CISCO
The bridge to possible

DONEWIN
Global ICT Solutions Provider

Cisco ASR 9903 Compact High-Performance Router Data Sheet

Contact Us

Phone: +852-51736677

Skype: wendycisco

WhatsAPP: +852-51736677

E-mail: wendy@donewin.com.hk

Website：https://www.uritprice.com

Contents

Product overview

Part of the Cisco® ASR 9000 Series, the Cisco ASR 9903 Router (Figure 1) is a compact, high-performance router that delivers up to 3.6 Tbps of nonblocking, full-duplex capacity in a Three-Rack-Unit (3RU) form factor. Based on the same Cisco IOS® XR software image as the other routers in the Cisco ASR 9000 Series, the Cisco ASR 9903 Router delivers the features and services found on the ASR 9000 Series platforms, allowing customers to standardize on the same Cisco IOS XR operating system. Multiple port rates are supported by ASR 9903: 400 Gigabit Ethernet, 200 Gigabit Ethernet, 100 Gigabit Ethernet, 40 Gigabit Ethernet, 25 Gigabit Ethernet and 10 Gigabit Ethernet, so it gives customers the flexibility to mix and match interface types on the same chassis and offers operators the readiness for mass-scale networking.

As a fully redundant, high-performance multi-purpose platform, the ASR 9903 router can be used in a wide range of customer's scenarios and use-cases: business PE, metro aggregation, cloud edge, Internet peering, Data Center Interconnect (DCI), and others. The compact size (depth is 600 mm), front-to-back airflow, support of PTP Telecom profiles, and different port rates make this platform very efficient and flexible for using at the mobile edge in 4G/5G networks. Enterprise customers can deploy the ASR 9903 as a border router at the edge of the enterprise network and as a peering router for communication with Internet service providers.

Features and benefits

The ASR 9903 router offers power-optimized architecture with high density of multi-rate ports and super service scales. This allows customers to reduce Capital Expense (CapEx) and Operating Expense (OpEx) while providing highly predictable, flexibly managed service infrastructure.

The Cisco ASR 9903 Router is a compact router that supports two redundant Route Processors (RP), two integrated switch fabrics, 4 AC or DC power supply modules, and 4 fans in redundant configuration. The router consists of the fixed board, with 16 integrated QSFP28-based 100GE ports plus 20 integrated SFP+-based ports and an optional Port Expansion Card (PEC), which can be inserted into the dedicated slot on demand.

The ASR 9903 fixed board supports maximum 1.6T data bandwidth. The integrated physical ports on its faceplate can operate in three combinations: 16x100GE, 15x100GE + 10x10GE or 14x100GE + 20x10GE.

The Cisco ASR 9903 Route Processor (Figure 2) is available in a service edge-optimized version to meet customer requirements for large-scale, comprehensive service deployment and also features a powerful 64-bit Intel CPU and 32GB memory. A set of external interfaces on the front panel includes: console and auxiliary serial ports, two management Ethernet interfaces, a Class A USB port, GPS interface (10Mhz, 1PPS, ToD ports), and two BITS interfaces.

The Cisco A9903-20HG-PEC (Figure 3) offers 20 physical ports with maximum 2T data bandwidth capacity. 5 of the 20 physical ports are 400GE/200GE/100GE multi-rate QSFP-DD/QSFP28-based ports which can be individually migrated to 400GE through a license. The rest 15 ports are 100GE QSFP28-based ports.

The Cisco A9903-8HG-PEC (Figure 3) offers 48 physical ports with maximum 800G data bandwidth capacity. 32 of the 48 physical ports are 25GE/10GE multi-rate SFP28/SFP+ -based ports. The remaining 16 ports are 10GE SFP+ -based ports.

All transceivers that are applicable on the ASR 9903 can be used in any of the ASR 9000 Series of modular chassis.

The QSFP-DD optics have the same mechanical characteristics and cage size as the QSFP28 optics, and the same ports can act as 25 GE and 10 GE (via breakout options), 40 GE, 100 GE, 200 GE, or 400 GE, therefore allowing operators to migrate to 400 GE at their own pace as the need arises.

The ASR 9903 Router is supported starting with Cisco IOS XR Software Release 7.1.25.
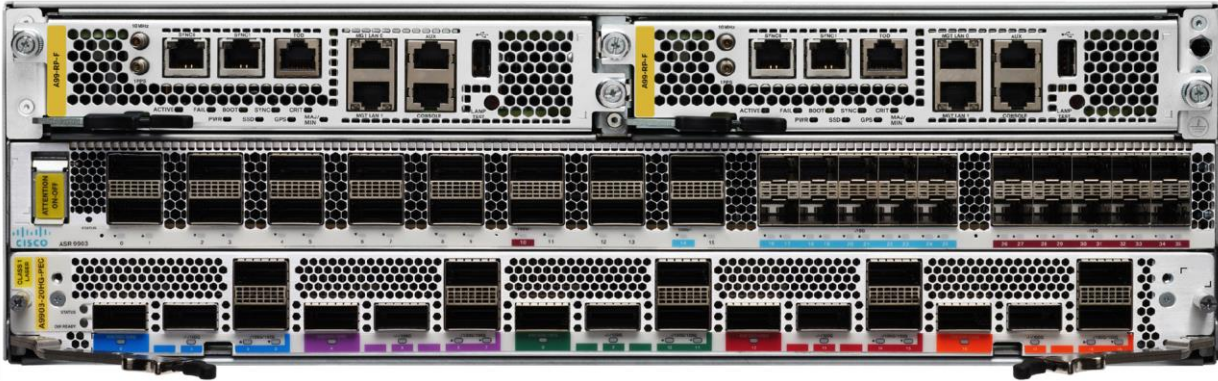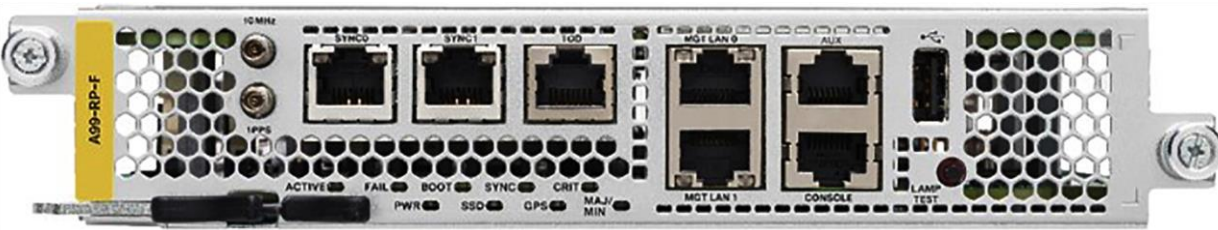

Figure 1.
Cisco ASR 9903 chassis

Figure 2.
Cisco ASR 9903 Route Processor

Figure 3.
Cisco ASR 9903 Series 2T Port Expansion Card

Figure 4.
Cisco ASR 9903 Series 800G Port Expansion Card

Table 1 lists the features and benefits of the ASR 9903 router. Specific features and scale support are hardware and software dependent.

Table 1.   Features and benefits of the Cisco ASR 9903 compact high-performance router

Feature	Benefit
Interface support	
Cisco Pluggable interfaces	Provides the capacity to mix and match 10, 25, 40, 100, and 400 Gigabit Ethernet interface types across the ASR 9903 chassis. For a complete list of supported pluggable interfaces, see the Cisco Optics Compatibility Matrix.
Evolutionary monitoring	
Carrier-class Operations, Administration, and Maintenance (OAM)	NetFlow, IEEE 802.1ag, IEEE 802.3ah, ITU Y.1731, IP Service-Level Agreement (IP SLA), Virtual Circuit Connectivity Verification (VCCV), ping, and traceroute
Timing capability	
Hardware-based IEEE 1588, GPS/BITS interfaces, and SyncE support	Delivers timing services over the packet network. Support of PTP Telecom profiles (G.8265.1, G.8275.1, G.8275.2). SyncE on Ethernet ports across the ASR 9903 chassis, support of GPS, and BITS interfaces to provide redundant network synchronization.
Carrier-grade redundancy	
Fully redundant configuration	Support of redundant configuration: two RPs, two fabrics, 4 power supply modules, 4 Fan modules
Carrier-class OS	
Cisco IOS XR Software (64-bit)	Modular, patchable, scalable, highly available, carrier-core, and edge-proven operating system

The ASR 9903 compact high-performance router is available in the service edge variant.

Feature licenses are also available to turn on features on the ASR 9903, as described in the Table 6 "Feature license information for the ASR 9903 router with the Traditional Business Model".

Product specifications

Table 2 provides product specifications for the ASR 9903 compact high-performance router.

Table 2.   Product specifications

Description	Specification
Physical dimensions (includes ejector bracket/lever); (H x W x D); weight	ASR 9903 chassis (including 2 RPs, 4 PSUs, 4 FANs): 5.18 x 17.475 x 30 in.; 81.62 lb (131.57 mm x 443.86 mm x 762 mm; 37 kg) Note: Excluding ejector, the depth is 23.62 in/600 mm
Redundancy	Route processor redundancy Switch fabric redundancy Power supply redundancy: Fan redundancy Software redundancy
Port density	ASR 9903 chassis with integrated ports: ● 16 QSFP28 ports capable of 10Gb, 40Gb, and 100Gb Ethernet ● 20 SFP+ ports capable of 10Gb Ethernet
RP CPU memory	SDRAM DDR4 – 32GB default
Rack mounting	19-in.
Airflow	Front to back

Power	● 1.6 kW DC power module (up to 4 modules), redundancy: 2+2
	● 1.6 kW AC power module (up to 4 modules), redundancy:
	   ◦ AC high line (200-240V): 2+2
	   ◦ AC low line (90-130V): 3+1
	
	Note: Mixing of AC and DC modules is not supported.

Ethernet	● 10 Gbps IEEE 802.3ae compliant ● 40/100-Gbps IEEE 802.3ba compliant ● 100 Gigabit Ethernet PHY monitoring ● IEEE 802.x flow control ● Full-duplex operation ● Per-port byte and packet counters for policy drops; oversubscription drops; Cyclic Redundancy Check (CRC) error drops; packet sizes; and unicast, multicast, and broadcast packets
Performance	● 10-Gbps line-rate throughput per SFP+ port ● 100-Gbps line-rate throughput per QSFP28 port
Operating temperature	41 to 104° F (5 to 40° C) **Note:** Limitations may apply when using high-power optics
Operating humidity (nominal) (relative humidity)	10 to 85%

Description	Specification
Storage temperature	–40 to 158° F (–40 to 70° C)
Storage (relative humidity)	5 to 95% **Note:** Not to exceed 0.024 kg of water per kg of dry air
Operating altitude	–60 to 1800 m
ETSI/EN standards	The Cisco ASR 9903 Router is designed to meet: • EN300 386: Telecommunications Network Equipment (EMC) • ETSI 300 019 Storage Class 1.1 • ETSI 300 019 Transportation Class 2.3 • ETSI 300 019 Stationary Use Class 3.1 • EN55022: Information Technology Equipment (Emissions) • EN55024: Information Technology Equipment (Immunity) • EN50082-1/EN-61000-6-1: Generic Immunity Standard
EMC standards	The Cisco ASR 9903 Router is designed to meet: • FCC Class A • ICES 003 Class A • AS/NZS 3548 Class A • CISPR 22 (EN55022) Class A • VCCI Class A • BSMI Class A • IEC/EN 61000-3-2: Power Line Harmonics • IEC/EN 61000-3-3: Voltage Fluctuations and Flicker • EN50121-4 Railway Applications Part 4: Emission and immunity of the signaling and telecommunications apparatus
Immunity	The Cisco ASR 9903 Router is designed to meet: • IEC/EN-61000-4-2: Electrostatic Discharge Immunity (8kV Contact, 15kV Air) • IEC/EN-61000-4-3: Radiated Immunity (10V/m) • IEC/EN-61000-4-4: Electrical Fast Transient Immunity (2kV Power, 1kV Signal) • IEC/EN-61000-4-5: Surge AC Port (4kV CM, 2kV DM) • IEC/EN-61000-4-5: Signal Ports (1kV) • IEC/EN-61000-4-5: Surge DC Port (1kV) • IEC/EN-61000-4-6: Immunity to Conducted Disturbances (10Vrms) • IEC/EN-61000-4-8: Power Frequency Magnetic Field Immunity (30A/m) • IEC/EN-61000-4-11: Voltage DIPS, Short Interruptions, and Voltage Variations • EN 50121-4: Railway EMC
Safety	The Cisco ASR 9903 Router is designed to meet: • UL/CSA/IEC/EN 60950-1 • IEC/EN 60825 Laser Safety • ACA TS001 • AS/NZS 60950 • FDA: Code of Federal Regulations Laser Safety

Description	Specification
Network Equipment Building Systems (NEBS)	The Cisco ASR 9903 Router is designed to meet: • SR-3580: NEBS Criteria Levels (Level 3) • GR-1089-CORE: NEBS EMC and Safety • GR-63-CORE: NEBS Physical Protection

Table 3 provides product specifications for the 2T Port Expansion Card.

Table 3. Product specifications

Description	Specification
Port density	**2 Terabit Port Expansion Card:** 15 QSFP28 ports capable of 10Gb, 25Gb, 40Gb, and 100Gb Ethernet traffic support. 5 QSFP-DD ports capable of 10Gb, 25Gb, 40Gb, 100Gb, 200Gb, and 400Gb Ethernet traffic support.
Ethernet	• 40/100-Gbps IEEE 802.3ba compliant • 100 Gigabit Ethernet PHY monitoring • 400-Gbos IEEE 802.3bs compliant • IEEE 802.x flow control • Full-duplex operation • Per-port byte and packet counters for policy drops; oversubscription drops; Cyclic Redundancy Check (CRC) error drops; packet sizes; and unicast, multicast, and broadcast packets
Performance	• 100-Gbps line-rate throughput per QSFP28 port • 400-Gbps line-rate throughput per QSFP-DD port
Physical dimensions (H x W x D); weight	2T Port Expansion Card: 1.47 x 16.31 x 15.09 in.; 15.02 lb (37.34 mm x 414.27 mm x 383.28 mm; 6.81 kg)
Operating temperature	41 to 104°F (5 to 40°C) **Note:** Limitations may apply when using high-power optics
Operating humidity (nominal) (relative humidity)	10 to 85%
Storage temperature	–40 to 158°F (–40 to 70°C)
Storage (relative humidity)	5 to 95% **Note:** Not to exceed 0.024 kg of water per kg of dry air
Operating altitude	–60 to 1800 m

Table 4 provides product specifications for the 800G Port Expansion Card.

Table 4.   Product specifications

Description	Specification
Port density	**800 Gigabit Port Expansion Card:** 32 SFP28 ports capable of 25Gb Ethernet traffic support.48 SFP+ ports capable of 10Gb Ethernet traffic support.
Ethernet	10-Gbps IEEE 802.3ae compliant 25-Gbps IEEE 802.3by and IEEE 802.3cc compliant - IEEE 802.x flow control - Full-duplex operation - Per-port byte and packet counters for policy drops; oversubscription drops; Cyclic Redundancy Check (CRC) error drops; packet sizes; and unicast, multicast, and broadcast packets
Performance	10 Gbps line rate throughput per SFP+ port 25 Gbps line rate throughput per SFP28 port
Physical dimensions (H x W x D); weight	800G Port Expansion Card: 1.47 x 16.31 x 15.09 in.; 12.84 lb (est.) (37.34 mm x 414.27 mm x 383.28 mm; 5.82 kg)
Operating temperature	41 to 104°F (5 to 40°C) **Note:** Limitations may apply when using high-power optics
Operating humidity (nominal) (relative humidity)	10 to 85%
Storage temperature	–40 to 158°F (–40 to 70°C)
Storage (relative humidity)	5 to 95% **Note:** Not to exceed 0.024 kg of water per kg of dry air
Operating altitude	–60 to 1800 m

Ordering information

The ASR 9903 Compact High-Performance router is available to order through the Software Flexible Consumption Model (FCM) and Traditional Business Model.

The Flexible Consumption Model offers a built-in "pay-as-you-grow" structure that lowers initial start-up costs with the ability to add more capacity overtime as needed. Software subscription provides feature upgrades and helps defer the payment of software value for the initial purchase.

Table 5 provides ordering information for the ASR 9903 router with the Flexible Consumption Model.

Table 5.   Ordering information for the ASR 9903 router with the Flexible Consumption Model

Part number	Feature description
ASR-9903-FC	ASR 9903 1.6T Flexible Consumption Chassis
A99-RP-F-FC	ASR 9900 Fixed Chassis Route Processor – Flexible Consumption Model
A9903-20HG-PEC-FC	ASR 9903 2T Flexible Consumption Port Expansion Card
A9903-8HG-PEC-FC	ASR 9903 800G Flexible Consumption Port Expansion Card
PWR-1.6KW-AC	ASR 9900 Fixed Chassis AC Power Supply
PWR-1.6KW-DC	ASR 9900 Fixed Chassis DC Power Supply
ASR-9903-FAN	ASR 9903 Fan Tray
ASR-9903-4P-KIT	ASR 9903 4-Post Mounting Kit for 19-Inch Rack
ASR-9903-CAB-MGMT	ASR 9903 Cable Management
ASR-9903-FILTER	ASR 9903 Air Filter
S-A9K-LI-LIC-FC	ASR 9K Smart License Lawful Intercept – Flexible Consumption Model
ESS-ED-100G-RTU1	Edge Essentials Software RTU License per 100G
ADV-ED-100G-RTU1	Edge Advantage w/o Essentials Software RTU License per 100G
ADN-ED-100G-RTU1	Edge Advantage w/ Essentials Software RTU License per 100G
ESS-ED-400G-RTU1	Edge Essentials Software RTU License per 400G
ADV-ED-400G-RTU1	Edge Advantage w/o Essentials Software RTU License per 400G
ADN-ED-400G-RTU1	Edge Advantage w/ Essentials Software RTU License per 400G
ESS-ED-100G-SIA5	Edge Essentials SIA per 100G 60-120 months
ESS-ED-100G-SIA3	Edge Essentials SIA per 100G 36-59 months
ESS-ED-400G-SIA5	Edge Essentials SIA per 400G 60-120 months

Part number	Feature description
ESS-ED-400G-SIA3	Edge Essentials SIA per 400G 36-59 months
ADV-ED-100G-SIA5	Edge Advantage w/o Essentials SIA per 100G for 60-120 months
ADV-ED-100G-SIA3	Edge Advantage w/o Essentials SIA per 100G for 36-59 months
ADV-ED-400G-SIA5	Edge Advantage w/o Essentials SIA per 400G for 60-120 months
ADV-ED-400G-SIA3	Edge Advantage w/o Essentials SIA per 400G for 36-59 months
ADN-ED-100G-SIA5	Edge Advantage w/ Essentials SIA per 100G for 60-120 months
ADN-ED-100G-SIA3	Edge Advantage w/ Essentials SIA per 100G for 36-59 months
ADN-ED-400G-SIA5	Edge Advantage w/ Essentials SIA per 400G for 60-120 months
ADN-ED-400G-SIA3	Edge Advantage w/ Essentials SIA per 400G for 36-59 months

For more information, please refer to the Cisco IOS XR Software Flexible Consumption Model Data Sheet.

Table 6 provides hardware ordering information for the ASR 9903 router with the Traditional Business Model.

Table 6.   Hardware ordering information for the ASR 9903 router with the Traditional Business Model

Part number	Feature description
ASR-9903	ASR 9903 Chassis
A99-RP-F	ASR 9900 Fixed Chassis Route Processor
A9903-20HG-PEC	ASR 9903 2T Multirate Port Expansion Card
A9903-8HG-PEC	ASR 9903 800G Multirate Port Expansion Card
PWR-1.6KW-AC	ASR 9900 Fixed Chassis AC Power Supply
PWR-1.6KW-DC	ASR 9900 Fixed Chassis DC Power Supply
ASR-9903-FAN	ASR 9903 Fan Tray
ASR-9903-4P-KIT	ASR 9903 4-Post Mounting Kit for 19-Inch Rack
ASR-9903-CAB-MGMT	ASR 9903 Cable Management
ASR-9903-FILTER	ASR 9903 Air Filter

The ASR 9903 compact high-performance router supports optional feature licenses to enable features. Table 7 lists the feature licenses.

Table 7. Feature license information for the ASR 9903 router with the Traditional Business Model

Part number	Feature description
S-A9903-IVRF	ASR 9903 License to Activate up to 8 VRFs for Fixed Ports
S-A9903-AIP	ASR 9903 Full-Scale VRF License for Fixed Ports
S-A9903-CGN	ASR 9903 License Inline CGv6 Transformation for Fixed Ports
S-A9903-20HG-IVRF	ASR 9903 License to Activate up to 8 VRFs for 2T PEC
S-A9903-20HG-AIP	ASR 9903 Full-Scale VRF License for 2T PEC
S-A9903-20HG-CGN	ASR 9903 License Inline CGv6 Transformation for 2T PEC
S-A9K-400G-F-ENBL	ASR 9903 Enablement License for 400G Port on 2T PEC
S-A9903-8HG-IVRF	ASR 9903 License to Activate up to 8 VRFs for 800G PEC
S-A9903-8HG-AIP	ASR 9903 Full scale VRF License for 800G PEC
S-A9903-8HG-CGN	ASR 9903 License In-line CGv6 Transformation for 800G PEC
S-A9K-MACSEC-10	ASR 9000 MACSEC 10G Right to use license
S-A9K-MACSEC-40	ASR 9000 MACSEC 40G Right to use license
S-A9K-MACSEC-100	ASR 9000 MACSEC 100G Right to use license
S-A9K-LI-LIC	ASR 9K Smart License Lawful Intercept
S-A9K-TUNNEL-ENT	ASR 9K Smart License RTU License for Tunnel Protocols
S-A9K-MOBILE-LIC	ASR 9K Smart License Advanced Mobile for System
S-A9K-NVSAT1-LIC	NV Host License for 1 nV Client
S-A9K-NVSAT5-LIC	NV Host License for up to 5 nV Clients
S-A9K-NVSAT20-LIC	NV Host License for up to 20 nV Clients

Downloading the software

Visit the Cisco Software Center to download Cisco IOS Software.

Cisco Services for the Cisco ASR 9000 Series

Through a lifecycle services approach, Cisco delivers comprehensive support to service providers to help them successfully deploy, operate, and optimize their Cisco IP Next-Generation Networks. Cisco Services for the Cisco ASR 9000 Series Aggregation Services Routers provide services and proven methodologies that help ensure service deployment with substantial Return On Investment (ROI), operational excellence, optimal performance, and high availability. These services are delivered using leading practices, tools, processes, and lab environments developed specifically for ASR 9000 Series deployments and post implementation support. The Cisco Services team addresses your specific requirements, mitigates risk to existing revenue-generating services, and helps accelerate time to market for new network services.

Product 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

Cisco makes the packaging data available for informational purposes only. It may not reflect the most current legal developments, and Cisco does not represent, warrant, or guarantee that it is complete, accurate, or up to date. This information is subject to change without notice.

Cisco Capital

Flexible payment solutions to help you achieve your objectives

Cisco Capital makes it easier to get the right technology to achieve your objectives, enable business transformation and help you stay competitive. We can help you reduce the total cost of ownership, conserve capital, and accelerate growth. In more than 100 countries, our flexible payment solutions can help you acquire hardware, software, services and complementary third-party equipment in easy, predictable payments.

Document history

Table 8.   Document history

New or Revised Topic	Described In	Date
Updated the Ordering information section with new license SKU content for both Traditional and FCM models. Updated relevant features and technical specifications across document.	Ordering information	July 26,2021

Contact Us

Phone: +852-51736677

Skype: wendycisco

WhatsAPP: +852-51736677

E-mail: wendy@donewin.com.hk

Website：https://www.uritprice.com