Release Notes for Cisco 8000 Series Routers, IOS XR Release 7.5.3

Revised: August 14, 2023

Cisco 8100, 8200, and 8800 Series Routers

What's New in Cisco IOS XR Release 7.5.3

Software Features Introduced and Enhanced

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

Feature	Description
Application Hosting	
Automatic Synchronization of Secondary IPv4 addresses from XR to Linux OS	Now the configured interface secondary IPv4 addresses on the Cisco IOS XR software are automatically synchronized to Linux operating system. The third-party applications on Cisco IOS XR can use the secondary IPv4 addresses without any manual intervention. Earlier, you had to configure the secondary IPv4 addresses on the Linux operating system manually.
BGP	
Delay BGP Route Advertisements	You can now prevent traffic loss due to premature advertising of BGP routes and subsequent packet loss in a network. You can achieve this by setting the delay time of the BGP start-up in the router until the Routing Information Base (RIB) is synchronized with the Forward Information Base (FIB) in the routing table. This delays the BGP update generation and prevents traffic loss in a network. You can configure a minimum delay of 1 second and a maximum delay of 600 seconds. This feature introduces the **update wait-install delay startup** command.
L2VPN	
Layer 2 Access Control Lists	The feature allows ACLs in the router to classify the packets in the ingress direction based on Layer 2 header information such as source and destination MAC address, ether type, or 802.1ad DEI. Layer 2 ACLs enable the router to copy the contents of an existing access list to another access list, clear counters for an access list using a specific sequence number and apply sequence numbers to permit or deny statements.
Interface and Hardware Component	
Decapsulating Multiple Tunneled Packets Using Tunnel Source Direct	With this new **tunnel source direct** option, a single tunnel interface can decapsulate multiple tunnel packets whose outer destination IP is any of the IPv4 or IPv6 address that is locally configured and operationally Up in the switch. Now, you can choose the IP ECMP links when there are multiple IP links between the two switches for decapsulation.
ERSPAN over MPLS Traffic	With this release, the router allows you to mirror MPLS traffic and set up the GRE tunnel with the next hop over a labeled path. This feature helps you to remote-monitor the traffic on traffic analyzers.

Feature	Description
Ethernet Frame Delay Measurement for L2VPN Services	You can now monitor L2VPN networks and avoid impact to your customers' operations by accurately measuring frame round-trip delays and jitters between two maintenance endpoints (MEPs). This feature lets you detect end-to-end connectivity, loopback, and link trace on MEPs. It reports service performance to your end customers, helping improve technical and operational tasks such as troubleshooting and billing. This feature introduces the **cfm-delay-measurement probe** command.
IP Tunnels with IPv6 Outer Header	With this release, decapsulation of IPv4 tunnels and IPv6 tunnels with IPv6 outer headers are allowed.

IP Addresses and Services

Feature	Description
ACL-based Forwarding (ABF) on Bridge Virtual Interfaces (BVIs)	This feature allows using Bridge Virtual Interfaces (BVIs) as next-hop in ABF. A single configuration can be applied for multiple interfaces that are part of the BVI. You can therefore divert user traffic for a group of interfaces with a particular purpose.
IPv6 Prefix Scale Expansion	You can now leverage the Central Exact Match (CEM) memory to insert /126 and /127 IPv6 prefixes. This is particularly useful when you have a large number of /126 and /127 IPv6 prefixes, and these prefixes do not fit into the LPM (Longest Prefix Match) memory. You can move the prefixes to the CEM memory by expanding the /126 prefixes into four /128 prefixes and /127 prefixes into two /128 prefixes, thus enhancing the IPv6 prefix scale. In earlier releases, you could only store /126 and /127 IPv6 prefixes in the LPM memory. This feature introduces the following commands: • **hw-module profile route scale ipv6-unicast connected-prefix high** • **show hw-module profile route-scale**

MPLS

Feature	Description
Attribute Set for Named Tunnels	You can now add an attribute set to the named tunnels under the path options eliminating the need to configure the TE-tunnel attributes individually. When you change the attribute set values for the path option, the same values are inherited to all the attached path options under named tunnels. The attribute set is a template that specifies a set of tunnel attributes, such as priority, affinity, signaled bandwidth, logging, policy class, record route and so on. Earlier, the attribute set was available only for numbered tunnels. The **attribute-set** keyword is added in the **path option (Named Tunnels)** .
Configure MPLS over UDP	You can now enable MPLS over UDP, where a dynamic tunnel is created with the BGP next hop that helps in traffic distribution along the path. Traffic distribution considers parameters such as IP source address, IP destination address, and UDP source port along different tunnels for hashing. This feature introduces the following new commands: • **set encapsulation-type mpls-udp** • **overlay-encapsulation mpls-udp**

Feature	Description
Enable LDP over TE Automatically on Cloned Tunnels	You can now enable LDP automatically on all the cloned tunnels and associate the parent and cloned tunnels. This feature helps you to overcome the 1k tunnel limitation under LDP because the cloned tunnels are not accounted for in the global count. Earlier, LDP had to be enabled on all the cloned tunnels manually, which was time-consuming. This feature introduces the **clone-tunnels** command.
Increase in RSVP-TE Tunnel Scale for LDP over TE	We allow you to use a maximum of 4000 RSVP-TE tunnels with LDP over TE using the **hw-module profile cef te-tunnel highscale-ldp-over-te-no-sr-over-srte** command. Earlier, only 1000 RSVP-TE tunnels were supported. If you further need to increase the number of RSVP-TE tunnels up to 8000, enable the **hw-module profile cef te-tunnel highscale-no-ldp-over-te** command on the edge routers. However, the LDP over TE is disabled when you enable this command.
Self-Ping Probe for Reoptimized LSP	You can now prevent traffic drops on a reoptimized label switch path (LSP) by timely confirmation that it's ready to handle the traffic. This confirmation is made possible by enabling the label edge router (LER) to send self-ping probes over the reoptimized LSP to the ingress LER. As soon the probe reaches the LER, there's confirmation that the RSVP programming is complete along the path. Post this confirmation, the LER switches traffic to the reoptimized LSP with no drop in traffic. This feature introduces the **self-ping** keyword in the **named-tunnels tunnel-te** command.
Maximum Character Limit for Named Tunnel	The maximum supported string length of the tunnel name for the named-tunnels tunnel-te command is changed from 54 to 64 characters.
Netflow	
sFlow Enhancements	With this release, the following syslog notifications are available with sFlow: • FLOW_SAMPLES_DROPPED - This alerts the user when the ring buffer is full with the sampled flow data due to high sampling rate or an increase in the traffic rate. • FLOW_SAMPLES_DROPPING_STOPPED - This alerts the user when the ring buffer returns to normal. • BUFFER_SIZE_EXCEEDED - This alerts the user when the flow monitor buffer is full with the sampled flow data due to low export rate limit or high sampling rate. • BUFFER_EXCEEDING_STOPPED - This alerts the user when the flow monitor buffer returns to normal.
Modular QoS	

Feature	Description
Detect High Bandwidth Memory Congestion	We provide detailed insights into congestion on the High Bandwidth Memory (HBM), such as the devices on which congestion has occurred, the time stamps, and when the device returned to its normal state. With such details, you can investigate the cause of congestion and identify the source ports causing congestion for future preventive actions. You must configure PFC in the buffer-extended mode for this option. The feature introduces the following to enable the option to detect HBM congestion: • YANG data model (at Github under the 753 folder): Cisco-IOS-XR-um-8000-hw-module-profile-cfg • CLI: **hw-module profile npu memory buffer-extended location bandwidth-congestion-detection enable** It also introduces the following to view the congestion and memory usage details: • YANG data model (at Github under the 753 folder): Cisco-IOS-XR-8000-platforms-npu-memory-oper • CLI: **show controllers npu packet-memory**
Priority Flow Control on Cisco 8808 and Cisco 8812 Modular Chassis Line Cards	Priority Flow Control is now supported on the following line card in the buffer-internal mode: • 88-LC0-34H14FH The feature is supported in the buffer-internal and buffer-extended modes on: • 88-LC0-36FH Apart from the buffer-external mode, support for this feature now extends to the buffer-internal mode on the following line cards: • 88-LC0-36FH-M • 8800-LC-48H
System Management	
Custom MIB Support Using SNMP Operations Script	Now you don't have to upgrade to the latest Cisco IOS XR Software release to access a new Management Information Base (MIB). This feature allows you to add a custom script to get support for custom MIB that is not implemented on Cisco IOS XR Software. Custom MIB fetches the required data from an operational database that is already available on the router and returns it on polling the Object Identifier (OID). This feature introduces the following commands: • snmp-server script • script snmp This feature also adds the following unified models, you can access these unified models in the Github repository. • Cisco-IOS-XR-um-script-cfg • Cisco-IOS-XR-um-script-server-cfg

Feature	Description
Segment Routing	
End.DT46 SRv6 Endpoint Behavior	This feature adds support for the "Endpoint with decapsulation and specific IP table lookup" SRv6 end-point behavior (End.DT46). One application for End.DT46 is the L3VPNv4/v6 use-case. This behavior is equivalent to the single per-VRF VPN label (for IPv4 and IPv6) in MPLS.
Explicit End.DT46 SRv6 SIDs	This feature allows you to configure explicit SIDs associated with SRv6-based L3VPN/Internet BGP services. In previous releases, these SIDs were allocated dynamically. Explicit End.DT46 SRv6 SIDs are persistent over reloads and restarts.
SRv6 Provider Edge (PE) Lite	This feature adds functionality where an SRv6 PE is capable only of VPN de-multiplexing behaviors (End.DT4/DT6/DT46); the SRv6 PE does not support VPN encapsulation.
Seamless BFD - Reflector Mode	This feature introduces support for Cisco 8000 series routers to act as a Seamless Bidirectional Forwarding Detection (SBFD) reflector. SBFD is a simplified mechanism for using BFD with many of the negotiation aspects eliminated. SBFD provides benefits such as quick provisioning and improved control and flexibility for network nodes initiating path monitoring. The SBFD reflector is an SBFD session on a network node that listens for incoming SBFD control packets to local entities and generates response SBFD control packets. The reflector is stateless and only reflects the SBFD packets back to the initiator.
Wide LIB uSID Allocation for End.DT46 SRv6 SIDs	This feature introduces support for Wide Local ID block (W-LIB). The Local ID block (LIB) is the set of IDs available for locally scoped uSID allocation. Wide LIB (W-LIB) provides an extended set of IDs available for local uSID allocation that benefits PEs with larger number of VPNs. W-LIB uSID allocation is supported for End.DT46 SRv6 SIDs.
System Security	
OpenSSH Certificate based Authentication for SSH Server	You can now use OpenSSH certificates to authenticate to the remote routers from a client machine. This feature uses the **ssh-keygen** utility available in OpenSSH to create a CA like infrastructure to logging to the router. As the router and client certificates are both signed by the same CA, authenticating the router and the client with the CA server will automatically establish trust between them and eliminate the need for establishing trust while using the client for first time.
Automatic renewal of Public Key Infrastructure (PKI) certificate	You can now enable the router to renew the PKI certificate from the Certificate Authority (CA) by configuring the percentage of the certificate validity, after which the router requests a new certificate from the CA, and the CA authorizes it before certification expiration. This feature eliminates the previously needed manual efforts of certification renewal and avoids interruptions such as MACsec session flaps due to certificate expiry and so on. This feature introduces the following commands: • **auto-enroll** • **renewal-message-type**

Programmability Data Models Introduced and Enhanced

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

Feature	Description
Programmability	
Unified Data Model to Configure Encapsulated Ambiguous VLANs	Use the `Cisco-IOS-XR-um-if-encap-ambiguous-cfg.yang` unified data model to configure encapsulated ambiguous VLANs with IEEE802.1ad Provider Bridging (PB) encapsulation type on an access-interface.
Unified Data Model to Configure MAC Address	Use the `Cisco-IOS-XR-um-if-mac-address-cfg.yang` unified data model to set or delete a Media Access Control (MAC) address of the Management Ethernet interface, which acts as a unique identifier for the device in the network.
Unified Data Model to Configure checksum in the custom OID	Use the `Cisco-IOS-XR-um-script-cfg.yang` unified data model to configure checksum for the newly added file-name in the Custom OID.
Unified Data Model to map script file to the custom OID	Use the `Cisco-IOS-XR-um-script-server-cfg.yang` unified data model to map script file to the custom OID.
openconfig-network-instance.yang	The OpenConfig data model is revised from version 0.6.0 to 0.15.0 and supports the following sensor paths to configure and retrieve the Layer 3 forwarding constructs, Layer 2 instances, static routes, forwarding instances, Border Gateway Protocol (BGP) parameters and so on: `oponconfig-network-instance/network-instances/network-instance[name]/` • `config` • `state` • `tables` • `protocols` You can stream Event-driven and Model-driven telemetry data for the operational state of the network instance.

Feature	Description

opisconfig-system.yang Version 0.7.0	The OpenConfig data model is revised from version 0.6.0 to 0.7.0. This version introduces support to view the statistics of CPU utilization of a component, create a customized banner that is displayed before the username and password login prompts and view the operational state of the system memory using the following sensor paths:
	
	`opisconfig-system:system/`
	
	  • `cpus`
	
	  • `memory/state`
	
	  • `config/login-banner`
	
	Event-driven telemetry is not supported for `openconfig-system:/system/cpus` sensor path. For the other sensor paths, you can stream Event-driven and Model-driven telemetry data for the operational state of the system.

opisconfig-system-terminal.yang Version 0.3.1	The OpenConfig data model is revised from version 0.3.0 to 0.3.1. This version introduces the following config sensor paths to configure the IPv4 or IPv6 telnet server and the number of telnet sessions that are active simultaneously, and state sensor paths to view that the configuration is enabled:
	
	IPv4: `openconfig-system/system/telnet-server/`
	
	`oc-term-ext:ipv4/oc-term-ext:vrf[vrf-name]/`
	
	  • oc-term-ext:state/oc-term-ext:enable
	
	  • oc-term-ext:config/oc-term-ext:session-limit
	
	  • oc-term-ext:state/oc-term-ext:session-limit
	
	IPv6: `openconfig-system/system/telnet-server/`
	
	`oc-term-ext:ipv6/oc-term-ext:vrf[vrf-name]/`
	
	  • oc-term-ext:state/oc-term-ext:enable
	
	  • oc-term-ext:config/oc-term-ext:session-limit
	
	  • oc-term-ext:state/oc-term-ext:session-limit
	
	With this release, an extended model `Cisco-IOS-XR-openconfig-system-terminal-ext.yang` is introduced to manage the telnet server configuration.
	
	You can stream Event-driven and Model-driven telemetry data for the operational state of the system.

Feature	Description
opencofig-routing-policy.yang Version 3.2.2	The OpenConfig data model is revised from version 3.1.0 to 3.2.2. You can configure the set-tag operation for local and interior gateway protocol (IGP) tagged routes in a routing policy.
	This data model is used along with related data models for routing protocols such as border gateway protocol (BGP), interior gateway routing protocol (IGRP) and so on. With this release, the `opencofig-bgp-policy.yang`OpenConfig model is also revised from version 4.0.1 to version 6.0.2. You can configure BGP routes exchanged between two BGP peers using the following sensor paths:
	`opencofig-routing-policy:routing-policy/`
	- `policy-definitions/policy-definition`
	- `defined-sets/tag-sets/tag-set`
	- `defined-sets/prefix-sets/prefix-set`
	- `defined-sets/opencofig-bgp-policy:bgpdefined-sets/community-sets/community-set`
	- `defined-sets/opencofig-bgp-policy:bgpdefined-sets/ext-community-sets/ext-community-set`
	- `defined-sets/opencofig-bgp-policy:bgpdefined-sets/as-path-sets/as-path-set`
	You can stream Event-driven and Model-driven telemetry data for the operational state of the routing policy.
opencofig-local-routing.yang Version 1.2.0	The OpenConfig data model, which is part of the `opencofig-network-instance.yang` data model is revised from version 1.0.1 to 1.2.0. This revision introduces support to configure and retrieve the operational state data for static routes using the following sensor paths:
	`opencofig-network-instance/network-instances/network-instance[name]/`
	- `config/enabled`
	- `protocols/[identifier-name]/static-routes/static/config/description`
	- `protocols/[identifier-name]/static-routes/static/state/description`
	You can stream Event-driven and Model-driven telemetry data for the operational state of the static routes.
opencofig-lacp.yang Version 1.2.0	The OpenConfig data model is revised from version 1.1.0 to 1.2.0 and introduces the following sensor paths to monitor the Link Aggregation Control Protocol (LACP) aggregate interface timeouts and the time since the last timeout:
	`lacp/interfaces/interface[name]/members/member[interface]/state/:`
	- `last-change`
	- `counters/lacp-timeout-transitions`
	You can stream Event-driven telemetry data for the time since the last change of a timeout, and Model-driven telemetry data for the number of times the state has transitioned with a timeout. The state
	change is monitored since the time the device restarted or the interface was brought up, whichever is most recent.

Feature	Description
openconfig-interfaces.yang Version 2.5.0	The OpenConfig data model is revised from version 2.4.3 to 2.5.0. This version introduces support to configure the interface to connect the system to an out-of-band management network and enable the system CPU to handle traffic using the following sensor paths: `openconfig-interfaces/interfaces/interface[name]/state/` • `state/management` • `state/cpu` • `subinterfaces/subinterface[index]/state/management` • `subinterfaces/subinterface[index]/state/cpu` You can stream Event-driven and Model-driven telemetry data for the operational state of the interface.

opencocnfig-if-ethernet.yang Version 2.12.1	The OpenConfig data model is revised from version 2.8.1 to 2.12.1 to support the following sensor paths to manage the Forward Error Correction (FEC) configuration and state of Ethernet interfaces:
	
	 Configuration sensor path:
	
	 `openconfig-interfaces:interfaces/interface[name="interface-name"]/`
	
	 `openconfig-if-ethernet:ethernet/config/fec-mode`
	
	 State sensor paths supported on half-duplex interfaces:
	
	 `openconfig-interfaces:interfaces/interface[name="interface-name"]/`
	
	 `openconfig-if-ethernet:ethernet/state/`
	
	 • `in-carrier-errors`
	 • `in-interrupted-tx`
	 • `in-late-collision`
	 • `in-single-collision`
	
	 State sensor paths supported on half-duplex and full-duplex interfaces:
	
	 `openconfig-interfaces:interfaces/interface[name="interface-name"]/`
	
	 `openconfig-if-ethernet:ethernet/state/`
	
	 • `in-mac-errors-rx`
	 • `in-symbol-error`
	 • `out-mac-errors-tx`
	 • `in-maxsize-exceeded`
	
	 You can stream Model-driven telemetry data for the operational state of the Ethernet interfaces.

Feature	Description

openconfig-vlan.yang
Version 3.2.0
	The OpenConfig data model is revised from version 1.0.2 to 3.2.0 and supports the following sensor paths to configure and retrieve the VLAN state variables and parameters associated with interfaces and subinterfaces:
	
	`/openconfig-interfaces:interfaces/interface/subinterfaces/subinterface/`
	
	`openconfig-vlan:vlan/`
	
	• `state`
	
	• `match`
	
	• `ingress-mapping`
	
	• `egress-mapping`
	
	• `config`
	
	You can stream Event-driven and Model-driven telemetry data using these sensor paths.

Openconfig-alarms.yang Version 0.3.2	The `openconfig-alarms.yang`OpenConfig data model is part of the `openconfig- system.yang` data model. The model is revised from 0.3.0 to 0.3.2 to enhance the time at which the alarm was raised by the system. This value is expressed relative to the UNIX Epoch time. Using this sensor path, you can stream Event-driven and Model-driven telemetry data.
openconfig-platform-cpu.yang Version 0.1.1	The OpenConfig data model is revised from version 0.1.0 to 0.1.1 and introduces the following sensor paths to view the CPU utilization statistics of the fan components: • `openconfig-platform:components/component/cpu/openconfig-platform-cpu:utilization/state` • `openconfig-platform:components/component[name=<node-name>]/cpu/openconfig-platform-cpu:utilization/state` The *node-name* indicates the location of the RP/CPU node.
openconfig-bgp.yang Version 6.0.0	The OpenConfig data model is revised from version 3.0.1 to 6.0.0. This version introduces the following changes: • Added new BGP mappings to the data model opyenconfig-network-instance.yang • Normalized timestamp units to nanoseconds • Removed obsolete model mappings • Managed model mappings with the same semantics but with different names that are absent in the new openconfig-network-instance.yang data model. For example, the name of the leaf under shutdown-threshold-pct container is changed to prefix-limit -pct. warning-threshold • Added new sensor paths for Event-based telemetry
openconfig-rib-bgp.yang Version 0.7.0	The OpenConfig data model is revised from version 0.2.0 to 0.7.0. This version introduces the following changes: • Managed model mappings for BGP Routing Information Base (RIB) in the `openconfig-network-instance.yang` data model • Updated changes related to importing segment-routing module

Feature	Description
oc-if-aggregate.yang Version 2.4.3	The OpenConfig data model is revised from version 1.0.2 to 2.4.3. This version does not add or modify leaves. Use this data model to manage the link bundles where one or more ports are aggregated together and treated as a single interface to provide increased bandwidth.
openconfig-bfd.yang Version 0.2.3	The OpenConfig data model is revised from version 0.2.2 to 0.2.3, the current latest version from the OC community. Event-driven telemetry and Model-driven telemetry is not supported for the sensor paths.
openconfig-telemetry.yang Version 0.5.1	The OpenConfig data model is revised from version 0.2.0 to 0.5.1, the latest published version from the OC community. Use this data model to configure telemetry sessions on the router.
openconfig-messages.yang Version 0.0.1	The data model introduces the following sensor path to retrieve the operational state of syslog messages: openconfig-system:system/messages The severity of syslog messages varies from the highest severity level 0 (for emergencies) to the lowest severity level 7 (for debugging). Depending upon a specified severity level, the router streams data to the telemetry server, starting from the chosen severity level and higher. This enables you to limit the streamed syslog to the most significant ones. Before you subscribe to the sensor path, you must configure the severity level either through the CLI or YANG: • CLI: Router(config)#logging yang severity-level • YANG: openconfig-system/messages/config/severity This release does not support the debug-entries container.
openconfig-lldp.yang Version 0.2.1	You can now override the system default values of some of the mandatory LLDP Type-Length-Values (TLVs) that are advertised by routers to their directly connected neighboring devices. While advertising their identity and capabilities, routers can assign user-defined meaningful names instead of autogenerated values. Using the NETCONF RPC or CLI you can specify these user-defined values. The following leaves support user-defined values for the LLDP TLVs: • OC-lldp:lldp/config/system-name • OC-lldp:lldp/config/system-description • OC-lldp:lldp/config/chassis-id-type • OC-lldp:lldp/config/chassis-id The data model also supports the following sensor paths to retrieve the operational state of LLDP packets that are sent and received by a specified interface: • OC-lldp:lldp/state/counters/last-clear • OC-lldp:lldp/state/counters/tlv-accepted • OC-lldp:lldp/interfaces/interface/state/counters • OC-lldp:lldp/interfaces/interface/neighbors/neighbor/state/age • OC-lldp:lldp/interfaces/interface/neighbors/neighbor/state/last-update

Feature	Description
openconfig-isis Version 0.6.0	With the revised version of this model, you can now monitor the system performance by checking the packet counter statistics and bandwidth, time, length, and values (TLVs) of IS-IS database. The revised model updates the leaf nodes in the following paths: • Configuration • Global Mode • System-level • Interface
openconfig-macsec.yang Version 0.2.0	The OpenConfig data model for MACsec now includes viewing error counter for Protocol Data unit (PDU) and Secure Association Key (SAK) in the MKA (MACSecKey Agreement) protocol in the `mka/state/counter` sensor path that was previously deviated. Using this sensor path, you can stream Event-driven and Model-driven telemetry data.

Hardware Introduced

Cisco IOS XR Release 7.5.3 introduces the following hardware support:

Hardware Feature	Description
Introducing Cisco 8101-32H	This release introduces a new variant in the Cisco 8100 Series routers. Based on the new Router-on-Chip (RoC) model, this router delivers full routing functionality with a single ASIC per router. The newly introduced variant is, Cisco 8101-32H – this router provides 3.2 Tbps of network bandwidth with dramatically lower power consumption than the current 10 Tbps systems. Supported ports include 32 QSFP28 100 GbE.
PSU3KW-HVPI Power Supply Unit for the Cisco 8202-32FH-M Router	We are now introducing a high voltage power supply unit, PSU3KW-HVPI that accepts AC, HVAC, or HVDC input power to operate the Cisco 8202-32FH-M router in the port side intake configuration. The PSU3KW-HVPI power supply unit has a maximum power of 1500W (AC low line) or 3000W (HVAC or HVDC). The benefits of the PSU3KW-HVPI PSU are: • Supports HVDC and HVAC input power • Helps when transceivers are installed in the router which needs more power to operate • Provides better efficiency for power distribution

For a complete list of supported hardware and ordering information, see the Cisco 8000 Series Data Sheet.

Release 7.5.3 Packages

The Cisco IOS XR software is composed of a base image (ISO) that provides the XR infrastructure. The ISO image is made up of a set of packages (also called RPMs). These packages are of three types:

- A mandatory package that is included in the ISO

- An optional package that is included in the ISO

- An optional package that is not included in the ISO

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

To determine the Cisco IOS XR Software packages installed on your router, log in to the router and enter the **show install active** command:

```
RP/0/RP0/CPU0#show install active
Package                                             Version
-------------------------------------------------- --------------------------
xr-8000-af-ea                                       7.5.3v1.0.0-1
xr-8000-aib                                         7.5.3v1.0.0-1
xr-8000-bfd                                         7.5.3v1.0.0-1
xr-8000-buffhdr-ea                                  7.5.3v1.0.0-1
xr-8000-bundles                                     7.5.3v1.0.0-1
xr-8000-card-support                                7.5.3v1.0.0-1
xr-8000-cdp-ea                                      7.5.3v1.0.0-1
xr-8000-cfm                                         7.5.3v1.0.0-1
xr-8000-core                                        7.5.3v1.0.0-1
xr-8000-cpa                                         7.5.3v1.0.0-1
xr-8000-cpa-npu                                     7.5.3v1.0.0-1
xr-8000-cpa-sb-data                                 7.5.3v1.0.0-1
xr-8000-dot1x                                       7.5.3v1.0.0-1
xr-8000-dsm                                         7.5.3v1.0.0-1
xr-8000-encap-id                                    7.5.3v1.0.0-1
xr-8000-ether-ea                                    7.5.3v1.0.0-1
xr-8000-fabric                                      7.5.3v1.0.0-1
xr-8000-feat-mgr                                    7.5.3v1.0.0-1
xr-8000-fib-ea                                      7.5.3v1.0.0-1
xr-8000-forwarder                                   7.5.3v1.0.0-1
xr-8000-fpd                                         7.5.3v1.0.0-1
xr-8000-fwd-tools                                   7.5.3v1.0.0-1
xr-8000-fwdlib                                      7.5.3v1.0.0-1
xr-8000-host-core                                   7.5.3v1.0.0-1
xr-8000-l2fib                                       7.5.3v1.0.0-1
xr-8000-leabaofa                                    7.5.3v1.0.0-1
xr-8000-libofaasync                                 7.5.3v1.0.0-1
xr-8000-lpts-ea                                     7.5.3v1.0.0-1
xr-8000-mcast                                       7.5.3v1.0.0-1
xr-8000-netflow                                     7.5.3v1.0.0-1
xr-8000-npu                                         7.5.3v1.0.0-1
xr-8000-oam                                         7.5.3v1.0.0-1
xr-8000-optics                                      7.5.3v1.0.0-1
xr-8000-os                                          7.5.3v1.0.0-1
xr-8000-os-extra                                    7.5.3v1.0.0-1
xr-8000-pbr                                         7.5.3v1.0.0-1
xr-8000-pfilter                                     7.5.3v1.0.0-1
xr-8000-pidb                                        7.5.3v1.0.0-1
xr-8000-pktio                                       7.5.3v1.0.0-1
xr-8000-port-mapper                                 7.5.3v1.0.0-1
xr-8000-port-mode                                   7.5.3v1.0.0-1
xr-8000-ppinfo                                      7.5.3v1.0.0-1
```

```
xr-8000-qos-ea                      7.5.3v1.0.0-1
xr-8000-secy-driver                 7.5.3v1.0.0-1
xr-8000-span                        7.5.3v1.0.0-1
xr-8000-spio                        7.5.3v1.0.0-1
xr-8000-spp-ea                      7.5.3v1.0.0-1
xr-8000-timing                      7.5.3v1.0.0-1
xr-8000-tunnel-ip                   7.5.3v1.0.0-1
xr-8000-utapp-blaze                 7.5.3v1.0.0-1
xr-8000-vether                      7.5.3v1.0.0-1
xr-8000-ztp-ea                      7.5.3v1.0.0-1
xr-aaa                              7.5.3v1.0.0-1
xr-acl                              7.5.3v1.0.0-1
xr-apphosting                       7.5.3v1.0.0-1
xr-appmgr                           7.5.3v1.0.0-1
xr-bcdl                             7.5.3v1.0.0-1
xr-bfd                              7.5.3v1.0.0-1
xr-bgp                              7.5.3v1.0.0-1
xr-bgputil                          7.5.3v1.0.0-1
xr-bng-stubs                        7.5.3v1.0.0-1
xr-bundles                          7.5.3v1.0.0-1
xr-cal-pi                           7.5.3v1.0.0-1
xr-cdp                              7.5.3v1.0.0-1
xr-cds                              7.5.3v1.0.0-1
xr-cfgmgr                           7.5.3v1.0.0-1
xr-cfm                              7.5.3v1.0.0-1
xr-cofo                             7.5.3v1.0.0-1
xr-core                             7.5.3v1.0.0-1
xr-core-calv                        7.5.3v1.0.0-1
xr-cpa-common                       7.5.3v1.0.0-1
xr-cpa-common-optics                7.5.3v1.0.0-1
xr-cpa-common-psu                   7.5.3v1.0.0-1
xr-cpa-driver-devobj-gnss           7.5.3v1.0.0-1
xr-cpa-driver-devobj-misc           7.5.3v1.0.0-1
xr-cpa-driver-devobj-npu            7.5.3v1.0.0-1
xr-cpa-driver-devobj-phy            7.5.3v1.0.0-1
xr-cpa-driver-devobj-sensors        7.5.3v1.0.0-1
xr-cpa-driver-devobj-storage        7.5.3v1.0.0-1
xr-cpa-driver-devobj-test           7.5.3v1.0.0-1
xr-cpa-driver-devobj-timing         7.5.3v1.0.0-1
xr-cpa-driver-fpgalib-access        7.5.3v1.0.0-1
xr-cpa-driver-fpgalib-common        7.5.3v1.0.0-1
xr-cpa-driver-fpgalib-infra         7.5.3v1.0.0-1
xr-cpa-driver-fpgalib-kmod          7.5.3v1.0.0-1
xr-cpa-driver-fpgalib-misc          7.5.3v1.0.0-1
xr-cpa-driver-fpgalib-optics        7.5.3v1.0.0-1
xr-cpa-driver-optics                7.5.3v1.0.0-1
xr-cpa-ethsw                        7.5.3v1.0.0-1
xr-cpa-idprom                       7.5.3v1.0.0-1
xr-cpa-tamlib                       7.5.3v1.0.0-1
xr-ctc                              7.5.3v1.0.0-1
xr-debug                            7.5.3v1.0.0-1
xr-dhcp                             7.5.3v1.0.0-1
xr-diags                            7.5.3v1.0.0-1
xr-diskboot                         7.5.3v1.0.0-1
xr-drivers                          7.5.3v1.0.0-1
xr-eem                              7.5.3v1.0.0-1
xr-elmi-stubs                       7.5.3v1.0.0-1
xr-ema                              7.5.3v1.0.0-1
xr-enhancedmanageability            7.5.3v1.0.0-1
xr-featurecapability                7.5.3v1.0.0-1
xr-fib                              7.5.3v1.0.0-1
xr-filesysinv                       7.5.3v1.0.0-1
xr-foundation-8000                  7.5.3v1.0.0-1
xr-fpd                              7.5.3v1.0.0-1
```

```
xr-ha-infra                      7.5.3v1.0.0-1
xr-healthcheck                   7.5.3v1.0.0-1
xr-host-core                     7.5.3v1.0.0-1
xr-httpclient                    7.5.3v1.0.0-1
xr-icpe-eth                      7.5.3v1.0.0-1
xr-icpe-opt                      7.5.3v1.0.0-1
xr-identifier                    7.5.3v1.0.0-1
xr-infra-sla                     7.5.3v1.0.0-1
xr-install                       7.5.3v1.0.0-1
xr-ip-apps                       7.5.3v1.0.0-1
xr-ip-core                       7.5.3v1.0.0-1
xr-ip-infra-vrf                  7.5.3v1.0.0-1
xr-ip-mibs                       7.5.3v1.0.0-1
xr-ip-static                     7.5.3v1.0.0-1
xr-ipc                           7.5.3v1.0.0-1
xr-ipsla                         7.5.3v1.0.0-1
xr-is-is                         7.5.3v1.0.0-1
xr-k9sec                         7.5.3v1.0.0-1
xr-l2snooptransport              7.5.3v1.0.0-1
xr-l2vpn                         7.5.3v1.0.0-1
xr-ldp                           7.5.3v1.0.0-1
xr-licensing                     7.5.3v1.0.0-1
xr-link-oam                      7.5.3v1.0.0-1
xr-linuxnetworking               7.5.3v1.0.0-1
xr-linuxsecurity                 7.5.3v1.0.0-1
xr-lldp                          7.5.3v1.0.0-1
xr-lpts                          7.5.3v1.0.0-1
xr-manageabilityxml              7.5.3v1.0.0-1
xr-mandatory                     7.5.3v1.0.0-1
xr-mcast                         7.5.3v1.0.0-1
xr-mda                           7.5.3v1.0.0-1
xr-mpls                          7.5.3v1.0.0-1
xr-mpls-oam                      7.5.3v1.0.0-1
xr-mpls-oam-client               7.5.3v1.0.0-1
xr-mpls-static                   7.5.3v1.0.0-1
xr-netflow                       7.5.3v1.0.0-1
xr-networkboot                   7.5.3v1.0.0-1
xr-nosi                          7.5.3v1.0.0-1
xr-ntp                           7.5.3v1.0.0-1
xr-ofa                           7.5.3v1.0.0-1
xr-optics                        7.5.3v1.0.0-1
xr-orrspf                        7.5.3v1.0.0-1
xr-os-apps                       7.5.3v1.0.0-1
xr-os-core                       7.5.3v1.0.0-1
xr-os-hardware                   7.5.3v1.0.0-1
xr-ospf                          7.5.3v1.0.0-1
xr-perf-meas                     7.5.3v1.0.0-1
xr-perfmgmt                      7.5.3v1.0.0-1
xr-pfi                           7.5.3v1.0.0-1
xr-pird-stubs                    7.5.3v1.0.0-1
xr-pkt-trace                     7.5.3v1.0.0-1
xr-platforms-ras                 7.5.3v1.0.0-1
xr-pm-alarm                      7.5.3v1.0.0-1
xr-procmgr                       7.5.3v1.0.0-1
xr-python                        7.5.3v1.0.0-1
xr-qos                           7.5.3v1.0.0-1
xr-rid-mgr                       7.5.3v1.0.0-1
xr-routing                       7.5.3v1.0.0-1
xr-rpl                           7.5.3v1.0.0-1
xr-rsvp-te                       7.5.3v1.0.0-1
xr-security                      7.5.3v1.0.0-1
xr-security-tams                 7.5.3v1.0.0-1
xr-servicelayer                  7.5.3v1.0.0-1
xr-snmp                          7.5.3v1.0.0-1
```

```
xr-snmp-hw                                              7.5.3v1.0.0-1
xr-span                                                 7.5.3v1.0.0-1
xr-spi-core                                             7.5.3v1.0.0-1
xr-spi-hw                                               7.5.3v1.0.0-1
xr-spp                                                  7.5.3v1.0.0-1
xr-sr                                                   7.5.3v1.0.0-1
xr-stats                                                7.5.3v1.0.0-1
xr-stp                                                  7.5.3v1.0.0-1
xr-stubs                                                7.5.3v1.0.0-1
xr-sysdb                                                7.5.3v1.0.0-1
xr-syslog                                               7.5.3v1.0.0-1
xr-telemetry                                            7.5.3v1.0.0-1
xr-telnet                                               7.5.3v1.0.0-1
xr-timing                                               7.5.3v1.0.0-1
xr-tmpdir-cleanup                                       7.5.3v1.0.0-1
xr-track                                                7.5.3v1.0.0-1
xr-transports                                           7.5.3v1.0.0-1
xr-tty                                                  7.5.3v1.0.0-1
xr-tunnel-ip                                            7.5.3v1.0.0-1
xr-tunnel-nve                                           7.5.3v1.0.0-1
xr-upgradematrix                                        7.5.3v1.0.0-1
xr-utils                                                7.5.3v1.0.0-1
xr-vether                                               7.5.3v1.0.0-1
xr-vpnmib                                               7.5.3v1.0.0-1
xr-xmlinfra                                             7.5.3v1.0.0-1
xr-xrlibcurl                                            7.5.3v1.0.0-1
xr-ztp                                                  7.5.3v1.0.0-1
```

To know about all the RPMs installed including XR, OS and other components use the **show install active all** command.

The software modularity approach provides a flexible model that allows you to install a subset of IOS XR packages on devices based on your individual requirements. All critical components are modularized as packages so that you can select the features that you want to run on your router.

Note The above show command output displays mandatory packages that are installed on the router. To view the optional and bug fix RPM packages, first install the package and use the **show install active summary** command.

Caveats

These caveats are applicable for Cisco IOS XR Software:

Table 1: Cisco 8000 Series Router Specific Bugs

Bug ID	Headline
CSCwd10994	tty_ltrace_initt FAILED floods on the console
CSCwd13245	show yang operational CLIs may fail by multiple clients simultaneously quering in parallel
CSCwc37609	Umbrella for XR and SDK NPU enhancements on the 8000 platform

Determine Software Version

Log in to the router and enter the **show version** command:

```
RP/0/RP0/CPU0# show version
Cisco IOS XR Software, Version 7.5.3 LNT
Copyright (c) 2013-2022 by Cisco Systems, Inc.

Build Information:
Built By     : ingunawa
Built On     : Tue Sep 27 08:57:08 UTC 2022
Build Host   : iox-ucs-031
Workspace    : /auto/srcarchive16/prod/7.5.3/8000/ws
Version      : 7.5.3
Label        : 7.5.3-RENUM

cisco 8000 (Intel(R) Xeon(R) CPU D-1530 @ 2.40GHz)
cisco 8812 (Intel(R) Xeon(R) CPU D-1530 @ 2.40GHz) processor with 32GB of memory
r8 uptime is 2 hours, 59 minutes
Cisco 8812 12-slot Chassis
```

Determine Firmware Support

Log in to the router and enter **show fpd package** command:

Cisco 8100 Series Router

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

```
================================================================================
               Field Programmable Device Package
               ================================================
                                           Req    SW      Min Req  Min Req
Card Type          FPD Description         Reload Ver     SW Ver   Board Ver
================== ========================= ====== ======= ======== =========
--------------------------------------------------------------------------------
8201               Bios                     YES    1.23    1.23     0.0
                   BiosGolden               YES    1.23    1.15     0.0
                   IoFpga                   YES    1.11    1.11     0.1
                   IoFpgaGolden             YES    1.11    0.48     0.1
                   SsdIntelS3520            YES    1.21    1.21     0.0
                   SsdIntelS4510            YES    11.32   11.32    0.0
                   SsdMicron5100            YES    7.01    7.01     0.0
                   SsdMicron5300            YES    0.01    0.01     0.0
                   x86Fpga                  YES    1.05    1.05     0.0
                   x86FpgaGolden            YES    1.05    0.48     0.0
                   x86TamFw                 YES    5.13    5.13     0.0
                   x86TamFwGolden           YES    5.13    5.05     0.0
--------------------------------------------------------------------------------
8201-ON            Bios                     YES    1.208   1.208    0.0
                   BiosGolden               YES    1.208   1.207    0.0
                   IoFpga                   YES    1.11    1.11     0.1
                   IoFpgaGolden             YES    1.11    0.48     0.1
                   SsdIntelS3520            YES    1.21    1.21     0.0
                   SsdIntelS4510            YES    11.32   11.32    0.0
                   SsdMicron5100            YES    7.01    7.01     0.0
                   SsdMicron5300            YES    0.01    0.01     0.0
                   x86Fpga                  YES    1.05    1.05     0.0
                   x86FpgaGolden            YES    1.05    0.48     0.0
```

```
                  x86TamFw                YES    5.13    5.13     0.0
                  x86TamFwGolden          YES    5.13    5.05     0.0
--------------------------------------------------------------------------------
8201-SYS          Bios                    YES    1.23    1.23     0.0
                  BiosGolden              YES    1.23    1.15     0.0
                  IoFpga                  YES    1.11    1.11     0.1
                  IoFpgaGolden            YES    1.11    0.48     0.1
                  SsdIntelS3520           YES    1.21    1.21     0.0
                  SsdIntelS4510           YES   11.32   11.32     0.0
                  SsdMicron5100           YES    7.01    7.01     0.0
                  SsdMicron5300           YES    0.01    0.01     0.0
                  x86Fpga                 YES    1.05    1.05     0.0
                  x86FpgaGolden           YES    1.05    0.48     0.0
                  x86TamFw                YES    5.13    5.13     0.0
                  x86TamFwGolden          YES    5.13    5.05     0.0
--------------------------------------------------------------------------------
8201-SYS-ON       Bios                    YES   1.208   1.208     0.0
                  BiosGolden              YES   1.208   1.207     0.0
                  IoFpga                  YES    1.11    1.11     0.1
                  IoFpgaGolden            YES    1.11    0.48     0.1
                  SsdIntelS3520           YES    1.21    1.21     0.0
                  SsdIntelS4510           YES   11.32   11.32     0.0
                  SsdMicron5100           YES    7.01    7.01     0.0
                  SsdMicron5300           YES    0.01    0.01     0.0
                  x86Fpga                 YES    1.05    1.05     0.0
                  x86FpgaGolden           YES    1.05    0.48     0.0
                  x86TamFw                YES    5.13    5.13     0.0
                  x86TamFwGolden          YES    5.13    5.05     0.0
--------------------------------------------------------------------------------
PSU1.4KW-ACPE     DT-PrimMCU              NO     3.01    3.01     0.0
                  DT-SecMCU               NO     2.02    2.02     0.0
--------------------------------------------------------------------------------
PSU1.4KW-ACPI     DT-PrimMCU              NO     3.01    3.01     0.0
                  DT-SecMCU               NO     2.02    2.02     0.0
--------------------------------------------------------------------------------
PSU2KW-ACPE       PO-PrimMCU              NO    17.54   17.54     0.0
--------------------------------------------------------------------------------
PSU2KW-ACPI       PO-PrimMCU              NO    17.56   17.56     0.0
--------------------------------------------------------------------------------
PSU2KW-DCPE       PO-PrimMCU              NO     1.07    1.07     0.0
--------------------------------------------------------------------------------
PSU2KW-DCPI       PO-PrimMCU              NO     1.07    1.07     0.0
--------------------------------------------------------------------------------
PSU2KW-HVPI       PO-PrimMCU              NO   17.136  17.136     0.0
```

Cisco 8200 Series Router

```
RP/0/RP0/CPU0# show fpd package
================================================================================
                   Field Programmable Device Package
            ==============================================
                              Req     SW     Min Req  Min Req
Card Type          FPD Description    Reload  Ver    SW Ver   Board Ver
================== ========================= ====== ======= ======== =========
--------------------------------------------------------------------------------
8202              Bios                    YES    1.23    1.23     0.0
                  BiosGolden              YES    1.23    1.15     0.0
                  IoFpga                  YES    1.03    1.03     0.0
                  IoFpgaGolden            YES    1.03    0.33     0.0
                  MiFpga                  YES    1.00    1.00     0.0
                  MiFpgaGolden            YES    1.00    0.02     0.0
                  SsdIntelS3520           YES    1.21    1.21     0.0
                  SsdIntelS4510           YES   11.32   11.32     0.0
                  SsdMicron5100           YES    7.01    7.01     0.0
```

```
                      SsdMicron5300              YES    0.01     0.01      0.0
                      x86Fpga                    YES    1.05     1.05      0.0
                      x86FpgaGolden              YES    1.05     0.48      0.0
                      x86TamFw                   YES    5.13     5.13      0.0
                      x86TamFwGolden             YES    5.13     5.05      0.0
-----------------------------------------------------------------------------
8202-O                Bios                       YES    1.208    1.208     0.0
                      BiosGolden                 YES    1.208    1.207     0.0
                      IoFpga                     YES    1.03     1.03      0.0
                      IoFpgaGolden               YES    1.03     0.33      0.0
                      MiFpga                     YES    1.00     1.00      0.0
                      MiFpgaGolden               YES    1.00     0.02      0.0
                      SsdIntelS3520              YES    1.21     1.21      0.0
                      SsdIntelS4510              YES    11.32    11.32     0.0
                      SsdMicron5100              YES    7.01     7.01      0.0
                      SsdMicron5300              YES    0.01     0.01      0.0
                      x86Fpga                    YES    1.05     1.05      0.0
                      x86FpgaGolden              YES    1.05     0.48      0.0
                      x86TamFw                   YES    5.13     5.13      0.0
                      x86TamFwGolden             YES    5.13     5.05      0.0
-----------------------------------------------------------------------------
PSU2KW-ACPE           PO-PrimMCU                 NO     17.54    17.54     0.0
-----------------------------------------------------------------------------
PSU2KW-ACPI           PO-PrimMCU                 NO     17.56    17.56     0.0
-----------------------------------------------------------------------------
PSU2KW-DCPE           PO-PrimMCU                 NO     1.07     1.07      0.0
-----------------------------------------------------------------------------
PSU2KW-DCPI           PO-PrimMCU                 NO     1.07     1.07      0.0
-----------------------------------------------------------------------------
PSU2KW-HVPI           PO-PrimMCU                 NO     17.136   17.136    0.0
-----------------------------------------------------------------------------
```

Cisco 8800 Series Router

```
RP/0/RP0/CPU0# show fpd package
================================================================================
                  Field Programmable Device Package
                  =================================================
                              Req    SW      Min Req  Min Req
Card Type          FPD Description            Reload Ver     SW Ver   Board Ver
================== ========================= ====== ======= ======== =========
--------------------------------------------------------------------------------
88-LC0-34H14FH     Bios                       YES    1.03     1.03      0.0
                   BiosGolden                 YES    1.03     0.13      0.0
                   EthSwitch                  YES    1.04     1.04      0.0
                   EthSwitchGolden            YES    1.04     0.07      0.0
                   IoFpga                      YES    1.07     1.07      0.1
                   IoFpgaGolden               YES    1.07     1.01      0.1
                   SsdIntelS3520              YES    1.21     1.21      0.0
                   SsdIntelS4510              YES    11.32    11.32     0.0
                   SsdMicron5100              YES    7.01     7.01      0.0
                   SsdMicron5300              YES    0.01     0.01      0.0
                   x86Fpga                    YES    0.87     0.87      0.1
                   x86FpgaGolden              YES    0.87     0.78      0.1
                   x86TamFw                   YES    6.13     6.13      0.1
                   x86TamFwGolden             YES    6.13     6.10      0.1
--------------------------------------------------------------------------------
88-LC0-34H14FH-O   Bios                       YES    0.218    0.218     0.0
                   BiosGolden                 YES    0.218    0.218     0.0
                   EthSwitch                  YES    1.04     1.04      0.0
                   EthSwitchGolden            YES    1.04     0.07      0.0
                   IoFpga                      YES    1.07     1.07      0.1
                   IoFpgaGolden               YES    1.07     1.01      0.1
                   SsdIntelS3520              YES    1.21     1.21      0.0
```

```
                         SsdIntelS4510          YES    11.32    11.32    0.0
                         SsdMicron5100          YES     7.01     7.01    0.0
                         SsdMicron5300          YES     0.01     0.01    0.0
                         x86Fpga                YES     0.87     0.87    0.1
                         x86FpgaGolden          YES     0.87     0.78    0.1
                         x86TamFw               YES     6.13     6.13    0.1
                         x86TamFwGolden         YES     6.13     6.10    0.1
-------------------------------------------------------------------------------
88-LC0-36FH              Bios                   YES     1.03     1.03    0.0
                         BiosGolden             YES     1.03     0.13    0.0
                         EthSwitch              YES     1.04     1.04    0.0
                         EthSwitchGolden        YES     1.04     0.07    0.0
                         IoFpga                 YES     1.11     1.11    0.1
                         IoFpgaGolden           YES     1.11     1.00    0.1
                         SsdIntelS3520          YES     1.21     1.21    0.0
                         SsdIntelS4510          YES    11.32    11.32    0.0
                         SsdMicron5100          YES     7.01     7.01    0.0
                         SsdMicron5300          YES     0.01     0.01    0.0
                         x86Fpga                YES     1.30     1.30    0.1
                         x86FpgaGolden          YES     1.30     1.04    0.1
                         x86TamFw               YES     6.13     6.13    0.1
                         x86TamFwGolden         YES     6.13     6.05    0.1
-------------------------------------------------------------------------------
88-LC0-36FH-M           Bios                   YES     1.03     1.03    0.0
                         BiosGolden             YES     1.03     0.13    0.0
                         EthSwitch              YES     1.04     1.04    0.0
                         EthSwitchGolden        YES     1.04     0.07    0.0
                         IoFpga                 YES     1.11     1.11    0.1
                         IoFpgaGolden           YES     1.11     1.00    0.1
                         SsdIntelS3520          YES     1.21     1.21    0.0
                         SsdIntelS4510          YES    11.32    11.32    0.0
                         SsdMicron5100          YES     7.01     7.01    0.0
                         SsdMicron5300          YES     0.01     0.01    0.0
                         x86Fpga                YES     1.30     1.30    0.1
                         x86FpgaGolden          YES     1.30     1.04    0.1
                         x86TamFw               YES     6.13     6.13    0.1
                         x86TamFwGolden         YES     6.13     6.05    0.1
-------------------------------------------------------------------------------
88-LC0-36FH-MO          Bios                   YES     0.218    0.218   0.0
                         BiosGolden             YES     0.218    0.218   0.0
                         EthSwitch              YES     1.04     1.04    0.0
                         EthSwitchGolden        YES     1.04     0.07    0.0
                         IoFpga                 YES     1.11     1.11    0.1
                         IoFpgaGolden           YES     1.11     1.00    0.1
                         SsdIntelS3520          YES     1.21     1.21    0.0
                         SsdIntelS4510          YES    11.32    11.32    0.0
                         SsdMicron5100          YES     7.01     7.01    0.0
                         SsdMicron5300          YES     0.01     0.01    0.0
                         x86Fpga                YES     1.30     1.30    0.1
                         x86FpgaGolden          YES     1.30     1.04    0.1
                         x86TamFw               YES     6.13     6.13    0.1
                         x86TamFwGolden         YES     6.13     6.05    0.1
-------------------------------------------------------------------------------
88-LC0-36FH-O           Bios                   YES     0.218    0.218   0.0
                         BiosGolden             YES     0.218    0.218   0.0
                         EthSwitch              YES     1.04     1.04    0.0
                         EthSwitchGolden        YES     1.04     0.07    0.0
                         IoFpga                 YES     1.11     1.11    0.1
                         IoFpgaGolden           YES     1.11     1.00    0.1
                         SsdIntelS3520          YES     1.21     1.21    0.0
                         SsdIntelS4510          YES    11.32    11.32    0.0
                         SsdMicron5100          YES     7.01     7.01    0.0
                         SsdMicron5300          YES     0.01     0.01    0.0
                         x86Fpga                YES     1.30     1.30    0.1
```

```
                          x86FpgaGolden             YES    1.30    1.04    0.1
                          x86TamFw                  YES    6.13    6.13    0.1
                          x86TamFwGolden            YES    6.13    6.05    0.1
-----------------------------------------------------------------------------------
8800-LC-36FH              Bios                      YES    1.23    1.23    0.0
                          BiosGolden                YES    1.23    1.15    0.0
                          EthSwitch                 YES    1.04    1.04    0.0
                          EthSwitchGolden           YES    1.04    0.07    0.0
                          IoFpga                    YES    1.38    1.38    0.0
                          IoFpgaGolden              YES    1.38    0.08    0.0
                          SsdIntelS3520             YES    1.21    1.21    0.0
                          SsdIntelS4510             YES   11.32   11.32    0.0
                          SsdMicron5100             YES    7.01    7.01    0.0
                          SsdMicron5300             YES    0.01    0.01    0.0
                          x86Fpga                   YES    1.49    1.49    0.0
                          x86FpgaGolden             YES    1.49    0.33    0.0
                          x86TamFw                  YES    5.13    5.13    0.0
                          x86TamFwGolden            YES    5.13    5.05    0.0
-----------------------------------------------------------------------------------
8800-LC-36FH-O           Bios                      YES    1.208   1.208   0.0
                          BiosGolden                YES    1.208   1.207   0.0
                          EthSwitch                 YES    1.04    1.04    0.0
                          EthSwitchGolden           YES    1.04    0.07    0.0
                          IoFpga                    YES    1.38    1.38    0.0
                          IoFpgaGolden              YES    1.38    0.08    0.0
                          SsdIntelS3520             YES    1.21    1.21    0.0
                          SsdIntelS4510             YES   11.32   11.32    0.0
                          SsdMicron5100             YES    7.01    7.01    0.0
                          SsdMicron5300             YES    0.01    0.01    0.0
                          x86Fpga                   YES    1.49    1.49    0.0
                          x86FpgaGolden             YES    1.49    0.33    0.0
                          x86TamFw                  YES    5.13    5.13    0.0
                          x86TamFwGolden            YES    5.13    5.05    0.0
-----------------------------------------------------------------------------------
8800-LC-48H              Bios                      YES    1.23    1.23    0.0
                          BiosGolden                YES    1.23    1.15    0.0
                          EthSwitch                 YES    1.04    1.04    0.0
                          EthSwitchGolden           YES    1.04    0.07    0.0
                          IoFpga                    YES    1.38    1.38    0.0
                          IoFpgaGolden              YES    1.38    0.08    0.0
                          SsdIntelS3520             YES    1.21    1.21    0.0
                          SsdIntelS4510             YES   11.32   11.32    0.0
                          SsdMicron5100             YES    7.01    7.01    0.0
                          SsdMicron5300             YES    0.01    0.01    0.0
                          x86Fpga                   YES    1.49    1.49    0.0
                          x86FpgaGolden             YES    1.49    0.33    0.0
                          x86TamFw                  YES    5.13    5.13    0.0
                          x86TamFwGolden            YES    5.13    5.05    0.0
-----------------------------------------------------------------------------------
8800-LC-48H-O            Bios                      YES    1.208   1.208   0.0
                          BiosGolden                YES    1.208   1.207   0.0
                          EthSwitch                 YES    1.04    1.04    0.0
                          EthSwitchGolden           YES    1.04    0.07    0.0
                          IoFpga                    YES    1.38    1.38    0.0
                          IoFpgaGolden              YES    1.38    0.08    0.0
                          SsdIntelS3520             YES    1.21    1.21    0.0
                          SsdIntelS4510             YES   11.32   11.32    0.0
                          SsdMicron5100             YES    7.01    7.01    0.0
                          SsdMicron5300             YES    0.01    0.01    0.0
                          x86Fpga                   YES    1.49    1.49    0.0
                          x86FpgaGolden             YES    1.49    0.33    0.0
                          x86TamFw                  YES    5.13    5.13    0.0
                          x86TamFwGolden            YES    5.13    5.05    0.0
-----------------------------------------------------------------------------------
```

```
8800-RP              Bios                  YES    1.23     1.23      0.0
                     BiosGolden            YES    1.23     1.15      0.0
                     EthSwitch             YES    1.02     1.02      0.0
                     EthSwitchGolden       YES    1.02     0.07      0.0
                     SsdIntelS3520         YES    1.21     1.21      0.0
                     SsdIntelS4510         YES    11.32    11.32     0.0
                     SsdMicron5100         YES    7.01     7.01      0.0
                     SsdMicron5300         YES    0.01     0.01      0.0
                     TimingFpga            YES    1.02     1.02      0.0
                     TimingFpgaGolden      YES    1.02     0.11      0.0
                     x86Fpga               YES    1.32     1.32      0.0
                     x86FpgaGolden         YES    1.32     0.24      0.0
                     x86TamFw              YES    5.13     5.13      0.0
                     x86TamFwGolden        YES    5.13     5.05      0.0
--------------------------------------------------------------------------
8800-RP-O            Bios                  YES    1.208    1.208     0.0
                     BiosGolden            YES    1.208    1.207     0.0
                     EthSwitch             YES    1.02     1.02      0.0
                     EthSwitchGolden       YES    1.02     0.07      0.0
                     SsdIntelS3520         YES    1.21     1.21      0.0
                     SsdIntelS4510         YES    11.32    11.32     0.0
                     SsdMicron5100         YES    7.01     7.01      0.0
                     SsdMicron5300         YES    0.01     0.01      0.0
                     TimingFpga            YES    1.02     1.02      0.0
                     TimingFpgaGolden      YES    1.02     0.11      0.0
                     x86Fpga               YES    1.32     1.32      0.0
                     x86FpgaGolden         YES    1.32     0.24      0.0
                     x86TamFw              YES    5.13     5.13      0.0
                     x86TamFwGolden        YES    5.13     5.05      0.0
--------------------------------------------------------------------------
8804-FAN             FtFpga                NO     1.00     1.00      0.0
                     FtFpgaGolden          NO     1.00     0.16      0.0
--------------------------------------------------------------------------
8804-FC0             IoFpga                YES    1.00     1.00      0.0
                     IoFpgaGolden          YES    1.00     0.16      0.0
--------------------------------------------------------------------------
8808-FAN             FtFpga                NO     1.00     1.00      0.0
                     FtFpgaGolden          NO     1.00     0.16      0.0
--------------------------------------------------------------------------
8808-FC              IoFpga                YES    1.02     1.02      0.0
                     IoFpgaGolden          YES    1.02     0.05      0.0
--------------------------------------------------------------------------
8808-FC0             IoFpga                YES    1.00     1.00      0.0
                     IoFpgaGolden          YES    1.00     0.16      0.0
--------------------------------------------------------------------------
8812-FAN             FtFpga                NO     1.00     1.00      0.0
                     FtFpgaGolden          NO     1.00     0.16      0.0
--------------------------------------------------------------------------
8812-FC              IoFpga                YES    1.02     1.02      0.0
                     IoFpgaGolden          YES    1.02     0.05      0.0
                     Retimer               YES    3.00     3.00      0.0
--------------------------------------------------------------------------
8818-FAN             FtFpga                NO     1.00     1.00      0.0
                     FtFpgaGolden          NO     1.00     0.16      0.0
--------------------------------------------------------------------------
8818-FC              IoFpga                YES    1.02     1.02      0.0
                     IoFpgaGolden          YES    1.02     0.05      0.0
                     Retimer               YES    3.00     3.00      0.0
--------------------------------------------------------------------------
8818-FC0             IoFpga                YES    1.00     1.00      0.0
                     IoFpgaGolden          YES    1.00     0.16      0.0
                     Retimer               YES    3.00     3.00      0.0
--------------------------------------------------------------------------
PSU-4.8KW-DC100      PO-PrimMCU            NO     51.85    51.85     0.0
```

```
--------------------------------------------------------------------------------
PSU6.3KW-20A-HV     DT-LogicMCU              NO     1.00     1.00      0.0
                    DT-PrimMCU               NO     1.00     1.00      0.0
                    DT-SecMCU                NO     1.00     1.00      0.0
--------------------------------------------------------------------------------
PSU6.3KW-HV         AB-LogicMCU              NO     3.08     3.08      0.0
                    AB-PrimMCU               NO     3.08     3.08      0.0
                    AB-SecMCU                NO     3.06     3.06      0.0
                    DT-LogicMCU              NO     4.11     4.11      0.0
                    DT-PrimMCU               NO     4.01     4.01      0.0
                    DT-SecMCU                NO     4.00     4.00      0.0
--------------------------------------------------------------------------------
PWR-4.4KW-DC-V3     DT-LogicMCU              NO     3.02     3.02      0.0
                    DT-Prim1MCU              NO     3.01     3.01      0.0
                    DT-Prim2MCU              NO     3.01     3.01      0.0
                    DT-Sec1MCU               NO     3.01     3.01      0.0
                    DT-Sec2MCU               NO     3.01     3.01      0.0
```

Important Notes

- The warning message that the smart licensing evaluation period has expired is displayed in the console every hour. There is, however, no functionality impact on the device. The issue is seen on routers that don't have the Flexible Consumption licensing model enabled. To stop the repetitive messaging, register the device with the smart licensing server and enable the Flexible Consumption model. Later load a new registration token.

  To register the device with the smart licensing server, see the Registering and Activating Your Router.

- When you execute the **show tech-support** command, a temporary directory is created and the related data is stored in this directory. This directory is deleted after the command is completed. For example,

```
Router#run ls -ltr
drwxrwxrwx. 3 root root show-tech-fabric-link-incl-loca-010cpu0_2.tgz
```

  In case, you terminate the **show tech-support** command manually, we recommend you to delete the corresponding show tech directory if not needed.

Supported Transceiver Modules

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

Related Documentation

The most current Cisco 8000 router documentation is located at the following URL:

https://www.cisco.com/c/en/us/td/docs/iosxr/8000-series-routers.html