Release Notes for Catalyst 4900M, Catalyst 4948E and Catalyst 4948E-F Series Switches, Cisco IOS Release 15.1(2)SGx

Current Release
IOS 15.1(2)SG3—December 20, 2013

Prior release
IOS 15.1(2)SG2, 15.1(2)SG1, 15.1(2)SG

These release notes describe the features, modifications, and caveats for Cisco IOS Release 15.1(2)SG on the Catalyst 4900M switch, the Catalyst 4948E Ethernet Switch, and the Catalyst 4948E-F Ethernet Switch.

Cisco IOS Software Release 15.1(2)SG delivers new software and hardware innovations in campus access and aggregation deployments that span across many technologies including Security, Video, High Availability, Network Virtualization, IP Multicast and Lower TCO as following:

Security

- IPv6 First Hop Security
  - DHCPv6 Guard
  - Lightweight DHCPv6 Relay Agent (LDRA)
  - IPv6 Destination Guard
  - IPv6 Snooping
  - IPv6 Neighbor Discovery Multicast Suppression
  - IPv6 Router Advertisement (RA) Guard
- Other
  - Reverse SSH Enhancements
  - Secure Shell SSH Version 2 Client Support
  - Secure Shell SSH Version 2 Server Support
  - SSH Keyboard Interactive Authentication
  - SSHv2 Enhancements

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  - SSHv2 Enhancements for RSA Keys

Lower Total Cost of Ownership and Ease of Use

- Smart Install (Director Support)

Routing and Multicast Enhancements

- BFD C bit support - RFC5882
- BGP Consistency Checker
- IPv6 BSR Scoped Zone support
- OSPFv3 Address Families
- OSPFv3 Time To Live Security
- Policy Based Routing: Recursive Next Hop

IPv6 Access Control

- IPv6 VACL (VLAN Access Control List)
- SPAN ACL Filtering for IPv6

Other

- FTP IPv6 Support
- IPSLA 4.0 - IPv6 phase 2
- IPSLA Multicast Support
- NTPv4 Orphan Mode support, Range for trusted key configuration
- TFTP IPv6 Support
- WSMA and XMLPI enhancement

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.

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/ps6021/index.html.

Note Although their Release Notes are unique, the platforms Catalyst 4900M/Catalyst 4948E/Catalyst 4948E-F and Catalyst 4500 leverage 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), Internetwork Packet Exchange (IPX), AppleTalk, Virtual Routing Forwarding (VRF-lite), GLBP, and policy-based routing (PBR).

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 15.1(1)SG, support for IP SLAs and NSF has been extended from Enterprise Services to IP Base.

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

Cisco IOS Release Strategy

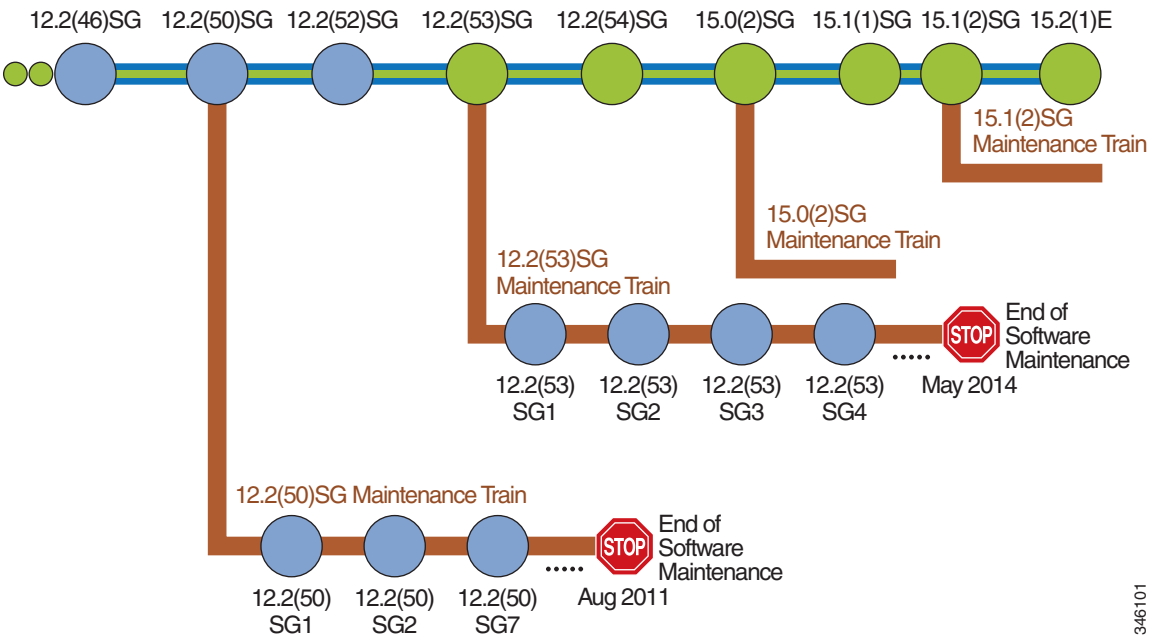
Customers with Catalyst 4948E, Catalyst 4948E-F and Catalyst 4900M series switches who need the latest hardware support and software features should migrate to Cisco IOS Release 15.1(2)SG.

The Catalyst 4900M Series Switch has three maintenance trains: 12.2(53)SGx, 15.0(2)SGx and 15.1(2)SGx. The Catalyst 4948E/E-F switches have two maintenance trains: 15.0(2)SGx and 15.1(2)SGx.

Figure 1 displays the three 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 Software Release 15.1(2)SG 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

For details on Catalyst 4900M, Catalyst 4948E, and Catalyst 4948E-F switch transceiver module compatibility, see the url:

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

The following table lists 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

Table 1 Supported Hardware for Catalyst 4900M Series Switch

Product Number (append with "=" for spares)	**Product Description**
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

The following table lists the hardware supported on the Catalyst 4948E Ethernet Switch.

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
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

The following table lists the hardware supported on the Catalyst 4948E-F Ethernet Switch.

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)

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

Product Number (append with "=" for spares)	**Product Description**
PWR-C49E-300AC-F/2	Catalyst 4948E 300WAC redundant power supply
WS-X4993-F(=)	Cisco Catalyst 4948E spare fan tray rear exhaust

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 4 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 4 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	No	Yes	Yes
8-Way CEF Load Balancing	No	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 SmartPorts	Yes	Yes	Yes
AutoQoS	Yes	Yes	Yes
Auto-MDIX	Yes	Yes	Yes
Auto-Voice VLAN (part of Auto QoS)	No	Yes	Yes

Table 4 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
Bidirectional Forwarding Detection (BFD) Hardware Offload Support	No	Yes	Yes
BFD - EIGRP Support	No	Yes	Yes
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

Table 4 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
CFM	Yes	Yes	Yes
CGMP - Cisco Group Management Protocol	Yes	Yes	Yes
Cisco IOS Scripting w/Tcl	Yes	Yes	Yes
CiscoView Autonomous Device Manager (ADP)	Yes	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 Server	Yes	Yes	Yes
DHCP Snooping	Yes	Yes	Yes
DHCPv6 Ethernet Remote ID option	No	Yes	Yes

Table 4 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
Diagnostics Tools	Yes	Yes	Yes
Digital Optical Monitoring (DOM)	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
EtherChannel	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	No	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
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

Table 4 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
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
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

Table 4 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 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
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

Table 4 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
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
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
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	No	Yes	Yes

Table 4 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 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 VoIP Threshold Traps	No	Yes	Yes
IP Unnumbered for VLAN-SVI interfaces	No	Yes	Yes
IPsecv3/IKEv2	Yes	Yes	Yes
IPSG (IP Source Guard) v4	Yes	Yes	Yes
IPSG (IP Source Guard) v4 for Static Hosts	Yes	Yes	Yes
IPv6 Bootstrap Router (BSR) Scoped Zone Support	No	No	Yes
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	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

Table 4 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 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[2]	Yes
IPv6 OSPFv3 NSF/SSO	No	Yes[2]	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[2]	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

Table 4 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
ISIS for IPv4 and IPv6	No	No	Yes
ISL Trunk	Yes	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	Yes	Yes	Yes
Layer 3 Multicast Routing (PIM SM, SSM, Bidir)	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
Multicast BGP (MBGP)	No	No	Yes
Multicast Routing Monitor (MRM)	No	Yes	Yes
Multicast Source Discovery Protocol (MSDP)	Yes	Yes	Yes
Multi-authentication and VLAN Assignment	Yes	Yes	Yes
Multi-VRF Support (VRF lite)	No	No	Yes
NAC - L2 IEEE 802.1x	Yes	Yes	Yes

Table 4 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
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
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) 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[2]	Yes
OSPF v3 Authentication	No	Yes[2]	Yes
OSPF Flooding Reduction	No	Yes[2]	Yes
OSPF for Routed Access	No	Yes	Yes

Table 4 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 Incremental Shortest Path First (i-SPF) Support	No	Yes[2]	Yes
OSPF Link State Database Overload Protection	No	Yes[2]	Yes
OSPF Not-So-Stubby Areas (NSSA)	No	Yes[2]	Yes
OSPF Packet Pacing	No	Yes[2]	Yes
OSPF Shortest Paths First Throttling	No	Yes[2]	Yes
OSPF Stub Router Advertisement	No	Yes[2]	Yes
OSPF Support for BFD over IPv4	No	Yes[2]	Yes
OSPF Support for Fast Hellos	No	Yes[2]	Yes
OSPF Support for Link State Advertisement (LSA) Throttling	No	Yes[2]	Yes
OSPF Support for Multi-VRF on CE Routers	No	Yes[2]	Yes
OSPF Update Packet-Pacing Configurable Timers	No	Yes[2]	Yes
OSPFv3 BFD	No	Yes[2]	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
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
PIM Version 1	No	Yes	Yes
PM Version 2	No	Yes	Yes
Policy-Based Routing (PBR)	No	No	Yes
Policy-Based Routing (PBR) Recursive Next Hop	No	No	Yes

Table 4 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
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
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	No	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
Remote SPAN (RSPAN)	Yes	Yes	Yes
REP (Resilient Ethernet Protocol)	Yes	Yes	Yes
REP - No Edge Neighbor Enhancement	Yes	Yes	Yes
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

Table 4 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
Secure Shell SSH Version 1, 2 Server Support	Yes	Yes	Yes
Secure Shell SSH Version 1, 2 Client Support	Yes	Yes	Yes
Service Advertisement Framework (SAF)	No	No	Yes
Smart Install Director Support	Yes	No	No
SmartPorts (Role based MACRO)	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 sessions) – Port Mirroring	Yes (4 sessions)	Yes (16 bidirectional sessions)	Yes (16 bidirectional sessions)
SPAN ACL Filtering for IPv6	Yes	Yes	Yes
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 - Per-Port Multicast Suppression	Yes	Yes	Yes
Stub IP Multicast Routing	No	Yes	No
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)[3]	No	Yes	Yes

Table 4 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
Time Protocols (SNTP, TimeP)	Yes	Yes	Yes
Traffic Mirroring (SPAN)	Yes	Yes	Yes
Trusted Boundary (LLDP & CDP Based)	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 between switch-to-switch links using Cisco SAP (Security Association Protocol)	No	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)[4]	No	Yes	Yes
Voice VLAN	Yes	Yes	Yes
VRF-aware TACACS+	No	No	Yes
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
XML-PI	Yes	Yes	Yes

1. Supported only on Supervisor Engine 6-E and Supervisor Engine 6L-E
2. IP Base supports only one OSPFv2 and one OSPFv3 instance with a maximum number of 200 dynamically learned routes.
3. TDR is supported on 4948E(F) and WS-X4908-10GB-R.
4. WS-C4948-10GE does not support VLAN mapping.

MIB Support

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

http://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

These features are not supported in Cisco IOS Release 15.1(2)SG on Catalyst 4900M, Catalyst 4948E, and Catalyst 4948E-L 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
- AutoQoS - VoIP
- 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)
- Global QoS (enable QoS)
- HTTP Software Upgrade
- IGRP (use EIGRP instead)
- **isis network point-to-point** command
- ISSU
- Kerberos support for access control
- LLDP HA
- Lock and key
- MAC Address Notification
- MAC notification MIB support
- 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
- UniDirectional Link Routing (UDLR)

Orderable Product Numbers

Table 5 Orderable Product Numbers for the Catalyst 4500 Series Switch

Product Number	Description	Image
S49EES-15102SG(=)	Cisco Catalyst 4900 IOS Enterprise Services w/o Crypto	cat4500e-entservices-mz.151-2.SG.bin
S49EESK9-15102SG(=)	Cisco Catalyst 4900 IOS Enterprise Services SSH	cat4500e-entservicesk9-mz.151-2.SG.bin
S49MES-15102SG(=)	Cisco Catalyst 4900M IOS Enterprise Services w/o Crypto	cat4500e-entservices-mz.151-2.SG.bin
S49MESK9-15102SG(=)	Cisco Catalyst 4900M IOS Enterprise Services SSH	cat4500e-entservicesk9-mz.151-2.SG.bin
S49EIPB-15102SG(=)	Cisco Catalyst 4900 IOS IP Base SSH	cat4500e-ipbasek9-mz.151-2.SG.bin
S49EIPBK9-15102SG(=)	Cisco Catalyst 4900 IOS IP Base SSH	cat4500e-ipbasek9-mz.151-2.SG.bin
S49MIPB-15102SG(=)	Cisco Catalyst 4900M IOS IP Base w/o Crypto	cat4500e-ipbase-mz.151-2.SG.bin
S49MIPBK9-15102SG(=)	Cisco Catalyst 4900M IOS IP Base SSH	cat4500e-ipbasek9-mz.151-2.SG.bin
S49ELB-15102SG(=)	Cisco Catalyst 4900 IOS LAN Base w/o Crypto	cat4500e-lanbase-mz.151-2.SG.bin
S49ELBK9-15102SG(=)	Cisco Catalyst 4900 IOS LAN Base SSH	cat4500e-lanbasek9-mz.151-2.SG.bin

New and Changed Information

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 Hardware Features in Release 15.1(2)SG, page 23
- New Software Features in Release 15.1(2)SG, page 24

New Hardware Features in Release 15.1(2)SG

Release 15.1(2)SG provides the following new hardware on the Catalyst 4948E, Catalyst 4948E-F and the Catalyst 4900M series switches:

- X2-10GB-T for 10GBASE-T X2 Support

New Software Features in Release 15.1(2)SG

Release 15.1(2)SG provides the following new software on the Catalyst 4948E, Catalyst 4948E-F and the Catalyst 4900M series switches:

Security

- IPv6 First Hop Security
  - DHCPv6 Guard
  - Lightweight DHCPv6 Relay Agent (LDRA)
  - IPv6 Destination Guard
  - IPv6 Snooping
  - IPv6 Neighbor Discovery Multicast Suppression
  - IPv6 Router Advertisement (RA) Guard
- Other
  - Reverse SSH Enhancements
  - Secure Shell SSH Version 2 Client Support
  - Secure Shell SSH Version 2 Server Support
  - SSH Keyboard Interactive Authentication
  - SSHv2 Enhancements
  - SSHv2 Enhancements for RSA Keys

Lower Total Cost of Ownership and Ease of Use

- Smart Install (Director Support)

Routing and Multicast Enhancements

- BFD C bit support - RFC5882
- BGP Consistency Checker
- IPv6 BSR Scoped Zone support
- OSPFv3 Address Families
- OSPFv3 Time To Live Security
- Policy Based Routing: Recursive Next Hop

IPv6 Access Control

- IPv6 VACL (VLAN Access Control List)
- SPAN ACL Filtering for IPv6

Other

- FTP IPv6 Support
- IPSLA 4.0 - IPv6 phase 2
- IPSLA Multicast Support
- NTPv4 Orphan Mode support, Range for trusted key configuration
- TFTP IPv6 Support
- WSMA and XMLPI enhancement

Minimum and Recommended ROMMON Release

Table 6 lists the minimum and recommended ROMMON releases for the Catalyst 4900M Series Switch, Catalyst 4948E Ethernet Switch, and Catalyst 4948E-F Ethernet Switch.

Table 6 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)SG5
Catalyst 4948E Ethernet Switch	12.2(44r)SG8	12.2(44r)SG8
Catalyst 4948E-F Ethernet Switch	12.2(44r)SG9	12.2(44r)SG9

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.

For details on Upgrading your ROMMON, refer to the ROMMON Release Notes for WS-X45-SUP6-E, WS-X45-SUP6-LE, WS-C4900M, WS-C4948E, and WS-C4948E-F.

Limitations and Restrictions

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

- Starting with Release IOS XE 3.3.0SG and IOS 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 46 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.

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

Open Caveats in Cisco IOS Release 15.1(2)SG3

This section lists the open caveats in Cisco IOS Release 15.1(2)SG3:

- If *burst* is not explicitly configured for a single rate policer, the **show policy-map command** displays an incorrect burst value.

  Workaround: Enter the **show policy-map interface** command. CSCsi71036

- IGMP snooping entries are active even after disabling IGMP snooping globally and per VLAN.

  Workarounds: Disable IGMP snooping on all the relevant VLANs before disabling it globally.

- IPv6 entries are active in the CAM; the CPU receives IPv6 packets.

  Workaround: Unconfigure any generic QOS policies from the system. The QoS policies with the **match any** attribute cause IPv6 entries to become active. If the switch is a pure Layer 2 device, remove the generic protocol family attributes and narrow it to the protocol family.

  CSCsq84796

- In Cisco IOS Release 12.2(54)SG, if an etherchannel is a member of a flexlink pair, then static MAC addresses configured on the EtherChannel are not moved to the alternate port when the EtherChannel fails (flexlink failure)

  Workaround: None. CSCsq99468

- When a CFM Inward Facing MEP(IFM) is configured on a VLAN that is not allocated on a switch port that is DOWN, the **show ethernet cfm maintenance-points local** command displays the IFM CC Status as **Inactive**. Then, you allocate the VLAN, the CC-status remains **Inactive**.

  You only see this symptom if you did not allocate a VLAN before you configure the IFM, then at a later time allocate the same VLAN.

  Workaround: Unconfigure, then reconfigure the IFM on the port.

- VTP databases do not propagate through promiscuous trunk ports. If only promiscuous trunks are configured, users will not see the VLAN updates on the other switches in the VTP domain.

  Workaround: For VTP database propagation, configure ISL/dot1q trunk port. CSCsu43445

- If you simultaneously apply a service-policy to a port in the output direction and a service-policy to a vlan-range under that port in the output direction, the class-map hit counters in the output of the **show policy-map interface** command are wrong.

  Workaround: None.

  The queue transmit counters as well as the policing statistics (if any) are correct. CSCsz20149

- When you configure **switchport block multicast** on a switch running Cisco IOS Release 12.2(53)SG1 and later or 12.2(50)SG6 and later, Layer 2 multicast is not blocked.

Prior to Cisco IOS Release 12.2(53)SG1, 12.2(50)SG6, the **switchport block multicast** command would block IP Multicast, Layer 2 multicast, and broadcast traffic (CSCta61825).

Workaround: None. CSCtb30327

- Before large PACLs are fully loaded in hardware, you might observe a false completion messages like the following:

```
Dec  1 18:44:59.926: %C4K_COMMONHWACLMAN-4-HWPROGSUCCESS: Input Security: pacl - now
fully loaded in hardware *Dec  1 18:44:59.926: %C4K_COMMONHWACLMAN-4-ALLACLINHW: All
configured ACLs now fully loaded in hardware - hardware switching / QoS restored.
```

  This issue does not impact functionality.

  Workaround: None.

  You must wait for the ACLs to be programmed before performing other TCAM related changes. CSCtd57063

- With a NEAT configuration on an ASW (Catalyst 4500 series switch) connected to an SSW (Catalyst 3750 series switch) serving as a root bridge and with redundant links between ASW and SSW, the following occur:
  - STP does not stabilize.
  - The SVI (network) is unreachable. If an SVI exists on the ASW, because of the STP flap in the setup as well as the CISP operations, the SVI MAC configuration on the ASW is incorrect.

  Workaround: Configure the ASW or any other switch upstream as the root-bridge for all the VLANs. CSCtg71030

- When two distinct Layer 3 CE-facing interfaces exist, each connected to a CE to split WCCP between the two CEs, and you move a particular WCCP service (like 60 (ftp-native)) from one Layer 3 interface to the other, the target interface fails to completely transfer the service to the new CE from the old CE.

  Workaround: Shutdown the CE-facing interface. Once all the mask-value entries point to the target CE, unshut the CE-facing interface. CSCtl09941

- WCCP service is not reacquired when a service group with a multicast group-address is unconfigured, and then reconfigured.

  Workaround: Configure ip multicast-routing globally and establish ip pim sparse-dense-mode on the CE-facing interface. CSCtl97692

- If you reboot a switch, the configured value of the interface MTU size for the elements of the port channel interface does not work for IPv6 traffic.

  Workaround: After the switch reloads, enter **shut** and **no shut** on the port-channel interface.

  CSCto27085

- When you enable both Cisco TrustSec and RADIUS accounting, a disparity occurs between the RADIUS client (Cisco switch) and the RADIUS/CTS server in how the authenticator field in the header is computed for DOT1X/RADIUS accounting messages.

  A Cisco IOS AAA client uses the PAC secret to compute the authenticator; Cisco Secure ACS 5.2 uses the shared secret. This behavior causes a mismatch that results in a rejection of the accounting message, and the client marks the server as unresponsive.

- When more than one Equal Cost Multipath (ECMP) is available on the downstream switch, and Mediatrace is invoked to provide flow statistics, the dynamic policy does not show statistics for a flow.

Mediatrace cannot find the correct inbound interface and applies the dynamic policy on a different interface from the one used for media flow.

Workaround: None. CSCts20229

- When you add a "bfd" suffix to the **snmp server host** *x.x.x.x* configuration command, the BFD traps, ciscoBfdSessUp and ciscoBfdSessDown, are not generated.

  Workaround: Do not specify a "bfd" suffix with the **snmp-server host** *x.x.x.x* configuration command. CSCtx51561

- During either a system- or user-initiated reload operation, the following message is observed when the system shuts down:

  ```
  HARDWARE WATCHDOG
  ```

  This message is not observed during a system bootup.

  Workaround: None required. This message is information only. CSCtz15738

- The Mediatrace Initiator may report the status "Abort due to route changed" when a MAC move happens on a switch configured as the Mediatrace Responder that is also connected to a video traffic generator.

  Workaround: None. CSCtt05864

- Configuring an interface as unidirectional with the **unidirectional send-only | receive-only** command still allows an interface to send (configured as Send-only Unidirection Ethernet mode) or receive (configured as Receive-only Unidirection Ethernet mode) packets in a bidirectional mode.

  Workaround: None. CSCui10480

Resolved Caveats in Cisco IOS Release 15.1(2)SG3

This section lists the resolved caveats in Cisco Release 15.1(2)SG3:

- On systems performing multicast routing, a brief increase in CPU consumption occurs every few minutes. In large-scale environments, this CPU increase is more noticeable.

  Workaround: None. CSCub44553

- SNMP may time out and produce CPUHOG messages when lldpXMedMIB is polled.

  Workaround: CSCuh88726

- A port configured for webauth is not programmed with the default or fallback ACL when sessions enter the INIT state.

  Workaround: None. CSCuj71597

- When a device authenticates with dot1x after authenticating with MAB, any policies applied by MAB remain in place.

  Wokarounds:

  – Ensure that the dot1x supplicant always authenticates before MAB.

  – Create MAB policies for dot1x hosts that do not supply a URL redirect. CSCui79988

Open Caveats in Cisco IOS Release 15.1(2)SG2

This section lists the open caveats in Cisco IOS Release 15.1(2)SG2:

- If *burst* is not explicitly configured for a single rate policer, the **show policy-map command** displays an incorrect burst value.

  Workaround: Enter the **show policy-map interface** command. CSCsi71036

- IGMP snooping entries are active even after disabling IGMP snooping globally and per VLAN.

  Workarounds: Disable IGMP snooping on all the relevant VLANs before disabling it globally.

- IPv6 entries are active in the CAM; the CPU receives IPv6 packets.

  Workaround: Unconfigure any generic QOS policies from the system. The QoS policies with the **match any** attribute cause IPv6 entries to become active. If the switch is a pure Layer 2 device, remove the generic protocol family attributes and narrow it to the protocol family.

  CSCsq84796

- In Cisco IOS Release 12.2(54)SG, if an etherchannel is a member of a flexlink pair, then static MAC addresses configured on the EtherChannel are not moved to the alternate port when the EtherChannel fails (flexlink failure)

  Workaround: None. CSCsq99468

- When a CFM Inward Facing MEP(IFM) is configured on a VLAN that is not allocated on a switch port that is DOWN, the **show ethernet cfm maintenance-points local** command displays the IFM CC Status as **Inactive**. Then, you allocate the VLAN, the CC-status remains **Inactive**.

  You only see this symptom if you did not allocate a VLAN before you configure the IFM, then at a later time allocate the same VLAN.

  Workaround: Unconfigure, then reconfigure the IFM on the port.

- VTP databases do not propagate through promiscuous trunk ports. If only promiscuous trunks are configured, users will not see the VLAN updates on the other switches in the VTP domain.

  Workaround: For VTP database propagation, configure ISL/dot1q trunk port. CSCsu43445

- If you simultaneously apply a service-policy to a port in the output direction and a service-policy to a vlan-range under that port in the output direction, the class-map hit counters in the output of the **show policy-map interface** command are wrong.

  Workaround: None.

  The queue transmit counters as well as the policing statistics (if any) are correct. CSCsz20149

- When you configure **switchport block multicast** on a switch running Cisco IOS Release 12.2(53)SG1 and later or 12.2(50)SG6 and later, Layer 2 multicast is not blocked.

  Prior to Cisco IOS Release 12.2(53)SG1, 12.2(50)SG6, the **switchport block multicast** command would block IP Multicast, Layer 2 multicast, and broadcast traffic (CSCta61825).

  Workaround: None. CSCtb30327

- Before large PACLs are fully loaded in hardware, you might observe a false completion messages like the following:

  ```
  Dec  1 18:44:59.926: %C4K_COMMONHWACLMAN-4-HWPROGSUCCESS: Input Security: pacl - now
  fully loaded in hardware *Dec  1 18:44:59.926: %C4K_COMMONHWACLMAN-4-ALLACLINHW: All
  configured ACLs now fully loaded in hardware - hardware switching / QoS restored.
  ```

  This issue does not impact functionality.

Workaround: None.

You must wait for the ACLs to be programmed before performing other TCAM related changes. CSCtd57063

- With a NEAT configuration on an ASW (Catalyst 4500 series switch) connected to an SSW (Catalyst 3750 series switch) serving as a root bridge and with redundant links between ASW and SSW, the following occur:
  - STP does not stabilize.
  - The SVI (network) is unreachable. If an SVI exists on the ASW, because of the STP flap in the setup as well as the CISP operations, the SVI MAC configuration on the ASW is incorrect.

  Workaround: Configure the ASW or any other switch upstream as the root-bridge for all the VLANs. CSCtg71030
- When two distinct Layer 3 CE-facing interfaces exist, each connected to a CE to split WCCP between the two CEs, and you move a particular WCCP service (like 60 (ftp-native)) from one Layer 3 interface to the other, the target interface fails to completely transfer the service to the new CE from the old CE.

  Workaround: Shutdown the CE-facing interface. Once all the mask-value entries point to the target CE, unshut the CE-facing interface. CSCtl09941
- WCCP service is not reacquired when a service group with a multicast group-address is unconfigured, and then reconfigured.

  Workaround: Configure ip multicast-routing globally and establish ip pim sparse-dense-mode on the CE-facing interface. CSCtl97692
- If you reboot a switch, the configured value of the interface MTU size for the elements of the port channel interface does not work for IPv6 traffic.

  Workaround: After the switch reloads, enter **shut** and **no shut** on the port-channel interface.

  CSCto27085
- When you enable both Cisco TrustSec and RADIUS accounting, a disparity occurs between the RADIUS client (Cisco switch) and the RADIUS/CTS server in how the authenticator field in the header is computed for DOT1X/RADIUS accounting messages.

  A Cisco IOS AAA client uses the PAC secret to compute the authenticator; Cisco Secure ACS 5.2 uses the shared secret. This behavior causes a mismatch that results in a rejection of the accounting message, and the client marks the server as unresponsive.
- When more than one Equal Cost Multipath (ECMP) is available on the downstream switch, and Mediatrace is invoked to provide flow statistics, the dynamic policy does not show statistics for a flow.

  Mediatrace cannot find the correct inbound interface and applies the dynamic policy on a different interface from the one used for media flow.

  Workaround: None. CSCts20229
- When you add a "bfd" suffix to the **snmp server host** *x.x.x.x* configuration command, the BFD traps, ciscoBfdSessUp and ciscoBfdSessDown, are not generated.

  Workaround: Do not specify a "bfd" suffix with the **snmp-server host** *x.x.x.x* configuration command. CSCtx51561
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Workaround: None required. This message is information only. CSCtz15738

- The Mediatrace Initiator may report the status "Abort due to route changed" when a MAC move happens on a switch configured as the Mediatrace Responder that is also connected to a video traffic generator.

  Workaround: None. CSCtt05864

- On systems performing multicast routing, a brief increase in CPU consumption occurs every few minutes. In large-scale environments, this CPU increase is more noticeable.

  Workaround: None. CSCub44553

- Configuring an interface as unidirectional with the **unidirectional send-only | receive-only** command still allows an interface to send (configured as Send-only Unidirection Ethernet mode) or receive (configured as Receive-only Unidirection Ethernet mode) packets in a bidirectional mode.

  Workaround: None. CSCui10480

- SNMP may time out and produce CPUHOG messages when lldpXMedMIB is polled.

  Workaround: CSCuh88726

- A port configured for webauth is not programmed with the default or fallback ACL when sessions enter the INIT state.

  Workaround: None. CSCuj71597

- When a device authenticates with dot1x after authenticating with MAB, any policies applied by MAB remain in place.

  Wokarounds:

  - Ensure that the dot1x supplicant always authenticates before MAB.
  - Create MAB policies for dot1x hosts that do not supply a URL redirect. CSCui79988

Resolved Caveats in Cisco IOS Release 15.1(2)SG2

This section lists the resolved caveats in Cisco Release 15.1(2)SG2:

- A GLC-GE-100FX pluggable may not operate when used in WS-X4624-SFP-E, WS-X4640-CSFP-E or WS-X4612-SFP-E modules.

  Workaround: None CSCui23911

- The switch may reload unexpectedly or become inaccessible when the integrated web server is used, either through direct web access to the switch, or indirectly through the webauth feature.

  Workaround: Enter either the **no ip http server** or the **no ip http secure-server** command. This disables the http/s server. CSCui14525

Open Caveats in Cisco IOS Release 15.1(2)SG1

This section lists the open caveats in Cisco IOS Release 15.1(2)SG1:

- If *burst* is not explicitly configured for a single rate policer, the **show policy-map command** displays an incorrect burst value.

  Workaround: Enter the **show policy-map interface** command. CSCsi71036

- IGMP snooping entries are active even after disabling IGMP snooping globally and per VLAN.

  Workarounds: Disable IGMP snooping on all the relevant VLANs before disabling it globally.

- IPv6 entries are active in the CAM; the CPU receives IPv6 packets.

  Workaround: Unconfigure any generic QOS policies from the system. The QoS policies with the **match any** attribute cause IPv6 entries to become active. If the switch is a pure Layer 2 device, remove the generic protocol family attributes and narrow it to the protocol family.

  CSCsq84796

- In Cisco IOS Release 12.2(54)SG, if an etherchannel is a member of a flexlink pair, then static MAC addresses configured on the EtherChannel are not moved to the alternate port when the EtherChannel fails (flexlink failure)

  Workaround: None. CSCsq99468

- When a CFM Inward Facing MEP(IFM) is configured on a VLAN that is not allocated on a switch port that is DOWN, the **show ethernet cfm maintenance-points local** command displays the IFM CC Status as **Inactive**. Then, you allocate the VLAN, the CC-status remains **Inactive**.

  You only see this symptom if you did not allocate a VLAN before you configure the IFM, then at a later time allocate the same VLAN.

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- If you simultaneously apply a service-policy to a port in the output direction and a service-policy to a vlan-range under that port in the output direction, the class-map hit counters in the output of the **show policy-map interface** command are wrong.

  Workaround: None.

  The queue transmit counters as well as the policing statistics (if any) are correct. CSCsz20149

- When you configure **switchport block multicast** on a switch running Cisco IOS Release 12.2(53)SG1 and later or 12.2(50)SG6 and later, Layer 2 multicast is not blocked.

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  configured ACLs now fully loaded in hardware - hardware switching / QoS restored.
  ```

  This issue does not impact functionality.

  Workaround: None.

  You must wait for the ACLs to be programmed before performing other TCAM related changes. CSCtd57063

- With a NEAT configuration on an ASW (Catalyst 4500 series switch) connected to an SSW (Catalyst 3750 series switch) serving as a root bridge and with redundant links between ASW and SSW, the following occur:

  - STP does not stabilize.
  - The SVI (network) is unreachable. If an SVI exists on the ASW, because of the STP flap in the setup as well as the CISP operations, the SVI MAC configuration on the ASW is incorrect.

  Workaround: Configure the ASW or any other switch upstream as the root-bridge for all the VLANs. CSCtg71030

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  Workaround: Shutdown the CE-facing interface. Once all the mask-value entries point to the target CE, unshut the CE-facing interface. CSCtl09941

- WCCP service is not reacquired when a service group with a multicast group-address is unconfigured, and then reconfigured.

  Workaround: Configure ip multicast-routing globally and establish ip pim sparse-dense-mode on the CE-facing interface. CSCtl97692

- If you reboot a switch, the configured value of the interface MTU size for the elements of the port channel interface does not work for IPv6 traffic.

  Workaround: After the switch reloads, enter **shut** and **no shut** on the port-channel interface.

  CSCto27085

- When you enable both Cisco TrustSec and RADIUS accounting, a disparity occurs between the RADIUS client (Cisco switch) and the RADIUS/CTS server in how the authenticator field in the header is computed for DOT1X/RADIUS accounting messages.

  A Cisco IOS AAA client uses the PAC secret to compute the authenticator; Cisco Secure ACS 5.2 uses the shared secret. This behavior causes a mismatch that results in a rejection of the accounting message, and the client marks the server as unresponsive.

- When more than one Equal Cost Multipath (ECMP) is available on the downstream switch, and Mediatrace is invoked to provide flow statistics, the dynamic policy does not show statistics for a flow.

  Mediatrace cannot find the correct inbound interface and applies the dynamic policy on a different interface from the one used for media flow.

  Workaround: None. CSCts20229

- When you add a "bfd" suffix to the **snmp server host** *x.x.x.x* configuration command, the BFD traps, ciscoBfdSessUp and ciscoBfdSessDown, are not generated.

  Workaround: Do not specify a "bfd" suffix with the **snmp-server host** *x.x.x.x* configuration command. CSCtx51561

- During either a system- or user-initiated reload operation, the following message is observed when the system shuts down:

  ```
  HARDWARE WATCHDOG
  ```

  This message is not observed during a system bootup.

  Workaround: None required. This message is information only. CSCtz15738

- The Mediatrace Initiator may report the status "Abort due to route changed" when a MAC move happens on a switch configured as the Mediatrace Responder that is also connected to a video traffic generator.

  Workaround: None. CSCtt05864

- On systems performing multicast routing, a brief increase in CPU consumption occurs every few minutes. In large-scale environments, this CPU increase is more noticeable.

  Workaround: None. CSCub44553

- Configuring an interface as unidirectional with the **unidirectional send-only | receive-only** command still allows an interface to send (configured as Send-only Unidirection Ethernet mode) or receive (configured as Receive-only Unidirection Ethernet mode) packets in a bidirectional mode.

  Workaround: None. CSCui10480

- The switch may reload unexpectedly or become inaccessible when the integrated web server is used, either through direct web access to the switch, or indirectly through the webauth feature.

  Workaround: Enter either the **no ip http server** or the **no ip http secure-server** command. This disables the http/s server. CSCui14525

- A GLC-GE-100FX pluggable may not operate when used in WS-X4624-SFP-E, WS-X4640-CSFP-E or WS-X4612-SFP-E modules.

  Workaround: None CSCui23911

- SNMP may time out and produce CPUHOG messages when lldpXMedMIB is polled.

  Workaround: CSCuh88726

- A port configured for webauth is not programmed with the default or fallback ACL when sessions enter the INIT state.

  Workaround: None. CSCuj71597

- When a device authenticates with dot1x after authenticating with MAB, any policies applied by MAB remain in place.

  Wokarounds:

  - Ensure that the dot1x supplicant always authenticates before MAB.
  - Create MAB policies for dot1x hosts that do not supply a URL redirect. CSCui79988

Resolved Caveats in Cisco IOS Release 15.1(2)SG1

This section lists the resolved caveats in Cisco Release 15.1(2)SG1:

- With IGMP snooping enabled, multicast traffic received through a tunnel interface is not forwarded through the Outgoing Interface List.

  Workaround: Disable IGMP snooping. CSCuc65538

- When MLD snooping is enabled, control-plane policing on IPv6 ND packets stops working. This does not impact other control packets.

  Workaround: None. CSCua89658

- When a port connected to a CDP, DHCP, or LLDP speaker goes down, a small memory leak occurs (typically less than 300 bytes).

  Workaround: Disable these protocols on interfaces that might flap frequently. CSCub85948

- If REP is configured on a dot1q trunk and the native VLAN is administratively set to something other then the default, REP packets are not sent on the native VLAN

  Workaround: Retain the trunk native VLAN as 1. CSCud05521

- When a session is neither authenticated nor granted fallback authorization (e.g. by entering **guest-vlan** or **auth-fail-vlan**) in multi-auth mode, unauthenticated sessions remain indefinitely and are not cleared by the system.

  Workaround: Clear sessions manually with the **clear authentication sessions** command. CSCtg15739

- When a switch receives a change of auth(CoA) for a port, policies already applied to that port are not cleared.

  Workaround: Send any policy with the CoA from the RADIUS server. CSCue62019

- If URL redirect installed as part of authorization and either of the following occurs, memory will be leaked:
  - a fast stream of traffic matches the URL redirect ACL as IPDT clears an address,
  - a traffic stream matches the URL redirect ACL and no URL redirect policy is installed for that IP address,

  If this occurs repeatedly, IPDT and other control packet processing ultimately ceases.

  Workaround: If this behavior completely fills the CPU buffer, the switch must be reloaded. However, the frequency of encountering a stuck queue can be reduced to nearly zero by modifying the URL redirect ACL to permit only 80/443 traffic. CSCug56646

- If a dACL name is too long (about 24 characters, depending on the interface where it is applied), the ACL will be incorrectly shared over multiple ports.

  Workaround: Shorten the dACL name. CSCug78653

- A switch running IOS Release 15.1(2)SG may crash during CPU packet switching with the following crash file vector:

```
========= Context ======================
pc=12EC6638 lr=128BFDD0 msr=02029230 vector=00000D00 >>>> D00
```

  Workaround: None. CSCuf93769

Open Caveats in Cisco IOS Release 15.1(2)SG

This section lists the open caveats in Cisco IOS Release 15.1(2)SG:

- If *burst* is not explicitly configured for a single rate policer, the **show policy-map command** displays an incorrect burst value.

  Workaround: Enter the **show policy-map interface** command. CSCsi71036

- IGMP snooping entries are active even after disabling IGMP snooping globally and per VLAN.

  Workarounds: Disable IGMP snooping on all the relevant VLANs before disabling it globally.

- IPv6 entries are active in the CAM; the CPU receives IPv6 packets.

  Workaround: Unconfigure any generic QOS policies from the system. The QoS policies with the **match any** attribute cause IPv6 entries to become active. If the switch is a pure Layer 2 device, remove the generic protocol family attributes and narrow it to the protocol family.

  CSCsq84796

- In Cisco IOS Release 12.2(54)SG, if an etherchannel is a member of a flexlink pair, then static MAC addresses configured on the EtherChannel are not moved to the alternate port when the EtherChannel fails (flexlink failure)

Workaround: None. CSCsq99468

- When a CFM Inward Facing MEP(IFM) is configured on a VLAN that is not allocated on a switch port that is DOWN, the **show ethernet cfm maintenance-points local** command displays the IFM CC Status as **Inactive**. Then, you allocate the VLAN, the CC-status remains **Inactive**.

  You only see this symptom if you did not allocate a VLAN before you configure the IFM, then at a later time allocate the same VLAN.

  Workaround: Unconfigure, then reconfigure the IFM on the port.

- VTP databases do not propagate through promiscuous trunk ports. If only promiscuous trunks are configured, users will not see the VLAN updates on the other switches in the VTP domain.

  Workaround: For VTP database propagation, configure ISL/dot1q trunk port. CSCsu43445

- If you simultaneously apply a service-policy to a port in the output direction and a service-policy to a vlan-range under that port in the output direction, the class-map hit counters in the output of the **show policy-map interface** command are wrong.

  Workaround: None.

  The queue transmit counters as well as the policing statistics (if any) are correct. CSCsz20149

- When you configure **switchport block multicast** on a switch running Cisco IOS Release 12.2(53)SG1 and later or 12.2(50)SG6 and later, Layer 2 multicast is not blocked.

  Prior to Cisco IOS Release 12.2(53)SG1, 12.2(50)SG6, the **switchport block multicast** command would block IP Multicast, Layer 2 multicast, and broadcast traffic (CSCta61825).

  Workaround: None. CSCtb30327

- Before large PACLs are fully loaded in hardware, you might observe a false completion messages like the following:

  ```
  Dec  1 18:44:59.926: %C4K_COMMONHWACLMAN-4-HWPROGSUCCESS: Input Security: pacl - now
  fully loaded in hardware *Dec  1 18:44:59.926: %C4K_COMMONHWACLMAN-4-ALLACLINHW: All
  configured ACLs now fully loaded in hardware - hardware switching / QoS restored.
  ```

  This issue does not impact functionality.

  Workaround: None.

  You must wait for the ACLs to be programmed before performing other TCAM related changes. CSCtd57063

- With a NEAT configuration on an ASW (Catalyst 4500 series switch) connected to an SSW (Catalyst 3750 series switch) serving as a root bridge and with redundant links between ASW and SSW, the following occur:

  – STP does not stabilize.

  – The SVI (network) is unreachable. If an SVI exists on the ASW, because of the STP flap in the setup as well as the CISP operations, the SVI MAC configuration on the ASW is incorrect.

  Workaround: Configure the ASW or any other switch upstream as the root-bridge for all the VLANs. CSCtg71030

- When two distinct Layer 3 CE-facing interfaces exist, each connected to a CE to split WCCP between the two CEs, and you move a particular WCCP service (like 60 (ftp-native)) from one Layer 3 interface to the other, the target interface fails to completely transfer the service to the new CE from the old CE.

  Workaround: Shutdown the CE-facing interface. Once all the mask-value entries point to the target CE, unshut the CE-facing interface. CSCtl09941

- WCCP service is not reacquired when a service group with a multicast group-address is unconfigured, and then reconfigured.

  Workaround: Configure ip multicast-routing globally and establish ip pim sparse-dense-mode on the CE-facing interface. CSCtl97692

- If you reboot a switch, the configured value of the interface MTU size for the elements of the port channel interface does not work for IPv6 traffic.

  Workaround: After the switch reloads, enter **shut** and **no shut** on the port-channel interface.

  CSCto27085

- When you enable both Cisco TrustSec and RADIUS accounting, a disparity occurs between the RADIUS client (Cisco switch) and the RADIUS/CTS server in how the authenticator field in the header is computed for DOT1X/RADIUS accounting messages.

  A Cisco IOS AAA client uses the PAC secret to compute the authenticator; Cisco Secure ACS 5.2 uses the shared secret. This behavior causes a mismatch that results in a rejection of the accounting message, and the client marks the server as unresponsive.

- When more than one Equal Cost Multipath (ECMP) is available on the downstream switch, and Mediatrace is invoked to provide flow statistics, the dynamic policy does not show statistics for a flow.

  Mediatrace cannot find the correct inbound interface and applies the dynamic policy on a different interface from the one used for media flow.

  Workaround: None. CSCts20229

- When you add a "bfd" suffix to the **snmp server host** *x.x.x.x* configuration command, the BFD traps, ciscoBfdSessUp and ciscoBfdSessDown, are not generated.

  Workaround: Do not specify a "bfd" suffix with the **snmp-server host** *x.x.x.x* configuration command. CSCtx51561

- During either a system- or user-initiated reload operation, the following message is observed when the system shuts down:

  ```
  HARDWARE WATCHDOG
  ```

  This message is not observed during a system bootup.

  Workaround: None required. This message is information only. CSCtz15738

- The Mediatrace Initiator may report the status "Abort due to route changed" when a MAC move happens on a switch configured as the Mediatrace Responder that is also connected to a video traffic generator.

  Workaround: None. CSCtt05864

- With IGMP snooping enabled, multicast traffic received through a tunnel interface is not forwarded through the Outgoing Interface List.

  Workaround: Disable IGMP snooping. CSCuc65538

- On systems performing multicast routing, a brief increase in CPU consumption occurs every few minutes. In large-scale environments, this CPU increase is more noticeable.

  Workaround: None. CSCub44553

- When MLD snooping is enabled, control-plane policing on IPv6 ND packets stops working. This does not impact other control packets.

  Workaround: None. CSCua89658

- When a port connected to a CDP, DHCP, or LLDP speaker goes down, a small memory leak occurs (typically less than 300 bytes).

  Workaround: Disable these protocols on interfaces that might flap frequently. CSCub85948

- If REP is configured on a dot1q trunk and the native VLAN is administratively set to something other then the default, REP packets are not sent on the native VLAN

  Workaround: Retain the trunk native VLAN as 1. CSCud05521

- When a session is neither authenticated nor granted fallback authorization (e.g. by entering **guest-vlan** or **auth-fail-vlan**) in multi-auth mode, unauthenticated sessions remain indefinitely and are not cleared by the system.

  Workaround: Clear sessions manually with the **clear authentication sessions** command. CSCtg15739

- redirect-url and redirect-acl are not cleared after a successful CoA, causing the final step of Central Web Authentication to fail.

  Workaround: Return a dACL in the authorization profile with successful guest authentication.

  CSCue62019

- If URL redirect installed as part of authorization and either of the following occurs, memory will be leaked:
  - a fast stream of traffic matches the URL redirect ACL as IPDT clears an address,
  - a traffic stream matches the URL redirect ACL and no URL redirect policy is installed for that IP address,

  If this occurs repeatedly, IPDT and other control packet processing ultimately ceases.

  Workaround: If this behavior completely fills the CPU buffer, the switch must be reloaded. However, the frequency of encountering a stuck queue can be reduced to nearly zero by modifying the URL redirect ACL to permit only 80/443 traffic. CSCug56646

- If a dACL name is too long (about 24 characters, depending on the interface where it is applied), the ACL will be incorrectly shared over multiple ports.

  Workaround: Shorten the dACL name. CSCug78653

- A switch running Supervisor Engine 6-E with IOS Release 15.1(2)SG may crash during CPU packet switching. The crash file would have the following vector:

```
========= Context ======================
pc=12EC6638 lr=128BFDD0 msr=02029230 vector=00000D00 >>>> D00
```

  Workaround: None. CSCuf93769

- Configuring an interface as unidirectional with the **unidirectional send-only | receive-only** command still allows an interface to send (configured as Send-only Unidirection Ethernet mode) or receive (configured as Receive-only Unidirection Ethernet mode) packets in a bidirectional mode.

  Workaround: None. CSCui10480

- A GLC-GE-100FX pluggable may not operate when used in WS-X4624-SFP-E, WS-X4640-CSFP-E or WS-X4612-SFP-E modules.

  Workaround: None CSCui23911

- SNMP may time out and produce CPUHOG messages when lldpXMedMIB is polled.

  Workaround: CSCuh88726

Resolved Caveats in Cisco IOS Release 15.1(2)SG

This section lists the resolved caveats in Cisco Release 15.1(2)SG:

- Dynamic ACLs do not function correctly if they include advanced operators, including dscp/ipp/tos, log/log-input, fragments and/or tcp flag operators.

  Workaround: Remove these operators from any dynamic ACLs. CSCts05302

- A peer policy is not updated after reauthentication if the policy is changed on the AS beforehand. After reauthentication, the original peer policy is retained.

  Workaround: Enter **shut** and **no shut** on the port. CSCts29515

- The Cisco IOS Software implementation of the virtual routing and forwarding (VRF) aware network address translation (NAT) feature contains a vulnerability when translating IP packets that could allow an unauthenticated, remote attacker to cause a denial of service (DoS) condition.

  Cisco has released free software updates that address this vulnerability. Workarounds that mitigate this vulnerability are not available.

  This advisory is available at the following link:

  http://tools.cisco.com/security/center/content/CiscoSecurityAdvisory/cisco-sa-20130327-nat

  Note: The March 27, 2013, Cisco IOS Software Security Advisory bundled publication includes seven Cisco Security Advisories. All advisories address vulnerabilities in Cisco IOS Software. Each Cisco IOS Software Security Advisory lists the Cisco IOS Software releases that correct the vulnerability or vulnerabilities detailed in the advisory as well as the Cisco IOS Software releases that correct all Cisco IOS Software vulnerabilities in the March 2013 bundled publication.

  Individual publication links are in "Cisco Event Response: Semiannual Cisco IOS Software Security Advisory Bundled Publication" at the following link:

  http://www.cisco.com/web/about/security/intelligence/Cisco_ERP_mar13.html

  CSCtg47129

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:

- Catalyst 4900 release notes are available at:

  http://www.cisco.com/en/US/products/ps6021/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/pcgi-bin/Support/Errordecoder/index.cgi

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This document is to be used in conjunction with the documents listed in the "Related Documentation" section.

Release Notes for the Catalyst 4900M and Catalyst 4948E Series Switch, Cisco IOS Release 15.1(2)SG