



Release Notes for Cisco ASR 9000 Series Routers, IOS XR Release 24.3.2

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Revised: December 9, 2024

Release Notes for Cisco ASR 9000 Series Routers, IOS XR Release 24.3.2

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 24.3.2 is an Extended Maintenance Release of [Cisco IOS XR Release 24.3.1](#) 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 24.3.2

Cisco IOS XR Release 24.3.2 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

Table 1: Cisco ASR 9000 Series Router Specific Bugs

| Bug ID | Headline |
|----------------------------|---|
| CSCwk85538 | After executing shut or no shut command the interface remains up, but the egress traffic is down. |
| CSCwn41235 | MRIB process memory leak is observed once peer node process restarts. |

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

Table 2: Cisco IOS XR 64 bit Software Release 24.3.2 TAR Files

| Feature Set | Filename | Description |
|---|-------------------------------|--|
| Cisco IOS XR IP/MPLS Core Software [for RSP and RP systems] | ASR9K-x64-iosxr-px-24.3.2.tar | <ul style="list-style-type: none">• 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 |

| Feature Set | Filename | Description |
|--|--|--|
| Cisco IOS XR IP/MPLS Core Software 3DES [for RSP and RP systems] | ASR9K-x64-iosxr-px-k9-24.3.2.tar | <ul style="list-style-type: none"> • 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 |
| Cisco IOS XR IP Unicast Routing Core Bundle and Migration to IOS XR 64 bit tar image | asr9k-mini-x64-migrate_to_eXR.tar-24.3.2 | <p>Contains the required core packages, including OS, Admin, Base, Forwarding, Modular Services Card, Routing, FPD, SNMP Agent, and Alarm Correlation.</p> <p>Contains mini.iso file for XR 64 bit 24.3.2 and additional software for migration to 64 bit.</p> |

Table 3: Cisco IOS XR 64 bit Software Release 24.3.2 ISO and RPM Files

| Composite Package | | |
|---|---------------------------|---|
| Feature Set | Filename | Description |
| Cisco IOS XR IP Unicast Routing Core Bundle | asr9k-mini-x64-24.3.2.iso | <p>Contains the required core packages, including OS, Admin, Base, Forwarding, Modular Services Card, Routing, FPD, SNMP Agent, and Alarm Correlation.</p> <p>The mini iso file is used for upgrading to the new release.</p> |
| Individually-Installable Optional Packages | | |
| Feature Set | Filename | Description |

| | | |
|---|---|--|
| Cisco IOS XR 64 bit EIGRP package | asr9k-eigrp-x64-1.0.0.0-r2432.x86_64.rpm | Includes EIGRP protocol support software |
| Cisco IOS XR BNG Package | asr9k-bng-x64-1.1.0.0-r2432.x86_64.rpm | Includes binaries to support BNG features. |
| Cisco IOS XR 64 bit ISIS package | asr9k-isis-x64-1.1.0.0-r2432.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-r2432.x86_64.rpm | Includes OSPF link state protocol support software |
| Cisco IOS XR Manageability Package | asr9k-mgbl-x64-3.0.0.0-r2432.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-r2432.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-r2432.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-r2432.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-r2432.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-r2432.x86_64.rpm | Includes LI software images. |
| Cisco IOS XR Security Package | asr9k-k9sec-x64-3.1.0.0-r2432.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-r2432.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-r2432.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 24.3.2 consist of the following:

- 32 GB memory on the A99-RP-F
- 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 24.3.2 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

```
Router# show install active summary
Label : 24.3.2-24_3_2_RN4

Active Packages: 18
  asr9k-xr-24.3.2 version=24.3.2 [Boot image]
  asr9k-9000v-nV-x64-1.0.0.0-r2432
  asr9k-m2m-x64-1.0.0.0-r2432
  asr9k-optic-x64-1.0.0.0-r2432
  asr9k-eigrp-x64-1.0.0.0-r2432
  asr9k-mgbl-x64-1.0.0.0-r2432
  asr9k-isis-x64-1.0.0.0-r2432
  asr9k-bng-x64-1.0.0.0-r2432
  asr9k-bng-ipoe-x64-1.0.0.0-r2432
  asr9k-ospf-x64-1.0.0.0-r2432
  asr9k-mpls-x64-1.0.0.0-r2432
  asr9k-mpls-te-rsvp-x64-1.0.0.0-r2432
  asr9k-bng-suppl-x64-1.0.0.0-r2432
  asr9k-bng-pppoe-x64-1.0.0.0-r2432
  asr9k-li-x64-1.0.0.0-r2432
  asr9k-services-x64-1.0.0.0-r2432
  asr9k-mcast-x64-1.0.0.0-r2432
  asr9k-k9sec-x64-1.0.0.0-r2432
```

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   SW   Min Req   Min Req
                    Reload  Ver   SW Ver   Board Ver
=====
A99-10X400GE-X-CM  Aldrin-FPGA              YES   1.05   1.05     0.0
                   Beachcomber-0            YES   0.01   0.01     0.0
                   Beachcomber-1            YES   0.01   0.01     0.0
                   CBC                      NO    62.05  62.05     0.0
                   IPU-DDR4                 YES   1.06   1.06     0.0
                   Primary-BIOS             YES  25.31  25.31     0.0
                   Sunstreaker              YES   0.19   0.19     0.0
                   TAMFW-Sunstreaker       YES   2.72   2.72     0.0
                   Trailbreaker-0          YES   0.24   0.24     0.0
                   Trailbreaker-1          YES   0.24   0.24     0.0
-----
A99-10X400GE-X-SE  Aldrin-FPGA              YES   1.05   1.05     0.0
                   Beachcomber-0            YES   0.01   0.01     0.0
                   Beachcomber-1            YES   0.01   0.01     0.0
                   CBC                      NO    62.05  62.05     0.0
                   IPU-DDR4                 YES   1.06   1.06     0.0
                   Primary-BIOS             YES  25.31  25.31     0.0
                   Sunstreaker              YES   0.19   0.19     0.0
                   TAMFW-Sunstreaker       YES   2.72   2.72     0.0
                   Trailbreaker-0          YES   0.24   0.24     0.0
                   Trailbreaker-1          YES   0.24   0.24     0.0
-----
A99-10X400GE-X-TR  Aldrin-FPGA              YES   1.05   1.05     0.0
                   Beachcomber-0            YES   0.01   0.01     0.0
                   Beachcomber-1            YES   0.01   0.01     0.0
                   CBC                      NO    62.05  62.05     0.0
                   IPU-DDR4                 YES   1.06   1.06     0.0
                   Primary-BIOS             YES  25.31  25.31     0.0
                   Sunstreaker              YES   0.19   0.19     0.0
                   TAMFW-Sunstreaker       YES   2.72   2.72     0.0
                   Trailbreaker-0          YES   0.24   0.24     0.0
                   Trailbreaker-1          YES   0.24   0.24     0.0
-----
A99-12X100GE       CBC                      NO    46.06  46.06     0.1
                   IPU-FPGA                 YES   1.90   1.90     0.1
                   IPU-FSBL                 YES   1.113  1.113     0.1
                   IPU-Linux                YES   1.113  1.113     0.1
                   Morra-0                 YES   1.05   1.05     0.1
                   Morra-1                 YES   1.05   1.05     0.1
                   Primary-BIOS             YES   9.33   9.33     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   1.90   1.90     0.1
                   IPU-FSBL                 YES   1.113  1.113     0.1
                   IPU-Linux                YES   1.113  1.113     0.1
                   Morra-0                 YES   1.05   1.05     0.1
                   Morra-1                 YES   1.05   1.05     0.1
                   Primary-BIOS             YES   9.33   9.33     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 | 1.05 | 1.05 | 0.0 |
| | CBC | NO | 48.09 | 48.09 | 0.0 |
| | Grapple-0 | YES | 0.15 | 0.15 | 0.0 |
| | IPU-DDR4 | YES | 1.09 | 1.09 | 0.0 |
| | Mixmaster-0 | YES | 0.13 | 0.13 | 0.0 |
| | Primary-BIOS | YES | 21.43 | 21.43 | 0.0 |
| | Scamper | YES | 0.23 | 0.23 | 0.0 |
| | Skylynx-0 | YES | 0.12 | 0.12 | 0.0 |
| ----- | | | | | |
| A99-16X100GE-SE | Aldrin-FPGA | YES | 1.05 | 1.05 | 0.0 |
| | CBC | NO | 48.09 | 48.09 | 0.0 |
| | Grapple-0 | YES | 0.15 | 0.15 | 0.0 |
| | IPU-DDR4 | YES | 1.09 | 1.09 | 0.0 |
| | Mixmaster-0 | YES | 0.13 | 0.13 | 0.0 |
| | Primary-BIOS | YES | 21.43 | 21.43 | 0.0 |
| | Scamper | YES | 0.23 | 0.23 | 0.0 |
| | Skylynx-0 | YES | 0.12 | 0.12 | 0.0 |
| ----- | | | | | |
| A99-16X100GE-TR | Aldrin-FPGA | YES | 1.05 | 1.05 | 0.0 |
| | CBC | NO | 48.09 | 48.09 | 0.0 |
| | Grapple-0 | YES | 0.15 | 0.15 | 0.0 |
| | IPU-DDR4 | YES | 1.09 | 1.09 | 0.0 |
| | Mixmaster-0 | YES | 0.13 | 0.13 | 0.0 |
| | Primary-BIOS | YES | 21.43 | 21.43 | 0.0 |
| | Scamper | YES | 0.23 | 0.23 | 0.0 |
| | Skylynx-0 | YES | 0.12 | 0.12 | 0.0 |
| ----- | | | | | |
| A99-16X100GE-X-SE | Aldrin-FPGA | YES | 1.05 | 1.05 | 0.0 |
| | CBC | NO | 48.09 | 48.09 | 0.0 |
| | Grapple-0 | YES | 0.15 | 0.15 | 0.0 |
| | Grapple-1 | YES | 0.15 | 0.15 | 0.0 |
| | IPU-DDR4 | YES | 1.09 | 1.09 | 0.0 |
| | Mixmaster-0 | YES | 0.13 | 0.13 | 0.0 |
| | Mixmaster-1 | YES | 0.13 | 0.13 | 0.0 |
| | Primary-BIOS | YES | 21.43 | 21.43 | 0.0 |
| | Scamper | YES | 0.23 | 0.23 | 0.0 |
| | Skylynx-0 | YES | 0.12 | 0.12 | 0.0 |
| | Skylynx-1 | YES | 0.12 | 0.12 | 0.0 |
| ----- | | | | | |
| A99-24HG-FLEX-CM | Aldrin-FPGA | YES | 1.05 | 1.05 | 0.0 |
| | CBC | NO | 57.04 | 57.04 | 0.0 |
| | Grapple-0 | YES | 0.15 | 0.15 | 0.0 |
| | Grapple-1 | YES | 0.15 | 0.15 | 0.0 |
| | IPU-DDR4 | YES | 1.18 | 1.18 | 0.0 |
| | Mixmaster-0 | YES | 0.13 | 0.13 | 0.0 |
| | Mixmaster-1 | YES | 0.13 | 0.13 | 0.0 |
| | Primary-BIOS | YES | 25.31 | 25.31 | 0.0 |
| | Skylynx-0 | YES | 0.12 | 0.12 | 0.0 |
| | Skylynx-1 | YES | 0.12 | 0.12 | 0.0 |
| | Sunstreaker | YES | 0.19 | 0.19 | 0.0 |
| | TAMFW-Sunstreaker | YES | 2.72 | 2.72 | 0.0 |
| ----- | | | | | |
| A99-24HG-FLEX-SE | Aldrin-FPGA | YES | 1.05 | 1.05 | 0.0 |
| | CBC | NO | 57.04 | 57.04 | 0.0 |
| | Grapple-0 | YES | 0.15 | 0.15 | 0.0 |
| | Grapple-1 | YES | 0.15 | 0.15 | 0.0 |
| | IPU-DDR4 | YES | 1.18 | 1.18 | 0.0 |
| | Mixmaster-0 | YES | 0.13 | 0.13 | 0.0 |
| | Mixmaster-1 | YES | 0.13 | 0.13 | 0.0 |
| | Primary-BIOS | YES | 25.31 | 25.31 | 0.0 |
| | Skylynx-0 | YES | 0.12 | 0.12 | 0.0 |
| | Skylynx-1 | YES | 0.12 | 0.12 | 0.0 |
| | Sunstreaker | YES | 0.19 | 0.19 | 0.0 |
| | TAMFW-Sunstreaker | YES | 2.72 | 2.72 | 0.0 |

| | | | | | |
|-------------------|-------------------|-----|-------|-------|-----|
| ----- | | | | | |
| A99-24HG-FLEX-TR | Aldrin-FPGA | YES | 1.05 | 1.05 | 0.0 |
| | CBC | NO | 57.04 | 57.04 | 0.0 |
| | Grapple-0 | YES | 0.15 | 0.15 | 0.0 |
| | Grapple-1 | YES | 0.15 | 0.15 | 0.0 |
| | IPU-DDR4 | YES | 1.18 | 1.18 | 0.0 |
| | Mixmaster-0 | YES | 0.13 | 0.13 | 0.0 |
| | Mixmaster-1 | YES | 0.13 | 0.13 | 0.0 |
| | Primary-BIOS | YES | 25.31 | 25.31 | 0.0 |
| | Skylynx-0 | YES | 0.12 | 0.12 | 0.0 |
| | Skylynx-1 | YES | 0.12 | 0.12 | 0.0 |
| | Sunstreaker | YES | 0.19 | 0.19 | 0.0 |
| | TAMFW-Sunstreaker | YES | 2.72 | 2.72 | 0.0 |
| ----- | | | | | |
| A99-24X10GE-1G-CM | CBC | NO | 47.03 | 47.03 | 0.1 |
| | IPU-FPGA | YES | 1.90 | 1.90 | 0.1 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.1 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.1 |
| | Leadfoot-0 | YES | 1.00 | 1.00 | 0.1 |
| | Lewis | YES | 1.11 | 1.11 | 0.1 |
| | Primary-BIOS | YES | 18.33 | 18.33 | 0.1 |
| ----- | | | | | |
| A99-24X10GE-1G-SE | CBC | NO | 47.03 | 47.03 | 0.1 |
| | IPU-FPGA | YES | 1.90 | 1.90 | 0.1 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.1 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.1 |
| | Leadfoot-0 | YES | 1.00 | 1.00 | 0.1 |
| | Lewis | YES | 1.11 | 1.11 | 0.1 |
| | Primary-BIOS | YES | 18.33 | 18.33 | 0.1 |
| ----- | | | | | |
| A99-24X10GE-1G-TR | CBC | NO | 47.03 | 47.03 | 0.1 |
| | IPU-FPGA | YES | 1.90 | 1.90 | 0.1 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.1 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.1 |
| | LeadFoot-0 | YES | 1.00 | 1.00 | 0.1 |
| | Lewis | YES | 1.11 | 1.11 | 0.1 |
| | Primary-BIOS | YES | 18.33 | 18.33 | 0.1 |
| ----- | | | | | |
| A99-32X100GE-CM | Aldrin-FPGA | YES | 1.05 | 1.05 | 0.0 |
| | CBC | NO | 48.09 | 48.09 | 0.0 |
| | Grapple-0 | YES | 0.15 | 0.15 | 0.0 |
| | Grapple-1 | YES | 0.15 | 0.15 | 0.0 |
| | IPU-DDR4 | YES | 1.09 | 1.09 | 0.0 |
| | Mixmaster-0 | YES | 0.13 | 0.13 | 0.0 |
| | Mixmaster-1 | YES | 0.13 | 0.13 | 0.0 |
| | Primary-BIOS | YES | 21.43 | 21.43 | 0.0 |
| | Scamper | YES | 0.23 | 0.23 | 0.0 |
| | Skylynx-0 | YES | 0.12 | 0.12 | 0.0 |
| | Skylynx-1 | YES | 0.12 | 0.12 | 0.0 |
| ----- | | | | | |
| A99-32X100GE-DENS | Aldrin-FPGA | YES | 1.05 | 1.05 | 0.0 |
| | CBC | NO | 57.04 | 57.04 | 0.0 |
| | Grapple-0 | YES | 0.12 | 0.12 | 0.0 |
| | Grapple-1 | YES | 0.12 | 0.12 | 0.0 |
| | IPU-DDR4 | YES | 1.08 | 1.08 | 0.0 |
| | Mixmaster-0 | YES | 0.13 | 0.13 | 0.0 |
| | Mixmaster-1 | YES | 0.13 | 0.13 | 0.0 |
| | Primary-BIOS | YES | 25.31 | 25.31 | 0.0 |
| | Skylynx-0 | YES | 0.08 | 0.08 | 0.0 |
| | Skylynx-1 | YES | 0.08 | 0.08 | 0.0 |
| | Sunstreaker | YES | 0.19 | 0.19 | 0.0 |
| | TAMFW-Sunstreaker | YES | 2.72 | 2.72 | 0.0 |
| ----- | | | | | |
| A99-32X100GE-SE | Aldrin-FPGA | YES | 1.05 | 1.05 | 0.0 |

| | | | | | |
|-------------------|-------------------|-----|-------|-------|-----|
| | CBC | NO | 48.09 | 48.09 | 0.0 |
| | Grapple-0 | YES | 0.15 | 0.15 | 0.0 |
| | Grapple-1 | YES | 0.15 | 0.15 | 0.0 |
| | IPU-DDR4 | YES | 1.09 | 1.09 | 0.0 |
| | Mixmaster-0 | YES | 0.13 | 0.13 | 0.0 |
| | Mixmaster-1 | YES | 0.13 | 0.13 | 0.0 |
| | Primary-BIOS | YES | 21.43 | 21.43 | 0.0 |
| | Scamper | YES | 0.23 | 0.23 | 0.0 |
| | Skylynx-0 | YES | 0.12 | 0.12 | 0.0 |
| | Skylynx-1 | YES | 0.12 | 0.12 | 0.0 |
| ----- | | | | | |
| A99-32X100GE-TR | Aldrin-FPGA | YES | 1.05 | 1.05 | 0.0 |
| | CBC | NO | 48.09 | 48.09 | 0.0 |
| | Grapple-0 | YES | 0.15 | 0.15 | 0.0 |
| | Grapple-1 | YES | 0.15 | 0.15 | 0.0 |
| | IPU-DDR4 | YES | 1.09 | 1.09 | 0.0 |
| | Mixmaster-0 | YES | 0.13 | 0.13 | 0.0 |
| | Mixmaster-1 | YES | 0.13 | 0.13 | 0.0 |
| | Primary-BIOS | YES | 21.43 | 21.43 | 0.0 |
| | Scamper | YES | 0.23 | 0.23 | 0.0 |
| | Skylynx-0 | YES | 0.12 | 0.12 | 0.0 |
| | Skylynx-1 | YES | 0.12 | 0.12 | 0.0 |
| ----- | | | | | |
| A99-32X100GE-X-CM | Aldrin-FPGA | YES | 1.05 | 1.05 | 0.0 |
| | CBC | NO | 57.04 | 57.04 | 0.0 |
| | Grapple-0 | YES | 0.15 | 0.15 | 0.0 |
| | Grapple-1 | YES | 0.15 | 0.15 | 0.0 |
| | IPU-DDR4 | YES | 1.18 | 1.18 | 0.0 |
| | Mixmaster-0 | YES | 0.13 | 0.13 | 0.0 |
| | Mixmaster-1 | YES | 0.13 | 0.13 | 0.0 |
| | Primary-BIOS | YES | 25.31 | 25.31 | 0.0 |
| | Skylynx-0 | YES | 0.12 | 0.12 | 0.0 |
| | Skylynx-1 | YES | 0.12 | 0.12 | 0.0 |
| | Sunstreaker | YES | 0.19 | 0.19 | 0.0 |
| | TAMFW-Sunstreaker | YES | 2.72 | 2.72 | 0.0 |
| ----- | | | | | |
| A99-32X100GE-X-SE | Aldrin-FPGA | YES | 1.05 | 1.05 | 0.0 |
| | CBC | NO | 57.04 | 57.04 | 0.0 |
| | Grapple-0 | YES | 0.15 | 0.15 | 0.0 |
| | Grapple-1 | YES | 0.15 | 0.15 | 0.0 |
| | IPU-DDR4 | YES | 1.18 | 1.18 | 0.0 |
| | Mixmaster-0 | YES | 0.13 | 0.13 | 0.0 |
| | Mixmaster-1 | YES | 0.13 | 0.13 | 0.0 |
| | Primary-BIOS | YES | 25.31 | 25.31 | 0.0 |
| | Skylynx-0 | YES | 0.12 | 0.12 | 0.0 |
| | Skylynx-1 | YES | 0.12 | 0.12 | 0.0 |
| | Sunstreaker | YES | 0.19 | 0.19 | 0.0 |
| | TAMFW-Sunstreaker | YES | 2.72 | 2.72 | 0.0 |
| ----- | | | | | |
| A99-32X100GE-X-TR | Aldrin-FPGA | YES | 1.05 | 1.05 | 0.0 |
| | CBC | NO | 57.04 | 57.04 | 0.0 |
| | Grapple-0 | YES | 0.15 | 0.15 | 0.0 |
| | Grapple-1 | YES | 0.15 | 0.15 | 0.0 |
| | IPU-DDR4 | YES | 1.18 | 1.18 | 0.0 |
| | Mixmaster-0 | YES | 0.13 | 0.13 | 0.0 |
| | Mixmaster-1 | YES | 0.13 | 0.13 | 0.0 |
| | Primary-BIOS | YES | 25.31 | 25.31 | 0.0 |
| | Skylynx-0 | YES | 0.12 | 0.12 | 0.0 |
| | Skylynx-1 | YES | 0.12 | 0.12 | 0.0 |
| | Sunstreaker | YES | 0.19 | 0.19 | 0.0 |
| | TAMFW-Sunstreaker | YES | 2.72 | 2.72 | 0.0 |
| ----- | | | | | |
| A99-48X10GE-1G-CM | CBC | NO | 47.03 | 47.03 | 0.1 |
| | IPU-FPGA | YES | 1.90 | 1.90 | 0.1 |

| | | | | | |
|-------------------|-------------------|-----|-------|-------|-----|
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.1 |
| | IPU-Linux | YES | 1.113 | 1.113 | 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 | 18.33 | 18.33 | 0.1 |
| ----- | | | | | |
| A99-48X10GE-1G-SE | CBC | NO | 47.03 | 47.03 | 0.1 |
| | IPU-FPGA | YES | 1.90 | 1.90 | 0.1 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.1 |
| | IPU-Linux | YES | 1.113 | 1.113 | 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 | 18.33 | 18.33 | 0.1 |
| ----- | | | | | |
| A99-48X10GE-1G-TR | CBC | NO | 47.03 | 47.03 | 0.1 |
| | IPU-FPGA | YES | 1.90 | 1.90 | 0.1 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.1 |
| | IPU-Linux | YES | 1.113 | 1.113 | 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 | 18.33 | 18.33 | 0.1 |
| ----- | | | | | |
| A99-4HG-FLEX-FC | Aldrin-FPGA | YES | 1.05 | 1.05 | 0.0 |
| | CBC | NO | 63.03 | 63.03 | 0.0 |
| | IPU-DDR4 | YES | 1.05 | 1.05 | 0.0 |
| | Moonracer | YES | 0.14 | 0.14 | 0.0 |
| | Primary-BIOS | YES | 25.31 | 25.31 | 0.0 |
| | Skywarp-0 | YES | 0.11 | 0.11 | 0.0 |
| | Skywarp-1 | YES | 0.11 | 0.11 | 0.0 |
| | Sunstreaker | YES | 0.19 | 0.19 | 0.0 |
| | TAMFW-Sunstreaker | YES | 2.72 | 2.72 | 0.0 |
| ----- | | | | | |
| A99-4HG-FLEX-SE | Aldrin-FPGA | YES | 1.05 | 1.05 | 0.0 |
| | CBC | NO | 63.03 | 63.03 | 0.0 |
| | IPU-DDR4 | YES | 1.05 | 1.05 | 0.0 |
| | Moonracer | YES | 0.14 | 0.14 | 0.0 |
| | Primary-BIOS | YES | 25.31 | 25.31 | 0.0 |
| | Skywarp-0 | YES | 0.11 | 0.11 | 0.0 |
| | Skywarp-1 | YES | 0.11 | 0.11 | 0.0 |
| | Sunstreaker | YES | 0.19 | 0.19 | 0.0 |
| | TAMFW-Sunstreaker | YES | 2.72 | 2.72 | 0.0 |
| ----- | | | | | |
| A99-4HG-FLEX-TR | Aldrin-FPGA | YES | 1.05 | 1.05 | 0.0 |
| | CBC | NO | 63.03 | 63.03 | 0.0 |
| | IPU-DDR4 | YES | 1.05 | 1.05 | 0.0 |
| | Moonracer | YES | 0.14 | 0.14 | 0.0 |
| | Primary-BIOS | YES | 25.31 | 25.31 | 0.0 |
| | Skywarp-0 | YES | 0.11 | 0.11 | 0.0 |
| | Skywarp-1 | YES | 0.11 | 0.11 | 0.0 |
| | Sunstreaker | YES | 0.19 | 0.19 | 0.0 |
| | TAMFW-Sunstreaker | YES | 2.72 | 2.72 | 0.0 |
| ----- | | | | | |
| A99-4X100GE-SE | CBC | NO | 38.23 | 38.23 | 0.0 |
| | Dalla | YES | 1.09 | 1.09 | 0.0 |
| | IPU-FPGA | YES | 1.99 | 1.99 | 0.0 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.0 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.0 |
| | Meldun-0 | YES | 1.07 | 1.07 | 0.0 |
| | Meldun-1 | YES | 1.07 | 1.07 | 0.0 |
| | Primary-BIOS | YES | 8.51 | 8.51 | 0.0 |
| ----- | | | | | |

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

| | | | | | |
|--------------------|---------------|-----|-------|-------|-----|
| | Dalla | YES | 1.09 | 1.09 | 0.0 |
| | IPU-FPGA | YES | 1.99 | 1.99 | 0.0 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.0 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.0 |
| | Meldun-0 | YES | 1.07 | 1.07 | 0.0 |
| | Meldun-1 | YES | 1.07 | 1.07 | 0.0 |
| | Primary-BIOS | YES | 8.51 | 8.51 | 0.0 |
| ----- | | | | | |
| A99-8X100GE-SE | CBC | NO | 38.23 | 38.23 | 0.0 |
| | Dalla | YES | 1.09 | 1.09 | 0.0 |
| | IPU-FPGA | YES | 1.99 | 1.99 | 0.0 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.0 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.0 |
| | Meldun-0 | YES | 1.07 | 1.07 | 0.0 |
| | Meldun-1 | YES | 1.07 | 1.07 | 0.0 |
| | Primary-BIOS | YES | 8.51 | 8.51 | 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 | 1.99 | 1.99 | 0.0 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.0 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.0 |
| | Meldun-0 | YES | 1.07 | 1.07 | 0.0 |
| | Meldun-1 | YES | 1.07 | 1.07 | 0.0 |
| | Primary-BIOS | YES | 8.51 | 8.51 | 0.0 |
| ----- | | | | | |
| A99-8X100GE-TAA | CBC | NO | 38.23 | 38.23 | 0.0 |
| | Dalla | YES | 1.09 | 1.09 | 0.0 |
| | IPU-FPGA | YES | 1.99 | 1.99 | 0.0 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.0 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.0 |
| | Meldun-0 | YES | 1.07 | 1.07 | 0.0 |
| | Meldun-1 | YES | 1.07 | 1.07 | 0.0 |
| | Primary-BIOS | YES | 8.51 | 8.51 | 0.0 |
| ----- | | | | | |
| A99-8X100GE-TR | CBC | NO | 38.23 | 38.23 | 0.0 |
| | Dalla | YES | 1.09 | 1.09 | 0.0 |
| | IPU-FPGA | YES | 1.99 | 1.99 | 0.0 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.0 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.0 |
| | Meldun-0 | YES | 1.07 | 1.07 | 0.0 |
| | Meldun-1 | YES | 1.07 | 1.07 | 0.0 |
| | Primary-BIOS | YES | 8.51 | 8.51 | 0.0 |
| ----- | | | | | |
| A99-8X100GE-TR | CBC | NO | 38.23 | 38.23 | 0.0 |
| | Dalla | YES | 1.09 | 1.09 | 0.0 |
| | IPU-FPGA | YES | 1.99 | 1.99 | 0.0 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.0 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.0 |
| | Meldun-0 | YES | 1.07 | 1.07 | 0.0 |
| | Meldun-1 | YES | 1.07 | 1.07 | 0.0 |
| | Primary-BIOS | YES | 8.51 | 8.51 | 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 | 1.99 | 1.99 | 0.0 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.0 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.0 |
| | Meldun-0 | YES | 1.07 | 1.07 | 0.0 |
| | Meldun-1 | YES | 1.07 | 1.07 | 0.0 |
| | Primary-BIOS | YES | 8.51 | 8.51 | 0.0 |
| ----- | | | | | |
| A99-RP-F | Aldrin-0-FPGA | YES | 1.06 | 1.06 | 0.0 |
| | CBC | NO | 59.13 | 59.13 | 0.0 |

| | | | | | |
|--------------|----------------|-----|-------|-------|-----|
| | Lionheart-FPGA | YES | 0.30 | 0.30 | 0.0 |
| | Longshot | YES | 2.16 | 2.16 | 0.0 |
| | Primary-BIOS | YES | 33.31 | 33.31 | 0.0 |
| | TamFW-Longshot | YES | 2.65 | 2.65 | 0.0 |
| | Wolfpack-FPGA | YES | 0.19 | 0.19 | 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 | 0.09 | 0.09 | 0.0 |
| | IPU-FPGA | YES | 0.72 | 0.72 | 0.0 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.0 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.0 |
| | Omega-FPGA | YES | 0.20 | 0.20 | 0.0 |
| | Optimus-FPGA | YES | 0.12 | 0.12 | 0.0 |
| | Primary-BIOS | YES | 14.39 | 14.39 | 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 | 0.09 | 0.09 | 0.0 |
| | IPU-FPGA | YES | 0.72 | 0.72 | 0.0 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.0 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.0 |
| | Omega-FPGA | YES | 0.20 | 0.20 | 0.0 |
| | Optimus-FPGA | YES | 0.12 | 0.12 | 0.0 |
| | Primary-BIOS | YES | 14.39 | 14.39 | 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 | 0.20 | 0.20 | 0.0 |
| | Orion-FPGA | YES | 0.23 | 0.23 | 0.0 |
| | Primary-BIOS | YES | 30.37 | 30.37 | 0.0 |
| | Zenith-FPGA | YES | 0.12 | 0.12 | 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 | 0.20 | 0.20 | 0.0 |
| | Orion-FPGA | YES | 0.23 | 0.23 | 0.0 |
| | Primary-BIOS | YES | 30.37 | 30.37 | 0.0 |
| | Zenith-FPGA | YES | 0.12 | 0.12 | 0.0 |
| ----- | | | | | |
| A99-RP3-X-SE | Aldrin-0-FPGA | YES | 1.00 | 1.00 | 0.0 |
| | Aldrin-1-FPGA | YES | 32.00 | 32.00 | 0.0 |
| | Beta-FPGA | YES | 2.02 | 2.02 | 0.0 |
| | CBC-0 | NO | 12.04 | 12.04 | 0.0 |
| | CBC-1 | NO | 51.12 | 51.12 | 0.0 |
| | IPU-DDR4 | YES | 3.04 | 3.04 | 0.0 |
| | Orion-FPGA | YES | 2.03 | 2.03 | 0.0 |
| | Primary-BIOS | YES | 35.12 | 35.12 | 0.0 |
| | Sigma | YES | 3.34 | 3.34 | 0.0 |
| | TamFW-Sigma | YES | 2.07 | 2.07 | 0.0 |
| | Zenith-FPGA | YES | 2.08 | 2.08 | 0.0 |
| ----- | | | | | |
| A99-RP3-X-TR | Aldrin-0-FPGA | YES | 1.00 | 1.00 | 0.0 |
| | Aldrin-1-FPGA | YES | 32.00 | 32.00 | 0.0 |
| | Beta-FPGA | YES | 2.02 | 2.02 | 0.0 |
| | CBC-0 | NO | 12.04 | 12.04 | 0.0 |

| | | | | | |
|---------------------|--------------|-----|-------|-------|-----|
| | CBC-1 | NO | 51.12 | 51.12 | 0.0 |
| | IPU-DDR4 | YES | 3.04 | 3.04 | 0.0 |
| | Orion-FPGA | YES | 2.03 | 2.03 | 0.0 |
| | Primary-BIOS | YES | 35.12 | 35.12 | 0.0 |
| | Sigma | YES | 3.34 | 3.34 | 0.0 |
| | TamFW-Sigma | YES | 2.07 | 2.07 | 0.0 |
| | Zenith-FPGA | YES | 2.08 | 2.08 | 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 | 0.09 | 0.09 | 0.0 |
| | IPU-FPGA | YES | 0.72 | 0.72 | 0.0 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.0 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.0 |
| | Omega-FPGA | YES | 0.20 | 0.20 | 0.0 |
| | Optimus-FPGA | YES | 0.12 | 0.12 | 0.0 |
| | Primary-BIOS | YES | 16.18 | 16.18 | 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 | 0.09 | 0.09 | 0.0 |
| | IPU-FPGA | YES | 0.72 | 0.72 | 0.0 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.0 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.0 |
| | Omega-FPGA | YES | 0.20 | 0.20 | 0.0 |
| | Optimus-FPGA | YES | 0.12 | 0.12 | 0.0 |
| | Primary-BIOS | YES | 16.18 | 16.18 | 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 | 0.25 | 0.25 | 0.0 |
| ----- | | | | | |
| A99-SFC3-S | CBC | NO | 44.02 | 44.02 | 0.0 |
| | IPU-DDR4 | YES | 0.25 | 0.25 | 0.0 |
| ----- | | | | | |
| A99-SFC3-T | CBC | NO | 44.02 | 44.02 | 0.0 |
| | IPU-DDR4 | YES | 0.25 | 0.25 | 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 | 1.99 | 1.99 | 0.0 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.0 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.0 |
| | Meldun-0 | YES | 1.07 | 1.07 | 0.0 |
| | Meldun-1 | YES | 1.07 | 1.07 | 0.0 |
| | Primary-BIOS | YES | 8.51 | 8.51 | 0.0 |
| ----- | | | | | |
| A99L-4X100GE-TAA | CBC | NO | 38.23 | 38.23 | 0.0 |
| | Dalla | YES | 1.09 | 1.09 | 0.0 |
| | IPU-FPGA | YES | 1.99 | 1.99 | 0.0 |

| | | | | | |
|---------------------|--------------|-----|--------|--------|-----|
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.0 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.0 |
| | Meldun-0 | YES | 1.07 | 1.07 | 0.0 |
| | Meldun-1 | YES | 1.07 | 1.07 | 0.0 |
| | Primary-BIOS | YES | 8.51 | 8.51 | 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 | 1.99 | 1.99 | 0.0 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.0 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.0 |
| | Meldun-0 | YES | 1.07 | 1.07 | 0.0 |
| | Meldun-1 | YES | 1.07 | 1.07 | 0.0 |
| | Primary-BIOS | YES | 8.51 | 8.51 | 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 | 1.99 | 1.99 | 0.0 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.0 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.0 |
| | Meldun-0 | YES | 1.07 | 1.07 | 0.0 |
| | Meldun-1 | YES | 1.07 | 1.07 | 0.0 |
| | Primary-BIOS | YES | 8.51 | 8.51 | 0.0 |
| ----- | | | | | |
| A99L-8X100GE-TAA | CBC | NO | 38.23 | 38.23 | 0.0 |
| | Dalla | YES | 1.09 | 1.09 | 0.0 |
| | IPU-FPGA | YES | 1.99 | 1.99 | 0.0 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.0 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.0 |
| | Meldun-0 | YES | 1.07 | 1.07 | 0.0 |
| | Meldun-1 | YES | 1.07 | 1.07 | 0.0 |
| | Primary-BIOS | YES | 8.51 | 8.51 | 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 | 1.99 | 1.99 | 0.0 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.0 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.0 |
| | Meldun-0 | YES | 1.07 | 1.07 | 0.0 |
| | Meldun-1 | YES | 1.07 | 1.07 | 0.0 |
| | Primary-BIOS | YES | 8.51 | 8.51 | 0.0 |
| ----- | | | | | |
| A9K-1600W-AC | PO-PrimCU | NO | 17.137 | 17.137 | 0.0 |
| ----- | | | | | |
| A9K-1600W-DC | PO-PrimCU | NO | 1.09 | 1.09 | 0.0 |
| ----- | | | | | |
| A9K-16X100GE-CM | Aldrin-FPGA | YES | 1.05 | 1.05 | 0.0 |
| | CBC | NO | 48.09 | 48.09 | 0.0 |
| | Grapple-0 | YES | 0.15 | 0.15 | 0.0 |
| | IPU-DDR4 | YES | 1.09 | 1.09 | 0.0 |
| | Mixmaster-0 | YES | 0.13 | 0.13 | 0.0 |
| | Primary-BIOS | YES | 21.43 | 21.43 | 0.0 |
| | Scamper | YES | 0.23 | 0.23 | 0.0 |
| | Skylynx-0 | YES | 0.12 | 0.12 | 0.0 |
| ----- | | | | | |
| A9K-16X100GE-SE | Aldrin-FPGA | YES | 1.05 | 1.05 | 0.0 |
| | CBC | NO | 48.09 | 48.09 | 0.0 |
| | Grapple-0 | YES | 0.15 | 0.15 | 0.0 |
| | IPU-DDR4 | YES | 1.09 | 1.09 | 0.0 |
| | Mixmaster-0 | YES | 0.13 | 0.13 | 0.0 |
| | Primary-BIOS | YES | 21.43 | 21.43 | 0.0 |
| | Scamper | YES | 0.23 | 0.23 | 0.0 |
| | Skylynx-0 | YES | 0.12 | 0.12 | 0.0 |
| ----- | | | | | |

| | | | | | |
|-------------------|-------------------|-----|-------|-------|-----|
| A9K-16X100GE-TR | Aldrin-FPGA | YES | 1.05 | 1.05 | 0.0 |
| | CBC | NO | 48.09 | 48.09 | 0.0 |
| | Grapple-0 | YES | 0.15 | 0.15 | 0.0 |
| | IPU-DDR4 | YES | 1.09 | 1.09 | 0.0 |
| | Mixmaster-0 | YES | 0.13 | 0.13 | 0.0 |
| | Primary-BIOS | YES | 21.43 | 21.43 | 0.0 |
| | Scamper | YES | 0.23 | 0.23 | 0.0 |
| | Skylynx-0 | YES | 0.12 | 0.12 | 0.0 |
| ----- | | | | | |
| A9K-16X100GE-TR | Aldrin-FPGA | YES | 1.05 | 1.05 | 0.0 |
| | CBC | NO | 48.09 | 48.09 | 0.0 |
| | Grapple-0 | YES | 0.15 | 0.15 | 0.0 |
| | IPU-DDR4 | YES | 1.09 | 1.09 | 0.0 |
| | Mixmaster-0 | YES | 0.13 | 0.13 | 0.0 |
| | Primary-BIOS | YES | 21.43 | 21.43 | 0.0 |
| | Scamper | YES | 0.23 | 0.23 | 0.0 |
| | Skylynx-0 | YES | 0.12 | 0.12 | 0.0 |
| ----- | | | | | |
| A9K-20HG-FLEX-CM | Aldrin-FPGA | YES | 1.05 | 1.05 | 0.0 |
| | CBC | NO | 58.09 | 58.09 | 0.0 |
| | IPU-DDR4 | YES | 1.18 | 1.18 | 0.0 |
| | Primary-BIOS | YES | 25.31 | 25.31 | 0.0 |
| | Sunstreaker | YES | 0.19 | 0.19 | 0.0 |
| | TAMFW-Sunstreaker | YES | 2.72 | 2.72 | 0.0 |
| | Trailbreaker-0 | YES | 0.24 | 0.24 | 0.0 |
| | Trailbreaker-1 | YES | 0.24 | 0.24 | 0.0 |
| | Windcharger-0 | YES | 0.08 | 0.08 | 0.0 |
| | Windcharger-1 | YES | 0.08 | 0.08 | 0.0 |
| | ----- | | | | |
| A9K-20HG-FLEX-SE | Aldrin-FPGA | YES | 1.05 | 1.05 | 0.0 |
| | CBC | NO | 58.09 | 58.09 | 0.0 |
| | IPU-DDR4 | YES | 1.18 | 1.18 | 0.0 |
| | Primary-BIOS | YES | 25.31 | 25.31 | 0.0 |
| | Sunstreaker | YES | 0.19 | 0.19 | 0.0 |
| | TAMFW-Sunstreaker | YES | 2.72 | 2.72 | 0.0 |
| | Trailbreaker-0 | YES | 0.24 | 0.24 | 0.0 |
| | Trailbreaker-1 | YES | 0.24 | 0.24 | 0.0 |
| | Windcharger-0 | YES | 0.08 | 0.08 | 0.0 |
| | Windcharger-1 | YES | 0.08 | 0.08 | 0.0 |
| | ----- | | | | |
| A9K-20HG-FLEX-TR | Aldrin-FPGA | YES | 1.05 | 1.05 | 0.0 |
| | CBC | NO | 58.09 | 58.09 | 0.0 |
| | IPU-DDR4 | YES | 1.18 | 1.18 | 0.0 |
| | Primary-BIOS | YES | 25.31 | 25.31 | 0.0 |
| | Sunstreaker | YES | 0.19 | 0.19 | 0.0 |
| | TAMFW-Sunstreaker | YES | 2.72 | 2.72 | 0.0 |
| | Trailbreaker-0 | YES | 0.24 | 0.24 | 0.0 |
| | Trailbreaker-1 | YES | 0.24 | 0.24 | 0.0 |
| | Windcharger-0 | YES | 0.08 | 0.08 | 0.0 |
| | Windcharger-1 | YES | 0.08 | 0.08 | 0.0 |
| | ----- | | | | |
| A9K-24X10GE-1G-CM | CBC | NO | 47.03 | 47.03 | 0.1 |
| | IPU-FPGA | YES | 1.90 | 1.90 | 0.1 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.1 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.1 |
| | Leadfoot-0 | YES | 1.00 | 1.00 | 0.1 |
| | Lewis | YES | 1.11 | 1.11 | 0.1 |
| | Primary-BIOS | YES | 18.33 | 18.33 | 0.1 |
| ----- | | | | | |
| A9K-24X10GE-1G-SE | CBC | NO | 47.03 | 47.03 | 0.1 |
| | IPU-FPGA | YES | 1.90 | 1.90 | 0.1 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.1 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.1 |
| | Leadfoot-0 | YES | 1.00 | 1.00 | 0.1 |

| | | | | | |
|-------------------|-------------------|-----|-------|-------|-----|
| | Lewis | YES | 1.11 | 1.11 | 0.1 |
| | Primary-BIOS | YES | 18.33 | 18.33 | 0.1 |
| ----- | | | | | |
| A9K-24X10GE-1G-TR | CBC | NO | 47.03 | 47.03 | 0.1 |
| | IPU-FPGA | YES | 1.90 | 1.90 | 0.1 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.1 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.1 |
| | Leadfoot-0 | YES | 1.00 | 1.00 | 0.1 |
| | Lewis | YES | 1.11 | 1.11 | 0.1 |
| | Primary-BIOS | YES | 18.33 | 18.33 | 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 | 8.51 | 8.51 | 0.1 |
| ----- | | | | | |
| A9K-400GE-LSP | Aldrin-FPGA | YES | 1.05 | 1.05 | 0.0 |
| | CBC | NO | 63.03 | 63.03 | 0.0 |
| | IPU-DDR4 | YES | 1.05 | 1.05 | 0.0 |
| | Moonracer | YES | 0.14 | 0.14 | 0.0 |
| | Primary-BIOS | YES | 25.31 | 25.31 | 0.0 |
| | Skywarp-0 | YES | 0.11 | 0.11 | 0.0 |
| | Skywarp-1 | YES | 0.11 | 0.11 | 0.0 |
| | Sunstreaker | YES | 0.19 | 0.19 | 0.0 |
| | TAMFW-Sunstreaker | YES | 2.72 | 2.72 | 0.0 |
| ----- | | | | | |
| A9K-48X10GE-1G-CM | CBC | NO | 47.03 | 47.03 | 0.1 |
| | IPU-FPGA | YES | 1.90 | 1.90 | 0.1 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.1 |
| | IPU-Linux | YES | 1.113 | 1.113 | 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 | 18.33 | 18.33 | 0.1 |
| ----- | | | | | |
| A9K-48X10GE-1G-SE | CBC | NO | 47.03 | 47.03 | 0.1 |
| | IPU-FPGA | YES | 1.90 | 1.90 | 0.1 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.1 |
| | IPU-Linux | YES | 1.113 | 1.113 | 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 | 18.33 | 18.33 | 0.1 |
| ----- | | | | | |
| A9K-48X10GE-1G-TR | CBC | NO | 47.03 | 47.03 | 0.1 |
| | IPU-FPGA | YES | 1.90 | 1.90 | 0.1 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.1 |
| | IPU-Linux | YES | 1.113 | 1.113 | 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 | 18.33 | 18.33 | 0.1 |
| ----- | | | | | |
| A9K-4HG-FLEX-FC | Aldrin-FPGA | YES | 1.05 | 1.05 | 0.0 |
| | CBC | NO | 63.03 | 63.03 | 0.0 |
| | IPU-DDR4 | YES | 1.05 | 1.05 | 0.0 |
| | Moonracer | YES | 0.14 | 0.14 | 0.0 |
| | Primary-BIOS | YES | 25.31 | 25.31 | 0.0 |
| | Skywarp-0 | YES | 0.11 | 0.11 | 0.0 |

| | | | | | |
|--------------------|-------------------|-----|-------|-------|-----|
| | Skywarp-1 | YES | 0.11 | 0.11 | 0.0 |
| | Sunstreaker | YES | 0.19 | 0.19 | 0.0 |
| | TAMFW-Sunstreaker | YES | 2.72 | 2.72 | 0.0 |
| ----- | | | | | |
| A9K-4HG-FLEX-SE | Aldrin-FPGA | YES | 1.05 | 1.05 | 0.0 |
| | CBC | NO | 63.03 | 63.03 | 0.0 |
| | IPU-DDR4 | YES | 1.05 | 1.05 | 0.0 |
| | Moonracer | YES | 0.14 | 0.14 | 0.0 |
| | Primary-BIOS | YES | 25.31 | 25.31 | 0.0 |
| | Skywarp-0 | YES | 0.11 | 0.11 | 0.0 |
| | Skywarp-1 | YES | 0.11 | 0.11 | 0.0 |
| | Sunstreaker | YES | 0.19 | 0.19 | 0.0 |
| | TAMFW-Sunstreaker | YES | 2.72 | 2.72 | 0.0 |
| ----- | | | | | |
| A9K-4HG-FLEX-TR | Aldrin-FPGA | YES | 1.05 | 1.05 | 0.0 |
| | CBC | NO | 63.03 | 63.03 | 0.0 |
| | IPU-DDR4 | YES | 1.05 | 1.05 | 0.0 |
| | Moonracer | YES | 0.14 | 0.14 | 0.0 |
| | Primary-BIOS | YES | 25.31 | 25.31 | 0.0 |
| | Skywarp-0 | YES | 0.11 | 0.11 | 0.0 |
| | Skywarp-1 | YES | 0.11 | 0.11 | 0.0 |
| | Sunstreaker | YES | 0.19 | 0.19 | 0.0 |
| | TAMFW-Sunstreaker | YES | 2.72 | 2.72 | 0.0 |
| ----- | | | | | |
| A9K-4X100GE | CBC | NO | 46.06 | 46.06 | 0.1 |
| | IPU-FPGA | YES | 1.90 | 1.90 | 0.1 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.1 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.1 |
| | Morra-0 | YES | 1.05 | 1.05 | 0.1 |
| | Primary-BIOS | YES | 9.33 | 9.33 | 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 | 1.99 | 1.99 | 0.0 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.0 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.0 |
| | Meldun-0 | YES | 1.07 | 1.07 | 0.0 |
| | Meldun-1 | YES | 1.07 | 1.07 | 0.0 |
| | Primary-BIOS | YES | 8.51 | 8.51 | 0.0 |
| ----- | | | | | |
| A9K-4X100GE-SE | CBC | NO | 38.23 | 38.23 | 0.0 |
| | Dalla | YES | 1.09 | 1.09 | 0.0 |
| | IPU-FPGA | YES | 1.99 | 1.99 | 0.0 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.0 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.0 |
| | Meldun-0 | YES | 1.07 | 1.07 | 0.0 |
| | Meldun-1 | YES | 1.07 | 1.07 | 0.0 |
| | Primary-BIOS | YES | 8.51 | 8.51 | 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 | 1.99 | 1.99 | 0.0 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.0 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.0 |
| | Meldun-0 | YES | 1.07 | 1.07 | 0.0 |
| | Meldun-1 | YES | 1.07 | 1.07 | 0.0 |
| | Primary-BIOS | YES | 8.51 | 8.51 | 0.0 |
| ----- | | | | | |
| A9K-4X100GE-TAA | CBC | NO | 38.23 | 38.23 | 0.0 |
| | Dalla | YES | 1.09 | 1.09 | 0.0 |
| | IPU-FPGA | YES | 1.99 | 1.99 | 0.0 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.0 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.0 |

| | | | | | |
|--------------------|-------------------|-----|-------|-------|-----|
| | Meldun-0 | YES | 1.07 | 1.07 | 0.0 |
| | Meldun-1 | YES | 1.07 | 1.07 | 0.0 |
| | Primary-BIOS | YES | 8.51 | 8.51 | 0.0 |
| ----- | | | | | |
| A9K-4X100GE-TR | CBC | NO | 38.23 | 38.23 | 0.0 |
| | Dalla | YES | 1.09 | 1.09 | 0.0 |
| | IPU-FPGA | YES | 1.99 | 1.99 | 0.0 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.0 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.0 |
| | Meldun-0 | YES | 1.07 | 1.07 | 0.0 |
| | Meldun-1 | YES | 1.07 | 1.07 | 0.0 |
| | Primary-BIOS | YES | 8.51 | 8.51 | 0.0 |
| ----- | | | | | |
| A9K-4X100GE-TR | CBC | NO | 38.23 | 38.23 | 0.0 |
| | Dalla | YES | 1.09 | 1.09 | 0.0 |
| | IPU-FPGA | YES | 1.99 | 1.99 | 0.0 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.0 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.0 |
| | Meldun-0 | YES | 1.07 | 1.07 | 0.0 |
| | Meldun-1 | YES | 1.07 | 1.07 | 0.0 |
| | Primary-BIOS | YES | 8.51 | 8.51 | 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 | 1.99 | 1.99 | 0.0 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.0 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.0 |
| | Meldun-0 | YES | 1.07 | 1.07 | 0.0 |
| | Meldun-1 | YES | 1.07 | 1.07 | 0.0 |
| | Primary-BIOS | YES | 8.51 | 8.51 | 0.0 |
| ----- | | | | | |
| A9K-4X100GE-TR-V2 | Aldrin-FPGA | YES | 1.05 | 1.05 | 0.0 |
| | CBC | NO | 48.09 | 48.09 | 0.0 |
| | Grapple-0 | YES | 0.15 | 0.15 | 0.0 |
| | IPU-DDR4 | YES | 1.09 | 1.09 | 0.0 |
| | Mixmaster-0 | YES | 0.13 | 0.13 | 0.0 |
| | Primary-BIOS | YES | 21.43 | 21.43 | 0.0 |
| | Scamper | YES | 0.23 | 0.23 | 0.0 |
| | Skylynx-0 | YES | 0.12 | 0.12 | 0.0 |
| ----- | | | | | |
| A9K-8HG-FLEX-CM | Aldrin-FPGA | YES | 1.05 | 1.05 | 0.0 |
| | CBC | NO | 58.09 | 58.09 | 0.0 |
| | IPU-DDR4 | YES | 1.18 | 1.18 | 0.0 |
| | Primary-BIOS | YES | 25.31 | 25.31 | 0.0 |
| | Sunstreaker | YES | 0.19 | 0.19 | 0.0 |
| | TAMFW-Sunstreaker | YES | 2.72 | 2.72 | 0.0 |
| | Trailbreaker-0 | YES | 0.24 | 0.24 | 0.0 |
| | Windcharger-0 | YES | 0.08 | 0.08 | 0.0 |
| ----- | | | | | |
| A9K-8HG-FLEX-SE | Aldrin-FPGA | YES | 1.05 | 1.05 | 0.0 |
| | CBC | NO | 58.09 | 58.09 | 0.0 |
| | IPU-DDR4 | YES | 1.18 | 1.18 | 0.0 |
| | Primary-BIOS | YES | 25.31 | 25.31 | 0.0 |
| | Sunstreaker | YES | 0.19 | 0.19 | 0.0 |
| | TAMFW-Sunstreaker | YES | 2.72 | 2.72 | 0.0 |
| | Trailbreaker-0 | YES | 0.24 | 0.24 | 0.0 |
| | Windcharger-0 | YES | 0.08 | 0.08 | 0.0 |
| ----- | | | | | |
| A9K-8HG-FLEX-TR | Aldrin-FPGA | YES | 1.05 | 1.05 | 0.0 |
| | CBC | NO | 58.09 | 58.09 | 0.0 |
| | IPU-DDR4 | YES | 1.18 | 1.18 | 0.0 |
| | Primary-BIOS | YES | 25.31 | 25.31 | 0.0 |
| | Sunstreaker | YES | 0.19 | 0.19 | 0.0 |
| | TAMFW-Sunstreaker | YES | 2.72 | 2.72 | 0.0 |

| | | | | | |
|--------------------|----------------|-----|-------|-------|-----|
| | Trailbreaker-0 | YES | 0.24 | 0.24 | 0.0 |
| | Windcharger-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 | 1.99 | 1.99 | 0.0 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.0 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.0 |
| | Meldun-0 | YES | 1.07 | 1.07 | 0.0 |
| | Meldun-1 | YES | 1.07 | 1.07 | 0.0 |
| | Primary-BIOS | YES | 8.51 | 8.51 | 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 | 1.99 | 1.99 | 0.0 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.0 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.0 |
| | Meldun-0 | YES | 1.07 | 1.07 | 0.0 |
| | Meldun-1 | YES | 1.07 | 1.07 | 0.0 |
| | Primary-BIOS | YES | 8.51 | 8.51 | 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 | 1.99 | 1.99 | 0.0 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.0 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.0 |
| | Meldun-0 | YES | 1.07 | 1.07 | 0.0 |
| | Meldun-1 | YES | 1.07 | 1.07 | 0.0 |
| | Primary-BIOS | YES | 8.51 | 8.51 | 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 | 1.99 | 1.99 | 0.0 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.0 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.0 |
| | Meldun-0 | YES | 1.07 | 1.07 | 0.0 |
| | Meldun-1 | YES | 1.07 | 1.07 | 0.0 |
| | Primary-BIOS | YES | 8.51 | 8.51 | 0.0 |
| ----- | | | | | |
| A9K-8X100GE-SE | CBC | NO | 38.23 | 38.23 | 0.0 |
| | Dalla | YES | 1.09 | 1.09 | 0.0 |
| | IPU-FPGA | YES | 1.99 | 1.99 | 0.0 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.0 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.0 |
| | Meldun-0 | YES | 1.07 | 1.07 | 0.0 |
| | Meldun-1 | YES | 1.07 | 1.07 | 0.0 |
| | Primary-BIOS | YES | 8.51 | 8.51 | 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 | 1.99 | 1.99 | 0.0 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.0 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.0 |
| | Meldun-0 | YES | 1.07 | 1.07 | 0.0 |
| | Meldun-1 | YES | 1.07 | 1.07 | 0.0 |
| | Primary-BIOS | YES | 8.51 | 8.51 | 0.0 |
| ----- | | | | | |
| A9K-8X100GE-TAA | CBC | NO | 38.23 | 38.23 | 0.0 |
| | Dalla | YES | 1.09 | 1.09 | 0.0 |
| | IPU-FPGA | YES | 1.99 | 1.99 | 0.0 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.0 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.0 |
| | Meldun-0 | YES | 1.07 | 1.07 | 0.0 |
| | Meldun-1 | YES | 1.07 | 1.07 | 0.0 |

| | | | | | |
|--------------------|--------------|-----|-------|-------|-----|
| | Primary-BIOS | YES | 8.51 | 8.51 | 0.0 |
| ----- | | | | | |
| A9K-8X100GE-TR | CBC | NO | 38.23 | 38.23 | 0.0 |
| | Dalla | YES | 1.09 | 1.09 | 0.0 |
| | IPU-FPGA | YES | 1.99 | 1.99 | 0.0 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.0 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.0 |
| | Meldun-0 | YES | 1.07 | 1.07 | 0.0 |
| | Meldun-1 | YES | 1.07 | 1.07 | 0.0 |
| | Primary-BIOS | YES | 8.51 | 8.51 | 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 | 1.99 | 1.99 | 0.0 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.0 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.0 |
| | Meldun-0 | YES | 1.07 | 1.07 | 0.0 |
| | Meldun-1 | YES | 1.07 | 1.07 | 0.0 |
| | Primary-BIOS | YES | 8.51 | 8.51 | 0.0 |
| ----- | | | | | |
| A9K-8X100GE-X-CM | Aldrin-FPGA | YES | 1.05 | 1.05 | 0.0 |
| | CBC | NO | 48.09 | 48.09 | 0.0 |
| | Grapple-0 | YES | 0.15 | 0.15 | 0.0 |
| | IPU-DDR4 | YES | 1.09 | 1.09 | 0.0 |
| | Mixmaster-0 | YES | 0.13 | 0.13 | 0.0 |
| | Primary-BIOS | YES | 21.43 | 21.43 | 0.0 |
| | Scamper | YES | 0.23 | 0.23 | 0.0 |
| | Skylynx-0 | YES | 0.12 | 0.12 | 0.0 |
| ----- | | | | | |
| A9K-8X100GE-X-SE | Aldrin-FPGA | YES | 1.05 | 1.05 | 0.0 |
| | CBC | NO | 48.09 | 48.09 | 0.0 |
| | Grapple-0 | YES | 0.15 | 0.15 | 0.0 |
| | IPU-DDR4 | YES | 1.09 | 1.09 | 0.0 |
| | Mixmaster-0 | YES | 0.13 | 0.13 | 0.0 |
| | Primary-BIOS | YES | 21.43 | 21.43 | 0.0 |
| | Scamper | YES | 0.23 | 0.23 | 0.0 |
| | Skylynx-0 | YES | 0.12 | 0.12 | 0.0 |
| ----- | | | | | |
| A9K-8X100GE-X-TR | Aldrin-FPGA | YES | 1.05 | 1.05 | 0.0 |
| | CBC | NO | 48.09 | 48.09 | 0.0 |
| | Grapple-0 | YES | 0.15 | 0.15 | 0.0 |
| | IPU-DDR4 | YES | 1.09 | 1.09 | 0.0 |
| | Mixmaster-0 | YES | 0.13 | 0.13 | 0.0 |
| | Primary-BIOS | YES | 21.43 | 21.43 | 0.0 |
| | Scamper | YES | 0.23 | 0.23 | 0.0 |
| | Skylynx-0 | YES | 0.12 | 0.12 | 0.0 |
| ----- | | | | | |
| A9K-8X100GE-X-TR | Aldrin-FPGA | YES | 1.05 | 1.05 | 0.0 |
| | CBC | NO | 48.09 | 48.09 | 0.0 |
| | Grapple-0 | YES | 0.15 | 0.15 | 0.0 |
| | IPU-DDR4 | YES | 1.09 | 1.09 | 0.0 |
| | Mixmaster-0 | YES | 0.13 | 0.13 | 0.0 |
| | Primary-BIOS | YES | 21.43 | 21.43 | 0.0 |
| | Scamper | YES | 0.23 | 0.23 | 0.0 |
| | Skylynx-0 | YES | 0.12 | 0.12 | 0.0 |
| ----- | | | | | |
| A9K-8X100GE-X2-CM | Aldrin-FPGA | YES | 1.05 | 1.05 | 0.0 |
| | CBC | NO | 58.09 | 58.09 | 0.0 |
| | Grapple-0 | YES | 0.15 | 0.15 | 0.0 |
| | IPU-DDR4 | YES | 1.18 | 1.18 | 0.0 |
| | Mixmaster-0 | YES | 0.13 | 0.13 | 0.0 |
| | Primary-BIOS | YES | 25.31 | 25.31 | 0.0 |
| | Skylynx-0 | YES | 0.12 | 0.12 | 0.0 |
| | Sunstreaker | YES | 0.19 | 0.19 | 0.0 |

| | | | | | |
|--------------------|-------------------|-----|-------|-------|-----|
| | TAMFW-Sunstreaker | YES | 2.72 | 2.72 | 0.0 |
| ----- | | | | | |
| A9K-8X100GE-X2-SE | Aldrin-FPGA | YES | 1.05 | 1.05 | 0.0 |
| | CBC | NO | 58.09 | 58.09 | 0.0 |
| | Grapple-0 | YES | 0.15 | 0.15 | 0.0 |
| | IPU-DDR4 | YES | 1.18 | 1.18 | 0.0 |
| | Mixmaster-0 | YES | 0.13 | 0.13 | 0.0 |
| | Primary-BIOS | YES | 25.31 | 25.31 | 0.0 |
| | Skylynx-0 | YES | 0.12 | 0.12 | 0.0 |
| | Sunstreaker | YES | 0.19 | 0.19 | 0.0 |
| | TAMFW-Sunstreaker | YES | 2.72 | 2.72 | 0.0 |
| ----- | | | | | |
| A9K-8X100GE-X2-TR | Aldrin-FPGA | YES | 1.05 | 1.05 | 0.0 |
| | CBC | NO | 58.09 | 58.09 | 0.0 |
| | Grapple-0 | YES | 0.15 | 0.15 | 0.0 |
| | IPU-DDR4 | YES | 1.18 | 1.18 | 0.0 |
| | Mixmaster-0 | YES | 0.13 | 0.13 | 0.0 |
| | Primary-BIOS | YES | 25.31 | 25.31 | 0.0 |
| | Skylynx-0 | YES | 0.12 | 0.12 | 0.0 |
| | Sunstreaker | YES | 0.19 | 0.19 | 0.0 |
| | TAMFW-Sunstreaker | YES | 2.72 | 2.72 | 0.0 |
| ----- | | | | | |
| A9K-8X100GELSE-TAA | CBC | NO | 38.23 | 38.23 | 0.0 |
| | Dalla | YES | 1.09 | 1.09 | 0.0 |
| | IPU-FPGA | YES | 1.99 | 1.99 | 0.0 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.0 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.0 |
| | Meldun-0 | YES | 1.07 | 1.07 | 0.0 |
| | Meldun-1 | YES | 1.07 | 1.07 | 0.0 |
| | Primary-BIOS | YES | 8.51 | 8.51 | 0.0 |
| ----- | | | | | |
| A9K-8X100GELTR-TAA | CBC | NO | 38.23 | 38.23 | 0.0 |
| | Dalla | YES | 1.09 | 1.09 | 0.0 |
| | IPU-FPGA | YES | 1.99 | 1.99 | 0.0 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.0 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.0 |
| | Meldun-0 | YES | 1.07 | 1.07 | 0.0 |
| | Meldun-1 | YES | 1.07 | 1.07 | 0.0 |
| | Primary-BIOS | YES | 8.51 | 8.51 | 0.0 |
| ----- | | | | | |
| A9K-MOD200-CM | Blaster | YES | 1.27 | 1.27 | 0.1 |
| | CBC | NO | 39.09 | 39.09 | 0.1 |
| | IPU-FPGA | YES | 1.101 | 1.101 | 0.1 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.1 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.1 |
| | Primary-BIOS | YES | 8.51 | 8.51 | 0.1 |
| ----- | | | | | |
| A9K-MOD200-SE | Blaster | YES | 1.27 | 1.27 | 0.1 |
| | CBC | NO | 39.09 | 39.09 | 0.1 |
| | IPU-FPGA | YES | 1.101 | 1.101 | 0.1 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.1 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.1 |
| | Primary-BIOS | YES | 8.51 | 8.51 | 0.1 |
| ----- | | | | | |
| A9K-MOD200-TR | Blaster | YES | 1.27 | 1.27 | 0.1 |
| | CBC | NO | 39.09 | 39.09 | 0.1 |
| | IPU-FPGA | YES | 1.101 | 1.101 | 0.1 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.1 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.1 |
| | Primary-BIOS | YES | 8.51 | 8.51 | 0.1 |
| ----- | | | | | |
| A9K-MOD400-CM | Blaster | YES | 1.27 | 1.27 | 0.1 |
| | CBC | NO | 39.09 | 39.09 | 0.1 |
| | IPU-FPGA | YES | 1.101 | 1.101 | 0.1 |

| | | | | | |
|------------------|---------------|-----|-------|-------|-----|
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.1 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.1 |
| | Primary-BIOS | YES | 8.51 | 8.51 | 0.1 |
| ----- | | | | | |
| A9K-MOD400-SE | Blaster | YES | 1.27 | 1.27 | 0.1 |
| | CBC | NO | 39.09 | 39.09 | 0.1 |
| | IPU-FPGA | YES | 1.101 | 1.101 | 0.1 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.1 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.1 |
| | Primary-BIOS | YES | 8.51 | 8.51 | 0.1 |
| ----- | | | | | |
| A9K-MOD400-TR | Blaster | YES | 1.27 | 1.27 | 0.1 |
| | CBC | NO | 39.09 | 39.09 | 0.1 |
| | IPU-FPGA | YES | 1.101 | 1.101 | 0.1 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.1 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.1 |
| | Primary-BIOS | YES | 8.51 | 8.51 | 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 | 0.20 | 0.20 | 0.0 |
| | Orion-FPGA | YES | 0.23 | 0.23 | 0.0 |
| | Primary-BIOS | YES | 31.37 | 31.37 | 0.0 |
| | Zenith-FPGA | YES | 0.12 | 0.12 | 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 | 0.20 | 0.20 | 0.0 |
| | Orion-FPGA | YES | 0.23 | 0.23 | 0.0 |
| | Primary-BIOS | YES | 31.37 | 31.37 | 0.0 |
| | Zenith-FPGA | YES | 0.12 | 0.12 | 0.0 |
| ----- | | | | | |
| A9K-RSP5-X-SE | Aldrin-0-FPGA | YES | 51.00 | 51.00 | 0.0 |
| | Beta-FPGA | YES | 2.02 | 2.02 | 0.0 |
| | CBC | NO | 14.04 | 14.04 | 0.0 |
| | IPU-DDR4 | YES | 3.04 | 3.04 | 0.0 |
| | Orion-FPGA | YES | 2.03 | 2.03 | 0.0 |
| | Primary-BIOS | YES | 35.12 | 35.12 | 0.0 |
| | Sigma | YES | 3.34 | 3.34 | 0.0 |
| | TamFW-Sigma | YES | 2.07 | 2.07 | 0.0 |
| | Zenith-FPGA | YES | 2.08 | 2.08 | 0.0 |
| ----- | | | | | |
| A9K-RSP5-X-TR | Aldrin-0-FPGA | YES | 51.00 | 51.00 | 0.0 |
| | Beta-FPGA | YES | 2.02 | 2.02 | 0.0 |
| | CBC | NO | 14.04 | 14.04 | 0.0 |
| | IPU-DDR4 | YES | 3.04 | 3.04 | 0.0 |
| | Orion-FPGA | YES | 2.03 | 2.03 | 0.0 |
| | Primary-BIOS | YES | 35.12 | 35.12 | 0.0 |
| | Sigma | YES | 3.34 | 3.34 | 0.0 |
| | TamFW-Sigma | YES | 2.07 | 2.07 | 0.0 |
| | Zenith-FPGA | YES | 2.08 | 2.08 | 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 | 50.03 | 50.03 | 0.0 |
| | IPU-FPGA | YES | 0.20 | 0.20 | 0.0 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.0 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.0 |
| | Omega-FPGA | YES | 0.07 | 0.07 | 0.0 |
| | Optimus-FPGA | YES | 0.05 | 0.05 | 0.0 |
| | Primary-BIOS | YES | 17.40 | 17.40 | 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 | 50.03 | 50.03 | 0.0 |
| | IPU-FPGA | YES | 0.20 | 0.20 | 0.0 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.0 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.0 |
| | Omega-FPGA | YES | 0.07 | 0.07 | 0.0 |
| | Optimus-FPGA | YES | 0.05 | 0.05 | 0.0 |
| | Primary-BIOS | YES | 17.40 | 17.40 | 0.0 |
| ----- | | | | | |
| A9K-RSP880-SE | Alpha-FPGA | YES | 0.16 | 0.16 | 0.0 |
| | CBC | NO | 34.40 | 34.40 | 0.0 |
| | Cha-FPGA | YES | 0.09 | 0.09 | 0.0 |
| | IPU-FPGA | YES | 0.72 | 0.72 | 0.0 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.0 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.0 |
| | Omega-FPGA | YES | 0.20 | 0.20 | 0.0 |
| | Optimus-FPGA | YES | 0.12 | 0.12 | 0.0 |
| | Primary-BIOS | YES | 10.69 | 10.69 | 0.0 |
| ----- | | | | | |
| A9K-RSP880-TR | Alpha-FPGA | YES | 0.16 | 0.16 | 0.0 |
| | CBC | NO | 34.40 | 34.40 | 0.0 |
| | Cha-FPGA | YES | 0.09 | 0.09 | 0.0 |
| | IPU-FPGA | YES | 0.72 | 0.72 | 0.0 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.0 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.0 |
| | Omega-FPGA | YES | 0.20 | 0.20 | 0.0 |
| | Optimus-FPGA | YES | 0.12 | 0.12 | 0.0 |
| | Primary-BIOS | YES | 10.69 | 10.69 | 0.0 |
| ----- | | | | | |
| A9K-TEST_LSQ_DX1 | Aldrin-FPGA | YES | 1.05 | 1.05 | 0.0 |
| | CBC | NO | 58.09 | 58.09 | 0.0 |
| | IPU-DDR4 | YES | 1.18 | 1.18 | 0.0 |
| | Primary-BIOS | YES | 25.31 | 25.31 | 0.0 |
| | Sunstreaker | YES | 0.19 | 0.19 | 0.0 |
| | TAMFW-Sunstreaker | YES | 2.72 | 2.72 | 0.0 |
| | Trailbreaker-0 | YES | 0.24 | 0.24 | 0.0 |
| | Windcharger-0 | YES | 0.08 | 0.08 | 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 | 1.99 | 1.99 | 0.0 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.0 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.0 |
| | Meldun-0 | YES | 1.07 | 1.07 | 0.0 |
| | Meldun-1 | YES | 1.07 | 1.07 | 0.0 |
| | Primary-BIOS | YES | 8.51 | 8.51 | 0.0 |
| ----- | | | | | |
| A9KL-4X100GE-TAA | CBC | NO | 38.23 | 38.23 | 0.0 |
| | Dalla | YES | 1.09 | 1.09 | 0.0 |
| | IPU-FPGA | YES | 1.99 | 1.99 | 0.0 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.0 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.0 |
| | Meldun-0 | YES | 1.07 | 1.07 | 0.0 |
| | Meldun-1 | YES | 1.07 | 1.07 | 0.0 |
| | Primary-BIOS | YES | 8.51 | 8.51 | 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 | 1.99 | 1.99 | 0.0 |
| | IPU-FSBL | YES | 1.113 | 1.113 | 0.0 |
| | IPU-Linux | YES | 1.113 | 1.113 | 0.0 |
| | Meldun-0 | YES | 1.07 | 1.07 | 0.0 |
| | Meldun-1 | YES | 1.07 | 1.07 | 0.0 |

| | | | | | |
|---------------------|-------------------|-----|-------|-------|-----|
| | Primary-BIOS | YES | 8.51 | 8.51 | 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 | 23.24 | 23.24 | 0.1 |
| ASR-9901-RP | CBC | NO | 54.11 | 54.11 | 0.1 |
| | Drax-FPGA | YES | 0.38 | 0.38 | 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 | 22.29 | 22.29 | 0.1 |
| ASR-9902 | FAN-CBC | NO | 61.25 | 61.25 | 0.0 |
| ASR-9902-LC | Aldrin-FPGA | YES | 1.05 | 1.05 | 0.0 |
| | CBC | NO | 17.03 | 17.03 | 0.0 |
| | Chromia | YES | 0.14 | 0.14 | 0.0 |
| | IPU-DDR4 | YES | 1.17 | 1.17 | 0.0 |
| | Primary-BIOS | YES | 34.31 | 34.31 | 0.0 |
| | Skywarp-0 | YES | 0.11 | 0.11 | 0.0 |
| | Skywarp-1 | YES | 0.11 | 0.11 | 0.0 |
| | Sunstreaker | YES | 0.19 | 0.19 | 0.0 |
| | TAMFW-Sunstreaker | YES | 2.72 | 2.72 | 0.0 |
| ASR-9903 | FAN-CBC | NO | 61.25 | 61.25 | 0.0 |
| ASR-9903-LC | Aldrin-0-FPGA | YES | 1.05 | 1.05 | 0.0 |
| | CBC | NO | 60.12 | 60.12 | 0.0 |
| | Harpoon-0 | YES | 0.11 | 0.11 | 0.0 |
| | Harpoon-1 | YES | 0.11 | 0.11 | 0.0 |
| | IPU-DDR4 | YES | 1.25 | 1.25 | 0.0 |
| | Metalmaster-0 | YES | 0.02 | 0.02 | 0.0 |
| | Metalmaster-1 | YES | 0.02 | 0.02 | 0.0 |
| | Primary-BIOS | YES | 34.31 | 34.31 | 0.0 |
| | Scattershot | YES | 0.14 | 0.14 | 0.0 |
| | Sunstreaker | YES | 0.19 | 0.19 | 0.0 |
| | Supernaut | YES | 0.14 | 0.14 | 0.0 |
| | TAMFW-Sunstreaker | YES | 2.72 | 2.72 | 0.0 |
| | Warstar-0 | YES | 0.02 | 0.02 | 0.0 |
| | Warstar-1 | YES | 0.02 | 0.02 | 0.0 |
| ASR-9903-PXC800G-LC | Harpoon-0 | YES | 0.11 | 0.11 | 0.0 |
| | Harpoon-1 | YES | 0.11 | 0.11 | 0.0 |

| | | | | | |
|-----------------|---------------|-----|-------|-------|------|
| 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-1.6KW-AC | PO-PrimMCU | NO | 17.20 | 17.20 | 0.0 |
| | QCS-PrimMCU | NO | 3.02 | 3.02 | 0.1 |
| | QCS-SecMCU | NO | 4.04 | 4.04 | 0.1 |
| PWR-1.6KW-DC | PO-PrimMCU | NO | 1.03 | 1.03 | 0.0 |
| | QCS-PrimMCU | NO | 1.05 | 1.05 | 0.0 |
| PWR-2KW-DC-V2 | DT-PrimMCU | 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-PrimMCU | NO | 3.13 | 3.13 | 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-PrimMCU | 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-3KW-HVDC | DT-PrimMCU | NO | 2.02 | 2.02 | 1.0 |
| | DT-Sec54vMCU | NO | 2.02 | 2.02 | 1.0 |
| | DT-Sec5vMCU | NO | 2.03 | 2.03 | 1.0 |
| PWR-4.4KW-DC-V3 | AB-Pri0MCU | NO | 3.02 | 3.02 | 0.1 |
| | AB-Pri1MCU | NO | 3.02 | 3.02 | 0.1 |
| | AB-Sec054vMCU | NO | 3.04 | 3.04 | 0.1 |
| | AB-Sec154vMCU | NO | 3.04 | 3.04 | 0.1 |
| | AB-Sec5vMCU | NO | 3.06 | 3.06 | 0.1 |
| | DT-Pri0MCU | NO | 3.01 | 3.01 | 0.1 |

| | | | | | |
|---------------|----------------|----|------|------|-----|
| | DT-Pri1MCU | NO | 3.01 | 3.01 | 0.1 |
| | DT-Sec054vMCU | NO | 3.03 | 3.03 | 0.1 |
| | DT-Sec154vMCU | NO | 3.03 | 3.03 | 0.1 |
| | DT-Sec5vMCU | NO | 3.02 | 3.02 | 0.1 |
| | QCS-Pri0MCU | NO | 1.04 | 1.04 | 0.1 |
| | QCS-Pri1MCU | NO | 1.04 | 1.04 | 0.1 |
| | QCS-Sec054vMCU | NO | 1.10 | 1.10 | 0.1 |
| | QCS-Sec154vMCU | NO | 1.10 | 1.10 | 0.1 |
| | QCS-Sec5vMCU | NO | 1.06 | 1.06 | 0.1 |
| ----- | | | | | |
| PWR-6KW-AC-V3 | AB-Pri0MCU | NO | 3.02 | 3.02 | 0.1 |
| | AB-Pri1MCU | NO | 3.02 | 3.02 | 0.1 |
| | AB-Sec054vMCU | NO | 3.02 | 3.02 | 0.1 |
| | AB-Sec154vMCU | NO | 3.02 | 3.02 | 0.1 |
| | AB-Sec5vMCU | NO | 3.05 | 3.05 | 0.1 |
| | 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 |

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 4: 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 |
| 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 |
| 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 |
| ASR-9912-FAN | Cisco ASR 9000 Series Aggregation Services Router 12-Slot Fan Tray | Release 6.1.2 |
| Cisco ASR 9922 Router | | |
| Part Number | Description | Support Initially Provided in IOS XR 64 bit Release |
| ASR-9922 | Cisco ASR 9922 20 Line Card Slot Chassis, 44 RU | Release 6.1.2 |
| ASR-9922-AC | Cisco ASR 9000 Series Aggregation Services Router 22-Slot 20 Line Card Slot AC Chassis w/ PEM V2 | Release 6.1.2 |
| ASR-9922-DC | Cisco ASR 9000 Series Aggregation Services Router 22-Slot 20 Line Card Slot DC Chassis w/ PEM V2 | Release 6.1.2 |
| A99-SFC3 | Cisco ASR 9900 Switch Fabric Card 3 | Release 6.5.15 |
| ASR-9922-FAN-V3 | Cisco ASR 9000 Series Aggregation Services Router 22-Slot Fan Tray version 3 | Release 6.5.15 |

| | | |
|------------------------------|---|--|
| ASR-9922-FLTR-CV2 | Cisco ASR 9000 Series Aggregation Services Router 22-Slot Air Filter with Media, Center | Release 6.1.2 |
| ASR-9922-FLTR-LR | Cisco ASR 9000 Series Aggregation Services Router 22-Slot Air Filter with Media, Left & Right | Release 6.1.2 |
| ASR-9922-RP-FILR | Cisco ASR 9000 Series Aggregation Services Router 22-Slot Route Processor Filler | Release 6.1.2 |
| ASR-9922-FAN-V2 | Cisco ASR 9000 Series Aggregation Services Router 22-Slot Version 2 Fan Tray | Release 6.1.2 |
| Cisco ASR 9006 Router | | |
| 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-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 |
| 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-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-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-48X10GE-1G-SE | ASR9000 48-port dual-rate 10G/1G service edge–optimized line card | Release 6.3.2 |
| A9K-48X10GE-1G-TR | ASR9000 48-port dual-rate 10G/1G packet transport–optimized line card | Release 6.3.2 |
| A9K-24X10GE-1G-SE | ASR9000 24-port dual-rate 10G/1G service edge–optimized line card | Release 6.3.2 |
| A9K-24X10GE-1G-TR | ASR9000 24-port dual-rate 10G/1G packet transport–optimized line card | Release 6.3.2 |
| Cisco ASR 9000 Series Aggregation Services Router - Modular Line Cards | | |
| Part Number | Description | Support Initially Provided in IOS XR 64 bit Release |
| 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 |

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| 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 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 |

Compatibility Matrix for EPNM and Crosswork with Cisco IOS XR Software

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

Table 5: Compatibility Matrix

| Cisco IOS XR | Crosswork | EPNM |
|----------------|---|--|
| Release 24.3.2 | Crosswork Optimization Engine 6.0 | Evolved Programmable Network Manager 7.1.1 |

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.
- Starting Cisco IOS XR Software Release 24.1.1, ISSU upgrades and ISSU SMU are not supported 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";
  } elseif exists user-class and option user-class = "xr-config" {
    filename = "http://172.30.0.22/scripts/cisco-rp0_ztp.sh";
  }
}
```

- The auto FPD upgrade may result in certain intentional exceptions, which may need manual upgrades or reloading for a few FPDs. We recommend you use the **show hw-module fpd** command to check the hardware module status immediately after the FPD auto upgrade is complete and take necessary action in both admin and XR VM mode. That is, if any FPD displays a **NEED**

UPGD status, then upgrade those FPDs individually by the manual upgrade and follow it with a reload in admin mode, and if any FPDs show a **RLOAD REQ** status, perform a hardware module reload from admin mode.

Licensing

Starting with Cisco IOS XR Release 24.1.1, Smart Licensing Using Policy (SLP) is the default Licensing model. When you upgrade to the Cisco IOS XR Release 24.1.1 release or later, the Smart Licensing Using Policy is enabled by default.

You can migrate your devices to Smart Licensing with Policy model, see *Migrating from Smart Licensing to Smart Licensing Using Policy*, [Smart Licensing Using Policy on Cisco IOS XR Routers](#).

We recommend that you update to the latest version of [SSM On-Prem](#) or [Cisco Smart Licensing Utility](#).



Note SSM On-Prem and CSSM both support SLP devices and SL devices. SLP devices and SL devices can coexist in a network. The Smart Licensing (SL) model is available in releases Cisco IOS XR Release 7.11.1 and earlier.

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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