



Introduction

The Cisco ASR 901 Mobile Wireless Router is a cell site gateway platform specifically designed to provide transport for both legacy TDM and Ethernet traffic over a single converged network. The Cisco ASR 901 router is used at the cell site as a part of a 2G, 3G, or 4G radio access network (RAN) traffic.

This chapter includes the following sections:

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- [Power Supply, page 1-5](#)
- [System Specifications, page 1-7](#)
- [Router Interface Numbering, page 1-8](#)
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Hardware Description



Note

This equipment is suitable for installation in Network Telecommunications Facilities and locations where the NEC applies. The equipment is suitable for installation as part of the Common Bonding Network (CBN).

Contained in a standard shelf-rack enclosure, the Cisco ASR 901 router weighs approximately 10 pounds (4 kg). It measures 1.7 inches high x 17.5 inches wide x 8.3 inches deep (43.2 x 444.5 x 211 mm), 1 RU. These dimensions do not include the rack-mount brackets.

You can mount the router in a standard (ETSI) 19-inch (48.3 cm) equipment rack or 600mm ETSI rack or a 23" ETSI rack.

The Cisco ASR 901 router includes the following hardware features:

- 16 T1/E1 RJ45 ports
- Four ports of 100/1000 Copper Ethernet including auto-MDIX (RJ45 connector)
- Four ports of SFP only
- Four combo ports (SFP/Copper)
- Dual feed supply with redundant DC inputs plus built in redundant power supply (RPS)
- Two fans placed in the chassis (fans are redundant)
- Chassis: 1RU, 8.25 inch depth

- Operating temperature range is -40 to +149°F (-40°C to +65°C).
- Side to side airflow
- Four solid state alarm inputs
- A single built-in 1Gb Meninx Flash memory
- Two management ports: RS-232 serial console and 10/100 Base-T Ethernet ports
- One BITS clock port (RJ45) and 1 ToD port (RJ45)
- Two miniature coaxial connectors for 10Mhz and 1PPS timing (input or output). You can use these interfaces with an external GPS device to send or receive clocking from the router.
- Two LEDs for each T1/E1 port
 - C—indicates out of service or not configured, carrier condition, and loop condition
 - AL—no alarm, or alarm condition
- Two LEDs for each Ethernet port
 - L—indicates activity, lack of activity, or no link
 - S—indicates speed (100 or 1000) or off
- One System LED:
 - Solid Green—System Healthy (normal operation)
 - Solid RED—System Faulty

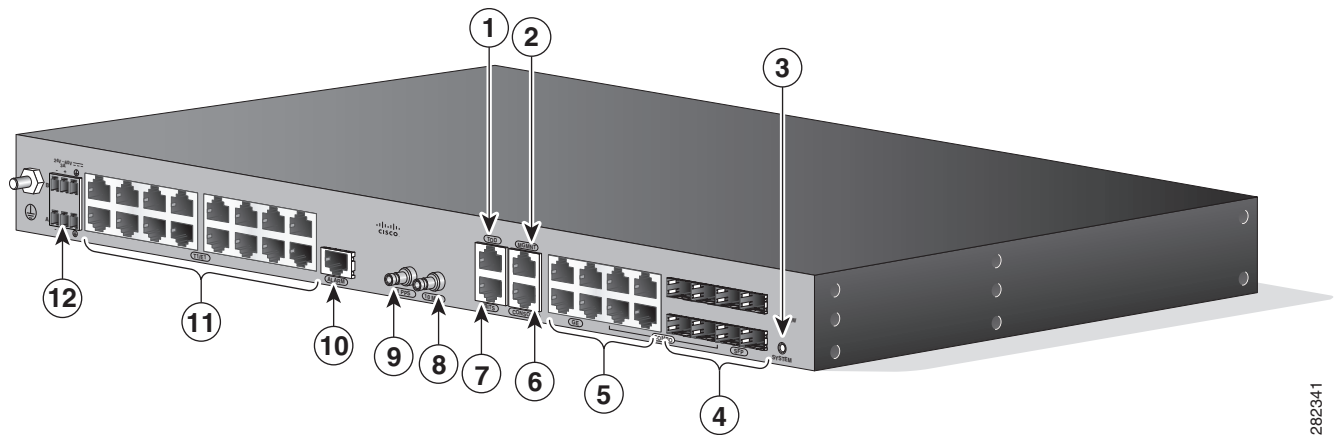
Cisco ASR 901 Router Front View

Figure 1-1 shows the front view of the Cisco ASR 901 router with each interface module.

The front panel of the Cisco ASR 901 router has the following components:

- 16 T1/E1 ports, labelled T1/E1 (positions 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14,15 and 16)
- Eight RJ-45 jacks for copper Ethernet ports, labeled “100/1000” Ethernet.
- Eight SFP connectors for optical GE ports
- Two miniature coaxial connectors for 10MHZ and 1PPS timing
- A single RJ-45 connector for console, labeled “CONSOLE”
- A single RJ-45 jack for the BITS interface, labeled “BITS”
- A single RJ-45 jack for the ToD interface, labeled “ToD”
- A single alarm
- Two management ports
- The following LEDs
 - T1/E1 ports
 - Ethernet ports
 - SFP ports
 - Chassis: Single LED for multiple conditions

Figure 1-1 Cisco ASR 901 Router—Front View



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1	ToD Port	7	BITS Port
2	Management Port	8	MINI-Coax Connector (10MHZ)
3	Power LED	9	MINI-Coax Connector (1PPS)
4	8 SFP Ports	10	Alarm
5	8 GE Ports	11	16 T1/E1 Ports
6	Console Port	12	Power Connector

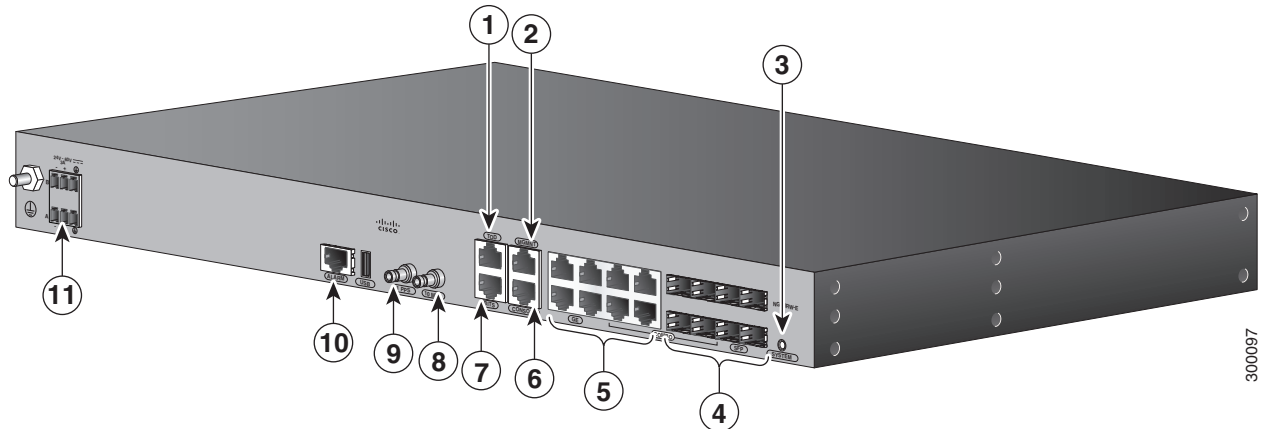
Cisco ASR 901 Router Ethernet Version Front View

Figure 1-2 shows the front view of the Cisco ASR 901 router with each interface module.

The front panel of the Cisco ASR 901 router, ethernet version has the following components:

- Eight RJ-45 jacks for copper Ethernet ports, labeled “100/1000” Ethernet.
- Eight SFP connectors for optical GE ports
- Two miniature coaxial connectors for 10MHZ and 1PPS timing
- A single RJ-45 connector for console, labeled “CONSOLE”
- A single RJ-45 jack for the BITS interface, labeled “BITS”
- A single RJ-45 jack for the ToD interface, labeled “ToD”
- A single alarm
- Two management ports
- The following LEDs
 - Ethernet ports
 - SFP ports
 - Chassis: Single LED for multiple conditions

Figure 1-2 Cisco ASR 901 Router Ethernet Version Front View



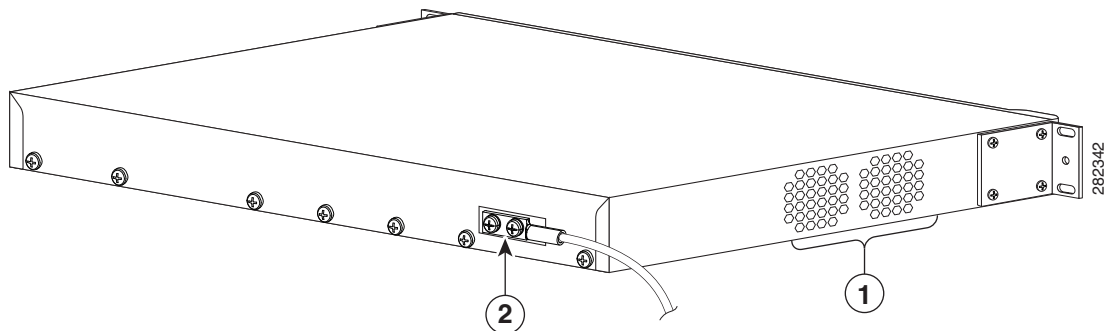
1	ToD Port	7	BITS Port
2	Management Port	8	MINI-Coax Connector (10MHZ)
3	Power LED	9	MINI-Coax Connector (1PPS)
4	8 SFP Ports	10	Alarm
5	8 GE Ports	11	Power Connector
6	Console Port		

Cisco ASR 901 Router Rear View

Figure 1-3 shows the rear view of the Cisco ASR 901 router including the orientation of the following components:

- Two blowing fans
- Mounting point for the 2-hole lug. For more information, see the [Connecting the Chassis Ground and Power](#), page 3-5

Figure 1-3 Cisco ASR 901 Router—Rear View



1	Fan
2	Grounding Point Lug

LEDs

The Cisco ASR 901 chassis and interface modules contain LEDs to assist in troubleshooting. For more detailed description of the LEDs, see the “[Reading the LEDs, page A-4](#).”

Power Supply

The Cisco ASR 901 router is equipped with an internal -24/-60 volts Direct Current (VDC).

**Note**

The grounding architecture of this product is DC-isolated (DC-I) for DC-powered products. DC-powered products have a nominal operating DC voltage of 48 VDC. Minimal steady state DC operating voltage is 19.2 VDC.

Safety Precautions

Observe the following general safety precautions and recommendations in planning the source power requirements for the Cisco ASR 901 router (for additional safety information, see the “[Safety Guidelines](#)” section on page 2-1):

- Check the power at your site before router installation (and periodically after installation) to ensure clean power (free of spikes and noise) is being received.
- Always disconnect the power source and unplug the power cable before working on the router.
- Install proper grounding for the site to avoid damage from lightning and power surges.

**Warning**

To avoid electric shock, do not connect safety extra-low voltage (SELV) circuits to telephone-network voltage (TNV) circuits. LAN ports contain SELV circuits, and WAN ports contain TNV circuits. Some LAN and WAN ports both use RJ-45 connectors. Use caution when connecting cables. Statement 1021

**Warning**

There is the danger of explosion if the battery is replaced incorrectly. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer’s instructions. Statement 1015

**Warning**

This unit might have more than one power supply connection. All connections must be removed to de-energize the unit. Statement 1028

**Warning**

The intrabuilding ports of the equipment or subassembly MUST NOT be metallically connected to interfaces that connect to the OSP or its wiring. These interfaces are designed for use only as intrabuilding interfaces (Type 2 or Type 4 ports as described in GR-1089-CORE), and require isolation from the exposed OSP cabling. The addition of primary protectors is not sufficient protection in order to connect these interfaces metallically to OSP wiring.

**Warning**

To comply with the Telcordia GR-1089 NEBS standard for electromagnetic compatibility and safety, connect the (Management Ethernet) ports only to intra-building or unexposed wiring or cable. The intrabuilding cable must be shielded and the shield must be grounded at both ends. The intra-building port(s) of the equipment or subassembly must not be metallicly connected to interfaces that connect to the OSP or its wiring. These interfaces are designed for use as intra-building interfaces only (Type 2 or Type 4 ports as described in GR-1089-CORE) and require isolation from the exposed OSP cabling. The addition of Primary Protectors is not sufficient protection in order to connect these interfaces metallicly to OSP wiring.

Table 1-1 lists the DC power supply specifications for the Cisco ASR 901 router.

Table 1-1 Cisco ASR 901 Router Power Supply Specifications

Specification	Value
DC power supply input voltage	-24/-60 VDC
Maximum input current	<ul style="list-style-type: none"> A901-4C-F-D and A901-12C-F-D: 2.5A A901-4C-FT-D and A901-12C-FT-D: 3.0A
Wire gauge for DC input power connections	16 AWG
Power dissipation	<ul style="list-style-type: none"> A901-12C-F-D: 40W A901-4C-F-D: 40W A901-12C-FT-D: 50W A901-4C-FT-D: 50W

The Cisco ASR 901 router uses two 3 pin connectors (part number 27-2030-01) for input to the power supply. The terminal block is part of the accessory kit (part number 53-3085-01/53-3295-0), which ships with the Cisco ASR 901 router. The ground wire connects to a 2-hole plug, which connects to the corresponding mounting point. With the connector installed in the chassis, the pins are numbered as 1, 2, and 3, respectively.

Figure 1-4 Cisco ASR 901 Router—Power Supply Connector Pinouts

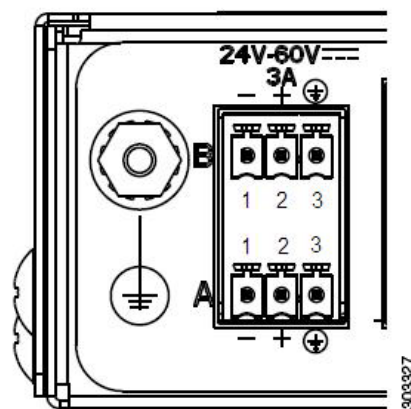


Table 1-2 lists the pinout configurations for the connector, based on the power source.

Table 1-2 Power Supply Connector Pinouts (-24/-60 VDC Application)

Pin	Connector A	Connector B
1	VDC (-24 to -60)	VDC (-24 to -60)
2	RTN	RTN
3	Chassis Ground	Chassis Ground

You can use connector A or B or both.

Environmental Monitoring Temperature Sensor

The Cisco ASR 901 router has a temperature sensor to detect overtemperature conditions inside the chassis. The overtemperature detection trips at 70°C. This condition is reported to the processor as an interrupt, where the software generates the appropriate alarms. If the router reaches a temperature of 85°C, the power supply cycles itself to prevent the router from exceeding the maximum temperature while being powered up.


Note

Auxiliary port is not supported.

System Specifications

Table 1-3 lists the system specifications for the Cisco ASR 901 router.

Table 1-3 Cisco ASR 901 Router System Specifications

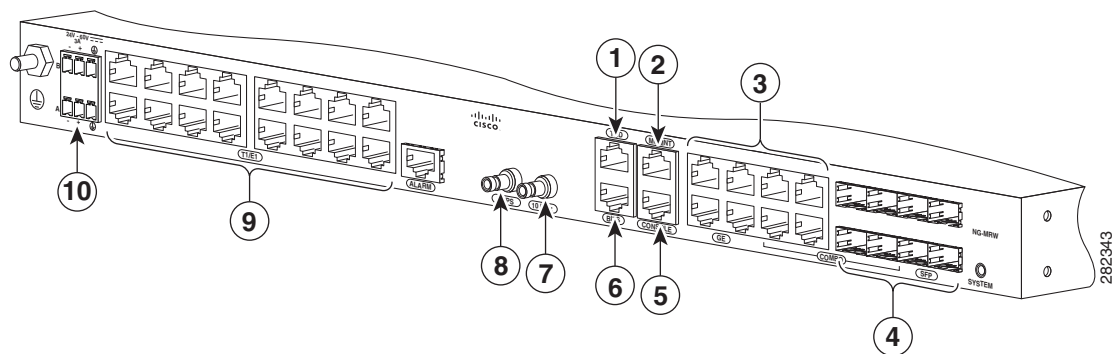
Description	Specification
Dimensions (H x W x D)	1.7 x 17.5 x 8.3 in. (43.2 x 444.5 x 211 mm), 1 RU (rack unit) in a 19-inch (48.3 cm) rack
Weight	<ul style="list-style-type: none"> A901-12C-FT-D and A901-4C-FT-D: 8.15 lb (3.7 kg) A901-12C-F-D and A901-4C-F-D: 7.93 lb (3.6 kg)
Console port	RJ-45 connector
Operating Temperature	Operating temperature range is -40°C to +65°C (-40 to +149°F)
Non-Operational Temperature	Temperature: -40 to 70 degrees C (-40 to 21.1 F)
Operating Humidity	5% to 85%, noncondensing RH, ±5%
Non-Operational Humidity	Upto 93% RH
Operating Altitude	13,000 ft (4000m) maximum 104°F (40°C) ambient
Operating Vibration	0.15 G, 10 to 500 Hz/100 minutes per axis
Non-Operational Vibration	0.8 G, 10 to 500 Hz/30 minutes per axis
Operating Acoustics	66 dBA with 23 cfm fan
Air Flow	Left to Right, 46 cfm

Router Interface Numbering

Each network interface on a Cisco ASR 901 router is identified by a slot number and a port number, explained in this sequence:

- Logical slot numbers starts from 0 for all built-in interfaces. The numbering format is **Interface type Slot number/Interface number**. Interface (port) numbers begin at logical 0 for each interface type.
- Logical interface numbering for T1/E1 ports on the TDM interface module runs from 0/0 through 0/15. Ports are numbered bottom to top, left to right.
- Logical interface numbering for the built-in ethernet ports runs from g0/0 through g0/3, the combo ports run from g0/4 to g0/7 and the SFP ports run from g0/8 through g0/11. The GE ports are numbered bottom to top, left to right.

Figure 1-5 Cisco ASR 901 Router Port Numbers



1	ToD Port	6	BITS Port
2	Management Port	7	MINI-Coax Connector (10MHZ)
3	8 GE Ports	8	MINI-Coax Connector (1PPS)
4	8 SFP Ports	9	16 T1/E1 Ports
5	Console Port	10	Power Connector

Table 1-4 Cisco ASR 901 Router Interface Labels

Interface	Number	Location	Label
RJ45 jacks for copper ethernet ports	8	Onboard	100/1000 ETHERNET
SFP connector for optical GE ports	8	Onboard	Fiber ETHERNET
RJ45 connector for console	1	Onboard	CON
RJ45 jack for BITS interface	1	Onboard	BITS
RJ45 jack for Time-of-Day interface	1	Onboard	TOD
1PPS mini-coax timing connector	1	Onboard	1PPS
10Mhz mini-coax timing connector	1	Onboard	10MHZ

Table 1-4 Cisco ASR 901 Router Interface Labels

Interface	Number	Location	Label
RJ48 jacks for T1/E1 ports	16	T1/E1 interface module	T1/E1
Power connector	1	Onboard	Power Connector

**Note**

Copper SFPs are not supported on the combo ports of the Cisco ASR 901 Router.

Regulatory Compliance

For regulatory compliance and safety information, see [Cisco Regulatory Compliance and Safety Information for Cisco ASR 901 Series Aggregation Services Router](#).

