# Cisco ASR 920 Series Aggregation Services Class B Timing Compliance Routers

The Cisco® ASR 920 Series Aggregation Services Class B Timing Compliance Router is a full-featured converged access platform, positioned as a Carrier Ethernet aggregation platform for business services or as a CSR/Small Aggregation platform for the Mobile Backhaul for 5G markets. These 5G ready routers meet ITU G.8273.2 Class B Timing specifications and provides better accuracy using PTP for phase delivery. These high-throughput, small-form-factor, low-power-consumption routers are optimized for mobile backhaul and business applications. ASR 920 routers provide a comprehensive and scalable feature set, supporting both Layer 2 VPN (L2VPN) and Layer 3 VPN (L3VPN) services in a compact package. They also allow service providers to deploy Multiprotocol Label Switching (MPLS)-based VPN services from within the access layer.

Product overview

ASR 920 series router offers key Carrier Ethernet features that simplify network operation. You can use them for premium services with enhanced Service-Level Agreements (SLAs). And an optional service-activation model supports incremental growth and makes these routers flexible and cost-effective.

Figure 1. ASR 920 Series – Class B timing compliance models
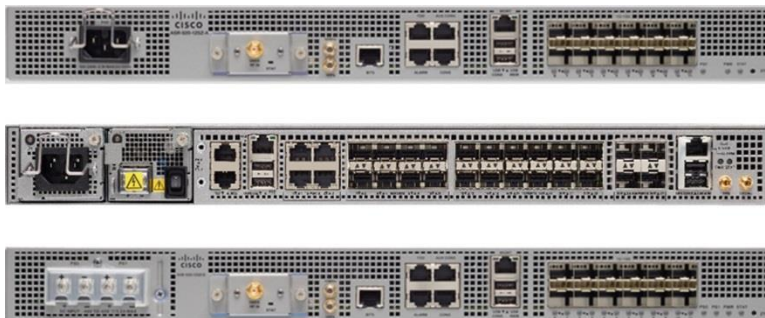
The new Class B Timing Compliance Cisco ASR 920 Series routers come in a small form factor (1RU) and in the below configurations:

- Cisco ASR 920-12SZ-A fixed access platform with single AC power supply, twelve 1/10GE SFP interfaces, Timing (1PPS/10MHz/ToD) interfaces and pluggable GNSS module
- Cisco ASR 920-12SZ-D fixed access platform with dual DC power supplies twelve 1/10GE SFP interfaces, Timing (1PPS/10MHz/ToD) interfaces and pluggable GNSS module
- Cisco ASR 920-20SZ-M fixed access platform with modular AC/ DC redundant power supplies, twenty GE SFP interfaces, four GE copper interfaces and 4X10GE SFP+ interfaces and Timing (1PPS/10MHz/ToD) interfaces

Prominent features

Broadband access

Cisco ASR 920 Class B timing routers support broadband access for delivering "any-play" services (that is, voice, video, data, and mobility) to thousands of subscribers. Quality of Service (QoS) on these routers can scale up to a large number of queues per device. This large number of queues, combined with a three-level hierarchical QoS algorithm, can deliver 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 ASR 920 router can aggregate multiple base stations through multiple Ethernet and IP interfaces, and it can use MPLS as a transport for mobile backhaul traffic. It also provides the Synchronous Ethernet (SyncE) and IEEE-1588 timing services required in today's converged access networks. The model (ASR-920-12SZ-A /ASR-920-12SZ-D) has a pluggable GNSS receiver, which can act as a grandmaster clock for aggregating and backhauling small cell traffic. The router can be deployed in small, completely sealed cabinets in outside environments, because of its small form factor and its durability in 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

ASR 920 routers help service providers deliver differentiated, cost-effective services such as residential broadband, mobile, and Metro Ethernet. It also provides all the features required for MEF 3.0 service initiation, including services such as ELINE, ELAN, ETREE, ACCESS ELINE, TRANSIT ELINE.

Flexible deployment options

ASR 920 routers are designed with a 1RU compact form factor to accommodate deployment in small spaces. Available with a range of mounting options, these routers can be deployed in space-constrained locations and cabinets. The extended temperature range supported by ASR 920 router allows them to be deployed in locations with minimal environmental control. In addition, their small footprint allows service providers to extend the reach of their Carrier Ethernet networks to more challenging and remote locations.

Power-supply unit

The new class B timing compliant routers support dual redundant fixed power supply module for DC(ASR-920-12SZ-D) & single fixed power supply module for AC(ASR-920-12SZ-A) PSU with front to back airflow. ASR-920-20SZ-M supports dual redundant power supply modules with front to back airflow and are field replaceable.

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, ASR 920 routers deliver 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 ASR 920 routers, 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 that include Layer 2 Connectivity Fault Management (CFM), IP Service-Level Agreements (SLAs) for Layer 3, and MPLS OAM.

Benefits

MPLS in the access layer

Cisco ASR 920 routers extend 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. These routers give 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. They offer full VPLS support, allowing multipoint services definition. For additional flexibility, VPLS can be deployed as a full mesh or as Hierarchical VPLS (H-VPLS).

Incremental 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 ASR 920 routers, then activate features later, 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 differentiated SLAs. The HQoS capabilities of ASR 920 routers 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

ASR 920 routers provide the timing services required in a converged access network to support mobile solutions, including Radio Access Network (RAN) applications. The new Cisco ASR920 Class B timing compliance routers will support enhanced timing capabilities via the Class B boundary clock ±20ns, which is required for MBH & 5G. They also support SyncE with Ethernet Synchronization Messaging Channel (ESMC) and Synchronization Status Messages (SSM) to allow excellent clock-source traceability. In addition, the routers support IEEE-1588, and the ASR-920-12SZ-A/ASR-920-12SZD models have a pluggable GNSS receiver which can act as a grandmaster clock for aggregating and backhauling small cell traffic.

Operational efficiency for carrier Ethernet access deployments

Cisco ASR 920 routers feature major enhancements that help service providers simplify and facilitate network management, for reduced operational costs. With these innovative features, ASR 920 routers can be deployed in a variety of applications, including business services with 10-Gigabit Ethernet User Network Interface (UNI) and Ethernet mobile backhaul. The features enhance performance awareness, facilitate troubleshooting, and simplify service turn-up and restoration. "Dying gasp" for power indicators and four external alarm inputs also detect changes in remote sites, giving service providers additional tools to manage the health of network elements.

Universal customer premises equipment

With all interfaces built in, this platform is versatile and can address many deployment scenarios, including Gigabit Ethernet and 10 Gigabit Ethernet deployments. The licensing mechanism in ASR-920-12SZ-A/ASR-920-12SZD model allows additional 10 Gigabit Ethernet interfaces to be activated as required for a particular deployment, so service providers can customize the configuration of the device and pay only when their services grow.

Software

Cisco ASR 920 routers are supported in Cisco IOS® XE Software, which is a modular operating system. This 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 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.

For the complete list of optics supported on the Cisco ASR920 Series, refer to the following link: https://www.cisco.com/c/dam/en/us/td/docs/routers/asr920/compatibility/matrix/Optics-Matrix-ASR920.pdf.

Product specifications

Tables 1 through 3 list the product, power, and environmental specifications for the Cisco ASR 920 Class B Timing Compliance Routers.

Table 1. Cisco ASR 920 Class B timing compliance series system specifications

Description	Cisco ASR-920-12SZ-D, Cisco ASR-920-12SZ-A	Cisco ASR-920-20SZ-M
Physical specifications	Height: 1.73 in., 1 RU Width: 17.5 in. Depth: 10 in. Weight: ASR-920-12SZ-A: 9.5 lb. (4.33 kg) without GNSS and 9.66 lb. (4.38 kg) with GNSS module ASR-920-12SZ-D: 9.5 lb.(4.31 kg) without GNSS and 9.6 lb.(4.36 kg) with GNSS module	Height: 1.72 in., 1 RU Width: 17.5 in. Depth: 10 in. Weight: 10.6 lb. (4.85 kg) – including 2 PSU and 8.6 lb. (3.86kg) without PSU
Rack mounts	ETSI rack mount kit 19 in. rack mount kit 23 in. rack mount kit	ETSI rack mount kit 19 in. rack mount kit 23 in. rack mount kit
Power supplies	Single AC power supply Or Dual DC Power Supply	Modular AC/DC Power Supply
Chassis MTBF at 40ºC operating temperature	400,000 hours	400,000 hours
Airflow	Front-to-back airflow	Front-to-back airflow

Table 2. Power specifications

Description	Cisco ASR 920 Class B Timing Compliance Routers
Power consumption	ASR-920-12SZ-A: Max 240W, Typical: 170W ASR-920-12SZ-D: Max 240W, Typical: 170W ASR-920-20SZ-M: Max 150W, Typical: 115W
AC input voltage and frequency	ASR-920-12SZ-A Voltage range: 90V AC to 264V AC, nominal 100V to 240V AC ASR-920-20SZ-M Voltage range: 85V AC to 264V AC, nominal 100V to 240V AC Frequency range: 47 to 63 Hz, nominal 50 to 60 Hz
DC input voltage	ASR-920-12SZ-D Voltage range: -36 to -72 VDC, nominal - -48 VDC/-60VDC ASR-920-20SZ-M Voltage range: 18 to 32 VDC or - -36 to -72 VDC, nominal: 24 VDC/-48 VDC

Table 3. Environmental specifications

Description	Cisco ASR 920 Class B Timing Compliance Routers
Product ID	ASR-920-12SZ-D; ASR-920-12SZ-A; ASR-920-20SZ-M
Operating Environment[1]	-40 to 70ºC, up to 1,000 feet (300m) -40 to 65ºC, up to 6,000 feet (1800m) -40 to 55ºC, up to 13,000 feet (4000m)
Relative humidity	5 to 95 percent, noncondensing
Noise[2]	55 dBA @ 30C for ASR-920-12SZ-D & ASR-920-12SZ-A 60 dBA @ 30C for ASR-920-20SZ-M 87 dBA at highest system performance
Outside Plant	For an outside plant installation, it is required that the system be protected against airborne contaminants, dust, moisture, insects, pests, corrosive gases, polluted air, or other reactive elements present in the outside air. To achieve this level of protection, it is recommended that the unit be installed in a fully sealed enclosure
Storage environment	Temperature: -40 to 70ºC altitude: 15,000 feet (4570m)
Seismic	Zone 4

[1] During fan fail, the other fans will run at full speeds and system will comply to GR3108 class-2 conditions

[2] Measured as per NEBS GR-63 Core

Table 4.   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
Emissions compliance	• 47 CFR Part 15 • KN 32: 2015 • EN 55032:2012/ AC:2013 • EN 55032:2015 • CISPR 32 Edition 2 • EN61000-3-2: 2014 • EN61000-3-3: 2013 • EN 300 386 V1.6.1 • ICES-003 Issue 6: 2016 • V-2/2015.04 • V-3/2015.04 • TCVN 7189: 2009 • CNS13438: 2006
Immunity compliance	• CISPR24: 2010 + A1: 2015 • EN55024: 2010 + A1: 2015 • KN35: 2015 • TCVN 7317: 2003 • EN 300 386 V1.6.1 • EN 61000-6-1: 2007
NEBS[1]	• GR-63-CORE • GR-1089-CORE • SR-3580 NEBS Level 3 • GR-3108-CORE
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

Ordering information

Table 5.   Ordering information

Part Number	Description
Cisco ASR 920	
ASR-920-12SZ-D	Cisco ASR 920 Series - 12 x 1/10GE SFP, DC Model
ASR-920-12SZ-A	Cisco ASR920 Series - 12 x 1/10 GE SFP, AC Model
ASR-920-20SZ-M	Cisco ASR920 Series - 20GE SFP, 4Cu and 4-10GE: Modular PSU
ASR-920-CM-GNSS	Cisco ASR 920 GNSS Pluggable Module
Licenses	
ASR920-S-M	IOS XE, Metro Access Package
ASR920-S-I	IOS XE, Metro IP Access Package
ASR920-S-A	IOS XE, Adv Metro IP Access Package
ASR920-1588	ASR 920 IEEE 1588-2008 BC/MC License
ASR920-10G-2-B	Cisco ASR 920 Series - 2 ports 10GE license for ClassB ASR920
S-ASR920-10G-2-B	Cisco ASR 920 Series - 2 ports 10GE license for ClassB ASR920 (Smart License)
Accessories	
For Product ID	**ASR-920-12SZ-A, ASR-920-12SZ-D**
A920-RCKMT-19-HA	EIA 19in Rack mount Option for ClassB Cisco ASR 920, AC
A920-RCKMT-19-HD	EIA 19in Rack mount Option for ClassB Cisco ASR 920, DC
A920-CBL-BRKT-H	Cable Bracket for non ETSI rackmounts for ClassB ASR 920
A920-RCKMT-23-HA	EIA 23in Rack mount Option for ClassB Cisco ASR 920, AC
A920-RCKMT-23-HD	EIA 23in Rack mount Option for ClassB Cisco ASR 920, DC
A920-RCKMT-ETSI-HA	ETSI Rack mount Option for ClassB Cisco ASR 920, AC
A920-RCKMT-ETSI-HD	ETSI Rack mount Option for ClassB Cisco ASR 920, DC
A900-CONS-KIT-U	ASR 900 USB Console Cabling Kit
A920-WALLMT-H	Wall Mount Option for ClassB Cisco ASR 920
For Product ID	**ASR-920-20SZ-M**
A920-RCKMT-ETSI	ETSI Rack mount Option for Cisco ASR 920
A920-RCKMT-19	EIA 19in Rack mount Option for Cisco ASR 920
A920-RCKMT-23-H	EIA 23in Rack mount Option for Class B Cisco ASR920, modular
A920-CBL-GUIDE	Cable Guide
A920-CBL-BRKT	Cable Bracket (Non-ETSI)
A920-CBL-BRKT-E	Cable Bracket (ETSI)
A900-CONS-KIT-U	ASR 900 USB Console Cabling Kit
A900-CONS-KIT-S	ASR 900 Serial Console Cabling Kit

Warranty information

Find warranty information on Cisco.com at the [Product Warranties](#) page.

Cisco and partner services

Cisco offers a wide range of services programs to help accelerate customer success. These innovative services programs are delivered through a unique combination of people, processes, tools, and partners, promoting 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 reducing 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 10 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 • Reduce network downtime

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