



Release Notes for Cisco ASR 9000 Series Routers, IOS XR Release 6.6.2

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Release Notes for Cisco ASR 9000 Series Routers, IOS XR Release 6.6.2



Note This software release has reached end-of-life status. For more information see the [End-of-Life and End-of-Sale Notices](#).



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Cisco IOS XR Release 6.6.2 contains all features released in Cisco IOS XR Release 6.6.1. Release 6.6.1 is a limited availability (LA) release. For more information on IOS XR Release 6.6.1 features, see [Release Notes for Cisco ASR 9000 Series Routers, Release 6.6.1](#)

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.

From Release 6.1.1 onwards, Cisco introduces support for the 64 bit Linux-based IOS XR operating system. Extensive feature parity is maintained between legacy 32 bit and new 64 bit environments.

For information on operational enhancements introduced in new 64 bit IOS XR OS, refer to the [Introduction to Operational Enhancements in Cisco IOS XR](#) guide.

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 . See the *Software Features Introduced in Cisco IOS XR Software Release 6.6.2* section in this document for information on new software features.

Supported Packages and System Requirements

This section describes the system requirements for Cisco ASR 9000 Series Aggregation Services Router Software Release 6.6.2

Feature Set Table

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 6.6.2.

Cisco IOS XR

This table lists the Cisco IOS XR Software feature set matrix (TAR files) and associated filenames available for the Cisco IOS XR Software Release 6.6.2 supported on the Cisco ASR 9000 Series Aggregation Services Router.

Table 1: Cisco IOS XR Software Release 6.6.2 TAR Files

Feature Set	Filename	Description
Cisco IOS XR IP/MPLS Core Software [for RSP880 and RP systems]	ASR9K-iosxr-px-6.6.2-turboboot.tar	Contains only the mini.vm package.
Cisco IOS XR IP/MPLS Core Software [for RSP880 and RP systems]	ASR9K-iosxr-px-6.6.2-pies.tar	• Cisco IOS XR IP Unicast Routing Core Bundle • Cisco IOS XR Manageability Package • Cisco IOS XR MPLS Package • Cisco IOS XR Multicast Package • Cisco IOS XR FPD Package • Cisco IOS XR Diagnostic Package • Cisco IOS XR Advanced Video Package • Cisco IOS XR Optics Package • Cisco IOS XR Upgrade Package • Cisco IOS XR BNG Package • Cisco IOS XR Lawful Intercept Package • Cisco IOS XR Services Package • Cisco IOS XR Satellite Package • 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-6.6.2-k9-pies.tar	• Cisco IOS XR IP Unicast Routing Core Bundle • Cisco IOS XR Manageability Package • Cisco IOS XR MPLS Package • Cisco IOS XR Multicast Package • Cisco IOS XR Security Package • Cisco IOS XR FPD Package • Cisco IOS XR Diagnostic Package • Cisco IOS XR Advanced Video Package • Cisco IOS XR Optics Package • Cisco IOS XR Upgrade Package • Cisco IOS XR BNG Package • Cisco IOS XR Lawful Intercept Package • Cisco IOS XR Services Package • Cisco IOS XR Satellite Package • Cisco IOS XR Documentation Package
Cisco IOS XR Bridge and SMUs	ASR9k-iosxr-px-6.6.2-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 6.6.2 supported on the Cisco ASR 9000 Series Aggregation Services Router.

Table 2: Cisco IOS XR Software Release 6.6.2 PX PIE Files

Composite Package		
Feature Set	Filename	Description
Cisco IOS XR IP Unicast Routing Core Bundle	asr9k-mini-px.pie-6.6.2	Contains the required core packages, including OS, Admin, Base, Forwarding, Modular Services Card, Routing, SNMP Agent, and Alarm Correlation. The mini pie file is used for upgrading to the new release

Cisco IOS XR IP Unicast Routing Core Bundle	asr9k-mini-px.vm-6.6.2	Contains the required core packages including OS, Admin, Base, Forwarding, Routing, SNMP Agent, Diagnostic Utilities, and Alarm Correlation. The mini VM file is used for turboboosting the device.
Individually-Installable Optional Packages		
Feature Set	Filename	Description
Cisco IOS XR Manageability Package	asr9k-mgbl-px.pie-6.6.2	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. IPSLA and environment MIBs are part of the mgbl pie.
Cisco IOS XR CGv6 VSM Package	asr9k-services-infra.pie- 6.6.2	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-6.6.2	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-6.6.2	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-6.6.2	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-6.6.2	Firmware for the optics feature for Cisco ASR 9000 Series Aggregation Services Router Chassis. It enables Transport / OTN feature under interfaces.

Cisco IOS XR FPD Package	asr9k-fpd-px.pie-6.6.2	Firmware pie for all LC and RSP FPGAs and ASICs.
Cisco IOS XR Services Package	asr9k-services.pie-6.6.2	Includes binaries to support CGv6 on VSM.
Cisco IOS XR Documentation Package	asr9k-doc-px.pie-6.6.2	.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-6.6.2	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-6.6.2	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 Package	asr9k-bng-px.pie-6.6.2	Includes binaries to support BNG features.
Cisco IOS XR Lawful Intercept (LI) Package	asr9k-li-px.pie-6.6.2	Includes LI software images.
Cisco IOS XR Security Package	asr9k-k9sec-px.pie-6.6.2	Support for Encryption, Decryption,, Secure Shell (SSH), Secure Socket Layer (SSL), and Public-key infrastructure (PKI).

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 Release 6.6.2 supported on the Cisco ASR 9000 Series Aggregation Services Router.

Table 3: Cisco IOS XR 64 bit Software Release 6.6.2 ISO and RPM Files

Composite Package		
Feature Set	Filename	Description
Cisco IOS XR IP Unicast Routing Core Bundle	asr9k-mini-x64-6.6.2.iso	Contains the required core packages, including OS, Admin, Base, Forwarding, Modular Services Card, Routing, SNMP Agent, and Alarm Correlation. The mini iso file is used for upgrading to the new release
Individually-Installable Optional Packages		
Feature Set	Filename	Description
Cisco IOS XR 64 bit EIGRP package	asr9k-eigrp-x64-1.0.0.0-r662.x86_64.rpm	Includes EIGRP protocol support software

Cisco IOS XR BNG Package	asr9k-bng-x64-1.1.0.0-r662.x86_64.rpm	Includes binaries to support BNG features.
Cisco IOS XR 64 bit ISIS package	asr9k-isis-x64-1.1.0.0-r662.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-r662.x86_64.rpm	Includes OSPF link state protocol support software
Cisco IOS XR 64 bit M2M package	asr9k-m2m-x64-2.0.0.0-r662.x86_64.rpm	Machine to Machine communication software
Cisco IOS XR Manageability Package	asr9k-mgbl-x64-3.0.0.0-r662.x86_64.rpm	CORBA2 agent, XML3 Parser, and HTTP server packages. This PIE 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-r662.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-r662.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.
Cisco IOS XR 64 bit Multicast Package	asr9k-mcast-x64-2.0.0.0-r662.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-r662.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-r662.x86_64.rpm	Includes LI software images.
Cisco IOS XR Security Package	asr9k-k9sec-x64-3.1.0.0-r662.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-r662.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
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Table 4: Cisco IOS XR 64 bit Software Release 6.6.2 TAR Files

Feature Set	Filename	Description
Cisco IOS XR IP/MPLS Core Software [for RSP880 and RP systems]	ASR9K-x64-iosxr-px-6.6.2.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 FPD Package • Cisco IOS XR Diagnostic 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 M2M Package

Feature Set	Filename	Description
Cisco IOS XR IP/MPLS Core Software 3DES [for RSP880 and RP systems]	ASR9K-x64-iosxr-px-k9-6.6.2.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 FPD Package • Cisco IOS XR Diagnostic 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 M2M Package
Cisco IOS XR IP Unicast Routing Core Bundle and Migration to IOS XR 64 bit tar image	asr9k-mini-x64-migrate_to_eXR.tar-6.6.2	Contains the required core packages, including OS, Admin, Base, Forwarding, Modular Services Card, Routing, SNMP Agent, and Alarm Correlation. Contains mini.iso file for XR 64 bit 6.6.2 and additional software for migration to 64 bit.

Memory



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

The available memory for Cisco ASR 9000 Series Aggregation Services Router running Cisco IOS XR Software Release 6.6.2 consist of the following:

- 16 GB memory on the RSP880, RSP880-LT, RP2, A99-RSP-TR and A99-RSP-SE
- 16 GB memory on the RP2 transport optimised (TR) variant and 32 GB memory on the RP2 service edge (SE) variant
- 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 RSP5 transport optimised (TR) variant and 40 GB memory on the RSP5 service edge (SE) variant

- 2 GB compact flash on route switch processors (RSPs)
- 4 GB memory on the line cards (LCs) running Cisco IOS XR 32 bit image
- 8 GB memory on the line cards (LCs) running Cisco IOS XR 64-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, on page 9](#)" 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.

Table 5: 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	Support Initially Provided in IOS XR 64 bit Release
ASR 9000 Route Switch Processor 5 for Service Edge	A9K-RSP5-SE	Not Supported	Release 6.5.15
ASR 9000 Route Switch Processor 5 for Packet Transport	A9K-RSP5-TR	Not Supported	Release 6.5.15
ASR 9900 Route Processor 3 for Service Edge	A99-RP3-SE	Not Supported	Release 6.5.15
ASR 9900 Route Processor 3 for Packet Transport	A99-RP3-TR	Not Supported	Release 6.5.15
Cisco ASR 9000 Series Aggregation Services Router RSP880-Lite, Packet Transport Optimized	A9K-RSP880-LT-TR	Release 6.2.2	Release 6.4.1
Cisco ASR 9000 Series Aggregation Services Router RSP880-Lite, Service Edge Optimized	A9K-RSP880-LT-SE	Release 6.2.2	Release 6.4.1
Cisco ASR 9000 Series Aggregation Services Router RSP4-S, Service Edge Optimized for ASR 9910 from Release 6.0.1.	A99-RSP-SE	Release 6.0.1	Release 6.2.1
Cisco ASR 9000 Series Aggregation Services Router RSP4-S, Packet Transport Optimized for ASR 9910 from Release 6.0.1.	A99-RSP-TR	Release 6.0.1	Release 6.2.1
Cisco ASR 9000 Series Aggregation Services Router RSP4-S, Packet Transport Optimized for ASR 9906 supported from Release 6.3.1	A99-RSP-TR	Release 6.3.1	Release 6.3.1
Cisco ASR 9000 Series Aggregation Services Router RSP4-S, Service Edge Optimized for ASR 9906 from Release 6.3.1.	A99-RSP-SE	Release 6.3.1	Release 6.3.1

ASR9K Route Switch Processor with 880G/slot and 32 GB for Service Edge	A9K-RSP880-SE	Release 5.3.0	Release 6.1.2
ASR9K Route Switch Processor with 880G/slot and 16 GB for Packet Transport	A9K-RSP880-TR	Release 5.3.0	Release 6.1.2
ASR Route Processor 32 GB for Service Edge	A99-RP2-SE	Release 5.3.0	Release 6.1.2
ASR Route Processor 16 GB for Packet Transport	A99-RP2-TR	Release 5.3.0	Release 6.1.2
ASR 9001 Route Switch Processor 8 GB	ASR9001-RP	Release 4.2.1	Unsupported
Cisco ASR 9000 Series Aggregation Services Router 2-RU Fixed Port – ASR 9901			
Component	Part Number	Support Initially Provided in IOS XR Release	Support Initially Provided in IOS XR 64 bit Release
Cisco ASR 9000 Series Aggregation Services Router 2-RU Fixed Port	ASR-9901	Unsupported	Release 6.4.1
Cisco ASR 9000 Series Aggregation Services Router 2-RU Fixed Port Fan Tray	ASR-9901-FAN	Unsupported	Release 6.4.1
Cisco ASR 9000 Series Aggregation Services Router 2-RU 1600W AC Power Module	A9K-1600W-AC	Unsupported	Release 6.4.1
Cisco ASR 9000 Series Aggregation Services Router 2-RU 1600W DC Power Module	A9K-1600W-DC	Unsupported	Release 6.4.1
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	Release 6.1.2
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	Release 6.1.2
Cisco ASR 9000 Series Aggregation Services Router 4-Slot Fan Tray	ASR-9904-FAN	Release 5.1.0	Release 6.1.2
Cisco ASR 9000 Series Aggregation Services Router 4-Slot Filter	ASR-9904-FILTER	Release 5.1.0	Release 6.1.2
Cisco ASR 9000 Series Aggregation Services Router 4-Slot Baffle	ASR-9904-BAFFLE	Release 5.1.0	Release 6.1.2
Cisco ASR 9000 Series Aggregation Services Router 12-Slot			
Cisco ASR 9000 Series Aggregation Services Router 12-Slot 10 Line Card Slot AC Chassis w/ PEM V2	ASR-9912-AC	Release 4.3.2	Release 6.1.2
Cisco ASR 9000 Series Aggregation Services Router 12-Slot 10 Line Card Slot DC Chassis w/ PEM V2	ASR-9912-DC	Release 4.3.2	Release 6.1.2

Cisco ASR 9000 Series Aggregation Services Router 12-Slot Fan Tray	ASR-9912-FAN	Release 4.3.2	Release 6.1.2
Cisco ASR 9000 Series Aggregation Services Router 22-Slot			
Component	Part Number	Support Initially Provided in IOS XR Release	Support Initially Provided in IOS XR 64 bit Release
Cisco ASR 9900 Switch Fabric Card 3	A99-SFC3	Not Supported	Release 6.5.15
Cisco ASR 9000 Fabric Card	A99-SFC2	Release 5.3.0	Release 6.1.2
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	Release 6.1.2
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	Release 6.1.2
Cisco ASR 9000 Series Aggregation Services Router 22-Slot Accessory Kit with grounding locks, guide rails etc	ASR-9922-ACC-KIT	NA	NA
Cisco ASR 9000 Series Aggregation Services Router 22-Slot Accessory - Cover for Power Shelves and Modules	ASR-9922-PWR-COV	NA	NA
Cisco ASR 9000 Series Aggregation Services Router 22-Slot Air Reflector	ASR-9922-AIRREF	NA	NA
Cisco ASR 9000 Series Aggregation Services Router 22-Slot Accessory - Door (with lock) and Fan Tray Covers	ASR-9922-DOOR	NA	NA
Cisco ASR 9000 Series Aggregation Services Router 22-Slot Fan Tray	ASR-9922-FAN	Release 4.2.2	Release 6.1.2
Cisco ASR 9000 Series Aggregation Services Router 22-Slot Fan Tray version 3	ASR-9922-FAN-V3	Not Supported	Release 6.5.15
Cisco ASR 9000 Series Aggregation Services Router 22-Slot Air Filter with Media, Center	ASR-9922-FLTR-CEN	Release 4.2.2	Release 6.1.2
Cisco ASR 9000 Series Aggregation Services Router 22-Slot Air Filter with Media, Left & Right	ASR-9922-FLTR-LR	Release 4.2.2	Release 6.1.2
Cisco ASR 9000 Series Aggregation Services Router 22-Slot Route Processor Filler	ASR-9922-RP-FILR	Release 4.2.2	Release 6.1.2
Cisco ASR 9000 Series Aggregation Services Router 22-Slot Switch Fabric Card Slot Filler	ASR-9922-SFC-FILR	Release 4.2.2	Unsupported
Cisco ASR 9000 Series Aggregation Services Router 22-Slot Version 2 Fan Tray	ASR-9922-FAN-V2	Release 5.2.2	Release 6.1.2
Cisco ASR 9000 Series Aggregation Services Router 2-RU			

Component	Part Number	Support Initially Provided in IOS XR Release	Support Initially Provided in IOS XR 64 bit Release
Cisco ASR 9000 Series Aggregation Services Router 2RU	ASR-9001	Release 4.2.1	Unsupported
Cisco ASR 9000 Series Aggregation Services Router 2-Slot Fan Tray	ASR-9001-FAN	Release 4.2.1	Unsupported
Cisco ASR 9000 Series Aggregation Services Router 2-Slot Line Card	ASR-9001-LC	Release 4.2.1	Unsupported
Cisco ASR 9000 Series Aggregation Services Router	ASR-9001-TRAY	Release 4.2.1	Unsupported
Cisco ASR 9000 Series Aggregation Services Router 6-Slot			
Component	Part Number	Support Initially Provided in IOS XR Release	Support Initially Provided in IOS XR 64 bit Release
Cisco ASR 9000 Series Aggregation Services Router 6-Slot System	ASR-9006-SYS	Release 3.7.2	Release 6.1.2
Cisco ASR 9000 Series Aggregation Services Router 6-Slot Fan Tray	ASR-9006-FAN	Release 3.7.2	Release 6.1.2
Cisco ASR 9000 Series Aggregation Services Router 6-Slot Door Kit	ASR-9006-DOOR	Release 3.7.2	Release 6.1.2
Cisco ASR 9000 Series Aggregation Services Router 6-Slot AC Chassis	ASR-9006-AC	Release 3.7.2	Release 6.1.2
Cisco ASR 9000 Series Aggregation Services Router 6-Slot DC Chassis	ASR-9006-DC	Release 3.7.2	Release 6.1.2
Cisco ASR 9000 Series Aggregation Services Router 6-Slot Air			
Component	Part Number	Support Initially Provided in IOS XR Release	Support Initially Provided in IOS XR 64 bit Release
Cisco ASR 9000 Series Aggregation Services Router 6-Slot Air Filter	ASR-9006-FILTER	Release 3.7.2	Release 6.1.2
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	Release 6.3.1
Cisco ASR 9000 Series Aggregation Services Router 6-Slot Fan Tray	ASR-9906-FAN	Release 6.3.1	Release 6.3.1
Cisco ASR 9000 Series Aggregation Services Router 6-Slot Fan Filter	ASR-9906-FILTER	Release 6.3.1	Release 6.3.1

ASR 9906 Switch Fabric Card 3	A99-SFC3-T	Not Supported	Release 6.5.15
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	Release 6.1.2
Cisco ASR 9000 Series Aggregation Services Router 10-Slot Fan Tray	ASR-9010-FAN	Release 3.7.2	Release 6.1.2
Cisco ASR 9000 Series Aggregation Services Router 10-Slot Door Kit	ASR-9010-DOOR	Release 3.7.2	Release 6.1.2
Cisco ASR 9000 Series Aggregation Services Router 10-Slot AC Chassis	ASR-9010-AC	Release 3.7.2	Release 6.1.2
Cisco ASR 9000 Series Aggregation Services Router 10-Slot DC Chassis	ASR-9010-DC	Release 3.7.2	Release 6.1.2
Cisco ASR 9000 Series Aggregation Services Router 2 Post Mounting Kit	ASR-9010-2P-KIT	Release 3.7.2	Release 6.1.2
Cisco ASR 9000 Series Aggregation Services Router 4 Post Mounting Kit	ASR-9010-2P-KIT	Release 3.7.2	Release 6.1.2
Cisco ASR 9000 Series Aggregation Services Router 10-Slot Air			
Component	Part Number	Support Initially Provided in IOS XR Release	Support Initially Provided in IOS XR 64 bit Release
Cisco ASR 9000 Series Aggregation Services Router 10-Slot Air Filter	ASR-9010-FILTER	Release 3.7.2	Release 6.1.2
Cisco ASR 9000 Series Aggregation Services Router 10-Slot External Exhaust Air Shaper	ASR-9010-AIRSHPR	NA	NA
Cisco ASR 9000 Series Aggregation Services Router 10-Slot Air Inlet Grill	ASR-9010-GRL	NA	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	Release 6.2.1
Cisco ASR 9000 Series Aggregation Services Router 10-Slot(9910) Fan Tray	ASR-9910-FAN	Release 6.0.1	Release 6.2.1
Cisco ASR 9000 Series Aggregation Services Router 10-Slot (9910) Accessory Kit	ASR-9910-ACC-KIT	Release 6.0.1	Release 6.2.1
Cisco ASR 9000 Series Aggregation Services Router 10-Slot (9910) 4 Post Rack Mounting Kit	ASR-9910-4P-KIT	Release 6.0.1	Release 6.2.1

Cisco ASR 9000 Series Aggregation Services Router 10-Slot (9910) 2 Post Rack Mounting Kit	ASR-9910-2P-KIT	Release 6.0.1	Release 6.2.1
Cisco ASR 9000 Series Aggregation Services Router 10-Slot (9910) Air Reflector	ASR-9910-AIRREF	Release 6.0.1	Release 6.2.1
Cisco ASR 9000 Series Aggregation Services Router 10-Slot (9910) Air Filter	ASR-9910-FILTER	Release 6.0.1	Release 6.2.1
Cisco ASR 9000 Series Aggregation Services Router 10-Slot (9910) Switch Fabric Card	A99-SFC-S	Release 6.0.1	Release 6.2.1
ASR 9910 Switch Fabric Card 3	A99-SFC3-S	Not Supported	Release 6.5.15
Cisco ASR 9000 Series Aggregation Services Router Power			
Component	Part Number	Support Initially Provided in IOS XR Release	Support Initially Provided in IOS XR 64 bit Release
Cisco ASR 9000 Series Aggregation Services Router 2KW DC Power Module, version 2	PWR-2KW-DC-V2	Release 4.2.0	Release 6.1.2
Cisco ASR 9000 Series Aggregation Services Router 3KW AC Power Module, version 2	PWR-3KW-AC-V2	Release 4.2.0	Release 6.1.2
Cisco ASR 9000 Series Aggregation Services Router AC Power Entry Module Version 2	A9K-AC-PEM-V2	Release 4.2.0	Release 6.1.2
Cisco ASR 9000 Series Aggregation Services Router DC Power Entry Module Version 2	A9K-DC-PEM-V2	Release 4.2.0	Release 6.1.2
Cisco ASR 9000 Series Aggregation Services Router Power Entry Module Version 2 Filler	A9K-PEM-V2-FILR	Release 4.2.0	Release 6.1.2
Cisco ASR 9000 Series Aggregation Services Router 1.5kW DC Power Module	A9K-1.5KW-DC	Release 3.7.2	Release 6.2.1
Cisco ASR 9000 Series Aggregation Services Router 2kW DC Power Module	A9K-2KW-DC	Release 3.7.2	Release 6.2.1
Cisco ASR 9000 Series Aggregation Services Router 3kW AC Power Module	A9K-3KW-AC	Release 3.7.2	Release 6.2.1
Cisco ASR 9000 Series Aggregation Services Router AC Power Enclosure Module Version 3	A9K-AC-PEM-V3	Release 5.3.0	Release 6.1.2
Cisco ASR 9000 Series Aggregation Services Router DC Power Enclosure Module Version 3	A9K-DC-PEM-V3	Release 5.3.0	Release 6.1.2
Cisco ASR 9000 Series Aggregation Services Router 6kW AC Power Module Version 3	PWR-6KW-AC-V3	Release 5.3.0	Release 6.1.2
Cisco ASR 9000 Series Aggregation Services Router 4.4kW DC Power Module Version 3	PWR-4.4KW-DC-V3	Release 5.3.0	Release 6.1.2

Cisco ASR 9000 Series Aggregation Services Router Line Cards			
Component	Part Number	Support Initially Provided in IOS XR Release	Support Initially Provided in IOS XR 64 bit Release
ASR 9000 16-port 100GE QSFP TR line card	A9K-16X100GE-TR	Not Supported	Release 6.5.15
ASR 9900 32-port 100GE QSFP TR line card	A99-32X100GE-TR	Not Supported	Release 6.5.15
ASR 9000 48 port dual rate 10G/1G Service Edge line card	A99-48X10GE-1G-SE	Release 6.5.2	Release 6.5.2
ASR 9000 48 port dual rate 10G/1G Transport Optimised line card	A99-48X10GE-1G-TR	Release 6.5.2	Release 6.5.2
ASR 9900 16-port 100GE QSFP SE	A99-16X100GE-X-SE	Not supported	Release 6.6.2
ASR 9000 48-port dual-rate 10G/1G Consumption Model line card	A9K-48X10GE-1G-CM	Release 6.3.2	Release 6.4.1
ASR 9000 24-port dual-rate 10G/1G Consumption Model line card	A9K-24X10GE-1G-CM	Release 6.3.2	Release 6.4.1
ASR 9000 4-port 100-Gigabit Ethernet Line Card	A9K-4X100GE	Release 6.2.3	Release 6.4.1
ASR9000 48-port dual-rate 10G/1G service edge–optimized line card	A9K-48X10GE-1G-SE	Release 6.2.1	Release 6.3.2
ASR9000 48-port dual-rate 10G/1G packet transport–optimized line card	A9K-48X10GE-1G-TR	Release 6.2.1	Release 6.3.2
ASR9000 24-port dual-rate 10G/1G service edge–optimized line card	A9K-24X10GE-1G-SE	Release 6.2.1	Release 6.3.2
ASR9000 24-port dual-rate 10G/1G packet transport–optimized line card	A9K-24X10GE-1G-TR	Release 6.2.1	Release 6.3.2
ASR 9900 8-port 100GE Service Edge optimized	A99-8X100GE-SE	Release 6.0.1	Release 6.1.2
ASR 9900 8-port 100GE Packet Transport optimized	A99-8X100GE-TR	Release 6.0.1	Release 6.1.2
ASR 9900 8-port 100GE Consumption Model	A99-8X100GE-CM	Release 6.0.1	Release 6.1.2
Cisco ASR 9000 Series Aggregation Services Router 12-Port 100-Gigabit Ethernet Line Card	A99-12X100GE	Release 6.0.1	Release 6.1.2
Cisco ASR 9000 Series Aggregation Services Router 12-port 100GE Ethernet Line card CM	A99-12X100GE-CM	Release 6.0.1	Release 6.1.2
Cisco ASR 9000 Series Aggregation Services Router 8-Port 100- Gigabit Ethernet, Consumption Model Optimized with CPAK	A9K-8X100GE-CM	Release 5.3.2	Release 6.1.2
Cisco ASR 9000 Series Aggregation Services Router 8-Port 100- Gigabit Ethernet, Service Edge Optimized	A9K-8X100GE-SE	Release 5.3.1	Release 6.1.2

Cisco ASR 9000 Series Aggregation Services Router 8-Port 100-Gigabit Ethernet, Packet Transport Optimized	A9K-8X100GE-TR	Release 5.3.1	Release 6.1.2
Cisco ASR 9000 Series Aggregation Services Router 4-Port 100-Gigabit Ethernet, Service Edge Optimized	A9K-4X100GE-SE	Release 5.3.1	Release 6.1.2
Cisco ASR 9000 Series Aggregation Services Router 4-Port 100- Gigabit Ethernet, Packet Transport Optimized	A9K-4X100GE-TR	Release 5.3.1	Release 6.1.2
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	Release 6.1.2
Cisco ASR 9000 Series Aggregation Services Router 4-Port Ten Gigabit Ethernet + Cisco ASR 9000 Series Aggregation Services Router 16-Port Gigabit Ethernet, Packet Transport Optimized	A9K-4T16GE-TR	Release 5.3.0	Unsupported
Cisco ASR 9000 Series Aggregation Services Router 4-Port Ten Gigabit Ethernet + Cisco ASR 9000 Series Aggregation Services Router 16-Port Gigabit Ethernet, Service Edge Optimized	A9k-4T16GE-SE	Release 5.3.0	Unsupported
Cisco ASR 9000 Series Aggregation Services Router Virtualized Services Module (VSM) line card	A9K-VSM-500	Release 5.1.2	Unsupported
Cisco ASR 9000 Series Aggregation Services Router 1-port 100GE, Service Edge Optimized	A9K-1X100GE-SE	Release 4.2.2	Unsupported
Cisco ASR 9000 Series Aggregation Services Router 1-port 100GE, Packet Transport Optimized	A9K-1X100GE-TR	Release 4.2.2	Unsupported
Cisco ASR 9000 Series Aggregation Services Router 36-port 10GE, Service Edge Optimized	A9K-36X10GE-SE	Release 4.2.2	Unsupported
Cisco ASR 9000 Series Aggregation Services Router 36-port 10GE, Packet Transport Optimized LC	A9K-36X10GE-TR	Release 4.2.2	Unsupported
Cisco ASR 9000 Series Aggregation Services Router Line Card Filler	A9K-LC-FILR	Release 3.7.2	Unsupported
Cisco ASR 9000 Series Aggregation Services Router 2-Port Hundred Gigabit Ethernet, Service Edge Optimized	A9K-2X100GE-SE	Release 4.2.0	Unsupported
Cisco ASR 9000 Series Aggregation Services Router 2-Port Hundred Gigabit Ethernet, Packet Transport Optimized	A9K-2X100GE-TR	Release 4.2.0	Unsupported
Cisco ASR 9000 Series Aggregation Services Router 24-Port Ten Gigabit Ethernet, Service Edge Optimized	A9K-24X10GE-SE	Release 4.2.0	Unsupported
Cisco ASR 9000 Series Aggregation Services Router 24-Port Ten Gigabit Ethernet, Packet Transport Optimized	A9K-24X10GE-TR	Release 4.2.0	Unsupported

Cisco ASR 9000 Series Aggregation Services Router 40-Port Ten Gigabit Ethernet, Packet Transport Optimized	A9K-40GE-TR	Release 5.2.2	Unsupported
Cisco ASR 9000 Series Aggregation Services Router 40-Port Ten Gigabit Ethernet, Service Edge Optimized	A9K-40GE-SE	Release 5.2.2	Unsupported
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	Release 6.2.1
Cisco ASR 9000 Series Aggregation Services Router Modular Line Cards			
Component	Part Number	Support Initially Provided in IOS XR Release	Support Initially Provided in IOS XR 64 bit Release
Cisco ASR 9000 Series Aggregation Services Router 200 Gigabit Modular Line Card, Packet Transport Optimized Cisco ASR 9000 Series Aggregation Services Router 200 Gigabit Modular Line Card, Service Edge Optimized	A9K-MOD200-TR A9K-MOD200-SE	Release 6.0.1	Release 6.3.1
Cisco ASR 9000 Modular 400G Consumption Model Line Card Bundle	A9K-MOD400-CM-BUN	Release 6.1.2	Release 6.2.1
Cisco ASR 9000 Modular 400G Consumption Model Line Card	A9K-MOD400-CM	Release 6.1.2	Release 6.2.1
Cisco ASR 9000 Series Aggregation Services Router 400 Gigabyte Modular Line Card, Service Edge Optimized	A9K-MOD400-SE	Release 5.3.2	Release 6.2.1
Cisco ASR 9000 Series Aggregation Services Router 400 Gigabyte Modular Line Card, Packet Transport Optimized	A9K-MOD400-TR	Release 5.3.2	Release 6.2.1
Cisco ASR 9000 Series Aggregation Services Router 80 Gig Modular Line Card, Service Edge Optimized	A9K-MOD80-SE	Release 4.2.0	Unsupported
Cisco ASR 9000 Series Aggregation Services Router 80 Gig Modular Line Card, Packet Transport Optimized	A9K-MOD80-TR	Release 4.2.0	Unsupported
Cisco ASR 9000 Series Aggregation Services Router 160 Gig Modular Line Card, Service Edge Optimized	A9K-MOD160-SE	Release 4.2.1	Unsupported
Cisco ASR 9000 Series Aggregation Services Router 160 Gig Modular Line Card, Packet Transport Optimized	A9K-MOD160-TR	Release 4.2.1	Unsupported
Cisco ASR 9000 Series Aggregation Services Router Modular Port Adapters (MPAs)			
Component	Part Number	Support Initially Provided in IOS XR Release	Support Initially Provided in IOS XR 64 bit Release
Cisco ASR 9000 1-port 200-Gigabit Ethernet MPA, requires CFP2-DCO optics	A9K-MPA-1X200GE	Release 6.6.2	Upcoming Release

Cisco ASR 9000 32-port 1-Gigabit Ethernet MPA with MACSec	A9K-MPA-32X1GE	Release 6.6.1	Release 6.6.2
Cisco ASR 9000 20x10GE Consumption Model MPA	A9K-MPA20X10GE-CM	Release 6.1.2	Release 6.5.1
Cisco ASR 9000 2x100GE Consumption Model MPA	A9K-MPA2X100GE-CM	Release 6.1.2	Release 6.5.1
Cisco ASR 9000 Series Aggregation Services Router 1-port 100-Gigabit Modular Port Adapter	A9K-MPA-1X100GE	Release 6.0.1	Release 6.3.1
Cisco ASR 9000 Series Aggregation Services Router 2-port 100-Gigabit Modular Port Adapter	A9K-MPA-2X100GE	Release 6.0.1	Release 6.2.2
20-Port 10-Gigabit Ethernet Modular Port Adapter with SFP+	A9K-MPA-20x10GE	Release 5.3.2	Release 6.2.1
Cisco ASR 9000 Series Aggregation Services Router 8-port 10GE Modular Port Adapter	A9K-MPA-8X10GE	Release 4.3.1	Release 6.3.2
Cisco ASR 9000 Series Aggregation Services Router 1-port 40GE Modular Port Adapter	A9K-MPA-1X40GE	Release 4.2.3	Release 6.3.1
Cisco ASR 9000 Series Aggregation Services Router 4-port 10GE Modular Port Adapter	A9K-MPA-4X10GE	Release 4.2.0	Release 6.2.1
Cisco ASR 9000 Series Aggregation Services Router 20-port 1GE Modular Port Adapter	A9K-MPA-20X1GE	Release 4.2.0	Release 6.2.1
Cisco ASR 9000 Series Aggregation Services Router 2-port 10GE Modular Port Adapter	A9K-MPA-2X10GE	Release 4.2.1	Release 6.3.2
Cisco ASR 9000 Series Aggregation Services Router 2-port 40GE Modular Port Adapter	A9K-MPA-2X40GE	Release 4.2.1	Release 6.3.1
Cisco ASR 9000v Satellite Shelf			
Component	Part Number	Support Initially Provided in IOS XR Release	Support Initially Provided in IOS XR 64 bit Release
Cisco ASR 9000v Satellite Shelf Version 2 DC power ANSI chassis	A9KV-V2-DC-A=	Release 5.2.2	Release 6.2.1
Cisco ASR 9000v Satellite Shelf Version 2 DC power chassis	A9KV-V2-DC-E=	Release 5.2.2	Release 6.2.1
Cisco ASR 9000v Satellite Shelf AC power chassis	A9KV-V2-AC=	Release 5.2.2	Release 6.2.1
Cisco ASR 9000v Satellite Shelf Version 2 Fan Tray	A9KV-V2-FAN=	Release 5.2.2	Release 6.2.1
Cisco NCS 5000 Satellite Shelf			
Cisco NCS 5001 Series Router	NCS-5001	Release 6.0.1	Release 6.2.1
Cisco NCS 5002 Series Router	NCS-5002	Release 6.0.1	Release 6.2.1

Cisco NCS 5001 Router Accessory Kit	NCS-5001-ACSR	Release 6.0.1	Release 6.2.1
Cisco NCS 5002 Router Accessory Kit	NCS-5002-ACSR	Release 6.0.1	Release 6.2.1
Cisco NCS 5001 Router Fan Back to Front AirFlow	NCS-5001-FN-BK	Release 6.0.1	Release 6.2.1
Cisco NCS 5002 Router Fan Back to Front AirFlow	NCS-5002-FN-BK	Release 6.0.1	Release 6.2.1
Cisco NCS 5001 Air Filter Back to Front Airflow	NCS-5001-FLT-BK	Release 6.0.1	Release 6.2.1
Cisco NCS 5002 Air Filter Back to Front Airflow	NCS-5002-FLT-BK	Release 6.0.1	Release 6.2.1
Cisco NCS 5001 Fan Front to Back Airflow	NCS-5001-FN-FR	Release 6.0.1	Release 6.2.1
Cisco NCS 5002 Fan Front to Back Airflow	NCS-5002-FN-FR	Release 6.0.1	Release 6.2.1
Cisco NCS 5001 Air Filter Front to Back Airflow	NCS-5001-FLT-FR	Release 6.0.1	Release 6.2.1
Cisco NCS 5002 Air Filter Front to Back Airflow	NCS-5002-FLT-FR	Release 6.0.1	Release 6.2.1
Cisco ASR 9000 Series Aggregation Services Router SIP and SPA Cards			
Component	Part Number	Support Initially Provided in IOS XR Release	Support Initially Provided in IOS XR 64 bit Release
Cisco ASR 9000 SIP-700 SPA interface processor	A9K-SIP-700	Release 3.9.0	Unsupported
2-Port Channelized OC-12/DS0 SPA	SPA-2XCHOC12/DS0	Release 3.9.0	Unsupported
1-Port Channelized OC48/STM16 DS3 SPA	SPA-1XCHOC48/DS3	Release 4.0.1	Unsupported
2-Port OC-48/STM16 SPA	SPA-2XOC48POS/RPR	Release 4.0.1	Unsupported
Cisco 4-Port OC-12c/STM-4 POS SPA	SPA-4XOC12-POS	Release 6.4.2	Unsupported
8-Port OC12/STM4 SPA	SPA-8XOC12-POS	Release 4.0.1	Unsupported
1-Port OC-192/STM-64 POS/RPR SPA	SPA-OC192POS-XFP	Release 4.0.1	Unsupported
4-Port Clear Channel T3/E3 SPA	SPA-4XT3E3	Release 4.0.1	Unsupported
2-Port Clear Channel T3/E3 SPA	SPA-2XT3E3	Release 4.0.1	Unsupported
1-Port Channelized OC-3/STM-1 SPA	SPA-1XCHSTM1/OC3	Release 4.0.1	Unsupported
4-Port OC-3/STM-1 POS SPA	SPA-4XOC3	Release 4.0.1	Unsupported
8-Port OC-3/STM-1 POS SPA	SPA-8XOC3	Release 4.0.1	Unsupported
4-Port Channelized T3 to DS0 SPA	SPA-4XCT3/DS0	Release 4.1.0	Unsupported
8-Port Channelized T1/E1 SPA	SPA-8XCHT1/E1	Release 4.1.0	Unsupported
1-Port and 3-Port Clear Channel OC-3 ATM SPA	SPA-1/3XOC3ATM	Release 4.2.0	Unsupported
1-Port Clear Channel OC-12 ATM SPA	SPA-1XOC12ATM	Release 4.2.0	Unsupported

1-Port Channelized OC-3 ATM CEoP SPA	SPA-1XOC3-CE-ATM	Release 4.2.0	Unsupported
1000BASE-BX40-D for Single-Fiber Bidirectional Applications	GLC-BX40-DA-I GLC-BX40-D-I	Release 5.1.2	Release 6.3.2
1000BASE-BX40-U for Single-Fiber Bidirectional Applications	GLC-BX40-U-I	Release 5.1.2	Unsupported
1000BASE-BX80-D for Single-Fiber Bidirectional Applications	GLC-BX80-D-I	Release 5.1.2	Unsupported
1000BASE-BX80-U for Single-Fiber Bidirectional Applications	GLC-BX80-U-I	Release 5.1.2	Unsupported
The Cisco 10GBASE Coarse Wavelength-Division Multiplexing (CWDM) Small Form-Factor Pluggable (SFP+)	CWDM-SFP10G-1470 CWDM-SFP10G-1490 CWDM-SFP10G-1510 CWDM-SFP10G-1530 CWDM-SFP10G-1550 CWDM-SFP10G-1570 CWDM-SFP10G-1590 CWDM-SFP10G-1610	Release 5.2.2	Unsupported
The Cisco Dense Wavelength-Division Multiplexing (DWDM) Tunable SFP+ 10 Gigabit Ethernet Transceiver Module	DWDM-SFP10G-C	Release 5.2.2	Unsupported
1000BASE-TX Extended Temperature SFP	GLC-TE	Release 5.2.2	Release 7.0.1
10GBASE-DWDM single wavelength Edge Performance XFP , dual LC connector, individual wavelength pluggable module	ONS-XC-10G-EPXX.Y	Release 5.2.2	Unsupported
10GBASE-DWDM single wavelength Edge Performance SFP+ pluggable module	ONS-SC-10G-EPXX.Y	Release 5.2.2	Unsupported
Dual Rate SFP	GLC-GE-DR-LX Dual Rate (100M/1G)	Release 5.2.2	Unsupported
1-Port 40G CPAK adapter module	CVR-CPAK-QSFP40	Release 5.3.2	Unsupported
CFP2 Digital Coherent Optics pluggable operates in 200G and 100G mode	CFP2-DCO	Release 6.6.2	Upcoming Release

Software Compatibility

Cisco IOS XR Software Release 6.6.2 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
 - 1-Slot (ASR-9901) 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 committed summary** command:

Cisco IOS XR

```
RP/0/RSP0/CPU0:router# show install committed summary
  Default Profile:
SDRs:
  Owner
Committed Packages:
disk0:asr9k-services-infra-6.6.2
disk0:asr9k-9000v-nv-px-6.6.2
disk0:asr9k-bng-px-6.6.2
disk0:asr9k-doc-px-6.6.2
disk0:asr9k-fpd-px-6.6.2
disk0:asr9k-li-px-6.6.2
disk0:asr9k-mcast-px-6.6.2
disk0:asr9k-mgbl-px-6.6.2
disk0:asr9k-mini-px-6.6.2
disk0:asr9k-mpls-px-6.6.2
disk0:asr9k-optic-px-6.6.2
disk0:asr9k-services-px-6.6.2
disk0:asr9k-video-px-6.6.2
disk0:asr9k-k9sec-px-6.6.2
```

Cisco IOS XR 64 bit

```
RP/0/RSP0/CPU0:router# show install committed summary
  Committed Packages: 9
    asr9k-xr-6.6.2 version=6.6.2 [Boot image]
    asr9k-mgbl-x64-2.0.0.0-r662
    asr9k-isis-x64-1.1.0.0-r662
    asr9k-mpls-x64-2.0.0.0-r662
    asr9k-mpls-te-rsvp-x64-2.1.0.0-r662
```

```
asr9k-ospf-x64-1.0.0.0-r662
asr9k-mcast-x64-2.0.0.0-r662
asr9k-k9sec-x64-2.1.0.0-r662
asr9k-9000v-nV-x64-1.0.0.0-r662
```

Software Features Introduced in this Release

Support to Add Options in DHCPv4 and DHCPv6 Messages for BNG Subscribers

When a BNG interface is configured with a proxy, server, or base profile; it sends DHCPv4 or DHCPv6 options of DHCP messages to the AAA server for authentication. This feature adds the flexibility of sending all or specific DHCPv4 or DHCPv6 options from the subscriber to the AAA server, thereby allowing advanced authentication options of the subscriber.

This feature also enables BNG to retrieve configured DHCPv4 or DHCPv6 options like Relay Agent Information, Subscriber-ID, Interface-ID from the radius and forward it to the DHCPv4 or DHCPv6 server. Retrieved options from RADIUS server can influence the DHCP server to identify the client or to select a pool configuration for the client.

For more information about the feature, see the chapter *Establishing Subscriber Sessions* in the *Cisco ASR 9000 Series Aggregation Services Router Broadband Network Gateway Configuration Guide*.

For more information on the commands on this feature, see the chapter *BNG DHCP Commands* in the *Cisco ASR 9000 Series Aggregation Services Router Broadband Network Gateway Command Reference*.

Service Edge

This feature enables you to configure internal TCAM profile partition on A99-12x100GE and A9K-4x100GE line cards in the service edge segments. With this configuration, sub-interface scale is increased from 1K to 4K and scale of IPv6 entries is increased from 1.75K to 3.5K.

For more information about the feature, see the chapter *Configuring Profiles* in the *System Management Configuration Guide for Cisco ASR 9000 Series Routers*, Release 6.6.x.

For more information on the commands on this feature, see the chapter *Hardware Redundancy and Node Administration Commands* in the *System Management Command Reference for Cisco ASR 9000 Series Routers*.

Flow-Based Manual Traffic Steering using SRTE Policies

Currently, the steering of traffic through a Segment Routing (SR) policy is based on the destination of the policy (Per-Destination Policy or PDP). Typically, the candidate paths of an SR policy define different paths to the destination of the policy. Every SR policy is also associated with a color.

The Flow-Based Manual Traffic Steering using SRTE Policies feature introduces a way to steer traffic on a SR policy based on the attributes of the incoming packets. Packets are classified into internal tags called forward classes (FC). Flow-based policies (Per-Flow Policy or PFP) contain mappings between different FCs and colors. Traffic steered onto a PFP are switched onto the appropriate path based on the packet's FC.

For more information about the Flow-Based Manual Traffic Steering using SRTE Policies feature, see the *Configure SR-TE Policies* chapter in the *Segment Routing Configuration Guide for Cisco ASR 9000 Series Routers*, IOS XR Release 6.6.x.

LDP over Segment Routing Policy

The LDP over Segment Routing Policy feature enables an LDP-targeted adjacency over Segment Routing (SR) policy between two routers. This feature extends the existing MPLS LDP address family neighbor configuration to specify an SR policy as the targeted end-point.

For more information about the LDP over Segment Routing Policy feature, see the Configure SR-TE Policies chapter in the *Segment Routing Configuration Guide for Cisco ASR 9000 Series Routers*.

Static Route Traffic-Steering using SRTE Policy

Earlier, you could associate Segment Routing Label Switched Paths (SR-LSP) with a static route. The Static Route Traffic-Steering using SRTE Policy feature adds support to specify a Segment Routing (SR) policy as an interface type when configuring static routes for MPLS and IPv6 data planes.

For more information about the Static Route Traffic-Steering using SRTE Policy feature, see the Configure SR-TE Policies chapter in the *Segment Routing Configuration Guide for Cisco ASR 9000 Series Routers*.

ACL Support for PCEP Connection

PCE protocol (PCEP) (RFC5440) is a client-server model running over TCP/IP, where the server (PCE) opens a port and the clients (PCC) initiate connections. After the peers establish a TCP connection, they create a PCE session on top of it.

The ACL Support for PCEP Connection feature provides a way to protect a PCE server using an Access Control List (ACL) to restrict the PCC peers at the time the TCP connection is created based on the source address of client. When a client initiates the TCP connection, the ACL is referenced, and the client source address is compared. The ACL can either permit or deny the address and the TCP connection will proceed or not.

For more information about ACLs, see the Implementing Access Lists and Prefix Lists chapter in the IP Addresses and Services Configuration Guide.

For more information about the ACL Support for PCEP Connection feature, see the Configure Segment Routing Path Computation Element chapter in the *Segment Routing Configuration Guide for Cisco ASR 9000 Series Routers*.

DHCPv6 to Handle vrf Name, IP Address Coming from Radius Server

The Internet Engineering Task Force (IETF) attributes, such as Framed-IP-Address and Framed-IP-Netmask, are received from the RADIUS server. If these attributes are present in the user profile, then they are used instead of allocating the IP address from the local pool in Distributed Address Pool Service (DAPS).

Traditionally, VRF of DHCP binding is derived from access interface or dynamic template configuration. With this feature, VRF name can be downloaded from the RADIUS server, and is preferred over dynamic template and access interface VRF.

For more information about the feature, see the <placeholder> chapter in the *Interface and Hardware Component Configuration Guide for Cisco ASR 9000 Series Routers*.

Building Integrated Timing Supply (BITS) output-input

This feature allows the BITS-default mode to be enabled where the BITS output and input can be configured from the same port.

For more information, see the port-parameters command in the System Management Command reference for Cisco ASR 9000 series Routers.

Support for DHCPv4 and DHCPv6 to Handle VRF Name and IP Address from Radius Server

This feature supports the DHCPv4 IETF attributes and DHCPv6 Cisco attributes that are received from the RADIUS Server. These attributes are preferred to be used instead of allocating the IP address from the local pool.

Traditionally, VRF of DHCP binding is derived from access interface or dynamic template configuration. With this feature, VRF name can be downloaded from RADIUS Server and is preferred over dynamic template and access interface VRF.

For more information about the feature, see the *Establishing Subscriber Sessions* chapter in the *Cisco ASR 9000 Series Aggregation Services Router Broadband Network Gateway Configuration Guide*.

DHCP Client Receiving DHCP Options From a RADIUS Server

This feature enables you to configure DHCPv4 or DHCPv6 options on a RADIUS server and then distribute the options on a per DHCP-client basis. This method results in RADIUS-sourced DHCP options—the DHCPv4 or DHCPv6 options originate at the RADIUS server and are sent to the DHCP client. This differs from the traditional DHCP-sourced method, in which the options are configured under DHCP Proxy/Server profile on BNG router. The RADIUS-sourced DHCP options are also considered to be opaque, because DHCP local server performs minimal processing and error checking for the DHCPv4 or DHCPv6 options string before passing the options to the DHCP client.

For more information about the feature, see the *Establishing Subscriber Sessions* chapter in the *Cisco ASR 9000 Series Aggregation Services Router Broadband Network Gateway Configuration Guide*.

DHCPv4 base profile support

BNG introduces DHCPv4 base profile support which is in line with DHCPv6 base profile. This enables the Radius server to select the profile mode based on matching the mode-class options.

For more information about the feature, see the chapter *Establishing Subscriber Sessions* in the *Cisco ASR 9000 Series Aggregation Services Router Broadband Network Gateway Configuration Guide*.

For more information on the commands on this feature, see the chapter *BNG DHCP Commands* in the *Cisco ASR 9000 Series Aggregation Services Router Broadband Network Gateway Command Reference*.

Dual Stack Verification for IPoE subscribers

BNG introduces dual stack verification for IPoE RSP/PWHE subscribers as DHCPv4/v6 proxy as well as IPoE RSP/PWHE subscribers over vrf with DHCP base profile. So, whenever a DISCOVER packet comes from any of the AFI, this feature enables the BNG to connect to the Radius server with an access request message and the Radius server responds back with the details of both v4 and v6

For more information about the feature, see the chapter *Establishing Subscriber Sessions* in the *Cisco ASR 9000 Series Aggregation Services Router Broadband Network Gateway Configuration Guide*.

For more information on the commands on this feature, see the chapter *BNG DHCP Commands* in the *Cisco ASR 9000 Series Aggregation Services Router Broadband Network Gateway Command Reference*.

DHCPv6 base profile support

BNG introduces DHCPv6 base profile support for IPoE subscribers. This feature helps service providers to change the IPv6 address allocation mechanism for a specific class of users, rather than allocating IPv6 address for their whole user base through the DHCPv6 server.

For more information about the feature, see the chapter *Establishing Subscriber Sessions* in the *Cisco ASR 9000 Series Aggregation Services Router Broadband Network Gateway Configuration Guide*.

For more information on the commands on this feature, see the chapter *BNG DHCP Commands* in the *Cisco ASR 9000 Series Aggregation Services Router Broadband Network Gateway Command Reference*.

Merge and Acct-stats for Parameterized QoS (PQoS)

BNG provides you the option to add merge and accounting statistics in Quality of Service Vendor Specific Attributes (QoS VSA) which can be downloaded from the radius server. This enables you to support merge and accounting attributes with the Radius-based service from Parameterized QoS (PQoS).

For more information about the feature, see the chapter *Deploying the Quality of Service (QoS)* in the *Cisco ASR 9000 Series Aggregation Services Router Broadband Network Gateway Configuration Guide*.

For more information on the commands on this feature, see the chapter *QoS Commands* in the *Cisco ASR 9000 Series Aggregation Services Router Broadband Network Gateway Command Reference*.

EVPN VxLAN VRF Route Leaking

The EVPN VxLAN VRF Route Leaking feature enables you to import IP prefixes to more than one VRF and leaks IP prefixes from source VRF to destination VRF. The various functionalities of this feature enable the following services in the data center:

- Internet access
- Service VRF
- Inter-VRF routing
- Internet full feed to customer edge devices

For more information, see the *Implementing DCI VXLAN Layer 3 Gateway* chapter in the *MPLS Layer 3 VPN Configuration Guide for Cisco ASR 9000 Series Routers, IOS XR Release 6.6.x*.

BFD over Bundle HW Offload on ASR 9000 Fourth Generation of Line Cards

The Bidirectional Forwarding Detection (BFD) hardware offload feature allows the offload of asynchronous BFD transmission (Tx) and reception (Rx) to the network processing unit on ASR 9000 Enhanced Ethernet Line Cards. BFD hardware offload improves scale and reduces the overall network convergence time by sending rapid failure detection packets (messages) to the routing protocols for recalculating the routing table. Support for this feature is introduced on ASR 9000 Fourth Generation of Line Cards.

For more information about this feature, see the *Implementing BFD* chapter in *Routing Configuration Guide for Cisco ASR 9000 Series Routers*.

Entropy Label

Entropy label (EL) in MPLS is a mechanism that improves load balancing across a network. Load balancing helps in planning the capacity of a network by distributing traffic across multiple paths based on hashing functions. Using the entropy label in the hash keys reduces the need of a Deep Packet Inspection (DPI) inspection in the Label Switching Routers (LSR). The transit LSR can use the entire label stack of the MPLS packet to perform load balancing, as the entropy label introduces the right level of order into the label stack.

To enhance load balancing in a network using entropy labels, see the *Implementing MPLS Label Distribution Protocol* in *MPLS Configuration Guide for Cisco ASR 9000 Series Routers*.

MLDP LFA FRR on ASR 9000 Fourth Generation of Line Cards

Multicast Label Distribution Protocol (MLDP) loop-free alternative (LFA) Fast Reroute (FRR) feature is now supported on the ASR 9000 Fourth Generation of line cards.

For more information, refer the chapter *Implementing Layer-3 Multicast Routing* in the *Multicast Configuration Guide for Cisco ASR 9000 Series Routers*, Release 6.6.x

New Hardware Introduced in Cisco IOS XR Software Release 6.6.2

This release introduces following hardware:

- 16-Port 100GE QSFP28/QSFP+ Line Cards—The Cisco ASR 9000 Series 16-port 100 Gigabit Ethernet Line Cards deliver industry-leading high density, with line-rate 100 Gigabit Ethernet ports, to any slot of a Cisco ASR 9000 Series Aggregation Services Router. The ASR 9000 Series 16-port 100 Gigabit Ethernet line card is fully compatible with Cisco ASR 9006 Router, ASR 9010 Router, ASR 9904 Router, ASR 9906 Router, ASR 9910 Router, ASR 9912 Router, and ASR 9922 Router.



Note

- This card is available in service edge optimized (A99-16X100GE-X-SE) variant.
- This card does not support 4x10G breakout configuration.

For more information, refer to the [Cisco ASR 9000 Series 16-Port 100 Gigabit Ethernet Line Card Data Sheet](#).

- A9K-MPA-1X200GE—ASR 9000 1-port 200-Gigabit Ethernet Modular Port Adapter, requires CFP2-DCO optics that operates in both 100G and 200G mode.
- CFP2-DCO—CFP2 Digital Coherent Optics pluggable operates in 200G and 100G mode.

Hardware Enhancements Introduced in Cisco IOS XR Software 6.6.2

- The Cisco ASR 9000 32-port 1-Gigabit Ethernet MPA with MACSec (A9K-MPA-32X1GE) line card is now supported on the Cisco IOS XR 64 bit operating system.
- QSFP-40 and QSFP-100 bi-directional optics are now supported on fourth generation of the ASR 9000 Series Ethernet line cards.

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.

```
RP/0/RSP0/CPU0:router(admin)#show fpd package
```

Field Programmable Device Package						
Card Type	FPD Description	Type	Subtype	SW Version	Min Req SW Ver	Min Req HW Vers
ASR-9906-BPID2	Can Bus Ctrl (CBC) BP2	bp	cbc	7.105	0.00	0.1

ASR-9910-BPID2	Can	Bus	Ctrl	(CBC)	BP2	bp	cbc	7.105	0.00	0.1
	Can	Bus	Ctrl	(CBC)	BP2	lc	cbc	7.105	0.00	0.1

ASR-9904-BPID2	Can	Bus	Ctrl	(CBC)	BP2	bp	cbc	7.105	0.00	0.1

ASR-9912-BPID2	Can	Bus	Ctrl	(CBC)	BP2	bp	cbc	7.105	0.00	0.1
	Can	Bus	Ctrl	(CBC)	BP2	lc	cbc	7.105	0.00	0.1

ASR-9922-BPID2	Can	Bus	Ctrl	(CBC)	BP2	bp	cbc	7.105	0.00	0.1
	Can	Bus	Ctrl	(CBC)	BP2	lc	cbc	7.105	0.00	0.1

A9K-BPID2-E-10-SLOT	Can	Bus	Ctrl	(CBC)	BP2	bp	cbc	7.105	0.00	0.1

A9K-BPID2-E-6-SLOT	Can	Bus	Ctrl	(CBC)	BP2	bp	cbc	7.105	0.00	0.1

A9K-BPID2-10-SLOT	Can	Bus	Ctrl	(CBC)	BP2	bp	cbc	7.105	0.00	0.1
	Can	Bus	Ctrl	(CBC)	BP2	lc	cbc	7.105	0.00	0.1

A9K-BPID2-6-SLOT	Can	Bus	Ctrl	(CBC)	BP2	bp	cbc	7.105	0.00	0.1
	Can	Bus	Ctrl	(CBC)	BP2	lc	cbc	7.105	0.00	0.1

ASR-9922-SFC110	Can	Bus	Ctrl	(CBC)	MTFC	fc	cbc	28.06	0.00	0.1
	Fabric	Ctrl0	MTFC			fc	fpga7	1.03	0.00	0.1
	Can	Bus	Ctrl	(CBC)	MTFC	lc	cbc	28.06	0.00	0.1

ASR-9912-SFC110	Can	Bus	Ctrl	(CBC)	SSFC	fc	cbc	32.05	0.00	0.1
	Fabric	Ctrl0	MTFC			fc	fpga7	1.03	0.00	0.1

A99-SFC2	Can	Bus	Ctrl	(CBC)	MTFC	fc	cbc	37.20	0.00	0.1
	Fabric	Ctrl0	MTFC			fc	fcfsbl	1.100	0.00	0.1
	Fabric	Ctrl0	MTFC			fc	fc1nxfw	1.100	0.00	0.1
	Fabric	Ctrl0	MTFC			fc	fpga8	0.37	0.00	0.1

ASR-9912-SFC220	Can	Bus	Ctrl	(CBC)	MTFC	fc	cbc	37.20	0.00	0.1
	Fabric	Ctrl0	MTFC			fc	fcfsbl	1.100	0.00	0.1
	Fabric	Ctrl0	MTFC			fc	fc1nxfw	1.100	0.00	0.1
	Fabric	Ctrl0	MTFC			fc	fpga8	0.37	0.00	0.1

A99-SFC-S	Can	Bus	Ctrl	(CBC)	SHFC	fc	cbc	44.02	0.00	0.1
	Fabric	Ctrl0	SHFC			fc	fcfsbl	1.100	0.00	0.1
	Fabric	Ctrl0	SHFC			fc	fc1nxfw	1.100	0.00	0.1
	Fabric	Ctrl0	SHFC			fc	fpga8	0.37	0.00	0.1

A99-SFC-T	Can	Bus	Ctrl	(CBC)	TWFC	fc	cbc	44.02	0.00	0.1
	Fabric	Ctrl0	TWFC			fc	fcfsbl	1.100	0.00	0.1
	Fabric	Ctrl0	TWFC			fc	fc1nxfw	1.100	0.00	0.1
	Fabric	Ctrl0	TWFC			fc	fpga8	0.37	0.00	0.1

ASR-9010-FAN	Can	Bus	Ctrl	(CBC)	FAN	ft	cbc	4.04	0.00	0.1
	Can	Bus	Ctrl	(CBC)	FAN	lc	cbc	4.03	0.00	0.1

ASR-9006-FAN	Can	Bus	Ctrl	(CBC)	FAN	ft	cbc	5.05	0.00	0.1
	Can	Bus	Ctrl	(CBC)	FAN	lc	cbc	5.04	0.00	0.1

ASR-9922-FAN	Can	Bus	Ctrl	(CBC)	MFAN	ft	cbc	29.12	0.00	0.1
	Can	Bus	Ctrl	(CBC)	MFAN	lc	cbc	29.12	0.00	0.1

ASR-9912-FAN	Can	Bus	Ctrl	(CBC)	SFAN	ft	cbc	31.06	0.00	0.1

ASR-9010-FAN-V2	Can	Bus	Ctrl	(CBC)	FAN	ft	cbc	29.12	0.00	0.1
	Can	Bus	Ctrl	(CBC)	FAN	lc	cbc	29.12	0.00	0.1

ASR-9904-FAN	Can	Bus	Ctrl	(CBC)	SFAN	ft	cbc	31.06	0.00	0.1

ASR-9922-FAN-V2	Can Bus Ctrl (CBC) MFAN	ft	cbc	40.07	0.00	0.1
	Fan Controller MFAN	ft	fpga9	2.06	0.00	0.1
ASR-9006-FAN-V2	Can Bus Ctrl (CBC) FAN	ft	cbc	5.05	0.00	0.1
	Can Bus Ctrl (CBC) FAN	lc	cbc	5.04	0.00	0.1
ASR-9910-FAN	Can Bus Ctrl (CBC) SHFAN	ft	cbc	45.02	0.00	0.1
	Fan Controller SHFAN	ft	fpga9	2.06	0.00	0.1
ASR-9906-FAN	Can Bus Ctrl (CBC) TWFAN	ft	cbc	56.01	0.00	0.1
	Fan Controller TWFAN	ft	fpga9	2.06	0.00	0.1
ASR-9001-FAN	Can Bus Ctrl (CBC) FAN	ft	cbc	24.115	0.00	0.1
	Can Bus Ctrl (CBC) FAN	lc	cbc	24.115	0.00	0.1
ASR-9001-FAN-V2	Can Bus Ctrl (CBC) FAN	ft	cbc	24.115	0.00	0.1
A9K-SIP-700	Can Bus Ctrl (CBC) LC5	lc	cbc	3.06	0.00	0.1
	CPUCtrl LC5	lc	cpld1	0.15	0.00	0.1
	QFPCPUBridge LC5	lc	fpga2	5.14	0.00	0.1
	NPUXBarBridge LC5	lc	fpga1	0.24	0.00	0.1
	ROMMONB LC5	lc	rommon	1.04	0.00	0.1
A9K-SIP-500	Can Bus Ctrl (CBC) LC5	lc	cbc	3.06	0.00	0.1
	CPUCtrl LC5	lc	cpld1	0.15	0.00	0.1
	QFPCPUBridge LC5	lc	fpga2	5.14	0.00	0.1
	NPUXBarBridge LC5	lc	fpga1	0.24	0.00	0.1
	ROMMONB LC5	lc	rommon	1.04	0.00	0.1
A9K-SIP-700-8G	Can Bus Ctrl (CBC) LC5	lc	cbc	3.06	0.00	0.1
	CPUCtrl LC5	lc	cpld1	0.15	0.00	0.1
	QFPCPUBridge LC5	lc	fpga2	5.14	0.00	0.1
	NPUXBarBridge LC5	lc	fpga1	0.24	0.00	0.1
	ROMMONB LC5	lc	rommon	1.35	0.00	0.1
ASR-9922-RP-TR	Can Bus Ctrl (CBC) MTRP	lc	cbc	25.03	0.00	0.1
	Fabric Ctrl13 MTFC	lc	fpga10	1.03	0.00	0.1
	Fabric Ctrl14 MTFC	lc	fpga11	1.03	0.00	0.1
	Fabric Ctrl15 MTFC	lc	fpga12	1.03	0.00	0.1
	Fabric Ctrl16 MTFC	lc	fpga13	1.03	0.00	0.1
	CPUCtrl11	lc	fpga2	1.03	0.00	0.1
	ClkCtrl	lc	fpga3	1.05	0.00	0.1
	IntCtrl	lc	fpga4	1.04	0.00	0.1
	UTI	lc	fpga5	4.09	0.00	0.1
	Timex	lc	fpga6	0.02	0.00	0.1
	Fabric Ctrl10 MTFC	lc	fpga7	1.03	0.00	0.1
	Fabric Ctrl11 MTFC	lc	fpga8	1.03	0.00	0.1
	Fabric Ctrl12 MTFC	lc	fpga9	1.03	0.00	0.1
	CPUCtrl10	lc	fpga1	1.05	0.00	0.1
	ROMMONB MTRP	lc	rommon	5.16	0.00	0.1
ASR-9922-RP-SE	Can Bus Ctrl (CBC) MTRP	lc	cbc	25.03	0.00	0.1
	Fabric Ctrl13 MTFC	lc	fpga10	1.03	0.00	0.1
	Fabric Ctrl14 MTFC	lc	fpga11	1.03	0.00	0.1
	Fabric Ctrl15 MTFC	lc	fpga12	1.03	0.00	0.1
	Fabric Ctrl16 MTFC	lc	fpga13	1.03	0.00	0.1
	CPUCtrl11	lc	fpga2	1.03	0.00	0.1
	ClkCtrl	lc	fpga3	1.05	0.00	0.1
	IntCtrl	lc	fpga4	1.04	0.00	0.1
	UTI	lc	fpga5	4.09	0.00	0.1
	Timex	lc	fpga6	0.02	0.00	0.1
	Fabric Ctrl10 MTFC	lc	fpga7	1.03	0.00	0.1

	Fabric Ctrl11 MTFC	1c	fpga8	1.03	0.00	0.1
	Fabric Ctrl12 MTFC	1c	fpga9	1.03	0.00	0.1
	CPUCtrl0	1c	fpga1	1.05	0.00	0.1
	ROMMONB MTRP	1c	rommon	5.16	0.00	0.1

ASR-9900-RP-TR	Can Bus Ctrl (CBC) MTRP	1c	cbc	25.03	0.00	0.1
	Fabric Ctrl13 MTFC	1c	fpga10	1.03	0.00	0.1
	Fabric Ctrl14 MTFC	1c	fpga11	1.03	0.00	0.1
	Fabric Ctrl15 MTFC	1c	fpga12	1.03	0.00	0.1
	Fabric Ctrl16 MTFC	1c	fpga13	1.03	0.00	0.1
	CPUCtrl1	1c	fpga2	1.03	0.00	0.1
	ClkCtrl	1c	fpga3	1.05	0.00	0.1
	IntCtrl	1c	fpga4	1.04	0.00	0.1
	UTI	1c	fpga5	4.09	0.00	0.1
	Timex	1c	fpga6	0.02	0.00	0.1
	Fabric Ctrl10 MTFC	1c	fpga7	1.03	0.00	0.1
	Fabric Ctrl11 MTFC	1c	fpga8	1.03	0.00	0.1
	Fabric Ctrl12 MTFC	1c	fpga9	1.03	0.00	0.1
	CPUCtrl0	1c	fpga1	1.05	0.00	0.1
	ROMMONB MTRP	1c	rommon	5.16	0.00	0.1

ASR-9900-RP-SE	Can Bus Ctrl (CBC) MTRP	1c	cbc	25.03	0.00	0.1
	Fabric Ctrl13 MTFC	1c	fpga10	1.03	0.00	0.1
	Fabric Ctrl14 MTFC	1c	fpga11	1.03	0.00	0.1
	Fabric Ctrl15 MTFC	1c	fpga12	1.03	0.00	0.1
	Fabric Ctrl16 MTFC	1c	fpga13	1.03	0.00	0.1
	CPUCtrl1	1c	fpga2	1.03	0.00	0.1
	ClkCtrl	1c	fpga3	1.05	0.00	0.1
	IntCtrl	1c	fpga4	1.04	0.00	0.1
	UTI	1c	fpga5	4.09	0.00	0.1
	Timex	1c	fpga6	0.02	0.00	0.1
	Fabric Ctrl10 MTFC	1c	fpga7	1.03	0.00	0.1
	Fabric Ctrl11 MTFC	1c	fpga8	1.03	0.00	0.1
	Fabric Ctrl12 MTFC	1c	fpga9	1.03	0.00	0.1
	CPUCtrl0	1c	fpga1	1.05	0.00	0.1
	ROMMONB MTRP	1c	rommon	5.16	0.00	0.1

A9K-RSP880-TR	Can Bus Ctrl (CBC) RSP4	1c	cbc	34.39	0.00	0.0
	MB CPUCtrl	1c	fpga2	0.71	0.00	0.0
	DBCtr1	1c	fpga3	0.16	0.00	0.0
	DBCtr1	1c	fpga4	0.16	0.00	0.0
	DBCtr1	1c	fpga5	0.12	0.00	0.0
	PUNT FPGA	1c	fpga6	0.08	0.00	0.0
	Fsbl	1c	fsbl	1.110	0.00	0.0
	LinuxFW	1c	lnxfw	1.110	0.00	0.0
	ROMMONB RSP4	1c	rommon	10.65	0.00	0.0

A9K-RSP880-SE	Can Bus Ctrl (CBC) RSP4	1c	cbc	34.39	0.00	0.0
	MB CPUCtrl	1c	fpga2	0.71	0.00	0.0
	DBCtr1	1c	fpga3	0.16	0.00	0.0
	DBCtr1	1c	fpga4	0.16	0.00	0.0
	DBCtr1	1c	fpga5	0.12	0.00	0.0
	PUNT FPGA	1c	fpga6	0.08	0.00	0.0
	Fsbl	1c	fsbl	1.110	0.00	0.0
	LinuxFW	1c	lnxfw	1.110	0.00	0.0
	ROMMONB RSP4	1c	rommon	10.65	0.00	0.0

A9K-RSP880-LT-TR	Can Bus Ctrl (CBC) RSP4L	1c	cbc	50.02	0.00	0.0
	MB CPUCtrl	1c	fpga2	0.19	0.00	0.0
	DBCtr1	1c	fpga3	0.05	0.00	0.0
	DBCtr1	1c	fpga4	0.04	0.00	0.0
	DBCtr1	1c	fpga5	0.04	0.00	0.0
	EOBCSwicthCtrl	1c	fpga6	1.11	0.00	0.0
	Fsbl	1c	fsbl	1.110	0.00	0.0

	LinuxFW	lc	lnxfw	1.110	0.00	0.0
	ROMMONB RSP4L	lc	rommon	17.34	0.00	0.0

A9K-RSP880-LT-SE	Can Bus Ctrl (CBC) RSP4L	lc	cbc	50.02	0.00	0.0
	MB CPUCtrl	lc	fpga2	0.19	0.00	0.0
	DBCtrl	lc	fpga3	0.05	0.00	0.0
	DBCtrl	lc	fpga4	0.04	0.00	0.0
	DBCtrl	lc	fpga5	0.04	0.00	0.0
	EOBCSwiethCtrl	lc	fpga6	1.11	0.00	0.0
	Fsbl	lc	fsbl	1.110	0.00	0.0
	LinuxFW	lc	lnxfw	1.110	0.00	0.0
	ROMMONB RSP4L	lc	rommon	17.34	0.00	0.0

A99-RSP-TR	Can Bus Ctrl (CBC) RSP4S	lc	cbc	43.03	0.00	0.1
	MB CPUCtrl	lc	fpga2	0.71	0.00	0.0
	DBCtrl	lc	fpga3	0.16	0.00	0.0
	DBCtrl	lc	fpga4	0.16	0.00	0.0
	DBCtrl	lc	fpga5	0.12	0.00	0.0
	PUNT FPGA	lc	fpga6	0.08	0.00	0.0
	Fsbl	lc	fsbl	1.110	0.00	0.0
	LinuxFW	lc	lnxfw	1.110	0.00	0.0
	ROMMONB RSP4SHW	lc	rommon	16.14	0.00	0.0

A99-RSP-SE	Can Bus Ctrl (CBC) RSP4S	lc	cbc	43.03	0.00	0.1
	MB CPUCtrl	lc	fpga2	0.71	0.00	0.0
	DBCtrl	lc	fpga3	0.16	0.00	0.0
	DBCtrl	lc	fpga4	0.16	0.00	0.0
	DBCtrl	lc	fpga5	0.12	0.00	0.0
	PUNT FPGA	lc	fpga6	0.08	0.00	0.0
	Fsbl	lc	fsbl	1.110	0.00	0.0
	LinuxFW	lc	lnxfw	1.110	0.00	0.0
	ROMMONB RSP4SHW	lc	rommon	16.14	0.00	0.0

A99-RP2-TR	Can Bus Ctrl (CBC) MTRP	lc	cbc	35.14	0.00	0.1
	MB CPUCtrl	lc	fpga2	0.71	0.00	0.0
	DBCtrl	lc	fpga3	0.16	0.00	0.0
	DBCtrl	lc	fpga4	0.16	0.00	0.0
	DBCtrl	lc	fpga5	0.12	0.00	0.0
	PUNT FPGA	lc	fpga6	0.08	0.00	0.0
	Fsbl	lc	fsbl	1.110	0.00	0.0
	LinuxFW	lc	lnxfw	1.110	0.00	0.0
	ROMMONB RP2	lc	rommon	14.35	0.00	0.0

A99-RP2-SE	Can Bus Ctrl (CBC) MTRP	lc	cbc	35.14	0.00	0.1
	MB CPUCtrl	lc	fpga2	0.71	0.00	0.0
	DBCtrl	lc	fpga3	0.16	0.00	0.0
	DBCtrl	lc	fpga4	0.16	0.00	0.0
	DBCtrl	lc	fpga5	0.12	0.00	0.0
	PUNT FPGA	lc	fpga6	0.08	0.00	0.0
	Fsbl	lc	fsbl	1.110	0.00	0.0
	LinuxFW	lc	lnxfw	1.110	0.00	0.0
	ROMMONB RP2	lc	rommon	14.35	0.00	0.0

ASR9001-RP	Can Bus Ctrl (CBC) IMRP	lc	cbc	22.114	0.00	0.1
	MB CPUCtrl	lc	fpga2	1.15	0.00	0.0
	ROMMONB IM RP	lc	rommon	3.04	0.00	0.1

A9K-24x10GE-SE	Can Bus Ctrl (CBC) LC6	lc	cbc	19.112	0.00	0.0
	DBCtrl LC6	lc	fpga2	1.03	0.00	0.0
	LinkCtrl LC6	lc	fpga3	1.01	0.00	0.0
	LCCPUCtrl LC6	lc	fpga4	1.07	0.00	0.0
	ROMMONB LC6	lc	rommon	3.03	0.00	0.0

A9K-2x100GE-SE	Can Bus Ctrl (CBC) LC4	lc	cbc	21.111	0.00	0.1

	DB IO FPGA1	1c	cp1d1	1.03	0.00	0.0
	MB CPUCtrl	1c	fpga2	1.08	0.00	0.0
	PortCtrl	1c	fpga3	1.05	0.00	0.0
	Imux	1c	fpga4	1.04	0.00	0.0
	Emux	1c	fpga5	1.04	0.00	0.0
	100GIGMAC	1c	fpga6	41.00	0.00	0.0
	ROMMONB LC4	1c	rommon	3.03	0.00	0.0
A9K-MOD80-SE	Can Bus Ctrl (CBC) LC4	1c	cbc	20.118	0.00	0.1
	DB Ctrl	1c	fpga2	1.04	0.00	0.0
	MB CPUCtrl	1c	fpga4	1.05	0.00	0.0
	ROMMONB LC4	1c	rommon	3.03	0.00	0.1
A9K-MOD160-SE	Can Bus Ctrl (CBC) LC4	1c	cbc	20.118	0.00	0.1
	DB Ctrl	1c	fpga2	1.04	0.00	0.0
	MB CPUCtrl	1c	fpga4	1.05	0.00	0.0
	ROMMONB LC4	1c	rommon	3.03	0.00	0.1
A9K-24x10GE-TR	Can Bus Ctrl (CBC) LC6	1c	cbc	19.112	0.00	0.0
	DBCtrl LC6	1c	fpga2	1.03	0.00	0.0
	LinkCtrl LC6	1c	fpga3	1.01	0.00	0.0
	LCCPUCtrl LC6	1c	fpga4	1.07	0.00	0.0
	ROMMONB LC6	1c	rommon	3.03	0.00	0.0
A9K-2x100GE-TR	Can Bus Ctrl (CBC) LC4	1c	cbc	21.111	0.00	0.1
	DB IO FPGA1	1c	cp1d1	1.03	0.00	0.0
	MB CPUCtrl	1c	fpga2	1.08	0.00	0.0
	PortCtrl	1c	fpga3	1.05	0.00	0.0
	Imux	1c	fpga4	1.04	0.00	0.0
	Emux	1c	fpga5	1.04	0.00	0.0
	100GIGMAC	1c	fpga6	41.00	0.00	0.0
	ROMMONB LC4	1c	rommon	3.03	0.00	0.0
A9K-MOD80-TR	Can Bus Ctrl (CBC) LC4	1c	cbc	20.118	0.00	0.1
	DB Ctrl	1c	fpga2	1.04	0.00	0.0
	MB CPUCtrl	1c	fpga4	1.05	0.00	0.0
	ROMMONB LC4	1c	rommon	3.03	0.00	0.1
A9K-MOD160-TR	Can Bus Ctrl (CBC) LC4	1c	cbc	20.118	0.00	0.1
	DB Ctrl	1c	fpga2	1.04	0.00	0.0
	MB CPUCtrl	1c	fpga4	1.05	0.00	0.0
	ROMMONB LC4	1c	rommon	3.03	0.00	0.1
A9K-36x10GE-SE	Can Bus Ctrl (CBC) LC6	1c	cbc	15.104	0.00	0.0
	DBCtrl LC6	1c	fpga2	1.01	0.00	0.0
	LinkCtrl LC6	1c	fpga3	1.00	0.00	0.0
	LCCPUCtrl LC6	1c	fpga4	1.03	0.00	0.0
	ROMMONB LC6	1c	rommon	3.03	0.00	0.0
A9K-36x10GE_SC7-SE	Can Bus Ctrl (CBC) LC6	1c	cbc	15.104	0.00	0.0
	DBCtrl LC6	1c	fpga2	1.01	0.00	0.0
	LinkCtrl LC6	1c	fpga3	1.00	0.00	0.0
	LCCPUCtrl LC6	1c	fpga4	1.03	0.00	0.0
	ROMMONB LC6	1c	rommon	3.03	0.00	0.0
A9K-36x10GE-TR	Can Bus Ctrl (CBC) LC6	1c	cbc	15.104	0.00	0.0
	DBCtrl LC6	1c	fpga2	1.01	0.00	0.0
	LinkCtrl LC6	1c	fpga3	1.00	0.00	0.0
	LCCPUCtrl LC6	1c	fpga4	1.03	0.00	0.0
	ROMMONB LC6	1c	rommon	3.03	0.00	0.0
A9K-36x10GE_SC7-TR	Can Bus Ctrl (CBC) LC6	1c	cbc	15.104	0.00	0.0
	DBCtrl LC6	1c	fpga2	1.01	0.00	0.0
	LinkCtrl LC6	1c	fpga3	1.00	0.00	0.0

	LCCPUCtrl LC6	lc	fpga4	1.03	0.00	0.0
	ROMMONB LC6	lc	rommon	3.03	0.00	0.0

A9K-1x100GE-SE	Can Bus Ctrl (CBC) LC4	lc	cbc	21.111	0.00	0.1
	DB IO FPGA1	lc	cpld1	1.03	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.08	0.00	0.0
	PortCtrl	lc	fpga3	1.05	0.00	0.0
	Imux	lc	fpga4	1.04	0.00	0.0
	Emux	lc	fpga5	1.04	0.00	0.0
	100GIGMAC	lc	fpga6	41.00	0.00	0.0
	ROMMONB LC4	lc	rommon	3.03	0.00	0.0

A9K-1x100GE-TR	Can Bus Ctrl (CBC) LC4	lc	cbc	21.111	0.00	0.1
	DB IO FPGA1	lc	cpld1	1.03	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.08	0.00	0.0
	PortCtrl	lc	fpga3	1.05	0.00	0.0
	Imux	lc	fpga4	1.04	0.00	0.0
	Emux	lc	fpga5	1.04	0.00	0.0
	100GIGMAC	lc	fpga6	41.00	0.00	0.0
	ROMMONB LC4	lc	rommon	3.03	0.00	0.0

A9K-VSM-500	CPUCtrl Forge	lc	cbc	33.05	0.00	0.1
	CPUCtrl Forge	lc	fpga1	1.26	0.00	0.1
	CPUCtrl Forge	lc	ibmc	5.08	0.00	0.1
	CPUCtrl Forge	lc	rommon	3.07	0.00	0.1

A99-8X100GE-SE	Can Bus Ctrl (CBC) LC4	lc	cbc	38.23	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.97	0.00	0.0
	DBCtrl	lc	fpga3	1.07	0.00	0.0
	PortCtrl	lc	fpga4	1.09	0.00	0.0
	CPAK LR4	lc	fpga5	1.16	0.00	0.0
	CPAK SR10	lc	fpga6	2.02	0.00	0.0
	Fsbl	lc	fsbl	1.103	0.00	0.0
	LinuxFW	lc	lnxfw	1.103	0.00	0.0
	ROMMONB LC1	lc	rommon	8.47	0.00	0.0

A99-8X100GE-TR	Can Bus Ctrl (CBC) LC4	lc	cbc	38.23	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.97	0.00	0.0
	DBCtrl	lc	fpga3	1.07	0.00	0.0
	PortCtrl	lc	fpga4	1.09	0.00	0.0
	CPAK LR4	lc	fpga5	1.16	0.00	0.0
	CPAK SR10	lc	fpga6	2.02	0.00	0.0
	Fsbl	lc	fsbl	1.103	0.00	0.0
	LinuxFW	lc	lnxfw	1.103	0.00	0.0
	ROMMONB LC1	lc	rommon	8.47	0.00	0.0

A99-4X100GE-SE	Can Bus Ctrl (CBC) LC4	lc	cbc	38.23	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.97	0.00	0.0
	DBCtrl	lc	fpga3	1.07	0.00	0.0
	PortCtrl	lc	fpga4	1.09	0.00	0.0
	CPAK LR4	lc	fpga5	1.16	0.00	0.0
	CPAK SR10	lc	fpga6	2.02	0.00	0.0
	Fsbl	lc	fsbl	1.103	0.00	0.0
	LinuxFW	lc	lnxfw	1.103	0.00	0.0
	ROMMONB LC1	lc	rommon	8.47	0.00	0.0

A99-4X100GE-SE-TAA	Can Bus Ctrl (CBC) LC4	lc	cbc	38.23	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.97	0.00	0.0
	DBCtrl	lc	fpga3	1.07	0.00	0.0
	PortCtrl	lc	fpga4	1.09	0.00	0.0
	CPAK LR4	lc	fpga5	1.16	0.00	0.0
	CPAK SR10	lc	fpga6	2.02	0.00	0.0
	Fsbl	lc	fsbl	1.103	0.00	0.0
	LinuxFW	lc	lnxfw	1.103	0.00	0.0

	ROMMONB LC1	lc	rommon	8.47	0.00	0.0

A99-4X100GE-TR	Can Bus Ctrl (CBC) LC4	lc	cbc	38.23	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.97	0.00	0.0
	DBCtrl	lc	fpga3	1.07	0.00	0.0
	PortCtrl	lc	fpga4	1.09	0.00	0.0
	CPAK LR4	lc	fpga5	1.16	0.00	0.0
	CPAK SR10	lc	fpga6	2.02	0.00	0.0
	Fsbl	lc	fsbl	1.103	0.00	0.0
	LinuxFW	lc	lnxfw	1.103	0.00	0.0
	ROMMONB LC1	lc	rommon	8.47	0.00	0.0

A99-4X100GE-TR-TAA	Can Bus Ctrl (CBC) LC4	lc	cbc	38.23	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.97	0.00	0.0
	DBCtrl	lc	fpga3	1.07	0.00	0.0
	PortCtrl	lc	fpga4	1.09	0.00	0.0
	CPAK LR4	lc	fpga5	1.16	0.00	0.0
	CPAK SR10	lc	fpga6	2.02	0.00	0.0
	Fsbl	lc	fsbl	1.103	0.00	0.0
	LinuxFW	lc	lnxfw	1.103	0.00	0.0
	ROMMONB LC1	lc	rommon	8.47	0.00	0.0

A99-4X100GE-TAA	Can Bus Ctrl (CBC) LC4	lc	cbc	38.23	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.97	0.00	0.0
	DBCtrl	lc	fpga3	1.07	0.00	0.0
	PortCtrl	lc	fpga4	1.09	0.00	0.0
	CPAK LR4	lc	fpga5	1.16	0.00	0.0
	CPAK SR10	lc	fpga6	2.02	0.00	0.0
	Fsbl	lc	fsbl	1.103	0.00	0.0
	LinuxFW	lc	lnxfw	1.103	0.00	0.0
	ROMMONB LC1	lc	rommon	8.47	0.00	0.0

A9K-4X100GE-SE	Can Bus Ctrl (CBC) LC4	lc	cbc	38.23	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.97	0.00	0.0
	DBCtrl	lc	fpga3	1.07	0.00	0.0
	PortCtrl	lc	fpga4	1.09	0.00	0.0
	CPAK LR4	lc	fpga5	1.16	0.00	0.0
	CPAK SR10	lc	fpga6	2.02	0.00	0.0
	Fsbl	lc	fsbl	1.103	0.00	0.0
	LinuxFW	lc	lnxfw	1.103	0.00	0.0
	ROMMONB LC1	lc	rommon	8.47	0.00	0.0

A9K-4X100GE-SE-TAA	Can Bus Ctrl (CBC) LC4	lc	cbc	38.23	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.97	0.00	0.0
	DBCtrl	lc	fpga3	1.07	0.00	0.0
	PortCtrl	lc	fpga4	1.09	0.00	0.0
	CPAK LR4	lc	fpga5	1.16	0.00	0.0
	CPAK SR10	lc	fpga6	2.02	0.00	0.0
	Fsbl	lc	fsbl	1.103	0.00	0.0
	LinuxFW	lc	lnxfw	1.103	0.00	0.0
	ROMMONB LC1	lc	rommon	8.47	0.00	0.0

A9K-4X100GE-TR	Can Bus Ctrl (CBC) LC4	lc	cbc	38.23	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.97	0.00	0.0
	DBCtrl	lc	fpga3	1.07	0.00	0.0
	PortCtrl	lc	fpga4	1.09	0.00	0.0
	CPAK LR4	lc	fpga5	1.16	0.00	0.0
	CPAK SR10	lc	fpga6	2.02	0.00	0.0
	Fsbl	lc	fsbl	1.103	0.00	0.0
	LinuxFW	lc	lnxfw	1.103	0.00	0.0
	ROMMONB LC1	lc	rommon	8.47	0.00	0.0

A9K-4X100GE-TR-TAA	Can Bus Ctrl (CBC) LC4	lc	cbc	38.23	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.97	0.00	0.0

	DBCtrl	lc	fpga3	1.07	0.00	0.0
	PortCtrl	lc	fpga4	1.09	0.00	0.0
	CPAK LR4	lc	fpga5	1.16	0.00	0.0
	CPAK SR10	lc	fpga6	2.02	0.00	0.0
	Fsbl	lc	fsbl	1.103	0.00	0.0
	LinuxFW	lc	lnx_fw	1.103	0.00	0.0
	ROMMONB LC1	lc	rommon	8.47	0.00	0.0
A9K-4X100GE-TAA	Can Bus Ctrl (CBC) LC4	lc	cbc	38.23	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.97	0.00	0.0
	DBCtrl	lc	fpga3	1.07	0.00	0.0
	PortCtrl	lc	fpga4	1.09	0.00	0.0
	CPAK LR4	lc	fpga5	1.16	0.00	0.0
	CPAK SR10	lc	fpga6	2.02	0.00	0.0
	Fsbl	lc	fsbl	1.103	0.00	0.0
	LinuxFW	lc	lnx_fw	1.103	0.00	0.0
	ROMMONB LC1	lc	rommon	8.47	0.00	0.0
A99K-MOD200-SE	Can Bus Ctrl (CBC) LC4	lc	cbc	39.09	0.00	0.0
	DBCtrl	lc	fpga10	1.27	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.97	0.00	0.0
	Fsbl	lc	fsbl	1.103	0.00	0.0
	LinuxFW	lc	lnx_fw	1.103	0.00	0.0
	ROMMONB LC1	lc	rommon	8.47	0.00	0.0
A99K-200MOD-SE-TAA	Can Bus Ctrl (CBC) LC4	lc	cbc	39.09	0.00	0.0
	DBCtrl	lc	fpga10	1.27	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.97	0.00	0.0
	Fsbl	lc	fsbl	1.103	0.00	0.0
	LinuxFW	lc	lnx_fw	1.103	0.00	0.0
	ROMMONB LC1	lc	rommon	8.47	0.00	0.0
A99K-MOD200-TR	Can Bus Ctrl (CBC) LC4	lc	cbc	39.09	0.00	0.0
	DBCtrl	lc	fpga10	1.27	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.97	0.00	0.0
	Fsbl	lc	fsbl	1.103	0.00	0.0
	LinuxFW	lc	lnx_fw	1.103	0.00	0.0
	ROMMONB LC1	lc	rommon	8.47	0.00	0.0
A99K-MOD200-TR-TAA	Can Bus Ctrl (CBC) LC4	lc	cbc	39.09	0.00	0.0
	DBCtrl	lc	fpga10	1.27	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.97	0.00	0.0
	Fsbl	lc	fsbl	1.103	0.00	0.0
	LinuxFW	lc	lnx_fw	1.103	0.00	0.0
	ROMMONB LC1	lc	rommon	8.47	0.00	0.0
A9K-MOD200-SE	Can Bus Ctrl (CBC) LC4	lc	cbc	39.09	0.00	0.0
	DBCtrl	lc	fpga10	1.27	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.97	0.00	0.0
	Fsbl	lc	fsbl	1.103	0.00	0.0
	LinuxFW	lc	lnx_fw	1.103	0.00	0.0
	ROMMONB LC1	lc	rommon	8.47	0.00	0.0
A9K-MOD200-SE-TAA	Can Bus Ctrl (CBC) LC4	lc	cbc	39.09	0.00	0.0
	DBCtrl	lc	fpga10	1.27	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.97	0.00	0.0
	Fsbl	lc	fsbl	1.103	0.00	0.0
	LinuxFW	lc	lnx_fw	1.103	0.00	0.0
	ROMMONB LC1	lc	rommon	8.47	0.00	0.0
A9K-MOD200-TR	Can Bus Ctrl (CBC) LC4	lc	cbc	39.09	0.00	0.0
	DBCtrl	lc	fpga10	1.27	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.97	0.00	0.0
	Fsbl	lc	fsbl	1.103	0.00	0.0

	LinuxFW	lc	lnxfw	1.103	0.00	0.0
	ROMMONB LC1	lc	rommon	8.47	0.00	0.0

A9K-MOD200-TR-TAA	Can Bus Ctrl (CBC) LC4	lc	cbc	39.09	0.00	0.0
	DBCtrl	lc	fpga10	1.27	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.97	0.00	0.0
	Fsbl	lc	fsbl	1.103	0.00	0.0
	LinuxFW	lc	lnxfw	1.103	0.00	0.0
	ROMMONB LC1	lc	rommon	8.47	0.00	0.0

A9K-MOD200-TAA	Can Bus Ctrl (CBC) LC4	lc	cbc	39.09	0.00	0.0
	DBCtrl	lc	fpga10	1.27	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.97	0.00	0.0
	Fsbl	lc	fsbl	1.103	0.00	0.0
	LinuxFW	lc	lnxfw	1.103	0.00	0.0
	ROMMONB LC1	lc	rommon	8.47	0.00	0.0

A99K-MOD400-SE	Can Bus Ctrl (CBC) LC4	lc	cbc	39.09	0.00	0.0
	DBCtrl	lc	fpga10	1.27	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.97	0.00	0.0
	Fsbl	lc	fsbl	1.103	0.00	0.0
	LinuxFW	lc	lnxfw	1.103	0.00	0.0
	ROMMONB LC1	lc	rommon	8.47	0.00	0.0

A99K-MOD400-SE-TAA	Can Bus Ctrl (CBC) LC4	lc	cbc	39.09	0.00	0.0
	DBCtrl	lc	fpga10	1.27	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.97	0.00	0.0
	Fsbl	lc	fsbl	1.103	0.00	0.0
	LinuxFW	lc	lnxfw	1.103	0.00	0.0
	ROMMONB LC1	lc	rommon	8.47	0.00	0.0

A99K-MOD400-TR	Can Bus Ctrl (CBC) LC4	lc	cbc	39.09	0.00	0.0
	DBCtrl	lc	fpga10	1.27	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.97	0.00	0.0
	Fsbl	lc	fsbl	1.103	0.00	0.0
	LinuxFW	lc	lnxfw	1.103	0.00	0.0
	ROMMONB LC1	lc	rommon	8.47	0.00	0.0

A99K-MOD400-TR-TAA	Can Bus Ctrl (CBC) LC4	lc	cbc	39.09	0.00	0.0
	DBCtrl	lc	fpga10	1.27	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.97	0.00	0.0
	Fsbl	lc	fsbl	1.103	0.00	0.0
	LinuxFW	lc	lnxfw	1.103	0.00	0.0
	ROMMONB LC1	lc	rommon	8.47	0.00	0.0

A9K-MOD400-SE	Can Bus Ctrl (CBC) LC4	lc	cbc	39.09	0.00	0.0
	DBCtrl	lc	fpga10	1.27	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.97	0.00	0.0
	Fsbl	lc	fsbl	1.103	0.00	0.0
	LinuxFW	lc	lnxfw	1.103	0.00	0.0
	ROMMONB LC1	lc	rommon	8.47	0.00	0.0

A9K-MOD400-SE-TAA	Can Bus Ctrl (CBC) LC4	lc	cbc	39.09	0.00	0.0
	DBCtrl	lc	fpga10	1.27	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.97	0.00	0.0
	Fsbl	lc	fsbl	1.103	0.00	0.0
	LinuxFW	lc	lnxfw	1.103	0.00	0.0
	ROMMONB LC1	lc	rommon	8.47	0.00	0.0

A9K-MOD400-TR	Can Bus Ctrl (CBC) LC4	lc	cbc	39.09	0.00	0.0
	DBCtrl	lc	fpga10	1.27	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.97	0.00	0.0
	Fsbl	lc	fsbl	1.103	0.00	0.0
	LinuxFW	lc	lnxfw	1.103	0.00	0.0
		lc				

	ROMMONB LC1	lc	rommon	8.47	0.00	0.0
A9K-MOD400-TR-TAA	Can Bus Ctrl (CBC) LC4	lc	cbc	39.09	0.00	0.0
	DBCtrl	lc	fpga10	1.27	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.97	0.00	0.0
	Fsbl	lc	fsbl	1.103	0.00	0.0
	LinuxFW	lc	lnx_fw	1.103	0.00	0.0
	ROMMONB LC1	lc	rommon	8.47	0.00	0.0
A9K-MOD400-TAA	Can Bus Ctrl (CBC) LC4	lc	cbc	39.09	0.00	0.0
	DBCtrl	lc	fpga10	1.27	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.97	0.00	0.0
	Fsbl	lc	fsbl	1.103	0.00	0.0
	LinuxFW	lc	lnx_fw	1.103	0.00	0.0
	ROMMONB LC1	lc	rommon	8.47	0.00	0.0
A9K-8X100GE-L-SE	Can Bus Ctrl (CBC) LC4	lc	cbc	38.23	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.97	0.00	0.0
	DBCtrl	lc	fpga3	1.07	0.00	0.0
	PortCtrl	lc	fpga4	1.09	0.00	0.0
	CPAK LR4	lc	fpga5	1.16	0.00	0.0
	CPAK SR10	lc	fpga6	2.02	0.00	0.0
	Fsbl	lc	fsbl	1.103	0.00	0.0
	LinuxFW	lc	lnx_fw	1.103	0.00	0.0
	ROMMONB LC1	lc	rommon	8.47	0.00	0.0
A9K-8X100GE-L-TR	Can Bus Ctrl (CBC) LC4	lc	cbc	38.23	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.97	0.00	0.0
	DBCtrl	lc	fpga3	1.07	0.00	0.0
	PortCtrl	lc	fpga4	1.09	0.00	0.0
	CPAK LR4	lc	fpga5	1.16	0.00	0.0
	CPAK SR10	lc	fpga6	2.02	0.00	0.0
	Fsbl	lc	fsbl	1.103	0.00	0.0
	LinuxFW	lc	lnx_fw	1.103	0.00	0.0
	ROMMONB LC1	lc	rommon	8.47	0.00	0.0
A9K-8X100GE-SE	Can Bus Ctrl (CBC) LC4	lc	cbc	38.23	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.97	0.00	0.0
	DBCtrl	lc	fpga3	1.07	0.00	0.0
	PortCtrl	lc	fpga4	1.09	0.00	0.0
	CPAK LR4	lc	fpga5	1.16	0.00	0.0
	CPAK SR10	lc	fpga6	2.02	0.00	0.0
	Fsbl	lc	fsbl	1.103	0.00	0.0
	LinuxFW	lc	lnx_fw	1.103	0.00	0.0
	ROMMONB LC1	lc	rommon	8.47	0.00	0.0
A9K-8X100GE-TR	Can Bus Ctrl (CBC) LC4	lc	cbc	38.23	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.97	0.00	0.0
	DBCtrl	lc	fpga3	1.07	0.00	0.0
	PortCtrl	lc	fpga4	1.09	0.00	0.0
	CPAK LR4	lc	fpga5	1.16	0.00	0.0
	CPAK SR10	lc	fpga6	2.02	0.00	0.0
	Fsbl	lc	fsbl	1.103	0.00	0.0
	LinuxFW	lc	lnx_fw	1.103	0.00	0.0
	ROMMONB LC1	lc	rommon	8.47	0.00	0.0
A99L-4X100GE-SE	Can Bus Ctrl (CBC) LC4	lc	cbc	38.23	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.97	0.00	0.0
	DBCtrl	lc	fpga3	1.07	0.00	0.0
	PortCtrl	lc	fpga4	1.09	0.00	0.0
	CPAK LR4	lc	fpga5	1.16	0.00	0.0
	CPAK SR10	lc	fpga6	2.02	0.00	0.0
	Fsbl	lc	fsbl	1.103	0.00	0.0
	LinuxFW	lc	lnx_fw	1.103	0.00	0.0

	ROMMONB LC1	lc	rommon	8.47	0.00	0.0
A99L-4X100GE-TR	Can Bus Ctrl (CBC) LC4	lc	cbc	38.23	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.97	0.00	0.0
	DBCtrl	lc	fpga3	1.07	0.00	0.0
	PortCtrl	lc	fpga4	1.09	0.00	0.0
	CPAK LR4	lc	fpga5	1.16	0.00	0.0
	CPAK SR10	lc	fpga6	2.02	0.00	0.0
	Fsbl	lc	fsbl	1.103	0.00	0.0
	LinuxFW	lc	lnxfw	1.103	0.00	0.0
	ROMMONB LC1	lc	rommon	8.47	0.00	0.0
A9KL-4X100GE-SE	Can Bus Ctrl (CBC) LC4	lc	cbc	38.23	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.97	0.00	0.0
	DBCtrl	lc	fpga3	1.07	0.00	0.0
	PortCtrl	lc	fpga4	1.09	0.00	0.0
	CPAK LR4	lc	fpga5	1.16	0.00	0.0
	CPAK SR10	lc	fpga6	2.02	0.00	0.0
	Fsbl	lc	fsbl	1.103	0.00	0.0
	LinuxFW	lc	lnxfw	1.103	0.00	0.0
	ROMMONB LC1	lc	rommon	8.47	0.00	0.0
A9KL-4X100GE-TR	Can Bus Ctrl (CBC) LC4	lc	cbc	38.23	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.97	0.00	0.0
	DBCtrl	lc	fpga3	1.07	0.00	0.0
	PortCtrl	lc	fpga4	1.09	0.00	0.0
	CPAK LR4	lc	fpga5	1.16	0.00	0.0
	CPAK SR10	lc	fpga6	2.02	0.00	0.0
	Fsbl	lc	fsbl	1.103	0.00	0.0
	LinuxFW	lc	lnxfw	1.103	0.00	0.0
	ROMMONB LC1	lc	rommon	8.47	0.00	0.0
A9K-400G-DWDM-TR	Can Bus Ctrl (CBC) LC4	lc	cbc	42.04	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.97	0.00	0.0
	DBCtrl	lc	fpga3	1.07	0.00	0.0
	DBCtrl	lc	fpga4	1.03	0.00	0.0
	DBCtrl	lc	fpga5	1.05	0.00	0.0
	DBCtrl	lc	fpga6	3.78	0.00	1.0
	DBCtrl	lc	fpga7	49.00	0.00	0.0
	CFP2 V2	lc	fpga8	5.52	0.00	2.0
	CFP2 V1	lc	fpga8	4.40	0.00	1.0
	Fsbl	lc	fsbl	1.103	0.00	0.0
	LinuxFW	lc	lnxfw	1.103	0.00	0.0
	ROMMONB LC1	lc	rommon	8.47	0.00	0.0
A9K-4X100GE	Can Bus Ctrl (CBC) LC4	lc	cbc	46.06	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.88	0.00	0.0
	DBCtrl	lc	fpga3	1.02	0.00	0.0
	PortCtrl	lc	fpga4	1.02	0.00	0.0
	Fsbl	lc	fsbl	1.112	0.00	0.0
	LinuxFW	lc	lnxfw	1.112	0.00	0.0
	ROMMONB LC1	lc	rommon	9.27	0.00	0.0
A99-12X100GE	Can Bus Ctrl (CBC) LC4	lc	cbc	46.06	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.88	0.00	0.0
	DBCtrl	lc	fpga3	1.02	0.00	0.0
	PortCtrl	lc	fpga4	1.02	0.00	0.0
	Fsbl	lc	fsbl	1.112	0.00	0.0
	LinuxFW	lc	lnxfw	1.112	0.00	0.0
	ROMMONB LC1	lc	rommon	9.27	0.00	0.0
A99-8X100GE-CM	Can Bus Ctrl (CBC) LC4	lc	cbc	38.23	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.97	0.00	0.0
	DBCtrl	lc	fpga3	1.07	0.00	0.0

	PortCtrl	lc	fpga4	1.09	0.00	0.0
	CPAK LR4	lc	fpga5	1.16	0.00	0.0
	CPAK SR10	lc	fpga6	2.02	0.00	0.0
	Fsbl	lc	fsbl	1.103	0.00	0.0
	LinuxFW	lc	lnx_fw	1.103	0.00	0.0
	ROMMONB LC1	lc	rommon	8.47	0.00	0.0

A9K-8X100GE-CM	Can Bus Ctrl (CBC) LC4	lc	cbc	38.23	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.97	0.00	0.0
	DBCtrl	lc	fpga3	1.07	0.00	0.0
	PortCtrl	lc	fpga4	1.09	0.00	0.0
	CPAK LR4	lc	fpga5	1.16	0.00	0.0
	CPAK SR10	lc	fpga6	2.02	0.00	0.0
	Fsbl	lc	fsbl	1.103	0.00	0.0
	LinuxFW	lc	lnx_fw	1.103	0.00	0.0
	ROMMONB LC1	lc	rommon	8.47	0.00	0.0

A99-12X100GE-CM	Can Bus Ctrl (CBC) LC4	lc	cbc	46.06	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.88	0.00	0.0
	DBCtrl	lc	fpga3	1.02	0.00	0.0
	PortCtrl	lc	fpga4	1.02	0.00	0.0
	Fsbl	lc	fsbl	1.112	0.00	0.0
	LinuxFW	lc	lnx_fw	1.112	0.00	0.0
	ROMMONB LC1	lc	rommon	9.27	0.00	0.0

A99-48X10GE-1G-SE	Can Bus Ctrl (CBC) LC4	lc	cbc	47.03	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.88	0.00	0.0
	PortCtrl	lc	fpga3	1.00	0.00	0.0
	EOBCSwiathCtrl	lc	fpga4	1.11	0.00	0.0
	Fsbl	lc	fsbl	1.111	0.00	0.0
	LinuxFW	lc	lnx_fw	1.111	0.00	0.0
	ROMMONB LC1	lc	rommon	18.27	0.00	0.0

A99-48X10GE-1G-TR	Can Bus Ctrl (CBC) LC4	lc	cbc	47.03	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.88	0.00	0.0
	PortCtrl	lc	fpga3	1.00	0.00	0.0
	EOBCSwiathCtrl	lc	fpga4	1.11	0.00	0.0
	Fsbl	lc	fsbl	1.111	0.00	0.0
	LinuxFW	lc	lnx_fw	1.111	0.00	0.0
	ROMMONB LC1	lc	rommon	18.27	0.00	0.0

A99-48X10GE-1G-CM	Can Bus Ctrl (CBC) LC4	lc	cbc	47.03	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.88	0.00	0.0
	PortCtrl	lc	fpga3	1.00	0.00	0.0
	fpd_lc_fpga4_0x003d02ca	lc	fpga4	1.11	0.00	0.0
	Fsbl	lc	fsbl	1.111	0.00	0.0
	LinuxFW	lc	lnx_fw	1.111	0.00	0.0
	ROMMONB LC1	lc	rommon	18.27	0.00	0.0

A9K-24X10GE-1G-SE	Can Bus Ctrl (CBC) LC4	lc	cbc	47.03	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.88	0.00	0.0
	PortCtrl	lc	fpga3	1.00	0.00	0.0
	EOBCSwiathCtrl	lc	fpga4	1.11	0.00	0.0
	Fsbl	lc	fsbl	1.111	0.00	0.0
	LinuxFW	lc	lnx_fw	1.111	0.00	0.0
	ROMMONB LC1	lc	rommon	18.27	0.00	0.0

A9K-24X10GE-1G-TR	Can Bus Ctrl (CBC) LC4	lc	cbc	47.03	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.88	0.00	0.0
	PortCtrl	lc	fpga3	1.00	0.00	0.0
	EOBCSwiathCtrl	lc	fpga4	1.11	0.00	0.0
	Fsbl	lc	fsbl	1.111	0.00	0.0
	LinuxFW	lc	lnx_fw	1.111	0.00	0.0
	ROMMONB LC1	lc	rommon	18.27	0.00	0.0

A9K-24X10GE-1G-CM	Can Bus Ctrl (CBC) LC4	1c	cbc	47.03	0.00	0.0
	MB CPUCtrl	1c	fpga2	1.88	0.00	0.0
	PortCtrl	1c	fpga3	1.00	0.00	0.0
	EOBCSwicthCtrl	1c	fpga4	1.11	0.00	0.0
	Fsbl	1c	fsbl	1.111	0.00	0.0
	LinuxFW	1c	lnxfw	1.111	0.00	0.0
	ROMMONB LC1	1c	rommon	18.27	0.00	0.0
A9K-48X10GE-1G-SE	Can Bus Ctrl (CBC) LC4	1c	cbc	47.03	0.00	0.0
	MB CPUCtrl	1c	fpga2	1.88	0.00	0.0
	PortCtrl	1c	fpga3	1.00	0.00	0.0
	EOBCSwicthCtrl	1c	fpga4	1.11	0.00	0.0
	Fsbl	1c	fsbl	1.111	0.00	0.0
	LinuxFW	1c	lnxfw	1.111	0.00	0.0
	ROMMONB LC1	1c	rommon	18.27	0.00	0.0
A9K-48X10GE-1G-TR	Can Bus Ctrl (CBC) LC4	1c	cbc	47.03	0.00	0.0
	MB CPUCtrl	1c	fpga2	1.88	0.00	0.0
	PortCtrl	1c	fpga3	1.00	0.00	0.0
	EOBCSwicthCtrl	1c	fpga4	1.11	0.00	0.0
	Fsbl	1c	fsbl	1.111	0.00	0.0
	LinuxFW	1c	lnxfw	1.111	0.00	0.0
	ROMMONB LC1	1c	rommon	18.27	0.00	0.0
A9K-48X10GE-1G-CM	Can Bus Ctrl (CBC) LC4	1c	cbc	47.03	0.00	0.0
	MB CPUCtrl	1c	fpga2	1.88	0.00	0.0
	PortCtrl	1c	fpga3	1.00	0.00	0.0
	EOBCSwicthCtrl	1c	fpga4	1.11	0.00	0.0
	Fsbl	1c	fsbl	1.111	0.00	0.0
	LinuxFW	1c	lnxfw	1.111	0.00	0.0
	ROMMONB LC1	1c	rommon	18.27	0.00	0.0
A99-24X10GE-1G-SE	Can Bus Ctrl (CBC) LC4	1c	cbc	47.03	0.00	0.0
	MB CPUCtrl	1c	fpga2	1.88	0.00	0.0
	PortCtrl	1c	fpga3	1.00	0.00	0.0
	EOBCSwicthCtrl	1c	fpga4	1.11	0.00	0.0
	Fsbl	1c	fsbl	1.111	0.00	0.0
	LinuxFW	1c	lnxfw	1.111	0.00	0.0
	ROMMONB LC1	1c	rommon	18.27	0.00	0.0
A99-24X10GE-1G-TR	Can Bus Ctrl (CBC) LC4	1c	cbc	47.03	0.00	0.0
	MB CPUCtrl	1c	fpga2	1.88	0.00	0.0
	PortCtrl	1c	fpga3	1.00	0.00	0.0
	EOBCSwicthCtrl	1c	fpga4	1.11	0.00	0.0
	Fsbl	1c	fsbl	1.111	0.00	0.0
	LinuxFW	1c	lnxfw	1.111	0.00	0.0
	ROMMONB LC1	1c	rommon	18.27	0.00	0.0
A99-24X10GE-1G-CM	Can Bus Ctrl (CBC) LC4	1c	cbc	47.03	0.00	0.0
	MB CPUCtrl	1c	fpga2	1.88	0.00	0.0
	PortCtrl	1c	fpga3	1.00	0.00	0.0
	EOBCSwicthCtrl	1c	fpga4	1.11	0.00	0.0
	Fsbl	1c	fsbl	1.111	0.00	0.0
	LinuxFW	1c	lnxfw	1.111	0.00	0.0
	ROMMONB LC1	1c	rommon	18.27	0.00	0.0
A9K-MOD400-CM	Can Bus Ctrl (CBC) LC4	1c	cbc	39.09	0.00	0.0
	DBCtr1	1c	fpga10	1.27	0.00	0.0
	MB CPUCtrl	1c	fpga2	1.97	0.00	0.0
	Fsbl	1c	fsbl	1.103	0.00	0.0
	LinuxFW	1c	lnxfw	1.103	0.00	0.0
	ROMMONB LC1	1c	rommon	8.47	0.00	0.0

A9K-MOD200-CM	Can Bus Ctrl (CBC) LC4	lc	cbc	39.09	0.00	0.0
	DBCtrl	lc	fpga10	1.27	0.00	0.0
	MB CPUCtrl	lc	fpga2	1.97	0.00	0.0
	Fsbl	lc	fsbl	1.103	0.00	0.0
	LinuxFW	lc	lnxfw	1.103	0.00	0.0
	ROMMONB LC1	lc	rommon	8.47	0.00	0.0
A9K-40GE-SE	Can Bus Ctrl (CBC) LC4	lc	cbc	41.104	0.00	0.1
	PortCtrl	lc	fpga2	0.08	0.00	0.0
	PortCtrl	lc	fpga3	0.08	0.00	0.0
	MB CPUCtrl	lc	fpga4	0.06	0.00	0.0
	ROMMONB LC4	lc	rommon	3.03	0.00	0.1
A9K-4T16GE-SE	Can Bus Ctrl (CBC) LC4	lc	cbc	41.104	0.00	0.1
	PortCtrl	lc	fpga2	0.08	0.00	0.0
	PortCtrl	lc	fpga3	1.00	0.00	0.0
	MB CPUCtrl	lc	fpga4	0.06	0.00	0.0
	ROMMONB LC4	lc	rommon	3.03	0.00	0.1
A9K-40GE-TR	Can Bus Ctrl (CBC) LC4	lc	cbc	41.104	0.00	0.1
	PortCtrl	lc	fpga2	0.08	0.00	0.0
	PortCtrl	lc	fpga3	0.08	0.00	0.0
	MB CPUCtrl	lc	fpga4	0.06	0.00	0.0
	ROMMONB LC4	lc	rommon	3.03	0.00	0.1
A9K-4T16GE-TR	Can Bus Ctrl (CBC) LC4	lc	cbc	41.104	0.00	0.1
	PortCtrl	lc	fpga2	0.08	0.00	0.0
	PortCtrl	lc	fpga3	1.00	0.00	0.0
	MB CPUCtrl	lc	fpga4	0.06	0.00	0.0
	ROMMONB LC4	lc	rommon	3.03	0.00	0.1
ASR9001-LC	Can Bus Ctrl (CBC) IMLC	lc	cbc	23.114	0.00	0.1
	DB CPUCtrl	lc	fpga2	1.18	0.00	0.0
	EP Gambit	lc	fpga3	1.01	0.00	0.0
	MB CPUCtrl	lc	fpga4	2.10	0.00	0.0
	EP Rogue	lc	fpga6	1.06	0.00	0.0
	EP I/O FPGA	lc	fpga7	1.02	0.00	0.0
	ROMMONB IM LC	lc	rommon	3.04	0.00	0.1
ASR9001-LC-S	Can Bus Ctrl (CBC) IMLC	lc	cbc	23.114	0.00	0.1
	DB CPUCtrl	lc	fpga2	1.18	0.00	0.0
	EP Gambit	lc	fpga3	1.01	0.00	0.0
	MB CPUCtrl	lc	fpga4	2.10	0.00	0.0
	EP Rogue	lc	fpga6	1.06	0.00	0.0
	EP I/O FPGA	lc	fpga7	1.02	0.00	0.0
	ROMMONB IM LC	lc	rommon	3.04	0.00	0.1
A9K-ISM-100	Can Bus Ctrl (CBC) LC6	lc	cbc	18.08	0.00	0.1
	CPUCtrl LC6	lc	cpld1	0.01	0.00	0.1
	Maintenance LC6	lc	fpga2	2.13	0.00	0.1
	Amistad LC6	lc	fpga1	0.33	0.00	0.20
	ROMMONB LC6	lc	rommon	1.02	0.00	0.1
PWR-3KW-AC-V2	Delta AC logic PM	pm	fpga11	6.04	0.00	0.1
	Delta AC primary PM	pm	fpga12	6.02	0.00	0.1
	Delta AC secondary PM	pm	fpga13	6.02	0.00	0.1
	Emerson AC logic PM	pm	fpga14	3.18	0.00	0.1
	Emerson AC primary PM	pm	fpga15	3.06	0.00	0.1
	Emerson AC secondary PM	pm	fpga16	3.12	0.00	0.1
PWR-2KW-DC-V2	Delta DC logic PM	pm	fpga11	6.03	0.00	0.1
	Delta DC primary PM	pm	fpga12	6.03	0.00	0.1
	Delta DC secondary PM	pm	fpga13	6.02	0.00	0.1
	Emerson DC logic PM	pm	fpga14	3.20	0.00	0.1

	Emerson DC primary PM	pm	fpga15	3.12	0.00	0.1
	Emerson DC secondary PM	pm	fpga16	3.21	0.00	0.1
PWR-6KW-AC-V3	Delta V3 AC logic PM	pm	fpga11	4.04	0.00	0.1
	Delta V3 AC primary PM	pm	fpga12	4.02	0.00	0.1
	Delta V3 AC secondary PM	pm	fpga13	4.03	0.00	0.1
	Acbel V3 AC logic PM MCU	pm	fpga14	2.05	0.00	0.1
	Acbel V3 AC primary PM	pm	fpga15	1.25	0.00	0.1
	Acbel V3 AC secondary PM	pm	fpga16	2.29	0.00	0.1
PWR-4.4KW-DC-V3	Delta V3 DC logic PM	pm	fpga11	3.00	0.00	0.1
	Delta V3 DC primary PM	pm	fpga12	3.00	0.00	0.1
	Delta V3 DC secondary PM	pm	fpga13	3.00	0.00	0.1
	Acbel V3 DC logic PM MCU	pm	fpga14	1.11	0.00	0.1
	Acbel V3 DC primary PM	pm	fpga15	1.03	0.00	0.1
	Acbel V3 DC secondary PM	pm	fpga16	2.13	0.00	0.1
PWR-3KW-HVDC	Delta HVDC logic PM	pm	fpga11	2.03	0.00	0.1
	Delta HVDC primary PM	pm	fpga12	2.02	0.00	0.1
	Delta HVDC secondary PM	pm	fpga13	2.02	0.00	0.1
A9K-MPA-32X1GE	EP I/O FPGA	spa	fpga11	1.09	0.00	0.0
SPA-4XT3/E3	SPA E3 Subrate FPGA	spa	fpga2	1.04	0.00	0.0
	SPA T3 Subrate FPGA	spa	fpga3	1.04	0.00	0.0
	SPA I/O FPGA	spa	fpga1	1.01	0.00	0.0
	SPA ROMMON	spa	rommon	2.12	0.00	0.0
SPA-2XT3/E3	SPA E3 Subrate FPGA	spa	fpga2	1.04	0.00	0.0
	SPA T3 Subrate FPGA	spa	fpga3	1.04	0.00	0.0
	SPA I/O FPGA	spa	fpga1	1.01	0.00	0.0
	SPA ROMMON	spa	rommon	2.12	0.00	0.0
SPA-4XCT3/DS0	SPA T3 Subrate FPGA	spa	fpga2	0.11	0.00	0.100
	SPA T3 Subrate FPGA	spa	fpga2	1.04	0.00	0.200
	SPA I/O FPGA	spa	fpga1	2.08	0.00	0.100
	SPA ROMMON	spa	rommon	2.12	0.00	0.100
SPA-OC192POS-XFP	SPA FPGA swv1.101 hww3	spa	fpga2	1.101	0.00	3.0
	SPA FPGA swv1.2 hww2	spa	fpga1	1.02	0.00	2.0
SPA-1XCHSTM1/OC3	SPA T3 Subrate FPGA	spa	fpga2	1.04	0.00	0.0
	SPA I/O FPGA	spa	fpga1	1.08	0.00	0.0
	SPA ROMMON	spa	rommon	2.12	0.00	0.0
SPA-1XOC48POS/RPR	SPA FPGA swv1.101 hww3	spa	fpga2	1.101	0.00	3.0
	SPA FPGA swv1.2	spa	fpga1	1.02	0.00	0.0
SPA-24CHT1-CE-ATM	SPA T3 Subrate FPGA	spa	fpga2	1.10	0.00	1.0
	SPA I/O FPGA	spa	fpga1	2.32	0.00	1.0
	SPA ROMMON	spa	rommon	1.03	0.00	1.0
SPA-2CHT3-CE-ATM	SPA T3 Subrate FPGA	spa	fpga2	1.11	0.00	1.0
	SPA I/O FPGA	spa	fpga1	2.22	0.00	1.0
	SPA ROMMON	spa	rommon	1.04	0.00	1.0
SPA-1CHOC3-CE-ATM	SPA OC3 Subrate FPGA	spa	fpga2	2.23	0.00	0.0
	SPA I/O FPGA	spa	fpga1	2.23	0.00	2.0
	SPA ROMMON	spa	rommon	1.04	0.00	0.0
SPA-1XCHOC48/DS3	SPA I/O FPGA	spa	fpga2	1.00	0.00	0.49
	SPA I/O FPGA	spa	fpga3	1.00	0.00	0.52
	SPA I/O FPGA	spa	fpga1	1.36	0.00	0.49
	SPA ROMMON	spa	rommon	2.02	0.00	0.49

SPA-4XT-SERIAL	SPA I/O FPGA	spa fpga2	1.04	0.00	2.0
	SPA I/O FPGA	spa fpga1	1.02	0.00	0.0
SPA-1XOC3-ATM-V2	SPA FPGA swv2.104 hmv2	spa fpga2	2.104	0.00	2.8
	SPA FPGA swv1.2	spa fpga1	2.02	0.00	0.0
SPA-3XOC3-ATM-V2	SPA FPGA swv2.104 hmv2	spa fpga2	2.104	0.00	2.8
	SPA FPGA swv1.2	spa fpga1	2.02	0.00	0.0
SPA-1XOC12-ATM-V2	SPA FPGA swv2.104 hmv2	spa fpga2	2.104	0.00	2.8
	SPA FPGA swv1.2	spa fpga1	2.02	0.00	0.0
SPA-2XCHOC12/DS0	SPA FPGA2 swv1.00	spa fpga2	1.00	0.00	0.0
	SPA FPGA swv1.36	spa fpga1	1.36	0.00	0.49
	SPA ROMMON swv2.2	spa rommon	2.02	0.00	0.49
A9K-MPA-20X1GE	EP I/O FPGA	spa fpga3	1.01	0.00	0.0
A9K-MPA-20X10GE	EP I/O FPGA	spa fpga5	1.16	0.00	0.0
A9K-MPA20X10GE-CM	EP I/O FPGA	spa fpga5	1.16	0.00	0.0
A9K-MPA-2X10GE	EP I/O FPGA	spa fpga6	1.06	0.00	0.0
A9K-MPA-4X10GE	EP I/O FPGA	spa fpga6	1.06	0.00	0.0
A9K-MPA-2X40GE	EP I/O FPGA	spa fpga7	1.03	0.00	0.0
A9K-MPA-1X40GE	EP I/O FPGA	spa fpga7	1.03	0.00	0.0
A9K-MPA-8X10GE	EP I/O FPGA	spa fpga8	1.09	0.00	0.0
A9K-MPA-2X100GE	EP I/O FPGA	spa fpga9	1.04	0.00	0.0
	CFP2 DCO B0	spap fpga7	38.26887	0.00	0.0
	CFP2 DCO	spap fpga8	38.26887	0.00	0.0
A9K-MPA-1X100GE	EP I/O FPGA	spa fpga9	1.04	0.00	0.0
	CFP2 DCO B0	spap fpga7	38.26887	0.00	0.0
	CFP2 DCO	spap fpga8	38.26887	0.00	0.0
A9K-MPA2X100GE-CM	EP I/O FPGA	spa fpga9	1.04	0.00	0.0
	CFP2 DCO B0	spap fpga7	38.26887	0.00	0.0
	CFP2 DCO	spap fpga8	38.26887	0.00	0.0
A9K-MPA-1X200GE	EP I/O FPGA	spa fpga9	1.04	0.00	0.0
	CFP2 DCO B0	spap fpga7	38.26887	0.00	0.0
	CFP2 DCO	spap fpga8	38.26887	0.00	0.0
SPA-8XOC12-POS	SPA FPGA swv1.0	spa fpga1	1.00	0.00	0.5
SPA-8XCHT1/E1	SPA I/O FPGA	spa fpga1	2.08	0.00	0.0
	SPA ROMMON	spa rommon	2.12	0.00	0.140
SPA-2XOC48POS/RPR	SPA FPGA swv1.0	spa fpga1	1.00	0.00	0.0
SPA-4XOC48POS/RPR	SPA FPGA swv1.0	spa fpga1	1.00	0.00	0.0
SPA-8XOC3-POS	SPA FPGA swv1.0	spa fpga1	1.00	0.00	0.5
SPA-2XOC12-POS	SPA FPGA swv1.0	spa fpga1	1.00	0.00	0.5
SPA-4XOC12-POS	SPA FPGA swv1.0	spa fpga1	1.00	0.00	0.5

SPA-10X1GE-V2	SPA FPGA swv1.10	spa fpgal	1.10	0.00	0.0
SPA-4XOC3-POS-V2	SPA FPGA swv1.0	spa fpgal	1.00	0.00	0.5
SPA-2XOC3-ATM-V2	SPA FPGA swv1.2	spa fpgal	2.02	0.00	0.0
SPA-8XCHT1/E1-V2	SPA I/O FPGA	spa fpgal	1.02	0.00	1.0
	SPA ROMMON	spa rommon	1.00	0.00	1.0
SPA-1CHSTM1/OC3V2	SPA I/O FPGA	spa fpgal	1.00	0.00	0.1
	SPA ROMMON	spa rommon	1.00	0.00	0.1
SPA-2XCT3/DS0-V2	SPA I/O FPGA	spa fpgal	1.01	0.00	1.0
	SPA ROMMON	spa rommon	1.00	0.00	1.0
SPA-4XCT3/DS0-V2	SPA I/O FPGA	spa fpgal	1.01	0.00	1.0
	SPA ROMMON	spa rommon	1.00	0.00	1.0
SPA-2XT3/E3-V2	SPA FPGA swv1.1 hww3	spa fpgal	1.01	0.00	1.0
	SPA ROMMON	spa rommon	1.00	0.00	1.0
SPA-4XT3/E3-V2	SPA FPGA swv1.1 hww3	spa fpgal	1.01	0.00	1.0
	SPA ROMMON	spa rommon	1.00	0.00	1.0

Firmware Support on Cisco IOS XR 64 bit

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



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.

```
(sysadmin-vm) #show fpd package
```

Field Programmable Device Package					
Card Type	FPD Description	Req Reload	SW Ver	Min Req SW Ver	Min Req Board Ver
A99-12X100GE	CBC	NO	46.06	46.06	0.1
	IPU-FPGA	YES	1.88	1.88	0.1
	IPU-FSBL	YES	1.112	1.112	0.1
	IPU-Linux	YES	1.112	1.112	0.1
	Morra-0	YES	1.02	1.02	0.1
	Morra-1	YES	1.02	1.02	0.1
	Primary-BIOS	YES	9.27	9.27	0.1
	Sideswipe-0	YES	1.02	1.02	0.1
	Sideswipe-1	YES	1.02	1.02	0.1
A99-12X100GE-CM	CBC	NO	46.06	46.06	0.1
	IPU-FPGA	YES	1.88	1.88	0.1
	IPU-FSBL	YES	1.112	1.112	0.1
	IPU-Linux	YES	1.112	1.112	0.1
	Morra-0	YES	1.02	1.02	0.1
	Morra-1	YES	1.02	1.02	0.1
	Primary-BIOS	YES	9.27	9.27	0.1
	Sideswipe-0	YES	1.02	1.02	0.1

	Sideswipe-1	YES	1.02	1.02	0.1
A99-16X100GE-CM	Aldrin-FPGA	YES	1.03	1.03	0.0
	CBC	NO	48.07	48.07	0.0
	Grapple-0	YES	0.11	0.11	0.0
	IPU-DDR4	YES	1.05	1.05	0.0
	Mixmaster-0	YES	0.08	0.08	0.0
	Primary-BIOS	YES	21.31	21.31	0.0
	Scamper	YES	0.21	0.21	0.0
	Skylynx-0	YES	0.08	0.08	0.0
A99-16X100GE-SE	Aldrin-FPGA	YES	1.03	1.03	0.0
	CBC	NO	48.07	48.07	0.0
	Grapple-0	YES	0.11	0.11	0.0
	IPU-DDR4	YES	1.05	1.05	0.0
	Mixmaster-0	YES	0.08	0.08	0.0
	Primary-BIOS	YES	21.31	21.31	0.0
	Scamper	YES	0.21	0.21	0.0
	Skylynx-0	YES	0.08	0.08	0.0
A99-16X100GE-TR	Aldrin-FPGA	YES	1.03	1.03	0.0
	CBC	NO	48.07	48.07	0.0
	Grapple-0	YES	0.11	0.11	0.0
	IPU-DDR4	YES	1.05	1.05	0.0
	Mixmaster-0	YES	0.08	0.08	0.0
	Primary-BIOS	YES	21.31	21.31	0.0
	Scamper	YES	0.21	0.21	0.0
	Skylynx-0	YES	0.08	0.08	0.0
A99-16X100GE-X-SE	Aldrin-FPGA	YES	1.03	1.03	0.0
	CBC	NO	48.07	48.07	0.0
	Grapple-0	YES	0.11	0.11	0.0
	Grapple-1	YES	0.11	0.11	0.0
	IPU-DDR4	YES	1.05	1.05	0.0
	Mixmaster-0	YES	0.08	0.08	0.0
	Mixmaster-1	YES	0.08	0.08	0.0
	Primary-BIOS	YES	21.31	21.31	0.0
	Scamper	YES	0.21	0.21	0.0
	Skylynx-0	YES	0.08	0.08	0.0
	Skylynx-1	YES	0.08	0.08	0.0
A99-24X10GE-1G-CM	CBC	NO	47.03	47.03	0.1
	IPU-FPGA	YES	1.88	1.88	0.1
	IPU-FSBL	YES	1.111	1.111	0.1
	IPU-Linux	YES	1.111	1.111	0.1
	Leadfoot-0	YES	1.00	1.00	0.1
	Lewis	YES	1.11	1.11	0.1
A99-24X10GE-1G-SE	Primary-BIOS	YES	18.27	18.27	0.1
A99-24X10GE-1G-SE	CBC	NO	47.03	47.03	0.1
	IPU-FPGA	YES	1.88	1.88	0.1
	IPU-FSBL	YES	1.111	1.111	0.1
	IPU-Linux	YES	1.111	1.111	0.1
	Leadfoot-0	YES	1.00	1.00	0.1
	Lewis	YES	1.11	1.11	0.1
A99-24X10GE-1G-TR	Primary-BIOS	YES	18.27	18.27	0.1
A99-24X10GE-1G-TR	CBC	NO	47.03	47.03	0.1
	IPU-FPGA	YES	1.88	1.88	0.1
	IPU-FSBL	YES	1.111	1.111	0.1
	IPU-Linux	YES	1.111	1.111	0.1
	Leadfoot-0	YES	1.00	1.00	0.1
	Lewis	YES	1.11	1.11	0.1
	Primary-BIOS	YES	18.27	18.27	0.1

A99-32X100GE-CM	Aldrin-FPGA	YES	1.03	1.03	0.0
	CBC	NO	48.07	48.07	0.0
	Grapple-0	YES	0.11	0.11	0.0
	Grapple-1	YES	0.11	0.11	0.0
	IPU-DDR4	YES	1.05	1.05	0.0
	Mixmaster-0	YES	0.08	0.08	0.0
	Mixmaster-1	YES	0.08	0.08	0.0
	Primary-BIOS	YES	21.31	21.31	0.0
	Scamper	YES	0.21	0.21	0.0
	Skylynx-0	YES	0.08	0.08	0.0
	Skylynx-1	YES	0.08	0.08	0.0
A99-32X100GE-SE	Aldrin-FPGA	YES	1.03	1.03	0.0
	CBC	NO	48.07	48.07	0.0
	Grapple-0	YES	0.11	0.11	0.0
	Grapple-1	YES	0.11	0.11	0.0
	IPU-DDR4	YES	1.05	1.05	0.0
	Mixmaster-0	YES	0.08	0.08	0.0
	Mixmaster-1	YES	0.08	0.08	0.0
	Primary-BIOS	YES	21.31	21.31	0.0
	Scamper	YES	0.21	0.21	0.0
	Skylynx-0	YES	0.08	0.08	0.0
	Skylynx-1	YES	0.08	0.08	0.0
A99-32X100GE-TR	Aldrin-FPGA	YES	1.03	1.03	0.0
	CBC	NO	48.07	48.07	0.0
	Grapple-0	YES	0.11	0.11	0.0
	Grapple-1	YES	0.11	0.11	0.0
	IPU-DDR4	YES	1.05	1.05	0.0
	Mixmaster-0	YES	0.08	0.08	0.0
	Mixmaster-1	YES	0.08	0.08	0.0
	Primary-BIOS	YES	21.31	21.31	0.0
	Scamper	YES	0.21	0.21	0.0
	Skylynx-0	YES	0.08	0.08	0.0
	Skylynx-1	YES	0.08	0.08	0.0
A99-48X10GE-1G-CM	CBC	NO	47.03	47.03	0.1
	IPU-FPGA	YES	1.88	1.88	0.1
	IPU-FSBL	YES	1.111	1.111	0.1
	IPU-Linux	YES	1.111	1.111	0.1
	Leadfoot-0	YES	1.00	1.00	0.1
	Leadfoot-1	YES	1.00	1.00	0.1
	Lewis	YES	1.11	1.11	0.1
	Primary-BIOS	YES	18.27	18.27	0.1
A99-48X10GE-1G-SE	CBC	NO	47.03	47.03	0.1
	IPU-FPGA	YES	1.88	1.88	0.1
	IPU-FSBL	YES	1.111	1.111	0.1
	IPU-Linux	YES	1.111	1.111	0.1
	Leadfoot-0	YES	1.00	1.00	0.1
	Leadfoot-1	YES	1.00	1.00	0.1
	Lewis	YES	1.11	1.11	0.1
	Primary-BIOS	YES	18.27	18.27	0.1
A99-48X10GE-1G-TR	CBC	NO	47.03	47.03	0.1
	IPU-FPGA	YES	1.88	1.88	0.1
	IPU-FSBL	YES	1.111	1.111	0.1
	IPU-Linux	YES	1.111	1.111	0.1
	Leadfoot-0	YES	1.00	1.00	0.1
	Leadfoot-1	YES	1.00	1.00	0.1
	Lewis	YES	1.11	1.11	0.1
	Primary-BIOS	YES	18.27	18.27	0.1

A99-4X100GE-SE	CBC	NO	38.23	38.23	0.0
	Dalla	YES	1.09	1.09	0.0
	IPU-FPGA	YES	1.97	1.97	0.0
	IPU-FSBL	YES	1.103	1.103	0.0
	IPU-Linux	YES	1.103	1.103	0.0
	Meldun-0	YES	1.07	1.07	0.0
	Meldun-1	YES	1.07	1.07	0.0
	Primary-BIOS	YES	8.47	8.47	0.0

A99-4X100GE-SE	CBC	NO	38.23	38.23	0.0
	Dalla	YES	1.09	1.09	0.0
	IPU-FPGA	YES	1.97	1.97	0.0
	IPU-FSBL	YES	1.103	1.103	0.0
	IPU-Linux	YES	1.103	1.103	0.0
	Meldun-0	YES	1.07	1.07	0.0
	Meldun-1	YES	1.07	1.07	0.0
	Primary-BIOS	YES	8.47	8.47	0.0

A99-4X100GE-SE-TAA	CBC	NO	38.23	38.23	0.0
	Dalla	YES	1.09	1.09	0.0
	IPU-FPGA	YES	1.97	1.97	0.0
	IPU-FSBL	YES	1.103	1.103	0.0
	IPU-Linux	YES	1.103	1.103	0.0
	Meldun-0	YES	1.07	1.07	0.0
	Meldun-1	YES	1.07	1.07	0.0
	Primary-BIOS	YES	8.47	8.47	0.0

A99-4X100GE-TAA	CBC	NO	38.23	38.23	0.0
	Dalla	YES	1.09	1.09	0.0
	IPU-FPGA	YES	1.97	1.97	0.0
	IPU-FSBL	YES	1.103	1.103	0.0
	IPU-Linux	YES	1.103	1.103	0.0
	Meldun-0	YES	1.07	1.07	0.0
	Meldun-1	YES	1.07	1.07	0.0
	Primary-BIOS	YES	8.47	8.47	0.0

A99-4X100GE-TR	CBC	NO	38.23	38.23	0.0
	Dalla	YES	1.09	1.09	0.0
	IPU-FPGA	YES	1.97	1.97	0.0
	IPU-FSBL	YES	1.103	1.103	0.0
	IPU-Linux	YES	1.103	1.103	0.0
	Meldun-0	YES	1.07	1.07	0.0
	Meldun-1	YES	1.07	1.07	0.0
	Primary-BIOS	YES	8.47	8.47	0.0

A99-4X100GE-TR	CBC	NO	38.23	38.23	0.0
	Dalla	YES	1.09	1.09	0.0
	IPU-FPGA	YES	1.97	1.97	0.0
	IPU-FSBL	YES	1.103	1.103	0.0
	IPU-Linux	YES	1.103	1.103	0.0
	Meldun-0	YES	1.07	1.07	0.0
	Meldun-1	YES	1.07	1.07	0.0
	Primary-BIOS	YES	8.47	8.47	0.0

A99-4X100GE-TR-TAA	CBC	NO	38.23	38.23	0.0
	Dalla	YES	1.09	1.09	0.0
	IPU-FPGA	YES	1.97	1.97	0.0
	IPU-FSBL	YES	1.103	1.103	0.0
	IPU-Linux	YES	1.103	1.103	0.0
	Meldun-0	YES	1.07	1.07	0.0
	Meldun-1	YES	1.07	1.07	0.0
	Primary-BIOS	YES	8.47	8.47	0.0

A99-8X100GE-CM	CBC	NO	38.23	38.23	0.0

	Dalla	YES	1.09	1.09	0.0
	IPU-FPGA	YES	1.97	1.97	0.0
	IPU-FSBL	YES	1.103	1.103	0.0
	IPU-Linux	YES	1.103	1.103	0.0
	Meldun-0	YES	1.07	1.07	0.0
	Meldun-1	YES	1.07	1.07	0.0
	Primary-BIOS	YES	8.47	8.47	0.0

A99-8X100GE-SE	CBC	NO	38.23	38.23	0.0
	Dalla	YES	1.09	1.09	0.0
	IPU-FPGA	YES	1.97	1.97	0.0
	IPU-FSBL	YES	1.103	1.103	0.0
	IPU-Linux	YES	1.103	1.103	0.0
	Meldun-0	YES	1.07	1.07	0.0
	Meldun-1	YES	1.07	1.07	0.0
	Primary-BIOS	YES	8.47	8.47	0.0

A99-8X100GE-SE	CBC	NO	38.23	38.23	0.0
	Dalla	YES	1.09	1.09	0.0
	IPU-FPGA	YES	1.97	1.97	0.0
	IPU-FSBL	YES	1.103	1.103	0.0
	IPU-Linux	YES	1.103	1.103	0.0
	Meldun-0	YES	1.07	1.07	0.0
	Meldun-1	YES	1.07	1.07	0.0
	Primary-BIOS	YES	8.47	8.47	0.0

A99-8X100GE-SE-TAA	CBC	NO	38.23	38.23	0.0
	Dalla	YES	1.09	1.09	0.0
	IPU-FPGA	YES	1.97	1.97	0.0
	IPU-FSBL	YES	1.103	1.103	0.0
	IPU-Linux	YES	1.103	1.103	0.0
	Meldun-0	YES	1.07	1.07	0.0
	Meldun-1	YES	1.07	1.07	0.0
	Primary-BIOS	YES	8.47	8.47	0.0

A99-8X100GE-TAA	CBC	NO	38.23	38.23	0.0
	Dalla	YES	1.09	1.09	0.0
	IPU-FPGA	YES	1.97	1.97	0.0
	IPU-FSBL	YES	1.103	1.103	0.0
	IPU-Linux	YES	1.103	1.103	0.0
	Meldun-0	YES	1.07	1.07	0.0
	Meldun-1	YES	1.07	1.07	0.0
	Primary-BIOS	YES	8.47	8.47	0.0

A99-8X100GE-TR	CBC	NO	38.23	38.23	0.0
	Dalla	YES	1.09	1.09	0.0
	IPU-FPGA	YES	1.97	1.97	0.0
	IPU-FSBL	YES	1.103	1.103	0.0
	IPU-Linux	YES	1.103	1.103	0.0
	Meldun-0	YES	1.07	1.07	0.0
	Meldun-1	YES	1.07	1.07	0.0
	Primary-BIOS	YES	8.47	8.47	0.0

A99-8X100GE-TR	CBC	NO	38.23	38.23	0.0
	Dalla	YES	1.09	1.09	0.0
	IPU-FPGA	YES	1.97	1.97	0.0
	IPU-FSBL	YES	1.103	1.103	0.0
	IPU-Linux	YES	1.103	1.103	0.0
	Meldun-0	YES	1.07	1.07	0.0
	Meldun-1	YES	1.07	1.07	0.0
	Primary-BIOS	YES	8.47	8.47	0.0

A99-8X100GE-TR-TAA	CBC	NO	38.23	38.23	0.0
	Dalla	YES	1.09	1.09	0.0

	IPU-FPGA	YES	1.97	1.97	0.0
	IPU-FSBL	YES	1.103	1.103	0.0
	IPU-Linux	YES	1.103	1.103	0.0
	Meldun-0	YES	1.07	1.07	0.0
	Meldun-1	YES	1.07	1.07	0.0
	Primary-BIOS	YES	8.47	8.47	0.0

A99-RP2-SE	Alpha-FPGA	YES	0.16	0.16	0.0
	CBC-0	NO	35.14	35.14	0.0
	CBC-1	NO	35.14	35.14	0.0
	Cha-FPGA	YES	0.08	0.08	0.0
	IPU-FPGA	YES	0.71	0.71	0.0
	IPU-FSBL	YES	1.110	1.110	0.0
	IPU-Linux	YES	1.110	1.110	0.0
	Omega-FPGA	YES	0.16	0.16	0.0
	Optimus-FPGA	YES	0.12	0.12	0.0
	Primary-BIOS	YES	14.35	14.35	0.0

A99-RP2-TR	Alpha-FPGA	YES	0.16	0.16	0.0
	CBC-0	NO	35.14	35.14	0.0
	CBC-1	NO	35.14	35.14	0.0
	Cha-FPGA	YES	0.08	0.08	0.0
	IPU-FPGA	YES	0.71	0.71	0.0
	IPU-FSBL	YES	1.110	1.110	0.0
	IPU-Linux	YES	1.110	1.110	0.0
	Omega-FPGA	YES	0.16	0.16	0.0
	Optimus-FPGA	YES	0.12	0.12	0.0
	Primary-BIOS	YES	14.35	14.35	0.0

A99-RP3-SE	Aldrin-0-FPGA	YES	1.03	1.03	0.0
	Aldrin-1-FPGA	YES	1.00	1.00	0.0
	Beta-FPGA	YES	0.07	0.07	0.0
	CBC-0	NO	51.12	51.12	0.0
	CBC-1	NO	51.12	51.12	0.0
	IPU-DDR4	YES	0.18	0.18	0.0
	Orion-FPGA	YES	0.22	0.22	0.0
	Primary-BIOS	YES	30.24	30.24	0.0
	Zenith-FPGA	YES	0.07	0.07	0.0

A99-RP3-TR	Aldrin-0-FPGA	YES	1.03	1.03	0.0
	Aldrin-1-FPGA	YES	1.00	1.00	0.0
	Beta-FPGA	YES	0.07	0.07	0.0
	CBC-0	NO	51.12	51.12	0.0
	CBC-1	NO	51.12	51.12	0.0
	IPU-DDR4	YES	0.18	0.18	0.0
	Orion-FPGA	YES	0.22	0.22	0.0
	Primary-BIOS	YES	30.24	30.24	0.0
	Zenith-FPGA	YES	0.07	0.07	0.0

A99-RSP-SE	Alpha-FPGA	YES	0.16	0.16	0.0
	CBC	NO	43.03	43.03	0.0
	Cha-FPGA	YES	0.08	0.08	0.0
	IPU-FPGA	YES	0.71	0.71	0.0
	IPU-FSBL	YES	1.110	1.110	0.0
	IPU-Linux	YES	1.110	1.110	0.0
	Omega-FPGA	YES	0.16	0.16	0.0
	Optimus-FPGA	YES	0.12	0.12	0.0
	Primary-BIOS	YES	16.14	16.14	0.0

A99-RSP-TR	Alpha-FPGA	YES	0.16	0.16	0.0
	CBC	NO	43.03	43.03	0.0
	Cha-FPGA	YES	0.08	0.08	0.0
	IPU-FPGA	YES	0.71	0.71	0.0
	IPU-FSBL	YES	1.110	1.110	0.0

	IPU-Linux	YES	1.110	1.110	0.0
	Omega-FPGA	YES	0.16	0.16	0.0
	Optimus-FPGA	YES	0.12	0.12	0.0
	Primary-BIOS	YES	16.14	16.14	0.0

A99-SFC-S	CBC	NO	44.02	44.02	0.0
	IPU-FPGA	YES	0.37	0.37	0.0
	IPU-FSBL	YES	1.100	1.100	0.0
	IPU-Linux	YES	1.100	1.100	0.0

A99-SFC-T	CBC	NO	44.02	44.02	0.0
	IPU-FPGA	YES	0.37	0.37	0.0
	IPU-FSBL	YES	1.100	1.100	0.0
	IPU-Linux	YES	1.100	1.100	0.0

A99-SFC2	CBC	NO	37.20	37.20	0.0
	IPU-FPGA	YES	0.37	0.37	0.0
	IPU-FSBL	YES	1.100	1.100	0.0
	IPU-Linux	YES	1.100	1.100	0.0

A99-SFC3	CBC	NO	49.03	49.03	0.0
	IPU-DDR4	YES	0.22	0.22	0.0

A99-SFC3-S	CBC	NO	44.02	44.02	0.0
	IPU-DDR4	YES	0.22	0.22	0.0

A99-SFC3-T	CBC	NO	44.02	44.02	0.0
	IPU-DDR4	YES	0.22	0.22	0.0

A99L-4X100GE-SE-TAA	CBC	NO	38.23	38.23	0.0
	Dalla	YES	1.09	1.09	0.0
	IPU-FPGA	YES	1.97	1.97	0.0
	IPU-FSBL	YES	1.103	1.103	0.0
	IPU-Linux	YES	1.103	1.103	0.0
	Meldun-0	YES	1.07	1.07	0.0
	Meldun-1	YES	1.07	1.07	0.0
	Primary-BIOS	YES	8.47	8.47	0.0

A99L-4X100GE-TAA	CBC	NO	38.23	38.23	0.0
	Dalla	YES	1.09	1.09	0.0
	IPU-FPGA	YES	1.97	1.97	0.0
	IPU-FSBL	YES	1.103	1.103	0.0
	IPU-Linux	YES	1.103	1.103	0.0
	Meldun-0	YES	1.07	1.07	0.0
	Meldun-1	YES	1.07	1.07	0.0
	Primary-BIOS	YES	8.47	8.47	0.0

A99L-4X100GE-TR-TAA	CBC	NO	38.23	38.23	0.0
	Dalla	YES	1.09	1.09	0.0
	IPU-FPGA	YES	1.97	1.97	0.0
	IPU-FSBL	YES	1.103	1.103	0.0
	IPU-Linux	YES	1.103	1.103	0.0
	Meldun-0	YES	1.07	1.07	0.0
	Meldun-1	YES	1.07	1.07	0.0
	Primary-BIOS	YES	8.47	8.47	0.0

A99L-8X100GE-SE-TAA	CBC	NO	38.23	38.23	0.0
	Dalla	YES	1.09	1.09	0.0
	IPU-FPGA	YES	1.97	1.97	0.0
	IPU-FSBL	YES	1.103	1.103	0.0
	IPU-Linux	YES	1.103	1.103	0.0
	Meldun-0	YES	1.07	1.07	0.0
	Meldun-1	YES	1.07	1.07	0.0
	Primary-BIOS	YES	8.47	8.47	0.0

A99L-8X100GE-TAA	CBC	NO	38.23	38.23	0.0
	Dalla	YES	1.09	1.09	0.0
	IPU-FPGA	YES	1.97	1.97	0.0
	IPU-FSBL	YES	1.103	1.103	0.0
	IPU-Linux	YES	1.103	1.103	0.0
	Meldun-0	YES	1.07	1.07	0.0
	Meldun-1	YES	1.07	1.07	0.0
	Primary-BIOS	YES	8.47	8.47	0.0

A99L-8X100GE-TR-TAA	CBC	NO	38.23	38.23	0.0
	Dalla	YES	1.09	1.09	0.0
	IPU-FPGA	YES	1.97	1.97	0.0
	IPU-FSBL	YES	1.103	1.103	0.0
	IPU-Linux	YES	1.103	1.103	0.0
	Meldun-0	YES	1.07	1.07	0.0
	Meldun-1	YES	1.07	1.07	0.0
	Primary-BIOS	YES	8.47	8.47	0.0

A9K-1600W-AC	PO-PrimMCU	NO	17.137	17.137	0.0

A9K-1600W-DC	PO-PrimMCU	NO	1.09	1.09	0.0

A9K-16X100GE-CM	Aldrin-FPGA	YES	1.03	1.03	0.0
	CBC	NO	48.07	48.07	0.0
	Grapple-0	YES	0.11	0.11	0.0
	IPU-DDR4	YES	1.05	1.05	0.0
	Mixmaster-0	YES	0.08	0.08	0.0
	Primary-BIOS	YES	21.31	21.31	0.0
	Scamper	YES	0.21	0.21	0.0
	Skylynx-0	YES	0.08	0.08	0.0

A9K-16X100GE-SE	Aldrin-FPGA	YES	1.03	1.03	0.0
	CBC	NO	48.07	48.07	0.0
	Grapple-0	YES	0.11	0.11	0.0
	IPU-DDR4	YES	1.05	1.05	0.0
	Mixmaster-0	YES	0.08	0.08	0.0
	Primary-BIOS	YES	21.31	21.31	0.0
	Scamper	YES	0.21	0.21	0.0
	Skylynx-0	YES	0.08	0.08	0.0

A9K-16X100GE-TR	Aldrin-FPGA	YES	1.03	1.03	0.0
	CBC	NO	48.07	48.07	0.0
	Grapple-0	YES	0.11	0.11	0.0
	IPU-DDR4	YES	1.05	1.05	0.0
	Mixmaster-0	YES	0.08	0.08	0.0
	Primary-BIOS	YES	21.31	21.31	0.0
	Scamper	YES	0.21	0.21	0.0
	Skylynx-0	YES	0.08	0.08	0.0

A9K-16X100GE-TR	Aldrin-FPGA	YES	1.03	1.03	0.0
	CBC	NO	48.07	48.07	0.0
	Grapple-0	YES	0.11	0.11	0.0
	IPU-DDR4	YES	1.05	1.05	0.0
	Mixmaster-0	YES	0.08	0.08	0.0
	Primary-BIOS	YES	21.31	21.31	0.0
	Scamper	YES	0.21	0.21	0.0
	Skylynx-0	YES	0.08	0.08	0.0

A9K-24X10GE-1G-CM	CBC	NO	47.03	47.03	0.1
	IPU-FPGA	YES	1.88	1.88	0.1
	IPU-FSBL	YES	1.111	1.111	0.1
	IPU-Linux	YES	1.111	1.111	0.1
	Leadfoot-0	YES	1.00	1.00	0.1

	Lewis	YES	1.11	1.11	0.1
	Primary-BIOS	YES	18.27	18.27	0.1

A9K-24X10GE-1G-SE	CBC	NO	47.03	47.03	0.1
	IPU-FPGA	YES	1.88	1.88	0.1
	IPU-FSBL	YES	1.111	1.111	0.1
	IPU-Linux	YES	1.111	1.111	0.1
	Leadfoot-0	YES	1.00	1.00	0.1
	Lewis	YES	1.11	1.11	0.1
	Primary-BIOS	YES	18.27	18.27	0.1

A9K-24X10GE-1G-TR	CBC	NO	47.03	47.03	0.1
	IPU-FPGA	YES	1.88	1.88	0.1
	IPU-FSBL	YES	1.111	1.111	0.1
	IPU-Linux	YES	1.111	1.111	0.1
	Leadfoot-0	YES	1.00	1.00	0.1
	Lewis	YES	1.11	1.11	0.1
	Primary-BIOS	YES	18.27	18.27	0.1

A9K-400G-DWDM-TR	CBC	NO	42.04	42.04	0.0
	Doran	YES	1.05	1.05	0.0
	Frenzy	YES	49.00	49.00	0.0
	IPU-FPGA	YES	1.97	1.97	0.1
	IPU-FSBL	YES	1.103	1.103	0.1
	IPU-Linux	YES	1.103	1.103	0.1
	Martell	YES	1.03	1.03	0.0
	Meldun	YES	1.07	1.07	0.1
	Primary-BIOS	YES	8.47	8.47	0.1

A9K-48X10GE-1G-CM	CBC	NO	47.03	47.03	0.1
	IPU-FPGA	YES	1.88	1.88	0.1
	IPU-FSBL	YES	1.111	1.111	0.1
	IPU-Linux	YES	1.111	1.111	0.1
	Leadfoot-0	YES	1.00	1.00	0.1
	Leadfoot-1	YES	1.00	1.00	0.1
	Lewis	YES	1.11	1.11	0.1
	Primary-BIOS	YES	18.27	18.27	0.1

A9K-48X10GE-1G-SE	CBC	NO	47.03	47.03	0.1
	IPU-FPGA	YES	1.88	1.88	0.1
	IPU-FSBL	YES	1.111	1.111	0.1
	IPU-Linux	YES	1.111	1.111	0.1
	Leadfoot-0	YES	1.00	1.00	0.1
	Leadfoot-1	YES	1.00	1.00	0.1
	Lewis	YES	1.11	1.11	0.1
	Primary-BIOS	YES	18.27	18.27	0.1

A9K-48X10GE-1G-TR	CBC	NO	47.03	47.03	0.1
	IPU-FPGA	YES	1.88	1.88	0.1
	IPU-FSBL	YES	1.111	1.111	0.1
	IPU-Linux	YES	1.111	1.111	0.1
	Leadfoot-0	YES	1.00	1.00	0.1
	Leadfoot-1	YES	1.00	1.00	0.1
	Lewis	YES	1.11	1.11	0.1
	Primary-BIOS	YES	18.27	18.27	0.1

A9K-4X100GE	CBC	NO	46.06	46.06	0.1
	IPU-FPGA	YES	1.88	1.88	0.1
	IPU-FSBL	YES	1.112	1.112	0.1
	IPU-Linux	YES	1.112	1.112	0.1
	Morra-0	YES	1.02	1.02	0.1
	Primary-BIOS	YES	9.27	9.27	0.1
	Sideswipe-0	YES	1.02	1.02	0.1

A9K-4X100GE-SE	CBC	NO	38.23	38.23	0.0
	Dalla	YES	1.09	1.09	0.0
	IPU-FPGA	YES	1.97	1.97	0.0
	IPU-FSBL	YES	1.103	1.103	0.0
	IPU-Linux	YES	1.103	1.103	0.0
	Meldun-0	YES	1.07	1.07	0.0
	Meldun-1	YES	1.07	1.07	0.0
	Primary-BIOS	YES	8.47	8.47	0.0

A9K-4X100GE-SE	CBC	NO	38.23	38.23	0.0
	Dalla	YES	1.09	1.09	0.0
	IPU-FPGA	YES	1.97	1.97	0.0
	IPU-FSBL	YES	1.103	1.103	0.0
	IPU-Linux	YES	1.103	1.103	0.0
	Meldun-0	YES	1.07	1.07	0.0
	Meldun-1	YES	1.07	1.07	0.0
	Primary-BIOS	YES	8.47	8.47	0.0

A9K-4X100GE-SE-TAA	CBC	NO	38.23	38.23	0.0
	Dalla	YES	1.09	1.09	0.0
	IPU-FPGA	YES	1.97	1.97	0.0
	IPU-FSBL	YES	1.103	1.103	0.0
	IPU-Linux	YES	1.103	1.103	0.0
	Meldun-0	YES	1.07	1.07	0.0
	Meldun-1	YES	1.07	1.07	0.0
	Primary-BIOS	YES	8.47	8.47	0.0

A9K-4X100GE-TAA	CBC	NO	38.23	38.23	0.0
	Dalla	YES	1.09	1.09	0.0
	IPU-FPGA	YES	1.97	1.97	0.0
	IPU-FSBL	YES	1.103	1.103	0.0
	IPU-Linux	YES	1.103	1.103	0.0
	Meldun-0	YES	1.07	1.07	0.0
	Meldun-1	YES	1.07	1.07	0.0
	Primary-BIOS	YES	8.47	8.47	0.0

A9K-4X100GE-TR	CBC	NO	38.23	38.23	0.0
	Dalla	YES	1.09	1.09	0.0
	IPU-FPGA	YES	1.97	1.97	0.0
	IPU-FSBL	YES	1.103	1.103	0.0
	IPU-Linux	YES	1.103	1.103	0.0
	Meldun-0	YES	1.07	1.07	0.0
	Meldun-1	YES	1.07	1.07	0.0
	Primary-BIOS	YES	8.47	8.47	0.0

A9K-4X100GE-TR	CBC	NO	38.23	38.23	0.0
	Dalla	YES	1.09	1.09	0.0
	IPU-FPGA	YES	1.97	1.97	0.0
	IPU-FSBL	YES	1.103	1.103	0.0
	IPU-Linux	YES	1.103	1.103	0.0
	Meldun-0	YES	1.07	1.07	0.0
	Meldun-1	YES	1.07	1.07	0.0
	Primary-BIOS	YES	8.47	8.47	0.0

A9K-4X100GE-TR	CBC	NO	38.23	38.23	0.0
	Dalla	YES	1.09	1.09	0.0
	IPU-FPGA	YES	1.97	1.97	0.0
	IPU-FSBL	YES	1.103	1.103	0.0
	IPU-Linux	YES	1.103	1.103	0.0
	Meldun-0	YES	1.07	1.07	0.0
	Meldun-1	YES	1.07	1.07	0.0
	Primary-BIOS	YES	8.47	8.47	0.0

A9K-4X100GE-TR-TAA	CBC	NO	38.23	38.23	0.0
	Dalla	YES	1.09	1.09	0.0
	IPU-FPGA	YES	1.97	1.97	0.0
	IPU-FSBL	YES	1.103	1.103	0.0
	IPU-Linux	YES	1.103	1.103	0.0
	Meldun-0	YES	1.07	1.07	0.0
	Meldun-1	YES	1.07	1.07	0.0
	Primary-BIOS	YES	8.47	8.47	0.0

A9K-4X100GE-TR-V2	Aldrin-FPGA	YES	1.03	1.03	0.0

	CBC	NO	48.07	48.07	0.0
	Grapple-0	YES	0.11	0.11	0.0
	IPU-DDR4	YES	1.05	1.05	0.0
	Mixmaster-0	YES	0.08	0.08	0.0
	Primary-BIOS	YES	21.31	21.31	0.0
	Scamper	YES	0.21	0.21	0.0
	Skylynx-0	YES	0.08	0.08	0.0

A9K-8X100GE-CM	CBC	NO	38.23	38.23	0.0
	Dalla	YES	1.09	1.09	0.0
	IPU-FPGA	YES	1.97	1.97	0.0
	IPU-FSBL	YES	1.103	1.103	0.0
	IPU-Linux	YES	1.103	1.103	0.0
	Meldun-0	YES	1.07	1.07	0.0
	Meldun-1	YES	1.07	1.07	0.0
	Primary-BIOS	YES	8.47	8.47	0.0

A9K-8X100GE-L-SE	CBC	NO	38.23	38.23	0.0
	Dalla	YES	1.09	1.09	0.0
	IPU-FPGA	YES	1.97	1.97	0.0
	IPU-FSBL	YES	1.103	1.103	0.0
	IPU-Linux	YES	1.103	1.103	0.0
	Meldun-0	YES	1.07	1.07	0.0
	Meldun-1	YES	1.07	1.07	0.0
	Primary-BIOS	YES	8.47	8.47	0.0

A9K-8X100GE-L-TAA	CBC	NO	38.23	38.23	0.0
	Dalla	YES	1.09	1.09	0.0
	IPU-FPGA	YES	1.97	1.97	0.0
	IPU-FSBL	YES	1.103	1.103	0.0
	IPU-Linux	YES	1.103	1.103	0.0
	Meldun-0	YES	1.07	1.07	0.0
	Meldun-1	YES	1.07	1.07	0.0
	Primary-BIOS	YES	8.47	8.47	0.0

A9K-8X100GE-L-TR	CBC	NO	38.23	38.23	0.0
	Dalla	YES	1.09	1.09	0.0
	IPU-FPGA	YES	1.97	1.97	0.0
	IPU-FSBL	YES	1.103	1.103	0.0
	IPU-Linux	YES	1.103	1.103	0.0
	Meldun-0	YES	1.07	1.07	0.0
	Meldun-1	YES	1.07	1.07	0.0
	Primary-BIOS	YES	8.47	8.47	0.0

A9K-8X100GE-SE	CBC	NO	38.23	38.23	0.0
	Dalla	YES	1.09	1.09	0.0
	IPU-FPGA	YES	1.97	1.97	0.0
	IPU-FSBL	YES	1.103	1.103	0.0
	IPU-Linux	YES	1.103	1.103	0.0
	Meldun-0	YES	1.07	1.07	0.0
	Meldun-1	YES	1.07	1.07	0.0
	Primary-BIOS	YES	8.47	8.47	0.0

A9K-8X100GE-SE-TAA	CBC	NO	38.23	38.23	0.0
	Dalla	YES	1.09	1.09	0.0
	IPU-FPGA	YES	1.97	1.97	0.0
	IPU-FSBL	YES	1.103	1.103	0.0
	IPU-Linux	YES	1.103	1.103	0.0
	Meldun-0	YES	1.07	1.07	0.0
	Meldun-1	YES	1.07	1.07	0.0
	Primary-BIOS	YES	8.47	8.47	0.0

A9K-8X100GE-TAA	CBC	NO	38.23	38.23	0.0
	Dalla	YES	1.09	1.09	0.0

	IPU-FPGA	YES	1.97	1.97	0.0
	IPU-FSBL	YES	1.103	1.103	0.0
	IPU-Linux	YES	1.103	1.103	0.0
	Meldun-0	YES	1.07	1.07	0.0
	Meldun-1	YES	1.07	1.07	0.0
	Primary-BIOS	YES	8.47	8.47	0.0

A9K-8X100GE-TR	CBC	NO	38.23	38.23	0.0
	Dalla	YES	1.09	1.09	0.0
	IPU-FPGA	YES	1.97	1.97	0.0
	IPU-FSBL	YES	1.103	1.103	0.0
	IPU-Linux	YES	1.103	1.103	0.0
	Meldun-0	YES	1.07	1.07	0.0
	Meldun-1	YES	1.07	1.07	0.0
	Primary-BIOS	YES	8.47	8.47	0.0

A9K-8X100GE-TR-TAA	CBC	NO	38.23	38.23	0.0
	Dalla	YES	1.09	1.09	0.0
	IPU-FPGA	YES	1.97	1.97	0.0
	IPU-FSBL	YES	1.103	1.103	0.0
	IPU-Linux	YES	1.103	1.103	0.0
	Meldun-0	YES	1.07	1.07	0.0
	Meldun-1	YES	1.07	1.07	0.0
	Primary-BIOS	YES	8.47	8.47	0.0

A9K-8X100GE-X-CM	Aldrin-FPGA	YES	1.03	1.03	0.0
	CBC	NO	48.07	48.07	0.0
	Grapple-0	YES	0.11	0.11	0.0
	IPU-DDR4	YES	1.05	1.05	0.0
	Mixmaster-0	YES	0.08	0.08	0.0
	Primary-BIOS	YES	21.31	21.31	0.0
	Scamper	YES	0.21	0.21	0.0
	Skylynx-0	YES	0.08	0.08	0.0

A9K-8X100GE-X-SE	Aldrin-FPGA	YES	1.03	1.03	0.0
	CBC	NO	48.07	48.07	0.0
	Grapple-0	YES	0.11	0.11	0.0
	IPU-DDR4	YES	1.05	1.05	0.0
	Mixmaster-0	YES	0.08	0.08	0.0
	Primary-BIOS	YES	21.31	21.31	0.0
	Scamper	YES	0.21	0.21	0.0
	Skylynx-0	YES	0.08	0.08	0.0

A9K-8X100GE-X-TR	Aldrin-FPGA	YES	1.03	1.03	0.0
	CBC	NO	48.07	48.07	0.0
	Grapple-0	YES	0.11	0.11	0.0
	IPU-DDR4	YES	1.05	1.05	0.0
	Mixmaster-0	YES	0.08	0.08	0.0
	Primary-BIOS	YES	21.31	21.31	0.0
	Scamper	YES	0.21	0.21	0.0
	Skylynx-0	YES	0.08	0.08	0.0

A9K-8X100GE-X-TR	Aldrin-FPGA	YES	1.03	1.03	0.0
	CBC	NO	48.07	48.07	0.0
	Grapple-0	YES	0.11	0.11	0.0
	IPU-DDR4	YES	1.05	1.05	0.0
	Mixmaster-0	YES	0.08	0.08	0.0
	Primary-BIOS	YES	21.31	21.31	0.0
	Scamper	YES	0.21	0.21	0.0
	Skylynx-0	YES	0.08	0.08	0.0

A9K-8X100GELSE-TAA	CBC	NO	38.23	38.23	0.0
	Dalla	YES	1.09	1.09	0.0
	IPU-FPGA	YES	1.97	1.97	0.0

	IPU-FSBL	YES	1.103	1.103	0.0
	IPU-Linux	YES	1.103	1.103	0.0
	Meldun-0	YES	1.07	1.07	0.0
	Meldun-1	YES	1.07	1.07	0.0
	Primary-BIOS	YES	8.47	8.47	0.0

A9K-8X100GELTR-TAA	CBC	NO	38.23	38.23	0.0
	Dalla	YES	1.09	1.09	0.0
	IPU-FPGA	YES	1.97	1.97	0.0
	IPU-FSBL	YES	1.103	1.103	0.0
	IPU-Linux	YES	1.103	1.103	0.0
	Meldun-0	YES	1.07	1.07	0.0
	Meldun-1	YES	1.07	1.07	0.0
	Primary-BIOS	YES	8.47	8.47	0.0

A9K-MOD200-CM	Blaster	YES	1.27	1.27	0.1
	CBC	NO	39.09	39.09	0.1
	IPU-FPGA	YES	1.97	1.97	0.1
	IPU-FSBL	YES	1.103	1.103	0.1
	IPU-Linux	YES	1.103	1.103	0.1
	Primary-BIOS	YES	8.47	8.47	0.1

A9K-MOD200-SE	Blaster	YES	1.27	1.27	0.1
	CBC	NO	39.09	39.09	0.1
	IPU-FPGA	YES	1.97	1.97	0.1
	IPU-FSBL	YES	1.103	1.103	0.1
	IPU-Linux	YES	1.103	1.103	0.1
	Primary-BIOS	YES	8.47	8.47	0.1

A9K-MOD200-TR	Blaster	YES	1.27	1.27	0.1
	CBC	NO	39.09	39.09	0.1
	IPU-FPGA	YES	1.97	1.97	0.1
	IPU-FSBL	YES	1.103	1.103	0.1
	IPU-Linux	YES	1.103	1.103	0.1
	Primary-BIOS	YES	8.47	8.47	0.1

A9K-MOD400-CM	Blaster	YES	1.27	1.27	0.1
	CBC	NO	39.09	39.09	0.1
	IPU-FPGA	YES	1.97	1.97	0.1
	IPU-FSBL	YES	1.103	1.103	0.1
	IPU-Linux	YES	1.103	1.103	0.1
	Primary-BIOS	YES	8.47	8.47	0.1

A9K-MOD400-SE	Blaster	YES	1.27	1.27	0.1
	CBC	NO	39.09	39.09	0.1
	IPU-FPGA	YES	1.97	1.97	0.1
	IPU-FSBL	YES	1.103	1.103	0.1
	IPU-Linux	YES	1.103	1.103	0.1
	Primary-BIOS	YES	8.47	8.47	0.1

A9K-MOD400-TR	Blaster	YES	1.27	1.27	0.1
	CBC	NO	39.09	39.09	0.1
	IPU-FPGA	YES	1.97	1.97	0.1
	IPU-FSBL	YES	1.103	1.103	0.1
	IPU-Linux	YES	1.103	1.103	0.1
	Primary-BIOS	YES	8.47	8.47	0.1

A9K-RSP5-SE	Aldrin-0-FPGA	YES	1.06	1.06	0.0
	Beta-FPGA	YES	0.07	0.07	0.0
	CBC	NO	53.10	53.10	0.0
	IPU-DDR4	YES	0.18	0.18	0.0
	Orion-FPGA	YES	0.22	0.22	0.0
	Primary-BIOS	YES	31.21	31.21	0.0
	Zenith-FPGA	YES	0.07	0.07	0.0

A9K-RSP5-TR	Aldrin-0-FPGA	YES	1.06	1.06	0.0
	Beta-FPGA	YES	0.07	0.07	0.0
	CBC	NO	53.10	53.10	0.0
	IPU-DDR4	YES	0.18	0.18	0.0
	Orion-FPGA	YES	0.22	0.22	0.0
	Primary-BIOS	YES	31.21	31.21	0.0
	Zenith-FPGA	YES	0.07	0.07	0.0

A9K-RSP880-LT-SE	Aldrin-FPGA	YES	1.11	1.11	0.0
	Alpha-FPGA	YES	0.05	0.05	0.0
	CBC	NO	50.02	50.02	0.0
	IPU-FPGA	YES	0.19	0.19	0.0
	IPU-FSBL	YES	1.110	1.110	0.0
	IPU-Linux	YES	1.110	1.110	0.0
	Omega-FPGA	YES	0.04	0.04	0.0
	Optimus-FPGA	YES	0.04	0.04	0.0
	Primary-BIOS	YES	17.34	17.34	0.0

A9K-RSP880-LT-TR	Aldrin-FPGA	YES	1.11	1.11	0.0
	Alpha-FPGA	YES	0.05	0.05	0.0
	CBC	NO	50.02	50.02	0.0
	IPU-FPGA	YES	0.19	0.19	0.0
	IPU-FSBL	YES	1.110	1.110	0.0
	IPU-Linux	YES	1.110	1.110	0.0
	Omega-FPGA	YES	0.04	0.04	0.0
	Optimus-FPGA	YES	0.04	0.04	0.0
	Primary-BIOS	YES	17.34	17.34	0.0

A9K-RSP880-SE	Alpha-FPGA	YES	0.16	0.16	0.0
	CBC	NO	34.39	34.39	0.0
	Cha-FPGA	YES	0.08	0.08	0.0
	IPU-FPGA	YES	0.71	0.71	0.0
	IPU-FSBL	YES	1.110	1.110	0.0
	IPU-Linux	YES	1.110	1.110	0.0
	Omega-FPGA	YES	0.16	0.16	0.0
	Optimus-FPGA	YES	0.12	0.12	0.0
	Primary-BIOS	YES	10.65	10.65	0.0

A9K-RSP880-TR	Alpha-FPGA	YES	0.16	0.16	0.0
	CBC	NO	34.39	34.39	0.0
	Cha-FPGA	YES	0.08	0.08	0.0
	IPU-FPGA	YES	0.71	0.71	0.0
	IPU-FSBL	YES	1.110	1.110	0.0
	IPU-Linux	YES	1.110	1.110	0.0
	Omega-FPGA	YES	0.16	0.16	0.0
	Optimus-FPGA	YES	0.12	0.12	0.0
	Primary-BIOS	YES	10.65	10.65	0.0

A9KL-4X100GE-SE-TAA	CBC	NO	38.23	38.23	0.0
	Dalla	YES	1.09	1.09	0.0
	IPU-FPGA	YES	1.97	1.97	0.0
	IPU-FSBL	YES	1.103	1.103	0.0
	IPU-Linux	YES	1.103	1.103	0.0
	Meldun-0	YES	1.07	1.07	0.0
	Meldun-1	YES	1.07	1.07	0.0
	Primary-BIOS	YES	8.47	8.47	0.0

A9KL-4X100GE-TAA	CBC	NO	38.23	38.23	0.0
	Dalla	YES	1.09	1.09	0.0
	IPU-FPGA	YES	1.97	1.97	0.0
	IPU-FSBL	YES	1.103	1.103	0.0
	IPU-Linux	YES	1.103	1.103	0.0
	Meldun-0	YES	1.07	1.07	0.0

	Meldun-1	YES	1.07	1.07	0.0
	Primary-BIOS	YES	8.47	8.47	0.0

A9KL-4X100GE-TR-TAA	CBC	NO	38.23	38.23	0.0
	Dalla	YES	1.09	1.09	0.0
	IPU-FPGA	YES	1.97	1.97	0.0
	IPU-FSBL	YES	1.103	1.103	0.0
	IPU-Linux	YES	1.103	1.103	0.0
	Meldun-0	YES	1.07	1.07	0.0
	Meldun-1	YES	1.07	1.07	0.0
	Primary-BIOS	YES	8.47	8.47	0.0

ASR-9006-AC	CBC	NO	7.105	7.105	0.0

ASR-9006-AC-V2	CBC	NO	7.105	7.105	0.0

ASR-9006-FAN	CBC	NO	5.04	5.04	0.0

ASR-9006-FAN-V2	CBC	NO	5.05	5.05	0.0

ASR-9010-AC	CBC	NO	7.105	7.105	0.0

ASR-9010-AC-V2	CBC	NO	7.105	7.105	0.0

ASR-9010-FAN	CBC	NO	4.03	4.03	0.0

ASR-9010-FAN-V2	CBC	NO	29.12	29.12	0.0

ASR-9901-LC	CBC	NO	55.07	55.07	0.1
	Gamora-FPGA	YES	0.36	0.36	0.1
	IPU-FPGA	YES	1.10	1.10	0.1
	IPU-FSBL	YES	1.104	1.104	0.1
	IPU-Linux	YES	1.104	1.104	0.1
	Primary-BIOS	YES	23.17	23.17	0.1

ASR-9901-RP	CBC	NO	54.10	54.10	0.1
	Drax-FPGA	YES	0.31	0.31	0.1
	IPU-FPGA	YES	2.05	2.05	0.1
	IPU-FSBL	YES	1.104	1.104	0.1
	IPU-Linux	YES	1.104	1.104	0.1
	Primary-BIOS	YES	22.20	22.20	0.1

ASR-9904-AC	CBC	NO	7.105	7.105	0.0

ASR-9904-FAN	CBC	NO	31.06	31.06	0.0

ASR-9906	CBC	NO	7.105	7.105	0.0

ASR-9906-FAN	CBC	NO	56.01	56.01	0.0
	PSOC	NO	2.06	2.06	0.0

ASR-9910	CBC	NO	7.105	7.105	0.0

ASR-9910-FAN	CBC	NO	45.02	45.02	0.0
	PSOC	NO	2.06	2.06	0.0

ASR-9912-AC	CBC	NO	7.105	7.105	0.0

ASR-9912-FAN	CBC	NO	31.06	31.06	0.0

ASR-9912-SFC220	CBC	NO	37.20	37.20	0.0
	IPU-FPGA	YES	0.37	0.37	0.0
	IPU-FSBL	YES	1.100	1.100	0.0
	IPU-Linux	YES	1.100	1.100	0.0

ASR-9922-AC	CBC-0	NO	7.105	7.105	0.0
	CBC-1	NO	7.105	7.105	0.0
ASR-9922-FAN	CBC	NO	29.12	29.12	0.0
ASR-9922-FAN-V2	CBC	NO	40.07	40.07	0.0
	PSOC	NO	2.06	2.06	0.0
ASR-9922-FAN-V3	CBC	NO	40.07	40.07	0.0
	PSOC	NO	2.06	2.06	0.0
PWR-2KW-DC-V2	DT-PrimCU	NO	6.03	6.03	0.12
	DT-Sec54vMCU	NO	6.02	6.02	0.12
	DT-Sec5vMCU	NO	6.03	6.03	0.12
	EM-PrimCU	NO	3.12	3.12	0.12
	EM-Sec54vMCU	NO	3.21	3.21	0.12
	EM-Sec5vMCU	NO	3.20	3.20	0.12
PWR-3KW-AC-V2	DT-PrimCU	NO	6.02	6.02	1.0
	DT-Sec54vMCU	NO	6.02	6.02	1.0
	DT-Sec5vMCU	NO	6.04	6.04	1.0
	EM-Sec54vMCU	NO	3.12	3.12	0.21
	EM-Sec5vMCU	NO	3.18	3.18	0.21
PWR-4.4KW-DC-V3	DT-Pri0MCU	NO	3.00	3.00	0.1
	DT-Pri1MCU	NO	3.00	3.00	0.1
	DT-Sec054vMCU	NO	3.00	3.00	0.1
	DT-Sec154vMCU	NO	3.00	3.00	0.1
	DT-Sec5vMCU	NO	3.00	3.00	0.1
PWR-6KW-AC-V3	DT-Pri0MCU	NO	4.02	4.02	0.1
	DT-Pri1MCU	NO	4.02	4.02	0.1
	DT-Sec054vMCU	NO	4.03	4.03	0.1
	DT-Sec154vMCU	NO	4.03	4.03	0.1
	DT-Sec5vMCU	NO	4.04	4.04	0.1

Other Important Information

- From Release 6.5.1 the Cisco ASR 9000 Series Route Switch Processor 440 (2nd Generation) has reached EoL, therefore the RSP440 is not supported.

Please refer to the [End-of-Sale and End-of-Life Announcement for the RSP440 \(2nd Generation\)](#).

- Bridge-Group Virtual Interface (BVI), Virtual Extensible LAN (VxLAN) and Generic Routing Encapsulation (GRE) are not supported on ASR 9000 16-port 100GE QSFP TR (A9K-16X100GE-TR), ASR 9900 16-port 100GE QSFP SE (A99-16X100GE-X-SE) and ASR 9900 32-port 100GE QSFP TR (A99-32X100GE-TR) line cards.
- Repetitive Smart Licensing evaluation expired warning messages are displayed on the console every hour, but no functionality impact is seen on the device. To stop these repetitive messages, you should register the device again with new registration token.
- Cisco IOS XR Release 6.1.1 does not support MAP-E and MAP-T on VSM
- 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 Release 6.0, A9K-RSP-4G, A9K-RSP-8G and the ASR 9000 Ethernet Line Cards also known as the first generation ASR 9000 LCs are not supported. For a detailed listing, see [End-of-Life and End-of-Sale Notices](#)
- From Release 6.0, the onePK toolkit is not supported.
- The line cards A9K-4X100GE-SE/TR and A9K-8X100GE-SE/TR comply with G.8273.2 Class A performance on 100G ports without breakout. These line cards comply with G.8273.2 Class B performance with 10G breakout.
- 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.
- **Card fan controller, and RSP removal**—For all card removal and replacement (including fabric cards, line cards, fan controller, and RSP) follow the instructions provided by Cisco to avoid impact to traffic. See the *Cisco ASR 9000 Series Aggregation Services Router Getting Started Guide* for procedures.
- 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*.
- Serial Interfaces Out of Order in **show ipv4 interface brief** or **show ipv6 interface brief** command—The show ip interface brief command might display interfaces out of order if different types of serialization are used on the SPA cards.

The serial interfaces are displayed in the show ip interface brief command output in the order shown in the example below:

The ordering is based on:

1. Slot
2. SPA
3. Type
4. T3
5. T3/T1
6. vt15-T1
7. multilink

This may be different from the usual order (as the interfaces appear out of order) for the user who is accustomed to IOS.

Example output:

With multiple cards:

```
Serial0/2/0/1/1/1:0 (t3/t1)
Serial0/2/0/1/2/1:0
Serial0/2/0/1/3/1:0
Serial0/2/0/1/4/1:0
Serial0/2/0/1/5/1:0
Serial0/2/0/1/6/1:0
```

Serial0/2/0/1/7/1:0
Serial0/2/0/1/8/1:0
Serial0/2/0/1/9/1:0
Serial0/2/0/1/10/1:0
Serial0/2/0/1/11/1:0
Serial0/2/0/1/12/1:0
Serial0/2/0/0/1/1/1:0 (vt15)
Serial0/2/0/0/2/1/1:0
Serial0/2/0/0/3/1/1:0
Serial0/2/0/0/4/1/1:0
Serial0/2/0/0/5/1/1:0
Serial0/2/0/0/6/1/1:0
Serial0/2/0/0/7/1/1:0
Serial0/2/0/0/8/1/1:0
Serial0/2/0/0/9/1/1:0
Serial0/2/0/0/10/1/1:0
Serial0/2/0/0/11/1/1:0
Serial0/2/0/0/12/1/1:0
Multilink 0/2/0/0/1
Serial0/2/1/0/1 (t3)
Serial0/2/1/1/1/1:0 (t3/t1)
Serial0/2/1/1/2/1:0
Serial0/2/1/1/3/1:0
Serial0/2/1/1/4/1:0
Serial0/2/1/1/5/1:0
Serial0/2/1/1/6/1:0
Serial0/2/1/1/7/1:0
Serial0/2/1/1/8/1:0
Serial0/2/1/1/9/1:0
Serial0/2/1/1/10/1:0
Serial0/2/1/1/11/1:0
Serial0/2/1/1/12/1:0
Serial0/6/0/1/1/1:0
Serial0/6/0/1/2/1:0
Serial0/6/0/1/3/1:0
Serial0/6/0/1/4/1:0
Serial0/6/0/1/5/1:0
Serial0/6/0/1/6/1:0
Serial0/6/0/1/7/1:0
Serial0/6/0/1/8/1:0
Serial0/6/0/1/9/1:0
Serial0/6/0/1/10/1:0
Serial0/6/0/1/11/1:0
Serial0/6/0/1/12/1:0
Serial0/6/0/0/1/1/1:0
Serial0/6/0/0/2/1/1:0
Serial0/6/0/0/3/1/1:0
Serial0/6/0/0/4/1/1:0
Serial0/6/0/0/5/1/1:0
Serial0/6/0/0/6/1/1:0
Serial0/6/0/0/7/1/1:0
Serial0/6/0/0/8/1/1:0
Serial0/6/0/0/9/1/1:0
Serial0/6/0/0/10/1/1:0
Serial0/6/0/0/11/1/1:0
Serial0/6/0/0/12/1/1:0
Multilink 0/6/0/0/1

```
Serial0/6/1/0/1
Serial0/6/1/1/1/1:0
Serial0/6/1/1/2/1:0
Serial0/6/1/1/3/1:0
Serial0/6/1/1/4/1:0
Serial0/6/1/1/5/1:0
Serial0/6/1/1/6/1:0
Serial0/6/1/1/7/1:0
Serial0/6/1/1/8/1:0
Serial0/6/1/1/9/1:0
Serial0/6/1/1/10/1:0
Serial0/6/1/1/11/1:0
Serial0/6/1/1/12/1:0
```

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.

Caveats

Caveats describe unexpected behavior in Cisco IOS XR Software releases. Severity-1 caveats are the most critical caveats; severity-2 caveats are less critical.

This section contains the caveats for Cisco ASR 9000 Series Aggregation Services Router Software Release 6.6.2 and the Cisco ASR 9000 Series Aggregation Services Router platform.

Cisco IOS XR Caveats

There are no caveats specific to Cisco IOS XR Software Release.

There are no caveats specific to Cisco IOS XR Software Release.

Caveats Specific to the Cisco ASR 9000 Series Router

Bug ID	Headline
CSCvp08519	NP lockup due to RFD leaking with nested GRE Tunnels + SPAN and Netflow
CSCvp46026	Unintended alarm gets raised & cleared on A99-12x100GE/A9K-24X10GE-1G-TR/A9K-48X10GE-1G-TR
CSCvp42030	iedged crash due to auth_attr_hdl corruption
CSCvk56971	SPAN with SRv6 causes NP reset or Loopback unreachable
CSCvp13584	SRv6: traffic is sent with wrong destination SRv6 SID after configure SPAN under core interface

Caveats Specific to the ASR 9001 Router

There are no caveats for ASR 9001 in this release.

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.

Before starting the software upgrade, use the **show install health** command in the admin mode. This command validates if the statuses of all relevant parameters of the system are ready for the software upgrade without interrupting the system. The command is supported in Cisco IOS XR 64-bit OS.

The upgrade document is available along with the software images.

Table 6: Upgrade Document Filename

To upgrade	Refer
Cisco IOS XR software	ASR9000_cXR_System_Upgrade_MOP_6.6.2.pdf
Cisco IOS XR 64 bit software	ASR9K_eXR_Upgrade_MOP_6.6.2.pdf

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](#).

Troubleshooting

For information on troubleshooting Cisco IOS XR Software, see the *Cisco ASR 9000 Series Aggregation Services Routers Getting Started Guide* and the *Cisco ASR 9000 Series Router Troubleshooting Feature Module*

Resolving Upgrade File Issues



Note

In some very rare cases inconsistencies in the content of the internal configuration files can appear. In such situations, to avoid configuration loss during upgrade, the following steps can be optionally done before activating packages:

1. Clear the NVGEN cache:

```
RP/0/RSP0/CPU0:router# run nvgen -F 1
```

2. Create a dummy config commit:

```
RP/0/RSP0/CPU0:router# config
RP/0/RSP0/CPU0:router(config)# hostname <hostname>
RP/0/RSP0/CPU0:router(config)# commit
RP/0/RSP0/CPU0:router(config)# end
```

3. Force a commit update by using the **reload** command. Press **n** when the confirmation prompt appears:

```
RP/0/RSP0/CPU0:router# reload
Updating Commit Database. Please wait...[OK]
Proceed with reload? [confirm]
```

4. Press **n**

In some cases other activity may preclude a reload. The following message may display:

```
RP/0/RSP0/CPU0:router# reload
Preparing system for backup. This may take a few minutes .....System
configuration backup in progress [Retry later]
```

If you receive this message wait and then retry the command after some time.

Related Documentation

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

<https://www.cisco.com/c/en/us/support/routers/asr-9000-series-aggregation-services-routers/products-installation-guides-list.html>

The Cisco IOS XR Software documentation set includes the Cisco IOS XR software configuration guides and command references.

- The configuration guides are located at this URL:

<https://www.cisco.com/c/en/us/support/routers/asr-9000-series-aggregation-services-routers/products-installation-and-configuration-guides-list.html>

- The command reference guides are located at this URL:

<https://www.cisco.com/c/en/us/support/routers/asr-9000-series-aggregation-services-routers/products-command-reference-list.html>

The document containing Cisco IOS XR System Error Messages (SEM) is located at this URL:

https://www.cisco.com/c/en/us/td/docs/ios_xr_sw/error/message/ios-xr-sem-guide.html

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.

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