Product Overview

This chapter provides an overview of the hardware features for the Cisco 851, Cisco 857, Cisco 871, Cisco 876, Cisco 877, and Cisco 878 routers. It contains the following sections:

General Descriptions of the Router Models

This section provides a general description of each of the router models.

Cisco 851 and Cisco 871 Ethernet-to-Ethernet Routers

The Cisco 851 and Cisco 871 Ethernet-to-Ethernet routers can connect a corporate teleworker or a small office to an Internet service provider (ISP) over a broadband or Ethernet connection to a corporate LAN or to the Internet. The Cisco 851 and Cisco 871 routers are switch-capable routers that provide a 4-port Ethernet switch for the LAN. These routers are capable of bridging and multiprotocol routing between LAN and WAN ports.

Universal Serial Bus (USB) ports on the Cisco 871 router provide connection for USB devices such as security tokens, flash memory sticks, and printers.

The front panels of the Cisco 851 and Cisco 871 routers are identical. (See Figure 1-1.) Figure 1-2 shows the back panel of the Cisco 851 router, and Figure 1-3 shows the back panel of the Cisco 871 router.

The Cisco 851 wireless model supports the use of a single 2.4-GHz antenna (see Figure 1-2), and the Cisco 871 wireless model supports the use of two 2.4-GHz antennas (see Figure 1-3).

Figure 1-1 Cisco 851 and Cisco 871 Router Front Panel

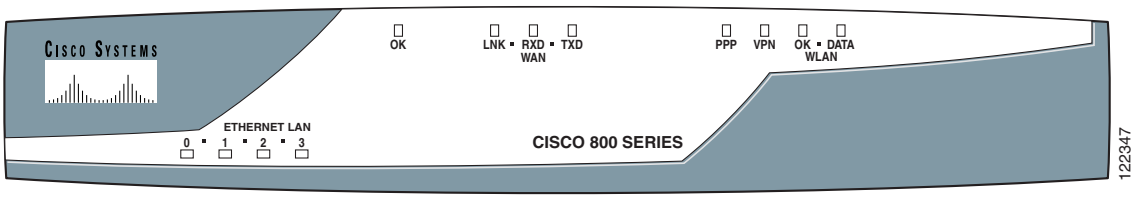


Figure 1-2 Cisco 851 Router Back Panel

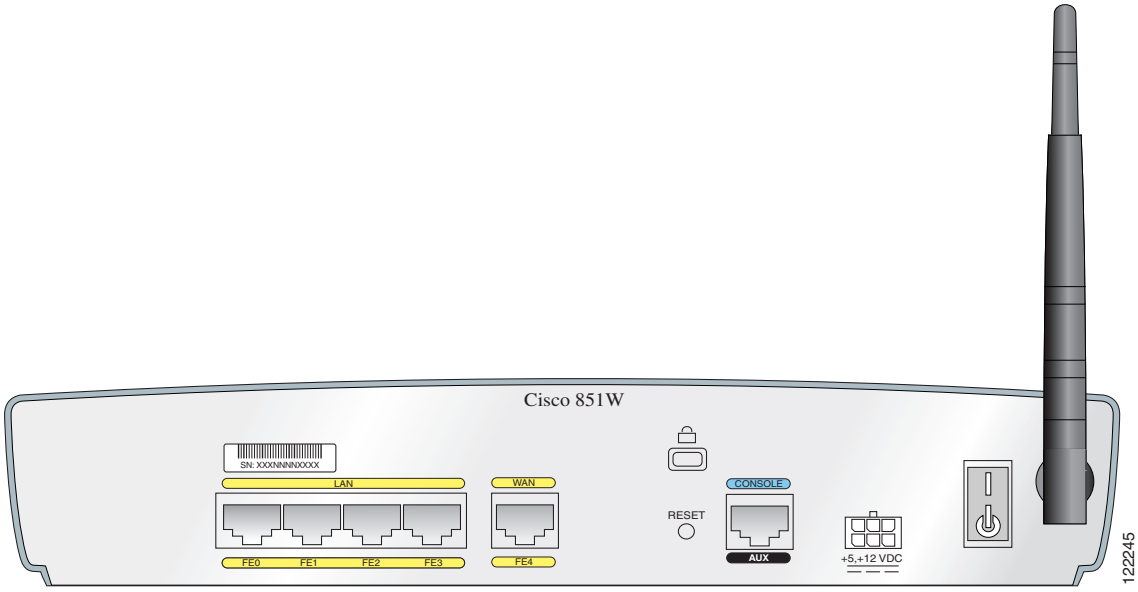
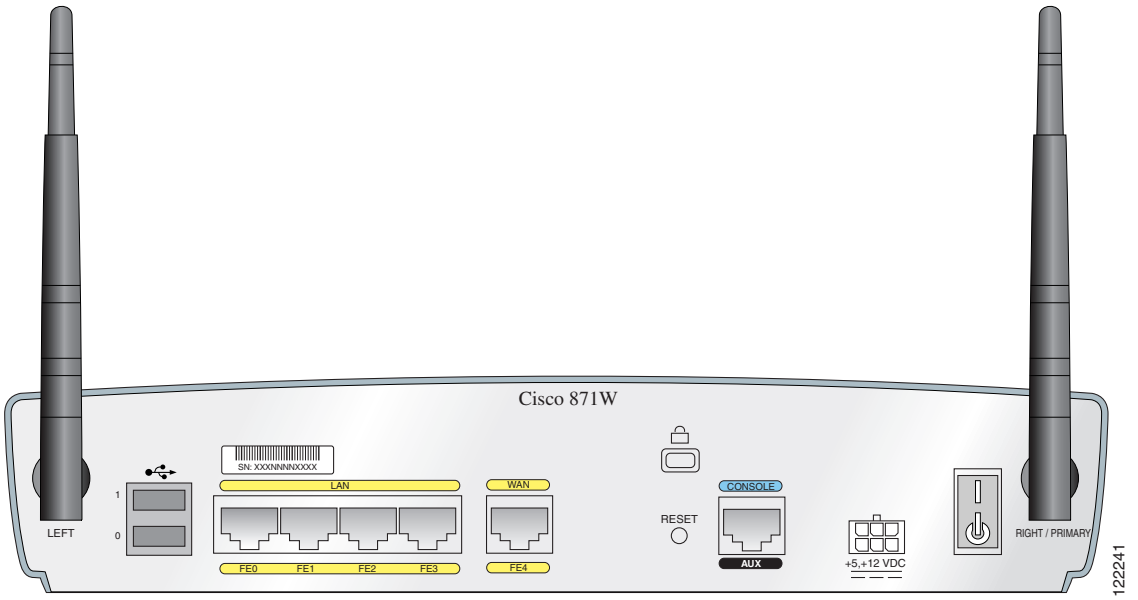


Figure 1-3 Cisco 871 Router Back Panel with Antennas



Router Ports on the Cisco 851 and Cisco 871 Back Panel

The Cisco 851 and Cisco 871 routers have the following ports on the back panel:

- Four 10/100BASE-T RJ-45 Fast Ethernet LAN ports with a built-in switch
- One 10/100BASE-T RJ-45 WAN Fast Ethernet port
- One RJ-45 console port
- Two USB ports (on the Cisco 871 router only)

USB Port Power Allocation on the Cisco 871 Router

The power available for each of the two USB ports is 500 mA. Power is dynamically allocated to each port as needed, up to 500 mA.

Cisco 857 and Cisco 877 ADSL-over-POTS Routers

The Cisco 857 and Cisco 877 routers are asymmetric digital subscriber line (ADSL)-over-plain old telephone service (POTS) routing devices. The routers have an integrated 4-port Ethernet switch for the LAN and an ADSL physical interface for the WAN, allowing the routers to connect a corporate telecommuter or small office to corporate LANs and the Internet.

The front panels of the Cisco 857 and Cisco 877 routers are identical. (See Figure 1-4.) The back panels of these two routers are similar except for their model numbers, which differ. Figure 1-5 shows the back panel of a Cisco 857 router, and Figure 1-6 shows the back panel of a Cisco 877 router.

Figure 1-4 Cisco 857 and Cisco 877 Router Front Panel

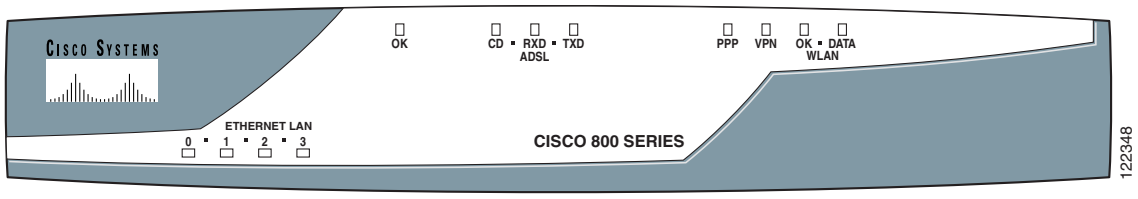


Figure 1-5 Cisco 857 Router Back Panel, with Antenna Installed

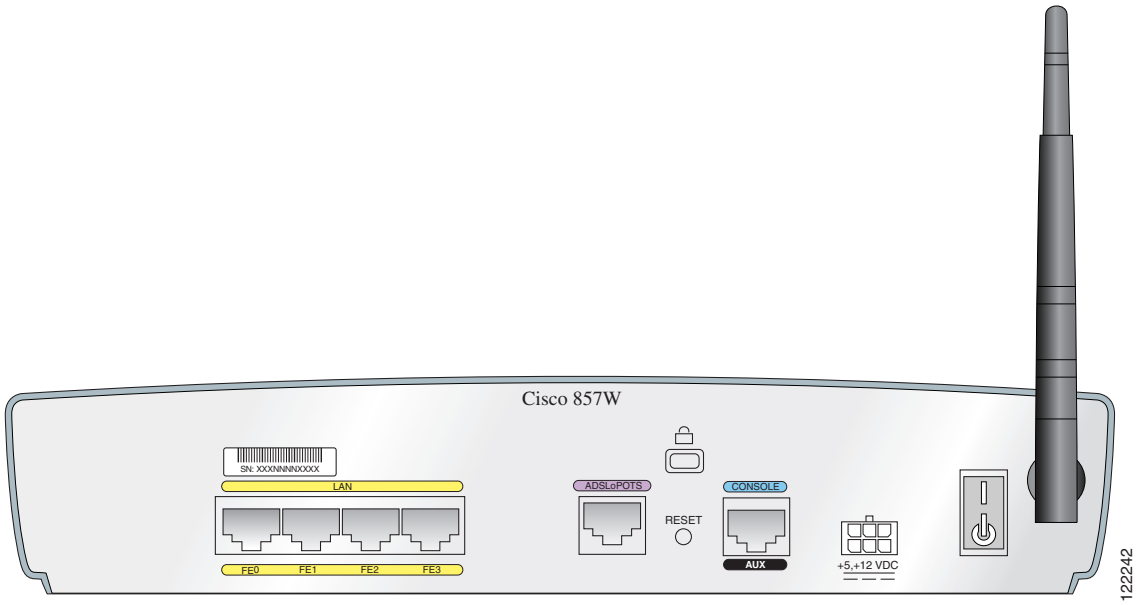
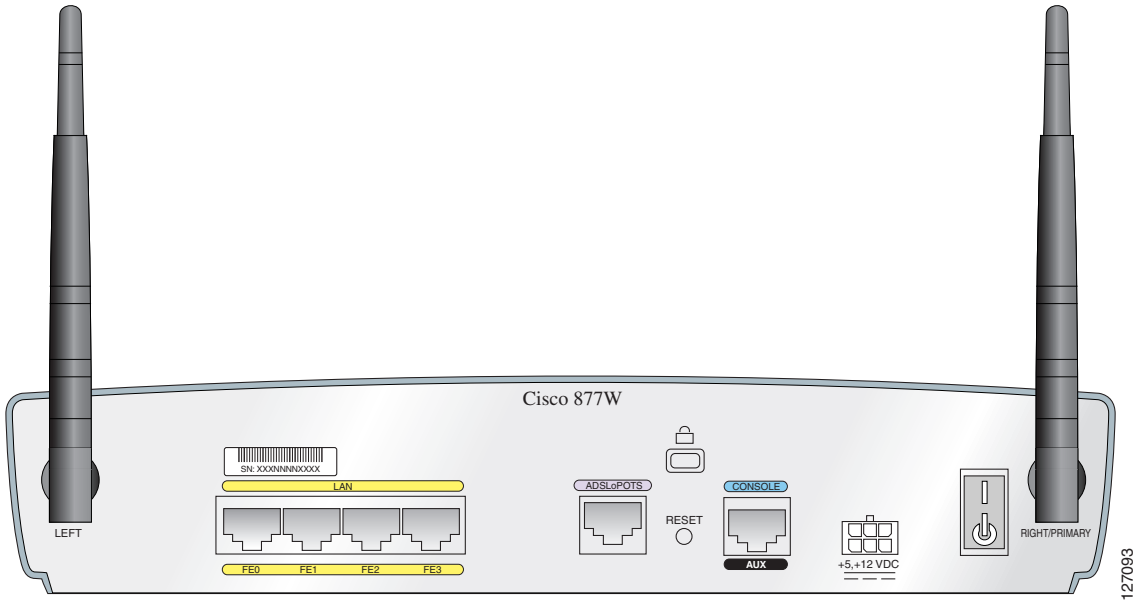


Figure 1-6 Cisco 877 Router Back Panel, with Antennas Installed



Router Ports on the Cisco 857 and Cisco 877 Back Panel

The Cisco 857 and Cisco 877 routers have the following ports on the back panel:

- Four 10/100BASE-T RJ-45 Fast Ethernet LAN ports with a built-in switch
- One ADSL-over-POTS port
- One RJ-45 console port

Cisco 876 ADSL-over-ISDN Router

The Cisco 876 router is an asymmetric digital subscriber line (ADSL)–over–ISDN routing device. The router has an integrated 4-port Ethernet switch for the LAN and an ADSL physical interface for the WAN, and ISDN BRI WAN connectivity. This ISDN BRI interface can be used for normal WAN connections or can be configured as a backup connection for the ADSL WAN interface. These features allow the routers to connect a corporate telecommuter or a small office to a central office or an Internet service provider (ISP) over an ADSL interface.

Figure 1-7 shows the front panel of the Cisco 876 router, and Figure 1-8 shows the back panel.

Figure 1-7 Cisco 876 Router Front Panel

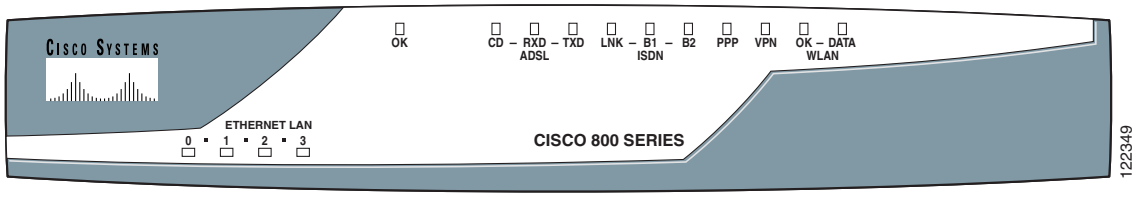
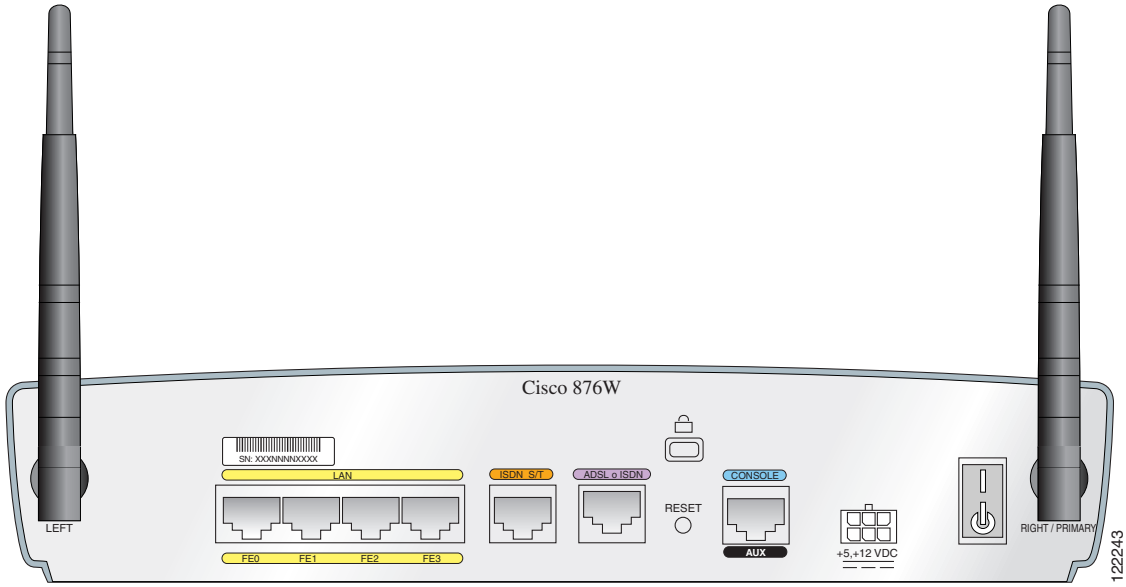


Figure 1-8 Cisco 876 Router Back Panel, with Antennas Installed



Router Ports on the Cisco 876 Back Panel

The Cisco 876 router has the following ports on the back panel:

- Four 10/100BASE-T RJ-45 Fast Ethernet LAN ports with a built-in switch
- One 10/100BASE-T RJ-45 WAN Fast Ethernet port
- One ISDN S/T port
- One ADSL-over-ISDN port
- One RJ-45 console port

Cisco 878 SHDSL Router

The Cisco 878 router can connect a corporate telecommuter or small office to an Internet service provider (ISP) over multirate symmetrical high-data-rate digital subscriber lines (G.SHDSLs) to a corporate LAN and to the Internet.

The router has an integrated 4-port Ethernet switch for the LAN, a G.SHDSL physical interface for the WAN, and an ISDN BRI interface. The ISDN BRI S/T port can be used for remote management. The router is capable of bridging and multiprotocol routing between LAN and WAN ports.

Figure 1-9 shows the front panel of the Cisco 878 router, and Figure 1-10 shows the back panel.

Figure 1-9 Cisco 878 Router Front Panel

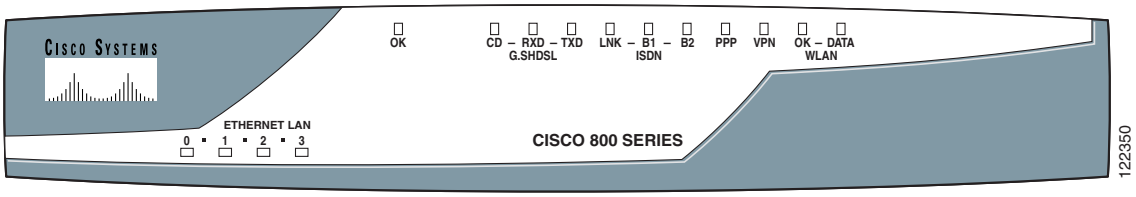
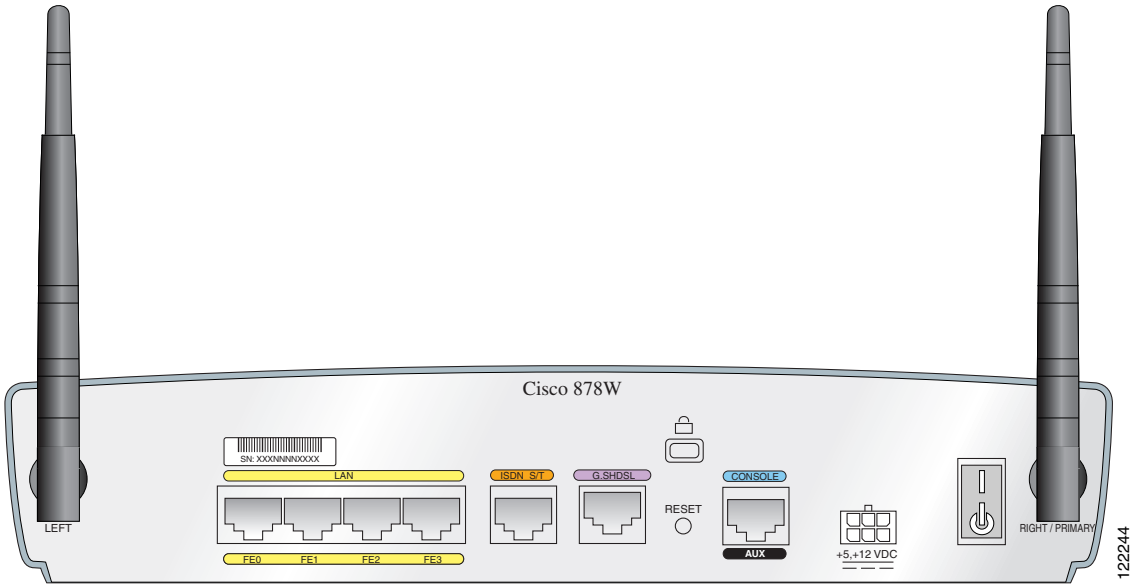


Figure 1-10 Cisco 878 Router Back Panel with Antennas



Router Ports on the Cisco 878 Back Panel

The Cisco 878 router has the following ports on the back panel:

- Four 10/100BASE-T RJ-45 Fast Ethernet LAN ports with a built-in switch
- One ISDN S/T port
- One G.SHDSL port
- One RJ-45 console port

Feature Summary

Table 1-1 summarizes the features of these routers.

Table 1-1 Hardware Feature Summary

Feature	Description
10BASE-T/100BASE-T built-in switch ports	Provides connection to 10/100BASE-T (10/100-Mbps) Ethernet networks. Compatible with 10/100-Mbps devices.
Fast Ethernet WAN port	Cisco 851 and Cisco 871 routers only. Provides connection to 10/100BASE-T. Can be connected to other network devices, such as cable modem, ADSL, and router.
ADSL-over-POTS port	Cisco 857 and Cisco 877 routers only. Provides connection to an ADSL network. Does not support the autoswitch function.
ISDN S/T port	Cisco 876 and Cisco 878 routers only. Provides remote management functions when the main ADSL or SHDSL link goes down by connecting to the ISDN service provider. Can be used for dial backup on Cisco 876 routers only.

Table 1-1 Hardware Feature Summary (continued)

Feature	Description
ADSL-over-ISDN port	Cisco 876 router only. Provides connection to an ADSL-over-ISDN network. Does not support the autoswitch function.
G.SHDSL port	Cisco 878 router only. Provides 2-wire or 4-wire connection to a G.SHDSL network.
Console port	Provides a connection to the terminal or PC for software configuration or troubleshooting using the command-line interface (CLI). The console port may be configured as a virtual auxiliary port (using the CLI) for dial backup and remote management.
Flash memory	Cisco 850 series routers: 20 MB of flash memory (default and maximum) Cisco 870 series routers: 20 MB of flash memory (default) 28 MB of flash memory for routers ordered with a Cisco IOS Advanced IP Services image or Enterprise Services image. Expandable by 8, 16, or 32 MB, up to a maximum of 52 MB.
Synchronous dynamic RAM (SDRAM)	Cisco 850 series routers: 64 MB of SDRAM on board. Cisco 870 series routers: 128 MB of SDRAM on board. Expandable by 64 or 128 MB, up to a maximum of 256 MB.
Router Reset button	Resets the router configuration to the factory default.
Dying gasp	Detects whether the router is about to lose power, and sends a signal to warn the digital subscriber line access multiplexer (DSLAM) about the impending line drop.
Wall-mount feature	Brackets for mounting the router on a wall or vertical surface.
USB ports	Cisco 871 router only. Supports USB-compatible devices such as security tokens and flash memory sticks.
IPSec hardware accelerator	The security processor implements symmetric key encryption, public key encryption, authentication, and data compression in hardware.
Integrated 802.11b/g radio module	(Optional) Provides connectivity to a wireless LAN using IEEE 802.11b/g standards. Enables the router to act as an access point (AP) in infrastructure mode.
External power-over-Ethernet (PoE) module	(Optional) Provides inline power for powered devices (such as PCs and phones) that are connected to the router.
Kensington security slot	Allows the router to be secured to a desktop or other surface by using Kensington lockdown equipment.
Security features	Provides support for virtual private networks (VPNs), Cisco IOS Firewall, and IPSec. For information about software security features, see the *Cisco 850 Series and Cisco 870 Series Access Routers Software Configuration Guide.*
Autosensing function	Eliminates the need for a crossover cable and allows the router to detect medium-dependent interface in normal mode (MDI) or medium-dependent interface in crossover mode (MDIX) in any other PC or hub with a straight-through cable or a crossover cable. The router is capable of bridging and multiprotocol routing between the LAN and WAN ports.

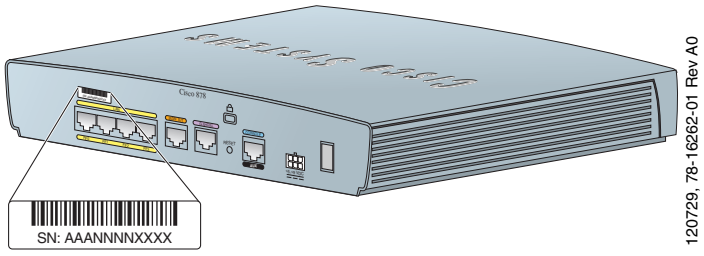
Hardware Features

This section provides an overview of the hardware features of Cisco 850 series and Cisco 870 series routers and includes the following topics:

Serial Number Location

The serial number label for the router is located on the rear of the chassis, at the left edge (see Figure 1-11).

Figure 1-11 Serial Number Location



LED Indicators on the Routers

The router LEDs that indicate status or activity on the router are located on the front panel of the routers. Table 1-2 lists and describes the LEDs.

Table 1-2 LED Indicators on the Routers

LED	Color	Description	Router Model
OK	Green	On when DC power is being supplied to the router. The light blinks if an error occurs during bootup.	All Cisco 850 series and Cisco 870 series
WAN LNK	Green	On if the WAN Ethernet carrier detects status and connects to the digital subscriber line access multiplexer (DSLAM).	Cisco 851, Cisco 871
WAN RXD	Green	Blinks when WAN DSL or WAN Internet receives data.	Cisco 851, Cisco 871

Table 1-2 LED Indicators on the Routers (continued)

LED	Color	Description	Router Model
WAN TXD	Green	Blinks when WAN DSL or WAN Internet transmits data. Off when no data is being uploaded.	Cisco 851, Cisco 871
ADSL CD	Green	On if the ADSL carrier detects status and connects to the DSLAM.	Cisco 857, Cisco 876, Cisco 877
ADSL RXD	Green	Blinks when the ADSL interface receives data. Off when there is no data.	Cisco 857, Cisco 876, Cisco 877
ADSL TXD	Green	Blinks when the ADSL interface transmits data. Off when no data is being uploaded.	Cisco 857, Cisco 876, Cisco 877
G.SHDSL CD	Green	On if the SHDSL carrier detects status and connects to the DSLAM.	Cisco 878
G.SHDSL RXD	Green	Blinks when the SHDSL interface receives data. Off when there is no data.	Cisco 878
G.SHDSL TXD	Green	Blinks when the SHDSL interface transmits data. Off when no data is being uploaded.	Cisco 878
ISDN LNK	Green	On when the ISDN D channel connects.	Cisco 876, Cisco 878
ISDN B1	Green	On when the ISDN B1 channel connects. Blinks when the B1 channel receives or sends data, or when data passes through ISDN channel 1.	Cisco 876, Cisco 878
ISDN B2	Green	On when the ISDN B2 channel connects. Blinks when the B2 channel receives or sends data, or when data passes through ISDN channel 2.	Cisco 876, Cisco 878
PPP	Green	PPP-over-Ethernet (PPPoE) or PPP-over-ATM (PPPoA) client status. On if at least one PPPoE or PPPoA client session is running. Off if neither PPPoE nor PPPoA is running.	All Cisco 850 series and Cisco 870 series
VPN	Green	VPN tunnel status. On when at least one crypto (IPSec) session is running. Off when no crypto session is running.	All Cisco 850 series and Cisco 870 series
WLAN OK	Green	Shows whether the wireless link status is operational. Blinks if no client is associated. Solid green if at least one client is associated.	All Cisco 850 series and Cisco 870 series wireless models
WLAN DATA	Green	Wireless LAN link traffic. Blinks if there is traffic on the wireless LAN. Off if there is no traffic.	All Cisco 850 series and Cisco 870 series wireless models

Table 1-2 LED Indicators on the Routers (continued)

LED	Color	Description	Router Model
ETHERNET LAN 0	Green	On when a device connects to the Ethernet LAN 0 port. Blinks when the Ethernet LAN 0 port receives or sends data, or when data passes through the port.	All Cisco 850 series and Cisco 870 series
ETHERNET LAN 1	Green	On when a device connects to the Ethernet LAN 1 port. Blinks when the Ethernet LAN 1 port receives or sends data, or when data passes through the port.	All Cisco 850 series and Cisco 870 series
ETHERNET LAN 2	Green	On when a device connects to the Ethernet LAN 2 port. Blinks when the Ethernet LAN 2 port receives or sends data, or when data passes through the port.	All Cisco 850 series and Cisco 870 series
ETHERNET LAN 3	Green	On when a device connects to the Ethernet LAN 3 port. Blinks when the Ethernet LAN 3 port receives or sends data, or when data passes through the port.	All Cisco 850 series and Cisco 870 series

Integrated 802.11b/g Radio Module (Wireless Models Only)

The Cisco 850 series and Cisco 870 series wireless routers have an integrated IEEE 802.11b/g radio module that operates as a wireless access point in infrastructure mode. The wireless routers have two reverse-polarity threaded Neill-Concelman (RP-TNC) connectors on the back panel. The dipole swivel antennas that were shipped with the router connect to the RP-TNC connectors to operate the 802.11b/g radio module.

The wireless operations can be configured by using the Cisco Router and Security Device Manager (SDM) web-based application, or by using the Cisco IOS command-line interface (CLI). See the *Cisco Router and Security Device Manager (SDM) Quick Start Guide* or the *Cisco Access Router Wireless Configuration Guide* for more information.

Supported Cisco Radio Antennas (Wireless Models Only)

Table 1-3 lists the Cisco antennas that are supported on the Cisco 850 series and Cisco 870 series wireless routers.

Table 1-3 Cisco Antennas Supported on the Cisco 850 Series and Cisco 870 Series Wireless Routers

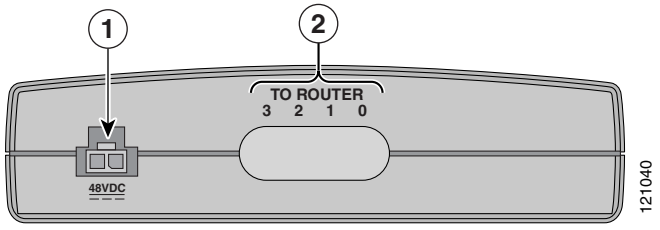
Cisco Part Number	Antenna Type	Maximum Gain	Description
23.7786.51	Omnidirectional	2.2 dBi	This is the default antenna. Swivel-mount dipole antenna operating in the 2.4- to 2.5-GHz band. This antenna is designed for use with Cisco wireless products utilizing an RP-TNC connector. For more information, see the *Cisco 2.4-GHz Swivel-Mount Dipole Antenna (23.7786.51)* document.
AIR-ANT4941	Omnidirectional	2.2 dBi	Swivel-mount dipole antenna operating in the 2.4- to 2.5-GHz band. This antenna is designed for use with Cisco wireless products utilizing an RP-TNC connector. For more information, see the *Cisco Aironet 2.4 Ghz Articulated Dipole Antenna (AIR-ANT4941)* document.
AIR-ANT1728	Omnidirectional	5.2 dBi	Ceiling-mount antenna operating in the 2.4- to 2.5-GHz band. This antenna has a clip that allows it to be mounted to a drop-ceiling cross member. For more information, see the *Cisco Aironet High Gain Omnidirectional Ceiling Mount Antenna (AIR-ANT1728)* document. **Note** This antenna is not supported in Japan.
AIR-ANT3549	Patch	9 dBi	Wall-mount antenna operating in the 2.4- to 2.5-GHz band. **Note** This antenna is not supported in the United States and Canada.
AIR-ANT5959	Diversity omnidirectional	2.35 dBi	Ceiling-mount antenna operating in the 2.4- to 2.5-GHz band. This antenna has a clip that allows it to be mounted to a drop-ceiling cross member. For more information, see the *Cisco Aironet 2 dBi Diversity Omnidirectional Ceiling Mount Antenna (AIR-ANT5959)* document.

External Power-over-Ethernet Module (Optional)

The optional external power-over-Ethernet (PoE) module is a standalone device that connects to the Ethernet ports on the router on one side (To ROUTER) and to powered devices (such as PCs, laptops, and IP phones) on the other side (To LAN). The PoE module has an independent power source that can provide inline power to devices connected to each of the four Ethernet ports, so that these devices do not need separate power sources.

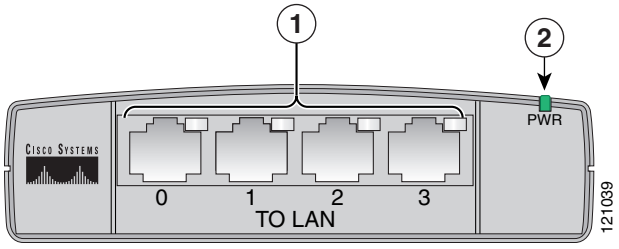
Caution To ensure proper PoE module operation, do not connect the PoE module power supply to the PoE module before you connect the PoE module to the router. Do not connect ISDN devices to the Ethernet ports on the PoE module; doing so may damage the hardware.

Figure 1-12 Power-over-Ethernet Module Front Panel



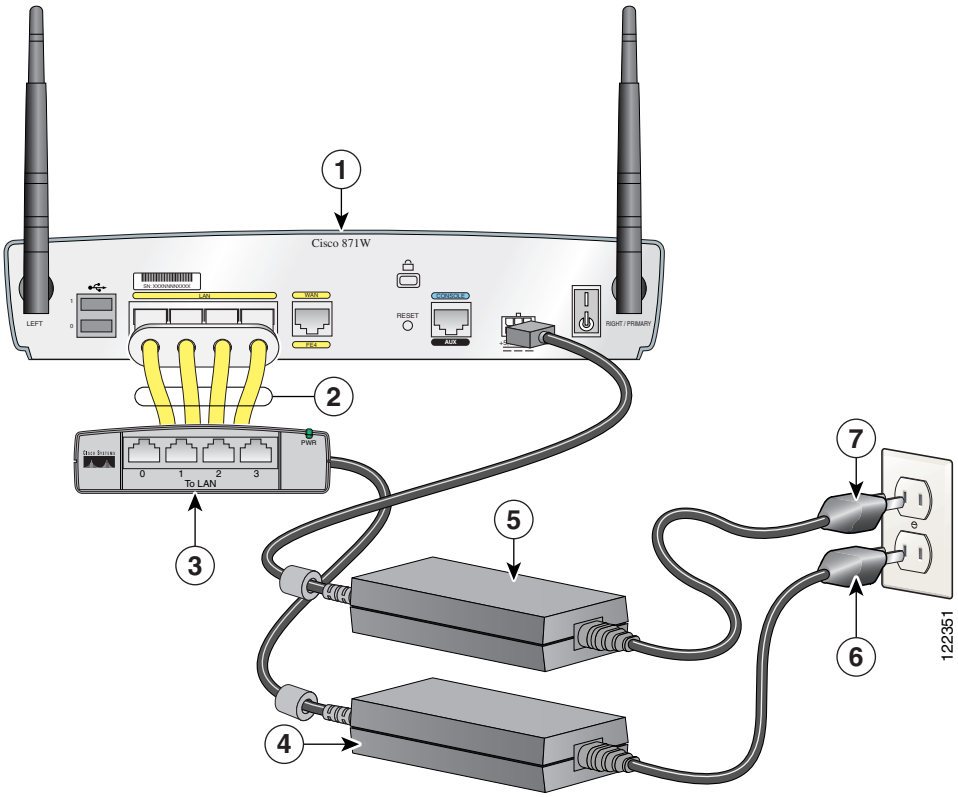
1	Power adapter input jack	**2**	Cable numbers associated with the corresponding Ethernet ports on the back panel. The integrated cable below the cable number label, consisting of four RJ-45 connectors organized by a plastic clip, is not shown in this illustration.

Figure 1-13 Power-over-Ethernet Module Back Panel



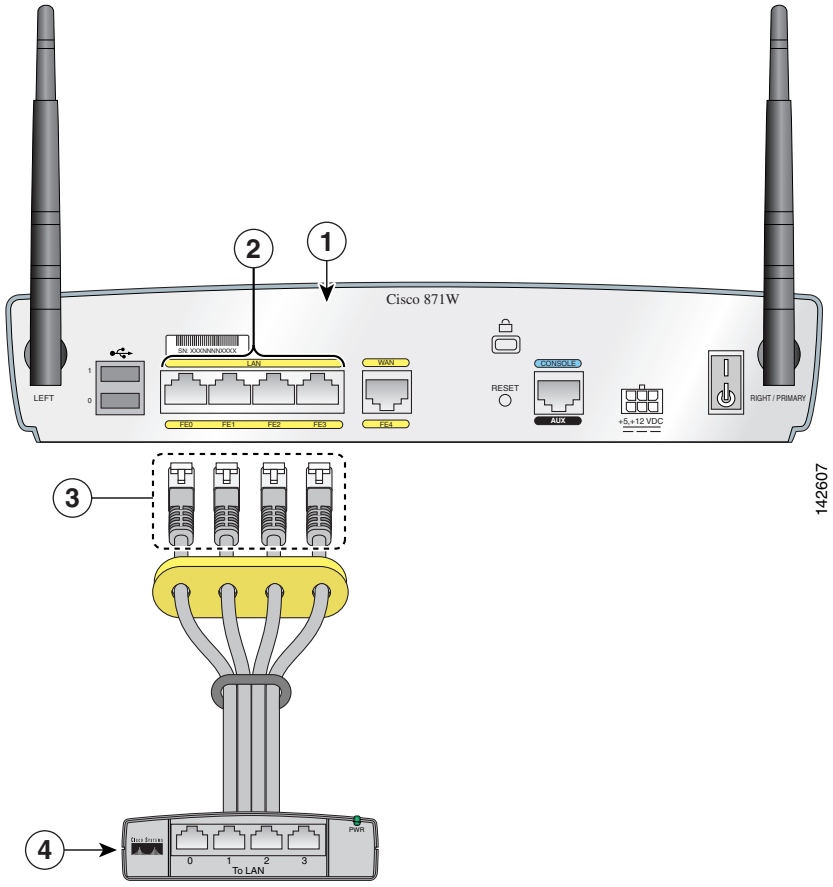
1	LED indicators and Ethernet ports for connecting powered devices	**2**	Power indicator

Figure 1-14 Installing the PoE Module



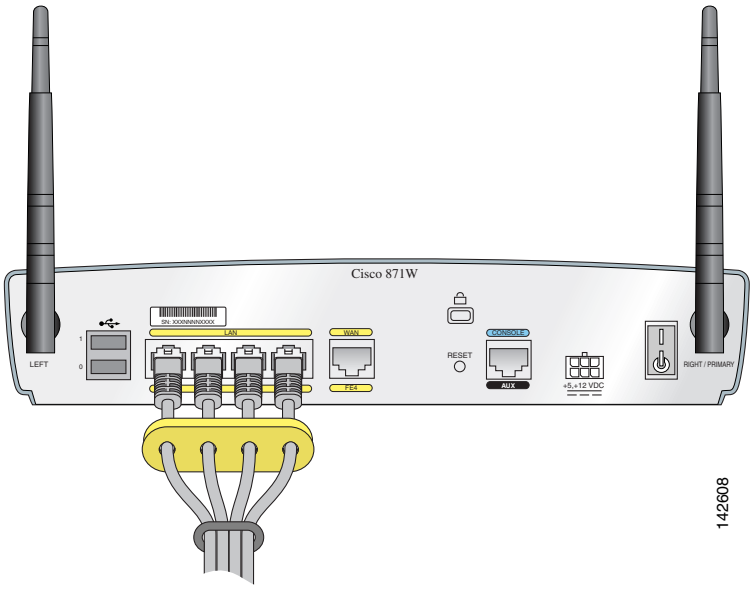
1	Cisco 870 series router	**5**	Router power adapter
2	Ethernet cables on the PoE module (four RJ-45 connectors in series)	**6**	PoE power plug
3	PoE module	**7**	Router power plug
4	PoE power adapter		

Figure 1-15 Connecting the PoE Module to the Router



1	Cisco 870 series router	**3**	Four RJ-45 Ethernet plugs, in series, from the PoE module (plug these into the Ethernet ports on the router)
2	RJ-45 Ethernet ports on the router	**4**	PoE module

Figure 1-16 PoE Module Connected to the Router



LED Indicators on the PoE Module

Table 1-4 LED Indicators for the PoE Module

LED	Color and Behavior	Description
POE ports 0, 1, 2, 3	None	No powered device detected
	Solid amber	Power administratively down
	Solid green	Power provided to the device
	Blinking amber	Fault detected in power delivery
	Blinking green	Power denied to the device

Router Memory

Cisco 850 series and Cisco 870 series routers support the following types of memory:

- Flash Memory
- SDRAM

Flash Memory

Flash memory stores the image of the ROMMON boot code, the Cisco IOS software, and the router configuration file. The router provides two onboard StrataFlash devices, one with 16 MB and the other with 4 MB of memory, for a total of 20 MB of onboard flash memory.

- For Cisco 850 series routers, the default and maximum flash memory is 20 MB. This is not upgradable.
- For Cisco 870 series routers, an expansion slot allows for an additional 8 MB, 16 MB, or 32 MB of memory. The maximum flash memory is 52 MB. The default flash memory depends on which Cisco IOS image is ordered with the router.
  - By default, the router ships with 4 MB in the expansion slot, for a total of 24 MB of flash memory.
  - If ordered with a Cisco IOS Advanced IP Services image or Enterprise Services image, the router ships by default with 8 MB of memory in the expansion slot, for a total of 28 MB of flash memory.

SDRAM

SDRAM stores the Cisco IOS software and provides memory for data created during packet processing. The router provides 128 MB of onboard SDRAM, with an expansion slot that allows an additional 64 MB or 128 MB, up to a maximum of 256 MB of SDRAM.

Router Hardware Security

The Cisco 850 series and Cisco 870 series routers have a Kensington security slot on the back panel. To secure the router to a desktop or other surface, use the Kensington lockdown equipment.

Regulatory Compliance

For compliance and safety information, see the *Regulatory Compliance and Safety Information for Cisco 800 Series and SOHO Series Routers* document that was shipped with the router.

For wireless models, also see the *Declarations of Conformity and Regulatory Information for Cisco Access Products with 802.11a/b/g and 802.11b/g Radios* document that was shipped with the router.