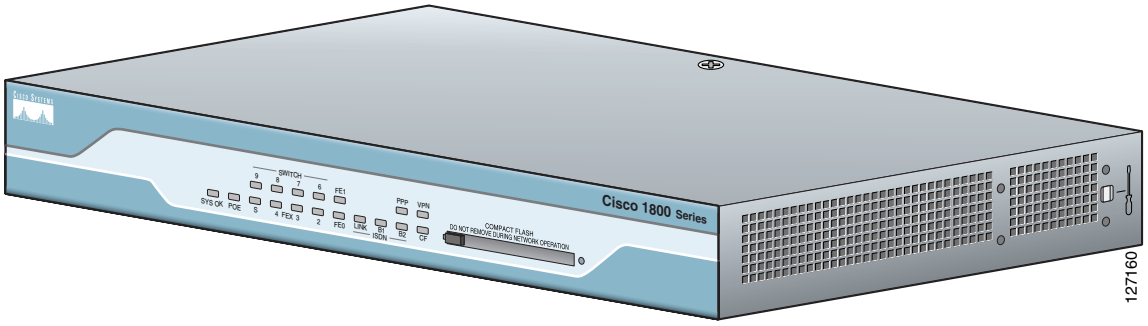
CHAPTER 1

Overview

The Cisco 1800 series fixed-configuration routers are part of the new line of integrated services routers that are optimized for secure, fast, high-quality delivery of multiple, concurrent services for small-to-medium-sized businesses and small enterprise branch offices. The Cisco 1811 and Cisco 1812 routers offer an 8-port 10/100Base-T switch, dual 10/100Base-T WAN ports, two USB 2.0 ports, and either an ISDN S/T or an analog modem port. The Cisco 1801, Cisco 1802, and Cisco 1803 routers offer an 8-port 10/100Base-T switch; a single 10/100Base-T WAN port; an ISDN S/T port; and either an ADSL over POTS, ADSL over ISDN, or G.SHDSL WAN port. All models also offer embedded hardware-based encryption that provides superior performance for advanced applications, optional 802.11a/b/g wireless LAN functionality, an integrated real-time clock for validating digital certificates and stamping syslog entries, and optional Power over Ethernet (PoE).

Figure 1-1 shows a front view of a Cisco 1800 series fixed-configuration router.

Figure 1-1 Front View of a Cisco 1800 Series Fixed-Configuration Router



This chapter describes the features and specifications of the routers and includes the following sections:

- Hardware Features, page 1-2
- Chassis Views, page 1-7
- Interface Numbering, page 1-11
- Specifications, page 1-12
- Regulatory Compliance, page 1-13

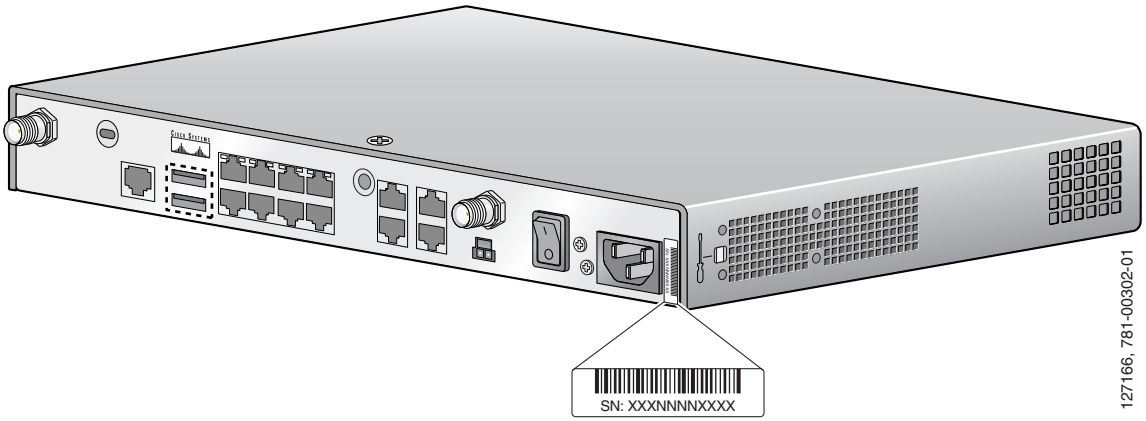
Hardware Features

This section describes the basic features of the Cisco 1800 series fixed-configuration routers, including product identification, built-in interfaces, memory, LED indicators, chassis ventilation, and the internal clock.

Product Serial Number Location

On the Cisco 1800 series fixed-configuration routers, the serial number label is located on the back of the chassis, along the bottom edge near the lower right corner. (See Figure 1-2.)

Figure 1-2 Serial Number Location



Note The serial number for the Cisco 1800 series fixed-configuration routers is 11 characters long.

Cisco Product Identification Tool

The Cisco Product Identification (CPI) tool provides detailed descriptions and illustrations showing where to locate serial number labels on Cisco products. The CPI tool includes the following features:

- A search option allows browsing for models by using a tree-structured product hierarchy.
- A search field on the final results page makes it easier to look up multiple products.
- End-of-sale products are clearly identified in results lists.

The tool streamlines the process of locating serial number labels and identifying products. Serial number information expedites the entitlement process and is important for access to support services.

The Cisco Product Identification tool can be accessed at the following URL:

http://tools.cisco.com/Support/CPI/index.do

Feature Summary

Table 1-1 summarizes the built-in ports and other hardware features of the Cisco 1800 series fixed-configuration routers.

Table 1-1 Summary of Cisco 1800 Series Fixed-Configuration Built-In Interfaces

Feature	Description
Managed 8-port 10/100 Fast Ethernet switch	Provides connection to 10/100BASE-T (10/100-Mbps) Ethernet networks. Compatible with 10/100-Mbps devices.
10/100 Fast Ethernet (FE) WAN port	Provides connection to 10/100BASE-T Ethernet networks. Can be connected to other network devices, such as cable modem, ADSL, and router. Cisco 1801, Cisco 1802, and Cisco 1803 routers have one 10/100 FE WAN port. Cisco 1811 and Cisco 1812 routers have two 10/100 FE WAN ports.
ADSL-over-POTS port	Cisco 1801 router only. Provides connection to an ADSL network. Does not support the autoswitch function.
ADSL-over-ISDN port	Cisco 1802 router only. Provides connection to an ADSL-over-ISDN network. Does not support the autoswitch function.
G.SHDSL port	Cisco 1803 router only. Provides 2-wire or 4-wire connection to a G.SHDSL network.
ISDN S/T port	Cisco 1801, Cisco 1802, Cisco 1803, and Cisco 1812 routers only. Should the main WAN link go down, provides dial backup and remote management functions by connecting to an ISDN service provider.
V.92 analog modem port.	Cisco 1811 routers only. Should the main WAN link go down, provides dial backup and remote management functions.
Console port	Provides a connection to the terminal or PC for software configuration or troubleshooting using the command-line interface (CLI).
Auxiliary port	Provides a connection to a modem for software configuration or troubleshooting using the command-line interface (CLI).
Two USB ports	Cisco 1811 and Cisco 1812 routers only. Support Cisco USB flash memory modules and USB eToken modules.
Integrated 802.11a/b/g radio module	Wireless models only. Provides connectivity to a wireless LAN using IEEE 802.11a/b/g standards. Enables the router to act as an access point (AP) in infrastructure mode.
Internal Power-over-Ethernet (PoE) module	(Optional) Provides inline power for powered devices, such as IP phones, that are connected to the router.
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.
Kensington security slot	Allows the router to be secured to a desktop or other surface by using Kensington lockdown equipment.
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.

Memory

Cisco 1800 series fixed-configuration routers contain the following types of memory:

- DRAM—Stores the running configuration and routing tables and is used for packet buffering by the network interfaces. Cisco IOS software executes from DRAM memory.Cisco 1800 series fixed-configuration routers contain 128 MB of internal DRAM memory by default. Cisco 1800 series fixed-configuration router models also contain a single 200-pin DDR Small Outline DIMM (SODIMM) slot that can accommodate up to a 256-MB SODIMM, for a maximum of 384 MB of internal DRAM memory.
- NVRAM—Internal flash memory. Stores the bootstrap program (ROM monitor), the configuration register, and the startup configuration. All Cisco 1800 series fixed-configuration models contain 2 MB of boot/NVRAM memory by default.
- Flash memory—External CompactFlash memory. Stores the operating system software image. All Cisco 1800 series fixed-configuration models contain 32 MB of internal flash memory by default, and can use external CompactFlash cards up to 128 MB in capacity.

Power

Table 1-2 summarizes the AC power options for the Cisco 1800 series fixed-configuration routers.

Table 1-2 Summary of Power Options for Cisco 1800 Series Fixed-Configuration Routers

Power Option	Input	IP Phone Power Output
AC input without inline power output	100–120V/200–240V, 1.2A/0.6A	None
AC input with inline power output	100–120V/200–240V, 1.2A/0.6A	–48 VDC, 80W

LED Indicators

Table 1-3 summarizes the LED indicators that are located in the router front panel.

Table 1-3 Summary of LED Indicators on the Cisco 1800 Series Fixed-Configuration Routers

LED	Color	Description
SYS OK	Green	The router has successfully booted up, and the software is functional. This LED blinks while booting or while in the ROM monitor mode.
WLAN	Green	This LED shows wireless access point link status. It is active only on wireless models. On indicates that at least one client is associated. Blinking green indicates that no client is associated.
POE[1]	Green/ Amber	Green indicates that the inline power supply is present. Amber indicates a fault with the inline power supply. Off indicates that the inline power supply is not installed.
FE <*port number*>	Green	These LEDs indicate Fast Ethernet port link and status for both FE WAN ports (ports 0 and 1 on the Cisco 1811 and Cisco 1812 routers; port 0 on the Cisco 1801, Cisco 1802, and Cisco 1803 routers) and the FE switch ports (ports 2 through 9 on the Cisco 1811 and Cisco 1812 routers; ports 1 through 8 on the Cisco 1801, Cisco 1802, and Cisco 1803routers). Green indicates a successful FE link. Off indicates no link.

Table 1-3 Summary of LED Indicators on the Cisco 1800 Series Fixed-Configuration Routers (continued)

LED	Color	Description
CD[2]	Green	This LED indicates whether a connection is established (carrier detect). On the Cisco 1801, Cisco 1802, and Cisco 1803 routers, this LED indicates whether a DSL connection is established. On the Cisco 1811 router, this LED indicates whether a modem connection is established. On indicates a connection is established. Off indicates no connection established.
LPBK[3]	Green	On indicates the DSL interface is in loopback mode. Off indicates DSL interface normal operation.
PPP	Green	On if at least one PPP connection is established.
VPN	Green	On if at least one VPN tunnel is established.
LINK[4]	Green	On indicates that an ISDN S/T connection has been established. Off indicates that no ISDN S/T connection has been established.
B1[4]	Green	Blinking green indicates activity on the first B channel. Off indicates no activity on the first B channel.
B2[4]	Green	Blinking green indicates activity on the second B channel. Off indicates no activity on the second B channel.
SPD[5]	Green	On indicates a connection at high speed (V.90/V.92). Off indicates a connection at low speed (V.32/V.32b/V.34).
BUSY[5]	Green	Blinking green indicates activity over the modem line. Off indicates no activity.
CF	Green	On when CompactFlash memory is busy. Do not remove CompactFlash memory when this light is on.

1. Inline power is a field-upgradable option only. It is not installed by default.
2. This LED does not exist on the Cisco 1812.
3. This LED exists on the Cisco 1801, Cisco 1802, and Cisco 1803 only.
4. This LED does not exist on the Cisco 1811.
5. This LED exists on the Cisco 1811 only.

For LED troubleshooting information, including possible trouble causes and corrective actions, see Table 6-1 in the "Troubleshooting" chapter.

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

The Cisco 1800 series fixed-configuration routers with the wireless option have an integrated IEEE 802.11a/b/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 802.11a/b/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 1-4 lists the Cisco antennas that are supported on the Cisco 1800 series fixed-configuration wireless routers.

Table 1-4 Cisco Antennas Supported on the Cisco 1800 Series Fixed-Configuration Wireless Routers

Cisco Part Number	Antenna Type	Maximum Gain	Description
AIR-ANTM2050D-R	Omnidirectional	2.0 dBi gain for 2.4GHz 5.0 dBi for 5GHz	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 Multiband Swivel-Mount Dipole Antenna* document.
AIR-ANTM4050V-R	Omnidirectional	4.0 dBi gain for 2.4GHz 5.0 dBi for 5GHz	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 Multiband Diversity Omnidirectional Ceiling-Mount Antenna* document.
AIR-ANTM5560P-R	Patch	5.5 dBi gain for 2.4GHz 6.0 dBi for 5GHz	Wall-mount antenna operating in the 2.4- to 2.5-GHz band. For more information, see the *Cisco Multiband Wall-Mount, Corner-Mount, or Mast-Mount Antenna* document.

Chassis Ventilation

Cisco 1800 series fixed-configuration routers have an internal multispeed fan that provides chassis cooling, controlled by an onboard temperature sensor. The internal fan operates at a continuously variable speed to minimize fan noise while providing sufficient chassis cooling.

Real-Time Clock

An internal real-time clock with battery backup provides the system software with time of day on system power up. This allows the system to verify the validity of the certification authority (CA) certificate and to timestamp syslog messages. Cisco 1800 series fixed-configuration routers have a socketed lithium battery. This battery lasts the life of the router under the operating environmental conditions specified for the router; the battery is not field-replaceable.

Note If the lithium battery in a Cisco 1800 series fixed-configuration router fails, the router must be returned to Cisco for repair.

Although the battery is not intended to be field-replaceable, the following warning must be heeded:

Warning **There is the danger of explosion if the battery is replaced incorrectly. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.** Statement 1015

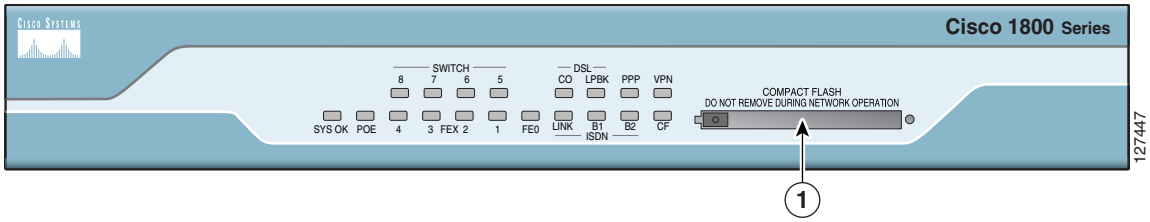
Kensington Lock

All Cisco 1800 series fixed-configuration routers include a Kensington lock located at the top left corner of the back panel for physical security.

Chassis Views

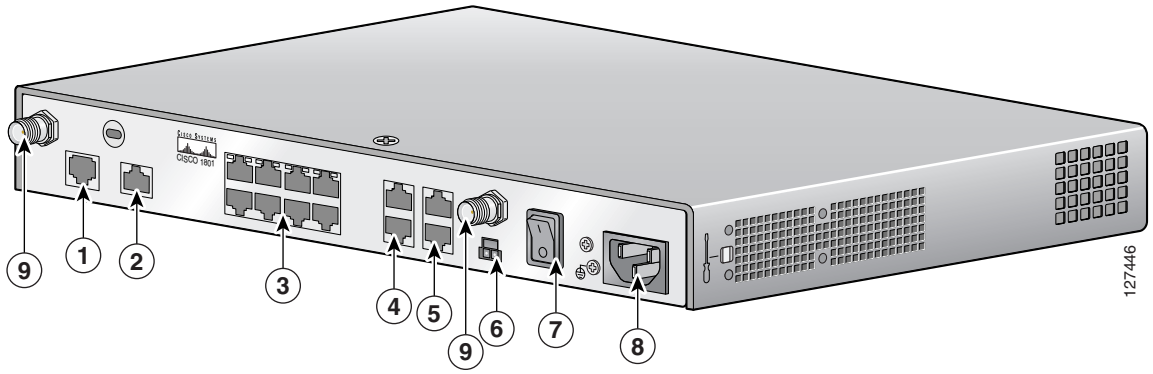
This section contains views of the front and rear panels of the Cisco 1800 series fixed-configuration routers, showing locations of the power and signal interfaces, module slots, status indicators, and chassis identification labels.

Figure 1-3 Front Panel of Cisco 1801 Router



1	CompactFlash Slot

Figure 1-4 Back Panel of Cisco 1801 Router

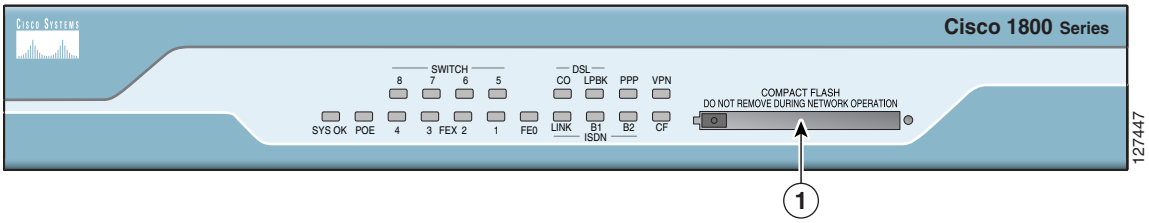


1	ADSL over POTS WAN port	**6**	POE connector[1]
2	ISDN BRI S/T port	**7**	Power switch

3	Managed 8-port FE switch	**8**	Power connector
4	FE WAN port[2]	**9**	RP-TNC antenna connectors (wireless models only)
5	Console and AUX ports		

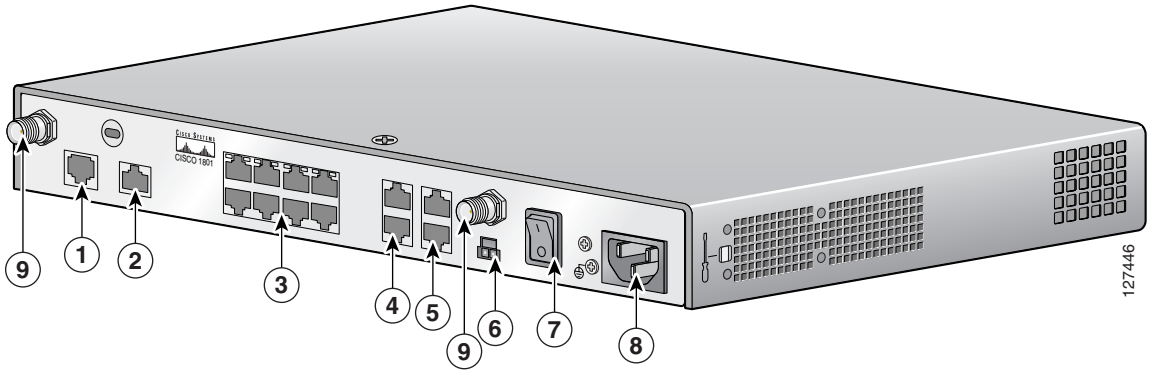
1. Inline power is a field-upgradable option only. It is not installed by default.
2. The Cisco 1801 only has one FE WAN port, which is the lower of the two ports shown. The upper port is disabled, and reserved for a future purpose.

Figure 1-5 Front Panel of Cisco 1802 Router



1	CompactFlash Slot

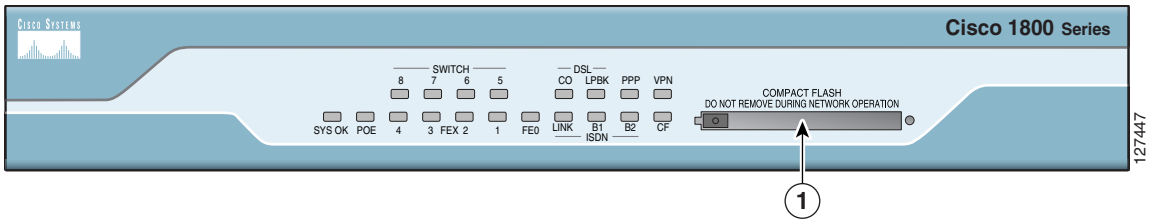
Figure 1-6 Back Panel of Cisco 1802 Router



1	ADSL over ISDN WAN port	**6**	POE connector[1]
2	ISDN BRI S/T port	**7**	Power switch
3	Managed 8-port FE switch	**8**	Power connector
4	FE WAN port[2]	**9**	RP-TNC antenna connectors (wireless models only)
5	Console and AUX ports		

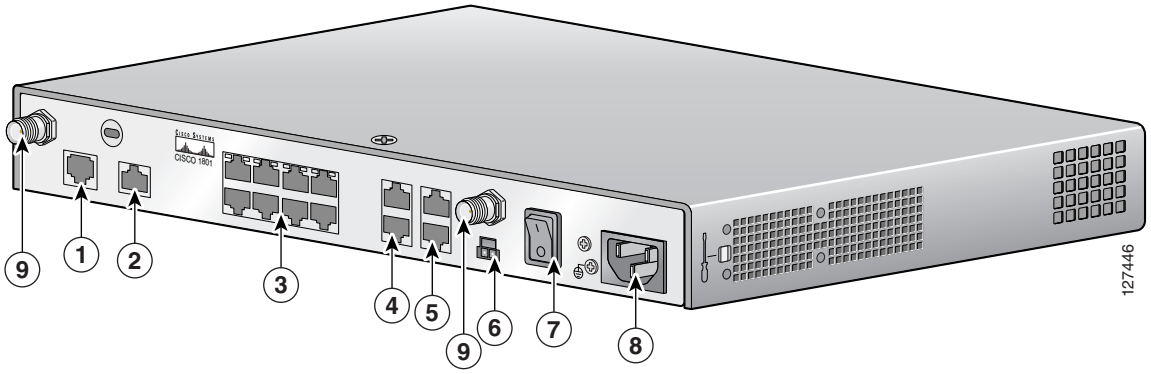
1. Inline power is a field-upgradable option only. It is not installed by default.
2. The Cisco 1802 only has one FE WAN port, which is the lower of the two ports shown. The upper port is disabled, and reserved for a future purpose.

Figure 1-7 Front Panel of Cisco 1803 Router



1	CompactFlash Slot

Figure 1-8 Back Panel of Cisco 1803 Router



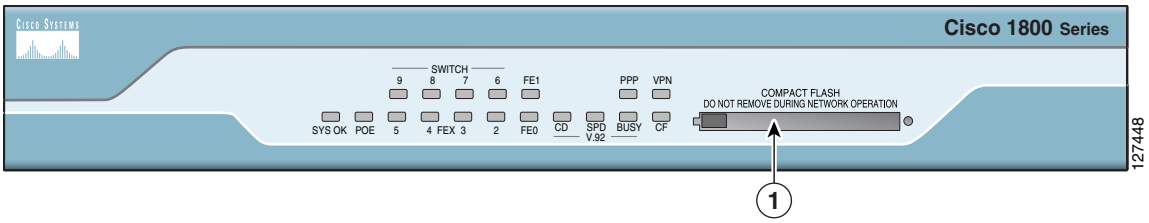
1	G.SHDSL WAN port	6	POE connector[1]
2	ISDN BRI S/T port	7	Power switch
3	Managed 8-port FE switch	8	Power connector
4	FE WAN port[2]	9	RP-TNC antenna connectors (wireless models only)
5	Console and AUX ports		

1. Inline power is a field-upgradable option only. It is not installed by default.
2. The Cisco 1803 only has one FE WAN port, which is the lower of the two ports shown. The upper port is disabled, and reserved for a future purpose.

Cisco 1811 Chassis

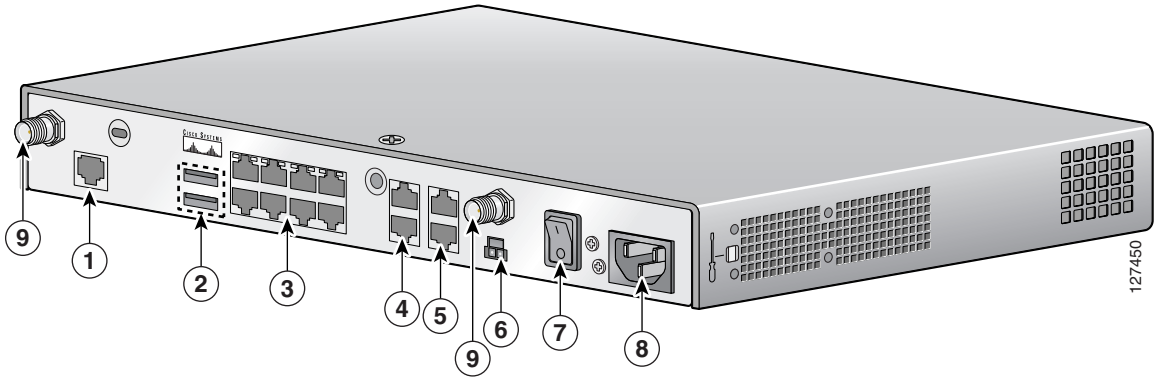
Figure 1-9 shows the front panel of a Cisco 1811 router. Figure 1-10 shows the rear panel of a Cisco 1811 router.

Figure 1-9 Front Panel of Cisco 1811 Router



1	CompactFlash Slot

Figure 1-10 Back Panel of Cisco 1811 Router



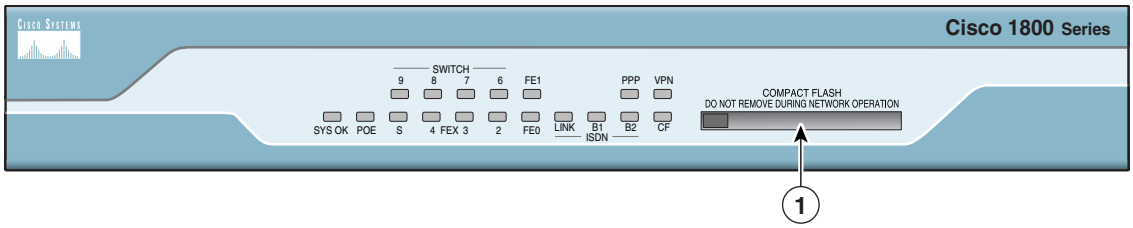
1	V.92 Modem port	**6**	POE connector[1]
2	USB 2.0 ports	**7**	Power switch
3	Managed 8-port FE switch	**8**	Power connector
4	FE WAN ports	**9**	RP-TNC antenna connectors (wireless models only)
5	Console and AUX ports		

1. Inline power is a field-upgradable option only. It is not installed by default.

Cisco 1812 Chassis

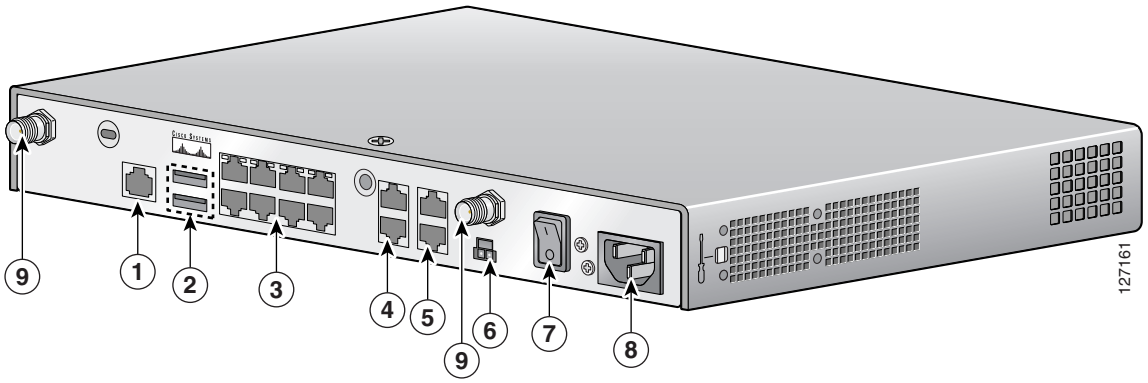
Figure 1-11 shows the front panel of a Cisco 1812 router. Figure 1-12 shows the back panel of a Cisco 1812 router.

Figure 1-11 Front Panel of Cisco 1812 Router



1	CompactFlash Slot

Figure 1-12 Back Panel of Cisco 1812 Router



1	ISDN BRI S/T port	**6**	POE connector[1]
2	USB 2.0 ports	**7**	Power switch
3	Managed 8-port FE switch	**8**	Power connector
4	FE WAN ports	**9**	RP-TNC antenna connectors (wireless models only)
5	Console and AUX ports		

1. Inline power is a field-upgradable option only. It is not installed by default.

Interface Numbering

The WAN and LAN interfaces on a Cisco 1800 series fixed-configuration router are numbered as follows:

- On the Cisco 1811 and Cisco 1812 routers, the Fast Ethernet 10/100 WAN ports are numbered FE 0 and FE 1; the lower of the two ports is FE 0.
- On the Cisco 1801, Cisco 1802, and Cisco 1803 routers, the Fast Ethernet 10/100 WAN port is numbered FE 0.
- On the Cisco 1811 and Cisco 1812 routers, the Fast Ethernet LAN switch ports are numbered FE 2 through FE 9. The FE 2 port is the lower port, farthest on the right (as viewed from the rear of the router), and switch ports are numbered incrementally, FE 2 through FE 5, to the left along the bottom row, and then incrementally, FE 6 through FE 9, to the left along the top row.

- On the Cisco 1801, Cisco 1802, and Cisco 1803 routers, the Fast Ethernet LAN switch ports are numbered FE 1 through FE 8. The FE 1 port is the lower port, farthest on the right (as viewed from the rear of the router), and switch ports are numbered incrementally, FE 1 through FE 4, to the left along the bottom row, and then incrementally, FE 5 through FE 8, to the left along the top row.
- The ADSL over POTS, ADSL over ISDN, G.SHDSL, ISDN S/T, and V.92 modem WAN ports are all numbered port 0 of their various type.
- On the Cisco 1811 and Cisco 1812 routers, the USB 2.0 ports are numbers usb 0 and usb 1. The usb 0 port is the lower of the two ports and usb 1 is the upper port.

Specifications

Table 1-5 provides the specifications for Cisco 1800 series fixed-configuration routers.

Table 1-5 Specifications for Cisco 1800 Series Fixed-Configuration Routers

Description	Specification
Dimensions (W x D)	12.5 x 9.5 in. (31.75 x 24.13 cm) Height without rubber feet: 1.73 in. (4.39 cm) Height with rubber feet: 1.87 in. (4.75 cm)
Weight	Maximum: 6.1 lb (2.8 kg)
AC input power	74 W maximum
Input voltage	100 to 240 VAC
Frequency	50 or 60 Hz
Input current	1.2 to 0.6 A
Inrush surge current	50 A maximum, one cycle (–48V power included)
Power dissipation (maximum)	153 BTU/hr
Console and auxiliary ports	RJ-45 connector
Operating humidity	10 to 85% noncondensing operating; 5 to 95% noncondensing, nonoperating
Operating temperature	32 to 104° F (0 to 40° C)
Nonoperating temperature	–4 to 149° F (–20 to 65° C)
Noise level	<78° F/25.6°C: 34 dBA >78°F/25.6°C through <104°F/40°C: 37 dBA >104°F/40°C: 42 dBA
Safety compliance	UL 60950; CAN/CSA C22.2 No. 60950; IEC 60950-1; EN 60950-1; AS/NZS 60950 For detailed compliance information, see the *Regulatory Compliance and Safety Information for Cisco 1800 Integrated Services Routers (Fixed)* document.

Table 1-5 Specifications for Cisco 1800 Series Fixed-Configuration Routers (continued)

Description	Specification
EMC Immunity compliance	EN300386; EN55024(CISPR24); EN61000-4-2; EN61000-4-3; EN61000-4-4; EN61000-4-5; EN61000-4-6; EN61000-4-8; EN61000-4-11; EN55082-1; EN61000-6-2; ITU-T K.21 For detailed compliance information, see the *Regulatory Compliance and Safety Information for Cisco 1800 Integrated Services Routers (Fixed)* document.
EMC Emissions compliance	CFR 47 Part 15, Class A; ICES-003 Class A; EN55022 Class A; CISPR22 Class A; AS/NZS 3548 Class A; VCCI Class A; EN 300386; EN61000-3-2; EN61000-3-3 For detailed compliance information, see the *Regulatory Compliance and Safety Information for Cisco 1800 Integrated Services Routers (Fixed)* document.

Regulatory Compliance

For compliance information, see the *Regulatory Compliance and Safety Information for Cisco 1800 Integrated Services Routers (Fixed)* document that accompanied the router shipment.