# Release Notes for Cisco ASR 9000 Routers, Cisco IOS XR Release 6.9.2

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# Release Notes for Cisco ASR 9000 Series Routers, IOS XR Release 6.9.2

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).

For more information about ASR 9000 Series routers, see ASR 9000 Data Sheet listing page.

Cisco IOS XR Software is a distributed operating system designed for continuous system operation combined with service flexibility and higher performance.

To migrate from legacy 32 bit and new 64 bit IOS XR OS, refer to the Migration Guide for Cisco ASR 9000 Series Routers.

This release notes describe the features provided in the Cisco IOS XR Software Release 6.9.2. See the *What's New in Cisco IOS XR Release 6.9.2* section in this document for information on new software features.

## What's New in Cisco IOS XR Release 6.9.2

Cisco is continuously enhancing the product with every release and this section covers a brief description of key features and enhancements. It also includes links to detailed documentation, where available.

Cisco IOS XR Release 6.9.2 is a maintenance release for Cisco ASR 9000 Series routers. There are no new software features or hardware introduced in this release.

For more details on the Cisco IOS XR release model and associated support, see Guidelines for Cisco IOS XR Software.

## Supported Packages and System Requirements

This section describes the system requirements for Cisco ASR 9000 Series Aggregation Services Router Software Release 6.9.2.

### Feature Set (Software Images)

The Cisco ASR 9000 Series Aggregation Services Router Software is packaged in *feature sets* (also called *software images*). Each feature set contains a specific set of features for Cisco ASR 9000 Series Aggregation Services Router IOS XR Release 6.9.2.

This table lists the Cisco IOS XR Software feature set matrix (TAR files) and associated filenames available for the Cisco IOS XR Software Release 6.9.2 supported on the Cisco ASR 9000 Series Aggregation Services Router.

*Table 1: Cisco IOS XR Software Release 6.9.2 TAR Files*

| Feature Set | Filename | Description |
| --- | --- | --- |
| Cisco IOS XR IP/MPLS Core Software [for RSP880 and RP systems] | ASR9K-iosxr-px-6.9.2-turboboot.tar | Contains only the mini.vm package. |

| Feature Set | Filename | Description |
|---|---|---|
| Cisco IOS XR IP/MPLS Core Software [for RSP880 and RP systems] | ASR9K-iosxr-px-6.9.2-pies.tar | • Cisco IOS XR IP Unicast Routing Core Bundle<br>• Cisco IOS XR Manageability Package<br>• Cisco IOS XR MPLS Package<br>• Cisco IOS XR Multicast Package<br>• Cisco IOS XR FPD Package<br>• Cisco IOS XR Diagnostic Package<br>• Cisco IOS XR Advanced Video Package<br>• Cisco IOS XR Optics Package<br>• Cisco IOS XR Upgrade Package<br>• Cisco IOS XR BNG Packages<br>• Cisco IOS XR Lawful Intercept Package<br>• Cisco IOS XR Services Package<br>• Cisco IOS XR Satellite Package<br>• Cisco IOS XR Documentation Package |

| Feature Set | Filename | Description |
|---|---|---|
| Cisco IOS XR IP/MPLS Core Software 3DES [for RSP-2, RSP880 and RP systems] | ASR9K-iosxr-px-6.9.2-k9-pies.tar | • Cisco IOS XR IP Unicast Routing Core Bundle<br><br>• Cisco IOS XR Manageability Package<br><br>• Cisco IOS XR MPLS Package<br><br>• Cisco IOS XR Multicast Package<br><br>• Cisco IOS XR Security Package<br><br>• Cisco IOS XR FPD Package<br><br>• Cisco IOS XR Diagnostic Package<br><br>• Cisco IOS XR Advanced Video Package<br><br>• Cisco IOS XR Optics Package<br><br>• Cisco IOS XR Upgrade Package<br><br>• Cisco IOS XR BNG Packages<br><br>• Cisco IOS XR Lawful Intercept Package<br><br>• Cisco IOS XR Services Package<br><br>• Cisco IOS XR Satellite Package<br><br>• Cisco IOS XR Documentation Package |
| Cisco IOS XR Bridge and SMUs | ASR9k-iosxr-px-6.9.2-bridge_smus.tar | Contains all bridge SMUs |

This table lists the Cisco ASR 9000 Series Aggregation Services Router Software feature set matrix (PX PIE files) and associated filenames available for the Cisco IOS XR Release 6.9.2 supported on the Cisco ASR 9000 Series Aggregation Services Router.

*Table 2: Cisco IOS XR Software Release 6.9.2 PX PIE Files*

| Composite Package | | |
|---|---|---|
| **Feature Set** | **Filename** | **Description** |
| Cisco IOS XR IP Unicast Routing Core Bundle | asr9k-mini-px.pie-6.9.2 | Contains the required core packages, including OS, Admin, Base, Forwarding, Modular Services Card, Routing, SNMP Agent, and Alarm Correlation.<br><br>The mini pie file is used for upgrading to the new release |

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|---|---|---|
| Cisco IOS XR IP Unicast Routing Core Bundle | asr9k-mini-px.vm-6.9.2 | Contains the required core packages including OS, Admin, Base, Forwarding, Routing, SNMP Agent, Diagnostic Utilities, and Alarm Correlation.<br><br>The mini VM file is used for turbobooting the device. |
| **Individually-Installable Optional Packages** | | |
| **Feature Set** | **Filename** | **Description** |
| Cisco IOS XR Manageability Package | asr9k-mgbl-px.pie-6.9.2 | CORBA2 agent, XML3 Parser, and HTTP server packages. This PIE also contains some SNMP MIB infrastructure. Certain MIBs won't work if this PIE is not installed.<br><br>IPSLA and environment MIBs are part of the mgbl pie. |
| Cisco IOS XR CGv6 VSM Package | asr9k-services-infra.pie- 6.9.2 | Contains iso images and version details of System Admin Virtual Machine (VM) and Kernel-based Virtual Machine (KVM). |
| Cisco IOS XR MPLS Package | asr9k-mpls-px.pie-6.9.2 | MPLS Traffic Engineering (MPLS-TE), Label Distribution Protocol (LDP), MPLS Forwarding, MPLS Operations, Administration, and Maintenance (OAM), Link Manager Protocol (LMP), Optical User Network Interface (OUNI), Resource Reservation Protocol (RSVP), and Layer-3 VPN. |
| Cisco IOS XR Multicast Package | asr9k-mcast-px.pie-6.9.2 | 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 Advanced Video Package | asr9k-video-px.pie-6.9.2 | Software providing the vidmon and video quality monitoring feature for Cisco ASR 9000 Series Router chassis. |
| Cisco IOS XR Optics Package | asr9k-optic-px.pie-6.9.2 | Firmware for the optics feature for Cisco ASR 9000 Series Aggregation Services Router Chassis. It enables Transport / OTN feature under interfaces. |

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|---|---|---|
| Cisco IOS XR FPD Package | asr9k-fpd-px.pie-6.9.2 | Firmware pie for all LC and RSP FPGAs and ASICs. |
| Cisco IOS XR Services Package | asr9k-services.pie-6.9.2 | Includes binaries to support CGv6 on VSM. |
| Cisco IOS XR Documentation Package | asr9k-doc-px.pie-6.9.2 | .man pages for Cisco IOS XR Software on the Cisco ASR 9000 Series Aggregation Services Router Chassis. |
| Cisco IOS XR Satellite Package - ASR9000v | asr9000v-nV-px.pie-6.9.2 | Includes binaries 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 Satellite Package - NCS 5001 and 5002 | asr9k-ncs500x-nV-px.pie-6.9.2 | Includes binaries to support Cisco NCS 5001/5002 Series Router Software and to support Cisco NCS 5001/5002 Series Router as a satellite for Cisco ASR 9000 Series Router. |
| Cisco IOS XR BNG Packages | asr9k-bng-px.pie-6.9.2<br><br>asr9k-bng-supp-px.pie-6.9.2 | Includes binaries to support BNG features. |
| Cisco IOS XR Lawful Intercept (LI) Package | asr9k-li-px.pie-6.9.2 | Includes LI software images. |
| Cisco IOS XR Security Package | asr9k-k9sec-px.pie-6.9.2 | Support for Encryption, Decryption,, Secure Shell (SSH), Secure Socket Layer (SSL), and Public-key infrastructure (PKI). |

## Memory Requirements

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

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

- minimum 6 GB memory on the RSP880, RSP880-LT, and RP2.

- minimum 6 GB memory on the A99-RSP-TR and A99-RSP-SE.

- minimum 2 GB compact flash on route switch processors (RSPs).

- minimum 4 GB memory on the line cards (LCs) running Cisco IOS XR 32 bit image.

## Supported Hardware

The following table lists the supported hardware components on the Cisco ASR 9000 Series Router and the minimum required software versions. For more information, see the *Firmware Support* section.

All hardware features are supported on Cisco IOS XR Software, subject to the memory requirements specified in the "Memory Requirements, on page 6" section.

For information on the end-of-sale and end-of-life dates for the Cisco ASR 9000 Series Router hardware, refer to the End-of-Life and End-of-Sale Notices page.

**Note** The show command output lists supported and EOL hardware PIDs. To know the PIDs that are supported in this release, see the **Supported Hardware** section in this Release Notes.

*Table 3: Cisco ASR 9000 Series Aggregation Services Router Supported Hardware and Minimum Software Requirements*

| Cisco ASR 9000 Series Aggregation Services Router Route Switch Processor Cards | | |
| --- | --- | --- |
| **Component** | **Part Number** | **Support Initially Provided in IOS XR Release** |
| Cisco ASR 9000 Series Aggregation Services Router RSP880-Lite, Packet Transport Optimized | A9K-RSP880-LT-TR | Release 6.2.2 |
| Cisco ASR 9000 Series Aggregation Services Router RSP880-Lite, Service Edge Optimized | A9K-RSP880-LT-SE | Release 6.2.2 |
| Cisco ASR 9000 Series Aggregation Services Router RSP4-S, Service Edge Optimized for ASR 9910. | A99-RSP-SE | Release 6.0.1 |
| Cisco ASR 9000 Series Aggregation Services Router RSP4-S, Packet Transport Optimized for ASR 9910. | A99-RSP-TR | Release 6.0.1 |
| Cisco ASR 9000 Series Aggregation Services Router RSP4-S, Packet Transport Optimized for ASR 9906 | A99-RSP-TR | Release 6.3.1 |
| Cisco ASR 9000 Series Aggregation Services Router RSP4-S, Service Edge Optimized for ASR 9906 | A99-RSP-SE | Release 6.3.1 |
| ASR9K Route Switch Processor with 880G/slot and 32 GB for Service Edge | A9K-RSP880-SE | Release 5.3.0 |
| ASR9K Route Switch Processor with 880G/slot and 16 GB for Packet Transport | A9K-RSP880-TR | Release 5.3.0 |
| ASR Route Processor 32 GB for Service Edge | A99-RP2-SE | Release 5.3.0 |
| ASR Route Processor 16 GB for Packet Transport | A99-RP2-TR | Release 5.3.0 |
| ASR 9001 Route Switch Processor 8 GB | ASR9001-RP | Release 4.2.1 |
| Cisco ASR 9000 Series Aggregation Services Router 4-Slot | | |
| Cisco ASR 9000 Series Aggregation Services Router 4-Slot 2 Line Card Slot AC Chassis w/ PEM V2 | ASR-9904-AC | Release 5.1.0 |

| Cisco ASR 9000 Series Aggregation Services Router 4-Slot 2 Line Card Slot DC Chassis w/ PEM V2 | ASR-9904-DC | Release 5.1.0 |
|---|---|---|
| Cisco ASR 9000 Series Aggregation Services Router 4-Slot Fan Tray | ASR-9904-FAN | Release 5.1.0 |
| Cisco ASR 9000 Series Aggregation Services Router 4-Slot Filter | ASR-9904-FILTER | Release 5.1.0 |
| Cisco ASR 9000 Series Aggregation Services Router 4-Slot Baffle | ASR-9904-BAFFLE | Release 5.1.0 |

**Cisco ASR 9000 Series Aggregation Services Router 22-Slot**

| Component | Part Number | Support Initially Provided in IOS XR Release |
|---|---|---|
| Cisco ASR 9000 Fabric Card | A99-SFC2 | Release 5.3.0 |
| Cisco ASR 9000 Series Aggregation Services Router 22-Slot 20 Line Card Slot AC Chassis w/ PEM V2 | ASR-9922-AC | Release 4.2.2 |
| Cisco ASR 9000 Series Aggregation Services Router 22-Slot 20 Line Card Slot DC Chassis w/ PEM V2 | ASR-9922-DC | Release 4.2.2 |
| Cisco ASR 9000 Series Aggregation Services Router 22-Slot Accessory Kit with grounding locks, guide rails etc | ASR-9922-ACC-KIT | NA |
| Cisco ASR 9000 Series Aggregation Services Router 22-Slot Accessory - Cover for Power Shelves and Modules | ASR-9922-PWR-COV | NA |
| Cisco ASR 9000 Series Aggregation Services Router 22-Slot Air Reflector | ASR-9922-AIRREF | NA |
| Cisco ASR 9000 Series Aggregation Services Router 22-Slot Accessory - Door (with lock) and Fan Tray Covers | ASR-9922-DOOR | NA |
| Cisco ASR 9000 Series Aggregation Services Router 22-Slot Fan Tray | ASR-9922-FAN | Release 4.2.2 |
| Cisco ASR 9000 Series Aggregation Services Router 22-Slot Air Filter with Media, Center | ASR-9922-FLTR-CEN | Release 4.2.2 |
| Cisco ASR 9000 Series Aggregation Services Router 22-Slot Air Filter with Media, Left & Right | ASR-9922-FLTR-LR | Release 4.2.2 |
| Cisco ASR 9000 Series Aggregation Services Router 22-Slot Route Processor Filler | ASR-9922-RP-FILR | Release 4.2.2 |
| Cisco ASR 9000 Series Aggregation Services Router 22-Slot Route Processor 12GB for Service Edge | ASR-9922-RP-SE | Release 4.2.2 |
| Cisco ASR 9000 Series Aggregation Services Router 22-Slot Route Processor 6GB for Packet Transport | ASR-9922-RP-TR | Release 4.2.2 |
| Cisco ASR 9000 Series Aggregation Services Router 22-Slot Switch Fabric Card Slot Filler | ASR-9922-SFC-FILR | Release 4.2.2 |

| Cisco ASR 9000 Series Aggregation Services Router 22-Slot Switch Fabric Card/110G | ASR-9922-SFC110 | Release 4.2.2 |
|---|---|---|
| Cisco ASR 9000 Series Aggregation Services Router 22-Slot Version 2 Fan Tray | ASR-9922-FAN-V2 | Release 5.2.2 |

**Cisco ASR 9000 Series Aggregation Services Router 2-RU**

| Component | Part Number | Support Initially Provided in IOS XR Release |
|---|---|---|
| Cisco ASR 9000 Series Aggregation Services Router 2RU | ASR-9001 | Release 4.2.1 |
| Cisco ASR 9000 Series Aggregation Services Router 2-Slot Fan Tray | ASR-9001-FAN | Release 4.2.1 |
| Cisco ASR 9000 Series Aggregation Services Router 2-Slot Line Card | ASR-9001-LC | Release 4.2.1 |
| Cisco ASR 9000 Series Aggregation Services Router | ASR-9001-TRAY | Release 4.2.1 |

**Cisco ASR 9000 Series Aggregation Services Router 6-Slot**

| Component | Part Number | Support Initially Provided in IOS XR Release |
|---|---|---|
| Cisco ASR 9000 Series Aggregation Services Router 6-Slot System | ASR-9006-SYS | Release 3.7.2 |
| Cisco ASR 9000 Series Aggregation Services Router 6-Slot Fan Tray | ASR-9006-FAN | Release 3.7.2 |
| Cisco ASR 9000 Series Aggregation Services Router 6-Slot Door Kit | ASR-9006-DOOR | Release 3.7.2 |
| Cisco ASR 9000 Series Aggregation Services Router 6-Slot AC Chassis | ASR-9006-AC | Release 3.7.2 |
| Cisco ASR 9000 Series Aggregation Services Router 6-Slot DC Chassis | ASR-9006-DC | Release 3.7.2 |

**Cisco ASR 9000 Series Aggregation Services Router 6-Slot Air**

| Component | Part Number | Support Initially Provided in IOS XR Release |
|---|---|---|
| Cisco ASR 9000 Series Aggregation Services Router 6-Slot Air Filter | ASR-9006-FILTER | Release 3.7.2 |

**Cisco ASR 9000 Series Aggregation Services Router 6-Slot -ASR 9906**

| Cisco ASR 9000 Series Aggregation Services Router 6-Slot chassis | ASR-9906 | Release 6.3.1 |
|---|---|---|
| Cisco ASR 9000 Series Aggregation Services Router 6-Slot Fan Tray | ASR-9906-FAN | Release 6.3.1 |
| Cisco ASR 9000 Series Aggregation Services Router 6-Slot Fan Filter | ASR-9906-FILTER | Release 6.3.1 |

**Cisco ASR 9000 Series Aggregation Services Router 10-Slot**

| Cisco ASR 9000 Series Aggregation Services Router 10-Slot System | ASR-9010-SYS | Release 3.7.2 |
|---|---|---|
| Cisco ASR 9000 Series Aggregation Services Router 10-Slot Fan Tray | ASR-9010-FAN | Release 3.7.2 |
| Cisco ASR 9000 Series Aggregation Services Router 10-Slot Door Kit | ASR-9010-DOOR | Release 3.7.2 |
| Cisco ASR 9000 Series Aggregation Services Router 10-Slot AC Chassis | ASR-9010-AC | Release 3.7.2 |
| Cisco ASR 9000 Series Aggregation Services Router 10-Slot DC Chassis | ASR-9010-DC | Release 3.7.2 |
| Cisco ASR 9000 Series Aggregation Services Router 2 Post Mounting Kit | ASR-9010-2P-KIT | Release 3.7.2 |
| Cisco ASR 9000 Series Aggregation Services Router 4 Post Mounting Kit | ASR-9010-2P-KIT | Release 3.7.2 |
| **Cisco ASR 9000 Series Aggregation Services Router 10-Slot Air** | | |
| **Component** | **Part Number** | **Support Initially Provided in IOS XR Release** |
| Cisco ASR 9000 Series Aggregation Services Router 10-Slot Air Filter | ASR-9010-FILTER | Release 3.7.2 |
| Cisco ASR 9000 Series Aggregation Services Router 10-Slot External Exhaust Air Shaper | ASR-9010-AIRSHPR | NA |
| Cisco ASR 9000 Series Aggregation Services Router 10-Slot Air Inlet Grill | ASR-9010-GRL | NA |
| **Cisco ASR 9000 Series Aggregation Services Router 10-Slot 21 RU** | | |
| Cisco ASR 9000 Series Aggregation Services Router 10-Slot (9910) System | ASR-9910 | Release 6.0.1 |
| Cisco ASR 9000 Series Aggregation Services Router 10-Slot(9910) Fan Tray | ASR-9910-FAN | Release 6.0.1 |
| Cisco ASR 9000 Series Aggregation Services Router 10-Slot (9910) Accessory Kit | ASR-9910-ACC-KIT | Release 6.0.1 |
| Cisco ASR 9000 Series Aggregation Services Router 10-Slot (9910) 4 Post Rack Mounting Kit | ASR-9910-4P-KIT | Release 6.0.1 |
| Cisco ASR 9000 Series Aggregation Services Router 10-Slot (9910) 2 Post Rack Mounting Kit | ASR-9910-2P-KIT | Release 6.0.1 |
| Cisco ASR 9000 Series Aggregation Services Router 10-Slot (9910) Air Reflector | ASR-9910-AIRREF | Release 6.0.1 |

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|---|---|---|
| Cisco ASR 9000 Series Aggregation Services Router 10-Slot (9910) Air Filter | ASR-9910-FILTER | Release 6.0.1 |
| Cisco ASR 9000 Series Aggregation Services Router 10-Slot (9910) Switch Fabric Card | A99-SFC-S | Release 6.0.1 |

**Cisco ASR 9000 Series Aggregation Services Router Power**

| Component | Part Number | Support Initially Provided in IOS XR Release |
|---|---|---|
| Cisco ASR 9000 Series Aggregation Services Router 2KW DC Power Module, version 2 | PWR-2KW-DC-V2 | Release 4.2.0 |
| Cisco ASR 9000 Series Aggregation Services Router 3KW AC Power Module, version 2 | PWR-3KW-AC-V2 | Release 4.2.0 |
| Cisco ASR 9000 Series Aggregation Services Router AC Power Entry Module Version 2 | A9K-AC-PEM-V2 | Release 4.2.0 |
| Cisco ASR 9000 Series Aggregation Services Router DC Power Entry Module Version 2 | A9K-DC-PEM-V2 | Release 4.2.0 |
| Cisco ASR 9000 Series Aggregation Services Router Power Entry Module Version 2 Filler | A9K-PEM-V2-FILR | Release 4.2.0 |
| Cisco ASR 9000 Series Aggregation Services Router 1.5kW DC Power Module | A9K-1.5KW-DC | Release 3.7.2 |
| Cisco ASR 9000 Series Aggregation Services Router 2kW DC Power Module | A9K-2KW-DC | Release 3.7.2 |
| Cisco ASR 9000 Series Aggregation Services Router 3kW AC Power Module | A9K-3KW-AC | Release 3.7.2 |
| Cisco ASR 9000 Series Aggregation Services Router AC Power Enclosure Module Version 3 | A9K-AC-PEM-V3 | Release 5.3.0 |
| Cisco ASR 9000 Series Aggregation Services Router DC Power Enclosure Module Version 3 | A9K-DC-PEM-V3 | Release 5.3.0 |
| Cisco ASR 9000 Series Aggregation Services Router 6kW AC Power Module Version 3 | PWR-6KW-AC-V3 | Release 5.3.0 |
| Cisco ASR 9000 Series Aggregation Services Router 4.4kW DC Power Module Version 3 | PWR-4.4KW-DC-V3 | Release 5.3.0 |

**Cisco ASR 9000 Series Aggregation Services Router Line Cards**

| Component | Part Number | Support Initially Provided in IOS XR Release |
|---|---|---|
| ASR 9000 48-port dual-rate 10G/1G Consumption Model line card | A9K-48X10GE-1G-CM | Release 6.3.2 |

| | | |
|---|---|---|
| ASR 9000 24-port dual-rate 10G/1G Consumption Model line card | A9K-24X10GE-1G-CM | Release 6.3.2 |
| ASR 9000 4-port 100-Gigabit Ethernet Line Card | A9K-4X100GE | Release 6.2.3 |
| ASR9000 48-port dual-rate 10G/1G service edge–optimized line card | A9K-48X10GE-1G-SE | Release 6.2.1 |
| ASR9000 48-port dual-rate 10G/1G packet transport–optimized line card | A9K-48X10GE-1G-TR | Release 6.2.1 |
| ASR9000 48-port dual-rate 10G/1G service edge line card | A99-48X10GE-1G-SE | Release 6.5.2 |
| ASR9000 48-port dual-rate 10G/1G packet transport line card | A99-48X10GE-1G-TR | Release 6.5.2 |
| ASR9000 24-port dual-rate 10G/1G service edge–optimized line card | A9K-24X10GE-1G-SE | Release 6.2.1 |
| ASR9000 24-port dual-rate 10G/1G packet transport–optimized line card | A9K-24X10GE-1G-TR | Release 6.2.1 |
| ASR 9900 8-port 100GE Service Edge optimized | A99-8X100GE-SE | Release 6.0.1 |
| ASR 9900 8-port 100GE Packet Transport optimized | A99-8X100GE-TR | Release 6.0.1 |
| ASR 9900 8-port 100GE Consumption Model | A99-8X100GE-CM | Release 6.0.1 |
| Cisco ASR 9000 Series Aggregation Services Router 12-Port 100-Gigabit Ethernet Line Card | A99-12X100GE | Release 6.0.1 |
| Cisco ASR 9000 Series Aggregation Services Router 12-port 100GE Ethernet Line card CM | A99-12X100GE-CM | Release 6.0.1 |
| Cisco ASR 9000 Series Aggregation Services Router 8-Port 100-Gigabit Ethernet, Consumption Model Optimized with CPAK | A9K-8X100GE-CM | Release 5.3.2 |
| Cisco ASR 9000 Series Aggregation Services Router 8-Port 100-Gigabit Ethernet, Service Edge Optimized | A9K-8X100GE-SE | Release 5.3.1 |
| Cisco ASR 9000 Series Aggregation Services Router 8-Port 100-Gigabit Ethernet, Packet Transport Optimized | A9K-8X100GE-TR | Release 5.3.1 |
| Cisco ASR 9000 4-port 100GE LAN line card | A9K-4X100GE | Release 6.2.3 |
| Cisco ASR 9000 Series Aggregation Services Router 4--Port 100-Gigabit Ethernet, Service Edge Optimized | A9K-4X100GE-SE | Release 5.3.1 |
| Cisco ASR 9000 Series Aggregation Services Router 4-Port 100-Gigabit Ethernet, Packet Transport Optimized | A9K-4X100GE-TR | Release 5.3.1 |
| Cisco ASR 9000 Series Aggregation Services Router 8-port High Density 100GE Ethernet Line Card, Service Edge Optimized | A9K-8X100GE-L-SE | Release 5.3.0 |
| Cisco ASR 9000 Series Aggregation Services Router 8-port High Density 100GE Ethernet Line Card, Packet Transport Optimized | A9K-8X100GE-L-TR | Release 5.3.0 |
| Cisco ASR 9000 Series Aggregation Services Router Virtualized Services Module (VSM) line card | A9K-VSM-500 | Release 5.1.2 |

| Cisco ASR 9000 Series Aggregation Services Router Line Card Filler | A9K-LC-FILR | Release 3.7.2 |
|---|---|---|
| 2-Port 100G + 20-Port 10 GE Combination IPoDWDM Line Card with CFP2 and SFP+, Packet Transport Optimized | A9K-400GE-DWDM-TR | Release 5.3.2 |

**Cisco ASR 9000 Series Aggregation Services Router Modular Line Cards**

| Component | Part Number | Support Initially Provided in IOS XR Release |
|---|---|---|
| Cisco ASR 9000 Series Aggregation Services Router 200 Gigabit Modular Line Card, Packet Transport Optimized<br><br>Cisco ASR 9000 Series Aggregation Services Router 200 Gigabit Modular Line Card, Service Edge Optimized | A9K-MOD200-TR<br><br>A9K-MOD200-SE | Release 6.0.1 |
| Cisco ASR 9000 Modular 400G Consumption Model Line Card | A9K-MOD400-CM | Release 6.1.2 |
| Cisco ASR 9000 Series Aggregation Services Router 400 Gigabyte Modular Line Card, Service Edge Optimized | A9K-MOD400-SE | Release 5.3.2 |
| Cisco ASR 9000 Series Aggregation Services Router 400 Gigabyte Modular Line Card, Packet Transport Optimized | A9K-MOD400-TR | Release 5.3.2 |

**Cisco ASR 9000 Series Aggregation Services Router Modular Port Adapters (MPAs)**

| Component | Part Number | Support Initially Provided in IOS XR Release |
|---|---|---|
| Cisco ASR 9000 1-port 200-Gigabit Ethernet MPA | A9K-MPA-1X200GE | Release 6.6.2 |
| Cisco ASR 9000 32-port 1-Gigabit Ethernet MPA with MACSec | A9K-MPA-32X1GE | Release 6.6.1 |
| Cisco ASR 9000 20x10GE Consumption Model MPA | A9K-MPA20X10GE-CM | Release 6.1.2 |
| Cisco ASR 9000 2x100GE Consumption Model MPA | A9K-MPA2X100GE-CM | Release 6.1.2 |
| Cisco ASR 9000 Series Aggregation Services Router 1-port 100-Gigabit Modular Port Adapter | A9K-MPA-1X100GE | Release 6.0.1 |
| Cisco ASR 9000 Series Aggregation Services Router 2-port 100-Gigabit Modular Port Adapter | A9K-MPA-2X100GE | Release 6.0.1 |
| 20-Port 10-Gigabit Ethernet Modular Port Adapter with SFP+ | A9K-MPA-20x10GE | Release 5.3.2 |
| Cisco ASR 9000 Series Aggregation Services Router 8-port 10GE Modular Port Adapter | A9K-MPA-8X10GE | Release 4.3.1 |
| Cisco ASR 9000 Series Aggregation Services Router 1-port 40GE Modular Port Adapter | A9K-MPA-1X40GE | Release 4.2.3 |
| Cisco ASR 9000 Series Aggregation Services Router 4-port 10GE Modular Port Adapter | A9K-MPA-4X10GE | Release 4.2.0 |

| | | |
|---|---|---|
| Cisco ASR 9000 Series Aggregation Services Router 20-port 1GE Modular Port Adapter | A9K-MPA-20X1GE | Release 4.2.0 |
| Cisco ASR 9000 Series Aggregation Services Router 2-port 10GE Modular Port Adapter | A9K-MPA-2X10GE | Release 4.2.1 |
| Cisco ASR 9000 Series Aggregation Services Router 2-port 40GE Modular Port Adapter | A9K-MPA-2X40GE | Release 4.2.1 |

**Cisco ASR 9000v Satellite Shelf**

| Component | Part Number | Support Initially Provided in IOS XR Release |
|---|---|---|
| Cisco ASR 9000v Satellite Shelf Version 2 DC power ANSI chassis | A9KV-V2-DC-A= | Release 5.2.2 |
| Cisco ASR 9000v Satellite Shelf Version 2 DC power chassis | A9KV-V2-DC-E= | Release 5.2.2 |
| Cisco ASR 9000v Satellite Shelf AC power chassis | A9KV-V2-AC= | Release 5.2.2 |
| Cisco ASR 9000v Satellite Shelf Version 2 Fan Tray | A9KV-V2-FAN= | Release 5.2.2 |

**Cisco NCS 5000 Satellite Shelf**

| | | |
|---|---|---|
| Cisco NCS 5001 Series Router | NCS-5001 | Release 6.0.1 |
| Cisco NCS 5002 Series Router | NCS-5002 | Release 6.0.1 |
| Cisco NCS 5001 Router Accessory Kit | NCS-5001-ACSR | Release 6.0.1 |
| Cisco NCS 5002 Router Accessory Kit | NCS-5002-ACSR | Release 6.0.1 |
| Cisco NCS 5001 Router Fan Back to Front AirFlow | NCS-5001-FN-BK | Release 6.0.1 |
| Cisco NCS 5002 Router Fan Back to Front AirFlow | NCS-5002-FN-BK | Release 6.0.1 |
| Cisco NCS 5001 Air Filter Back to Front Airflow | NCS-5001-FLT-BK | Release 6.0.1 |
| Cisco NCS 5002 Air Filter Back to Front Airflow | NCS-5002-FLT-BK | Release 6.0.1 |
| Cisco NCS 5001 Fan Front to Back Airflow | NCS-5001-FN-FR | Release 6.0.1 |
| Cisco NCS 5002 Fan Front to Back Airflow | NCS-5002-FN-FR | Release 6.0.1 |
| Cisco NCS 5001 Air Filter Front to Back Airflow | NCS-5001-FLT-FR | Release 6.0.1 |
| Cisco NCS 5002 Air Filter Front to Back Airflow | NCS-5002-FLT-FR | Release 6.0.1 |

**Cisco ASR 9000 Series Aggregation Services Router SIP and SPA Cards**

| Component | Part Number | Support Initially Provided in IOS XR Release |
|---|---|---|
| Cisco ASR 9000 SIP-700 SPA interface processor | A9K-SIP-700 | Release 3.9.0 |

| | | |
|---|---|---|
| 2-Port OC-48/STM16 SPA | SPA-2XOC48POS/RPR | Release 4.0.1 |
| Cisco 4-Port OC-12c/STM-4 POS SPA | SPA-4XOC12-POS | Release 6.4.2 |
| 8-Port OC12/STM4 SPA | SPA-8XOC12-POS | Release 4.0.1 |
| 1-Port OC-192/STM-64 POS/RPR SPA | SPA-OC192POS-XFP | Release 4.0.1 |
| 4-Port Clear Channel T3/E3 SPA | SPA-4XT3E3 | Release 4.0.1 |
| 2-Port Clear Channel T3/E3 SPA | SPA-2XT3E3 | Release 4.0.1 |
| 1-Port Channelized OC-3/STM-1 SPA | SPA-1CHSTM1/OC3 | Release 4.0.1 |
| 4-Port OC-3/STM-1 POS SPA | SPA-4XOC3-POS | Release 4.0.1 |
| 8-Port OC-3/STM-1 POS SPA | SPA-8XOC3-POS | Release 4.0.1 |
| 4-Port Channelized T3 to DS0 SPA | SPA-4XCT3/DS0 | Release 4.1.0 |
| 8-Port Channelized T1/E1 SPA | SPA-8XCHT1/E1 | Release 4.1.0 |

## 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

  - 22-Slot (ASR-9922) Line Card Chassis

  - 12-Slot (ASR-9912) Line Card Chassis

  - 10-Slot (ASR-9910) Line Card Chassis

  - 6-Slot (ASR-9906) Line Card Chassis

  - 4-slot (ASR-9904) Line Card Chassis

- Cisco ASR 9000 Series Chassis

  - 10-Slot (ASR-9010) Line Card Chassis

  - 6-Slot (ASR-9006) Line Card Chassis

  - 1-Slot (ASR-9001) Line Card 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.

## Determining Installed Packages

To determine the version of Cisco IOS XR Software packages installed on your router, log in to the router and enter the **show install active summary** command:

**Cisco IOS XR**

```
RP/0/RSP0/CPU0:router#show install active summary
Default Profile:
  SDRs:
    Owner
  Active Packages:
    disk0:asr9k-mini-px-6.9.2
    disk0:asr9k-services-infra-6.9.2
    disk0:asr9k-9000v-nV-px-6.9.2
    disk0:asr9k-bng-px-6.9.2
    disk0:asr9k-bng-supp-px-6.9.2
    disk0:asr9k-doc-px-6.9.2
    disk0:asr9k-fpd-px-6.9.2
    disk0:asr9k-k9sec-px-6.9.2
    disk0:asr9k-li-px-6.9.2
    disk0:asr9k-mcast-px-6.9.2
    disk0:asr9k-mgbl-px-6.9.2
    disk0:asr9k-mpls-px-6.9.2
    disk0:asr9k-optic-px-6.9.2
    disk0:asr9k-services-px-6.9.2
    disk0:asr9k-video-px-6.9.2
```

# Firmware Support on Cisco IOS XR

To check the firmware code running on the Cisco ASR 9000 Series Router, run the **show fpd package** command in admin mode.

# Caveats

There are no caveats in this release.

# Other Important Information

- Repetitive Smart Licensing evaluation expired warning messages are displayed on the console every hour, but there is no functionality impact observed on the device. To stop these repetitive messages, you should register the device again with a new registration token.

- Cisco IOS XR Release 5.3.0 and later does not support the first and third generation Cisco ASR 9000 Line Cards to coexist in a single chassis.

  For the list of ASR 9000 Series line card types, see: http://www.cisco.com/c/en/us/support/docs/routers/asr-9000-series-aggregation-services-routers/116726-qanda-product-00.html#anc2

- From IOS XR Release 6.0, A9K-RSP-4G, A9K-RSP-8G and the first generation ASR 9000 LCs are not supported. For a detailed listing, see End-of-Life and End-of-Sale Notices

- In IOS XR Releases 6.8.x and 6.9.x, 2nd generation of ASR 9000 line cards is not supported.

- From Release 6.0, the onePK toolkit is not supported.

- Country-specific laws, regulations, and licenses—In certain countries, use of these products may be prohibited and subject to laws, regulations, or licenses, including requirements applicable to the use of the products under telecommunications and other laws and regulations; customers must comply with all such applicable laws in the countries in which they intend to use the products.

- Exceeding Cisco testing—If you intend to test beyond the combined maximum configuration tested and published by Cisco, contact your Cisco Technical Support representative to discuss how to engineer a large-scale configuration for your purpose.

- Installing a Line Card—For a fully populated 40-port high density Line Card with cable optics, maintenance time required for card replacement is higher. For more information about Line Card installation and removal, refer to the *Cisco ASR 9000 Aggregation Services Router Ethernet Line Card Installation Guide*.

## Supported Transceiver Modules

To determine the transceivers that Cisco hardware device supports, refer to the Transceiver Module Group (TMG) Compatibility Matrix tool.

## Supported Modular Port Adapters

For the compatibility details of Modular Port Adapters (MPAs) on the line cards, see the datasheet of that specific line card.

## Upgrading Cisco IOS XR Software

Cisco IOS XR Software is installed and activated from modular packages, allowing specific features or software patches to be installed, upgraded, or downgraded without affecting unrelated processes. Software packages can be upgraded or downgraded on all supported card types, or on a single card (node).

Software packages are installed from package installation envelope (PIE) files that contain one or more software components.

The upgrade document is available along with the software images.

Cisco Software Manager (CSM) application provides an intuitive user interface to manage Cisco IOS XR installations, with pre-installation and post-installation checks and reports. CSM helps manage the process of software maintenance upgrades (SMUs) and service packs (SPs) on devices that run the Cisco IOS XR Software.

For information on how to use CSM, see Cisco Software Manager User Guide.

## Production Software Maintenance Updates (SMUs)

A production SMU is a SMU that is formally requested, developed, tested, and released. Production SMUs are intended for use in a live network environment and are formally supported by the Cisco TAC and the relevant development teams. Software bugs identified through software recommendations or Bug Search Tools are not a basis for production SMU requests.

For information on production SMU types, refer the Production SMU Types section of the *IOS XR Software Maintenance Updates (SMUs)* guide.

## Related Documentation

The most current Cisco ASR 9000 router documentation is located at the following URL:

https://www.cisco.com/c/en/us/td/docs/iosxr/asr-9000-series-routers.html