



# Specifications

This appendix provides system and component specifications for the Cisco 7304 router.

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## System Specifications

The specifications for the Cisco 7304 router are listed in [Table A-1](#).

**Table A-1 Cisco 7304 System Specifications**

Description	Specification
Dimensions (H x W x D)	6.94 in. x 17.6 in. x 20.5 in. (17.63 cm x 44.70 cm x 52.07 cm)
Weight	28 lbs. (12.73 kg) (Chassis without line cards)
Heat dissipation	700W (2387 BTU) maximum
AC-input power	800 VA maximum (single supply configuration)
AC-input voltage rating	100-240 VAC <sup>1</sup> wide input with power factor correction
AC-input current rating	Rated for 8A when $V_{in} = 100$ VAC or 4A when $V_{in} = 200$ VAC.
AC-input frequency rating	50–60 Hz <sup>2</sup>
AC-input cable	18 AWG <sup>3</sup> three-wire cable, with a three-lead IEC-320 receptacle on the power supply end, and a country-dependent plug on the power source end
DC-input power	750 VA maximum configuration
DC-input voltage ratings	–48 VDC nominal, maximum range –48 VDC to –60 VDC (–40.5 to –72 VDC supply tolerance)

**Table A-1 Cisco 7304 System Specifications (continued)**

Description	Specification
DC-input current ratings	16A at –48 VDC (18.5A at –40.5 VDC, 10.4A at –72 VDC supply tolerance)
DC-input cable	12 AWG only

1. VAC = volts alternating current
2. Hz = hertz
3. AWG = American Wire Gauge

## Processor and Memory Specifications and Configurations

**Table A-2 NSE-100 Processor and Memory Specifications**

Memory Type	Memory Size	Quantity	Description	Location
SDRAM <sup>1</sup>	256 or 512 MB	1	256-MB or 512-MB SODIMM	U19
Non-upgradeable boot ROM	512 KB	1	OTP <sup>2</sup> ROM for the ROM monitor program (ROMmon)	U11
Upgradeable boot ROM	1 MB	2	Programmable ROM	U14, U34
Flash memory	disk 0: 64 MB, 128 MB, or 256 MB bootdisk: 32 MB	2	CompactFlash Disks	P2 (bootdisk:), P3 (disk0:)
Primary cache	16 KB (instruction), 16 KB (data)	—	RM7000 processor; internal cache	U2
Secondary cache	256 KB	—	RM7000 processor; internal unified instruction and data cache	U2
Tertiary cache	1 MB (fixed)	—	RM7000 processor; external cache	U5, U32, U33

1. On November 3, 2003, the 512 MB SDRAM memory option became the default SDRAM memory option for the NSE-100 Processor. The 256 MB SDRAM memory option is still available as a spare, but the 128 MB SDRAM memory option that was once available for the NSE-100 Processor became unavailable for the NSE-100 Processor.
2. OTP = one-time programmable. Although the OTP ROMmon cannot be upgraded, the boot code can be upgraded using the Cisco IOS software. If the boot code is upgraded, the updated boot code is stored in upgradeable boot ROM.

**Table A-3 NSE-150 Memory Specifications**

Memory Type	Memory Size	Quantity	Description
SDRAM	2GB	1	Built-in 2GB SDRAM
Non-upgradeable boot ROM	512 KB	1	OTP ROM for the ROM monitor (ROMmon)
Upgradeable boot ROM	2 MB	2	Programmable ROM
NVRAM	2 MB	1	Stores the system configuration and environmental monitoring logs

**Table A-3 NSE-150 Memory Specifications**

Memory Type	Memory Size	Quantity	Description
Flash Disk memory (internal Compact Flash slot; bootdisk:)	256 MB	1	Stores images, configurations, or other files. 256 MB Compact Flash Disks
Flash Disk memory (external Compact Flash slot; disk0:)	256 MB	1	Stores images, configurations, or other files. 256 MB Compact Flash Disks

**Table A-4 NPE-G100 Processor and Memory Specifications**

Memory Type	Memory Size	Quantity	Description	Location on NPE-G100 Board
SDRAM	1 GB	2	2 512 MBSODIMMs	J3, J4
Non-upgradeable boot ROM	512 KB	1	OTP <sup>1</sup> ROM for the ROM monitor (ROMmon)	U15
NVRAM	512 KB	2	Configuration and crash information files	U1, U7
Upgradeable boot ROM	1 MB	2	Programmable ROM	U26, U64
Flash memory	disk0: 256 MB bootdisk: 32 MB	1	CompactFlash Disks	External (disk0:)
Primary cache	16 KB (instruction), 16 KB (data)	—	BCM 1250 processor system, internal cache	U24
Secondary cache	512 KB	—	BCM 1250 processor system; internal, unified instruction and data cache	U24
Memory Type	Memory Size	Quantity	Description	Location on NPE-G100 Board

1. OTP = one-time programmable. Although the OTP ROMmon cannot be upgraded, the boot code can be upgraded using the Cisco IOS software. If the boot code is upgraded, the updated boot code is stored in upgradeable boot ROM.

**Table A-5 NSE-100 SODIMM Configurations—Configurable Memory**

Total	SODIMM	Quantity	Product Number
128 MB	U19	1 128-MB SODIMM	7300-MEM-128=
256 MB	U19	1 256-MB SODIMM	7300-MEM-256=
512 MB	U19	1 512-MB SODIMM	7300-MEM-512=

**Table A-6 NPE-G100 SODIMM Configurations—Configurable Memory**

Total SDRAM	SDRAM SODIMMs	Quantity	Product Number
1 GB	J3 and J4	2 512-MB SODIMMs	7304-MEM-G100-1GB=

**Table A-7 CompactFlash Disk Configuration**

Memory Size	Processor Engine	Product Number
64 MB	NSE-100, NSE-150, or NPE-G100	7300-I/O-CFM-64MB=
128 MB	NSE-100, NSE-150, or NPE-G100	7300-I/O-CFM-128MB=
256 MB	NSE-150 or NPE-G100	7300-I/O/-CFM-256MB=

## Gigabit Ethernet SFP Port and Cabling Information

For information on the GBICs that are supported on the NSE-100 and the SFPs that are supported on the NSE-150, see the [Cisco 7304 Network Services Engine Installation and Configuration Guide](#).

For information on the SFPs that are supported on the NPE-G100, see the “SFP Port and Cabling Information” section of the [Cisco 7304 Network Processing Engine Installation and Configuration Guide](#).

## Gigabit Ethernet RJ-45 Port Pinouts

The Cisco 7304 router has RJ-45 ports for either two or three 10/100/1000 Ethernet/Fast Ethernet/Gigabit Ethernet connections, depending on whether you have an NSE-100 or NPE-G100 installed (the NSE-150 only uses SFPs for Gigabit Ethernet connectivity). The RJ-45 ports support IEEE 802.3ab (Gigabit Ethernet) and IEEE 802.3u (Fast Ethernet) interfaces compliant with 10BASET, 100BASETX, and 1000BASET specifications.

The RJ-45 ports support standard straight-through and crossover Category 5 UTP cables with RJ-45 connectors. Cisco Systems does not supply Category 5 UTP cables; these cables are available commercially.

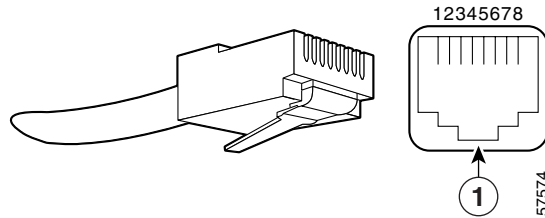


### Warning

**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.**

Figure A-1 shows an RJ-45 port and connector. Table A-8 lists the pinouts and signals for the RJ-45 port.

Figure A-1 RJ-45 Port and Connector



1	RJ-45 connector		
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Table A-8 RJ-45 Receptacle Pinouts

Pin	FE Signal	GE Signal
1	TX DATA+ <sup>1</sup>	Tx A+
2	TX DATA-	Tx A-
3	RX DATA+ <sup>2</sup>	Rx B+
4	N/C	Tx C+
5	N/C	Tx C-
6	RX DATA-	Rx B-
7	N/C	Rx D+
8	N/C	Rx D-

1. TX DATA = Transmit Data
2. RX DATA = Receive Data

## NSE-100 and NSE-150 Fast Ethernet RJ-45 Port Pinouts

The Cisco 7304 router NSE-100 has RJ-45 ports for the one Fast Ethernet connection. The RJ-45 ports support IEEE 802.3, (Ethernet), and IEEE 802.3u (Fast Ethernet) interfaces compliant with 10BASET and 100BASETX specifications.

The RJ-45 port supports standard straight-through and crossover Category 5 UTP cables with RJ-45 connectors. Cisco Systems does not supply Category 5 UTP cables; these cables are available commercially.

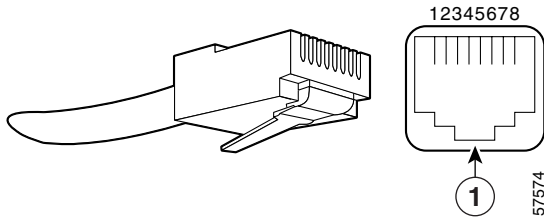


**Warning**

**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.**

Figure A-2 shows an RJ-45 port and connector. Table A-9 lists the pinouts and signals for the RJ-45 port.

Figure A-2 RJ-45 Port and Connector



1	RJ-45 connector		
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Table A-9 RJ-45 Receptacle Pinouts

Pin <sup>1</sup>	Description
1	TxD+ <sup>2</sup>
2	TxD-
3	RxD+ <sup>3</sup>
6	RxD-

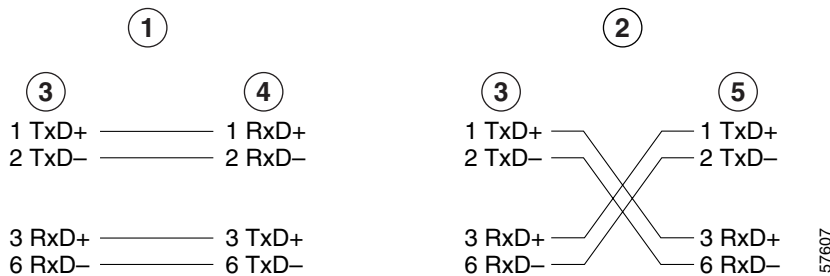
1. Any pin not referenced is not connected.
2. TxD = Transmit Data
3. RxD = Receive Data

**Note**

With reference to the RJ-45 pinout in Table A-9, proper common-mode line terminations should be used for the unused Category 5 UTP cable pairs 4/5 and 7/8. Common-mode termination reduces electromagnetic interference (EMI).

Use the pinouts shown in Figure A-3 for straight-through and crossover twisted-pair cable connections for your RJ-45 interface cabling requirements.

Figure A-3 Ethernet Pinouts—Straight-Through or Crossover Cable



1	Straight-through cable pinout, Ethernet port to a hub or repeater	4	Hub
2	Crossover cable pinout, Ethernet port to a DTE	5	DTE
3	Ethernet port		

To determine whether a UTP cable is a crossover cable or a straight-through cable, hold the two RJ-45 connectors next to each other so you can see the colored wires inside the ends.

Examine the sequence of colored wires to determine the type of cable, as follows:

- Straight-through—The colored wires are in the same sequence at both ends of the cable.
- Crossover—The first (far left) colored wire at one end of the cable is the third colored wire at the other end of the cable.

## Console and Auxiliary Port Signals and Pinouts

The Cisco 7304 router does not support Data Carrier Detect (DCD). [Table A-10](#) lists the RJ-45 console port signals.

**Table A-10 Console Port Signals**

Pin	Signal	Direction	Description
1	CTS	Out	Clear To Send (tracks RTS)
2	DTR	Out	Data Terminal Ready (always on)
3	TXD	Out	Transmit Data
4	GND	—	Signal Ground
5	GND	In	Signal Ground
6	RXD	Out	Receive Data
7	DSR	Out	Data Set Ready (always on)
8	RTS	In	Ready To Send

[Table A-11](#) lists the RJ-45 auxiliary port signals.

**Table A-11 Auxiliary Port Signals**

Pin	Signal	Direction	Description
1	RTS	Out	Ready To Send
2	DSR	Out	Data Set Ready
3	RXD	In	Receive Data
4	GND	—	Signal Ground
5	GND	—	Signal Ground
6	TXD	In	Transmit Data
7	DTR	In	Data Terminal Ready (always on)
8	CTS	In	Clear To Send (tracks RTS)

