Release Notes for Cisco 8000 Series Routers, IOS XR Release 7.5.1

Revised: November 23, 2023

Cisco 8100, 8200, and 8800 Series Routers

What's New in Cisco IOS XR Release 7.5.1

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
Setup and Upgrade	
Automatic Bridging of Bug Fix RPMs	In earlier releases, any mandatory bridging bug fixes had to be installed separately *before* a GISO upgrade. In this release, this feature allows mandatory bridging bug fixes to be included within the GISO for installation during the GISO upgrade process. This eliminates the older two-step workflow.
Build Golden ISO (GISO) Using gisobuild.py Tool	This feature allows you to build your GISO image without support from Cisco. You can now select the install files, add your RPMs, repackage them as a custom image, and install the image. In previous releases, you had to contact Cisco to get your GISO built.
Check Integrity of Golden ISO (GISO) Files	This feature enables an automated check during **install package replace** operations to ensure that the files in GISO have not been corrupted. It does so by calculating the md5sum of the files and comparing it against md5sum value that is contained within the GISO that was calculated when the image was built.
IOS XR Configuration File in Golden ISO (GISO)	GISO is a customized image with the standard functional components and additional configuration files. This feature extracts the IOS XR configuration file in GISO and automates the updating of configuration files when the router is reloaded with the new GISO. This feature introduces **iso-config [ignore | replace]** keywords to the **install replace** and **install package replace** commands.
Telemetry	
Target-Defined Mode for Cached Generic Counters Data	This feature streams telemetry data for cached generic counters using a TARGET_DEFINED subscription. This subscription ensures that any change to the cache streams the latest data to the collector as an event-driven telemetry notification. This feature introduces support for the following sensor path: `Cisco-IOS-XR-infra-statsd-oper:infra-statistics/interfaces/interface/cache/generic-counters`
gNMI Dial-Out via Tunnel Service	This feature uses the tunnel service to allow the router (tunnel client) to dial out to a collector (tunnel server). After the session is established, the server-client switch directions where a server can act as a client to request gNMI services without altering the gNMI semantics.
Programmability	

Feature	Description
Add Multiple Events In a Policy Map With a Single EEM Script	With this feature, you can add multiple events to a policy map with boolean (AND or OR) correlation. EEM triggers the script when the correlation defined in the policy map for the events is true. Using EEM scripts, you can create a logical correlation of events in the policy map and configure multiple actions for detectors such as timer, object-tracking, and telemetry events via sensor path.
Control Line Card Power Using YANG Data Model	The `oc-platform.yang` YANG data model enables or disables power to the line card and identifies its slot or chassis. You can access this data model from the Github repository.
Debug Automation Scripts	Use this feature to collect logs that contain debug information for ltraces and tech-support data. These logs aid in troubleshooting whenever the scripts are not working as expected. This feature introduces the **show tech-support script** command.
Github Repository for Automation Scripts	You now have access to sample scripts and templates published on the Github repository. You can leverage these samples to use the python packages and libraries developed by Cisco to build your custom automation scripts for your network
Manage Common Script Actions Using YANG RPCs	This feature enables you to use YANG remote procedure calls (RPCs) on `Cisco-IOS-XR-infra-script-mgmt-act.yang` data model to perform actions on the automation scripts such as add or remove script from the script repository, run, or stop script from running.
Update Automation Scripts from Remote Server	This feature lets you update automation scripts across routers by accessing the master script from a remote site. This eases script management, where you make changes to the master script and then copy it to routers where it is deployed. This feature introduces the **auto-update** keyword in the **script exec** command.
Upgraded IOS XR Python from Version 3.5 to Version 3.9	This upgrade adds new modules and capabilities to create Python scripts and execute the scripts on routers running Cisco IOS XR software. Some of the modules added as part of the upgraded IOS XR Python 3.9 are: hashlib, idna, packaging, pyparsing, six, yaml.
Validate Pre-configuration Using Config Scripts	This feature allows you to use config scripts to validate pre-configuration during a commit or validate operation. Any active config scripts can read and validate (accept, reject or modify) pre-configuration. The pre-configuration is only applied to the system later on, when the relevant hardware is inserted, and does not require further script validation at that point. Previously, config scripts did not allow validating configuration until the corresponding hardware was present.
gRPC Connections over UNIX domain sockets for Enhanced Security and Control	This feature allows local containers and scripts on the router to establish gRPC connections over UNIX domain sockets. These sockets provide better inter-process communication eliminating the need to manage passwords for local communications. Configuring communication over UNIX domain sockets also gives you better control of permissions and security because UNIX file permissions come into force. This feature introduces the **grpc local-connection** command.
System Monitoring	

Feature	Description
Supporting Custom Profile show tech command	This feature lets you run a customized list of **show** commands and **System Admin show** commands from all core protocols such as BGP, MPLS, Segment Routing etc. You can also generate **tech-support** information that is useful for Cisco Technical Support representatives when troubleshooting a router. This feature introduces the **show tech support custom profile-name** command.
System Security	
Command Authorization Using Local User Account	This feature allows locally authenticated users—authenticated by the AAA server internal to the router—to run all XR VM commands even if a remote TACACS+ AAA server is not reachable for authorization. It prevents a complete router lockdown. The feature also prevents remotely authenticated users—authenticated using a remote AAA server (say, TACACS+ server)—from running any non-permitted commands on the router, and thus prevents misuse of user privileges. This feature modifies the aaa authorization commands default command to include the **local** option for XR VM command authorization.

Hardware Introduced

Cisco IOS XR Release 7.5.1 introduces the following hardware support:

Hardware Feature	Description
88-LC0-34H14FH based on Q200 Silicon Chip	This release introduces a 48-port combo line card that provides 9 Tbps of throughput. The 88-LC0-34H14FH line card is Q200 silicon chip-based and comprises 34 ports of 100 GbE (QSFP28) and 14 ports of 400 GbE (QSFP-DD). Sixteen 100 GbE ports are MACSec capable. 100 GbE ports support 4x10/25 GbE breakout, and 400 GbE ports support 4x100 GbE, 2x100 GbE, and 4x10/25 GbE breakout. The 88-LC0-34H14FH line card is supported on Cisco 8800 series modular chassis. For more information on this line card, see the Cisco 8000 Series Routers Data Sheet.

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

Release 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                                              7.5.1v1.0.0-1
xr-8000-aib                                                7.5.1v1.0.0-1
xr-8000-bfd                                                7.5.1v1.0.0-1
xr-8000-bmc                                                7.5.1v1.0.0-1
xr-8000-buffhdr-ea                                         7.5.1v1.0.0-1
xr-8000-bundles                                            7.5.1v1.0.0-1
xr-8000-card-support                                       7.5.1v1.0.0-1
xr-8000-cdp-ea                                             7.5.1v1.0.0-1
xr-8000-cfm                                                7.5.1v1.0.0-1
xr-8000-core                                               7.5.1v1.0.0-1
xr-8000-cpa                                                7.5.1v1.0.0-1
xr-8000-cpa-npu                                            7.5.1v1.0.0-1
xr-8000-cpa-sb-data                                        7.5.1v1.0.0-1
xr-8000-dsm                                                7.5.1v1.0.0-1
xr-8000-encap-id                                           7.5.1v1.0.0-1
xr-8000-ether-ea                                           7.5.1v1.0.0-1
xr-8000-fabric                                             7.5.1v1.0.0-1
xr-8000-feat-mgr                                           7.5.1v1.0.0-1
xr-8000-fib-ea                                             7.5.1v1.0.0-1
xr-8000-forwarder                                          7.5.1v1.0.0-1
xr-8000-fpd                                                7.5.1v1.0.0-1
xr-8000-fwdlib                                             7.5.1v1.0.0-1
xr-8000-host-core                                          7.5.1v1.0.0-1
xr-8000-l2fib                                              7.5.1v1.0.0-1
xr-8000-leabaofa                                           7.5.1v1.0.0-1
xr-8000-libofaasync                                        7.5.1v1.0.0-1
xr-8000-lpts-ea                                            7.5.1v1.0.0-1
xr-8000-mcast                                              7.5.1v1.0.0-1
xr-8000-netflow                                            7.5.1v1.0.0-1
xr-8000-npu                                                7.5.1v1.0.0-1
xr-8000-oam                                                7.5.1v1.0.0-1
xr-8000-optics                                             7.5.1v1.0.0-1
xr-8000-os                                                 7.5.1v1.0.0-1
xr-8000-pbr                                                7.5.1v1.0.0-1
xr-8000-pfilter                                            7.5.1v1.0.0-1
xr-8000-pidb                                               7.5.1v1.0.0-1
xr-8000-pktio                                              7.5.1v1.0.0-1
xr-8000-port-mapper                                        7.5.1v1.0.0-1
xr-8000-port-mode                                          7.5.1v1.0.0-1
xr-8000-ppinfo                                             7.5.1v1.0.0-1
xr-8000-qos-ea                                             7.5.1v1.0.0-1
xr-8000-secy-driver                                        7.5.1v1.0.0-1
xr-8000-span                                               7.5.1v1.0.0-1
xr-8000-spio                                               7.5.1v1.0.0-1
xr-8000-spp-ea                                             7.5.1v1.0.0-1
xr-8000-timing                                             7.5.1v1.0.0-1
xr-8000-tunnel-ip                                          7.5.1v1.0.0-1
xr-8000-utapp-blaze                                        7.5.1v1.0.0-1
xr-8000-vether                                             7.5.1v1.0.0-1
xr-8000-ztp-ea                                             7.5.1v1.0.0-1
xr-aaa                                                     7.5.1v1.0.0-1
xr-acl                                                     7.5.1v1.0.0-1
xr-apphosting                                              7.5.1v1.0.0-1
xr-appmgr                                                  7.5.1v1.0.0-1
xr-bcdl                                                    7.5.1v1.0.0-1
xr-bfd                                                     7.5.1v1.0.0-1
```

xr-bgp	7.5.1v1.0.0-1
xr-bgputil	7.5.1v1.0.0-1
xr-bng-stubs	7.5.1v1.0.0-1
xr-bundles	7.5.1v1.0.0-1
xr-cal-pi	7.5.1v1.0.0-1
xr-cdp	7.5.1v1.0.0-1
xr-cds	7.5.1v1.0.0-1
xr-cfgmgr	7.5.1v1.0.0-1
xr-cfm	7.5.1v1.0.0-1
xr-cofo	7.5.1v1.0.0-1
xr-core	7.5.1v1.0.0-1
xr-core-calv	7.5.1v1.0.0-1
xr-cpa-common	7.5.1v1.0.0-1
xr-cpa-common-optics	7.5.1v1.0.0-1
xr-cpa-common-psu	7.5.1v1.0.0-1
xr-cpa-driver-devobj-misc	7.5.1v1.0.0-1
xr-cpa-driver-devobj-npu	7.5.1v1.0.0-1
xr-cpa-driver-devobj-phy	7.5.1v1.0.0-1
xr-cpa-driver-devobj-sensors	7.5.1v1.0.0-1
xr-cpa-driver-devobj-storage	7.5.1v1.0.0-1
xr-cpa-driver-devobj-test	7.5.1v1.0.0-1
xr-cpa-driver-devobj-timing	7.5.1v1.0.0-1
xr-cpa-driver-fpgalib-access	7.5.1v1.0.0-1
xr-cpa-driver-fpgalib-common	7.5.1v1.0.0-1
xr-cpa-driver-fpgalib-infra	7.5.1v1.0.0-1
xr-cpa-driver-fpgalib-kmod	7.5.1v1.0.0-1
xr-cpa-driver-fpgalib-misc	7.5.1v1.0.0-1
xr-cpa-driver-fpgalib-optics	7.5.1v1.0.0-1
xr-cpa-driver-optics	7.5.1v1.0.0-1
xr-cpa-ethsw	7.5.1v1.0.0-1
xr-cpa-idprom	7.5.1v1.0.0-1
xr-cpa-tamlib	7.5.1v1.0.0-1
xr-ctc	7.5.1v1.0.0-1
xr-debug	7.5.1v1.0.0-1
xr-dhcp	7.5.1v1.0.0-1
xr-diags	7.5.1v1.0.0-1
xr-diskboot	7.5.1v1.0.0-1
xr-drivers	7.5.1v1.0.0-1
xr-eem	7.5.1v1.0.0-1
xr-elmi-stubs	7.5.1v1.0.0-1
xr-ema	7.5.1v1.0.0-1
xr-enhancedmanageability	7.5.1v1.0.0-1
xr-featurecapability	7.5.1v1.0.0-1
xr-fib	7.5.1v1.0.0-1
xr-filesysinv	7.5.1v1.0.0-1
xr-foundation-8000	7.5.1v1.0.0-1
xr-fpd	7.5.1v1.0.0-1
xr-ha-infra	7.5.1v1.0.0-1
xr-healthcheck	7.5.1v1.0.0-1
xr-host-core	7.5.1v1.0.0-1
xr-httpclient	7.5.1v1.0.0-1
xr-icpe-eth	7.5.1v1.0.0-1
xr-icpe-opt	7.5.1v1.0.0-1
xr-identifier	7.5.1v1.0.0-1
xr-infra-sla	7.5.1v1.0.0-1
xr-install	7.5.1v1.0.0-1
xr-ip-apps	7.5.1v1.0.0-1
xr-ip-core	7.5.1v1.0.0-1
xr-ip-infra-vrf	7.5.1v1.0.0-1
xr-ip-mibs	7.5.1v1.0.0-1
xr-ip-static	7.5.1v1.0.0-1
xr-ipc	7.5.1v1.0.0-1
xr-ipsla	7.5.1v1.0.0-1
xr-is-is	7.5.1v1.0.0-1

xr-k9sec	7.5.1v1.0.0-1
xr-l2snooptransport	7.5.1v1.0.0-1
xr-l2vpn	7.5.1v1.0.0-1
xr-ldp	7.5.1v1.0.0-1
xr-licensing	7.5.1v1.0.0-1
xr-link-oam	7.5.1v1.0.0-1
xr-linuxnetworking	7.5.1v1.0.0-1
xr-linuxsecurity	7.5.1v1.0.0-1
xr-lldp	7.5.1v1.0.0-1
xr-lpts	7.5.1v1.0.0-1
xr-manageabilityxml	7.5.1v1.0.0-1
xr-mandatory	7.5.1v1.0.0-1
xr-mcast	7.5.1v1.0.0-1
xr-mda	7.5.1v1.0.0-1
xr-mpls	7.5.1v1.0.0-1
xr-mpls-oam	7.5.1v1.0.0-1
xr-mpls-oam-client	7.5.1v1.0.0-1
xr-mpls-static	7.5.1v1.0.0-1
xr-netflow	7.5.1v1.0.0-1
xr-networkboot	7.5.1v1.0.0-1
xr-nosi	7.5.1v1.0.0-1
xr-ntp	7.5.1v1.0.0-1
xr-ofa	7.5.1v1.0.0-1
xr-optics	7.5.1v1.0.0-1
xr-orrspf	7.5.1v1.0.0-1
xr-os-apps	7.5.1v1.0.0-1
xr-os-core	7.5.1v1.0.0-1
xr-os-hardware	7.5.1v1.0.0-1
xr-ospf	7.5.1v1.0.0-1
xr-perf-meas	7.5.1v1.0.0-1
xr-perfmgmt	7.5.1v1.0.0-1
xr-pfi	7.5.1v1.0.0-1
xr-pird-stubs	7.5.1v1.0.0-1
xr-pkt-trace	7.5.1v1.0.0-1
xr-platforms-ras	7.5.1v1.0.0-1
xr-pm-alarm	7.5.1v1.0.0-1
xr-procmgr	7.5.1v1.0.0-1
xr-python	7.5.1v1.0.0-1
xr-qos	7.5.1v1.0.0-1
xr-rid-mgr	7.5.1v1.0.0-1
xr-routing	7.5.1v1.0.0-1
xr-rpl	7.5.1v1.0.0-1
xr-rsvp-te	7.5.1v1.0.0-1
xr-security	7.5.1v1.0.0-1
xr-security-tams	7.5.1v1.0.0-1
xr-servicelayer	7.5.1v1.0.0-1
xr-snmp	7.5.1v1.0.0-1
xr-snmp-hw	7.5.1v1.0.0-1
xr-span	7.5.1v1.0.0-1
xr-spi-core	7.5.1v1.0.0-1
xr-spi-hw	7.5.1v1.0.0-1
xr-spp	7.5.1v1.0.0-1
xr-sr	7.5.1v1.0.0-1
xr-stats	7.5.1v1.0.0-1
xr-stp	7.5.1v1.0.0-1
xr-stubs	7.5.1v1.0.0-1
xr-sysdb	7.5.1v1.0.0-1
xr-syslog	7.5.1v1.0.0-1
xr-telemetry	7.5.1v1.0.0-1
xr-telnet	7.5.1v1.0.0-1
xr-timing	7.5.1v1.0.0-1
xr-tmpdir-cleanup	7.5.1v1.0.0-1
xr-track	7.5.1v1.0.0-1
xr-transports	7.5.1v1.0.0-1

```
xr-tty                                                          7.5.1v1.0.0-1
xr-tunnel-ip                                                    7.5.1v1.0.0-1
xr-utils                                                        7.5.1v1.0.0-1
xr-vether                                                       7.5.1v1.0.0-1
xr-vpnmib                                                       7.5.1v1.0.0-1
xr-xmlinfra                                                     7.5.1v1.0.0-1
xr-xrlibcurl                                                    7.5.1v1.0.0-1
xr-ztp                                                          7.5.1v1.0.0-1
```

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

Table 1: Cisco 8000 Series Router Specific Bugs

Bug ID	Headline
CSCvz53722	Commit replace failed with message " 'OSPFV3' detected the 'resource not available' condition".
CSCwa19042	Login banner text leaf (line) is missed on Cisco-IOS-XR-um-banner-cfg when the total characters in text exceeds 1015.

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 7.5.1 LNT
Copyright (c) 2013-2021 by Cisco Systems, Inc.

Build Information:
Built By     : username
Built On     : Sun Nov 28 17:24:00 UTC 2021
Build Host   : iox-ucs-030
Workspace    : /auto/srcarchive15/prod/7.5.1/8000/ws
Version      : 7.5.1
Label        : 7.5.1

cisco 8000 (Intel(R) Xeon(R) CPU D-1530 @ 2.40GHz)
cisco 8201-SYS (Intel(R) Xeon(R) CPU D-1530 @ 2.40GHz) processor with 32GB of memory
R1-Sherman uptime is 11 minutes
Cisco 8201 1RU System with 24x400GE QSFP56-DD & 12x100GE QSFP28
```

Determine Firmware Support

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

Cisco 8200 Series Router

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     0.17      0.17      0.0
                     BiosGolden             YES     0.17      0.13      0.0
                     EthSwitch              YES     1.04      1.04      0.0
                     EthSwitchGolden        YES     1.04      0.07      0.0
                     IoFpga                 YES     1.01      1.01      0.1
                     IoFpgaGolden           YES     1.01      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     0.78      0.78      0.1
                     x86FpgaGolden          YES     0.78      0.78      0.1
                     x86TamFw               YES     6.10      6.10      0.1
                     x86TamFwGolden         YES     6.10      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     1.01      1.01      0.1
                     IoFpgaGolden           YES     1.01      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     0.78      0.78      0.1
                     x86FpgaGolden          YES     0.78      0.78      0.1
                     x86TamFw               YES     6.10      6.10      0.1
                     x86TamFwGolden         YES     6.10      6.10      0.1
--------------------------------------------------------------------------------
88-LC0-36FH          Bios                   YES     0.17      0.17      0.0
                     BiosGolden             YES     0.17      0.13      0.0
                     EthSwitch              YES     1.04      1.04      0.0
                     EthSwitchGolden        YES     1.04      0.07      0.0
                     IoFpga                 YES     1.00      1.00      0.1
                     IoFpgaGolden           YES     1.00      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     1.06      1.06      0.1
                     x86FpgaGolden          YES     1.06      1.04      0.1
                     x86TamFw               YES     6.05      6.05      0.1
                     x86TamFwGolden         YES     6.05      6.05      0.1
--------------------------------------------------------------------------------
```

```
88-LC0-36FH-M        Bios                 YES     0.17      0.17      0.0
                     BiosGolden           YES     0.17      0.13      0.0
                     EthSwitch            YES     1.04      1.04      0.0
                     EthSwitchGolden      YES     1.04      0.07      0.0
                     IoFpga               YES     1.00      1.00      0.1
                     IoFpgaGolden         YES     1.00      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     1.06      1.06      0.1
                     x86FpgaGolden        YES     1.06      1.04      0.1
                     x86TamFw             YES     6.05      6.05      0.1
                     x86TamFwGolden       YES     6.05      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     1.00      1.00      0.1
                     IoFpgaGolden         YES     1.00      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     1.06      1.06      0.1
                     x86FpgaGolden        YES     1.06      1.04      0.1
                     x86TamFw             YES     6.05      6.05      0.1
                     x86TamFwGolden       YES     6.05      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     1.00      1.00      0.1
                     IoFpgaGolden         YES     1.00      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     1.06      1.06      0.1
                     x86FpgaGolden        YES     1.06      1.04      0.1
                     x86TamFw             YES     6.05      6.05      0.1
                     x86TamFwGolden       YES     6.05      6.05      0.1
--------------------------------------------------------------------------------
8800-LC-36FH         Bios                 YES     1.22      1.22      0.0
                     BiosGolden           YES     1.22      1.15      0.0
                     EthSwitch            YES     1.04      1.04      0.0
                     EthSwitchGolden      YES     1.04      0.07      0.0
                     IoFpga               YES     1.12      1.12      0.0
                     IoFpgaGolden         YES     1.12      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     1.13      1.13      0.0
                     x86FpgaGolden        YES     1.13      0.33      0.0
                     x86TamFw             YES     5.06      5.06      0.0
                     x86TamFwGolden       YES     5.06      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	1.12	1.12	0.0
	IoFpgaGolden	YES	1.12	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	1.13	1.13	0.0
	x86FpgaGolden	YES	1.13	0.33	0.0
	x86TamFw	YES	5.06	5.06	0.0
	x86TamFwGolden	YES	5.06	5.05	0.0
8800-LC-48H	Bios	YES	1.22	1.22	0.0
	BiosGolden	YES	1.22	1.15	0.0
	EthSwitch	YES	1.04	1.04	0.0
	EthSwitchGolden	YES	1.04	0.07	0.0
	IoFpga	YES	1.12	1.12	0.0
	IoFpgaGolden	YES	1.12	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	1.13	1.13	0.0
	x86FpgaGolden	YES	1.13	0.33	0.0
	x86TamFw	YES	5.06	5.06	0.0
	x86TamFwGolden	YES	5.06	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	1.12	1.12	0.0
	IoFpgaGolden	YES	1.12	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	1.13	1.13	0.0
	x86FpgaGolden	YES	1.13	0.33	0.0
	x86TamFw	YES	5.06	5.06	0.0
	x86TamFwGolden	YES	5.06	5.05	0.0
8800-RP	Bios	YES	1.22	1.22	0.0
	BiosGolden	YES	1.22	1.15	0.0
	BmcFitGolden	YES	5.00	0.240	0.0
	BmcFitPrimary	YES	5.00	5.00	0.0
	BmcFpga	YES	1.03	1.03	0.0
	BmcFpgaGolden	YES	1.03	0.19	0.0
	BmcTamFw	YES	5.08	5.08	0.0
	BmcTamFwGolden	YES	5.08	5.05	0.0
	BmcUbootGolden	YES	1.02	0.15	0.0
	BmcUbootPrimary	YES	1.02	1.02	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	1.23	1.23	0.0
	x86FpgaGolden	YES	1.23	0.24	0.0
	x86TamFw	YES	5.06	5.06	0.0
	x86TamFwGolden	YES	5.06	5.05	0.0

8800-RP-O	Bios	YES	1.208	1.208	0.0
	BiosGolden	YES	1.208	1.207	0.0
	BmcFitGolden	YES	5.00	0.240	0.0
	BmcFitPrimary	YES	5.00	5.00	0.0
	BmcFpga	YES	1.03	1.03	0.0
	BmcFpgaGolden	YES	1.03	0.19	0.0
	BmcTamFw	YES	5.08	5.08	0.0
	BmcTamFwGolden	YES	5.08	5.05	0.0
	BmcUbootGolden	YES	1.02	0.15	0.0
	BmcUbootPrimary	YES	1.02	1.02	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	1.23	1.23	0.0
	x86FpgaGolden	YES	1.23	0.24	0.0
	x86TamFw	YES	5.06	5.06	0.0
	x86TamFwGolden	YES	5.06	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

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