Cisco ASR 920 Series Aggregation Services Routers: Passively Cooled Model

The Cisco® ASR 920 Series Aggregation Services Router (ASR) is a full-featured converged access platform designed for the cost-effective delivery of wireline and wireless services. These temperature-hardened, high-throughput, shallow-depth, low-power-consumption routers are optimized for mobile backhaul and business applications. The Cisco ASR 920 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. The Cisco ASR 920 Series offers key Carrier Ethernet features that simplify network operation; you can use them for premium services with enhanced service-level agreements (SLAs). An optional "pay-as-you-grow" feature and service activation model makes the Cisco ASR 920 Series a flexible and cost-effective solution.

This data sheet features the Passively Cooled Cisco ASR 920 Series Router model (part number ASR-920-10SZ-PD).

Major Applications

Broadband Access

The Cisco ASR 920 Router supports broadband access for delivering “any-play” services (voice, video, data, and mobility) to thousands of subscribers, with quality of service (QoS) on the Cisco ASR 920 capable of scaling up to a large number of queues per device. The large number of queues, combined with the three-level hierarchical QoS algorithm, results in an enhanced broadband user experience. This full-featured Layer 2 switch and Layer 3 router 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. It provides the Synchronous Ethernet (SyncE) and IEEE-1588 timing services required in today’s converged access networks. The router can be deployed in outside environments inside a rain- and water-protected cabinet and is certified 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 differentiated, cost-effective services such as Residential Broadband, Mobile, and Metro Ethernet.

Flexible Deployment Options

The Cisco ASR 920 passively cooled version supports deployment in rain- and water-protected cabinets for outdoor deployment in line with GR-3108 Class 3 Installation and supports both horizontal and vertical mounting options.

The extended temperature range supported by the Cisco ASR 920 Router allows the router to be deployed in locations with minimal environmental control. The passively cooled unit with support for an extended temperature range allows service providers to extend the reach of their Carrier Ethernet networks to more rugged and remote locations.

Power Supply Unit: High Availability

This router supports dual DC power supplies. They are redundant and built into the chassis. The Ethernet interfaces are available in copper and fiber, with speeds 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), which was 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 and taxing 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 the Cisco ASR 920 Router, each service is assigned enhanced QoS and security attributes. The router provides 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) functions including 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 ASR 920 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 router 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 as Hierarchical VPNS (H-VPLS).

Pay-as-You-Grow Investment Model

The return on investment (ROI) on an access element is heavily influenced by its location in the network and proximity to customers. The ability to deploy the Cisco ASR 920 Series and later activate features on demand delivers investment protection. This protection allows flexible timing for deploying MPLS and10-Gigabit Ethernet services and boosting service capacity.

Advanced Service-Level Agreements

Service-aware QoS allows service providers to expand and differentiate their services portfolio with highly advanced and differentiating SLAs. The HQoS capabilities of the Cisco ASR 920 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 ASR 920 Series provides the timing services required in a converged access network to support mobile solutions including Radio Access Network (RAN) applications. The router supports SyncE with Ethernet Synchronization Messaging Channel (ESMC) and Synchronization Status Messages (SSM) to allow excellent clock-source traceability. The Cisco ASR 920 Series supports IEEE-1588 as well.

Operational Efficiency for Carrier Ethernet Access Deployments

The Cisco ASR 920 Series features major enhancements that help service providers simplify and facilitate the management of their networks, resulting in diminishing operational costs. This innovative feature set allows the Cisco ASR 920 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, this router can be deployed in protected outside environments and remote locations.

Software

The Cisco ASR 920 Series Routers are supported in Cisco IOS® XE Software, which is a modular operating system. Cisco IOS XE Software is designed to provide modular packaging, feature velocity, and powerful resiliency. For more information on the supported features and software capabilities, see the Cisco IOS XE Software for Cisco ASR 920 Series Aggregation Services Router data sheet.

Network Management

Cisco ASR 920 Series Routers are supported in Cisco Prime™ for EPN architectures. The Cisco Prime end-to-end network management solution drastically simplifies the design, provisioning, and management of carrier-grade networks. It is a comprehensive solution that centralizes and automates service design, fulfillment, assurance, and performance analysis to help service providers and enterprises lower their costs while meeting high customer expectations.

Optics Support

FastEthernet SFP's	Supported as of Release	Description
GLC-FE-100LX	3.13	100BASE-LX SFP for FE port
GLC-FE-100BX-D	3.13	100BASE-BX10-D SFP
GLC-FE-100BX-U	3.13	100BASE-BX10-U SFP
GLC-FE-100EX	3.13	100BASE-EX SFP (40km)
GLC-FE-100ZX	3.13	100BASE-ZX SFP (80km)
GLC-FE-100FX	3.13	100BASE-FX SFP for FE port
GLC-FE-100LX-RGD=	3.13	100BASE-LX SM Rugged SFP
GLC-FE-100FX-RGD=	3.13	100BASE-FX MM Rugged SFP
GigabitEthernet SFP's		
GLC-SX-MM-RGD	3.13	1000Mbps Multi-Mode Rugged SFP
GLC-LX-SM-RGD	3.13	1000Mbps Single Mode Rugged SFP
GLC-ZX-SM-RGD	3.13	1000BASE-ZX Single Mode RuggedSFP
GLC-BX-D=	3.13	1000BASE-BX SFP, 1490nm
GLC-BX-U=	3.13	1000BASE-BX SFP, 1310nm
GLC-EX-SMD	3.13	GE SFP, LC Connector, EX transceiver
GLC-SX-MMD	3.13	1000BASE-SX SFP transceiver module, MMF, 850nm, DOM
GLC-LH-SMD	3.13	1000BASE-LX/LH SFP transceiver module, MMF/SMF, 1310nm, DOM
GLC-ZX-SMD	3.13	1000BASE-ZX SFP transceiver module, SMF, 1550nm, DOM
SFP-GE-T	3.13	1000BASE-T SFP (NEBS 3 ESD)
SFP-GE-L	3.13	1000BASE-LX/LH SFP (DOM)
SFP-GE-S	3.13	1000BASE-SX SFP (DOM)
SFP-GE-Z	3.13	1000BASE-ZX Gigabit Ethernet SFP (DOM)
GLC-BX40-U-I	3.14	1000BASE-BX40 SFP, 1310NM

FastEthernet SFP's	Supported as of Release	Description
GLC-BX40-D-I	3.14	1000BASE-BX40 SFP, 1550NM
GLC-BX40-DA-I	3.14	1000BASE-BX40 SFP, 1490NM
GLC-BX80-U-I	3.14	1000BASE-BX80 SFP, 1490NM
GLC-BX80-D-I	3.14	1000BASE-BX80 SFP, 1570NM
GigabitEthernet Colored SFP's		
CWDM-SFP-xxxx=	3.13	CWDM "xxxx" NM SFP Gigabit Ethernet and 1G/2G FC
DWDM-SFP-xxxx=	3.13	DWDM SFP xxxx.xx nm SFP (100 GHz ITU grid)
Colored TenGigabitEthernet SFP's		
DWDM-SFP10G-xx.xx	3.13	DWDM SFP+
CWDM-SFP10G-xxxx	3.14	8 wavelengths CWDM optics SFP+
TenGigabitEthernet SFP+		
SFP-10G-SR	3.13	10GBASE-SR SFP Module
SFP-10G-LR	3.13	10GBASE-LR SFP Module
SFP-10G-LRM	3.14	10GBASE-LRM SFP Module
SFP-H10GB-CUxM	3.14	10GBASE-CU SFP+ Cable x Meter
SFP-10G-ER	3.13	10GBASE-ER SFP Module
SFP-10G-ZR	3.13	Cisco 10GBASE-ZR SFP10G Module for SMF
SFP-10G-SR-X	3.13	10GBASE-SR SFP Module for Extended Temp range
SFP-10G-LR-X	3.13	10GBASE-LR SFP Module for Extended Temp range
SFP-10G-BXD-I	3.14	SFP+ Bidirectional for 10km, downstream
SFP-10G-BXU-I	3.14	SFP+ Bidirectional for 10km, upstream
SFP-10G-BX40D-I	3.14	SFP+ Bidirectional for 40km, downstream
SFP-10G-BX40U-I	3.14	SFP+ Bidirectional for 40km, upstream

Hardware components for the Cisco ASR 920 Series Router are shown in Table 1.

Table 1. Hardware Components for Cisco ASR 920 Router

Part Number	Description
ASR-920-10SZ-PD	Cisco ASR920 Series - 10GE and 2-10GE - Passively Cooled DC model
ASR 920 Accessories	
A920-RCKMT-19-PC	EIA 19" Rack mount for passively cooled variant of ASR920
A920-CBL-GUIDE-PC	ASR 920 Cable Guide for passively cooled variant
A920-PC-CAB-DC-3M	Power Cord - DC, ASR 920 Passively Cooled - 3M
A920-PC-CAB-DC-3M=	Power Cord - DC, ASR 920 Passively Cooled - 3M

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-920-10SZ-PD: 4.45 x 17 x 12.6 in. (113 x 431 x 320 mm) - Horizontal ASR-920-10SZ-PD: 17 x 4.45 x 12.6 in. (431 x 113 x 320 mm) - Vertical
Weight	ASR-920-10SZ-PD: 30.8 lb (~14kg)
Rack mounts	19-in. rack-mount kit

Description	Cisco ASR 920 Router
Power supplies	2 power supplies (DC)
MTBF (hrs)	328,500

Table 3. Power Specifications

Description	Cisco ASR 920 Router
Power consumption	ASR-920-10SZ-PD: Max 80W, Typical 70W
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, up to 1,000 feet (300m) -40ºC to +60ºC, up to 6,000 feet (1800m) -40ºC to +50ºC, up to 13,000 feet (4000m)
Relative humidity	5 to 95 percent, noncondensing
Storage environment	Temperature: -40 to +70ºC altitude: 15,000 ft (4570m)
Seismic	Zone 4

[1] Optics used may limit the temperature range.

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
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 • GR-3108-CORE, Class 3
ETSI	• ETS/EN 300 019 - Storage: Class 1.2, Transportation: Class 2.3, In-Use/Operational: Class 3.2

Type	Standards
Network synchronization	• GR-1244-CORE • GR-253-CORE • 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: This router does not have fans and is passively cooled.

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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