



APPENDIX **B**

Cable Specifications

If you prefer to build your own cables, this appendix provides cable specifications for the Cisco MWR 2941 router.

This appendix includes the following sections:

- [Gigabit Ethernet Connector Pinouts, page B-1](#)
- [T1/E1 Port Pinouts, page B-2](#)
- [Console and Auxiliary Port Signals and Pinouts, page B-3](#)
- [BITS Pinouts, page B-6](#)
- [GPS Port Pinouts, page B-6](#)
- [SFP Modules and Cable Specifications, page B-7](#)
- [HWICs and Cable Specifications, page B-7](#)



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

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.

[Figure B-1](#) shows the RJ-45 connector and port, and [Table B-1](#) lists the connector pinouts and signals.

Figure B-1 RJ-45 Connector and Port

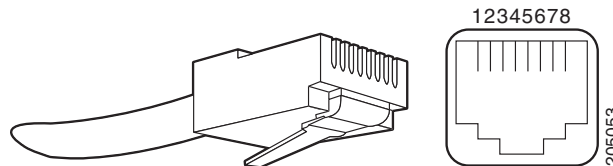


Table B-1 RJ-45 Connector Pinouts

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-

T1/E1 Port Pinouts

Figure B-2 shows the RJ-48C connector used by the T1/E1 ports.

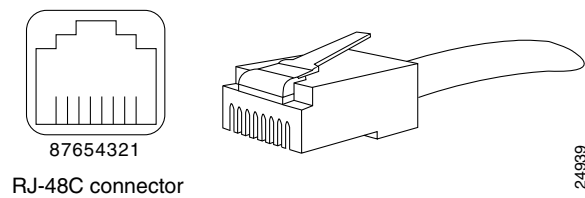
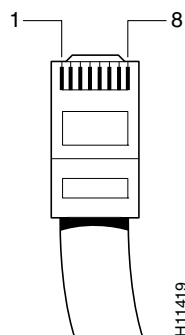
Figure B-2 RJ-48C Connector

Figure B-3 shows the RJ-48C connector wiring for the T1/E1 cable for the Cisco MWR 2941.

Figure B-3 RJ-48-to-RJ-48 T1/E1 Cable Wiring**Note**

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

Table B-2 shows the pinout configuration for the RJ-48C connectors on the Cisco MWR 2941-DC and Cisco MWR 2941-DC-A for T1/E1 ports.

Table B-2 T1/E1 Port Pinout

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
6			Not used
7			Not used
8			Not used

Console and Auxiliary Port Signals and Pinouts

You can order a console cable kit for the Cisco MWR 2941 router, 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.



Note

The console cable kit is not included with the router.

For console connections, see the “[Console Port Signals and Pinouts](#)” section on page B-3; for modem connections, see the “[Auxiliary Port Signals and Pinouts](#)” section on page B-4.

Console Port Signals and Pinouts

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. [Figure B-4](#) shows how to connect the console port to a PC. [Table B-3](#) 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).

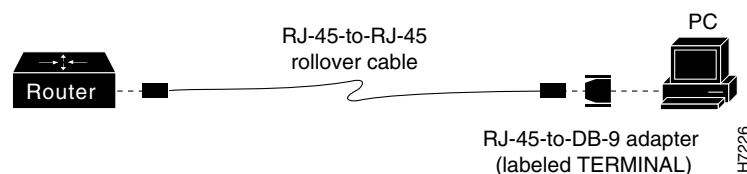
Figure B-4 Connecting the Console Port to a PC

Table B-3 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	
	Signal	RJ-45 Pin	RJ-45 Pin		DB-9 Pin
RTS	1 ¹	8	8	8	CTS
DTR	2	7	7	6	DSR/DCD
TxD	3	6	6	2	RxD
GND/RI	4	5	5	5	GND
GND	5	4	4	5	GND/RI
RxD	6	3	3	3	TxD
DSR/DCD	7	2	2	4	DTR
CTS	8 ¹	1	1	7	RTS

1. Pin 1 is connected internally to pin 8.

Table B-4 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 B-4 Console Port Signaling and Cabling Using a DB-25 Adapter

Console Port (DTE) ¹	RJ-45-to-RJ-45 Rollover Cable		RJ-45-to-DB-25 Terminal Adapter	Console Device	
	Signal	RJ-45 Pin	RJ-45 Pin		DB-25 Pin
RTS	1 ²	8	8	5	CTS
DTR	2	7	7	6	DSR/DCD
TxD	3	6	6	3	RxD
GND/RI	4	5	5	7	GND
GND	5	4	4	7	GND/RI
RxD	6	3	3	2	TxD
DSR/DCD	7	2	2	20	DTR
CTS	8 ²	1	1	4	RTS

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

2. Pin 1 is connected internally to pin 8.

Auxiliary Port Signals and Pinouts

Table B-5 lists the pinouts for the asynchronous serial auxiliary port, the RJ-45-to-RJ-45 rollover cable, and the RJ-45-to-DB-25 male DCE adapter (labeled MODEM).

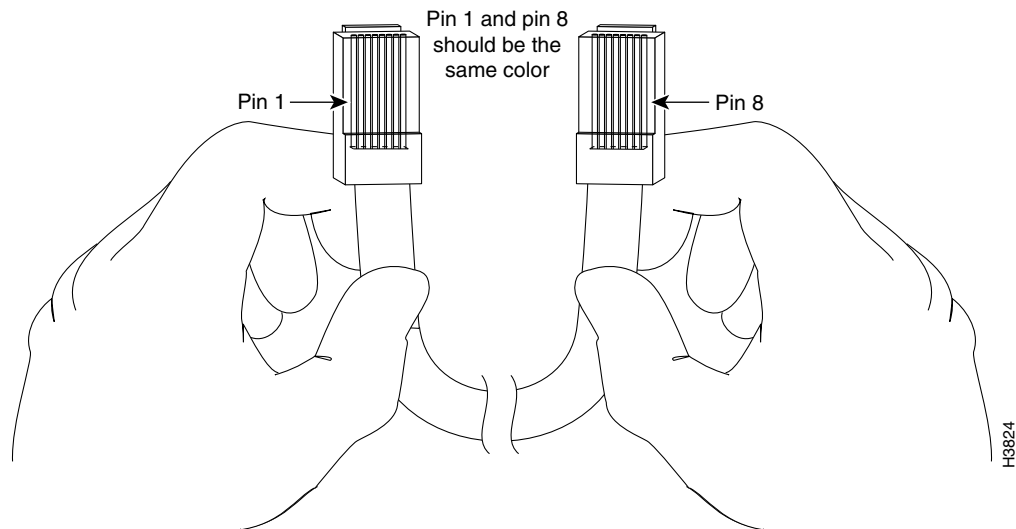
Table B-5 Auxiliary Port Signaling and Cabling Using a DB-25 Adapter

Auxiliary Port (DTE)	RJ-45-to-RJ-45 Rollover Cable		RJ-45-to-DB-25 Modem Adapter	Modem
Signal	RJ-45 Pin	RJ-45 Pin	DB-25 Pin	Signal
RTS	1 ¹	8	4	RTS
DTR	2	7	20	DTR
TxD	3	6	3	TxD
GND/RI	4	5	7	GND/RI
GND	5	4	7	GND
RxD	6	3	2	RxD
DSR/DCD	7	2	8	DCD/DSR
CTS	8 ¹	1	5	CTS

1. Pin 1 is connected internally to pin 8.

Identifying a Rollover Cable

To identify a rollover cable, compare the modular plugs at the two ends of the cable. When you hold the plugs side by side, with the tab at the back, the wire connected to the pin on the outside of the left plug should be the same color as the wire connected to the pin on the outside of the right plug (Figure B-5.) If you purchased your cable from Cisco Systems, pin 1 is white on one connector, and pin 8 is white on the other (a rollover cable connects pins 1 and 8, 2 and 7, 3 and 6, and 4 and 5).

Figure B-5 Identifying a Rollover Cable

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BITS Pinouts

Table B-6 lists the pinouts for the BITS interface RJ-48 port on the Cisco MWR 2941-DC.

Table B-6 BITS Interface Pinouts for the Cisco MWR 2941-DC

Pin	Signal Name	Direction	Description
1	RX ring	Input	Receive ring
2	RX tip	Input	Receive tip (T1/E1)
3, 4	Not used		—
5	TX ring	Not used	—
6	TX tip	Not used	—
7, 8	Not used		—

Table B-6 list the pinouts for the BITS/ToD interface RJ-45 port on the Cisco MWR 2941-DC-A.

Table B-7 BITS/ToD Pinouts for the Cisco MWR 2941-DA-A

Pin	Signal Name	Direction	Description
1	RX ring	Input	Receive ring
2	RX tip	Input	Receive tip (T1/E1)
3	1PPS_N	Output	1PPS RS422 output signal.
4, 5	Ground		
6	1PPS_P	Output	1PPS RS422 output signal.
7	TOD_N	Output/Input	Time of Day RS422 output or input
8	TOD_P	Output/Input	Time of Day RS422 output or input

GPS Port Pinouts

The Cisco MWR 2941-DC-A has a 10Mhz and a 1PPS GPS port that allow you to configure input or output clocking with a GPS device. Table B-8 summarizes the pinouts for the 10Mhz and 1PPS interfaces.



Note

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

Table B-8 GPS Port Pinouts for the Cisco MWR 2941-DC-A

	10 Mhz	1PPS
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

**Note**

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

For instructions on how to configure the 10 Mhz and 1PPSs ports, see the *Cisco MWR 2941 Mobile Wireless Edge Router Software Configuration Guide*.

SFP Modules and Cable Specifications

For information about SFP modules supported by the Cisco MWR 2941, including pinouts, see the [Cisco Interfaces and Modules](#) support section on Cisco.com.

HWICs and Cable Specifications

For information about HWICs supported by the Cisco MWR 2941, including pinouts, see http://www.cisco.com/en/US/products/hw/modules/ps2641/prod_installation_guides_list.html.

