



Release Notes for Cisco Catalyst 9400 Series Switches, Cisco IOS XE Everest 16.6.1

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This release note gives an overview of the hardware and software with the Cisco IOS XE Everest 16.6.1, on the Cisco Catalyst 9400 Series Switches.

- For information about unsupported features, see [Important Notes, page 2](#)
 - For information about software and hardware restrictions and limitations, see [Limitations and Restrictions, page 8](#).
 - For information about open issues with the software, see [Caveats, page 10](#).
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Introduction

Cisco Catalyst 9400 Series Switches are Cisco's leading modular enterprise switching access platform built for security, IoT and Cloud.

Cisco Catalyst 9400 Series Switches deliver complete convergence in terms of ASIC architecture with a Unified Access Data Plane (UADP) 2.0. The series forms the foundational building block for Software Defined-Access (SD-Access), which is Cisco's lead enterprise architecture.

Cisco Catalyst 9400 Series Switches are enterprise optimized with a dual-serviceable fan tray design, side to side airflow and are closet-friendly with a 16-inch depth.



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Important Notes

The following are the unsupported hardware and software features for the Cisco Catalyst 9400 Series Switches. For the list of supported features, go to <http://www.cisco.com/go/cfn>.

Unsupported hardware features

- The SFP or SFP+ port LINK LEDs on the supervisor module. They remain Off even if the SFP or SFP+ ports are enabled.

Unsupported software features

- Audio Video Bridging (including IEEE802.1AS, IEEE 802.1Qat, and IEEE 802.1Qav)
- Bluetooth
- Boot Integrity Visibility
- Bidirectional Forwarding Detection (BFD)
- Cisco Nonstop Forwarding (NSF)
- Cisco Discovery Protocol (CDP) Bypass
- Cisco Plug-in for OpenFlow 1.3
- Cisco StackWise Virtual
- Cisco TrustSec Network Device Admission Control (NDAC) on Uplinks
- Converged Access for Branch Deployments
- Gateway Load Balancing Protocol (GLBP)
- MACSec Encryption—Both host link encryption (downlinks) and inter network device encryption (uplinks), with 128-bit and 256-bit AES MACsec (IEEE 802.1AE)
- Network-Powered Lighting (including COAP Proxy Server, 2-event Classification, Perpetual POE, Fast PoE)
- Stateful Switchover (SSO)
- Performance Monitoring (PerfMon)
- Programmability
- VRF Aware Web-Authentication

Supported Hardware

Supported Cisco Catalyst 9400 Series Switches

Table 1 lists the supported hardware models. For information about the available license levels, see section [License Levels, page 5](#)

Product ID (PID) (append with “=” for spares)	Description
C9407R	Cisco Catalyst 9400 Series 7 slot chassis <ul style="list-style-type: none"> • Redundant supervisor module capability • Five switching module slots • Hot-swappable, front and rear serviceable fan tray assembly • Eight power supply module slots
C9410R	Cisco Catalyst 9400 Series 10 slot chassis <ul style="list-style-type: none"> • Redundant supervisor module capability • Eight switching module slots • Hot-swappable, front and rear serviceable fan tray assembly • Eight power supply module slots

Supported Hardware on Cisco Catalyst 9400 Series Switches

Table 1 Supported Hardware on Cisco Catalyst 9400 Series Switches

Supervisor Modules	
Product ID (append with “=” for spares)	Description
C9400-SUP-1	Cisco Catalyst 9400 Series Supervisor 1 Module This supervisor module is supported on C9407R, C9410R chassis
Gigabit Ethernet Switching Modules	
C9400-LC-48T	Cisco Catalyst 9400 Series 48-Port 10/100/1000 (RJ-45)
C9400-LC-48U	Cisco Catalyst 9400 Series 48-Port UPOE 10/100/1000 (RJ-45)
M.2 SATA SSD Module ¹ (for the Supervisor)	
C9400-SSD-240GB	Cisco Catalyst 9400 Series 240GB M2 SATA memory
C9400-SSD-480GB	Cisco Catalyst 9400 Series 480GB M2 SATA memory
C9400-SSD-960GB	Cisco Catalyst 9400 Series 960GB M2 SATA memory
Power Supply Modules	
C9400-PWR-3200AC	Cisco Catalyst 9400 Series 3200W AC Power Supply

1. M.2 Serial Advanced Technology Attachment (SATA) Solid State Drive (SSD) Module

Optics Modules

Catalyst switches support a wide range of optics. Because the list of supported optics is updated on a regular basis, consult the tables at this URL for the latest compatibility information:

<http://www.cisco.com/c/en/us/support/interfaces-modules/transceiver-modules/products-device-support-tables-list.html>

Compatibility Matrix

Table 2 Software Compatibility Matrix

Catalyst 9400 Release	Cisco Identity Services Engine	Cisco Access Control Server	Prime Infrastructure
Everest 16.6.1	2.2	5.4 5.5	PI 3.1.6 + Device Pack 13 See Prime Infrastructure 3.1 on cisco.com.
Everest 16.5.1a	2.1 Patch 3	5.4 5.5	-

Web UI System Requirements

The following sections list the hardware and software required to access the Web UI:

Hardware Requirements

Table 3 Minimum Hardware Requirements

Processor Speed	DRAM	Number of Colors	Resolution	Font Size
233 MHz minimum ¹	512 MB ²	256	1024 x 768	Small

1. We recommend 1 GHz.
2. We recommend 1 GB DRAM.

Software Requirements

- Operating Systems
 - Windows 7 or later
 - Mac OS X 10.11 or later

- Browsers
 - Google Chrome—Version 38 and later (On Windows and Mac)
 - Microsoft Internet Explorer—Version 10 or later, and Microsoft Edge (On Windows)
 - Mozilla Firefox—Version 33 and later (On Windows and Mac)
 - Safari—Version 7 and later (On Mac)

Finding the Software Version

The package files for the Cisco IOS XE software are stored on the system board flash device (flash:). You can use the **show version** privileged EXEC command to see the software version that is running on your switch.



Note

Although the **show version** output always shows the software image running on the switch, the model name shown at the end of this display is the factory configuration and does not change if you upgrade the software license.

You can also use the **dir filesystem:** privileged EXEC command to see the directory names of other software images that you might have stored in flash memory.

Table 4 Software Images

Release	Image	File Name
Cisco IOS XE Everest 16.6.1	CAT9K_IOSXE	cat9k_iosxe.16.06.01.SPA.bin
Cisco IOS XE Everest 16.6.1	Licensed Data Payload Encryption (LDPE)	cat9k_iosxeldpe.16.06.01.SPA.bin

Licensing

This section provides information about the licensing packages for features available on Cisco Catalyst 9000 Series Switches.

License Levels

The software features available on Cisco Catalyst 9000 Series Switches fall under the base or add-on license levels.

Base Licenses

- Network Essentials
- Network Advantage—Includes features available with the Network Essentials license and more.

Add-On Licenses—Require a Network Essentials or Advantage as a pre-requisite. The features available with add-on license levels provide Cisco innovations on the switch, as well as on the Cisco Digital Network Architecture Center (Cisco DNA Center).

- DNA Essentials

- DNA Advantage— Includes features available with the DNA Essentials license and more.

To find information about platform support and to know which license levels a feature is available with, use Cisco Feature Navigator. To access Cisco Feature Navigator, go to <http://www.cisco.com/go/cfn>. An account on Cisco.com is not required.

License Types

The following license types are available:

- Permanent—for a license level, and without an expiration date .
- Term— for a license level, and for a three, five, or seven year period.
- Evaluation—for a license level, preinstalled on the device, and for a 90-day trial period only.

Ordering with Smart Accounts

We recommend that you use Smart Accounts to order devices as well as licenses. Smart Accounts enable you to manage all of your software licenses for switches, routers, firewalls, access-points or tools from one centralized website. To create Smart Accounts, use the Cisco Smart Software Manager (Cisco SSM).



Note This is especially relevant to the term licenses that you order, because information about the expiry of term licences is available only through the Cisco SSM website.

For information more information about Cisco SSM, see:

<http://www.cisco.com/c/en/us/buy/smart-accounts/software-licensing.html>

The possible deployment modes are:

- Right-to-use (RTU) licensing mode—Supported on Cisco Catalyst 9000 Series Switches. See [The RTU Licensing Mode, page 6](#).
- Smart Licensing mode—Currently not supported on Cisco Catalyst 9000 Series Switches. It is on the roadmap for future releases.

The RTU Licensing Mode

This is the currently supported licensing mode for Cisco Catalyst 9000 Series Switches.

Right-to-use (RTU) licensing allows you to order and activate a specific license type for a given license level, and then to manage license usage on your switch.



Note The RTU licensing structure has been modified to match the packaging model that will be used with Smart Licensing mode in the future. Unified licensing structures across the RTU and Smart Licensing modes, along with usage reports, will simplify migration and reduce the implementation time required for Smart Licensing.

The **license right-to-use** command (privilege EXEC mode) provides options to activate or deactivate any license supported on the platform.

Options for Base Licenses

license right-to-use [activate | deactivate] [network-essentials | network-advantage] [evaluation | subscription] [active | both | standby] [acceptEULA]

Options for Add-On Licenses

license right-to-use [activate | deactivate] **addon** {dna-essentials | dna-advantage} {evaluation | subscription}[active | both | standby][acceptEULA]

Usage Guidelines for the RTU Licensing Mode

- Base licenses (Network Essentials and Network-Advantage) may be ordered only with a permanent license type.
- Add-on licenses (DNA Essentials and DNA Advantage) may be ordered only with a term license type.

You can set up Cisco SSM to receive daily e-mail alerts, to be notified of expiring add-on licenses that you want to renew.

You must order an add-on license in order to purchase a switch. On term expiry, you can either renew the add-on license to continue using it, or deactivate the add-on license and then reload the switch to continue operating with the base license capabilities.

- When ordering an add-on license with a base license, note the combinations that are permitted and those that are not permitted:

Table 5 *Permitted Combinations*

	DNA Essentials	DNA Advantage
Network Essentials	Yes	No
Network Advantage	Yes ¹	Yes

1. For this combination, the DNA-Essentials license must be ordered separately using Cisco SSM.

- The following features are currently available only at the Network Advantage license level. However, the correct minimum license level for these features is Network Essentials and the CFN reflects this correct license level.
You will be able to configure the feature with a Network Essentials license level after the correction is made in an upcoming release.
 - IPv6 Multicast
 - IPv6 ACL Support for HTTP Servers
- Evaluation licenses cannot be ordered. They can be activated temporarily, without purchase. Warning system messages about the evaluation license expiry are generated 10 and 5 days before the 90-day window. Warning system messages are generated every day after the 90-day period. An expired evaluation license cannot be reactivated after reload.

For detailed configuration information about using the RTU Licensing Mode, see the System Management > Configuring Right-To-Use Licenses chapter in the software configuration guide.

Scaling Guidelines

For information about feature scaling guidelines, see these datasheets for Cisco Catalyst 9400 Series Switches:

<http://www.cisco.com/c/en/us/products/collateral/switches/catalyst-9400-series-switches/datasheet-c78-739055.html>

<http://www.cisco.com/c/en/us/products/collateral/switches/catalyst-9400-series-switches/datasheet-c78-739053.html>

Limitations and Restrictions

- Cisco TrustSec restrictions—Cisco TrustSec can be configured only on physical interfaces, not on logical interfaces.
- Flexible NetFlow (FNF) limitations
 - You cannot configure NetFlow export using the Ethernet Management port (GigabitEthernet0/0)
 - You can not configure a flow monitor on logical interfaces, such as switched virtual interfaces (SVIs), port-channel, loopback, tunnels.
 - You can not configure multiple flow monitors of the same type (ipv4, ipv6 or datalink) on the same interface, in the same direction.
- Memory leak—When a logging discriminator is configured and applied to a device, memory leak is seen under heavy syslog or debug output. The rate of the leak is dependent on the quantity of logs produced. In extreme cases, the device may fail. As a workaround, disable the logging discriminator on the device.
- QoS restrictions:
 - When configuring QoS queuing policy, the sum of the queuing buffer should not exceed 100%.
 - For QoS policies, only SVIs are supported for logical interfaces.
 - QoS policies are not supported for port-channel interfaces, tunnel interfaces, and other logical interfaces.
- Redundancy—The supervisor module (hardware) supports redundancy, but the software does not. The associated route processor redundancy (RPR) and stateful switchover (SSO) features are also currently not supported. Redundancy in software will be supported in a later release. Since software redundancy is currently not supported, we recommend installing a blank module filler plate (C9400-S-BLANK) in the second supervisor slot. This prevents inadvertent booting of a redundant supervisor and helps maintain proper airflow in the absence of a second supervisor module.



Note If you have installed a second supervisor and booted it to ROMMON, remove it and replace it with a blank module filler plate, which is shipped with each standard accessory kit.

- Secure Shell (SSH)
 - Use SSH Version 2. SSH Version 1 is not supported.

- When the device is running SCP (Secure Copy Protocol) and SSH cryptographic operations, expect high CPU until the SCP read process is completed. SCP supports file transfers between hosts on a network and uses SSH for the transfer.

Since SCP and SSH operations are currently not supported on the hardware crypto engine, running encryption and decryption process in software causes high CPU. The SCP and SSH processes can show as much as 40 or 50 percent CPU usage, but they do not cause the device to shutdown.

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.

- [Cisco Bug Search Tool](#), page 10
- [Open Caveats in Cisco IOS XE Everest 16.6.1](#), page 10

Cisco Bug Search Tool

The [Bug Search Tool](#) (BST) allows partners and customers to search for software bugs based on product, release, and keyword, and aggregates key data such as bug details, product, and version. The BST is designed to improve the effectiveness in network risk management and device troubleshooting. The tool has a provision to filter bugs based on credentials to provide external and internal bug views for the search input.

To view the details of a caveat, click on the identifier.

Open Caveats in Cisco IOS XE Everest 16.6.1

The following are the open caveats in this release:

Identifier	Headline
CSCvf36816	cat9400-16.6.1 bootup error/warning messages - no functional impact
CSCve20614	Snmpset is failing for Dot3PauseExtAdminMode object on x86 image
CSCve78881	C9400: OIDs have to be unique for 40G QSFPs under 'show inventory oid' output
CSCve95723	For few copper SFP - 'show inventory' doesn't show PID data
CSCvf06005	CRC error packets are observed on peer: (Local port: with 1G-->100M speed change)
CSCvf12480	C9400:Clients in PVLAN with IPSG cannot communicate.
CSCvf23678	C9400: Flow-control operational status is incorrect when using 1G Fiber/Copper SFPs

Troubleshooting

For the most up-to-date, detailed troubleshooting information, see the Cisco TAC website at this URL:

<http://www.cisco.com/en/US/support/index.html>

Choose **Product Support** > **Switches**. Then choose your product and click **Troubleshoot and Alerts** to find information for the problem that you are experiencing.

Related Documentation

- Cisco Catalyst 9400 Series Switches documentation at this URL:
<http://www.cisco.com/go/c9400>
- Cisco IOS XE 16 documentation at this URL:
<http://www.cisco.com/c/en/us/products/ios-nx-os-software/ios-xe/index.html>
- Cisco transceiver module documentation, including compatibility information at this URL:
http://www.cisco.com/en/US/products/hw/modules/ps5455/tsd_products_support_series_home.html
- Cisco Validated Designs documents at this URL:
<http://www.cisco.com/go/designzone>

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at:

<http://www.cisco.com/c/en/us/td/docs/general/whatsnew/whatsnew.html>

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