

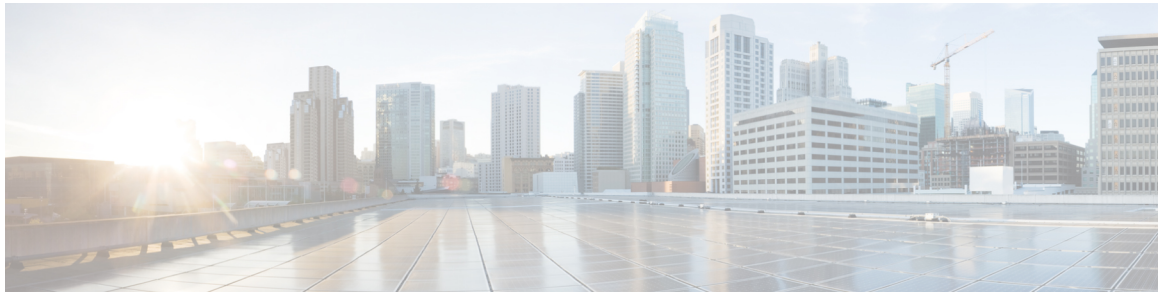


Release Notes for Cisco Catalyst 9300 Series Switches, Cisco IOS XE Dublin 17.10.x

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CHAPTER 1

Introduction

Cisco Catalyst 9300 Series Switches are Cisco's lead stackable access platforms for the next-generation enterprise and have been purpose-built to address emerging trends of Security, IoT, Mobility, and Cloud.

They deliver complete convergence with the rest of the Cisco Catalyst 9000 Series Switches in terms of ASIC architecture with a Unified Access Data Plane (UADP) 2.0. The platform runs an Open Cisco IOS XE that supports model driven programmability, has the capacity to host containers, and run 3rd party applications and scripts natively within the switch (by virtue of x86 CPU architecture, local storage, and a higher memory footprint). This series forms the foundational building block for SD-Access, which is Cisco's lead enterprise architecture.

- [Supported Hardware, on page 1](#)

Supported Hardware

Cisco Catalyst 9300 Series Switches—Model Numbers

The following table lists the supported hardware models and the default license levels they are delivered with. For information about the available license levels, see section *License Levels*.

Table 1: Cisco Catalyst 9300 Series Switches

Switch Model	Default License Level	Description
C9300-24H-A	Network Advantage	Stackable 24 10/100/1000 Mbps UPOE+ ports; PoE budget of 830 W with 1100 WAC power supply; supports StackWise-480 and StackPower
C9300-24H-E	Network Essentials	
C9300-24P-A	Network Advantage	Stackable 24 10/100/1000 PoE+ ports; PoE budget of 437W; 715 WAC power supply; supports StackWise-480 and StackPower
C9300-24P-E	Network Essentials	

Switch Model	Default License Level	Description
C9300-24S-A	Network Advantage	Stackable 24 1G SFP ports; two power supply slots with 715 WAC power supply installed by default; supports StackWise-480 and StackPower.
C9300-24S-E	Network Essentials	
C9300-24T-A	Network Advantage	Stackable 24 10/100/1000 Ethernet ports; 350 WAC power supply; supports StackWise-480 and StackPower
C9300-24T-E	Network Essentials	
C9300-24U-A	Network Advantage	Stackable 24 10/100/1000 UPoE ports; PoE budget of 830W; 1100 WAC power supply; supports StackWise-480 and StackPower
C9300-24U-E	Network Essentials	
C9300-24UB-A	Network Advantage	Stackable 24 10/100/1000 Mbps UPOE ports that provide deep buffers and higher scale; PoE budget of 830W with 1100 WAC power supply; supports StackWise-480 and StackPower
C9300-24UB-E	Network Essentials	
C9300-24UX-A	Network Advantage	Stackable 24 Multigigabit Ethernet 100/1000/2500/5000/10000 UPoE ports; PoE budget of 490 W with 1100 WAC power supply; supports StackWise-480 and StackPower
C9300-24UX-E	Network Essentials	
C9300-24UXB-A	Network Advantage	Stackable 24 Multigigabit Ethernet (100 Mbps or 1/2.5/5/10 Gbps) UPOE ports that provide deep buffers and higher scale; PoE budget of 560 W with 1100 WAC power supply; supports StackWise-480 and StackPower
C9300-24UXB-E	Network Essentials	
C9300-48H-A	Network Advantage	Stackable 48 10/100/1000 Mbps UPOE+ ports; PoE budget of 822 W with 1100 WAC power supply; supports StackWise-480 and StackPower
C9300-48H-E	Network Essentials	
C9300-48T-A	Network Advantage	Stackable 48 10/100/1000 Ethernet ports; 350 WAC power supply; supports StackWise-480 and StackPower
C9300-48T-E	Network Essentials	

Switch Model	Default License Level	Description
C9300-48P-A	Network Advantage	Stackable 48 10/100/1000 PoE+ ports; PoE budget of 437W; 715 WAC power supply; supports StackWise-480 and StackPower
C9300-48P-E	Network Essentials	
C9300-48S-A	Network Advantage	Stackable 48 1G SFP ports; two power supply slots with 715 WAC power supply installed by default; supports StackWise-480 and StackPower.
C9300-48S-E	Network Essentials	
C9300-48T-A	Network Advantage	Stackable 48 10/100/1000 Ethernet ports; 350 WAC power supply; supports StackWise-480 and StackPower
C9300-48T-E	Network Essentials	
C9300-48U-A	Network Advantage	Stackable 48 10/100/1000 UPoE ports; PoE budget of 822 W; 1100 WAC power supply; supports StackWise-480 and StackPower
C9300-48U-E	Network Essentials	
C9300-48UB-A	Network Advantage	Stackable 48 10/100/1000 Mbps UPOE ports that provide deep buffers and higher scale; PoE budget of 822 W with 1100 WAC power supply; supports StackWise-480 and StackPower
C9300-48UB-E	Network Essentials	
C9300-48UN-A	Network Advantage	Stackable 48 Multigigabit Ethernet (100 Mbps or 1/2.5/5 Gbps) UPoE ports; PoE budget of 610 W with 1100 WAC power supply; supports StackWise-480 and StackPower
C9300-48UN-E	Network Essentials	
C9300-48UXM-A	Network Advantage	Stackable 48 (36 2.5G Multigigabit Ethernet and 12 10G Multigigabit Ethernet Universal Power Over Ethernet (UPOE) ports)
C9300-48UXM-E	Network Essentials	

Table 2: Cisco Catalyst 9300L Series Switches

Switch Model	Default License Level	Description
C9300L-24T-4G-A	Network Advantage	Stackable 24x10/100/1000M Ethernet ports; 4x1G SFP fixed uplink ports; 350 WAC power supply; supports StackWise-320.
C9300L-24T-4G-E	Network Essentials	
C9300L-24P-4G-A	Network Advantage	Stackable 24x10/100/1000M PoE+ ports; 4x1G SFP fixed uplink ports; PoE budget of 505W with 715 WAC power supply; supports StackWise-320.
C9300L-24P-4G-E	Network Essentials	
C9300L-24T-4X-A	Network Advantage	Stackable 24x10/100/1000M Ethernet ports; 4x10G SFP+ fixed uplink ports; 350 WAC power supply; supports StackWise-320.
C9300L-24T-4X-E	Network Essentials	
C9300L-24P-4X-A	Network Advantage	Stackable 24x10/100/1000M PoE+ ports; 4x10G SFP+ fixed uplink ports; PoE budget of 505W with 715 WAC power supply; supports StackWise-320.
C9300L-24P-4X-E	Network Essentials	
C9300L-48T-4G-A	Network Advantage	Stackable 48x10/100/1000M Ethernet ports; 4x1G SFP fixed uplink ports; 350 WAC power supply; supports StackWise-320.
C9300L-48T-4G-E	Network Essentials	
C9300L-48P-4G-A	Network Advantage	Stackable 48x10/100/1000M PoE+ ports; 4x1G SFP fixed uplink ports; PoE budget of 505W with 715 WAC power supply; supports StackWise-320.
C9300L-48P-4G-E	Network Essentials	
C9300L-48T-4X-A	Network Advantage	Stackable 48x10/100/1000M Ethernet ports; 4x10G SFP+ fixed uplink ports; 350 WAC power supply; supports StackWise-320.
C9300L-48T-4X-E	Network Essentials	
C9300L-48P-4X-A	Network Advantage	Stackable 48x10/100/1000M PoE+ ports; 4x10G SFP+ fixed uplink ports; PoE budget of 505W with 715 WAC power supply; supports StackWise-320.
C9300L-48P-4X-E	Network Essentials	

Switch Model	Default License Level	Description
C9300L-48PF-4G-A	Network Advantage	Stackable 48 10/100/1000 Mbps PoE+ ports; 4x1G SFP+ fixed uplink ports; PoE budget of 890 W with 1100 WAC power supply; supports StackWise-320.
C9300L-48PF-4G-E	Network Essentials	
C9300L-48PF-4X-A	Network Advantage	Stackable 48 10/100/1000 Mbps PoE+ ports; 4x10G SFP+ fixed uplink ports; PoE budget of 890 W with 1100 WAC power supply; supports StackWise-320.
C9300L-48PF-4X-E	Network Essentials	
C9300L-24UXG-4X-A	Network Advantage	Stackable 16 10/100/1000 Mbps and 8 Multigigabit Ethernet (100 Mbps or 1/2.5/5/10 Gbps) UPOE ports; 4x10G SFP+ fixed uplink ports; PoE budget of 880 W with 1100 WAC power supply; supports StackWise-320.
C9300L-24UXG-4X-E	Network Essentials	
C9300L-24UXG-2Q-A	Network Advantage	Stackable 16 10/100/1000 Mbps and 8 Multigigabit Ethernet (100 Mbps or 1/2.5/5/10 Gbps) UPOE ports; 2x40G QSFP+ fixed uplink ports; PoE budget of 722 W with 1100 WAC power supply; supports StackWise-320.
C9300L-24UXG-2Q-E	Network Essentials	
C9300L-48UXG-4X-A	Network Advantage	Stackable 36 10/100/1000 Mbps and 12 Multigigabit Ethernet (100 Mbps or 1/2.5/5/10 Gbps) UPOE ports; 4x10G SFP+ fixed uplink ports; PoE budget of 675 W with 1100 WAC power supply; supports StackWise-320.
C9300L-48UXG-4X-E	Network Essentials	
C9300L-48UXG-2Q-A	Network Advantage	Stackable 36 10/100/1000 Mbps and 12 Multigigabit Ethernet (100 Mbps or 1/2.5/5/10 Gbps) UPOE ports; 2x40G QSFP+ fixed uplink ports; PoE budget of 675 W with 1100 WAC power supply; supports StackWise-320.
C9300L-48UXG-2Q-E	Network Essentials	

Table 3: Cisco Catalyst 9300LM Series Switches

Switch Model	Default License Level	Description
C9300LM-48T-4Y-A	Network Advantage	Stackable 48 x 10/100/1000 M Ethernet ports; 4 x 25 GE SFP28 fixed uplink ports; 600 WAC power supply and fixed fans; supports StackWise-320.
C9300LM-48T-4Y-E	Network Essentials	

Switch Model	Default License Level	Description
C9300LM-24U-4Y-A	Network Advantage	Stackable 24 x 10/100/1000 M UPOE ports; 4 x 25 GE SFP28 fixed uplink ports; PoE budget of 420 W with a single default 600 WAC power supply; supports StackWise-320.
C9300LM-24U-4Y-E	Network Essentials	
C9300LM-48U-4Y-A	Network Advantage	Stackable 48 x 10/100/1000 M UPOE ports; 4 x 25 GE SFP28 fixed uplink ports; PoE budget of 790 W with a single default 1000 WAC power supply; supports StackWise-320.
C9300LM-48U-4Y-E	Network Essentials	
C9300LM-48UX-4Y-A	Network Advantage	Stackable 40 x 10/100/1000 M and 8 Multigigabit Ethernet (100M/1000M/2.5GE/5GE/10GE) UPOE ports; 4 x 25 GE SFP28 fixed uplink ports; PoE budget of 790 W with a single default 1000 WAC power supply; supports StackWise-320.
C9300LM-48UX-4Y-E	Network Essentials	

Table 4: Cisco Catalyst 9300X Series Switches

Switch Model	Default License Level	Description
C9300X-12Y-A	Network Advantage	Stackable 12 1/10/25 GE SFP28 downlink ports; 715 WAC power supply; supports StackPower+, StackWise-1T and C9300X-NM network modules.
C9300X-12Y-E	Network Essentials	
C9300X-24Y-A	Network Advantage	Stackable 24 1/10/25 GE SFP28 downlink ports; 715 WAC power supply; supports StackPower+, StackWise-1 and C9300X-NM network modules.
C9300X-24Y-E	Network Essentials	
C9300X-24HX-A	Network Advantage	Stackable 24 Multigigabit Ethernet (100 Mbps or 1/2.5/5/10 Gbps) UPOE+ ports; PoE budget of 735W with 1100WAC power supply; supports StackPower+, StackWise-1T and C9300X-NM network modules.
C9300X-24HX-E	Network Essentials	
C9300X-48HX-A	Network Advantage	Stackable 48 Multigigabit Ethernet (100 Mbps or 1/2.5/5/10 Gbps) UPOE+ports; PoE budget of 590W with 1100 WAC power supply; supports StackPower+, StackWise-1T and C9300X-NM network modules.
C9300X-48HX-E	Network Essentials	
C9300X-48TX-A	Network Advantage	Stackable 48 Multigigabit Ethernet (100 Mbps or 1/2.5/5/10 Gbps) ports; 715WAC powersupply; supports StackPower+, StackWise-1T and C9300X-NM network modules.
C9300X-48TX-E	Network Essentials	
C9300X-48HXN-A	Network Advantage	Stackable 40 x 100/1000 M or 2.5/5 GE Multigigabit Ethernet and 8 x 100/1000 M or 2.5/5/10 GE Multigigabit Ethernet UPOE+ ports; PoE budget of 690W with 1100WAC power supply; supports StackPower+, StackWise-1T and C9300X-NM network modules
C9300X-48HXN-E	Network Essentials	

Network Modules

The following table lists the optional uplink network modules with 1-Gigabit, 10-Gigabit, 25-Gigabit, and 40-Gigabit slots. You should only operate the switch with either a network module or a blank module installed.

Network Module	Description
C3850-NM-4-1G ¹	Four 1 Gigabit Ethernet SFP module slots
C3850-NM-2-10G ¹	Two 10 Gigabit Ethernet SFP module slots
C3850-NM-4-10G ¹	Four 10 Gigabit Ethernet SFP module slots
C3850-NM-8-10G ¹	Eight 10 Gigabit Ethernet SFP module slots
C3850-NM-2-40G ¹	Two 40 Gigabit Ethernet SFP module slots
C9300-NM-4G ²	Four 1 Gigabit Ethernet SFP module slots
C9300-NM-4M ²	Four MultiGigabit Ethernet slots
C9300-NM-8X ²	Eight 10 Gigabit Ethernet SFP+ module slots
C9300-NM-2Q ²	Two 40 Gigabit Ethernet QSFP+ module slots
C9300-NM-2Y ²	Two 25 Gigabit Ethernet SFP28 module slots
C9300X-NM-2C ³	Two 40 Gigabit Ethernet/100 Gigabit Ethernet QSFP+ module slots
C9300X-NM-4C ³	Four 40 Gigabit Ethernet/100 Gigabit Ethernet slots with a QSFP+ connector in each slot.
C9300X-NM-8M ³	Eight Multigigabit Ethernet slots
C9300X-NM-8Y ³	Eight 25 Gigabit Ethernet/10 Gigabit Ethernet/1 Gigabit Ethernet SFP+ module slots


Note

1. These network modules are supported only on the C3850 and C9300 SKUs of the Cisco Catalyst 3850 Series Switches and Cisco Catalyst 9300 Series Switches respectively.
2. These network modules are supported only on the C9300 SKUs of the Cisco Catalyst 9300 Series Switches.
3. These network modules are supported only on the C9300X SKUs of the Cisco Catalyst 9300 Series Switches.

The following table lists the network modules that are supported on the Cisco Catalyst 9300X-HXN Series Switches and the ports that are usable on each of these network module:

Table 5: Network Modules Supported on Catalyst 9300X-HXN Series Switches

Network Module	Cisco IOS XE Cupertino 17.7.1 and Previous Releases	Cisco IOS XE Cupertino 17.8.1 and Later Releases
C9300X-NM-8Y (8x25G)	Ports 1 to 4 usable.	Ports 1 to 6 usable. Ports 7 and 8 are permanently disabled.
C9300X-NM-8M (8xmGig)	Ports 1 to 4 usable.	Ports 1 to 6 usable. Ports 7 and 8 are permanently disabled.
C9300X-NM-2C (2x100G/2x40G)	Ports 1 to 2 usable. No breakout cable support.	Ports 1 and 2 usable. Breakout cable supported only on port 1. No support for breakout cable on port 2.

Optics Modules

Cisco Catalyst Series Switches support a wide range of optics and the list of supported optics is updated on a regular basis. Use the [Transceiver Module Group \(TMG\) Compatibility Matrix](#) tool, or consult the tables at this URL for the latest transceiver module compatibility information: https://www.cisco.com/en/US/products/hw/modules/ps5455/products_device_support_tables_list.html



CHAPTER 2

Whats New in Cisco IOS XE Dublin 17.10.x

- [Hardware Features in Cisco IOS XE Dublin 17.10.1, on page 9](#)
- [Software Features in Cisco IOS XE Dublin 17.10.1, on page 10](#)
- [Hardware and Software Behavior Changes in Cisco IOS XE Dublin 17.10.1, on page 11](#)

Hardware Features in Cisco IOS XE Dublin 17.10.1

Feature Name	Description
100GBASE ER-Lite QSFP Module on Cisco Catalyst 9300X Series Switches	<p>Supported transceiver module product numbers:</p> <ul style="list-style-type: none">• QSFP-100G-ERL-S <p>For information about the module, see Cisco 100GBASE QSFP-100G Modules Data Sheet. For information about device compatibility, see the Transceiver Module Group (TMG) Compatibility Matrix.</p>
100GBASE DR QSFP Module on Cisco Catalyst 9300X Series Switches	<p>Supported transceiver module product numbers:</p> <ul style="list-style-type: none">• QSFP-100G-DR-S <p>For information about the module, see Cisco 100GBASE QSFP-100G Modules Data Sheet. For information about device compatibility, see the Transceiver Module Group (TMG) Compatibility Matrix.</p>

Software Features in Cisco IOS XE Dublin 17.10.1

Feature Name	Description
BGP EVPN VXLAN with IPv6 in the Underlay (VXLANv6)	Introduces support for IPv6 addressing in the underlay of a BGP EVPN VXLAN fabric. In a new deployment, you can build your BGP EVPN VXLAN fabric with IPv6 underlay. For an existing BGP EVPN VXLAN fabric with IPv4 underlay, you can seamlessly migrate to an IPv6 or dual stack underlay.
Custom EAPoL	Allows customization of the default EAPoL EtherType to configure MACsec with EtherType as 876F.
DHCP Gleaning	Introduces support for a read-only DHCP snooping functionality that allows components to register and glean only DHCP version 4 packets. (Network Essentials and Network Advantage)
Enhanced Password Security Through Updated Combination Rule	The character-repetition and restrict-consecutive-letters keywords were introduced for the aaa common-criteria policy command.
MACsec Fallback Key Support with High Availability	Introduces support for the MACsec Fallback Key feature with High Availability. The MACsec Fallback Key feature establishes an MKA session with the pre-shared fallback key whenever the PSK fails to establish a session because of key mismatch. (Network Advantage)
NAT support on L3 Port Channel	Introduces support for configuring NAT on Layer 3 port channel using the interface port-channel command.
Programmability <ul style="list-style-type: none"> • Upgrade YANG Models to YANG 1.1 • YANG Data Models • App-Hosting: ERSPAN Capabilities on AppGigabitEthernet Port 	The following programmability features are introduced in this release: <ul style="list-style-type: none"> • Upgrade YANG Models to YANG 1.1: Cisco-defined YANG models are in YANG Version 1.1 in Cisco IOS XE Dublin 17.10.1 and later releases. (Network Advantage) • YANG Data Models: For the list of Cisco IOS XE YANG models available with this release, navigate to: https://github.com/YangModels/yang/tree/master/vendor/cisco/xe/17101. (Network Advantage) • App-Hosting: ERSPAN Capabilities on AppGigabitEthernet Port: To mirror data traffic, the spanning traffic and captured traffic is transported to the IOx virtual application through the AppGigabitEthernet port. This ensures that the ERSPAN destination is reachable through the AppGigabitEthernet interface. (Network Advantage)

Feature Name	Description
RADIUS Automated Testing Probe-on	The command automate-tester probe-on was introduced. It starts a dead timer and packets are sent to the external RADIUS server after the timer expires.
Reflexive Access Lists (IPv4)	Reflexive access lists allow IP packets to be filtered based on upper-layer session information. (Network Advantage)
Secure Data Wipe	Introduces support for performing factory reset by using the keyword all secure in the factory-reset command. This option performs data sanitisation and securely resets the device. (Network Essentials and Network Advantage)
SHA256 based Password-masking support	You can use the masked-secret keyword on the enable algorithm type command and username command. The keyword masks the secret input and converts to the selected encryption. (Network Essentials and Network Advantage)
Standalone Mode on Layer 3 EtherChannels	Introduces support for configuring standalone mode/independent mode on Layer 3 EtherChannels.
Support for Migrating to Meraki Dashboard-Managed Mode	Introduces support for migrating Cisco Catalyst 9300 Series Switches to Meraki Dashboard-managed mode. This feature migrates the switch or switch stack to be fully controlled by Meraki Dashboard. After migration is complete, the switch access through console is disabled. Configuration and monitoring can only be performed through the dashboard. See System Management → Migrating to Meraki Managed Dashboard .

New on the WebUI

There are no new WebUI features in this release.

Hardware and Software Behavior Changes in Cisco IOS XE Dublin 17.10.1

Behavior Change	Description
debug platform command	The debug platform software fed switch active inject packet-capture start command was modified. full-packet keyword was added. It allows you to capture 1500 bytes of packet. The default packet capture was only for 128 bytes of the packet prior to Cisco IOS XE Dublin 17.10.1.



CHAPTER 3

Important Notes

- [Important Notes, on page 13](#)

Important Notes

Unsupported Features

- **Cisco TrustSec**
 - Cisco TrustSec Network Device Admission Control (NDAC) on Uplinks
- **Security**
 - MACsec switch-to-host connections in an overlay network.
 - Virtual Routing and Forwarding (VRF)-Aware web authentication
- **System Management**
 - Performance Monitoring (PerfMon)
- Converged Access for Branch Deployments
- Network Load Balancing (NLB)

Complete List of Supported Features

For the complete list of features supported on a platform, see the [Cisco Feature Navigator](#).

Accessing Hidden Commands

Starting with Cisco IOS XE Fuji 16.8.1a, as an improved security measure, the way in which hidden commands can be accessed has changed.

Hidden commands have always been present in Cisco IOS XE, but were not equipped with CLI help. That is, entering a question mark (?) at the system prompt did not display the list of available commands. These commands were only meant to assist Cisco TAC in advanced troubleshooting and were not documented either.

Starting with Cisco IOS XE Fuji 16.8.1a, hidden commands are available under:

- Category 1—Hidden commands in privileged or User EXEC mode. Begin by entering the **service internal** command to access these commands.
- Category 2—Hidden commands in one of the configuration modes (global, interface and so on). These commands do not require the **service internal** command.

Further, the following applies to hidden commands under Category 1 and 2:

- The commands have CLI help. Enter a question mark (?) at the system prompt to display the list of available commands.

Note: For Category 1, enter the **service internal** command before you enter the question mark; you do not have to do this for Category 2.

- The system generates a %PARSER-5-HIDDEN syslog message when a hidden command is used. For example:

```
*Feb 14 10:44:37.917: %PARSER-5-HIDDEN: Warning!!! 'show processes memory old-header '
is a hidden command.
Use of this command is not recommended/supported and will be removed in future.
```

Apart from category 1 and 2, there remain internal commands displayed on the CLI, for which the system does NOT generate the %PARSER-5-HIDDEN syslog message.



Important

We recommend that you use any hidden command only under TAC supervision.

If you find that you are using a hidden command, open a TAC case for help with finding another way of collecting the same information as the hidden command (for a hidden EXEC mode command), or to configure the same functionality (for a hidden configuration mode command) using non-hidden commands.

Default Behaviour

Beginning from Cisco IOS XE Gibraltar 16.12.5 and later, do not fragment bit (DF bit) in the IP packet is always set to 0 for all outgoing RADIUS packets (packets that originate from the device towards the RADIUS server).



CHAPTER 4

Compatibility Matrix and Web UI System Requirements

- [Compatibility Matrix](#), on page 15
- [Web UI System Requirements](#), on page 15

Compatibility Matrix

To view the software compatibility information between Cisco Catalyst 9300 Series Switches, Cisco Identity Services Engine, and Cisco Prime Infrastructure, go to [Cisco Catalyst 9000 Series Switches Software Version Compatibility Matrix](#).

Web UI System Requirements

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

Minimum Hardware Requirements

Processor Speed	DRAM	Number of Colors	Resolution	Font Size
233 MHz minimum ¹	512 MB ²	256	1280 x 800 or higher	Small

¹ We recommend 1 GHz

² We recommend 1 GB DRAM

Software Requirements

Operating Systems

- Windows 10 or later
- Mac OS X 10.9.5 or later

Browsers

- Google Chrome—Version 59 or later (On Windows and Mac)

- Microsoft Edge
- Mozilla Firefox—Version 54 or later (On Windows and Mac)
- Safari—Version 10 or later (On Mac)



CHAPTER 5

Licensing and Scaling Guidelines

- [Licensing, on page 17](#)
- [Scaling Guidelines, on page 17](#)

Licensing

For information about licenses required for the features available on Cisco Catalyst 9000 Series Switches, see [Configuring Licenses on Cisco Catalyst 9000 Series Switches](#).

All licensing information relating to Cisco Catalyst 9000 Series Switches are available on this collection page: [Cisco Catalyst 9000 Switching Family Licensing](#).

Available Licensing Models and Configuration Information

- Cisco IOS XE Fuji 16.8.x and earlier: RTU Licensing is the default and the only supported method to manage licenses.
- Cisco IOS XE Fuji 16.9.1 to Cisco IOS XE Amsterdam 17.3.1: Smart Licensing is the default and the only supported method to manage licenses.
- Cisco IOS XE Amsterdam 17.3.2a and later: Smart Licensing Using Policy, which is an enhanced version of Smart Licensing, is the default and the only supported method to manage licenses.

Scaling Guidelines

For information about feature scaling guidelines, see the Cisco Catalyst 9300 Series Switches datasheet at:

<http://www.cisco.com/c/en/us/products/collateral/switches/catalyst-9300-series-switches/datasheet-c78-738977.html>



CHAPTER 6

Limitations and Restrictions

- [Limitations and Restrictions, on page 19](#)

Limitations and Restrictions

- Control Plane Policing (CoPP)—The **show run** command does not display information about classes configured under `system-cpp policy`, when they are left at default values. Use the **show policy-map system-cpp-policy** or the **show policy-map control-plane** commands in privileged EXEC mode instead.
- Cisco TrustSec restrictions—Cisco TrustSec can be configured only on physical interfaces, not on logical interfaces.
- Flexible NetFlow 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 layer 2 port-channels, loopback, tunnels.
 - You can not configure multiple flow monitors of same type (ipv4, ipv6 or datalink) on the same interface for same direction.
- Hardware Limitations—Optics:
 - SFP-10G-T-X supports 100Mbps/1G/10G speeds based on auto negotiation with the peer device. 10Mbps speed is not supported and you cannot force speed settings from the transceiver.
 - PHY Loopback test is not supported on SFP-10G-T-X.
- QoS restrictions
 - When configuring QoS queuing policy, the sum of the queuing buffer should not exceed 100%.
 - Policing and marking policy on sub interfaces is supported.
 - Marking policy on witched virtual interfaces (SVI) is supported.
 - QoS policies are not supported for port-channel interfaces, tunnel interfaces, and other logical interfaces.
 - Stack Queuing and Scheduling (SQS) drops CPU bound packets exceeding 1.4 Gbps.

- Secure Shell (SSH)

- Use SSH Version 2. SSH Version 1 is not supported.
- When the device is running SCP 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.

- Smart Licensing Using Policy: Starting with Cisco IOS XE Amsterdam 17.3.2a, with the introduction of Smart Licensing Using Policy, even if you configure a hostname for a product instance or device, only the Unique Device Identifier (UDI) is displayed. This change in the display can be observed in all licensing utilities and user interfaces where the hostname was displayed in earlier releases. It does not affect any licensing functionality. There is no workaround for this limitation.

The licensing utilities and user interfaces that are affected by this limitation include only the following: Cisco Smart Software Manager (CSSM), Cisco Smart License Utility (CSLU), and Smart Software Manager On-Prem (SSM On-Prem).

This limitation is removed from Cisco IOS XE Cupertino 17.9.1. If you configure a hostname and disable hostname privacy (**no license smart privacy hostname** global configuration command), hostname information is sent from the product instance and displayed on the applicable user interfaces (CSSM, CSLU, SSM On-Prem). For more information, see the command reference for this release.

- Stacking:

- A switch stack supports up to eight stack members.
- Only homogenous stacking is supported, mixed stacking is not.

C9300 SKUs can be stacked only with other C9300 SKUs. Similarly C9300L SKUs can be stacked only with other C9300L SKUs.

The following additional restriction applies to the C9300-24UB, C9300-24UXB, and C9300-48UB models of the series: These models can be stacked only with each other. They cannot be stacked with other C9300 SKUs.

- Auto upgrade for a new member switch is supported only in the install mode.
- TACACS legacy command: Do not configure the legacy **tacacs-server host** command; this command is deprecated. If the software version running on your device is Cisco IOS XE Gibraltar 16.12.2 or a later release, using the legacy command can cause authentication failures. Use the **tacacs server** command in global configuration mode.
- USB Authentication—When you connect a Cisco USB drive to the switch, the switch tries to authenticate the drive against an existing encrypted preshared key. Since the USB drive does not send a key for authentication, the following message is displayed on the console when you enter **password encryption aes** command:


```
Device(config)# password encryption aes
Master key change notification called without new or old key
```
- MACsec is not supported on Software-Defined Access deployments.

- **VLAN Restriction**—It is advisable to have well-defined segregation while defining data and voice domain during switch configuration and to maintain a data VLAN different from voice VLAN across the switch stack. If the same VLAN is configured for data and voice domains on an interface, the resulting high CPU utilization might affect the device.
- **Wired Application Visibility and Control limitations:**
 - NBAR2 (QoS and Protocol-discovery) configuration is allowed only on wired physical ports. It is not supported on virtual interfaces, for example, VLAN, port channel nor other logical interfaces.
 - NBAR2 based match criteria ‘match protocol’ is allowed only with marking or policing actions. NBAR2 match criteria will not be allowed in a policy that has queuing features configured.
 - ‘Match Protocol’: up to 256 concurrent different protocols in all policies.
 - NBAR2 and Legacy NetFlow cannot be configured together at the same time on the same interface. However, NBAR2 and wired AVC Flexible NetFlow can be configured together on the same interface.
 - Only IPv4 unicast (TCP/UDP) is supported.
 - AVC is not supported on management port (Gig 0/0)
 - NBAR2 attachment should be done only on physical access ports. Uplink can be attached as long as it is a single uplink and is not part of a port channel.
 - **Performance**—Each switch member is able to handle 2000 connections per second (CPS) at less than 50% CPU utilization. Above this rate, AVC service is not guaranteed.
 - **Scale**—Able to handle up to 20000 bi-directional flows per 24 access ports and per 48 access ports.
- **YANG data modeling limitation**—A maximum of 20 simultaneous NETCONF sessions are supported.
- **Embedded Event Manager**—Identity event detector is not supported on Embedded Event Manager.
- **The File System Check (fsck) utility** is not supported in install mode.
- **Switch Web UI** allows configuration of data VLANs only and not voice VLANs. If you remove a voice VLAN configured to an interface using the Web UI, then all data VLANs associated with the interface are also removed by default.



CHAPTER 7

ROMMON Versions

- [ROMMON Versions](#), on page 23

ROMMON Versions

ROMMON, also known as the boot loader, is firmware that runs when the device is powered up or reset. It initializes the processor hardware and boots the operating system software (Cisco IOS XE software image). The ROMMON is stored on the following Serial Peripheral Interface (SPI) flash devices on your switch:

- **Primary:** The ROMMON stored here is the one the system boots every time the device is powered-on or reset.
- **Golden:** The ROMMON stored here is a backup copy. If the one in the primary is corrupted, the system automatically boots the ROMMON in the golden SPI flash device.

ROMMON upgrades may be required to resolve firmware defects, or to support new features, but there may not be new versions with every release.

Release	ROMMON Version (C9300 Models)	ROMMON Version (C9300L Models)	ROMMON Version (C9300X Models)	ROMMON Version (C9300LM Models)
Dublin 17.10.1	17.10.1r[FC1]	17.10.1r[FC1]	17.9.1r	17.10.1r
Cupertino 17.9.5	17.9.2r	17.9.2r	17.9.4r	17.9.1r[FC1]
Cupertino 17.9.5	17.9.2r	17.9.2r	17.9.4r	17.9.1r[FC1]
Cupertino 17.9.4	17.9.2r	17.9.1r	17.9.1r	17.9.1r[FC1]
Cupertino 17.9.3	17.9.2r	17.9.1r	17.9.1r	17.9.1r[FC1]
Cupertino 17.9.2	17.9.1r	17.9.1r	17.9.1r	17.9.1r
Cupertino 17.9.1	17.9.1r	17.9.1r	17.9.1r	17.9.1r
Cupertino 17.8.1	17.8.1r[FC2]	17.8.1r[FC2]	17.5.1r	17.8.1r
Cupertino 17.7.1	17.6.1r[FC2]	17.6.1r[FC2]	17.5.1r	-
Bengaluru 17.6.8	17.6.6r	17.6.1r[FC2]	17.5.1r	-

Release	ROMMON Version (C9300 Models)	ROMMON Version (C9300L Models)	ROMMON Version (C9300X Models)	ROMMON Version (C9300LM Models)
Bengaluru 17.6.7	17.6.6r	17.6.1r[FC2]	17.5.1r	-
Bengaluru 17.6.6a	17.6.6r	17.6.1r[FC2]	17.5.1r	-
Bengaluru 17.6.6	17.6.6r	17.6.1r[FC2]	17.5.1r	-
Bengaluru 17.6.5	17.6.6r	17.6.1r[FC2]	17.5.1r	-
Bengaluru 17.6.4	17.6.1r[FC2]	17.6.1r[FC2]	17.5.1r	-
Bengaluru 17.6.3	17.6.1r[FC2]	17.6.1r[FC2]	17.5.1r	-
Bengaluru 17.6.2	17.6.1r[FC2]	17.6.1r[FC2]	17.5.1r	-
Bengaluru 17.6.1	17.6.1r[FC2]	17.6.1r[FC2]	17.5.1r	-
Bengaluru 17.5.1	17.5.2r	17.4.1r[FC2]	17.5.1r	-
Bengaluru 17.4.1	17.4.1r	17.4.1r[FC2]	-	-
Amsterdam 17.3.8a	17.3.8r	17.8.1r[FC2]	-	-
Amsterdam 17.3.8	17.3.8r	17.8.1r[FC2]	-	-
Amsterdam 17.3.7	17.3.2r	17.8.1r[FC2]	-	-
Amsterdam 17.3.6	17.3.2r	17.8.1r[FC2]	-	-
Amsterdam 17.3.5	17.3.2r	17.8.1r[FC2]	-	-
Amsterdam 17.3.4	17.3.2r	17.3.2r	-	-
Amsterdam 17.3.3	17.3.2r	17.3.2r	-	-
Amsterdam 17.3.2a	17.3.2r	17.3.2r	-	-
Amsterdam 17.3.1	17.3.1r[FC2]	17.1.1r [FC1]	-	-
Amsterdam 17.2.1	17.2.1r[FC1]	17.1.1r[FC1]	-	-
Amsterdam 17.1.1	17.1.1r [FC1]	17.1.1r [FC1]	-	-



CHAPTER 8

Upgrading the Switch Software

- [Finding the Software Version, on page 25](#)
- [Software Images, on page 25](#)
- [Upgrading the ROMMON, on page 26](#)
- [Software Installation Commands, on page 26](#)
- [Upgrading in Install Mode, on page 27](#)
- [Downgrading in Install Mode, on page 35](#)
- [Field-Programmable Gate Array Version Upgrade, on page 43](#)

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.

Software Images

Release	Image Type	File Name
Cisco IOS XE Dublin 17.10.1	CAT9K_IOSXE	cat9k_iosxe.17.10.01.SPA.bin
	No Payload Encryption (NPE)	cat9k_iosxe_npe.17.10.01.SPA.bin

Upgrading the ROMMON

To know the ROMMON or bootloader version that applies to every major and maintenance release, see [ROMMON Versions, on page 23](#).

You can upgrade the ROMMON before, or, after upgrading the software version. If a new ROMMON version is available for the software version you are upgrading to, proceed as follows:

- Upgrading the ROMMON in the primary SPI flash device

This ROMMON is upgraded automatically. When you upgrade from an existing release on your switch to a later or newer release for the first time, and there is a new ROMMON version in the new release, the system automatically upgrades the ROMMON in the primary SPI flash device, based on the hardware version of the switch.

- Upgrading the ROMMON in the golden SPI flash device

You must manually upgrade this ROMMON. Enter the **upgrade rom-monitor capsule golden switch** command in privileged EXEC mode.



Note

- In case of a switch stack, perform the upgrade on the active switch and all members of the stack.

After the ROMMON is upgraded, it will take effect on the next reload. If you go back to an older release after this, the ROMMON is not downgraded. The updated ROMMON supports all previous releases.

Software Installation Commands

Summary of Software Installation Commands	
Supported starting from Cisco IOS XE Everest 16.6.2 and later releases	
To install and activate the specified file, and to commit changes to be persistent across reloads: install add file <i>filename</i> [activate commit]	
To separately install, activate, commit, cancel, or remove the installation file: install ?	
add file tftp: <i>filename</i>	Copies the install file package from a remote location to the device and performs a compatibility check for the platform and image versions.
activate [auto-abort-timer]	Activates the file, and reloads the device. The auto-abort-timer keyword automatically rolls back image activation.
commit	Makes changes persistent over reloads.
rollback to committed	Rolls back the update to the last committed version.
abort	Cancels file activation, and rolls back to the version that was running before the current installation procedure started.

Summary of Software Installation Commands**Supported starting from Cisco IOS XE Everest 16.6.2 and later releases**

remove	Deletes all unused and inactive software installation files.
---------------	--



Note The **request platform software** commands are deprecated starting from Cisco IOS XE Gibraltar 16.10.1. The commands are visible on the CLI in this release and you can configure them, but we recommend that you use the **install** commands to upgrade or downgrade.

Summary of request platform software CommandsDevice# **request platform software package ?**

clean	Cleans unnecessary package files from media
copy	Copies package to media
describe	Describes package content
expand	Expands all-in-one package to media
install	Installs the package
uninstall	Uninstalls the package
verify	Verifies In Service Software Upgrade (ISSU) software package compatibility

Upgrading in Install Mode

Follow these instructions to upgrade from one release to another, in install mode. To perform a software image upgrade, you must be booted into IOS through **boot flash:packages.conf**.

Before you begin

Note that you can use this procedure for the following upgrade scenarios:

When upgrading from ...	Use these commands...	To upgrade to...
Cisco IOS XE Everest 16.5.1a or Cisco IOS XE Everest 16.6.1	Only request platform software commands	Cisco IOS XE Dublin 17.10.x
Cisco IOS XE Everest 16.6.2 and all later releases	Either install commands or request platform software commands ³ .	

³ The **request platform software** commands are deprecated. So although they are still visible on the CLI, we recommend that you use **install** commands.

The sample output in this section displays upgrade from Cisco IOS XE Cupertino 17.9.1 to Cisco IOS XE Dublin 17.10.1 using **install** commands only.

Procedure

Step 1 Clean-up

install remove inactive

Use this command to clean-up old installation files in case of insufficient space and to ensure that you have at least 1GB of space in flash, to expand a new image.

The following sample output displays the cleaning up of unused files, by using the **install remove inactive** command:

```
Switch# install remove inactive

install_remove: START Mon Nov 14 19:51:48 PDT 2022
Cleaning up unnecessary package files
Scanning boot directory for packages ... done.
Preparing packages list to delete ...
  cat9k-cc_srdriver.17.09.01.SPA.pkg
    File is in use, will not delete.
  cat9k-espbases.17.09.01.SPA.pkg
    File is in use, will not delete.
  cat9k-guestshell.17.09.01.SPA.pkg
    File is in use, will not delete.
  cat9k-rpbases.17.09.01.SPA.pkg
    File is in use, will not delete.
  cat9k-rpboot.17.09.01.SPA.pkg
    File is in use, will not delete.
  cat9k-sipbase.17.09.01.SPA.pkg
    File is in use, will not delete.
  cat9k-sipspa.17.09.01.SPA.pkg
    File is in use, will not delete.
  cat9k-srdriver.17.09.01.SPA.pkg
    File is in use, will not delete.
  cat9k-webui.17.09.01.SPA.pkg
    File is in use, will not delete.
  cat9k-wlc.17.09.01.SPA.pkg
    File is in use, will not delete.
  packages.conf
    File is in use, will not delete.
done.
The following files will be deleted:
[switch 1]:
/flash/cat9k-cc_srdriver.17.09.01.SPA.pkg
/flash/cat9k-espbases.17.09.01.SPA.pkg
/flash/cat9k-guestshell.17.09.01.SPA.pkg
/flash/cat9k-rpbases.17.09.01.SPA.pkg
/flash/cat9k-rpboot.17.09.01.SPA.pkg
/flash/cat9k-sipbase.17.09.01.SPA.pkg
/flash/cat9k-sipspa.17.09.01.SPA.pkg
/flash/cat9k-srdriver.17.09.01.SPA.pkg
/flash/cat9k-webui.17.09.01.SPA.pkg
/flash/cat9k-wlc.17.09.01.SPA.pkg
/flash/packages.conf

Do you want to remove the above files? [y/n]y

[switch 1]:
```



```

Deleting file flash:cat9k-cc_srdriver.17.09.01.SPA.pkg ... done.
Deleting file flash:cat9k-espbase.17.09.01.SPA.pkg ... done.
Deleting file flash:cat9k-guestshell.17.09.01.SPA.pkg ... done.
Deleting file flash:cat9k-rpbase.17.09.01.SPA.pkg ... done.
Deleting file flash:cat9k-rpboot.17.09.01.SPA.pkg ... done.
Deleting file flash:cat9k-sipbase.17.09.01.SPA.pkg ... done.
Deleting file flash:cat9k-sipspa.17.09.01.SPA.pkg ... done.
Deleting file flash:cat9k-srdriver.17.09.01.SPA.pkg ... done.
Deleting file flash:cat9k-webui.17.09.01.SPA.pkg ... done.
Deleting file flash:cat9k-wlc.17.09.01.SPA.pkg ... done.
Deleting file flash:packages.conf ... done.
SUCCESS: Files deleted.
--- Starting Post_Remove_Cleanup ---
Performing Post_Remove_Cleanup on all members
[1] Post_Remove_Cleanup package(s) on switch 1
[1] Finished Post_Remove_Cleanup on switch 1
Checking status of Post_Remove_Cleanup on [1]
Post_Remove_Cleanup: Passed on [1]
Finished Post_Remove_Cleanup

SUCCESS: install_remove Mon Nov 14 19:52:25 PDT 2022
Switch#
<output truncated>

```

Step 2 Copy new image to flash

a) **copy tftp:[//location]/directory]/filenameflash:**

Use this command to copy the new image from a TFTP server to flash memory. The location is either an IP address or a host name. The filename is specified relative to the directory used for file transfers. Skip this step if you want to use the new image from a TFTP server.

```

Switch# copy tftp://10.8.0.6/image/cat9k_iosxe.17.10.01.SPA.bin flash:
destination filename [cat9k_iosxe.17.10.01.SPA.bin]?
Accessing tftp://10.8.0.6/image/cat9k_iosxe.17.10.01.SPA.bin...
Loading /cat9k_iosxe.17.10.01.SPA.bin from 10.8.0.6 (via GigabitEthernet0/0):
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
[OK - 601216545 bytes]

601216545 bytes copied in 50.649 secs (11870255 bytes/sec)

```

b) **dir flash:**

Use this command to confirm that the image has been successfully copied to flash.

```

Switch# dir flash:*.bin
Directory of flash:/*.bin

Directory of flash:/

434184 -rw- 601216545    Nov 14 2022 10:18:11 -07:00 cat9k_iosxe.17.10.01.SPA.bin
11353194496 bytes total (8976625664 bytes free)

```

Step 3 Set boot variable

a) **no boot system**

Use this command to reset the boot variable. This command removes the startup system image specification. Otherwise, the switch may boot a previously configured boot image.

```
Switch(config)# no boot system
```

b) **boot system flash:packages.conf**

Use this command to set the boot variable to **flash:packages.conf**.

```
Switch(config)# boot system flash:packages.conf
```

c) **no boot manual**

Use this command to configure the switch to auto-boot.

```
Switch(config)# no boot manual
Switch(config)# exit
```

d) **write memory**

Use this command to save boot settings.

```
Switch# write memory
```

e) **show boot**

Use this command to verify the boot variable (packages.conf) and manual boot setting (no):

```
Switch# show boot
Current Boot Variables:
BOOT variable = flash:packages.conf;

Boot Variables on next reload:
BOOT variable = flash:packages.conf;
Manual Boot = no
Enable Break = yes
Boot Mode = DEVICE
iPXE Timeout = 0
```

Step 4 Install image to flash**install add file activate commit**

Use this command to install the image.

We recommend that you point to the source image on your TFTP server or the flash drive of the *active* switch, if you have copied the image to flash memory. If you point to an image on the flash or USB drive of a member switch (instead of the active), you must specify the exact flash or USB drive - otherwise installation fails. For example, if the image is on the flash drive of member switch 3 (flash-3): **Switch# install add file flash-3:cat9k_iosxe.17.10.01.SPA.bin activate commit**.

The following sample output displays installation of the Cisco IOS XE Dublin 17.10.1 software image in the flash memory:

```
Switch# install add file flash:cat9k_iosxe.17.10.01.SPA.bin activate commit

install_add_activate_commit: START Mon Nov 14 15:37:20 PDT 2022
install_add_activate_commit: Adding PACKAGE
install_add_activate_commit: Checking whether new add is allowed ....

--- Starting initial file syncing ---
[2]: Copying flash:cat9k_iosxe.17.10.01.SPA.bin from switch 2 to switch 1 3 4
[1 3 4]: Finished copying to switch 1 switch 3 switch 4
Info: Finished copying flash:cat9k_iosxe.17.10.01.SPA.bin to the selected switch(es)
Finished initial file syncing

--- Starting Add ---
Performing Add on all members
[1] Add package(s) on switch 1
[1] Finished Add on switch 1
```

```
[2] Add package(s) on switch 2
[2] Finished Add on switch 2
[3] Add package(s) on switch 3
[3] Finished Add on switch 3
[4] Add package(s) on switch 4
[4] Finished Add on switch 4
Checking status of Add on [1 2 3 4]
Add: Passed on [1 2 3 4]
Finished Add

Image added. Version: 17.10.01
install_add_activate_commit: Activating PACKAGE
Following packages shall be activated:
/flash/cat9k-wlc.17.10.01.SPA.pkg
/flash/cat9k-webui.17.10.01.SPA.pkg
/flash/cat9k-srdriver.17.10.01.SPA.pkg
/flash/cat9k-sipspa.17.10.01.SPA.pkg
/flash/cat9k-sipbase.17.10.01.SPA.pkg
/flash/cat9k-rpboot.17.10.01.SPA.pkg
/flash/cat9k-rpbase.17.10.01.SPA.pkg
/flash/cat9k-lni.17.10.01.SPA.pkg
/flash/cat9k-guestshell.17.10.01.SPA.pkg
/flash/cat9k-esppbase.17.10.01.SPA.pkg
/flash/cat9k-cc_srdriver.17.10.01.SPA.pkg
--- Starting Activate ---
Performing Activate on all members
[1] Activate package(s) on switch 1
--- Starting list of software package changes ---
Old files list:
  Removed cat9k-cc_srdriver.17.09.01.SPA.pkg
  Removed cat9k-esppbase.17.09.01.SPA.pkg
  Removed cat9k-guestshell.17.09.01.SPA.pkg
  Removed cat9k-rpbase.17.09.01.SPA.pkg
  Removed cat9k-rpboot.17.09.01.SPA.pkg
  Removed cat9k-sipbase.17.09.01.SPA.pkg
  Removed cat9k-sipspa.17.09.01.SPA.pkg
  Removed cat9k-srdriver.17.09.01.SPA.pkg
  Removed cat9k-webui.17.09.01.SPA.pkg
  Removed cat9k-wlc.17.09.01.SPA.pkg
New files list:
  Added cat9k-cc_srdriver.17.10.01.SPA.pkg
  Added cat9k-esppbase.17.10.01.SPA.pkg
  Added cat9k-guestshell.17.10.01.SPA.pkg
  Added cat9k-lni.17.10.01.SPA.pkg
  Added cat9k-rpbase.17.10.01.SPA.pkg
  Added cat9k-rpboot.17.10.01.SPA.pkg
  Added cat9k-sipbase.17.10.01.SPA.pkg
  Added cat9k-sipspa.17.10.01.SPA.pkg
  Added cat9k-srdriver.17.10.01.SPA.pkg
  Added cat9k-webui.17.10.01.SPA.pkg
  Added cat9k-wlc.17.10.01.SPA.pkg
Finished list of software package changes
[1] Finished Activate on switch 1
[2] Activate package(s) on switch 2
--- Starting list of software package changes ---
Old files list:
  Removed cat9k-cc_srdriver.17.09.01.SPA.pkg
  Removed cat9k-esppbase.17.09.01.SPA.pkg
  Removed cat9k-guestshell.17.09.01.SPA.pkg
  Removed cat9k-rpbase.17.09.01.SPA.pkg
  Removed cat9k-rpboot.17.09.01.SPA.pkg
  Removed cat9k-sipbase.17.09.01.SPA.pkg
  Removed cat9k-sipspa.17.09.01.SPA.pkg
  Removed cat9k-srdriver.17.09.01.SPA.pkg
```

```
Removed cat9k-webui.17.09.01.SPA.pkg
Removed cat9k-wlc.17.09.01.SPA.pkg
New files list:
Added cat9k-cc_srdriver.17.10.01.SPA.pkg
Added cat9k-espbases.17.10.01.SPA.pkg
Added cat9k-guestshell.17.10.01.SPA.pkg
Added cat9k-lni.17.10.01.SPA.pkg
Added cat9k-rpbases.17.10.01.SPA.pkg
Added cat9k-rpboot.17.10.01.SPA.pkg
Added cat9k-sipbases.17.10.01.SPA.pkg
Added cat9k-sipspace.17.10.01.SPA.pkg
Added cat9k-srdriver.17.10.01.SPA.pkg
Added cat9k-webui.17.10.01.SPA.pkg
Added cat9k-wlc.17.10.01.SPA.pkg
Finished list of software package changes
[2] Finished Activate on switch 2
[3] Activate package(s) on switch 3
--- Starting list of software package changes ---
Old files list:
Removed cat9k-cc_srdriver.17.09.01.SPA.pkg
Removed cat9k-espbases.17.09.01.SPA.pkg
Removed cat9k-guestshell.17.09.01.SPA.pkg
Removed cat9k-rpbases.17.09.01.SPA.pkg
Removed cat9k-rpboot.17.09.01.SPA.pkg
Removed cat9k-sipbases.17.09.01.SPA.pkg
Removed cat9k-sipspace.17.09.01.SPA.pkg
Removed cat9k-srdriver.17.09.01.SPA.pkg
Removed cat9k-webui.17.09.01.SPA.pkg
Removed cat9k-wlc.17.09.01.SPA.pkg
New files list:
Added cat9k-cc_srdriver.17.10.01.SPA.pkg
Added cat9k-espbases.17.10.01.SPA.pkg
Added cat9k-guestshell.17.10.01.SPA.pkg
Added cat9k-lni.17.10.01.SPA.pkg
Added cat9k-rpbases.17.10.01.SPA.pkg
Added cat9k-rpboot.17.10.01.SPA.pkg
Added cat9k-sipbases.17.10.01.SPA.pkg
Added cat9k-sipspace.17.10.01.SPA.pkg
Added cat9k-srdriver.17.10.01.SPA.pkg
Added cat9k-webui.17.10.01.SPA.pkg
Added cat9k-wlc.17.10.01.SPA.pkg
Finished list of software package changes
[3] Finished Activate on switch 3
[4] Activate package(s) on switch 4
--- Starting list of software package changes ---
Old files list:
Removed cat9k-cc_srdriver.17.09.01.SPA.pkg
Removed cat9k-espbases.17.09.01.SPA.pkg
Removed cat9k-guestshell.17.09.01.SPA.pkg
Removed cat9k-rpbases.17.09.01.SPA.pkg
Removed cat9k-rpboot.17.09.01.SPA.pkg
Removed cat9k-sipbases.17.09.01.SPA.pkg
Removed cat9k-sipspace.17.09.01.SPA.pkg
Removed cat9k-srdriver.17.09.01.SPA.pkg
Removed cat9k-webui.17.09.01.SPA.pkg
Removed cat9k-wlc.17.09.01.SPA.pkg
New files list:
Added cat9k-cc_srdriver.17.10.01.SPA.pkg
Added cat9k-espbases.17.10.01.SPA.pkg
Added cat9k-guestshell.17.10.01.SPA.pkg
Added cat9k-lni.17.10.01.SPA.pkg
Added cat9k-rpbases.17.10.01.SPA.pkg
Added cat9k-rpboot.17.10.01.SPA.pkg
Added cat9k-sipbases.17.10.01.SPA.pkg
```

```

        Added cat9k-sipsa.17.10.01.SPA.pkg
        Added cat9k-srdriver.17.10.01.SPA.pkg
        Added cat9k-webui.17.10.01.SPA.pkg
        Added cat9k-wlc.17.10.01.SPA.pkg
    Finished list of software package changes
[4] Finished Activate on switch 4
Checking status of Activate on [1 2 3 4]
Activate: Passed on [1 2 3 4]
Finished Activate
--- Starting Commit ---
Performing Commit on all members
    [1] Commit package(s) on switch 1
    [1] Finished Commit on switch 1
    [2] Commit package(s) on switch 2
    [2] Finished Commit on switch 2
    [3] Commit package(s) on switch 3
    [3] Finished Commit on switch 3
    [4] Commit package(s) on switch 4
    [4] Finished Commit on switch 4
Checking status of Commit on [1 2 3 4]
Commit: Passed on [1 2 3 4]
Finished Commit

Send model notification for install_add_activate_commit before reload
[1 2 3 4]: Performing Upgrade_Service

*Nov 14 15:47:28.095: %IOSXEBOOT-4-BOOTLOADER_UPGRADE: (local/local): Starting boot preupgrade
300+0 records in
300+0 records out
307200 bytes (307 kB, 300 KiB) copied, 0.315817 s, 973 kB/s

AppGigabitEthernet port has the latest Firmware

MM [1] MCU version 191 sw ver 196
MM [2] MCU version 191 sw ver 196

Front-end Microcode IMG MGR: found 4 microcode images for 1 device.
Image for front-end 0: /tmp/microcode_update/front_end/fe_type_6_0 update needed: no
Image for front-end 0: /tmp/microcode_update/front_end/fe_type_6_1 update needed: yes
Image for front-end 0: /tmp/microcode_update/front_end/fe_type_6_2 update needed: yes
Image for front-end 0: /tmp/microcode_update/front_end/fe_type_6_3 update needed: no
Front-end Microcode IMG MGR: Preparing to program device microcode...
Front-end Microcode IMG MGR: Preparing to program device[0], index=0 ...594412 bytes....
Skipped[0].
Front-end Microcode IMG MGR: Preparing to program device[0], index=1 ...440976 bytes.
Front-end Microcode IMG MGR: Programming device 0...rwRrrrrrw..
0%.....10%
.....20%
.....30%
.....40%
.....50%
.....60%
.....70%
.....80%
.....90%
.....100%
Front-end Microcode IMG MGR: Preparing to program device[0], index=2 ...24506 bytes.
Front-end Microcode IMG MGR: Programming device
0...rrrrrw..0%...10%...20%...30%...40%...50%...60%...70%...80%...90%...100%w
Waiting for MCU to come up .....Rr!
Front-end Microcode IMG MGR: Microcode programming complete for device 0.
Front-end Microcode IMG MGR: Preparing to program device[0], index=3 ...90974 bytes....
Skipped[3].
Front-end Microcode IMG MGR: Microcode programming complete in 298 seconds

```

```

MCU UPGRADE COMPLETED!!... SUCCESS: Upgrade_Service finished
Install will reload the system now!
SUCCESS: install_add_activate_commit Mon Nov 14 15:52:33 PDT 2022
Switch#
Chassis 2 reloading, reason - Reload command
Nov 14 15:52:36.588: %PMAN-5-EXITACTION: F0/0: pvp: Process manager is exiting: reload fp
action requested
Nov 14 15:52:38.199: %PMAN-5-EXITACTION: R0/0: pvp: Process manager is exiting: rp processes
exit with reload switch code

Initializing Hardware.....

System Bootstrap, Version 17.3.1r[FC2], RELEASE SOFTWARE (P)
Compiled Wed 11/09/2022 12:55:25.08 by rel

Current ROMMON image : Primary
Last reset cause      : SoftwareReload
C9300-48P platform with 8388608 Kbytes of main memory

Preparing to autoboot. [Press Ctrl-C to interrupt] 0
boot: attempting to boot from [flash:packages.conf]
boot: reading file packages.conf
#####
#####

Waiting for 120 seconds for other switches to boot
#####
Switch number is 2
<output truncated>

```

Note

The system reloads automatically after executing the **install add file activate commit** command. You do not have to manually reload the system.

Step 5 Verify installation

After the software has been successfully installed, use the **dir flash:** command to verify that the flash partition has ten new .pkg files and two .conf files.

a) **dir flash:*.pkg**

The following is sample output of the **dir flash:*.pkg** command:

```

Switch# dir flash:*.pkg

Directory of flash:/
75140 -rw- 2012104      Jul 17 2022 09:52:41 -07:00 cat9k-cc_srdriver.17.09.01.SPA.pkg
475141 -rw- 70333380    Jul 17 2022 09:52:44 -07:00 cat9k-esppbase.17.09.01.SPA.pkg
475142 -rw- 13256       Jul 17 2022 09:52:44 -07:00 cat9k-guestshell.17.09.01.SPA.pkg
475143 -rw- 349635524   Jul 17 2022 09:52:54 -07:00 cat9k-rpbase.17.09.01.SPA.pkg
475149 -rw- 24248187    Jul 17 2022 09:53:02 -07:00 cat9k-rpboot.17.09.01.SPA.pkg
475144 -rw- 25285572    Jul 17 2022 09:52:55 -07:00 cat9k-sipbase.17.09.01.SPA.pkg
475145 -rw- 20947908    Jul 17 2022 09:52:55 -07:00 cat9k-sipspa.17.09.01.SPA.pkg
475146 -rw- 2962372     Jul 17 2022 09:52:56 -07:00 cat9k-srdriver.17.09.01.SPA.pkg
475147 -rw- 13284288    Jul 17 2022 09:52:56 -07:00 cat9k-webui.17.09.01.SPA.pkg
475148 -rw- 13248       Jul 17 2022 09:52:56 -07:00 cat9k-wlc.17.09.01.SPA.pkg

491524 -rw- 25711568   Nov 14 2022 11:49:33 -07:00 cat9k-cc_srdriver.17.10.01.SPA.pkg

```

```

491525 -rw- 78484428 Nov 14 2022 11:49:35 -07:00 cat9k-espbases.17.10.01.SPA.pkg
491526 -rw- 1598412 Nov 14 2022 11:49:35 -07:00 cat9k-guestshell.17.10.01.SPA.pkg
491527 -rw- 404153288 Nov 14 2022 11:49:47 -07:00 cat9k-rpbase.17.10.01.SPA.pkg
491533 -rw- 31657374 Nov 14 2022 11:50:09 -07:00 cat9k-rpboot.17.10.01.SPA.pkg
491528 -rw- 27681740 Nov 14 2022 11:49:48 -07:00 cat9k-sipbase.17.10.01.SPA.pkg
491529 -rw- 52224968 Nov 14 2022 11:49:49 -07:00 cat9k-sipsps.17.10.01.SPA.pkg
491530 -rw- 31130572 Nov 14 2022 11:49:50 -07:00 cat9k-srdriver.17.10.01.SPA.pkg
491531 -rw- 14783432 Nov 14 2022 11:49:51 -07:00 cat9k-webui.17.10.01.SPA.pkg
491532 -rw- 9160 Nov 14 2022 11:49:51 -07:00 cat9k-wlc.17.10.01.SPA.pkg

```

```

11353194496 bytes total (9544245248 bytes free)
Switch#

```

b) **dir flash:*.conf**

The following is sample output of the **dir flash:*.conf** command. It displays the .conf files in the flash partition; note the two .conf files:

- **packages.conf**—the file that has been re-written with the newly installed .pkg files
- **cat9k_iosxe.17.10.01.SPA.conf**— a backup copy of the newly installed packages.conf file

```

Switch# dir flash:*.conf

Directory of flash:/*.conf
Directory of flash:/

434197 -rw- 7406 Nov 14 2022 10:59:16 -07:00 packages.conf
516098 -rw- 7406 Nov 14 2022 10:58:08 -07:00 cat9k_iosxe.17.10.01.SPA.conf
11353194496 bytes total (8963174400 bytes free)

```

Step 6 **show version**

After the image boots up, use this command to verify the version of the new image.

The following sample output of the **show version** command displays the Cisco IOS XE Dublin 17.10.1 image on the device:

```

Switch# show version
Cisco IOS XE Software, Version 17.10.01
Cisco IOS Software [Dublin], Catalyst L3 Switch Software (CAT9K_IOSXE), Version 17.10.1,
RELEASE SOFTWARE (fcl)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2022 by Cisco Systems, Inc.
<output truncated>

```

Downgrading in Install Mode

Follow these instructions to downgrade from one release to another, in install mode. To perform a software image downgrade, you must be booted into IOS through **boot flash:packages.conf**.

Before you begin

Note that you can use this procedure for the following downgrade scenarios:

When downgrading from ...	Use these commands...	To downgrade to...
Cisco IOS XE Dublin 17.10.x	Either install commands or request platform software command ⁴ .	Cisco IOS XE Cupertino 17.9.x or earlier releases.

⁴ The **request platform software** commands are deprecated. So although they are still visible on the CLI, we recommend that you use **install** commands.



Note New switch models that are introduced in a release cannot be downgraded. The release in which a switch model is introduced is the minimum software version for that model.

The sample output in this section shows downgrade from Cisco IOS XE Dublin 17.10.1 to Cisco IOS XE Cupertino 17.9.1, using **install** commands.

Microcode Downgrade Prerequisite:

Starting from Cisco IOS XE Gibraltar 16.12.1, a new microcode is introduced to support IEEE 802.3bt Type 3 standard for UPOE switches in the series (C9300-24U, C9300-48U, C9300-24UX, C9300-48UXM, C9300-48UN). The new microcode is not backward-compatible with some releases, because of which you must also downgrade the microcode when you downgrade to one of these releases. If the microcode is not downgraded, PoE features will be impacted after the downgrade.

Depending on the *release* you are downgrading to and the *commands* you use to downgrade, review the table below for the action you may have to take:

When downgrading from ...	To one of These Releases	by Using...	Action For Microcode Downgrade
Cisco IOS XE Gibraltar 16.12.1 or a later release	Cisco IOS XE Everest 16.6.1 through Cisco IOS XE Everest 16.6.6	install commands	Microcode will roll back automatically as part of the software installation. No further action is required.
	Cisco IOS XE Fuji 16.9.1 through Cisco IOS XE Fuji 16.9.2	request platform software commands or or bundle boot	Manually downgrade the microcode before downgrading the software image. Enter the hw-module mcu rollback command in global configuration mode, to downgrade microcode.

Procedure

Step 1

Clean-up

install remove inactive

Use this command to clean-up old installation files in case of insufficient space and to ensure that you have at least 1GB of space in flash, to expand a new image.

The following sample output displays the cleaning up of unused files, by using the **install remove inactive** command:


```

Switch# install remove inactive

install_remove: START Mon Nov 07 19:51:48 PDT 2022
Cleaning up unnecessary package files
Scanning boot directory for packages ... done.
Preparing packages list to delete ...
  cat9k-cc_srdriver.17.09.01.SSA.pkg
    File is in use, will not delete.
  cat9k-espbases.17.09.01.SSA.pkg
    File is in use, will not delete.
  cat9k-guestshell.17.09.01.SSA.pkg
    File is in use, will not delete.
  cat9k-rpbases.17.09.01.SSA.pkg
    File is in use, will not delete.
  cat9k-rpboot.17.09.01.SSA.pkg
    File is in use, will not delete.
  cat9k-sipbases.17.09.01.SSA.pkg
    File is in use, will not delete.
  cat9k-sipspace.17.09.01.SSA.pkg
    File is in use, will not delete.
  cat9k-srdriver.17.09.01.SSA.pkg
    File is in use, will not delete.
  cat9k-webui.17.09.01.SSA.pkg
    File is in use, will not delete.
  cat9k-wlc.17.09.01.SSA.pkg
    File is in use, will not delete.
  packages.conf
    File is in use, will not delete.
done.
SUCCESS: No extra package or provisioning files found on media. Nothing to clean.

SUCCESS: install_remove Mon Nov 07 11:42:39 PDT 2022

```

Step 2 Copy new image to flash

a) **copy tftp:[//location]/directory]/filenameflash:**

Use this command to copy the new image from a TFTP server to flash memory. The location is either an IP address or a host name. The filename is specified relative to the directory used for file transfers. Skip this step if you want to use the new image from a TFTP server.

```

Switch# copy tftp://10.8.0.6/image/cat9k_iosxe.17.09.01.SPA.bin flash:
Destination filename [cat9k_iosxe.17.09.01.SPA.bin]?
Accessing tftp://10.8.0.6//cat9k_iosxe.17.09.01.SPA.bin...
Loading /cat9k_iosxe.17.09.01.SPA.bin from 10.8.0.6 (via GigabitEthernet0/0):
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
[OK - 508584771 bytes]
508584771 bytes copied in 101.005 secs (5035244 bytes/sec)

```

b) **dir flash:**

Use this command to confirm that the image has been successfully copied to flash.

```

Switch# dir flash:*.bin
Directory of flash:/*.bin

Directory of flash:/

434184 -rw- 508584771 Nov 07 2022 13:35:16 -07:00 cat9k_iosxe.17.09.01.SPA.bin
11353194496 bytes total (9055866880 bytes free)

```

Step 3 Set boot variablea) **boot system flash:packages.conf**

Use this command to set the boot variable to **flash:packages.conf**.

```
Switch(config)# boot system flash:packages.conf
```

b) **no boot manual**

Use this command to configure the switch to auto-boot.

```
Switch(config)# no boot manual
Switch(config)# exit
```

c) **write memory**

Use this command to save boot settings.

```
Switch# write memory
```

d) **show boot**

Use this command to verify the boot variable (packages.conf) and manual boot setting (no):

```
Switch# show boot
Current Boot Variables:
BOOT variable = flash:packages.conf;

Boot Variables on next reload:
BOOT variable = flash:packages.conf;
Manual Boot = no
Enable Break = yes
Boot Mode = DEVICE
iPXE Timeout = 0
```

Step 4 Downgrade software image**install add file activate commit**

Use this command to install the image.

We recommend that you point to the source image on your TFTP server or the flash drive of the *active* switch, if you have copied the image to flash memory. If you point to an image on the flash or USB drive of a member switch (instead of the active), you must specify the exact flash or USB drive - otherwise installation fails. For example, if the image is on the flash drive of member switch 3 (flash-3): **Switch# install add file flash-3:cat9k_iosxe.17.09.01.SPA.bin activate commit.**

The following example displays the installation of the Cisco IOS XE Cupertino 17.9.1 software image to flash, by using the **install add file activate commit** command.

```
Switch# install add file flash:cat9k_iosxe.17.09.01.SPA.bin activate commit
install_add_activate_commit: START Mon Nov 07 14:59:46 PDT 2022
install_add_activate_commit: Adding PACKAGE
install_add_activate_commit: Checking whether new add is allowed ....

--- Starting initial file syncing ---
[1]: Copying flash:cat9k_iosxe.17.09.01.SPA.bin from switch 1 to switch 2 3 4
[2 3 4]: Finished copying to switch 2 switch 3 switch 4
Info: Finished copying flash:cat9k_iosxe.17.09.01.SPA.bin to the selected switch(es)
Finished initial file syncing

--- Starting Add ---
Performing Add on all members
^[[A [1] Add package(s) on switch 1
```

```
[1] Finished Add on switch 1
[2] Add package(s) on switch 2
[2] Finished Add on switch 2
[3] Add package(s) on switch 3
[3] Finished Add on switch 3
[4] Add package(s) on switch 4
[4] Finished Add on switch 4
Checking status of Add on [1 2 3 4]
Add: Passed on [1 2 3 4]
Finished Add

Image added. Version: 17.09.01.0.306
install_add_activate_commit: Activating PACKAGE
Following packages shall be activated:
/flash/cat9k-wlc.17.09.01.SPA.pkg
/flash/cat9k-webui.17.09.01.SPA.pkg
/flash/cat9k-srdriver.17.09.01.SPA.pkg
/flash/cat9k-sipspa.17.09.01.SPA.pkg
/flash/cat9k-sipbase.17.09.01.SPA.pkg
/flash/cat9k-rpboot.17.09.01.SPA.pkg
/flash/cat9k-rpbase.17.09.01.SPA.pkg
/flash/cat9k-guestshell.17.09.01.SPA.pkg
/flash/cat9k-esppbase.17.09.01.SPA.pkg
/flash/cat9k-cc_srdriver.17.09.01.SPA.pkg
--- Starting Activate ---
Performing Activate on all members
[1] Activate package(s) on switch 1
--- Starting list of software package changes ---
Old files list:
  Removed cat9k-cc_srdriver.17.10.01.SPA.pkg
  Removed cat9k-esppbase.17.10.01.SPA.pkg
  Removed cat9k-guestshell.17.10.01.SPA.pkg
  Removed cat9k-lni.17.10.01.SPA.pkg
  Removed cat9k-rpbase.17.10.01.SPA.pkg
  Removed cat9k-rpboot.17.10.01.SPA.pkg
  Removed cat9k-sipbase.17.10.01.SPA.pkg
  Removed cat9k-sipspa.17.10.01.SPA.pkg
  Removed cat9k-srdriver.17.10.01.SPA.pkg
  Removed cat9k-webui.17.10.01.SPA.pkg
  Removed cat9k-wlc.17.10.01.SPA.pkg
New files list:
  Added cat9k-cc_srdriver.17.09.01.SPA.pkg
  Added cat9k-esppbase.17.09.01.SPA.pkg
  Added cat9k-guestshell.17.09.01.SPA.pkg
  Added cat9k-rpbase.17.09.01.SPA.pkg
  Added cat9k-rpboot.17.09.01.SPA.pkg
  Added cat9k-sipbase.17.09.01.SPA.pkg
  Added cat9k-sipspa.17.09.01.SPA.pkg
  Added cat9k-srdriver.17.09.01.SPA.pkg
  Added cat9k-webui.17.09.01.SPA.pkg
  Added cat9k-wlc.17.09.01.SPA.pkg
Finished list of software package changes
[1] Finished Activate on switch 1
[2] Activate package(s) on switch 2
--- Starting list of software package changes ---
Old files list:
  Removed cat9k-cc_srdriver.17.10.01.SPA.pkg
  Removed cat9k-esppbase.17.10.01.SPA.pkg
  Removed cat9k-guestshell.17.10.01.SPA.pkg
  Removed cat9k-lni.17.10.01.SPA.pkg
  Removed cat9k-rpbase.17.10.01.SPA.pkg
  Removed cat9k-rpboot.17.10.01.SPA.pkg
  Removed cat9k-sipbase.17.10.01.SPA.pkg
  Removed cat9k-sipspa.17.10.01.SPA.pkg
```

```

Removed cat9k-srdriver.17.10.01.SPA.pkg
Removed cat9k-webui.17.10.01.SPA.pkg
Removed cat9k-wlc.17.10.01.SPA.pkg
New files list:
Added cat9k-cc_srdriver.17.09.01.SPA.pkg
Added cat9k-espbases.17.09.01.SPA.pkg
Added cat9k-guestshell.17.09.01.SPA.pkg
Added cat9k-rpbases.17.09.01.SPA.pkg
Added cat9k-rpboot.17.09.01.SPA.pkg
Added cat9k-sipbases.17.09.01.SPA.pkg
Added cat9k-sipspace.17.09.01.SPA.pkg
Added cat9k-srdriver.17.09.01.SPA.pkg
Added cat9k-webui.17.09.01.SPA.pkg
Added cat9k-wlc.17.09.01.SPA.pkg
Finished list of software package changes
[2] Finished Activate on switch 2
[3] Activate package(s) on switch 3
--- Starting list of software package changes ---
Old files list:
Removed cat9k-cc_srdriver.17.10.01.SPA.pkg
Removed cat9k-espbases.17.10.01.SPA.pkg
Removed cat9k-guestshell.17.10.01.SPA.pkg
Removed cat9k-lni.17.10.01.SPA.pkg
Removed cat9k-rpbases.17.10.01.SPA.pkg
Removed cat9k-rpboot.17.10.01.SPA.pkg
Removed cat9k-sipbases.17.10.01.SPA.pkg
Removed cat9k-sipspace.17.10.01.SPA.pkg
Removed cat9k-srdriver.17.10.01.SPA.pkg
Removed cat9k-webui.17.10.01.SPA.pkg
Removed cat9k-wlc.17.10.01.SPA.pkg
New files list:
Added cat9k-cc_srdriver.17.09.01.SPA.pkg
Added cat9k-espbases.17.09.01.SPA.pkg
Added cat9k-guestshell.17.09.01.SPA.pkg
Added cat9k-rpbases.17.09.01.SPA.pkg
Added cat9k-rpboot.17.09.01.SPA.pkg
Added cat9k-sipbases.17.09.01.SPA.pkg
Added cat9k-sipspace.17.09.01.SPA.pkg
Added cat9k-srdriver.17.09.01.SPA.pkg
Added cat9k-webui.17.09.01.SPA.pkg
Added cat9k-wlc.17.09.01.SPA.pkg
Finished list of software package changes
[3] Finished Activate on switch 3
[4] Activate package(s) on switch 4
--- Starting list of software package changes ---
Old files list:
Removed cat9k-cc_srdriver.17.10.01.SPA.pkg
Removed cat9k-espbases.17.10.01.SPA.pkg
Removed cat9k-guestshell.17.10.01.SPA.pkg
Removed cat9k-lni.17.10.01.SPA.pkg
Removed cat9k-rpbases.17.10.01.SPA.pkg
Removed cat9k-rpboot.17.10.01.SPA.pkg
Removed cat9k-sipbases.17.10.01.SPA.pkg
Removed cat9k-sipspace.17.10.01.SPA.pkg
Removed cat9k-srdriver.17.10.01.SPA.pkg
Removed cat9k-webui.17.10.01.SPA.pkg
Removed cat9k-wlc.17.10.01.SPA.pkg
New files list:
Added cat9k-cc_srdriver.17.09.01.SPA.pkg
Added cat9k-espbases.17.09.01.SPA.pkg
Added cat9k-guestshell.17.09.01.SPA.pkg
Added cat9k-rpbases.17.09.01.SPA.pkg
Added cat9k-rpboot.17.09.01.SPA.pkg
Added cat9k-sipbases.17.09.01.SPA.pkg

```

```

        Added cat9k-sipsa.17.09.01.SPA.pkg
        Added cat9k-srdriver.17.09.01.SPA.pkg
        Added cat9k-webui.17.09.01.SPA.pkg
        Added cat9k-wlc.17.09.01.SPA.pkg
    Finished list of software package changes
[4] Finished Activate on switch 4
Checking status of Activate on [1 2 3 4]
Activate: Passed on [1 2 3 4]
Finished Activate

--- Starting Commit ---
Performing Commit on all members
    [1] Commit package(s) on switch 1
    [1] Finished Commit on switch 1
    [2] Commit package(s) on switch 2
    [2] Finished Commit on switch 2
    [3] Commit package(s) on switch 3
    [3] Finished Commit on switch 3
    [4] Commit package(s) on switch 4
    [4] Finished Commit on switch 4
Checking status of Commit on [1 2 3 4]
Commit: Passed on [1 2 3 4]
Finished Commit

Send model notification for install_add_activate_commit before reload
[1 2 3 4]: Performing Upgrade_Service
300+0 records in
300+0 records out
307200 bytes (307 kB, 300 KiB) copied, 0.316195 s, 972 kB/s
MM [1] MCU version 196 sw ver 191
MM [2] MCU version 196 sw ver 191

MCU UPGRADE IN PROGRESS... PLEASE DO NOT POWER CYCLE!!

Front-end Microcode IMG MGR: found 4 microcode images for 1 device.
Image for front-end 0: /tmp/microcode_update/front_end/fe_type_6_0 update needed: no
Image for front-end 0: /tmp/microcode_update/front_end/fe_type_6_1 update needed: yes
Image for front-end 0: /tmp/microcode_update/front_end/fe_type_6_2 update needed: yes
Image for front-end 0: /tmp/microcode_update/front_end/fe_type_6_3 update needed: no

Front-end Microcode IMG MGR: Preparing to program device microcode...
Front-end Microcode IMG MGR: Preparing to program device[0], index=0 ...594412 bytes....
Skipped[0].
Front-end Microcode IMG MGR: Preparing to program device[0], index=1 ...440688 bytes.
Front-end Microcode IMG MGR: Programming device 0...rwRrrrrrrw
..0%.....10%
.....20%
.....30%
.....40%
.....50%
.....60%
.....70%
.....80%
.....90%
.....100%

Front-end Microcode IMG MGR: Preparing to program device[0], index=2 ...24506 bytes.
Front-end Microcode IMG MGR: Programming device
0...rrrrrrw..0%...10%...20%...30%...40%...50%...60%...70%...80%...90%...100%w
Wating for MCU to come up .....Rr!
Front-end Microcode IMG MGR: Microcode programming complete for device 0.
Front-end Microcode IMG MGR: Preparing to program device[0], index=3 ...90974 bytes....
Skipped[3].
Front-end Microcode IMG MGR: Microcode programming complete in 295 seconds

```

```

MCU UPGRADE COMPLETED!!... SUCCESS: Upgrade_Service finished

Install will reload the system now!
SUCCESS: install_add_activate_commit Mon Nov 07 15:14:57 PDT 2022
stack-4mnyq#
Chassis 1 reloading, reason - Reload command
Nov 07 15:15:01.382: %PMAN-5-EXITACTION: F0/0: pvp: Process manager is exiting: reload fp
action requested
Nov 07 15:15:03.101: %PMAN-5-EXITACTION: R0/0: pvp: Process manager is exiting: rp processes
exit with reload switch code

Initializing Hardware.....

System Bootstrap, Version 17.3.1r[FC2], RELEASE SOFTWARE (P)
Compiled Wed 11/09/2022 12:55:25.08 by rel

Current ROMMON image : Primary
Last reset cause      : SoftwareReload
C9300-24UX platform with 8388608 Kbytes of main memory

switch: boot
boot: attempting to boot from [flash:packages.conf]
boot: reading file packages.conf
#
#####
#####
#####

Waiting for 120 seconds for other switches to boot
Switch is in STRAGGLER mode, waiting for active Switch to boot
Active Switch has booted up, starting discovery phase

Switch number is 1
All switches in the stack have been discovered. Accelerating discovery

Switch console is now available

Press RETURN to get started.

```

Note

The system reloads automatically after executing the **install add file activate commit** command. You do not have to manually reload the system.

Step 5

Verify version

show version

After the image boots up, use this command to verify the version of the new image.

Note

When you downgrade the software image, the ROMMON version does not downgrade. It remains updated.

The following sample output of the **show version** command displays the Cisco IOS XE Cupertino 17.9.1 image on the device:

```

Switch# show version
Cisco IOS XE Software, Version 17.09.01
Cisco IOS Software [Cupertino], Catalyst L3 Switch Software (CAT9K_IOSXE), Version 17.9.1,
RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2022 by Cisco Systems, Inc.
<output truncated>

```

Field-Programmable Gate Array Version Upgrade

A field-programmable gate array (FPGA) is a type of programmable memory device that exists on Cisco switches. They are re-configurable logic circuits that enable the creation of specific and dedicated functions.

To check the current FPGA version, enter the **version -v** command in ROMMON mode.



Note

- Not every software release has a change in the FPGA version.
 - The version change occurs as part of the regular software upgrade and you do not have to perform any other additional steps.
-



CHAPTER 9

Caveats

- [Cisco Bug Search Tool](#), on page 45
- [Open Caveats in Cisco IOS XE Dublin 17.10.x](#), on page 45
- [Resolved Caveats in Cisco IOS XE Dublin 17.10.1](#), on page 45

Cisco Bug Search Tool

The Cisco [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 Dublin 17.10.x

There are no open caveats in this release.

Resolved Caveats in Cisco IOS XE Dublin 17.10.1

Identifier	Applicable Models	Headline
CSCwa06718	9300L	Link between 9500x/9600X QSA/SFP+ to 9300L 10G doesn't come up after reload
CSCwb76541	All models	IOSd Crashes in "Call Home cert update" Process During Trustpool Download
CSCwc29733	9300L	C9300L uplink using GLC-SX-MMD not coming up
CSCwc83686	9300	C9000 - IPv6 Source Guard filter not programmed in hardware when different SISF polices are attached

Identifier	Applicable Models	Headline
CSCwc85671	9300, 9300L	"license boot level" command line duplicated if there is no DNA add-on license
CSCwc88452	9300	hw-module breakout command not working on C9300-48UN IOS version 17.6.3



CHAPTER 10

Additional Information

- [Troubleshooting](#), on page 47
- [Related Documentation](#), on page 47
- [Communications, Services, and Additional Information](#), on page 47

Troubleshooting

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

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

Go to **Product Support** and select your product from the list or enter the name of your product. Look under Troubleshoot and Alerts, to find information for the problem that you are experiencing.

Related Documentation

Information about Cisco IOS XE at this URL: <https://www.cisco.com/c/en/us/products/ios-nx-os-software/ios-xe/index.html>

All support documentation for Cisco Catalyst 9300 Series Switches is at this URL: <https://www.cisco.com/c/en/us/support/switches/catalyst-9300-series-switches/tsd-products-support-series-home.html>

Cisco Validated Designs documents at this URL: <https://www.cisco.com/go/designzone>

To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL: <https://cfnng.cisco.com/mibs>

Communications, Services, and Additional Information

- To receive timely, relevant information from Cisco, sign up at [Cisco Profile Manager](#).
- To get the business results you're looking for with the technologies that matter, visit [Cisco Services](#).
- To submit a service request, visit [Cisco Support](#).
- To discover and browse secure, validated enterprise-class apps, products, solutions and services, visit [Cisco DevNet](#).

- To obtain general networking, training, and certification titles, visit [Cisco Press](#).
- To find warranty information for a specific product or product family, access [Cisco Warranty Finder](#).

Cisco Bug Search Tool

[Cisco Bug Search Tool](#) (BST) is a web-based tool that acts as a gateway to the Cisco bug tracking system that maintains a comprehensive list of defects and vulnerabilities in Cisco products and software. BST provides you with detailed defect information about your products and software.

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