Connectors and Cables

This appendix describes the connectors, cables, and adapters that you use to connect the switch to other devices.

Connector Specifications

These sections describe the connectors used with the Catalyst 2950 switches and contains this information:

10/100 Ports

The 10/100 Ethernet ports use standard RJ-45 connectors and Ethernet pinouts with internal crossovers, as shown by an **X** in the port name. These ports have the transmit (TD) and receive (RD) signals internally crossed so that a twisted-pair straight-through cable and adapter can be attached to the port. Figure B-1 shows the pinout.

When connecting 10/100 ports to other devices, such as servers, workstations, and routers, you can use a two or four twisted-pair, straight-through cable wired for 10BASE-T and 100BASE-TX. Figure B-6 shows the two twisted-pair, straight-through cable schematics. Figure B-8 shows the four twisted-pair, straight-through cable schematics.

When connecting the ports to other devices, such as switches or repeaters, you can use a two or four twisted-pair, crossover cable. Figure B-7 shows the two twisted-pair, crossover cable schematics. Figure B-9 shows the four twisted-pair, crossover cable schematics.

You can use Category 3, 4, or 5 cabling when connecting to 10BASE-T devices. You must use Category 5 cabling when connecting to 100BASE-TX devices.

Note Use a straight-through cable to connect two ports only when one port is designated with an **X**. Use a crossover cable to connect two ports when both ports are designated with an **X** or when both ports do not have an **X**.

Figure B-1   10/100 RJ-45 Pinouts

Pin	Label	1 2 3 4 5 6 7 8
1	RD+	
2	RD-	
3	TD+	
4	NC	
5	NC	
6	TD-	
7	NC	
8	NC	

H5318

10/100/1000 Ports

The 10/100/1000 Ethernet ports on Catalyst 2950T-24 switches use standard RJ-45 connectors. Figure B-2 shows the pinout.

Connecting to 10BASE-T and 100BASE-TX Devices

When connecting the ports to 10BASE-T and 100BASE-TX devices, such as servers, workstations, and routers, you can use a two or four twisted-pair, straight-through cable wired for 10BASE-T and100BASE-TX. Figure B-6 shows the two twisted-pair, straight-through cable schematics. Figure B-8 shows the four twisted-pair, straight-through cable schematics.

When connecting the ports to 10BASE-T- and 100BASE-TX devices, such as switches or repeaters, you can use a two or four twisted-pair, crossover cable. Figure B-7 shows the two twisted-pair, crossover cable schematics. Figure B-9 shows the four twisted-pair, crossover cable schematics.

You can use Category 3, 4, or 5 cabling when connecting to 10BASE-T devices. You must use Category 5 cabling when connecting to 100BASE-TX devices.

Connecting to 1000BASE-T Devices

When connecting the ports to 1000BASE-T devices, such as servers, workstations, and routers, you must use a four twisted-pair, Category 5, straight-through cable wired for 10BASE-T, 100BASE-TX, and 1000BASE-T. Figure B-10 shows the straight-through cable schematics.

When connecting the ports to other devices, such as switches or repeaters, you must use a four twisted-pair, Category 5, crossover cable. Figure B-11 shows the crossover cable schematics.
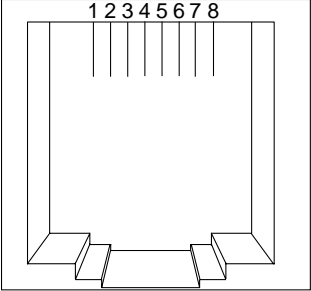
Note   Be sure to use a four twisted-pair, Category 5 cable when connecting to a 1000BASE-T device.

Note   Use a straight-through cable to connect two ports only when one port is designated with an **X**. Use a crossover cable to connect two ports when both ports are designated with an **X** or when both ports do not have an **X**.

Figure B-2   RJ-45 Pinouts for 10/100/1000 and 1000BASE-T Ports

| Pin	Label
1	TP0+
2	TP0-
3	TP1+
4	TP2+
5	TP2-
6	TP1-
7	TP3+
8	TP3-

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100BASE-FX Ports

The 100BASE-FX multimode (MM) fiber-optic ports use MT-RJ connectors, shown in Figure B-3. These ports use 50/125- or 62.5/125-micron multimode fiber-optic cabling.

For MM connections, use one of the LCs listed in Table B-1. Use the Cisco part numbers in Table B-1 to order the patch cables that you need.

Figure B-3   MT-RJ Connector
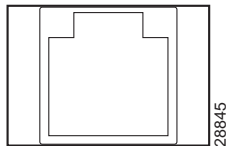
28845

Warning   **LED radiation is present when the system is open.**
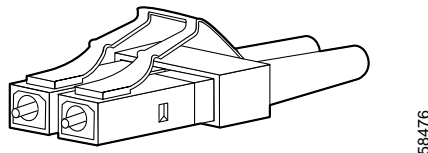
Warning   **Class 1 LED product**

Table B-1   MT-RJ Patch Cables for 100BASE-FX Connections

Type	Cisco Part Number
1-meter, MT-RJ-to-SC multimode cable	CAB-MTRJ-SC-MM-1M
3-meter, MT-RJ-to-SC multimode cable	CAB-MTRJ-SC-MM-3M
5-meter, MT-RJ-to-SC multimode cable	CAB-MTRJ-SC-MM-5M
1-meter, MT-RJ-to-ST multimode cable	CAB-MTRJ-ST-MM-1M
3-meter, MT-RJ-to-ST multimode cable	CAB-MTRJ-ST-MM-3M
5-meter, MT-RJ-to-ST multimode cable	CAB-MTRJ-ST-MM-5M

100BASE-LX Ports

The 100BASE-LX single-mode (SM) fiber-optic ports use LC-type connectors, shown in Figure B-4. These ports use 9/125-micron single-mode fiber-optic cabling.

Figure B-4   100BASE-LX SM Port Connector

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⚠

Warning   Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments.

⚠

Warning   Class 1 laser product

For SM connections, use one of the LCs listed in Table B-2. Use the Cisco part numbers in Table B-2 to order the connectors that you need.

Table B-2   LC Patch Cables for 100BASE-LX Connections

Type	Cisco Part Number
2-meter, LC-to-SC single-mode cable	CAB-CP-LCSC-2M
8-inch, SC-to-LC single-mode cable	CAB-CP-SCLC-8IN
10-foot, LC-to-SC single-mode cable	CAB-SMF-SC-10
100-foot, LC-to-SC single-mode cable	CAB-SMF-SC-100
25-foot, LC-to-SC single-mode cable	CAB-SMF-SC-25
50-foot, LC-to-SC single-mode cable	CAB-SMF-SC-50
75-foot, LC-to-SC single-mode cable	CAB-SMF-SC-75

Power and Relay Connector

The power and relay connector is a pluggable screw terminal block connector that provides power and return connections for both the primary and secondary power supplies. The power and relay connector also gives the Catalyst 2955 switch the interfaces to two independent alarm relays.

Figure B-5   Power and Relay Connector
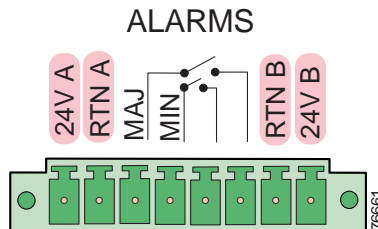
Console Port

The console port uses an 8-pin RJ-45 connector. You can connect a switch to a PC through the console port and the supplied RJ-45-to-DB-9 adapter cable. If you want to connect a switch to a terminal, you need to provide an RJ-45-to-DB-25 female DTE adapter. You can order a kit (part number ACS-DSBUASYN=) with that adapter from Cisco. For console-port and adapter-pinout information, see Table B-3 and Table B-4.

Cable and Adapter Specifications

These sections describe the cables and adapters used with Catalyst 2950 switches.

- Two Twisted-Pair Cable Pinouts, page B-7
- Four Twisted-Pair Cable Pinouts for 10/100 Ports, page B-8
- Four Twisted-Pair Cable Pinouts for 1000BASE-T Ports, page B-9

Two Twisted-Pair Cable Pinouts

Figure B-6 and Figure B-7 show the schematics of two twisted-pair cables for 10/100 ports.

Figure B-6   Two Twisted-Pair Straight-Through Cable Schematic for 10/100 Ports

Switch   Switch

3 TD+ ──────────▶ 3 RD+
6 TD– ──────────▶ 6 RD–

1 RD+ ◀────────── 1 TD+
2 RD– ◀────────── 2 TD–

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Figure B-7   Two Twisted-Pair Crossover Cable Schematic for 10/100 Ports

Switch   Switch

```
3 TD+  ──────┐  ┌──────  3 TD+
6 TD–  ─────┐│  │┌─────  6 TD–
            ╳╳
1 RD+  ◄────┘│  │└────►  1 RD+
2 RD–  ◄─────┘  └─────►  2 RD–
```

H5579
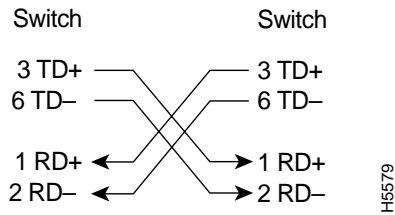
Four Twisted-Pair Cable Pinouts for 10/100 Ports

Figure B-8 and Figure B-9 show the schematics of four twisted-pair cables for 10/100 ports.

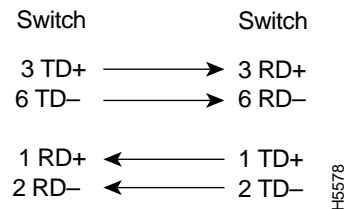*Figure B-8   Four Twisted-Pair Straight-Through Cable Schematic for 10/100 Ports*

Switch   Switch

```
1  RD+  ◄──────────  1  TD+
2  RD-  ◄──────────  2  TD-
3  TD+  ──────────►  3  RD+
6  TD-  ──────────►  6  RD-


4  NC                4  NC
5  NC                5  NC
7  NC                7  NC
8  NC                8  NC
```

65271

Figure B-9   Four Twisted-Pair Crossover Cable Schematic for 10/100 Ports

```
        Switch                    Switch
    1   RD+    ←      →      1   RD+
    2   RD-    ←      →      2   RD-
    3   TD+      ────        3   TD+
    6   TD-      ────        6   TD-


    4   NC                   4   NC
    5   NC                   5   NC
    7   NC                   7   NC
    8   NC                   8   NC
```

65273

Four Twisted-Pair Cable Pinouts for 1000BASE-T Ports

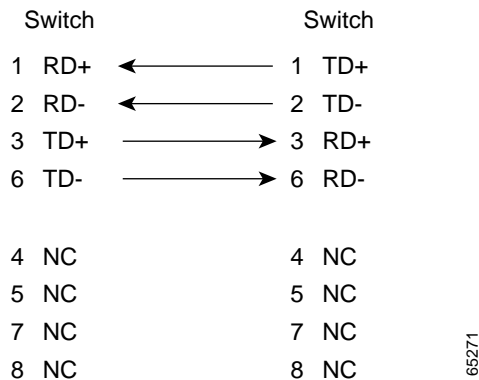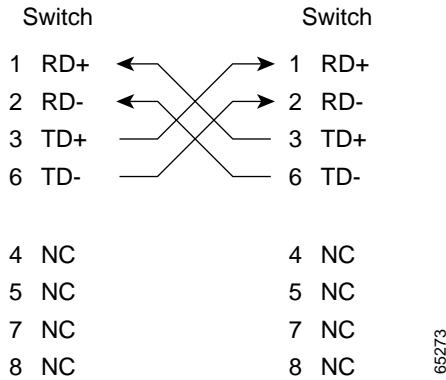Figure B-10 and Figure B-11 show the schematics of four twisted-pair cables for 10/100/1000 ports on Catalyst 2950T-24 switches and 1000BASE-T ports.

Figure B-10   Four Twisted-Pair Straight-Through Cable Schematic for 10/100/1000 and 1000BASE-T Ports

```
        Switch                    Switch
    1   TPO+   ←──────→      1   TP1+
    2   TPO-   ←──────→      2   TP1-
    3   TP1+   ←──────→      3   TPO+
    6   TP1-   ←──────→      6   TPO-


    4   TP2+   ←──────→      4   TP3+
    5   TP2-   ←──────→      5   TP3-
    7   TP3+   ←──────→      7   TP2+
    8   TP3-   ←──────→      8   TP2-
```

65272
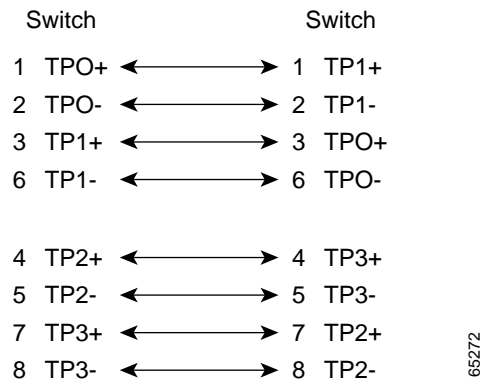
Figure B-11   Four Twisted-Pair Crossover Cable Schematics for 10/100/1000 and 1000BASE-T Ports

```
        Switch                      Switch

    1  TPO+  ←——      ——→  1  TP0+
    2  TPO-  ←——  ╳   ——→  2  TP0-
    3  TP1+  ←——      ——→  3  TP1+
    6  TP1-  ←——  ╳   ——→  6  TP1-


    4  TP2+  ←——      ——→  4  TP2+
    5  TP2-  ←——  ╳   ——→  5  TP2-
    7  TP3+  ←——      ——→  7  TP3+
    8  TP3-  ←——  ╳   ——→  8  TP3-
```

65274
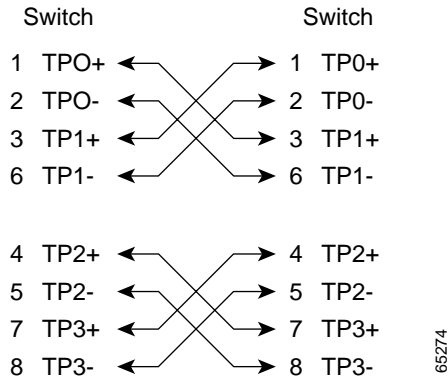
Cable and Adapter Pinouts

This section describes the cable and adapter pinouts and also describes how to identify a rollover cable.

Connecting to a PC

Use the supplied RJ-45-to-DB-9 adapter cable to connect the console port to a PC running terminal-emulation software. Figure B-12 shows how to connect the console port to a PC. Table B-3 lists the pinouts for the console port and the RJ-45-to-DB-9 adapter cable.
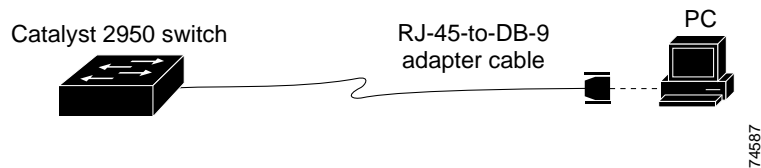
Figure B-12   Connecting the Console Port to a PC

Catalyst 2950 switch   RJ-45-to-DB-9   PC
                              adapter cable

74587

Table B-3   Console Port Signaling and RJ-45-to-DB-9 Adapter Cabling

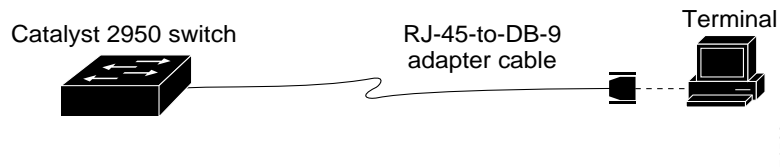| Console Port (DTE)	RJ-45-to-DB-9 Adapter Cable		Console Device
Signal	RJ-45 Pin	DB-9 Pin	Signal
RTS	1	8	CTS
Not connected	2	6	DSR
TxD	3	2	RxD
GND	4	5	GND
GND	5	5	GND
RxD	6	3	TxD
Not connected	7	4	DTR
CTS	8	7	RTS

Connecting to a Terminal

Use the supplied RJ-45-to-DB-9 adapter cable and an RJ-45-to-DB-25 female DTE adapter to connect the console port to a terminal. Figure B-13 shows how to connect the console port to a terminal. Table B-4 lists the pinouts for the console port, the adapter cable, and the RJ-45-to-DB-25 adapter.

Note The RJ-45-to-DB-25 female DTE adapter is not supplied with the switch. You can order a kit (part number ACS-DSBUASYN=) with that adapter from Cisco.

Figure B-13   Connecting the Console Port to a Terminal

Catalyst 2950 switch   RJ-45-to-DB-9 adapter cable   Terminal

74588

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

Console Port (DTE)	RJ-45-to-DB-9 Adapter Cable		RJ-45-to-DB-25 Terminal Adapter	Console Device
Signal	RJ-45 Pin	DB-9 Pin	DB-25 Pin	Signal
RTS	1	8	5	CTS
Not connected	2	6	6	DSR
TxD	3	2	3	RxD
GND	4	5	7	GND
GND	5	5	7	GND
RxD	6	3	2	TxD
Not connected	7	4	20	DTR
CTS	8	7	4	RTS

Identifying a Rollover Cable

You can identify a rollover cable by comparing the two modular cable ends. Hold the cable ends 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. (See Figure B-14.)

Figure B-14 Identifying a Rollover Cable

Pin 1 on one connector and
pin 8 on the other connector
should be the same color.

Pin 1

Pin 8

H10632