



# Release Notes for Cisco NCS 540 Series Routers, Cisco IOS XR Release 7.7.1

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## What's New in Cisco IOS XR Release 7.7.1

Hardware	Description
Optics	<p><b>Note</b> Optics support varies across devices such as routers, line cards, and RPs. To know if an optics is compatible with a specific Cisco device, refer to the <a href="#">Transceiver Module Group (TMG) Compatibility Matrix</a>.</p> <p>This release introduces the following optics:</p> <ul style="list-style-type: none"><li>• Cisco 10GBASE SFP+ Module<ul style="list-style-type: none"><li>• <a href="#">SFP-10G-SR-I</a></li></ul></li><li>• Cisco 10GBASE SFP+ Module<ul style="list-style-type: none"><li>• <a href="#">SFP-10G-ZR-I</a></li><li>• <a href="#">SFP-10G-AOCxM</a></li></ul></li><li>• SFP+ 10GBASE-T Transceiver Module<ul style="list-style-type: none"><li>• <a href="#">SFP-10G-T-X</a></li></ul></li><li>• Cisco 100GBASE QSFP-100G Modules<ul style="list-style-type: none"><li>• <a href="#">QSFP-100G-ZR4-S</a></li></ul></li></ul>

The following features are supported on all the NCS 540 variants.

Feature	Description
Modular QoS	

Feature	Description
<a href="#">QoS IP DSCP Preservation for SR-TE</a>	<p>In terms of preserving IP DSCP markings, this release covers two scenarios for SR-TE traffic:</p> <ul style="list-style-type: none"> <li>• <b>For two or less than two topmost or imposition labels:</b> when you set the MPLS experimental bits (EXP) values (also called Traffic Class values), the IP DSCP markings are now preserved by default in the ingress policies when the MPLS labels are pushed into the packet.</li> <li>• <b>For more than three imposition labels:</b> you must enable this functionality to preserve IP DSCP markings.</li> </ul> <p>With preservation, traffic with IP packets with DSCP marking for priority, flows as intended and there's no drop in traffic because of incorrect or missing labels.</p> <p>In previous releases, irrespective of the number of MPLS labels, when the EXP values were copied into the packet header during imposition, even the IP DSCP markings were modified. This modification resulted in traffic drops at the next-hop routers in SR-TE tunnels.</p> <p>This feature introduces the <a href="#">hw-module profile mpls-ext-dscp-preserve v4uc-enable</a> command.</p>
<b>Routing</b>	
<a href="#">Multihop BFD over nondefault VRF</a>	<p>You can set a multihop BFD session using IPv4 for a non-default-VRF between a source and destination endpoints that have IP connectivity. This feature provides subsecond forwarding failure detection for a destination more than one hop, and up to 255 hops away.</p> <p>IPv4 Multihop BFD is a BFD session between two nodes, such as a PE and CE node, or between routers that are several TTL hops away. You can extend the BFD session to nondefault VRFs.</p> <p>This feature enables you to extend the BFD session to nondefault VRFs.</p> <p>Thus, the advantage of BFD, low-overhead, and short-duration detection of path failures between routers, is extended to a multihop scenario.</p>
<a href="#">Setting SPF interval in IS-IS to postpone the IS-IS SPF computations</a>	<p>You can now define a standard algorithm to postpone the IS-IS SPF computations by setting an SPF interval. This reduces the computational load and churn on IGP nodes when multiple temporally close network events trigger multiple SPF computations.</p> <p>This algorithm also reduces the probability and the duration of transient forwarding loops during native IS-IS convergence when the protocol reacts to multiple temporally close events.</p> <p>This feature complies with <a href="#">RFC 8405</a>.</p> <p>This feature introduces the <a href="#">spf-interval ietf</a> command.</p>

Feature	Description
<b>Multicast</b>	
Qos DSCP Preservation	<p>In terms of preserving IP DSCP markings, when you set the MPLS experimental bits (EXP) values (also called Traffic Class values), the IP DSCP markings are now preserved by default in the ingress policies when the MPLS labels are pushed into the packet.</p> <p>Traffic with IP packets with DSCP marking for priority, flows as intended and there's no drop in traffic because of incorrect or missing labels.</p> <p>In previous releases, irrespective of the number of MPLS labels, when the EXP values were copied into the packet header during imposition, even the IP DSCP markings were modified. This modification resulted in traffic drops at the next-hop routers.</p>
Extending Selective Multicast using IGMP Proxy	<p>The IGMP Proxy function enables PE routers to act as a proxy for the CE routers connected to it.</p> <p>IGMP Proxy function provides the following benefits:</p> <ul style="list-style-type: none"> <li>• Reduces the flooding of IGMP messages in an EVPN network.</li> <li>• Enables EVPN network to act as a distributed anycast multicast router.</li> <li>• Helps in having selective multicast over EVPN network.</li> </ul> <p>Earlier, connecting an external network directly to an EVPN fabric was not possible. With this IGMP Proxy support, it is possible to have seamless connectivity over the EVPN network for its hosts with respect to multicast operations.</p>
<b>System Security</b>	
Non-Default SSH Port	<p>We have enhanced the system security to minimize the automated attacks that may target the default Secure Socket Shell (SSH) port on your router. You can now specify a non-default port number for the SSH server on your router. The SSH, Secure Copy Protocol (SCP), and Secure File Transfer Protocol (SFTP) client services can then access your router only through this non-default port. The new port option also enables the SSH, SCP, and SFTP clients on your router to connect to SSH servers on the network that use a wide range of non-default port numbers. In earlier releases, these SSH, SCP, and SFTP connections were established through the default SSH port, 22. The non-default SSH port is supported only on SSH version 2.</p> <p>The feature modifies these commands to include the <b>port</b> option:</p> <ul style="list-style-type: none"> <li>• <b>ssh</b></li> <li>• <b>sftp</b></li> <li>• <b>scp</b></li> </ul>

Feature	Description
<a href="#">Password Policy to Restrict Consecutive Characters</a>	<p>We have enhanced the router security by enforcing a strong password policy for all users configured on the router. You can now specify a new password policy for the user that restricts the usage of a specific number of consecutive characters for the login passwords. These characters include English alphabets, the sequence of QWERTY keyboard layout, and numbers, such as, 'abcd', 'qwer', '1234', and so on. Apart from <i>passwords</i>, the feature is also applicable for <i>secrets</i>—the one-way encrypted secure login passwords that are not easy to decrypt to retrieve the original unencrypted password text.</p> <p>The password policy is applicable only for the users configured on the local AAA server on the router; not those configured on the remote AAA server.</p> <p>The feature introduces the <a href="#">restrict-consecutive-characters</a> command.</p>
<b>Interface and Hardware Component</b>	
<a href="#">Enhancement to Ethernet SLA Statistics Measurement</a>	<p>You can now configure the size of bins for the delay and jitter measurement in Ethernet SLA statistics with a <b>width</b> value ranging from 1 to 10000000 microseconds. This enhancement provides granularity to store more accurate results of SLA statistics in the aggregate bins.</p> <p>In earlier releases, you could only configure the <b>width</b> value for the delay and jitter measurement in milliseconds.</p> <p>This feature introduces <b>usec</b> keyword in the <a href="#">aggregate</a> command.</p>
<b>System Setup and Software Installation</b>	
<a href="#">ZTP over Layer 2 on Cisco NCS 540 variants</a>	<p>ZTP over Layer 2 is now supported on the following NCS 540 router variants.</p> <ul style="list-style-type: none"> <li>• N540-28Z4C-SYS-A/D</li> <li>• N540X-16Z4G8Q2C-A/D</li> <li>• N540-12Z20G-SYS-A/D</li> <li>• N540X-12Z16G-SYS-A/D</li> <li>• N540X-6Z18G-SYS-A/D</li> <li>• N540X-8Z16G-SYS-A/D</li> <li>• N540X-4Z14G2Q-A/D</li> <li>• N540-FH-CSR-SYS</li> <li>• N540-FH-AGG-SYS</li> <li>• N540-24Q8L2DD-SYS</li> <li>• N540-6Z14S-SYS-D</li> </ul>

Feature	Description
<b>Segment Routing</b>	
<a href="#">SRv6 Traffic Class QoS Enhancement</a>	<p>The modified <b>hw-module profile segment-routing srv6 mode</b> command option provides you with better flexibility to customize the optional SRv6 encapsulation parameters. The updated command will now support both L2 and L3 traffic types of SRv6 parameters.</p> <p>Encapsulation is a sub-mode from Release 7.7.1.</p> <p>The <b>l3-traffic</b> config supports the additional <b>policy-map</b> option that sets SRv6 traffic-class DSCP based on qos-group selected by input policy-map.</p> <p>The following commands are updated:</p> <ul style="list-style-type: none"> <li>• <a href="#">hw-module profile segment-routing srv6 mode</a>: Mode is a mandatory parameter</li> </ul> <p>The following commands are introduced:</p> <ul style="list-style-type: none"> <li>• <a href="#">encapsulation l2-traffic</a></li> <li>• <a href="#">encapsulation l3-traffic</a></li> </ul>
<b>System Monitoring</b>	
<a href="#">Out of Resource handling of Input Logical Interface and Router Interface</a>	<p>You can now reconfigure the threshold level for NPU resources - Input Logical Interface (INLIF) and Router Interface (RIF) by changing the predefined threshold level at which Out of Resource (OOR) situation is triggered. Graceful handling of OOR helps you to minimize traffic loss.</p> <p>You get notified via systemlogs, when the utilization of resources reaches their OOR limit. Also, you can view the utilization of resources by using the following commands:</p> <ul style="list-style-type: none"> <li>• <a href="#">show controllers npu resources</a></li> <li>• <a href="#">show grid pool</a></li> </ul>
<b>Network Synchronization</b>	
PTP Double Failure Clock Class	<p>This feature enables you to configure a clock class that will override the existing class during a state of double-failure where PTP and SyncE are lost.</p> <p>This feature introduces the <b>double-failure-clock-class</b> command.</p>
<b>System Management</b>	
Unified Model: Cisco-IOS-XR-um-fpd-cfg	<p>We have introduced the Cisco-IOS-XR-um-fpd-cfg unified model to enable or disable the automatic reload and automatic upgrade of Field Programmable Devices.</p> <p>You can access this unified model from the <a href="#">Github</a> repository.</p>

The following features are supported on N540-ACC-SYS, N540X-ACC-SYS, and N540-24Z8Q2C-SYS variants.

Feature	Description
<b>Modular QoS</b>	
<a href="#">Prioritize Traffic during Oversubscription</a>	<p>If the ASIC packet processing capacity is overloaded with continuous flow of packets, it's called oversubscription and it results in packet drops at the interface level. By enabling prioritization of packets during oversubscription, you can protect the high priority traffic.</p> <p>This feature introduces the <a href="#">hw-module oversubscription</a> command.</p>

The following features are supported on N540-ACC-SYS, N540X-ACC-SYS, N540-24Z8Q2C-SYS, N540-28Z4C-SYS-A/D, N540X-16Z4G8Q2C-A/D, N540-12Z20G-SYS-A/D, N540X-12Z16G-SYS-A/D, and N540-24Q8L2DD-SYS variants.

Feature	Description
<b>System Security</b>	
<a href="#">MACSec Support on N540-24Q8L2DD-SYS</a>	<p>MACSec, the Layer 2 encryption protocol, secures the data on physical media and provides data integrity and confidentiality.</p> <p>MACSec is now supported on the following Cisco NCS 540 router variant:</p> <ul style="list-style-type: none"> <li>• N540-24Q8L2DD-SYS</li> </ul> <p><b>Note</b> On the N540-24Q8L2DD-SYS router, MACSec is supported on 10G, 25G, 40G, 50G, 100G, 400G, 4x10G, 4x25G, 4x100G, and 2x100G on ports 0 to 9.</p> <ul style="list-style-type: none"> <li>• Ports 0 and 1 are QDD (400G) ports.</li> <li>• Ports 2 to 9 are SFP/SFP+ ports.</li> </ul> <p><b>Note</b> Data delay protection (DDP) is not supported on Cisco N540-24Q8L2DD-SYS routers.</p>
<b>Network Synchronization</b>	
<a href="#">Assisted Partial Timing Support</a>	<p>Assisted Partial Timing Support (APTS) is now available on the following Cisco NCS 540 router variants:</p> <ul style="list-style-type: none"> <li>• N540X-12Z16G-SYS-A/D</li> <li>• N540-24Q8L2DD-SYS</li> </ul> <p>APTS allows for proper distribution of phase and time synchronization in the network.</p>

Feature	Description
<a href="#">PTP Virtual Port Support for N540X-12Z16G-SYS-A/D and N540-24Q8L2DD-SYS</a>	PTP Virtual Port is now supported on the following Cisco NCS 540 router variants: <ul style="list-style-type: none"> <li>• N540X-12Z16G-SYS-A/D</li> <li>• N540-24Q8L2DD-SYS</li> </ul>
<a href="#">ITU-T G.8275.2 and Default PTP profiles over IPv6</a>	For ITU-T G.8275.2 and the IEEE 1588 default PTP profiles, the encapsulation type for PTP packet transport is now extended to IPv6. The transport command now accepts the keyword <b>ipv6</b> . In this release, this feature is supported on the following Cisco NCS 540 router variants: <ul style="list-style-type: none"> <li>• N540-ACC-SYS</li> <li>• N540X-ACC-SYS</li> <li>• N540-24Z8Q2C-SYS</li> <li>• N540-28Z4C-SYS-A/D</li> <li>• N540X-16Z4G8Q2C-A/D</li> <li>• N540-12Z20G-SYS-A/D</li> <li>• N540X-12Z16G-SYS-A/D</li> </ul>
<a href="#">Synchronous Ethernet ESMC and SSM on N540X-16Z4G8Q2C-A/D</a>	Synchronous Ethernet ESMC and SSM are now supported on the following Cisco NCS 540 router variant: <ul style="list-style-type: none"> <li>• N540X-16Z4G8Q2C-A/D</li> </ul> <p>For 1G ports, clock recovery is supported only on ports 4 to 19.</p>

## YANG Data Models Introduced and Enhanced

This release introduces or enhances the following data models. For detailed information about the supported and unsupported sensor paths of all the data models, see the [Github](#) repository. To get a comprehensive list of the data models supported in a release, navigate to the **Available-Content.md** file for the release in the Github repository. The unsupported sensor paths are documented as deviations. For example, `openconfig-acl.yang` provides details about the supported sensor paths, whereas `cisco-xr-openconfig-acl-deviations.yang` provides the unsupported sensor paths for `openconfig-acl.yang` on Cisco IOS XR routers.

Feature	Description
<b>Programmability</b>	

Feature	Description
OpenConfig Model: <i>openconfig-inet-types</i> Version 0.4.1	We have now revised the <i>openconfig-inet-types</i> open configuration from version 0.3.1 to 0.4.1. With this revision, this data model supports autogenerated regular expressions for faster validation of text strings for the following IPv4 pattern statement: <ul style="list-style-type: none"> <li>• ip-address</li> <li>• ipv4-address-zoned</li> <li>• ipv4-prefix</li> </ul> <p>You can access the OC data model from the <a href="#">Github</a> repository.</p>
openconfig-platform-transceiver Revision 0.7.0	The OpenConfig data model configures the mapping of optical channel with the configured physical channel, and physical port with the configured interface using the following XPathS: <ul style="list-style-type: none"> <li>• openconfig-platform/openconfig-platform-transceiver/ transceiver</li> <li>• openconfig-platform/openconfig-platform-transceiver/ physical-channels/channel[index]/config/associated-optical-channel</li> <li>• openconfig-platform/openconfig-platform-transceiver/ physical-channels/channel[index]/state/associated-optical-channel</li> </ul>
openconfig-terminal-device Revision 1.7.2	The OpenConfig data model configures terminal optics devices up to 400G bandwidth to manage the line side terminal systems in a Dense wavelength-division multiplexing (DWDM) transport network using the following XPathS: <ul style="list-style-type: none"> <li>• openconfig-terminal-device:terminal-device/logical-channels/channel</li> <li>• openconfig-terminal-device:terminal-device/optical-channels/channel</li> </ul>

## Restrictions and Limitations on the Cisco NCS 540 Series Router

- Fabric multicast queue stats are not supported in N540X-8Z16G-SYS-A/D, N540X-6Z18G-SYS-A/D, and N540X-4Z14G2Q-A/D variants.
- Unlabeled BGP PIC EDGE for global prefixes is not supported.
- The **show inventory** and the **show diagnostic** commands do not display the fan serial number for N540-28Z4C-SYS-A/D, N540-12Z20G-SYS-A/D, and N540X-12Z16G-SYS-A/D variants.
- The interface ports 0/0/0/24 to 0/0/0/31 do not support 1G Copper SFPs on N540-24Z8Q2C-SYS, N540-ACC-SYS, and N540X-ACC-SYS variants. Also, these ports do not support Auto-Negotiation with 1GE optical SFPs and they cannot act as 1GE Synchronous Ethernet sources.
- The interface ports 0/0/0/20 to 0/0/0/27 do not support 1G Copper SFPs on N540X-16Z4G8Q2C-A and N540X-16Z4G8Q2C-D variants. Also, these ports do not support Auto-Negotiation with 1GE optical SFPs and they cannot act as 1GE Synchronous Ethernet sources.



- Remove the speed settings on the 1G Copper optics when 10M/100M is configured and replaced with 1G SFP optics.
- The **hw-module profile mfib statistics** command is not supported.

## Cisco IOS XR Caveats Release 7.7.1

Bug ID	Headline
<a href="#">CSCwc00673</a>	Continuous HW_PROG_ERROR seen after commit replace of configuration
<a href="#">CSCwc09026</a>	Provisioning in progress alarm on ots-och on shut and no shut of ots0/0/0/0

## IOS XR Base Images and Optional Packages

For more information on system setup and software installation process, see [System Setup and Software Installation Guide for Cisco NCS 540 Series Routers](#).

For general and ordering information see:

- [Cisco Network Convergence System 540 Fronthaul Routers Data Sheet](#)
- [Cisco Network Convergence System 540 Large Density Router Data Sheet](#)
- [Cisco Network Convergence System 540 Medium Density Routers Data Sheet](#)
- [Cisco Network Convergence System 540 Small Density Router Data Sheet](#)

To install the Cisco NCS 540 Series Routers, see [Cisco NCS 540 Router Hardware Installation Guide](#).

## Release 7.7.1 Software

The following tables list the supported base images and optional packages and their corresponding file names.

- The first table lists the supported software for N540-24Z8Q2C-SYS, N540-ACC-SYS, and N540X-ACC-SYS variants.
- The second table lists the supported software for N540-24Q8L2DD-SYS, N540X-16Z4G8Q2C-A/D, N540-28Z4C-SYS-A/D, N540X-12Z16G-SYS-A/D, N540-12Z20G-SYS-A/D, N540-FH-CSR-SYS, and N540-FH-AGG-SYS variants.
- The third table lists the supported software for N540X-4Z14G2Q-A/D, N540X-8Z16G-SYS-A/D and N540X-6Z18G-SYS-A/D variants.

**Table 1: Release 7.7.1 Software for N540-24Z8Q2C-SYS, N540-ACC-SYS, and N540X-ACC-SYS**

Base Image	Filename
IOS XR Base Image	ncs540-mini-x-7.7.1.iso

USB Boot Package	ncs540-usb_boot-7.7.1.zip
<b>Optional Packages not included in the base image</b>	
<b>Package</b>	<b>Filename</b>
IOS XR Manageability	ncs540-mgbl-1.0.0.0-r771.x86_64.rpm
IOS XR MPLS	ncs540-mpls-1.0.0.0-r771.x86_64.rpm ncs540-mpls-te-rsvp-1.0.0.0-r771.x86_64.rpm
IOS XR Security	ncs540-k9sec-1.0.0.0-r771.x86_64.rpm
IOS XR ISIS	ncs540-isis-1.0.0.0-r771.x86_64.rpm
IOS XR OSPF	ncs540-ospf-1.0.0.0-r771.x86_64.rpm
IOS XR Lawful Intercept	ncs540-li-1.0.0.0-r771.x86_64.rpm
IOS XR Multicast	ncs540-mcast-1.0.0.0-r771.x86_64.rpm
IOS XR EIGRP	ncs540-eigrp-1.0.0.0-r771.x86_64.rpm
IOS XR LI-CTRL	ncs540-lictrl-1.0.0.0-r771.x86_64.rpm

**Table 2: Release 7.7.1 Software for N540-24Q8L2DD-SYS, N540X-16Z4G8Q2C-A/D, N540-28Z4C-SYS-A/D, N540X-12Z16G-SYS-A/D, N540-12Z20G-SYS-A/D, N540-FH-CSR-SYS, and N540-FH-AGG-SYS**

<b>Base Image</b>	<b>Filename</b>
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IOS XR Base Image	ncs540l-x64-7.7.1.iso
USB Boot Package	ncs540l-usb_boot-7.7.1.zip
<b>Optional Packages not included in the base image</b>	
<b>Package</b>	<b>Filename</b>
IOS XR Telnet (xr-telnet)	NCS540l-iosxr-7.7.1.tar
IOS XR EIGRP (xr-eigrp)	NCS540l-iosxr-7.7.1.tar
IOS XR CDP (xr-cdp)	NCS540l-iosxr-7.7.1.tar
IOS XR k9sec (xr-k9sec)	NCS540l-k9sec-rpms.7.7.1.tar
IOS XR RIP (xr-rip)	NCS540l-iosxr-7.7.1.tar

*Table 3: Release 7.7.1 Software for N540X-4Z14G2Q-A/D, N540X-8Z16G-SYS-A/D and N540X-6Z18G-SYS-A/D*

Base Image	Filename
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IOS XR Base Image	ncs540l-aarch64-7.7.1.iso
USB Boot Package	ncs540l-aarch64-usb_boot-7.7.1.zip
<b>Optional Packages not included in the base image</b>	
<b>Package</b>	<b>Filename</b>
IOS XR Telnet (xr-telnet)	NCS540l-aarch64-iosxr-optional-rpms-7.7.1.tar
IOS XR EIGRP (xr-eigrp)	NCS540l-aarch64-iosxr-optional-rpms-7.7.1.tar
IOS XR CDP (xr-cdp)	NCS540l-aarch64-iosxr-optional-rpms-7.7.1.tar
IOS XR k9sec (xr-k9sec)	NCS540l-aarch64-k9sec-rpms.7.7.1.tar
IOS XR RIP (xr-rip)	NCS540l-aarch64-iosxr-optional-rpms-7.7.1.tar

## Determine Software Version

Log in to the router and enter the **show version** command on the N540-24Z8Q2C-SYS, N540-ACC-SYS, and N540X-ACC-SYS variants:

```
RP/0/RP0/CPU0:Router# show version
Cisco IOS XR Software, Version 7.7.1
Copyright (c) 2013-2022 by Cisco Systems, Inc.
```

Build Information:

```
Built By      : ingunawa
Built On     : Mon Jul 25 02:19:41 PDT 2022
Built Host   : iox-lnx-096
Workspace    : /auto/srcarchive12/prod/7.7.1/ncs540/ws
Version      : 7.7.1
Location     : /opt/cisco/XR/packages/
Label       : 7.7.1
```

```
cisco NCS-540 () processor
System uptime is 5 hours 1 minute
```

Log in to the router and enter the **show version** command on the N540X-16Z4G8Q2C-A/D, N540-28Z4C-SYS-A/D, N540X-12Z16G-SYS-A/D, and N540-12Z20G-SYS-A/D variants:

```
RP/0/RP0/CPU0:Router# show version
Cisco IOS XR Software, Version 7.7.1 LNT
Copyright (c) 2013-2022 by Cisco Systems, Inc.
```

Build Information:

```
Built By      : ingunawa
Built On     : Mon Jul 25 06:07:25 UTC 2022
Built Host   : iox-ucs-002
Workspace    : /auto/srcarchive12/prod/7.7.1/ncs540l/ws
Version      : 7.7.1
Label       : 7.7.1-iso
```

```
cisco NCS540L (C3708 @ 1.70GHz)
cisco N540X-16Z4G8Q2C-A (C3708 @ 1.70GHz) processor with 8GB of memory
R1-EVERGLIDE uptime is 5 hours, 23 minutes
Cisco NCS 540 System with 16x10G+4x1GCu+8x25G+2x100G AC Chassis
```

Log in to the router and enter the **show version** command on the N540X-8Z16G-SYS-A/D, and N540X-6Z18G-SYS-A/D variants:

```
RP/0/RP0/CPU0:Router# show version
Cisco IOS XR Software, Version 7.7.1 LNT
Copyright (c) 2013-2022 by Cisco Systems, Inc.
```

Build Information:

```
Built By      : ingunawa
Built On     : Mon Jul 25 06:07:25 UTC 2022
Built Host   : iox-ucs-004
Workspace    : /auto/srcarchive12/prod/7.7.1/ncs540l-aarch64/ws
Version      : 7.7.1
Label       : 7.7.1-iso
```

```
cisco NCS540L
cisco N540X-6Z18G-SYS-D processor with 8GB of memory
R81-BEAGLE uptime is 6 hours, 23 minutes
Cisco NCS 540 Series Fixed Router 18x1G, 6x1/10G, DC
```

Log in to the router and enter the **show version** command on the N540-24Q8L2DD-SYS variant:

```
RP/0/RP0/CPU0:Router# show version
Cisco IOS XR Software, Version 7.7.1 LNT
Copyright (c) 2013-2022 by Cisco Systems, Inc.
```

Build Information:

```
Built By      : ingunawa
Built On     : Mon Jul 25 06:07:25 UTC 2022
Built Host   : iox-ucs-002
Workspace    : /auto/srcarchive12/prod/7.7.1/ncs540l/ws
Version      : 7.7.1
Label       : 7.7.1-iso
```

## Determine Firmware Support

```
cisco NCS540L (D1519 @ 1.50GHz)
cisco N540-24Q8L2DD-SYS (D1519 @ 1.50GHz) processor with 16GB of memory
R14-ARCHES uptime is 5 hours, 53 minutes
Cisco NCS540 Series, Fixed Router 2x400G, 8x50G, 24x25G Chassis
```

Log in to the router and enter the **show version** command on the N540-FH-AGG-SYS variant:

```
RP/0/RP0/CPU0:Router# show version
Cisco IOS XR Software, Version 7.7.1 LNT
Copyright (c) 2013-2022 by Cisco Systems, Inc.
```

### Build Information:

```
Built By      : ingunawa
Built On     : Mon Jul 25 06:07:25 UTC 2022
Build Host   : iox-ucs-002
Workspace    : /auto/srcarchive12/prod/7.7.1/ncs5401/ws
Version      : 7.7.1
Label       : 7.7.1
```

```
cisco NCS540L (C3708 @ 1.70GHz)
cisco N540-FH-AGG-SYS (C3708 @ 1.70GHz) processor with 8GB of memory
CE7-Lion uptime is 6 minutes
Cisco NCS 540 FH System with 24xCPRI/25G/10G/TSN+4x100G
```

## Determine Firmware Support

Use the **show** command in EXEC 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. The Golden FPDs with “NEED UPGD” can be ignored, the Golden FPDs are not upgradable.

Log in to the router and enter the **show fpd package** and **show hw-module fpd** commands on the Cisco N540-24Z8Q2C-SYS, N540X-ACC-SYS, and N540-ACC-SYS variants:

```
RP/0/RP0/CPU0:Router# show fpd package
=====
                                Field Programmable Device Package
                                =====
Card Type                       FPD Description                Req   SW   Min Req  Min Req
=====  =====  =====  =====  =====  =====
N540-24Z8Q2C-M                 Bootloader (A)                  YES   1.16  1.16     0.0
                                CPU-IOFPGA (A)                  YES   0.10  0.10     0.0
                                MB-IOFPGA (A)                   YES   0.26  0.26     0.0
                                MB-MIFPGA                        YES   0.05  0.05     0.0
                                SATA-INTEL_240G (A)             NO   1132.00 1132.00  0.0
                                SATA-INTEL_480G (A)             NO   1132.00 1132.00  0.0
                                SATA-M500IT-MC (A)              NO    3.00   3.00     0.0
                                SATA-M500IT-MU-A (A)            NO    5.00   5.00     0.0
                                SATA-M500IT-MU-B (A)            NO    4.00   4.00     0.0
                                SATA-M5100 (A)                  NO   75.00  75.00    0.0
                                SATA-M600-MCT (A)               NO    5.00   5.00     0.0
                                SATA-M600-MU (A)                NO    6.00   6.00     0.0
                                SATA-Micron (A)                 NO    1.00   1.00     0.0
                                SATA-SMART-128G (A)            NO  1241.00 1241.00  0.0
                                SSFP_E1F_0                      NO   13.01  13.01    0.0
                                SSFP_E1F_1                      NO   13.01  13.01    0.0
                                SSFP_E1F_10                     NO   13.01  13.01    0.0
                                SSFP_E1F_11                     NO   13.01  13.01    0.0
                                SSFP_E1F_12                     NO   13.01  13.01    0.0
                                SSFP_E1F_13                     NO   13.01  13.01    0.0
                                SSFP_E1F_14                     NO   13.01  13.01    0.0
                                SSFP_E1F_15                     NO   13.01  13.01    0.0
```

SSFP_E1F_16	NO	13.01	13.01	0.0	
SSFP_E1F_17	NO	13.01	13.01	0.0	
SSFP_E1F_18	NO	13.01	13.01	0.0	
SSFP_E1F_19	NO	13.01	13.01	0.0	
SSFP_E1F_2	NO	13.01	13.01	0.0	
SSFP_E1F_20	NO	13.01	13.01	0.0	
SSFP_E1F_21	NO	13.01	13.01	0.0	
SSFP_E1F_22	NO	13.01	13.01	0.0	
SSFP_E1F_23	NO	13.01	13.01	0.0	
SSFP_E1F_24	NO	13.01	13.01	0.0	
SSFP_E1F_25	NO	13.01	13.01	0.0	
SSFP_E1F_26	NO	13.01	13.01	0.0	
SSFP_E1F_27	NO	13.01	13.01	0.0	
SSFP_E1F_28	NO	13.01	13.01	0.0	
SSFP_E1F_29	NO	13.01	13.01	0.0	
SSFP_E1F_3	NO	13.01	13.01	0.0	
SSFP_E1F_30	NO	13.01	13.01	0.0	
SSFP_E1F_31	NO	13.01	13.01	0.0	
SSFP_E1F_4	NO	13.01	13.01	0.0	
SSFP_E1F_5	NO	13.01	13.01	0.0	
SSFP_E1F_6	NO	13.01	13.01	0.0	
SSFP_E1F_7	NO	13.01	13.01	0.0	
SSFP_E1F_8	NO	13.01	13.01	0.0	
SSFP_E1F_9	NO	13.01	13.01	0.0	
SSFP_OC3_STM1_0	NO	12.01	12.01	0.0	
SSFP_OC3_STM1_1	NO	12.01	12.01	0.0	
SSFP_OC3_STM1_10	NO	12.01	12.01	0.0	
SSFP_OC3_STM1_11	NO	12.01	12.01	0.0	
SSFP_OC3_STM1_12	NO	12.01	12.01	0.0	
SSFP_OC3_STM1_13	NO	12.01	12.01	0.0	
SSFP_OC3_STM1_14	NO	12.01	12.01	0.0	
SSFP_OC3_STM1_15	NO	12.01	12.01	0.0	
SSFP_OC3_STM1_16	NO	12.01	12.01	0.0	
SSFP_OC3_STM1_17	NO	12.01	12.01	0.0	
SSFP_OC3_STM1_18	NO	12.01	12.01	0.0	
SSFP_OC3_STM1_19	NO	12.01	12.01	0.0	
SSFP_OC3_STM1_2	NO	12.01	12.01	0.0	
SSFP_OC3_STM1_20	NO	12.01	12.01	0.0	
SSFP_OC3_STM1_21	NO	12.01	12.01	0.0	
SSFP_OC3_STM1_22	NO	12.01	12.01	0.0	
SSFP_OC3_STM1_23	NO	12.01	12.01	0.0	
SSFP_OC3_STM1_24	NO	12.01	12.01	0.0	
SSFP_OC3_STM1_25	NO	12.01	12.01	0.0	
SSFP_OC3_STM1_26	NO	12.01	12.01	0.0	
SSFP_OC3_STM1_27	NO	12.01	12.01	0.0	
SSFP_OC3_STM1_28	NO	12.01	12.01	0.0	
SSFP_OC3_STM1_29	NO	12.01	12.01	0.0	
SSFP_OC3_STM1_3	NO	12.01	12.01	0.0	
SSFP_OC3_STM1_30	NO	12.01	12.01	0.0	
SSFP_OC3_STM1_31	NO	12.01	12.01	0.0	
SSFP_OC3_STM1_4	NO	12.01	12.01	0.0	
SSFP_OC3_STM1_5	NO	12.01	12.01	0.0	
SSFP_OC3_STM1_6	NO	12.01	12.01	0.0	
SSFP_OC3_STM1_7	NO	12.01	12.01	0.0	
SSFP_OC3_STM1_8	NO	12.01	12.01	0.0	
SSFP_OC3_STM1_9	NO	12.01	12.01	0.0	
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N540-ACC-SYS	Bootloader (A)	YES	1.16	1.16	0.0
	CPU-IOFPGA (A)	YES	0.10	0.10	0.0
	MB-IOFPGA (A)	YES	0.26	0.26	0.0
	MB-MIFPGA	YES	0.05	0.05	0.0
	SATA-INTEL_240G (A)	NO	1132.00	1132.00	0.0
	SATA-INTEL_480G (A)	NO	1132.00	1132.00	0.0
	SATA-M500IT-MC (A)	NO	3.00	3.00	0.0

## Determine Firmware Support

SATA-M500IT-MU-A (A)	NO	5.00	5.00	0.0
SATA-M500IT-MU-B (A)	NO	4.00	4.00	0.0
SATA-M5100 (A)	NO	75.00	75.00	0.0
SATA-M600-MCT (A)	NO	5.00	5.00	0.0
SATA-M600-MU (A)	NO	6.00	6.00	0.0
SATA-Micron (A)	NO	1.00	1.00	0.0
SATA-SMART-128G (A)	NO	1241.00	1241.00	0.0
SSFP_E1F_0	NO	13.01	13.01	0.0
SSFP_E1F_1	NO	13.01	13.01	0.0
SSFP_E1F_10	NO	13.01	13.01	0.0
SSFP_E1F_11	NO	13.01	13.01	0.0
SSFP_E1F_12	NO	13.01	13.01	0.0
SSFP_E1F_13	NO	13.01	13.01	0.0
SSFP_E1F_14	NO	13.01	13.01	0.0
SSFP_E1F_15	NO	13.01	13.01	0.0
SSFP_E1F_16	NO	13.01	13.01	0.0
SSFP_E1F_17	NO	13.01	13.01	0.0
SSFP_E1F_18	NO	13.01	13.01	0.0
SSFP_E1F_19	NO	13.01	13.01	0.0
SSFP_E1F_2	NO	13.01	13.01	0.0
SSFP_E1F_20	NO	13.01	13.01	0.0
SSFP_E1F_21	NO	13.01	13.01	0.0
SSFP_E1F_22	NO	13.01	13.01	0.0
SSFP_E1F_23	NO	13.01	13.01	0.0
SSFP_E1F_24	NO	13.01	13.01	0.0
SSFP_E1F_25	NO	13.01	13.01	0.0
SSFP_E1F_26	NO	13.01	13.01	0.0
SSFP_E1F_27	NO	13.01	13.01	0.0
SSFP_E1F_28	NO	13.01	13.01	0.0
SSFP_E1F_29	NO	13.01	13.01	0.0
SSFP_E1F_3	NO	13.01	13.01	0.0
SSFP_E1F_30	NO	13.01	13.01	0.0
SSFP_E1F_31	NO	13.01	13.01	0.0
SSFP_E1F_4	NO	13.01	13.01	0.0
SSFP_E1F_5	NO	13.01	13.01	0.0
SSFP_E1F_6	NO	13.01	13.01	0.0
SSFP_E1F_7	NO	13.01	13.01	0.0
SSFP_E1F_8	NO	13.01	13.01	0.0
SSFP_E1F_9	NO	13.01	13.01	0.0
SSFP_OC3_STM1_0	NO	12.01	12.01	0.0
SSFP_OC3_STM1_1	NO	12.01	12.01	0.0
SSFP_OC3_STM1_10	NO	12.01	12.01	0.0
SSFP_OC3_STM1_11	NO	12.01	12.01	0.0
SSFP_OC3_STM1_12	NO	12.01	12.01	0.0
SSFP_OC3_STM1_13	NO	12.01	12.01	0.0
SSFP_OC3_STM1_14	NO	12.01	12.01	0.0
SSFP_OC3_STM1_15	NO	12.01	12.01	0.0
SSFP_OC3_STM1_16	NO	12.01	12.01	0.0
SSFP_OC3_STM1_17	NO	12.01	12.01	0.0
SSFP_OC3_STM1_18	NO	12.01	12.01	0.0
SSFP_OC3_STM1_19	NO	12.01	12.01	0.0
SSFP_OC3_STM1_2	NO	12.01	12.01	0.0
SSFP_OC3_STM1_20	NO	12.01	12.01	0.0
SSFP_OC3_STM1_21	NO	12.01	12.01	0.0
SSFP_OC3_STM1_22	NO	12.01	12.01	0.0
SSFP_OC3_STM1_23	NO	12.01	12.01	0.0
SSFP_OC3_STM1_24	NO	12.01	12.01	0.0
SSFP_OC3_STM1_25	NO	12.01	12.01	0.0
SSFP_OC3_STM1_26	NO	12.01	12.01	0.0
SSFP_OC3_STM1_27	NO	12.01	12.01	0.0
SSFP_OC3_STM1_28	NO	12.01	12.01	0.0
SSFP_OC3_STM1_29	NO	12.01	12.01	0.0
SSFP_OC3_STM1_3	NO	12.01	12.01	0.0
SSFP_OC3_STM1_30	NO	12.01	12.01	0.0



	SSFP_OC3_STM1_31	NO	12.01	12.01	0.0
	SSFP_OC3_STM1_4	NO	12.01	12.01	0.0
	SSFP_OC3_STM1_5	NO	12.01	12.01	0.0
	SSFP_OC3_STM1_6	NO	12.01	12.01	0.0
	SSFP_OC3_STM1_7	NO	12.01	12.01	0.0
	SSFP_OC3_STM1_8	NO	12.01	12.01	0.0
	SSFP_OC3_STM1_9	NO	12.01	12.01	0.0
-----					
N540-PWR400-A	LIT-PrimCU-ACFW (A)	NO	0.04	0.04	0.0
	LIT-SecMCU-ACFW (A)	NO	0.07	0.07	0.0
-----					
N540-PWR400-D	LIT-PrimCU-DCFW (A)	NO	0.04	0.04	0.0
	LIT-SecMCU-DCFW (A)	NO	0.06	0.06	0.0
	SDG-PrimCU-DCFW (A)	NO	1.03	1.03	0.0
	SDG-SecMCU-DCFW (A)	NO	1.03	1.03	0.0
-----					
N540-X-24Z8Q2C-M	Bootloader (A)	YES	1.16	1.16	0.0
	CPU-IOFPGA (A)	YES	0.10	0.10	0.0
	MB-IOFPGA (A)	YES	0.26	0.26	0.0
	MB-MIFPGA	YES	0.05	0.05	0.0
	SATA-INTEL_240G (A)	NO	1132.00	1132.00	0.0
	SATA-INTEL_480G (A)	NO	1132.00	1132.00	0.0
	SATA-M500IT-MC (A)	NO	3.00	3.00	0.0
	SATA-M500IT-MU-A (A)	NO	5.00	5.00	0.0
	SATA-M500IT-MU-B (A)	NO	4.00	4.00	0.0
	SATA-M5100 (A)	NO	75.00	75.00	0.0
	SATA-M600-MCT (A)	NO	5.00	5.00	0.0
	SATA-M600-MU (A)	NO	6.00	6.00	0.0
	SATA-Micron (A)	NO	1.00	1.00	0.0
	SATA-SMART-128G (A)	NO	1241.00	1241.00	0.0
	SSFP_E1F_0	NO	13.01	13.01	0.0
	SSFP_E1F_1	NO	13.01	13.01	0.0
	SSFP_E1F_10	NO	13.01	13.01	0.0
	SSFP_E1F_11	NO	13.01	13.01	0.0
	SSFP_E1F_12	NO	13.01	13.01	0.0
	SSFP_E1F_13	NO	13.01	13.01	0.0
	SSFP_E1F_14	NO	13.01	13.01	0.0
	SSFP_E1F_15	NO	13.01	13.01	0.0
	SSFP_E1F_16	NO	13.01	13.01	0.0
	SSFP_E1F_17	NO	13.01	13.01	0.0
	SSFP_E1F_18	NO	13.01	13.01	0.0
	SSFP_E1F_19	NO	13.01	13.01	0.0
	SSFP_E1F_20	NO	13.01	13.01	0.0
	SSFP_E1F_21	NO	13.01	13.01	0.0
	SSFP_E1F_22	NO	13.01	13.01	0.0
	SSFP_E1F_23	NO	13.01	13.01	0.0
	SSFP_E1F_24	NO	13.01	13.01	0.0
	SSFP_E1F_25	NO	13.01	13.01	0.0
	SSFP_E1F_26	NO	13.01	13.01	0.0
	SSFP_E1F_27	NO	13.01	13.01	0.0
	SSFP_E1F_28	NO	13.01	13.01	0.0
	SSFP_E1F_29	NO	13.01	13.01	0.0
	SSFP_E1F_3	NO	13.01	13.01	0.0
	SSFP_E1F_30	NO	13.01	13.01	0.0
	SSFP_E1F_31	NO	13.01	13.01	0.0
	SSFP_E1F_4	NO	13.01	13.01	0.0
	SSFP_E1F_5	NO	13.01	13.01	0.0
	SSFP_E1F_6	NO	13.01	13.01	0.0
	SSFP_E1F_7	NO	13.01	13.01	0.0
	SSFP_E1F_8	NO	13.01	13.01	0.0
	SSFP_E1F_9	NO	13.01	13.01	0.0
	SSFP_OC3_STM1_0	NO	12.01	12.01	0.0
SSFP_OC3_STM1_1	NO	12.01	12.01	0.0	

## Determine Firmware Support

	SSFP_OC3_STM1_10	NO	12.01	12.01	0.0
	SSFP_OC3_STM1_11	NO	12.01	12.01	0.0
	SSFP_OC3_STM1_12	NO	12.01	12.01	0.0
	SSFP_OC3_STM1_13	NO	12.01	12.01	0.0
	SSFP_OC3_STM1_14	NO	12.01	12.01	0.0
	SSFP_OC3_STM1_15	NO	12.01	12.01	0.0
	SSFP_OC3_STM1_16	NO	12.01	12.01	0.0
	SSFP_OC3_STM1_17	NO	12.01	12.01	0.0
	SSFP_OC3_STM1_18	NO	12.01	12.01	0.0
	SSFP_OC3_STM1_19	NO	12.01	12.01	0.0
	SSFP_OC3_STM1_2	NO	12.01	12.01	0.0
	SSFP_OC3_STM1_20	NO	12.01	12.01	0.0
	SSFP_OC3_STM1_21	NO	12.01	12.01	0.0
	SSFP_OC3_STM1_22	NO	12.01	12.01	0.0
	SSFP_OC3_STM1_23	NO	12.01	12.01	0.0
	SSFP_OC3_STM1_24	NO	12.01	12.01	0.0
	SSFP_OC3_STM1_25	NO	12.01	12.01	0.0
	SSFP_OC3_STM1_26	NO	12.01	12.01	0.0
	SSFP_OC3_STM1_27	NO	12.01	12.01	0.0
	SSFP_OC3_STM1_28	NO	12.01	12.01	0.0
	SSFP_OC3_STM1_29	NO	12.01	12.01	0.0
	SSFP_OC3_STM1_3	NO	12.01	12.01	0.0
	SSFP_OC3_STM1_30	NO	12.01	12.01	0.0
	SSFP_OC3_STM1_31	NO	12.01	12.01	0.0
	SSFP_OC3_STM1_4	NO	12.01	12.01	0.0
	SSFP_OC3_STM1_5	NO	12.01	12.01	0.0
	SSFP_OC3_STM1_6	NO	12.01	12.01	0.0
	SSFP_OC3_STM1_7	NO	12.01	12.01	0.0
	SSFP_OC3_STM1_8	NO	12.01	12.01	0.0
	SSFP_OC3_STM1_9	NO	12.01	12.01	0.0
-----					
N540X-ACC-SYS	Bootloader (A)	YES	1.16	1.16	0.0
	CPU-IOFPGA (A)	YES	0.10	0.10	0.0
	MB-IOFPGA (A)	YES	0.26	0.26	0.0
	MB-MIFPGA	YES	0.05	0.05	0.0
	SATA-INTEL_240G (A)	NO	1132.00	1132.00	0.0
	SATA-INTEL_480G (A)	NO	1132.00	1132.00	0.0
	SATA-M500IT-MC (A)	NO	3.00	3.00	0.0
	SATA-M500IT-MU-A (A)	NO	5.00	5.00	0.0
	SATA-M500IT-MU-B (A)	NO	4.00	4.00	0.0
	SATA-M5100 (A)	NO	75.00	75.00	0.0
	SATA-M600-MCT (A)	NO	5.00	5.00	0.0
	SATA-M600-MU (A)	NO	6.00	6.00	0.0
	SATA-Micron (A)	NO	1.00	1.00	0.0
	SATA-SMART-128G (A)	NO	1241.00	1241.00	0.0
	SSFP_E1F_0	NO	13.01	13.01	0.0
	SSFP_E1F_1	NO	13.01	13.01	0.0
	SSFP_E1F_10	NO	13.01	13.01	0.0
	SSFP_E1F_11	NO	13.01	13.01	0.0
	SSFP_E1F_12	NO	13.01	13.01	0.0
	SSFP_E1F_13	NO	13.01	13.01	0.0
	SSFP_E1F_14	NO	13.01	13.01	0.0
	SSFP_E1F_15	NO	13.01	13.01	0.0
	SSFP_E1F_16	NO	13.01	13.01	0.0
	SSFP_E1F_17	NO	13.01	13.01	0.0
	SSFP_E1F_18	NO	13.01	13.01	0.0
	SSFP_E1F_19	NO	13.01	13.01	0.0
	SSFP_E1F_2	NO	13.01	13.01	0.0
	SSFP_E1F_20	NO	13.01	13.01	0.0
	SSFP_E1F_21	NO	13.01	13.01	0.0
	SSFP_E1F_22	NO	13.01	13.01	0.0
	SSFP_E1F_23	NO	13.01	13.01	0.0
	SSFP_E1F_24	NO	13.01	13.01	0.0
	SSFP_E1F_25	NO	13.01	13.01	0.0

SSFP_E1F_26	NO	13.01	13.01	0.0
SSFP_E1F_27	NO	13.01	13.01	0.0
SSFP_E1F_28	NO	13.01	13.01	0.0
SSFP_E1F_29	NO	13.01	13.01	0.0
SSFP_E1F_3	NO	13.01	13.01	0.0
SSFP_E1F_30	NO	13.01	13.01	0.0
SSFP_E1F_31	NO	13.01	13.01	0.0
SSFP_E1F_4	NO	13.01	13.01	0.0
SSFP_E1F_5	NO	13.01	13.01	0.0
SSFP_E1F_6	NO	13.01	13.01	0.0
SSFP_E1F_7	NO	13.01	13.01	0.0
SSFP_E1F_8	NO	13.01	13.01	0.0
SSFP_E1F_9	NO	13.01	13.01	0.0
SSFP_OC3_STM1_0	NO	12.01	12.01	0.0
SSFP_OC3_STM1_1	NO	12.01	12.01	0.0
SSFP_OC3_STM1_10	NO	12.01	12.01	0.0
SSFP_OC3_STM1_11	NO	12.01	12.01	0.0
SSFP_OC3_STM1_12	NO	12.01	12.01	0.0
SSFP_OC3_STM1_13	NO	12.01	12.01	0.0
SSFP_OC3_STM1_14	NO	12.01	12.01	0.0
SSFP_OC3_STM1_15	NO	12.01	12.01	0.0
SSFP_OC3_STM1_16	NO	12.01	12.01	0.0
SSFP_OC3_STM1_17	NO	12.01	12.01	0.0
SSFP_OC3_STM1_18	NO	12.01	12.01	0.0
SSFP_OC3_STM1_19	NO	12.01	12.01	0.0
SSFP_OC3_STM1_2	NO	12.01	12.01	0.0
SSFP_OC3_STM1_20	NO	12.01	12.01	0.0
SSFP_OC3_STM1_21	NO	12.01	12.01	0.0
SSFP_OC3_STM1_22	NO	12.01	12.01	0.0
SSFP_OC3_STM1_23	NO	12.01	12.01	0.0
SSFP_OC3_STM1_24	NO	12.01	12.01	0.0
SSFP_OC3_STM1_25	NO	12.01	12.01	0.0
SSFP_OC3_STM1_26	NO	12.01	12.01	0.0
SSFP_OC3_STM1_27	NO	12.01	12.01	0.0
SSFP_OC3_STM1_28	NO	12.01	12.01	0.0
SSFP_OC3_STM1_29	NO	12.01	12.01	0.0
SSFP_OC3_STM1_3	NO	12.01	12.01	0.0
SSFP_OC3_STM1_30	NO	12.01	12.01	0.0
SSFP_OC3_STM1_31	NO	12.01	12.01	0.0
SSFP_OC3_STM1_4	NO	12.01	12.01	0.0
SSFP_OC3_STM1_5	NO	12.01	12.01	0.0
SSFP_OC3_STM1_6	NO	12.01	12.01	0.0
SSFP_OC3_STM1_7	NO	12.01	12.01	0.0
SSFP_OC3_STM1_8	NO	12.01	12.01	0.0
SSFP_OC3_STM1_9	NO	12.01	12.01	0.0

RP/0/RP0/CPU0:Router# show hw-module fpd  
 Auto-upgrade:Enabled

Location	Card type	HWver	FPD device	ATR Status	FPD Versions	
					Running	Programd
0/RP0	N540-ACC-SYS	1.0	MB-MIFPGA	CURRENT	0.05	0.05
0/RP0	N540-ACC-SYS	1.0	Bootloader	CURRENT	1.16	1.16
0/RP0	N540-ACC-SYS	1.0	CPU-IOFPGA	CURRENT	0.10	0.10
0/RP0	N540-ACC-SYS	1.0	MB-IOFPGA	CURRENT	0.26	0.26
0/RP0	N540-ACC-SYS	1.0	SATA-M500IT-MU-B	CURRENT	4.00	4.00
0/PM0	N540-PWR400-A		SDG-PrimCU-ACFW	NOT READY		
0/PM0	N540-PWR400-A		SDG-SecMCU-ACFW	NOT READY		
0/PM1	N540-PWR400-A	1.256	LIT-PrimCU-ACFW	CURRENT	0.04	0.04
0/PM1	N540-PWR400-A	1.256	LIT-SecMCU-ACFW	CURRENT	0.07	0.07

Log in to the router and enter the **show fpd package** and **show hw-module fpd** commands on the Cisco N540-28Z4C-SYS-A/D, N540-12Z20G-SYS-A/D, N540X-12Z16G-SYS-A/D and N540X-16Z4G8Q2C-A/D variants:

```
RP/0/RP0/CPU0:Router#show fpd package
```

```
=====
                                Field Programmable Device Package
                                =====
Card Type          FPD Description          Req   SW   Min Req  Min Req
=====          =====          Relo  Ver  SW Ver   Board Ver
=====          =====          =====
-----
N540-12Z20G-SYS-A  ADMConfig                NO    1.05  1.05     0.0
                  IoFpga                   YES   2.07  2.07     0.0
                  IoFpgaGolden             YES   2.07  2.03     0.0
                  Primary-BIOS             YES   1.41  1.41     0.0
                  StdbyFpga               YES   0.40  0.40     0.0
                  StdbyFpgaGolden         YES   0.40  0.40     0.0
                  TamFw                   YES   4.11  4.11     0.0
                  TamFwGolden            YES   4.11  4.11     0.0
-----
N540-12Z20G-SYS-D  ADMConfig                NO    1.05  1.05     0.0
                  IoFpga                   YES   2.07  2.07     0.0
                  IoFpgaGolden             YES   2.07  2.03     0.0
                  Primary-BIOS             YES   1.41  1.41     0.0
                  StdbyFpga               YES   0.40  0.40     0.0
                  StdbyFpgaGolden         YES   0.40  0.40     0.0
                  TamFw                   YES   4.11  4.11     0.0
                  TamFwGolden            YES   4.11  4.11     0.0
-----
N540-24Q8L2DD-SYS ADM-DBConfig             NO    2.03  2.03     0.0
                  ADM-MBConfig            NO    2.01  2.01     0.0
                  IoFpga                   YES   2.12  2.12     0.0
                  IoFpgaGolden             YES   2.12  2.12     0.0
                  Primary-BIOS             YES   4.05  4.05     0.0
                  StdbyFpga               YES   2.59  2.59     0.0
                  StdbyFpgaGolden         YES   2.56  2.39     0.0
                  TamFw                   YES   6.05  6.05     0.0
                  TamFwGolden            YES   6.05  6.05     0.0
-----
N540-28Z4C-SYS-A  ADMConfig                NO    1.05  1.05     0.0
                  IoFpga                   YES   2.07  2.07     0.0
                  IoFpgaGolden             YES   2.07  2.03     0.0
                  Primary-BIOS             YES   1.41  1.41     0.0
                  StdbyFpga               YES   0.40  0.40     0.0
                  StdbyFpgaGolden         YES   0.40  0.40     0.0
                  TamFw                   YES   4.11  4.11     0.0
                  TamFwGolden            YES   4.11  4.11     0.0
-----
N540-28Z4C-SYS-D  ADMConfig                NO    1.05  1.05     0.0
                  IoFpga                   YES   2.07  2.07     0.0
                  IoFpgaGolden             YES   2.07  2.03     0.0
                  Primary-BIOS             YES   1.41  1.41     0.0
                  StdbyFpga               YES   0.40  0.40     0.0
                  StdbyFpgaGolden         YES   0.40  0.40     0.0
                  TamFw                   YES   4.11  4.11     0.0
                  TamFwGolden            YES   4.11  4.11     0.0
-----
N540-FH-AGG-SYS   ADM1_Config              NO    1.02  1.02     1.0
                  ADM2_Config              NO    1.02  1.02     1.0
                  DpFpgaCpri             YES   0.22  0.22     0.0
                  DpFpgaEth             YES   1.20  1.20     0.0
                  IoFpga                   YES   1.30  1.30     0.0
                  IoFpgaGolden             YES   1.30  1.30     0.0
-----
```

	Primary-BIOS	YES	1.33	1.33	0.0
	StdbyFpga	YES	0.46	0.46	0.0
	StdbyFpgaGolden	YES	0.46	0.46	0.0
	TamFw	YES	6.05	6.05	0.0
	TamFwGolden	YES	6.05	6.05	0.0
-----					
N540-FH-CSR-SYS	ADM1_Config	NO	0.09	0.09	0.0
	ADM1_Config	NO	1.01	1.01	2.0
	ADM2_Config	NO	0.09	0.09	0.0
	ADM2_Config	NO	1.01	1.01	2.0
	DpFpga	YES	0.21	0.21	0.0
	IoFpga	YES	1.30	1.30	0.0
	IoFpgaGolden	YES	1.30	1.30	0.0
	Primary-BIOS	YES	1.33	1.33	0.0
	StdbyFpga	YES	0.46	0.46	0.0
	StdbyFpgaGolden	YES	0.46	0.46	0.0
	TamFw	YES	6.05	6.05	0.0
	TamFwGolden	YES	6.05	6.05	0.0
-----					
N540-PWR400-A	LI-PrimMCU	NO	0.04	0.04	0.0
	LI-SecMCU	NO	0.06	0.06	0.0
	PrimMCU	NO	1.02	1.02	0.0
	SecMCU	NO	1.03	1.03	0.0
-----					
N540-PWR400-D	LI-PrimMCU	NO	0.04	0.04	0.0
	LI-SecMCU	NO	0.06	0.06	0.0
	PrimMCU	NO	1.03	1.03	0.0
	SecMCU	NO	1.03	1.03	0.0
-----					
N540-PWR750-A	EM-PrimMCU	NO	1.02	1.02	0.0
	EM-SecMCU	NO	1.03	1.03	0.0
-----					
N540-PWR750-D	EM-PrimMCU	NO	1.03	1.03	0.0
	EM-SecMCU	NO	3.01	3.01	0.0
-----					
N540X-12Z16G-SYS-A	ADMConfig	NO	1.05	1.05	0.0
	IoFpga	YES	2.07	2.07	0.0
	IoFpgaGolden	YES	2.07	2.03	0.0
	Primary-BIOS	YES	1.41	1.41	0.0
	StdbyFpga	YES	0.40	0.40	0.0
	StdbyFpgaGolden	YES	0.40	0.40	0.0
	TamFw	YES	4.11	4.11	0.0
	TamFwGolden	YES	4.11	4.11	0.0
-----					
N540X-12Z16G-SYS-D	ADMConfig	NO	1.05	1.05	0.0
	IoFpga	YES	2.07	2.07	0.0
	IoFpgaGolden	YES	2.07	2.03	0.0
	Primary-BIOS	YES	1.41	1.41	0.0
	StdbyFpga	YES	0.40	0.40	0.0
	StdbyFpgaGolden	YES	0.40	0.40	0.0
	TamFw	YES	4.11	4.11	0.0
	TamFwGolden	YES	4.11	4.11	0.0
-----					
N540X-16Z4G8Q2C-A	ADMConfig	NO	1.05	1.05	0.0
	IoFpga	YES	2.07	2.07	0.0
	IoFpgaGolden	YES	2.07	2.03	0.0
	Primary-BIOS	YES	1.41	1.41	0.0
	StdbyFpga	YES	0.40	0.40	0.0
	StdbyFpgaGolden	YES	0.40	0.40	0.0
	TamFw	YES	4.11	4.11	0.0
	TamFwGolden	YES	4.11	4.11	0.0
-----					
N540X-16Z4G8Q2C-D	ADMConfig	NO	1.05	1.05	0.0
	IoFpga	YES	2.07	2.07	0.0

Determine Firmware Support

	IoFpgaGolden	YES	2.07	2.03	0.0
	Primary-BIOS	YES	1.41	1.41	0.0
	StdbyFpga	YES	0.40	0.40	0.0
	StdbyFpgaGolden	YES	0.40	0.40	0.0
	TamFw	YES	4.11	4.11	0.0
	TamFwGolden	YES	4.11	4.11	0.0
-----					
N540X-16Z8Q2C-A	ADMConfig	NO	1.05	1.05	0.0
	IoFpga	YES	2.07	2.07	0.0
	IoFpgaGolden	YES	2.07	2.03	0.0
	Primary-BIOS	YES	1.41	1.41	0.0
	StdbyFpga	YES	0.40	0.40	0.0
	StdbyFpgaGolden	YES	0.40	0.40	0.0
	TamFw	YES	4.11	4.11	0.0
	TamFwGolden	YES	4.11	4.11	0.0
-----					
N540X-16Z8Q2C-D	ADMConfig	NO	1.05	1.05	0.0
	IoFpga	YES	2.07	2.07	0.0
	IoFpgaGolden	YES	2.07	2.03	0.0
	Primary-BIOS	YES	1.41	1.41	0.0
	StdbyFpga	YES	0.40	0.40	0.0
	StdbyFpgaGolden	YES	0.40	0.40	0.0
	TamFw	YES	4.11	4.11	0.0
	TamFwGolden	YES	4.11	4.11	0.0

RP/0/RP0/CPU0:Router# show hw-module fpd  
 Auto-upgrade:Enabled  
 Attribute codes: B golden, P protect, S secure

Location	Card type	HWver	FPD device	ATR Status	FPD Versions	
					Running	Programd
Reload Loc						
0/RP0/CPU0	N540X-16Z4G8Q2C-A	1.0	ADMConfig	CURRENT	1.05	1.05
0/RP0/CPU0	N540X-16Z4G8Q2C-A	1.0	IoFpga	CURRENT	2.07	2.07
0/RP0/CPU0	N540X-16Z4G8Q2C-A	1.0	IoFpgaGolden	B NEED UPGD		1.31
0/RP0/CPU0	N540X-16Z4G8Q2C-A	1.0	Primary-BIOS	S CURRENT	1.41	1.41
0/RP0/CPU0	N540X-16Z4G8Q2C-A	1.0	StdbyFpga	S CURRENT	0.40	0.40
0/RP0/CPU0	N540X-16Z4G8Q2C-A	1.0	StdbyFpgaGolden	BS NEED UPGD		0.37
0/RP0/CPU0	N540X-16Z4G8Q2C-A	1.0	TamFw	S CURRENT	4.11	4.11
0/RP0/CPU0	N540X-16Z4G8Q2C-A	1.0	TamFwGolden	BS CURRENT		4.11

Log in to the router and enter the **show fpd package** and **show hw-module fpd** commands on the Cisco N540X-6Z18G-SYS-A/D, and N540X-8Z16G-SYS-A/D variants:

```
RP/0/RP0/CPU0:Router#show fpd package
```

Field Programmable Device Package					
Card Type	FPD Description	Req Reload	SW Ver	Min Req SW Ver	Min Req Board Ver
N540-6Z14S-SYS-D	ADMConfig	NO	5.03	5.03	0.0
	BckUp-BootLoader	YES	20.05	20.05	0.0
	IoFpga	YES	0.17	0.17	0.0
	IoFpgaGolden	YES	0.15	0.15	0.0

	Prim-BootLoader	YES	20.05	20.05	0.0
	Stdbypfpga	YES	1.09	1.09	0.0
	StdbypfpgaGolden	YES	0.33	0.33	0.0
	TamFw	YES	6.05	6.05	0.0
	TamFwGolden	YES	6.05	6.05	0.0
-----					
N540X-4Z14G2Q-A	ADMConfig	NO	5.00	5.00	0.0
	BckUp-BootLoader	YES	20.05	20.05	0.0
	IoFpga	YES	0.17	0.17	0.0
	IoFpgaGolden	YES	0.15	0.15	0.0
	Prim-BootLoader	YES	20.05	20.05	0.0
	Stdbypfpga	YES	1.09	1.09	0.0
	StdbypfpgaGolden	YES	0.33	0.33	0.0
	TamFw	YES	6.05	6.05	0.0
	TamFwGolden	YES	6.05	6.05	0.0
-----					
N540X-4Z14G2Q-D	ADMConfig	NO	5.00	5.00	0.0
	BckUp-BootLoader	YES	20.05	20.05	0.0
	IoFpga	YES	0.17	0.17	0.0
	IoFpgaGolden	YES	0.15	0.15	0.0
	Prim-BootLoader	YES	20.05	20.05	0.0
	Stdbypfpga	YES	1.09	1.09	0.0
	StdbypfpgaGolden	YES	0.33	0.33	0.0
	TamFw	YES	6.05	6.05	0.0
	TamFwGolden	YES	6.05	6.05	0.0
-----					
N540X-6Z18G-SYS-A	ADMConfig	NO	5.00	5.00	0.0
	BckUp-BootLoader	YES	20.05	20.05	0.0
	IoFpga	YES	0.17	0.17	0.0
	IoFpgaGolden	YES	0.15	0.15	0.0
	Prim-BootLoader	YES	20.05	20.05	0.0
	Stdbypfpga	YES	1.09	1.09	0.0
	StdbypfpgaGolden	YES	0.33	0.33	0.0
	TamFw	YES	6.05	6.05	0.0
	TamFwGolden	YES	6.05	6.05	0.0
-----					
N540X-6Z18G-SYS-D	ADMConfig	NO	5.00	5.00	0.0
	BckUp-BootLoader	YES	20.05	20.05	0.0
	IoFpga	YES	0.17	0.17	0.0
	IoFpgaGolden	YES	0.15	0.15	0.0
	Prim-BootLoader	YES	20.05	20.05	0.0
	Stdbypfpga	YES	1.09	1.09	0.0
	StdbypfpgaGolden	YES	0.33	0.33	0.0
	TamFw	YES	6.05	6.05	0.0
	TamFwGolden	YES	6.05	6.05	0.0
-----					
N540X-8Z16G-SYS-A	ADMConfig	NO	5.00	5.00	0.0
	BckUp-BootLoader	YES	20.05	20.05	0.0
	IoFpga	YES	0.17	0.17	0.0
	IoFpgaGolden	YES	0.15	0.15	0.0
	Prim-BootLoader	YES	20.05	20.05	0.0
	Stdbypfpga	YES	1.09	1.09	0.0
	StdbypfpgaGolden	YES	0.33	0.33	0.0
	TamFw	YES	6.05	6.05	0.0
	TamFwGolden	YES	6.05	6.05	0.0
-----					
N540X-8Z16G-SYS-D	ADMConfig	NO	5.00	5.00	0.0
	BckUp-BootLoader	YES	20.05	20.05	0.0
	IoFpga	YES	0.17	0.17	0.0
	IoFpgaGolden	YES	0.15	0.15	0.0
	Prim-BootLoader	YES	20.05	20.05	0.0
	Stdbypfpga	YES	1.09	1.09	0.0
	StdbypfpgaGolden	YES	0.33	0.33	0.0

Determine Firmware Support

```
TamFw                YES    6.05    6.05    0.0
TamFwGolden          YES    6.05    6.05    0.0
```

```
RP/0/RP0/CPU0:Router#show hw-module fpd
Auto-upgrade:Enabled
Attribute codes: B golden, P protect, S secure
```

Location	Card type	HWver	FPD device	ATR	Status	FPD Versions	
						Running	Programd
0/RP0/CPU0 0/RP0	N540X-6Z18G-SYS-D	0.2	ADMConfig		NEED UPGD	1.02	1.02
0/RP0/CPU0 0/RP0	N540X-6Z18G-SYS-D	0.2	IoFpga		CURRENT	0.17	0.17
0/RP0/CPU0 0/RP0	N540X-6Z18G-SYS-D	0.2	IoFpgaGolden	B	CURRENT		0.15
0/RP0/CPU0 0/RP0	N540X-6Z18G-SYS-D	0.2	Prim-BootLoader		CURRENT	20.05	20.05
0/RP0/CPU0 0/RP0	N540X-6Z18G-SYS-D	0.2	StdbyFpga	S	CURRENT	1.09	1.09
0/RP0/CPU0 0/RP0	N540X-6Z18G-SYS-D	0.2	StdbyFpgaGolden	BS	NEED UPGD		0.00
0/RP0/CPU0 0/RP0	N540X-6Z18G-SYS-D	0.2	TamFw	S	CURRENT	6.05	6.05
0/RP0/CPU0 0/RP0	N540X-6Z18G-SYS-D	0.2	TamFwGolden	BS	NEED UPGD		5.06

Log in to the router and enter the **show fpd package** and **show hw-module fpd** commands on the Cisco N540-24Q8L2DD-SYS variant:

```
RP/0/RP0/CPU0:Router# show fpd package
```

Field Programmable Device Package						
Card Type	FPD Description	Req Reload	SW Ver	Min Req SW Ver	Min Req Board Ver	
N540-12Z20G-SYS-A	ADMConfig	NO	1.05	1.05	0.0	
	IoFpga	YES	2.07	2.07	0.0	
	IoFpgaGolden	YES	2.07	2.03	0.0	
	Primary-BIOS	YES	1.41	1.41	0.0	
	StdbyFpga	YES	0.40	0.40	0.0	
	StdbyFpgaGolden	YES	0.40	0.40	0.0	
	TamFw	YES	4.11	4.11	0.0	
N540-12Z20G-SYS-D	ADMConfig	NO	1.05	1.05	0.0	
	IoFpga	YES	2.07	2.07	0.0	
	IoFpgaGolden	YES	2.07	2.03	0.0	
	Primary-BIOS	YES	1.41	1.41	0.0	
	StdbyFpga	YES	0.40	0.40	0.0	
	StdbyFpgaGolden	YES	0.40	0.40	0.0	
	TamFw	YES	4.11	4.11	0.0	
N540-24Q8L2DD-SYS	ADM-DBConfig	NO	2.03	2.03	0.0	
	ADM-MBConfig	NO	2.01	2.01	0.0	
	IoFpga	YES	2.12	2.12	0.0	
	IoFpgaGolden	YES	2.12	2.12	0.0	
	Primary-BIOS	YES	4.05	4.05	0.0	
	StdbyFpga	YES	2.59	2.59	0.0	
	StdbyFpgaGolden	YES	2.56	2.39	0.0	
TamFw	YES	6.05	6.05	0.0		



	TamFwGolden	YES	6.05	6.05	0.0
-----					
N540-28Z4C-SYS-A	ADMConfig	NO	1.05	1.05	0.0
	IoFpga	YES	2.07	2.07	0.0
	IoFpgaGolden	YES	2.07	2.03	0.0
	Primary-BIOS	YES	1.41	1.41	0.0
	StdbyFpga	YES	0.40	0.40	0.0
	StdbyFpgaGolden	YES	0.40	0.40	0.0
	TamFw	YES	4.11	4.11	0.0
	TamFwGolden	YES	4.11	4.11	0.0
-----					
N540-28Z4C-SYS-D	ADMConfig	NO	1.05	1.05	0.0
	IoFpga	YES	2.07	2.07	0.0
	IoFpgaGolden	YES	2.07	2.03	0.0
	Primary-BIOS	YES	1.41	1.41	0.0
	StdbyFpga	YES	0.40	0.40	0.0
	StdbyFpgaGolden	YES	0.40	0.40	0.0
	TamFw	YES	4.11	4.11	0.0
	TamFwGolden	YES	4.11	4.11	0.0
-----					
N540-FH-AGG-SYS	ADM1_Config	NO	1.02	1.02	1.0
	ADM2_Config	NO	1.02	1.02	1.0
	DpFpgaCpri	YES	0.22	0.22	0.0
	DpFpgaEth	YES	1.20	1.20	0.0
	IoFpga	YES	1.30	1.30	0.0
	IoFpgaGolden	YES	1.30	1.30	0.0
	Primary-BIOS	YES	1.33	1.33	0.0
	StdbyFpga	YES	0.46	0.46	0.0
	StdbyFpgaGolden	YES	0.46	0.46	0.0
	TamFw	YES	6.05	6.05	0.0
	TamFwGolden	YES	6.05	6.05	0.0
-----					
N540-FH-CSR-SYS	ADM1_Config	NO	0.09	0.09	0.0
	ADM1_Config	NO	1.01	1.01	2.0
	ADM2_Config	NO	0.09	0.09	0.0
	ADM2_Config	NO	1.01	1.01	2.0
	DpFpga	YES	0.21	0.21	0.0
	IoFpga	YES	1.30	1.30	0.0
	IoFpgaGolden	YES	1.30	1.30	0.0
	Primary-BIOS	YES	1.33	1.33	0.0
	StdbyFpga	YES	0.46	0.46	0.0
	StdbyFpgaGolden	YES	0.46	0.46	0.0
	TamFw	YES	6.05	6.05	0.0
	TamFwGolden	YES	6.05	6.05	0.0
-----					
N540-PWR400-A	LI-PrimMCU	NO	0.04	0.04	0.0
	LI-SecMCU	NO	0.06	0.06	0.0
	PrimMCU	NO	1.02	1.02	0.0
	SecMCU	NO	1.03	1.03	0.0
-----					
N540-PWR400-D	LI-PrimMCU	NO	0.04	0.04	0.0
	LI-SecMCU	NO	0.06	0.06	0.0
	PrimMCU	NO	1.03	1.03	0.0
	SecMCU	NO	1.03	1.03	0.0
-----					
N540-PWR750-A	EM-PrimMCU	NO	1.02	1.02	0.0
	EM-SecMCU	NO	1.03	1.03	0.0
-----					
N540-PWR750-D	EM-PrimMCU	NO	1.03	1.03	0.0
	EM-SecMCU	NO	3.01	3.01	0.0
-----					
N540X-12Z16G-SYS-A	ADMConfig	NO	1.05	1.05	0.0
	IoFpga	YES	2.07	2.07	0.0
	IoFpgaGolden	YES	2.07	2.03	0.0

Determine Firmware Support

	Primary-BIOS	YES	1.41	1.41	0.0
	StdbypFpga	YES	0.40	0.40	0.0
	StdbypFpgaGolden	YES	0.40	0.40	0.0
	TamFw	YES	4.11	4.11	0.0
	TamFwGolden	YES	4.11	4.11	0.0
-----					
N540X-12Z16G-SYS-D	ADMConfig	NO	1.05	1.05	0.0
	IoFpga	YES	2.07	2.07	0.0
	IoFpgaGolden	YES	2.07	2.03	0.0
	Primary-BIOS	YES	1.41	1.41	0.0
	StdbypFpga	YES	0.40	0.40	0.0
	StdbypFpgaGolden	YES	0.40	0.40	0.0
	TamFw	YES	4.11	4.11	0.0
	TamFwGolden	YES	4.11	4.11	0.0
-----					
N540X-16Z4G8Q2C-A	ADMConfig	NO	1.05	1.05	0.0
	IoFpga	YES	2.07	2.07	0.0
	IoFpgaGolden	YES	2.07	2.03	0.0
	Primary-BIOS	YES	1.41	1.41	0.0
	StdbypFpga	YES	0.40	0.40	0.0
	StdbypFpgaGolden	YES	0.40	0.40	0.0
	TamFw	YES	4.11	4.11	0.0
	TamFwGolden	YES	4.11	4.11	0.0
-----					
N540X-16Z4G8Q2C-D	ADMConfig	NO	1.05	1.05	0.0
	IoFpga	YES	2.07	2.07	0.0
	IoFpgaGolden	YES	2.07	2.03	0.0
	Primary-BIOS	YES	1.41	1.41	0.0
	StdbypFpga	YES	0.40	0.40	0.0
	StdbypFpgaGolden	YES	0.40	0.40	0.0
	TamFw	YES	4.11	4.11	0.0
	TamFwGolden	YES	4.11	4.11	0.0
-----					
N540X-16Z8Q2C-A	ADMConfig	NO	1.05	1.05	0.0
	IoFpga	YES	2.07	2.07	0.0
	IoFpgaGolden	YES	2.07	2.03	0.0
	Primary-BIOS	YES	1.41	1.41	0.0
	StdbypFpga	YES	0.40	0.40	0.0
	StdbypFpgaGolden	YES	0.40	0.40	0.0
	TamFw	YES	4.11	4.11	0.0
	TamFwGolden	YES	4.11	4.11	0.0
-----					
N540X-16Z8Q2C-D	ADMConfig	NO	1.05	1.05	0.0
	IoFpga	YES	2.07	2.07	0.0
	IoFpgaGolden	YES	2.07	2.03	0.0
	Primary-BIOS	YES	1.41	1.41	0.0
	StdbypFpga	YES	0.40	0.40	0.0
	StdbypFpgaGolden	YES	0.40	0.40	0.0
	TamFw	YES	4.11	4.11	0.0
	TamFwGolden	YES	4.11	4.11	0.0

RP/0/RP0/CPU0:Router# show hw-module fpd  
 Auto-upgrade:Enabled  
 Attribute codes: B golden, P protect, S secure

		FPD Versions					
		=====					
Location	Card type	HWver	FPD device	ATR Status	Running Programd		
Reload Loc							
0/RP0/CPU0	N540-24Q8L2DD-SYS	2.0	ADM-DBConfig	NEED UPGD	1.51	1.51	
NOT REQ							
0/RP0/CPU0	N540-24Q8L2DD-SYS	2.0	ADM-MBConfig	CURRENT	2.01	2.01	
NOT REQ							
0/RP0/CPU0	N540-24Q8L2DD-SYS	2.0	IoFpga	CURRENT	2.12	2.12	
0/RP0							

0/RP0/CPU0 N540-24Q8L2DD-SYS 0/RP0	2.0	IoFpgaGolden	B	NEED UPGD		0.00
0/RP0/CPU0 N540-24Q8L2DD-SYS 0/RP0	2.0	Primary-BIOS	S	CURRENT	4.05	4.05
0/RP0/CPU0 N540-24Q8L2DD-SYS 0/RP0	2.0	StdbyFpga	S	CURRENT	2.59	2.59
0/RP0/CPU0 N540-24Q8L2DD-SYS 0/RP0	2.0	StdbyFpgaGolden	BS	NEED UPGD		0.00
0/RP0/CPU0 N540-24Q8L2DD-SYS 0/RP0	2.0	TamFw	S	CURRENT	6.05	6.05
0/RP0/CPU0 N540-24Q8L2DD-SYS 0/RP0	2.0	TamFwGolden	BS	NEED UPGD		0.00

Log in to the router and enter the **show fpd package** and **show hw-module fpd** commands on the Cisco N540-FH-AGG-SYS variant:

RP/0/RP0/CPU0:Router# show fpd package

```

=====
                                Field Programmable Device Package
                                =====
Card Type                FPD Description                Req   SW   Min Req  Min Req
=====  =====  =====  =====  =====  =====
N540-12Z20G-SYS-A      ADMConfig                       NO    1.05   1.05     0.0
                        IoFpga                          YES    2.07   2.07     0.0
                        IoFpgaGolden                    YES    2.07   2.03     0.0
                        Primary-BIOS                    YES    1.41   1.41     0.0
                        StdbyFpga                      YES    0.40   0.40     0.0
                        StdbyFpgaGolden                YES    0.40   0.40     0.0
                        TamFw                          YES    4.11   4.11     0.0
                        TamFwGolden                    YES    4.11   4.11     0.0
-----
N540-12Z20G-SYS-D      ADMConfig                       NO    1.05   1.05     0.0
                        IoFpga                          YES    2.07   2.07     0.0
                        IoFpgaGolden                    YES    2.07   2.03     0.0
                        Primary-BIOS                    YES    1.41   1.41     0.0
                        StdbyFpga                      YES    0.40   0.40     0.0
                        StdbyFpgaGolden                YES    0.40   0.40     0.0
                        TamFw                          YES    4.11   4.11     0.0
                        TamFwGolden                    YES    4.11   4.11     0.0
-----
N540-24Q8L2DD-SYS     ADM-DBConfig                    NO    2.03   2.03     0.0
                        ADM-MBConfig                    NO    2.01   2.01     0.0
                        IoFpga                          YES    2.12   2.12     0.0
                        IoFpgaGolden                    YES    2.12   2.12     0.0
                        Primary-BIOS                    YES    4.05   4.05     0.0
                        StdbyFpga                      YES    2.59   2.59     0.0
                        StdbyFpgaGolden                YES    2.56   2.39     0.0
                        TamFw                          YES    6.05   6.05     0.0
                        TamFwGolden                    YES    6.05   6.05     0.0
-----
N540-28Z4C-SYS-A      ADMConfig                       NO    1.05   1.05     0.0
                        IoFpga                          YES    2.07   2.07     0.0
                        IoFpgaGolden                    YES    2.07   2.03     0.0
                        Primary-BIOS                    YES    1.41   1.41     0.0
                        StdbyFpga                      YES    0.40   0.40     0.0
                        StdbyFpgaGolden                YES    0.40   0.40     0.0
                        TamFw                          YES    4.11   4.11     0.0
                        TamFwGolden                    YES    4.11   4.11     0.0
-----
N540-28Z4C-SYS-D      ADMConfig                       NO    1.05   1.05     0.0
                        IoFpga                          YES    2.07   2.07     0.0
                        IoFpgaGolden                    YES    2.07   2.03     0.0
                        Primary-BIOS                    YES    1.41   1.41     0.0

```

## Determine Firmware Support

	StdbyFpga	YES	0.40	0.40	0.0
	StdbyFpgaGolden	YES	0.40	0.40	0.0
	TamFw	YES	4.11	4.11	0.0
	TamFwGolden	YES	4.11	4.11	0.0
-----					
N540-FH-AGG-SYS	ADM1_Config	NO	1.02	1.02	1.0
	ADM2_Config	NO	1.02	1.02	1.0
	DpFpgaCpri	YES	0.22	0.22	0.0
	DpFpgaEth	YES	1.20	1.20	0.0
	IoFpga	YES	1.30	1.30	0.0
	IoFpgaGolden	YES	1.30	1.30	0.0
	Primary-BIOS	YES	1.33	1.33	0.0
	StdbyFpga	YES	0.46	0.46	0.0
	StdbyFpgaGolden	YES	0.46	0.46	0.0
	TamFw	YES	6.05	6.05	0.0
	TamFwGolden	YES	6.05	6.05	0.0
-----					
N540-FH-CSR-SYS	ADM1_Config	NO	0.09	0.09	0.0
	ADM1_Config	NO	1.01	1.01	2.0
	ADM2_Config	NO	0.09	0.09	0.0
	ADM2_Config	NO	1.01	1.01	2.0
	DpFpga	YES	0.21	0.21	0.0
	IoFpga	YES	1.30	1.30	0.0
	IoFpgaGolden	YES	1.30	1.30	0.0
	Primary-BIOS	YES	1.33	1.33	0.0
	StdbyFpga	YES	0.46	0.46	0.0
	StdbyFpgaGolden	YES	0.46	0.46	0.0
	TamFw	YES	6.05	6.05	0.0
	TamFwGolden	YES	6.05	6.05	0.0
-----					
N540-PWR400-A	LI-PrimMCU	NO	0.04	0.04	0.0
	LI-SecMCU	NO	0.06	0.06	0.0
	PrimMCU	NO	1.02	1.02	0.0
	SecMCU	NO	1.03	1.03	0.0
-----					
N540-PWR400-D	LI-PrimMCU	NO	0.04	0.04	0.0
	LI-SecMCU	NO	0.06	0.06	0.0
	PrimMCU	NO	1.03	1.03	0.0
	SecMCU	NO	1.03	1.03	0.0
-----					
N540-PWR750-A	EM-PrimMCU	NO	1.02	1.02	0.0
	EM-SecMCU	NO	1.03	1.03	0.0
-----					
N540-PWR750-D	EM-PrimMCU	NO	1.03	1.03	0.0
	EM-SecMCU	NO	3.01	3.01	0.0
-----					
N540X-12Z16G-SYS-A	ADMConfig	NO	1.05	1.05	0.0
	IoFpga	YES	2.07	2.07	0.0
	IoFpgaGolden	YES	2.07	2.03	0.0
	Primary-BIOS	YES	1.41	1.41	0.0
	StdbyFpga	YES	0.40	0.40	0.0
	StdbyFpgaGolden	YES	0.40	0.40	0.0
	TamFw	YES	4.11	4.11	0.0
	TamFwGolden	YES	4.11	4.11	0.0
-----					
N540X-12Z16G-SYS-D	ADMConfig	NO	1.05	1.05	0.0
	IoFpga	YES	2.07	2.07	0.0
	IoFpgaGolden	YES	2.07	2.03	0.0
	Primary-BIOS	YES	1.41	1.41	0.0
	StdbyFpga	YES	0.40	0.40	0.0
	StdbyFpgaGolden	YES	0.40	0.40	0.0
	TamFw	YES	4.11	4.11	0.0
	TamFwGolden	YES	4.11	4.11	0.0
-----					

N540X-16Z4G8Q2C-A	ADMConfig	NO	1.05	1.05	0.0
	IoFpga	YES	2.07	2.07	0.0
	IoFpgaGolden	YES	2.07	2.03	0.0
	Primary-BIOS	YES	1.41	1.41	0.0
	StdbyFpga	YES	0.40	0.40	0.0
	StdbyFpgaGolden	YES	0.40	0.40	0.0
	TamFw	YES	4.11	4.11	0.0
	TamFwGolden	YES	4.11	4.11	0.0
N540X-16Z4G8Q2C-D	ADMConfig	NO	1.05	1.05	0.0
	IoFpga	YES	2.07	2.07	0.0
	IoFpgaGolden	YES	2.07	2.03	0.0
	Primary-BIOS	YES	1.41	1.41	0.0
	StdbyFpga	YES	0.40	0.40	0.0
	StdbyFpgaGolden	YES	0.40	0.40	0.0
	TamFw	YES	4.11	4.11	0.0
	TamFwGolden	YES	4.11	4.11	0.0
N540X-16Z8Q2C-A	ADMConfig	NO	1.05	1.05	0.0
	IoFpga	YES	2.07	2.07	0.0
	IoFpgaGolden	YES	2.07	2.03	0.0
	Primary-BIOS	YES	1.41	1.41	0.0
	StdbyFpga	YES	0.40	0.40	0.0
	StdbyFpgaGolden	YES	0.40	0.40	0.0
	TamFw	YES	4.11	4.11	0.0
	TamFwGolden	YES	4.11	4.11	0.0
N540X-16Z8Q2C-D	ADMConfig	NO	1.05	1.05	0.0
	IoFpga	YES	2.07	2.07	0.0
	IoFpgaGolden	YES	2.07	2.03	0.0
	Primary-BIOS	YES	1.41	1.41	0.0
	StdbyFpga	YES	0.40	0.40	0.0
	StdbyFpgaGolden	YES	0.40	0.40	0.0
	TamFw	YES	4.11	4.11	0.0
	TamFwGolden	YES	4.11	4.11	0.0

RP/0/RP0/CPU0:Router# show hw-module fpd  
 Auto-upgrade:Enabled  
 Attribute codes: B golden, P protect, S secure

Location	Card type	HWver	FPD device	ATR Status	FPD Versions	
					Running	Programd
Reload Loc						
0/RP0/CPU0	N540-FH-AGG-SYS	1.0	ADM1_Config	NEED UPGD	0.91	0.91
NOT REQ						
0/RP0/CPU0	N540-FH-AGG-SYS	1.0	ADM2_Config	NEED UPGD	0.91	0.91
NOT REQ						
0/RP0/CPU0	N540-FH-AGG-SYS	1.0	DpFpgaCpri	NOT READY		0.20
N/A						
0/RP0/CPU0	N540-FH-AGG-SYS	1.0	DpFpgaEth	CURRENT	1.20	1.20
0/RP0						
0/RP0/CPU0	N540-FH-AGG-SYS	1.0	IoFpga	CURRENT	1.30	1.30
0/RP0						
0/RP0/CPU0	N540-FH-AGG-SYS	1.0	IoFPgaGolden	B NEED UPGD		1.23
0/RP0						
0/RP0/CPU0	N540-FH-AGG-SYS	1.0	Primary-BIOS	S CURRENT	1.33	1.33
0/RP0						
0/RP0/CPU0	N540-FH-AGG-SYS	1.0	StdbyFpga	S CURRENT	0.46	0.46
0/RP0						
0/RP0/CPU0	N540-FH-AGG-SYS	1.0	StdbyFpgaGolden	BS NEED UPGD		0.00
0/RP0						
0/RP0/CPU0	N540-FH-AGG-SYS	1.0	TamFw	S CURRENT	6.05	6.05
0/RP0						
0/RP0/CPU0	N540-FH-AGG-SYS	1.0	TamFwGolden	BS NEED UPGD		0.26

0/RP0							
0/PM1	N540-PWR750-A	0.0	PrimMCU	NOT READY	1.02	1.02	
N/A							
0/PM1	N540-PWR750-A	0.0	SecMCU	NOT READY	1.03	1.03	
N/A							

## Important Notes

### Supported Transceiver Modules

For more information on the supported transceiver modules, see [Transceiver Module Group \(TMG\) Compatibility Matrix](#). In the **Begin your Search** search box, enter the keyword NCS540 and click **Enter**.

### 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.

The upgrade document for N540-24Z8Q2C-SYS, N540X-ACC-SYS, and N540-ACC-SYS variants is available along with the software image in *NCS540-docs-7.7.1.tar* file.

The upgrade document for N540-28Z4C-SYS-A/D, N540-12Z20G-SYS-A/D, N540X-12Z16G-SYS-A/D, N540X-16Z4G8Q2C-A/D, N540-24Q8L2DD-SYS, N540-FH-AGG-SYS, and N540-FH-CSR-SYS variants is available along with the software image in *NCS540l-docs-7.7.1.tar* file.

The upgrade document for N540X-4Z14G2Q-A/D, N540X-8Z16G-SYS-A/D, and N540X-6Z18G-SYS-A/D variants is available along with the software image in *NCS540l-aarch64-docs-7.7.1.tar* file.




---

**Note** Quad configurations will be lost when you perform a software downgrade on Cisco NCS 540 Routers that support quad configurations from IOS XR Release 7.5.1 onwards to a release prior to IOS XR Release 7.5.1 due to a non-backward compatibility change. The lost configuration can be applied manually after the downgrade.

---

### 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";
  }
}

```

## Additional References

### Supported MIBs

The Cisco NCS 5500 MIB support list is also applicable to the Cisco NCS 540 Series Routers. For the list of supported MIBs, see the [Cisco NCS5500 MIB Support List](#).

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