

# Cisco IOS XR Release 5.3.0 for Cisco ASR 9000 Series Routers and Cisco Carrier Routing System

PB733789

## Product Overview

Cisco® ASR 9000 Series Aggregation Services Routers (ASR 9000 Series) deliver unprecedented scale, service flexibility, and high availability for service providers' fixed and mobile networks, data centers, and transport networks. The routers are powered by Cisco IOS® XR Software, an innovative, self-healing, distributed operating system designed for always-on operation while scaling system capacity into multiple terabits per second (Tbps).

The Cisco CRS-X platform offers an industry-leading IP core solution using back-to-back and multichassis system expansion. The Cisco CRS-X delivers one of the industry's highest 100 Gigabit Ethernet port densities. With programmable features, such as [Cisco nLight™](#) technology, service providers can converge their IP and optical networks, which helps them increase service velocity and respond more quickly to customer service requests.

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 that be deployed on any x86 hardware (server or laptop) running standard hypervisors. The Cisco IOS XRv router supports the same control-plane features and configurations that are supported on the Cisco ASR 9000 Series and Cisco CRS Routers.

## New Hardware Features

The Cisco ASR 9000 Series is introducing support for industry-leading, high-density 8-port 100 Gigabit Ethernet line cards with Cisco IOS XR Software Release 5.3.0. These line cards are fully compatible with Cisco ASR 9006, ASR 9010, ASR 9904, ASR 9912 and ASR 9922 routers. The high-capacity line cards are designed to remove bandwidth bottlenecks caused by a large increase in video-on-demand (VoD), IPTV, point-to-point video, Internet video, and cloud services traffic.

The Cisco IOS XR Software Release 5.3.0 also introduces support for new 56-Gbps line cards and Route Switch Processors (RSPs) for the Cisco ASR 9000 Series, as well as, new optics.

Table 1 lists the new hardware support that has been added to Cisco IOS XR Software Release 5.3.0.

**Table 1.** New 100 Gigabit Ethernet High-Density Hardware Supported on Cisco ASR 9000 Series Routers in Cisco IOS XR Software Release 5.3.0

Part Number	Description
<b>A9K-8X100G-LB-SE</b>	8-port 100GE, Service Edge Optimized LC
<b>A9K-8X100G-LB-TR</b>	8-port 100GE, Packet Transport Optimized LC
<b>A99-SFC2</b>	ASR 9900 Series Switch Fabric Card 2
<b>A99-RP2-TR</b>	ASR 9900 Route Processor 2 for Packet Transport
<b>A99-RP2-SE</b>	ASR 9900 Route Processor 2 for Service Edge
<b>A9K-RSP880-TR</b>	ASR 9000 Route Switch Processor 880 for Packet Transport

Part Number	Description
<b>A9K-RSP880-SE</b>	ASR 9000 Route Switch Processor 880 for Service Edge
<b>A9K-AC-PEM-V3</b>	ASR9K AC Power Enclosure Module Version 3
<b>A9K-DC-PEM-V3</b>	ASR9K DC Power Enclosure Module Version 3
<b>PWR-6KW-AC-V3</b>	6KW AC Power Module Version 3
<b>PWR-4.4KW-DC-V3</b>	4.4KW DC Power Module Version 3
<b>ASR-9922-FAN-V2</b>	ASR 9922 Fan Tray v2
<b>ASR-9922-FLTR-CV2</b>	ASR 9922 Air Filter Center V2
<b>ASR-9006-FAN-V2</b>	ASR-9006 Fan Tray Version 2

Table 2 lists additional new hardware support that has been added to Cisco IOS XR Software Release 5.3.0.

**Table 2.** New 56-Gbps Hardware Supported on Cisco ASR 9000 Series Routers in Cisco IOS XR Software Release 5.3.0

Part Number	Description
<b>A9K-4T16GE-TR</b>	4X10GE + 16X1G Combo Linecard, Packet Transport Optimized
<b>A9K-4T16GE-SE</b>	4X10GE + 16X1G Combo Linecard, Service Edge Optimized

Table 3 lists the new hardware support that has been added to Cisco IOS XR Software Release 5.3.0.

**Table 3.** New RSP Hardware Supported on Cisco ASR 9000 Series Routers in Cisco IOS XR Software Release 5.3.0

Part Number	Description
<b>A9K-RSP440-180</b>	ASR9K Route Switch Processor with 440G/slot Fabric and 6GB

Table 4 lists the new optics support that has been added to Cisco IOS XR Software Release 5.3.0.

**Table 4.** Optics Support

Part Number	Description	Supported On - (Part Numbers)
<b>CPAK-100G-SR10</b>	CPAK-100G-SR10 Transceiver module, 100m OM3 MMF	A9K-8X100G-LB-SE, A9K-8X100G-LB-TR
<b>CPAK-100G-LR4</b>	CPAK-100G-LR4 Transceiver module, 10km SMF	A9K-8X100G-LB-SE, A9K-8X100G-LB-TR
<b>CPAK-10x10G-LR</b>	CPAK-10X10GLR, Transceiver module, 10 x 10Gb/s 10km SMF	A9K-8X100G-LB-SE, A9K-8X100G-LB-TR

## New Software Features

Table 5 lists new software features in Cisco IOS XR Software Release 5.3.0 supported on Cisco ASR 9000 Series Aggregation Services Routers and CRS Routers.

**Table 5.** New Software Features Supported on Cisco ASR 9000 Series Routers in Cisco IOS XR Software Release 5.3.0

Feature	Description
<b>Subscriber Awareness - Diameter Support</b>	<p>Diameter, a networking protocol derived from RADIUS protocol, is considered to be the next-generation Authentication, Authorization, and Accounting (AAA) protocol. Widely used in mobile networks, this protocol is an important "glue" for unified subscriber management across wireline, mobile, and wireless subscribers.</p> <p>The Broadband Network Gateway (BNG) supports the Diameter-based protocol, along with applications such as Diameter Credit Control Application (DCCA) and Network Access Server Requirements (NASREQ), which is used for policy control and charging and real-time credit control of pre-paid users. BNG acts as NASREQ and DCCA client to perform AAA NAS-related functionality, policy provisioning, quota request, and usage-reporting function. With this Diameter interface, BNG provides service-aware billing functionality and policy provisioning for post-paid and pre-paid users.</p>

Feature	Description
<b>Local Mobility Anchor (LMA) Enhancements</b>	<p>LMA acts as the home agent for a mobile node in a Proxy Mobile IPv6 (PMIPv6) domain, which is the network where the mobility management of a mobile node is handled using the PMIPv6 protocol. LMA is the topological anchor point for the mobile node's home network prefixes and is the entity that manages the node's binding state.</p> <p>In Cisco IOS XR Release 5.3.0, the following enhancements are delivered:</p> <ul style="list-style-type: none"> <li>• Dynamically created point-to-multipoint (P2MP) Generic Routing Encapsulation (GRE) tunnels between Mobile Access Gateway (MAG) and LMA (mGRE IPv4 and mGRE IPv6)</li> <li>• VPN routing and forwarding (VRF)-aware LMA or customer awareness</li> <li>• Multiple operator peering</li> <li>• AAA accounting for mobile nodes and tunnels</li> <li>• Scale enhancements</li> </ul>
<b>NETCONF/YANG</b>	<p>The Network Configuration Protocol (NETCONF) provides mechanisms to install, manipulate, and delete the configuration of network devices. It uses an Extensible Markup Language (XML)-based data encoding for configuration data as well as protocol messages. The NETCONF protocol operations are realized as remote procedure calls (RPCs). Cisco IOS XR Release 5.3.0 delivers NETCONF Version 1.1 agent support, achieving compliance with RFC-6241.</p> <p>YANG is a data modeling language used to model configuration and state data manipulated by the NETCONF protocol, operations, and notifications. Twenty YANG RFC 6020 compliant models have been added in Cisco IOS XR Release 5.3.0 for network provisioning and management.</p>

## Ordering Information

Table 6 lists ordering information for Cisco IOS XR Software Release 5.3.0 for Cisco ASR 9000 Series routers. When future rebuilds of Cisco IOS XR Software Release 5.3.0 are available, the latest release is automatically shipped when this product is ordered.

**Table 6.** Ordering Information for Cisco IOS XR and IOS XRv Software Release 5.3.0

Part Number	Product Name
<b>XR-A9K-PX-05.03</b>	Cisco IOS XR IP/MPLS Core Software
<b>XR-A9K-PXK9-05.03</b>	Cisco IOS XR IP/MPLS Core Software 3DES
<b>XR-A9K-05.03-BSMU</b>	Cisco ASR 9000 IOS XR Software Bridge SMUs
<b>XR-A9K-05.03-TURBO</b>	Cisco ASR 9000 IOS XR Software Turboboot
<b>XR-CR1-PX-05.03</b>	Cisco IOS XR IP/MPLS Core software for CRS-1
<b>XR-CR1-PXK9-05.03</b>	Cisco IOS XR IP/MPLS Core Software 3DES for CRS-1
<b>XR-CR3-PX-05.03</b>	Cisco IOS XR IP/MPLS for CRS-3
<b>XR-CR3-PXK9-05.03</b>	Cisco IOS XR IP/MPLS Core Software 3DES for CRS-3
<b>XR-CRX-PX-05.03</b>	Cisco IOS XR IP/MPLS for CRS-X
<b>XR-CRX-PXK9-05.03</b>	Cisco IOS XR IP/MPLS Core Software 3DES for CRS-X
<b>R-XRV-5.3.0</b>	Cisco IOS XRv Software Production VM Images for v5.3.0
<b>R-XRV-K9-5.3.0</b>	Cisco IOS XRv Software Production VM Images for v5.3.0-K9

## Cisco IOS XR Software Release 5.3.0 Lifecycle

The Cisco IOS XR Software release strategy is time-based, with a fixed release date and lifecycle, rather than being a feature-based release strategy with a variable release date. Table 7 lists the major milestones of Cisco IOS XR Software Release 5.3.0 and later.

**Table 7.** Major Milestones for Cisco IOS XR Software Release 5.3.0

Milestone	Definition	Date
<b>Availability date</b>	The date that Cisco IOS XR Software Release 5.3.0 information is published on Cisco.com and becomes available to the general public.	January 20, 2015

Milestone	Definition	Date
<b>End-of-life announcement date</b>	The date when official end-of-life documents announcing the end of sale and end of life of Cisco IOS XR Software 5.3.0 (and later versions of 5.3.0) are distributed to the general public.	August 11, 2016
<b>End-of-sale date</b>	The last date to order Cisco IOS XR Software 5.3.0 through Cisco point-of-sale mechanisms. (The product is no longer for sale after this date.)	February 9, 2017
<b>End of software maintenance (Standard Maintenance Release)</b>	The last date that Cisco Engineering may release any final software maintenance releases or bug fixes. (After this date, Cisco Engineering will no longer develop, repair, maintain, or test the product software.) Applies to Standard rebuilds only. Refer to Cisco IOS XR Software Policy Guideline bulletin for more details ( <a href="http://www.cisco.com/c/en/us/products/collateral/ios-nx-os-software/ios-xr-software/product_bulletin_c25-478699.html">http://www.cisco.com/c/en/us/products/collateral/ios-nx-os-software/ios-xr-software/product_bulletin_c25-478699.html</a> )	August 11, 2017
<b>End of software maintenance (Extended Maintenance Release)</b>	The last date that Cisco Engineering may release any final software maintenance releases or bug fixes. (After this date, Cisco Engineering will no longer develop, repair, maintain, or test the product software.) Applies to Standard rebuilds only. Refer to Cisco IOS XR Software Policy Guideline bulletin for more details. ( <a href="http://www.cisco.com/c/en/us/products/collateral/ios-nx-os-software/ios-xr-software/product_bulletin_c25-478699.html">http://www.cisco.com/c/en/us/products/collateral/ios-nx-os-software/ios-xr-software/product_bulletin_c25-478699.html</a> )	August 11, 2018
<b>End of software maintenance for Product Security Incident Response Team (PSIRT)</b>	The last date that Cisco Engineering may release any final software maintenance releases or bug fixes for PSIRTs through Software Maintenance Unit to Release 5.3. (Beyond this date, PSIRT bugs become candidates for following feature releases.)	August 11, 2019
<b>Last date of support</b>	The last date to receive applicable service and support for the product, as entitled by active service contracts or by warranty terms and conditions. (After this date, all support services for the product are unavailable, and the product becomes obsolete.)	February 28, 2022

## For More Information

For more information regarding this release, please visit:

- Cisco ASR 9000 Series Release Notes:  
[http://www.cisco.com/c/en/us/td/docs/routers/asr9000/software/asr9k\\_r5-3/general/release/notes/reln\\_530a9k.html](http://www.cisco.com/c/en/us/td/docs/routers/asr9000/software/asr9k_r5-3/general/release/notes/reln_530a9k.html)
- Cisco IOS XRv Release Notes:  
[http://www.cisco.com/c/en/us/td/docs/ios\\_xr\\_sw/ios\\_xrv/release/notes/xrv-rn.html](http://www.cisco.com/c/en/us/td/docs/ios_xr_sw/ios_xrv/release/notes/xrv-rn.html)
- Cisco CRS Release Notes:  
[http://www.cisco.com/c/en/us/td/docs/routers/crs/software/crs\\_r5-3/general/release/notes/reln\\_530crs.html](http://www.cisco.com/c/en/us/td/docs/routers/crs/software/crs_r5-3/general/release/notes/reln_530crs.html)
- For official end-of-life and end-of-sale announcements for Cisco IOS XR Software, please visit [http://www.cisco.com/en/US/products/ps5845/prod\\_eol\\_notices\\_list.html](http://www.cisco.com/en/US/products/ps5845/prod_eol_notices_list.html), or contact your local Cisco account representative.
- For additional information about the Cisco ASR 9000 Series, Cisco CRS routers or Cisco IOS XR Software, please visit <http://www.cisco.com/>, or contact your local Cisco account representative.



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