



Release Notes for Cisco ASR 9000 Series Routers, IOS XR Release 25.2.1



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Cisco ASR 9000 Series Routers, IOS XR Release 25.2.1

Cisco IOS XR Release 25.2.1 is a new feature and hardware release for Cisco ASR 9000 Series routers. Key highlights include Smart Licensing support, enhanced telemetry, DDoS edge protection, and cloud-native BNG functionalities. The release also features a new hardware, A99-4HG-FLEX-X-SE line card with 400 Gbps bandwidth.

New software features

Table 1. New software features for Cisco ASR 9000 Series Routers, Release 25.2.1

Product Impact	Feature	Description
Licensing		
Licensing Process	Support for Smart Licensing on ASR 9900 5th Generation 400G Ethernet Enhanced Line Cards	<p>Smart Licensing is a cloud-based, flexible software licensing model that enables you to activate and manage Cisco software licenses across your organization. Smart Licensing solution allows you to easily track the status of your license and software usage trends.</p> <p>Smart Licensing support is now extended to the A99-4HG-FLEX-X-SE line card.</p>
Telemetry		
Software Reliability	Stream telemetry data for IPv4 and IPv6 data on interfaces	<p>You can now enhance network reliability and resource optimization for efficient data collection and analysis by monitoring interface performance and operational status across platforms. This ensures consistent management, proactive troubleshooting, and optimization in multi-vendor environments by using openconfig-if-ip.yang data models. This can be achieved by enabling telemetry to configure specific sensor paths for tracking interface states.</p>
Application Hosting		
Upgrade	Cisco Secure DDoS Edge Protection	<p>You can now enable the router to detect DDoS attacks targeting MPLS traffic using DDoS edge protection. The router analyzes MPLS flows to identify malicious traffic patterns, ensuring the availability and performance of services traversing MPLS networks.</p>
Cloud Native BNG User Plane		
Hardware Reliability	Enable LAC on Cloud Native BNG	<p>You can now enable the cloud-native BNG user plane to act as an L2TP Access Concentrator (LAC) on these Cisco ASR 9000 5th Generation High-Density Ethernet line cards and fixed routers, facilitating the tunneling of point-to-point frames between a remote system or LAC client and an LNS.</p> <ul style="list-style-type: none">• A99-32X100GE-X-SE• A9K-20HG-FLEX-SE• A9K-8HG-FLEX-SE• A9K-4HG-FLEX-SE• Cisco ASR 9902 Router• Cisco ASR 9903 Router

Product Impact	Feature	Description
Hardware Reliability	Enable LNS on Cloud Native BNG	<p>You can now enable the cloud-native BNG (cnBNG) to act as an L2TP Network Server (LNS), allowing the termination of tunnels or subscriber sessions initiated by the LAC client on the following Cisco ASR 9000 5th Generation High-Density Ethernet line cards:</p> <ul style="list-style-type: none"> • A99-32X100GE-X-SE • A9K-20HG-FLEX-SE • A9K-8HG-FLEX-SE • A9K-4HG-FLEX-SE <p>This feature is also supported on these fixed routers:</p> <ul style="list-style-type: none"> • Cisco ASR 9902 Router • Cisco ASR 9903 Router
Hardware Reliability	cnBNG on ASR 9000 5th Generation 400G Ethernet Enhanced Line Cards	<p>The Cloud-Native Broadband Network Gateway (cnBNG) enhances subscriber management, traffic optimization, and service delivery by leveraging CUPS BNG Architecture as defined in Broadband Forum TR-459 to manage subscriber sessions, aggregate traffic, and ensure secure and reliable broadband access.</p> <p>The user plane functionality for cnBNG is now supported on these line cards</p> <ul style="list-style-type: none"> • A99-4HG-FLEX-X-SE • A9K-4HG-FLEX-X-SE
Ease of use	RADIUS-Based Policing - QoS shape-rate parameterization	<p>You can now dynamically manage your cnBNG subscriber services through RADIUS-based activation. With RADIUS-Based Policing (RaBaPol), you can customize service parameters, such as the QoS shape-rate, according to your requirements, giving you greater control over service management.</p>
Ease of use	Shared Policy Instance	<p>You can now allocate and share a single set of QoS resources across multiple cnBNG sub-interfaces and bundle sub-interfaces. By using a single QoS policy instance across multiple sub-interfaces, you can achieve aggregate shaping across your sub-interfaces, promoting streamlined bandwidth management.</p>
Broadband Network Gateway		
Hardware Reliability	BNG on ASR 9000 5th Generation 400G Ethernet Enhanced Line Cards	<p>The Broadband Network Gateway (BNG) enhances subscriber management, traffic optimization, and service delivery by acting as a central point for managing subscriber sessions, aggregating traffic, and ensuring secure and reliable broadband access.</p> <p>BNG support is now available on these line cards:</p> <ul style="list-style-type: none"> • A99-4HG-FLEX-X-SE • A9K-4HG-FLEX-X-SE

Product Impact	Feature	Description
Software Reliability	TCP MSS adjustment	<p>You can now enhance network performance by optimizing TCP packet sizes, reducing fragmentation, and improving data transmission efficiency. This capability ensures compatibility and performance optimization in scenarios where mismatched MSS values between endpoints could lead to suboptimal performance or packet loss. By dynamically tuning the MSS in TCP SYN packets, the feature ensures seamless communication. In its default operation, the feature applies the default MSS value consistently across all interfaces when no custom MSS value is configured. For custom configurations, it matches the configured MSS value, ensuring optimal data flow and preventing packet loss. This functionality is critical for maintaining robust network performance and addressing challenges in data transmission.</p> <p>The default value of TCP MSS adjustment is 1436 bytes. The supported range for TCP MSS adjustment is 1280 to 1535 bytes.</p>
System Management		
Upgrade	Precision time protocol on ASR 9000 5th generation 400G ethernet enhanced line card	<p>Based on the IEEE 1588-2008 standard, Precision Time Protocol (PTP) is a protocol that defines a method to synchronize clocks in a network for networked measurement and control systems.</p> <p>This feature is now supported on A99-4HG-FLEX-X-SE line card.</p> <p>Class B performance is supported on all ports 1G, 10G, 25G, 40G and 100G for A9K-4HG-FLEX-X-SE and A99-4HG-FLEX-X-SE line cards.</p> <p>Route processors:</p> <ul style="list-style-type: none"> • A9K-RSP5-SE/TR • A99-RP3-SE/TR <p>Class C performance is supported on all ports 1G, 10G, 25G, 40G and 100G for A9K-4HG-FLEX-X-SE and A99-4HG-FLEX-X-SE line cards.</p> <p>Route processors:</p> <ul style="list-style-type: none"> • A9K-RSP5-X-SE/TR • A99-RP3-X-SE/TR <p>With this release, A99-4HG-FLEX-X-SE line card supports these PTP telecom profiles:</p> <p>G.8265.1</p> <p>G.8273.2</p> <p>G.8275.1</p> <p>G.8275.2</p>

Product Impact	Feature	Description
Upgrade	SyncE support on ASR 9000 5th generation 400G ethernet enhanced line card	<p>SyncE provides synchronization signals transmitted over the Ethernet physical layer to downstream devices, while the Synchronization Status Message (SSM) indicates the quality level of the transmitting clock to the neighboring nodes, informing the nodes about the level of the network's reliability. Ethernet Synchronization Message Channel (ESMC) is the logical channel that uses an Ethernet PDU (protocol data unit) to exchange SSM information over the SyncE link.</p> <p>This feature is now supported on A99-4HG-FLEX-X-SE line card.</p> <p>Route Processors:</p> <ul style="list-style-type: none"> • A9K-RSP5-SE/TR • A99-RP3-SE/TR • A9K-RSP5-X- SE/TR • A99-RP3-X- SE/TR <p>With this release, A99-4HG-FLEX-X-SE line card supports these PTP telecom profiles:</p> <p>G.8265.1</p> <p>G.8273.2</p> <p>G.8275.1</p> <p>G.8275.2</p>
L2VPN and Ethernet Services		
Software Reliability	EVPN port-active manual switchover and swap DF role	You can now optimize traffic management, redundancy, and high availability in EVPN port-active multihoming setups by manually controlling the DF role on an ES, enabling the swapping of the DF role between active and standby routers and vice versa.
Routing		
Ease of Setup	IS-IS static neighbor	IS-IS static neighbor allows the advertisement of an IS-IS link without forming an actual IS-IS adjacency. This feature is useful when a link is required in the topology for the controller, but IS-IS is not actively running on the link.
Segment Routing		
Ease of Use	BVI support for L3VPN over SRv6	The feature introduces support for Bridge Group Virtual Interfaces (BVIs) in Layer 3 VPN (L3VPN) services over Segment Routing over IPv6 (SRv6). The capability enables seamless integration of bridge-based access networks with SRv6 transport in the provider core, without requiring changes to existing access architectures.
System Security		
Software Reliability	MACsec for A99-4HG-FLEX-X-SE	MACsec, the Layer 2 encryption protocol, secures the data on physical media and provides data integrity and confidentiality. MACsec is now supported on A99-4HG-FLEX-X-SE line card, at all port speeds across all ports, including the breakout ports.

New hardware

Table 2. New hardware for Cisco ASR 9000 Series Routers, Release 25.2.1

Hardware	Description
A99-4HG-FLEX-X-SE line card	<p>The A99-4HG-FLEX-X-SE line card supports front panel bandwidth of 400 Gbps through optics ports. The front panel consists of these ports:</p> <ul style="list-style-type: none">• 4 QSFP28 ports capable of 100Gb, 40Gb• 16 SFP28 ports capable of 25Gb, 10Gb, 1Gb• 24 SFP+ ports capable of 10Gb, 1Gb <p>The A99-4HG-FLEX-X-SE line card is optimized for use in Cisco ASR 9900 series routers only.</p>
Optics	<p>Note: Optics support varies across devices (routers, line cards, RPs, and so on). To know if an optics is compatible with a specific Cisco device, refer to the Transceiver Module Group (TMG) Compatibility Matrix.</p> <p>This release introduces the following optics:</p> <p>Cisco QSFP28-100G- ZR Bidirectional Pluggable Transceivers</p> <p>DP01QS28-E20 (C-Temp)</p>

Changes in behavior

- [Customize docker run options using application manager](#): The **--cap-add=NET_RAW** option has been added to the Docker Run configuration which enables Application Manager containers to perform advanced network-level operations, improving the functionality of containerized applications.
- [Autoroute announce with IPv6 destination address for ISIS](#): Two new keywords, **destination** and **ipv6**, were added to the **autoroute announce** command to provide the IPv6 destination address to ISIS thus allowing an MPLS-TE tunnel as the nexthop for IPv6 destinations. ISIS uses this address when filtering prefixes.
- [Type6 Server output enhancements](#): The **show type6 server** command now includes two new outputs that provides additional details for enhanced server management and troubleshooting:
 - Masterkey Length
 - Masterkey Hash
- [gRPC remote-connection](#): A new command, **grpc remote-connection disable**, has been introduced. This command allows users to disable TCP connections on the router, providing greater control over network configurations.
- Full overwrite for gNMI union-replace operations: The gNMI union-replace operation has been enhanced to align more closely with the intended behavior defined in the gNMI specification. Instead of merging new configuration data with existing configuration, the operation now performs a full commit-replace, ensuring that the resulting configuration reflects only the contents of the union-replace request.

- When performing a statistics collection via gNMI from the router for **Cisco-IOS-XR-platforms-ofa-oper:ofa/stats/nodes/node/Cisco-IOS-XR-ofa-npu-stats-oper:asic-statistics/asic-statistics-drop-for-npu-ids/asic-statistics-drop-for-npu-id**, the precision is incorrectly reported in microseconds instead of nanoseconds.
- The DC-powered Cisco ASR 9000 series routers power-down if the input voltage goes below 38.5V. The routers automatically power-up again when the input voltage is restored to a value above 42.5V (within the range of 42.5V to 54V). During voltage drops, the Cisco IOS XR software raises alarms: a minor alarm for <44V, a major alarm for <42V, and a critical alarm for <40V. These alarms can be viewed using the **show alarms** command. In Release 25.2.1, to prevent router shut down due to low voltage (between 38.5V and 40V), you can disable graceful system shutdown by executing the **environment graceful-shutdown disabled** command.
- The **Cisco-IOS-XR-pmengine-oper.yang data** model has been updated to ensure consistency. The naming convention has been standardized by renaming elements such as **hour24fec** to **hour24-fec**, **minute15pcs** to **minute15-pcs**, and **second30pcs** to **second30-pcs** across all layers, including OTN, OTNSEC, PCS, FEC, PRBS, Ether, and GFP. For more details on the sensor paths or the updated 25.2.1 Yang models, refer to the [GitHub](#) repository.

Open issues

Table 3. Open issues for Cisco ASR 9000 Series Routers, Release 25.2.1

Bug ID	Description
CSCwo96518	The line cards take additional time to come up in comparison with the previous releases.
CSCwo39824	PEC failed state, sub-slot reload with an active BNG session.

Known issues

There are no known issues in this release.

Compatibility

Compatibility matrix for EPNM and Crosswork with Cisco IOS XR software

The compatibility matrix lists the version of EPNM and Crosswork that are supported with Cisco IOS XR Release in this release.

Table 4. Compatibility Matrix

Cisco IOS XR	Crosswork	EPNM
Release 25.2.1	Crosswork Optimization Engine 6.0	Evolved Programmable Network Manager 7.1.1

Memory

The available memory for Cisco ASR 9000 Series Aggregation Services Router running Cisco IOS XR Software Release consist of the following:

- 32 GB memory on the A99-RP-F

- 24 GB memory on the RP3 transport optimised (TR) variant and 40 GB memory on the RP3 service edge (SE) variant
- 24 GB memory on the RP3-X transport optimized (TR) variant and 48 GB memory on the RP3-X service edge (SE) variant
- 24 GB memory on the RSP5 transport optimized (TR) variant and 40 GB memory on the RSP5 service edge (SE) variant
- 24 GB memory on the RSP5-X transport optimized (TR) variant and 48 GB memory on the RSP5-X service edge (SE) variant
- 2 GB compact flash on route switch processors (RSPs)
- 8 GB memory on the line cards (LCs) running Cisco IOS XR 64-bit image

Caution: If you remove the media in which the software image or configuration is stored, the router may become unstable and fail.

Software compatibility

Cisco IOS XR Software Release is compatible with the following Cisco ASR 9000 Series Aggregation Services Router systems.

- Cisco ASR 9900 Series Chassis
 - Cisco ASR 9922 Chassis
 - Cisco ASR 9912 Chassis
 - Cisco ASR 9910 Chassis
 - Cisco ASR 9906 Chassis
 - Cisco ASR 9904 Chassis
 - Cisco ASR 9903 Chassis
 - Cisco ASR 9902 Chassis
 - Cisco ASR 9901 Chassis
- Cisco ASR 9000 Series Chassis
 - Cisco ASR 9010 Chassis
 - Cisco ASR 9006 Chassis

For Cisco license support, please contact your Cisco Sales Representative or Customer Service at 800-553-NETS (6387) or 408-526-4000. For questions on the program other than ordering, please send e-mail to: cwm-license@cisco.com.

Supported hardware

Table of supported hardware components and the minimum required software versions.

Table 5. Supported Hardware

Part Number	Description	Support Initially Provided in IOS XR 64 bit Release
Cisco ASR 9000 Series Aggregation Services Router - Route Switch Processor Cards		
A9K-RSP5-X-SE	ASR 9000 Series Route Switch Processor 5 for Service Edge, Premium	Release 7.6.2
A9K-RSP5-X-TR	ASR 9000 Series Route Switch Processor 5 for Packet Transport, Premium	Release 7.6.2
A9K-RSP5-SE	ASR 9000 Route Switch Processor 5 for Service Edge	Release 6.5.15
A9K-RSP5-TR	ASR 9000 Route Switch Processor 5 for Packet Transport	Release 6.5.15
Cisco ASR 9000 Series Aggregation Services Router - Route Processor Cards		
A99-RP3-X-SE	ASR 9900 Route Processor 3 for Service Edge, Premium	Release 7.6.2
A99-RP3-X-TR	ASR 9900 Route Processor 3 for Packet Transport, Premium	Release 7.6.2
A99-RP3-SE	ASR 9900 Route Processor 3 for Service Edge	Release 6.5.15
A99-RP3-TR	ASR 9900 Route Processor 3 for Packet Transport	Release 6.5.15
Cisco ASR 9901 Router		
ASR-9901	Cisco ASR 9000 Series Aggregation Services Router 2-RU Fixed Port	Release 6.4.1
ASR-9901-FAN	Cisco ASR 9000 Series Aggregation Services Router 2-RU Fixed Port Fan Tray	Release 6.4.1
A9K-1600W-AC	Cisco ASR 9000 Series Aggregation Services Router 2-RU 1600W AC Power Module	Release 6.4.1
A9K-1600W-DC	Cisco ASR 9000 Series Aggregation Services Router 2-RU 1600W DC Power Module	Release 6.4.1
Cisco ASR 9902 Router		
ASR-9902	Cisco ASR 9902 2RU Chassis with fixed ports	Release 7.4.1
A99-RP-F	Cisco ASR 9900 Fixed Chassis Route Processor	Release 7.1.3
ASR-9902-4P-KIT	Cisco ASR 9902 4-Post Mounting Kit for 19-Inch and 23-Inch Rack	Release 7.4.1
ASR-9902-4P-KIT-L	ASR 9902 4-Post Mounting Kit for 19 and 23 inch Rack - Long	Release 7.4.1
ASR-9902-2P-KIT	Cisco ASR 9902 2-Post Mounting Kit for 19-Inch and 23-Inch Rack	Release 7.4.1
ASR-9902-CAB-MGMT	Cisco ASR 9902 Cable Management	Release 7.4.1
ASR-9902-FILTER	Cisco ASR 9902 Air Filter	Release 7.4.1

Part Number	Description	Support Initially Provided in IOS XR 64 bit Release
ASR-9902-FAN	Cisco ASR 9902 Fan Tray	Release 7.4.1
Cisco ASR 9903 Router		
ASR-9903	Cisco ASR 9903 Compact High-Performance Router with fixed ports and PEC (Port Expansion Card) slot.	Release 7.1.3
A99-RP-F	Cisco ASR 9900 Fixed Chassis Route Processor	Release 7.1.3
ASR-9903-FAN	Cisco ASR 9903 Router Fan Tray	Release 7.1.3
ASR-9903-4P-KIT	ASR 9903 4-Post Mounting Kit for 19-inch Rack	Release 7.1.3
ASR-9903-CAB-MGMT	ASR 9903 Cable Management Brackets	Release 7.1.3
ASR-9903-FILTER	ASR 9903 Air Filter	Release 7.1.3
Cisco ASR 9904 Router		
ASR-9904	Cisco ASR 9000 Series Aggregation Services Router 4-Slot 2 Line Card Slot Chassis, 6 RU	Release 6.1.2
ASR-9904-AC	Cisco ASR 9000 Series Aggregation Services Router 4-Slot 2 Line Card Slot AC Chassis w/ PEM V2	Release 6.1.2
ASR-9904-DC	Cisco ASR 9000 Series Aggregation Services Router 4-Slot 2 Line Card Slot DC Chassis w/ PEM V2	Release 6.1.2
ASR-9904-FAN	Cisco ASR 9000 Series Aggregation Services Router 4-Slot Fan Tray	Release 6.1.2
ASR-9904-FILTER	Cisco ASR 9000 Series Aggregation Services Router 4-Slot Filter	Release 6.1.2
ASR-9904-BAFFLE	Cisco ASR 9000 Series Aggregation Services Router 4-Slot Baffle	Release 6.1.2
Cisco ASR 9912 Router		
ASR-9912	Cisco ASR 9000 Series Aggregation Services Router 12-Slot 10 Line Card Slot Chassis	Release 6.1.2
ASR-9912-AC	Cisco ASR 9000 Series Aggregation Services Router 12-Slot 10 Line Card Slot AC Chassis w/ PEM V2	Release 6.1.2
ASR-9912-DC	Cisco ASR 9000 Series Aggregation Services Router 12-Slot 10 Line Card Slot DC Chassis w/ PEM V2	Release 6.1.2
A99-SFC3	Cisco ASR 9900 Switch Fabric Card 3	Release 6.5.15
ASR-9912-FAN	Cisco ASR 9000 Series Aggregation Services Router 12-Slot Fan Tray	Release 6.1.2
Cisco ASR 9922 Router		

Part Number	Description	Support Initially Provided in IOS XR 64 bit Release
ASR-9922	Cisco ASR 9922 20 Line Card Slot Chassis, 44 RU	Release 6.1.2
ASR-9922-AC	Cisco ASR 9000 Series Aggregation Services Router 22-Slot 20 Line Card Slot AC Chassis w/ PEM V2	Release 6.1.2
ASR-9922-DC	Cisco ASR 9000 Series Aggregation Services Router 22-Slot 20 Line Card Slot DC Chassis w/ PEM V2	Release 6.1.2
A99-SFC3	Cisco ASR 9900 Switch Fabric Card 3	Release 6.5.15
ASR-9922-FAN-V3	Cisco ASR 9000 Series Aggregation Services Router 22-Slot Fan Tray version 3	Release 6.5.15
ASR-9922-FLTR-CV2	Cisco ASR 9000 Series Aggregation Services Router 22-Slot Air Filter with Media, Center	Release 6.1.2
ASR-9922-FLTR-LR	Cisco ASR 9000 Series Aggregation Services Router 22-Slot Air Filter with Media, Left & Right	Release 6.1.2
ASR-9922-RP-FILR	Cisco ASR 9000 Series Aggregation Services Router 22-Slot Route Processor Filler	Release 6.1.2
ASR-9922-FAN-V2	Cisco ASR 9000 Series Aggregation Services Router 22-Slot Version 2 Fan Tray	Release 6.1.2
Cisco ASR 9006 Router		
ASR-9006-SYS	Cisco ASR 9000 Series Aggregation Services Router 6-Slot System	Release 6.1.2
ASR-9006-AC-V2	Cisco ASR 9000 Series Aggregation Services Router 6-Slot AC Chassis Version 2	Release 6.1.2
ASR-9006-DC-V2	Cisco ASR 9000 Series Aggregation Services Router 6-Slot DC Chassis Version 2	Release 6.1.2
ASR-9006-FAN	Cisco ASR 9000 Series Aggregation Services Router 6-Slot Fan Tray	Release 6.1.2
ASR-9006-FAN-V2	Cisco ASR 9000 Series Aggregation Services Router 6-Slot Version 2 Fan Tray	Release 6.1.2
ASR-9006-DOOR	Cisco ASR 9000 Series Aggregation Services Router 6-Slot Door Kit	Release 6.1.2
ASR-9006-FILTER	Cisco ASR 9000 Series Aggregation Services Router 6-Slot Air Filter	Release 6.1.2
Cisco ASR 9906 Router		
ASR-9906	Cisco ASR 9000 Series Aggregation Services Router 6-Slot chassis	Release 6.3.1
ASR-9906-FAN	Cisco ASR 9000 Series Aggregation Services Router 6-Slot Fan Tray	Release 6.3.1
ASR-9906-FILTER	Cisco ASR 9000 Series Aggregation Services Router 6-Slot Fan Filter	Release 6.3.1

Part Number	Description	Support Initially Provided in IOS XR 64 bit Release
A99-SFC3-T	ASR 9906 Switch Fabric Card	Release 6.5.15
Cisco ASR 9010 Router		
ASR-9010-SYS	Cisco ASR 9000 Series Aggregation Services Router 10-Slot System	Release 6.1.2
ASR-9010-AC-V2	Cisco ASR 9000 Series Aggregation Services Router 10-Slot AC Chassis Version 2	Release 6.1.2
ASR-9010-DC-V2	Cisco ASR 9000 Series Aggregation Services Router 10-Slot DC Chassis Version 2	Release 6.1.2
ASR-9010-FAN	Cisco ASR 9000 Series Aggregation Services Router 10-Slot Fan Tray	Release 6.1.2
ASR-9010-FAN-V2	Cisco ASR 9000 Series Aggregation Services Router 10-Slot Version 2 Fan Tray	Release 6.1.2
ASR-9010-DOOR	Cisco ASR 9000 Series Aggregation Services Router 10-Slot Door Kit	Release 6.1.2
ASR-9010-2P-KIT	Cisco ASR 9000 Series Aggregation Services Router 2 Post Mounting Kit	Release 6.1.2
ASR-9010-4P-KIT	Cisco ASR 9000 Series Aggregation Services Router 4 Post Mounting Kit	Release 6.1.2
ASR-9010-FILTER	Cisco ASR 9000 Series Aggregation Services Router 10-Slot Air Filter	Release 6.1.2
Cisco ASR 9910 Router		
ASR-9910	Cisco ASR 9000 Series Aggregation Services Router 10-Slot (9910) System	Release 6.2.1
ASR-9910-FAN	Cisco ASR 9000 Series Aggregation Services Router 10-Slot(9910) Fan Tray	Release 6.2.1
ASR-9910-ACC-KIT	Cisco ASR 9000 Series Aggregation Services Router 10-Slot (9910) Accessory Kit	Release 6.2.1
ASR-9910-4P-KIT	Cisco ASR 9000 Series Aggregation Services Router 10-Slot (9910) 4 Post Rack Mounting Kit	Release 6.2.1
ASR-9910-2P-KIT	Cisco ASR 9000 Series Aggregation Services Router 10-Slot (9910) 2 Post Rack Mounting Kit	Release 6.2.1
ASR-9910-AIRREF	Cisco ASR 9000 Series Aggregation Services Router 10-Slot (9910) Air Reflector	Release 6.2.1
ASR-9910-FILTER	Cisco ASR 9000 Series Aggregation Services Router 10-Slot (9910) Air Filter	Release 6.2.1
A99-SFC3-S	ASR 9910 Switch Fabric Card 3	Release 6.5.15
Cisco ASR 9000 Series Aggregation Services Router - Route Switch Processor Cards		

Part Number	Description	Support Initially Provided in IOS XR 64 bit Release
A9K-RSP5-X-SE	ASR 9000 Series Route Switch Processor 5 for Service Edge, Premium	Release 7.6.2
A9K-RSP5-X-TR	ASR 9000 Series Route Switch Processor 5 for Packet Transport, Premium	Release 7.6.2
A9K-RSP5-SE	ASR 9000 Route Switch Processor 5 for Service Edge	Release 6.5.15
A9K-RSP5-TR	ASR 9000 Route Switch Processor 5 for Packet Transport	Release 6.5.15
Cisco ASR 9000 Series Aggregation Services Router - Power Modules		
PWR-2KW-DC-V2	Cisco ASR 9000 Series Aggregation Services Router 2KW DC Power Module, version 2	Release 6.1.2
PWR-3KW-AC-V2	Cisco ASR 9000 Series Aggregation Services Router 3KW AC Power Module, version 2	Release 6.1.2
A9K-AC-PEM-V2	Cisco ASR 9000 Series Aggregation Services Router AC Power Entry Module Version 2	Release 6.1.2
A9K-DC-PEM-V2	Cisco ASR 9000 Series Aggregation Services Router DC Power Entry Module Version 2	Release 6.1.2
A9K-PEM-V2-FILR	Cisco ASR 9000 Series Aggregation Services Router Power Entry Module Version 2 Filler	Release 6.1.2
A9K-AC-PEM-V3	Cisco ASR 9000 Series Aggregation Services Router AC Power Enclosure Module Version 3	Release 6.1.2
A9K-DC-PEM-V3	Cisco ASR 9000 Series Aggregation Services Router DC Power Enclosure Module Version 3	Release 6.1.2
PWR-6KW-AC-V3	Cisco ASR 9000 Series Aggregation Services Router 6kW AC Power Module Version 3	Release 6.1.2
PWR-4.4KW-DC-V3	Cisco ASR 9000 Series Aggregation Services Router 4.4kW DC Power Module Version 3	Release 6.1.2
PWR-1.6KW-AC	ASR 9900 Fixed Chassis AC Power Supply	Release 7.1.25
PWR-1.6KW-DC	ASR 9900 Fixed Chassis DC Power Supply	Release 7.1.25
Cisco ASR 9000 Series Aggregation Services Router - Line Cards		
A99-4HG-FLEX-X-SE	ASR 9900 400GE Combo Service Edge Line Card Enhanced - 5th Generation	Release 25.2.1
A9K-4HG-FLEX-X-SE	ASR 9000 400GE Combo Service Edge Line Card Enhanced - 5th Generation	Release 25.1.1
A9K-4HG-FLEX-SE	ASR 9000 400GE Combo Service Edge Line Card - 5th Generation	Release 7.4.1

Part Number	Description	Support Initially Provided in IOS XR 64 bit Release
A9K-4HG-FLEX-TR	ASR 9000 400GE Combo Packet Transport Line Card - 5th Generation	Release 7.4.1
A99-4HG-FLEX-SE	ASR 9900 400GE Combo Service Edge Line Card - 5th Generation	Release 7.4.1
A99-4HG-FLEX-TR	ASR 9900 400GE Combo Packet Transport Line Card - 5th Generation	Release 7.4.1
A9903-8HG-PEC	ASR 9903 800G Multi-rate Port Expansion Card	Release 7.4.1
A99-10X400GE-X-SE	ASR 9900 4T Service Edge Line Card - 5th Generation	Release 7.3.1
A99-10X400GE-X-TR	ASR 9900 4T Packet Transport Line Card - 5th Generation	Release 7.3.1
A9903-20HG-PEC	ASR 9903 2T Multi-rate Port Expansion Card	Release 7.1.3
A99-32X100GE-X-SE	ASR 9000 32-Port 100GE QSFP28/QSFP+ Service Edge optimized Line Card - 5th Generation	Release 7.1.15
A99-32X100GE-X-TR	ASR 9000 32-Port 100GE QSFP28/QSFP+ Packet Transport optimized Line Card - 5th Generation	Release 7.1.15
A9K-20HG-FLEX-SE	ASR 9000 2T Combo Line Card - 5th Generation	Release 7.1.15
A9K-20HG-FLEX-TR	ASR 9000 800G Combo Line Card - 5th Generation	Release 7.1.15
A9K-8HG-FLEX-SE		
A9K-8HG-FLEX-TR	ASR 9000 16-port 100GE QSFP TR line card	Release 6.5.15
A9K-16X100GE-TR		
A99-32X100GE-TR	ASR 9900 32-port 100GE QSFP TR line card	Release 6.5.15
A99-48X10GE-1G-SE	ASR 9000 48 port dual rate 10G/1G Service Edge line card	Release 6.5.2
A99-48X10GE-1G-TR	ASR 9000 48 port dual rate 10G/1G Transport Optimised line card	Release 6.5.2

Part Number	Description	Support Initially Provided in IOS XR 64 bit Release
A99-16X100GE-X-SE	ASR 9900 16-port 100GE QSFP SE	Release 6.5.3
A9K-48X10GE-1G-CM	ASR 9000 48-port dual-rate 10G/1G Consumption Model line card	Release 6.4.1
A9K-24X10GE-1G-CM	ASR 9000 24-port dual-rate 10G/1G Consumption Model line card	Release 6.4.1
A9K-48X10GE-1G-SE	ASR9000 48-port dual-rate 10G/1G service edge-optimized line card	Release 6.3.2
A9K-48X10GE-1G-TR	ASR9000 48-port dual-rate 10G/1G packet transport-optimized line card	Release 6.3.2
A9K-24X10GE-1G-SE	ASR9000 24-port dual-rate 10G/1G service edge-optimized line card	Release 6.3.2
A9K-24X10GE-1G-TR	ASR9000 24-port dual-rate 10G/1G packet transport-optimized line card	Release 6.3.2
Cisco ASR 9000 Series Aggregation Services Router - Modular Line Cards		
A9K-MOD400-CM	Cisco ASR 9000 Modular 400G Consumption Model Line Card	Release 6.2.1
A9K-MOD400-SE	Cisco ASR 9000 Series Aggregation Services Router 400 Gigabyte Modular Line Card, Service Edge Optimized	Release 6.2.1
A9K-MOD400-TR	Cisco ASR 9000 Series Aggregation Services Router 400 Gigabyte Modular Line Card, Packet Transport Optimized	Release 6.2.1
Cisco ASR 9000 Series Aggregation Services Router - Modular Port Adapters (MPAs)		
A9K-MPA-1X200GE	Cisco ASR 9000 1-port 200-Gigabit Ethernet MPA, requires CFP2-DCO optics	Release 6.6.2
A9K-MPA-32X1GE	Cisco ASR 9000 32-port 1-Gigabit Ethernet MPA with MACSec	Release 6.6.2
A9K-MPA20X10GE-CM	Cisco ASR 9000 20x10GE Consumption Model MPA	Release 6.5.1
A9K-MPA2X100GE-CM	Cisco ASR 9000 2x100GE Consumption Model MPA	Release 6.5.1
A9K-MPA-1X100GE	Cisco ASR 9000 Series Aggregation Services Router 1-port 100-Gigabit Modular Port Adapter	Release 6.3.1
A9K-MPA-2X100GE	Cisco ASR 9000 Series Aggregation Services Router 2-port 100-Gigabit Modular Port Adapter	Release 6.2.2

Part Number	Description	Support Initially Provided in IOS XR 64 bit Release
A9K-MPA-20x10GE	20-Port 10-Gigabit Ethernet Modular Port Adapter with SFP+	Release 6.2.1
A9K-MPA-8X10GE	Cisco ASR 9000 Series Aggregation Services Router 8-port 10GE Modular Port Adapter	Release 6.3.2
A9K-MPA-4X10GE	Cisco ASR 9000 Series Aggregation Services Router 4-port 10GE Modular Port Adapter	Release 6.2.1
A9K-MPA-20X1GE	Cisco ASR 9000 Series Aggregation Services Router 20-port 1GE Modular Port Adapter	Release 6.2.1
A9K-MPA-2X40GE	Cisco ASR 9000 Series Aggregation Services Router 2-port 40GE Modular Port Adapter	Release 6.3.1

Supported software packages

Feature set (software images)

Visit the [Cisco Software Download](#) page to download the Cisco IOS XR software.

Cisco IOS XR 64 bit

This table lists the feature set matrix (ISO and RPM files) and associated filenames available for the Cisco IOS XR 64 bit 25.2.1 Release supported on the Cisco ASR 9000 Series Aggregation Services Router.

Table 6. Cisco IOS XR 64 bit Software Release 25.2.1 TAR Files

Feature Set	Filename	Description
Cisco IOS XR IP/MPLS Core Software [for RSP and RP systems]	ASR9K-x64-iosxr-px-25.2.1.tar	Cisco IOS XR Manageability Package Cisco IOS XR MPLS Package Cisco IOS XR MPLS -TE and RSVP Package Cisco IOS XR Multicast Package Cisco IOS XR Optics Package Cisco IOS XR BNG Package Cisco IOS XR Lawful Intercept Package Cisco IOS XR Satellite Package Cisco IOS XR EIGRP Package Cisco IOS XR ISIS Package Cisco IOS XR OSPF Package Cisco IOS XR Service Package
Cisco IOS XR IP/MPLS Core Software 3DES [for RSP and RP systems]	ASR9K-x64-iosxr-px-k9-25.2.1.tar	Cisco IOS XR Manageability Package Cisco IOS XR MPLS Package Cisco IOS XR MPLS -TE and RSVP Package Cisco IOS XR Multicast Package Cisco IOS XR Optics Package Cisco IOS XR BNG Package Cisco IOS XR Lawful Intercept Package Cisco IOS XR Satellite Package Cisco IOS XR Security Package Cisco IOS XR EIGRP Package Cisco IOS XR ISIS Package Cisco IOS XR OSPF Package Cisco IOS XR Service Package

Feature Set	Filename	Description
Cisco IOS XR IP Unicast Routing Core Bundle and Migration to IOS XR 64 bit tar image	asr9k-mini-x64-migrate_to_eXR.tar-25.2.1	Contains the required core packages, including OS, Admin, Base, Forwarding, Modular Services Card, Routing, FPD, SNMP Agent, and Alarm Correlation. Contains mini.iso file for XR 64 bit 24.3.2 and additional software for migration to 64 bit.

Table 7. Cisco IOS XR 64 bit Software Release 25.2.1 ISO and RPM Files

Feature Set	Filename	Description
Composite Package		
Cisco IOS XR IP Unicast Routing Core Bundle	asr9k-mini-x64-25.2.1.iso	Contains the required core packages, including OS, Admin, Base, Forwarding, Modular Services Card, Routing, FPD, SNMP Agent, and Alarm Correlation. The mini iso file is used for upgrading to the new release.
Individually Installable Optional Packages		
Cisco IOS XR 64 bit EIGRP package	asr9k-eigrp-x64-1.0.0.0-r2521.x86_64.rpm	Includes EIGRP protocol support software
Cisco IOS XR BNG Package	asr9k-bng-x64-1.1.0.0-r2521.x86_64.rpm	Includes binaries to support BNG features.
Cisco IOS XR 64 bit ISIS package	asr9k-isis-x64-1.1.0.0-r2521.x86_64.rpm	Includes IS-IS Link state protocol support software
Cisco IOS XR 64 bit OSPF package	asr9k-ospf-x64-1.1.0.0-r2521.x86_64.rpm	Includes OSPF link state protocol support software
Cisco IOS XR Manageability Package	asr9k-mgbl-x64-3.0.0.0-r2521.x86_64.rpm	CORBA2 agent, XML3 Parser, and HTTP server packages. This RPM also contains some SNMP MIB infrastructure. Certain MIBs won't work if this RPM is not installed. IPSLA and environment MIBs are part of the mgbl rpm.
Cisco IOS XR 64 bit MPLS-TE and RSVP package	asr9k-mpls-te-rsvp-x64-1.2.0.0-r2521.x86_64.rpm	MPLS Traffic Engineering (MPLS-TE), Resource Reservation Protocol (RSVP).
Cisco IOS XR 64 bit MPLS Package	asr9k-mpls-x64-2.1.0.0-r2521.x86_64.rpm	Label Distribution Protocol (LDP), MPLS Forwarding, MPLS Operations, Administration, and Maintenance (OAM), Link Manager Protocol (LMP), Optical User Network Interface (OUNI) and Layer-3 VPN.

Feature Set	Filename	Description
Cisco IOS XR 64 bit Multicast Package	asr9k-mcast-x64-2.0.0.0-r2521.x86_64.rpm	Multicast Routing Protocols (PIM, Multicast Source Discovery Protocol [MSDP], Internet Group Management Protocol [IGMP], Auto-RP), Tools (SAP, MTrace), and Infrastructure [(Multicast Routing Information Base [MRIB], Multicast-Unicast RIB [MURIB], Multicast forwarding [MFWD]), and Bidirectional Protocol Independent Multicast (BIDIR-PIM).
Cisco IOS XR 64 bit Optics Package	asr9k-optic-x64-1.0.0.0-r2521.x86_64.rpm	Firmware for the optics feature for Cisco ASR 9000 Series Aggregation Services Router Chassis. It enables Transport / OTN feature under interfaces.
Cisco IOS XR 64 bit Lawful Intercept (LI) Package	asr9k-li-x64-1.1.0.0-r2521.x86_64.rpm	Includes LI software images.
Cisco IOS XR Security Package	asr9k-k9sec-x64-3.1.0.0-r2521.x86_64.rpm	Support for Encryption, Decryption,, Secure Shell (SSH), Secure Socket Layer (SSL), and Public-key infrastructure (PKI).
Cisco IOS XR Satellite Package - ASR9000v	asr9k-9000v-nV-x64-1.0.0.0-r2521.x86_64.rpm	Includes RPM to support Cisco ASR9000v Series Router Software and to support Cisco ASR 9000v Series Router as a satellite for Cisco ASR 9000 Series Router
Cisco IOS XR 64 bit Services Package	asr9k-services-x64-1.0.0.0-r2521.x86_64.rpm	Includes RPM to support Cisco IOS XR 64-bit inline MAP-T function

Related resources

Table 8. Related resources

Resource	Description
Cisco feature finder	Assists in locating features introduced across Cisco IOS XR releases and platforms.
Smart licensing	Provides information about Smart Licensing Using Policy solutions and their deployment on IOS XR routers.
Cisco ASR 9000 documentation	Provides CDC documentation for Cisco ASR 9000 series routers.
Transceiver Module Group (TMG) compatibility matrix	Allows searching by product family, product ID, data rate, reach, cable type, or form factor to determine the transceivers that Cisco hardware device supports.
Cisco IOS XR Error messages	Allows searching by release number, error strings, or comparing release numbers to view a detailed repository of error messages and descriptions.
Cisco IOS XR MIBs	Allows selecting the MIB of your choice from a drop-down to explore an extensive repository of MIB information.
Yang data models in GitHub	Provides yang data models introduced and enhanced in every IOS XR release.



Resource	Description
Recommended release	Provides a general guide in case of upgrading IOS XR routers or new deployments that involve IOS XR routers.

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