



Cabling Specifications

This appendix describes cables and cabling guidelines for the router and contains the following sections:

- [Ethernet Cables](#)
- [Ethernet Network Cabling Guidelines](#)
- [Console Cable and Adapters](#)
- [VIC Cables and Pinouts](#)
- [Cables and Pinouts for 2-Port ISDN BRI Card](#)



Note

For detailed information about cables used with Cisco WICs and VICs, refer to the *Cisco WAN Interface Cards Hardware Installation Guide* that comes with each of the cards.

Ethernet Cables

This section describes the Ethernet cables you use to connect the router to your local Ethernet network. A 10/100BaseTX router, like the Cisco 1751 router, requires Category 5 unshielded twisted-pair (UTP) or shielded twisted-pair (STP) cable. [Table B-1](#) describes the pinouts for a RJ-45-to-RJ-45 Ethernet cable.

Table B-1 Straight-Through Ethernet Cable (RJ-45-to-RJ-45) Pinouts

RJ-45 Pin ¹	Signal	Direction	RJ-45 Pin
1	TX+	—>	1
2	TX-	—>	2
3	RX+	<—	3
6	RX-	<—	6

1. Pins 4, 5, 7, and 8 are not used for signaling but to reduce radiated cable emissions.

Ethernet Network Cabling Guidelines

[Table B-2](#) describes guidelines for creating Ethernet networks. Figures might vary, depending on the manufacturer of the network equipment.

Table B-2 Ethernet Cabling Guidelines

Specification	10BaseT	100BaseTX
Maximum segment length	100 meters	100 meters
Maximum number of segments per network	5	<ul style="list-style-type: none"> • With Class I repeaters: 1 • With Class II repeaters: 2

Table B-2 Ethernet Cabling Guidelines (continued)

Specification	10BaseT	100BaseTX
Maximum hop count ¹	4	<ul style="list-style-type: none"> • With Class I repeaters: none • With Class II repeaters: 1
Maximum number of nodes per segment	1024	1024
Cable type required	UTP Category 3, 4, or 5	UTP Category 5 or STP

1. Hop count = Routing metric used to measure the distance between a source and a destination.

Console Cable and Adapters

A console cable kit is provided with your router. Use this kit when connecting your router to a PC or terminal.

The console cable kit contains:

- RJ-45-to-RJ-45 console cable (light blue)
- DB-9-to-RJ-45 console adapter

[Table B-3](#) describes the wiring for the console port, the console cable, and the included adapters. This table also includes pinouts for a DB-9-to-RJ-45 console adapter.

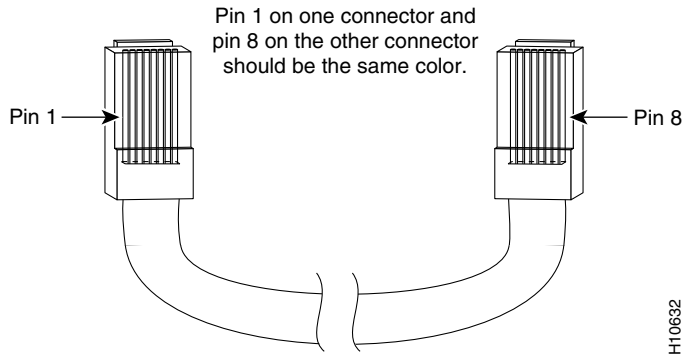
Table B-3 Console Cable and Adapter Pinouts

Console (DTE)	Console Port	Console Cable	Adapter	Adapter	Terminal (DTE)
Signal	RJ-45 Pin	RJ-45 Pin	DB-9 Pin	DB-25 Pin	Signal
RTS	1	8	8	5	CTS
DTR	2	7	6	6	DSR

Table B-3 Console Cable and Adapter Pinouts (continued)

Console (DTE)	Console Port	Console Cable	Adapter	Adapter	Terminal (DTE)
Signal	RJ-45 Pin	RJ-45 Pin	DB-9 Pin	DB-25 Pin	Signal
TXD	3	6	2	3	RXD
GND	4	5	5	7	GND
GND	5	4	5	7	GND
RXD	6	3	3	2	TXD
DSR	7	2	4	20	DTR
CTS	8	1	7	4	RTS

Figure B-1 illustrates how to identify the console cable, which is also referred to as the *rollover* cable.

Figure B-1 Identifying a Rollover Cable

VIC Cables and Pinouts

This section describes the VIC cables and pinouts for foreign exchange station (FXS), foreign exchange office (FXO), and E&M connectors. Use the following cables to connect the VICs to the network:

- Standard RJ-11 modular telephone cable to connect FXS VIC ports (color-coded gray) to a telephone or fax machine.
- Standard RJ-11 modular telephone cable to connect FXO VIC ports (color-coded pink) to the PSTN or to a PBX that does not support E&M signaling.
- Standard RJ-48S connector and cable to connect E&M VIC ports (color-coded brown) to a PBX line. The cable wiring depends on the PBX type and connection. For details refer to the *Cisco WAN Interface Cards Hardware Installation Guide*.

Figure B-2 shows how to connect the VICs to the network.

Figure B-2 Connecting VICs to the Network

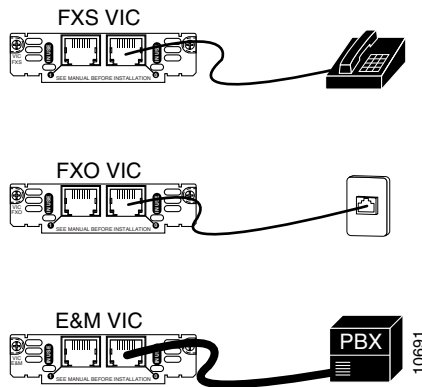


Table B-4 lists the pinouts for FXS and FXO VIC connectors.

**Note**

Pins that are not used should not be connected.

Table B-4 RJ-11 Pinouts

Pin	Signal
1	–
2	–
3	Ring
4	Tip
5	–
6	–

The E&M VIC pinout depends on the PBX type and connection. Table B-5 lists the pinouts for this connector.

**Note**

Pins that are not used should not be connected.

Table B-5 E&M Pinouts

Pin	Signal	Description
1	SB	–48V signaling battery
2	M-lead	Signaling input
3	R	Ring, audio input
4	R or R1	Ring, audio input/output, or output
5	T or T1	Tip, audio input/output, or output
6	T	Tip, audio input
7	E-lead	Signaling output
8	SG	Signaling ground return

Cables and Pinouts for 2-Port ISDN BRI Card

Use the straight-through RJ-45 cable to connect the 2-port ISDN BRI card to an ISDN network through a telephone wall outlet or other device.

**Note**

When the interface is configured as NT and is connecting to a TE device, the cable must have the transmit and receive pins swapped (crossover cable). (See [Table 6](#).)

Table 6 *Interface Pin Numbers and Functions*

ISDN BRI NT/TE	NT Interface (use straight-through cable)	TE Interface (use crossover cable)
Pin 3/T+	Pin 3/R+	Pin 3/T+
Pin 4/R+	Pin 4/T+	Pin 4/R+
Pin 5/R-	Pin 5/T-	Pin 5/R-
Pin 6/T-	Pin 6/R-	Pin 6/T-

