



PRODUCT BULLETIN NO. 2893

GENERAL DEPLOYMENT RELEASE STATUS FOR CISCO CATALYST 4000 AND CATALYST 6500 SERIES CATALYST OS SOFTWARE—7 TRAIN

General Deployment Version: Cisco Catalyst OS Software 7.6(12)

OVERVIEW

This product bulletin announces the General Deployment code status for Cisco® Catalyst® Operating System (Catalyst OS) 7 train while detailing the hardware and software support provided in the release. A discussion of the Catalyst OS software release strategy and release trains for the Cisco Catalyst 4000 and Catalyst 6500 series switches is also included for reference.

Cisco Catalyst OS software train number 7 has been in the development phase since January 2002 and was completed in April 2003. In addition to meeting stringent internal metrics, Cisco Systems® recently solicited feedback to a survey from Cisco Catalyst 4000 and Catalyst 6500 customers to gauge customer perception of the quality of the code in Catalyst OS 7 train. More than 1000 customers responded to the survey with very positive responses and comments. Given the maturity of the software in wide and successful deployments in the Cisco Catalyst 4000 and Catalyst 6500 customer base, the positive responses to the survey, and the meeting of internal metrics, Cisco has elevated the 7.6(12) and later releases to General Deployment status. Some important components of the hardware and software features supported, portions of which were delivered in previous switch software versions of 7.x, are outlined in the following section. With the general deployment announcement of the Cisco Catalyst 7 train, Cisco recommends that all customers using the 6.x releases from Catalyst OS 6 train to upgrade with the latest release in the Catalyst OS 7 train, for example, 7.6(12)GD or later. An announcement for end of sale, end of engineering, and end of life for the Cisco Catalyst 4000, 5000, and 6500 Series Catalyst OS version 6.x software will follow in the near future.

Key Features Supported in 7 Train

Following are some of the primary hardware and software features that are supported in the Cisco Catalyst OS 7 train. Pointers for further detail are given in later sections.

Cisco Catalyst 6500 Series Hardware Overview

- Support for Cisco Catalyst 3-slot chassis
- Support for Catalyst 6500 Firewall Services Module, Catalyst 6500 SSL Services Module, Catalyst 6500 Intrusion Detection System Module 2, and Cisco Content Switching Module
- Support for 48-port 10/100/1000-Mbps classic and Ethernet fabric-enabled interface modules with inline power

Cisco Catalyst 4000 Series Hardware Overview

Cisco Catalyst 4000 Series extends control from the backbone network to the network edge with intelligent network services, including advanced quality of service (QoS), scalable performance, comprehensive security, and simple manageability. The modular architecture, media flexibility, and expandability of the Cisco Catalyst 4000 Series facilitate a longer deployment life in converged networks, which reduces the overall cost of ownership by minimizing recurring operational expenses and improves return on investment (ROI).

Cisco Catalyst 6500 and Catalyst 4000 Series Software Overview

- Support for IEEE 802.1w specification, (Rapid Spanning Tree Protocol), which provides for sub-second reconvergence of the Spanning Tree Protocol after failure of one of the uplinks in a bridged environment.
- Support for IEEE 802.1s specification (Multiple Spanning Tree), which allows a user to build multiple spanning trees over VLAN trunks.
- Support for 802.1x extensions like IEEE 802.1x with guest VLAN, IEEE 802.1x operation with voice VLAN Identification (VVID), IEEE 802.1x with Port Security, and IEEE 802.1x with VLAN assignment.

HARDWARE SUPPORT

Table 1 and 2 list the hardware that is supported in 7 train, in addition to the hardware support in prior releases. Details are given in the release notes.

Table 1. Cisco Catalyst 6500 Series Hardware Supported in 7 Train

| Part Number | Description |
|-----------------------------------|--|
| WS-X6501-10GEX4 | 1-port 10GBASE-EX4 Metro 10-Gigabit Ethernet, fabric-enabled QoS port architecture (Rx/Tx): 1p1q8t/1p2q1t |
| WS-X6502-10GE | 1-port 10GBASE-E Serial 10-Gigabit Ethernet, fabric-enabled QoS port architecture (Rx/Tx): 1p1q8t/1p2q1t |
| WS-X6148-GE-TX WS-X6148V-GE-TX | 48-port 10/100/1000BASE-TX switching module (WS-X6148V-GE-TX provides inline power to IP telephones) QoS port architecture (Rx/Tx): 1q2t/1p2q2t |
| WS-X6548-GE-TX WS-X6548V-GE-TX | 48-port 10/100/1000BASE-TX switching module, fabric-enabled (WS-X6548V-GE-TX provides inline power to IP telephones) QoS port architecture (Rx/Tx): 1q2t/1p2q2t |
| WS-X6516A-GBIC | 16-port Gigabit Ethernet GBIC switching module, fabric-enabled, 1-MB per-port packet buffers QoS port architecture (Rx/Tx): 1p1q4t/1p2q2t |
| WS-X6524-100FX-MM | 24-port 100FX Ethernet multimode, fabric-enabled QoS port architecture (Rx/Tx): 1p1q0t/1p3q1t |
| WS-SVC-IDSM2-BUN-K9 | Intrusion Detection System Module 2 |
| WS-SVC-NAM1 | Network Analysis Module, 512-MB RAM, fabric-enabled |
| WS-SVC-NAM-2 | Network Analysis Module, 1-GB RAM, fabric enabled, accelerator daughter card |
| WS-SVC-FWM-1-K9 | Firewall Services Module |
| WS-SVC-SSL-1 | SSL Services Module |
| WS-X6066-SLB-APC | Content Switching Module |
| WS-SVC-CSG-1 | Content Services Gateway |
| OSM-4OC3-POS-SI | 4-port OC-3c/STM-1c packet-over-SONET (POS) Optical Services Module, SM-IR, with 4 Gigabit Ethernet ports |
| WS-CAC-3000W | 3000W AC power supply |
| PWR-950-AC | 950W AC power supply |
| PWR-950-DC | 950W DC power supply |
| PWR-1900-AC | 1900W AC power supply |
| PWR-1900-DC | 1900W DC power supply |
| WS-C6503 | Catalyst 6503 chassis <ul style="list-style-type: none"> • 3 slots • 64 chassis MAC addresses • Does not support Small Form-Factor Pluggable (SFM) optics |

Table 2. Cisco Catalyst 4000 Series Hardware Supported in 7 Train

| Part Number | Description |
|------------------|---|
| WS-C4003 | Catalyst 4003 Switch <ul style="list-style-type: none"> • Modular 3-slot chassis • Optional redundant power supplies |
| WS-C4006 | Catalyst 4006 Switch <ul style="list-style-type: none"> • Modular 6-slot chassis • 30-Gbps backplane • Two power supplies with optional third power supply |
| WS-C4503 | Catalyst 4503 chassis (3-slot), fan, no power supply |
| WS-C4506 | Catalyst 4506 chassis (6-slot), fan, no power supply |
| WS-C4912G | Catalyst 4912G Switch <ul style="list-style-type: none"> • Fixed-configuration switch • 12-Gbps backplane • Optional redundant power supplies • 12 1000BASE-X gigabit interface converter (GBIC) Gigabit Ethernet ports |
| WS-C2948G | Catalyst 2948G <ul style="list-style-type: none"> • Fixed-configuration switch • 12-Gbps backplane • Optional redundant power supplies • Two 1000BASE-X (GBIC) Gigabit Ethernet ports • 48 10/100BASE-TX Fast Ethernet ports |
| WS-C2980G | Catalyst 2980G with eighty 10/100 Fast Ethernet ports and two 1000BASE-X ports |
| WS-C2980G-A | Catalyst 2980G <ul style="list-style-type: none"> • Fixed-configuration switch • 12-Gbps backplane • Optional redundant power supplies • Two 1000BASE-X (GBIC) Gigabit Ethernet ports • Eighty 10/100BASE-TX Fast Ethernet ports |
| WS-X4012 | Catalyst 4000 Series Supervisor Engine I |
| WS-X4013 | Catalyst 4000 Series Supervisor Engine II |
| WS-X4448-GB-RJ45 | 48-port 10/100/1000-Mbps Gigabit Ethernet (RJ-45) |
| WS-X4424-GB-RJ45 | 24-port 10/100/1000-Mbps Gigabit Ethernet (RJ-45) |
| WS-X4148-RJ | 48-port 10/100-Mbps Ethernet (RJ-45) |
| WS-X4148-RJ45V | 48-port 10/100-Mbps Ethernet with inline power (RJ-45) |
| WS-X4148-RJ21 | 48-port 100-Mbps Ethernet (RJ-21 telco) |
| WS-X4232-L3 | Layer 3 Services Engine—32-port 10/100-Mbps Ethernet plus 2-port Gigabit Ethernet uplinks |
| WS-X4604-GWY | Access Gateway Module |
| WS-X4148-FX-MT | 48-port 100-Mbps Ethernet 100BASE-LX10 (MT-RJ) |
| WS-X4124-FX-MT | 24-port 100-Mbps Ethernet 100BASE-FX (MT-RJ) |
| WS-X4232-GB-RJ | 32-port 10/100-Mbps Ethernet plus 2-port Gigabit Ethernet uplinks |

| Part Number | Description |
|-------------------|---|
| WS-X4232-RJ-XX | 32-port 10/100-Mbps Ethernet BASE plus modular uplink support |
| WS-U4504-FX-MT | 4-port 100-Mbps Fast Ethernet uplink module |
| WS-X4306-GB | 6-port Gigabit Ethernet (GBIC slot) |
| WS-X4418-GB | 18-port Gigabit Ethernet (GBIC slot) |
| WS-X4448-GB-LX | 48-port 1000BASE-LX Gigabit Ethernet module (SFP) |
| WS-X4412-2GB-T | 12-port 1000BASE-T Gigabit Ethernet switching module |
| WS-X4008= | 400W AC power supply for Catalyst 4000 Series chassis |
| WS-X4008-DC= | 400W DC power supply for Catalyst 4000 Series chassis |
| PWR-C45-1000AC= | 1000W AC power supply for Catalyst 4500 Series chassis (data only) |
| PWR-C45-1300ACV= | 1300W AC power supply with inline power for Catalyst 4500 Series chassis |
| PWR-C45-2800ACV= | 2800W AC power supply with inline power for Catalyst 4500 Series chassis |
| PWR-C45-1400DC-P= | 1400W DC power supply with integrated power entry module (PEM) for Catalyst 4500 Series chassis |

SOFTWARE SUPPORT

The Cisco Catalyst OS 7 train supports the following features for Cisco Catalyst 4000 and Catalyst 6500 series (Table 3), in addition to the software features supported in previous releases. (Note: products are listed in parenthesis.) Some of the features listed as supported on “4000 only” may be supported on the Catalyst 6500 Series in an earlier Catalyst OS release. For more details on features, please refer to the release notes.

Table 3. Features Supported by Cisco Catalyst OS 7 Train

| | |
|--------------------------|--|
| Network Scalability | <ul style="list-style-type: none"> • IEEE 802.1w (Catalyst 6500, Catalyst 4000 series) • IEEE 802.1s (Catalyst 6500, Catalyst 4000 series) • Rapid Per VLAN Spanning Tree Plus (PVST+) (Catalyst 6500, Catalyst 4000 series) • 4096 VLAN Support (Catalyst 4000 Series only) |
| Quality of Service (QoS) | <ul style="list-style-type: none"> • AutoQoS (Catalyst 6500 Series only) • QoS access control list (ACL) limit increase (Catalyst 6500 Series only) |
| Network Management | <ul style="list-style-type: none"> • Time Delay Reflectometer (Catalyst 6500 only) • Pseudo Random Bit Sequence (PRBS) Test (Catalyst 6500 only) • Auto-save feature for text-configuration mode (Catalyst 6500 only) • Syslog dump (Catalyst 6500 only) • SC1 interface (Catalyst 6500, Catalyst 4000) • Local username/password (Catalyst 6500 only) • NetFlow Version 5 (Catalyst 6500 only) • New MAC address trap (Catalyst 6500 only) • 802.1q all tagged per port (Catalyst 6500 only) • Extended trust for Cisco Discovery Protocol devices (Catalyst 6500 only) • Bridged NetFlow Statistics (Catalyst 6500 only) • ErrDisable Reactivation Per Port (Catalyst 6500, Catalyst 4000) • Content-addressable memory (CAM) usage monitoring (Catalyst 6500 only) • NVRAM monitoring (Catalyst 6500 only) • Syslog enhancement (Catalyst 6500, Catalyst 4000) |

| | |
|--------------------|--|
| Network Security | <ul style="list-style-type: none"> • VLAN Assignment with IEEE 802.1x (Catalyst 6500, Catalyst 4000) • High Availability for 802.1x (Catalyst 6500) • High Availability for Port Security (Catalyst 6500) • IEEE 802.1x with Port Security (Catalyst 6500, Catalyst 4000) • IEEE 802.1x with Dynamic Host Configuration Protocol (Catalyst 6500, Catalyst 4000) • IEEE 802.1x with Voice VLAN ID (Catalyst 6500, Catalyst 4000) • IEEE 802.1x with Guest VLAN (Catalyst 6500, Catalyst 4000) • Bridge Protocol Data Unit (BPDU) Filtering Per Port (Catalyst 6500 only) • Multiple switch virtual interfaces (SVIs) on firewall (Catalyst 6500 only) • Address Resolution Protocol (ARP) inspection (Catalyst 6500 only) • Network-Based Application Recognition (NBAR) in software (Catalyst 6500 only) • Port unicast block (Catalyst 6500, Catalyst 4000) • Rate limit log ACL (Catalyst 6500 only) • Better ACL Merge (Catalyst 6500) • Authentication Lockout Enhancement (Catalyst 6500, Catalyst 4000) |
| Network Resiliency | <ul style="list-style-type: none"> • IEEE 802.3ad (Catalyst 6500, 4000) • Layer 2 Protocol Tunneling (6500 only) • Layer 2 Tunneling Protocol on trunk ports (Catalyst 6500 only) • Option for no VLAN Trunking Protocol (VTP) (Catalyst 6500, Catalyst 4000) • Portfast on Trunks (Catalyst 6500, Catalyst 4000) • Show Port MAC Address (Catalyst 6500 only) • Single Device Per-Port Enhancement (Catalyst 6500 only) • MAC Address Notification (Catalyst 4000 only) • Ethernet Link Debounce (Catalyst 4000 only) • Jumbo Frames on sc0 (Catalyst 6500 only) • Broadcast Suppression Enhancement (Catalyst 6500, Catalyst 4000) |
| Multicast Services | <ul style="list-style-type: none"> • Internet Group Management Protocol (IGMP) Filtering (Catalyst 4000) • IGMP Snooping Querier (Catalyst 6500) • IGMP Snooping on Private VLANs (Catalyst 6500) • Internet Group Management Protocol v3 (Catalyst 6500 only) |

For more information on the Cisco Catalyst 6500 Series, please visit:

http://www.cisco.com/en/US/products/hw/switches/ps708/prod_release_note09186a008007f717.html - wp33188

For more information on the Cisco Catalyst 5000 Series, please visit:

http://www.cisco.com/en/US/products/hw/switches/ps679/prod_release_note09186a008007eea5.html

For more information on the Cisco Catalyst 4000 Series, please visit:

http://www.cisco.com/univercd/cc/td/doc/product/lan/cat4000/reInotes/ol_2117.htm

CISCO CATALYST SOFTWARE RELEASE NUMBERING SCHEME

The numbering scheme for Release X.Y(n)zzz is as follows:

- X Denotes a train, for example, the “7 train”
- X.Y Denotes a feature set, for example, “Release 7.1”

- (n) Denotes the maintenance or bug-fix level, for example, “7.1(1)”
- zzz Denotes a special release, for example, “7.1(1)XXX”

SOFTWARE TRAIN LIFE CYCLE

Each Cisco Catalyst 4000 and Catalyst 6500 series software release is a member of a release train. Each release train consists of two phases: the Early Deployment release phase and the General Deployment release phase. Early Deployment releases are the early-life stages of the train, where new capability is added concurrent with bug fixes being applied.

The General Deployment releases are considered the later-life stages where only bug fixes are applied. There are three classifications within the General Deployment release phase. These include Pre-General Deployment, General Deployment, and General Deployment—Mature Maintenance. After the train has transitioned to maintenance mode, it enters Pre-General Deployment and no new capability is added. After all requirements are met for the train, the train transitions to General Deployment status, and eventually to General Deployment—Mature Maintenance when the train is near its end of life.

CISCO CATALYST 4000 AND CATALYST 6500 SERIES SOFTWARE RELEASE TRAIN TYPES AND DEFINITIONS

Early Deployment Release

- Deliver new capability to market quickly
- Generally delivered every three to six months
- Typically there are several Early Deployment releases in each train before it goes to Pre-General Deployment, and then General Deployment status
- When a train is in the Early Deployment stage of its life cycle, delivery of bug fixes often requires moving to the next Early Deployment release, which includes new capability

Pre-General Deployment Release

- The software train is now at the mature “Feature Freeze” stage in its life cycle
- Typically there are several maintenance releases in this stage

A train is designated as “Pre-General Deployment” when no new capability is being added and only bug fixes are applied (for example, this becomes a maintenance train)

General Deployment Release

- Goal is stability
- General Deployment maintenance releases are generally delivered every six to ten weeks
- Must meet rigid criteria including defect arrival-rate thresholds and a customer feedback survey in order to achieve General Deployment status. To achieve General Deployment status, a software release train must meet the following criteria:
 1. Minimal deployment timeframe of three months in the field.
 2. Installed and running on at least 1000 systems in the field (determined by number of systems shipped from Cisco manufacturing plus the number of downloads from Cisco.com).
 3. Arrival rate for customer-found severity-1 bugs must be less than 10 per month.
 4. Successfully pass a detailed Customer Satisfaction Survey with responses from at least 100 customers. To pass there must be agreement that there are no quality problem areas. Any problems must be addressed by engineering.

General Deployment—Mature Maintenance

A train is designated as “General Deployment—Mature Maintenance” when it is close to end of life. Only severity-1 bugs are fixed in this stage

MILESTONE DATES

- **End of Sale**—The date at which product is removed from the price list and is no longer orderable through the normal, nonexception, order-fulfillment process
- **End of Engineering**—The date after which scheduled maintenance releases are not produced and the software is removed from Cisco.com
- **End of Life**—The date after which the software release is no longer supported by Cisco customer support

RELEASE TRAIN STATUS—TRANSITION TIMEFRAMES

From the start of a train there are multiple Early Deployment releases before Feature Freeze, at which point the train becomes pre-General Deployment.

- On average it takes 12 months before a train reaches Pre-General Deployment status
- From Pre-General Deployment it takes six months on average to achieve General Deployment status
- General Deployment to General Deployment—Mature Maintenance will generally occur in 8 to 12 months
- General Deployment—Mature Maintenance to end of engineering is no less than three months and generally not longer than six months
- The Cisco customer support group continues to provide support for a release train until it reaches its end of life, which is generally six months after end of engineering

CISCO CATALYST 4000, CATALYST 5000, AND CATALYST 6500 SERIES SOFTWARE-MAINTENANCE GUIDELINES

To better ensure the stability of the release train as it ages, less change is allowed in the source-code base. The level of change that is allowed depends on the severity of the problem and its effect on the release’s stability. Table 4 identifies the minimal severity level required at different milestones in the release train’s life.

Table 4. Bug Fixes for Each Release Type

| Release Status | Committed Fixes |
|---------------------------------------|-----------------|
| General Deployment—Mature Maintenance | S1 |
| General Deployment | S1-S2 |
| Pre-General Deployment | S1-S3 |
| Early Deployment | S1-S4 |
| Development Mainline | S1-S5 |

Table 5. Bug Security Level Definitions

| Level | Definitions |
|-------|------------------------------|
| S1 | Catastrophic |
| S2 | Severe |
| S3 | Moderate |
| S4 | Minor |
| S5 | Cosmetic/Enhancement Request |

QUESTIONS, COMMENTS AND FEEDBACK

Please forward any questions, comments, or feedback regarding this product bulletin to:

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