Release Notes for Cisco Catalyst IE9300 Rugged Series Switches, Cisco IOS XE Cupertino 17.7.x

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Cisco Catalyst IE9300 Rugged Series Switches

This document provides release information for the following Catalyst IE switches:

- IE9310 GE Fiber

- IE9320 GE Fiber

Cisco Catalyst IE9300 Rugged Series Switches provide rugged and secure switching infrastructure for harsh environments. It is suitable for industrial Ethernet applications, including manufacturing, utility substations, intelligent transportation systems (ITSs), rail transportation, and other similar deployments.

The switch fulfills the need for a high-density SFP, rack-, or wall-mount switch that can function as a software-defined (SD)-Access fabric edge. It provides end-to-end architectural uniformity in the Cisco Digital Network Architecture (DNA) for Internet of Things (IoT) connected communities and extended enterprises.

In industrial environments, the switch can be connected to any Ethernet-enabled industrial communication devices. These devices include programmable logic controllers (PLCs), human-machine interfaces (HMIs), drives, sensors, and input and output (I/O) devices.

Note The documentation set for this product strives to use bias-free language. For purposes of this documentation set, bias-free is defined as language that does not imply discrimination based on age, disability, gender, racial identity, ethnic identity, sexual orientation, socioeconomic status, and intersectionality. Exceptions may be present in the documentation due to language that is hardcoded in the user interfaces of the product software, language used based on standards documentation, or language that is used by a referenced third-party product.

New Features in Cisco Catalyst IE9300 Rugged Series Switches

The following features apply to all versions of the IE9310 GE Fiber and IE9320 GE Fiber switches unless mentioned.

Feature Name	License Level	Description	Supported Switches
Application Visibility and Control (AVC)	Network Advantage and DNA Advantage	AVC classifies applications using deep packet inspection techniques with the Network-Based Application Recognition (NBAR2) engine. You can configure AVC on wired access ports for standalone switches. You can configure wired AVC Flexible NetFlow (FNF) on an interface to provide client, server, and application statistics per interface.	• IE-9310-26S2C-A • IE-9310-26S2C-E • IE-9320-26S2C-A • IE-9320-26S2C-E
Encapsulated remote switched port (ERSPAN)	Network Advantage with DNAC Advantage	Cisco ERSPAN allows you to monitor traffic on ports or VLANs and to send the monitored traffic to destination ports. ERSPAN sends traffic to a network analyzer, such as a Switch Probe device or a Remote Monitoring (RMON) probe. ERSPAN supports source ports, source VLANs, and destination ports on different devices, which help remote monitoring of multiple devices across a network.	• IE-9310-26S2C-A • IE-9310-26S2C-E • IE-9320-26S2C-A • IE-9320-26S2C-E

Feature Name	License Level	Description	Supported Switches
Layer 3 Network Address Translation (NAT)	Network Advantage	NAT is designed for IP address conservation. It enables private IP networks that use unregistered IP addresses to connect to the Internet. NAT usually connects two networks together, and translates the private (not globally unique) addresses in the internal network into global routable addresses. It does so before packets are forwarded onto another network.	• IE-9310-26S2C-A • IE-9310-26S2C-E • IE-9320-26S2C-A • IE-9320-26S2C-E
Parallel Redundancy Protocol (PRP)	Network Essentials	PRP is designed to provide hitless redundancy (zero packet loss during a failure in LAN A or LAN B). With PRP, the end enodes and the switch (in certain modes) implement redundancy by connecting to two networks (such as LAN A and LAN B) and transmitting duplicate frames. One frame is on each independent, disjointed, parallel network. The PRP switch acts as a Dual Attached Node (DAN) and provides connectivity to end-nodes behind it over the two parallel networks (such as LAN A and LAN B).	• IE-9320-26S2C-A • IE-9320-26S2C-E

Feature Name	License Level	Description	Supported Switches
Precision Time Protocol (PTP)	Network Essentials	PTP synchronizes the clocks in packet-based networks that include distributed device clocks of varying precision and stability. It is designed specifically for industrial, networked measurement and control systems. It is optimal for use in distributed systems because it requires minimal bandwidth and little processing overhead.	• IE-9310-26S2C-A • IE-9310-26S2C-E • IE-9320-26S2C-A • IE-9320-26S2C-E

Important Notes

Accessing Hidden Commands

Hidden commands have always been present in Cisco IOS XE, but were not equipped with CLI help. This means that entering a question mark (?) at the system prompt did not display the list of available commands. Such hidden commands are only meant to assist Cisco TAC in advanced troubleshooting and are therefore not documented. For more information about CLI help, see the *Using the Command-Line Interface* → *Understanding the Help System* chapter of the Command Reference document.

This section provides information about hidden commands in Cisco IOS XE and the security measures in place, when they are accessed. Hidden commands are meant to assist Cisco TAC in advanced troubleshooting and are therefore not documented. For more information about CLI help, see the *Using the Command-Line Interface* → *Understanding the Help System* chapter of the Command Reference document.

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. Entering enter a question mark (?) at the system prompt displays 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 the 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 that are displayed on the CLI, for which the system does NOT generate the %PARSER-5-HIDDEN syslog message.

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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.

Cisco Catalyst IE9300 Rugged Series Switch Model Numbers

The following table lists the supported hardware models and the default license levels that they are delivered with.

Model Number	Default License Level	Stacking Support	Description
IE-9310-26S2C-A	Network Advantage	No	• *Total ports*: 28
IE-9310-26S2C-E	Network Essentials		• *SFP uplinks*: 4x 1-Gb SFP
IE-9320-26S2C-A	Network Advantage	Yes	*SFP downlinks*: 22x 1-Gb SFP, 2x 1-Gb dual-media ports
IE-9320-26S2C-E	Network Essentials		• *Power supplies*: Support for field-replaceable, redundant AC or DC power supplies.

All Cisco Catalyst IE9300 Rugged Series Switches have 4 GB of DRAM, four alarm inputs, and one alarm output. Other I/O include the following:

- SD-cards socket
- Power input
- RJ-45 (RS-232) console
- Micro-USB console
- USB-A host port

Note This document uses the term IE9310 GE Fiber when referring to both IE-9310-26S2C-A and IE-9310-26S2C-E switches. This document uses the term IE9320 GE Fiber when referring to both IE-9320-26S2C-A and IE-9320-26S2C-E switches.

Upgrading the Switch Software

This section covers the various aspects of upgrading or downgrading the device software.

Finding the Software Version

The package files for the Cisco IOS XE software can be found on the system board flash device flash (flash:) or external SDFlash (sdflash:).

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 17.7.x

The following table provides the filenames for the IOS XE 17.7.x software image for Cisco Catalyst IE3x00 Rugged, IE3400 Heavy Duty, and ESS3300 Series Switches.

Release	Image Type	Filename
Cisco IOS XE.17.7.1	Universal	ie3x00-universalk9.17.07.01.SPA.bin
		ess3x00-universalk9.17.07.01.SPA.bin
	NPE	ie3x00-universalk9_npe.17.07.01.SPA.bin

Software Installation Commands

Summary of Software Installation Commands	
To install and activate the specified file, and to commit changes to be persistent across reloads—**install add file** *filename* [**activate commit**]	
add file tftp: *filename*	Copies the install file package from a remote location to the device and performs a compatibility check for the platform and image versions.

Summary of Software Installation Commands	
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.
remove	Deletes all unused and inactive software installation files.

Licensing

This section provides information about the licensing packages for features available on Cisco Catalyst IE9300 Rugged Series Switches.

License Levels

The software features available on Cisco Catalyst IE9300 Rugged Series Switches fall under these 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

Add-on licenses require a Network Essentials or Network Advantage as a prerequisite. The features available with add-on license levels provide Cisco innovations on the switch, and 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 https://cfnng.cisco.com. An account on Cisco.com is not required.

Smart Licensing Using Policy

Smart Licensing Using Policy, which is an enhanced version of Smart Licensing, is the default and the only supported method to manage licenses.

Smart Licensing using Policy provides a licensing solution that does not interrupt the operations of your network. Instead, it enables a compliance relationship to account for the hardware and software licenses you purchase and use.

With this licensing model, you do not have to complete any licensing-specific operations, such as registering or generating keys before you start using the software and the licenses that are tied to it. Only export-controlled and enforced licenses require Cisco authorization *before* use. License usage is recorded on your device with timestamps, and the required workflows can be completed later.

Multiple options are available for license usage reporting – this depends on the topology you implement. You can use the Cisco Smart Licensing Utility (CSLU) Windows application, or report usage information directly to Cisco Smart Software Manager (CSSM). A provision for offline reporting for air-gapped networks, where you download usage information and upload to CSSM, is also available.

Starting with this release, Smart Licensing Using Policy is automatically enabled on the device. This is also the case when you upgrade to this release.

By default, your Smart Account and Virtual Account in CSSM is enabled for Smart Licensing Using Policy.

Caveats

Caveats describe unexpected behavior in Cisco IOS XE releases.

Open Caveats

Identifier	Description
CSCvz79250	FCS errors with sync/pdel req/resp packets with PTP power profile when spanned on rx
CSCwa00379	PTP: Pdelay_Req messages are missing after PTP enable/disable in TC mode
CSCwa20424	PTP time synchronization init fails when the port is moved between L2 and L3 and reloaded
CSCwa27652	Clock syntonized shows FALSE when moving between GMs
CSCwa34430	CDP neighbors not shown when removing an 100m SFP and inserting a 1Gig SFP on same port
CSCwa39943	"speed 10 or speed 100" config is not shown in combo ports after device reload
CSCwa31367	NTP source is not removing from clock data set when we shut the NTP interface

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.

Information about Cisco Catalyst IE9300 Rugged Series Switches is at this URL: https://www.cisco.com/c/en/us/products/ios-nx-os-software/ios-xe/index.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: http://www.cisco.com/go/mibs

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- 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 gateway to the Cisco bug-tracking system, which maintains a comprehensive list of defects and vulnerabilities in Cisco products and software. The BST provides you with detailed defect information about your products and software.

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