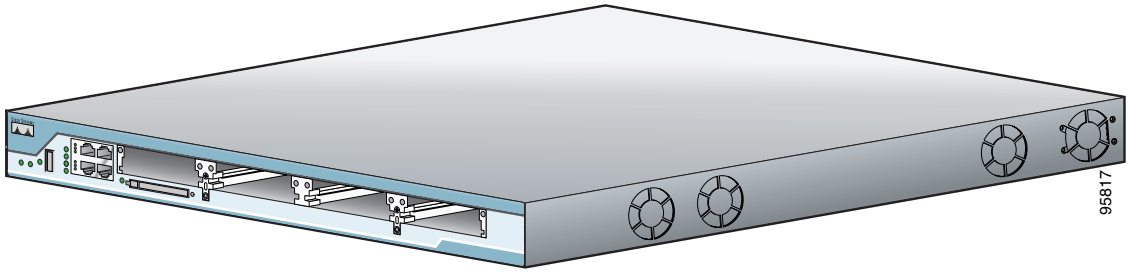
Overview of Cisco 2800 Series Routers

The Cisco 2800 series of integrated services routers offers secure, wire-speed delivery of concurrent data, voice, and video services. The modular design of the Cisco 2800 series routers provides maximum flexibility, allowing you to configure your router to meet evolving needs. The Cisco 2800 series routers incorporate data, security, and voice services in a single system for fast, scalable delivery of crucial business applications. The routers offer features such as hardware-based VPN encryption acceleration, intrusion-protection and firewall functions, and optional integrated call processing and voice mail. The routers offer a wide variety of network modules and interfaces, voice digital signal processor (DSP) slots, high-density interfaces for a wide range of connectivity requirements, and sufficient performance and slot density for future network expansion requirements and advanced applications.

The Cisco 2800 series consists of four versions. The Cisco 2801 routers and Cisco 2811 routers are one rack unit in height and have two 10/100 LAN ports. The more powerful Cisco 2821 routers and Cisco 2851 routers are two rack units in height and have two 10/100/1000 LAN ports. The higher-end router platforms of the Cisco 2800 series offer increased performance, increased slot density including network module slots ad extension voice module slots and increased inline power output.

Figure 1, Figure 2, and Figure 3 show front views of the Cisco 2800 series routers.

Figure 1 Front View of a Cisco 2801 Router



Corporate Headquarters:
Cisco Systems, Inc., 170 West Tasman Drive, San Jose, CA 95134-1706 USA

Figure 2 Front View of a Cisco 2811 Router

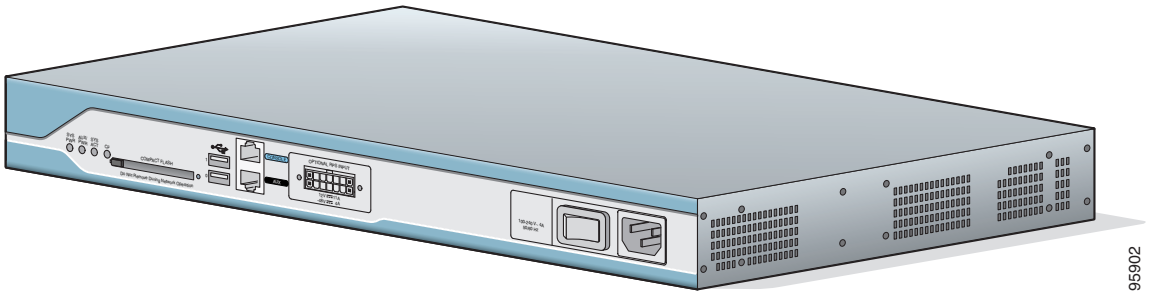
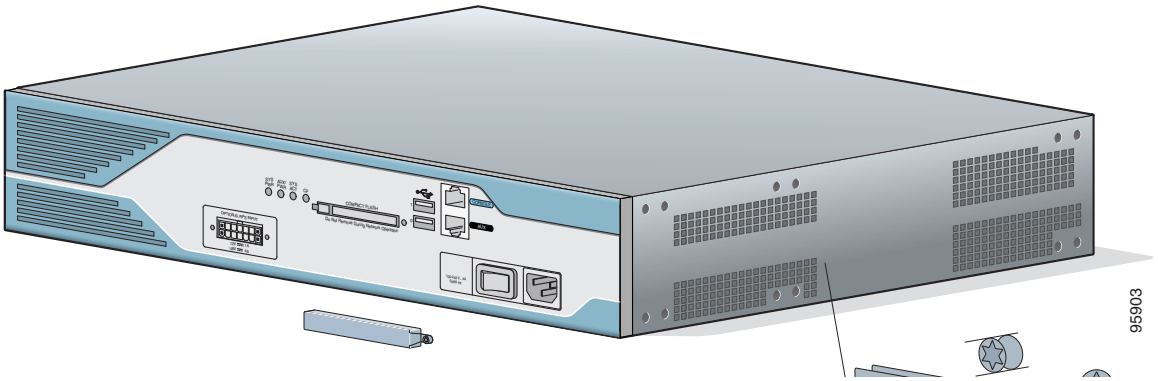


Figure 3 Front View of a Cisco 2821 or Cisco 2851 Router



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

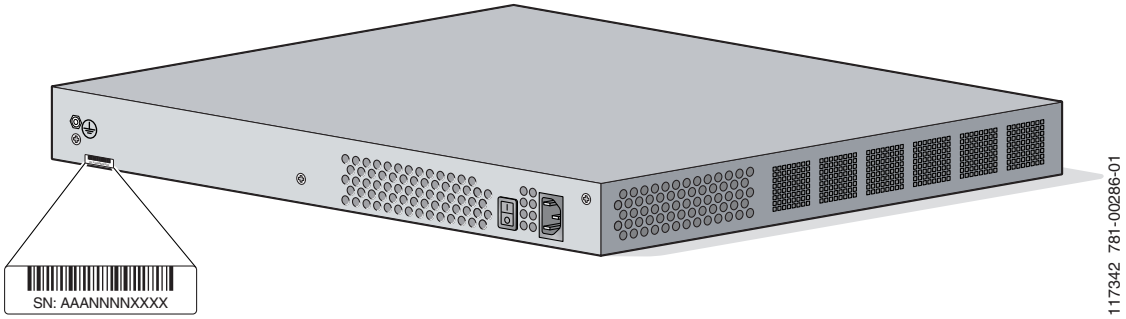
Hardware Features

This section describes the basic features of Cisco 2800 series routers, including product identification, built-in interfaces, modules, memory, LED indicators, chassis ventilation, and the internal clock.

Product Serial Number Location

The serial number label for Cisco 2801 routers is located on the rear of the chassis, along the bottom edge near the lower left corner. (See Figure 4.)

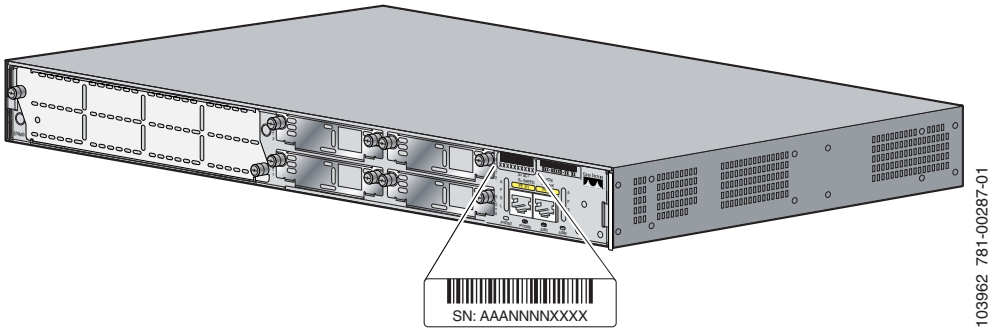
Figure 4 Serial Number Location on the Cisco 2801 Router



Note The serial number for Cisco 2801 routers is 11 characters long.

The serial number label for Cisco 2811 routers is located on the rear of the chassis, near the top right corner, to the left of the CLEI label. (See Figure 5.)

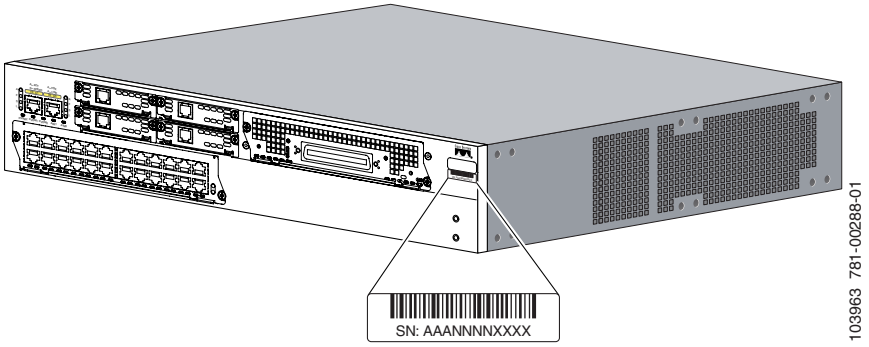
Figure 5 Serial Number Location on the Cisco 2811 Router



Note The serial number for Cisco 2811 routers is 11 characters long.

The serial number label for Cisco 2821 and Cisco 2851 routers is located on the rear of the chassis, near the top right corner, below the CLEI label. (See Figure 6.)

Figure 6 Serial Number Location on the Cisco 2821 and Cisco 2851 Routers



Note The serial number for Cisco 2821 and Cisco 2851 routers is 11 characters long.

Cisco Product Identification Tool

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

- A search option that allows browsing for models using a tree-structured product hierarchy
- A search field on the final results page making 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

Built-in Interfaces

Table 1 summarizes the interface ports built into the chassis.

Table 1 Summary of Cisco 2800 Series Built-In Interfaces

Model	100BASE-T Fast Ethernet (FE) Ports (RJ-45)	1000BASE-T Gigabit Ethernet (GE) Ports (RJ-45)	Universal Serial Bus (USB) Ports	Console Port (RJ-45)	Auxiliary Port (RJ-45)
Cisco 2801	2	—	1	1	1
Cisco 2811	2	—	2	1	1
Cisco 2821	—	2	2	1	1
Cisco 2851	—	2	2	1	1

Removable and Interchangeable Modules

Table 2 summarizes the optional modules that can be installed in the router to provide specific capabilities. The network modules, extension voice modules, and interface cards fit into slots, located on the front of the chassis on the Cisco 2801 router, and on the rear of the chassis on the Cisco 2811, Cisco 2821, and Cisco 2851 routers; they can be removed and installed without opening the chassis. Advanced integration modules (AIMs), expansion DRAM memory modules (DIMMs), and packet voice data modules (PVDMs) plug into connectors inside the chassis; they can be removed and installed only by opening the chassis.

Table 2 Summary of Cisco 2800 Series Removable and Interchangeable Modules

Router Model	External Modules (In chassis slots)			Internal Modules	
	Network Modules	High-Speed WAN Interface Cards (HWICs)	Extension Voice Modules (EVMs)	Advanced Integration Modules (AIMs)	Packet Voice Data Modules (PVDMs)[1]
Cisco 2801	—	2 single-wide (HWIC) or 2 double-wide (HWIC-D) 1 WIC/VWIC/VIC slot 1 VWIC/VIC (voice-only)	—	2	2
Cisco 2811	1 network module (NM) or 1 network module enhanced (NME)	4 single-wide (HWIC) or 2 double-wide (HWIC-D)	—	2	2
Cisco 2821	1 network module (NM) or 1 network module enhanced (NME) or 1 network module enhanced extended (NME-X)	4 single-wide (HWIC) or 2 double-wide (HWIC-D)	1	2	3
Cisco 2851	1 network module (NM) or 1 network module enhanced (NME) or 1 network module enhanced extended (NME-X) or 1 network module double-wide (NMD) or 1 network module enhanced extended double-wide (NME-XD)	4 single-wide (HWIC) or 2 double-wide (HWIC-D)	1	2	3

1. Cisco 2800 series routers use PVDM II modules that are not compatible with Cisco 2600 series routers.

Memory

Cisco 2800 series 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.
- Boot/NVRAM—Internal flash memory. Stores the bootstrap program (ROM monitor), the configuration register, and the startup configuration.
- Flash memory—External flash memory. Stores the operating system software image.

Table 3 summarizes the memory options for Cisco 2800 series routers. The default memory numbers for RAM represent the minimum usable memory. You can install additional RAM in multiples of the default amount, up to the maximum amount.

Table 3 Router Memory Specifications

Router Platform	DRAM	Boot/NVRAM	Flash Memory
Cisco 2801	Type—SDRAM DIMM DIMM sizes—64 MB, 128 MB, 256 MB DIMM expansion slots—1[1] Default onboard memory—128 MB Maximum memory—384 MB	Internal 4-MB flash memory	External CompactFlash memory cards of the following optional sizes: • 64 MB (default) • 128 MB
Cisco 2811	Type—ECC DDR (error-correcting code, double data rate) SDRAM DIMM DIMM sizes—256 MB, 512 MB DIMM slots—2 Default onboard memory— none Default memory—256 MB Maximum memory—768 MB[2]	Internal 2-MB flash memory	External CompactFlash memory cards of the following optional sizes: • 64 MB (default) • 128 MB • 256 MB
Cisco 2821 Cisco 2851	Type—ECC DDR (error-correcting code, double data rate) DRAM DIMM DIMM sizes—256 MB, 512 MB DIMM slots—2 Default onboard memory— none Default memory—256 MB Maximum memory—1024 MB[3]		

1. Cisco 2801 routers have 128 MB of SDRAM soldered onto the system board. You can install a DIMM into the expansion slot to increase memory to the maximum of 384 MB.
2. Cisco 2811 routers can accept one 256 MB and one 512 MB DIMM to provide 768 MB of usable memory.
3. Cisco 2851 routers can accept two 512 MB DIMMs to provide 1024 MB of usable memory.

Power

Table 4 summarizes the power options for Cisco 2800 series routers. Cisco 2801 routers are equipped for operation using AC power only. Cisco 2811, Cisco 2821, and Cisco 2851 routers can be equipped for operation using either AC or DC input power by installation of the appropriate chassis power supply. IP phone power is supported if the appropriate AC-input chassis power supply is installed.

Table 4 Summary of Cisco 2800 Series Power Options

Router Model	Power Option	Input	IP Phone Power Output
Cisco 2801	AC input without IP phone power output	100 - 240 VAC, 2 A	None
	AC input with IP phone power output	100 - 240 VAC, 5 A	–48 VDC, 120 W
Cisco 2811	AC input without IP phone power output	100 - 240 VAC, 2 A	None
	AC input with IP phone power output	100 - 240 VAC, 4 A	–48 VDC, 160 W
	DC input without IP phone power output	24 - 60 VDC, 8 A	None
Cisco 2821	AC input without IP phone power output	100 - 240 VAC, 3 A	None
	AC input with IP phone power output	100 - 240 VAC, 8 A	–48 VDC, 240 W
	DC input without IP phone power output	24 - 60 VDC, 12 A	None
Cisco 2851	AC input without IP phone power output	100 - 240 VAC, 3 A	None
	AC input with IP phone power output	100 - 240 VAC, 8 A	–48 VDC, 360 W
	DC input without IP phone power output	24 - 60 VDC, 12 A	None
Cisco 2811, Cisco 2821, and Cisco 2851	Backup power for AC- or DC-powered routers: Cisco Redundant Power System (RPS-675)	100 VAC, 10 A, or 240 VAC, 6 A	The Cisco RPS provides IP phone power only if the chassis power supply supports IP phone power. With Cisco 2811: –48 VDC, 160 W With Cisco 2821: –48 VDC, 240 W With Cisco 2851: –48 VDC, 360 W

LED Indicators

Table 5 and Table 6 summarize the LED indicators that are located in the router bezel or chassis, but not in removable modules or interface cards.

To see descriptions of LEDs in removable modules and interface cards, refer to the applicable documentation for those products: the *Cisco Network Modules Hardware Installation Guide* or the *Cisco Interface Cards Installation Guide*.

For LED troubleshooting information, including possible trouble causes and corrective actions, see Table 1 in the "Troubleshooting Cisco 2800 Series Routers" document.

Table 5 Summary of Cisco 2801 Series LED Indicators

LED	Color	Description	Location
SYS PWR	Green	Router has successfully booted up and the software is functional. This LED blinks while booting or in the ROM monitor.	Front
SYS ACT	Green	Blinking when any packets are transmitted or received on any WAN or LAN or system is monitoring internal activities.	Front
CF	Green	On when flash memory is busy. Do not remove the CompactFlash memory card when this light is on.	Front
AUX/PWR	Green/ Amber	Indicates that the inline power supply is present (LED is on). When the inline power supply is not installed, the LED is off. If the power supply is working properly, the LED is green. If the power supply is not working properly, the LED is amber, indicating an inline power failure.	Front
FE 0 Link	Green	On when the router is correctly connected to a local Ethernet LAN through Ethernet port 0.	Front
FE 0 100	Green	On indicates a 100-Mbps link. Off indicates a 10-Mbps link.	Front
FE 0 FDX	Green	On indicates full-duplex operation. Off indicates half-duplex operation.	Front
FE 1 Link	Green	On when the router is correctly connected to a local Ethernet LAN through Ethernet port 1.	Front
FE 1 100	Green	On indicates a 100-Mbps link. Off indicates a 10-Mbps link.	Front
FE 1 FDX	Green	On indicates full-duplex operation. Off indicates half-duplex operation.	Front
AIM 0	Green	On indicates presence of an advanced integration module (AIM) in AIM slot 0.	Front
AIM 1	Green	On indicates presence of an AIM in AIM slot 1.	Front
PVDM 0	Green	On indicates presence of a packet voice data module (PVDM) in PVDM slot 0.	Front
PVDM 1	Green	On indicates presence of a PVDM in PVDM slot 1.	Front

Table 6 Summary of Cisco 2811, Cisco 2821, and Cisco 2851 Series LED Indicators

LED Location	LED Label	LED Color or State	Meaning
Front of chassis	SYS PWR	Solid green	System is operating normally
		Blinking green	System is booting or is in ROM monitor mode
		Amber	System error
		Off	Power is off or system board is faulty
	AUX/ PWR	Green	IP phone power operating normally (if installed), or Cisco Redundant Power System (RPS) operating normally (if installed)
		Amber	IP phone power fault (if installed), or Cisco Redundant Power System (RPS) fault (if installed)
		Off	IP phone power and Cisco RPS are not installed
	SYS ACT	Blinking green or solid green	Packet transfers are occurring
		Off	No packet transfers are occurring
	CF	Green	Flash memory is being accessed; do not eject the CompactFlash memory card
		Off	Flash memory is not being accessed; okay to eject the CompactFlash memory card
Rear of chassis	A (=ACT)	Blinking green or solid green	Packet activity in FE or GE port
		Off	No packet activity in FE or GE port
	F (=FDX)	Green	FE or GE port is operating in full-duplex mode
		Off	FE or GE port is operating in half-duplex mode
	S (= Speed)[1]	1 blink + pause	FE or GE port operating at 10 Mbps
		2 blinks + pause	FE or GE port operating at 100 Mbps
		3 blinks + pause	GE port operating at 1000 Mbps (Cisco 2821 and Cisco 2851 only)
	L (= Link)	Green	FE or GE link is established
		Off	No FE or GE link is established
	PVDM0 PVDM1 PVDM2[2]	Green	PVDM in slot (0, 1, or 2) is initialized
		Amber	PVDM in slot (0, 1, or 2) is detected but not initialized
		Off	No PVDM installed in slot (0, 1, or 2)
	AIM0 AIM1	Green	AIM in slot (0 or 1) is initialized
		Amber	AIM in slot (0 or 1) has initialization error
		Off	No AIM installed in slot (0 or 1)

1. The Ethernet S (Speed) LED blinks only when the L (Link) LED is on.
2. The PVDM2 LED is applicable only to the Cisco 2821 and Cisco 2851 routers.

Chassis Ventilation

Internal multispeed fans provide chassis cooling, controlled by an onboard temperature sensor.

The Cisco 2801 router has two fans. The Cisco 2801 router with inline power includes two additional fans integrated with the inline power supply, for a total of four fans. The Cisco 2801 internal fans operate at three different speeds, running at the slower speeds to conserve power and reduce fan noise at ambient temperatures below 40°C. They operate at the highest speed in ambient temperatures above 40°C.

The Cisco 2811 router has three fans that operate at a slower speed to conserve power and reduce fan noise at ambient temperatures below 32°C. They operate at high speed in ambient temperatures above 32°C.

The Cisco 2821 and Cisco 2851 routers have three fans that operate at a slower speed to conserve power and reduce fan noise at ambient temperatures below 40°C. They operate at high speed in ambient temperatures above 40°C.

Caution Ensure the device is not installed in close proximity to other devices which could lead to excessive pre-heating of air at the air intake of the router.

Caution Your chassis installation must allow unrestricted airflow for chassis cooling.

Cisco 2800 Series Router Installation and Preventive Maintenance

Periodic inspection and cleaning of the external surface of the router is recommended to minimize the negative impact of environmental dust or debris on the router performance. The frequency of inspection and cleaning is dependent upon the severity of the environmental conditions. Cleaning involves vacuuming of router air intake and exhaust vents.

Caution Fans are dynamic Electro-Mechanical devices. As such, fans can fail for various electronic reasons, and will eventually fail due to mechanical wear-out. Sites with ambient temperatures consistently above 25 degree C and with potentially high levels of dust or debris may require fan servicing.

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. In the Cisco 2811, Cisco 2821, and Cisco 2851 routers, the clock and battery are permanently installed; the battery lasts the life of the router under the operating environmental conditions specified for the router. The Cisco 2801 router has a socketed lithium battery. This battery lasts the life of the router under the operating environmental conditions specified for the router, and is not field-replaceable.

Note If the lithium battery in a Cisco 2801 router should fail, 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

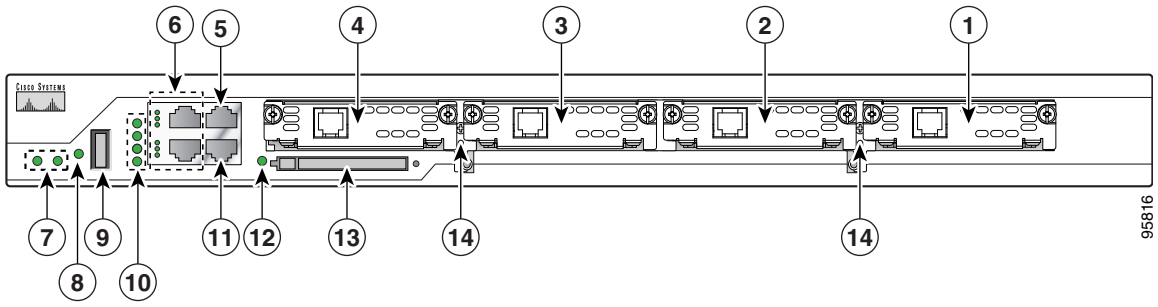
Chassis Views

This section contains views of the front and rear panels of the Cisco 2800 series routers, showing locations of the power and signal interfaces, module slots, status indicators, and chassis identification labels.

Cisco 2801 Chassis

Figure 7 shows the front panel of a Cisco 2801 router. Figure 8 shows the back panel.

Figure 7 Front Panel of the Cisco 2801 Router

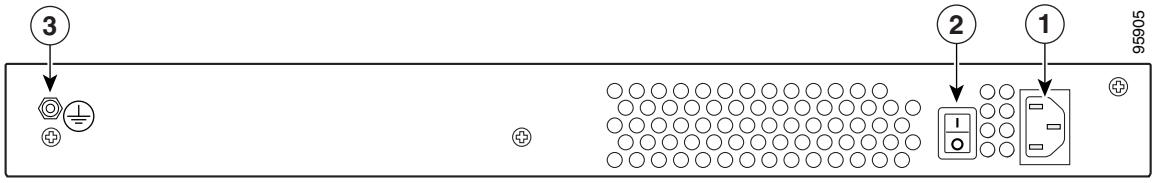


1	Slot 0 (VIC or VWIC, for voice only)	**8**	Auxiliary Power (AUX/PWR) LED
2	Slot 1 (WIC, VIC, VWIC, or HWIC)	**9**	Universal serial bus (USB) port
3	Slot 2 (WIC, VIC, or VWIC)	**10**	AIM/PVDM LEDs
4	Slot 3 (WIC, VIC, VWIC, or HWIC)	**11**	Auxiliary port
5	Console port	**12**	Compact flash (CF) LED
6	Fast Ethernet ports and LEDs	**13**	External CompactFlash memory card slot
7	System LEDs	**14**	Removable center card guides to allow double-wide HWIC-D installation

Double-wide HWICs can go into slots 0 and 1, and into slots 2 and 3.

Note Slot 0 does not support PRI on T1/E1 VWICs, only channel-associated signaling (CAS) digital voice.

Figure 8 Back Panel of the Cisco 2801 Router

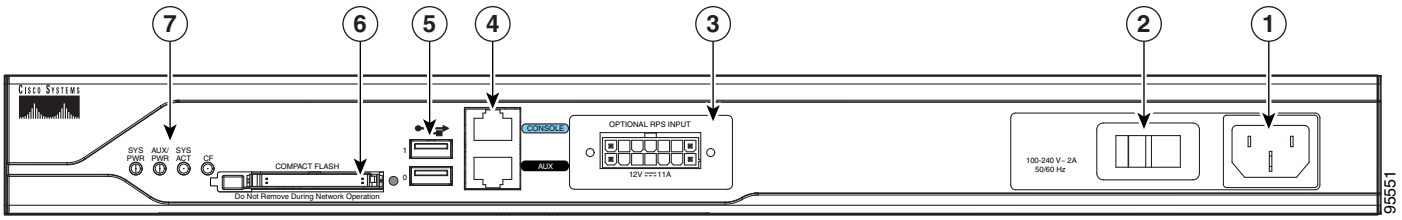


1	Input power connector	**3**	Chassis ground connection
2	On/Off switch		

Cisco 2811 Chassis

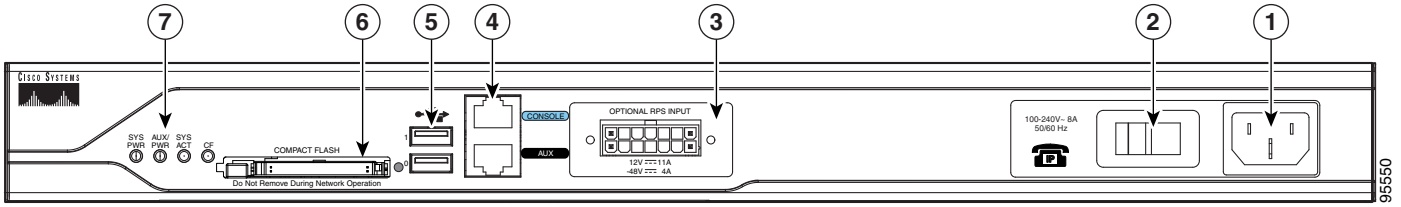
Figure 9, Figure 10, and Figure 11 show the front panel of a Cisco 2811 router. Figure 12 shows the rear panel of a Cisco 2811 router.

Figure 9 Front Panel of Cisco 2811 Router with AC Input Power and Without IP Phone Power Output



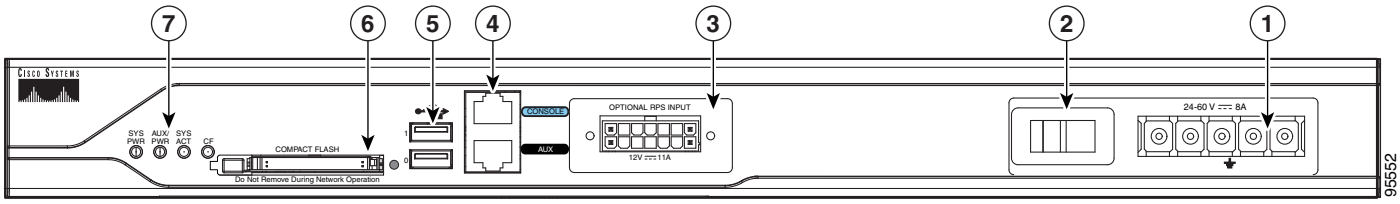
1	Input power connection	**5**	Universal serial bus (USB) ports
2	On/Off switch	**6**	External CompactFlash memory card slot
3	Cisco redundant power supply connector (covered if not used)	**7**	LED indicators
4	Console and auxiliary ports		

Figure 10 Front Panel of Cisco 2811 Router with AC Input Power and with IP Phone Power Output



1	Input power connection	**5**	Universal serial bus (USB) ports
2	On/Off switch	**6**	External CompactFlash memory card slot
3	Cisco redundant power supply connector (covered if not used)	**7**	LED indicators
4	Console and auxiliary ports		

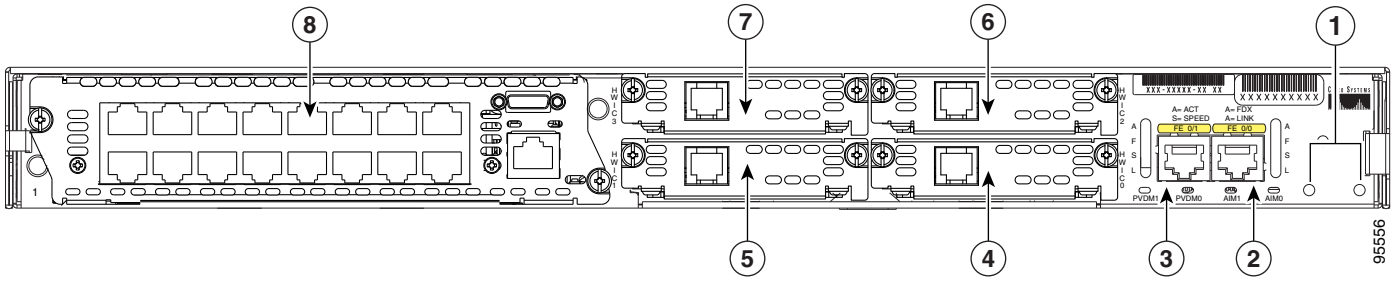
Figure 11 Front Panel of Cisco 2811 Router with DC Input Power



1	Input power connection	**5**	Universal serial bus (USB) ports
2	On/Stand-by switch[1]	**6**	External CompactFlash memory card slot
3	Cisco redundant power supply connector (covered if not used)	**7**	LED indicators
4	Console and auxiliary ports		

1. This switch does not turn off the power supply completely, but rather puts it in stand-by mode.

Figure 12 Rear Panel of Cisco 2811 Router



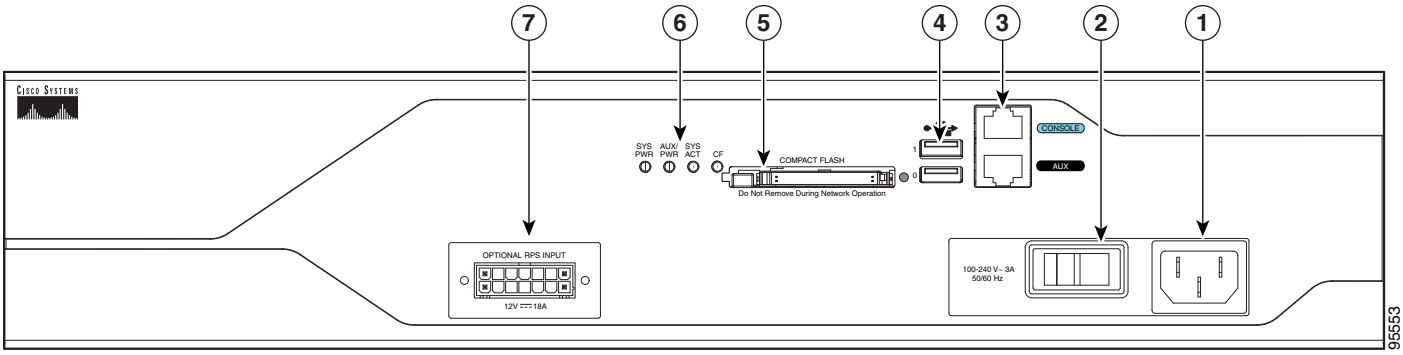
1	Screw holes for ground lug	**5**	High-speed WAN interface card slot 1
2	Fast Ethernet port 0/0	**6**	High-speed WAN interface card slot 2
3	Fast Ethernet port 0/1	**7**	High-speed WAN interface card slot 3
4	High-speed WAN interface card slot 0	**8**	Network module enhanced (NME) slot[1]

1. The network module slot is compatible with Cisco network modules of type NM (network module) and NME (network module enhanced).

Cisco 2821 and Cisco 2851 Chassis

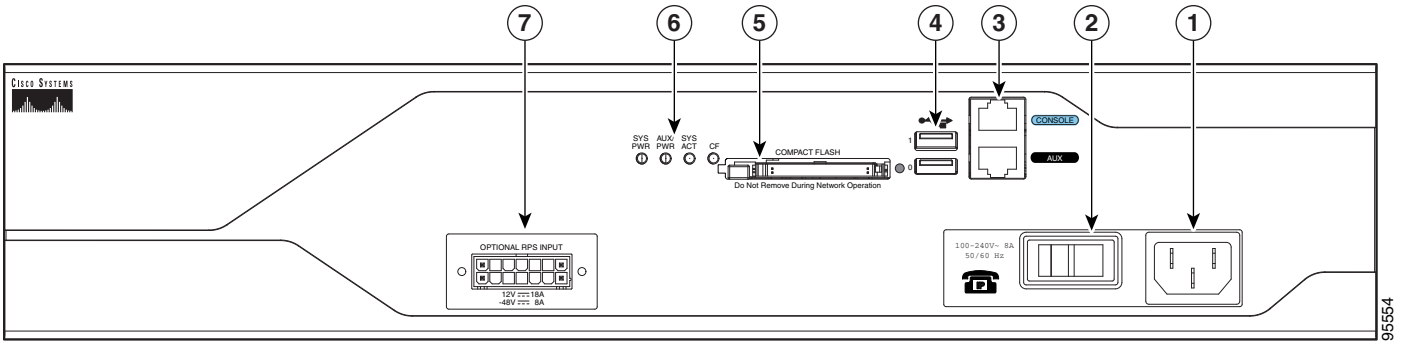
Figure 13, Figure 14, and Figure 15 show the front panel of Cisco 2821 and Cisco 2851 routers. Figure 16 shows the rear panel of a Cisco 2821 router. Figure 17 shows the rear panel of a Cisco 2851 router.

Figure 13 Front Panel of Cisco 2821 and Cisco 2851 Routers with AC Input Power and Without IP Phone Power Output



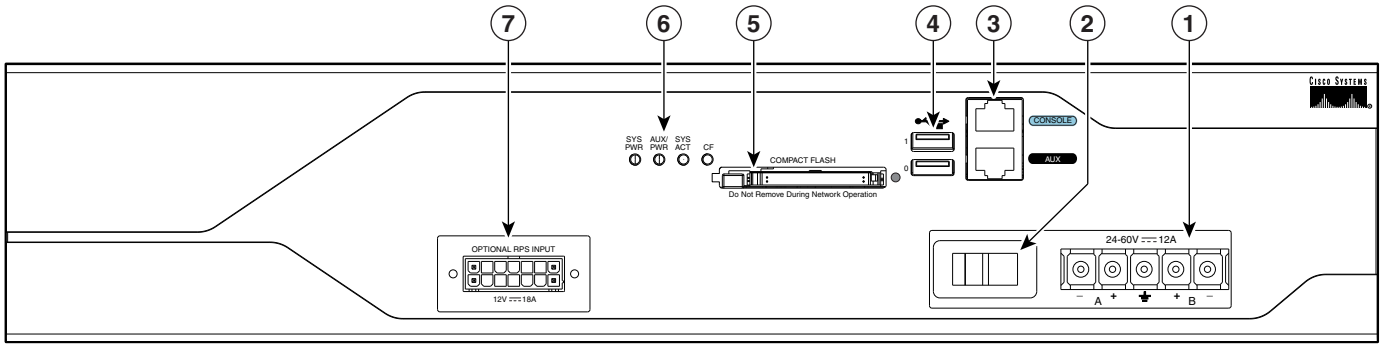
1	Input power connection	**5**	External CompactFlash memory card slot
2	On/Off switch	**6**	LED indicators
3	Console and auxiliary ports	**7**	Cisco redundant power supply connector (covered if not used)
4	Universal serial bus (USB) ports		

Figure 14 Front Panel of Cisco 2821 and Cisco 2851 Routers with AC Input Power and IP Phone Power Output



1	Input power connection	**5**	External CompactFlash memory card slot
2	On/Off switch	**6**	LED indicators
3	Console and auxiliary ports	**7**	Cisco redundant power supply connector (covered if not used)
4	Universal serial bus (USB) ports		

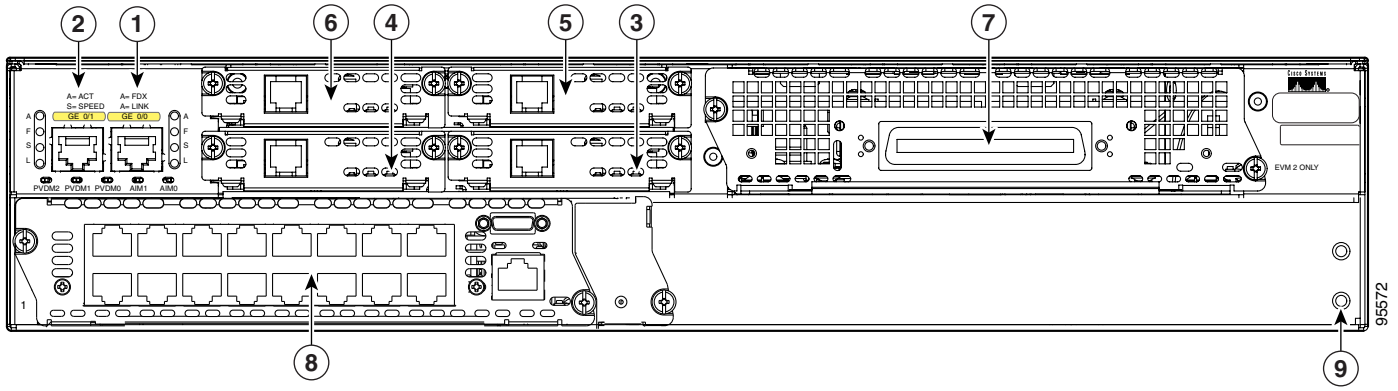
Figure 15 Front Panel of Cisco 2821 and Cisco 2851 Routers with DC Input Power



1	Input power connection	**5**	External CompactFlash memory card slot
2	On/Standby switch[1]	**6**	LED indicators
3	Console and auxiliary ports	**7**	Cisco redundant power supply connector (covered if not used)
4	Universal serial bus (USB) ports		

1. This switch does not turn off the power supply completely, but rather puts it in standby mode.

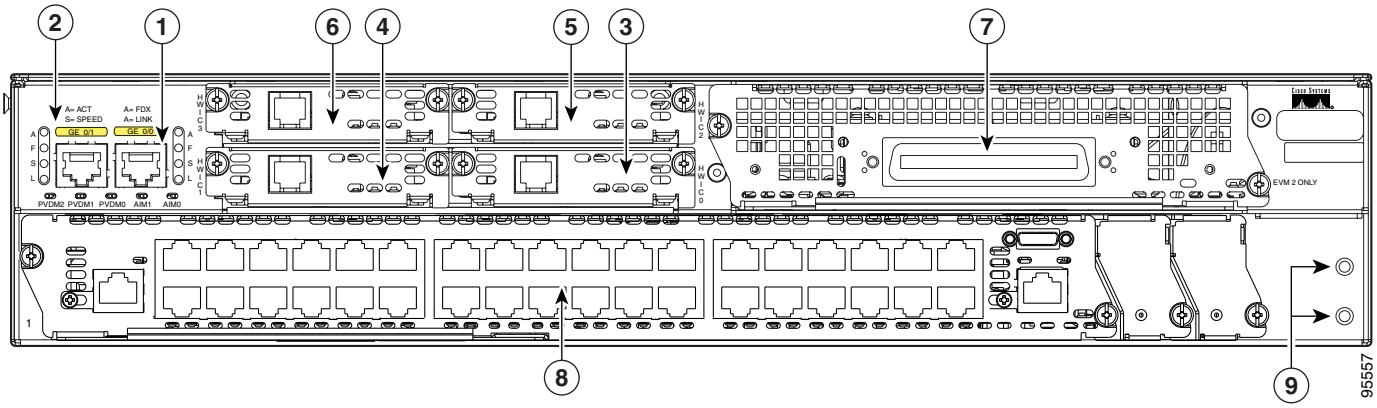
Figure 16 Rear Panel of the Cisco 2821 Router



1	Gigabit Ethernet port 0/0	**6**	High-speed WAN interface card slot 3
2	Gigabit Ethernet port 0/1	**7**	Extension voice module (EVM) slot
3	High-speed WAN interface card slot 0	**8**	Network module enhanced (NME) slot[1]
4	High-speed WAN interface card slot 1	**9**	Screw holes for ground lug
5	High-speed WAN interface card slot 2		

1. The network module slot is compatible with Cisco network modules of type NM (network module), NME (network module enhanced), and NME-X (enhanced extended).

Figure 17 Rear Panel of the Cisco 2851 Router



1	Gigabit Ethernet port 0/0	**6**	High-speed WAN interface card slot 3
2	Gigabit Ethernet port 0/1	**7**	Extension voice module (EVM) slot
3	High-speed WAN interface card slot 0	**8**	Network module enhanced (NME) slot[1]
4	High-speed WAN interface card slot 1	**9**	Screw holes for ground lug
5	High-speed WAN interface card slot 2		

1. The network module slot is compatible with Cisco network modules of type NM (network module), NME (network module enhanced), NME-X (enhanced extended), NMD (double-wide), and NME-XD (enhanced extended double-wide).

Interface Numbering

Table 7 summarizes the interface numbering on a Cisco 2801 series router. Table 8 summarizes the interface numbering on Cisco 2811, Cisco 2821, and Cisco 2851 series routers.

Note The interface numbering on Cisco 2800 series routers is different from the numbering on Cisco 2600 series routers.

Note On the Cisco 2801 router, the numbering format for slots is *interface type 0/slot/port*. “0” indicates slots that are built into the chassis of a router. On the Cisco 2801 router, all slots begin with “0,” because all slots are built into the chassis. Note that this is different from the Cisco 2811, Cisco 2821, and Cisco 2851 routers. On these routers, some slots are built into the chassis and have slot numbers that begin with “0”. However, it is possible to have other slots that are part of a network module or an extension voice module. Those slots have slot numbers that begin with “1” or “2,” respectively.

Table 7 Interface Numbering on Cisco 2801 Series Routers

Slot Number	Slot Type	Interface Numbering Range
Onboard ports	Fast Ethernet	0/0 and 0/1
0	VIC / VWIC (voice only)	0/0/0 to 0/0/3
1	HWIC / WIC / VIC / VWIC[1]	0/1/0 to 0/1/3 (single-wide HWIC) 0/1/0 to 0/1/7 (double-wide HWIC)
2	WIC / VIC / VWIC[1]	0/2/0 to 0/2/3
3	HWIC / WIC / VIC / VWIC[1]	0/3/0 to 0/3/3 (single-wide HWIC) 0/3/0 to 0/3/7 (double-wide HWIC)

1. A VWIC in slots 1, 2, and 3 can operate in both data and voice mode; in slot 0, a VWIC can operate only in voice mode.

Note On the Cisco 2801 router, the numbering format for configuring an asynchronous interface is 0/*slot*/*port*. To configure the line associated with an asynchronous interface, simply use the interface number to specify the async line. For example, line 0/1/0 specifies the line associated with interface serial 0/1/0 on a WIC-2A/S in slot 1. Similarly, line 0/2/1 specifies the line associated with interface async 0/2/1 on a WIC-2AM in slot 2.

Table 8 Interface Numbering on Cisco 2811, Cisco 2821, and Cisco 2851 Integrated Services Routers

Port Location	Interface Numbering Scheme	Examples[1, 2]
Built into the chassis front panel	*Interface-type port*	usb 0 usb 1
Built into the chassis rear panel	*Interface-type* **0** / *port*	interface fa 0/x interface gi 0/x
In an interface card (HWIC, HWIC-D, WIC, VWIC, VIC) plugged directly into an HWIC slot in a chassis	*Interface-type* **0** / *interface-card-slot*[3] / *port* **Note** Interface card slots built into the chassis are labeled HWIC *slot-number* on Cisco 2800 series routers.	interface serial 0/x/y interface async 0/x/y line 0/x/y[4] interface fa 0/x/y voice-port 0/x/y
In an interface card (WIC, VWIC, VIC) plugged into a slot in a network module	*Interface-type* **1**[5] / *interface-card-slot* / *port*	controller t1 1/x/y voice-port 1/x/y interface serial 1/x/y interface async 1/x/y line 1/x/y[4]
Built into a network module (NME, NME-X, NMD, NME-XD)	*Interface-type* **1**[5] / *port*	interface gi 1/x interface serial 1/x interface async 1/x line 1/x[4]
FXS or FXO port in an extension voice module (EVM)	*Interface-type* **2**[6] / **0**[7] / *port* FXS/DID port numbers 0 to 7 are built into the EVM. FXS/FXO port numbers 8 to 15 are in expansion module 0. FXS/FXO port numbers 16 to 23 are in expansion module 1.	voice-port 2/0/x

Table 8 Interface Numbering on Cisco 2811, Cisco 2821, and Cisco 2851 Integrated Services Routers (continued)

Port Location	Interface Numbering Scheme	Examples[1, 2]
Voice port in a BRI expansion module (internal slot) in an extension voice module (EVM)	*Interface-type* **2**[6] / **0**[7] / *port* Port numbers are 8 to 11 in expansion module 0. Port numbers are 16 to 19 in expansion module 1.	voice-port 2/0/x
BRI interface in a BRI expansion module (internal slot) in an extension voice module (EVM)	*Interface-type* **2**[6] / *port* Port numbers are 0 to 3 if one expansion module is installed. Port numbers are 0 to 7 if two expansion modules are installed.	interface bri 2/x

1. Interface abbreviations: fa = Fast Ethernet; gi = Gigabit Ethernet; usb = universal serial bus; bri = ISDN basic rate interface.
2. The interfaces listed are examples only; other possible interface types are not listed.
3. Interface card slot numbers for double-width (HWIC-D) slots are 1 and 3 only.
4. Specify the line number in the Cisco IOS CLI by using the interface number for the associated asynchronous serial interface.
5. "**1**" is the network module slot number in all Cisco 2800 series routers.
6. "**2**" is the EVM slot number in Cisco 2821 and Cisco 2851 routers.
7. "0" is required by the CLI syntax for voice ports in an EVM; it indicates no interface card slots in EVMs.

Note On the Cisco 2811, Cisco 2821, and Cisco 2851 routers, the interface numbering scheme is the same for asynchronous interfaces as other types of interfaces. To configure the line associated with an async interface, simply use the interface number to specify the async line. For example, line 0/3/0 specifies the line associated with interface serial 0/3/0 on a WIC-2A/S in slot 3. Similarly, line 1/22 specifies the line associated with interface async 1/22 on a NM-32A in network module slot 1.

Specifications

Table 9, Table 10, Table 11, and Table 12 list Cisco 2800 series specifications.

Table 9 Cisco 2801 Router Specifications

Description	Specification
Dimensions (H x W x D)	1.72 x 17.49 x 16.5 in. (4.4 x 44.4 x 41.9 cm).
Weight	10.9 lb (4.9 kg) with standard power supply if fully populated with modules 13.71 lb (6.2 kg) with inline power supply if fully populated with modules
AC input power • Input voltage • Frequency • Input current • Inrush surge current	 100 to 240 VAC, autoranging 47 to 63 Hz 2 A (5 A for IP phone support) 50 A maximum, one cycle (–48V power included)
Power consumption	105 W with standard power supply (maximum) 130 W with inline power supply and 12 IP phones (maximum)
Console and auxiliary ports	RJ-45 connector

Table 9 Cisco 2801 Router Specifications (continued)

Description	Specification
Operating humidity	5 to 95%, noncondensing
Operating temperature	32 to 104° F (0 to 40° C)
Nonoperating temperature	–4 to 149° F (–20 to 65° C)
Noise level, standard power supply	39 dBA for local temperatures < 90° F (32° C) 47 dBA for local temperatures between 90° F and 116° F (47° F) 52.6 dBA for temperatures above 116° F (47° F)
Noise level, inline power supply	44 dBA for local temperatures < 90° F (32° C) 50 dBA for local temperatures between 90° F and 116° F (47° F) 53 dBA for temperatures above 116° F (47° F)
Safety compliance	UL 60950; CAN/CSA C22.2 No. 60950-00; IEC 60950; EN 60950-1; AS/NZS 60950 For detailed compliance information, refer to the *Cisco 2800 and Cisco 3800 Series Integrated Services Routers Regulatory Compliance and Safety Information* document.
Immunity compliance	EN300386; EN55024/CISPR24; EN50082-1; EN61000-6-2 For detailed compliance information, refer to the *Cisco 2800 and Cisco 3800 Series Integrated Services Routers Regulatory Compliance and Safety Information* document.
EMC compliance	FCC Part 15; ICES-003 Class A; EN55022 Class A; CISPR22 Class A; AS/NZS 3548 Class A; VCCI Class A; EN 300386; EN61000-3-3; EN61000-3-2 For detailed compliance information, refer to the *Cisco 2800 and Cisco 3800 Series Integrated Services Routers Regulatory Compliance and Safety Information* document.

Table 10 Cisco 2811 Router Specifications

Description	Specification
Dimensions (H x W x D)	1.75 x 17.25 x 16.4 in. (44.5 x438.2 x 416.6 mm), 1 RU height
Weight	14 lb (6.36 kg) if fully populated with modules
AC input power • Input voltage • Frequency • Input current • Inrush surge current	 100 to 240 VAC, autoranging 47 to 63 Hz 2 A (4 A for IP phone support) 50 A maximum, one cycle (–48V power included)
DC input power • Input voltage • Input current • Inrush surge current	 24 to 60 VDC, positive or negative 8 A at 24 V 50 A, maximum, <10 ms
Power dissipation (maximum) • AC without IP phone support • AC with IP phone support: System only IP phones DC	 170 W (580 BTU/hr) 210 W (717 BTU/hr) 160 W (546 BTU/hr) 180 W (614 BTU/hr)
Console and auxiliary ports	RJ-45 connector
Operating humidity	5 to 95%, noncondensing
Operating temperature	32 to 104° F (0 to 40° C)
Nonoperating temperature	–4 to 149° F (–20 to 65° C)
Noise level	47 dBA in normal ambient temperature; 57 dBA in maximum ambient temperature
Safety compliance	UL 60950; CAN/CSA C22.2 No. 60950-00; IEC 60950; EN 60950-1; AS/NZS 60950 For detailed compliance information, refer to the *Cisco 2800 and Cisco 3800 Series Integrated Services Routers Regulatory Compliance and Safety Information* document.
Immunity compliance	EN300386; EN55024/CISPR24; EN50082-1; EN61000-6-2 For detailed compliance information, refer to the *Cisco 2800 and Cisco 3800 Series Integrated Services Routers Regulatory Compliance and Safety Information* document.

Table 10 Cisco 2811 Router Specifications (continued)

Description	Specification
EMC compliance	FCC Part 15; ICES-003 Class A; EN55022 Class A; CISPR22 Class A; AS/NZS 3548 Class A; VCCI Class A; EN 300386; EN61000-3-3; EN61000-3-2 For detailed compliance information, refer to the *Cisco 2800 and Cisco 3800 Series Integrated Services Routers Regulatory Compliance and Safety Information* document.

Table 11 Cisco 2821 Router Specifications

Description	Specification
Dimensions (H x W x D)	3.5 x 17.25 x 16.4 in. (88.9 x 438.2 x 416.6 mm), 2 RU height
Weight	25 lb (11.36 kg) if fully populated with modules
AC input power • Input voltage • Frequency • Input current • Inrush surge current	 100 to 240 VAC, autoranging 47 to 63 Hz 3 A (8 A for IP phone support) 50 A maximum, one cycle (–48 V power included)
DC input power • Input voltage • Input current • Inrush surge current	 24 to 60 VDC, positive or negative 12 A at 24 V 50 A, maximum, <10 ms
Power dissipation (maximum) • AC without IP phone support • AC with IP phone support: – System only – IP phones • DC	 280 W (955 BTU/hr) 310 W (1058 BTU/hr) 240 W (820 BTU/hr) 300 W (1024 BTU/hr)
Console and auxiliary ports	RJ-45 connector
Operating humidity	5 to 95%, noncondensing
Operating temperature	32 to 104° F (0 to 40° C)
Nonoperating temperature	–4 to 149° F (–20 to 65° C)
Noise level	44 dBA in normal ambient temperature; 52 dBA in maximum ambient temperature
Safety compliance	UL 60950; CAN/CSA C22.2 No. 60950-00; IEC 60950; EN 60950-1; AS/NZS 60950 For detailed compliance information, refer to the *Cisco 2800 and Cisco 3800 Series Integrated Services Routers Regulatory Compliance and Safety Information* document.
Immunity compliance	EN300386; EN55024/CISPR24; EN50082-1; EN61000-6-2 For detailed compliance information, refer to the *Cisco 2800 and Cisco 3800 Series Integrated Services Routers Regulatory Compliance and Safety Information* document.

Table 11 Cisco 2821 Router Specifications (continued)

Description	Specification
EMC compliance	FCC Part 15; ICES-003 Class A; EN55022 Class A; CISPR22 Class A; AS/NZS 3548 Class A; VCCI Class A; EN 300386; EN61000-3-3; EN61000-3-2 For detailed compliance information, refer to the *Cisco 2800 and Cisco 3800 Series Integrated Services Routers Regulatory Compliance and Safety Information* document.

Table 12 Cisco 2851 Router Specifications

Description	Specification
Dimensions (H x W x D)	3.5 x 17.25 x 16.4 in. (88.9 x 438.2 x 416.6 mm), 2 RU height
Weight	25 lb (11.36 kg) if fully populated with modules
AC input power • Input voltage • Frequency • Input current • Inrush surge current	 100 to 240 VAC, autoranging 47 to 63 Hz 3 A (8 A for IP phone support) 50 A maximum, one cycle (–48 V power included)
DC input power • Input voltage • Input current • Inrush surge current	 24 to 60 VDC, positive or negative 12 A at 24 V 50 A, maximum, <10 ms
Power dissipation (maximum) • AC without IP phone support • AC with IP phone support: – System only – IP phones • DC	 280 W (955 BTU/hr) 370 W (1262 BTU/hr) 360 W (1128 BTU/hr) 300 W (1024 BTU/hr)
Console and auxiliary ports	RJ-45 connector
Operating humidity	5 to 95%, noncondensing
Operating temperature	32 to 104° F (0 to 40° C)
Nonoperating temperature	–4 to 149° F (–20 to 65° C)
Noise level	44 dBA in normal ambient temperature; 52 dBA in maximum ambient temperature
Safety compliance	UL 60950; CAN/CSA C22.2 No. 60950-00; IEC 60950; EN 60950-1; AS/NZS 60950 For detailed compliance information, refer to the *Cisco 2800 and Cisco 3800 Series Integrated Services Routers Regulatory Compliance and Safety Information* document.
Immunity compliance	EN300386; EN55024/CISPR24; EN50082-1; EN61000-6-2 For detailed compliance information, refer to the *Cisco 2800 and Cisco 3800 Series Integrated Services Routers Regulatory Compliance and Safety Information* document.

Table 12 Cisco 2851 Router Specifications (continued)

Description	Specification
EMC compliance	FCC Part 15; ICES-003 Class A; EN55022 Class A; CISPR22 Class A; AS/NZS 3548 Class A; VCCI Class A; EN 300386; EN61000-3-3; EN61000-3-2 For detailed compliance information, refer to the *Cisco 2800 and Cisco 3800 Series Integrated Services Routers Regulatory Compliance and Safety Information* document.

Regulatory Compliance

For compliance information, refer to the *Cisco 2800 and Cisco 3800 Series Integrated Services Routers Regulatory Compliance and Safety Information* document that accompanied the router.