# Cisco ASR 920 Series Aggregation Services Routers: High-Port-Density Models

The Cisco® ASR 920 Series Aggregation Services Router is a full-featured converged access platform designed for the cost-effective delivery of wireline and wireless services. These temperature-hardened, 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.

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.   ASR920 Series - High Port Density models
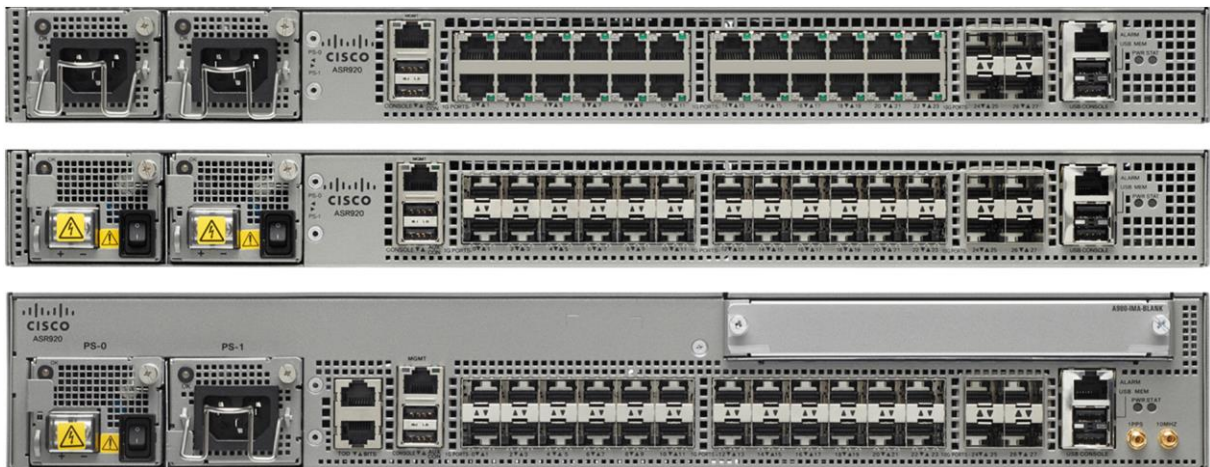
ASR 920 series router offers multiple models with different port densities and interfaces:

- ASR 920 (part number: ASR-920-12SZ-IM)
- ASR 920 (part number: ASR-920-24TZ-M)
- ASR 920 (part number: ASR-920-24SZ-M)
- ASR 920 (part number: ASR-920-24SZ-IM)

Major Applications

Broadband Access

Cisco ASR 920 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-IM) has a built-in GNSS receiver, which can act as a grandmaster clock for aggregating and backhauling small cell traffic. It also supports Cisco Universal Power over Ethernet (Cisco UPOE™) which can be used to power small cell radios. 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.

Advanced Security

Small cells deployments face challenges on the security front due to their location. The model (ASR-920-12SZ-IM) supports security services such as IP Security (IPSec), Network Address Translation (NAT), and Port Address Translation (PAT) to help protect against vulnerabilities to subscriber traffic and the network. A built-in hardware crypto engine allows the feature to scale and makes it ideal for extensive small cell deployments.

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.

Flexible Deployment Options

ASR 920 routers are designed with a 1RU compact form factor to accommodate deployment in small spaces. ASR-920-24SZ-IM model is 1.5RU to accommodate the interface module in the chassis. Available with a range of mounting options, these routers can be deployed in space-constrained locations such as ETSI 300-mm-deep 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: High Availability

ASR 920 routers offer a choice of AC and DC power supplies, which are redundant and built into the chassis. Ethernet interfaces are available in copper and fiber, with speeds ranging from 10 Mbps to 10 Gbps. The time-division multiplexing (TDM) interfaces are available in the product models (ASR-920-12SZ-IM and ASR-920-24SZ-IM), with speeds ranging from n x DS-0 to OC-12/STM-4 for plesiochronous digital hierarchy (PDH), SDH, and SONET. The interface modules, power supplies, and fan tray are all 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. 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-IM model has a built-in 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 fixed-form-factor platform is versatile and can address many deployment scenarios, including Gigabit Ethernet and 10 Gigabit Ethernet deployments. The licensing mechanism allows additional 1 Gigabit and 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. With support for extended temperatures, ASR 920 routers can be deployed in outside environments and remote locations.

Software

Cisco ASR 920 touters 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.

Interface Modules

Interface modules supported on the ASR 920 routers are listed in Table 1 and Table 2.

Table 1.   Interface Modules Supported on Cisco ASR 920 Router - ASR-920-12SZ-IM Model

Part Number	Description	Supported as of Cisco IOS XE Release
A900-IMA8T	ASR 900 8 port 10/100/1000 Ethernet Interface Module	3.16.0S
A900-IMA8S	ASR 900 8 port SFP Gigabit Ethernet Interface Module	3.16.0S
A900-IMA8D	ASR 900 8 port RJ48C T1/E1 Interface Module	3.16.0S
A900-IMA16D	ASR 900 16 port T1/E1 Interface Module, Requires patch panel	3.16.0S
A900-IMA1X	ASR 900 1 port 10GE XFP Interface Module	3.16.0S

Table 2. Interface Modules Supported on Cisco ASR 920 Router - ASR-920-24SZ-IM Model

Part Number	Description	Supported as of Cisco IOS XE Release
A900-IMA8T	ASR 900 8 port 10/100/1000 Ethernet Interface Module	3.14.0S
A900-IMA1X	ASR 900 1 port 10GE XFP Interface Module	3.14.0S
A900-IMA2Z	ASR 900 2 port 10GE SFP+/XFP Interface Module	3.14.0S
A900-IMA8D	ASR 900 8 port RJ48C T1/E1 Interface Module	3.14.0S
A900-IMA16D	ASR 900 16 port T1/E1 Interface Module, Requires patch panel	3.15.0S
A900-IMA32D	ASR 900 32 port T1/E1 Interface Module, Requires patch panel	3.15.0S
A900-IMA4OS	ASR 900 4 port OC3/STM1 or 1 port OC12/STM4 Interface Module	3.15.0S

Cisco ASR 900 Series 8-Port 1GE RJ-45 Module

This interface module delivers eight ports of Gigabit Ethernet, Fast Ethernet, and Ethernet connectivity on Cisco ASR 920 routers. The interface speed can be software-selected per interface. This interface module provides physical connectivity using eight RJ-45 connectors. When this module is inserted in the ASR 920 Router (ASR-920-24SZ-IM model), ports 16-23 of the chassis are not usable.

Cisco ASR 900 Series 8-Port 1GE SFP Module

This interface module delivers eight ports of Gigabit Ethernet and Fast Ethernet connectivity on ASR 920 routers. The interface speed can be selected per interface, depending on the optic used. This interface module provides physical connectivity using eight SFP optics.

Table 3 lists the pluggable optics that are supported in the Cisco ASR 900 Series 8-Port 1GE SFP Module, on Cisco IOS XE Software releases for Cisco ASR 920 routers.

Table 3. Pluggable Optics Supported on Cisco ASR 900 Series 8-Port 1GE SFP Module

Ethernet SFPs	Supported as of Release	Description
GLC-FE-100LX	3.16	100BASE-LX SFP for FE port
GLC-FE-100BX-D	3.16	100BASE-BX10-D SFP
GLC-FE-100BX-U	3.16	100BASE-BX10-U SFP
GLC-FE-100EX	3.16	100BASE-EX SFP (40km)
GLC-FE-100ZX	3.16	100BASE-ZX SFP (80km)
GLC-FE-100FX	3.16	100BASE-FX SFP for FE port
GLC-FE-100LX-RGD=	3.16	100BASE-LX SM Rugged SFP
GLC-FE-100FX-RGD=	3.16	100BASE-FX MM Rugged SFP
Gigabit Ethernet SFPs		
GLC-SX-MM-RGD	3.16	1000Mbps Multi-Mode Rugged SFP
GLC-LX-SM-RGD	3.16	1000Mbps Single Mode Rugged SFP
GLC-ZX-SM-RGD	3.16	1000BASE-ZX Single Mode Rugged SFP
GLC-BX-D=	3.16	1000BASE-BX SFP, 1490nm
GLC-BX-U=	3.16	1000BASE-BX SFP, 1310nm
GLC-EX-SMD	3.16	GE SFP, LC Connector, EX transceiver
GLC-SX-MMD	3.16	1000BASE-SX SFP transceiver module, MMF, 850nm, DOM
GLC-LH-SMD	3.16	1000BASE-LX/LH SFP transceiver module, MMF/SMF, 1310nm, DOM
GLC-ZX-SMD	3.16	1000BASE-ZX SFP transceiver module, SMF, 1550nm, DOM
SFP-GE-T	3.16	1000BASE-T SFP (NEBS 3 ESD)

Ethernet SFPs	Supported as of Release	Description
SFP-GE-L	3.16	1000BASE-LX/LH SFP (DOM)
SFP-GE-S	3.16	1000BASE-SX SFP (DOM)
SFP-GE-Z	3.16	1000BASE-ZX Gigabit Ethernet SFP (DOM)
GLC-BX40-U-I	3.16	1000BASE-BX40 SFP, 1310NM
GLC-BX40-D-I	3.16	1000BASE-BX40 SFP, 1550NM
GLC-BX40-DA-I	3.16	1000BASE-BX40 SFP, 1490NM
GLC-BX80-U-I	3.16	1000BASE-BX80 SFP, 1490NM
GLC-BX80-D-I	3.16	1000BASE-BX80 SFP, 1570NM
Gigabit Ethernet Colored SFPs		
CWDM-SFP-xxxx=	3.16	CWDM "xxxx" NM SFP Gigabit Ethernet and 1G/2G FC
DWDM-SFP-xxxx=	3.16	DWDM SFP xxxx.xx nm SFP (100 GHz ITU grid)

Cisco ASR 900 Series 1-Port 10GE XFP Module

This interface module provides physical connectivity using a single pluggable 10 Gigabit Ethernet XFP optic. Table 4 lists the pluggable optics that are supported in the module, on the Cisco IOS XE Software releases for Cisco ASR 920 routers.

Higher combined interface bandwidth may be accepted in the ASR 920 router model ASR-920-12SZ-IM and model ASR-920-24SZ-IM configuration. However, beyond the maximum interface throughput, the functions of the router cannot be guaranteed. Oversubscription is not supported.

Table 4.   10 Gigabit Ethernet Optics Supported in the 1-Port 10GE XFP Module

Optic Product Number	Supported as of Cisco IOS XE Release	Description
XFP10GER-192IR-L	3.14.0S	Cisco multirate XFP transceiver module for 10GBASE-ER/-EW Ethernet and OC-192/STM-64 intermediate-reach (IR-2), single-mode fiber (SMF), dual LC connector, low power (2.5W)
XFP10GLR-192SR-L	3.14.0S	Cisco multirate XFP transceiver module for 10GBASE-LR/-LW Ethernet and OC-192/STM-64 short-reach (SR-1), SMF, dual LC connector, low power (1.5W)
XFP-10GZR-OC192LR	3.14.0S	Cisco multirate XFP transceiver module for 10GBASE-ZR/-ZW Ethernet and OC-192/STM-64 long-reach, SMF, dual LC connector
DWDM-XFP-C	3.14.0S	10GBASE-DWDM Tunable XFP (50-GHz ITU grid), dual LC connector
DWDM-XFP-xx.yy	3.14.0S	10GBASE-DWDM single-wavelength XFP (100-GHz ITU grid), dual LC connector - 32 individual wavelength pluggable modules
ONS-XC-10G-EPxx.y=	3.14.0S	10GBASE-DWDM single-wavelength Edge Performance XFP (100-GHz ITU grid), dual LC connector, 50-km reach - 40 individual wavelength pluggable modules
ONS-XC-10G-xxxx=	3.14.0S	10GBASE-CWDM single-wavelength XFP (ITU G694.2), dual LC connector, 40-km reach - 8 individual wavelength pluggable modules
XFP-10G-MM-SR	3.14.0S	Cisco 10GBASE-SR Ethernet XFP transceiver module for multimode fiber (MMF), dual LC connector
XFP-10GLR-OC192SR	3.14.0S	Cisco multirate XFP transceiver module for 10GBASE-LR Ethernet and OC-192/STM-64 short-reach (SR-1) PoS applications, SMF, dual LC connector
XFP-10GZR-OC192LR	3.14.0S	Cisco multirate XFP transceiver module for 10GBASE-ZR Ethernet and OC-192/STM-64 long-reach PoS applications, SMF, dual LC connector

Cisco ASR 900 Series 2-Port 10GE XFP/SFP+ Module

This module provides two 10 Gigabit Ethernet ports with physical connectivity, using either a pluggable 10 Gigabit Ethernet Enhanced Small Form Factor Pluggable (SFP+) or a pluggable 10 Gigabit Ethernet XFP optic per port.

Table 5 lists the pluggable optics that are supported in the Cisco ASR 900 Series 2-Port 10GE XFP/SFP+ Module on the Cisco IOS XE Software releases for Cisco ASR 920 routers.

Higher combined interface bandwidth may be accepted in the ASR 920 model ASR-920-12SZ-IM and model ASR-920-24SZ-IM configuration. However, beyond the maximum interface throughput, the functions of the router cannot be guaranteed. Oversubscription is not supported.

Table 5.   10 Gigabit Ethernet Optics Supported in the 2-Port 10GE XFP/SFP+ Module

Optic Product Number	Supported as of Cisco IOS XE Release	Description
XFP10GER-192IR-L	3.14.0S	Cisco multirate XFP transceiver module for 10GBASE-ER/-EW Ethernet and OC-192/STM-64 intermediate-reach (IR-2), single-mode fiber (SMF), dual LC connector, low power (2.5W)
XFP10GLR-192SR-L	3.14.0S	Cisco multirate XFP transceiver module for 10GBASE-LR/-LW Ethernet and OC-192/STM-64 short-reach (SR-1), SMF, dual LC connector, low power (1.5W)
XFP-10GZR-OC192LR	3.14.0S	Cisco multirate XFP transceiver module for 10GBASE-ZR/-ZW Ethernet and OC-192/STM-64 long-reach, SMF, dual LC connector
DWDM-XFP-C	3.14.0S	10GBASE-DWDM Tunable XFP (50-GHz ITU grid), dual LC connector
DWDM-XFP-xx.yy	3.14.0S	10GBASE-DWDM single-wavelength XFP (100-GHz ITU grid), dual LC connector - 32 individual wavelength pluggable modules
ONS-XC-10G-EPxx.y=	3.14.0S	10GBASE-DWDM single-wavelength Edge Performance XFP (100-GHz ITU grid), dual LC connector, 50-km reach - 40 individual wavelength pluggable modules
ONS-XC-10G-xxxx=	3.14.0S	10GBASE-CWDM single-wavelength XFP (ITU G694.2), dual LC connector, 40-km reach - 8 individual wavelength pluggable modules
XFP-10G-MM-SR	3.14.0S	Cisco 10GBASE-SR Ethernet XFP transceiver module for multimode fiber (MMF), dual LC connector
XFP-10GLR-OC192SR	3.14.0S	Cisco multirate XFP transceiver module for 10GBASE-LR Ethernet and OC-192/STM-64 short-reach (SR-1) PoS applications, SMF, dual LC connector
XFP-10GZR-OC192LR	3.14.0S	Cisco multirate XFP transceiver module for 10GBASE-ZR Ethernet and OC-192/STM-64 long-reach PoS applications, SMF, dual LC connector
SFP-10G-SR	3.14.0S	Cisco 10GBASE-SR Ethernet SFP+ transceiver module for MMF, 850 nm
SFP-10G-LR	3.14.0S	Cisco 10GBASE-LR Ethernet SFP+ transceiver module for SMF, 1310 nm
SFP-10G-ER	3.14.0S	Cisco 10GBASE-ER Ethernet SFP+ transceiver module for SMF and MMF, 1550 nm
SFP-10G-ZR	3.14.0S	Cisco multirate 10GBASE-ZR, 10GBASE-ZW and OTU2/OTU2e SFP+ transceiver module for SMF and MMF, 1550 nm
DWDM-SFP10G-xx.xx=	3.14.0S	Cisco multirate (LAN/WAN/OTU2/OTU2E) 10GBASE-DWDM single-wavelength SFP+ module (100-GHz ITU grid) - 40 individual wavelength pluggable modules
SFP-10G-BXD-I	3.14.0S	10GBASE-BX Single-strand SMF Bidirectional SFP+ module, 1320-nm to 1340-nm TX/1260-nm to 1280-nm RX wavelength, single LC/PC connector, 10Km reach
SFP-10G-BXU-I	3.14.0S	10GBASE-BX Single-strand SMF Bidirectional SFP+ module, 1260-nm to 1280-nm TX/1320-nm to 1340-nm RX wavelength, single LC/PC connector, 10Km reach
SFP-10G-BX40D-I	3.14.0S	10GBASE-BX Single-strand SMF Bidirectional SFP+ module, 1320-nm to 1340-nm TX/1260-nm to 1280-nm RX wavelength, single LC/PC connector, 40Km reach
SFP-10G-BX40U-I	3.14.0S	10GBASE-BX Single-strand SMF Bidirectional SFP+ module, 1260-nm to 1280-nm TX/1320-nm to 1340-nm RX wavelength, single LC/PC connector, 40Km reach

Cisco ASR 900 Series 8-Port T1/E1 Module

This interface module delivers 8 ports of T1 or E1 connectivity on ASR 920 routers. The module can be software-configured as either T1 mode or E1 mode per interface module in an ASR 920 platform. This interface module provides physical connectivity using 8 onboard individual physical RJ-48C port connectors. When using this interface module with the ASR-920-24SZ-IM model, ports 20-23 of the chassis are not usable.

The module is software-configurable for 8 T1 or 8 E1 ports. Mixing T1 and E1 ports on the same interface module is not supported. The module can be clocked from a line or from an internal clock source. The protocols supported on the module are software-configurable per interface, allowing for flexible deployment and efficient use of the hardware.

Cisco ASR 900 Series 16-Port T1/E1 Module

This interface module delivers 16 ports of T1 or E1 connectivity on ASR 920 routers. The module can be software configured as either T1 mode or E1 mode per interface module in an ASR 920 platform. This interface module provides physical connectivity using a single high-density connector and requires a breakout cable and third-party patch panel for individual port connections.

When using this interface module with the ASR-920-24SZ-IM model, ports 20-23 of the chassis are not usable.

The module is software configurable for 16 T1 or 16 E1 ports. Mixing T1 and E1 ports on the same interface module is not supported. The module can be clocked from a line or from an internal clock source. The protocols supported on the module are software configurable per interface, which allows for flexible deployment and efficient use of the hardware.

The module uses an external patch panel and a breakout cable to deliver a BNC or RJ48C port for the user application.

Table 6 lists the cables and patch panels that are supported with the Cisco ASR 900 Series 16-Port T1/E1 Module on the Cisco IOS XE Software releases for ASR 920 routers.

Table 6.   Accessories Supported with the 16-Port E1/T1 Module

Optic Product ID	Supported as of Cisco IOS XE Release	Description
CABLE-16T1E1	3.15.0S	Cable for 16 Port T1/E1 Interface Module, 12 feet
PANEL-16-BNC	3.15.0S	Breakout panel with 16 T1/E1 75-ohm BNC ports
PANEL-32-RJ48	3.15.0S	Breakout panel with 32 T1/E1 100/120- ohm RJ48 ports

Cisco ASR 900 Series 32-Port T1/E1 Module

This interface module delivers 32 ports of T1 or E1 connectivity on Cisco ASR 920 routers. The module can be software configured as either T1 mode or E1 mode per interface module in an ASR 920 platform. This interface module provides physical connectivity using a single high-density connector and requires a breakout cable and third-party patch panel for individual port connections.

When using this interface module with the ASR-920-24SZ-IM model, ports 20-23 of the chassis are not usable.

The module is software configurable for 32 T1 or 32 E1 ports. Mixing T1 and E1 ports on the same interface module is not supported. The interfaces can be clocked from a line or from an internal clock source. The protocols supported on the module are software configurable per interface, which allows for flexible deployment and efficient use of the hardware.

The module uses an external patch panel and a breakout cable to deliver a BNC or RJ48C port for the user application.

Table 7 lists the cables and patch panels that are supported with the Cisco ASR 900 Series 32-Port T1/E1 Module on the Cisco IOS XE Software releases for Cisco ASR 920 routers.

Table 7.   Accessories Supported with the 32-Port E1/T1

Optic Product ID	Supported as of Cisco IOS XE Release	Description
CABLE-32T1E1	3.15.0S	Cable for 32 Port T1/E1 Interface Module
PANEL-16-BNC	3.15.0S	Breakout panel with 16 T1/E1 75-ohm BNC ports
PANEL-32-RJ48	3.15.0S	Breakout panel with 32 T1/E1 100/120- ohm RJ48 ports

Cisco ASR 900 Series 4-Port OC3/STM1

This interface module delivers four active ports of OC-3 or Synchronous Transport Module level 1 (STM-1) connectivity or one active port of OC-12 or STM-4 connectivity on Cisco ASR 920 Series routers. The interface module supports:

- Channelized OC-3 to clear channel T1, clear channel DS3 and channelized T1/E1
- Clear channel OC-3
- Channelized STM-1 to clear channel T1/E1 and channelized T1/E1

The module can be clocked from a line or from an internal clock source.

By using per-port software licenses, this module delivers a true multiservice and multirate capability in a small form factor in combination with an "pay as you grow" pricing model. The interface module can be software configured as either SONET mode or SDH mode per module in the ASR 920 configuration.

This interface module provides physical connectivity using pluggable SFP optics.

Table 8 lists the pluggable optics that are supported in the Cisco ASR 900 Series 4-Port OC3/STM1 Module on the Cisco IOS XE Software releases for Cisco ASR 920 routers.

Table 8.   Optics Supported in the 4-Port OC3/STM1 or 1-Port OC12/STM4 Module

Optic Product ID	Supported as of Cisco IOS XE Release	Description
ONS-SI-155-SR-MM	3.15.0S	OC-3/STM-1, short reach (SR), 1310 nm, multimode (MM), SFP, industrial temperature range
ONS-SI-155-I1	3.15.0S	OC-3/STM-1 intermediate reach (IR), 1310 nm, SFP, industrial temperature range
ONS-SI-155-L1	3.15.0S	OC-3/STM-1 long reach (LR), 1310 nm, SFP, industrial temperature range
ONS-SI-155-L2	3.15.0S	OC-3/STM-1 LR, 1550 nm, SFP, industrial temperature range
ONS-SC-155-EL	3.15.0S	STM-1 Electrical SFP, Commercial temperature range

Table 9.   Optics Supported on ASR920 Routers

Fast Ethernet SFPs	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
Gigabit Ethernet SFPs		
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 Rugged SFP
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

Fast Ethernet SFPs	Supported as of Release	Description
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
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
Gigabit Ethernet Colored SFPs		
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 10 Gigabit Ethernet SFPs		
DWDM-SFP10G-xx.xx	3.13	DWDM SFP+
CWDM-SFP10G-xxxx	3.14	8 wavelengths CWDM optics SFP+
10 Gigabit Ethernet 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

Table 10 lists hardware components available for Cisco ASR 920 routers.

Table 10.   Hardware Components for Cisco ASR 920 Router

Part Number	Description
ASR-920-12SZ-IM	Cisco ASR920 Series - 12GE and 4-10GE, 1 IM slot
ASR-920-24SZ-M	Cisco ASR920 Series - 24GE Fiber and 4-10GE - Modular PSU
ASR-920-24SZ-IM	Cisco ASR920 Series - 24GE and 4-10GE - Modular PSU and IM
ASR-920-24TZ-M	Cisco ASR920 Series - 24GE Copper and 4-10GE - Modular PSU
ASR-920-FAN-TRAY	Cisco ASR 920 Fan Tray
ASR-920-FAN-F	ASR920 Fan for Fixed Chassis
ASR-920-FAN-M	ASR920 Fan for Modular Chassis
A920-PWR400-A	Cisco ASR 920 400W AC PSU

Part Number	Description
A920-PWR400-D	Cisco ASR 920 400W DC PSU
ASR-920-PWR-A	ASR920 AC Power Supply
ASR-920-PWR-D	ASR920 DC Power Supply
ASR920-PWR-BLNK	ASR 920 Power Supply Blank Cover
ASR920-PWR-BLANK	ASR920 Power Supply Blank Cover
A900-IMA-BLANK	ASR 900 Interface Module Type-A Blank Cover
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-DRIP-TRAY[*]	ASR 920 Drip Tray - Modular

Tables 11 through 13 list the product, power, and environmental specifications for the Cisco ASR 920 Router. Table 14 provides safety and compliance information.

[*] Applicable for the Cisco ASR 920 Router, ASR-920-24SZ-IM model only.

Table 11.   Cisco ASR 920 Router System Specifications

Description	Cisco ASR 920 Router
Physical specifications[1] **(H x W x D)**	ASR-920-12SZ-IM: 1.73 x 17.5 x 11.28 in. (44 x 444.5 x 286.54 mm), 1RU ASR-920-24SZ-M: 1.72 x 17.5 x 10 in. (43.7 x 444.5 x 255 mm), 1RU ASR-920-24TZ-M: 1.72 x 17.5 x 10 in. (43.7 x 444.5 x 255 mm), 1RU ASR-920-24SZ-IM: 2.6 x 17.5 x 10.6 in. (66 x 444.5 x 270 mm), 1.5RU (with IM)
Weight	ASR-920-12SZ-IM: 9.25 lb (4.2 kg) - empty chassis ASR-920-24TZ-M: 8.3 lb (3.8 kg) - empty chassis ASR-920-24SZ-M: 8.5 lb (3.9kg) - empty chassis ASR-920-24SZ-IM: 10.3 lb (4.7kg) - empty chassis ASR-920-12SZ-IM: 13.44 lb (6.1 kg) with two AC PSU and IM card ASR-920-24TZ-M: 10.5 lb (4.8 kg) with two AC PSU ASR-920-24SZ-M: 10.5 lb (4.8 kg) with two AC PSU ASR-920-24SZ-IM: 14.1 lb (6.4 kg) with two AC PSU and IM card
Rack mounts	ETSI rack-mount kit 19-in. rack-mount kit 23-in. rack-mount kit
Air flow	Front-to-Back airflow (ASR-920-12SZ-IM, ASR-920-24TZ-M, ASR-920-24SZ-M) Front-to-Back & Side-to-Back airflow (ASR-920-24SZ-IM)
Power supplies	2 power supplies (AC or DC)
Mean time between failures (MTBF) (hours)	ASR-920-12SZ-IM: 407,230 ASR-920-24TZ-M: 582,610 ASR-920-24SZ-M: 546,260 ASR-920-24SZ-IM: 471,530 A920-PWR400-A: 356,809 A920-PWR400-D: 331,879 ASR-920-FAN-TRAY: 2,811,680 ASR-920-FAN-F: 2,581,770 ASR-920-FAN-M: 2,681,720 ASR-920-PWR-A: 1,598,000 ASR-920-PWR-D: 1,129,417

[1] Measured from the front of the chassis (excluding handles from the power supply, fan tray, and interface modules installed in the chassis).

Table 12.   Power Specifications

Description	Cisco ASR 920 Router
Power consumption	ASR-920-12SZ-IM: Max 150W, Typical: 130W (without PoE) ASR-920-24TZ-M: Max 130W, Typical: 100W ASR-920-24SZ-M: Max 145W, Typical: 110W ASR-920-24SZ-IM: Max 180W, Typical: 130W
AC input voltage and frequency	Voltage range: 85V AC to 264V AC, nominal 100V AC to 240V AC Frequency Range: 47 to 63 Hz, nominal 50 to 60 Hz
DC input voltage	Voltage range: -18 to -32 VDC or -36 to -72 VDC, nominal: -24 VDC/-48 VDC Voltage range (ASR-920-12SZ-IM): -18 VDC to -32 VDC or -40 VDC to -72 VDC nominal -24VDC/-48VDC/-60VDC

Table 13.   Environmental Specifications

Description	Cisco ASR 920 Router
Operating environment and altitude[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
Acoustic noise[2]	Acoustic noise peak operation maximum 55 dBA (59 dBA for ASR-920-12SZ-IM) 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 78 dB 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 feet (4570m)
Seismic	Zone 4

[1] Optics used may limit the temperature range.

[2] The numbers in Table 12 are for normal (nonfailure) operation. When operating with a fan failure, these numbers may be exceeded.

Table 14.   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 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 14 are available as part of the Cisco Carrier Ethernet Switching Service and Support solution and are available directly from Cisco and through resellers.

Table 15. 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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