# Cisco ASR 9000 Series IOS XR 64‑Bit Data Sheet

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# Contents

The Cisco IOS® XR 64-Bit on ASR 9000 Series operating system is an addition to the current generation of Cisco IOS XR operating systems, delivering the same comprehensive features and system resilience with additional benefits.

## Product overview

The Cisco ASR 9000 Series Aggregation Services Routers have been delivering exceptional scalability, carrier-class reliability, environmentally conscious design, incredible flexibility, and an attractive price-to-performance benchmark to service providers and enterprise customers in edge and core routing.

The Cisco IOS XR 64 Bit on ASR 9000 Series operating system is an addition to the current generation of Cisco IOS XR operating systems, delivering the same comprehensive features and system resilience.

In Cisco IOS XR 64 Bit on ASR 9000, we are evolving the networking operating system specifically to help customers move and innovate faster. While retaining its breadth of protocol spectrum and feature set, Cisco IOS XR Software has now evolved to meet next-generation operational requirements.

As customer organizations have grown over the past decade, they've sought a flexible operating system that can keep up. The new innovations in Cisco IOS XR 64 Bit on ASR 9000 enable incremental builds, agile workflow, and modular delivery of software, while also offering the capability to host third-party applications on Cisco routers.

## Features and benefits

| Feature | Benefit |
|---------|---------|
| Fully automated initial installation | • **Bootable ISO:** To simplify installation, Cisco IOS XR 64 Bit on ASR 9000 images are in the form of a bootable ISO that's installed on the system. The software also supports iPXE, which allows the administrator to boot from TFTP, HTTP, or FTP.<br>• **Auto provisioning:** Auto provisioning starts at the end of the software's boot process in a fresh system installation and serves two functions: static configuration application and script execution. It allows administrators to customize settings easily and automatically, without wasting time on manual configuration. |
| Visibility for smarter control, simpler monitoring, and faster troubleshooting | • **Streaming telemetry:** Users can take advantage of streaming telemetry to direct data to a configured receiver. Data can be pushed out at intervals determined by the administrator, at a cadence as low as 10 seconds. Using sophisticated algorithms, a back-end server can then analyze data received from Cisco IOS XR 64 Bit on ASR 9000. The data can be encoded in JavaScript Object Notation (JSON) or Google Protocol Buffers (GPB). This analysis enables back-end management systems to measure and even predict control-plane and data-plane trends.<br>• **Model-driven interfaces:** Prior to Release 6.0, administrators relied on Simple Network Management Protocol (SNMP) and syslog—techniques that are neither scalable nor easily automated. With this latest release of Cisco IOS XR Software, administrators can more easily work together using the internal system database (SysDB) represented by YANG models. SysDB is not a database in a strict sense, but rather a treelike file system that can provide a common mechanism for management clients to modify or access system information. SysDB stores a variety of types of data, including integers of different sizes, character strings, and externally managed data items. |
| Flexible design for agile maintenance and updates | • **Application hosting:** The Cisco IOS XR 64 Bit on ASR 9000 architecture supports third-party off-the-shelf applications built with Linux tool chains. Users can run custom applications built with the software development kit that Cisco provides. Application hosting gives administrators a platform for experimenting with their own tools and utilities.<br>• **Flexible packaging and provisioning:** The Release 6.1.1 architecture facilitates modular software delivery of individual components, which increases operational agility and efficiency. Modular delivery of software also eases difficulties during routine upgrades and maintenance fixes, promoting flexible, asynchronous upgrades. |

| Feature | Benefit |
|---|---|
| Open architecture | • **Linux-based OS:** Release 6.1.1 opens up the architecture of Cisco IOS XR Software using a 64-bit Linux-based operating system. (It uses the Wind River 7 distribution, which is compatible with Yocto 1.5 and approved by the Yocto project.) In contrast to the traditional 32-bit QNX OS, Release 6.1.1 can easily integrate applications, configuration-management tools, and auto provisioning. These attributes make it highly automatable and transparent to monitoring and management tools. |
| In-Service Software Upgrade (ISSU) | • Cisco IOS XR 64 Bit on ASR 9000 will have a new foundation for ISSU. The virtualized environment running instances of Cisco IOS XR 64 Bit will enable the platform to orchestrate the software upgrade process to minimize the disruption of services in the network without powering down the system to upgrade the operating system. |

## Platform support/compatibility

| Product Family | Platforms Supported | Software Release |
|---|---|---|
| ASR 9900 Series | ASR 9922 ASR 9912 | 6.1.1 |
| | ASR 9910 | 6.2.1 |
| | ASR 9906 | 6.3.1 |
| | ASR 9904 | 6.1.1 |
| | ASR 9903 | 7.1.3 |
| | ASR 9902 | 7.4.1 |
| | ASR 9901 | 6.4.1 |
| ASR 9000 Series | ASR 9006 ASR 9010 | 6.1.1 |

## System requirements

For software release to support each of the product IDs below, please refer to the Software Release Notes of each software release from 6.1.1 onward.

| Product Family | RSP/RP/FC | Product IDs |
|---|---|---|
| **ASR 9006**<br>**ASR 9010**<br>**ASR 9904** | Route switch processor | A9K-RSP5-SE<br>A9K-RSP5-TR<br>A9K-RSP880-LT-SE<br>A9K-RSP880-LT-TR<br>A9K-RSP880-SE<br>A9K-RSP880-TR |
| **ASR 9912**<br>**ASR 9922** | Route processor | A99-RP3-SE<br>A99-RP3-TR<br>A99-RP2-SE<br>A99-RP2-TR |
| | Fabric card | A99-SFC3<br>A99-SFC2 |
| **ASR 9910**<br>**ASR-9906** | Route processor | A9K-RSP5-SE<br>A9K-RSP5-TR<br>A9K-RSP880-LT-SE<br>A9K-RSP880-LT-TR<br>A99-RSP-SE<br>A99-RSP-TR |
| | Fabric card | A99-SFC3-S (ASR 9910)<br>A99-SFC-S (ASR 9910)<br>A99-SFC3-T (ASR 9906)<br>A99-SFC-T (ASR 9906) |
| **Line cards** | 5th Generation Line cards | A99-4T-FC<br>A99-10X400GE-X (-SE, -TR)<br>A99-32HG-FC<br>A99-32X100GE-X (-SE, -TR)<br>A9K-20HG-FLEX (-FC, -SE, -TR)<br>A9K-8HG-FLEX (-FC, -SE, -TR)<br>A99-4HG-FLEX (-FC, -SE, -TR)<br>A9K-4HG-FLEX (-FC, -SE, -TR) |

| Product Family | RSP/RP/FC | Product IDs |
|---|---|---|
| | 4th Generation Line Cards | A99-32X100GE (-FC, -TR, -CM) |
| | | A9K-16X100GE (-FC, -TR, -CM) |
| | | A99-16X100GE-X (-FC, -SE) |
| | 3rd Generation Line cards | A99-12X100GE (-FC, -CM) |
| | | A99-12X100GE |
| | | A99-8X100GE (-FC, -SE, -TR, -CM) |
| | | A9K-8X100GE (-FC, -SE, -TR, -CM) |
| | | A9K-8X100G-LB (-SE, -TR) |
| | | A9K-4X100GE (-FC, -SE, -TR) |
| | | A9K-400GE-LAN-FC |
| | | A9K-4X100GE |
| | | A99-48X10GE-1G (-FC, -SE, -TR) |
| | | A9K-48X10GE-1G (-FC, -SE, -TR, -CM) |
| | | A9K-24X10GE-1G (-FC, -SE, -TR, -CM) |
| | | A9K-MOD400 (-FC, -SE, -TR, -CM) |
| | | A9K-MOD200 (-FC, -SE, -TR) |
| | | A9K-400G-DWDM-TR |

## Ordering information

| Part Number | Product Description |
|---|---|
| XR-A9K-X64-07.6 | Cisco IOS XR 64 Bit IP/MPLS Core Software |
| XR-A9K-X64K9-07.6 | Cisco IOS XR 64 Bit IP/MPLS Core Software 3DES |

## Cisco environmental sustainability

Information about Cisco's environmental sustainability policies and initiatives for our products, solutions, operations, and extended operations or supply chain is provided in the "Environment Sustainability" section of Cisco's Corporate Social Responsibility (CSR) Report.

Reference links to information about key environmental sustainability topics (mentioned in the "Environment Sustainability" section of the CSR Report) are provided in the following table:

| Sustainability topic | Reference |
|---|---|
| Information on product material content laws and regulations | Materials |
| Information on electronic waste laws and regulations, including products, batteries, and packaging | WEEE compliance |

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## Document history

| New or Revised Topic | Described In | Date |
|---|---|---|
| **Updated Supported platforms and IOS SW versions** | Platform support/compatibility | April 26, 2022 |
| **Updated product part numbers of supported line cards** | System requirements | April 26, 2022 |
| **Updated IOS SW Part numbers** | Ordering information | April 26, 2022 |

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