Release Notes for Cisco IOS XRv

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Cisco IOS XRv Router is a Virtual Machine (VM) based platform running 32-bit Cisco IOS XR software with the QNX microkernel. This VM contains a single Route Processor (RP) with control plane functionality and Line Card (LC) network interfaces with their associated functionality.

Cisco IOS XRv Overview

Cisco IOS XRv router runs the Cisco IOS XR software and operating system on generic virtualized hardware based on Cisco IOS XR Software. It is provided as a virtual machine (VM) supporting full virtualization, and can be deployed on any x86 hardware (server or laptop) running standard hypervisors. It provides the functionality of a route processor and a line card in a combined route processor line card (RPLC) with both the route processor control plane functionality and the network interfaces and associated LC functionality running on the same virtual card.

Cisco IOS XRv router is a representation of the Cisco IOS XR Software and operating system, and does not provide a virtual representation of any physical router. As a result, some physical system components, such as line cards, fabric cards, and multichassis, that are not appropriate for the VM setup, are not present in the Cisco IOS XRv router system.

Cisco IOS XRv supports the same control plane features and configurations that are supported on the Cisco ASR 9000 Series Aggregation Services Routers and Cisco CRS Routers. Cisco IOS XRv router does not support data plane and hardware specific configurations. The configuration commands for control plane features follow the same syntax as the Cisco ASR 9000 Series Aggregation Services Routers and Cisco CRS Routers. See Cisco ASR 9000 Series Aggregation Services Routers and Cisco CRS Router command references for more information on configuration commands, at this link: http://www.cisco.com/c/en/us/support/ios-nx-os-software/ios-xr-software/products-command-reference-list.html.

Cisco IOS XRv routers do not support Layer 2 features.

The Cisco IOS XRv router provides these benefits of virtualization in the cloud environment.

- Hardware independence—The Cisco IOS XRv router runs on a virtual machine, therefore, can be supported on any x86 hardware supported by the virtualization platform.

- Sharing of resources—The resources used by the Cisco IOS XRv router are managed by the hypervisor, and can be shared among VMs. The amount of hardware resources that the VM server allocates to a specific VM, can be reallocated to another VM on the server.

- Flexibility in deployment—You can easily move a VM from one server to another. Thus, you can move the Cisco IOS XRv Router from a server in one physical location to a server in another physical location without moving any hardware resources.

The Cisco IOS XR Software running on the Cisco IOS XRv router provides the following features:

- IP features—Supports a wide range of IPv4 and IPv6 services and routing protocols such as IPv4 unicast services, IPv6 unicast services, IPv4 Multicast services, IPv4 and IPv6 equal-cost multi-path (ECMP),

IPv4 and IPv6 load balancing, Cisco Discovery Protocol, IPv4 and IPv6 addressing, and Internet Control Message Protocol (ICMP).

- Layer 3 routing protocols—Supports routing protocols such as Border Gateway Protocol Version 4 (BGPv4), Open Shortest Path First Version 2 (OSPFv2) and Version 3 (OSPFv3), and Intermediate System-to-Intermediate System (IS-IS) protocol.

- Multiprotocol Label Switching (MPLS) Features—Supports MPLS features such as MPLS Label Distribution Protocol (LDP), Resource Reservation Protocol (RSVP), Diffserv Aware Traffic Engineering (TE), MPLS Traffic Engineering control plane (RFCs 2702 and 2430), MPLS forwarding and MPLS load balancing.

- Network Management—This supports features like Enhanced CLI, XML interface and Simple Network Management Protocol (SNMP) support.

- Software Maintenance Update (SMU)—Support for applying fixes for software defects between releases.

Cisco IOS XRv Packages

This table lists the software feature set matrix (packages, also called *software images*) and associated filenames available for the Cisco IOS XRv router.

Package	Description
Demo Locked Image and Demo Locked Image with Crypto Support	Demo Locked: A portable, downloadable VM that is hamstrung to limit its usefulness, but enables a number of internal and external use cases including Cisco IOS XR training and familiarization, demonstrations, sales tool, and early field trial (EFT) for control plane features. • Available free for users • AAA hardcoded users • Rate limit of 2 Mbps

Package	Description
Production Capable Image and Production Capable Image with Crypto Support	Production: Provides a platform for the Cisco IOS XR based virtualized route reflector (vRR). • No hardcoded AAA users • No rate limit • Base or Advanced Feature Set • Low, Medium or High Scalability • One-year or Three-years Term Licenses
	Simulation: Provides large-scale, control-plane network simulations. • No hardcoded AAA users • Rate limit of 50 Mbps
	Demo Unlocked: Provides a platform for Cisco IOS XR training and familiarization, demonstrations, sales tool, and early field trial (EFT) for control plane features. Transition the Demo Unlocked image to Simulation or Production mode with the purchase of appropriate license from Cisco.

What's New in this Release

This section contains the new features introduced in this release.

Release	What's new
5.3.2	This release supports the control plane features introduced in Cisco IOS XR, release 5.3.2
5.3.1	This release supports the control plane features introduced in Cisco IOS XR, release 5.3.1
5.3.0	This release supports the control plane features introduced in Cisco IOS XR, release 5.3.0

Release	What's new
5.2.2	New features include: • Support for control plane features introduced in Cisco IOS XR, release 5.2.2 • Support for Smart Call Home • Support for Cisco Smart Licensing • IOS XRv OVAs can be customized using the Common OVF Tool (COT), an open-source tool for editing Open Virtualization Format (.ovf, .ova) virtual appliances such as Cisco IOS XRv. For more information, see https://github.com/glennmatthews/cot
5.2.0	This release supports the control plane features introduced in Cisco IOS XR, release 5.2.0
5.1.2	New features include: • Support for control plane features introduced in Cisco IOS XR, release 5.1.2 • XRv operations supported with multiple CPUs. • In addition to ESXi, the production virtual Route Reflector (vRR) is supported on KVM-QEMU 1.0.
5.1.3	New features include: • Support for control plane features introduced in Cisco IOS XR, release 5.1.3 • Support for QEMU version 2.0 • Support for Jumbo frames (MTU 9000, max payload 8936) on GigE and Tap interfaces • Issues related to the application of Software Maintenance Updates (SMUs) and Package Installation Envelope (PIEs) are resolved

Caveats

Caveats describe unexpected behavior in Cisco IOS XR Software releases. Severity-1 caveats are the most serious caveats; severity-2 caveats are less serious.

Release 5.3.2

Bug ID	Severity	Headline
CSCus00955	3	CVAC interface configuration rejected by XRv.

Release 5.3.1

Bug ID	Severity	Headline
CSCus00955	3	CVAC interface configuration rejected by XRv.
CSCus21747	3	CDP Discovery broken

Release 5.3.0

Bug ID	Severity	Headline
CSCus00955	3	CVAC interface configuration rejected by XRv.
CSCus21747	3	CDP Discovery broken

Release 5.2.0

Bug ID	Severity	Headline
CSCuo12014	2	The installation of Software Maintenance Updates (SMU) and Package Installation Envelope (PIE) are successful, but the updates are non-functional.
CSCun79501	2	The command `show tech-support` displays error messages and produces incomplete output.

Release 5.1.1

Bug ID	Severity	Headline
CSCuh44312	2	IOS XRv crashes when more than one CPU is running.
CSCui75114	3	Packet drops seen periodically with the VirtIO (virtual input output) driver interface.
CSCuo12014	2	The installation of Software Maintenance Updates (SMU) and Package Installation Envelope (PIE) are successful, but the updates are non-functional.

Release 5.1.2

Bug ID	Severity	Headline
CSCuo12014	2	The installation of Software Maintenance Updates (SMU) and Package Installation Envelope (PIE) are successful, but the updates are non-functional.

Release 5.1.3

Bug ID	Severity	Headline
CSCum12967	2	Packet path testing crashes IOS XRv in nested environment.
CSCuo98998	2	XRv Kernel-based Virtual Machine (KVM) IO-APIC performance issues.

Cisco Bug Search Tool

Bug Search Tool (BST), the online successor to Bug Toolkit, is designed to improve the effectiveness in network risk management and device troubleshooting. The tool allows partners and customers to search for software bugs based on product, release, and keyword, and aggregates key data such as bug details, product, and version. The tool has provision to filter bugs based on credentials to provide external and internal bug views for the search input.

Use the BST to view the list of outstanding and resolved bugs in a release.

The BST is available at Bug Search. To search for a specific bug, go to https://tools.cisco.com/bugsearch/bug/ *bugid*. For more information on BST, see Bug Search Help.

Search Bugs in BST

Follow these instructions to search for bugs that are specific to Cisco IOS XRv software release in BST.

Step 1 Go to https://tools.cisco.com/bugsearch/.
Log in to the tool using your Cisco.com user name and password. After successful login, the Bug Search Tool page opens.

Step 2 To search for release-specific bugs, enter the following parameters in the page:

- Product–Select **Series**, enter Cisco IOS XRv Software in the text box. You can alternately navigate to the product name from the **Select from list** link.

- Releases–Enter release number. For example, 5.2.0

- Show Bugs–Select **Affecting or Fixed in these Releases**.

Step 3 Press **Enter**.

> **Note**
> - By default, the search results include bugs with all severity levels and statuses, and bugs that were modified during the life cycle of the bug. After you perform a search, you can filter your search results to meet your search requirements.
>
> - An initial set of 25 search results is shown in the bottom pane. Drag the scroll bar to display the next set of 25 results. Pagination of search results is not supported.

The show version Command

To determine the version of Cisco IOS XR Software running on your Cisco IOS XRv router, log in to the router and enter the **show version** command:

SUMMARY STEPS

1. Establish a Telnet session with the router.
2. Enter **show version** command from EXEC mode.

DETAILED STEPS

Step 1   Establish a Telnet session with the router.

Step 2   Enter **show version** command from EXEC mode.

System Requirements

Hypervisors

The Cisco IOS XRv router is hypervisor agnostic. The demo image, which is provided without support, is suitable for use on a laptop or on a server that meets the requirements outlined below. For the production image, the supported hypervisors are QEMU 1.0, QEMU 2.0 from release 5.1.3 and later, and VMWare ESXi 5.0 and later. Use QEMU to configure one to eight CPUs. Use VMWare ESXi 5.0 to configure with only a single CPU, and use VMWare ESXi 5.1 (using VM version 9) to configure one to eight CPUs. See below for more information on VMWare ESXi and QEMU:

- VMware ESXi 5.0 and later—VMware ESX and VMware ESXi are bare-metal embedded hypervisors from VMware's enterprise software for guest virtual servers that run directly on host server hardware without requiring an additional underlying operating system.

- QEMU 1.0 and QEMU 2.0 (supported form release 5.1.3 and later) —Quick EMUlator (QEMU) is a free and open-source software product that performs hardware virtualization. QEMU is a hosted virtual machine monitor. It emulates central processing units through dynamic binary translation and provides a set of device models, enabling it to run a variety of unmodified guest operating systems. It also provides an accelerated mode for supporting a mixture of binary translation (for kernel code) and native execution (for user code), in the same fashion VMware Workstation and VirtualBox do. QEMU can also be used mainly for CPU emulation for user-level processes, allowing applications compiled for one architecture to be run on another. Kernel-based Virtual Machine (KVM) is virtualization infrastructure for the Linux kernel that QEMU can use to improve performance. KVM requires a processor with hardware virtualization extension.

Servers

The Cisco IOS XRv router can run on Cisco Unified Computing System (UCS) server or servers from third party vendors that support VMWare ESXi 5.0 and higher or the combination of Ubuntu Linux 12.04LTS and QEMU/KVM 1.0. The server must support the following:

• Intel Nehalem CPU with clock frequency 2.0 GHz or higher.

• Gigabit Ethernet interfaces.

Virtual Machines

The Cisco IOS XRv router virtual machines must meet the following requirements:

Component	Minimum	Maximum
Memory (RAM)	3 GB	8 GB
Hard Disk	1 disk, 3 GB	Primary disk must be 3GB, secondary disk of arbitrary size can be added.
CPUs	1 CPU	8 CPUs **Note** See Hypervisors section for restrictions on use of multiple CPUs with VMWare ESXi.
Serial Ports	1 serial port (IOS XR console)	4 serial ports (IOS XR console, IOS XR aux port, 2 debugging ports)
NICs	1 NIC	128 (depending on hypervisor's capabilities)

Related Documentation

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

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

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, using the Cisco Bug Search Tool (BST), submitting a service request, and gathering additional information, see *What's New in Cisco Product Documentation*, at: http://www.cisco.com/c/en/us/td/docs/general/whatsnew/whatsnew.html.

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