Release Notes for Cisco NCS 540 Series Routers, Cisco IOS XR Release 24.2.1

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Network Convergence System 540 Series Routers

What's New in Cisco IOS XR Release 24.2.1

For more details on the Cisco IOS XR release model and associated support, see Software Lifecycle Support Statement - IOS XR.

Software Features Enhanced and Introduced

To learn about features introduced in other Cisco IOS XR releases, select the release from the Documentation Landing Page.

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

Feature	Description
Routing	
Support for NCS 540 routers as Seamless BFD reflector	This feature introduces support for NCS 540 routers as a Seamless BFD (SBFD) reflector.
	Seamless BFD simplifies the negotiation and state establishment aspects of BFD by predetermining session discriminators and maintaining session state only at the headend. This approach ensures quicker connectivity tests and reduces complexity in session establishment.
	Previously, support for Seamless BFD reflector was not available.
	The feature introduces these changes:
	CLI:
	The **sbfd** command is extended to support NCS 540 routers.
Segment Routing	

Feature	Description
Data Plane Validation for SR-MPLS IPv6-based Controller Instantiated LSPs	You can now verify the network configuration and paths and policies set up, without interrupting or potentially disrupting live network traffic, for SR-MPLS (Segment Routing over Multiprotocol Label Switching) IPv6-based Label Switched Paths (LSPs). With this feature, you can validate controller instantiated LSPs programmed directly into the forwarding hardware. Previously, SR data plane validation was possible over IPv4-based LSPs. The feature introduces these changes: **CLI:** The **dataplane-only** keyword is introduced in the **traceroute sr-mpls** and **ping sr-mpls** commands. **YANG Data Models:** • `Cisco-IOS-XR-mpls-traceroute-act.yang` • `Cisco-IOS-XR-mpls-ping-act.yang` See (GitHub, Yang Data Models Navigator)
Delay Measurement for IP Endpoint over SRv6 Network	In Segment Routing over an IPv6 network (SRv6), you can measure packet delay from the source to a specific IP endpoint. You can use this information for troubleshooting, network maintenance, and optimizing network performance. Additionally, you can use flow labels to verify the delay of each subsequent hop path towards the IP endpoint of that path. So that, when network traffic is distributed across multiple available paths towards an IP endpoint, delay measurement tracks the delay of each of these paths towards the IP endpoint. The feature introduces these changes: **CLI:** • The **source-address ipv6** keyword is introduced in the **performance-measurement endpoint** command. • The **segment-list name** keyword is introduced in the **segment-routing traffic-eng explicit** command. • The **flow-label** keyword is introduced in the **performance-measurement delay-profile name** command. **YANG Data Model:** • `Cisco-IOS-XR-um-performance-measurement-cfg` • `Cisco-IOS-XR-perf-meas-oper.yang` (See GitHub, YANG Data Models Navigator)

Feature	Description
Display Neighbor Router Capabilities in OSPF Networks	You can now improve the user experience, understand the features and functionalities supported by neighboring routers, reduce operational work hours and human errors by gaining better visibility into the routing capabilities of directly connected neighboring routers in an OSPF network. These improvements are now possible when you enable Segment Routing on a neighboring connected router. Previously, there was no straightforward method to display the segment routing and other capabilities of neighboring routers in an OSPF network. The feature introduces these changes: **CLI:** • The **capabilities** keyword is introduced in the **show ospf neighbor** command. **YANG Data Models:** • `Cisco-IOS-XR-ipv4-ospf-oper.yang` See (GitHub, Yang Data Models Navigator)
Liveness Monitoring for IP Endpoint over SRv6 Network	In Segment Routing over an IPv6 network (SRv6), you can keep track of the operational status of both the forward and reverse paths of a particular node or IP endpoint. You can use this information for troubleshooting, network maintenance, and optimizing network performance. Additionally, you can use flow labels to verify the liveness of each subsequent hop path toward the IP endpoint of that path. So that, when network traffic is distributed across multiple available paths towards an IP endpoint, liveness detection tracks the operational status of each of these paths towards the IP endpoint. The feature introduces these changes: **CLI:** • The **reverse-path** and **segment-list name** keywords are introduced in the **segment-routing traffic-eng explicit** command. • The **source-address ipv6** is introduced in the **performance-measurement endpoint** command. **YANG Data Model:** • `Cisco-IOS-XR-um-performance-measurement-cfg` • `Cisco-IOS-XR-perf-meas-oper.yang` (see GitHub, YANG Data Models Navigator)

Feature	Description
MPLS OAM support for SR-TE Policies using MPLS IPv6-based LSPs	You can now verify the network configuration and paths and SR-TE policies set up, without interrupting or potentially disrupting live network traffic, for SR-MPLS (Segment Routing over Multiprotocol Label Switching) IPv6-based Label Switched Paths (LSPs). Previously, MPLS OAM support was only for IPv4-based LSPs. The feature introduces these changes: **CLI:** The **traceroute sr-mpls** and **ping sr-mpls** commands are extended to support IPv6 nexthop addresses. **YANG Data Models:** • `Cisco-IOS-XR-mpls-traceroute-act.yang` • `Cisco-IOS-XR-mpls-ping-act.yang` See (GitHub, Yang Data Models Navigator)
Multi-area Loopback Interface Support for OSPF	You can save IP addresses and resources, prevent the use of multiple node SIDs for labels associated with loopback interfaces, and save time configuring multiple loopback interfaces for an Area Border Router (ABR) in a network. These improvements are possible as you can now configure a single loopback interface for multiple areas. With this feature, an ABR can use a single loopback interface for all areas it connects to, eliminating the need for separate loopback interfaces for each area. Previously, each loopback interface was linked to only one area. The feature introduces these changes: **CLI:** The **multi-area-interface** command is extended to support loopback interfaces.
SRv6 Traffic Class DSCP Marking Enhancement for QoS	This feature enables you to configure the traffic-class DSCP marking to 6-bits using the new **policy-map-extend** keyword in the **hw-module profile segment-routing srv6 mode microsegment f3216 encapsulation traffic-class** CLI in both the L2 and L3 traffic configurations for SRv6. This is a mutually inclusive feature for L2 and L3 traffic. Therefore, this feature cannot be used in the individual configuration for L2 and L3 traffic. When you use the **policy-map-extend** keyword in the **hw-module profile segment-routing srv6 mode microsegment f3216 encapsulation traffic-class** CLI, the existing 3-bit DSCP marking set by the **hw-module profile segment-routing srv6 mode microsegment f3216 encapsulation traffic-class l3-traffic policy-map** CLI in the L3 traffic configuration is modified to 6-bits. This feature introduces this change: **CLI:** The **policy-map-extend** keyword is introduced in the **hw-module profile segment-routing srv6 mode microsegment f3216 encapsulation traffic-class** command.

Feature	Description
SR ECMP-FEC Optimization for IPv6 Prefixes	You can now minimize ECMP-FEC resource consumption and duplication of resources during underlay programming for an SR-MPLS network for IPv6 prefixes. The feature supports sharing the same ECMP-FEC, regular FEC, and Egress Encapsulation DB (EEDB) entries for all paths with the same outgoing MPLS label among IPv6 prefixes. This improvement is now possible by using the **hw-module fib mpls label lsr-optimized** command. In earlier releases, ECMP-FEC optimization for IPv4 prefixes was available.
User-Defined Generic Metric Support for IS-IS Flex Algo	This feature adds support for user-defined generic metric as a metric type for IS-IS Flexible Algorithm. You can now have more control over traffic flows using user-defined generic metrics. You can define a family of user-defined generic metrics that can advertise different types of administrative metrics such as jitter, reliability, and fiscal cost depending on the traffic class for Flexible Algorithms. You can selectively define and assign semantics of these metrics as per the network requirement. The feature introduces the following changes: **CLI**: • The feature introduces the **generic-metric flex-algo** and **metric-type generic** commands. **YANG Data Models:** • `Cisco-IOS-XR-um-router-isis-cfg.yang`
L3VPN	
MPLS Layer 3 VPNs CLI Enhancements	You can now verify that MPLS labels are correctly programmed in the control plane (or software) and the data plane (hardware forwarding tables) using the show mpls forwarding labels command. Previously the command only showed the MPLS label information for software, additional steps were required to verify the label status in the hardware, by checking in the SDK.
Netflow	
Monitor GTP-U Traffic in 5G Network	You can now export GTP-U traffic flow records using NetFlow v9 and IPFIX in 5G network. This enables you to monitor provides you with bidirectional traffic monitoring crucial for analytics and robust DDoS prevention strategies. This feature modifies the output of the **show flow monitor** command.
Network Synchronization	

Feature	Description
Detect Packet Timing Signal Fail -unusable	This feature allows the exclusion of Foreign Masters (FMs) with unstable timing from Best Master Clock Algorithm (BMCA). It enables the detection of clocks that are unusable due to Packet Timing Signal Fail (PTSF) and keeps them under surveillance for any timing stabilization. Once improvements are observed, these clocks can be reassessed and potentially reinstated as viable sources.
	The system's reliability is improved by regularly checking all Frequency Managers (FMs) for their Precision Time Protocol (PTP) timing accuracy, including those that are currently not selected. This allows for dynamic selection of time sources, which in turn improves service delivery and strengthens the resilience of the synchronization infrastructure..
	This feature introduces these changes:
	CLI:
	• **detect-ptsf-unusable**
	• The **show ptp foreign-masters** command output is enhanced to include phase difference values and servo status.
Delay Request-Response Mechanism for Passive Ports and PTP Phase Difference Alarm Triggering	You can now enable the participation of passive ports in the Delay Request-Response Mechanism (DRRM), thus ensuring that in case the phase difference readings exceed the allowed threshold then syslogs are displayed.
	This feature enables you to detect potential errors such as fiber asymmetry or a clock failure in the PTP network by measuring the phase difference between passive port and secondary port.
	This feature introduces these changes:
	CLI:
	• **phase-difference-threshold-breach**
	• The **show ptp foreign-masters** command output is enhanced to include phase difference values and servo status.
	YANG Data Models:
	The following data models are enhanced:
	• `Cisco-IOS-XR-ptp-cfg.yang`
	• `Cisco-IOS-XR-um-ptp-cfg.yang`
System Management	

Feature	Description
Advanced Network Latency Insights through Frame Delay Categorization	By precisely measuring the frame delay range into widths, bins, minimum-delay and range percentile, you can now get a clearer picture of network speeds by sorting delays into groups. This helps make sure data flows smoothly and problems are found and fixed faster. Plus, it allows users to check if most data gets through the network quickly, making the network more reliable for everyone. This feature introduces these changes: **CLI:** **frame delay width bins minimum-delay frame-delay-range percentile** **Yang Data Models:** • `Cisco-IOS-XR-ethernet-sat-oper.yang` • `Cisco-IOS-XR-ethernet-sat-cfg.yang`
Support For Default mode of Encapsulation	Using the default encapsulation setting for Service Activation Tests (SAT) streamlines the activation process with its ease of configuration and uniform testing standards. It accelerates service rollout by diminishing the need for intricate adjustments and guarantees the consistency of test outcomes. This setting establishes a dependable benchmark for assessing performance, benefits from extensive vendor support, and ensures seamless interaction between diverse network elements, aiding in the efficient deployment and ongoing management of network services.
User-Specified MTU Support for EMIX Traffic in Service Activation Tests	Defining the MTU packet size in Service Activation Tests (SAT) allows for tailored testing that matches the network's maximum frame capacity. This precision testing ensures accurate service performance validation and a reliable network service rollout. This feature introduces the following changes: **CLI:** **packet-size emix Sequence h**
System Security	
Support for Layer 2 Untagged Sub-interface configuration in IEEE 802.1X Port-based Authentication	This feature allows you to configure the Layer 2 untagged sub-interfaces in the IEEE 802.1X port-based authentication.
System Monitoring	
Traffic Statistics with Packet Drop Location	We help you save debugging time to locate packet drops by automatically detecting nonzero traffic drops from the commands running in the background and giving you the exact location of the packet drop. In earlier releases, you used multiple show commands with their respective locations to detect packet drops. This feature introduces the **show drops all** command.

Feature	Description
System Setup	
Installing Owner and Partner RPMs Using IOS XR Install Infrastructure	In previous releases, the Owner and Partner applications could not be installed via the same install infrastructure as the rest of the IOS XR software. Instead, you had to install these applications via the Application Manager interface.
	Starting this release, you can use the existing IOS XR install infrastructure to install your proprietary Owner and Partner RPMs. This enhancement streamlines the process for integrating third-party software seamlessly into the IOS XR environment, including bundling the owner and partner RPMs into a GISO.
	This feature introduces the keyword **skip-implicit-owner-packages-checks** in the following install commands:
	• install package add
	• install replace
	• install replace reimage

The following feature is supported on N540-6Z14S-SYS-D, N540X-4Z14G2Q-A/D, N540X-8Z16G-SYS-A/D, N540-6Z18G-SYS-A/D, and N540X-6Z18G-SYS-A/D variants.

Feature	Feature
Modular QoS	
Increase in Number of Ingress QoS Policies Supported on Layer 2	Layer 2 Virtual Private Network (L2VPN) now supports increase in number of ingress QoS policies on all the class-map sizes.
	Now you can attach the additional QoS policies to the interfaces, to manage, prioritize, and control the flow of traffic at ingress.
	This feature is supported on the following Cisco NCS 540 router variants:
	• N540X-6Z18G-SYS-A
	• N540X-6Z18G-SYS-D
	To enable the increased ingress QoS policies on all the class-map sizes in Layer 2, this feature introdces the following new command:
	• hw-module profile qos policer-scale l2-mode

The following feature is supported only on N540-24Q8L2DD-SYS router variant.

Feature	Description
Interface and Hardware Component	

Feature	Description
8x25G Breakout Port Support on N540-24Q8L2DD-SYS	An 8x25G breakout interface allows you to split the 400G high-density ports into multiple lower-density ports.
	You can now configure 8x25G breakout ports using the optics QDD-2X100-SR4-S.
	Breakout port is supported on the following Cisco NCS 540 router variant:
	• N540-24Q8L2DD-SYS

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, `opencofig-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.

You can also view the data model definitions using the YANG Data Models Navigator tool. This GUI-based and easy-to-use tool helps you explore the nuances of the data model and view the dependencies between various containers in the model. You can view the list of models supported across Cisco IOS XR releases and platforms, locate a specific model, view the containers and their respective lists, leaves, and leaf lists presented visually in a tree structure.

To get started with using data models, see the *Programmability Configuration Guide for Cisco NCS 540 Series Routers*.

Feature	Description
Programmability	
opencofig-local-routing.yang Version 2.0.1	The OpenConfig data model, which is part of the opencofig-network-instance.yang data model is revised from version 1.2.0 to 2.0.1. This revision enables you to configure the preference for the order selection when multiple sources, such as protocols and static routes, contribute to the same prefix entry. A lower number signifies a better preference. When the preference value is not specified, default preference value is considered which is one.
	This data model supports event-driven and Model-driven telemetry.

Feature	Description
openconfig-sflow.yang Version 1.0.0	This OpenConfig data model is enhanced to support: • stream cadence-driven telemetry data for the total number of flow record packets sent to the collector using **packets-sent** leaf • Stream cadence-driven telemetry data for the total number of packets sampled from the interface using **packets-sampled** leaf This data model supports event-driven and Model-driven telemetry.
Cisco-IOS-XR-infra-statsd-oper.yang	The native yang data model streams cached counters using a TARGET_DEFINED subscription. It enables you to fetch interface statistics, such as bytes-received, packets-received and other details, from a cache which is periodically updated from hardware using generic-counters container. The hardware-timestamp field indicates the timestamp of the most recent hardware counter readings. If hardware-timestamp field is 0, the last-data-time field indicates the timestamp of the most recent counter readings, which could be either from hardware or software.
openconfig-if-ip.yang Version 3.5.0	The OpenConfig data model has been updated from version 3.0.0 to 3.5.0. This data model helps you specify data structures for managing both configuration and operational state on IP interfaces, supporting IPv4 and IPv6. You can stream telemetry for the operational state of these interfaces using both model-driven and event-driven approaches.
Cisco-IOS-XR-ipv4-ospf-oper.yang	This native data model is enhanced with new leaves *sr-capable, ri-capabilities-tlv, te-capable, gr-capable, grh-capable*, and *host-nam*e in the *OSPF-SH-NEIGHBOR-DETAIL* and *OSPF-SH-NEIGHBOR* groupings to display neighbor router capabilities in OSPF networks.
Cisco-IOS-XR-evpn-oper.yang	This native data model is enhanced to stream event-driven telemetry (EDT) data for the operational state of Layer 2 Ethernet VPN (EVPN) MAC routes using mac container. EDT data is streamed when an on-change event on the MAC route is detected such as adding, deleting or modifying a MAC address.
Cisco-IOS-XR-mpls-traceroute-act.yang	This unified data model is enhanced with a new container, *ipv6*, and leaves such as *next-hop*, l*sp-endpoint*, and *force-ipv6-explicit-null* in the *type-ipv6-next-hop* interface to extend support to Segment Routing OAM to verify network configuration for SR-MPLS IPv6-based LSPs.
Cisco-IOS-XR-um-router-isis-cfg	This unified data model is enhanced with new containers *generic-metric*, and *generic-metric-level* to define a family of user-defined generic metrics that can advertise different types of administrative metrics such as jitter, reliability, and fiscal cost depending on the traffic class for Flexible Algorithms.

Hardware Introduced

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Note   Before you install the Cisco router, you must prepare your site for the installation, for more details on site planning and environmental requirements, see Hardware Installation Guide.

Hardware	Description
Optics	This release launches the following new optics on selective hardware within the product portfolio. For details and other new supported transceivers, refer to the Transceiver Module Group (TMG) Compatibility Matrix. • Cisco 100GBASE QSFP-100G Modules • QSFP-100G-B20D4-I • QSFP-100G-B20U4-I • Cisco 10GBASE Dense Wavelength-Division Multiplexing SFP+ Modules • DWDM-SFP10G-C-I • Multirate GE, FE pluggable optics • ONS-SC-PTP-1510 • ONS-SC-PTP-1514 • Quad Small Form-factor Pluggable Double Density • DP04QSDD-ER1 • Cisco 400G QSFP-DD Cable and Transceiver Module • QDD-400G-SR8-S

Behavior Changes

• From this release, the default order of authentication methods for SSH clients on Cisco IOS XR routers running Cisco IOS XR SSH is changed to: **public-key**, **keyboard-interactive**, and **password**.

Prior to this release, the default order was: **public-key**, **password**, and **keyboard-interactive**.

• Cisco Secure DDoS Edge Protection is supported from Cisco IOS XR Release 7.10.1 on Cisco NCS 540 series routers. But the smart licensing usage and utilization reporting for the edge protection feature remains disabled. Usage details of the edge protection functionality will be enabled only in the future release. Hence, the **Smart Account In Use** utilization report for edge protection will show as 0 (zero) consumed.

- Prior to Cisco IOS XR Release 7.2.1, a segment of an explicit segment list can be configured as an IPv4 address (representing a Node or a Link) using the **index** *index***address ipv4** *address* command.

  Starting with Cisco IOS XR Release 7.2.1, an IPv4-based segment (representing a Node or a Link) can also be configured with the new **index** *index* **mpls adjacency***address* command. The configuration is stored in NVRAM in the same CLI format used to create it. There is no conversion from the old CLI to the new CLI.

  Starting with Cisco IOS XR Release 7.9.1, the old CLI has been deprecated. Old configurations stored in NVRAM will be rejected at boot-up.

  As a result, explicit segment lists with IPv4-based segments using the old CLI must be re-configured using the new CLI.

  There are no CLI changes for segments configured as MPLS labels using the **index** *index* **mpls label** *label* command.

- If you are on a release before Cisco IOS XR Release 7.4.1, you can configure SR-ODN with Flexible Algorithm constraints using the **segment-routing traffic-eng on-demand color** *color* **dynamic sid-algorithm** *algorithm-number* command.

  Starting with Cisco IOS XR Release 7.4.1, you can also configure SR-ODN with Flexible Algorithm constraints using the new **segment-routing traffic-eng on-demand color** *color* **constraints segments sid-algorithm** *algorithm-number* command.

  From Cisco IOS XR Release 7.9.1, the **segment-routing traffic-eng on-demand color** *color* **dynamic sid-algorithm** *algorithm-number* command is deprecated. Previous configurations stored in NVRAM will be rejected at boot-up.

  Hence, for Cisco IOS XR Release 7.9.1, you must reconfigure all SR-ODN configurations with Flexible Algorithm constraints that use the on-demand dynamic sid-algorithm with the on-demand constraints command.

Restrictions and Limitations on the Cisco NCS 540 Series Router

- The statistics collection may time out due to CPU overload during route churn. In such scenarios, statistics collection will resume when the CPU becomes available after the route churn is complete.

- Autonegotiation is disabled by default on the fixed GigE - 0/0/0/0 - 0/0/0/4 copper ports of N540X-16Z4G8Q2C-A/D and N540X-12Z16G-SYS-A/D router variants. To enable autonegotiation, use the **negotiation auto** command.

- If you're migrating from previous XR versions, then you must enable autonegotiation for fixed copper ports using the **negotiation auto** command before performing the software upgrade to avoid any links going down.

- Enabling or disabling frame preemption on the Time Sensitive Networking (TSN) port results in traffic drop for N540-FH-CSR-SYS. The port Twenty Five G0/0/12 is used as the TSN port.

- Fabric multicast queue stats are not supported in N540X-8Z16G-SYS-A/D, N540X-6Z18G-SYS-A/D, N540-6Z14S-SYS-D, N540-6Z18G-SYS-A/D, and N540X-4Z14G2Q-A/D variants.

- Unlabeled BGP PIC EDGE for global prefixes is not supported.

- 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, N540X-16Z8Q2C-D, 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.

Caveats

There are no caveats in this release.

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 24.2.1 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, N540X-16Z8Q2C-D and N540-FH-AGG-SYS variants.

- The third table lists the supported software for N540X-4Z14G2Q-A/D, N540X-8Z16G-SYS-A/D, N540-6Z14S-SYS-D, N540-6Z18G-SYS-A/D, and N540X-6Z18G-SYS-A/D variants.

Visit the Cisco Software Download page to download the Cisco IOS XR software images.

Table 1: Release 24.2.1 Software for N540-24Z8Q2C-SYS, N540-ACC-SYS, and N540X-ACC-SYS

Base Image	Filename	Description

IOS XR Base Image	ncs540-mini-x-24.2.1.iso	IOS XR mandatory base image.
USB Boot Package	ncs540-usb_boot-24.2.1.zip	Package required to perform USB Boot. Includes the same packages as the base image.
Optional Packages not included in the base image		
Package	**Filename**	**Description**
IOS XR Manageability	ncs540-mgbl-1.0.0.0-r2421.x86_64.rpm	Supports Extensible Markup Language (XML) Parser, Telemetry, Netconf, gRPC and HTTP server
IOS XR MPLS	ncs540-mpls-1.0.0.0-r2421.x86_64.rpm ncs540-mpls-te-rsvp-1.0.0.0-r2421.x86_64.rpm	Supports MPLS and MPLS Traffic Engineering (MPLS-TE)
IOS XR Security	ncs540-k9sec-1.0.0.0-r2421.x86_64.rpm	Supports MACsec and 802.1X
IOS XR ISIS	ncs540-isis-1.0.0.0-r2421.x86_64.rpm	Supports ISIS
IOS XR OSPF	ncs540-ospf-1.0.0.0-r2421.x86_64.rpm	Supports OSPF
IOS XR Lawful Intercept	ncs540-li-1.0.0.0-r2421.x86_64.rpm	Supports Lawful Intercept (LI)
IOS XR Multicast	ncs540-mcast-1.0.0.0-r2421.x86_64.rpm	Supports Multicast
IOS XR EIGRP	ncs540-eigrp-1.0.0.0-r2421.x86_64.rpm	Supports EIGRP
IOS XR LI-CTRL	ncs540-lictrl-1.0.0.0-r2421.x86_64.rpm	Supports LI-CTRL

Table 2: Release 24.2.1 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, N540X-16Z8Q2C-D and N540-FH-AGG-SYS

Base Image	**Filename**	**Description**

IOS XR Base Image	ncs540l-x64-24.2.1.iso	IOS XR base image with mandatory packages.
		The base ISO image also includes the following optional packages:
		• xr-bgp
		• xr-cdp
		• xr-eigrp
		• xr-ipsla
		• xr-is-is
		• xr-k9sec
		• xr-lictrl
		• xr-lldp
		• xr-mcast
		• xr-mpls-oam
		• xr-netflow
		• xr-ospf
		• xr-perf-meas
		• xr-perfmgmt
		• xr-rip
		• xr-telnet
		• xr-track
		These optional packages are also included in NCS540l-iosxr-24.2.1.tar.
USB Boot Package	ncs540l-usb_boot-24.2.1.zip	Package required to perform USB Boot. Includes the same packages as the base image.

Optional Packages not included in the base image

Package	Filename	Description
IOS XR Telnet (xr-telnet)	NCS540l-iosxr-24.2.1.tar	Supports Telnet
IOS XR EIGRP (xr-eigrp)	NCS540l-iosxr-24.2.1.tar	Supports EIGRP
IOS XR CDP (xr-cdp)	NCS540l-iosxr-24.2.1.tar	Supports CDP
IOS XR k9sec (xr-k9sec)	NCS540l-k9sec-rpms.24.2.1.tar	Supports 802.1X

| IOS XR RIP (xr-rip) | NCS540l-iosxr-24.2.1.tar | Supports RIP |

Table 3: Release 24.2.1 Software for N540X-4Z14G2Q-A/D, N540X-8Z16G-SYS-A/D, N540-6Z14S-SYS-D, N540-6Z18G-SYS-A/D, and N540X-6Z18G-SYS-A/D

Base Image	**Filename**	**Description**
IOS XR Base Image	ncs540l-aarch64-24.2.1.iso	IOS XR base image with mandatory packages. The ISO image also includes the following optional packages: • xr-bgp • xr-cdp • xr-eigrp • xr-ipsla • xr-is-is • xr-k9sec • xr-lictrl • xr-lldp • xr-mcast • xr-mpls-oam • xr-ncs540l-mcast • xr-ncs540l-netflow • xr-netflow • xr-ospf • xr-perf-meas • xr-perfmgmt • xr-rip • xr-telnet • xr-track These optional packages are also included in NCS540l aarch64 iosxr optional rpms-24.2.1.tar.
USB Boot Package	ncs540l-aarch64-usb_boot-24.2.1.zip	Package required to perform USB Boot. Includes the same packages as the base image.

Optional Packages not included in the base image		
Package	**Filename**	**Description**
IOS XR Telnet (xr-telnet)	NCS540l-aarch64-iosxr-optional-rpms-24.2.1.tar	Supports Telnet
IOS XR EIGRP (xr-eigrp)	NCS540l-aarch64-iosxr-optional-rpms-24.2.1.tar	Supports EIGRP
IOS XR CDP (xr-cdp)	NCS540l-aarch64-iosxr-optional-rpms-24.2.1.tar	Supports CDP
IOS XR k9sec (xr-k9sec)	NCS540l-aarch64-k9sec-rpms.24.2.1.tar	Supports 802.1X
IOS XR RIP (xr-rip)	NCS540l-aarch64-iosxr-optional-rpms-24.2.1.tar	Supports RIP

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 24.2.1
Copyright (c) 2013-2024 by Cisco Systems, Inc.

Build Information:
 Built By      : swtools
 Built On      : Tue Jun 11 09:05:57 PDT 2024
 Built Host    : iox-lnx-066
 Workspace     : /auto/srcarchive11/prod/24.2.1/ncs540/ws
 Version       : 24.2.1
 Location      : /opt/cisco/XR/packages/
 Label         : 24.2.1

cisco NCS-540 () processor
System uptime is 8 hours 59 minutes
```

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 24.2.1 LNT
Copyright (c) 2013-2024 by Cisco Systems, Inc.

Build Information:
 Built By      : cisco
 Built On      : Tue Jun 11 13:58:26 UTC 2024
 Build Host    : iox-ucs-056
 Workspace     : /auto/srcarchive11/prod/24.2.1/ncs540l/ws/
 Version       : 24.2.1
 Label         : 24.2.1

cisco NCS540L (C3708 @ 1.70GHz)
cisco N540X-16Z4G8Q2C-A (C3708 @ 1.70GHz) processor with 8GB of memory
EG-PE41 uptime is 9 hours, 3 minutes
Cisco NCS 540 System with 16x10G+4x1GCu+8x25G+2x100G DC
```

Log in to the router and enter the **show version** command on the N540X-4Z14G2Q-A/D, N540-6Z18G-SYS-A/D, N540X-8Z16G-SYS-A/D, N540-6Z14S-SYS-D, and N540X-6Z18G-SYS-A/D variants:

```
RP/0/RP0/CPU0:Router#show version
Cisco IOS XR Software, Version 24.2.1 LNT
```

```
                    Copyright (c) 2013-2024 by Cisco Systems, Inc.

                    Build Information:
                     Built By     : cisco
                     Built On     : Tue Jun 11 13:58:26 UTC 2024
                     Build Host   : iox-ucs-059
                     Workspace    : /auto/srcarchive11/prod/24.2.1/ncs540l-aarch64/ws/
                     Version      : 24.2.1
                     Label        : 24.2.1

                    cisco NCS540L
                    cisco N540X-6Z18G-SYS-A processor with 8GB of memory
                    PE5_540L uptime is 17 hours, 6 minutes
                    Cisco NCS 540 Series Fixed Router 18x1G, 6x1/10G, AC
```

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 24.2.1 LNT
Copyright (c) 2013-2024 by Cisco Systems, Inc.

Build Information:
 Built By     : cisco
 Built On     : Tue Jun 11 13:58:26 UTC 2024
 Build Host   : iox-ucs-056
 Workspace    : /auto/srcarchive11/prod/24.2.1/ncs540l/ws/
 Version      : 24.2.1
 Label        : 24.2.1

cisco NCS540L (D1519 @ 1.50GHz)
cisco N540-24Q8L2DD-SYS (D1519 @ 1.50GHz) processor with 16GB of memory
Arches-PE42 uptime is 9 hours, 24 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 24.2.1 LNT
Copyright (c) 2013-2024 by Cisco Systems, Inc.

Build Information:
 Built By     : sajshah
 Built On     : Wed Jun 12 00:04:09 UTC 2024
 Build Host   : iox-ucs-054
 Workspace    :
/auto/ioxdepot6/GISO/giso_build_lindt/giso_custom_create/kalaisel_2024-06-12_07-01-59_UTC
 Version      : 24.2.1
 Label        : 24.2.1-iso

cisco NCS540L (C3708 @ 1.70GHz)
cisco N540-FH-AGG-SYS (C3708 @ 1.70GHz) processor with 8GB of memory
LION_PE1 uptime is 9 hours, 16 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:

> ✎
>
> **Note**   If the **Req Reload** field is mentioned as **Yes** in the output, then it indicates the need for a router reboot for the FPD's latest version to take effect.

```
RP/0/RP0/CPU0:Router#show fpd package
============================== ===================================================
                                        Field Programmable Device Package
                               ===================================================
                                       Req    SW      Min Req   Min Req
Card Type            FPD Description   Reload Ver     SW Ver    Board Ver
================== ========================= ====== ======= ======== =========
----------------------------------------------------------------------------------
N540-24Z8Q2C-M       Bootloader(A)            YES    1.17       1.17      0.0
                     CPU-IOFPGA(A)            YES    0.10       0.10      0.0
                     MB-IOFPGA(A)             YES    0.28       0.28      0.0
                     MB-MIFPGA                YES    0.08       0.08      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-M1100(A)            NO     50.00      50.00     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     1427.00    1427.00   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_32              NO     13.01      13.01     0.0
                     SSFP_E1F_33              NO     13.01      13.01     0.0
                     SSFP_E1F_34              NO     13.01      13.01     0.0
                     SSFP_E1F_35              NO     13.01      13.01     0.0
                     SSFP_E1F_36              NO     13.01      13.01     0.0
                     SSFP_E1F_37              NO     13.01      13.01     0.0
                     SSFP_E1F_38              NO     13.01      13.01     0.0
                     SSFP_E1F_39              NO     13.01      13.01     0.0
                     SSFP_E1F_4               NO     13.01      13.01     0.0
```

```
SSFP_E1F_40            NO    13.01   13.01   0.0
SSFP_E1F_41            NO    13.01   13.01   0.0
SSFP_E1F_42            NO    13.01   13.01   0.0
SSFP_E1F_43            NO    13.01   13.01   0.0
SSFP_E1F_44            NO    13.01   13.01   0.0
SSFP_E1F_45            NO    13.01   13.01   0.0
SSFP_E1F_46            NO    13.01   13.01   0.0
SSFP_E1F_47            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_32       NO    12.01   12.01   0.0
SSFP_OC3_STM1_33       NO    12.01   12.01   0.0
SSFP_OC3_STM1_34       NO    12.01   12.01   0.0
SSFP_OC3_STM1_35       NO    12.01   12.01   0.0
SSFP_OC3_STM1_36       NO    12.01   12.01   0.0
SSFP_OC3_STM1_37       NO    12.01   12.01   0.0
SSFP_OC3_STM1_38       NO    12.01   12.01   0.0
SSFP_OC3_STM1_39       NO    12.01   12.01   0.0
SSFP_OC3_STM1_4        NO    12.01   12.01   0.0
SSFP_OC3_STM1_40       NO    12.01   12.01   0.0
SSFP_OC3_STM1_41       NO    12.01   12.01   0.0
SSFP_OC3_STM1_42       NO    12.01   12.01   0.0
SSFP_OC3_STM1_43       NO    12.01   12.01   0.0
SSFP_OC3_STM1_44       NO    12.01   12.01   0.0
SSFP_OC3_STM1_45       NO    12.01   12.01   0.0
SSFP_OC3_STM1_46       NO    12.01   12.01   0.0
SSFP_OC3_STM1_47       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
SSFP_STM1_TSOP_0       NO    13.00   13.00   0.0
SSFP_STM1_TSOP_1       NO    13.00   13.00   0.0
SSFP_STM1_TSOP_10      NO    13.00   13.00   0.0
```

```
                           SSFP_STM1_TSOP_11          NO     13.00     13.00      0.0
                           SSFP_STM1_TSOP_12          NO     13.00     13.00      0.0
                           SSFP_STM1_TSOP_13          NO     13.00     13.00      0.0
                           SSFP_STM1_TSOP_14          NO     13.00     13.00      0.0
                           SSFP_STM1_TSOP_15          NO     13.00     13.00      0.0
                           SSFP_STM1_TSOP_16          NO     13.00     13.00      0.0
                           SSFP_STM1_TSOP_17          NO     13.00     13.00      0.0
                           SSFP_STM1_TSOP_18          NO     13.00     13.00      0.0
                           SSFP_STM1_TSOP_19          NO     13.00     13.00      0.0
                           SSFP_STM1_TSOP_2           NO     13.00     13.00      0.0
                           SSFP_STM1_TSOP_20          NO     13.00     13.00      0.0
                           SSFP_STM1_TSOP_21          NO     13.00     13.00      0.0
                           SSFP_STM1_TSOP_22          NO     13.00     13.00      0.0
                           SSFP_STM1_TSOP_23          NO     13.00     13.00      0.0
                           SSFP_STM1_TSOP_24          NO     13.00     13.00      0.0
                           SSFP_STM1_TSOP_25          NO     13.00     13.00      0.0
                           SSFP_STM1_TSOP_26          NO     13.00     13.00      0.0
                           SSFP_STM1_TSOP_27          NO     13.00     13.00      0.0
                           SSFP_STM1_TSOP_28          NO     13.00     13.00      0.0
                           SSFP_STM1_TSOP_29          NO     13.00     13.00      0.0
                           SSFP_STM1_TSOP_3           NO     13.00     13.00      0.0
                           SSFP_STM1_TSOP_30          NO     13.00     13.00      0.0
                           SSFP_STM1_TSOP_31          NO     13.00     13.00      0.0
                           SSFP_STM1_TSOP_32          NO     13.00     13.00      0.0
                           SSFP_STM1_TSOP_33          NO     13.00     13.00      0.0
                           SSFP_STM1_TSOP_34          NO     13.00     13.00      0.0
                           SSFP_STM1_TSOP_35          NO     13.00     13.00      0.0
                           SSFP_STM1_TSOP_36          NO     13.00     13.00      0.0
                           SSFP_STM1_TSOP_37          NO     13.00     13.00      0.0
                           SSFP_STM1_TSOP_38          NO     13.00     13.00      0.0
                           SSFP_STM1_TSOP_39          NO     13.00     13.00      0.0
                           SSFP_STM1_TSOP_4           NO     13.00     13.00      0.0
                           SSFP_STM1_TSOP_40          NO     13.00     13.00      0.0
                           SSFP_STM1_TSOP_41          NO     13.00     13.00      0.0
                           SSFP_STM1_TSOP_42          NO     13.00     13.00      0.0
                           SSFP_STM1_TSOP_43          NO     13.00     13.00      0.0
                           SSFP_STM1_TSOP_44          NO     13.00     13.00      0.0
                           SSFP_STM1_TSOP_45          NO     13.00     13.00      0.0
                           SSFP_STM1_TSOP_46          NO     13.00     13.00      0.0
                           SSFP_STM1_TSOP_47          NO     13.00     13.00      0.0
                           SSFP_STM1_TSOP_5           NO     13.00     13.00      0.0
                           SSFP_STM1_TSOP_6           NO     13.00     13.00      0.0
                           SSFP_STM1_TSOP_7           NO     13.00     13.00      0.0
                           SSFP_STM1_TSOP_8           NO     13.00     13.00      0.0
                           SSFP_STM1_TSOP_9           NO     13.00     13.00      0.0
------------------------------------------------------------------------------------
N540-ACC-SYS               Bootloader(A)              YES     1.17      1.17      0.0
                           CPU-IOFPGA(A)              YES     0.10      0.10      0.0
                           MB-IOFPGA(A)               YES     0.28      0.28      0.0
                           MB-MIFPGA                  YES     0.08      0.08      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-M1100(A)              NO     50.00     50.00      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   1427.00   1427.00      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_32          NO    13.01    13.01    0.0
SSFP_E1F_33          NO    13.01    13.01    0.0
SSFP_E1F_34          NO    13.01    13.01    0.0
SSFP_E1F_35          NO    13.01    13.01    0.0
SSFP_E1F_36          NO    13.01    13.01    0.0
SSFP_E1F_37          NO    13.01    13.01    0.0
SSFP_E1F_38          NO    13.01    13.01    0.0
SSFP_E1F_39          NO    13.01    13.01    0.0
SSFP_E1F_4           NO    13.01    13.01    0.0
SSFP_E1F_40          NO    13.01    13.01    0.0
SSFP_E1F_41          NO    13.01    13.01    0.0
SSFP_E1F_42          NO    13.01    13.01    0.0
SSFP_E1F_43          NO    13.01    13.01    0.0
SSFP_E1F_44          NO    13.01    13.01    0.0
SSFP_E1F_45          NO    13.01    13.01    0.0
SSFP_E1F_46          NO    13.01    13.01    0.0
SSFP_E1F_47          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_32              NO    12.01    12.01    0.0
SSFP_OC3_STM1_33              NO    12.01    12.01    0.0
SSFP_OC3_STM1_34              NO    12.01    12.01    0.0
SSFP_OC3_STM1_35              NO    12.01    12.01    0.0
SSFP_OC3_STM1_36              NO    12.01    12.01    0.0
SSFP_OC3_STM1_37              NO    12.01    12.01    0.0
SSFP_OC3_STM1_38              NO    12.01    12.01    0.0
SSFP_OC3_STM1_39              NO    12.01    12.01    0.0
SSFP_OC3_STM1_4               NO    12.01    12.01    0.0
SSFP_OC3_STM1_40              NO    12.01    12.01    0.0
SSFP_OC3_STM1_41              NO    12.01    12.01    0.0
SSFP_OC3_STM1_42              NO    12.01    12.01    0.0
SSFP_OC3_STM1_43              NO    12.01    12.01    0.0
SSFP_OC3_STM1_44              NO    12.01    12.01    0.0
SSFP_OC3_STM1_45              NO    12.01    12.01    0.0
SSFP_OC3_STM1_46              NO    12.01    12.01    0.0
SSFP_OC3_STM1_47              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
SSFP_STM1_TSOP_0             NO    13.00    13.00    0.0
SSFP_STM1_TSOP_1             NO    13.00    13.00    0.0
SSFP_STM1_TSOP_10            NO    13.00    13.00    0.0
SSFP_STM1_TSOP_11            NO    13.00    13.00    0.0
SSFP_STM1_TSOP_12            NO    13.00    13.00    0.0
SSFP_STM1_TSOP_13            NO    13.00    13.00    0.0
SSFP_STM1_TSOP_14            NO    13.00    13.00    0.0
SSFP_STM1_TSOP_15            NO    13.00    13.00    0.0
SSFP_STM1_TSOP_16            NO    13.00    13.00    0.0
SSFP_STM1_TSOP_17            NO    13.00    13.00    0.0
SSFP_STM1_TSOP_18            NO    13.00    13.00    0.0
SSFP_STM1_TSOP_19            NO    13.00    13.00    0.0
SSFP_STM1_TSOP_2             NO    13.00    13.00    0.0
SSFP_STM1_TSOP_20            NO    13.00    13.00    0.0
SSFP_STM1_TSOP_21            NO    13.00    13.00    0.0
SSFP_STM1_TSOP_22            NO    13.00    13.00    0.0
SSFP_STM1_TSOP_23            NO    13.00    13.00    0.0
SSFP_STM1_TSOP_24            NO    13.00    13.00    0.0
SSFP_STM1_TSOP_25            NO    13.00    13.00    0.0
SSFP_STM1_TSOP_26            NO    13.00    13.00    0.0
SSFP_STM1_TSOP_27            NO    13.00    13.00    0.0
SSFP_STM1_TSOP_28            NO    13.00    13.00    0.0
SSFP_STM1_TSOP_29            NO    13.00    13.00    0.0
SSFP_STM1_TSOP_3             NO    13.00    13.00    0.0
SSFP_STM1_TSOP_30            NO    13.00    13.00    0.0
SSFP_STM1_TSOP_31            NO    13.00    13.00    0.0
SSFP_STM1_TSOP_32            NO    13.00    13.00    0.0
SSFP_STM1_TSOP_33            NO    13.00    13.00    0.0
SSFP_STM1_TSOP_34            NO    13.00    13.00    0.0
SSFP_STM1_TSOP_35            NO    13.00    13.00    0.0
SSFP_STM1_TSOP_36            NO    13.00    13.00    0.0
SSFP_STM1_TSOP_37            NO    13.00    13.00    0.0
SSFP_STM1_TSOP_38            NO    13.00    13.00    0.0
SSFP_STM1_TSOP_39            NO    13.00    13.00    0.0
SSFP_STM1_TSOP_4             NO    13.00    13.00    0.0
```

```
                         SSFP_STM1_TSOP_40           NO     13.00      13.00      0.0
                         SSFP_STM1_TSOP_41           NO     13.00      13.00      0.0
                         SSFP_STM1_TSOP_42           NO     13.00      13.00      0.0
                         SSFP_STM1_TSOP_43           NO     13.00      13.00      0.0
                         SSFP_STM1_TSOP_44           NO     13.00      13.00      0.0
                         SSFP_STM1_TSOP_45           NO     13.00      13.00      0.0
                         SSFP_STM1_TSOP_46           NO     13.00      13.00      0.0
                         SSFP_STM1_TSOP_47           NO     13.00      13.00      0.0
                         SSFP_STM1_TSOP_5            NO     13.00      13.00      0.0
                         SSFP_STM1_TSOP_6            NO     13.00      13.00      0.0
                         SSFP_STM1_TSOP_7            NO     13.00      13.00      0.0
                         SSFP_STM1_TSOP_8            NO     13.00      13.00      0.0
                         SSFP_STM1_TSOP_9            NO     13.00      13.00      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     1.17       1.17      0.0
                         CPU-IOFPGA(A)               YES     0.10       0.10      0.0
                         MB-IOFPGA(A)                YES     0.28       0.28      0.0
                         MB-MIFPGA                   YES     0.08       0.08      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-M1100(A)               NO     50.00      50.00      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   1427.00    1427.00      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_32                 NO     13.01      13.01      0.0
```

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SSFP_E1F_33           NO    13.01    13.01    0.0
SSFP_E1F_34           NO    13.01    13.01    0.0
SSFP_E1F_35           NO    13.01    13.01    0.0
SSFP_E1F_36           NO    13.01    13.01    0.0
SSFP_E1F_37           NO    13.01    13.01    0.0
SSFP_E1F_38           NO    13.01    13.01    0.0
SSFP_E1F_39           NO    13.01    13.01    0.0
SSFP_E1F_4            NO    13.01    13.01    0.0
SSFP_E1F_40           NO    13.01    13.01    0.0
SSFP_E1F_41           NO    13.01    13.01    0.0
SSFP_E1F_42           NO    13.01    13.01    0.0
SSFP_E1F_43           NO    13.01    13.01    0.0
SSFP_E1F_44           NO    13.01    13.01    0.0
SSFP_E1F_45           NO    13.01    13.01    0.0
SSFP_E1F_46           NO    13.01    13.01    0.0
SSFP_E1F_47           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_32      NO    12.01    12.01    0.0
SSFP_OC3_STM1_33      NO    12.01    12.01    0.0
SSFP_OC3_STM1_34      NO    12.01    12.01    0.0
SSFP_OC3_STM1_35      NO    12.01    12.01    0.0
SSFP_OC3_STM1_36      NO    12.01    12.01    0.0
SSFP_OC3_STM1_37      NO    12.01    12.01    0.0
SSFP_OC3_STM1_38      NO    12.01    12.01    0.0
SSFP_OC3_STM1_39      NO    12.01    12.01    0.0
SSFP_OC3_STM1_4       NO    12.01    12.01    0.0
SSFP_OC3_STM1_40      NO    12.01    12.01    0.0
SSFP_OC3_STM1_41      NO    12.01    12.01    0.0
SSFP_OC3_STM1_42      NO    12.01    12.01    0.0
SSFP_OC3_STM1_43      NO    12.01    12.01    0.0
SSFP_OC3_STM1_44      NO    12.01    12.01    0.0
SSFP_OC3_STM1_45      NO    12.01    12.01    0.0
SSFP_OC3_STM1_46      NO    12.01    12.01    0.0
SSFP_OC3_STM1_47      NO    12.01    12.01    0.0
```

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                         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
                         SSFP_STM1_TSOP_0        NO    13.00    13.00    0.0
                         SSFP_STM1_TSOP_1        NO    13.00    13.00    0.0
                         SSFP_STM1_TSOP_10       NO    13.00    13.00    0.0
                         SSFP_STM1_TSOP_11       NO    13.00    13.00    0.0
                         SSFP_STM1_TSOP_12       NO    13.00    13.00    0.0
                         SSFP_STM1_TSOP_13       NO    13.00    13.00    0.0
                         SSFP_STM1_TSOP_14       NO    13.00    13.00    0.0
                         SSFP_STM1_TSOP_15       NO    13.00    13.00    0.0
                         SSFP_STM1_TSOP_16       NO    13.00    13.00    0.0
                         SSFP_STM1_TSOP_17       NO    13.00    13.00    0.0
                         SSFP_STM1_TSOP_18       NO    13.00    13.00    0.0
                         SSFP_STM1_TSOP_19       NO    13.00    13.00    0.0
                         SSFP_STM1_TSOP_2        NO    13.00    13.00    0.0
                         SSFP_STM1_TSOP_20       NO    13.00    13.00    0.0
                         SSFP_STM1_TSOP_21       NO    13.00    13.00    0.0
                         SSFP_STM1_TSOP_22       NO    13.00    13.00    0.0
                         SSFP_STM1_TSOP_23       NO    13.00    13.00    0.0
                         SSFP_STM1_TSOP_24       NO    13.00    13.00    0.0
                         SSFP_STM1_TSOP_25       NO    13.00    13.00    0.0
                         SSFP_STM1_TSOP_26       NO    13.00    13.00    0.0
                         SSFP_STM1_TSOP_27       NO    13.00    13.00    0.0
                         SSFP_STM1_TSOP_28       NO    13.00    13.00    0.0
                         SSFP_STM1_TSOP_29       NO    13.00    13.00    0.0
                         SSFP_STM1_TSOP_3        NO    13.00    13.00    0.0
                         SSFP_STM1_TSOP_30       NO    13.00    13.00    0.0
                         SSFP_STM1_TSOP_31       NO    13.00    13.00    0.0
                         SSFP_STM1_TSOP_32       NO    13.00    13.00    0.0
                         SSFP_STM1_TSOP_33       NO    13.00    13.00    0.0
                         SSFP_STM1_TSOP_34       NO    13.00    13.00    0.0
                         SSFP_STM1_TSOP_35       NO    13.00    13.00    0.0
                         SSFP_STM1_TSOP_36       NO    13.00    13.00    0.0
                         SSFP_STM1_TSOP_37       NO    13.00    13.00    0.0
                         SSFP_STM1_TSOP_38       NO    13.00    13.00    0.0
                         SSFP_STM1_TSOP_39       NO    13.00    13.00    0.0
                         SSFP_STM1_TSOP_4        NO    13.00    13.00    0.0
                         SSFP_STM1_TSOP_40       NO    13.00    13.00    0.0
                         SSFP_STM1_TSOP_41       NO    13.00    13.00    0.0
                         SSFP_STM1_TSOP_42       NO    13.00    13.00    0.0
                         SSFP_STM1_TSOP_43       NO    13.00    13.00    0.0
                         SSFP_STM1_TSOP_44       NO    13.00    13.00    0.0
                         SSFP_STM1_TSOP_45       NO    13.00    13.00    0.0
                         SSFP_STM1_TSOP_46       NO    13.00    13.00    0.0
                         SSFP_STM1_TSOP_47       NO    13.00    13.00    0.0
                         SSFP_STM1_TSOP_5        NO    13.00    13.00    0.0
                         SSFP_STM1_TSOP_6        NO    13.00    13.00    0.0
                         SSFP_STM1_TSOP_7        NO    13.00    13.00    0.0
                         SSFP_STM1_TSOP_8        NO    13.00    13.00    0.0
                         SSFP_STM1_TSOP_9        NO    13.00    13.00    0.0
-------------------------------------------------------------------------------
N540X-ACC-SYS            Bootloader(A)           YES    1.17     1.17    0.0
                         CPU-IOFPGA(A)           YES    0.10     0.10    0.0
                         MB-IOFPGA(A)            YES    0.28     0.28    0.0
                         MB-MIFPGA               YES    0.08     0.08    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-M1100(A)           NO    50.00    50.00    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
```

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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   1427.00   1427.00      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_32                  NO     13.01     13.01      0.0
SSFP_E1F_33                  NO     13.01     13.01      0.0
SSFP_E1F_34                  NO     13.01     13.01      0.0
SSFP_E1F_35                  NO     13.01     13.01      0.0
SSFP_E1F_36                  NO     13.01     13.01      0.0
SSFP_E1F_37                  NO     13.01     13.01      0.0
SSFP_E1F_38                  NO     13.01     13.01      0.0
SSFP_E1F_39                  NO     13.01     13.01      0.0
SSFP_E1F_4                   NO     13.01     13.01      0.0
SSFP_E1F_40                  NO     13.01     13.01      0.0
SSFP_E1F_41                  NO     13.01     13.01      0.0
SSFP_E1F_42                  NO     13.01     13.01      0.0
SSFP_E1F_43                  NO     13.01     13.01      0.0
SSFP_E1F_44                  NO     13.01     13.01      0.0
SSFP_E1F_45                  NO     13.01     13.01      0.0
SSFP_E1F_46                  NO     13.01     13.01      0.0
SSFP_E1F_47                  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_32        NO    12.01    12.01    0.0
                              SSFP_OC3_STM1_33        NO    12.01    12.01    0.0
                              SSFP_OC3_STM1_34        NO    12.01    12.01    0.0
                              SSFP_OC3_STM1_35        NO    12.01    12.01    0.0
                              SSFP_OC3_STM1_36        NO    12.01    12.01    0.0
                              SSFP_OC3_STM1_37        NO    12.01    12.01    0.0
                              SSFP_OC3_STM1_38        NO    12.01    12.01    0.0
                              SSFP_OC3_STM1_39        NO    12.01    12.01    0.0
                              SSFP_OC3_STM1_4         NO    12.01    12.01    0.0
                              SSFP_OC3_STM1_40        NO    12.01    12.01    0.0
                              SSFP_OC3_STM1_41        NO    12.01    12.01    0.0
                              SSFP_OC3_STM1_42        NO    12.01    12.01    0.0
                              SSFP_OC3_STM1_43        NO    12.01    12.01    0.0
                              SSFP_OC3_STM1_44        NO    12.01    12.01    0.0
                              SSFP_OC3_STM1_45        NO    12.01    12.01    0.0
                              SSFP_OC3_STM1_46        NO    12.01    12.01    0.0
                              SSFP_OC3_STM1_47        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
                              SSFP_STM1_TSOP_0        NO    13.00    13.00    0.0
                              SSFP_STM1_TSOP_1        NO    13.00    13.00    0.0
                              SSFP_STM1_TSOP_10       NO    13.00    13.00    0.0
                              SSFP_STM1_TSOP_11       NO    13.00    13.00    0.0
                              SSFP_STM1_TSOP_12       NO    13.00    13.00    0.0
                              SSFP_STM1_TSOP_13       NO    13.00    13.00    0.0
                              SSFP_STM1_TSOP_14       NO    13.00    13.00    0.0
                              SSFP_STM1_TSOP_15       NO    13.00    13.00    0.0
                              SSFP_STM1_TSOP_16       NO    13.00    13.00    0.0
                              SSFP_STM1_TSOP_17       NO    13.00    13.00    0.0
                              SSFP_STM1_TSOP_18       NO    13.00    13.00    0.0
                              SSFP_STM1_TSOP_19       NO    13.00    13.00    0.0
                              SSFP_STM1_TSOP_2        NO    13.00    13.00    0.0
                              SSFP_STM1_TSOP_20       NO    13.00    13.00    0.0
                              SSFP_STM1_TSOP_21       NO    13.00    13.00    0.0
                              SSFP_STM1_TSOP_22       NO    13.00    13.00    0.0
                              SSFP_STM1_TSOP_23       NO    13.00    13.00    0.0
                              SSFP_STM1_TSOP_24       NO    13.00    13.00    0.0
                              SSFP_STM1_TSOP_25       NO    13.00    13.00    0.0
                              SSFP_STM1_TSOP_26       NO    13.00    13.00    0.0
                              SSFP_STM1_TSOP_27       NO    13.00    13.00    0.0
                              SSFP_STM1_TSOP_28       NO    13.00    13.00    0.0
                              SSFP_STM1_TSOP_29       NO    13.00    13.00    0.0
                              SSFP_STM1_TSOP_3        NO    13.00    13.00    0.0
                              SSFP_STM1_TSOP_30       NO    13.00    13.00    0.0
                              SSFP_STM1_TSOP_31       NO    13.00    13.00    0.0
                              SSFP_STM1_TSOP_32       NO    13.00    13.00    0.0
```

```
SSFP_STM1_TSOP_33                 NO      13.00     13.00        0.0
SSFP_STM1_TSOP_34                 NO      13.00     13.00        0.0
SSFP_STM1_TSOP_35                 NO      13.00     13.00        0.0
SSFP_STM1_TSOP_36                 NO      13.00     13.00        0.0
SSFP_STM1_TSOP_37                 NO      13.00     13.00        0.0
SSFP_STM1_TSOP_38                 NO      13.00     13.00        0.0
SSFP_STM1_TSOP_39                 NO      13.00     13.00        0.0
SSFP_STM1_TSOP_4                  NO      13.00     13.00        0.0
SSFP_STM1_TSOP_40                 NO      13.00     13.00        0.0
SSFP_STM1_TSOP_41                 NO      13.00     13.00        0.0
SSFP_STM1_TSOP_42                 NO      13.00     13.00        0.0
SSFP_STM1_TSOP_43                 NO      13.00     13.00        0.0
SSFP_STM1_TSOP_44                 NO      13.00     13.00        0.0
SSFP_STM1_TSOP_45                 NO      13.00     13.00        0.0
SSFP_STM1_TSOP_46                 NO      13.00     13.00        0.0
SSFP_STM1_TSOP_47                 NO      13.00     13.00        0.0
SSFP_STM1_TSOP_5                  NO      13.00     13.00        0.0
SSFP_STM1_TSOP_6                  NO      13.00     13.00        0.0
SSFP_STM1_TSOP_7                  NO      13.00     13.00        0.0
SSFP_STM1_TSOP_8                  NO      13.00     13.00        0.0
SSFP_STM1_TSOP_9                  NO      13.00     13.00        0.0

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

                                                               FPD Versions
                                                               ==============
Location   Card type              HWver  FPD device      ATR Status    Running   Programd
-----------------------------------------------------------------------------------------
0/RP0      N540-24Z8Q2C-M         1.0    MB-MIFPGA           CURRENT    0.08      0.08

0/RP0      N540-24Z8Q2C-M         1.0    Bootloader          CURRENT    1.17      1.17

0/RP0      N540-24Z8Q2C-M         1.0    CPU-IOFPGA          CURRENT    0.10      0.10

0/RP0      N540-24Z8Q2C-M         1.0    MB-IOFPGA           CURRENT    0.28      0.28

0/RP0      N540-24Z8Q2C-M         1.0    SATA-M500IT-MU-B    CURRENT    4.00      4.00

0/PM0      N540-PWR400-A          1.0    SDG-PriMCU-ACFW     CURRENT    0.04      0.04

0/PM0      N540-PWR400-A          1.0    SDG-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, N540X-16Z8Q2C-D, and N540X-16Z4G8Q2C-A/D variants:

```
RP/0/RP0/CPU0:Router#show fpd package
================================= ==================================================
                                    Field Programmable Device Package
                                  ==================================================
                                    Req     SW       Min Req   Min Req
Card Type           FPD Description Reload  Ver      SW Ver    Board Ver
================== ========================= ====== ======= ======== =========
------------------------------------------------------------------------------
N540-12Z20G-SYS-A   ADM_FW               YES     14.03    14.03       0.0
                    ADMConfig            NO      1.05     1.05        0.0
                    IoFpga               YES     3.08     3.08        0.0
                    IoFpgaGolden         YES     2.07     2.03        0.0
                    Primary-BIOS         YES     1.49     1.49        0.0
                    StdbyFpga            YES     0.50     0.50        0.0
                    StdbyFpgaGolden      YES     0.50     0.40        0.0
                    TamFw                YES     4.13     4.13        0.0
                    TamFwGolden          YES     4.13     4.11        0.0
------------------------------------------------------------------------------
N540-12Z20G-SYS-D   ADM_FW               YES     14.03    14.03       0.0
```

```
                         ADMConfig                  NO      1.05     1.05     0.0
                         IoFpga                     YES     3.08     3.08     0.0
                         IoFpgaGolden               YES     2.07     2.03     0.0
                         Primary-BIOS               YES     1.49     1.49     0.0
                         StdbyFpga                  YES     0.50     0.50     0.0
                         StdbyFpgaGolden            YES     0.50     0.40     0.0
                         TamFw                      YES     4.13     4.13     0.0
                         TamFwGolden                YES     4.13     4.11     0.0
 ------------------------------------------------------------------------------------
 N540-24Q8L2DD-SYS       ADM-DBConfig               NO      2.05     2.05     0.0
                         ADM-MBConfig               NO      2.05     2.05     0.0
                         IoFpga                     YES     2.12     2.12     0.0
                         IoFpgaGolden               YES     2.12     2.12     0.0
                         Primary-BIOS               YES     4.07     4.07     0.0
                         SsdSAMSA64G3               YES    12.41    12.41     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        ADM_FW                     YES    14.03    14.03     0.0
                         ADMConfig                  NO      1.05     1.05     0.0
                         IoFpga                     YES     3.08     3.08     0.0
                         IoFpgaGolden               YES     2.07     2.03     0.0
                         JMAC1-Config               YES     3.00     3.00     0.0
                         JMAC2-Config               YES     3.00     3.00     0.0
                         JMAC3-Config               YES     3.00     3.00     0.0
                         JMAC4-Config               YES     3.00     3.00     0.0
                         JMAC5-Config               YES     3.00     3.00     0.0
                         Primary-BIOS               YES     1.49     1.49     0.0
                         StdbyFpga                  YES     0.50     0.50     0.0
                         StdbyFpgaGolden            YES     0.50     0.40     0.0
                         TamFw                      YES     4.13     4.13     0.0
                         TamFwGolden                YES     4.13     4.11     0.0
 ------------------------------------------------------------------------------------
 N540-28Z4C-SYS-D        ADM_FW                     YES    14.03    14.03     0.0
                         ADMConfig                  NO      1.05     1.05     0.0
                         IoFpga                     YES     3.08     3.08     0.0
                         IoFpgaGolden               YES     2.07     2.03     0.0
                         JMAC1-Config               YES     3.00     3.00     0.0
                         JMAC2-Config               YES     3.00     3.00     0.0
                         JMAC3-Config               YES     3.00     3.00     0.0
                         JMAC4-Config               YES     3.00     3.00     0.0
                         JMAC5-Config               YES     3.00     3.00     0.0
                         Primary-BIOS               YES     1.49     1.49     0.0
                         StdbyFpga                  YES     0.50     0.50     0.0
                         StdbyFpgaGolden            YES     0.50     0.40     0.0
                         TamFw                      YES     4.13     4.13     0.0
                         TamFwGolden                YES     4.13     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     0.24     0.24     0.0
                         DpFpgaEth                  YES     1.22     1.22     0.0
                         IoFpga                     YES     1.30     1.30     0.0
                         IoFpgaGolden               YES     1.30     1.30     0.0
                         Primary-BIOS               YES     1.49     1.49     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    0.23     0.23     0.0
                        IoFpga              YES    1.30     1.30     0.0
                        IoFpgaGolden        YES    1.30     1.30     0.0
                        Primary-BIOS        YES    1.49     1.49     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      ADM_FW              YES    14.03    14.03    0.0
                        ADMConfig           NO     1.05     1.05     0.0
                        IoFpga              YES    3.08     3.08     0.0
                        IoFpgaGolden        YES    2.07     2.03     0.0
                        Primary-BIOS        YES    1.49     1.49     0.0
                        StdbyFpga           YES    0.50     0.50     0.0
                        StdbyFpgaGolden     YES    0.50     0.40     0.0
                        TamFw               YES    4.13     4.13     0.0
                        TamFwGolden         YES    4.13     4.11     0.0
-------------------------------------------------------------------------------
N540X-12Z16G-SYS-D      ADM_FW              YES    14.03    14.03    0.0
                        ADMConfig           NO     1.05     1.05     0.0
                        IoFpga              YES    3.08     3.08     0.0
                        IoFpgaGolden        YES    2.07     2.03     0.0
                        Primary-BIOS        YES    1.49     1.49     0.0
                        StdbyFpga           YES    0.50     0.50     0.0
                        StdbyFpgaGolden     YES    0.50     0.40     0.0
                        TamFw               YES    4.13     4.13     0.0
                        TamFwGolden         YES    4.13     4.11     0.0
-------------------------------------------------------------------------------
N540X-16Z4G8Q2C-A       ADM_FW              YES    14.03    14.03    0.0
                        ADMConfig           NO     1.05     1.05     0.0
                        IoFpga              YES    3.08     3.08     0.0
                        IoFpgaGolden        YES    2.07     2.03     0.0
                        Primary-BIOS        YES    1.49     1.49     0.0
                        StdbyFpga           YES    0.50     0.50     0.0
                        StdbyFpgaGolden     YES    0.50     0.40     0.0
                        TamFw               YES    4.13     4.13     0.0
                        TamFwGolden         YES    4.13     4.11     0.0
-------------------------------------------------------------------------------
N540X-16Z4G8Q2C-D       ADM_FW              YES    14.03    14.03    0.0
                        ADMConfig           NO     1.05     1.05     0.0
                        IoFpga              YES    3.08     3.08     0.0
                        IoFpgaGolden        YES    2.07     2.03     0.0
                        Primary-BIOS        YES    1.49     1.49     0.0
                        StdbyFpga           YES    0.50     0.50     0.0
                        StdbyFpgaGolden     YES    0.50     0.40     0.0
```

```
                          TamFw                         YES     4.13      4.13       0.0
                          TamFwGolden                   YES     4.13      4.11       0.0
      ------------------------------------------------------------------------------
      N540X-16Z8Q2C-A     ADMConfig                     NO      1.05      1.05       0.0
                          IoFpga                        YES     3.08      3.08       0.0
                          IoFpgaGolden                  YES     2.07      2.03       0.0
                          Primary-BIOS                  YES     1.49      1.49       0.0
                          StdbyFpga                     YES     0.50      0.50       0.0
                          StdbyFpgaGolden               YES     0.50      0.40       0.0
                          TamFw                         YES     4.13      4.13       0.0
                          TamFwGolden                   YES     4.13      4.11       0.0
      ------------------------------------------------------------------------------
      N540X-16Z8Q2C-D     ADMConfig                     NO      1.05      1.05       0.0
                          IoFpga                        YES     3.08      3.08       0.0
                          IoFpgaGolden                  YES     2.07      2.03       0.0
                          Primary-BIOS                  YES     1.49      1.49       0.0
                          StdbyFpga                     YES     0.50      0.50       0.0
                          StdbyFpgaGolden               YES     0.50      0.40       0.0
                          TamFw                         YES     4.13      4.13       0.0
                          TamFwGolden                   YES     4.13      4.11       0.0

RP/0/RP0/CPU0:Router#show hw-module fpd
Auto-upgrade:Enabled
Attribute codes: B golden, P protect, S secure, A Anti Theft aware
                                                                   FPD Versions
                                                                   ==============
Location    Card type             HWver FPD device      ATR Status Running Programd
Reload Loc
------------------------------------------------------------------------------------
0/RP0/CPU0 N540X-16Z4G8Q2C-A      0.2   ADM_FW               CURRENT  14.03   14.03
NOT REQ
0/RP0/CPU0 N540X-16Z4G8Q2C-A      0.2   ADMConfig            CURRENT   1.05    1.05
NOT REQ
0/RP0/CPU0 N540X-16Z4G8Q2C-A      0.2   IoFpga               CURRENT   3.08    3.08
  0/RP0
0/RP0/CPU0 N540X-16Z4G8Q2C-A      0.2   IoFpgaGolden     B   CURRENT           2.03
  0/RP0
0/RP0/CPU0 N540X-16Z4G8Q2C-A      0.2   Primary-BIOS     SA  CURRENT   1.49    1.49
  0/RP0
0/RP0/CPU0 N540X-16Z4G8Q2C-A      0.2   StdbyFpga        S   CURRENT   0.50    0.50
  0/RP0
0/RP0/CPU0 N540X-16Z4G8Q2C-A      0.2   StdbyFpgaGolden  BS  CURRENT           0.50
  0/RP0
0/RP0/CPU0 N540X-16Z4G8Q2C-A      0.2   TamFw            S   CURRENT   4.13    4.13
  0/RP0
0/RP0/CPU0 N540X-16Z4G8Q2C-A      0.2   TamFwGolden      BS  CURRENT           4.13
  0/RP0
```

Log in to the router and enter the **show fpd package** and **show hw-module fpd** commands on the Cisco N540X-4Z14G2Q-A/D, N540-6Z18G-SYS-A/D, N540X-6Z18G-SYS-A/D, N540-6Z14S-SYS-D, and N540X-8Z16G-SYS-A/D variants:

```
RP/0/RP0/CPU0:Router#show fpd package
================================  =================================================
                                  Field Programmable Device Package
                                  =================================================
                                  Req    SW       Min Req   Min Req
Card Type           FPD Description        Reload Ver      SW Ver    Board Ver
==================  ========================  ======  =======  ========  =========
------------------------------------------------------------------------------
N540-6Z14S-SYS-D    ADMConfig                 NO      5.03     5.03      0.0
                    BckUp-BootLoader          YES     20.08    20.08     0.0
                    IoFpga                    YES     0.17     0.17      0.0
                    IoFpgaGolden              YES     0.15     0.15      0.0
                    Prim-BootLoader           YES     20.08    20.08     0.0
```

```
                                    StdbyFpga              YES     2.05     2.05     0.0
                                    StdbyFpgaGolden        YES     0.33     0.33     0.0
                                    TamFw                  YES     6.05     6.05     0.0
                                    TamFwGolden            YES     6.05     6.05     0.0
------------------------------------------------------------------------------------------
N540-6Z18G-SYS-A                    ADMConfig              NO      5.03     5.03     0.0
                                    BckUp-BootLoader       YES    20.08    20.08     0.0
                                    IoFpga                 YES     0.08     0.08     0.0
                                    IoFpgaGolden           YES     0.03     0.03     0.0
                                    Prim-BootLoader        YES    20.08    20.08     0.0
                                    StdbyFpga              YES     2.05     2.05     0.0
                                    StdbyFpgaGolden        YES     0.33     0.33     0.0
                                    TamFw                  YES     6.05     6.05     0.0
                                    TamFwGolden            YES     6.05     6.05     0.0
------------------------------------------------------------------------------------------
N540-6Z18G-SYS-D                    ADMConfig              NO      5.03     5.03     0.0
                                    BckUp-BootLoader       YES    20.08    20.08     0.0
                                    IoFpga                 YES     0.08     0.08     0.0
                                    IoFpgaGolden           YES     0.03     0.03     0.0
                                    Prim-BootLoader        YES    20.08    20.08     0.0
                                    StdbyFpga              YES     2.05     2.05     0.0
                                    StdbyFpgaGolden        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    20.08    20.08     0.0
                                    IoFpga                 YES     0.17     0.17     0.0
                                    IoFpgaGolden           YES     0.15     0.15     0.0
                                    Prim-BootLoader        YES    20.08    20.08     0.0
                                    StdbyFpga              YES     2.05     2.05     0.0
                                    StdbyFpgaGolden        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    20.08    20.08     0.0
                                    IoFpga                 YES     0.17     0.17     0.0
                                    IoFpgaGolden           YES     0.15     0.15     0.0
                                    Prim-BootLoader        YES    20.08    20.08     0.0
                                    StdbyFpga              YES     2.05     2.05     0.0
                                    StdbyFpgaGolden        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    20.08    20.08     0.0
                                    IoFpga                 YES     0.17     0.17     0.0
                                    IoFpgaGolden           YES     0.15     0.15     0.0
                                    Prim-BootLoader        YES    20.08    20.08     0.0
                                    StdbyFpga              YES     2.05     2.05     0.0
                                    StdbyFpgaGolden        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    20.08    20.08     0.0
                                    IoFpga                 YES     0.17     0.17     0.0
                                    IoFpgaGolden           YES     0.15     0.15     0.0
                                    Prim-BootLoader        YES    20.08    20.08     0.0
                                    StdbyFpga              YES     2.05     2.05     0.0
                                    StdbyFpgaGolden        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  20.08   20.08     0.0
                     IoFpga                 YES   0.17    0.17     0.0
                     IoFpgaGolden           YES   0.15    0.15     0.0
                     Prim-BootLoader        YES  20.08   20.08     0.0
                     StdbyFpga              YES   2.05    2.05     0.0
                     StdbyFpgaGolden        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  20.08   20.08     0.0
                     IoFpga                 YES   0.17    0.17     0.0
                     IoFpgaGolden           YES   0.15    0.15     0.0
                     Prim-BootLoader        YES  20.08   20.08     0.0
                     StdbyFpga              YES   2.05    2.05     0.0
                     StdbyFpgaGolden        YES   0.33    0.33     0.0
                     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, A Anti Theft aware
                                                            FPD Versions
                                                            ==============
Location   Card type          HWver FPD device    ATR Status  Running Programd
Reload Loc
--------------------------------------------------------------------------------------
0/RP0/CPU0 N540X-6Z18G-SYS-A  1.0   ADMConfig          CURRENT  5.00    5.00
NOT REQ
0/RP0/CPU0 N540X-6Z18G-SYS-A  1.0   IoFpga             CURRENT  0.17    0.17
  0/RP0
0/RP0/CPU0 N540X-6Z18G-SYS-A  1.0   IoFpgaGolden   B   CURRENT          0.15
  0/RP0
0/RP0/CPU0 N540X-6Z18G-SYS-A  1.0   Prim-BootLoader A  CURRENT 20.08   20.08
  0/RP0
0/RP0/CPU0 N540X-6Z18G-SYS-A  1.0   StdbyFpga      S   CURRENT  2.05    2.05
  0/RP0
0/RP0/CPU0 N540X-6Z18G-SYS-A  1.0   StdbyFpgaGolden BS CURRENT          0.32
  0/RP0
0/RP0/CPU0 N540X-6Z18G-SYS-A  1.0   TamFw          S   CURRENT  6.05    6.05
  0/RP0
0/RP0/CPU0 N540X-6Z18G-SYS-A  1.0   TamFwGolden    BS  CURRENT          6.05
  0/RP0
```

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
                                =====================================================
                                 Req    SW      Min Req   Min Req
Card Type          FPD Description  Reload Ver     SW Ver    Board Ver
================== ========================= ====== ======= ======== =========
--------------------------------------------------------------------------------
N540-12Z20G-SYS-A  ADM_FW              YES    14.03   14.03     0.0
                   ADMConfig           NO     1.05    1.05      0.0
                   IoFpga              YES    3.08    3.08      0.0
                   IoFpgaGolden        YES    2.07    2.03      0.0
                   Primary-BIOS        YES    1.49    1.49      0.0
                   StdbyFpga           YES    0.50    0.50      0.0
                   StdbyFpgaGolden     YES    0.50    0.40      0.0
                   TamFw               YES    4.13    4.13      0.0
```

```
                             TamFwGolden               YES    4.13    4.11    0.0
-------------------------------------------------------------------------------
N540-12Z20G-SYS-D            ADM_FW                    YES   14.03   14.03    0.0
                            ADMConfig                  NO     1.05    1.05    0.0
                            IoFpga                     YES    3.08    3.08    0.0
                            IoFpgaGolden               YES    2.07    2.03    0.0
                            Primary-BIOS               YES    1.49    1.49    0.0
                            StdbyFpga                  YES    0.50    0.50    0.0
                            StdbyFpgaGolden            YES    0.50    0.40    0.0
                            TamFw                      YES    4.13    4.13    0.0
                            TamFwGolden                YES    4.13    4.11    0.0
-------------------------------------------------------------------------------
N540-24Q8L2DD-SYS           ADM-DBConfig              NO     2.05    2.05    0.0
                            ADM-MBConfig              NO     2.05    2.05    0.0
                            IoFpga                     YES    2.12    2.12    0.0
                            IoFpgaGolden               YES    2.12    2.12    0.0
                            Primary-BIOS               YES    4.07    4.07    0.0
                            SsdSAMSA64G3               YES   12.41   12.41    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            ADM_FW                    YES   14.03   14.03    0.0
                            ADMConfig                  NO     1.05    1.05    0.0
                            IoFpga                     YES    3.08    3.08    0.0
                            IoFpgaGolden               YES    2.07    2.03    0.0
                            JMAC1-Config               YES    3.00    3.00    0.0
                            JMAC2-Config               YES    3.00    3.00    0.0
                            JMAC3-Config               YES    3.00    3.00    0.0
                            JMAC4-Config               YES    3.00    3.00    0.0
                            JMAC5-Config               YES    3.00    3.00    0.0
                            Primary-BIOS               YES    1.49    1.49    0.0
                            StdbyFpga                  YES    0.50    0.50    0.0
                            StdbyFpgaGolden            YES    0.50    0.40    0.0
                            TamFw                      YES    4.13    4.13    0.0
                            TamFwGolden                YES    4.13    4.11    0.0
-------------------------------------------------------------------------------
N540-28Z4C-SYS-D            ADM_FW                    YES   14.03   14.03    0.0
                            ADMConfig                  NO     1.05    1.05    0.0
                            IoFpga                     YES    3.08    3.08    0.0
                            IoFpgaGolden               YES    2.07    2.03    0.0
                            JMAC1-Config               YES    3.00    3.00    0.0
                            JMAC2-Config               YES    3.00    3.00    0.0
                            JMAC3-Config               YES    3.00    3.00    0.0
                            JMAC4-Config               YES    3.00    3.00    0.0
                            JMAC5-Config               YES    3.00    3.00    0.0
                            Primary-BIOS               YES    1.49    1.49    0.0
                            StdbyFpga                  YES    0.50    0.50    0.0
                            StdbyFpgaGolden            YES    0.50    0.40    0.0
                            TamFw                      YES    4.13    4.13    0.0
                            TamFwGolden                YES    4.13    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    0.24    0.24    0.0
                            DpFpgaEth                  YES    1.22    1.22    0.0
                            IoFpga                     YES    1.30    1.30    0.0
                            IoFpgaGolden               YES    1.30    1.30    0.0
                            Primary-BIOS               YES    1.49    1.49    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    0.23     0.23      0.0
                       IoFpga               YES    1.30     1.30      0.0
                       IoFpgaGolden         YES    1.30     1.30      0.0
                       Primary-BIOS         YES    1.49     1.49      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     ADM_FW               YES    14.03    14.03     0.0
                       ADMConfig            NO     1.05     1.05      0.0
                       IoFpga               YES    3.08     3.08      0.0
                       IoFpgaGolden         YES    2.07     2.03      0.0
                       Primary-BIOS         YES    1.49     1.49      0.0
                       StdbyFpga            YES    0.50     0.50      0.0
                       StdbyFpgaGolden      YES    0.50     0.40      0.0
                       TamFw                YES    4.13     4.13      0.0
                       TamFwGolden          YES    4.13     4.11      0.0
----------------------------------------------------------------------------
N540X-12Z16G-SYS-D     ADM_FW               YES    14.03    14.03     0.0
                       ADMConfig            NO     1.05     1.05      0.0
                       IoFpga               YES    3.08     3.08      0.0
                       IoFpgaGolden         YES    2.07     2.03      0.0
                       Primary-BIOS         YES    1.49     1.49      0.0
                       StdbyFpga            YES    0.50     0.50      0.0
                       StdbyFpgaGolden      YES    0.50     0.40      0.0
                       TamFw                YES    4.13     4.13      0.0
                       TamFwGolden          YES    4.13     4.11      0.0
----------------------------------------------------------------------------
N540X-16Z4G8Q2C-A      ADM_FW               YES    14.03    14.03     0.0
                       ADMConfig            NO     1.05     1.05      0.0
                       IoFpga               YES    3.08     3.08      0.0
                       IoFpgaGolden         YES    2.07     2.03      0.0
                       Primary-BIOS         YES    1.49     1.49      0.0
                       StdbyFpga            YES    0.50     0.50      0.0
                       StdbyFpgaGolden      YES    0.50     0.40      0.0
                       TamFw                YES    4.13     4.13      0.0
                       TamFwGolden          YES    4.13     4.11      0.0
----------------------------------------------------------------------------
N540X-16Z4G8Q2C-D      ADM_FW               YES    14.03    14.03     0.0
                       ADMConfig            NO     1.05     1.05      0.0
                       IoFpga               YES    3.08     3.08      0.0
                       IoFpgaGolden         YES    2.07     2.03      0.0
```

```
                       Primary-BIOS              YES     1.49      1.49      0.0
                       StdbyFpga                 YES     0.50      0.50      0.0
                       StdbyFpgaGolden           YES     0.50      0.40      0.0
                       TamFw                     YES     4.13      4.13      0.0
                       TamFwGolden               YES     4.13      4.11      0.0
--------------------------------------------------------------------------------
N540X-16Z8Q2C-A        ADMConfig                 NO      1.05      1.05      0.0
                       IoFpga                    YES     3.08      3.08      0.0
                       IoFpgaGolden              YES     2.07      2.03      0.0
                       Primary-BIOS              YES     1.49      1.49      0.0
                       StdbyFpga                 YES     0.50      0.50      0.0
                       StdbyFpgaGolden           YES     0.50      0.40      0.0
                       TamFw                     YES     4.13      4.13      0.0
                       TamFwGolden               YES     4.13      4.11      0.0
--------------------------------------------------------------------------------
N540X-16Z8Q2C-D        ADMConfig                 NO      1.05      1.05      0.0
                       IoFpga                    YES     3.08      3.08      0.0
                       IoFpgaGolden              YES     2.07      2.03      0.0
                       Primary-BIOS              YES     1.49      1.49      0.0
                       StdbyFpga                 YES     0.50      0.50      0.0
                       StdbyFpgaGolden           YES     0.50      0.40      0.0
                       TamFw                     YES     4.13      4.13      0.0
                       TamFwGolden               YES     4.13      4.11      0.0
```

```
RP/0/RP0/CPU0:Router#show hw-module fpd
Auto-upgrade:Enabled
Attribute codes: B golden, P protect, S secure, A Anti Theft aware
                                                              FPD Versions
                                                              ==============
Location    Card type          HWver FPD device      ATR Status   Running Programd
Reload Loc
--------------------------------------------------------------------------------------
0/RP0/CPU0 N540-24Q8L2DD-SYS   4.0   ADM-DBConfig         CURRENT   2.05    2.05
NOT REQ
0/RP0/CPU0 N540-24Q8L2DD-SYS   4.0   ADM-MBConfig         CURRENT   2.05    2.05
NOT REQ
0/RP0/CPU0 N540-24Q8L2DD-SYS   4.0   IoFpga               CURRENT   2.12    2.12
  0/RP0
0/RP0/CPU0 N540-24Q8L2DD-SYS   4.0   IoFpgaGolden     B   CURRENT           2.12
  0/RP0
0/RP0/CPU0 N540-24Q8L2DD-SYS   4.0   Primary-BIOS     S   CURRENT   4.07    4.07
  0/RP0
0/RP0/CPU0 N540-24Q8L2DD-SYS   4.0   SsdSAMSA64G3     S   CURRENT   12.41   12.41
  0/RP0
0/RP0/CPU0 N540-24Q8L2DD-SYS   4.0   StdbyFpga        S   CURRENT   2.59    2.59
  0/RP0
0/RP0/CPU0 N540-24Q8L2DD-SYS   4.0   StdbyFpgaGolden  BS  CURRENT           2.59
  0/RP0
0/RP0/CPU0 N540-24Q8L2DD-SYS   4.0   TamFw            S   CURRENT   6.05    6.05
  0/RP0
0/RP0/CPU0 N540-24Q8L2DD-SYS   4.0   TamFwGolden      BS  CURRENT           6.05
  0/RP0
```

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
                                   ===================================================
                                          Req    SW      Min Req   Min Req
Card Type            FPD Description       Reload Ver     SW Ver    Board Ver
=================== ========================= ====== ======= ======== =========
--------------------------------------------------------------------------------
N540-12Z20G-SYS-A    ADM_FW                    YES    14.03   14.03     0.0
```

```
                         ADMConfig                  NO     1.05     1.05     0.0
                         IoFpga                     YES    3.08     3.08     0.0
                         IoFpgaGolden               YES    2.07     2.03     0.0
                         Primary-BIOS               YES    1.49     1.49     0.0
                         StdbyFpga                  YES    0.50     0.50     0.0
                         StdbyFpgaGolden            YES    0.50     0.40     0.0
                         TamFw                      YES    4.13     4.13     0.0
                         TamFwGolden                YES    4.13     4.11     0.0
--------------------------------------------------------------------------------
N540-12Z20G-SYS-D        ADM_FW                     YES   14.03    14.03     0.0
                         ADMConfig                  NO     1.05     1.05     0.0
                         IoFpga                     YES    3.08     3.08     0.0
                         IoFpgaGolden               YES    2.07     2.03     0.0
                         Primary-BIOS               YES    1.49     1.49     0.0
                         StdbyFpga                  YES    0.50     0.50     0.0
                         StdbyFpgaGolden            YES    0.50     0.40     0.0
                         TamFw                      YES    4.13     4.13     0.0
                         TamFwGolden                YES    4.13     4.11     0.0
--------------------------------------------------------------------------------
N540-24Q8L2DD-SYS        ADM-DBConfig               NO     2.05     2.05     0.0
                         ADM-MBConfig               NO     2.05     2.05     0.0
                         IoFpga                     YES    2.12     2.12     0.0
                         IoFpgaGolden               YES    2.12     2.12     0.0
                         Primary-BIOS               YES    4.07     4.07     0.0
                         SsdSAMSA64G3               YES   12.41    12.41     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         ADM_FW                     YES   14.03    14.03     0.0
                         ADMConfig                  NO     1.05     1.05     0.0
                         IoFpga                     YES    3.08     3.08     0.0
                         IoFpgaGolden               YES    2.07     2.03     0.0
                         JMAC1-Config               YES    3.00     3.00     0.0
                         JMAC2-Config               YES    3.00     3.00     0.0
                         JMAC3-Config               YES    3.00     3.00     0.0
                         JMAC4-Config               YES    3.00     3.00     0.0
                         JMAC5-Config               YES    3.00     3.00     0.0
                         Primary-BIOS               YES    1.49     1.49     0.0
                         StdbyFpga                  YES    0.50     0.50     0.0
                         StdbyFpgaGolden            YES    0.50     0.40     0.0
                         TamFw                      YES    4.13     4.13     0.0
                         TamFwGolden                YES    4.13     4.11     0.0
--------------------------------------------------------------------------------
N540-28Z4C-SYS-D         ADM_FW                     YES   14.03    14.03     0.0
                         ADMConfig                  NO     1.05     1.05     0.0
                         IoFpga                     YES    3.08     3.08     0.0
                         IoFpgaGolden               YES    2.07     2.03     0.0
                         JMAC1-Config               YES    3.00     3.00     0.0
                         JMAC2-Config               YES    3.00     3.00     0.0
                         JMAC3-Config               YES    3.00     3.00     0.0
                         JMAC4-Config               YES    3.00     3.00     0.0
                         JMAC5-Config               YES    3.00     3.00     0.0
                         Primary-BIOS               YES    1.49     1.49     0.0
                         StdbyFpga                  YES    0.50     0.50     0.0
                         StdbyFpgaGolden            YES    0.50     0.40     0.0
                         TamFw                      YES    4.13     4.13     0.0
                         TamFwGolden                YES    4.13     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    0.24     0.24     0.0
                         DpFpgaEth                  YES    1.22     1.22     0.0
```

```
                          IoFpga                    YES     1.30     1.30     0.0
                          IoFpgaGolden              YES     1.30     1.30     0.0
                          Primary-BIOS              YES     1.49     1.49     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     0.23     0.23     0.0
                          IoFpga                    YES     1.30     1.30     0.0
                          IoFpgaGolden              YES     1.30     1.30     0.0
                          Primary-BIOS              YES     1.49     1.49     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        ADM_FW                    YES    14.03    14.03     0.0
                          ADMConfig                 NO      1.05     1.05     0.0
                          IoFpga                    YES     3.08     3.08     0.0
                          IoFpgaGolden              YES     2.07     2.03     0.0
                          Primary-BIOS              YES     1.49     1.49     0.0
                          StdbyFpga                 YES     0.50     0.50     0.0
                          StdbyFpgaGolden           YES     0.50     0.40     0.0
                          TamFw                     YES     4.13     4.13     0.0
                          TamFwGolden               YES     4.13     4.11     0.0
--------------------------------------------------------------------------------
N540X-12Z16G-SYS-D        ADM_FW                    YES    14.03    14.03     0.0
                          ADMConfig                 NO      1.05     1.05     0.0
                          IoFpga                    YES     3.08     3.08     0.0
                          IoFpgaGolden              YES     2.07     2.03     0.0
                          Primary-BIOS              YES     1.49     1.49     0.0
                          StdbyFpga                 YES     0.50     0.50     0.0
                          StdbyFpgaGolden           YES     0.50     0.40     0.0
                          TamFw                     YES     4.13     4.13     0.0
                          TamFwGolden               YES     4.13     4.11     0.0
--------------------------------------------------------------------------------
N540X-16Z4G8Q2C-A         ADM_FW                    YES    14.03    14.03     0.0
                          ADMConfig                 NO      1.05     1.05     0.0
                          IoFpga                    YES     3.08     3.08     0.0
                          IoFpgaGolden              YES     2.07     2.03     0.0
                          Primary-BIOS              YES     1.49     1.49     0.0
                          StdbyFpga                 YES     0.50     0.50     0.0
                          StdbyFpgaGolden           YES     0.50     0.40     0.0
```

```
                         TamFw                      YES    4.13    4.13     0.0
                         TamFwGolden                YES    4.13    4.11     0.0
--------------------------------------------------------------------------------
N540X-16Z4G8Q2C-D        ADM_FW                     YES   14.03   14.03     0.0
                         ADMConfig                  NO     1.05    1.05     0.0
                         IoFpga                     YES    3.08    3.08     0.0
                         IoFpgaGolden               YES    2.07    2.03     0.0
                         Primary-BIOS               YES    1.49    1.49     0.0
                         StdbyFpga                  YES    0.50    0.50     0.0
                         StdbyFpgaGolden            YES    0.50    0.40     0.0
                         TamFw                      YES    4.13    4.13     0.0
                         TamFwGolden                YES    4.13    4.11     0.0
--------------------------------------------------------------------------------
N540X-16Z8Q2C-A          ADMConfig                  NO     1.05    1.05     0.0
                         IoFpga                     YES    3.08    3.08     0.0
                         IoFpgaGolden               YES    2.07    2.03     0.0
                         Primary-BIOS               YES    1.49    1.49     0.0
                         StdbyFpga                  YES    0.50    0.50     0.0
                         StdbyFpgaGolden            YES    0.50    0.40     0.0
                         TamFw                      YES    4.13    4.13     0.0
                         TamFwGolden                YES    4.13    4.11     0.0
--------------------------------------------------------------------------------
N540X-16Z8Q2C-D          ADMConfig                  NO     1.05    1.05     0.0
                         IoFpga                     YES    3.08    3.08     0.0
                         IoFpgaGolden               YES    2.07    2.03     0.0
                         Primary-BIOS               YES    1.49    1.49     0.0
                         StdbyFpga                  YES    0.50    0.50     0.0
                         StdbyFpgaGolden            YES    0.50    0.40     0.0
                         TamFw                      YES    4.13    4.13     0.0
                         TamFwGolden                YES    4.13    4.11     0.0

RP/0/RP0/CPU0:Router#show hw-module fpd
Auto-upgrade:Enabled
Attribute codes: B golden, P protect, S secure, A Anti Theft aware
                                                                    FPD Versions
                                                                    ==============
Location    Card type          HWver  FPD device       ATR Status  Running Programd
Reload Loc
-----------------------------------------------------------------------------------
0/RP0/CPU0  N540-FH-AGG-SYS    1.0    ADM1_Config          CURRENT  1.02    1.02
NOT REQ
0/RP0/CPU0  N540-FH-AGG-SYS    1.0    ADM2_Config          CURRENT  1.02    1.02
NOT REQ
0/RP0/CPU0  N540-FH-AGG-SYS    1.0    DpFpgaCpri           CURRENT  0.24    0.24
  0/RP0
0/RP0/CPU0  N540-FH-AGG-SYS    1.0    DpFpgaEth            CURRENT  1.22    1.22
  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   CURRENT          1.20
  0/RP0
0/RP0/CPU0  N540-FH-AGG-SYS    1.0    Primary-BIOS     SA  CURRENT  1.49    1.49
  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  CURRENT          0.35
  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  CURRENT          6.04
  0/RP0
0/PM0       N540-PWR750-A      1.0    EM-PrimMCU           CURRENT  1.02    1.02
NOT REQ
0/PM0       N540-PWR750-A      1.0    EM-SecMCU            CURRENT  1.03    1.03
NOT REQ
```

```
0/PM1      N540-PWR750-A      1.0    EM-PrimMCU      CURRENT    1.03    1.03
NOT REQ
0/PM1      N540-PWR750-A      1.0    EM-SecMCU       CURRENT    1.03    1.03
NOT REQ
```

Important Notes

Licensing

Starting with Cisco IOS XR Release 24.1.1, Smart Licensing Using Policy (SLP) is the default Licensing model. When you upgrade to the Cisco IOS XR Release 24.1.1 release or later, the Smart Licensing Using Policy is enabled by default.

You can migrate your devices to Smart Licensing with Policy model, see *Migrating from Smart Licensing to Smart Licensing Using Policy*, Smart Licensing Using Policy on Cisco IOS XR Routers.

We recommend that you update to the latest version of SSM On-Prem or Cisco Smart Licensing Utility.

Note   SSM On-Prem and CSSM both support SLP devices and SL devices. SLP devices and SL devices can coexist in a network. The Smart Licensing (SL) model is available in releases Cisco IOS XR Release 7.11.1 and earlier.

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

Note   For software installation and upgrades, refer to the respective upgrade/downgrade docs *.tar* files based on your 540 router varaint.

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-24.2.1.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, N540X-16Z8Q2C-D, and N540-FH-CSR-SYS variants is available along with the software image in *NCS540l-docs-24.2.1.tar* file.

The upgrade document for N540X-4Z14G2Q-A/D, N540X-8Z16G-SYS-A/D, N540-6Z14S-SYS-D, N540-6Z18G-SYS-A/D, and N540X-6Z18G-SYS-A/D variants is available along with the software image in *NCS540l-aarch64-docs-24.2.1.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.

Production Software Maintenance Updates (SMUs)

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

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

Cisco IOS XR Error messages

To view, search, compare, and download Cisco IOS XR Error Messages, refer to the Cisco IOS XR Error messages tool.

Cisco IOS XR MIBs

To determine the MIBs supported by platform and release, refer to the Cisco IOS XR MIBs tool.

Related Documentation

The most current Cisco NCS 540 router documentation is located at the following URL:

https://www.cisco.com/c/en/us/td/docs/iosxr/ncs-540-series-routers.html