



Release Notes for Cisco NCS 5500 Series Routers, IOS XR Release 7.3.4

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Network Convergence System 5500 Series Routers



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What's New in Cisco IOS XR Release 7.3.4

Software Features Introduced and Enhanced

To learn about features introduced in other Cisco IOS XR releases, select the release from the [What's new](#) page.

Unless specified the following features are not supported on the Cisco 5700 series fixed port routers and the Cisco NCS 5500 series routers that have the Cisco NC57 line cards installed and operating in the native or compatibility mode.

To enable the native mode on Cisco NCS 5500 series routers having Cisco NC57 line cards, use the **hw-module profile npu native-mode-enable** command in the configuration mode. Ensure that you reload the router after configuring the native mode.

Feature	Description
Telemetry	

Feature	Description
Enhancements to Hardware Timestamp	<p>Telemetry messages carry a timestamp per interface to indicate the time when data is collected from the hardware. With this feature, the support for hardware timestamp is extended to MPLS Traffic Engineering (MPLS TE) counters, Segment Routing for Traffic Engineering (SR-TE) interface counters, protocol statistics, and bundle protocol counters.</p> <p>The interface counters in the following paths are enhanced for hardware timestamp:</p> <ul style="list-style-type: none"> • Cisco-IOS-XR-infra-statsd-oper:infra-statistics/interfaces/interface/cache /generic-counters • Cisco-IOS-XR-infra-statsd-oper:infra-statistics/interfaces/interface/latest /generic-counters • openconfig-network-instance:network-instances/network-instance/mpls/lsp/constrained-path/tunnels • openconfig-interfaces:interfaces/interface
Programmability	
OpenConfig YANG Model:AFT	<p>This feature extends support to additional lists and containers in the OpenConfig Abstract Forwarding Table (AFT) model. With this support, the NMS receives only essential interface characteristics, such as next-hop group, next hop, and RSVP-TE for an IP prefix. As a result, the forwarding process is simplified for the NMS.</p> <p>You can access the OC data model from the Github repository.</p>
OpenConfig YANG Model:SR	<p>Support has been extended for the following components in the OpenConfig (OC) Segment-Routing (SR) YANG model:</p> <ul style="list-style-type: none"> • The aggregate-sid-counters container in the sr-mpls-top group to aggregate the prefix-SID counters across all interfaces of the router. • The aggregate-sid-counter list is supported along with the mpls-label key to aggregate counters across all the interfaces of the router corresponding to traffic forwarded with a particular prefix-SID. <p>You can access the OC data model from the Github repository.</p>
OpenConfig YANG Model:SR-TE Policies	<p>The OpenConfig (OC) Segment Routing-Traffic Engineering (SR-TE) YANG data model provides data definitions for SR-TE policy configuration and associated signaling and traffic engineering protocols. This release extends support for the following data model to stream telemetry data:</p> <p>openconfig-srte-policy</p> <p>You can access the OC data model from the Github repository.</p>

Feature	Description
Telemetry Accuracy Enhancements	<p>In this release, the timestamp option is enabled for interface counters. This helps you retrieve an accurate set of statistics related to the operational state of the router in terms of label, packets-forwarded, and octets-forwarded for an interface.</p> <p>The timestamp option is also enabled in the OC-AFT YANG model. The model facilitates the NMS to receive only essential interface characteristics, such as the next-hop group, next hop, and RSVP-TE for an IP prefix along with the timestamp. By using timestamped packets, the NMS is able to calculate the rate at which data is transmitted accurately.</p> <p>See hardware timestamping for more information.</p>
Segment Routing	
IPv6 Autoroute Include Support for an SR-TE Policy with an IPv4 Endpoint	<p>On the headend router, you can steer incoming IPv6 traffic into an SR-TE policy with an IPv4 endpoint. Prior to this, the support was available only for incoming IPv4 traffic.</p> <p>New command:</p> <pre>autoroute [include ipv6 all]</pre>
BGP Best Path Computation using SR Policy Paths	<p>BGP best-path selection is modified for a prefix when at least one of its paths resolves over the next hop using SR policies (SR policy in “up” state). Under this condition, paths not steered over an SR policy (those using native next-hop resolution) are considered ineligible during best-path selection.</p> <p>You can thus control the best path selection in order to steer traffic, preferably or exclusively, over SR policies with the desired SLA.</p> <p>This feature introduces the bgp bestpath sr-policy {force prefer} command.</p>
Modular QoS	
Classifying Packets Based on MPLS Experimental Bits in MPLS Over GRE	<p>For MPLS over GRE scenarios that tunnel MPLS traffic over non-MPLS networks, you can now perform QoS classification for specific traffic or applications based on MPLS EXP bit field values in the MPLS header.</p> <p>In earlier releases, you could perform QoS classification only in the outer GRE IP header using DiffServ Code Point (DSCP) or IP precedence bits that helped you achieve the required line rate minus the granularity.</p> <p>This feature introduces the hw-module profile qos gre-exp-classification-enable command.</p>
Netflow	
sFlow Enhancements	<p>With this release, the following enhancements are available with sFlow:</p> <ul style="list-style-type: none"> • Discard codes 0, 1, 256, 257, and 258 are supported. This alerts the user about the packets dropped in the network. • Syslog notifications for flow monitor buffer and ring buffer status.
System Monitoring	
NOS Insights	<p>The NOS Insights is an application that interacts with the NOS (Network Optimization Service) and collects data metrics through multiple methods such as NetConf, Telemetry, and Commands. It then analyzes the available datasets and information to detect a gray failure event in the device.</p>

Hardware Introduced

Cisco IOS XR Release 7.3.4 introduces the following hardware support:

No new hardware features introduced in this release.

Caveats

Table 1: Cisco NCS 5500 Series Routers Specific Bugs

Bug ID	Headline
CSCwb13644	fib_mgr gets blocked for mins due to "clear route afi-all safi-all"
CSCwb51480	SR/RSVP-TE Missing Explicit-Null label for IPv6 traffic

Release Package

This table lists the Cisco IOS XR Software feature set matrix (packages) with associated filenames.

Visit the [Cisco Software Download](#) page to download the Cisco IOS XR software images.

Table 2: Release 7.3.4 Packages for Cisco NCS 5500 Series Router

Composite Package		
Feature Set	Filename	Description
Cisco IOS XR IP Unicast Routing Core Bundle	ncs5500-mini-x.iso	Contains base image contents that includes: <ul style="list-style-type: none"> • Host operating system • System Admin boot image • IOS XR boot image • BGP packages
Individually-Installable Optional Packages		
Feature Set	Filename	Description
Cisco IOS XR Manageability Package	ncs5500-mgbl-3.0.0.0-r734.x86_64.rpm	Extensible Markup Language (XML) Parser, Telemetry, Netconf, gRPC and HTTP server packages.
Cisco IOS XR MPLS Package	ncs5500-mpls-2.1.0.0-r734.x86_64.rpm ncs5500-mpls-te-rsvp-2.2.0.0-r734.x86_64.rpm	MPLS and MPLS Traffic Engineering (MPLS-TE) RPM.
Cisco IOS XR Security Package	ncs5500-k9sec-3.1.0.0-r734.x86_64.rpm	Support for Encryption, Decryption, Secure Shell (SSH), Secure Socket Layer (SSL), and Public-key infrastructure (PKI)

Cisco IOS XR ISIS package	ncs5500-isis-1.2.0.0-r734.x86_64.rpm	Support ISIS
Cisco IOS XR OSPF package	ncs5500-ospf-2.0.0.0-r734.x86_64.rpm	Support OSPF
Lawful Intercept (LI) Package	ncs5500-li-1.0.0.0-r734.x86_64.rpm	Includes LI software images
Multicast Package	ncs5500-mcast-1.0.0.0-r734.rpm	Support Multicast

Table 3: Release 7.3.4 TAR files for Cisco NCS 5500 Series Router

Feature Set	Filename
NCS 5500 IOS XR Software 3DES	NCS5500-iosxr-k9-7.3.4.tar
NCS 5500 IOS XR Software	NCS5500-iosxr-7.3.4.tar
NCS 5500 IOS XR Software	NCS5500-docs-7.3.4.tar

Table 4: Release 7.3.4 Packages for Cisco NCS 5700 Series Router

Feature Set	Filename
NCS 5700 IOS XR Software	ncs5700-x64-7.3.4.iso
NCS 5700 IOS XR Software (only k9 RPMs)	ncs5700-k9sec-rpms.7.3.4.tar
NCS 5700 IOS XR Software Optional Package	NCS5700-optional-rpms.7.3.4.tar This TAR file contains the following RPMS: <ul style="list-style-type: none"> • optional-rpms/cdp/* • optional-rpms/eigrp/* • optional-rpms/telnet/*

Determine Software Version

To verify the software version running on the router, use **show version** command in the EXEC mode.

```
RP/0/RP0/CPU0:router# show version
```

```
Cisco IOS XR Software, Version 7.3.4
Copyright (c) 2013-2022 by Cisco Systems, Inc.
```

```
Build Information:
Built By      : ingunawa
Built On     : Thu May 12 12:18:32 PDT 2022
Built Host   : iox-ucs-003
Workspace    : /auto/srcarchive14/prod/7.3.4/ncs5500/ws
Version      : 7.3.4
Location     : /opt/cisco/XR/packages/
Label       : 7.3.4-Renumbered2
```

```
cisco NCS-5500 () processor
System uptime is 2 hours 4 minutes
```

Determine Firmware Support

Use the **show hw-module fpd** command in EXEC and Admin mode to view the hardware components with their current FPD version and status. The status of the hardware must be CURRENT; Running and Programed version must be the same.



Note You can also use the **show fpd package** command in Admin mode to check the fpd versions.

This sample output is for **show hw-module fpd** command from the Admin mode:

```
sysadmin-vm:0_RP0# show hw-module fpd
```

```

FPD Versions
=====

```

Location	Card type	HWver	FPD device	ATR	Status	Run	Programd
0/0	NC55-36X100G	1.4	Bootloader		CURRENT	1.22	1.22
0/0	NC55-36X100G	1.4	IOFPGA		CURRENT	0.15	0.15
0/0	NC55-36X100G	1.4	SATA-M600-MCT		CURRENT	5.00	5.00
0/1	NC55-36X100G	1.4	Bootloader		CURRENT	1.22	1.22
0/1	NC55-36X100G	1.4	IOFPGA		CURRENT	0.15	0.15
0/1	NC55-36X100G	1.4	SATA-M500IT-MU-A		CURRENT	5.00	5.00
0/2	NC55-36X100G	1.4	Bootloader		CURRENT	1.22	1.22
0/2	NC55-36X100G	1.4	IOFPGA		CURRENT	0.15	0.15
0/2	NC55-36X100G	1.4	SATA-M500IT-MU-A		CURRENT	5.00	5.00
0/3	NC55-36X100G-S	1.2	Bootloader		CURRENT	1.19	1.19
0/3	NC55-36X100G-S	1.2	IOFPGA		CURRENT	0.11	0.11
0/3	NC55-36X100G-S	1.2	SATA-M500IT-MC		CURRENT	3.00	3.00
0/4	NC55-36X100G-S	1.2	Bootloader		CURRENT	1.19	1.19
0/4	NC55-36X100G-S	1.2	IOFPGA		CURRENT	0.11	0.11
0/4	NC55-36X100G-S	1.2	SATA-M600-MCT		CURRENT	5.00	5.00
0/5	NC55-36X100G-S	1.2	Bootloader		CURRENT	1.19	1.19
0/5	NC55-36X100G-S	1.2	IOFPGA		CURRENT	0.11	0.11
0/5	NC55-36X100G-S	1.2	SATA-M600-MCT		CURRENT	5.00	5.00
0/6	NC55-36X100G-S	1.2	Bootloader		CURRENT	1.19	1.19
0/6	NC55-36X100G-S	1.2	IOFPGA		CURRENT	0.11	0.11
0/6	NC55-36X100G-S	1.2	SATA-M600-MCT		CURRENT	5.00	5.00
0/7	NC55-36X100G-S	1.2	Bootloader		CURRENT	1.19	1.19
0/7	NC55-36X100G-S	1.2	IOFPGA		CURRENT	0.11	0.11
0/7	NC55-36X100G-S	1.2	SATA-M600-MCT		CURRENT	5.00	5.00
0/RP0	NC55-RP	1.2	Bootloader		CURRENT	9.31	9.31
0/RP0	NC55-RP	1.2	IOFPGA		CURRENT	0.09	0.09
0/RP0	NC55-RP	1.2	SATA-M600-MU		CURRENT	6.00	6.00
0/RP1	NC55-RP	2.2	Bootloader		CURRENT	9.31	9.31
0/RP1	NC55-RP	2.2	IOFPGA		CURRENT	0.09	0.09
0/RP1	NC55-RP	2.2	SATA-M600-MU		CURRENT	6.00	6.00
0/FC0	NC55-5508-FC	1.3	Bootloader		CURRENT	1.74	1.74
0/FC0	NC55-5508-FC	1.3	IOFPGA		CURRENT	0.16	0.16
0/FC1	NC55-5508-FC	1.3	Bootloader		CURRENT	1.74	1.74
0/FC1	NC55-5508-FC	1.3	IOFPGA		CURRENT	0.16	0.16
0/FC2	NC55-5508-FC	1.3	Bootloader		CURRENT	1.74	1.74
0/FC2	NC55-5508-FC	1.3	IOFPGA		CURRENT	0.16	0.16
0/FC3	NC55-5508-FC	1.3	Bootloader		CURRENT	1.74	1.74
0/FC3	NC55-5508-FC	1.3	IOFPGA		CURRENT	0.16	0.16
0/FC4	NC55-5508-FC	1.3	Bootloader		CURRENT	1.74	1.74
0/FC4	NC55-5508-FC	1.3	IOFPGA		CURRENT	0.16	0.16
0/FC5	NC55-5508-FC	1.3	Bootloader		CURRENT	1.74	1.74
0/FC5	NC55-5508-FC	1.3	IOFPGA		CURRENT	0.16	0.16
0/SC0	NC55-SC	2.0	Bootloader		CURRENT	1.74	1.74
0/SC0	NC55-SC	2.0	IOFPGA		CURRENT	0.10	0.10

0/SC1	NC55-SC	2.0	Bootloader	CURRENT	1.74	1.74
0/SC1	NC55-SC	2.0	IOFPGA	CURRENT	0.10	0.10

Other Important Information

- The total number of bridge-domains (2*BDs) and GRE tunnels put together should not exceed 1518.

Here the number 1518 represents the multi-dimensional scale value.

- The offline diagnostics functionality is not supported in NCS 5500 platform. Therefore, the **hw-module service offline location** command will not work. However, you can use the **(sysadmin)# hw-module shutdown location** command to bring down the LC.

Supported Transceiver Modules

To determine the transceivers that Cisco hardware device supports, refer to the [Transceiver Module Group \(TMG\) Compatibility Matrix](#) tool.

Supported Modular Port Adapters

For the compatibility details of Modular Port Adapters (MPAs) on the line cards, see the [datasheet](#) of that specific line card.

Upgrading Cisco IOS XR Software

Cisco IOS XR Software is installed and activated from modular packages, allowing specific features or software patches to be installed, upgraded, or downgraded without affecting unrelated processes. Software packages can be upgraded or downgraded on all supported card types, or on a single card (node).

Before starting the software upgrade, use the **show install health** command in the admin mode. This command validates if the statuses of all relevant parameters of the system are ready for the software upgrade without interrupting the system.



Note

- If you use a TAR package to upgrade from a Cisco IOS XR release prior to 7.x, the output of the **show install health** command in admin mode displays the following error messages:

```
sysadmin-vm:0_RSP0# show install health
. . .
ERROR /install_repo/gl/xr -rw-r--r--. 1 8413 floppy 3230320 Mar 14 05:45 <platform>-isis-2.2.0.0-r702.x86_64
ERROR /install_repo/gl/xr -rwxr-x---. 1 8413 165 1485781 Mar 14 06:02 <platform>-k9sec-3.1.0.0-r702.x86_64
ERROR /install_repo/gl/xr -rw-r--r--. 1 8413 floppy 345144 Mar 14 05:45 <platform>-li-1.0.0.0-r702.x86_64
```

You can ignore these messages and proceed with the installation operation.

Production Software Maintenance Updates (SMUs)

A production SMU is a SMU that is formally requested, developed, tested, and released. Production SMUs are intended for use in a live network environment and are formally supported by the Cisco TAC and the relevant development teams. Software bugs identified through software recommendations or Bug Search Tools are not a basis for production SMU requests.

For information on production SMU types, refer the [Production SMU Types](#) section of the *IOS XR Software Maintenance Updates (SMUs)* guide.

Cisco IOS XR Error messages

To view, search, compare, and download Cisco IOS XR Error Messages, refer to the [Cisco IOS XR Error messages](#) tool.

Cisco IOS XR MIBs

To determine the MIBs supported by platform and release, refer to the [Cisco IOS XR MIBs](#) tool.

Use user-class Option 'xr-config' Instead Of 'exr-config' To Provision ZTP

In Cisco IOS XR Release 7.3.1 and earlier, the system accepts the device sending **user-class = "exr-config"**; however starting Cisco IOS XR Release 7.3.2 and later, you must use only **user-class = "xr-config"**.

In Cisco IOS XR Release 7.3.2 and later, use:

```
host cisco-rp0 {
  hardware ethernet e4:c7:22:be:10:ba;
  fixed-address 172.30.12.54;
  if exists user-class and option user-class = "iPXE" {
    filename = "http://172.30.0.22/boot.ipxe";
  } elseif exists user-class and option user-class = "xr-config" {
    filename = "http://172.30.0.22/scripts/cisco-rp0_ztp.sh";
  }
}
```

Related Documentation

The most current Cisco NCS 5500 router documentation is located at the following URL:

<https://www.cisco.com/c/en/us/td/docs/iosxr/ios-xr.html>



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