

Cisco IOS XR Software Release 3.9.0 for Cisco CRS-1 Series Routers and Cisco XR 12000 Series Routers

PB573748

Cisco IOS® XR Software Release 3.9.0 introduces support for generic routing encapsulation (GRE) as a transport mechanism in Cisco® CRS-1 Series Routers for Layer 2 and Layer 3 VPN. The release brings Point-to-Multipoint Traffic Engineering support to Cisco CRS-1 Series Routers. The Cisco XR 12000 Series extends SDH support for dense-channelization shared port adapters (SPAs) (product part numbers SPA-1xCHOC12/DS0 and SPA-1xCHOC48/DS3); it also enhances the MultiService Edge feature set on the Cisco XR 12000 Series by adding IP Header Compression support for Point-to-Point Protocol (PPP) and Multilink Point-to-Point Protocol/link fragmentation and interleaving (MLPPP/LFI) interfaces as well as three-level quality of service (QoS).

Cisco IOS XR Software Release 3.9.0 incorporates support for all hardware modules and software features of all prior releases.

Software Features

Cisco IOS XR Software Release 3.9.0 adds support for new features in the Cisco CRS-1 Series Routers listed in Table 1.

Table 1. Software Features Supported in Cisco IOS XR Software Release 3.9.0 New to Cisco CRS-1 Series Routers

Feature	Description
GRE	<ul style="list-style-type: none"> GRE support for IPv4 and IPv6 traffic over GRE tunnels. Control packets for Open Shortest Path First (OSPF), Intermediate System-to-Intermediate System (IS-IS) Protocol, and BGP. Label Distribution Protocol (LDP) over GRE. Ethernet over Multiprotocol Label Switching (EoMPLS) support for port mode and VLAN mode Layer 3 VPN support over GRE tunnels.
BGP	<ul style="list-style-type: none"> Border Gateway Protocol (BGP) best external capability to advertise Best External path to Interior BGP (iBGP) peer or Route Reflector when a locally selected best path is from an internal peer. BGP prefix-independent convergence (PIC) edge primary/backup (BGP PIC edge unipath) offers the capability to install a backup path in the forwarding table to provide prefix-independent convergence during provider edge or customer edge link failure. BGP as plain support provides the ability to represent BGP AS as a 4-byte decimal number.
IP FRR of OSPFv2	<ul style="list-style-type: none"> IP Fast Reroute (FRR) capability supported with OSPFv2 routing protocol for fast convergence. This capability offers a precomputed backup path to reroute traffic around failures.
Traffic engineering	<ul style="list-style-type: none"> Point-to-multipoint traffic engineering support, Resource Reservation Protocol (RSVP) MIB support (RFC 2206).
Ethernet OAM	<ul style="list-style-type: none"> 802.3 operations, administration, and maintenance (OAM) support with neighbor discovery, link monitoring, and remote fault indication. 802.1ag Connectivity Fault Management (CFM) support on physical interface, 802.1q, and 802.1ad.
Security	<ul style="list-style-type: none"> Secure File Transfer Protocol (SFTP) interactive client and SFTP server support. Secure Shell (SSH) RSA Public Key Authentication and Host Based Authentication
BFD	<ul style="list-style-type: none"> Hot Standby Router Protocol (HSRP) and Virtual Router Redundancy Protocol (VRRP) will use forwarding failure notification from Bidirectional Forwarding Detection (BFD) to switch from Active (Master in the case of VRRP) to Standby (Backup in the case of VRRP) router.
L2TPv3	<ul style="list-style-type: none"> IPv4 Layer 3 VPN over Layer 2 Tunneling Protocol Version 3 (L2TP v3) Layer 2 VPN over L2TP v3 for Ethernet port, VLAN, QinQ, and QinAny

Cisco IOS XR Software Release 3.9.0 adds support for new features on Cisco XR 12000 Series Routers, listed in Table 2.

Table 2. Additional Software Features Supported in Cisco IOS XR Software Release 3.9.0 New to Cisco 12000 Series Routers

Feature	Description
Link bundling	<ul style="list-style-type: none"> Packet-over-SONET/SDH (PoS) link bundles on Engine 3 and Engine 5 line cards. QoS support for link bundles.
IP header compression (IPHC)	<ul style="list-style-type: none"> IPHC support on PPP and MLPPP/LFI-enabled serial interfaces. Supported only on the following SPAs: SPA-1xCHOC12/DS0, SPA-1xCHO48/DS3, SPA-1xCHSTM1/OC3, SPA-8xCHT1/E1, SPA-4xT3/E3, and SPA-4xCT3/DS0.
Traffic engineering	<ul style="list-style-type: none"> Traffic engineering over VLAN over Ethernet link bundle. Traffic engineering fast reroute support on Engine 3 and Engine 5 line cards. RSVP MIB support (RFC 2206).
Three-level QoS	<ul style="list-style-type: none"> An additional third grandchild-level policy-map will be supported in the egress facing interfaces.
BGP	<ul style="list-style-type: none"> BGP best external capability to advertise best external path to iBGP peer or route reflector when a locally selected best path is from an internal peer. BGP PIC edge primary/backup (BGP PIC edge unipath) offers the capability to install a backup path in the forwarding table to provide prefix-independent convergence during provider edge or customer edge link failure. BGP as plain support BGP as a 4-byte decimal number.
BFD	<ul style="list-style-type: none"> BFD support for HSRP and VRRP.
Security	<ul style="list-style-type: none"> SFTP interactive client and SFTP server support. SSH RSA Public Key Authentication and Host Based Authentication.
8kbps shaping granularity	<ul style="list-style-type: none"> Granularity of the rates specified in shape and bandwidth commands will be changed from 64 kbps to 8 kbps.

Orderable Software Images

Table 3 lists the Cisco IOS XR Software Release 3.9.0 and applicable ordering information for the Cisco CRS-1, Cisco ASR 9000 Series Aggregation Services Routers, and Cisco XR 12000 Series Routers.

These are the only product IDs that will be orderable. After rereleases of Cisco IOS Software Release 3.9.0 are available, ordering these product IDs will automatically result in the latest rerelease being shipped.

Table 3. Software Versions and Ordering Information

Product ID	Description
XR-RP-03.09	Cisco IOS XR IP/MPLS Core Software, Cisco CRS-1 Series Routers
XR-RPK9-03.09	Cisco IOS XR IP/MPLS Core Software 3DES, Cisco CRS-1 Series Routers
XR-XR12K-03.09	Cisco IOS XR IP/MPLS Core Software, XR 12000
XR-XR12KK9-03.09	Cisco IOS XR IP/MPLS Core Software 3DES, XR 12000

Release 3.9.0 End-of-Life Major Milestones

The Cisco IOS XR Software release strategy is time-based, with a fixed release date and lifecycle, as opposed to being a feature-based release strategy with a variable release date.

Table 4 lists the major end-of-life milestones of the Cisco IOS XR Software 3.9.0 release as a reference for the customer. An official end of sale will be published on Cisco.com on August 9, 2008. For more information about the Cisco IOS XR Software release end of sale, contact the local Cisco customer representatives.

Table 4. Major Release End-of-Life Milestones of Cisco IOS XR Software Release 3.9.0

Milestone	Definition	Date
Release available date	The date that Cisco IOS XR Software Release 3.6.0 got published on Cisco.com and became available to the general public.	December 18, 2009
End-of-life announcement date	The date that the official end-of-life document that announces the end of sale and end of life of a product is distributed to the general public.	September 18, 2010
End-of-sale date and end-of-maintenance date	The last date to order the product through Cisco point-of-sale mechanisms. The product is no longer for sale after this date. This also marks end of engineering, maintenance rebuilds, and software fixes through rebuilds of Cisco IOS XR Software 3.9.x. After this date, maintenance rebuilds and software-fix support will be provided only through rebuilds of Cisco IOS XR Software 4.0.x or later.	June 18, 2011
End of software maintenance releases through migration: OS software	The last date that Cisco Engineering may release any final software maintenance releases or bug fixes through software maintenance updates (SMUs). From June 18, 2011 until June 18, 2012, maintenance rebuilds and software fixes through SMU support for Cisco IOS XR Software Release 3.9.x will be provided only through migration to rebuilds of Cisco IOS XR Software Release 4.0.x. After June 18, 2012, Cisco Engineering will no longer develop, repair, maintain, or test Cisco IOS XR Software Release 3.9.x.	June 18, 2012
Last date of support:	The last date to receive service and support for the product. After this date, all support services for the product are unavailable, and the product becomes obsolete.	June 18, 2016



Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
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