

Cisco ASR 9901 Router

Product Overview

Part of the Cisco® ASR 9000 Series, the Cisco ASR 9901 Router (Figure 1) is a compact high-capacity Provider Edge (PE) router that delivers 456 Gbps of nonblocking, full-duplex fabric capacity in a Two-Rack-Unit (2RU) form factor. Based on the same Cisco IOS® XR software image as the other routers in the Cisco ASR 9000 Series, the Cisco ASR 9901 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. The Cisco ASR 9901 Router has an Integrated Route Switch Processor (RSP) and has 42 integrated ports that supports a combination of 1/10/100GE speeds, a GPS input for stratum-1 clocking, Building Integrated Timing Supply (BITS) ports, and management ports.

Figure 1. Cisco ASR 9901 Router



Cisco ASR 9000 Series Aggregation Services Routers deliver exceptional scale, service flexibility, and high availability to Carrier Ethernet transport networks. The router is powered by widely deployed Cisco IOS XR 64 bit operating system, an innovative self-healing, distributed operating system designed for always-on operation. The ASR 9901 sets a new standard for Layer 2 and Layer 3 10GE/1GE service density and scale to support large-scale aggregation, Data Center Interconnect (DCI), and Satellite Network Virtualization (nV) System mode on the ASR 9000 Series Router. The ASR 9901 also supports industry leading MAC-SEC encryption on all its port speeds. These versatile capabilities help operators qualify and stock one type of chassis that can be deployed in any combination of Layer 2, Layer 3, DCI, or aggregation applications, thereby reducing Capital Expenditures (CapEx) and Operating Expenses (OpEx), as well as reducing the time required to develop and deploy new services.

Cisco ASR 9000 Series Carrier Ethernet applications include business services such as Layer 2 and Layer 3 VPN (L2VPN and L3VPN, mobile backhaul transport networks, and Broadband Network Gateway (BNG). Features supported include Ethernet Services; L2VPN; IPv4, IPv6, and L3VPN; Layer 2 and Layer 3 multicast; Synchronous Ethernet (SyncE), Ethernet Operations, Administration, and Maintenance (EOAM) and MPLS OAM, Layer 2 and Layer 3 Access Control Lists (ACLs), Hierarchical Quality of Service (HQoS), MPLS Traffic Engineering Fast Reroute (MPLS TE-FRR), Multichassis Link Aggregation (MC-LAG), Integrated Routing and Bridging (IRB) and Cisco Nonstop Forwarding (NSF) and Nonstop Routing (NSR). The System also supports the advanced features including Segment Routing, EVPN, Programmability and Telemetry and other enhancements in the IOS-XR 64 Bit Operating System.

Features and benefits of the Cisco ASR 9901 Router are listed in Table 1.

Table 1. Features and Benefits of Cisco ASR 9901 Router

Feature	Benefit
Highly Scalable fabric	Designed to support high 1/10/40/100 Gigabit densities in a 2RU form factor Provides built-in scalability for investment protection
Integrated ports	Provides 42 Integrated ports (16x1G, 24x1/10G(Dual rate), 2x100G ports)
Integrated route processor with 32 GB RAM	Runs Cisco IOS XR 64 Bit, a carrier-class operating system with high memory capacity suitable for all multidimensional scale applications.
Distributed forwarding plane architecture	Allows ports to support independent forwarding for enhanced performance and scale
Hardware-based IEEE 1588 support	Delivers timing services over the packet network efficiently and reliably
Two independent clock source connections: BITS and Synchronization Supply Unit (SSU) with DOCSIS® Timing Interface (DTI)	Offers redundant, centralized network synchronization support
GPS	Provides option for Stratum-1 clocking
Processor	Integrated RSP has 4 cores, 2.4 Ghz Intel CPU
Embedded USB memory (eUSB) port	Provides access to USB flash memory devices for software image loading and upgrades
Front-panel LEDs	Provides visual indication of RSP status, power management, and activity on compact flash and Hard Disk Drive (HDD)
Management ports	Provides easy access to system console
Power supply	Redundant AC or DC power supplies

Product Specifications

Table 2 provides details about the Cisco ASR 9901 Router. The system is designed for high performance and high reliability. The Cisco ASR 9901 has an integrated RSP capable of supporting fabric bandwidth up to 456 Gbps.

Table 2. Specifications for Cisco ASR 9901 Router

Category	Part Number or Specification
Chassis	ASR 9901
Integrated interfaces	16x1 GE, 24x 1/10 GE, 2x100 GE
Redundancy	Power supply & Fan redundancy
Power supply part number	<ul style="list-style-type: none"> • A9K-1600W-AC • A9K-1600W-DC
Physical specifications	<ul style="list-style-type: none"> • Height: 3.43 inches (8.7 cm) • Width: 17.32 inches (44 cm) • Depth: 23.62 inches (60 cm) • Weight of chassis: 47.62 lbs (21.6 kg) • Weight of fully configured (including 2 x power modules & 3x Fan trays) chassis 55.97 lbs (25.4 kg)
Power inputs	<ul style="list-style-type: none"> • Worldwide ranging AC (90-265V; 50-60 Hz) • Worldwide ranging DC (-40V to -72V)
Power consumption	<ul style="list-style-type: none"> • 850 watts typical, 1100 watts maximum
Environmental conditions	<ul style="list-style-type: none"> • Operating temperature: 41° to 104°F (5° to 40°C) • Storage temperature: -40 to 167°F (-40 to 75°C) • Relative humidity: 10 to 85%, noncondensing • Regulatory compliance
Environmental Specifications	
Operating temperature (nominal)	41 to 104°F (5 to 40°C)
Operating temperature (short-term)	23 to 131°F (-5 to 55°C)

Category	Part Number or Specification
Operating humidity (nominal) (relative humidity)	10 to 85%
Operating humidity (short-term)	5 to 90% Note: Not to exceed 0.024 kg water or dry air
Storage temperature	-40 to 158°F (-40 to 70°C)
Storage (relative humidity)	5 to 95% Note: Not to exceed 0.024 kg water or dry air
Operating altitude	0 - 4000m
Air flow	Front to Back
Compliance	
Network Equipment Building Standards (NEBS)	Cisco ASR 9901 is designed to meet: <ul style="list-style-type: none"> • SR-3580: NEBS Criteria Levels (Level 3) • GR-1089-CORE: NEBS EMC and Safety • GR-63-CORE: NEBS Physical Protection • VZ.TPR.9205: Verizon TEEER
ETSI standards	Cisco ASR 9901 is designed to meet (qualification in progress): <ul style="list-style-type: none"> • 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	Cisco ASR 9901 is designed to meet: <ul style="list-style-type: none"> • 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 • EN 50121-4: Railway EMC
Immunity	Cisco ASR 9901 is designed to meet: <ul style="list-style-type: none"> • 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	Cisco ASR 9901 is designed to meet: <ul style="list-style-type: none"> • UL/CSA/IEC/EN 60950-1 • IEC/EN 60825 Laser Safety • ACA TS001 • AS/NZS 60950 • FDA: Code of Federal Regulations Laser Safety

Ordering Information

Table 3 provides ordering information for the Cisco ASR 9901 Router.

Table 3. Ordering Information

Product Description	Supported Software Release	Part Number
ASR 9901 Router	Cisco IOS XR Software Release 6.4.1 or later	ASR-9901
AC Power Entry module	Cisco IOS XR Software Release 6.4.1 or later	A9K-1600W-AC
DC Power Entry module	Cisco IOS XR Software Release 6.4.1 or later	A9K-1600W-DC
ASR 9901 120G Router	Cisco IOS XR Software Release 6.4.1 or later	ASR-9901-120G
ASR 9901 256G Router	Cisco IOS XR Software Release 6.4.1 or later	ASR-9901-256G
ASR 9901 Fan Tray	Cisco IOS XR Software Release 6.4.1 or later	ASR-9901-FAN
ASR 9901 120 – 256 Upgrade License	Cisco IOS XR Software Release 6.4.1 or later	A9K9901-UP120-256G
ASR 9901 256 – 456 Upgrade License	Cisco IOS XR Software Release 6.4.1 or later	A9K9901-UP256-456G

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 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.

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