations and Restrictions

Following limitations and restrictions apply to the Cisco Catalyst 4948E, Catalyst 4948E-F and the Catalyst 4900M series switches:

- The maximum MTE supported on the device is 8000, per direction.
- Supervisor 6-E, Supervisor 6L-E, Catalyst 4900M, and Catalyst 4948-E do not support hardware Control Plane Policing (CoPP) for all IPv6 First Hop Security Features on all ports.
- Starting with Cisco IOS Release 15.1(1)SG, the seven RP restriction was removed.
- The WS-X4920-GB-RJ45 card performs at wire speed until it operates at 99.6% utilization. Beyond this rate, the card will lose some packets.
- Compact Flash is not supported on a Cisco Catalyst 4900M switch running Cisco IOS Release 12.2(40)XO. Attempting to use Compact Flash may corrupt your data.
- IP classful routing is not supported; do not use the **no ip classless** command; it will have no effect, as only classless routing is supported. The command **ip classless** is not supported as classless routing is enabled by default.
- A Layer 2 LACP channel cannot be configured with the spanning tree PortFast feature.
- Netbooting using a boot loader image is not supported. See the "Related Documentation" section on page 41 for details on alternatives.
- An unsupported default CLI for mobile IP is displayed in the HSRP configuration. Although this CLI will not harm your system, you might want to remove it to avoid confusion.

  Workaround: Display the configuration with the **show standby** command, then remove the CLI. Here is sample output of the **show standby GigabitEthernet1/1** command:

  ```
  switch(config)# interface g1/1
  switch(config)# no standby 0 name (0 is hsrp group number)
  ```

- For HSRP "preempt delay" to function consistently, you must use the **standby delay minimum** command. Be sure to set the delay to more than 1 hello interval, thereby ensuring that a hello is received before HSRP leaves the initiate state.

  Use the **standby delay reload** option if the router is rebooting after reloading the image.
- You can run only .1q-in-.1q packet pass-through with the Cisco Catalyst 4948E, Catalyst 4948E-F and the Catalyst 4900M series switches.

- For PVST, on the Cisco Catalyst 4948E, Catalyst 4948E-F and the Catalyst 4900M series switches VLANs, Cisco IOS Release 12.2(54)SG supports a maximum of 3000 spanning tree port instances. If you want to use more than this number of instances, you should use MST rather than PVST.
- Because the Cisco Catalyst 4948E, Catalyst 4948E-F and the Catalyst 4900M series switches support the FAT file system, the following restrictions apply:
  - The **verify** and **squeeze** commands are not supported.
  - The **rename** command is supported in FAT file system.

    For the Cisco Catalyst 4948E, Catalyst 4948E-F and the Catalyst 4900M series switches, the rename command has been added for bootflash and slot0. For all other supervisor engines, the rename command is supported for nvram devices only.
  - the **fsck** command is supported for slot0 device. It is not supported in the file systems on supervisor engines other than 6-E.
  - In the FAT file system, the IOS **format bootflash:** command erases user files only. It does not erase system configuration.
  - The FAT file system supports a maximum of 63 characters for file/directory name. The maximum for path length is 127 characters.
  - The FAT file system does not support the following characters in file/directory names:{}#%^ and space characters.
  - The FAT file system honors the Microsoft Windows file attribute of "read-only" and "read-write", but it does not support the Windows file "hidden" attribute.
  - Supervisor Engine 6-E uses the FAT file system for compact flash (slot0). If a compact flash is not formatted in FAT file system (such as compact flash on a supervisor engine other than 6-E), the switch does not recognize it.
- If an original packet is dropped due to transmit queue shaping and/or sharing configurations, a SPAN packet copy can still be transmitted on the SPAN port.
- All software releases support a maximum of 32,768 IGMP snooping group entries.
- Use the **no ip unreachables** command on all interfaces with ACLs configured for performance reasons.
- The threshold for the Dynamic Arp Inspection err-disable function is set to 15 ARP packets per second per interface. You should adjust this threshold depending on the network configuration. The CPU should not receive DHCP packets at a sustained rate greater than 1000 pps.
- If you first configure an IP address or IPv6 address on a Layer 3 port, then change the Layer 3 port to a Layer 2 port with the **switchport** command, and finally change it back to a Layer 3 port, the original IP/IPv6 address will be lost.
- If the Cisco Catalyst 4948E, Catalyst 4948E-F and the Catalyst 4900M series switches request information from the Cisco Secure Access Control Server (ACS) and the message exchange times out because the server does not respond, a message similar to this appears:

  ```
  00:02:57: %RADIUS-4-RADIUS_DEAD: RADIUS server 172.20.246.206:1645,1646 is not
  responding.
  ```

  If this message appears, check that there is network connectivity between the switch and the ACS. You should also check that the switch has been properly configured as an AAA client on the ACS.
- For IP Port Security (IPSG) for static hosts, the following apply:
  - As IPSG learns the static hosts on each interface, the switch CPU may hit 100 per cent if there are a large number of hosts to learn. The CPU usage will drop once the hosts are learned.

  - IPSG violations for static hosts are printed as they occur. If multiple violations occur simultaneously on different interfaces, the CLI displays the last violation. For example, if IPSG is configured for 10 ports and violations exist on ports 3,6 and 9, the violation messages are printed only for port 9.
  - Inactive host bindings will appear in the device tracking table when either a VLAN is associated with another port or a port is removed from a VLAN. So, as hosts are moved across subnets, the hosts are displayed in the device tracking table as INACTIVE.
  - Autostate SVI does not work on EtherChannel.

- When ipv6 is enabled on an interface via any CLI, it is possible to see the following message:

```
% Hardware MTU table exhausted
```

  In such a scenario, the ipv6 MTU value programmed in hardware will be different from the ipv6 interface MTU value. This will happen if there is no room in the hw MTU table to store additional values.

  You must free up some space in the table by unconfiguring some unused MTU values and subsequently disable/re-enable ipv6 on the interface or reapply the MTU configuration.

- To stop IPSG with Static Hosts on an interface, use the following commands in interface configuration submode:

```
Switch(config-if)# no ip verify source
Switch(config-if)# no ip device tracking max"
```

  To enable IPSG with Static Hosts on a port, issue the following commands:

```
Switch(config)# ip device tracking ****enable IP device tracking globally
Switch(config)# ip device tracking max <n> ***set an IP device tracking maximum on int
Switch(config-if)# ip verify source tracking [port-security] ****activate IPSG on port
```

Caution If you only configure the **ip verify source tracking [port-security]** interface configuration command on a port without enabling IP device tracking globally or setting an IP device tracking maximum on that interface, IPSG with Static Hosts will reject all the IP traffic from that interface.

Note The issue above also applies to IPSG with Static Hosts on a PVLAN Host port.

- Class-map match statements using **match ip prec | dscp** match only IPv4 packets whereas matches performed with **match prec | dscp** match both IPv4 and IPv6 packets.
- IPv6 QoS hardware switching is disabled if the policy-map contains IPv6 ACL and match cos in the same class-map with the ipv6 access-list has any mask range between /81 and /127. It results in forwarding packets to software which efficiently disable the QoS.
- Management port does not support *non-VRF* aware features.
- A Span destination of fa1 is not supported.
- The "keepalive" CLI is not supported in interface mode on the switch, although it will appear in the running configuration. This behavior has no impact on functionality.
- TDR is only supported on interfaces Gi1/1 through Gi1/48, at 1000BaseT under open or shorted cable conditions. TDR length resolution is +/- 10 m. If the cable is less than 10 m or if the cable is properly terminated, the TDR result displays "0" m. If the interface speed is not 1000BaseT, an "unsupported" result status displays. TDR results will be unreliable for cables extended with the use of jack panels or patch panels.

- Upstream ports on the Cisco Catalyst 4948E, Catalyst 4948E-F and the Catalyst 4900M series switches support flow control auto negotiation in 1G mode only, and flow control is forced in 10G mode. If the interface is configured to auto-negotiate the flow control, and the interface is operating in 10G mode, the system forces flow control to ON and does not auto-negotiate.
- The following guidelines apply to Fast UDLD:
  - Fast UDLD is disabled by default.
  - Configure fast UDLD only on point-to-point links between network devices that support fast UDLD.
  - You can configure fast UDLD in either normal or aggressive mode.
  - Do not enter the link debounce command on fast UDLD ports.
  - Configure fast UDLD on at least two links between each connected network device. This reduces the likelihood of fast UDLD incorrectly error disabling a link due to false positives.
  - Fast UDLD does not report a unidirectional link if the same error occurs simultaneously on more than one link to the same neighbor device.
  - The Cisco Catalyst 4948E, Catalyst 4948E-F and the Catalyst 4900M series switches support fast UDLD on a maximum of 32 ports.
- 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>
```

- Although the Catalyst 4900M series switch still supports legacy 802.1X commands used in Cisco IOS Release 12.2(46)SG and earlier releases (that is, they are accepted on the CLI), they do not display in the CLI help menu.
- Current IOS software cannot support filenames exceeding 64 characters.
- 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.
- With Cisco IOS Release 12.2(53)SG3 (and 12.2(54)SG), we changed the default behavior such that your single supervisor, RPR, or fixed configuration switch does not reload automatically. To configure automatic reload, you must enter the **diagnostic fpga soft-error recover aggressive** command. (CSCth16953)
- 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
- If a class-map is configured with **exceed-action drop**, re-configuring the same class-map with **exceed-action transmit** causes class-map configurations to conflict for the same class-map.

Workaround: If you plan to change a class-map action, such as **exceed-action**, you meed to remove the class-map with the **no class c1** command under policy-map submode. Then, apply the new class-map with the updated changes. CSCsk70826)

- When you enter the **show policy-map vlan** *vlan* command, unconditional marking actions that are configured on the VLAN are not shown.

  Workaround: None. However, if you enter the **show policy-map** *name*, the unconditional marking actions are displayed. CSCsi94144

- An IP unnumbered configuration is lost after a reload.

  Workarounds: Do one of the following:

  – After a reload, copy the startup-config to the running-config.

  – Use a loopback interface as the target of the **ip unnumbered** command

  – Change the CLI configuration such that during bootup, the router port is created first.

  CSCsq63051

- After posture validation succeeds, the following benign traceback messages may appear after you unconfigure the global RADIUS and IP device tracking commands:

```
%SM-4-BADEVENT: Event 'eouAAAAuthor' is invalid for the current state 'eou_abort':
eou_auth 4.1.0.101   Traceback= 101D9A88 10B76BB0 10B76FE0 10B7A114 10B7A340 1066A678
106617F8
%SM-4-BADEVENT: Event 'eouAAAAuthor' is invalid for the current state 'eou_abort':
eou_auth 4.1.0.102   Traceback= 101D9A88 10B76BB0 10B76FE0 10B7A114 10B7A340 1066A678
106617F8
```

  This applies to classic or E-series Catalyst 4500 supervisor engines running Cisco IOS Release 12.2(50)SG

  Workaround: None. CSCsw14005

- On the Cisco Catalyst 4948E, Catalyst 4948E-F and the Catalyst 4900M series switches, the host's MAC address is not synchronized to the standby supervisor engine after you unconfigure 802.1X on the port and reconnect the host to a IP phone (with CDP port status TLV support) that is connected to the switch.

  If the switch were to run a supervisor switchover while in this state, the host's MAC address would not be present in the new active supervisor engine’s MAC address table, causing possible connectivity interruption on the host.

  Workaround: Enter the **shutdown** command, followed by the **no shutdown** command on the interface. This triggers relearning and synchronizing of the host's MAC to the standby supervisor engine. CSCsw91661

- When multiple streams of CRC errors are encountered on a WS-C4900M configured with OAM Configuration of monitoring the errored frame seconds, OAM does not always report the value of errored frame seconds correctly.

  To observe this issue, the following CLIs are configured with window size as the period for monitoring the errors and a low threshold equal to the number of CRC errored seconds seen/expected.

```
ethernet oam link-monitor frame-seconds window
ethernet oam link-monitor frame-seconds threshold low
```

  Workaround: Configure a lower value of low threshold such that the frame errors are seen divided into the expected number of frame errored seconds. CSCsy37181

- If *time* is not specified in the **link debounce** command, the default value depends on the supervisor engine. The default is 10 mS for the Catalyst 4948E, Catalyst 4948E-F, Catalyst 4900M, Supervisor Engine 6-E, and Supervisor Engine 6L-E. The default is 100 mS for all other supervisor engines.

  Workaround: None. CSCte51948

- Fast UDLD in aggressive mode may incorrectly errdisable a link in the following scenarios:
  - Fast UDLD peer switch performs SSO.
  - Fast UDLD peer switch is reloaded.
  - One or more interfaces on a fast UDLD peer switch are shut down (or the port mode changes from switchport to routed, and vice versa).

Note To reduce the likelihood of this event, connect at least two physical interfaces between fast UDLD peer switches. You must configure the interfaces with the same neighbor fast hello interval.

Workarounds:

- Reset the error disabled links with the **udld reset** command.
- Configure error disable recovery with the commands **errdisable recovery cause udld** and **errdisable recovery interval** *value (*between 30 and 86400 sec).
- Manually clear errdisable on the local interface with a **shutdown** then a **no shutdown**.

CSCtc99007

- On a peer interface on a switch, if errdisabled mode flap detection is set to a very small number (such as 2 flaps in 10 sec), a 10GE link flap may cause the peer interface to enter the errdisabled state.

  Workarounds: The Cisco switch default link-flap detection value is 5 flaps in 10 seconds. Use the default value or larger numbers. CSCtg07677

- When you have enabled EPM logging and the client is authenticated via MAB or Webauth, the value of AUTHTYPE is DOT1X in EPM syslog messages irrespective of the authentication method.

  Similarly, the show epm sessions command always displays the authentication method as DOT1X.

  Workaround: To view the authentication method used for a client, enter the **show authentication sessions** command. CSCsx42157

- With CFM enabled globally as well as on an ingress interface, CFM packets received on the interface are not policed with hardware control plane policing.

  Workaround: None. CSCso93282

- 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
```

  CSCtl06706

- If a large number of VLAN mappings are configured, a member port might fail to join a port channel and no warning is issued.

  Workaround: Reduce the number of VLAN mappings. CSCtn56208

- If an interface whose IP address is being used as the Router ID is deleted or shuts down and you configure a service group with a multicast group-address, packet redirection to CE stops and packets are forwarded directly to the destination.

  Workaround: Unconfigure and reconfigure the service group. CSCtn88087

- When a sampling monitor is configured on a routed port or on a VLAN (an SVI with just one port as a member) and **bidir multicast** is enabled, a packet sample may be exported even though the original multicast packet was not forwarded by the switch.

  This issue only impacts Catalyst 4948E and Catalyst 4948E-F Ethernet Switches.

  Workaround: None. CSCtk97612

- Global WCCP service configuration fails to enable (WCCP global config is accepted but nvgen fails) on a newly deployed switch if the switch is not enabled for SVI or a Layer 3 interface.

  Workaround: Enable a Layer 3 interface in the running config. CSCsc88636.

- When you enter the **ip pim register-rate-limit** command, the following error message displays:

  ```
  'Failed to configure service policy on register tunnel' and 'STANDBY:Failed to
  configure service policy on register tunnel'.
  ```

  Workaround: None. The **ip pim register-rate-limit** command does not function. CSCub32679

- For packets with the same ingress and egress Layer 3 interface, ingress QoS marking policy does not work.

  Workaround: Turn off ICMP redirect through the **ip redirect** command. CSCua71929

- 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

- 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

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

  Workaround: None. CSCuc77376

- For any configuration where the source-interface keyword is used, if you provide an SVI that is associated with a secondary private VLAN, configuration involving the secondary VLAN may be lost when the switch is reloaded. In such scenarios, always use the primary private VLAN.

- 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.

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_advisory09186a0080b4a315.shtml

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

Bug ID	Headline
CSCva26201	3750X is not sending correct DSCP value in cflow IP header.
CSCvk21769	C2960L packet loss on 10M/Full port.
CSCvk38377	C4K_SNIPSMAN-3-GTXRXRESETFAILURE: Gtx Rx Reset Error in Snips.
CSCvm36476	C2960 plus handling GARP unexpectedly.
CSCvm24330	Tracebacks seen on loadversion due to MTU mismatch.
CSCvo24813	WS-C4510R+E / Dual WS-X45-SUP8-E / Crash when configuring flow exporter
CSCvo37003	C4500 not showing MAC add of device (Avaya phone) in "show mac add" table after enabling mab,dot1x.
CSCvo38680	C6800IA-48FPD (FEX) reloads with a last reload reason of "Unknown reason".

Resolved Caveats in Cisco IOS Release 15.2(4)E10a

Bug ID	Headline
CSCvu10399	Cisco IOS and IOS XE Software Information Disclosure Vulnerability.
CSCvu19733	Evaluation of CVE-2020-11868 for IOS.

Resolved Caveats in Cisco IOS Release 15.2(4)E10

None.

Resolved Caveats in Cisco IOS Release 15.2(4)E9

Bug ID	Headline
CSCut66603	Device stuck on 4500X VSS during Rommon version upgrade
CSCvd67904	4500X does not run dot1x when a laptop wakes from sleep mode
CSCvk74432	AFTER ADDING NEW VLAN IN REP SEGMENT THERE IS A LAYER 2 LOOP
CSCvn72973	Device is getting crashed on the "cts role-based enforcement"
CSCuv90519	IKEv2 session fails to come up after tunnel source address change
CSCve21224	ewlc: wncd crash seen at auth_mgr_pre_shim_handle_pre_event
CSCve57810	Device failing over without 'fail next-method' or 'no-response next method'
CSCvj23301	IOS: Crypto Ruleset fails to get deleted
CSCvk56331	Initial contact in IKEv1 phase 2 rekey (QM1) causes all crypto sessions to drop
CSCvn13735	Failure to detect the back to back CoA requests, leading to policy deletion.
CSCvn00129	After CoA push from ISE, Result of "show cts policy sgt" has multiple policies for "to unknown"
CSCvp76403	Defaulting interface config on dot1x interface results in incorrect port-control state on port

Resolved Caveats in Cisco IOS Release 15.2(4)E8

Bug ID	Headline
CSCvc71220	Fix the quotes issue in SA build infra
CSCve89361	Crash in SISF while processing IPv6 packet
CSCvf70676	Interface flaps on 4724-SFP/4748-SFP module with 100M SFP GLC-GE-100FX
CSCvj86626	Clients stuck in authentication loop when interface template is pushed from Radius server
CSCvk44790	WS-X45-SUP7-E with MMU and preemption not effective upon fail back to active
CSCvk62735	3750 | high CPU | HACL Acl Manager
CSCvm21098	OSPFv3 BFD is broken
CSCvm43071	[IBNS 2.0] aaa-available event is not being triggered when using authentication/authorization list
CSCvm52157	Cat4K/sup8-E VSS 3.8.5aE- running out of CPU and IO memory resources while clearing access-session
CSCvm87280	%C4K_CHASSIS-3-ALLMODULETEMPERATURESENSORSFAILED shows randomly when we removal/insertion
CSCvm90630	4500 forwards traffic on BKN interface
CSCvm96180	Cat4500 switch reboots unexpectedly after certain Netflow configuration is pushed via SSH
CSCvn18256	"platform" command on VSS gets switch on a boot loop
CSCvo08913	can't issu from 3.8.6E to 3.10.2E due to an inconsistency between the Active and Standby

Resolved Caveats in Cisco IOS Release 15.2(4)E7

Bug ID	Headline
CSCva10393	System crashed during boot up on 4948E.
CSCvd87317	The **ip access-list logging hash-generation** command not function expectedly.
CSCve37498	Switch sends duplicate accounting message, that causing ISE to generate misconfigured NAS Alarms.
CSCve69049	Crash when it tries to write over a TTY session.
CSCve73467	Link not up on M-gig line cards WS-X4748-12X48U+E with cable length of 300Ft.
CSCvg82674	VSS Standby crashes @ /k5/aclman/K5AclProfileMapEntry.cxx:135
CSCvh28285	H/W mac address table learn wrong mac address on C4500X VSS with Flexlink switchover.
CSCvh79168	Crash on numPolicersPerBank with Invalid policerBaseIndex.
CSCvh89534	4500 Sup 8E DACL applied to the incorrect interface.

CSCvi01706	Removing ACE from long ACL interrupts traffic.
CSCvi25365	2960x - session to the member switch fails in stack.
CSCvi50136	Repeated Modification of ACL causes standby switch to crash.
CSCvj29126	RADIUS client on network fails to solicit PAC key from Cisco TrustSec even though the device has a valid PAC.
CSCvj41439	ACL TCAM USAGE is different when using the same ACL configuration but different IOS version.
CSCvk23596	Additional fix needed for CSCvg34881 (Catalyst 4500 crash when WS-X4748 card goes down).
CSCvk52487	3750X Switch crash due to memory leak in HL2MCM process.

Resolved Caveats for Cisco IOS Release 15.2(4)E5

Bug ID	Headline
CSCva86436	No export IPv4 unicast map triggered router to crash.
CSCvc72751	Endpoint bypasses restriction given by ISE and gets network access.
CSCuz61109	Self ping to port channel subinterface dropped with LISP decap log.
CSCuz94245	IGP-LDP sync interoperability for OSPF multiarea adjacency.
CSCuz95753	Paramiko SSH client, having password authentication, fails to connect to IOS.

Resolved Caveats for Cisco IOS Release 15.2(4)E4

Bug ID	Headline
CSCvd48893	Cisco IOS and IOS XE Software Cluster Management Protocol Remote Code Execution Vulnerability

Resolved Caveats for Cisco IOS Release 15.2(4)E3

There are no resolved caveats in this release.

Resolved Caveats for Cisco IOS Release 15.2(4)E2

Bug ID	Headline
CSCur64110	Queue-based Transmit/Drop QoS counters for Cisco Catalyst 4000 Series Switches.
CSCuu66503	HTTPs: IOS HTTPS client not enforcing subject-name verification.
CSCuv27265	ENH: Enable support for TLSv1.1 & TLSv1.2 for HTTP secure server/client.

CSCuv41355	Unable to telnet: No wild listener: port 23.
CSCuv92875	Add prefix information in IPv6 RA when system/ SVI is shutdown.
CSCuw36080	SNMP with extended ACL.
CSCuw48118	Cisco ASR 920 Series switches: crash in bcopy called from addnew during reassembly.
CSCuw49406	“no ip routing protocol purge interface” delete with reload
CSCux26097	Debug logging - parser issue.
CSCux38417	Cisco IOS and IOS-XE IKEv2 fragmentation DoS.
CSCux85039	Cisco Catalyst 3650 and 3850 Series Switches: Syslog produces no output when set to logging queue-limit X.
CSCux99025	Evaluation of Cisco IOS and IOS-XEl for NTP January 2016.
CSCux99594	EEM policies may not be able to send emails.
CSCuy03680	V3Lite IGMP packets sent instead of V3 when UDP based feature is present.
CSCuy05927	IPC-WATERMARK and CHKPT-5-HIGHBUFFER logs leading to reload.
CSCuy12271	Wrong LSP size calculation following MAC move with OTV.
CSCuy43392	Cisco 5760 Wireless LAN Controller crash at snmp_subagent.
CSCuy44377	Syslog: Source-Interface address change does not take effect in IPv6.
CSCuy87667	Crash due to block overrun by AAA banner.
CSCuy92281	VLAN 1 interface is shutdown during bootup.
CSCuz13878	Crash when remotely executing show license right-to-use summary.
CSCuz18217	Cisco Catalyst 4000 Series SwitvhesSUP8E VSS active crash due to signr 11 when OIR standby SUP8E.

Resolved Caveats for Cisco IOS Release 15.2(4)E

Bug ID	Headline
CSCus13924	Device crashes while configuring 'Identity' commands
CSCuu83085	Memory leaks @ AAA Account Response.
CSCuu92224	2960X - EPM vlan plugin crash

Related Documentation

Although their Release Notes are unique, the 4 platforms (Catalyst 4500, Catalyst 4900, Catalyst ME 4900, and Catalyst 4900M) use the same *Software Configuration Guide*, *Command Reference Guide*, and *System Message Guide*. Refer to the following home pages for additional information:

- Catalyst 4900 Series Switch Documentation Home

  http://www.cisco.com//en/US/products/ps6021/index.html

Hardware Documents

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

- *Catalyst 4500 Series Switches Installation Guide*

  http://www.cisco.com/en/US/docs/switches/lan/catalyst4500/hardware/installation/guide/78-14409-08/4500inst.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

- Catalyst 4900 and 4900M hardware installation information is available at:

  http://www.cisco.com/en/US/products/ps6021/prod_installation_guides_list.html

Software Documentation

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

- Release Notes—Cisco Catalyst 4900 Series Switches are available at:

  http://www.cisco.com/en/US/products/ps6021/prod_release_notes_list.html

- Guides—The Catalyst 4900M, Catalyst 4948E, Catalyst 4948E-F Series Switches, Catalyst 4500 Series Switches, the Catalyst 4500-X Series Switches, and the Catalyst 4500-E Series Switches, leverage the same software configuration guide, command reference guide, and system message guide:

  – Software Configuration Guides:

    http://www.cisco.com/en/US/products/hw/switches/ps4324/products_installation_and_configuration_guides_list.html

  – Command Reference Guides:
    http://www.cisco.com/en/US/products/hw/switches/ps4324/prod_command_reference_list.html

  – System Message Guides:

    http://www.cisco.com/en/US/products/hw/switches/ps4324/products_system_message_guides_list.html

Cisco IOS Documentation

Platform- independent Cisco IOS documentation is available at the following URLs:

- Cisco IOS configuration guides, Release 15.2xE

  http://www.cisco.com/c/en/us/support/ios-nx-os-software/ios-15-2e/products-installation-and-configuration-guides-list.html

- 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/pcgi-bin/Support/Errordecoder/index.cgi

Notices

The following notices pertain to this software license.

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

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

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

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