

# Cisco ASR 901 Series Aggregation Services Routers

The Cisco® ASR 901 Series Aggregation Services Routers are environmentally hardened, high-speed, low-power-consumption routers optimized for any-generation cell-site Radio Access Network (RAN) backhaul and Ethernet access. By using Cisco ASR 901 routers, operators can reduce backhaul operating costs, simplify and converge their RAN and Ethernet access networks, and enhance their profit opportunities with mobile and premium Ethernet services.

RAN cell sites are places of transformation between mobile radio and mobile transport networks. Cost-effective RAN backhaul requires the ability to simultaneously aggregate the transport of traffic from both traditional and next-generation radios across multiple transport options available at the cell site. The Cisco ASR 901 routers are designed to minimize operating costs and optimize this radio-to-transport transformation through scalable time-division multiplexing (TDM) and IP/Ethernet interfaces for any combination of multivendor, multigeneration radios and transport networks.

## Product Overview

The Cisco ASR 901 Series Aggregation Services Routers are compact cell-site and Ethernet access routers specifically designed to clock, aggregate, and backhaul mixed-generation RAN traffic. Cisco ASR 901 routers prioritize and process cell-site voice, data, and signaling traffic as part of the Cisco Unified RAN Backhaul solution for reliable transport across any available backhaul networks, including T1/E1, ATM, Carrier Ethernet, microwave, WiMAX, and service provider Wi-Fi networks.

Designed for cell sites and Carrier Ethernet access, the Cisco ASR 901 differentiating features include:

- Low power consumption
- Line rate performance for all Layer 2 and Layer 3 interfaces
- Flexible clocking options: TDM, Building Integrated Timing Supply (BITS), GPS (10Mhz, 1PPS/ToD), 1588v2, and Synchronous Ethernet (SyncE)
- Extended operating temperatures
- Small form factor: 1 rack unit (RU) with 8.3 - 9.1 in. depth
- Redundant power and cooling

Figures 1 and 2 show the two basic 1-Gigabit Ethernet models of the Cisco ASR 901 Series routers.

**Figure 1.** Cisco ASR 901-12C-FT-D and ASR 901-4C-FT-D Routers



**Figure 2.** Cisco ASR 901-12C-F-D and ASR 901-4C-F-D Routers



Figures 3 through 6 show the four basic 10-Gigabit Ethernet models of the Cisco ASR 901 Series routers.

**Figure 3.** Cisco ASR 901-6CZ-FT-D Router



**Figure 4.** Cisco ASR 901-6CZ-F-D Router



**Figure 5.** Cisco ASR 901-6CZ-FT-A Router



**Figure 6.** Cisco ASR 901-6CZ-F-A Router



## Major Applications

### Cell-Site Backhaul for Mobile Applications

Deployed as cell-site routers for mobile backhaul, the Cisco ASR 901 routers can aggregate multiple base stations through multiple TDM, Ethernet, and IP interfaces, and can use Multiprotocol Label Switching (MPLS), Resilient Ethernet Protocol (REP), Multilink Point-to-Point Protocol (MLPPP), Layer 2 VPN (L2VPN), Layer 3 VPN (L3VPN), and other common transport protocols for RAN backhaul. Essentially, the routers prioritize, differentiate, and segment any combination of 2G, 3G, or 4G traffic for backhaul over any combination of IP/Ethernet and TDM (E1/T1) infrastructures (copper, microwave, or optical).

### Metro Ethernet Access

Cisco ASR 901 routers allow service providers to simultaneously manage and operate Pseudowire Emulation Edge to Edge (PWE3) and Carrier Ethernet environments by supporting line-rate Layer 2 Ethernet operations, administration, and maintenance (EOAM), including Connectivity Fault Management (CFM), Ethernet Local Management Interface (E-LMI), REP, QinQ, and link aggregation.

### Business Access Device

Cisco ASR 901 routers are optimized for remote-access and small aggregation sites where a fully featured, compact access platform is needed. The routers offer business service flexibility using an Ethernet virtual circuit (EVC) infrastructure and deliver Layer 2, IP, and MPLS transport for advanced Layer 2 and Layer 3 VPN services.

## Benefits

Cisco ASR 901 routers help service providers deliver advanced services and reduce operating costs for mobile backhaul and Carrier Ethernet access solutions. Highlights include the following.

### “Green” Hardware

Cisco ASR 901 routers help service providers reduce operating costs by optimizing energy efficiency, allowing cost-effective and responsible resource management. The routers are designed for low power consumption with Reduction of Hazardous Substances (RoHS) compliant, lead-free components. An indirect benefit is a significant reduction of carbon emissions.

### Comprehensive Services

With the Cisco ASR 901 routers, services can be prioritized and differentiated through hierarchical quality of service (HQoS) and security attributes. The routers offer advanced traffic analytics and performance monitoring and control, including per-traffic-class metering, bidirectional packets, and byte statistics. The service offering is enhanced with comprehensive OAM functionality, including Layer 2 CFM, IP service-level agreements (SLAs) for Layer 3, and MPLS OAM and TDM advanced timing and synchronization.

### Service Scalability

The Cisco ASR 901 routers deliver line-rate performance and flexible service scalability in a compact form factor. With support for up to 32,000 MAC addresses, up to 4000 bridge domains, and multiple hierarchical queues, the routers deliver high performance and scale for all mobile and Carrier Ethernet services.

### Advanced Timing

The Cisco ASR 901 routers provide the timing services required in today's converged access networks by offering integrated support for the BITS, 10-MHz, 1 Pulse Per Second (PPS), and Time of Day (ToD) interfaces. The routers support SyncE on copper and optical ports and IEEE1588v2 Precision Time Protocol (PTP) clock recovery from T1/E1 ports.

### Network Simplification

Cisco network virtualization (nV) technology can simplify network operations by reducing the number of components that must be managed, supporting easier configuration. The result is increased network scalability, improved service velocity, and lower operating costs. The nV-capable Cisco ASR 901 routers can be deployed as satellites of a Cisco ASR 9000 Series system to reduce the complexity of today's mobile Internet networks.

## Components and Options

Table 1 lists the hardware parts available for the Cisco ASR 901 Series.

**Table 1.** Hardware Components for the Cisco ASR 901 Series

Part Number	Description
<b>A901-12C-F-D</b>	Cisco ASR 901 Series Aggregation Services Router Chassis, Ethernet-only interfaces, DC power
<b>A901-12C-FT-D</b>	Cisco ASR 901 Series Aggregation Services Router Chassis, Ethernet and TDM interfaces, DC power
<b>A901-4C-F-D</b>	Cisco ASR 901 Series Aggregation Services Router Chassis, PAYG 4 GE Port, Ethernet-only interfaces, DC power
<b>A901-4C-FT-D</b>	Cisco ASR 901 Series Aggregation Services Router Chassis, PAYG 4 GE Port, Ethernet and TDM interfaces, DC power
<b>A901-6CZ-F-D</b>	Cisco ASR 901 Series Aggregation Services Router Chassis, Ethernet-only interfaces, 10 GE, DC power, USB
<b>A901-6CZ-FT-D</b>	Cisco ASR 901 Series Aggregation Services Router Chassis, Ethernet and TDM interfaces, 10 GE, DC power, USB

Part Number	Description
<b>A901-6CZ-F-A</b>	Cisco ASR 901 Series Aggregation Services Router Chassis, Ethernet-only interfaces, 10 GE, AC power, USB
<b>A901-6CZ-FT-A</b>	Cisco ASR 901 Series Aggregation Services Router Chassis, Ethernet and TDM interfaces, 10 GE, AC power, USB
<b>Cisco ASR 901 Accessories</b>	
<b>CAB-CONSOLE-RJ45</b>	Console cable: 6 ft with RJ-45 and DB9F
<b>CAB-CONSOLE-RJ45=</b>	Console cable: 6 ft with RJ-45 and DB9F (spare)
<b>Cisco ASR 901 Rack Mount Kits</b>	
<b>A901-RCKMNT-19IN</b>	Cisco ASR 901 Router 19-in. Rack Mount Kit
<b>A901-RCKMNT-19IN=</b>	Cisco ASR 901 Router 19-in. Rack Mount Kit, spare
<b>A901-RCKMNT-23IN</b>	Cisco ASR 901 Router 23-in. Rack Mount Kit
<b>A901-RCKMNT-23IN=</b>	Cisco ASR 901 Router 23-in. Rack Mount Kit, spare
<b>A901-RCKMNT-R19</b>	Cisco ASR 901 Router Recessed Rack Mount Kit for 19-in. cabinet
<b>A901-RCKMNT-R19=</b>	Cisco ASR 901 Router Recessed Rack Mount Kit for 19-in. cabinet, spare
<b>A901Z-RCKMNT-19IN</b>	Cisco ASR 901 10GE Router 19-in. Rack Mount Kit
<b>A901Z-RCKMNT-19IN=</b>	Cisco ASR 901 10GE Router 19-in. Rack Mount Kit, spare
<b>A901Z-RCKMNT-23IN</b>	Cisco ASR 901 10GE Router 23-in. Rack Mount Kit
<b>A901Z-RCKMNT-23IN=</b>	Cisco ASR 901 10GE Router 23-in. Rack Mount Kit, spare
<b>A901Z-RCKMNT-ETSI</b>	Cisco ASR 901 10GE Router ETSI Rack Mount Kit
<b>A901Z-RCKMNT-ETSI=</b>	Cisco ASR 901 10GE Router ETSI Rack Mount Kit, spare
<b>A901Z-RCKMNT-R19</b>	Cisco ASR 901 10GE Router Recessed Rack Mount Kit for 19-in. cabinet
<b>A901Z-RCKMNT-R19=</b>	Cisco ASR 901 10GE Router Recessed Rack Mount Kit for 19-in. cabinet, spare
<b>A901Z-RCKMNT-R23</b>	Cisco ASR 901 10GE Router Recessed Rack Mount Kit for 23-in. cabinet
<b>A901Z-RCKMNT-R23=</b>	Cisco ASR 901 10GE Router Recessed Rack Mount Kit for 23-in. cabinet, spare
<b>A901Z-RCKMNT-RETS</b>	Cisco ASR 901 10GE Router Recessed Rack Mount Kit for ETSI cabinet
<b>A901Z-RCKMNT-RETS=</b>	Cisco ASR 901 10GE Router Recessed Rack Mount Kit for ETSI cabinet, spare
<b>A901Z-RCKMNT-WALL</b>	Cisco ASR 901 10GE Router Wall Mount Kit
<b>A901Z-RCKMNT-WALL=</b>	Cisco ASR 901 10GE Router Wall Mount Kit, spare

The Cisco ASR 901 Series supports a wide range of Small Form-Factor Pluggable (SFP) and enhanced SFP (SFP+) optics modules. Table 2 lists their part numbers. The operational temperatures supported for the optics are defined by individual SFP or SFP+ modules.

**Table 2.** SFP and SFP+ Modules Supported with the Cisco ASR 901 Series

Type	Part Number
<b>Ethernet SFP</b>	GLC-LH-SM, GLC-LH-SMD, GLC-EX-SMD, GLC-ZX-SMD, GLC-LX-SM-RGD, GLC-SX-MM, GLC-SX-MMD, GLC-SX-MM-RGD, GLC-ZX-SM, GLC-ZX-SM-RGD, GLC-T, GLC-BX-U, GLC-BX-D, SFP-GE-L, SFP-GE-S, SFP-GE-Z, SFP-GE-T, GLC-FE-100FX-RGD, CWDM-SFP-1470, CWDM-SFP-1490, CWDM-SFP-1510, CWDM-SFP-1530, CWDM-SFP-1550, CWDM-SFP-1570, CWDM-SFP-1590, CWDM-SFP-1610, Ranging from DWDM-SFP-3033 to DWDM-SFP-6141 (40 wavelengths)
<b>Ethernet SFP+</b>	SFP-10G-SR, SFP-10G-LR, SFP-10G-ER, SFP-10G-ZR, SFP-10G-LRM, SFP-10G-SR-X, SFP-10G-LR-X

## Software

The Cisco ASR 901 Series is supported in Cisco IOS® Software. Table 3 describes the Cisco IOS Software feature licenses that are supported.

**Table 3.** Descriptions of Cisco IOS Software Feature Licenses for Cisco ASR 901-10G Series

Cisco IOS Software Feature License	Part Number	Description
<b>Base</b>	SL-A901-B	Base feature license supports: <ul style="list-style-type: none"> <li>• Layer 2: EVC Infra, 802.1Q, 802.1ad, QinQ, 802.3ah, and REP</li> <li>• QoS and 2 Level H-QoS</li> <li>• Layer 3: IPv4 static routes, BGPv4, IS-IS, OSPFv2, BFD, Multi-Virtual Route Forwarding (VRF) (VRF-lite), host connectivity, HSRP and VRRP</li> <li>• IPv6 static routes, Multiprotocol BGP, IS-IS, OSPFv3, BFDv6</li> <li>• EOAM: CFM (BD, port level), IP SLA, Y.1731 FM</li> <li>• Clocking: SyncE with SSM and ESMC, 1588v2 OC</li> <li>• Security: Port ACL and Router ACL</li> <li>• Management: SNMP, SSH, Telnet</li> </ul>
<b>Advanced IP Metro</b>	SL-A901-A SL-A901-A= L-SL-A901-A=	Advanced IP Metro feature license supports: <ul style="list-style-type: none"> <li>• Base features (above)</li> <li>• MPLS: MPLS using Label Distribution Protocol (LDP), EoMPLS, L3VPN, MPLS OAM, pseudowire redundancy, TE FRR, Labeled BGP (RFC3107)</li> <li>• EOAM: CFM over pseudowire, IP SLA (LSP)</li> <li>• TDM: T1/E1, Circuit Emulation Service over Packet Switched Network (CESoPSN) over MPLS and User Datagram Protocol (UDP), Structure Agnostic TDM over Packet (SAToP) over MPLS and UDP, PPP High-Level Data Control (HDLC) over MPLS, IP over PPP, HDLC, MLPPP, QoS over MLPPP, TDM Pseudowire redundancy, TDM Local Switching</li> </ul>

## Flexible Software Options

Cisco ASR 901 routers support the Cisco IOS Software Activation feature. With this feature, Cisco IOS Software feature sets can be activated by Cisco software licenses, providing a “pay as services grow” model. This model allows service providers to invest in software resources only when their businesses need it. The Cisco ASR 901 routers offer two Cisco IOS Software feature licenses. Each license enables feature activation on a per-chassis basis.

- The Base license includes support for Layer 2 and Layer 3 features, Sync-E, and 1588 Ordinary Clock.
- The Advanced IP Metro license adds the following capabilities to the Base license: TDM, MPLS, CESoPSN pseudowires, MPLS VPN support, Ethernet pseudowires and pseudowire redundancy.

Table 4 lists the main features in the Cisco IOS Software licenses for the Cisco ASR 901 Series.

**Table 4.** Software Feature Set in Cisco ASR 901 Series Licenses

Base Software Services (Default Image)	Advanced Metro IP Services
<b>EVC infrastructure, 802.1Q, 802.1ad, QinQ, 802.3ah, and REP</b>	All features in Base license plus the following
<b>QoS, with deep buffers and hierarchical QoS</b>	MPLS (LDP VPN), Labeled BGP (RFC3107)
<b>Layer 2: 802.1d, 802.1q, Link aggregation</b>	MPLS OAM
<b>IP routing (BGP, OSPF, IS-IS, static routes), BFD, Multi-Hop BFD, VRF-lite</b>	Pseudowire emulation (EoMPLS, CESoPSN over MPLS and UDP, SAToP over MPLS and UDP, PPP, HDLC over MPLS)
<b>EVC infrastructure</b>	Pseudowire redundancy
<b>Ethernet OAM (802.1ag, 802.3ah), Y.1731 FM</b>	QoS for L3VPN, L2VPN, and TDM
<b>MST and REP</b>	T1/E1, MLPPP, IP over PPP, HDLC
<b>Synchronous Ethernet on copper and fiber</b>	TE FRR

Base Software Services (Default Image)	Advanced Metro IP Services
IEEE 1588v2 (ordinary clock)	
IPv6 routing (BGP, OSPF, IS-IS, static routes), BFDv6	

Table 5 provides brief descriptions of the Cisco ASR 901 Series software options.

**Table 5.** Cisco ASR 901 Series Software Options

Part Number	Product Name
<b>Feature Set License Options</b>	
SL-A901-B	ASR 901 Base Feature Services
SL-A901-A	ASR 901 Advanced Metro IP Services
<b>Feature Set License Options (Spares)</b>	
SL-A901-A=	ASR 901 Advanced Metro IP Services Paper PAK for Metro IP Services Enablement on Base Feature Services
L-SL-A901-A=	ASR 901 Advanced Metro IP Services E-Delivery PAK for Metro IP Services Enablement on Base Feature Services

Table 6 provides brief descriptions of the Cisco ASR 901 port upgrade options for the 1-Gigabit Ethernet models.

**Table 6.** Cisco ASR 901 Series Port Upgrade Options

Part Number	Product Name
<b>GE Port Upgrade License Options</b>	
FLS-A901-4S	ASR 901 4 Port SFP GE Upgrade License
FLS-A901-4T	ASR 901 4 Port Copper GE Upgrade License
<b>GE Port Upgrade License Options (Spares)</b>	
FLS-A901-4S=	ASR 901 4 Port SFP GE Upgrade License: Paper License
L-FLS-A901-4S=	ASR 901 4 Port SFP GE Upgrade License: e-Delivery License
FLS-A901-4T=	ASR 901 4 Port Copper GE Upgrade License: Paper License
L-FLS-A901-TS=	ASR 901 4 Port Copper GE Upgrade License: e-Delivery License

Table 7 provides brief descriptions of the Cisco ASR 901 port upgrade options for the 10-Gigabit Ethernet models.

**Table 7.** Cisco ASR 901 Series Port Upgrade Options for the 10-Gigabit Ethernet Models

Part Number	Product Name
<b>GE Port Upgrade License Options</b>	
FLS-A901-4	ASR 901 4 Port GE Upgrade License
FLS-A901-2Z	ASR 901 2x 10GE Port SFP Upgrade License
<b>GE Port Upgrade License Options (Spares)</b>	
FLS-A901-4=	ASR 901 4 Port GE Upgrade License: Paper License
L-FLS-A901-4=	ASR 901 4 Port GE Upgrade License: e-Delivery License
FLS-A901-2Z=	ASR 901 2x 10 GE Port SFP Upgrade License: Paper License
L-FLS-A901-2Z=	ASR 901 2x 10 GE Port SFP Upgrade License: e-Delivery License

## Major Features

Table 8 lists the features of the Cisco ASR 901 routers.

**Table 8.** Cisco ASR 901 Routers Features

Features
<b>Ethernet Services</b>
<ul style="list-style-type: none"><li>• EVCs for:<ul style="list-style-type: none"><li>◦ 802.1q</li><li>◦ 802.1ad (QinQ)</li><li>◦ Selective QinQ</li><li>◦ Inner and outer VLAN classification</li></ul></li><li>• IEEE bridging</li><li>• REP</li><li>• MSTP</li><li>• 802.3ad Link Aggregation Bundles</li><li>• EoMPLS</li><li>• EoMPLS pseudowire redundancy</li><li>• Dynamic Host Configuration Protocol (DHCP) Client for Switch Virtual Interface(SVI)</li><li>• Link Layer Discovery Protocol (LLDP)</li><li>• L2 Protocol Peering, Forwarding, and Tunneling</li><li>• Ethernet Loopback</li></ul>
<b>TDM</b>
<ul style="list-style-type: none"><li>• T1/E1</li><li>• Pseudowire setup and maintenance using the LDP: RFC 4447</li><li>• Structure-Aware TDM CESoPSN: RFC 5086</li><li>• Structure-Aware TDM Circuit Emulation Service over UDP (CESoUDP): RFC 5086</li><li>• SAToP: RFC 4553</li><li>• Structure-Agnostic TDM over UDP: RFC 4553</li><li>• Pseudowire redundancy for CESoPSN and SAToP over MPLS</li><li>• IP over HDLC, PPP, and MLPPP</li><li>• QoS</li><li>• ANSI T1.403 Remote Loopback</li><li>• Bit Error Rate Test (BERT)</li><li>• ATM-IMA</li><li>• Per VC level shaping, CBR, UBR, UBR+, VBR-RT, VBR-nRT</li><li>• TDM Local Switching</li></ul>
<b>Layer 3 and MPLS Services</b>
<ul style="list-style-type: none"><li>• Layer 3 routing</li><li>• Cisco Express Forwarding (CEF) Load Sharing of Equal Cost Paths (ECMP)</li><li>• Open Shortest Path First (OSPF)</li><li>• Border Gateway Protocol (BGP)</li><li>• Intermediate System-to-Intermediate System (IS-IS)</li><li>• Bidirectional Forwarding Detection (BFD) support for OSPF, IS-IS, BGP, and static routes</li><li>• MPLS</li><li>• LDP with Label Edge Router (LER) and Label Switch Router (LSR) support</li><li>• Equal Cost Multiple Path (ECMP) support</li><li>• MPLS L3VPN</li><li>• IPv6 routing (BGP, OSPF, ISIS, static routes), BFDv6</li><li>• Two-Way Active Measurement Protocol (TWAMP)</li><li>• Labeled BGP (RFC 3107)</li><li>• Hot Standby Router Protocol (HSRP)</li><li>• Virtual Router Redundancy Protocol (VRRP)</li><li>• Multi-hop BFD</li></ul>

## Features

- MPLS Traffic Engineering/Fast Reroute (TE/FRR)

## QoS

- IEEE 802.1p QoS
- IP Precedence Type of Service (ToS)
- Differentiated Services Code Point (DSCP) traffic shaping and policing
- Class-Based Weighted Fair Queuing (CBWFQ)
- Weighted Random Early Detection (WRED)
- Priority queuing
- 2-rate 3-color (2R3C) policing
- Egress shaping per queue
- Modular QoS CLI (MQC)
- Hierarchical QoS (HQoS)
- Classification based on class of service (CoS), VLAN ID, DSCP, or IP precedence
- QoS ingress and egress statistics
- ACL QoS on IPv4
- IPv6 QoS

## Timing

- IEEE1588-2008 ordinary clock
- T1/E1 line timing
- Time of Day (ToD), 10 MHz, 1 (PPS)
- BITS
- ITU-T SyncE support on copper and fiber

## OAM

- IEEE 802.1ag Connectivity Fault Management (CFM)
- Ethernet Local Management Interface (ELMI)
- IEEE 802.3ah Link OAM
- MPLS OAM
- IP SLA
- Y.1731 Fault Management
- Dying Gasp

## Security

- Authentication, authorization, and accounting (AAA) with TACACS+ and RADIUS
- Secure Shell (SSH) Protocol v2
- Layer 3 ACLs

## Availability

- REP
- Cisco Express Forwarding Load Sharing of Equal Cost Paths
- IEEE 802.1s MSTP
- Bidirectional Forwarding Detection (BFD) support for OSPF, IS-IS, BGP, and static routes
- Multi Hop BFD
- HSRP and VRRP
- Pseudowire redundancy
- TE/FRR

## Manageability

- Simple Network Management Protocol (SNMP)
- SSH, Telnet
- Command Line Interface (CLI)
- Cisco Prime™ Network: fault, provisioning, and performance management
- Remote Monitoring (RMON)
- Embedded Event Manager (EEM) Script
- Data Collection Manager (DCM)



## Product Specifications

Tables 9, 10, and 11 list product, power, and environmental specifications for the Cisco ASR 901 routers. Table 12 provides safety and compliance information.

**Table 9.** Cisco ASR 901 Series System Specifications

Description	Cisco ASR 901 Series Specification
<b>Dimensions (H x W x D)</b>	A901-12C-FT-D, A901-4C-FT-D: 1.7 x 17.5 x 8.3 in. (43.2 x 444.5 x 211 mm), 1 RU A901-12C-F-D, A901-4C-F-D: 1.7 x 17.5 x 8.3 in. (43.2 x 444.5 x 211 mm), 1 RU A901-6CZ-FT-D: 1.7 x 17.5 x 9.1 in. (43.2 x 444.5 x 231 mm), 1RU A901-6CZ-F-D: 1.7 x 17.5 x 9.1 in. (43.2 x 444.5 x 231 mm), 1RU A901-6CZ-FT-A: 1.7 x 17.5 x 9.1 in. (43.2 x 444.5 x 231 mm), 1RU A901-6CZ-F-A: 1.7 x 17.5 x 9.1 in. (43.2 x 444.5 x 231 mm), 1RU
<b>Weight</b>	A901-12C-FT-D, A901-4C-FT-D: 8.15 lb (3.7 kg) A901-12C-F-D, A901-4C-F-D: 7.93 lb (3.6 kg) A901-6CZ-FT-D: 8.15 lb (3.7 kg) A901-6CZ-F-D: 7.93 lb (3.6 kg) A901-6CZ-FT-A: 8.15 lb (3.7 kg) A901-6CZ-F-A: 7.93 lb (3.6 kg)
<b>Memory</b>	Flash memory: 128 MB (onboard flash) System memory: 512 MB (DDR3)
<b>Rack mounts</b>	1 GE models: <ul style="list-style-type: none"> <li>• 19-in. rack mount option</li> <li>• 23-in. rack mount option</li> <li>• Recessed rack mount option for 19-in. cabinets</li> </ul> 10 GE models: <ul style="list-style-type: none"> <li>• 19-in. rack mount option</li> <li>• 23-in. rack mount option</li> <li>• ETSI rack mount option</li> <li>• Recessed rack mount option for 19-in. cabinets</li> <li>• Recessed rack mount option for 23-in. cabinets</li> <li>• Recessed rack mount option for ETSI cabinets</li> <li>• Wall mount option</li> </ul>
<b>Ethernet ports</b>	4 100/1000 RJ-45 Gigabit Ethernet ports 4 x 1 SFP Gigabit Ethernet ports <sup>1</sup> 4 x 1 Gigabit Ethernet Combo ports <sup>1</sup> 2 x 10 Gigabit Ethernet ports (10 GE models only)
<b>TDM ports</b>	A901-12C-FT-D: 16 T1/E1 A901-4C-FT-D: 16 T1/E1 A901-6CZ-FT-D: 8 T1/E1 A901-6CZ-FT-A: 8 T1/E1
<b>Console port</b>	1 (up to 115.2 Kbps)
<b>USB port</b>	1 supported on the following chassis models: <ul style="list-style-type: none"> <li>• A901-6CZ-FT-D</li> <li>• A901-6CZ-F-D</li> <li>• A901-6CZ-FT-A</li> <li>• A901-6CZ-F-A</li> </ul>
<b>External timing ports</b>	BITS input, 10-MHz input/output, 1 PPS input/output, ToD interface, and SyncE
<b>Fans</b>	1 GE models: dual fan, 1+1 redundancy 10 GE models: three fans, with redundancy
<b>Air flow</b>	Left to right airflow
<b>Cabling</b>	Front-panel access cabling and LED indicators

Description	Cisco ASR 901 Series Specification
<b>Power supplies</b>	2 power supplies (DC only); module redundancy: 1:1 1 power supply (AC only)
<b>Mean Time Between Failure (MTBF)</b>	A901-12C-F-D: 614,790 hours A901-4C-F-D: 614,790 hours A901-12C-FT-D: 378,310 hours A901-4C-FT-D: 378,310 hours A901-6CZ-F-D: 491,160 hours A901-6CZ-FT-D: 378,490 hours A901-6CZ-FT-A: 383,220 hours A901-6CZ-F-A: 499,660 hours

<sup>1</sup> Fiber ports can operate at 100 M with 100-M FX SFP.

**Table 10.** Power Specifications

Description	Cisco ASR 901 Specifications
<b>Power consumption</b>	1 GE models: dual DC DC-input power and power dissipation: <ul style="list-style-type: none"> <li>• A901-12C-F-D: 40W</li> <li>• A901-4C-F-D: 40W</li> <li>• A901-12C-FT-D: 50W</li> <li>• A901-4C-FT-D: 50W</li> </ul> 10 GE models: dual DC Maximum DC-input power and power dissipation at 48V supply: <ul style="list-style-type: none"> <li>• A901-6CZ-F-D: 58W</li> <li>• A901-6CZ-FT-D: 67W</li> </ul> 10 GE models: single AC only AC-input power and power dissipation: <ul style="list-style-type: none"> <li>• A901-6CZ-F-A: 57W</li> <li>• A901-6CZ-FT-A: 65W</li> </ul>
<b>AC input voltage and frequency</b>	AC-input voltage rating: 100V-240V 1A-0.5A, 50-60Hz
<b>Power rating</b>	1 GE models: <ul style="list-style-type: none"> <li>• DC-input voltage rating: 24 VDC, -48 VDC, -60 VDC</li> <li>• DC-input current rating: 2.8A maximum</li> </ul> 10 GE models: <ul style="list-style-type: none"> <li>• DC-input voltage rating: 24 VDC, -48 VDC, -60 VDC</li> </ul> DC-input current rating: 3.2A maximum
<b>Power connector</b>	6-position 2-tier stacked connector comprising two feeds, A and B DC power (AMPHENOL ELVA06100), and 3-position mating connectors for each feed (AMPHENOL ELVP03100)

- AC power: AC voltage = 220V, Temp = 65C, Traffic -> 8 copper (1 GE) port + 4 SFP (GE) +2 SFP+ (10 GE) + 8 TDM ports
- DC power: DC voltage = 48V, Temp = 65C, Traffic -> 8 copper (1 GE) port + 4 SFP (GE) +2 SFP+ (10 GE) + 8 TDM ports
- Traffic conditions are the same for the AC and DC chassis. In the case of Ethernet-only chassis, TDM, traffic is not present

**Table 11.** Environmental Specifications

Description	Cisco ASR 901
<b>Operating temperature<sup>1</sup></b>	-40 to 149°F (-40 to 65°C)
<b>Nonoperating temperature</b>	-40 to 158°F (-40 to 70°C)
<b>Relative humidity</b>	10% to 85%, noncondensing, ±5 %
<b>Operational altitude</b>	13,000 ft (4000m) maximum 104°F (40°C) ambient
<b>Acoustic noise<sup>2</sup></b>	1 GE models: 66 dBA with 23 cfm fan 10 GE models: 61 dBA with 19 cfm fan
<b>Air flow</b>	1 GE models: 46 cfm 10 GE models: 57 cfm

<sup>1</sup> Optics used may limit the temperature range.

<sup>2</sup> The above are for normal (nonfailure) operation. When operating with a fan failure, the above may be exceeded.

**Table 12.** Safety and Compliance

Type	Standards
<b>Safety</b>	<ul style="list-style-type: none"> <li>• UL/CSA 60950-1</li> <li>• IEC/EN 60950-1</li> <li>• AS/NZS 60950.1</li> </ul>
<b>EMC emissions<sup>1</sup></b>	<ul style="list-style-type: none"> <li>• FCC 47CFR15, Class A</li> <li>• EN55022, Class A</li> <li>• CISPR 22, Class A</li> <li>• AS/NZS CISPR 22, Class A</li> <li>• ICES 003, Class A</li> <li>• VCCI, Class A</li> <li>• KN 22, Class A</li> </ul>
<b>EMC immunity</b>	<ul style="list-style-type: none"> <li>• EN/IEC61000-4-2 Electrostatic Discharge Immunity - Enclosure</li> <li>• EN/IEC61000-4-3 Radiated Immunity - Enclosure</li> <li>• EN/IEC61000-4-4 Electrical Fast Transient Immunity</li> <li>• EN/IEC61000-4-5 Surge</li> <li>• EN/IEC61000-4-6 Immunity to Conducted Disturbances</li> </ul>
<b>Network Equipment Building Standards (NEBS)<sup>2</sup></b>	<p>This product is designed to meet the following requirements</p> <ul style="list-style-type: none"> <li>• GR-63-CORE</li> <li>• GR-1089-CORE</li> </ul>
<b>ETS/EN</b>	<ul style="list-style-type: none"> <li>• EN 300 386 Telecommunications Network Equipment (EMC)</li> <li>• EN55022 Information Technology Equipment (Emissions)</li> <li>• EN55024 Information Technology Equipment (Immunity)</li> <li>• EN61000-6-1 Generic Immunity Standard</li> </ul>
<b>Network synchronization</b>	<ul style="list-style-type: none"> <li>• GR-1244-CORE</li> <li>• ITU-T G.813</li> <li>• ITU-T G.703 clause 5</li> <li>• ITU-T G.703 clause 9</li> <li>• ITU-T G.8261/Y.1361</li> <li>• ITU-T G.781</li> <li>• ITU-T G.8264</li> <li>• IEEE1588-2008</li> </ul>

Type	Standards
<b>E1</b>	<ul style="list-style-type: none"> <li>• AS/ACIF S016: 2001</li> <li>• ITU.G.703: 1998</li> <li>• ITU I.431: 1993</li> <li>• TBR13: 1996</li> <li>• TBR12:1996: A1 1996</li> <li>• RRA No. 2009-38</li> <li>• ITU G.704</li> </ul>
<b>T1</b>	<ul style="list-style-type: none"> <li>• IC CS-03: 2004</li> <li>• DSPR Technical Condition 2004</li> <li>• TIA-968B</li> <li>• ID0002: 2007</li> <li>• HKTA 2028: Edition 2010</li> </ul>
<b>Ethernet:</b> 1000Base-T 100Base-T 100Base-FX 1000Base-S 1000BaseL 1000Base-Z 1000Base-E 1000Base-BX-U 1000Base-BX-D DWDM-SFP-GE: CWDM-SFP-GE: 10000Base-S 10000Base-L 10000Base-Z 10000Base-E	DSPR Technical Requirement 2005 <ul style="list-style-type: none"> <li>• IEEE 802.3</li> <li>• IEEE 802.3ae</li> </ul> DSPR Technical Condition 2004 <ul style="list-style-type: none"> <li>• IEEE-802.3ah</li> <li>• ANSI X3.263-1995</li> <li>• ISO/IEC 9314-3</li> </ul>

<sup>1</sup> The TDM ports (A901-12C-FT-D, A901-4C-FT-D, A901-6CZ-FT-D, and A901-6CZ-FT-A) and BITS ports require the use of shielded twisted pair cabling (STP) for EMC emissions.

<sup>2</sup> The copper Ethernet ports require the use of STP cabling for NEBS EMC compliance. The TDM ports (A901-12C-FT-D, A901-4C-FT-D, A901-6CZ-FT-D, and A901-6CZ-FT-A) and BITS ports are Type-2 and Type-4 NEBS compliant.

## Warranty Information

Warranty information is available 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 13 are available as part of the Cisco Carrier Ethernet Switching Service and Support solution and are available directly from Cisco and through resellers.

**Table 13.** Service and Support

Advanced Services	Features	Benefits
<p><b>Cisco Total Implementation Solutions (TIS), available directly from Cisco</b></p> <p><b>Cisco Packaged TIS, available through resellers</b></p>	<ul style="list-style-type: none"> <li>• Project management</li> <li>• Site survey, configuration, and deployment</li> <li>• Installation, test, and cutover</li> <li>• Training</li> <li>• Major moves, adds, and changes</li> <li>• Design review and product staging</li> </ul>	<ul style="list-style-type: none"> <li>• Supplement existing staff</li> <li>• Help ensure functions meet needs</li> <li>• Mitigate risk</li> </ul>
<p><b>Cisco SP Base Support and Service-Provider-Based Onsite Support, available directly from Cisco</b></p> <p><b>Cisco Packaged Service-Provider-Based Support, available through resellers</b></p>	<ul style="list-style-type: none"> <li>• 24-hour access to software updates</li> <li>• Web access to technical repositories</li> <li>• Telephone support through the Cisco Technical Assistance Center (TAC)</li> <li>• Advance replacement of hardware parts</li> </ul>	<ul style="list-style-type: none"> <li>• Facilitate proactive or expedited problem resolution</li> <li>• Lower total cost of ownership by taking advantage of Cisco expertise and knowledge</li> <li>• Minimize network downtime</li> </ul>



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