Cisco ASR 920 Series Aggregation Series Routers

Cisco® ASR 920 Series Aggregation Services Routers are full-featured converged access platforms designed for the cost-effective delivery of wireline and wireless services. They are temperature hardened, high-throughput, small form factor, low-power-consumption routers optimized for mobile backhaul, residential, and business service applications. The Cisco ASR 920 Router provides a comprehensive and scalable feature set of Layer 2 VPN (L2VPN) and Layer 3 VPN (L3VPN) services in a compact package. It also enables service providers to deploy Multiprotocol Label Switching (MPLS)-based VPN services from within the access layer. Designed around key Carrier Ethernet features that simplify network operation, the Cisco ASR 920 Series enables premium services with enhanced service-level agreement (SLA) capabilities. An optional "pay-as-you-grow" feature and service activation model gives service providers a flexible, cost-effective solution.

The Cisco ASR 920 Series Aggregation Services Routers (Figure 1) come in multiple versions with different port densities. Models include:

- Cisco ASR-920-12CZ-A
- Cisco ASR-920-12CZ-D
- Cisco ASR-920-4SZ-A
- Cisco ASR-920-4SZ-D

Figure 1.   Cisco ASR 920 Router

Major Applications

Broadband Access

The Cisco ASR 920 Router supports broadband access for delivering "any-play" services (voice, video, data, and mobility). Designed to support thousands of subscribers, quality of service (QoS) on the Cisco ASR 920 router is capable of scaling up to a large number of queues per device. This scalability, combined with a highly granular QoS algorithm (three-level hierarchical QoS), results in an enhanced broadband user experience. As a full-featured Layer 2 switch and Layer 3 router, the Cisco ASR 920 supports a variety of broadband applications including IPTV and video on demand (VoD), enhancing and extending the Cisco Evolved Programmable Network (EPN) architecture.

Converged Access for Mobile Applications

Deployed as a converged access platform for mobile backhaul, the Cisco ASR 920 Router can aggregate multiple base stations through multiple Ethernet and IP Interfaces and can use MPLS as a transport for mobile backhaul traffic.

The Cisco ASR 920 Router provides the timing services required in today's converged access networks by offering integrated support for the Building Integrated Timing Supply (BITS), 1 Pulse Per Second (1PPS) and Time Of Day (TOD) interfaces. The router also supports Synchronous Ethernet (SyncE) and IEEE-1588 and can act as the source for network clocking for time-division multiplexing (TDM), Synchronous Digital Hierarchy (SDH), and Synchronous Optical Network (SONET), SyncE, and Global Positioning Satellite (GPS) interfaces. In addition to the timing services, the Cisco ASR 920 Router can be deployed in small and outdoor environments due to its shallow depth and robust construction designed for extended temperature ranges.

Metro Ethernet Access

The Cisco ASR 920 Router is built to meet service provider requirements for Carrier Ethernet access. It is optimized for remote access and central offices for smaller aggregation sites where a full-featured, small-footprint converged platform is needed. The router offers service flexibility and delivers Layer 2, IP, and MPLS transport for advanced L2VPN, L3VPN, and multicast services.

Major Differentiators

The Cisco ASR 920 Router helps service providers deliver advanced services for Residential Broadband, Mobile and Metro Ethernet applications. This allows an operator to provide differentiated and cost-effective services to end users.

Flexible Deployment Options

The Cisco ASR 920 Router is designed with a 1RU compact form factor to accommodate deployment in small spaces. Available with a range of mounting options, the router can be deployed in space-constrained locations such as ETSI 300-mm deep cabinets. Extended temperature range supported by the Cisco ASR 920 Router allows the router to be deployed in locations with minimal environmental control. Small footprint and extended temperature range support allows service providers to extend the reach of their Carrier Ethernet networks to more challenging and remote locations.

Power Supply Unit (PSU): High Availability

Cisco ASR920 product family offers a choice of AC and DC power supplies. They are redundant and built into the chassis. The Ethernet interfaces are available in copper and fiber, with speed ranging from 10 Mbps to 10 Gbps.

Powered by the Cisco Carrier Ethernet ASIC

Powered by the Cisco Carrier Ethernet application-specific integrated circuit (ASIC), designed specifically for service providers, the Cisco ASR 920 series delivers essential Carrier Ethernet technologies including hierarchical quality of service (HQoS), MPLS, and Virtual Private LAN Services (VPLS). This custom and advanced ASIC design provides uninterrupted line rate performance while delivering complex services such as access control list (ACL) and HQoS. The Carrier Ethernet ASIC integrates Cisco traffic management innovation to deliver intelligent packet switching and routing operations.

Service Enhancement

In Cisco ASR 920 Router, each service is assigned enhanced QoS and security attributes. The ASR 920 Router accomplishes advanced per-traffic-class metering and offers bidirectional packet count and byte count statistics. The service offering is enhanced with operations, administration, and maintenance (OAM) functionality that includes Layer 2 Connectivity Fault Management (CFM), IP service-level agreement (SLA) for Layer 3, and MPLS OAM.

Benefits

MPLS in the Access layer

The Cisco ASR920 Series extends MPLS into the access layer by allowing service providers to initiate MPLS-based Layer 2 and Layer 3 VPN services from within the access layer. The Cisco ASR920 series gives service providers the ability to expand MPLS toward their network edge to gain the advantages of a single unified MPLS control plane across their networks. It offers full VPLS support allowing multipoint services definition. For additional flexibility, VPLS can be deployed as a full mesh or with a hierarchy (HVPLS).

Pay-as-You-Grow Investment Model

The ROI on an access element is heavily influenced by its location in the network and proximity to customers. The ability to deploy the Cisco ASR920 series and later activate features on demand delivers investment protection. This allows flexible timing for deploying MPLS, 10-Gigabit Ethernet services and boosting service capacity.

Advanced Service-Level Agreements

Service-aware quality of service (QoS) allows service providers to expand and differentiate their services portfolio with highly advanced and differentiating SLAs. The HQoS capabilities of the Cisco ASR920 series scale to eight queues per service, three levels of scheduling, and buffer volumes capable of accommodating today's most demanding wireline and wireless applications.

Mobile Timing and Synchronization Services

The Cisco ASR920 series provides the timing services required in converged access network to support mobile solutions including Radio Access Network (RAN) applications, and offers integrated support for the Building Integrated Timing Supply (BITS), 1 Pulse Per Second (1PPS) and Time Of Day (ToD) interfaces. The Cisco ASR920 series also supports synchronous Ethernet (SyncE) with Ethernet Synchronization Messaging Channel (ESMC) and Synchronization Status Messages (SSM) to allow excellent clock source traceability. The Cisco ASR920 series support IEEE-1588, and can act as the source for network clocking for TDM, SDH and SONET interfaces and SyncE.

Operational Efficiency for Carrier Ethernet Access Deployments

The Cisco ASR920 series features major enhancements that help service providers simplify and facilitate the management of their networks, resulting in diminishing operational costs. This unique feature set allows the Cisco ASR920 series to be deployed in a variety of applications including business service with 10-Gigabit Ethernet User Network Interface (UNI) and Ethernet mobile backhaul. These features enhance performance awareness, facilitate troubleshooting, and simplify service turn-up and restoration, ultimately reducing operational costs. "Dying gasp" for power indicators and four external alarm inputs to detect changes in remote sites further help service providers manage the health of network elements.

Universal Customer Premises Equipment

With all interfaces built in, this fixed-form-factor platform is versatile and can cover many deployment scenarios including Gigabit Ethernet and 10-Gigabit Ethernet deployments. The licensing mechanism supports enabling additional 1-Gigabit/10-Gigabit Ethernet interfaces as required for a particular deployment, allowing service providers to customize the configuration of the device and pay only when their services grow. With support for extended temperatures, the Cisco ASR920 series can be deployed in outside environments and remote locations.

Table 1. Hardware Components for Cisco ASR 920 Router

Part Number	Description
ASR-920-12CZ-A	Cisco ASR920 Series - 12GE and 2-10GE - AC model
ASR-920-12CZ-D	Cisco ASR920 Series - 12GE and 2-10GE - DC model
ASR-920-4SZ-A	Cisco ASR920 Series - 2GE and 4-10GE - AC model
ASR-920-4SZ-D	Cisco ASR920 Series - 2GE and 4-10GE - DC model
ASR 920 Accessories	
A920-RCKMT-ETSI	ETSI Rack mount Option for the Cisco ASR 920
A920-RCKMT-19	EIA 19" Rack mount Option for the Cisco ASR 920
A920-RCKMT-23	EIA 23" Rack mount Option for the Cisco ASR 920
A920-RCKMT-C-ETSI	ETSI Rack mount Option for the Cisco ASR 920 Compact
A920-RCKMT-C-19	EIA 19" Rack mount Option for the Cisco ASR 920 Compact
A920-RCKMT-C-23	EIA 23" Rack mount Option for the Cisco ASR 920 Compact

Tables 2 through 4 list the product, power, and environmental specifications for the Cisco ASR 920 Router. Table 5 provides safety and compliance information.

Table 2. Cisco ASR 920 Router System Specifications

Description	Cisco ASR 920 Router
Physical Specifications (H * W * D)	ASR-920-12CZ-A, ASR-920-12CZ-D: 1.7 x 17.5 x 9.1 in. (44 x 444 x 233 mm),1 RU ASR-920-4SZ-A, ASR-920-4SZ-D: 1.7 x 15.5 x 9.1 in. (44 x 394 x 233 mm), 1 RU
Weight	ASR-920-12CZ-A: 8.6lbs (3.9 kg) ASR-920-12CZ-D: 7.9lbs (3.6kg) ASR-920-4SZ-A: 7.5lbs (3.4kg) ASR-920-4SZ-D: 6.8lbs (3.1kg)
Rack mounts	ETSI rack mount kit 19 in. rack mount kit 23 in. rack mount kit
Air flow	Front to back airflow
Power supplies	2 power supplies (AC or DC)

Table 3.   Power Specifications

Description	Cisco ASR 920 Router
Power consumption	ASR-920-12CZ-A: Max 100W, Typical: 80W ASR-920-12CZ-D: Max 100W, Typical: 80W ASR-920-4SZ-A: Max 95W, Typical: 75W ASR-920-4SZ-D: Max 95W, Typical: 75W
AC input voltage and frequency	Voltage range: 85V AC to 264V AC, nominal 100V AC to 240V AC Frequency Range: 47Hz to 63Hz, nominal 50Hz to 60Hz
DC input voltage	Voltage range: -19.2V DC to -72V DC, nominal -24V DC to -48V DC

Table 4.   Environmental Specifications

Description	Cisco ASR 920 Router
Operating environment and altitude[1]	-40ºC to 65ºC operating temperature (AC and DC operation) -60m to 1800m operating altitude (for full operating temperature range) Up to 4000m operating altitude (at up to +40ºC temperature)
Relative humidity	5% to 95%, noncondensing
Acoustic noise[3]	Acoustic noise peak operation maximum 48 dBA sound pressure level, bystander position for rack mount products at 20ºC operation as measured by ISO 7779 NAIS noise measurement test standard Acoustic noise peak operation compliant to the Network Equipment Building Standards (NEBS) GR-63-Core Issue 3 sound power level of 78dB at 27ºC operation as measured by the ANSI S12.10/ISO 7779 NAIS noise measurement test standard
Storage environment	Temperature: -40 to +70ºC altitude: 15,000 ft (4570m)
Seismic	Zone 4

[1] Optics used may limit the temperature range.
[2] Not more than the following in a one-year period: 96 consecutive hours, or 360 hours total, or 15 occurrences.
[3] The above are for normal (nonfailure) operation. When operating with a fan failure, the above may be exceeded.

Table 5.   Safety and Compliance

Type	Standards
Safety	• UL 60950-1, 2nd edition • CAN/CSA C22.2 No. 60950-1-07 2nd edition • IEC 60950-1, 2nd edition • EN 60950-1, 2nd edition • AS/NZS 60950.1:2003
Electromagnetic	• FCC CFR47 Part 15 Class A
Emissions compliance	• EN55022, class A • CISPR22, class A • ICES-003, class A • EN 300 386, class A • VCCI, class A • KN22, class A • EN61000-3-2 to EN61000-3-3

Type	Standards
Immunity compliance	• EN 300 386 • EN 61000-6-1 • EN 50082-1 • CISPR24 • EN 55024 • KN 24 • EN 50121-4 • EN/KN 61000-4-2 to EN/KN 61000-4-6 • EN/KN 61000-4-8 • EN/KN 61000-4-11
NEBS[1]	• GR-63-CORE Issue 4 • GR-1089-CORE Issue 6 • SR-3580 NEBS Level 4
ETSI	• ETS/EN 300 119 Part 4 • ETS/EN 300 019 - Storage: Class 1.2, Transportation: Class 2.3, In-Use/Operational: Class 3.2 • ETS/EN 300 753
Network synchronization	• ANSI T1.101 • GR-1244-CORE • GR-253-CORE • ITU-T G.703 clause 5 • ITU-T G.703 clause 9 • ITU-T G.781 • ITU-T G.813 • ITU-T G.823 • ITU-T G.824 • ITU-T G.8261/Y.1361 • ITU-T G.8262 • ITU-T G.8264 • IEEE1588-2008

[1] Notable exceptions: Fans do not have filters, and all cabling is provided through the front panel.

Warranty Information

Find warranty information on Cisco.com at the Product Warranties page.

Service and Support

Cisco offers a wide range of services programs to accelerate customer success. These innovative services programs are delivered through a unique combination of people, processes, tools, and partners, resulting in high levels of customer satisfaction. Cisco Services help you protect your network investment, optimize network operations, and prepare your network for new applications to extend network intelligence and the power of your business. For more information about Cisco Services, refer to Cisco Technical Support Services or Cisco Advanced Services.

Cisco is committed to minimizing your total cost of ownership. Cisco offers a portfolio of technical support services to help ensure that Cisco products operate efficiently, remain highly available, and benefit from the most up-to-date system software. The services and support programs described in Table 6 are available as part of the Cisco Carrier Ethernet Switching Service and Support solution and are available directly from Cisco and through resellers.

Table 6. Service and Support

Advanced Services	Features	Benefits
Cisco Total Implementation Solutions (TIS), available directly from Cisco **Cisco Packaged TIS, available through resellers**	• Project management • Site survey, configuration, and deployment • Installation, text, and cutover • Training • Major moves, adds, and changes • Design review and product staging	• Supplement existing staff • Help ensure functions meet needs • Mitigate risk
Cisco SP Base Support and Service Provider-Based Onsite Support, available directly from Cisco **Cisco Packaged Service Provider- Based Support, available through resellers**	• 24-hour access to software updates • Web access to technical repositories • Telephone support through the Cisco Technical Assistance Center (TAC) • Advance replacement of hardware parts	• Facilitate proactive or expedited problem resolution • Lower total cost of ownership by taking advantage of Cisco expertise and knowledge • Minimize network downtime

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