

Cisco IOS XR Release 5.3.1 for Cisco Carrier Routing System

PB734534

Product Overview

The Cisco Carrier Routing System (CRS) offers an industry-leading IP/MPLS solution delivering 6.4 Tbps in a single chassis and scalable to back-to-back and multichassis system configurations delivering up to 57.6 Tbps. The Cisco CRS delivers one of the industry's highest 100 Gigabit Ethernet port densities. The Cisco CRS has delivered 10x capacity increment over a decade on an existing footprint, providing unprecedented investment protection and carrier class reliability. The Cisco CRS is powered by the Cisco® nPower™ integrated network processor which delivers new levels of performance and bandwidth, programmable control using open APIs and advanced compute capabilities; thus enabling service agility and simplified network operation for our customers.

New Hardware Features

The Cisco Carrier Routing System is introducing support for CRS-X 8-Slot Back-to-Back system with Cisco IOS XR Software Release 5.3.1. This CRS-X 8 slot chassis is capable of delivering 3.2 Tbps per system. The 8-slot Back-to-Back capability enables service providers to double the system density to 6.4 Tbps, while preserving their existing investment in the CRS, with zero service disruption. Two 8-slot chassis are connected using a set of back-to-back cables. Migration from a single 8-slot to a B2B can be done seamlessly and in service. Any CRS-1, CRS-3 or a CRS-X single chassis or a CRS-3 Back-to-Back System can be upgraded to a CRS-X Back-to-Back System.

The Carrier Routing System is also introducing another flavor of CRS-X linecard: FP200-Lite. The FP200-Lite card is a hardware optimized version of the FP-400 Card wherein one slice of 200G route processing hardware (nPower) is de-popped, making it more thermally efficient as well as right-priced. The FP200-Lite comes with the same Software capability as the FP-400 linecard, with absolutely no compromise on features or performance. The FP200-Lite works with Cisco IOS XR Release 5.1.4 and with Cisco IOS XR Release 5.3.1.

The new FP200G-Lite Card has been specially designed for the Legacy Chassis Systems around three principal benefits:

- Cost - 30% lesser than the existing CRS-X pricing (FP200 license)
- Bandwidth - Linerate 200G BW available (2x100 GE/20x10GE/5x40GE)
- Thermal and Power Efficiency - 10% more power efficient than the existing FP140G Card

The Cisco IOS XR Software Release 5.3.1 also introduces new CPAK based 100G ER4 Lite optics for the 4x100GE card on the Cisco CRS.

Table 1 lists the new hardware support that has been added to Cisco IOS XR Software Release 5.3.1.

Table 1. New Back-to-Back fabric card for the 8 slot CRS chassis and FP200-Lite in Cisco IOS XR Software Release 5.3.1

Part Number	Description
CRS-8-FC400/M	Back to Back 400G fabric card for the 8 slot CRS chassis
CRS-FP200G-L=	200G linecard in the CRS-X linecard family for legacy chassis

Table 2 lists the new optics support that has been added to Cisco IOS XR Software Release 5.3.1.

Table 2. Optics Support

Part Number	Description	Supported On - (Part Numbers)
CPAK-100G-ER4L	<p>The primary application of the Cisco CPAK 100GBASE-ER4 Lite module (Figure 3) is to support 100-Gbps optical links over standard single-mode fiber (SMF, G.652) terminated with SC connectors. Nominal power consumption is less than 7.5W.</p> <p>The ER4 Lite module is compatible with the 100GBASE-ER4 standard and supports link lengths up to about 25 km over standard SMF, G.652. It delivers an aggregate data signal of 100 Gbps, carried over four LAN wavelength-division multiplexing (WDM) wavelengths operating at a nominal 25 Gbps per lane. The module can be used over longer distances in engineered links with CPAK-100G-ER4L modules at both ends. Optical multiplexing and demultiplexing of the four wavelengths are managed within the module.</p>	4X100GE-LO 40X10GE-WLO 2X100GE-FLEX-40

New Software Features

Table 3 lists new software features in Cisco IOS XR Software Release 5.3.1 supported on CRS Routers.

Table 3. New Software Features Supported on Cisco Carrier Routing system in Cisco IOS XR Software Release 5.3.1

Feature	Description
NETCONF/YANG Support	<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).</p> <p>YANG is a data modeling language used to model configuration and state data manipulated by the NETCONF protocol, operations, and notifications. 36 YANG RFC 6020 compliant models have been added in Cisco IOS XR Release 5.3.1 for network provisioning and management.</p>
RADIUS over IPv6	<p>The following RADIUS attributes, as described in RFC 3162, are supported for IPv6:</p> <ul style="list-style-type: none"> • Framed-Interface-Id • Framed-IPv6-Pool • Framed-IPv6-Prefix • Framed-IPv6-Route • Login-IPv6-Host <p>The following RADIUS attributes are also supported for IPv6:</p> <ul style="list-style-type: none"> • Delegated-IPv6-Prefix (RFC 4818) • Delegated-IPv6-Prefix-Pool • DNS-Server-IPv6-Address • IPv6 ACL • IPv6_DNS_Servers • IPv6 Pool • IPv6 Prefix# • IPv6 Route
Link Fault Signaling (LFS) BER Control	<p>Feature enables support for pre-FEC version of the SF-BER and SD-BER Threshold Crossing Alert (TCA) condition for OTUn Signals to guarantee the reliable detection of impaired signal conditions before traffic is impacted. LFS shall be activated at user-selectable BER thresholds.</p>
CRS-X Feature Enhancements	<p>Cisco IOS XR Release 5.3.1 introduces several features on the CRS-X to enable network refreshes from CRS-1/CRS-3 to CRS-X on the core and edge of Service Provider networks. The features are:</p> <ul style="list-style-type: none"> • Per sub-interface ARP protection • VPLS and H-VPLS (including support for TE/FRR and QinQ) • LDPv6 • v4/v6 mVPN GRE • TWAMP • Carrier Supporting Carrier • Segment Routing - OSPF and ISIS Extensions for v4 services

Feature	Description
CGSE+ Enhancements	<p>Cisco IOS XR Release 5.3.1 introduces several enhancements for the Carrier Grade Services Engine+ card on the CRS. These are</p> <ul style="list-style-type: none"> • HA on datapath SVI: This feature is provides for High Availability on ServiceApp interfaces for 6RD application • Throughput Measurement tracker which enables various measurements for packets entering the CGN instance for NAT44 • CGN MIB support allows for easy polling of various Carrier Grade NAT parameters for performance monitoring • IPM - Port preservation provides for an Intelligent Port Management feature to preserve the source ports while using Carrier Grade NAT

Ordering Information

Table 4 lists ordering information for Cisco IOS XR Software Release 5.3.1 for Cisco Carrier Routing System (CRS) 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 4. Ordering Information for Cisco IOS XR Software Release 5.3.1

Part Number	Product Name
XR-CR1-PX-05.03	Cisco IOS XR IP/MPLS Core software for CRS-1
XR-CR1-PXK9-05.03	Cisco IOS XR IP/MPLS Core Software 3DES for CRS-1
XR-CR3-PX-05.03	Cisco IOS XR IP/MPLS for CRS-3
XR-CR3-PXK9-05.03	Cisco IOS XR IP/MPLS Core Software 3DES for CRS-3
XR-CRX-PX-05.03	Cisco IOS XR IP/MPLS for CRS-X
XR-CRX-PXK9-05.03	Cisco IOS XR IP/MPLS Core Software 3DES for CRS-X

Cisco IOS XR Software Release 5.3.1 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 5 lists the major milestones of Cisco IOS XR Software Release 5.3.1.

Table 5. Major Milestones for Cisco IOS XR Software Release 5.3.1

Milestone	Definition	Date
Availability date	The date that Cisco IOS XR Software Release 5.3.1 information is published on Cisco.com and becomes available to the general public.	April 30, 2015
End-of-life announcement date	The date when official end-of-life documents announcing the end of sale and end of life of Cisco IOS XR Software 5.3.1 (and later versions of 5.3.1) are distributed to the general public.	October 30, 2015
End-of-sale date	The last date to order Cisco IOS XR Software 5.3.1 through Cisco point-of-sale mechanisms. (The product is no longer for sale after this date.)	October 30, 2016
End of software maintenance (Standard Maintenance Release)	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. (http://www.cisco.com/c/en/us/products/collateral/ios-nx-os-software/ios-xr-software/product_bulletin_c25-478699.html)	April 30, 2017
End of software maintenance (Extended Maintenance Release)	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. (http://www.cisco.com/c/en/us/products/collateral/ios-nx-os-software/ios-xr-software/product_bulletin_c25-478699.html)	April 30, 2018

Milestone	Definition	Date
End of software maintenance for Product Security Incident Response Team (PSIRT)	The last date that Cisco Engineering may release any final software maintenance releases or bug fixes for PSIRTs through Software Maintenance Unit to Release 5.2. (Beyond this date, PSIRT bugs become candidates for following feature releases.)	April 30, 2019
Last date of support	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.)	October 30, 2021

For More Information

For more information regarding this release, please visit:

- Cisco CRS Release Notes: <http://www.cisco.com/c/en/us/support/routers/carrier-routing-system/products-release-notes-list.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, or contact your local Cisco account representative.
- For additional information about the Cisco CRS or Cisco IOS XR Software, please visit <http://www.cisco.com/>, or contact your local Cisco account representative.



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