

Release Notes for Catalyst 2948G-L3 and Catalyst 4908G-L3 for Cisco IOS Release 12.0(10)W5(18g)

April 20, 2001

Current Release:
12.0(10)W5(18g)

Previous release:

This document describes the current Catalyst 2948G-L3 and Catalyst 4908G-L3 switches software features and caveats for Cisco IOS Release 12.0(10)W5(18g).

Cisco IOS Release 12.0(10)W5(18g) supersedes the 12.0(14)W5(20) release.

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Introduction

The Catalyst 2948G-L3 and Catalyst 4908G-L3 are high-performance Layer 3 switch routers that share the same software image. The Catalyst 2948G-L3 is a multiprotocol 10/100/1000 Ethernet switch router. The Catalyst 4908G-L3 is a multiprotocol Gigabit Ethernet switch router.

A Layer 3 switch router performs the following three major functions:

- Packet switching
- Route processing
- Intelligent network services

Compared to other routers, Layer 3 switch routers process more packets faster by using application-specific integrated circuit (ASIC) hardware instead of microprocessor-based engines. Layer 3 switch routers also improve network performance with two software functions, route processing and intelligent network services.

System Requirements

This section describes the system requirements for Release 12.0(10)W5(18g) and includes the following sections:

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Memory Defaults

Table 1 lists the default Flash and DRAM memory defaults for the Catalyst 2948G-L3 and Catalyst 4908G-L3 switch routers.

Table 1 *Default Memory by Platform*

Layer 3 Switch Router	Flash Memory	DRAM
Catalyst 2948G-L3	16 MB	64 MB
Catalyst 4908G-L3	16 MB	64 MB

Hardware Supported

Table 2 lists the interfaces that the Catalyst 2948G-L3 and the Catalyst 4908G-L3 switch routers support.

Table 2 *Interfaces Supported by Platform*

Layer 3 Switch Routers	Interface Types	No. of Ports
Catalyst 2948G-L3	10/100 Mbps Fast Ethernet—UTP	48
	1 Gbps Gigabit Ethernet	2
Catalyst 4908G-L3	1 Gbps Gigabit Ethernet	8

Software Release Requirement

The Catalyst 2948G-L3 and Catalyst 4908G-L3 switch routers share the same software version. To determine the version of the Cisco IOS software currently running on your switch router, log on to the switch router and enter the **show version EXEC** command.

Features Supported

Table 3 lists the software features of the Catalyst 2948G-L3 and Catalyst 4908G-L3 switch routers.


Table 3 *Feature Set for the Catalyst 2948G-L3 and Catalyst 4908G-L3 Switch Routers*

Feature Set
Layer 1 Features
10/100BASE-TX half duplex and full duplex (Catalyst 2948G-L3 only)
1000BASE-SX,-LX, and long haul (-LX/LH, -ZX) full duplex
Layer 2 Bridging Features
Layer 2 transparent bridging
Layer 2 MAC ¹ learning, aging, and switching by hardware
Spanning-Tree Protocol (IEEE 802.1D) per bridge group
Maximum of 16 active bridge groups supported

Table 3 Feature Set for the Catalyst 2948G-L3 and Catalyst 4908G-L3 Switch Routers (continued)

Feature Set
Layer 2 Bridging Features (cont.)
Up to 4000 MAC addresses
Integrated routing and bridging (IRB)
24Kb CAM ² shared by Layer 2 entries, IP routing, IP multicast routing, and Novell IPX routing on the Catalyst 2948G-L3 and 32Kb CAM on the Catalyst 4908G-L3
VLAN ³ features
ISL ⁴ -based VLAN trunking
IEEE 802.1Q-based VLAN trunking
Layer 3 Routing, Switching, and Forwarding
IP, IPX, and IP multicast routing and switching between Ethernet ports
Constrained multicast flooding (CMF)
QoS-based forwarding based on IP precedence
Load balancing among equal cost paths, based on source and destination IP and IPX ⁵ addresses
Layer 2 entries, IP routing, IP multicast routing, and Novell IPX routing share the 24Kb content addressable memory (CAM) on the Catalyst 2948G-L3 and the 32Kb CAM on the Catalyst 4908G-L3
Up to 18,000 IP routes
Up to 20,000 IP host entries
Up to 20,000 IPX routes
Up to 20,000 IPX host entries
Up to 12,000 IP multicast (S, G) entries (maximum of 128 groups)
Access Control Lists (Gigabit Ethernet ports)
IP uplink redirect
Supported Routing Protocols
RIP ⁶ and RIP II
IGRP ⁷
EIGRP ⁸
OSPF ⁹
IPX RIP and EIGRP
PIM ¹⁰ —sparse and dense mode
Secondary addressing
Static routes
Classless interdomain routing (CIDR)
BGP (Border Gateway Protocol)
Fast EtherChannel (FEC) Features (Catalyst 2948G-L3 only)
Bundling of up to four FEC ports

Table 3 Feature Set for the Catalyst 2948G-L3 and Catalyst 4908G-L3 Switch Routers (continued)

Feature Set	
Fast EtherChannel (FEC) Features (Catalyst 2948G-L3 only) [cont.]	
Load sharing based on source and destination IP and IPX addresses of unicast packets	
Load sharing for bridged traffic based on MAC address	
ISL on the FEC	
IRB on the FEC	
IEEE 802.1Q trunking on the FEC	
Up to 16 active FEC port channels	
	Note The Catalyst 4908G-L3 does not have Fast Ethernet interfaces, which can be assigned to an EtherChannel
Gigabit EtherChannel (GEC) Features	
Bundling of the two Gigabit Ethernet ports on the Catalyst 2948G-L3 and up to four active GEC port channels on the Catalyst 4908G-L3	
Load sharing based on source and destination IP or IPX addresses of unicast packets	
Load sharing for bridge traffic based on MAC address	
ISL supported on the external GEC	
IRB on the GEC	
IEEE 802.1Q trunking on the GEC	
One active GEC ¹¹ port channel on the Catalyst 2948G-L3 and up to four active GEC port channels on the Catalyst 4908G-L3	
Additional Protocols and Features	
Bootstrap Protocol (BOOTP)	
Cisco Discovery Protocol (CDP) support on Ethernet ports	
Cisco Group Management Protocol (CGMP) server support	
Additional Protocols and Features (cont.)	
DHCP ¹² relay	
HSRP ¹³ over 10/100 Ethernet, Gigabit Ethernet, FEC, GEC, and Bridge Group Virtual Interface (BVI)	
ICMP ¹⁴	
IGMP ¹⁵	
SAP and IPX SAP ¹⁶ filtering	
IRB ¹⁷ routing mode support	
SNMP ¹⁸	
Per-port QoS ¹⁹ rate-limiting and shaping	
1.	MAC = Media Access Control
2.	CAM = content addressable memory
3.	VLAN = Virtual LAN

4. ISL = Inter-Switch Link
5. IPX = Internet Packet Exchange
6. RIP = Routing Information Protocol
7. IGRP = Interior Gateway Routing Protocol
8. EIGRP = Enhanced Interior Gateway Routing Protocol
9. OSPF = Open Shortest Path First
10. PIM = Protocol Independent Multicast
11. GEC = Gigabit EtherChannel
12. DHCP = Dynamic Host Configuration Protocol
13. HSRP = Hot Standby Router Protocol
14. ICMP = Internet Control Message Protocol
15. IGMP = Internet Group Management Protocol
16. IPX SAP = Internet Packet Exchange Service Advertisement Protocol
17. IRB = Integrated Routing and Bridging Protocol
18. SNMP = Simple Network Management Protocol
19. QoS = Quality of Service

Features Not Supported

Table 4 lists some of the features not supported on the Catalyst 2948G-L3 and the Catalyst 4908G-L3 switch routers.

Table 4 *Features Not Supported on the Catalyst 2948G-L3 and the Catalyst 4908G-L3 Switch Routers*

Features Not Supported
Layer 2 source MAC address filtering with standard Access Control List (ACL)
User Datagram Protocol (UDP) turbo flooding
Port-based snooping (SPAN)
DEC spanning tree
IPX per packet load balancing
AppleTalk 1 and 2 routing
AppleTalk Routing Table Maintenance Protocol (RTMP)
AppleTalk Update-based Routing Protocol (AURP)
CGMP over BVI
Policy Based Routing (PBR)
ISIS

Determining the Software Version

To determine the version of Cisco IOS software running on your Catalyst 2948G-L3 or Catalyst 4908G-L3 switch router, log in to the switch router and enter the **show version** EXEC command.

Version and Part Number

Table 5 lists the features and license numbers for each platform.

Table 5 *Features and License Numbers by Platform*

Platform	Features Included	License Number
Catalyst 2948G-L3	OSPF, IGRP, EIGRP	FR2948GL3-IP
Catalyst 2948G-L3	IPX	FR2948GL3-IPX
Catalyst 4908G-L3	IPX	FR4908GL3-IPX

New Features and Changed Information

This section lists the new features available in each release.

New Features in 12.0(10)W5(18g)

No new features were added to the 12.0(10)W5(18g) release.

The 12.0(10)W5(18g) release contains important fixes. If you are currently running 12.0(10)W5(18e) you should migrate to 12.0(10)W5(18g) release or to the recommended 12.0(14)W5(20) release as 12.0(10)W5(18e) has been deferred.

Limitations and Restrictions

The following limitations and restrictions apply to the Catalyst 2948G-L3 and Catalyst 4908G-L3 switch routers:

- HSRP performance drops when two switch routers are configured with BVI. When HSRP over BVI is configured on both the active and standby HSRP switch routers, and the HSRP-routed packets pass through the standby switch router to reach the active router, the performance of traffic traversing this path be degraded more slowly.
- In the absence of any egress traffic on the master port (one of the following ports: f2, f6, f10, f12, f18, f22, f26, f30, f34, f38, f42, or f46) of the 10/100 Fast Ethernet interface, the Ethernet ports that are in the same EPIF as the master port learn MAC entries than their usual rate. For instance, if port f2 has no egress traffic, ports f1, f3, and f4 learn MAC entries at a slower rate than usual.
- CDP will fail on a Gigabit port when trunking is enabled. The switch router will not send CDP packets on a trunk port connected to a Catalyst 4000 Family switch when CDP packets are coming on a VLAN for which a subinterface is not configured. To receive CDP packets, configure a dummy VLAN subinterface on the trunk port connected to the Catalyst 4000 Family.
- Under extreme conditions, MAC_learn IPC might be lost. A host move under high traffic conditions might cause a MAC entry in the Cisco IOS bridging table to be lost. Routing over BVI might cause loss of connectivity. You can resolve this problem by entering the **clear bridge** command
- When the **no negotiation auto** command is used on a Gigabit port, the link status of that port appears up regardless of the presence of a cable or GBIC on that port.

- A root tree pointer may become invalid for an existing subinterface. This happens very infrequently, when a large configuration is copied to the running configuration under heavy traffic loads. Use the **clear bridge** command to remove the invalid root tree pointer.
- The CLI command **no qos switching** is not supported. Use the **qos mapping precedence value wrr-weight weight** command to configure the same WRRweight for all the precedence values globally, using the CLI.
- If the interface encapsulation is changed to ISL or IEEE 802.1Q on a particular port while there is traffic on the interface, runs and input error counters might increase. However, after the link is stable and normal operation resumes, these counters should not continue to increase.
- An invalid value is returned for SNMP requests for the CiscoFlashDeviceCard MIB object.
- Catalyst 2948G-L3 and Catalyst 4908G-L3 switch routers do not block SNAP encapsulated ARP packets, even though there is switching support only for ARPA encapsulated IP packets. Because of this ARP entries for non-supported IP encapsulations can make it to the ARP table.
- Without IEEE 802.1Q or ISL encapsulation on a subinterface, inbound IPX ACLs do not take effect.
- When spanning-tree is disabled in a bridge group, dynamically learned MAC entries will not be deleted immediately from the CAM. If the interface on which the MAC entries were learned goes down the entries will be aged out and removed.

Caveats

Caveats describe unexpected behavior in Cisco IOS software releases. Severity 1 caveats are the most serious caveats; severity 2 caveats are less serious. Caveats listed as open in a prior release are carried forward to the next release as either open or resolved.

For information on caveats in Cisco IOS Release 12.0, see “Caveats for *Cisco IOS Release 12.0*,” which lists severity 1 and 2 caveats for Release 12.0 on Cisco.com and the Documentation CD-ROM.



Note

Caveats about Fast Ethernet interfaces do not apply to the Catalyst 4908G-L3 switch router, which has only Gigabit Ethernet interfaces.

Open Caveats in Release 12.0(10)W5(18g)

- In configurations with a large number of bridge groups and bridge group members, you might see the following traceback message during reload. (CSCdm73215)


```
00:00:38:%SYS-3-CPUHOG: Task ran for 3084 msec (437/1), process = CDP Protocol, PC = 6015BD40.
```
- A CPU HOG condition occurs on the switch router after you enter the **no ipx router eigrp** command for routes learned through IEEE 802.1Q encapsulation on the Gigabit Ethernet port. After approximately 15 seconds the console prompt returns. (CSCdp37972)
- When accessed through Simple Network Management Protocol (SNMP), the QoS mapping table lists an entry with the wrong precedence index value of four. This value must be in a range from zero to three.

Workaround: None. (CSCdr24893)

- Cisco IOS does not update the IPX routing table when more than two equal hop paths are available, and one of them is shut down. For example, a router with three interfaces I1, I2 and I3. Each of the interfaces has an IPX network configured, N1, N2, and N3 respectively. A remote IPX network (R) is accessible through all N1, N2, and N3. The maximum equal hop paths are set to 2. Hence, the IOS routing table shows two destination paths (N1 and N2) in the IPX routing table. Now the interface I2 is shut down. Since all the three paths are equal hop, the IOS routing table should show N1 and N3 as two equal hop paths. However the routing table shows only N1 as the destination path.

Workaround: Enter the **clear ipx route** command, and the routing table will show N1 and N3 as the destination next hop paths. (CSCdp13515)

Resolved Caveats in Release 12.0(10)W5(18g)

- Enabling port-qos features on an interface with the B4 version of XPIF leads to high performance drops.

Workaround: A special image that includes a fix is available. Contact TAC for a copy of the image. (CSCdt08870)

- Occasionally when you apply port-qos features, such as rate-limiting and shaping, an interface does not take packet length into account, making the output bit rate inaccurate.

Workaround: This problem is fixed in Cisco 12.0(10)W05(17.113), which is an integrated release not available on Cisco.com. This IOS image will be provided on a case-by-case basis for customers requiring port-qos features. The next maintenance release will incorporate this fix. (CSCds82323)

- BGP configuration with route-map configured is susceptible to memory corruption. (CSCdt79947)
- A Border Gateway Protocol (BGP) UPDATE contains Network Layer Reachability Information (NLRI) and attributes that describe the path to the destination. Each path attribute is a type, length, value (TLV) object.

The type is a two-octet field that includes the attribute flags and the type code. The fourth high-order bit (bit 3) of the attribute flags is the Extended Length bit. It defines whether the attribute length is one octet (if set to 0) or two octets (if set to 1). The extended length bit is used only if the length of the attribute value is greater than 255 octets.

The AS_PATH (type code 2) is represented by a series of TLVs (or path segments). The path segment type indicates whether the content is an AS_SET or AS_SEQUENCE. The path segment length indicates the number of autonomous systems (ASes) in the segment. The path segment value contains the list of ASes (each AS is represented by two octets).

The total length of the attribute depends on the number of path segments and the number of ASes in them. For example, if the AS_PATH contains only an AS_SEQUENCE, then the maximum number of ASes (without having to use the extended length bit) is 126 [= (255-2)/2]. If the UPDATE is propagated across an AS boundary, then the local Abstract Syntax Notation (ASN) must be appended and the extended length bit used.

The caveat was caused by the mishandling of the operation during which the length of the attribute was truncated to only one octet. Because of the internal operation of the code, the receiving border router would not be affected, but its iBGP peers would detect the mismatch and issue a NOTIFICATION message (update malformed) to reset their session.

The average maximum AS_PATH length in the Internet is between 15 and 20 ASes, so there is no need to use the extended length. The failure was discovered because of a malfunction in the BGP implementation of another vendor. There is no workaround.

[Part of the text was taken from rfc 1771.] (CSCdr54230)

- When BGP sessions get reset, currently, with `log neighbor-changes`, the event is logged. However, to find out the reasons as to why there was a reset, one has to turn on the debugs. This fix will automatically log the NOTIFICATION message when the sessions are reset. This feature will be turned on by the same `log neighbor-changes` knob. (CSCdr54231)
- Cisco Security Advisory:
Cisco IOS Software TCP Initial Sequence Number Randomization Improvements
Revision 1.0: INTERIM
For Public Release 2001 February 27 20:00 US/Eastern (UTC+0500)

Summary

Cisco IOS software contains a flaw that permits the successful prediction of TCP Initial Sequence Numbers.

This vulnerability is present in all released versions of Cisco IOS software running on Cisco routers and switches. It only affects the security of TCP connections that originate or terminate on the affected Cisco device itself; it does not apply to TCP traffic forwarded through the affected device in transit between two other hosts.

To remove the vulnerability, Cisco is offering free software upgrades for all affected platforms. The defect is described in DDTS record CSCds04747.

Workarounds are available that limit or deny successful exploitation of the vulnerability by filtering traffic containing forged IP source addresses at the perimeter of a network or directly on individual devices.

This notice will be posted at
<http://www.cisco.com/warp/public/707/ios-tcp-isn-random-pub.shtml>. (CSCds04747)

Error Messages

This section describes Catalyst 2948G-L3 and Catalyst 4908G-L3 switch router error messages.



Note

Error messages about Fast Ethernet interfaces do not apply to the Catalyst 4908G-L3 switch router, which has only Gigabit Ethernet interfaces.

- When you use the **`sdm size`** command in an attempt to add more IP multicast routes than the size previously configured, the following error message is displayed.
For example, if the number of IP multicast routes added to SDM exceeds the size configured with the **`sdm size`** command, the following error message is displayed:

```
%LSS-1-SDM: IP Multicast, Region reached limit Cannot accept more entries
```

Explanation Cannot accept more routes in SDM.

Action To rectify this situation, increase the protocol size using the **`sdm size configuration`** command and reload the switch router.

- When you attempt to add more routes than the Fast Ethernet CAM size allows, the following error message is displayed:

```
7:28:06:%LSS-4-INTERFACE:(Interface FastEthernet2) CAM reached limit. Cannot
accept more route entries
```

Explanation Cannot accept more routes in CAM.

Action None.

Related Documentation

This section describes the documentation available for the Catalyst 2948G-L3 and Catalyst 4908G-L3 switch routers. Both printed manuals and electronic documents are available.

The most current documentation is available on Cisco.com and the Documentation CD-ROM. These electronic documents might contain updates and modifications made after the hard-copy documents were printed.

Use these release notes with the following documents:

- *Catalyst 2948G-L3 Hardware Installation Guide*
- *Catalyst 2948G-L3 and Catalyst 4908G-L3 Software Feature and Configuration Guide*
- *Catalyst 4908G-L3 Hardware Installation Guide*
- For information about MIBs, refer to:
<http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml>

Service and Support

For service and support for a product purchased from a reseller, contact the reseller. Resellers offer a wide variety of Cisco service and support programs, which are described in the section “Service and Support” in the information packet that was shipped with your product.



Note

If you purchased your product from a reseller, you can access Cisco.com as a guest. Cisco.com is Cisco Systems’ primary real-time support channel. Your reseller offers programs that include direct access to Cisco.com services.

For service and support for a product purchased directly from Cisco, use Cisco.com.

Software Configuration Tips on the Cisco TAC Home Page

For helpful tips on configuring Cisco products, follow this path on Cisco.com:

Service & Support: Technical Assistance Center

“Software Technical Tips” are popular tips and hints gathered from Cisco’s Technical Assistance Center (TAC). Most of these documents are also available from the TAC’s Fax-on-Demand service. To access Fax-on-Demand and receive documents at your fax machine, call 888-50-CISCO (888-502-4726). From international areas, call 650-556-8409.

In addition to “Software Technical Tips,” the following sections are on the Technical Documents page:

- Cisco Product Catalog—MultiNet & Cisco Suite 100, Network Management, Cisco IOS Software Bulletins, CiscoPro Configurations.
- Field Notices—Notification of critical issues regarding Cisco products. These include problem descriptions, safety or security issues, and hardware defects.
- Hardware Technical Tips—Technical tips related to specific hardware platforms.
- Hot Tips—Popular tips and hints for a range of product suites, gathered from Cisco's Technical Assistance Center (TAC).
- Internetworking Technical Tips—Tips for using and deploying Cisco IOS software features and services.
- Sample Configurations—Actual configuration examples complete with topology and annotations.
- Special Collections—Other helpful documents: Frequently Asked Questions, Security Advisories, References & RFCs, Case Studies, and the CiscoPro Documentation CD-ROM.

Obtaining Documentation

World Wide Web

You can access the most current Cisco documentation on the World Wide Web, at the following sites:

- <http://www.cisco.com>
- <http://www-china.cisco.com>
- <http://www-europe.cisco.com>

Documentation CD-ROM

Cisco documentation and additional literature are available in a CD-ROM package, which is shipped with your product. The Documentation CD-ROM is updated monthly and therefore is probably more current than printed documentation. The CD-ROM package is available as a single unit or as an annual subscription.

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170 West Tasman Drive
San Jose, CA 95134-9883

We appreciate your comments.

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Technical Assistance Center

The Cisco TAC website is available to all customers who need technical assistance with a Cisco product or technology that is under warranty or covered by a maintenance contract.

Contacting TAC by Using the Cisco TAC Website

If you have a priority level 3 (P3) or priority level 4 (P4) problem, contact TAC by going to the TAC website:

<http://www.cisco.com/tac>

P3 and P4 level problems are defined as follows:

- P3—Your network performance is degraded. Network functionality is noticeably impaired, but most business operations continue.
- P4—You need information or assistance on Cisco product capabilities, product installation, or basic product configuration.

In each of the above cases, use the Cisco TAC website to quickly find answers to your questions.

To register for Cisco.com, go to the following website:

<http://www.cisco.com/register/>

If you cannot resolve your technical issue by using the TAC online resources, Cisco.com registered users can open a case online by using the TAC Case Open tool at the following website:

<http://www.cisco.com/tac/caseopen>

Contacting TAC by Telephone

If you have a priority level 1 (P1) or priority level 2 (P2) problem, contact TAC by telephone and immediately open a case. To obtain a directory of toll-free numbers for your country, go to the following website:

<http://www.cisco.com/warp/public/687/Directory/DirTAC.shtml>

P1 and P2 level problems are defined as follows:

- P1—Your production network is down, causing a critical impact to business operations if service is not restored quickly. No workaround is available.
- P2—Your production network is severely degraded, affecting significant aspects of your business operations. No workaround is available.

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

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