# Release Notes for Cisco NCS 560 Series Routers, Cisco IOS XR Release 7.7.1

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

| Feature | Description |
|---|---|
| **Hardware** | |
| Optics | **Note** Optics support varies across devices such as routers, line cards, and RPs. To know if an optics is compatible with a specific Cisco device, refer to the Transceiver Module Group (TMG) Compatibility Matrix.<br>This release introduces the following optics:<br>• Cisco 100/1000BASE-LX SFP for long-reach single-mode fibers<br>  • GLC-GE-DR-LX SFP<br>• Cisco 1000BASE-ZX SFP Transceiver Module for SMF<br>  • SFP-GE-Z<br>• Cisco 100GBASE CFP Module<br>  • QSFP-100G-LR4-I |
| **Routing** | |
| Multihop BFD over nondefault VRF | You can set a multihop BFD session using IPv4 for a non-default-VRF between a source and destination endpoints that have IP connectivity. This feature provides subsecond forwarding failure detection for a destination more than one hop, and up to 255 hops away.<br>IPv4 Multihop BFD is a BFD session between two nodes, such as a PE and CE node, or between routers that are several TTL hops away. You can extend the BFD session to nondefault VRFs.<br>This feature enables you to extend the BFD session to nondefault VRFs.<br>Thus, the advantage of BFD, low-overhead, and short-duration detection of path failures between routers, is extended to a multihop scenario. |

| Feature | Description |
|---|---|
| Setting SPF interval in IS-IS to postpone the IS-IS SPF computations | You can now define a standard algorithm to postpone the IS-IS SPF computations by setting an SPF interval. This reduces the computational load and churn on IGP nodes when multiple temporally close network events trigger multiple SPF computations.<br>This algorithm also reduces the probability and the duration of transient forwarding loops during native IS-IS convergence when the protocol reacts to multiple temporally close events.<br>This feature complies with RFC 8405.<br>This feature introduces the **spf-interval ietf** command. |
| **Modular QoS** | |
| QoS IP DSCP Preservation for SR-TE | In terms of preserving IP DSCP markings, this release covers two scenarios for SR-TE traffic:<br>• **For two or less than two topmost or imposition labels:** when you set the MPLS experimental bits (EXP) values (also called Traffic Class values), the IP DSCP markings are now preserved by default in the ingress policies when the MPLS labels are pushed into the packet.<br>• **For more than three imposition labels:** you must enable this functionality to preserve IP DSCP markings.<br>With preservation, traffic with IP packets with DSCP marking for priority, flows as intended and there's no drop in traffic because of incorrect or missing labels.<br>In previous releases, irrespective of the number of MPLS labels, when the EXP values were copied into the packet header during imposition, even the IP DSCP markings were modified. This modification resulted in traffic drops at the next-hop routers in SR-TE tunnels.<br>This feature introduces the **hw-module profile mpls-ext-dscp-preserve v4uc-enable** command. |
| Ingress QoS scale improvement | This enhancement increases the number of supported ingress policers. The policer scale is now enhanced from 48000 policers per NPU to 56000 policers per NPU. Also, the policy map scale is enhanced from 6000 to 7000.<br>Now you can have more interfaces with ingress QoS policies applied. |
| **Multicast** | |

| Feature | Description |
|---|---|
| Qos DSCP Preservation | In terms of preserving IP DSCP markings, when you set the MPLS experimental bits (EXP) values (also called Traffic Class values), the IP DSCP markings are now preserved by default in the ingress policies when the MPLS labels are pushed into the packet.<br>Traffic with IP packets with DSCP marking for priority, flows as intended and there’s no drop in traffic because of incorrect or missing labels.<br>In previous releases, irrespective of the number of MPLS labels, when the EXP values were copied into the packet header during imposition, even the IP DSCP markings were modified. This modification resulted in traffic drops at the next-hop routers. |
| Extending Selective Multicast using IGMP Proxy | The IGMP Proxy function enables PE routers to act as a proxy for the CE routers connected to it.<br>IGMP Proxy function provides the following benefits:<br>• Reduces the flooding of IGMP messages in an EVPN network.<br>• Enables EVPN network to act as a distributed anycast multicast router.<br>• Helps in having selective multicast over EVPN network.<br>Earlier, connecting an external network directly to an EVPN fabric was not possible. With this IGMP Proxy support, it is possible to have seamless connectivity over the EVPN network for its hosts with respect to multicast operations. |
| **Interface and Hardware Component** | |
| Enhancement to Ethernet SLA Statistics Measurement | You can now configure the size of bins for the delay and jitter measurement in Ethernet SLA statistics with a **width** value ranging from 1 to 10000000 microseconds. This enhancement provides granularity to store more accurate results of SLA statistics in the aggregate bins.<br>In earlier releases, you could only configure the **width** value for the delay and jitter measurement in milliseconds.<br>This feature introduces **usec** keyword in the **aggregate** command. |
| **Network Synchronization** | |
| PTP Double Failure Clock Class | This feature enables you to configure a clock class that will override the existing class during a state of double-failure where PTP and SyncE are lost.<br>This feature introduces the **double-failure-clock-class** command. |
| **System Security** | |

| Feature | Description |
|---|---|
| Non-Default SSH Port | We have enhanced the system security to minimize the automated attacks that may target the default Secure Socket Shell (SSH) port on your router. You can now specify a non-default port number for the SSH server on your router. The SSH, Secure Copy Protocol (SCP), and Secure File Transfer Protocol (SFTP) client services can then access your router only through this non-default port. The new port option also enables the SSH, SCP, and SFTP clients on your router to connect to SSH servers on the network that use a wide range of non-default port numbers. In earlier releases, these SSH, SCP, and SFTP connections were established through the default SSH port, 22. The non-default SSH port is supported only on SSH version 2.<br>The feature modifies these commands to include the **port** option:<br>• **ssh**<br>• **sftp**<br>• **scp** |
| Password Policy to Restrict Consecutive Characters | We have enhanced the router security by enforcing a strong password policy for all users configured on the router. You can now specify a new password policy for the user that restricts the usage of a specific number of consecutive characters for the login passwords. These characters include English alphabets, the sequence of QWERTY keyboard layout, and numbers, such as, 'abcd', 'qwer', '1234', and so on. Apart from *passwords*, the feature is also applicable for *secrets*–the one-way encrypted secure login passwords that are not easy to decrypt to retrieve the original unencrypted password text.<br>The password policy is applicable only for the users configured on the local AAA server on the router; not those configured on the remote AAA server.<br>The feature introduces the **restrict-consecutive-characters** command. |
| **Segment Routing** | |

| Feature | Description |
|---|---|
| SRv6 Traffic Class QoS Enhancement | The modified **hw-module profile segment-routing srv6 mode** command option provides you with better flexibility to customize the optional SRv6 encapsulation parameters. The updated command will now support both L2 and L3 traffic types of SRv6 parameters.<br>Encapsulation is a sub-mode from Release 7.7.1.<br>The **l3-traffic** config supports the additional **policy-map** option that sets SRv6 traffic-class DSCP based on qos-group selected by input policy-map.<br>The following commands are updated:<br>• hw-module profile segment-routing srv6 mode: Mode is a mandatory parameter<br>The following commands are introduced:<br>• encapsulation l2-traffic<br>• encapsulation l3-traffic |
| **System Monitoring** | |
| Out of Resource handling of Input Logical Interface and Router Interface | You can now reconfigure the threshold level for NPU resources - Input Logical Interface (INLIF) and Router Interface (RIF) by changing the predefined threshold level at which Out of Resource (OOR) situation is triggered. Graceful handling of OOR helps you to minimize traffic loss.<br>You get notified via systemlogs, when the utilization of resources reaches their OOR limit. Also, you can view the utilization of resources by using the following commands:<br>• show controllers npu resources<br>• show grid pool |
| **System Management** | |
| Unified Model: Cisco-IOS-XR-um-fpd-cfg | We have introduced the Cisco-IOS-XR-um-fpd-cfg unified model to enable or disable the automatic reload and automatic upgrade of Field Programmable Devices.<br>You can access this unified model from the Github repository. |

# YANG Data Models Introduced and Enhanced

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

| Feature | Description |
|---|---|
| **Programmability** | |
| OpenConfig Model: *openconfig-inet-types* Version 0.4.1 | We have now revised the openconfig-inet-types open configuration from version 0.3.1 to 0.4.1. With this revision, this data model supports autogenerated regular expressions for faster validation of text strings for the following IPv4 pattern statement:<br>• ip-address<br>• ipv4-address-zoned<br>• ipv4-prefix<br>You can access the OC data model from the Github repository. |
| openconfig-platform-transceiver Revision 0.7.0 | The OpenConfig data model configures the mapping of optical channel with the configured physical channel, and physical port with the configured interface using the following XPaths:<br>• openconfig-platform/openconfig-platform-transceiver/ transceiver<br>• openconfig-platform/openconfig-platform-transceiver/ physical-channels/channel[index]/config/associated-optical-channel<br>• openconfig-platform/openconfig-platform-transceiver/ physical-channels/channel[index]/state/associated-optical-channel |
| openconfig-terminal-device Revision 1.7.2 | The OpenConfig data model configures terminal optics devices up to 400G bandwidth to manage the line side terminal systems in a Dense wavelength-division multiplexing (DWDM) transport network using the following XPaths:<br>• openconfig-terminal-device:terminal-device/logical-channels/channel<br>• openconfig-terminal-device:terminal-device/optical-channels/channel |

# Restrictions and Limitations on the Cisco NCS 560 Series Router

- The standby RP may get into '`NOT READY`' state intermittently due to some network churn, though the corresponding VM is up and running. But this is a transient state and shows that some data aren't in sync between active and standby due to the network churn. After both active and standby are in sync with respect to all the parameters, then the standby RP comes into '`READY`' state.
- Unlabeled BGP PIC EDGE for global prefixes is not supported.

# Cisco IOS XR Caveats Release 7.7.1

| Bug ID | Headline |
|---|---|
| CSCwc09026 | Provisioning in progress alarm on ots-och on shut and no shut of ots0/0/0/0 |

# Supported Packages and System Requirements

For more information on system upgrade and package installation process, see Perform System Upgrade and Install Feature Packages.

For a complete list of supported optics, hardware and ordering information, see the Cisco NCS 560 Series Routers Interface Modules Data Sheet and Cisco Network Convergence System 560-4 Router Data Sheet.

To install the Cisco NCS 560 Series Routers, see Cisco N560-RSP4 and Cisco N560-RSP4-E Route Processor Hardware Installation Guide and Cisco NCS 560-4 Router Hardware Installation Guide.

## Release 7.7.1 Packages

This following table lists the supported packages and their corresponding file names.

*Table 1: Release 7.7.1 Packages for Cisco NCS 560 Series Router*

| Composite Package | | |
|---|---|---|
| **Feature Set** | **Filename** | **Description** |
| Cisco IOS XR IP Unicast Routing Core Bundle | ncs560-mini-x-7.7.1.iso | Contains base image contents that includes:<br>• Host operating system<br>• System Admin boot image<br>• IOS XR boot image<br>• BGP packages<br>• OS<br>• Admin<br>• Base<br>• Forwarding<br>• Modular Services Card<br>• Routing<br>• SNMP Agent<br>• Alarm Correlation |

| **Composite Package** | | |
|---|---|---|
| **Feature Set** | **Filename** | **Description** |
| Cisco IOS XR Manageability Package | ncs560-mgbl-2.0.0.0-r771.x86_64.rpm | Telemetry, Extensible Markup Language (XML), Parser, and HTTP server packages, NETCONF, YANG Models, gRPC. |
| Cisco IOS XR OSPF package | ncs560-ospf-2.0.0.0-r771.x86_64.rpm | Supports OSPF |
| Cisco IOS XR Security Package | ncs560-k9sec-2.0.0.0-r771.x86_64.rpm | Support for Encryption, Decryption, Secure Shell (SSH), Secure Socket Layer (SSL), and Public-key infrastructure (PKI) |
| Multicast Package | ncs560-mcast-2.0.0.0-r771.x86_64.rpm | Supports Multicast<br>Supports Automatic Multicast Tunneling (AMT), IGMP Multicast Listener Discovery (MLD), Multicast Label Distribution Protocol (MLDP), Multicast Source Discovery Protocol (MSDP) and PIM. |
| Cisco IOS XR ISIS package | ncs560-isis-2.0.0.0-r771.x86_64.rpm | Supports Intermediate System to Intermediate System (IS-IS). |
| Cisco IOS XR USB Boot Package | ncs560-usb_boot-7.7.1.zip | Supports Cisco IOS XR USB Boot Package |
| Cisco IOS XR MPLS Package | ncs560-mpls-1.0.0.0-r771.x86_64.rpm<br>ncs560-mpls-te-rsvp-2.0.0.0-r771.x86_64.rpm | Supports MPLS and MPLS Traffic Engineering (MPLS-TE) RPM. Label Distribution Protocol (LDP), MPLS Forwarding, MPLS Operations, Administration, and Maintenance (OAM), Link Manager Protocol (LMP), Optical User Network Interface (OUNI) and Layer-3 VPN.<br>Cisco IOS XR MPLS-TE and RSVP Package<br>MPLS Traffic Engineering (MPLS-TE) and Resource Reservation Protocol (RSVP). |
| Cisco IOS XR LI Package | ncs560-li-1.0.0.0-r771.x86_64.rpm | Lawful Intercept |
| Cisco IOS XR EIGRP Package | ncs560-eigrp-1.0.0.0-r771.x86_64.rpm | (Optional) Includes EIGRP protocol support software |

## Determine Software Version

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

```
RP/0/RP0/CPU0:R3_PE3_RSP4#show version
Cisco IOS XR Software, Version 7.7.1
Copyright (c) 2013-2022 by Cisco Systems, Inc.

Build Information:
 Built By     : ingunawa
 Built On     : Mon Jul 25 01:18:30 PDT 2022
 Built Host   : iox-ucs-030
 Workspace    : /auto/srcarchive12/prod/7.7.1/ncs560/ws
 Version      : 7.7.1
 Location     : /opt/cisco/XR/packages/
 Label        : 7.7.1

cisco NCS-560 () processor
System uptime is 5 hours 28 minutes
```

## Determine Firmware Support

Log in to the router and enter the **show fpd package** command to know the release image.

```
RP/0/RP0/CPU0:R3_PE3_RSP4#show fpd package
=============================== ================================================
                                        Field Programmable Device Package
                                ================================================
                                               Req     SW      Min Req   Min Req
Card Type            FPD Description           Reload  Ver     SW Ver  Board Ver
=================== ========================== ====== ======= ======== =========
--------------------------------------------------------------------------------
A900-IMA8CS1Z-CC     IMFPGA                     YES     1.113     1.113     0.0
--------------------------------------------------------------------------------
A900-IMA8CS1Z-M      IMFPGA                     YES     1.113     1.113     0.0
--------------------------------------------------------------------------------
A900-IMA8Z           IMFPGA                     YES    17.05     17.05      0.0
--------------------------------------------------------------------------------
A900-IMA8Z-CC        IMFPGA                     YES    17.05     17.05      0.0
--------------------------------------------------------------------------------
A900-IMA8Z-L         IMFPGA                     YES     1.49      1.49      0.0
--------------------------------------------------------------------------------
A900-PWR1200-A       DCA-PriMCU(A)             NO       0.11      0.11      0.0
                     DCA-SecMCU(A)             NO       1.04      1.04      0.0
--------------------------------------------------------------------------------
A900-PWR1200-D       LIT-PriMCU(A)             NO       2.04      0.04      0.0
                     LIT-SecMCU(A)             NO       1.23      1.23      0.0
--------------------------------------------------------------------------------
A907-FAN-E           PSOC(A)                    NO      1.65      1.65      0.0
                     PSOC(A)                    NO      1.66      1.66      0.4
--------------------------------------------------------------------------------
N560-4-FAN-H         PSOC(A)                    NO    177.02    177.02      0.0
--------------------------------------------------------------------------------
N560-4-FAN-H-CC      PSOC(A)                    NO    177.02    177.02      0.0
--------------------------------------------------------------------------------
N560-4-FAN-H-R       PSOC(A)                    NO    177.02    177.02      0.0
--------------------------------------------------------------------------------
N560-4-PWR-FAN       PSOC(A)                    NO    177.08    177.08      0.0
--------------------------------------------------------------------------------
N560-4-PWR-FAN-CC    PSOC(A)                    NO    177.08    177.08      0.0
--------------------------------------------------------------------------------
N560-4-PWR-FAN-R     PSOC(A)                    NO    177.08    177.08      0.0
--------------------------------------------------------------------------------
```

```
N560-4-RSP4          ADM(A)                     NO      1.06      1.06      0.0
                     IOFPGA(A)                  YES     0.67      0.67      0.0
                     PRIMARY-BIOS(A)            YES     0.21      0.21      0.0
                     SATA(A)                    NO      2.10      2.10      0.0
                     SATA_MAR(A)                NO      1.30      1.30      0.0
--------------------------------------------------------------------------------
N560-4-RSP4-CC       ADM(A)                     NO      1.06      1.06      0.0
                     IOFPGA(A)                  YES     0.67      0.67      0.0
                     PRIMARY-BIOS(A)            YES     0.21      0.21      0.0
                     SATA(A)                    NO      2.10      2.10      0.0
                     SATA_MAR(A)                NO      1.30      1.30      0.0
--------------------------------------------------------------------------------
N560-4-RSP4E         ADM(A)                     NO      1.06      1.06      0.0
                     IOFPGA(A)                  YES     0.67      0.67      0.0
                     PRIMARY-BIOS(A)            YES     0.21      0.21      0.0
                     SATA(A)                    NO      2.10      2.10      0.0
                     SATA_MAR(A)                NO      1.30      1.30      0.0
--------------------------------------------------------------------------------
N560-4-RSP4E-CC      ADM(A)                     NO      1.06      1.06      0.0
                     IOFPGA(A)                  YES     0.67      0.67      0.0
                     PRIMARY-BIOS(A)            YES     0.21      0.21      0.0
                     SATA(A)                    NO      2.10      2.10      0.0
                     SATA_MAR(A)                NO      1.30      1.30      0.0
--------------------------------------------------------------------------------
N560-FAN-H           PSOC(A)                    NO      2.02      2.02      0.0
--------------------------------------------------------------------------------
N560-IMA-8Q/4L       IMFPGA                     YES     1.27      1.27      0.0
--------------------------------------------------------------------------------
N560-IMA1W           CFP2-D-DCO                 NO     38.27397  38.27397   0.0
                     CFP2-DE-DCO                NO     38.27397  38.27397   0.0
                     CFP2-DET-DCO               NO     38.27397  38.27397   0.0
                     CFP2-DETS-DCO              NO     38.27397  38.27397   0.0
                     CFP2-DS-DCO                NO     38.27397  38.27397   0.0
                     CFP2-DS100-DCO             NO     38.27397  38.27397   0.0
                     IMFPGA                     YES     1.28      1.28      0.0
--------------------------------------------------------------------------------
N560-IMA2C           IMFPGA                     YES     6.06      6.06      0.0
--------------------------------------------------------------------------------
N560-IMA2C-CC        IMFPGA                     YES     6.06      6.06      0.0
--------------------------------------------------------------------------------
N560-IMA2C-DD        IMFPGA                     YES     1.28      1.28      0.0
                     QDD_100_FW_P0              NO    161.10    161.10      0.0
                     QDD_100_FW_P1              NO    161.10    161.10      0.0
--------------------------------------------------------------------------------
N560-IMA2C-L         IMFPGA                     YES     1.28      1.28      0.0
--------------------------------------------------------------------------------
N560-PWR1200-D-E     QCS-PriMCU(A)              NO      1.82      1.82      0.0
                     QCS-SecMCU(A)              NO      1.84      1.84      0.0
--------------------------------------------------------------------------------
N560-RSP4            ADM(A)                     NO      1.06      1.06      0.0
                     IOFPGA(A)                  YES     0.78      0.78      0.0
                     PRIMARY-BIOS(A)            YES     0.21      0.21      0.0
                     SATA(A)                    NO      2.10      2.10      0.0
                     SATA_MAR(A)                NO      1.30      1.30      0.0
--------------------------------------------------------------------------------
N560-RSP4-E          ADM(A)                     NO      1.06      1.06      0.0
                     IOFPGA(A)                  YES     0.78      0.78      0.0
                     PRIMARY-BIOS(A)            YES     0.21      0.21      0.0
                     SATA(A)                    NO      2.10      2.10      0.0
                     SATA_MAR(A)                NO      1.30      1.30      0.0
--------------------------------------------------------------------------------
NCS4200-1T16G-PS     IMFPGA                     YES     1.113     1.113     0.0
--------------------------------------------------------------------------------
NCS4200-2H-PQ        IMFPGA                     YES     6.06      6.06      0.0
```

```
--------------------------------------------------------------------------------
NCS4200-8T-PS        IMFPGA                     YES    17.05     17.05      0.0
```

Log in to the router and enter the **show hw-module fpd** command to know the current version.

```
RP/0/RP0/CPU0:R3_PE3_RSP4#show hw-module fpd
Auto-upgrade:Enabled
                                                                         FPD Versions
                                                                        ==============
Location   Card type             HWver FPD device       ATR Status    Running   Programd
-----------------------------------------------------------------------------------------
0/1        A900-IMA8CS1Z-M       0.0   IMFPGA               CURRENT     1.113     1.113
0/4        A900-IMA8Z            0.0   IMFPGA               CURRENT    17.05     17.05
0/5        A900-IMA8Z            0.0   IMFPGA               CURRENT    17.05     17.05
0/7        N560-IMA1W            66.32 CFP2-DE-DCO          CURRENT    38.27397  38.27397
0/7        N560-IMA1W            0.0   IMFPGA               CURRENT     1.28      1.28
0/9        N560-IMA2C            0.0   IMFPGA               CURRENT     6.06      6.06
0/10       A900-IMA8Z            0.0   IMFPGA               CURRENT    17.05     17.05
0/11       N560-IMA-8Q/4L        0.0   IMFPGA               CURRENT     1.27      1.27
0/13       A900-IMA8Z            0.0   IMFPGA               CURRENT    17.05     17.05
0/15       A900-IMA8CS1Z-M       0.0   IMFPGA               CURRENT     1.113     1.113
0/RP0      N560-RSP4-E           0.0   ADM                  CURRENT     1.06      1.06
0/RP0      N560-RSP4-E           0.0   IOFPGA               CURRENT     0.78      0.78
0/RP0      N560-RSP4-E           0.0   PRIMARY-BIOS         CURRENT     0.21      0.21
0/RP0      N560-RSP4-E           0.0   SATA                 CURRENT     2.10      2.10
0/RP1      N560-RSP4-E           0.0   ADM                  CURRENT     1.06      1.06
0/RP1      N560-RSP4-E           0.0   IOFPGA               CURRENT     0.78      0.78
0/RP1      N560-RSP4-E           0.0   PRIMARY-BIOS         CURRENT     0.21      0.21
0/RP1      N560-RSP4-E           0.0   SATA                 CURRENT     2.10      2.10
0/FT0      N560-FAN-H            1.0   PSOC                 CURRENT     2.02      2.02
```

# Important Notes

## Supported Transceiver Modules

For more information on the supported transceiver modules, see Transceiver Module Group (TMG) Compatibility Matrix. In the **Begin your Search** search box, enter the keyword NCS560 and click **Enter**.

## Upgrading Cisco IOS XR Software

Cisco IOS XR Software is installed and activated from modular packages, allowing specific features or software patches to be installed, upgraded, or downgraded without affecting unrelated processes. Software packages can be upgraded or downgraded on all supported card types, or on a single card (node).

The upgrade document for Cisco NCS 560 router is available along with the software image in *NCS560_Upgrade_MOP_7.7.1.tar* file.

## Use user-class Option 'xr-config' Instead Of 'exr-config' To Provision ZTP

In Cisco IOS XR Release 7.3.1 and earlier, the system accepts the device sending **user-class = "exr-config"**; however starting Cisco IOS XR Release 7.3.2 and later, you must use only **user-class = "xr-config"**.

In Cisco IOS XR Release 7.3.2 and later, use:

```
host cisco-rp0 {
   hardware ethernet e4:c7:22:be:10:ba;
   fixed-address 172.30.12.54;
   if exists user-class and option user-class = "iPXE" {
      filename = "http://172.30.0.22/boot.ipxe";
   } elsif exists user-class and option user-class = "xr-config" {
      filename = "http://172.30.0.22/scripts/cisco-rp0_ztp.sh";
   }
}
```

# Additional References

## Supported MIBs

The Cisco NCS 5500 MIB support list is also applicable to the Cisco NCS 560 Series Routers. For the list of supported MIBs, see the Cisco NCS5500 MIB Support List.

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