

Release Notes for Cisco ASR 9000 Series Routers, IOS XR Release 7.10.2

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Revised: March 17, 2025

Release Notes for Cisco ASR 9000 Series Routers, IOS XR Release 7.10.2

IOS XR 64-bit on Cisco ASR 9000 Series is the next generation operating system running in a virtualized environment with an underlying 64-bit Linux kernel. Cisco IOS XR operating system delivers greater agility, automation, and simplicity while reducing the cost of operating the networks.

Note Cisco IOS XR Release 7.10.2 is an Extended Maintenance Release of Cisco IOS XR Release 7.10.1 for Cisco ASR 9000 Series routers. For more details on the Cisco IOS XR release model and associated support, see Guidelines for Cisco IOS XR Software.

Note The support for ISSU on ASR 9000 third-generation line cards will extend only up to Cisco IOS XR Releases 7.10.2.

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

Note Cisco IOS XR Release 7.11.2 is an Extended Maintenance Release of Cisco IOS XR Release 7.11.1 for Cisco ASR 9000 Series routers. For more details on the Cisco IOS XR release model and associated support, see Guidelines for Cisco IOS XR Software.

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

References

For more information about Cisco ASR 9000 Series, see:

- Cisco ASR 9000 Data Sheet listing page
- Migration Guide for Cisco ASR 9000 Series Routers

What's New in Cisco IOS XR Release 7.10.2

Cisco IOS XR Release 7.10.2 is a maintenance release for Cisco ASR 9000 Series routers. There are no new software features or hardware introduced in this release.

For more details on the Cisco IOS XR release model and associated support, see Software Lifecycle Support Statement - IOS XR.

Caveats

Cisco ASR 9000 Series Router Specific Bugs

There are no caveats in this release.

Behavior Changes

Starting with Cisco IOS XR Software Release 7.10.1, you must configure a name server for Smart Licensing deployment options that use HTTPS for communication with Cisco Smart Software Manager (CSSM). If the system cannot validate that the Common Name (CN) in the X.509 server certificate is a Fully Qualified Domain Name (FQDN), communication with CSSM results in an **Error during SSL communication**. See the *Smart Licensing Chapter* in the *System Management Configuration Guide for ASR 9000 Series Routers* for more information and options to bypass the name server configuration.

Supported Packages and System Requirements

Feature Set (Software Images)

Visit the Cisco Software Download page to download the Cisco IOS XR software.

Cisco IOS XR 64 bit

This table lists the feature set matrix (ISO and RPM files) and associated filenames available for the Cisco IOS XR 64 bit 7.10.2 Release supported on the Cisco ASR 9000 Series Aggregation Services Router.

Table 1: Cisco IOS XR 64 bit Software Release 7.10.2 TAR Files

Feature Set	Filename	Description
Cisco IOS XR IP/MPLS Core Software [for RSP and RP systems]	ASR9K-x64-iosxr-px-7.10.2.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 Optics Package • Cisco IOS XR BNG Package • Cisco IOS XR Lawful Intercept Package • Cisco IOS XR Satellite Package • Cisco IOS XR EIGRP Package • Cisco IOS XR ISIS Package • Cisco IOS XR OSPF Package • Cisco IOS XR Service Package
Cisco IOS XR IP/MPLS Core Software 3DES [for RSP and RP systems]	ASR9K-x64-iosxr-px-k9-7.10.2.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 Optics Package • Cisco IOS XR BNG Package • Cisco IOS XR Lawful Intercept Package • Cisco IOS XR Satellite Package • Cisco IOS XR Security Package • Cisco IOS XR EIGRP Package • Cisco IOS XR ISIS Package • Cisco IOS XR OSPF Package • Cisco IOS XR Service Package

Feature Set	Filename	Description
Cisco IOS XR IP Unicast Routing Core Bundle and Migration to IOS XR 64 bit tar image	asr9k-mini-x64-migrate_to_eXR.tar-7.10.2	Contains the required core packages, including OS, Admin, Base,Forwarding, Modular Services Card, Routing, FPD, SNMP Agent, and Alarm Correlation. Contains mini.iso file for XR 64 bit 7.10.1 and additional software for migration to 64 bit.

Table 2: Cisco IOS XR 64 bit Software Release 7.10.2 ISO and RPM Files

Composite Package		
Feature Set	**Filename**	**Description**
Cisco IOS XR IP Unicast Routing Core Bundle	asr9k-mini-x64-7.10.2.iso	Contains the required core packages, including OS, Admin, Base,Forwarding, Modular Services Card, Routing, FPD, SNMP Agent, and Alarm Correlation. The mini iso file is used for upgrading to the new release.
Individually-Installable Optional Packages		
Feature Set	**Filename**	**Description**
Cisco IOS XR 64 bit EIGRP package	asr9k-eigrp-x64-1.0.0.0-r7102.x86_64.rpm	Includes EIGRP protocol support software
Cisco IOS XR BNG Package	asr9k-bng-x64-1.1.0.0-r7102.x86_64.rpm	Includes binaries to support BNG features.
Cisco IOS XR 64 bit ISIS package	asr9k-isis-x64-1.1.0.0-r710.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-r710.x86_64.rpm	Includes OSPF link state protocol support software
Cisco IOS XR Manageability Package	asr9k-mgbl-x64-3.0.0.0-r7102.x86_64.rpm	CORBA2 agent, XML3 Parser, and HTTP server packages. This RPM also contains some SNMP MIB infrastructure. Certain MIBs won't work if this RPM is not installed. IPSLA and environment MIBs are part of the mgbl rpm.
Cisco IOS XR 64 bit MPLS-TE and RSVP package	asr9k-mpls-te-rsvp-x64-1.2.0.0-r7102.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-r7102.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-r7102.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-r7102.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-r7102.x86_64.rpm	Includes LI software images.
Cisco IOS XR Security Package	asr9k-k9sec-x64-3.1.0.0-r7102.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-r7102.x86_64.rpm	Includes RPM to support Cisco ASR9000v Series Router Software and to support Cisco ASR 9000v Series Router as a satellite for Cisco ASR 9000 Series Router
Cisco IOS XR 64 bit Services Package	asr9k-services-x64-1.0.0.0-r7102.x86_64.rpm	Includes RPM to support Cisco IOS XR 64-bit inline MAP-T function

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 7.10.2 consist of the following:

- 32 GB memory on the A99-RP-F
- 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 RP3-X transport optimised (TR) variant and 48 GB memory on the RP3-X 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
- 24 GB memory on the RSP5-X transport optimised (TR) variant and 48 GB memory on the RSP5-X service edge (SE) variant
- 2 GB compact flash on route switch processors (RSPs)
- 8 GB memory on the line cards (LCs) running Cisco IOS XR 64-bit image

Software Compatibility

Cisco IOS XR Software Release 7.10.2 is compatible with the following Cisco ASR 9000 Series Aggregation Services Router systems.

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

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

Determining Installed Packages

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

Cisco IOS XR 64 bit

```
RP/0/RP0/CPU0#show install active summary
Mon Nov 20 08:11:42.112 UTC
Label : 7.10.2

    Active Packages: 18
        asr9k-xr-7.10.2 version=7.10.2 [Boot image]
        asr9k-eigrp-x64-1.0.0.0-r7102
        asr9k-mpls-te-rsvp-x64-1.0.0.0-r7102
```

```
asr9k-mgbl-x64-1.0.0.0-r7102
asr9k-isis-x64-1.0.0.0-r7102
asr9k-9000v-nV-x64-1.0.0.0-r7102
asr9k-bng-x64-1.0.0.0-r7102
asr9k-bng-ipoe-x64-1.0.0.0-r7102
asr9k-m2m-x64-1.0.0.0-r7102
asr9k-optic-x64-1.0.0.0-r7102
asr9k-ospf-x64-1.0.0.0-r7102
asr9k-li-x64-1.0.0.0-r7102
asr9k-mpls-x64-1.0.0.0-r7102
asr9k-bng-supp-x64-1.0.0.0-r7102
asr9k-bng-pppoe-x64-1.0.0.0-r7102
asr9k-mcast-x64-1.0.0.0-r7102
asr9k-k9sec-x64-1.0.0.0-r7102
asr9k-services-x64-1.0.0.0-r7102
```

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.

```
RP/0/RP0/CPU0#show fpd package
Mon Nov 20 08:01:44.121 UTC

================================ ============================================
                                        Field Programmable Device Package
                                 ============================================
                                           Req      SW      Min Req   Min Req
Card Type            FPD Description       Reload   Ver     SW Ver    Board Ver
================== ========================= ====== ======= ======== =========
--------------------------------------------------------------------------------
A99-10X400GE-X-CM    Aldrin-FPGA(A)            YES     1.05      1.05      0.0
                     Beachcomber-0(A)          YES     0.01      0.01      0.0
                     Beachcomber-1(A)          YES     0.01      0.01      0.0
                     CBC(A)                    NO     62.05     62.05      0.0
                     IPU-DDR4(A)               YES     1.06      1.06      0.0
                     Primary-BIOS(A)           YES    25.30     25.30      0.0
                     QDD_0_3                   NO     61.23     61.23      0.0
                     QDD_0_5                   NO     61.23     61.23      0.0
                     QDD_0_6                   NO     61.23     61.23      0.0
                     QDD_0_7                   NO     61.23     61.23      0.0
                     QDD_0_9                   NO     61.23     61.23      0.0
                     Sunstreaker(A)            YES     0.19      0.19      0.0
                     TAMFW-Sunstreaker(A)      YES     2.72      2.72      0.0
                     TimingIC-A                YES     7.216     7.216     0.0
                     TimingIC-B-0              YES     7.216     7.216     0.0
                     TimingIC-B-1              YES     7.216     7.216     0.0
                     Trailbreaker-0(A)         YES     0.24      0.24      0.0
                     Trailbreaker-1(A)         YES     0.24      0.24      0.0
--------------------------------------------------------------------------------
A99-10X400GE-X-SE    Aldrin-FPGA(A)            YES     1.05      1.05      0.0
                     Beachcomber-0(A)          YES     0.01      0.01      0.0
                     Beachcomber-1(A)          YES     0.01      0.01      0.0
                     CBC(A)                    NO     62.05     62.05      0.0
                     IPU-DDR4(A)               YES     1.06      1.06      0.0
                     Primary-BIOS(A)           YES    25.30     25.30      0.0
                     QDD_0_3                   NO     61.23     61.23      0.0
                     QDD_0_5                   NO     61.23     61.23      0.0
                     QDD_0_6                   NO     61.23     61.23      0.0
                     QDD_0_7                   NO     61.23     61.23      0.0
                     QDD_0_9                   NO     61.23     61.23      0.0
                     Sunstreaker(A)            YES     0.19      0.19      0.0
                     TAMFW-Sunstreaker(A)      YES     2.72      2.72      0.0
                     TimingIC-A                YES     7.216     7.216     0.0
                     TimingIC-B-0              YES     7.216     7.216     0.0
                     TimingIC-B-1              YES     7.216     7.216     0.0
                     Trailbreaker-0(A)         YES     0.24      0.24      0.0
                     Trailbreaker-1(A)         YES     0.24      0.24      0.0
--------------------------------------------------------------------------------
A99-10X400GE-X-TR    Aldrin-FPGA(A)            YES     1.05      1.05      0.0
                     Beachcomber-0(A)          YES     0.01      0.01      0.0
                     Beachcomber-1(A)          YES     0.01      0.01      0.0
                     CBC(A)                    NO     62.05     62.05      0.0
                     IPU-DDR4(A)               YES     1.06      1.06      0.0
                     Primary-BIOS(A)           YES    25.30     25.30      0.0
                     QDD_0_3                   NO     61.23     61.23      0.0
                     QDD_0_5                   NO     61.23     61.23      0.0
                     QDD_0_6                   NO     61.23     61.23      0.0
                     QDD_0_7                   NO     61.23     61.23      0.0
                     QDD_0_9                   NO     61.23     61.23      0.0
                     Sunstreaker(A)            YES     0.19      0.19      0.0
```

	TAMFW-Sunstreaker(A)	YES	2.72	2.72	0.0
	TimingIC-A	YES	7.216	7.216	0.0
	TimingIC-B-0	YES	7.216	7.216	0.0
	TimingIC-B-1	YES	7.216	7.216	0.0
	Trailbreaker-0(A)	YES	0.24	0.24	0.0
	Trailbreaker-1(A)	YES	0.24	0.24	0.0
A99-12X100GE	CBC(A)	NO	46.06	46.06	0.1
	IPU-FPGA(A)	YES	1.90	1.90	0.1
	IPU-FSBL(A)	YES	1.113	1.113	0.1
	IPU-Linux(A)	YES	1.113	1.113	0.1
	Morra-0(A)	YES	1.05	1.05	0.1
	Morra-1(A)	YES	1.05	1.05	0.1
	Primary-BIOS(A)	YES	9.33	9.33	0.1
	Sideswipe-0(A)	YES	1.02	1.02	0.1
	Sideswipe-1(A)	YES	1.02	1.02	0.1
A99-12X100GE-CM	CBC(A)	NO	46.06	46.06	0.1
	IPU-FPGA(A)	YES	1.90	1.90	0.1
	IPU-FSBL(A)	YES	1.113	1.113	0.1
	IPU-Linux(A)	YES	1.113	1.113	0.1
	Morra-0(A)	YES	1.05	1.05	0.1
	Morra-1(A)	YES	1.05	1.05	0.1
	Primary-BIOS(A)	YES	9.33	9.33	0.1
	Sideswipe-0(A)	YES	1.02	1.02	0.1
	Sideswipe-1(A)	YES	1.02	1.02	0.1
A99-16X100GE-CM	Aldrin-FPGA(A)	YES	1.05	1.05	0.0
	CBC(A)	NO	48.09	48.09	0.0
	Grapple-0(A)	YES	0.15	0.15	0.0
	IPU-DDR4(A)	YES	1.09	1.09	0.0
	Mixmaster-0(A)	YES	0.13	0.13	0.0
	Primary-BIOS(A)	YES	21.43	21.43	0.0
	Scamper(A)	YES	0.23	0.23	0.0
	Skylynx-0(A)	YES	0.12	0.12	0.0
A99-16X100GE-SE	Aldrin-FPGA(A)	YES	1.05	1.05	0.0
	CBC(A)	NO	48.09	48.09	0.0
	Grapple-0(A)	YES	0.15	0.15	0.0
	IPU-DDR4(A)	YES	1.09	1.09	0.0
	Mixmaster-0(A)	YES	0.13	0.13	0.0
	Primary-BIOS(A)	YES	21.43	21.43	0.0
	Scamper(A)	YES	0.23	0.23	0.0
	Skylynx-0(A)	YES	0.12	0.12	0.0
A99-16X100GE-TR	Aldrin-FPGA(A)	YES	1.05	1.05	0.0
	CBC(A)	NO	48.09	48.09	0.0
	Grapple-0(A)	YES	0.15	0.15	0.0
	IPU-DDR4(A)	YES	1.09	1.09	0.0
	Mixmaster-0(A)	YES	0.13	0.13	0.0
	Primary-BIOS(A)	YES	21.43	21.43	0.0
	Scamper(A)	YES	0.23	0.23	0.0
	Skylynx-0(A)	YES	0.12	0.12	0.0
A99-16X100GE-X-SE	Aldrin-FPGA(A)	YES	1.05	1.05	0.0
	CBC(A)	NO	48.09	48.09	0.0
	Grapple-0(A)	YES	0.15	0.15	0.0
	Grapple-1(A)	YES	0.15	0.15	0.0
	IPU-DDR4(A)	YES	1.09	1.09	0.0
	Mixmaster-0(A)	YES	0.13	0.13	0.0
	Mixmaster-1(A)	YES	0.13	0.13	0.0
	Primary-BIOS(A)	YES	21.43	21.43	0.0
	Scamper(A)	YES	0.23	0.23	0.0
	Skylynx-0(A)	YES	0.12	0.12	0.0

	Skylynx-1(A)	YES	0.12	0.12	0.0
A99-24HG-FLEX-CM	Aldrin-FPGA(A)	YES	1.05	1.05	0.0
	CBC(A)	NO	57.04	57.04	0.0
	Grapple-0(A)	YES	0.15	0.15	0.0
	Grapple-1(A)	YES	0.15	0.15	0.0
	IPU-DDR4(A)	YES	1.18	1.18	0.0
	Mixmaster-0(A)	YES	0.13	0.13	0.0
	Mixmaster-1(A)	YES	0.13	0.13	0.0
	Primary-BIOS(A)	YES	25.30	25.30	0.0
	Skylynx-0(A)	YES	0.12	0.12	0.0
	Skylynx-1(A)	YES	0.12	0.12	0.0
	Sunstreaker(A)	YES	0.19	0.19	0.0
	TAMFW-Sunstreaker(A)	YES	2.72	2.72	0.0
A99-24HG-FLEX-SE	Aldrin-FPGA(A)	YES	1.05	1.05	0.0
	CBC(A)	NO	57.04	57.04	0.0
	Grapple-0(A)	YES	0.15	0.15	0.0
	Grapple-1(A)	YES	0.15	0.15	0.0
	IPU-DDR4(A)	YES	1.18	1.18	0.0
	Mixmaster-0(A)	YES	0.13	0.13	0.0
	Mixmaster-1(A)	YES	0.13	0.13	0.0
	Primary-BIOS(A)	YES	25.30	25.30	0.0
	Skylynx-0(A)	YES	0.12	0.12	0.0
	Skylynx-1(A)	YES	0.12	0.12	0.0
	Sunstreaker(A)	YES	0.19	0.19	0.0
	TAMFW-Sunstreaker(A)	YES	2.72	2.72	0.0
A99-24HG-FLEX-TR	Aldrin-FPGA(A)	YES	1.05	1.05	0.0
	CBC(A)	NO	57.04	57.04	0.0
	Grapple-0(A)	YES	0.15	0.15	0.0
	Grapple-1(A)	YES	0.15	0.15	0.0
	IPU-DDR4(A)	YES	1.18	1.18	0.0
	Mixmaster-0(A)	YES	0.13	0.13	0.0
	Mixmaster-1(A)	YES	0.13	0.13	0.0
	Primary-BIOS(A)	YES	25.30	25.30	0.0
	Skylynx-0(A)	YES	0.12	0.12	0.0
	Skylynx-1(A)	YES	0.12	0.12	0.0
	Sunstreaker(A)	YES	0.19	0.19	0.0
	TAMFW-Sunstreaker(A)	YES	2.72	2.72	0.0
A99-24X10GE-1G-CM	CBC(A)	NO	47.03	47.03	0.1
	IPU-FPGA(A)	YES	1.90	1.90	0.1
	IPU-FSBL(A)	YES	1.113	1.113	0.1
	IPU-Linux(A)	YES	1.113	1.113	0.1
	Leadfoot-0(A)	YES	1.00	1.00	0.1
	Lewis(A)	YES	1.11	1.11	0.1
	Primary-BIOS(A)	YES	18.33	18.33	0.1
A99-24X10GE-1G-SE	CBC(A)	NO	47.03	47.03	0.1
	IPU-FPGA(A)	YES	1.90	1.90	0.1
	IPU-FSBL(A)	YES	1.113	1.113	0.1
	IPU-Linux(A)	YES	1.113	1.113	0.1
	Leadfoot-0(A)	YES	1.00	1.00	0.1
	Lewis(A)	YES	1.11	1.11	0.1
	Primary-BIOS(A)	YES	18.33	18.33	0.1
A99-24X10GE-1G-TR	CBC(A)	NO	47.03	47.03	0.1
	IPU-FPGA(A)	YES	1.90	1.90	0.1
	IPU-FSBL(A)	YES	1.113	1.113	0.1
	IPU-Linux(A)	YES	1.113	1.113	0.1
	Leadfoot-0(A)	YES	1.00	1.00	0.1
	Lewis(A)	YES	1.11	1.11	0.1
	Primary-BIOS(A)	YES	18.33	18.33	0.1

A99-32X100GE-CM	Aldrin-FPGA(A)	YES	1.05	1.05	0.0
	CBC(A)	NO	48.09	48.09	0.0
	Grapple-0(A)	YES	0.15	0.15	0.0
	Grapple-1(A)	YES	0.15	0.15	0.0
	IPU-DDR4(A)	YES	1.09	1.09	0.0
	Mixmaster-0(A)	YES	0.13	0.13	0.0
	Mixmaster-1(A)	YES	0.13	0.13	0.0
	Primary-BIOS(A)	YES	21.43	21.43	0.0
	Scamper(A)	YES	0.23	0.23	0.0
	Skylynx-0(A)	YES	0.12	0.12	0.0
	Skylynx-1(A)	YES	0.12	0.12	0.0
A99-32X100GE-DENS	Aldrin-FPGA(A)	YES	1.05	1.05	0.0
	CBC(A)	NO	57.04	57.04	0.0
	Grapple-0(A)	YES	0.12	0.12	0.0
	Grapple-1(A)	YES	0.12	0.12	0.0
	IPU-DDR4(A)	YES	1.08	1.08	0.0
	Mixmaster-0(A)	YES	0.13	0.13	0.0
	Mixmaster-1(A)	YES	0.13	0.13	0.0
	Primary-BIOS(A)	YES	25.30	25.30	0.0
	Skylynx-0(A)	YES	0.08	0.08	0.0
	Skylynx-1(A)	YES	0.08	0.08	0.0
	Sunstreaker(A)	YES	0.19	0.19	0.0
	TAMFW-Sunstreaker(A)	YES	2.72	2.72	0.0
A99-32X100GE-SE	Aldrin-FPGA(A)	YES	1.05	1.05	0.0
	CBC(A)	NO	48.09	48.09	0.0
	Grapple-0(A)	YES	0.15	0.15	0.0
	Grapple-1(A)	YES	0.15	0.15	0.0
	IPU-DDR4(A)	YES	1.09	1.09	0.0
	Mixmaster-0(A)	YES	0.13	0.13	0.0
	Mixmaster-1(A)	YES	0.13	0.13	0.0
	Primary-BIOS(A)	YES	21.43	21.43	0.0
	Scamper(A)	YES	0.23	0.23	0.0
	Skylynx-0(A)	YES	0.12	0.12	0.0
	Skylynx-1(A)	YES	0.12	0.12	0.0
A99-32X100GE-TR	Aldrin-FPGA(A)	YES	1.05	1.05	0.0
	CBC(A)	NO	48.09	48.09	0.0
	Grapple-0(A)	YES	0.15	0.15	0.0
	Grapple-1(A)	YES	0.15	0.15	0.0
	IPU-DDR4(A)	YES	1.09	1.09	0.0
	Mixmaster-0(A)	YES	0.13	0.13	0.0
	Mixmaster-1(A)	YES	0.13	0.13	0.0
	Primary-BIOS(A)	YES	21.43	21.43	0.0
	Scamper(A)	YES	0.23	0.23	0.0
	Skylynx-0(A)	YES	0.12	0.12	0.0
	Skylynx-1(A)	YES	0.12	0.12	0.0
A99-32X100GE-X-CM	Aldrin-FPGA(A)	YES	1.05	1.05	0.0
	CBC(A)	NO	57.04	57.04	0.0
	Grapple-0(A)	YES	0.15	0.15	0.0
	Grapple-1(A)	YES	0.15	0.15	0.0
	IPU-DDR4(A)	YES	1.18	1.18	0.0
	Mixmaster-0(A)	YES	0.13	0.13	0.0
	Mixmaster-1(A)	YES	0.13	0.13	0.0
	Primary-BIOS(A)	YES	25.30	25.30	0.0
	Skylynx-0(A)	YES	0.12	0.12	0.0
	Skylynx-1(A)	YES	0.12	0.12	0.0
	Sunstreaker(A)	YES	0.19	0.19	0.0
	TAMFW-Sunstreaker(A)	YES	2.72	2.72	0.0
A99-32X100GE-X-SE	Aldrin-FPGA(A)	YES	1.05	1.05	0.0

	CBC(A)	NO	57.04	57.04	0.0
	Grapple-0(A)	YES	0.15	0.15	0.0
	Grapple-1(A)	YES	0.15	0.15	0.0
	IPU-DDR4(A)	YES	1.18	1.18	0.0
	Mixmaster-0(A)	YES	0.13	0.13	0.0
	Mixmaster-1(A)	YES	0.13	0.13	0.0
	Primary-BIOS(A)	YES	25.30	25.30	0.0
	Skylynx-0(A)	YES	0.12	0.12	0.0
	Skylynx-1(A)	YES	0.12	0.12	0.0
	Sunstreaker(A)	YES	0.19	0.19	0.0
	TAMFW-Sunstreaker(A)	YES	2.72	2.72	0.0
A99-32X100GE-X-TR	Aldrin-FPGA(A)	YES	1.05	1.05	0.0
	CBC(A)	NO	57.04	57.04	0.0
	Grapple-0(A)	YES	0.15	0.15	0.0
	Grapple-1(A)	YES	0.15	0.15	0.0
	IPU-DDR4(A)	YES	1.18	1.18	0.0
	Mixmaster-0(A)	YES	0.13	0.13	0.0
	Mixmaster-1(A)	YES	0.13	0.13	0.0
	Primary-BIOS(A)	YES	25.30	25.30	0.0
	Skylynx-0(A)	YES	0.12	0.12	0.0
	Skylynx-1(A)	YES	0.12	0.12	0.0
	Sunstreaker(A)	YES	0.19	0.19	0.0
	TAMFW-Sunstreaker(A)	YES	2.72	2.72	0.0
A99-48X10GE-1G-CM	CBC(A)	NO	47.03	47.03	0.1
	IPU-FPGA(A)	YES	1.90	1.90	0.1
	IPU-FSBL(A)	YES	1.113	1.113	0.1
	IPU-Linux(A)	YES	1.113	1.113	0.1
	Leadfoot-0(A)	YES	1.00	1.00	0.1
	Leadfoot-1(A)	YES	1.00	1.00	0.1
	Lewis(A)	YES	1.11	1.11	0.1
	Primary-BIOS(A)	YES	18.33	18.33	0.1
A99-48X10GE-1G-SE	CBC(A)	NO	47.03	47.03	0.1
	IPU-FPGA(A)	YES	1.90	1.90	0.1
	IPU-FSBL(A)	YES	1.113	1.113	0.1
	IPU-Linux(A)	YES	1.113	1.113	0.1
	Leadfoot-0(A)	YES	1.00	1.00	0.1
	Leadfoot-1(A)	YES	1.00	1.00	0.1
	Lewis(A)	YES	1.11	1.11	0.1
	Primary-BIOS(A)	YES	18.33	18.33	0.1
A99-48X10GE-1G-TR	CBC(A)	NO	47.03	47.03	0.1
	IPU-FPGA(A)	YES	1.90	1.90	0.1
	IPU-FSBL(A)	YES	1.113	1.113	0.1
	IPU-Linux(A)	YES	1.113	1.113	0.1
	Leadfoot-0(A)	YES	1.00	1.00	0.1
	Leadfoot-1(A)	YES	1.00	1.00	0.1
	Lewis(A)	YES	1.11	1.11	0.1
	Primary-BIOS(A)	YES	18.33	18.33	0.1
A99-4HG-FLEX-FC	Aldrin-FPGA(A)	YES	1.05	1.05	0.0
	CBC(A)	NO	63.03	63.03	0.0
	IPU-DDR4(A)	YES	1.05	1.05	0.0
	Moonracer(A)	YES	0.14	0.14	0.0
	Primary-BIOS(A)	YES	25.30	25.30	0.0
	Skywarp-0(A)	YES	0.11	0.11	0.0
	Skywarp-1(A)	YES	0.11	0.11	0.0
	Sunstreaker(A)	YES	0.19	0.19	0.0
	TAMFW-Sunstreaker(A)	YES	2.72	2.72	0.0
	TimingIC-A	YES	7.216	7.216	0.0
	TimingIC-B	YES	7.216	7.216	0.0

A99-4HG-FLEX-SE	Aldrin-FPGA(A)	YES	1.05	1.05	0.0
	CBC(A)	NO	63.03	63.03	0.0
	IPU-DDR4(A)	YES	1.05	1.05	0.0
	Moonracer(A)	YES	0.14	0.14	0.0
	Primary-BIOS(A)	YES	25.30	25.30	0.0
	Skywarp-0(A)	YES	0.11	0.11	0.0
	Skywarp-1(A)	YES	0.11	0.11	0.0
	Sunstreaker(A)	YES	0.19	0.19	0.0
	TAMFW-Sunstreaker(A)	YES	2.72	2.72	0.0
	TimingIC-A	YES	7.216	7.216	0.0
	TimingIC-B	YES	7.216	7.216	0.0
A99-4HG-FLEX-TR	Aldrin-FPGA(A)	YES	1.05	1.05	0.0
	CBC(A)	NO	63.03	63.03	0.0
	IPU-DDR4(A)	YES	1.05	1.05	0.0
	Moonracer(A)	YES	0.14	0.14	0.0
	Primary-BIOS(A)	YES	25.30	25.30	0.0
	Skywarp-0(A)	YES	0.11	0.11	0.0
	Skywarp-1(A)	YES	0.11	0.11	0.0
	Sunstreaker(A)	YES	0.19	0.19	0.0
	TAMFW-Sunstreaker(A)	YES	2.72	2.72	0.0
	TimingIC-A	YES	7.216	7.216	0.0
	TimingIC-B	YES	7.216	7.216	0.0
A99-4X100GE-SE	CBC(A)	NO	38.23	38.23	0.0
	Dalla(A)	YES	1.09	1.09	0.0
	IPU-FPGA(A)	YES	1.99	1.99	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Meldun-0(A)	YES	1.07	1.07	0.0
	Meldun-1(A)	YES	1.07	1.07	0.0
	Primary-BIOS(A)	YES	8.51	8.51	0.0
	CBC(A)	NO	38.23	38.23	0.0
	Dalla(A)	YES	1.09	1.09	0.0
	IPU-FPGA(A)	YES	1.99	1.99	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Meldun-0(A)	YES	1.07	1.07	0.0
	Meldun-1(A)	YES	1.07	1.07	0.0
	Primary-BIOS(A)	YES	8.51	8.51	0.0
A99-4X100GE-SE-TAA	CBC(A)	NO	38.23	38.23	0.0
	Dalla(A)	YES	1.09	1.09	0.0
	IPU-FPGA(A)	YES	1.99	1.99	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Meldun-0(A)	YES	1.07	1.07	0.0
	Meldun-1(A)	YES	1.07	1.07	0.0
	Primary-BIOS(A)	YES	8.51	8.51	0.0
A99-4X100GE-TAA	CBC(A)	NO	38.23	38.23	0.0
	Dalla(A)	YES	1.09	1.09	0.0
	IPU-FPGA(A)	YES	1.99	1.99	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Meldun-0(A)	YES	1.07	1.07	0.0
	Meldun-1(A)	YES	1.07	1.07	0.0
	Primary-BIOS(A)	YES	8.51	8.51	0.0
A99-4X100GE-TR	CBC(A)	NO	38.23	38.23	0.0
	Dalla(A)	YES	1.09	1.09	0.0
	IPU-FPGA(A)	YES	1.99	1.99	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0

	Meldun-0(A)	YES	1.07	1.07	0.0
	Meldun-1(A)	YES	1.07	1.07	0.0
	Primary-BIOS(A)	YES	8.51	8.51	0.0
	CBC(A)	NO	38.23	38.23	0.0
	Dalla(A)	YES	1.09	1.09	0.0
	IPU-FPGA(A)	YES	1.99	1.99	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Meldun-0(A)	YES	1.07	1.07	0.0
	Meldun-1(A)	YES	1.07	1.07	0.0
	Primary-BIOS(A)	YES	8.51	8.51	0.0
A99-4X100GE-TR-TAA	CBC(A)	NO	38.23	38.23	0.0
	Dalla(A)	YES	1.09	1.09	0.0
	IPU-FPGA(A)	YES	1.99	1.99	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Meldun-0(A)	YES	1.07	1.07	0.0
	Meldun-1(A)	YES	1.07	1.07	0.0
	Primary-BIOS(A)	YES	8.51	8.51	0.0
A99-8X100GE-CM	CBC(A)	NO	38.23	38.23	0.0
	Dalla(A)	YES	1.09	1.09	0.0
	IPU-FPGA(A)	YES	1.99	1.99	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Meldun-0(A)	YES	1.07	1.07	0.0
	Meldun-1(A)	YES	1.07	1.07	0.0
	Primary-BIOS(A)	YES	8.51	8.51	0.0
A99-8X100GE-SE	CBC(A)	NO	38.23	38.23	0.0
	Dalla(A)	YES	1.09	1.09	0.0
	IPU-FPGA(A)	YES	1.99	1.99	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Meldun-0(A)	YES	1.07	1.07	0.0
	Meldun-1(A)	YES	1.07	1.07	0.0
	Primary-BIOS(A)	YES	8.51	8.51	0.0
	CBC(A)	NO	38.23	38.23	0.0
	Dalla(A)	YES	1.09	1.09	0.0
	IPU-FPGA(A)	YES	1.99	1.99	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Meldun-0(A)	YES	1.07	1.07	0.0
	Meldun-1(A)	YES	1.07	1.07	0.0
	Primary-BIOS(A)	YES	8.51	8.51	0.0
A99-8X100GE-SE-TAA	CBC(A)	NO	38.23	38.23	0.0
	Dalla(A)	YES	1.09	1.09	0.0
	IPU-FPGA(A)	YES	1.99	1.99	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Meldun-0(A)	YES	1.07	1.07	0.0
	Meldun-1(A)	YES	1.07	1.07	0.0
	Primary-BIOS(A)	YES	8.51	8.51	0.0
A99-8X100GE-TAA	CBC(A)	NO	38.23	38.23	0.0
	Dalla(A)	YES	1.09	1.09	0.0
	IPU-FPGA(A)	YES	1.99	1.99	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Meldun-0(A)	YES	1.07	1.07	0.0
	Meldun-1(A)	YES	1.07	1.07	0.0
	Primary-BIOS(A)	YES	8.51	8.51	0.0

A99-8X100GE-TR	CBC(A)	NO	38.23	38.23	0.0
	Dalla(A)	YES	1.09	1.09	0.0
	IPU-FPGA(A)	YES	1.99	1.99	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Meldun-0(A)	YES	1.07	1.07	0.0
	Meldun-1(A)	YES	1.07	1.07	0.0
	Primary-BIOS(A)	YES	8.51	8.51	0.0
	CBC(A)	NO	38.23	38.23	0.0
	Dalla(A)	YES	1.09	1.09	0.0
	IPU-FPGA(A)	YES	1.99	1.99	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Meldun-0(A)	YES	1.07	1.07	0.0
	Meldun-1(A)	YES	1.07	1.07	0.0
	Primary-BIOS(A)	YES	8.51	8.51	0.0
A99-8X100GE-TR-TAA	CBC(A)	NO	38.23	38.23	0.0
	Dalla(A)	YES	1.09	1.09	0.0
	IPU-FPGA(A)	YES	1.99	1.99	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Meldun-0(A)	YES	1.07	1.07	0.0
	Meldun-1(A)	YES	1.07	1.07	0.0
	Primary-BIOS(A)	YES	8.51	8.51	0.0
A99-RP-F	Aldrin-0-FPGA(A)	YES	1.06	1.06	0.0
	CBC(A)	NO	59.13	59.13	0.0
	Lionheart-FPGA(A)	YES	0.30	0.30	0.0
	Longshot(A)	YES	2.16	2.16	0.0
	Primary-BIOS(A)	YES	33.30	33.30	0.0
	TamFW-Longshot(A)	YES	2.65	2.65	0.0
	TimingIC-A	YES	7.218	7.218	0.0
	Wolfpack-FPGA(A)	YES	0.19	0.19	0.0
A99-RP2-SE	Alpha-FPGA(A)	YES	0.16	0.16	0.0
	CBC-0(A)	NO	35.14	35.14	0.0
	CBC-1(A)	NO	35.14	35.14	0.0
	Cha-FPGA(A)	YES	0.09	0.09	0.0
	IPU-FPGA(A)	YES	0.72	0.72	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Omega-FPGA(A)	YES	0.20	0.20	0.0
	Optimus-FPGA(A)	YES	0.12	0.12	0.0
	Primary-BIOS(A)	YES	14.39	14.39	0.0
A99-RP2-TR	Alpha-FPGA(A)	YES	0.16	0.16	0.0
	CBC-0(A)	NO	35.14	35.14	0.0
	CBC-1(A)	NO	35.14	35.14	0.0
	Cha-FPGA(A)	YES	0.09	0.09	0.0
	IPU-FPGA(A)	YES	0.72	0.72	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Omega-FPGA(A)	YES	0.20	0.20	0.0
	Optimus-FPGA(A)	YES	0.12	0.12	0.0
	Primary-BIOS(A)	YES	14.39	14.39	0.0
A99-RP3-SE	Aldrin-0-FPGA(A)	YES	1.03	1.03	0.0
	Aldrin-1-FPGA(A)	YES	1.00	1.00	0.0
	Beta-FPGA(A)	YES	0.07	0.07	0.0
	CBC-0(A)	NO	51.12	51.12	0.0
	CBC-1(A)	NO	51.12	51.12	0.0
	IPU-DDR4(A)	YES	0.20	0.20	0.0

	Orion-FPGA(A)	YES	0.23	0.23	0.0
	Primary-BIOS(A)	YES	30.36	30.36	0.0
	Zenith-FPGA(A)	YES	0.12	0.12	0.0
A99-RP3-TR	Aldrin-0-FPGA(A)	YES	1.03	1.03	0.0
	Aldrin-1-FPGA(A)	YES	1.00	1.00	0.0
	Beta-FPGA(A)	YES	0.07	0.07	0.0
	CBC-0(A)	NO	51.12	51.12	0.0
	CBC-1(A)	NO	51.12	51.12	0.0
	IPU-DDR4(A)	YES	0.20	0.20	0.0
	Orion-FPGA(A)	YES	0.23	0.23	0.0
	Primary-BIOS(A)	YES	30.36	30.36	0.0
	Zenith-FPGA(A)	YES	0.12	0.12	0.0
A99-RP3-X-SE	Aldrin-0-FPGA(A)	YES	1.00	1.00	0.0
	Aldrin-1-FPGA(A)	YES	32.00	32.00	0.0
	Beta-FPGA(A)	YES	2.02	2.02	0.0
	CBC-0(A)	NO	12.04	12.04	0.0
	CBC-1(A)	NO	51.12	51.12	0.0
	IPU-DDR4(A)	YES	3.03	3.03	0.0
	Orion-FPGA(A)	YES	2.03	2.03	0.0
	Primary-BIOS(A)	YES	35.03	35.03	0.0
	Sigma(A)	YES	3.33	3.33	0.0
	TamFW-Sigma(A)	YES	2.07	2.07	0.0
	TimingIC-A	YES	7.216	7.216	0.0
	Zenith-FPGA(A)	YES	2.07	2.07	0.0
A99-RP3-X-TR	Aldrin-0-FPGA(A)	YES	1.00	1.00	0.0
	Aldrin-1-FPGA(A)	YES	32.00	32.00	0.0
	Beta-FPGA(A)	YES	2.02	2.02	0.0
	CBC-0(A)	NO	12.04	12.04	0.0
	CBC-1(A)	NO	51.12	51.12	0.0
	IPU-DDR4(A)	YES	3.03	3.03	0.0
	Orion-FPGA(A)	YES	2.03	2.03	0.0
	Primary-BIOS(A)	YES	35.03	35.03	0.0
	Sigma(A)	YES	3.33	3.33	0.0
	TamFW-Sigma(A)	YES	2.07	2.07	0.0
	TimingIC-A	YES	7.216	7.216	0.0
	Zenith-FPGA(A)	YES	2.07	2.07	0.0
A99-RSP-SE	Alpha-FPGA(A)	YES	0.16	0.16	0.0
	CBC(A)	NO	43.03	43.03	0.0
	Cha-FPGA(A)	YES	0.09	0.09	0.0
	IPU-FPGA(A)	YES	0.72	0.72	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Omega-FPGA(A)	YES	0.20	0.20	0.0
	Optimus-FPGA(A)	YES	0.12	0.12	0.0
	Primary-BIOS(A)	YES	16.18	16.18	0.0
A99-RSP-TR	Alpha-FPGA(A)	YES	0.16	0.16	0.0
	CBC(A)	NO	43.03	43.03	0.0
	Cha-FPGA(A)	YES	0.09	0.09	0.0
	IPU-FPGA(A)	YES	0.72	0.72	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Omega-FPGA(A)	YES	0.20	0.20	0.0
	Optimus-FPGA(A)	YES	0.12	0.12	0.0
	Primary-BIOS(A)	YES	16.18	16.18	0.0
A99-SFC-S	CBC(A)	NO	44.02	44.02	0.0
	IPU-FPGA(A)	YES	0.37	0.37	0.0
	IPU-FSBL(A)	YES	1.100	1.100	0.0
	IPU-Linux(A)	YES	1.100	1.100	0.0

A99-SFC-T	CBC(A)	NO	44.02	44.02	0.0
	IPU-FPGA(A)	YES	0.37	0.37	0.0
	IPU-FSBL(A)	YES	1.100	1.100	0.0
	IPU-Linux(A)	YES	1.100	1.100	0.0
A99-SFC2	CBC(A)	NO	37.20	37.20	0.0
	IPU-FPGA(A)	YES	0.37	0.37	0.0
	IPU-FSBL(A)	YES	1.100	1.100	0.0
	IPU-Linux(A)	YES	1.100	1.100	0.0
A99-SFC3	CBC(A)	NO	49.03	49.03	0.0
	IPU-DDR4(A)	YES	0.25	0.25	0.0
A99-SFC3-S	CBC(A)	NO	44.02	44.02	0.0
	IPU-DDR4(A)	YES	0.25	0.25	0.0
A99-SFC3-T	CBC(A)	NO	44.02	44.02	0.0
	IPU-DDR4(A)	YES	0.25	0.25	0.0
A9903-20HG-PEC	QDD_1_0	NO	61.23	61.23	0.0
	QDD_1_12	NO	61.23	61.23	0.0
	QDD_1_16	NO	61.23	61.23	0.0
	QDD_1_4	NO	61.23	61.23	0.0
	QDD_1_8	NO	61.23	61.23	0.0
	TimingIC-B-1	YES	7.216	7.216	0.0
A9903-8HG-PEC	TimingIC-B-1	YES	7.216	7.216	0.0
A99L-4X100GE-SE-TAA	CBC(A)	NO	38.23	38.23	0.0
	Dalla(A)	YES	1.09	1.09	0.0
	IPU-FPGA(A)	YES	1.99	1.99	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Meldun-0(A)	YES	1.07	1.07	0.0
	Meldun-1(A)	YES	1.07	1.07	0.0
	Primary-BIOS(A)	YES	8.51	8.51	0.0
A99L-4X100GE-TAA	CBC(A)	NO	38.23	38.23	0.0
	Dalla(A)	YES	1.09	1.09	0.0
	IPU-FPGA(A)	YES	1.99	1.99	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Meldun-0(A)	YES	1.07	1.07	0.0
	Meldun-1(A)	YES	1.07	1.07	0.0
	Primary-BIOS(A)	YES	8.51	8.51	0.0
A99L-4X100GE-TR-TAA	CBC(A)	NO	38.23	38.23	0.0
	Dalla(A)	YES	1.09	1.09	0.0
	IPU-FPGA(A)	YES	1.99	1.99	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Meldun-0(A)	YES	1.07	1.07	0.0
	Meldun-1(A)	YES	1.07	1.07	0.0
	Primary-BIOS(A)	YES	8.51	8.51	0.0
A99L-8X100GE-SE-TAA	CBC(A)	NO	38.23	38.23	0.0
	Dalla(A)	YES	1.09	1.09	0.0
	IPU-FPGA(A)	YES	1.99	1.99	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Meldun-0(A)	YES	1.07	1.07	0.0
	Meldun-1(A)	YES	1.07	1.07	0.0
	Primary-BIOS(A)	YES	8.51	8.51	0.0

A99L-8X100GE-TAA	CBC(A)	NO	38.23	38.23	0.0
	Dalla(A)	YES	1.09	1.09	0.0
	IPU-FPGA(A)	YES	1.99	1.99	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Meldun-0(A)	YES	1.07	1.07	0.0
	Meldun-1(A)	YES	1.07	1.07	0.0
	Primary-BIOS(A)	YES	8.51	8.51	0.0
A99L-8X100GE-TR-TAA	CBC(A)	NO	38.23	38.23	0.0
	Dalla(A)	YES	1.09	1.09	0.0
	IPU-FPGA(A)	YES	1.99	1.99	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Meldun-0(A)	YES	1.07	1.07	0.0
	Meldun-1(A)	YES	1.07	1.07	0.0
	Primary-BIOS(A)	YES	8.51	8.51	0.0
A9K-1600W-AC	PO-PriMCU(A)	NO	17.137	17.137	0.0
A9K-1600W-DC	PO-PriMCU(A)	NO	1.09	1.09	0.0
A9K-16X100GE-CM	Aldrin-FPGA(A)	YES	1.05	1.05	0.0
	CBC(A)	NO	48.09	48.09	0.0
	Grapple-0(A)	YES	0.15	0.15	0.0
	IPU-DDR4(A)	YES	1.09	1.09	0.0
	Mixmaster-0(A)	YES	0.13	0.13	0.0
	Primary-BIOS(A)	YES	21.43	21.43	0.0
	Scamper(A)	YES	0.23	0.23	0.0
	Skylynx-0(A)	YES	0.12	0.12	0.0
A9K-16X100GE-SE	Aldrin-FPGA(A)	YES	1.05	1.05	0.0
	CBC(A)	NO	48.09	48.09	0.0
	Grapple-0(A)	YES	0.15	0.15	0.0
	IPU-DDR4(A)	YES	1.09	1.09	0.0
	Mixmaster-0(A)	YES	0.13	0.13	0.0
	Primary-BIOS(A)	YES	21.43	21.43	0.0
	Scamper(A)	YES	0.23	0.23	0.0
	Skylynx-0(A)	YES	0.12	0.12	0.0
A9K-16X100GE-TR	Aldrin-FPGA(A)	YES	1.05	1.05	0.0
	CBC(A)	NO	48.09	48.09	0.0
	Grapple-0(A)	YES	0.15	0.15	0.0
	IPU-DDR4(A)	YES	1.09	1.09	0.0
	Mixmaster-0(A)	YES	0.13	0.13	0.0
	Primary-BIOS(A)	YES	21.43	21.43	0.0
	Scamper(A)	YES	0.23	0.23	0.0
	Skylynx-0(A)	YES	0.12	0.12	0.0
	Aldrin-FPGA(A)	YES	1.05	1.05	0.0
	CBC(A)	NO	48.09	48.09	0.0
	Grapple-0(A)	YES	0.15	0.15	0.0
	IPU-DDR4(A)	YES	1.09	1.09	0.0
	Mixmaster-0(A)	YES	0.13	0.13	0.0
	Primary-BIOS(A)	YES	21.43	21.43	0.0
	Scamper(A)	YES	0.23	0.23	0.0
	Skylynx-0(A)	YES	0.12	0.12	0.0
A9K-20HG-FLEX-CM	Aldrin-FPGA(A)	YES	1.05	1.05	0.0
	CBC(A)	NO	58.09	58.09	0.0
	IPU-DDR4(A)	YES	1.18	1.18	0.0
	Primary-BIOS(A)	YES	25.30	25.30	0.0
	QDD_0_0	NO	61.23	61.23	0.0
	QDD_0_12	NO	61.23	61.23	0.0

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                    QDD_0_19                  NO     61.23     61.23      0.0
                    QDD_0_7                   NO     61.23     61.23      0.0
                    QDD_0_8                   NO     61.23     61.23      0.0
                    Sunstreaker(A)            YES     0.19      0.19      0.0
                    TAMFW-Sunstreaker(A)      YES     2.72      2.72      0.0
                    TimingIC-A                YES     7.216     7.216     0.0
                    TimingIC-B                YES     7.216     7.216     0.0
                    Trailbreaker-0(A)         YES     0.24      0.24      0.0
                    Trailbreaker-1(A)         YES     0.24      0.24      0.0
                    Windcharger-0(A)          YES     0.08      0.08      0.0
                    Windcharger-1(A)          YES     0.08      0.08      0.0
--------------------------------------------------------------------------------
A9K-20HG-FLEX-SE    Aldrin-FPGA(A)            YES     1.05      1.05      0.0
                    CBC(A)                    NO     58.09     58.09      0.0
                    IPU-DDR4(A)               YES     1.18      1.18      0.0
                    Primary-BIOS(A)           YES    25.30     25.30      0.0
                    QDD_0_0                   NO     61.23     61.23      0.0
                    QDD_0_12                  NO     61.23     61.23      0.0
                    QDD_0_19                  NO     61.23     61.23      0.0
                    QDD_0_7                   NO     61.23     61.23      0.0
                    QDD_0_8                   NO     61.23     61.23      0.0
                    Sunstreaker(A)            YES     0.19      0.19      0.0
                    TAMFW-Sunstreaker(A)      YES     2.72      2.72      0.0
                    TimingIC-A                YES     7.216     7.216     0.0
                    TimingIC-B                YES     7.216     7.216     0.0
                    Trailbreaker-0(A)         YES     0.24      0.24      0.0
                    Trailbreaker-1(A)         YES     0.24      0.24      0.0
                    Windcharger-0(A)          YES     0.08      0.08      0.0
                    Windcharger-1(A)          YES     0.08      0.08      0.0
--------------------------------------------------------------------------------
A9K-20HG-FLEX-TR    Aldrin-FPGA(A)            YES     1.05      1.05      0.0
                    CBC(A)                    NO     58.09     58.09      0.0
                    IPU-DDR4(A)               YES     1.18      1.18      0.0
                    Primary-BIOS(A)           YES    25.30     25.30      0.0
                    QDD_0_0                   NO     61.23     61.23      0.0
                    QDD_0_12                  NO     61.23     61.23      0.0
                    QDD_0_19                  NO     61.23     61.23      0.0
                    QDD_0_7                   NO     61.23     61.23      0.0
                    QDD_0_8                   NO     61.23     61.23      0.0
                    Sunstreaker(A)            YES     0.19      0.19      0.0
                    TAMFW-Sunstreaker(A)      YES     2.72      2.72      0.0
                    TimingIC-A                YES     7.216     7.216     0.0
                    TimingIC-B                YES     7.216     7.216     0.0
                    Trailbreaker-0(A)         YES     0.24      0.24      0.0
                    Trailbreaker-1(A)         YES     0.24      0.24      0.0
                    Windcharger-0(A)          YES     0.08      0.08      0.0
                    Windcharger-1(A)          YES     0.08      0.08      0.0
--------------------------------------------------------------------------------
A9K-24X10GE-1G-CM   CBC(A)                    NO     47.03     47.03      0.1
                    IPU-FPGA(A)               YES     1.90      1.90      0.1
                    IPU-FSBL(A)               YES     1.113     1.113     0.1
                    IPU-Linux(A)              YES     1.113     1.113     0.1
                    Leadfoot-0(A)             YES     1.00      1.00      0.1
                    Lewis(A)                  YES     1.11      1.11      0.1
                    Primary-BIOS(A)           YES    18.33     18.33      0.1
--------------------------------------------------------------------------------
A9K-24X10GE-1G-SE   CBC(A)                    NO     47.03     47.03      0.1
                    IPU-FPGA(A)               YES     1.90      1.90      0.1
                    IPU-FSBL(A)               YES     1.113     1.113     0.1
                    IPU-Linux(A)              YES     1.113     1.113     0.1
                    Leadfoot-0(A)             YES     1.00      1.00      0.1
                    Lewis(A)                  YES     1.11      1.11      0.1
                    Primary-BIOS(A)           YES    18.33     18.33      0.1
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A9K-24X10GE-1G-TR    CBC(A)                    NO     47.03     47.03      0.1
                     IPU-FPGA(A)               YES     1.90      1.90      0.1
                     IPU-FSBL(A)               YES     1.113     1.113     0.1
                     IPU-Linux(A)              YES     1.113     1.113     0.1
                     Leadfoot-0(A)             YES     1.00      1.00      0.1
                     Lewis(A)                  YES     1.11      1.11      0.1
                     Primary-BIOS(A)           YES    18.33     18.33      0.1
-------------------------------------------------------------------------------
A9K-400G-DWDM-TR     CBC(A)                    NO     42.04     42.04      0.0
                     CFP2-0                    NO      5.54      5.54      0.1
                     CFP2-1                    NO      5.54      5.54      0.1
                     Doran(A)                  YES     1.05      1.05      0.0
                     ETNA-0                    NO      3.78      3.78      0.1
                     ETNA-1                    NO      3.78      3.78      0.1
                     Frenzy(A)                 YES    49.00     49.00      0.0
                     IPU-FPGA(A)               YES     1.97      1.97      0.1
                     IPU-FSBL(A)               YES     1.103     1.103     0.1
                     IPU-Linux(A)              YES     1.103     1.103     0.1
                     Martell(A)                YES     1.03      1.03      0.0
                     Meldun(A)                 YES     1.07      1.07      0.1
                     Primary-BIOS(A)           YES     8.51      8.51      0.1
-------------------------------------------------------------------------------
A9K-400GE-LSP        Aldrin-FPGA(A)            YES     1.05      1.05      0.0
                     CBC(A)                    NO     63.03     63.03      0.0
                     IPU-DDR4(A)               YES     1.05      1.05      0.0
                     Moonracer(A)              YES     0.14      0.14      0.0
                     Primary-BIOS(A)           YES    25.30     25.30      0.0
                     Skywarp-0(A)              YES     0.11      0.11      0.0
                     Skywarp-1(A)              YES     0.11      0.11      0.0
                     Sunstreaker(A)            YES     0.19      0.19      0.0
                     TAMFW-Sunstreaker(A)      YES     2.72      2.72      0.0
-------------------------------------------------------------------------------
A9K-48X10GE-1G-CM    CBC(A)                    NO     47.03     47.03      0.1
                     IPU-FPGA(A)               YES     1.90      1.90      0.1
                     IPU-FSBL(A)               YES     1.113     1.113     0.1
                     IPU-Linux(A)              YES     1.113     1.113     0.1
                     Leadfoot-0(A)             YES     1.00      1.00      0.1
                     Leadfoot-1(A)             YES     1.00      1.00      0.1
                     Lewis(A)                  YES     1.11      1.11      0.1
                     Primary-BIOS(A)           YES    18.33     18.33      0.1
-------------------------------------------------------------------------------
A9K-48X10GE-1G-SE    CBC(A)                    NO     47.03     47.03      0.1
                     IPU-FPGA(A)               YES     1.90      1.90      0.1
                     IPU-FSBL(A)               YES     1.113     1.113     0.1
                     IPU-Linux(A)              YES     1.113     1.113     0.1
                     Leadfoot-0(A)             YES     1.00      1.00      0.1
                     Leadfoot-1(A)             YES     1.00      1.00      0.1
                     Lewis(A)                  YES     1.11      1.11      0.1
                     Primary-BIOS(A)           YES    18.33     18.33      0.1
-------------------------------------------------------------------------------
A9K-48X10GE-1G-TR    CBC(A)                    NO     47.03     47.03      0.1
                     IPU-FPGA(A)               YES     1.90      1.90      0.1
                     IPU-FSBL(A)               YES     1.113     1.113     0.1
                     IPU-Linux(A)              YES     1.113     1.113     0.1
                     Leadfoot-0(A)             YES     1.00      1.00      0.1
                     Leadfoot-1(A)             YES     1.00      1.00      0.1
                     Lewis(A)                  YES     1.11      1.11      0.1
                     Primary-BIOS(A)           YES    18.33     18.33      0.1
-------------------------------------------------------------------------------
A9K-4HG-FLEX-FC      Aldrin-FPGA(A)            YES     1.05      1.05      0.0
                     CBC(A)                    NO     63.03     63.03      0.0
                     IPU-DDR4(A)               YES     1.05      1.05      0.0
                     Moonracer(A)              YES     0.14      0.14      0.0
                     Primary-BIOS(A)           YES    25.30     25.30      0.0
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	Skywarp-0(A)	YES	0.11	0.11	0.0
	Skywarp-1(A)	YES	0.11	0.11	0.0
	Sunstreaker(A)	YES	0.19	0.19	0.0
	TAMFW-Sunstreaker(A)	YES	2.72	2.72	0.0
	TimingIC-A	YES	7.216	7.216	0.0
	TimingIC-B	YES	7.216	7.216	0.0
A9K-4HG-FLEX-SE	Aldrin-FPGA(A)	YES	1.05	1.05	0.0
	CBC(A)	NO	63.03	63.03	0.0
	IPU-DDR4(A)	YES	1.05	1.05	0.0
	Moonracer(A)	YES	0.14	0.14	0.0
	Primary-BIOS(A)	YES	25.30	25.30	0.0
	Skywarp-0(A)	YES	0.11	0.11	0.0
	Skywarp-1(A)	YES	0.11	0.11	0.0
	Sunstreaker(A)	YES	0.19	0.19	0.0
	TAMFW-Sunstreaker(A)	YES	2.72	2.72	0.0
	TimingIC-A	YES	7.216	7.216	0.0
	TimingIC-B	YES	7.216	7.216	0.0
A9K-4HG-FLEX-TR	Aldrin-FPGA(A)	YES	1.05	1.05	0.0
	CBC(A)	NO	63.03	63.03	0.0
	IPU-DDR4(A)	YES	1.05	1.05	0.0
	Moonracer(A)	YES	0.14	0.14	0.0
	Primary-BIOS(A)	YES	25.30	25.30	0.0
	Skywarp-0(A)	YES	0.11	0.11	0.0
	Skywarp-1(A)	YES	0.11	0.11	0.0
	Sunstreaker(A)	YES	0.19	0.19	0.0
	TAMFW-Sunstreaker(A)	YES	2.72	2.72	0.0
	TimingIC-A	YES	7.216	7.216	0.0
	TimingIC-B	YES	7.216	7.216	0.0
A9K-4X100GE	CBC(A)	NO	46.06	46.06	0.1
	IPU-FPGA(A)	YES	1.90	1.90	0.1
	IPU-FSBL(A)	YES	1.113	1.113	0.1
	IPU-Linux(A)	YES	1.113	1.113	0.1
	Morra-0(A)	YES	1.05	1.05	0.1
	Primary-BIOS(A)	YES	9.33	9.33	0.1
	Sideswipe-0(A)	YES	1.02	1.02	0.1
A9K-4X100GE-SE	CBC(A)	NO	38.23	38.23	0.0
	Dalla(A)	YES	1.09	1.09	0.0
	IPU-FPGA(A)	YES	1.99	1.99	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Meldun-0(A)	YES	1.07	1.07	0.0
	Meldun-1(A)	YES	1.07	1.07	0.0
	Primary-BIOS(A)	YES	8.51	8.51	0.0
	CBC(A)	NO	38.23	38.23	0.0
	Dalla(A)	YES	1.09	1.09	0.0
	IPU-FPGA(A)	YES	1.99	1.99	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Meldun-0(A)	YES	1.07	1.07	0.0
	Meldun-1(A)	YES	1.07	1.07	0.0
	Primary-BIOS(A)	YES	8.51	8.51	0.0
A9K-4X100GE-SE-TAA	CBC(A)	NO	38.23	38.23	0.0
	Dalla(A)	YES	1.09	1.09	0.0
	IPU-FPGA(A)	YES	1.99	1.99	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Meldun-0(A)	YES	1.07	1.07	0.0
	Meldun-1(A)	YES	1.07	1.07	0.0
	Primary-BIOS(A)	YES	8.51	8.51	0.0

A9K-4X100GE-TAA	CBC(A)	NO	38.23	38.23	0.0
	Dalla(A)	YES	1.09	1.09	0.0
	IPU-FPGA(A)	YES	1.99	1.99	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Meldun-0(A)	YES	1.07	1.07	0.0
	Meldun-1(A)	YES	1.07	1.07	0.0
	Primary-BIOS(A)	YES	8.51	8.51	0.0
A9K-4X100GE-TR	CBC(A)	NO	38.23	38.23	0.0
	Dalla(A)	YES	1.09	1.09	0.0
	IPU-FPGA(A)	YES	1.99	1.99	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Meldun-0(A)	YES	1.07	1.07	0.0
	Meldun-1(A)	YES	1.07	1.07	0.0
	Primary-BIOS(A)	YES	8.51	8.51	0.0
	CBC(A)	NO	38.23	38.23	0.0
	Dalla(A)	YES	1.09	1.09	0.0
	IPU-FPGA(A)	YES	1.99	1.99	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Meldun-0(A)	YES	1.07	1.07	0.0
	Meldun-1(A)	YES	1.07	1.07	0.0
	Primary-BIOS(A)	YES	8.51	8.51	0.0
A9K-4X100GE-TR-TAA	CBC(A)	NO	38.23	38.23	0.0
	Dalla(A)	YES	1.09	1.09	0.0
	IPU-FPGA(A)	YES	1.99	1.99	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Meldun-0(A)	YES	1.07	1.07	0.0
	Meldun-1(A)	YES	1.07	1.07	0.0
	Primary-BIOS(A)	YES	8.51	8.51	0.0
A9K-4X100GE-TR-V2	Aldrin-FPGA(A)	YES	1.05	1.05	0.0
	CBC(A)	NO	48.09	48.09	0.0
	Grapple-0(A)	YES	0.15	0.15	0.0
	IPU-DDR4(A)	YES	1.09	1.09	0.0
	Mixmaster-0(A)	YES	0.13	0.13	0.0
	Primary-BIOS(A)	YES	21.43	21.43	0.0
	Scamper(A)	YES	0.23	0.23	0.0
	Skylynx-0(A)	YES	0.12	0.12	0.0
A9K-8HG-FLEX-CM	Aldrin-FPGA(A)	YES	1.05	1.05	0.0
	CBC(A)	NO	58.09	58.09	0.0
	IPU-DDR4(A)	YES	1.18	1.18	0.0
	Primary-BIOS(A)	YES	25.30	25.30	0.0
	QDD_0_0	NO	61.23	61.23	0.0
	QDD_0_7	NO	61.23	61.23	0.0
	Sunstreaker(A)	YES	0.19	0.19	0.0
	TAMFW-Sunstreaker(A)	YES	2.72	2.72	0.0
	TimingIC-A	YES	7.216	7.216	0.0
	TimingIC-B	YES	7.216	7.216	0.0
	Trailbreaker-0(A)	YES	0.24	0.24	0.0
	Windcharger-0(A)	YES	0.08	0.08	0.0
A9K-8HG-FLEX-SE	Aldrin-FPGA(A)	YES	1.05	1.05	0.0
	CBC(A)	NO	58.09	58.09	0.0
	IPU-DDR4(A)	YES	1.18	1.18	0.0
	Primary-BIOS(A)	YES	25.30	25.30	0.0
	QDD_0_0	NO	61.23	61.23	0.0
	QDD_0_7	NO	61.23	61.23	0.0

	Sunstreaker(A)	YES	0.19	0.19	0.0
	TAMFW-Sunstreaker(A)	YES	2.72	2.72	0.0
	TimingIC-A	YES	7.216	7.216	0.0
	TimingIC-B	YES	7.216	7.216	0.0
	Trailbreaker-0(A)	YES	0.24	0.24	0.0
	Windcharger-0(A)	YES	0.08	0.08	0.0
A9K-8HG-FLEX-TR	Aldrin-FPGA(A)	YES	1.05	1.05	0.0
	CBC(A)	NO	58.09	58.09	0.0
	IPU-DDR4(A)	YES	1.18	1.18	0.0
	Primary-BIOS(A)	YES	25.30	25.30	0.0
	QDD_0_0	NO	61.23	61.23	0.0
	QDD_0_7	NO	61.23	61.23	0.0
	Sunstreaker(A)	YES	0.19	0.19	0.0
	TAMFW-Sunstreaker(A)	YES	2.72	2.72	0.0
	TimingIC-A	YES	7.216	7.216	0.0
	TimingIC-B	YES	7.216	7.216	0.0
	Trailbreaker-0(A)	YES	0.24	0.24	0.0
	Windcharger-0(A)	YES	0.08	0.08	0.0
A9K-8X100GE-CM	CBC(A)	NO	38.23	38.23	0.0
	Dalla(A)	YES	1.09	1.09	0.0
	IPU-FPGA(A)	YES	1.99	1.99	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Meldun-0(A)	YES	1.07	1.07	0.0
	Meldun-1(A)	YES	1.07	1.07	0.0
	Primary-BIOS(A)	YES	8.51	8.51	0.0
A9K-8X100GE-L-SE	CBC(A)	NO	38.23	38.23	0.0
	Dalla(A)	YES	1.09	1.09	0.0
	IPU-FPGA(A)	YES	1.99	1.99	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Meldun-0(A)	YES	1.07	1.07	0.0
	Meldun-1(A)	YES	1.07	1.07	0.0
	Primary-BIOS(A)	YES	8.51	8.51	0.0
A9K-8X100GE-L-TAA	CBC(A)	NO	38.23	38.23	0.0
	Dalla(A)	YES	1.09	1.09	0.0
	IPU-FPGA(A)	YES	1.99	1.99	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Meldun-0(A)	YES	1.07	1.07	0.0
	Meldun-1(A)	YES	1.07	1.07	0.0
	Primary-BIOS(A)	YES	8.51	8.51	0.0
A9K-8X100GE-L-TR	CBC(A)	NO	38.23	38.23	0.0
	Dalla(A)	YES	1.09	1.09	0.0
	IPU-FPGA(A)	YES	1.99	1.99	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Meldun-0(A)	YES	1.07	1.07	0.0
	Meldun-1(A)	YES	1.07	1.07	0.0
	Primary-BIOS(A)	YES	8.51	8.51	0.0
A9K-8X100GE-SE	CBC(A)	NO	38.23	38.23	0.0
	Dalla(A)	YES	1.09	1.09	0.0
	IPU-FPGA(A)	YES	1.99	1.99	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Meldun-0(A)	YES	1.07	1.07	0.0
	Meldun-1(A)	YES	1.07	1.07	0.0
	Primary-BIOS(A)	YES	8.51	8.51	0.0

A9K-8X100GE-SE-TAA	CBC(A)	NO	38.23	38.23	0.0
	Dalla(A)	YES	1.09	1.09	0.0
	IPU-FPGA(A)	YES	1.99	1.99	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Meldun-0(A)	YES	1.07	1.07	0.0
	Meldun-1(A)	YES	1.07	1.07	0.0
	Primary-BIOS(A)	YES	8.51	8.51	0.0
A9K-8X100GE-TAA	CBC(A)	NO	38.23	38.23	0.0
	Dalla(A)	YES	1.09	1.09	0.0
	IPU-FPGA(A)	YES	1.99	1.99	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Meldun-0(A)	YES	1.07	1.07	0.0
	Meldun-1(A)	YES	1.07	1.07	0.0
	Primary-BIOS(A)	YES	8.51	8.51	0.0
A9K-8X100GE-TR	CBC(A)	NO	38.23	38.23	0.0
	Dalla(A)	YES	1.09	1.09	0.0
	IPU-FPGA(A)	YES	1.99	1.99	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Meldun-0(A)	YES	1.07	1.07	0.0
	Meldun-1(A)	YES	1.07	1.07	0.0
	Primary-BIOS(A)	YES	8.51	8.51	0.0
A9K-8X100GE-TR-TAA	CBC(A)	NO	38.23	38.23	0.0
	Dalla(A)	YES	1.09	1.09	0.0
	IPU-FPGA(A)	YES	1.99	1.99	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Meldun-0(A)	YES	1.07	1.07	0.0
	Meldun-1(A)	YES	1.07	1.07	0.0
	Primary-BIOS(A)	YES	8.51	8.51	0.0
A9K-8X100GE-X-CM	Aldrin-FPGA(A)	YES	1.05	1.05	0.0
	CBC(A)	NO	48.09	48.09	0.0
	Grapple-0(A)	YES	0.15	0.15	0.0
	IPU-DDR4(A)	YES	1.09	1.09	0.0
	Mixmaster-0(A)	YES	0.13	0.13	0.0
	Primary-BIOS(A)	YES	21.43	21.43	0.0
	Scamper(A)	YES	0.23	0.23	0.0
	Skylynx-0(A)	YES	0.12	0.12	0.0
A9K-8X100GE-X-SE	Aldrin-FPGA(A)	YES	1.05	1.05	0.0
	CBC(A)	NO	48.09	48.09	0.0
	Grapple-0(A)	YES	0.15	0.15	0.0
	IPU-DDR4(A)	YES	1.09	1.09	0.0
	Mixmaster-0(A)	YES	0.13	0.13	0.0
	Primary-BIOS(A)	YES	21.43	21.43	0.0
	Scamper(A)	YES	0.23	0.23	0.0
	Skylynx-0(A)	YES	0.12	0.12	0.0
A9K-8X100GE-X-TR	Aldrin-FPGA(A)	YES	1.05	1.05	0.0
	CBC(A)	NO	48.09	48.09	0.0
	Grapple-0(A)	YES	0.15	0.15	0.0
	IPU-DDR4(A)	YES	1.09	1.09	0.0
	Mixmaster-0(A)	YES	0.13	0.13	0.0
	Primary-BIOS(A)	YES	21.43	21.43	0.0
	Scamper(A)	YES	0.23	0.23	0.0
	Skylynx-0(A)	YES	0.12	0.12	0.0
	Aldrin-FPGA(A)	YES	1.05	1.05	0.0

	CBC(A)	NO	48.09	48.09	0.0
	Grapple-0(A)	YES	0.15	0.15	0.0
	IPU-DDR4(A)	YES	1.09	1.09	0.0
	Mixmaster-0(A)	YES	0.13	0.13	0.0
	Primary-BIOS(A)	YES	21.43	21.43	0.0
	Scamper(A)	YES	0.23	0.23	0.0
	Skylynx-0(A)	YES	0.12	0.12	0.0
A9K-8X100GE-X2-CM	Aldrin-FPGA(A)	YES	1.05	1.05	0.0
	CBC(A)	NO	58.09	58.09	0.0
	Grapple-0(A)	YES	0.15	0.15	0.0
	IPU-DDR4(A)	YES	1.18	1.18	0.0
	Mixmaster-0(A)	YES	0.13	0.13	0.0
	Primary-BIOS(A)	YES	25.30	25.30	0.0
	Skylynx-0(A)	YES	0.12	0.12	0.0
	Sunstreaker(A)	YES	0.19	0.19	0.0
	TAMFW-Sunstreaker(A)	YES	2.72	2.72	0.0
A9K-8X100GE-X2-SE	Aldrin-FPGA(A)	YES	1.05	1.05	0.0
	CBC(A)	NO	58.09	58.09	0.0
	Grapple-0(A)	YES	0.15	0.15	0.0
	IPU-DDR4(A)	YES	1.18	1.18	0.0
	Mixmaster-0(A)	YES	0.13	0.13	0.0
	Primary-BIOS(A)	YES	25.30	25.30	0.0
	Skylynx-0(A)	YES	0.12	0.12	0.0
	Sunstreaker(A)	YES	0.19	0.19	0.0
	TAMFW-Sunstreaker(A)	YES	2.72	2.72	0.0
A9K-8X100GE-X2-TR	Aldrin-FPGA(A)	YES	1.05	1.05	0.0
	CBC(A)	NO	58.09	58.09	0.0
	Grapple-0(A)	YES	0.15	0.15	0.0
	IPU-DDR4(A)	YES	1.18	1.18	0.0
	Mixmaster-0(A)	YES	0.13	0.13	0.0
	Primary-BIOS(A)	YES	25.30	25.30	0.0
	Skylynx-0(A)	YES	0.12	0.12	0.0
	Sunstreaker(A)	YES	0.19	0.19	0.0
	TAMFW-Sunstreaker(A)	YES	2.72	2.72	0.0
A9K-8X100GELSE-TAA	CBC(A)	NO	38.23	38.23	0.0
	Dalla(A)	YES	1.09	1.09	0.0
	IPU-FPGA(A)	YES	1.99	1.99	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Meldun-0(A)	YES	1.07	1.07	0.0
	Meldun-1(A)	YES	1.07	1.07	0.0
	Primary-BIOS(A)	YES	8.51	8.51	0.0
A9K-8X100GELTR-TAA	CBC(A)	NO	38.23	38.23	0.0
	Dalla(A)	YES	1.09	1.09	0.0
	IPU-FPGA(A)	YES	1.99	1.99	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Meldun-0(A)	YES	1.07	1.07	0.0
	Meldun-1(A)	YES	1.07	1.07	0.0
	Primary-BIOS(A)	YES	8.51	8.51	0.0
A9K-MOD200-CM	Blaster(A)	YES	1.27	1.27	0.1
	CBC(A)	NO	39.09	39.09	0.1
	IPU-FPGA(A)	YES	1.97	1.97	0.1
	IPU-FSBL(A)	YES	1.103	1.103	0.1
	IPU-Linux(A)	YES	1.103	1.103	0.1
	Primary-BIOS(A)	YES	8.51	8.51	0.1
A9K-MOD200-SE	Blaster(A)	YES	1.27	1.27	0.1

	CBC(A)	NO	39.09	39.09	0.1
	IPU-FPGA(A)	YES	1.97	1.97	0.1
	IPU-FSBL(A)	YES	1.103	1.103	0.1
	IPU-Linux(A)	YES	1.103	1.103	0.1
	Primary-BIOS(A)	YES	8.51	8.51	0.1
A9K-MOD200-TR	Blaster(A)	YES	1.27	1.27	0.1
	CBC(A)	NO	39.09	39.09	0.1
	IPU-FPGA(A)	YES	1.97	1.97	0.1
	IPU-FSBL(A)	YES	1.103	1.103	0.1
	IPU-Linux(A)	YES	1.103	1.103	0.1
	Primary-BIOS(A)	YES	8.51	8.51	0.1
A9K-MOD400-CM	Blaster(A)	YES	1.27	1.27	0.1
	CBC(A)	NO	39.09	39.09	0.1
	IPU-FPGA(A)	YES	1.97	1.97	0.1
	IPU-FSBL(A)	YES	1.103	1.103	0.1
	IPU-Linux(A)	YES	1.103	1.103	0.1
	Primary-BIOS(A)	YES	8.51	8.51	0.1
A9K-MOD400-SE	Blaster(A)	YES	1.27	1.27	0.1
	CBC(A)	NO	39.09	39.09	0.1
	IPU-FPGA(A)	YES	1.97	1.97	0.1
	IPU-FSBL(A)	YES	1.103	1.103	0.1
	IPU-Linux(A)	YES	1.103	1.103	0.1
	Primary-BIOS(A)	YES	8.51	8.51	0.1
A9K-MOD400-TR	Blaster(A)	YES	1.27	1.27	0.1
	CBC(A)	NO	39.09	39.09	0.1
	IPU-FPGA(A)	YES	1.97	1.97	0.1
	IPU-FSBL(A)	YES	1.103	1.103	0.1
	IPU-Linux(A)	YES	1.103	1.103	0.1
	Primary-BIOS(A)	YES	8.51	8.51	0.1
A9K-MPA-1X100GE	CFP2-DCO-0	NO	38.26887	38.26887	0.1
	CFP2-DCO-B0-0	NO	38.26887	38.26887	0.1
	Springer	YES	1.04	1.04	0.1
A9K-MPA-1X200GE	CFP2-DCO-0	NO	38.26887	38.26887	0.1
	CFP2-DCO-B0-0	NO	38.26887	38.26887	0.1
	Springer	YES	1.04	1.04	0.1
A9K-MPA-1X40GE	Sage	YES	1.03	1.03	0.1
A9K-MPA-20X10GE	Skyquake	YES	1.16	1.16	0.1
A9K-MPA-20X1GE	Gambit	YES	1.01	1.01	0.1
A9K-MPA-2X100GE	CFP2-DCO-0	NO	38.26887	38.26887	0.1
	CFP2-DCO-1	NO	38.26887	38.26887	0.1
	CFP2-DCO-B0-0	NO	38.26887	38.26887	0.1
	CFP2-DCO-B0-1	NO	38.26887	38.26887	0.1
	Springer	YES	1.04	1.04	0.1
A9K-MPA-2X10GE	Rogue	YES	1.06	1.06	0.1
A9K-MPA-2X40GE	Sage	YES	1.03	1.03	0.1
A9K-MPA-32X1GE	Antman	YES	1.09	1.09	0.1
A9K-MPA-4X10GE	Rogue	YES	1.06	1.06	0.1
A9K-MPA-8X10GE	Pixie	YES	1.09	1.09	0.1

A9K-MPA20X10GE-CM	Skyquake	YES	1.16	1.16	0.1
A9K-MPA2X100GE-CM	CFP2-DCO-0	NO	38.26887	38.26887	0.1
	CFP2-DCO-1	NO	38.26887	38.26887	0.1
	CFP2-DCO-B0-0	NO	38.26887	38.26887	0.1
	CFP2-DCO-B0-1	NO	38.26887	38.26887	0.1
	Springer	YES	1.04	1.04	0.1
A9K-RSP5-SE	Aldrin-0-FPGA(A)	YES	1.06	1.06	0.0
	Beta-FPGA(A)	YES	0.07	0.07	0.0
	CBC(A)	NO	53.10	53.10	0.0
	IPU-DDR4(A)	YES	0.20	0.20	0.0
	Orion-FPGA(A)	YES	0.23	0.23	0.0
	Primary-BIOS(A)	YES	31.36	31.36	0.0
	Zenith-FPGA(A)	YES	0.12	0.12	0.0
A9K-RSP5-TR	Aldrin-0-FPGA(A)	YES	1.06	1.06	0.0
	Beta-FPGA(A)	YES	0.07	0.07	0.0
	CBC(A)	NO	53.10	53.10	0.0
	IPU-DDR4(A)	YES	0.20	0.20	0.0
	Orion-FPGA(A)	YES	0.23	0.23	0.0
	Primary-BIOS(A)	YES	31.36	31.36	0.0
	Zenith-FPGA(A)	YES	0.12	0.12	0.0
A9K-RSP5-X-SE	Aldrin-0-FPGA(A)	YES	51.00	51.00	0.0
	Beta-FPGA(A)	YES	2.02	2.02	0.0
	CBC(A)	NO	14.04	14.04	0.0
	IPU-DDR4(A)	YES	3.03	3.03	0.0
	Orion-FPGA(A)	YES	2.03	2.03	0.0
	Primary-BIOS(A)	YES	35.03	35.03	0.0
	Sigma(A)	YES	3.33	3.33	0.0
	TamFW-Sigma(A)	YES	2.07	2.07	0.0
	TimingIC-A	YES	7.216	7.216	0.0
	Zenith-FPGA(A)	YES	2.07	2.07	0.0
A9K-RSP5-X-TR	Aldrin-0-FPGA(A)	YES	51.00	51.00	0.0
	Beta-FPGA(A)	YES	2.02	2.02	0.0
	CBC(A)	NO	14.04	14.04	0.0
	IPU-DDR4(A)	YES	3.03	3.03	0.0
	Orion-FPGA(A)	YES	2.03	2.03	0.0
	Primary-BIOS(A)	YES	35.03	35.03	0.0
	Sigma(A)	YES	3.33	3.33	0.0
	TamFW-Sigma(A)	YES	2.07	2.07	0.0
	TimingIC-A	YES	7.216	7.216	0.0
	Zenith-FPGA(A)	YES	2.07	2.07	0.0
A9K-RSP880-LT-SE	Aldrin-FPGA(A)	YES	1.11	1.11	0.0
	Alpha-FPGA(A)	YES	0.05	0.05	0.0
	CBC(A)	NO	50.03	50.03	0.0
	IPU-FPGA(A)	YES	0.20	0.20	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Omega-FPGA(A)	YES	0.07	0.07	0.0
	Optimus-FPGA(A)	YES	0.05	0.05	0.0
	Primary-BIOS(A)	YES	17.40	17.40	0.0
A9K-RSP880-LT-TR	Aldrin-FPGA(A)	YES	1.11	1.11	0.0
	Alpha-FPGA(A)	YES	0.05	0.05	0.0
	CBC(A)	NO	50.03	50.03	0.0
	IPU-FPGA(A)	YES	0.20	0.20	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Omega-FPGA(A)	YES	0.07	0.07	0.0
	Optimus-FPGA(A)	YES	0.05	0.05	0.0

	Primary-BIOS(A)	YES	17.40	17.40	0.0
A9K-RSP880-SE	Alpha-FPGA(A)	YES	0.16	0.16	0.0
	CBC(A)	NO	34.39	34.39	0.0
	Cha-FPGA(A)	YES	0.09	0.09	0.0
	IPU-FPGA(A)	YES	0.72	0.72	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Omega-FPGA(A)	YES	0.20	0.20	0.0
	Optimus-FPGA(A)	YES	0.12	0.12	0.0
	Primary-BIOS(A)	YES	10.69	10.69	0.0
A9K-RSP880-TR	Alpha-FPGA(A)	YES	0.16	0.16	0.0
	CBC(A)	NO	34.39	34.39	0.0
	Cha-FPGA(A)	YES	0.09	0.09	0.0
	IPU-FPGA(A)	YES	0.72	0.72	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Omega-FPGA(A)	YES	0.20	0.20	0.0
	Optimus-FPGA(A)	YES	0.12	0.12	0.0
	Primary-BIOS(A)	YES	10.69	10.69	0.0
A9K-TEST_LSQ_DX1	Aldrin-FPGA(A)	YES	1.05	1.05	0.0
	CBC(A)	NO	58.09	58.09	0.0
	IPU-DDR4(A)	YES	1.18	1.18	0.0
	Primary-BIOS(A)	YES	25.30	25.30	0.0
	Sunstreaker(A)	YES	0.19	0.19	0.0
	TAMFW-Sunstreaker(A)	YES	2.72	2.72	0.0
	Trailbreaker-0(A)	YES	0.24	0.24	0.0
	Windcharger-0(A)	YES	0.08	0.08	0.0
A9KL-4X100GE-SE-TAA	CBC(A)	NO	38.23	38.23	0.0
	Dalla(A)	YES	1.09	1.09	0.0
	IPU-FPGA(A)	YES	1.99	1.99	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Meldun-0(A)	YES	1.07	1.07	0.0
	Meldun-1(A)	YES	1.07	1.07	0.0
	Primary-BIOS(A)	YES	8.51	8.51	0.0
A9KL-4X100GE-TAA	CBC(A)	NO	38.23	38.23	0.0
	Dalla(A)	YES	1.09	1.09	0.0
	IPU-FPGA(A)	YES	1.99	1.99	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Meldun-0(A)	YES	1.07	1.07	0.0
	Meldun-1(A)	YES	1.07	1.07	0.0
	Primary-BIOS(A)	YES	8.51	8.51	0.0
A9KL-4X100GE-TR-TAA	CBC(A)	NO	38.23	38.23	0.0
	Dalla(A)	YES	1.09	1.09	0.0
	IPU-FPGA(A)	YES	1.99	1.99	0.0
	IPU-FSBL(A)	YES	1.113	1.113	0.0
	IPU-Linux(A)	YES	1.113	1.113	0.0
	Meldun-0(A)	YES	1.07	1.07	0.0
	Meldun-1(A)	YES	1.07	1.07	0.0
	Primary-BIOS(A)	YES	8.51	8.51	0.0
ASR-9006-AC	CBC(A)	NO	7.105	7.105	0.0
ASR-9006-AC-V2	CBC(A)	NO	7.105	7.105	0.0
ASR-9006-FAN	CBC(A)	NO	5.04	5.04	0.0

ASR-9006-FAN-V2	CBC(A)	NO	5.05	5.05	0.0
ASR-9010-AC	CBC(A)	NO	7.105	7.105	0.0
ASR-9010-AC-V2	CBC(A)	NO	7.105	7.105	0.0
ASR-9010-FAN	CBC(A)	NO	4.03	4.03	0.0
ASR-9010-FAN-V2	CBC(A)	NO	29.12	29.12	0.0
ASR-9901-LC	CBC(A)	NO	55.07	55.07	0.1
	Gamora-FPGA(A)	YES	0.36	0.36	0.1
	IPU-FPGA(A)	YES	1.10	1.10	0.1
	IPU-FSBL(A)	YES	1.104	1.104	0.1
	IPU-Linux(A)	YES	1.104	1.104	0.1
	Primary-BIOS(A)	YES	23.22	23.22	0.1
ASR-9901-RP	CBC(A)	NO	54.11	54.11	0.1
	Drax-FPGA(A)	YES	0.38	0.38	0.1
	IPU-FPGA(A)	YES	2.05	2.05	0.1
	IPU-FSBL(A)	YES	1.104	1.104	0.1
	IPU-Linux(A)	YES	1.104	1.104	0.1
	Primary-BIOS(A)	YES	22.28	22.28	0.1
ASR-9902	FAN-CBC(A)	NO	61.25	61.25	0.0
ASR-9902-LC	Aldrin-FPGA(A)	YES	1.05	1.05	0.0
	CBC(A)	NO	17.03	17.03	0.0
	Chromia(A)	YES	0.14	0.14	0.0
	IPU-DDR4(A)	YES	1.17	1.17	0.0
	Primary-BIOS(A)	YES	34.30	34.30	0.0
	Skywarp-0(A)	YES	0.11	0.11	0.0
	Skywarp-1(A)	YES	0.11	0.11	0.0
	Sunstreaker(A)	YES	0.19	0.19	0.0
	TAMFW-Sunstreaker(A)	YES	2.72	2.72	0.0
ASR-9903	FAN-CBC(A)	NO	61.25	61.25	0.0
ASR-9903-LC	Aldrin-0-FPGA(A)	YES	1.05	1.05	0.0
	CBC(A)	NO	60.12	60.12	0.0
	Harpoon-0(A)	YES	0.11	0.11	0.0
	Harpoon-1(A)	YES	0.11	0.11	0.0
	IPU-DDR4(A)	YES	1.25	1.25	0.0
	Metalmaster-0(A)	YES	0.02	0.02	0.0
	Metalmaster-1(A)	YES	0.02	0.02	0.0
	Primary-BIOS(A)	YES	34.30	34.30	0.0
	QDD_1_0	NO	61.23	61.23	0.0
	QDD_1_12	NO	61.23	61.23	0.0
	QDD_1_16	NO	61.23	61.23	0.0
	QDD_1_4	NO	61.23	61.23	0.0
	QDD_1_8	NO	61.23	61.23	0.0
	Scattershot(A)	YES	0.14	0.14	0.0
	Sunstreaker(A)	YES	0.19	0.19	0.0
	Supernaut(A)	YES	0.14	0.14	0.0
	TAMFW-Sunstreaker(A)	YES	2.72	2.72	0.0
	TimingIC-A	YES	7.216	7.216	0.0
	TimingIC-B-0	YES	7.216	7.216	0.0
	Warstar-0(A)	YES	0.02	0.02	0.0
	Warstar-1(A)	YES	0.02	0.02	0.0
ASR-9903-PXC800G-LC	Harpoon-0(A)	YES	0.11	0.11	0.0
	Harpoon-1(A)	YES	0.11	0.11	0.0
ASR-9904-AC	CBC(A)	NO	7.105	7.105	0.0

ASR-9904-FAN	CBC(A)	NO	31.06	31.06	0.0
ASR-9906	CBC(A)	NO	7.105	7.105	0.0
ASR-9906-FAN	CBC(A)	NO	56.01	56.01	0.0
	PSOC(A)	NO	2.06	2.06	0.0
ASR-9910	CBC(A)	NO	7.105	7.105	0.0
ASR-9910-FAN	CBC(A)	NO	45.02	45.02	0.0
	PSOC(A)	NO	2.06	2.06	0.0
ASR-9912-AC	CBC(A)	NO	7.105	7.105	0.0
ASR-9912-FAN	CBC(A)	NO	31.06	31.06	0.0
ASR-9912-SFC220	CBC(A)	NO	37.20	37.20	0.0
	IPU-FPGA(A)	YES	0.37	0.37	0.0
	IPU-FSBL(A)	YES	1.100	1.100	0.0
	IPU-Linux(A)	YES	1.100	1.100	0.0
ASR-9922-AC	CBC-0(A)	NO	7.105	7.105	0.0
	CBC-1(A)	NO	7.105	7.105	0.0
ASR-9922-FAN	CBC(A)	NO	29.12	29.12	0.0
ASR-9922-FAN-V2	CBC(A)	NO	40.07	40.07	0.0
	PSOC(A)	NO	2.06	2.06	0.0
ASR-9922-FAN-V3	CBC(A)	NO	40.07	40.07	0.0
	PSOC(A)	NO	2.06	2.06	0.0
PWR-1.6KW-AC	PO-PriMCU(A)	NO	17.20	17.20	0.0
	QCS-PriMCU(A)	NO	3.00	3.00	0.1
	QCS-SecMCU(A)	NO	4.01	4.01	0.1
PWR-1.6KW-DC	PriMCU(A)	NO	1.03	1.03	0.0
PWR-2KW-DC-V2	DT-PriMCU(A)	NO	6.03	6.03	0.12
	DT-Sec54vMCU(A)	NO	6.02	6.02	0.12
	DT-Sec5vMCU(A)	NO	6.03	6.03	0.12
	EM-PriMCU(A)	NO	3.13	3.13	0.12
	EM-Sec54vMCU(A)	NO	3.21	3.21	0.12
	EM-Sec5vMCU(A)	NO	3.20	3.20	0.12
PWR-3KW-AC-V2	DT-PriMCU(A)	NO	6.02	6.02	1.0
	DT-Sec54vMCU(A)	NO	6.02	6.02	1.0
	DT-Sec5vMCU(A)	NO	6.04	6.04	1.0
	EM-Sec54vMCU(A)	NO	3.12	3.12	0.21
	EM-Sec5vMCU(A)	NO	3.18	3.18	0.21
PWR-3KW-HVDC	DT-PriMCU(A)	NO	2.02	2.02	1.0
	DT-Sec54vMCU(A)	NO	2.02	2.02	1.0
	DT-Sec5vMCU(A)	NO	2.03	2.03	1.0
PWR-4.4KW-DC-V3	AB-Pri0MCU(A)	NO	3.02	3.02	0.1
	AB-Pri1MCU(A)	NO	3.02	3.02	0.1
	AB-Sec054vMCU(A)	NO	3.04	3.04	0.1
	AB-Sec154vMCU(A)	NO	3.04	3.04	0.1
	AB-Sec5vMCU(A)	NO	3.06	3.06	0.1
	DT-Pri0MCU(A)	NO	3.01	3.01	0.1
	DT-Pri1MCU(A)	NO	3.01	3.01	0.1
	DT-Sec054vMCU(A)	NO	3.02	3.02	0.1

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                        DT-Sec154vMCU(A)          NO      3.02       3.02       0.1
                        DT-Sec5vMCU(A)            NO      9.03       9.03       0.1
                        QCS-Pri0MCU(A)            NO      1.02       1.02       0.1
                        QCS-Pri1MCU(A)            NO      1.02       1.02       0.1
                        QCS-Sec054vMCU(A)         NO      1.08       1.08       0.1
                        QCS-Sec154vMCU(A)         NO      1.08       1.08       0.1
                        QCS-Sec5vMCU(A)           NO      1.03       1.03       0.1
-------------------------------------------------------------------------------------
PWR-6KW-AC-V3           AB-Pri0MCU(A)             NO      3.02       3.02       0.1
                        AB-Pri1MCU(A)             NO      3.02       3.02       0.1
                        AB-Sec054vMCU(A)          NO      3.02       3.02       0.1
                        AB-Sec154vMCU(A)          NO      3.02       3.02       0.1
                        AB-Sec5vMCU(A)            NO      3.05       3.05       0.1
                        DT-Pri0MCU(A)             NO      4.02       4.02       0.1
                        DT-Pri1MCU(A)             NO      4.02       4.02       0.1
                        DT-Sec054vMCU(A)          NO      4.03       4.03       0.1
                        DT-Sec154vMCU(A)          NO      4.03       4.03       0.1
                        DT-Sec5vMCU(A)            NO      4.04       4.04       0.
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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 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 3: Cisco ASR 9000 Series Aggregation Services Router Supported Hardware and Minimum Software Requirements

Cisco ASR 9000 Series Aggregation Services Router - Route Switch Processor Cards		
Part Number	**Description**	**Support Initially Provided in IOS XR 64 bit Release**
A9K-RSP5-X-SE	ASR 9000 Series Route Switch Processor 5 for Service Edge, Premium	Release 7.6.2
A9K-RSP5-X-TR	ASR 9000 Series Route Switch Processor 5 for Packet Transport, Premium	Release 7.6.2
A9K-RSP5-SE	ASR 9000 Route Switch Processor 5 for Service Edge	Release 6.5.15
A9K-RSP5-TR	ASR 9000 Route Switch Processor 5 for Packet Transport	Release 6.5.15
A9K-RSP880-LT-SE	Cisco ASR 9000 Series Aggregation Services Router RSP880-Lite, Service Edge Optimized	Release 6.4.1
A9K-RSP880-LT-TR	Cisco ASR 9000 Series Aggregation Services Router RSP880-Lite, Packet Transport Optimized	Release 6.4.1
A99-RSP-SE	Cisco ASR 9000 Series Aggregation Services Router RSP4-S, Service Edge Optimized for ASR 9910 from Release 6.0.1.	Release 6.2.1
A99-RSP-TR	Cisco ASR 9000 Series Aggregation Services Router RSP4-S, Packet Transport Optimized for ASR 9910 from Release 6.0.1.	Release 6.2.1

A99-RSP-SE	Cisco ASR 9000 Series Aggregation Services Router RSP4-S, Service Edge Optimized for ASR 9906 from Release 6.3.1.	Release 6.3.1
A99-RSP-TR	Cisco ASR 9000 Series Aggregation Services Router RSP4-S, Packet Transport Optimized for ASR 9906 supported from Release 6.3.1	Release 6.3.1
A9K-RSP880-SE	ASR9K Route Switch Processor with 880G/slot and 32 GB for Service Edge	Release 6.1.2
A9K-RSP880-TR	ASR9K Route Switch Processor with 880G/slot and 16 GB for Packet Transport	Release 6.1.2
Cisco ASR 9000 Series Aggregation Services Router - Route Processor Cards		
Part Number	**Description**	**Support Initially Provided in IOS XR 64 bit Release**
A99-RP3-X-SE	ASR 9900 Route Processor 3 for Service Edge, Premium	Release 7.6.2
A99-RP3-X-TR	ASR 9900 Route Processor 3 for Packet Transport, Premium	Release 7.6.2
A99-RP3-SE	ASR 9900 Route Processor 3 for Service Edge	Release 6.5.15
A99-RP3-TR	ASR 9900 Route Processor 3 for Packet Transport	Release 6.5.15
A99-RP2-SE	ASR Route Processor 32 GB for Service Edge	Release 6.1.2
A99-RP2-TR	ASR Route Processor 16 GB for Packet Transport	Release 6.1.2
Cisco ASR 9901 Router		
Part Number	**Description**	**Support Initially Provided in IOS XR 64 bit Release**
ASR-9901	Cisco ASR 9000 Series Aggregation Services Router 2-RU Fixed Port	Release 6.4.1
ASR-9901-FAN	Cisco ASR 9000 Series Aggregation Services Router 2-RU Fixed Port Fan Tray	Release 6.4.1
A9K-1600W-AC	Cisco ASR 9000 Series Aggregation Services Router 2-RU 1600W AC Power Module	Release 6.4.1
A9K-1600W-DC	Cisco ASR 9000 Series Aggregation Services Router 2-RU 1600W DC Power Module	Release 6.4.1
Cisco ASR 9902 Router		
Part Number	**Description**	**Support Initially Provided in IOS XR 64 bit Release**
ASR-9902	Cisco ASR 9902 2RU Chassis with fixed ports	Release 7.4.1
A99-RP-F	Cisco ASR 9900 Fixed Chassis Route Processor	Release 7.1.3
ASR-9902-4P-KIT	Cisco ASR 9902 4-Post Mounting Kit for 19-Inch and 23-Inch Rack	Release 7.4.1

ASR-9902-4P-KIT-L	ASR 9902 4-Post Mounting Kit for 19 & 23 inch Rack – Long	Release 7.4.1
ASR-9902-2P-KIT	Cisco ASR 9902 2-Post Mounting Kit for 19-Inch and 23-Inch Rack	Release 7.4.1
ASR-9902-CAB-MGMT	Cisco ASR 9902 Cable Management	Release 7.4.1
ASR-9902-FILTER	Cisco ASR 9902 Air Filter	Release 7.4.1
ASR-9902-FAN	Cisco ASR 9902 Fan Tray	Release 7.4.1
Cisco ASR 9903 Router		
Part Number	**Description**	**Support Initially Provided in IOS XR 64 bit Release**
ASR-9903	Cisco ASR 9903 Compact High-Performance Router with fixed ports and PEC (Port Expansion Card) slot.	Release 7.1.3
A99-RP-F	Cisco ASR 9900 Fixed Chassis Route Processor	Release 7.1.3
ASR-9903-FAN	Cisco ASR 9903 Router Fan Tray	Release 7.1.3
ASR-9903-4P-KIT	ASR 9903 4-Post Mounting Kit for 19-inch Rack	Release 7.1.3
ASR-9903-CAB-MGMT	ASR 9903 Cable Management Brackets	Release 7.1.3
ASR-9903-FILTER	ASR 9903 Air Filter	Release 7.1.3
Cisco ASR 9904 Router		
Part Number	**Description**	**Support Initially Provided in IOS XR 64 bit Release**
ASR-9904	Cisco ASR 9000 Series Aggregation Services Router 4-Slot 2 Line Card Slot Chassis, 6 RU	Release 6.1.2
ASR-9904-AC	Cisco ASR 9000 Series Aggregation Services Router 4-Slot 2 Line Card Slot AC Chassis w/ PEM V2	Release 6.1.2
ASR-9904-DC	Cisco ASR 9000 Series Aggregation Services Router 4-Slot 2 Line Card Slot DC Chassis w/ PEM V2	Release 6.1.2
ASR-9904-FAN	Cisco ASR 9000 Series Aggregation Services Router 4-Slot Fan Tray	Release 6.1.2
ASR-9904-FILTER	Cisco ASR 9000 Series Aggregation Services Router 4-Slot Filter	Release 6.1.2
ASR-9904-BAFFLE	Cisco ASR 9000 Series Aggregation Services Router 4-Slot Baffle	Release 6.1.2
Cisco ASR 9912 Router		
Part Number	**Description**	**Support Initially Provided in IOS XR 64 bit Release**
ASR-9912	Cisco ASR 9000 Series Aggregation Services Router 12-Slot 10 Line Card Slot Chassis	Release 6.1.2

ASR-9912-AC	Cisco ASR 9000 Series Aggregation Services Router 12-Slot 10 Line Card Slot AC Chassis w/ PEM V2	Release 6.1.2
ASR-9912-DC	Cisco ASR 9000 Series Aggregation Services Router 12-Slot 10 Line Card Slot DC Chassis w/ PEM V2	Release 6.1.2
A99-SFC3	Cisco ASR 9900 Switch Fabric Card 3	Release 6.5.15
A99-SFC2	Cisco ASR 9000 Fabric Card	Release 6.1.2
ASR-9912-FAN	Cisco ASR 9000 Series Aggregation Services Router 12-Slot Fan Tray	Release 6.1.2
Cisco ASR 9922 Router		
Part Number	**Description**	**Support Initially Provided in IOS XR 64 bit Release**
ASR-9922	Cisco ASR 9922 20 Line Card Slot Chassis, 44 RU	Release 6.1.2
ASR-9922-AC	Cisco ASR 9000 Series Aggregation Services Router 22-Slot 20 Line Card Slot AC Chassis w/ PEM V2	Release 6.1.2
ASR-9922-DC	Cisco ASR 9000 Series Aggregation Services Router 22-Slot 20 Line Card Slot DC Chassis w/ PEM V2	Release 6.1.2
A99-SFC3	Cisco ASR 9900 Switch Fabric Card 3	Release 6.5.15
A99-SFC2	Cisco ASR 9000 Fabric Card	Release 6.1.2
ASR-9922-FAN-V3	Cisco ASR 9000 Series Aggregation Services Router 22-Slot Fan Tray version 3	Release 6.5.15
ASR-9922-FLTR-CV2	Cisco ASR 9000 Series Aggregation Services Router 22-Slot Air Filter with Media, Center	Release 6.1.2
ASR-9922-FLTR-LR	Cisco ASR 9000 Series Aggregation Services Router 22-Slot Air Filter with Media, Left & Right	Release 6.1.2
ASR-9922-RP-FILR	Cisco ASR 9000 Series Aggregation Services Router 22-Slot Route Processor Filler	Release 6.1.2
ASR-9922-FAN-V2	Cisco ASR 9000 Series Aggregation Services Router 22-Slot Version 2 Fan Tray	Release 6.1.2
Cisco ASR 9006 Router		
Part Number	**Description**	**Support Initially Provided in IOS XR 64 bit Release**
ASR-9006-SYS	Cisco ASR 9000 Series Aggregation Services Router 6-Slot System	Release 6.1.2
ASR-9006-AC-V2	Cisco ASR 9000 Series Aggregation Services Router 6-Slot AC Chassis Version 2	Release 6.1.2

ASR-9006-DC-V2	Cisco ASR 9000 Series Aggregation Services Router 6-Slot DC Chassis Version 2	Release 6.1.2
ASR-9006-FAN	Cisco ASR 9000 Series Aggregation Services Router 6-Slot Fan Tray	Release 6.1.2
ASR-9006-FAN-V2	Cisco ASR 9000 Series Aggregation Services Router 6-Slot Version 2 Fan Tray	Release 6.1.2
ASR-9006-DOOR	Cisco ASR 9000 Series Aggregation Services Router 6-Slot Door Kit	Release 6.1.2
ASR-9006-FILTER	Cisco ASR 9000 Series Aggregation Services Router 6-Slot Air Filter	Release 6.1.2
Cisco ASR 9906 Router		
Part Number	**Description**	**Support Initially Provided in IOS XR 64 bit Release**
ASR-9906	Cisco ASR 9000 Series Aggregation Services Router 6-Slot chassis	Release 6.3.1
ASR-9906-FAN	Cisco ASR 9000 Series Aggregation Services Router 6-Slot Fan Tray	Release 6.3.1
ASR-9906-FILTER	Cisco ASR 9000 Series Aggregation Services Router 6-Slot Fan Filter	Release 6.3.1
A99-SFC3-T	ASR 9906 Switch Fabric Card	Release 6.5.15
A99-SFC-T	ASR 9906 Switch Fabric Card 3	Release 6.3.1
Cisco ASR 9010 Router		
Part Number	**Description**	**Support Initially Provided in IOS XR 64 bit Release**
ASR-9010-SYS	Cisco ASR 9000 Series Aggregation Services Router 10-Slot System	Release 6.1.2
ASR-9010-AC-V2	Cisco ASR 9000 Series Aggregation Services Router 10-Slot AC Chassis Version 2	Release 6.1.2
ASR-9010-DC-V2	Cisco ASR 9000 Series Aggregation Services Router 10-Slot DC Chassis Version 2	Release 6.1.2
ASR-9010-FAN	Cisco ASR 9000 Series Aggregation Services Router 10-Slot Fan Tray	Release 6.1.2
ASR-9010-FAN-V2	Cisco ASR 9000 Series Aggregation Services Router 10-Slot Version 2 Fan Tray	Release 6.1.2
ASR-9010-DOOR	Cisco ASR 9000 Series Aggregation Services Router 10-Slot Door Kit	Release 6.1.2
ASR-9010-2P-KIT	Cisco ASR 9000 Series Aggregation Services Router 2 Post Mounting Kit	Release 6.1.2
ASR-9010-2P-KIT	Cisco ASR 9000 Series Aggregation Services Router 4 Post Mounting Kit	Release 6.1.2
ASR-9010-FILTER	Cisco ASR 9000 Series Aggregation Services Router 10-Slot Air Filter	Release 6.1.2

Cisco ASR 9910 Router		
Part Number	**Description**	**Support Initially Provided in IOS XR 64 bit Release**
ASR-9910	Cisco ASR 9000 Series Aggregation Services Router 10-Slot (9910) System	Release 6.2.1
ASR-9910-FAN	Cisco ASR 9000 Series Aggregation Services Router 10-Slot(9910) Fan Tray	Release 6.2.1
ASR-9910-ACC-KIT	Cisco ASR 9000 Series Aggregation Services Router 10-Slot (9910) Accessory Kit	Release 6.2.1
ASR-9910-4P-KIT	Cisco ASR 9000 Series Aggregation Services Router 10-Slot (9910) 4 Post Rack Mounting Kit	Release 6.2.1
ASR-9910-2P-KIT	Cisco ASR 9000 Series Aggregation Services Router 10-Slot (9910) 2 Post Rack Mounting Kit	Release 6.2.1
ASR-9910-AIRREF	Cisco ASR 9000 Series Aggregation Services Router 10-Slot (9910) Air Reflector	Release 6.2.1
ASR-9910-FILTER	Cisco ASR 9000 Series Aggregation Services Router 10-Slot (9910) Air Filter	Release 6.2.1
A99-SFC-S	Cisco ASR 9000 Series Aggregation Services Router 10-Slot (9910) Switch Fabric Card	Release 6.2.1
A99-SFC3-S	ASR 9910 Switch Fabric Card 3	Release 6.5.15
Cisco ASR 9000 Series Aggregation Services Router - Power Modules		
Part Number	**Description**	**Support Initially Provided in IOS XR 64 bit Release**
PWR-2KW-DC-V2	Cisco ASR 9000 Series Aggregation Services Router 2KW DC Power Module, version 2	Release 6.1.2
PWR-3KW-AC-V2	Cisco ASR 9000 Series Aggregation Services Router 3KW AC Power Module, version 2	Release 6.1.2
A9K-AC-PEM-V2	Cisco ASR 9000 Series Aggregation Services Router AC Power Entry Module Version 2	Release 6.1.2
A9K-DC-PEM-V2	Cisco ASR 9000 Series Aggregation Services Router DC Power Entry Module Version 2	Release 6.1.2
A9K-PEM-V2-FILR	Cisco ASR 9000 Series Aggregation Services Router Power Entry Module Version 2 Filler	Release 6.1.2
A9K-AC-PEM-V3	Cisco ASR 9000 Series Aggregation Services Router AC Power Enclosure Module Version 3	Release 6.1.2

A9K-DC-PEM-V3	Cisco ASR 9000 Series Aggregation Services Router DC Power Enclosure Module Version 3	Release 6.1.2
PWR-6KW-AC-V3	Cisco ASR 9000 Series Aggregation Services Router 6kW AC Power Module Version 3	Release 6.1.2
PWR-4.4KW-DC-V3	Cisco ASR 9000 Series Aggregation Services Router 4.4kW DC Power Module Version 3	Release 6.1.2
PWR-1.6KW-AC	ASR 9900 Fixed Chassis AC Power Supply	Release 7.1.25
PWR-1.6KW-DC	ASR 9900 Fixed Chassis DC Power Supply	Release 7.1.25
Cisco ASR 9000 Series Aggregation Services Router - Line Cards		
Part Number	**Description**	**Support Initially Provided in IOS XR 64 bit Release**
A9K-4HG-FLEX-SE	ASR 9000 400GE Combo Service Edge Line Card - 5th Generation	Release 7.4.1
A9K-4HG-FLEX-TR	ASR 9000 400GE Combo Packet Transport Line Card - 5th Generation	Release 7.4.1
A99-4HG-FLEX-SE	ASR 9900 400GE Combo Service Edge Line Card - 5th Generation	Release 7.4.1
A99-4HG-FLEX-TR	ASR 9900 400GE Combo Packet Transport Line Card - 5th Generation	Release 7.4.1
A9903-8HG-PEC	ASR 9903 800G Multi-rate Port Expansion Card	Release 7.4.1
A99-10X400GE-X-SE	ASR 9900 4T Service Edge Line Card - 5th Generation	Release 7.3.1
A99-10X400GE-X-TR	ASR 9900 4T Packet Transport Line Card - 5th Generation	Release 7.3.1
A9903-20HG-PEC	ASR 9903 2T Multi-rate Port Expansion Card	Release 7.1.3
A99-32X100GE-X-SE	ASR 9000 32-Port 100GE QSFP28/QSFP+ Service Edge optimized Line Card - 5th Generation	Release 7.1.15
A99-32X100GE-X-TR	ASR 9000 32-Port 100GE QSFP28/QSFP+ Packet Transport optimized Line Card - 5th Generation	Release 7.1.15
A9K-20HG-FLEX-SE A9K-20HG-FLEX-TR	ASR 9000 2T Combo Line Card - 5th Generation	Release 7.1.15
A9K-8HG-FLEX-SE A9K-8HG-FLEX-TR	ASR 9000 800G Combo Line Card - 5th Generation	Release 7.1.15
A9K-16X100GE-TR	ASR 9000 16-port 100GE QSFP TR line card	Release 6.5.15
A99-32X100GE-TR	ASR 9900 32-port 100GE QSFP TR line card	Release 6.5.15
A99-48X10GE-1G-SE	ASR 9000 48 port dual rate 10G/1G Service Edge line card	Release 6.5.2
A99-48X10GE-1G-TR	ASR 9000 48 port dual rate 10G/1G Transport Optimised line card	Release 6.5.2
A99-16X100GE-X-SE	ASR 9900 16-port 100GE QSFP SE	Release 6.5.3

A9K-48X10GE-1G-CM	ASR 9000 48-port dual-rate 10G/1G Consumption Model line card	Release 6.4.1
A9K-24X10GE-1G-CM	ASR 9000 24-port dual-rate 10G/1G Consumption Model line card	Release 6.4.1
A9K-4X100GE	ASR 9000 4-port 100-Gigabit Ethernet Line Card	Release 6.4.1
A9K-48X10GE-1G-SE	ASR9000 48-port dual-rate 10G/1G service edge–optimized line card	Release 6.3.2
A9K-48X10GE-1G-TR	ASR9000 48-port dual-rate 10G/1G packet transport–optimized line card	Release 6.3.2
A9K-24X10GE-1G-SE	ASR9000 24-port dual-rate 10G/1G service edge–optimized line card	Release 6.3.2
A9K-24X10GE-1G-TR	ASR9000 24-port dual-rate 10G/1G packet transport–optimized line card	Release 6.3.2
A99-8X100GE-SE	ASR 9900 8-port 100GE Service Edge optimized	Release 6.1.2
A99-8X100GE-TR	ASR 9900 8-port 100GE Packet Transport optimized	Release 6.1.2
A99-8X100GE-CM	ASR 9900 8-port 100GE Consumption Model	Release 6.1.2
A99-12X100GE	Cisco ASR 9000 Series Aggregation Services Router 12-Port 100-Gigabit Ethernet Line Card	Release 6.1.2
A99-12X100GE-CM	Cisco ASR 9000 Series Aggregation Services Router 12-port 100GE Ethernet Line card CM	Release 6.1.2
A9K-8X100GE-CM	Cisco ASR 9000 Series Aggregation Services Router 8-Port 100-Gigabit Ethernet, Consumption Model Optimized with CPAK	Release 6.1.2
A9K-8X100GE-SE	Cisco ASR 9000 Series Aggregation Services Router 8-Port 100-Gigabit Ethernet, Service Edge Optimized	Release 6.1.2
A9K-8X100GE-TR	Cisco ASR 9000 Series Aggregation Services Router 8-Port 100-Gigabit Ethernet, Packet Transport Optimized	Release 6.1.2
A9K-4X100GE-SE	Cisco ASR 9000 Series Aggregation Services Router 4--Port 100-Gigabit Ethernet, Service Edge Optimized	Release 6.1.2
A9K-4X100GE-TR	Cisco ASR 9000 Series Aggregation Services Router 4-Port 100-Gigabit Ethernet, Packet Transport Optimized	Release 6.1.2
Cisco ASR 9000 Series Aggregation Services Router - Modular Line Cards		
Part Number	**Description**	**Support Initially Provided in IOS XR 64 bit Release**
A9K-MOD200-TR A9K-MOD200-SE	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	Release 6.3.1
A9K-MOD400-CM	Cisco ASR 9000 Modular 400G Consumption Model Line Card	Release 6.2.1

A9K-MOD400-SE	Cisco ASR 9000 Series Aggregation Services Router 400 Gigabyte Modular Line Card, Service Edge Optimized	Release 6.2.1
A9K-MOD400-TR	Cisco ASR 9000 Series Aggregation Services Router 400 Gigabyte Modular Line Card, Packet Transport Optimized	Release 6.2.1
Cisco ASR 9000 Series Aggregation Services Router - Modular Port Adapters (MPAs)		
Part Number	**Description**	**Support Initially Provided in IOS XR 64 bit Release**
A9K-MPA-1X200GE	Cisco ASR 9000 1-port 200-Gigabit Ethernet MPA, requires CFP2-DCO optics	Release 6.6.2
A9K-MPA-32X1GE	Cisco ASR 9000 32-port 1-Gigabit Ethernet MPA with MACSec	Release 6.6.2
A9K-MPA20X10GE-CM	Cisco ASR 9000 20x10GE Consumption Model MPA	Release 6.5.1
A9K-MPA2X100GE-CM	Cisco ASR 9000 2x100GE Consumption Model MPA	Release 6.5.1
A9K-MPA-1X100GE	Cisco ASR 9000 Series Aggregation Services Router 1-port 100-Gigabit Modular Port Adapter	Release 6.3.1
A9K-MPA-2X100GE	Cisco ASR 9000 Series Aggregation Services Router 2-port 100-Gigabit Modular Port Adapter	Release 6.2.2
A9K-MPA-20x10GE	20-Port 10-Gigabit Ethernet Modular Port Adapter with SFP+	Release 6.2.1
A9K-MPA-8X10GE	Cisco ASR 9000 Series Aggregation Services Router 8-port 10GE Modular Port Adapter	Release 6.3.2
A9K-MPA-4X10GE	Cisco ASR 9000 Series Aggregation Services Router 4-port 10GE Modular Port Adapter	Release 6.2.1
A9K-MPA-20X1GE	Cisco ASR 9000 Series Aggregation Services Router 20-port 1GE Modular Port Adapter	Release 6.2.1
A9K-MPA-2X40GE	Cisco ASR 9000 Series Aggregation Services Router 2-port 40GE Modular Port Adapter	Release 6.3.1
Cisco Digital Pluggable Optical Modules		
CFP2-WDM-DET-1HL=	200G, 100G, WDM Digital CFP2 pluggable Licensed for 100G only – TOF	Release 6.6.2
CFP2-WDM-D-1HL=	200G, 100G, WDM Digital CFP2 pluggable Licensed for 100G only – NON TOF	Release 6.6.2
Cisco ASR 9000v Satellite Shelf		
Part Number	**Description**	**Support Initially Provided in IOS XR 64 bit Release**
A9KV-V2-DC-A=	Cisco ASR 9000v Satellite Shelf Version 2 DC power ANSI chassis	Release 6.2.1

A9KV-V2-DC-E=	Cisco ASR 9000v Satellite Shelf Version 2 DC power chassis	Release 6.2.1
A9KV-V2-AC=	Cisco ASR 9000v Satellite Shelf AC power chassis	Release 6.2.1
A9KV-V2-FAN=	Cisco ASR 9000v Satellite Shelf Version 2 Fan Tray	Release 6.2.1
Cisco NCS 5000 Satellite Shelf		
Part Number	**Description**	**Support Initially Provided in IOS XR 64 bit Release**
NCS-5001	Cisco NCS 5001 Series Router	Release 6.2.1
NCS-5002	Cisco NCS 5002 Series Router	Release 6.2.1
NCS-5001-ACSR	Cisco NCS 5001 Router Accessory Kit	Release 6.2.1
NCS-5002-ACSR	Cisco NCS 5002 Router Accessory Kit	Release 6.2.1
NCS-5001-FN-BK	Cisco NCS 5001 Router Fan Back to Front AirFlow	Release 6.2.1
NCS-5002-FN-BK	Cisco NCS 5002 Router Fan Back to Front AirFlow	Release 6.2.1
NCS-5001-FLT-BK	Cisco NCS 5001 Air Filter Back to Front Airflow	Release 6.2.1
NCS-5002-FLT-BK	Cisco NCS 5002 Air Filter Back to Front Airflow	Release 6.2.1
NCS-5001-FN-FR	Cisco NCS 5001 Fan Front to Back Airflow	Release 6.2.1
NCS-5002-FN-FR	Cisco NCS 5002 Fan Front to Back Airflow	Release 6.2.1
NCS-5001-FLT-FR	Cisco NCS 5001 Air Filter Front to Back Airflow	Release 6.2.1
NCS-5002-FLT-FR	Cisco NCS 5002 Air Filter Front to Back Airflow	Release 6.2.1

Important Notes

- Repetitive Smart Licensing evaluation expired warning messages are displayed on the console every hour, but no functionality impact is observed on the device. To stop these repetitive messages, you should register the device again with a new registration token.
- From IOS XR Release 7.0, 1st and 2nd generation of Ethernet ASR 9000 line cards are not supported.
- Country-specific laws, regulations, and licenses—In certain countries, use of these products may be prohibited and subject to laws, regulations, or licenses, including requirements applicable to the use of the products under telecommunications and other laws and regulations; customers must comply with all such applicable laws in the countries in which they intend to use the products.
- Exceeding Cisco testing—If you intend to test beyond the combined maximum configuration tested and published by Cisco, contact your Cisco Account Team or Technical Support representative to discuss how to engineer a large-scale configuration for your purpose.
- Cisco IOS XR Release 7.10.2 is the last release for ISSU on ASR 9000 third-generation line cards. Any future releases of IOS XR will not support ISSU on ASR 9000 third-generation line cards.

- The ISSU SMU for ASR 9000 third-generation line cards will be supported until the Cisco IOS XR Release 7.11.2 only. The ISSU SMU will not be supported in the future releases for ASR 9000 third-generation line cards.
- Installing a Line Card—For a fully populated 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*.
- For ZTP, In Cisco IOS XR Release 7.3.1 and earlier, the system accepts the device sending **user-class = "exr-config"**; however starting Cisco IOS XR Release 7.3.2 and later, you must use only **user-class = "xr-config"**.

  In Cisco IOS XR Release 7.3.2 and later, use:

```
host cisco-rp0 {
   hardware ethernet e4:c7:22:be:10:ba;
   fixed-address 172.30.12.54;
   if exists user-class and option user-class = "iPXE" {
      filename = "http://172.30.0.22/boot.ipxe";
   } elsif exists user-class and option user-class = "xr-config" {
      filename = "http://172.30.0.22/scripts/cisco-rp0_ztp.sh";
   }
}
```

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.

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.

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 Route Processor Module (RPM) files that contain one or more software components.

The upgrade document is available along with the software images.

Note If you have mLACP/ICCP Redundancy Model setup, ensure that you upgrade the active and standby nodes to the same IOS XR version while upgrading to a newer version of the ASR 9000 router.

Cisco IOS XR Error messages

To view, search, compare, and download Cisco IOS XR Error Messages, refer to the Cisco IOS XR Error messages tool.

Cisco IOS XR MIBs

To determine the MIBs supported by platform and release, refer to the Cisco IOS XR MIBs tool.

Related Documentation

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

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

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