



Technical Specifications and Product IDs

This appendix lists specifications for the following routers:

- [Cisco ASR 9000v Satellite Shelf, on page 1](#)
- [Cisco ASR 901 as a Satellite Shelf, on page 4](#)
- [Cisco ASR 903 as a Satellite Shelf, on page 13](#)

Cisco ASR 9000v Satellite Shelf

This section contains product names, product IDs, and hardware specifications for the Cisco ASR 9000v satellite shelf.

Cisco ASR 9000v Satellite Shelf Product IDs

Table 1: Cisco ASR 9000v Satellite Shelf System Product IDs

Product ID	Description
ASR-9000v-AC	44-Port GE + 4-Port 10-GE ASR 9000v, AC Power
ASR-9000v-24-A	44-Port GE + 4-Port 10-GE ASR 9000v, +24 V DC Power ANSI Chassis
ASR-9000v-DC-A	44-Port GE + 4-Port 10-GE ASR 9000v, DC Power ANSI Chassis
ASR-9000v-DC-E	44-Port GE + 4-Port 10-GE ASR 9000v, DC Power ETSI Chassis
A9KV-V2-AC	44-Port GE + 4-Port 10-GE ASR 9000v Version 2, AC Power
A9KV-V2-DC-A	44-Port GE + 4-Port 10-GE ASR 9000v Version 2, DC Power ANSI Chassis
A9KV-V2-DC-E	44-Port GE + 4-Port 10-GE ASR 9000v Version 2, DC Power ETSI Chassis
A9K-NVSAT1-LIC(=)	ASR-9000 nV Host License for up to 1 nV Clients
A9K-NVSAT5-LIC(=)	ASR-9000 nV Host License for up to 5 nV Clients
A9K-NVSAT20-LIC(=)	ASR-9000 nV Host License for up to 20 nV Clients
ASR-9000v-FAN	ASR-9000v Fan Tray with Filter

Product ID	Description
A9KV-V2-FAN	ASR-9000v Version 2 Fan Tray with Filter

Cisco ASR 9000v Satellite Shelf System Specifications

This section provides the specifications for timing, power, and environmental specifications, and shelf dimensions of the Cisco ASR 9000v satellite shelf system.

The GPS (Global Positioning System) interface (1-PPS and 10-MHz) specifications are listed in this table.

Table 2: GPS (Global Positioning System) Interface (1PPS and 10MHz) of the Cisco ASR 9000v Satellite Shelf System

	10-MHz Specification	1-PPS Specification
Waveform	Sine wave	Pulse
Frequency	10 MHz	1 PPS
Amplitude	> 1 V LVTTTL Compatible	> 1 V LVTTTL Compatible
Impedance	50 Ohms	50 Ohms

The pinout of the TOD (Time of Day) RJ-45 port is listed in the table below.

Table 3: TOD/1PPS RS422 Interface— RJ-45 Pinout of the Cisco ASR 9000v Satellite Shelf System

Pin	Signal Name	Description
1	1PPS_N	1PPS RS422 output signal
2	1PPS_P	1PPS RS422 output signal
3	NC	No Connect
4	GND	—
5	GND	—
6	NC	No Connect
7	TOD_P	Time of Day RS422 output
8	TOD_N	Time of Day RS422 output

System Power for the Cisco ASR 9000v Satellite Shelf

Cisco ASR 9000v Fan Tray

Table 4: Cisco ASR 9000v Satellite Shelf Fan Tray Power Specifications

Shelf	Input Voltage	Power Consumption	Power Terminals	Fuse Rating
Cisco ASR 9000v satellite shelf with AC power module for ANSI and ETSI standards	100V to 240V AC depending on the standards in various countries; 50/60 Hz nominal (range: 47 to 63 Hz)	100 VAC 2.4 A; 240 VAC 1A	One AC single phase with 3- pole (line L, Neutral N, and Protective Earth PE) input connector.	Must not exceed 10 A or 15 A, depending on the standards in various countries.
Cisco ASR 9000v satellite shelf with 24V DC power module for ANSI standard	Voltages –20 VDC and –28.3 VDC are, respectively, the minimum and maximum voltages required to power the chassis. The nominal steady state voltage is –24 VDC.	24 VDC 10A	Single terminal block with four poles— –24V and RET for power terminals A and B.	Must not exceed 15 A.
Cisco ASR 9000v satellite shelf with 48 V DC power module for ANSI standard	Voltages –40.5 VDC and –57.6 VDC are, respectively, the minimum and maximum voltages required to power the chassis. The nominal steady state voltage is –48 VDC. Functionality is guaranteed at –40 VDC input voltage, according to GR-1089, Issue 5.	48 VDC 5 A	Single terminal block with four poles— –48V and RET for power terminals A and B.	Must not exceed 10 A.
Cisco ASR 9000v satellite shelf with 48 V DC power module for ETSI standard	Voltages –40.5 VDC and –57.6 VDC are, respectively, the minimum and maximum voltages required to power the chassis. The nominal steady state voltage is –48 VDC.	48 VDC 5 A	DSUB 2 poles.	Must not exceed 10 A.

Table 5: Fan Tray Power Requirements

Fan Tray	Watts	Amps
12 V supplied by the Cisco ASR 9000v satellite shelf	36	3

Cisco ASR 9000v Satellite Shelf Physical Dimensions

Table 6: Physical Dimensions of the Cisco ASR 9000v Satellite Shelf System

Shelf	Physical Dimensions							
	Measurement in inches				Measurement in mm			
	Height	Width	Depth	Weight in Kg	Height	Width	Depth	Weight in Kg

Shelf	Physical Dimensions							
Cisco ASR 9000v Satellite Shelf	1.7	19 or 23 with mounting ears attached for ANSI rack configuration 21 with mounting ears attached for ETSI rack configuration	9.1	With AC power module: 4.06 kg With DC power module: 4.22 kg	43.1	482.6 or 584.2 with mounting ears attached for ANSI rack configuration 533.4 mm with mounting ears attached for ETSI rack configuration	231.1	With AC power module: 4.06 kg With DC power module: 4.22 kg

Cisco ASR 9000v Satellite Shelf Operating Temperature and Humidity

- Operating Temperature: –5 to 55 degrees Celsius for AC power supply; –40 to 65 degrees Celsius for DC power supply.
- Operating Humidity: 5 to 85 percent, noncondensing; functionality is guaranteed up to 5 to 95 percent, noncondensing.

Cisco ASR 9000v Satellite Shelf Switching Capacity

Table 7: Switching Capacity of the Cisco ASR 9000v Satellite Shelf System

Shelf	Interface	Switching Capacity
Cisco ASR 9000v Satellite Shelf	44 GE 10/100/1000 Mbps SFP ports	44 GB
	4 10-GE SFP+ ports	

Cisco ASR 9000v Satellite Shelf GBIC, SFP, SFP+, and XFP Compatibility

Refer to the [Transceiver Module Group \(TMG\) Compatibility Matrix](#) for information on transceiver compatibility of the Cisco ASR 9000v satellite shelf system.

Cisco ASR 901 as a Satellite Shelf

This section contains hardware specifications for the Cisco ASR 901 as a satellite shelf.

Cisco ASR 901 System Specifications

Table 8: Cisco ASR 901 Router System Specifications

Description	Specification
Dimensions (H x W x D)	1.7 x 17.4 x 8.25 in. (4.37 x 44.2 x 21.0 cm) 1 RU (rack unit) in a 19-in (48.3-cm) rack
Weight	7 lb (3.1 kg)
Console and Auxiliary Ports	RJ-45 connector
Operating Temperature	Operating temperature range is -40 to +65°C (-40 to 149°F)
Non-Operational Temperature	Temperature: -40 to 70 °C (-40 to 21.1°F)
Operating Humidity	10 to 90% RH (non-condensing)
Non-Operational Humidity	Up to 93% RH
Operating Altitude	13,800 ft (4206 m)
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	60 dB
Airflow	Side to side

Cisco ASR 901 Power Specifications

This table lists the DC power supply specifications for the Cisco ASR 901 router.

Table 9: Cisco ASR 901 Router Power Supply Specifications

Specification	Value
DC power supply input voltage	-24/-72 VDC
Maximum input current	3 A
Wire gauge for DC input power connections	16 AWG
Power dissipation	60 W

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 lug, which connects to the corresponding mounting point.

With the connector installed in the chassis, the pins numbered from top to bottom are 1, 2, and 3, respectively.

This table lists the pinout configurations for the connector, based on the power source.

Table 10: Power Supply Connector Pinouts (–24/–72 VDC Application)

Pin	Connector A
1	VDC (–24 to –72)
2	RTN
3	Chassis Ground

Pin	Connector B
1	VDC (–24 to –72)
2	RTN
3	Chassis Ground

You can use connector A or B or both.

Cisco ASR 901 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, and 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.

Cisco ASR 901 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 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.

Table 11: Cisco ASR 901 Router Interface Labels

Interface	Number	Location	Label
RJ-45 jacks for copper Ethernet ports	8	Onboard	100/1000 ETHERNET
SFP connector for optical GE ports	8	Onboard	Fiber ETHERNET
RJ-45 connector for the console	1	Onboard	CON/AUX
RJ-45 jack for the BITS interface	1	Onboard	BITS
RJ-45 jack for the Time-of-Day interface	1	Onboard	TOD

Interface	Number	Location	Label
1-PPS mini-coax timing connector	1	Onboard	1PPS
10-MHz mini-coax timing connector	1	Onboard	10MHZ
Power connector	1	Onboard	Power Connector

Cisco ASR 901 Cable Specifications

If you prefer to build your own cables, this section provides cable specifications for the Cisco ASR 901 router.

Gigabit Ethernet Connector Pinouts

This section illustrates the Gigabit Ethernet RJ-45 connector and lists its pinout and signal descriptions. Note that the RJ-45 ports are capable of operating in both 100BaseT and 1000BaseT modes.

This figure shows the RJ-45 connector and port, and the *RJ-45 Connector Pinouts* table lists the connector pinouts and signals.

Figure 1: RJ-45 Connector and Port

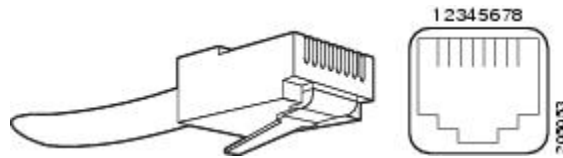


Table 12: RJ-45 Connector Pinouts

Pin	FE Signal	GE Signal
1	TX data+	TX A+
2	TX data-	TX A-
3	RX data+	RX B+
4	Not used	TX C+
5	Not used	TX C-
6	RX data-	RX B-
7	Not used	RX D+
8	Not used	RX D-

SFP Port Pinouts and Cable Specifications

For information about SFP modules supported by the Cisco ASR 901 router, including pinouts, see the *Cisco Interfaces and Modules* support section on Cisco.com.

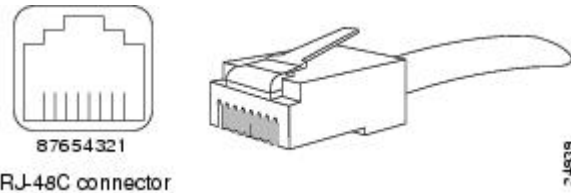


Note Pins not listed in the tables in this appendix are not connected.

T1/E1 Port Pinouts

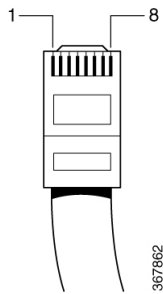
This figure shows the RJ-48C connector used by the T1/E1 ports on the TDM interface module on the Cisco ASR 901 router.

Figure 2: RJ-48C Connector



This figure shows the RJ-48C connector wiring for the T1/E1 cable.

Figure 3: RJ-48-to-RJ-48 T1/E1 Cable Wiring



Note We recommend using a shielded cable for RJ-48C connectors.

This table shows the pinout configuration for the RJ-48C connectors on the Cisco ASR 901 router for both the shielded and unsaddled cables for either T1 or E1. This table shows the pinout configuration for the RJ-45 connectors on the TDM interface module on the Cisco ASR 901 router.

Table 13: T1/E1 Port Pinout for the Cisco ASR 901 Router

Pin	Signal Name	Direction	Description
1	RX Tip	Input	Receive Tip
2	RX Ring	Input	Receive Ring
3	Not Used		
4	TX Tip	Output	Transmit Tip
5	TX Ring	Output	Transmit Ring

Pin	Signal Name	Direction	Description
6	Not Used		
7	Not Used		
8	Not Used		

Console Port Signals and Pinouts

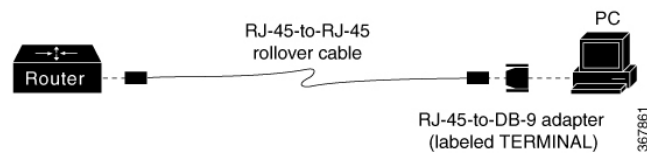
The Cisco ASR 901 router ships with a console cable kit, which contains the cable and adapters to connect a console terminal (an ASCII terminal or PC running terminal emulation software). The console cable kit includes the following items:

- RJ-45-to-RJ-45 rollover cable
- RJ-45-to-DB-9 female DTE adapter (labeled TERMINAL)
- RJ-45-to-DB-25 female DTE adapter (labeled TERMINAL)

To connect a modem, you need to order an auxiliary cable.

Use the thin, flat, RJ-45-to-RJ-45 rollover cable and the RJ-45-to-DB-9 female DTE adapter (labeled TERMINAL) to connect the console port to a PC running terminal emulation software. This figure shows how to connect the console port to a PC. The *Console Port Pinouts* table lists the pinouts for the asynchronous serial console port, the RJ-45-to-RJ-45 rollover cable, and the RJ-45-to-DB-9 female DTE adapter (labeled TERMINAL).

Figure 4: Connecting the Console Port to a PC



This table lists the Console port pinouts for the Cisco ASR 901 router.

Table 14: Console Port Pinouts

Pin	Signal Name	HP Pins	Direction	Description
1	RTS	UART_RTS1	Output	Request to send
2	DTR	NC		
3	TXD	UART_SOUT1	Output	Transmit data
4	RI	GND		Ring indicator
5	GND	GND		
6	RXD	UART_SIN1	Input	Receive data
7	DSR/DCD	NC	Input	Data set ready/data carrier detect

Pin	Signal Name	HP Pins	Direction	Description
8	CTS	UART_CTS1	Input	Clear to send

This table describes the pinouts RJ-45-to-RJ-45 and RJ-45-to-DB-9 rollover cables.

Table 15: Console Port Signaling and Cabling Using a DB-9 Adapter

Console Port (DTE)	RJ-45-to-RJ-45 Rollover Cable		RJ-45-to-DB-9 Terminal Adapter (Connected to Rollover Cable)	Console Device
	RJ-45 Pin	RJ-45 Pin	DB-9 Pin	
Signal	RJ-45 Pin	RJ-45 Pin	DB-9 Pin	Signal
RTS	1 ¹	8	8	CTS
DTR	2	7	6	DSR/DCD
TxD	3	6	2	RxD
GND/RI	4	5	5	GND
GND	5	4	5	GND/RI
RxD	6	3	3	TxD
DSR/DCD	7	2	4	DTR
CTS	8	1	7	RTS

¹ Pin 1 is connected internally to pin 8.

This table lists the pinouts for the asynchronous serial console port, the RJ-45-to-RJ-45 rollover cable, and the RJ-45-to-DB-25 female DTE adapter (labeled TERMINAL).

Table 16: Console Port Signaling and Cabling Using a DB-25 Adapter

Console Port (DTE) ²	RJ-45-to-RJ-45 Rollover Cable		RJ-45-to-DB-25 Terminal Adapter	Console Device
	RJ-45 Pin	RJ-45 Pin	DB-25 Pin	
Signal	RJ-45 Pin	RJ-45 Pin	DB-25 Pin	Signal
RTS	1 ³	8	5	CTS
DTR	2	7	6	DSR/DCD
TxD	3	6	3	RxD
GND/RI	4	5	7	GND
GND	5	4	7	GND/RI

Console Port (DTE) ²	RJ-45-to-RJ-45 Rollover Cable		RJ-45-to-DB-25 Terminal Adapter	Console Device
RxD	6	3	2	TxD
DSR/DCD	7	2	20	DTR
CTS	82	1	4	RTS

² You can use the same cabling to connect a console to the auxiliary port.

³ Pin 1 is connected internally to pin 8.

BITS Port Pinouts

This table lists the pinouts for the BITS interface RJ-45 port on the Cisco ASR 901 router.

Table 17: BITS Pinouts for the Cisco ASR 901 Router

Pin	Signal Name	Direction	Description
1	RX ring	Input	Receive ring
2	RX tip	Input	Receive tip (T1/E1)
3	Not connected	Output	Transmit ring
4	TX ring		
5	TX tip	Output/input	Transmit tip (T1/E1)
6	Not connected		
7	Not connected		
8	Not connected		

Time of Day Pinouts

This table lists the pinouts for the Time of Day RJ-45 interface on the Cisco ASR 901 router.

Table 18: Time of Day RJ-45 Interface Pinout

Pin	Signal Name	Direction	Description
1	Not connected		
2	Not connected		
3	Not connected		
4	Ground		
5	Ground		

Pin	Signal Name	Direction	Description
6	Not connected		
7	TOD_N	Output/Input	Time of Day RS422 differential input or output
8	TOD_P	Output/Input	Time of Day RS422 differential input or output

GPS Port Pinouts

The Cisco ASR 901 router has a 10-MHz and a 1-PPS GPS port that allow you to configure input or output clocking with a GPS device. This table summarizes the pinouts for the 10-MHz and 1-PPS interfaces.



Note For pinouts related to ToD and 1 PPS using the BITS interface, see [Console Port Signals and Pinouts, on page 9](#).

Table 19: GPS Port Pinouts for the Cisco ASR 901 Router

	10 MHz	1 PPS
Waveform	Input: Sine wave Output: Square wave	Input: Pulse shape Output: Pulse shape
Amplitude	Input: > 1.7 volt p-p(+8 to +10 dBm) Output: > 2.4 volts TTL compatible	Input: > 2.4 volts TTL compatible Output: > 2.4 volts TTL compatible
Impedance	50 ohms	50 ohms
Pulse Width	50% duty cycle	26 microseconds
Rise Time	Input: AC coupled Output: 5 nanoseconds	40 nanoseconds

The 1-PPS interface type is Series 1.0 / 2.3, 50 ohms.

For instructions on how to configure the 10-MHz and 1-PPS ports, see the http://www.cisco.com/c/en/us/td/docs/wireless/asr_901/Configuration/Guide/b_asr901-scg/b_asr901-scg_preface_00.html Cisco ASR 901 Router Mobile Wireless Software Configuration Guide .

Alarm Port Pinouts

This table lists the pinouts for the alarm port (RJ-45) on the Cisco ASR 901 router.

Table 20: Alarm Port Pinout

Pin	Signal Name	Description
1	Alarm input 1	
2	Alarm input 2	

Pin	Signal Name	Description
3	Not connected	
4	Alarm input 3	
5	Alarm input 4	
6	Not connected	
7	Not connected	
8	Not connected	

Management Ethernet Port Pinouts

This table lists the pinouts for the management Ethernet port (RJ-45) on the Cisco ASR 901 router.

Table 21: Management Ethernet Pinout

Pin	Signal Name
1	RxD_P
2	RxD_N
3	TxD_P
4	Not connected
5	Not connected
6	TxD_N
7	Not connected
8	Not connected

Cisco ASR 903 as a Satellite Shelf

Cisco ASR 903 System Specifications

This table summarizes the system specifications and environmental requirements for the Cisco ASR 901.

Table 22: Cisco ASR 901 System Specifications

Dimensions (Height x Width x Depth)	5.22 x 17.44 x 10.565 in. (132.588 x 442.976 x 268.351 mm)
	Note This measurement includes handles from the power supply, fan tray, and interface modules installed in the chassis.

Weight	27.117 lb (12.3 kg) Note This weight includes a redundant RSP and power supply.
Operating Temperature	The Cisco ASR 901 supports the following temperature ranges with the DC power supply: <ul style="list-style-type: none"> • –60 to 4000 meters: –40 to 104°F(–40 to 40°C) • –60 to 1800 meters: –40 to 149°F(–40 to 65°C) The Cisco ASR 901 supports the following temperature ranges with the AC power supply: <ul style="list-style-type: none"> • –60 to 4000 meters: 32 to 104°F (0 to 40°C) • –60 to 1800 meters: 23 to 140°F(–5 to 60°C)
Nonoperating Temperature	–40°F to 185°F (–40°C to +85°C) storage temperature
Operating Humidity	5 to 95% operating noncondensing relative humidity
Operating Altitude	–60-m to 1800-m operating altitude for full operating temperature range; up to 4000 m at up to 40°C.
Nonoperating Altitude	4572-m storage altitude
Vibration	1.0 G from 1.0 to 150 Hz
Shock	30 G half sine 6 ms and 11 ms
Nonoperating Vibration	Random: 1.15 gRMS 3 to 200 Hz, 30 minutes/axis Sine: 10 to 500 Hz @ 0.8 G peak / 5 sweep cycles/axis
Operating Acoustics	Less than 55 dBa @ 27°C

ASR 903 Connector and Cable Specifications

The following sections describe the pinouts for the Cisco ASR 903 Router satellite shelf interfaces:

Alarm Port Pinout

Table 23: External Alarm Input Pinout

Pin	Signal Name	Description
1	ALARM0_IN	Alarm input 0
2	ALARM1_IN	Alarm input 1
3	Not connected	

Pin	Signal Name	Description
4	ALARM2_IN	Alarm input 2
5	ALARM3_IN	Alarm input 3
6	Not connected	Alarm common
7	Not connected	
8	COMMON	

Console/Aux RJ-45 RS-232 Serial Port Pinout

Table 24: Console/Aux RJ-45 RS-232 Serial Port

Pin	Signal Name	Direction	Description
1	RTS	Output	Request to send
2	DTR	Output	Data terminal ready (always on).
3	TXD	Output	Transmit data
4	RI		Ring indicator
5	GND		
6	RXD	Input	Receive data
7	DSR/DCD	Input	Data set ready/data carrier detect
8	CTS	Input	Clear to send

Management Ethernet Port Pinout

Table 25: Management Ethernet Port Pinout

Pin	Signal Name
1	TRP0+
2	TRP0-
3	TRP1+
4	TRP2+
5	TRP2-

Fn	Signal Name
6	TRP1-
7	TRP3+
8	TRP3-

USB Console Port Pinout

Table 26: Single USB Console Port

Fn	Signal Name	Description
A1	Vcc	+5 VDC (500 mA)
A2	D-	Data -
A3	D+	Data +
A4	Gnd	Ground



Note The USB console port +5 VDC is input and operates as an USB peripheral device.

USB Flash/MEM Port Pinout

Table 27: Single USB Flash/MEM Port

Fn	Signal Name	Description
A1	Vcc	+5VDC (500mA)
A2	D-	Data -
A3	D+	Data +
A4	Gnd	Ground



Note A USB TYPE-A receptacle is used.



Note The USB flash/MEM port +5 VDC is output. We provide power for USB flash/MEM, and it operates as a USB host device.

Fiber-Optic Specifications

The specification for optical fiber transmission defines two types of fiber: single-mode and multimode. Within the single-mode category, three transmission types are defined: short reach, intermediate reach, and long reach. Within the multimode category, only short reach is available. For information about optical SFP modules, see the documentation for the SFP module at:

<https://www.cisco.com/c/en/us/support/interfaces-modules/transceiver-modules/products-installation-guides-list.html>

