



Release Notes for Catalyst 4000 Family Layer 3 Services Module Cisco IOS Release 12.0(7)W5(15d)

June 7, 2000

Current Release:
12.0(7)W5(15d)

These release notes describe the features, modifications, and caveats for the Catalyst 4000 family Layer 3 Services module WS-X4232-L3. These release notes apply to the 12.0(7)W5(15d) Cisco IOS release. For features, modifications, and caveats for the Catalyst 4000 family supervisor engine software, refer to the *Release Notes for Catalyst 4000 Family Software Release 5.x*.



Note

The Catalyst 4000 family includes the Catalyst 4003 and the Catalyst 4006 switches. Throughout this publication and all Catalyst 4000 family documents, the phrase *Catalyst 4000 family switches* refers to all Catalyst 4000 family switches, unless otherwise noted.



Note

The Catalyst 4000 Layer 3 Services module ships with Cisco IOS software installed. However, before this module can run in your Catalyst 4000 family switch, be sure that the Catalyst 4000 family supervisor engine is running supervisor engine software release 5.5(1) or later. Software images are available through Cisco Connection Online (CCO); see the "Cisco Connection Online" section for details.

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Corporate Headquarters: Cisco Systems, Inc., 170 West Tasman Drive, San Jose, CA 95134-1706 USA

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Memory Requirements

The Catalyst 4000 Layer 3 Services module has a 64-MB synchronous dynamic random-access memory (SDRAM) and requires a 16-MB Flash memory.

Software Ordering Information

Table 1 lists the software version and applicable ordering information for the Catalyst 4000 family Layer 3 Services module software.

Table 1 Software Version and Orderable Product Number

Software Version	Filename	Orderable Product Number Flash on System	Orderable Product Number Spare Upgrade (Floppy Media)
12.0(7)W5(15d)	cat4232-in-mz.bin	SC42Z-12.0.7W	SC42Z-12.0.7W=

Features in Release 12.0(7)W5(15d)

The Catalyst 4000 Layer 3 Services module provides multiprotocol switching and routing for the Catalyst 4000 family switches.

The 32 10/100 Ethernet interfaces on the module provide full Layer 2 feature support and are configurable from the Catalyst 4000 family switch supervisor engine. Refer to the *Software Configuration Guide—Catalyst 5000 Family, 4000 Family, 2926G Series, 2980G and 2948G Switches, Software Release 5.5(1)* for information on feature support on the Catalyst 4000 family switches.

Table 2 lists the Cisco IOS features available for the Catalyst 4000 Layer 3 Services module.

Table 2 Cisco IOS Features

Layer 2 Bridging Features
Layer 2 transparent bridging
Layer 2 MAC learning, aging, and switching by hardware
Spanning Tree Protocol (IEEE802.1D) on each bridge group
A maximum of 16 active bridge groups
Up to 4000 MAC addresses
24K CAM ¹ is shared by Layer 2 entries, IP routing, IP multicast routing, and Novell IPX routing

Table 2 Cisco IOS Features (continued)**VLAN Features**ISL²-based VLAN trunking on the front panel Gigabit Ethernet ports

802.1Q-based VLAN trunking on all ports

Layer 3 Routing, Switching, and Forwarding

IP, IPX, and IP multicast routing and switching between Ethernet ports

Constrained multicast flooding (CMF)

Load balancing among equal cost paths based on source and destination IP and IPX addresses

24,000 CAM is shared by Layer 2 entries, IP routing, IP multicast routing, and Novell IPX routing

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 128,000 IP multicast groups

Supported Routing ProtocolsRIP and RIP II³IGRP⁴EIGRP⁵OSPF⁶IPX RIP and EIGRP⁷PIM⁸—sparse and dense mode

Secondary addressing

Static routes

Gigabit EtherChannel Features

Bundling of up to two Gigabit Ethernet ports

Load sharing for bridge traffic based on MAC address

Load sharing based on source and destination IP and IPX addresses of unicast packets

ISL trunking supported on the external Gigabit EtherChannel

802.1Q trunking supported on the external and internal Gigabit EtherChannel

Two active GEC⁹ port channels**Additional Protocols and Features**Layer 3 QoS¹⁰SDM¹¹BOOTP¹²CDP¹³ support on Ethernet portsCGMP¹⁴ server supportDHCP¹⁵ relayHSRP¹⁶

Table 2 Cisco IOS Features (continued)

ICMP ¹⁷
IGMP ¹⁸
IPX SAP and SAP ¹⁹ filtering
SNMP ²⁰
TACACS+ ²¹

1. CAM=content addressable memory
2. ISL=Inter-Switch Link
3. RIP=Routing Information Protocol
4. IGRP=Interior Gateway Routing Protocol
5. EIGRP=Enhanced Interior Gateway Protocol
6. OSPF=Open Shortest Path First
7. IPX=Internet Packet Exchange
8. PIM=Protocol Independent Multicast
9. GEC=Gigabit EtherChannel
10. QoS=Quality of Service
11. SDM=Switching Database Manager
12. BOOTP=Bootstrap Protocol
13. CDP=Cisco Discovery Protocol
14. CGMP=Cisco Group Management Protocol
15. DHCP=Dynamic Host Configuration Protocol
16. HSRP=Hot Standby Router Protocol
17. ICMP=Internet Control Message Protocol
18. IGMP=Internet Group Management Protocol
19. Internet Packet Exchange Service Advertisement Protocol
20. SNMP=Simple Network Management Protocol
21. TACACS+=Terminal Access Controller Access Control System Plus

Unsupported Features

The following major features are not supported on the Catalyst 4000 Layer 3 Services module:

- Multilayer switching (MLS).
- Access control lists (ACLs).
- Integrated routing and bridging (IRB), and concurrent routing and bridging (CRB).
- Border Gateway Protocol (BGP).
- AppleTalk.

If a feature does not appear in the list of supported features in this document or in the list of supported features in these release notes, that feature is not supported on the Catalyst 4000 Layer 3 Services module.

We do not recommend that you configure unsupported features even if you can configure them with the CLI.

Usage Guidelines and Restrictions

This section provides usage guidelines for the Catalyst 4000 Layer 3 Services module hardware and software:

- Do not configure the 10/100 management port for HSRP because this action might make the Layer 3 Services module the active router in the network.
- When you configure a native VLAN for 802.1Q trunking, make sure you are using the native VLAN only for management traffic and not for data traffic. If you have data traffic on a native VLAN, you will see a performance drop for this traffic because all traffic coming in over the native VLAN on an 802.1Q trunk is sent to the CPU to be processed by software instead of routed in hardware.

Open Caveats in Release 12.0(7)W5(15d)

This section describes open caveats in software release 12.0(7)W5(15d):

- If the native VLAN on a port is cleared from the allowed range of VLANs for the port's trunk link, the port will not appear to be in the native VLAN in the configuration file. (CSCdr31412)
- When the Layer 3 Services module acts as a relay agent, it sends DHCP discover packets (with its Primary IP address) to the DHCP server requesting an IP address for the DHCP client in the same subnet. If the primary pool of IP addresses is excluded and only the secondary pool is available on the DHCP server, the DHCP discover packet with the primary IP address should be rejected, but it is not. The functionality to resend DHCP requests with the secondary IP address when the primary IP address fails will be available in a later release.(CSCdr23558)
- When the Layer 3 Services module is configured as a DHCP relay agent, it fails to drop DHCP packets with hop counts over 16. (CSCdr21806)
- Under normal circumstances, heavy data traffic is routed by the XPIFs within the switch fabric without involving the CPU. But when the XPIFs get packets they don't know how to handle, they send those packets to the main CPU. Such packets include CDP packets, unreachable network packets, and packets coming in on a native VLAN on a 802.1Q trunked interface. When the CPU receives too much traffic, packet loss can occur causing CDP to fail and the Layer 3 Services module to become unreachable through the **session** command. (CSCdr49762)
- TACACS+ authentication does not work properly if a banner is configured. Either the banner does not display, or if the banner displays, it does not prompt for user name and password and as a result authentication fails.
Workaround: Do not configure TACACS+ authentication with a banner. (CSCdr46740)
- Integrated Routing and Bridging (IRB) and Concurrent Routing and Bridging (CRB) are not supported. (CSCdr31970)
- Border Gateway Protocol (BGP) is not supported. (CSCdr32464)
- AppleTalk routing is not supported. (CSCdr30658)

Additional Documentation

The following documents are available for Catalyst 4000 family switches:

- *Catalyst 4003 and 4006 Installation Guide*

- *Software Configuration Guide—Catalyst 5000 Family, 4000 Family, 2926G Series, and 2948G Switches*
- *Layer 3 Switching Software Configuration Guide – Catalyst 5000 Family, 4000 Family, 2926G Series, 2948G, 2980G, and 2980G Switches*
- *Command Reference—Catalyst 5000 Family, 4000 Family, 2926G Series, and 2948G Switches*
- *System Message Guide—Catalyst 6000, Catalyst 5000 Family, 4000 Family, 2926G Series, 2948G, and 2980G Switches*
- *Troubleshooting Tips—Catalyst 6000, Catalyst 5000 Family, 4000 Family, 2926G Series 2926 Series, 2948G, and 2980G Switches*
- *Enterprise MIB User Quick Reference* (online only)

Obtaining Documentation

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- Modem using standard connection rates and the following terminal settings: VT100 emulation; 8 data bits; no parity; and 1 stop bit.
 - From North America, call 408 526-8070
 - From Europe, call 33 1 64 46 40 82

You can e-mail questions about using CCO to cco-team@cisco.com.

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English	tac@cisco.com
Hanzi (Chinese)	chinese-tac@cisco.com
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Hangul (Korean)	korea-tac@cisco.com
Spanish	tac@cisco.com
Thai	thai-tac@cisco.com

In North America, TAC can be reached at 800 553-2447 or 408 526-7209. For other telephone numbers and TAC e-mail addresses worldwide, consult the following web site:
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We appreciate and value your comments.

This document is to be used in conjunction with the *Software Configuration Guide* and the *Command Reference* publications for your switch.

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