Release Notes for Cisco IOS XRv 9000 Router, IOS XR Release 6.3.2

Revised: June 10, 2021

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Note *This software release has reached end-of-life status. For more information, see the* End-of-Life and End-of-Sale Notices.

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Cisco IOS XR Release 6.3.2 contains all features released in Cisco IOS XR Release 6.3.1. Release 6.3.1 is a limited availability (LA) release. For more information on IOS XR Release 6.3.1 features, see Release Notes for Cisco IOS XRv 9000 Router, IOS XR Release 6.3.1

Cisco IOS XRv 9000 Router is a cloud-based router that is deployed on a virtual machine (VM) instance on x86 server hardware running 64 bit IOS XR software. Cisco IOS XRv 9000 Router provides traditional Provider Edge (PE) services in a virtualized form factor, as well as virtual Route Reflector (vRR) capabilities.

Cisco IOS XRv 9000 Router Overview

The Cisco IOS XRv 9000 Router is based on Cisco IOS XR software, so it inherits and shares the wide breadth of routing functionality available on other IOS XR platforms. The IOS XR features available on the Cisco IOS XRv 9000 Router are discussed in *Supported Cisco IOS XR Technologies* section.

When the Cisco IOS XRv 9000 Router virtual IOS XR software is deployed as a VM, the Cisco IOS XR software functions just as if it were deployed on a traditional Cisco IOS XR hardware platform. The Cisco IOS XRv 9000 Router combines Route Processor, Line Card, and virtualized forwarding capabilities into a single, centralized forwarding instance. The Cisco IOS XRv 9000 Router has a fully featured, high speed virtual x86 data plane.

Cisco IOS XRv 9000 Router supports the same look and feel as Cisco ASR 9000 Series Aggregation Services Routers and North-bound APIs. Cisco IOS XRv 9000 Router does not support hardware specific configurations. The configuration commands for control plane and data plane features follow the same syntax as the Cisco ASR 9000 Series Aggregation Services Routers. See Cisco ASR 9000 Series Aggregation Services Routers command references for more information on configuration commands.

Cisco IOS XRv 9000 Router Licensing Model

The Cisco IOS XRv 9000 Router supports activation using Cisco Smart Licensing. By default the Cisco IOS XRv 9000 Router (without license) is rate limited to 200 Kbps.

For more information on licensing model supported on Cisco IOS XRv 9000 Router, see the *Cisco IOS XRv 9000 Router Smart Licensing* chapter in the Cisco IOS XRv 9000 Router Installation and Configuration Guide.

See Cisco Smart Software Licensing Overview for more information on Cisco Smart Licensing.

License Ordering Information

The Cisco IOS XRv 9000 Router offers a flexible licensing scheme, with multiple tiers to choose from, such as Scale, and Throughput. This table lists details of Cisco IOS XRv 9000 Router's pool of software licenses or entitlements, arranged according to licensing PIDs.

Note The XRv9000 router only consumes and reports VPE licenses. VRR licenses are not consumed or reported.

Table 1: Cisco IOS XRv 9000 Router Licensing PIDs

PIDs	Description
R-IOSXRV-SUBSCRIP	Bundle PID for IOS XRV SBP
R-VROUTER-SUB	Subscription license for Cisco IOS XRv 9000 Software
R-IOSXRV-SUB-IMG	ATO for XRv SUB
R-XRV9000-600	Subscription license for Cisco IOS XRV 9000 software, Non VRR profile
R-XRV9000-600-VG	Subscription license for Cisco IOS XRV 9000 software, VRR profile
R-XRV9000-600-RR	Subscription for 1G throughput license for IP MPLS base package
R-XRV9000-600-RRVG	Cisco IOS XRV 9000 software, Non VRR profile (with VGA support)
S-XRV-SUB-RR-1M	Subscription license for virtual Route Reflector (vRR) functionality with 1 million routes
S-XRV-SUB-RTU	IOS XRv 9000 license for one virtual router instantiation
S-XRV-SUB-RR-4M	Subscription license for virtual Route Reflector (vRR) scale upgrade from 4 million routes
S-XRV-SUB-RR-10M	Subscription license for virtual Route Reflector (vRR) scale upgrade from 4 to 10 million routes

PIDs	Description
S-XRV-SUB-RR-20M	Subscription license for virtual Route Reflector (vRR) scale upgrade from 10 to 20 million routes
S-XRV-SUB-XTC	Billing PID for SBP XRV9K -SR-PCE (XTC) RTU
S-XRV-B-SUB-1G	IOS XRv 9000 1G throughput license for IP MPLS base package
S-XRV-P-SUB-1G	IOS XRv 9000 1G throughput license for IP MPLS premium package
S-XRV-L3-B-SUB-1G	IOS XRv 9000 1G throughput license for IP MPLS L3VPN base package
S-XRV-L3-P-SUB-1G	IOS XRv 9000 1G throughput license for IP MPLS L3VPN premium package
S-XRV-L2-B-SUB-1G	Billing PID for subscribtion XRV9K - L2 Base 1G
S-XRV-L2-P-SUB-1G	Billing PID for subscribtion XRV9K - L2 Premium 1G
S-XRV-LI-SUB-RTU	IOS XRv 9000 Advance software license for Lawful Intercept
S-XRV-HQOS-SUB-1G	IOS XRv 9000 1G Advance software license for HQoS
S-XR-BNG-PRO	Billing PID for subscription XRv9K - BNG PRO
S-XR-BNG-8K	Billing PID for subscription XRv9K - BNG 8000 session
S-XR-BNG-ADV-8K	Billing PID for subscription XRv9K - BNG ADV 8000 session
S-XR-SESSION-8K	Billing PID for subscription XRv9K - BNG 8000 session
S-XR-BNG-256K	Billing PID for subscription XRV9K -BNG 256K session
S-XR-BNG-ADV-256K	Billing PID for subscription XRV9K -BNG ADV 256K session
S-XR-BNG-512K	Billing PID for subscription XRV9K -BNG 512K session
S-XR-BNG-ADV-512K	Billing PID for subscription XRV9K -BNG ADV 512K session
S-XR-BNG-1M	Billing PID for subscription XRV9K -BNG 1M session
S-XR-BNG-ADV-1M	Billing PID for subscription XRV9K - BNG ADV 1M session
SVS-XRV-SUPT-BA	XRV Support - Basic

Table 2: Cisco IOS XRv 9000 Router UCS M5 Based vRR Appliance PIDS

License PID	Description
R-XRV9000-66-RR	Cisco IOS XRV 9000 software, VRR profile
S-XRV-ROUTE-T4	Preloaded Software Image: IOS XRv 9000 vRR scale upgrade license from 20M up to 70M

License PID	Description
XRV9000-APLN-ROUT	IOS XRv 9000 M5 Appliance with preloaded IOS XR functionality with 20 million route scale

Supported MIBs

The following MIBs are supported in this release:

- ENTITY-MIB
- ENTITY-STATE-MIB
- CISCO-ENTITY-ASSET-MIB
- BGP4-MIB
- CISCO-AAA-SERVER-MIB
- CISCO-ACL-MIB
- CISCO-BGP4-MIB
- CISCO-BULK-FILE-MIB
- CISCO-CDP-MIB
- CISCO-CLASS-BASED-QOS-MIB
- CISCO-CONFIG-COPY-MIB
- CISCO-CONFIG-MAN-MIB
- CISCO-CONTEXT-MAPPING-MIB
- CISCO-FTP-CLIENT-MIB
- CISCO-IF-EXTENSION-MIB
- CISCO-PING-MIB
- CISCO-PROCESS-MIB
- CISCO-SYSLOG-MIB
- CISCO-SYSTEM-MIB
- CISCO-TCP-MIB
- CISCO-VLAN-IFTABLE-RELATIONSHIP-MIB
- ETHERLIKE-MIB
- EVENT-MIB
- EXPRESSION-MIB
- IETF-TCP-MIB

- IETF-UDP-MIB
- IF-MIB
- IP-FORWARD-MIB
- IP-MIB
- IPV6-MIB
- IPV6-FORWARD-MIB
- ISIS-MIB
- MPLS-L3VPN-STD-MIB
- MPLS-LDP-GENERIC-STD-MIB
- MPLS-LDP-STD-MIB
- MPLS-LSR-STD-MI
- NOTIFICATION-LOG-MIB
- OSPF-MIB
- OSPF-TRAP-MIB
- OSPFV3-MIB
- RFC1213-MIB
- RFC2011-MIB
- RFC2465-MIB
- SNMP-COMMUNITY-MIB
- SNMP-FRAMEWORK-MIB
- SNMP-NOTIFICATION-MIB
- SNMP-TARGET-MIB
- SNMP-USB-MIB
- SNMPv2-MIB
- SNMP-VACM-MIB
- TCP-MIB
- UDP-MIB
- CISCO-IETF-BFD-MIB
- CISCO-IP-TAP-MIB
- CISCO-TAP2-MIB
- RADIUS-ACC-CLIENT-MIB
- RADIUS-AUTH-CLIENT-MIB

- SNMP-TARGET-MIB

Software Features Introduced in Cisco IOS XR Software Release 6.3.2

There are no new software features released in this release.

Behavior Change Introduced in Cisco IOS XR Release 6.3.2

From this release onwards **address-family** is a mandatory keyword for the **show tech-support multicast** command. The command syntax is:

```
show tech multicast address-family <ipv4/ipv6>.
```

For more information, refer the *show tech-support multicast* command in the *Tech-Support Commands* chapter of the *Advance System Command Reference for Cisco ASR 9000 Series Routers.*

System Requirements

Hypervisors

A hypervisor enables multiple operating systems to share a single hardware host machine. While each operating system appears to have the dedicated use of the host's processor, memory, and other resources; the hypervisor controls and allocates only needed resources to each operating system and ensures that the operating systems (VMs) do not disrupt each other.

Installation of the Cisco IOS XRv 9000 Router is supported on selected Type 1 (native, bare metal) hypervisors. Installation is not supported on Type 2 (hosted) hypervisors, such as VMware Fusion, VMware Player, or Virtual Box. The following table lists release specific supported hypervisor versions.

Table 3: Support Matrix for Hypervisor Versions

Cisco IOS XR Version	VMWare ESXi	Kernel Based Virtual Machine (KVM)
Release 6.3.2	version 6.5, 6.7 and later	Linux KVM based on • Red Hat Enterprise Linux 7, 7.1, 7.2, 7.3, 7.4, 7.5, 7.6, 7.7, and 8.0 • Ubuntu 14.04.03 LTS • Ubuntu 16.04 LTS • CentOS 7, 7.1, 7.2, 7.3, 7.4, 7.5, 7.6, and 7.7 • Openstack 10

Virtual Machines

Cisco IOS XRv 9000 Router virtual machines must meet the following requirements:

Table 4: VM Requirement for VMware Environment

Parameters	Supported
VMware ESXi	Version 6.5, 6.7 and later
Virtual CPU cores	1 socket with a minimum of 2 cores **Note** For production environment minimum of 4 cores is recommended.
Virtual Machine memory size	12GB minimum, 19GB recommended for 10G interfaces
Virtual Machine hard disk size	45GB minimum for vPE and vRR image variants
Virtual Interfaces	E1000 VMXNET3 for traffic interfaces only
Physical NICs	For pass-through: • Intel i350 Quad Port 1Gb Adapter • Intel Dual Port 10 GbE Ethernet X520 Server Adapter • Intel 4 port 10GE Fortville **Note** PCI passthrough only. SRIOV is not support. **Note** • Intel Forville has a lower forwarding capability (for high throughput applications in vPE profiles) when compared with Intel 82599 10GE Controller. Cisco UCS Virtual Interface Card (VIC) 1225 **Note** If you are configuring LLDP on Cisco IOS XRv 9000, then you must first disable LLDP in the Cisco UCS VIC 1225 via Cisco Integrated Management Controller (CIMC).
Number of interfaces	Minimum of 4 NICs where: • 1 for management • 2 are reserved • 1 for traffic Maximum of 11 NICs where: • 1 for management • 2 are reserved • 8 for traffic

Parameters	Supported
Default video, SCSI controller set	Required SCSI controller not required for IDE disk.
Virtual CD/DVD drive installed	Virtual CD/DVD is required when installing the Cisco IOS XRv 9000 Router on the VM using ISO template.
IDE hard disk	Single IDE hard disk **Note** Multiple hard disk drives on a VM are not supported.

Note The maximum traffic performance with pass-through NIC interfaces in ESXi is lower than the performance that can be achieved in KVM environments. This is because it is not possible to configure 1G huge-pages in the ESXi hypervisor (as of VMware ESXi 6.0).

Table 5: VM Requirement for KVM Environment

Parameters	Supported
KVM versions	• Linux KVM based on Red Hat Enterprise Linux 7, 7.1, 7.2, 7.3 and 7.4 • Ubuntu 14.04.03 LTS Server 64 Bits • Ubuntu 16.04 LTS • Openstack Release 5 (Icehouse), Openstack Juno/Icehouse (RHEL 7), Kilo (RHEL 7.1), Liberty (RHEL 7.2), Openstack 10 (Newton) • CentOS 7, 7.1, 7.2, 7.3, 7.4
Virtual CPU cores	1 socket with minimum of 2 cores.
Virtual Machine memory size	12GB Minimum, 19GB recommended for 10G interfaces
Virtual Machine hard disk size	45GB minimum.
Virtual Interfaces	E1000, VirtIO and VMXNET3 for traffic interfaces only

Parameters	Supported
Physical NICs	For pass-through: • Intel i350 Quad Port 1Gb Adapter • Intel Dual Port 10 GbE Ethernet X520 Server Adapter • Intel 4 port 10GE Fortville **Note** PCI passthrough only. SRIOV is not support. **Note** • Intel Forville has a lower forwarding capability (for high throughput applications in vPE profiles) when compared with Intel 82599 10GE Controller. Cisco UCS Virtual Interface Card (VIC) 1225 **Note** If you are configuring LLDP on Cisco IOS XRv 9000, then you must first disable LLDP in the Cisco UCS VIC 1225 via Cisco Integrated Management Controller (CIMC).
Number of interfaces	Minimum of 4 NICs where: • 1 is for management • 2 are reserved • 1 is for traffic Maximum of 11 NICs where: • 1 is for management • 2 are reserved • 8 is for traffic
Virtual CD/DVD drive installed	Virtual CD/DVD drive is required for ISO installation

Note In the Cisco IOS XRv 9000 Router, some CPU cores are dedicated to the control plane while others are dedicated to the data plane. Each data plane's core runs a single thread that performs packet forwarding. To achieve maximum performance, these threads constantly look for data packets to process. As a result, the OS records that these cores run at 100% utilization. This is expected behavior and not an indication that packet forwarding has reached its threshold limit.

10G Optic Support

Product	Product Code	Supplier Part Number
Cisco 10GBASE SFP+, Short Range	Cisco SFP-10G-SR	Cisco SFP-10G-SR **Note** This optic is recommended for the better performance and interoperability with IOS XRv 9000.
Cisco 10GBASE SFP+, Long Range	Cisco SFP-10G-LR	Cisco SFP-10G-LR **Note** This optic is recommended for the better performance and interoperability with IOS XRv 9000.
Intel Ethernet SFP SR Optics Dual Rate 10GBASE-SR/1000BASE-SX	E10GSFPSR	FTLX8571D3BCVIT1 or AFBR-709DMZ-IN2

Server

The server must support:

- Intel Westmere or later CPU versions with clock frequency of 2.0GHz for instances with Gigabit or paravirtualized interfaces
- Intel Ivy Bridge or later CPU versions for instances with 10Gb or higher interfaces
- Intel CPU must support the **sse4_2** capability flag. This can be checked in KVM by looking for the **sse4_2** flag in the flags section of */proc/cpuinfo*. For example:

```
cat /proc/cpuinfo | grep sse4_2
flags           : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat pse36 clflush mmx fxsr
 sse sse2 ss syscall nx pdpe1gb rdtscp lm constant_tsc arch_perfmon nopl xtopology tsc_reliable nonstop_tsc
 aperfmperf pni pclmulqdq vmx ssse3 fma cx16 pcid sse4_1 sse4_2 x2apic movbe popcnt aes xsave avx f16c
rdrand hypervisor lahf_lm ida arat epb pln pts dtherm tpr_shadow vnmi ept vpid fsgsbase smep
```

Note To use passthrough interfaces in KVM, you must set the option **intel_iommu=on** command in the grub configuration.

Supported Cisco IOS XR Technologies

Cisco IOS XRv 9000 Router supports selected Cisco IOS XR technologies.

This table lists the major Cisco IOS XR technologies Cisco IOS XRv 9000 supports. Not all features in a given technology may be supported. To verify support for specific features, use Cisco Feature Navigator.

Table 6: Cisco IOS XR Technologies Supported on the Cisco IOS XRv 9000 Router

Feature	See the Following Documentation	Introduced in Release
• 6PE, 6VPE	• Cisco ASR 9000 Series Aggregation Services Router MPLS Layer 3 VPN Configuration Guide • Cisco ASR 9000 Series Aggregation Services Router VPN and Ethernet Services Command Reference	Release 5.4.0
• Application Hosting	• Cisco IOS XR Application Hosting Configuration Guide	Release 6.1.2
• BFD over Logical Bundle	• Routing Configuration Guide for Cisco ASR 9000 Series Routers • Routing Command Reference for Cisco ASR 9000 Series Routers	Release 6.1.2
• Bi-directional Policing and Marking	• Cisco ASR 9000 Series Aggregation Services Router Modular Quality of Service Configuration Guide • Cisco ASR 9000 Series Aggregation Services Router Modular Quality of Service Command Reference	Release 5.4.0
• Bi-directional Forwarding Detection	• Cisco ASR 9000 Series Aggregation Services Router Routing Configuration Guide • Cisco ASR 9000 Series Aggregation Services Router Routing Command Reference	Release 5.4.0
• BGP Persistence	• Cisco ASR 9000 Series Aggregation Services Router Routing Configuration Guide • Cisco ASR 9000 Series Aggregation Services Router Routing Command Reference	Release 6.2.1
• BGP Optimal Route Reflector	• Cisco IOS XRv 9000 Router Installation and Configuration Guide	Release 6.0.1
• Broadband Network Gateway (BNG) IPoE	• Broadband Network Gateway Configuration Guide for Cisco ASR 9000 Series Routers • IPoE Commands	Release 6.3.1
Customize Installation using Golden ISO	Customize Installation using Golden ISO	Release 7.3.1
Cisco IOS XRv 9000 Router Deployment on AWS	• Cisco IOS XRv 9000 Router Installation and Configuration Guide	Release 6.3.1

Feature	See the Following Documentation	Introduced in Release
Create User Profiles and Assign Privileges	System Setup and Software Installation Guide for Cisco ASR 9000 Series Routers	Release 7.1.1
• Early Fast Discard	• Early Fast discard	Release 5.4.0
• Generic Routing Encapsulation (GRE) over IPv4	• MPLS Layer 3 VPN Configuration Guide for Cisco ASR 9000 Series Routers • Generic Routing Encapsulation Commands	Release 6.3.1
• HSRP • VRRP	• IP Addresses and Services Configuration Guide for Cisco ASR 9000 Series Routers • Cisco ASR 9000 Series Aggregation Services Router IP Addresses and Services Command Reference	Release 6.2.1
• Hierarchical Policers (including conform aware)	• Cisco ASR 9000 Series Aggregation Services Router Modular Quality of Service Configuration Guide • Cisco ASR 9000 Series Aggregation Services Router Modular Quality of Service Command Reference	Release 6.0.1
• IPv4 Routing • IPv6 Routing • OSPF • ISIS	• Cisco ASR 9000 Series Aggregation Services Router Routing Configuration Guide • Cisco ASR 9000 Series Aggregation Services Router Routing Command Reference	Release 5.4.0
• IPSLA • Platform Automated Monitoring	• Implementing IP Service Level Agreements • Cisco ASR 9000 Series Aggregation Services Router System Monitoring Command Reference	Release 6.0.0
• IPv4 and IPv6 ACL	• Cisco ASR 9000 Series Aggregation Services Router IP Addresses and Services Configuration Guide • Access List Commands	Release 5.4.0
• IPv4 L3VPN • 6PE, 6VPE	• Cisco ASR 9000 Series Aggregation Services Router MPLS Layer 3 VPN Configuration Guide • Cisco ASR 9000 Series Aggregation Services Router VPN and Ethernet Services Command Reference	Release 5.4.0

Feature	See the Following Documentation	Introduced in Release
• Link Aggregation Group (LAG)	• Cisco ASR 9000 Series Aggregation Services Router Interface and Hardware Component Configuration Guide	Release 6.1.2
• Lawful Intercept	• Implementing Lawful Intercept • Cisco ASR 9000 Series Aggregation Services Router System Security Command Reference	Release 5.4.0
• LDP	• Cisco ASR 9000 Series Aggregation Services Router MPLS Configuration Guide • Cisco ASR 9000 Series Aggregation Services Router MPLS Command Reference	Release 5.4.0
• LPTS	• Cisco ASR 9000 Series Aggregation Services Router IP Addresses and Services Configuration Guide • LPTS Commands	Release 5.4.0
• MPLS	• Cisco ASR 9000 Series Aggregation Services Router MPLS Configuration Guide • Cisco ASR 9000 Series Aggregation Services Router MPLS Command Reference	Release 5.4.0
• MP-BGP, EBGP PE-CE	• Cisco ASR 9000 Series Aggregation Services Router Routing Configuration Guide • Cisco ASR 9000 Series Aggregation Services Router Routing Command Reference	Release 5.4.0
• Network Service Header (NSH)	• Implementing NSH Based Service Chaining • Cisco ASR 9000 Series Aggregation Services Router IP Addresses and Services Command Reference	Release 6.1.2
• Netconf Yang support	• System Management Configuration Guide for Cisco ASR 9000 Series Routers • Network Time Protocol (NTP) Commands	Release 5.4.0
• NSH Proxy Mode	Cisco IOS XRv 9000 Router Specific Features	Release 6.2.1

Feature	See the Following Documentation	Introduced in Release
• RT Constriant	• Cisco ASR 9000 Series Aggregation Services Router Routing Configuration Guide • Cisco ASR 9000 Series Aggregation Services Router Routing Command Reference	Release 6.2.1
• Smart Licensing	• Cisco ASR 9000 Series Aggregation Services Router System Management Configuration Guid • Cisco ASR 9000 Series Aggregation Services Router System Management Command Reference	Release 5.4.0
• SNMP support	• Cisco ASR 9000 Series Aggregation Services Router System Management Configuration Guide • Cisco ASR 9000 Series Aggregation Services Router System Management Command Reference	Release 5.4.0
• Strict Unicast IPv4 and IPv6 Reverse Path Forwarding (uRPF)	• Cisco ASR 9000 Series Aggregation Services Router IP Addresses and Services Configuration Guide • IP Addresses and Services Command Reference for Cisco ASR 9000 Series Routers	Release 5.4.0
• Telemetry	• Telemetry Configuration Guide for Cisco ASR 9000 Series Routers	Release 6.0.0
• The Two-Way Active Measurement Protocol (TWAMP)	• System Monitoring Configuration Guide for Cisco ASR 9000 Series Routers • Cisco ASR 9000 Series Aggregation Services Router System Monitoring Command Reference	Release 6.0.1
• Virtualised Local Mobility Anchor (vLMA)	• Configuring Proxy Mobile IPv6 Local Mobility Anchor • Proxy Mobile IPv6 Local Mobility Anchor Commands	Release 6.3.1
• VRF Support on Docker and LXC Containers	• Cisco IOS XR Application Hosting Configuration Guide	Release 6.3.1

Caveats

Caveats describe unexpected behavior in Cisco IOS XR Software release.

Cisco IOS XR Caveats

There are no caveats specific to Cisco IOS XR Software Release.

Bug ID	Headline
CSCvh18580	Convergence delay of upto 15sec with main/sub interface shutdown
CSCvh69102	FRR shutdown notification not processed on sub-interface

Upgrading Cisco IOS XR Software

Related Documentation

The most current Cisco IOS XRv 9000 Router software documentation is located at this URL:

http://www.cisco.com/c/en/us/support/routers/ios-xrv-9000-router/tsd-products-support-series-home.html

The document containing Cisco IOS XR System Error Messages (SEM) is located at this URL:

https://www.cisco.com/c/en/us/td/docs/ios_xr_sw/error/message/ios-xr-sem-guide.html

Production Software Maintenance Updates (SMUs)

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

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

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- To obtain general networking, training, and certification titles, visit Cisco Press.
- To find warranty information for a specific product or product family, access Cisco Warranty Finder.

Cisco Bug Search Tool

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