



Release Notes for Cisco NCS 5500 Series Routers, IOS XR Release 7.4.2

[Network Convergence System 5500 Series Routers](#) 2

[Software Features Introduced and Enhanced](#) 2

[Hardware Introduced](#) 4

[Features Supported on Cisco NC57 Line Cards and NCS 5700 Fixed Routers](#) 5

[Caveats](#) 6

[Release Package](#) 6

[Determine Software Version](#) 7

[Determine Firmware Support](#) 8

[Other Important Information](#) 9

[Full Cisco Trademarks with Software License](#) 11

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Network Convergence System 5500 Series Routers



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Note Cisco IOS XR Release 7.4.2 is an Extended Maintenance Release of [Cisco IOS XR Release 7.4.1](#) for Cisco NCS 5500 Series routers. For more details on the Cisco IOS XR release model and associated support, see [Guidelines for Cisco IOS XR Software](#).

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
Telemetry Support for OpenConfig Interfaces, IPv4 and IPv6 Addresses and State	<p>This feature provides GNMI and GRPC telemetry support for the following openconfig-if-ip.yang sensor paths. Previously, only NETCONF edit-config, get-config and get operations were supported. With this new feature, telemetry polling at a cadence or on-change can be retrieved for IPv4 and IPv6 data.</p> <ul style="list-style-type: none"> • /oc-if:interfaces/oc-if:interface/oc-if:subinterfaces/oc-if:subinterface/ipv6/ • addresses/address[ip]/state/ip • addresses/address[ip]/state/prefix-length • addresses/address[ip]/state/origin • state/enabled • state/mtu • state/dup-addr-detect-transmits • state/counters/in-pkts • state/counters/in-octets • state/counters/out-pkts • state/counters/out-octets • openconfig-if-ip-ext:autoconf/create-global-addresses • /oc-if:interfaces/oc-if:interface/oc-if:subinterfaces/oc-if:subinterface/ipv4/ • addresses/address[ip]/state/ip • addresses/address[ip]/state/prefix-length • addresses/address[ip]/state/origin • state/mtu • state/dhcp-client • state/in-pkts • state/in-octets • state/out-pkts • state/out-octets <p>You can access this data model from the Github repository.</p>
L2VPN and Ethernet Services	
Ingress Storm control (BUM) policers	<p>This feature helps to rate limit ingress broadcast, multicast, unknown-unicast (BUM) traffic as per the configured threshold.</p> <p>It is now supported on routers that have Cisco NC57 line cards with external TCAM that are installed and operating in native mode.</p>

Feature	Description
Support for DHCPv6 Client over BVI	<p>With this feature, you can configure a Bridge Group Virtual Interface (BVI) and request a DHCP IPv6 address on the BVI. This configuration allows your customer's device to have initial connectivity to your network without user intervention in the field.</p> <p>This feature is now supported on Cisco NCS 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 mode.</p>
MAC Loop Release Prevention	<p>This feature helps reduce network congestion and avoid traffic loss by shutting down a port after it reaches the configured number of MAC moves within the specified move interval. You can configure this feature at the bridge-domain level using the mac secure command.</p> <p>This feature is now supported on routers that have Cisco NC57 line cards installed and operate in native and compatibility modes.</p>
EVPN Seamless Integration with VPWS	<p>This feature enables you to seamlessly migrate the PE nodes from VPWS to EVPN-VPWS service without disruption in traffic. Such a migration offers your service providers the option to use VPWS or EVPN-VPWS services on PE nodes</p> <p>This feature introduces the vpws-seamless-integration command.</p>
Segment Routing	
SR Policy Path Protection	<p>This feature enables path protection for SR policies. It allows you to configure an SR policy with working (active) and protect (backup) candidate paths pre-programmed in the forwarding. You can monitor these candidate paths using SR Policy Liveness Monitoring probes. When the head-end detects a liveness failure on the working candidate path, it triggers a switchover to the protect candidate path.</p>
QoS	
Cisco NC57 Native Mode: 802.1P marking	<p>This feature marks priority code point (PCP) and drop eligible indicator (DEI) fields on VLAN-tagged ethernet frames egressing out of the Layer 3 subinterface and helps achieve differentiated QoS in the network based on PCP and DEI marking.</p> <p>This feature is now supported for multicast traffic on routers that have the Cisco NC57 line cards installed and operate in the native mode.</p>
Explicit Congestion Notification	<p>This feature marks packets instead of dropping them when the average queue length exceeds a specific threshold value, ensuring timely and efficient end-to-end congestion notification leading to fewer packet drops.</p> <p>This feature is now supported on routers that have Cisco NC57 line cards installed and operate in the native mode.</p>

Hardware Introduced

This release introduces the following new hardware:

Hardware	Description
Supported Optical Modules on the Cisco NCS 5700 series and Cisco NCS 5500 series Line Cards	<p>The NC57-18DD-SE line card supports the following optical modules—</p> <ul style="list-style-type: none"> • QDD-400G-LR4-S • QDD-4X100G-LR-S • QSFP-100G-ERL-S • QSFP-100G-LR-S <p>The NC57-36H-SE and NC55-36X100G-A-SE line cards support the following optical modules –</p> <ul style="list-style-type: none"> • QSFP-100G-ERL-S • QSFP-100G-LR-S <p>The NC55-MOD-A-SE-S line card along with the NC55-MPA-4H-HD-S modular port adapter supports the following optical modules—</p> <ul style="list-style-type: none"> • QSFP-100G-ERL-S • QSFP-100G-LR-S <p>QDD-400G-LR4-S and QDD-4X100G-LR-S – The Cisco 400GBASE Quad Small Form-Factor Pluggable Double Density (QSFP-DD) portfolio offers a wide variety of super high-density transceiver modules and the flexibility of 400 Gigabit Ethernet connectivity options for data center, high-performance computing networks, enterprise core and distribution layers, and service provider applications. For more information on these optical modules, see the Cisco 400G QSFP-DD Cable and Transceiver Modules Data Sheet.</p> <p>QSFP-100G-ERL-S and QSFP-100G-LR-S – The Cisco 100GBASE Quad Small Form-Factor Pluggable (QSFP) portfolio offers a wide variety of high-density and low-power 100 Gigabit Ethernet connectivity options for data center, high-performance computing networks, enterprise core and distribution layers, and service provider applications. For more information on these optical modules, see the Cisco 100GBASE QSFP-100G Modules Data Sheet.</p>

Features Supported on Cisco NC57 Line Cards and NCS 5700 Fixed Routers

The following table lists the parity features supported on Cisco NC57 line cards in compatibility mode (NC57 line cards with previous generation NC55 line cards in the same modular chassis) and native mode (modular chassis with only NC57 line cards and NCS5700 fixed chassis).

Table 1: Parity Features Supported on Cisco NC57 Line Cards and NCS 5700 fixed routers

Feature	Compatible Mode	Native Mode
Ingress Storm control (BUM) policers	×	✓
Support for DHCPv6 Client over BVI	×	✓
MAC Loop Release Prevention	✓	✓

Feature	Compatible Mode	Native Mode
EVPN MPLS Seamless Integration with VPLS	✓	✓
Port Mirroring Enhancements	×	✓
Cisco NC57 Native Mode: 802.1P marking	×	✓
Explicit Congestion Notification	×	✓

For the complete list of parity features supported on Cisco NC57 line cards until Cisco IOS XR Release 7.4.2, see:

- [Release Notes for Cisco NCS 5500 Series Routers, IOS XR Release 7.4.1](#)
- [Release Notes for Cisco NCS 5500 Series Routers, IOS XR Release 7.3.1](#)
- [Release Notes for Cisco NCS 5500 Series Routers, IOS XR Release 7.2.2](#)
- [Release Notes for Cisco NCS 5500 Series Routers, IOS XR Release 7.2.1](#)

Caveats

These caveats are applicable for Cisco IOS XR Software:

Bug ID	Headline
CSCwa35067	ROUTING-OSPF-3-EXTERNALERR_RC : External error, xtc_api_connect - log seen post RPFO

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 7.4.2 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-r742.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-r742.x86_64.rpm ncs5500-mpls-te-rsvp-2.2.0.0-r742.x86_64.rpm	MPLS and MPLS Traffic Engineering (MPLS-TE) RPM.
Cisco IOS XR Security Package	ncs5500-k9sec-3.1.0.0-r742.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-r742.x86_64.rpm	Support ISIS
Cisco IOS XR OSPF package	ncs5500-ospf-2.0.0.0-r742.x86_64.rpm	Support OSPF
Lawful Intercept (LI) Package	ncs5500-li-1.0.0.0-r742.x86_64.rpm	Includes LI software images
Multicast Package	ncs5500-mcast-1.0.0.0-r742.rpm	Support Multicast

Table 3: Release 7.4.2 TAR files for Cisco NCS 5500 Series Router

Feature Set	Filename
NCS 5500 IOS XR Software 3DES	NCS5500-iosxr-k9-7.4.2.tar
NCS 5500 IOS XR Software	NCS5500-iosxr-7.4.2.tar
NCS 5500 IOS XR Software	NCS5500-docs-7.4.2.tar

Table 4: Release 7.4.2 Packages for Cisco NCS 5700 Series Router

Feature Set	Filename
NCS 5700 IOS XR Software	ncs5700-x64-7.4.2.iso
NCS 5700 IOS XR Software (only k9 RPMs)	ncs5700-k9sec-rpms.7.4.2.tar
NCS 5700 IOS XR Software Optional Package	NCS5700-optional-rpms.7.4.2.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 7.4.2
Copyright (c) 2013-2022 by Cisco Systems, Inc.
```

```
Build Information:
  Built By      : ingunawa
  Built On     : Wed Feb 16 03:23:21 PST 2022
  Built Host   : iox-ucs-067
  Workspace    : /auto/srcarchive15/prod/7.4.2/ncs5500/ws
  Version      : 7.4.2
  Location     : /opt/cisco/XR/packages/
  Label       : 7.4.2
```

```
cisco NCS-5500 () processor
System uptime is 1 hour 15 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
```

Location	Card type	HWver	FPD device	ATR Status	FPD Versions	
					Run	Programd
0/0	NC55-32T16Q4H-A	0.302	Bootloader	CURRENT	0.05	0.05
0/0	NC55-32T16Q4H-A	0.302	DBFPGA	CURRENT	0.14	0.14
0/0	NC55-32T16Q4H-A	0.302	IOFPGA	CURRENT	0.89	0.89
0/0	NC55-32T16Q4H-A	0.302	SATA-M5100	CURRENT	71.00	71.00
0/1	NC57-24DD	1.0	Bootloader	CURRENT	1.03	1.03
0/1	NC57-24DD	1.0	DBFPGA	CURRENT	0.14	0.14
0/1	NC57-24DD	1.0	IOFPGA	CURRENT	0.21	0.25
0/2	NC55-6X200-DWDM-S	0.502	Bootloader	CURRENT	1.19	1.19
0/2	NC55-6X200-DWDM-S	0.502	IOFPGA	CURRENT	0.14	0.14
0/2	NC55-6X200-DWDM-S	0.502	SATA-M600-MCT	CURRENT	5.00	5.00
0/3	NC57-36H6D-S	0.300	Bootloader	CURRENT	0.02	0.02
0/3	NC57-36H6D-S	0.300	DBFPGA	CURRENT	0.14	0.14
0/3	NC57-36H6D-S	0.300	IOFPGA	CURRENT	0.46	0.46
0/6	NC55-24X100G-SE	1.0	Bootloader	CURRENT	1.19	1.19
0/6	NC55-24X100G-SE	1.0	IOFPGA	CURRENT	0.13	0.13
0/6	NC55-24X100G-SE	1.0	SATA-M600-MCT	CURRENT	5.00	5.00
0/8	NC55-MOD-A-S	0.302	Bootloader	CURRENT	1.03	1.03
0/8	NC55-MOD-A-S	0.302	DBFPGA	CURRENT	0.14	0.14
0/8	NC55-MOD-A-S	0.302	IOFPGA	CURRENT	0.09	0.09
0/8	NC55-MOD-A-S	0.302	SATA-M600-MCT	CURRENT	5.00	5.00
0/9	NC55-32T16Q4H-A	0.12	Bootloader	CURRENT	0.05	0.05
0/9	NC55-32T16Q4H-A	0.12	DBFPGA	CURRENT	0.14	0.14
0/9	NC55-32T16Q4H-A	0.12	IOFPGA	CURRENT	0.89	0.89
0/9	NC55-32T16Q4H-A	0.12	SATA-M5100	CURRENT	71.00	71.00
0/12	NC57-18DD-SE	1.1	Bootloader	CURRENT	1.03	1.03
0/12	NC57-18DD-SE	1.1	DBFPGA	CURRENT	0.14	0.14
0/12	NC57-18DD-SE	1.1	IOFPGA	CURRENT	0.20	0.20
0/RP0	NC55-RP2-E	0.201	Bootloader	CURRENT	0.08	0.08

0/RP0	NC55-RP2-E	0.201	IOFPGA	CURRENT	0.50	0.50
0/RP0	NC55-RP2-E	0.201	OMGFPGA	CURRENT	0.46	0.46
0/RP0	NC55-RP2-E	0.201	SATA-M5100	CURRENT	71.00	71.00
0/RP1	NC55-RP2-E	0.202	Bootloader	CURRENT	0.08	0.08
0/RP1	NC55-RP2-E	0.202	IOFPGA	CURRENT	0.50	0.50
0/RP1	NC55-RP2-E	0.202	OMGFPGA	CURRENT	0.46	0.46
0/RP1	NC55-RP2-E	0.202	SATA-M5100	CURRENT	71.00	71.00
0/FC1	NC55-5516-FC2	1.0	Bootloader	CURRENT	1.80	1.80
0/FC1	NC55-5516-FC2	1.0	IOFPGA	CURRENT	0.17	0.17
0/FC1	NC55-5516-FC2	1.0	SATA-M5100	CURRENT	71.00	71.00
0/FC3	NC55-5516-FC2	1.0	Bootloader	CURRENT	1.80	1.80
0/FC3	NC55-5516-FC2	1.0	IOFPGA	CURRENT	0.17	0.17
0/FC3	NC55-5516-FC2	1.0	SATA-M5100	CURRENT	71.00	71.00
0/FC5	NC55-5516-FC2	1.0	Bootloader	CURRENT	1.80	1.80
0/FC5	NC55-5516-FC2	1.0	IOFPGA	CURRENT	0.17	0.17
0/FC5	NC55-5516-FC2	1.0	SATA-M5100	CURRENT	71.00	71.00
0/SC0	NC55-SC	1.4	Bootloader	CURRENT	1.74	1.74
0/SC0	NC55-SC	1.4	IOFPGA	CURRENT	0.10	0.10
0/SC1	NC55-SC	1.4	Bootloader	CURRENT	1.74	1.74
0/SC1	NC55-SC	1.4	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.

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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