



Release Notes for Cisco NCS 5500 Series Routers, IOS XR Release 7.5.2

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Network Convergence System 5500 Series Routers

The NCS 5500 Series, and NCS 5700 line cards and routers, offer industry-leading 400 GbE port density to handle massive traffic growth. They are designed for flexibility and operational simplicity. The product and feature offerings efficiently meet the scaling needs of large enterprises, web, and service providers.



Note Cisco IOS XR Release 7.5.2 is an Extended Maintenance Release of [Cisco IOS XR Release 7.5.1](#) 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](#).

What's New in Cisco IOS XR Release 7.5.2

Software Features Introduced and Enhanced

To learn about features introduced in other Cisco IOS XR releases, select the release from the [Documentation Landing 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
Application Hosting	
Virtual IP address in the Linux networking stack	<p>Virtual IP addresses allow a single IP address to connect to the current active RP after an RP switchover event. In addition, this functionality enables your network stack to support virtual IP addresses for third-party applications and IOS XR applications that use the Linux networking stack.</p> <p>The following commands are modified:</p> <ul style="list-style-type: none">• ipv4 virtual address• ipv6 virtual address• show kim status
Programmability	
OpenConfig YANG Model:MACsec	<p>You can now use the OpenConfig YANG data model to define the MACsec key chain and policy, and apply MACsec encryption on a router interface.</p> <p>You can access the OC data model from the Github repository.</p>
System Setup and Software Installation	
Automatic Bridging of Bug Fix RPMs	<p>This release enables an easy, one-step, no-prompt upgrade or downgrade based on GISO. This removes the dependency on manually installing RPMs that bridge bug fixes across release versions.</p>

Feature	Description
IOS XR Configuration File in Golden ISO (GISO)	<p>GISO is a customized image with the standard functional components and additional configuration files. This feature extracts the IOS XR configuration file in GISO and automates the updating of configuration files when the router is reloaded with the new GISO.</p> <p>This feature introduces iso-config [ignore replace] keywords to the install replace and install package replace commands.</p>
Telemetry	
Enhanced Syslog Notifications for Unresolved Line Card Forwarding Paths	<p>This feature notifies you of Line Card and Route Processor paths not resolving in the Forwarding Information Base. Both Model-Driven Telemetry (MDT) and Event Driven Telemetry (EDT) notifications are supported. In earlier releases, notifications for route processors were supported. This feature provides for improved diagnostics.</p>
Segment Routing	
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>
Optimal Utilization of ECMP FEC Resources	<p>BGP-SR multipath ECMP FEC optimization is enhanced to support 32k BGP-LU prefixes (from the earlier 4k BGP-LU prefixes) on multipath with the same outgoing label. This results in the consumption of lesser ECMP FEC resources, thus avoiding out-of-resource (OOR) situations for your router.</p> <p>In earlier releases, all 4k BGP-LU prefixes consumed all the 4k ECMP FEC resources.</p> <p>Use the hw-module fib mpls bgp-sr lsr-optimized command to enable BGP-SR multipath ECMP FEC optimization.</p>
Cisco NC57 Native Mode: SRv6 Micro-Segment (uSID)	<p>The following features are now supported on Cisco NCS 5700 series fixed port routers and the Cisco NCS 5500 series routers that have Cisco NC57 line cards installed and operating in the native mode:</p> <ul style="list-style-type: none"> • SRv6 Micro SID (uSID) • IS-IS: TI-LFA, Microloop Avoidance, Flexible Algorithm, OAM, Performance Measurement • SRv6 BGP Services: IPv4 L3VPN, IPv6 L3VPN, IPv4 BGP Global, IPv6 BGP Global • SRv6 Services: Dual-Stack L3 Services (IPv4 BGP global, IPv6 BGP global), EVPN VPWS (ELINE) • SRv6/MPLS L3 Service Interworking Gateway
Flexible Algorithm Prefix-SID Redistribution for External Route Propagation	<p>This feature enables the propagation of flexible algorithm prefix-SIDs and their algo-specific metric from other domains into OSPF, and from OSPF to other domains.</p> <p>The show ospf route command has been modified to include additional attributes to indicate the external routes.</p>
Flexible Algorithm to Exclude SRLGs for OSPF	<p>You can now configure the flexible algorithm to exclude any link belonging to the Shared Risk Link Groups (SRLGs) from the path computation for OSPF. The ability to exclude the at-risk links ensures that the rest of the links in the network remain unaffected.</p>

Feature	Description
SRv6: Ultimate Segment Decapsulation (USD) behavior	<p>This feature supports the Ultimate Segment Decapsulation (USD) variant on SRv6 endpoint nodes using full-length SIDs. Previously, USD variant was supported on SRv6 endpoint nodes using using Micro SIDs (uSIDs).</p> <p>The USD variant enables interworking with SRv6 underlay headend nodes that push SIDs using H.Encaps (SR Headend Behavior with Encapsulation in an SRv6 Policy) or H.Encaps.Red (H.Encaps with reduced Encapsulation) instead of H.Insert (SR Headend with insertion of an SRv6 Policy) or H.Insert.Red (H.Insert with reduced insertion).</p> <p>One of the applications of the USD variant is the case of TI-LFA in P routers with encapsulation with H.Encaps. The USD variant allows the last Segment Endpoint Node in the repair path list to decapsulate the IPv6 header added at the TI-LFA Point of Local Repair and forward the inner packet.</p>
SRv6 Services: Ethernet VPN Emulated LAN (ELAN)	<p>This feature builds upon EVPN BGP signaling to provide Emulated Local Area Network (ELAN) multipoint-to-multipoint Ethernet services over an SRv6-based network.</p> <p>This feature introduces the following ELAN-related behaviors:</p> <ul style="list-style-type: none"> • Ingress PE: <ul style="list-style-type: none"> • H.Encaps.L2.[Red] – Encapsulation of L2/Ether frame using SRv6 • Egress PE <ul style="list-style-type: none"> • End.DT2U – Decapsulation and Unicast MAC L2 Table Lookup • End.DT2M – Decapsulation and L2 Table Flooding <p>Automated steering of traffic of an EVPN ELAN service into the path associated with a best-effort or Flex- Algo locator is supported.</p>
Modular QoS	
Setting MPLS Experimental Bits on Inner MPLS Headers to Classify Traffic	<p>For MPLS over GRE scenarios that tunnel MPLS traffic over non-MPLS networks across CE devices, you can now perform QoS classification for specific traffic or applications by setting MPLS EXP bit field values in the inner 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>
BGP	
BGP-LU Multipath PIC with Auto Protection	<p>BGP-LU multipath prefix independent convergence (PIC) supports auto protection. Each active path has a backup path, ensuring almost immediate restoration of multicast traffic when a path fails.</p> <p>In earlier releases, multipath configuration supports primary and backup path with a limitation that backup path can support only one failed path at a time.</p>

Feature	Description
BGP AS Path Replacement with Custom Values	<p>You can now configure to replace the AS Path in BGP with custom values, based on route policy. While selecting the BGP best path, a shorter AS Path makes the selection process simple and flexible.</p> <p>This feature introduces the following command:</p> <p>replace as-path all</p>
RIPng	<p>RIPng (RIP next generation) is a RIPv2 extension that supports IPv6 which is the next-generation Internet Protocol. RIPng provides routing functionalities for an IPv6-based network. RIPng functions as an interior gateway protocol (IGP) in moderate-sized autonomous systems. RIPng uses Bellman-Ford distance-vector algorithm to determine the best route to an IPv6 destination. RIP enhancements for IPv6 include support for IPv6 addresses and prefixes; and the use of the all-RIP-devices multicast group address FF02::9 as the destination address for RIP update messages.</p>
L2VPN and Ethernet Services	
MAC Loop 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 <code>mac secure</code> 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>
Multicast	
Naming Data MDTs	You can deterministically control the multicast flows by assigning the flows to the named data MDTs.
Flexible Algorithm for Loop-Free Alternative Fast Reroute	<p>You can build disjoint live-live paths or create specific paths with flexible algorithm constraints, have low-latency routing without IGP constraints.</p> <p>MLDP route-policy supporting flexible algorithm-based filtering, which provides more granular enablement of FRR for LSPs, is also available</p>
Flexible Algorithm for multicast VPN profiles	<p>Flexible Algorithm is now available for the following profiles:</p> <ul style="list-style-type: none"> • Profile 12: Default MDT - MLDP - P2MP - BGP-AD - BGP C-Mcast Signaling • Profile 14: Partitioned MDT - MLDP P2MP - BGP-AD - BGP C-Mcast Signaling
Interface and Hardware Component	
2x50GbE Breakout Ports on Cisco NCS-55A1-24H Routers	You can now configure 2x50GbE breakout ports on all QSFP28 ports of the Cisco NCS-55A1-24H fixed port router.
SPAN Mirror First	<p>This feature allows you to mirror only the first x-bytes of a packet, that is, only the packet header and not the payload to the destination. Thus, allowing enhanced data security without compromising user data.</p> <p>With the introduction of this feature, you can use the <code>mirror first</code> option in the global configuration mode of the <code>monitor-session</code> command.</p>

Feature	Description
VLAN Subinterface as Source for Traffic Mirroring	<p>You can now configure the VLAN subinterface as a source for traffic mirroring for:</p> <ul style="list-style-type: none"> • Traffic ingressing at the interface • Traffic egressing at the interface • Traffic egressing and ingressing at the same interface <p>You could configure mirror functionality only at the main interface level in earlier releases.</p>
IP-in-IP tunnels with IPv6 over IPv4 Decapsulation	<p>Routers can now transport IPv6 packets across routers supporting only IPv4 by encapsulating the IPv6 packets within IPv4 packets. Such an encapsulation helps the efficient passing of packets across different network protocols. These packets are eventually decapsulated at the destination IPv6 network. For more information, see IP-in-IP De-capsulation.</p>
IP Addresses and Services	
Scaling to higher LPTS entries using eTCAM	<p>Implementing LPTS infrastructure using external TCAM (eTCAM) is 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. With this functionality, the LPTS routing packet entries are scaled to 12000. This helps in scaling the other protocol entries up to 1.5 times the current scale.</p>
System Management	
Automatic FPD upgrade for PSU	<p>This feature enables the automatic FPD upgrade for PSUs. Prior to this release, automatic upgrades were not applicable to FPDs associated with the PSUs.</p>
PTP and Frequency Synchronization on the NCS-57C1-48Q6-S chassis	<p>Based on the IEEE 1588-2008 standard, PTP is a protocol that synchronizes clocks in a network for networked measurement and control systems.</p> <p>With this release, timing support for IEEE 1588-2008 (PTPv2) telecom profiles is extended to the NCS-57C1-48Q6D-S chassis.</p>
Flexible Consumption Model Licensing on the NCS-57C1-48Q6-SYS chassis	<p>The Flexible Consumption Model (FCM) of licensing, which provides you with the capability and flexibility to purchase software capacity per your changing business requirements, is now available on the NCS-57C1-48Q6-SYS chassis.</p>
System Monitoring	
Platform Automated Monitoring for Blocked Processes	<p>You can enable the Platform Automated Monitoring tool integrated into the Cisco IOS XR software image and receive alerts if any process is blocked. Several system failures can cause a blocked process, such as memory leak, network connection loss, and so on.</p> <p>The tool collects the required data to troubleshoot the issue and generates a system log message with the name of the process that is currently blocked.</p> <p>This feature introduces the following commands:</p> <ul style="list-style-type: none"> • enable-pam process-monitoring • disable-pam process-monitoring • show pam process-monitoring-status

Feature	Description
System Security	
MACSec Encryption on NCS-57C1-48Q6D-S	The NCS-57C1-48Q6D-S chassis on 400GE ports 0, 2, and 4 now support MACsec. This Layer 2 encryption protocol secures the data on physical media and provides data integrity and confidentiality.

Hardware Introduced

Cisco IOS XR Release 7.5.2 introduces the following hardware support:

Hardware Feature	Description
NCS-57C1-48Q6D-S and NCS-57C1-48Q6-SYS Routers	<p>This release introduces one rack unit (1RU) fixed port routers in the Cisco NCS 5700 series. There are two variants:</p> <ul style="list-style-type: none"> • NCS-57C1-48Q6D-S (Perpetual Licensing) • NCS-57C1-48Q6-SYS (Flexible Consumption Model) <p>These high-capacity, low power consuming routers provide the following support and capabilities:</p> <ul style="list-style-type: none"> • Up to 4T total port bandwidth and 2.4T forwarding capacity. • Total of 54 ports - 4 ports of 400G QSFP-DD, 2 ports of 4x100G QSFP-DD, 16 ports of 50G SFP+ (also support traffic speed of 10G, 25G, and 1G), 32 ports of 25G SFP+ (also support traffic speed of 10G and 1G) • Support for SFP, SFP+, SFP28, and QSFP28 optics • Synchronous Ethernet (SyncE) • Power supply redundancy
Optics	<p>Note Optics support varies across devices (routers, line cards, RPs, and so on). To know if an optics is compatible with a specific Cisco device, refer to the Transceiver Module Group (TMG) Compatibility Matrix.</p> <p>This release introduces the following optics:</p> <ul style="list-style-type: none"> • Cisco TPOp (Transparent PDH over Packet) Smart SFP <ul style="list-style-type: none"> • SFP-E1F-SATOP-I

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
MAC Loop Prevention	✓	✓
SRv6 Micro-Segment (uSID)	✗	✓

For the complete list of parity features supported on Cisco NC57 line cards until Cisco IOS XR Release 7.5.2,, 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:

Table 2: Cisco NCS 5500 Series Routers Specific Bugs

Bug ID	Headline
CSCwa69632	BGP-LU Multipath High convergence is seen when new path is added during ecmp multipath shut trigger.
CSCwb22033	DPA/FIB InvalConf seen on compatible chassis if activate "hw-module fib mpls bgp-sr lsr-optimized".
CSCwb22388	NCS57C3 platform not booting up properly after software upgrade.

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 3: Release 7.5.2 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-r752.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-r752.x86_64.rpm ncs5500-mpls-te-rsvp-2.2.0.0-r752.x86_64.rpm	MPLS and MPLS Traffic Engineering (MPLS-TE) RPM.
Cisco IOS XR Security Package	ncs5500-k9sec-3.1.0.0-r752.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-r752.x86_64.rpm	Support ISIS
Cisco IOS XR OSPF package	ncs5500-ospf-2.0.0.0-r752.x86_64.rpm	Support OSPF
Lawful Intercept (LI) Package	ncs5500-li-1.0.0.0-r752.x86_64.rpm	Includes LI software images
Multicast Package	ncs5500-mcast-1.0.0.0-r752.rpm	Support Multicast

Table 4: Release 7.5.2 TAR files for Cisco NCS 5500 Series Router

Feature Set	Filename
NCS 5500 IOS XR Software 3DES	NCS5500-iosxr-k9-7.5.2.tar
NCS 5500 IOS XR Software	NCS5500-iosxr-7.5.2.tar
NCS 5500 IOS XR Software	NCS5500-docs-7.5.2.tar

Table 5: Release 7.5.2 Packages for Cisco NCS 5700 Series Router

Feature Set	Filename
NCS 5700 IOS XR Software	ncs5700-x64-7.5.2.iso
NCS 5700 IOS XR Software (only k9 RPMs)	ncs5700-k9sec-rpms.7.5.2.tar

NCS 5700 IOS XR Software Optional Package	NCS5700-optional-rpms.7.5.2.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 7.5.2
Copyright (c) 2013-2022 by Cisco Systems, Inc.

Build Information:
  Built By       : ingunawa
  Built On      : Tue Apr 26 18:00:43 PDT 2022
  Built Host    : iox-ucs-101
  Workspace     : /auto/srcarchive14/prod/7.5.2/ncs5500/ws
  Version      : 7.5.2
  Location     : /opt/cisco/XR/packages/
  Label        : 7.5.2

cisco NCS-5500 () processor
System uptime is 7 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
-----
0/2      NC57-18DD-SE        1.1    Bootloader           CURRENT     1.03     1.03
0/2      NC57-18DD-SE        1.1    DBFPGA               CURRENT     0.14     0.14
0/2      NC57-18DD-SE        1.1    IOFPGA               CURRENT     0.22     0.22
0/4      NC57-18DD-SE        1.1    Bootloader           CURRENT     1.03     1.03
0/4      NC57-18DD-SE        1.1    DBFPGA               CURRENT     0.14     0.14
0/4      NC57-18DD-SE        1.1    IOFPGA               CURRENT     0.22     0.22
0/RP0    NC55-RP-E           1.1    Bootloader           CURRENT     1.24     1.24
0/RP0    NC55-RP-E           1.1    IOFPGA               CURRENT     0.23     0.23
0/RP0    NC55-RP-E           1.1    OMGFPGA              CURRENT     0.61     0.61
0/RP0    NC55-RP-E           1.1    SATA-M5100           CURRENT     75.00    75.00
0/RP1    NC55-RP-E           1.1    Bootloader           CURRENT     1.24     1.24
```

0/RP1	NC55-RP-E	1.1	IOFPGA	CURRENT	0.23	0.23
0/RP1	NC55-RP-E	1.1	OMGFPGA	CURRENT	0.61	0.61
0/RP1	NC55-RP-E	1.1	SATA-M5100	CURRENT	75.00	75.00
0/FC1	NC55-5508-FC2	1.0	Bootloader	CURRENT	1.80	1.80
0/FC1	NC55-5508-FC2	1.0	IOFPGA	CURRENT	0.12	0.12
0/FC1	NC55-5508-FC2	1.0	SATA-INTEL_240G	CURRENT	1132.00	1132.00
0/FC3	NC55-5508-FC2	1.0	Bootloader	CURRENT	1.80	1.80
0/FC3	NC55-5508-FC2	1.0	IOFPGA	CURRENT	0.12	0.12
0/FC3	NC55-5508-FC2	1.0	SATA-INTEL_240G	CURRENT	1132.00	1132.00
0/FC5	NC55-5508-FC2	1.0	Bootloader	CURRENT	1.80	1.80
0/FC5	NC55-5508-FC2	1.0	IOFPGA	CURRENT	0.12	0.12
0/FC5	NC55-5508-FC2	1.0	SATA-Micron	CURRENT	1.00	1.00
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

Important Notes

- 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.

- Quad configurations will be lost when you perform a software downgrade on a NCS-55A1-48Q6H device from IOS XR Release 7.5.1 onwards to a release prior to IOS XR Release 7.5.1 due to non-backward compatibility change. The lost configuration can be applied manually after the downgrade.

**Note**

A quad is a group of four ports with common speeds, 1G/10G or 25G. You can configure the ports speed for a quad by using the **hw-module quad** command.

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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