



Overview of the Routers

Cisco Integrated Services Routers Generation 2 (ISR G2) offer data functionality through Gigabit Ethernet ports and security functionality with a virtual private network (VPN) accelerator on the motherboard. Additional security features are available with add-on hardware and software.

Cisco 2900 series and Cisco 3900 series routers also provide voice IP telephony with digital signal processor (DSP) capability; and voice gateway, DSP farm, IP-to-IP gateway, Cisco Unified Communications Manager Express (CUCME) via Cisco IOS. Cisco Unity Express (CUE) is provided through the use of add-on hardware.

This series of ISRs have new slots that support next generation Enhanced High-Speed WAN Interface Cards (EHWICs), Internal Services Modules (ISMs), Packet Voice Data Modules (PVDM3s), Service Modules (SMs), and Services Performance Engines (SPEs).

Access to the Cisco Multi-Gigabit Fabric (MGF) facilitates connection between switch ports on the ISR without utilizing all of the external ports. A logical GE interface on the ISR connects external and internal modules through the MGF for improved LAN and WAN switching.

Table 1-1 **ISR G2 Models**

Series	Routers
Cisco 2900	<ul style="list-style-type: none"> • 2901 • 2911 • 2911-T • 2921 • 2951
Cisco 3900	<ul style="list-style-type: none"> • 3925 • 3925E • 3945 • 3945E

The following sections are provided in this chapter:

- [Chassis Views, page 1-2](#)
- [Locating the Serial Number, PID, VID and CLEI, page 1-12](#)
- [Hardware Features, page 1-17](#)

- [Slot, Port, and Interface Information, page 1-28](#)
- [LED Indicators, page 1-31](#)
- [Specifications, page 1-33](#)

Chassis Views

This section contains views of the front and back panels of the Cisco 2900 series and Cisco 3900 series routers, showing locations of the power and signal interfaces, module slots, status indicators, and chassis identification labels.



Note

Routers support the following slot types: Service Modules (SMs), Enhanced High-Speed Interface Card (EHWICs), high-speed WAN interface cards (HWICs), voice WAN interface cards (VWICs), WAN interface cards (WICs), Internal Services Modules (ISM), and packet voice DSP modules (PVDM3s). However, some router models do not support all of these media types. See the router model descriptions for more information.

Cisco 2900 Series ISRs

- [Cisco 2901 Chassis, page 1-2](#)
- [Cisco 2911 Chassis, page 1-4](#)
- [Cisco 2921 and Cisco 2951 Chassis, page 1-6](#)

Cisco 3900 Series ISRs

- [Cisco 3900 Series Chassis, page 1-8](#)

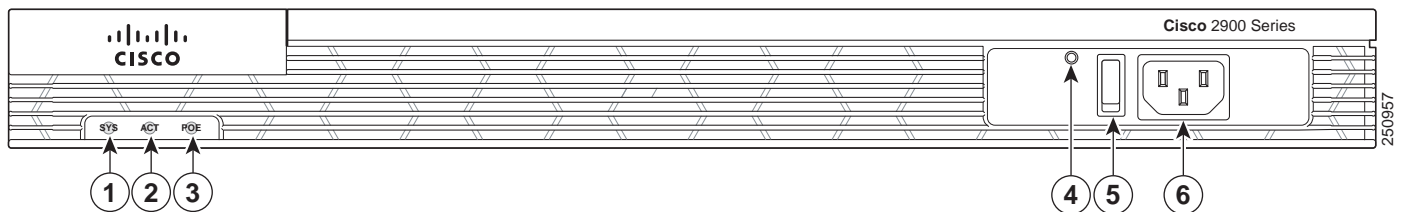
Cisco 2901 Chassis

[Figure 1-1](#)— Front panel

[Figure 1-2 on page 1-3](#)— Back panel

[Figure 1-3 on page 1-4](#)— Back panel LEDs

Figure 1-1 Front Panel of the Cisco 2901 Router

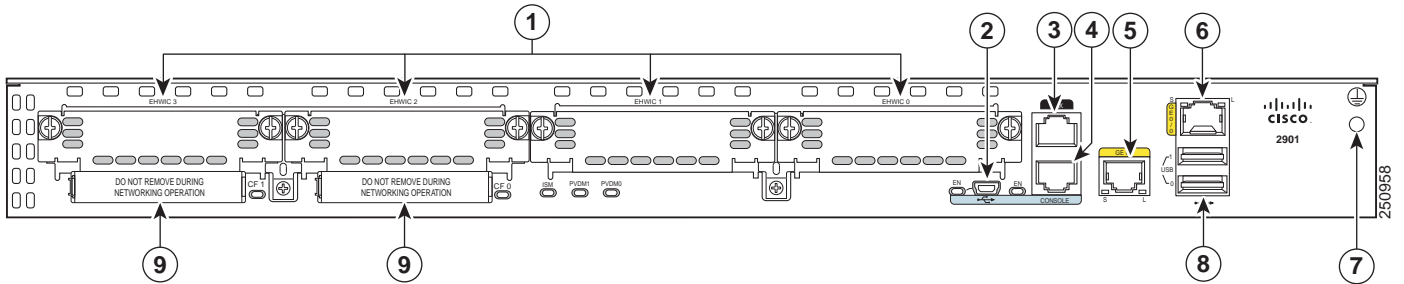


1	SYS ¹	2	ACT ²
3	POE ³	4	AC OK ⁴ (only on AC PS, not AC-POE PS)
5	On/off switch	6	AC power connector

1. System

2. Activity
3. POE = power over Ethernet.
4. LED goes off if the AC power fails or is disconnected. It does not go on and off with the power switch.

Figure 1-2 Back Panel Slots and Connectors of the Cisco 2901 Router

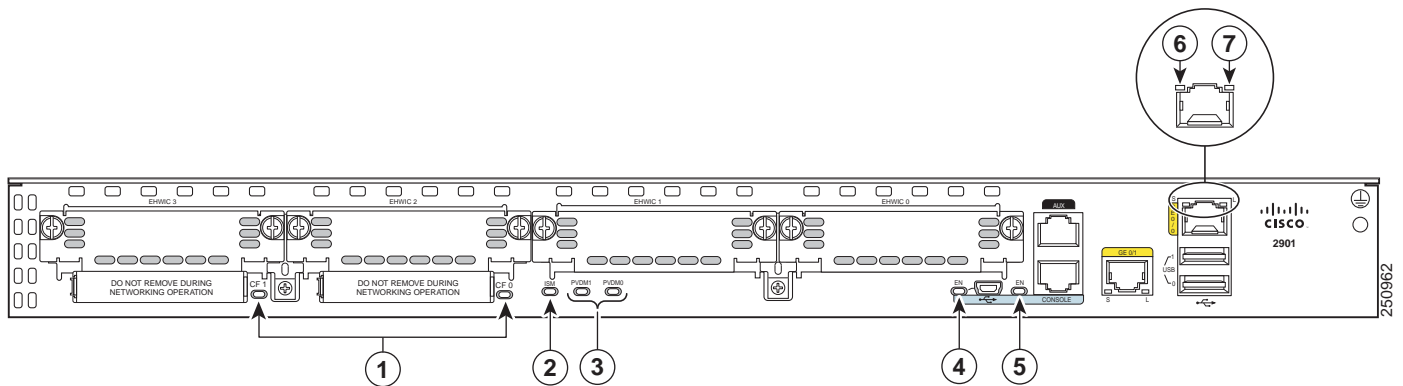


1	EHWIC slots ¹ 0, 1, 2, and 3 (0, Far right)	2	USB ² serial port
3	Aux port	4	RJ-45 serial console port
5	10/100/1000 Ethernet ports (GEO/1)	6	10/100/1000 Ethernet port (GEO/0)
7	Ground	8	USB0 and USB1 (1, Top)
9	CompactFlash ³ 0 and 1		

1. DW-EHWICs can fit into slot 0 and 1, and into slot 2 and 3. EHWIC slots support HWIC, VIC, and WIC.
2. USB = Universal serial bus
3. Only Advanced Capability CompactFlash (CF) purchased from Cisco operates in Cisco 2900 series and Cisco 3900 series ISRs. Legacy CF can impact and severely degrade performance in these routers. See the “Memory” section on page 1-22. When legacy CF is inserted, the following error message appears:

WARNING: Unsupported compact flash detected. Use of this card during normal operation can impact and severely degrade performance of the system. Please use supported compact flash cards only.

Figure 1-3 Back Panel LEDs of Cisco 2901 Router



1	CompactFlash 0 and 1 (0, Right)	2	ISM ¹
3	PVDM3 0 and 1 (0, Right)	4	EN (Enable USB console)
5	EN (Enable RJ-45 console)	6	S (Speed)
7	L (Link)		

1. ISM = Internal Services Module

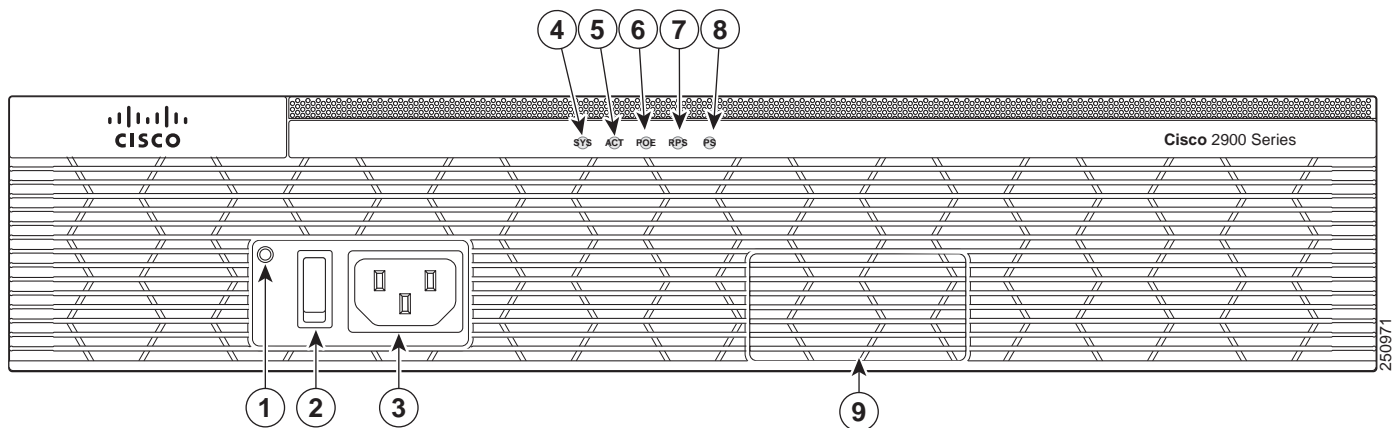
Cisco 2911 Chassis

Figure 1-4— Front panel

Figure 1-5 on page 1-5— Back panel

Figure 1-6 on page 1-6 — Back panel LEDs

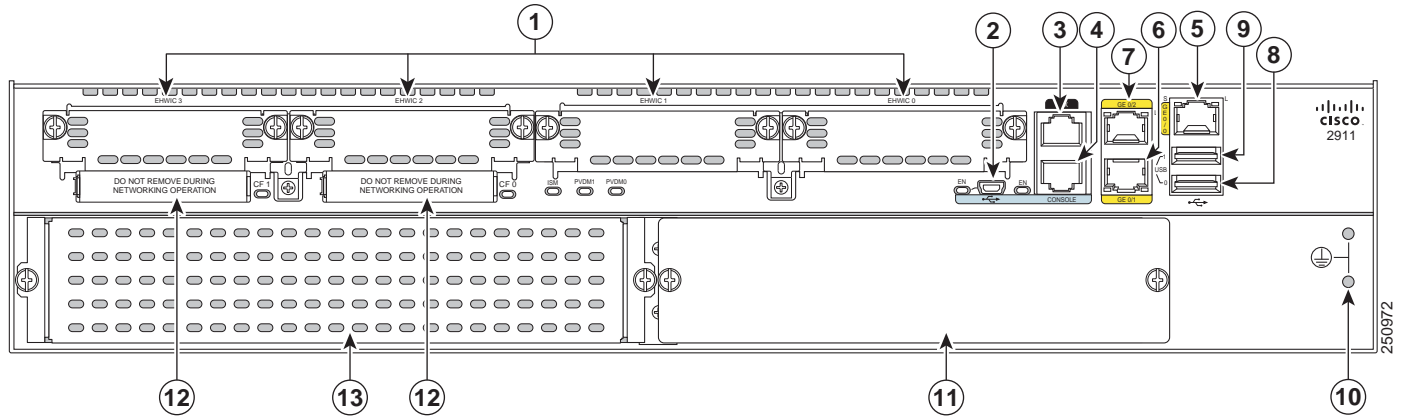
Figure 1-4 Front Panel of the Cisco 2911 Router



1	AC OK ¹	2	On/off switch
3	AC power connector	4	SYS
5	ACT	6	POE
7	RPS ²	8	PS ³
9	Optional RPS adapter (blank panel shown)		

1. LED goes off if the AC power fails or is disconnected. It does not go on and off with the power switch
2. RPS = Redundant Power Supply
3. PS = power supply

Figure 1-5 Back Panel of the Cisco 2911 Router



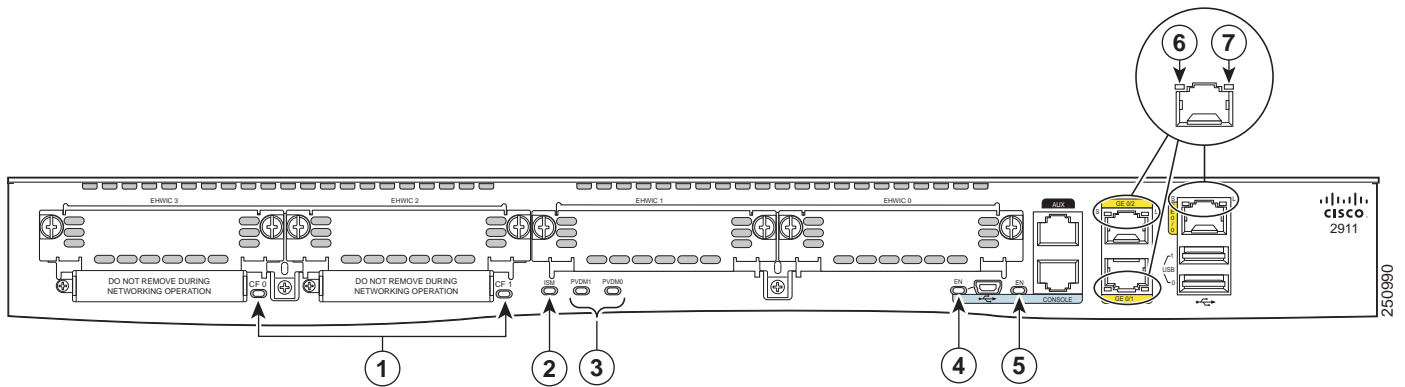
1	EHWIC slots ¹ 0, 1, 2, and 3 (0, Far right)	2	USB serial port
3	AUX	4	RJ-45 serial console port
5	10/100/1000 Ethernet port (GE0/0)	6	10/100/1000 Ethernet port (GE0/1)
7	10/100/1000 Ethernet port (GE0/2)	8	USB 0
9	USB 1	10	Ground
11	AC, DC, AC-POE, or DC-POE Power Module	12	CompactFlash ² 0 and 1 (0, Right)
13	Service module ³ slot 1		

1. Double-wide EHWICs can fit into slot 0 and 1, and into slot 2 and 3. EHWIC slots support HWIC, VIC, and WIC.
2. Only Advanced Capability CompactFlash (CF) purchased from Cisco operates in Cisco 2900 series and Cisco 3900 series ISRs. Legacy CF can impact and several degrade performance in these routers. See the [“Memory” section on page 1-22](#). When legacy CF is inserted, the following error message appears:

WARNING: Unsupported compact flash detected. Use of this card during normal operation can impact and severely degrade performance of the system. Please use supported compact flash cards only.

3. Service module slots support legacy network modules when inserted with an adapter. See the router product page at Cisco.com for a list of supported modules.

Figure 1-6 Back Panel LEDs of the Cisco 2911 Router



1	CompactFlash 0 and 1 (0, Far right)	2	ISM ¹
3	PVDM3 PVDM 0, 1, (0, Far right LED)	4	EN (Enable USB console)
5	EN (Enable RJ-45 console)	6	S (Speed)
7	L (Link)		

1. Integrated Service Module (ISM)

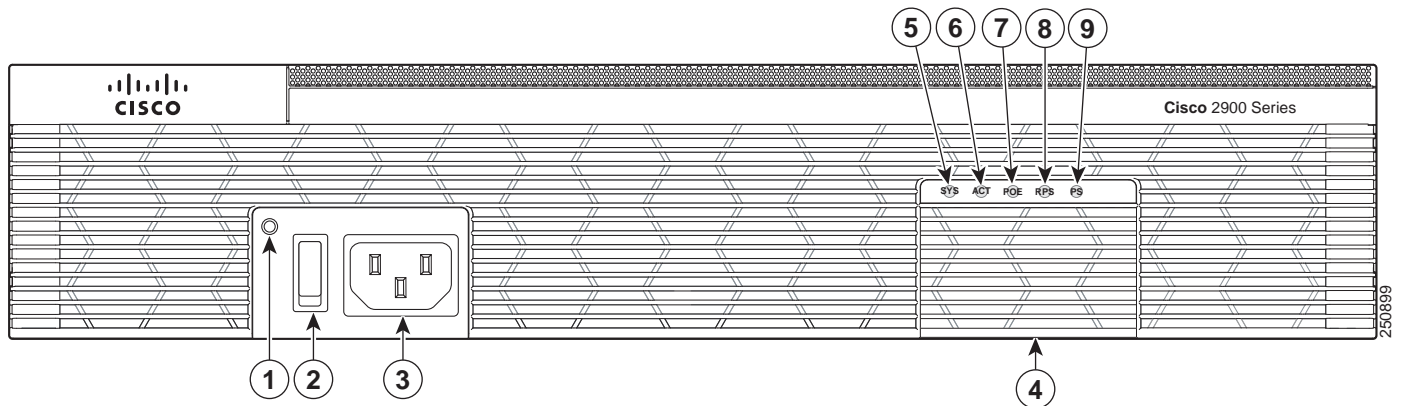
Cisco 2921 and Cisco 2951 Chassis

Figure 1-7 on page 1-6— Front panel

Figure 1-8 on page 1-7— Back panel

Figure 1-9 on page 1-8— Back panel LEDs

Figure 1-7 Front Panel of the Cisco 2921 and 2951 Routers

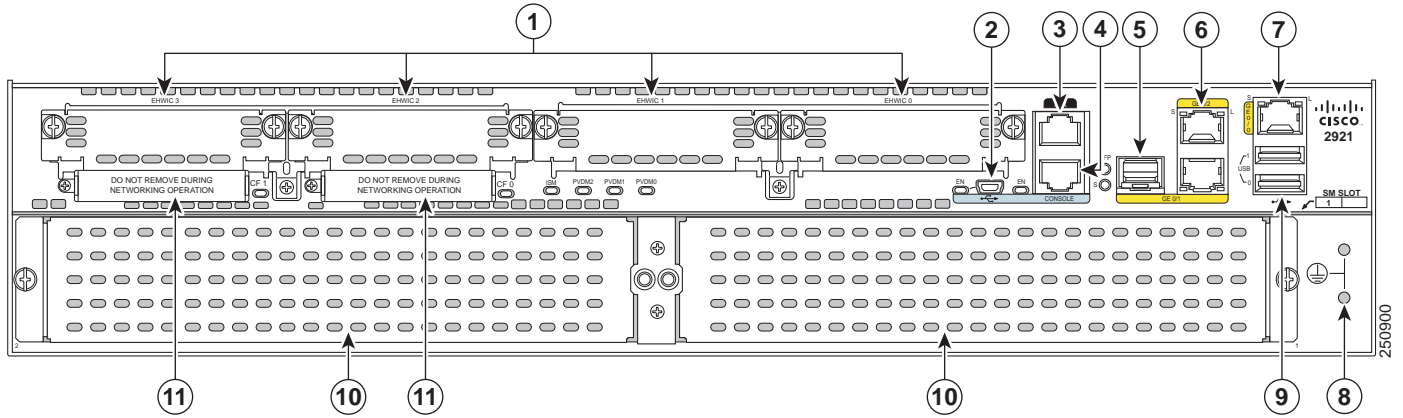


1	AC OK ¹	2	Power On/off switch
3	AC power connector	4	Optional RPS adapter (Blank panel shown)

5	SYS	6	ACT
7	POE	8	RPS
9	PS ²		

1. LED goes off if the AC power fails or is disconnected. It does not go on and off with the power switch.
2. Power supply (PS)

Figure 1-8 Back Panel Slots and Connectors on the Cisco 2921 and 2951 Routers

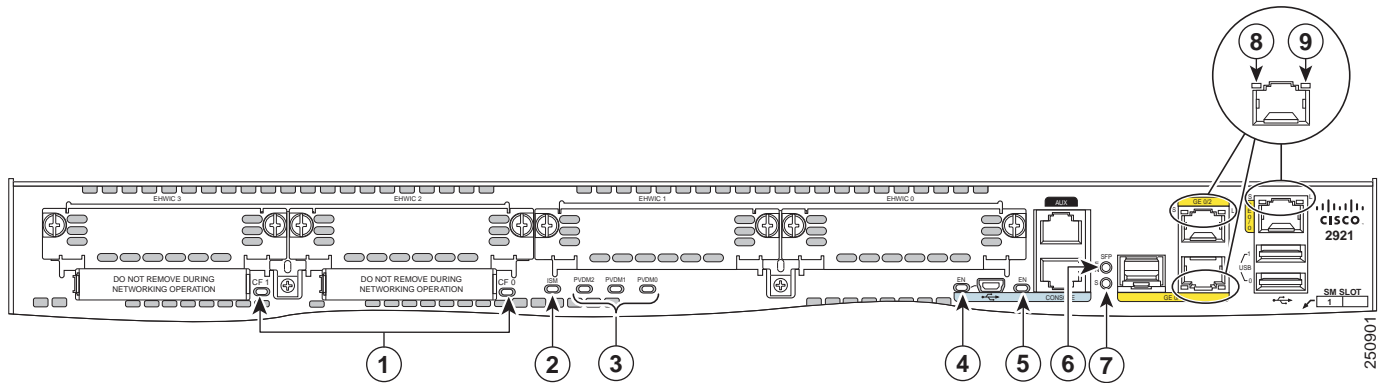


1	EHWIC slots ¹ 0,1,2, and 3 (0, Far right)	2	USB serial console port
3	AUX port	4	RJ-45 serial console port
5	SFP	6	10/100/1000 Ethernet ports (GE 0/1 and GE 0/2 (GE 0/2, Top)
7	10/100/1000 Ethernet port GE 0/0	8	Ground
9	USB0 and USB1 (1, Top)	10	Service module slots ² SM1 and SM2 (1, Right on 2951), (1, left on 2921)
11	CompactFlash ³ 0 and 1 (0, Right)		

1. Double-wide EHWICs can fit into slot 0 and 1, and into slot 2 and 3. EHWIC slots support HWIC, VIC, and WIC.
2. Service module slots support legacy network modules when inserted with an adapter. See the router product page at Cisco.com for a list of supported modules. Cisco 2921 supports only one service module in the left slot.
3. Only Advanced Capability CF purchased from Cisco operates in Cisco 2900 series and Cisco 3900 series ISRs. Legacy CF will not operate in these routers. When legacy CF is inserted, the following error message appears:

WARNING: Unsupported compact flash detected. Use of this card during normal operation can impact and severely degrade performance of the system. Please use supported compact flash cards only.

Figure 1-9 Back Panel LEDs of the Cisco 2921 and 2951 Routers



1	CompactFlash 0 and 1 (0, Right)	2	ISM ¹
3	PVDM3 0,1, and 2 (0, Right)	4	EN (Enable USB console)
5	EN (Enable RJ-45 console)	6	SFP ² EN
7	SFP S	8	S (Speed)
9	L (Link)		

1. ISM = Internal Services Module
2. SFP = small-form-factor pluggable

Cisco 3900 Series Chassis

Cisco 3900 series ISRs are shipped with Services Performance Engines (SPEs) pre-installed in the router. See the “[Services Performance Engine](#)” section on page 1-21 for models and support information.

Table 1-2 Services Performance Engines

Router	Services Performance Engine
Cisco 3925	Services Performance Engine 100
Cisco 3945	Services Performance Engine 150
Cisco 3925E	Services Performance Engine 200
Cisco 3945E	Services Performance Engine 250

Figure 1-10 shows the Cisco 3925 and Cisco 3945 front panels.

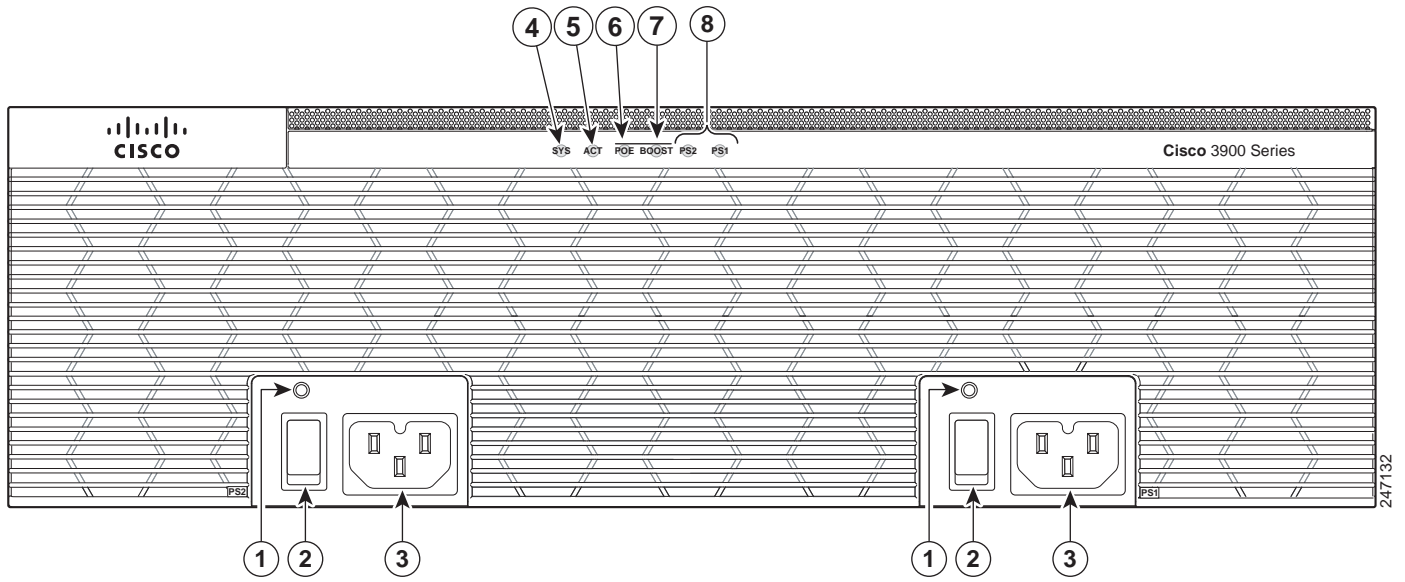
Cisco 3925 and Cisco 3945 (SPE 100 and SPE 150)

- Back panel slots and connectors— [Figure 1-11](#)
- Back panel LEDs— [Figure 1-12](#)

Cisco 3925E and Cisco 3945E (SPE 200 or SPE 250)

- Back panel slots and connectors— [Figure 1-13](#)
- Back panel LEDs— [Figure 1-14](#)

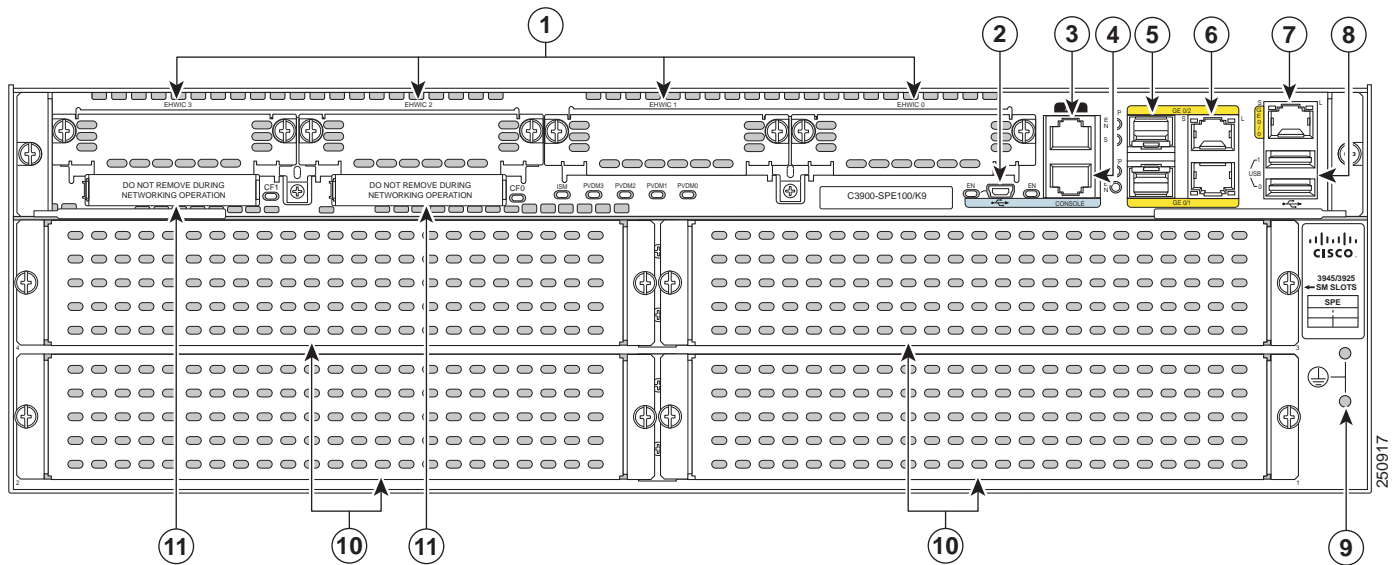
Figure 1-10 Front Panel of the Cisco 3900 Series ISRs



1	AC OK ¹	2	On/off switch
3	Power connector	4	SYS status LED
5	ACT status LED	6	POE
7	Boost	8	PS1 (Right), PS2 (Left)

1. LED goes off if the AC power fails or is disconnected. It does not go on and off with the power switch.

Figure 1-11 Back Panel Slots and Connectors for Cisco 3925 and 3945 (SPE 100 and SPE 150)

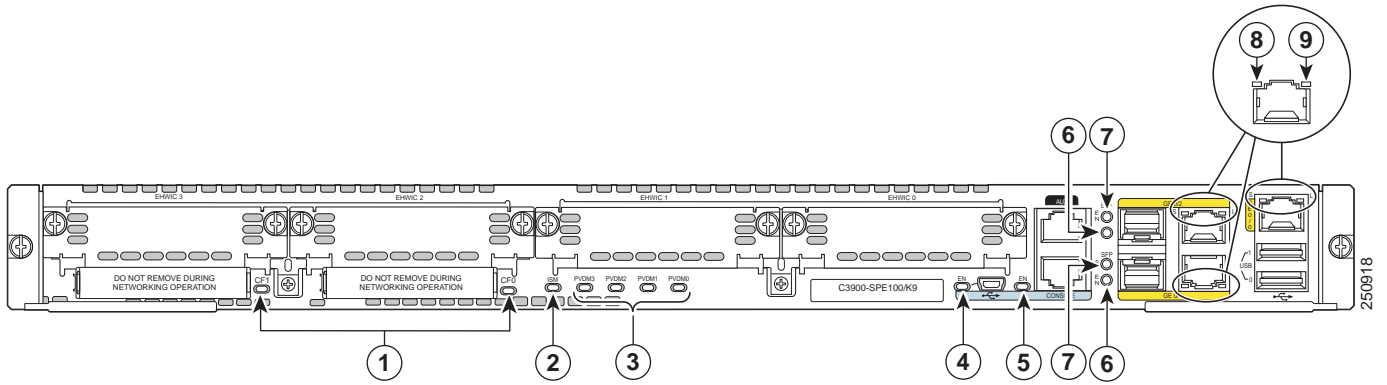


1	EHWIC slots ¹ 0, 1, 2 and 3 (0, Far right)	2	USB serial console port
3	AUX port	4	RJ-45 serial console port
5	SFP1 and SFP2 (2, Top)	6	10/100/1000 Ethernet ports GE 0/1 and GE 0/2 (GE 0/2, Top)
7	10/100/1000 Ethernet port GE0/0	8	USB0 and USB1 (1, Top)
9	Ground	10	Cisco 3945 Service module slots ² , 1 (Lower right), 2 (Lower left), 3 (Top right), and 4 (Top left) Cisco 3925 Service module slots ³ , 1 (Lower left) ⁴ , 2 (Top left)
11	CompactFlash ⁵ 0 and 1 (0, Far right)		

1. Double-wide EHWICs can fit into slot 0 and 1, and into slot 2 and 3. EHWIC slots support HWIC, VIC, and WIC.
2. Service module slots support legacy network modules when inserted with an adapter. See the router product page at Cisco.com for a list of supported modules. See [Table 1-5](#) for more router slot and module configurations.
3. Service module slots support legacy network modules when inserted with an adapter. See the router product page at Cisco.com for a list of supported modules. Double wide service modules install in the top slots. See [Table 1-5](#) for more router slot and module configurations.
4. One single-wide in slot 1 (lower left). Lower right panel cannot be removed. See [Table 1-5](#) for more router slot and module configurations.
5. Only Advanced Capability CompactFlash (CF) purchased from Cisco operates in Cisco 2900 series and Cisco 3900 series ISRs. Legacy CF can impact and severely degrade performance in these routers. See the [“Memory” section on page 1-22](#). When legacy CF is inserted, the following error message appears:

WARNING: Unsupported compact flash detected. Use of this card during normal operation can impact and severely degrade performance of the system. Please use supported compact flash cards only.

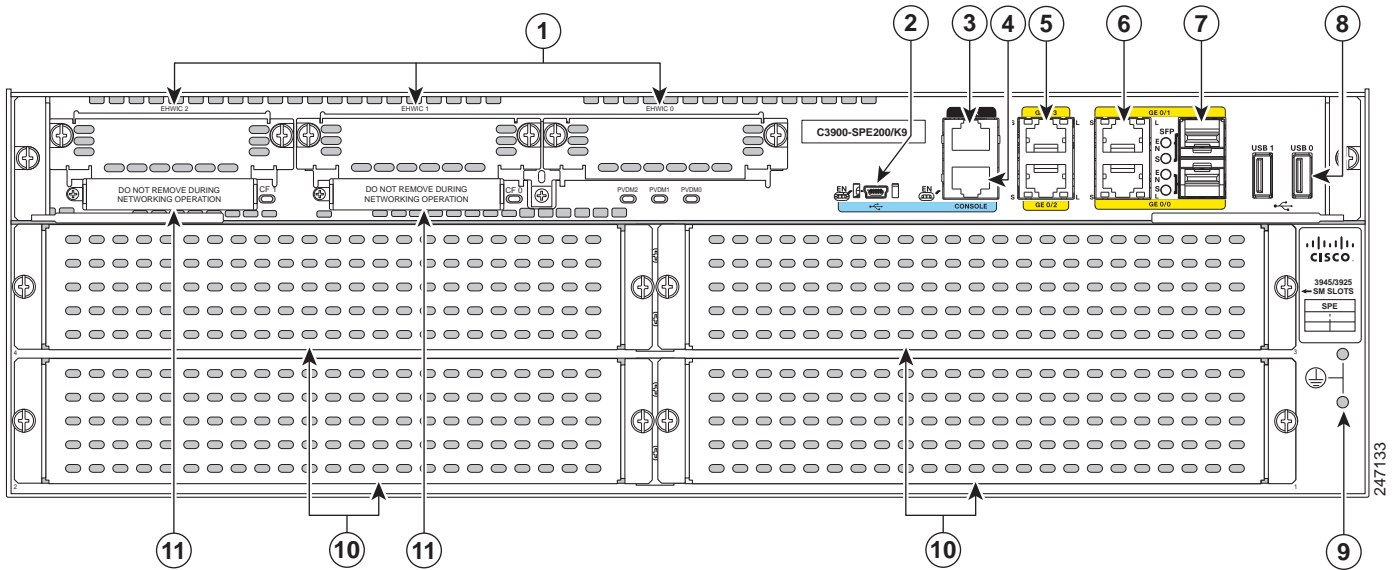
Figure 1-12 Back Panel LEDs on Services Performance Engine 100 and SPE 150



1	CompactFlash 0 and 1 (0, Far right)	2	ISM ¹
3	PVDM3 0,1, 2, and 3 (0, Far right LED)	4	EN (Enable USB console)
5	EN (Enable RJ-45 console)	6	SFP S
7	SFP EN	8	S (Speed)
9	L (Link)		

1. ISM = Internal Services Module

Figure 1-13 Back Panel Slots/Connectors for Cisco 3925E and 3945E (SPE 200 or SPE 250)



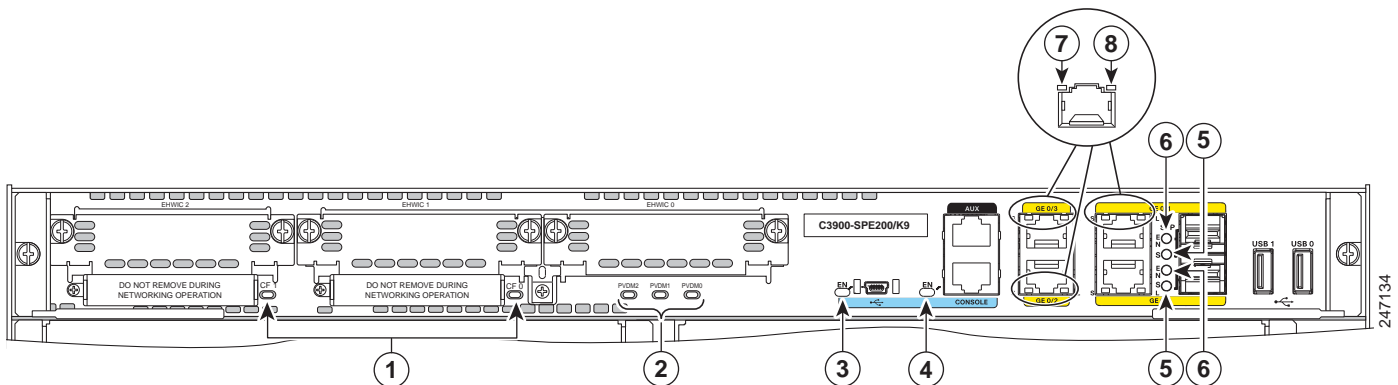
1	EHWIC slots ¹ 0,1, and 2 (0, Far right)	2	USB serial console port
3	AUX port	4	RJ-45 serial console port
5	10/100/1000 Ethernet ports (GE 0/3, Top; GE 0/2, Bottom)	6	10/100/1000 Ethernet ports (GE 0/1, Top; GE 0/0, Bottom)

7	SFP 1 and SFP 2 (1, Top)	8	USB 0 and USB 1 (1, Left)
9	Ground	10	Cisco 3945 Service module slots ² , 1 (Lower right), 2 (Lower left), 3 (Top right), and 4 (Top left) Cisco 3925 Service module slots ³ , 1 (Lower left) ⁴ , 2 (Top left)
11	CompactFlash ⁵ 1 and 0 (0, Far right)		

- Slot 0 supports WIC/VIC, HWIC, and EHWIC.
Slot 1 supports WIC/VIC, HWIC, EHWIC, DWHIC, and EDHWIC.
Slot 2 supports WIC/VIC, HWIC, and EHWIC.
- Service module slots support legacy network modules when inserted with an adapter. See the router product page at Cisco.com for a list of supported modules. See [Table 1-5](#) for router slot and module configurations.
- Service module slots support legacy network modules when inserted with an adapter. See the router product page at Cisco.com for a list of supported modules. See [Table 1-5](#) for router slot and module configurations.
- One single-wide in slot 1 (lower left). Lower right panel cannot be removed. See [Table 1-5](#) for more router slot and module configurations.
- Only Advanced Capability CF purchased from Cisco operates in Cisco 2900 series and Cisco 3900 series ISRs. Legacy CF will not operate in these routers. When legacy CF is inserted, the following error message appears:

WARNING: Unsupported compact flash detected. Use of this card during normal operation can impact and severely degrade performance of the system. Please use supported compact flash cards only.

Figure 1-14 Back Panel LEDs on Services Performance Engine 200 and 250



1	CompactFlash 0 and 1 (0, Far right)	2	PVDM3 0, 1, and 2 (0, Far right LED)
3	EN (Enable USB console)	4	EN (Enable RJ-45 console)
5	SFP S	6	SFP EN
7	S (Speed)	8	L (Link)

Locating the Serial Number, PID, VID and CLEI

Software License

To obtain a software license, you need a product authorization key (PAK) and the unique device identifier (UDI) of the device where the license will be installed.

The serial number (SN), product ID (PID), version ID (VID), and Common Language Equipment Identifier (CLEI) are printed on a label on the back of the router or on a label tray located on the router chassis or motherboard. The UDI can be viewed using the **show license udi** command in privileged Exec

mode in Cisco Internet Operating System (IOS) software. For additional information on the UDI or how to obtain a PAK, see the [Cisco Software Activation on Integrated Services Routers](#) document at Cisco.com.

The UDI has two main components:

- Product ID (PID)
- Serial number (SN)

Refer to these sections to locate labels on Cisco 2900 series and 3900 series ISRG2 routers:

Cisco 2900 Series

- [Labels on Cisco 2901, page 1-13](#)
- [Labels on Cisco 2911, page 1-14](#)
- [Labels on Cisco 2921 and Cisco 2951, page 1-15](#)

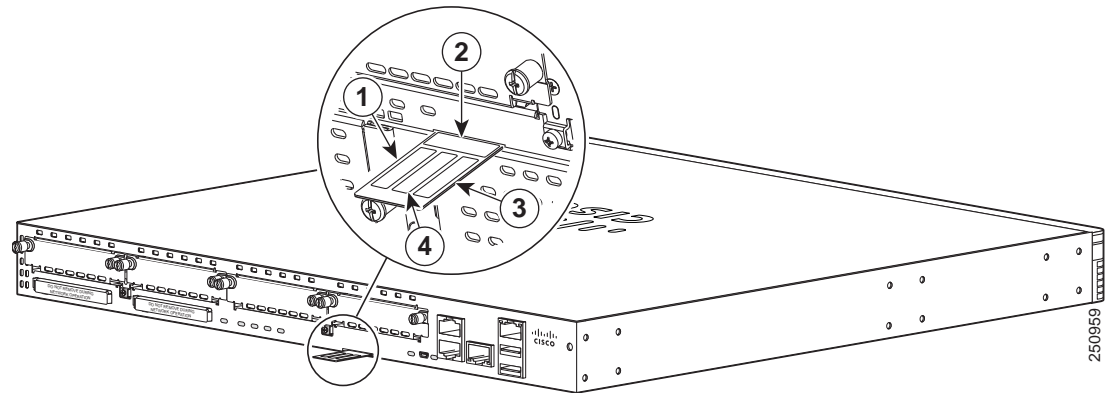
Cisco 3900 Series

- [Labels on Cisco 3925 and Cisco 3945, page 1-15](#)

Labels on Cisco 2901

[Figure 1-15](#) shows the location of the labels on the Cisco 2901 router.

Figure 1-15 Labels Location on the Cisco 2901 Router

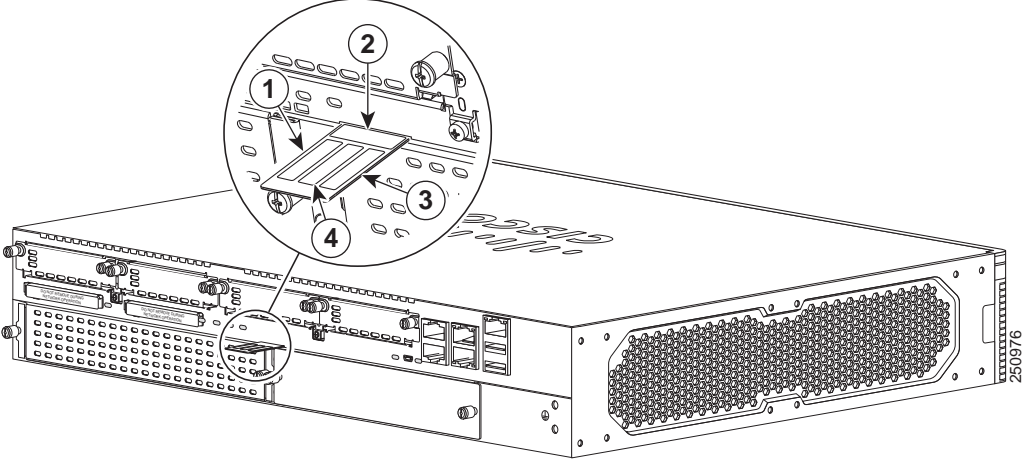


Label	Description
1	Product ID
2	Serial Number
3	Product ID/Version ID
4	Common Language Equipment Identifier

Labels on Cisco 2911

Figure 1-16 shows the location of the labels on the Cisco 2911 router.

Figure 1-16 Labels Location on the Cisco 2911 Router

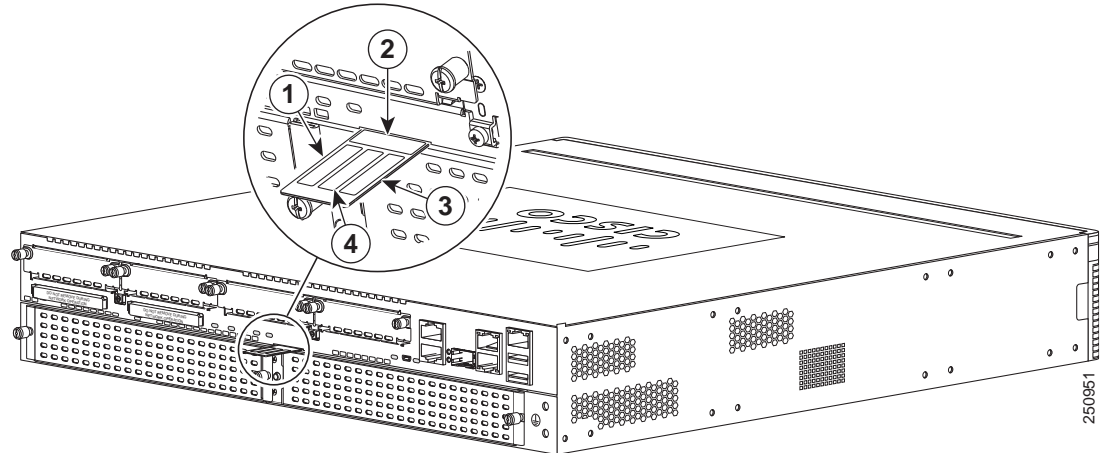


Label	Description
1	Product ID
2	Serial Number
3	PID/VID
4	CLEI

Labels on Cisco 2921 and Cisco 2951

Figure 1-17 shows the location of the labels on the Cisco 2921 and Cisco 2951 routers.

Figure 1-17 Label Location on the Cisco 2921 and Cisco 2951 Routers



Label	Description
1	Product ID
2	Serial Number
3	PID/VID
4	CLEI

Labels on Cisco 3925 and Cisco 3945

Figure 1-18 shows the two locations where labels are located on Cisco 3900 ISRs. There are labels on the router chassis and on the Services Performance Engine (SPE).



Note Use the serial number on the SPE label to obtain a PAK.

Figure 1-18 Labels Location(s) on Cisco 3900 ISRs

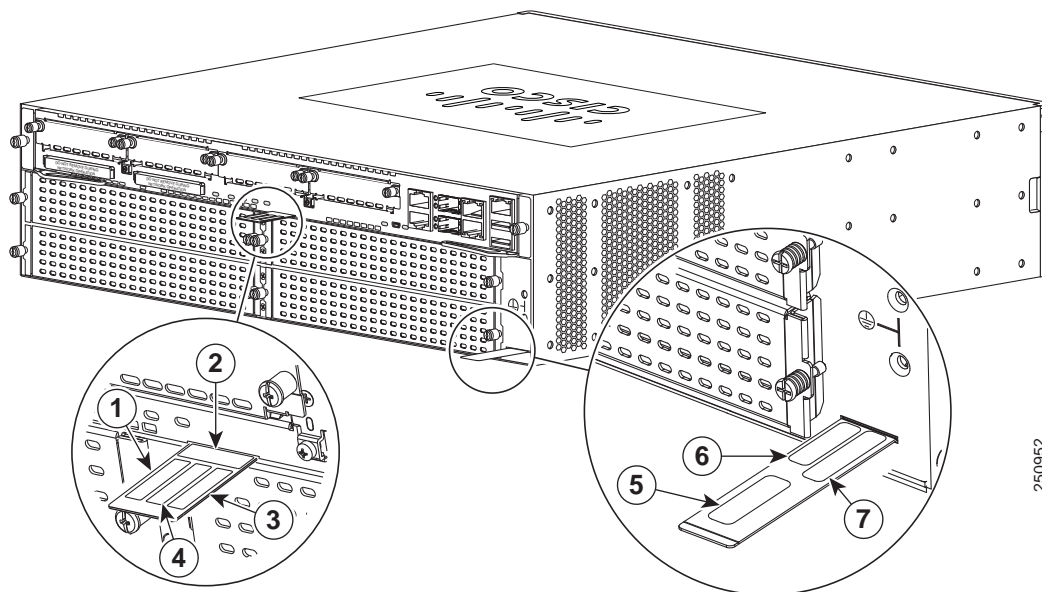


Table 1-3 Labels on Cisco 3900 Routers and SPE

Label	Description
1	SPE PID
2	SPE Serial Number
3	SPE PID/VID
4	SPE CLEI
5	Chassis CLEI
6	Chassis Serial Number
7	Chassis PID/VID

For Additional Help Locating Labels on the Router

Use the Cisco Product Identification (CPI) tool to find labels on the router. It provides detailed illustrations and descriptions of where the labels are located on Cisco products. It includes the following features:

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

Hardware Features

This section describes the hardware features in Cisco 2900 series and Cisco 3900 series routers.

- [Built-in Interface Ports, page 1-17](#)
- [Removable and Interchangeable Modules and Cards, page 1-18](#)
- [Packet Voice Data Modules, page 1-22](#)
- [Power Supplies, page 1-24](#)
- [Module and Router Power Consumption, page 1-25](#)
- [Fans, Ventilation, and Airflow, page 1-26](#)
- [Real-Time Clock, page 1-28](#)
- [Secure Key, page 1-28](#)
- [Cryptographic Accelerator, page 1-28](#)

Built-in Interface Ports

[Table 1-4](#) summarizes the interface ports built into the router chassis.

Table 1-4 Summary of Cisco 2900 series and Cisco 3900 series Built-In Interfaces

Router Model	Data Ports			Management Ports		
	10/100/1000 GE RJ-45	10/100/1000 SFP	USB Type A	Console Serial, RJ-45	Console Serial, Mini-USB (Type B)	Auxiliary, RJ-45
Cisco 2901	2	—	2	1	1	1
Cisco 2911	3	—	2	1	1	1
Cisco 2921	3	1	2	1	1	1
Cisco 2951	3	1	2	1	1	1
Cisco 3925 with SPE 100	3 ¹	2	2	1	1	1
Cisco 3945 with SPE 150	3 ²	2	2	1	1	1
Cisco 3925E with SPE 200	4 ³	2	2	1	1	1
Cisco 3945E with SPE 250	4 ⁴	2	2	1	1	1

1. One RJ-45 with 2 GE SFPs, or 3 RJ-45 GEs
2. One RJ-45 with 2 GE SFPs, or 3 RJ-45 GEs
3. Four RJ-45 or three RJ-45 with one GE-SFP, or two RJ-45 with two GE SFP
4. Four RJ-45 or three RJ-45 with one GE-SFP, or two RJ-45 with two GE SFP

Gigabit Ethernet Ports

There are two different types of Gigabit Ethernet (GE) ports available on Cisco 2900 series and Cisco 3900 series ISRs.

GE Ports

The GE RJ-45 copper interface ports support 10BASE-T, 100BASE-TX, and 1000BASE-T.

SFP Ports

The small-form-factor pluggable (SFP) ports support 1000BASE-LX/LH, 1000BASE-SX, 1000BASE-ZX, and Coarse Wavelength-Division Multiplexing (CWDM-8) modules, as well as 100Mbps SFP modules.

The SFP port shares the same physical port as an RJ-45 GE port. [Table 1-4 on page 1-17](#) shows the models that support SFP installation. The SFP port supports auto-media-detection, auto-failover and remote fault indication (RFI), as described in the IEEE 802.3ah specification.

Use the **media-type {rj45{auto-failover}} | {sfp{auto-failover}}** command to enable the auto-media-detection and auto-failover features. Use the [Command Lookup Tool](#) for details about this command.

The SFP port can be configured for the following behaviors:

- Always use the RJ-45 port.
- Always use the SFP port.
- Always use the RJ-45 port but fail over to the SFP port if the RJ-45 port fails. This is the default configuration.
- Always use the SFP port but fail over to the RJ-45 port if the SFP port fails.

USB Serial Console Port

The Mini-USB type B serial port has been enabled to perform management tasks on the router. To use this port, you must install a Windows USB device driver before establishing physical connectivity between a personal computer and the router. See the [“Installing the Cisco Microsoft Windows USB Device Driver” section on page 3-35](#) for driver installation instructions.

Removable and Interchangeable Modules and Cards

[Table 1-5 on page 1-20](#) summarizes the type of removable modules and cards that can be installed in the router to provide specific capabilities. Services Performance Engines (SPEs), Service Modules (SMs), and Enhanced High-Speed WAN Interface Cards (EHWICs) fit into external slots and can be removed or replaced without opening the chassis.

Internal Services Modules (ISM), expansion DRAM memory modules and next-generation Packet Voice Data Modules (PVDM3s) plug into internal connectors inside the chassis. These modules can be removed and installed only by opening the chassis on the Cisco 3900 series, or sliding the motherboard out of the Cisco 3900 series.

External Slots

- [Services Performance Engine, page 1-21](#)
- [Service Modules, page 1-21](#)
- [Enhanced High-Speed WAN Interface Cards, page 1-21](#)

Internal Slots

- [Integrated Service Modules, page 1-22](#)
- [Packet Voice Data Modules, page 1-22](#)
- [Memory, page 1-22](#)

Because of physical differences with the new slots, legacy network modules and legacy Service Modules require an adapter for installation.

**Warning**

Only trained and qualified personnel should be allowed to install, replace, or service this equipment. Statement 1030

**Warning**

This equipment must be installed and maintained by service personnel as defined by AS/NZS 3260. Incorrectly connecting this equipment to a general-purpose outlet could be hazardous. The telecommunications lines must be disconnected 1) before unplugging the main power connector or 2) while the housing is open, or both. Statement 1043

See the [Overview of Cisco Network Modules and Service Modules for Cisco Access Routers](#) document for general information and single- and double-wide slot numbering.

See the [Installing Cisco Network Modules in Cisco Access Routers](#) document for instructions that describe how to install SMs, legacy network modules, and legacy Service Modules in the router.

See the [Overview of Cisco Interface Cards for Cisco Access Routers](#) for general interface card information.

See the [Installing Cisco Interface Cards in Cisco Access Routers](#) document, for instructions that describe how to install EHWICs and legacy interface cards in the router.

**Note**

See the router product page at Cisco.com for a list of supported network modules and interface cards for Cisco 2900 series and Cisco 3900 series ISRs.

Table 1-5 shows the number of internal and external slots on Cisco 2900 series and Cisco 3900 series ISRs. It also shows the number of EHWICs and SMs that are supported in the router slots at any time. Table 1-8 on page 1-23 shows memory specifications by router.

Table 1-5 Cisco 2900 series and Cisco 3900 series Slots and Module Configurations

Router	Modules and Cards			Internal Modules	
	SPE	SM ¹	EHWIC ²	ISM ³	PVDM3 ⁴
2901	—	—	4 single-wide (EHWIC) or 2 double-wide (DW-EHWIC)	1	2
2911	—	1 single-wide	4 single-wide (EHWIC) or 2 double-wide (DW-EHWIC)	1	2
2921	—	1 single-wide or 1 double-wide	4 single-wide (EHWIC) or 2 double-wide (DW-EHWIC)	1	3
2951	—	2 single-wide or 1 double-wide	4 single-wide (EHWIC) or 2 double-wide (DW-EHWIC)	1	3
3925	Services Performance Engine 100	2 single-wide or 1 single-wide + 1 double-wide	4 single-wide (EHWIC) or 2 double-wide (DW-EHWIC)	1	4
3945	Services Performance Engine 150	4 single-wide or 1 double-wide + 2 single-wide	4 single-wide (EHWIC) or 2 double-wide (DW-EHWIC)	1	4
3925E	Services Performance Engine 200	2 single-wide or 1 single-wide + 1 double-wide	3 single-wide (EHWIC) or 1 double-wide + 1 single-wide	0	3
3945E	Services Performance Engine 250	4 single-wide or 1 double-wide + 2 single-wide	3 single-wide (EHWIC) or 1 double-wide + 1 single-wide	0	3

1. Service Module slots support the installation of legacy network modules and extended voice modules (EVMs) with an appropriate adapter. See the *Hardware Installation Guide* for the router.
2. EHWIC slots support HWICs, WICs and VICs.
3. AIMS are not supported.

4. PVDM3 slots support the installation of PVDM2 modules with an appropriate adapter. PVDM2s can not be intermixed with PVDM3s. See the *Hardware Installation Guide* for router.

Services Performance Engine

Services Performance Engines (SPEs) are modular motherboards for Cisco 3900 series ISRs. The SPE includes PVDM3 slots and system memory slots, and the ISM slot. The Services Performance Engine provides a modular approach to system upgrades. Slide out the SPE from the router to replace internal modules, or to upgrade the SPE for improved router performance.

See the “[Removing and Replacing the Services Performance Engine](#)” procedure on page 5-6 for installation information.

[Table 1-6](#) lists four SPE models that are supported on Cisco 3900 series routers. SPEs illustrations are shown in the “[Chassis Views](#)” section on page 1-2. SPEs come pre-installed in 3900 series routers, or they are purchased separately and installed in a 3900 series router. See the support table for more information.

Table 1-6 Services Performance Engine Support

Services Performance Engines	Cisco 3925	Cisco 3945
SPE 100	supported	—
SPE 150	—	supported
SPE 200	supported	—
SPE 250	—	supported



Note The SPE 200 and the SPE 250 include a cryptographic accelerator for improved security performance. See the “[Cryptographic Accelerator](#)” section on page 1-28 for more information.

Service Modules

Service Modules (SM) are the largest modules on Cisco 2900 series and Cisco 3900 series ISRs. With the largest form-factor and power capacity, these modules deliver high-performance service applications. SMs are physically larger than legacy network modules, as a result, network modules require an adapter for installation. See the *Installing Cisco Network Modules in Cisco Access Routers* guide for installation instructions,

<http://www.cisco.com/en/US/docs/routers/access/interfaces/nm/hardware/installation/guide/InstNetM.html>.

Enhanced High-Speed WAN Interface Cards

Enhanced High-Speed WAN Interface Card (EHWICs) are the latest generation of interface cards. EHWICs are installed in the EHWIC slot on the router. Legacy interface cards, such as WAN interface cards (WICs), voice interface cards (VICs), high-speed WAN interface cards (HWICs), double-width high-speed WAN interface cards (DHWICs), and (EHWICs) are supported in the EHWIC slot on the router.

Services Performance Engine 200 and Services Performance Engine 250 support the following legacy interface cards in the EHWIC slots. (See [Table 1-7](#).)

Table 1-7 EHWIC Support for SPE 200 and SPE 250

Slot 0	Slot 1	Slot 2
WIC/VIC and HWIC	WIC/VIC, HWIC, EHWIC, DHWIC, and EDHWIC	WIC/VIC and HWIC

Integrated Service Modules

Internal Services Modules (ISM) supersede advanced integration modules (AIM) on Cisco 2900 series and Cisco 3900 series ISRs. The ISM is larger in size than the AIM. Due to these physical differences, the AIM does not fit into the ISM slot and is no longer supported on Cisco 2900 series and Cisco 3900 series ISRs.

Packet Voice Data Modules

The Packet Voice Data Modules (PVDM3s) are the latest generation of PVDMs. First-generation PVDM-I cards are not supported in the PVDM3 slots. Due to physical differences, PVDM2s require an adapter for installation in the PVDM3 slot. See the [“Installing and Removing PVDM2s” section on page 5-23](#) for installation instructions.



Note PVDM2 cards cannot be mixed with PVDM3s.

Memory

Cisco 2900 series and Cisco 3900 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. Supported module types are Unregistered Dual In-Line Memory Module (UDIMM) and very low profile registered DIMM (VLP RDIMM).



Note UDIMMs and VLP RDIMMs are not interchangeable.

- Boot/NVRAM—256K of internal non-volatile 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. Each model supports 2 external CompactFlash 4-GB memory cards provide a maximum 8-GB of CompactFlash.



Note You must use Cisco-qualified CompactFlash cards supporting True IDE PIO Mode 6 and True IDE Multiword DMA Mode 4 as defined in CompactFlash Specification Revision 4.1 of the CompactFlash Association. Use of any other cards during normal network operation can affect system performance.

Table 1-8 summarizes the memory options for Cisco 2900 series and Cisco 3900 series routers. Default memory represents the minimum usable RAM. You can install additional RAM up to the maximum amount.

Expansion memory modules are UDIMMs or VLP RDIMMs with error correction code (ECC). All onboard RAM uses ECC.

**Note**

The current IOS supports only 2 GB of DRAM, although; the hardware supports more. Future IOS versions may support more than 2 GB of DRAM.

Table 1-8 Router Memory Specifications

Router Platform	DRAM
Cisco 2901	Expansion Type—UDIMM with ECC. UDIMM sizes—512 MB, 1 GB, 2 GB. UDIMM expansion slots—1. Fixed onboard ECC memory—512 MB. Maximum memory—2 GB.
Cisco 2911	Expansion Type—UDIMM with ECC. UDIMM sizes—512 MB, 1 GB, 2GB. UDIMM expansion slots—1. Fixed onboard ECC memory—512 MB. Maximum memory—2 GB.
Cisco 2921	Expansion Type—UDIMM with ECC. UDIMM sizes—512 MB, 1 GB, 2 GB. UDIMM expansion slots—1. Fixed onboard ECC memory—512 MB. Maximum memory—2 GB.
Cisco 2951	Expansion Type—VLP RDIMM with ECC. VLP RDIMM sizes—512 MB, 1 GB, 2 GB. VLP RDIMM slots—2. Default VLP RDIMM memory module — One 512 MB module (slot 0) Maximum memory—2 GB.
Cisco 3925	Type—VLP RDIMM with ECC VLP RDIMM sizes—512 MB and 1 GB. VLP RDIMM expansion slots—2; both must be the same density. Default VLP RDIMM memory modules—Two 512-MB modules for a maximum of 1 GB. Maximum memory—2.0 GB; 1.0 GB in each slot.

Table 1-8 Router Memory Specifications (continued)

Router Platform	DRAM
Cisco 3945	Type—VLP RDIMM with ECC VLP RDIMM sizes—512 MB and 1 GB. VLP RDIMM expansion slots—2; both must be the same density. Default VLP RDIMM memory modules—Two 512-MB modules for a maximum of 1 GB. Maximum memory—2.0 GB; 1.0 GB in each slot.
Cisco 3925E	Type—VLP RDIMMwith ECC. VLP RDIMM sizes—512 MB, 1GB. VLP RDIMM expansion slots—2, both must be the same density. Default ECC memory modules—Two 512-MB modules for 1 GB. Maximum memory—2.0 GB; 1.0 GB in each slot.
Cisco 3945E	Type—VLP RDIMMwith ECC. VLP RDIMM sizes—512 MB, 1GB. VLP RDIMM expansion slots—2, both must be the same density. Default ECC memory modules—Two 512-MB modules for 1 GB. Maximum memory—2.0 GB; 1.0 GB in each slot.

Power Supplies

Cisco 2900 series and Cisco 3900 series ISRs support a variety of power supply configurations. All power supplies are field replaceable and externally accessible with the exception of the Cisco 2901 ISR. The Cisco 2901 ISR has an internal power supply, which requires removing the cover for replacement.

If configured with dual power supplies or an Redundant power supplies (RPS), the power supplies are hot swappable. RPSs require an RPS adapter. There are two versions of the RPS adapter, one for the Cisco 2911 and one for the Cisco 2921 and 2951. Both use the Cisco Redundant Power System 2300.

Configurations include AC and DC (with and without IP), Dual DC, internal POE, and POE boost.

- [Table 1-9](#) summarizes the power options.
- [Table 1-10](#) shows POE power rates.

Table 1-9 Cisco 2900 Series and Cisco 3900 Series Field Replaceable Unit Power Options

Router Model	AC	AC + POE	DC	Hot Swap ¹	Internal RPS ²	External RPS ³	Dual DC ⁴	Internal POE	Internal POE Boost	External POE Boost ⁵	Internal DC + POE
2901	X	X	—	—	—	—	—	X	—	—	—
2911	X	X	X	X	—	X	—	X	—	X	X
2921	X	X	X	X	—	X	—	X	—	X	—
2951	X	X	X	X	—	X	—	X	—	X	—
3925	X	X	X	X	X	—	—	X	X	—	—
3925E	X	X	X	X	X	—	—	X	X	—	—
3945	X	X	X	X	X	—	—	X	X	—	—
3945E	X	X	X	X	X	—	—	X	X	—	—

1. Must have RPS or POE boost installed.
2. Internal RPS means that an additional power supply can be added to the PS2 slot.
3. Uses external Cisco Redundant Power System 2300 with an adapter inserted in the chassis.
4. Dual DC means two separate DC inputs to the same power supply.
5. Uses Cisco Redundant Power System 2300 as 100% power boost. Internal power supply does not supply any boost. In this configuration there is no POE redundancy.

Table 1-10 Cisco 2900 series and Cisco 3900 series POE Power Ratings

Power Supply	Router Model							
	2901	2911	2921	2951	3925	3925E	3945	3945E
Internal POE	130 W	200 W	280 W	370 W	520 W	520 W	520 W	520 W
Internal POE Boost	—	—	—	—	1040 W	1040 W	1040 W	1040 W
Internal DC+POE	—	160 W	—	—	—	—	—	—
External POE Boost	—	750 W	750 W	750 W	—	—	—	—

Module and Router Power Consumption

Cisco 2900 series and Cisco 3900 series ISRs have energy efficiency features that reduce power consumption. Some of the energy efficiency features are controlled by the hardware, whereas other energy efficiency features are controlled by the software.

Hardware Features

- High-efficiency AC power supplies.

Software Features

- See the *Configuring Power Efficiency Management* module in the *Cisco 3900 Series, 2900 Series, and 1900 Series Integrated Services Routers Software Configuration Guide* at Cisco.com. Learn how to configure and manage power going to modules and peripherals.

Fans, Ventilation, and Airflow

The Cisco 2911 and Cisco 3900 series ISRs have optional fan filters that are easy to replace. The filters may be used to meet Network Equipment Building Systems (NEBS) requirements, or to operate in dusty environments. When a filter becomes dirty, discard it and replace it with a new one. See the [“Replacing a Fan Tray or Air Filter”](#) section on page 5-44.

Fan speeds are controlled by the fan speed controller circuitry. To minimize noise, the fans operate at one of several predetermined speeds and are dependent on the input ambient air temperature.

- [Figure 1-19](#) shows Cisco 2901 airflow.
- [Figure 1-20](#) shows Cisco 2911 airflow.
- [Figure 1-21](#) shows Cisco 2921 and 2951 airflow.
- [Figure 1-22](#) shows the Cisco 3900 series standard (non NEBS) airflow configuration. For NEBS, the airflow is reversed.
- [Figure 1-23](#) shows the Cisco 3900 series standard NEBS airflow configuration.

Figure 1-19 Cisco 2901 Router Airflow

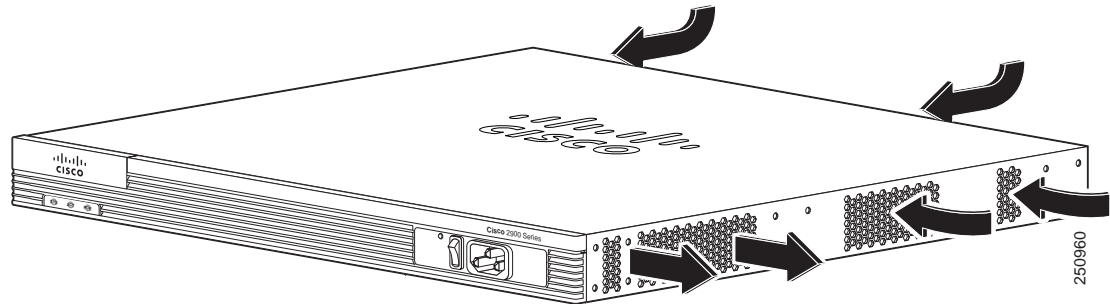


Figure 1-20 Cisco 2911 Router Airflow

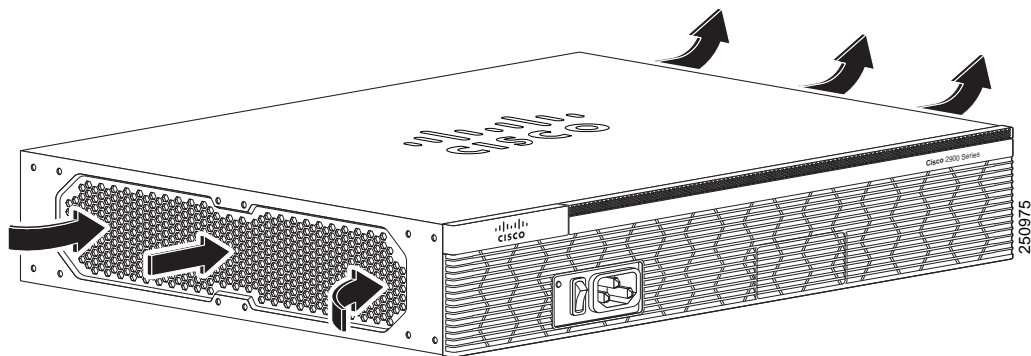


Figure 1-21 Cisco 2921 and Cisco 2951 Router Airflow

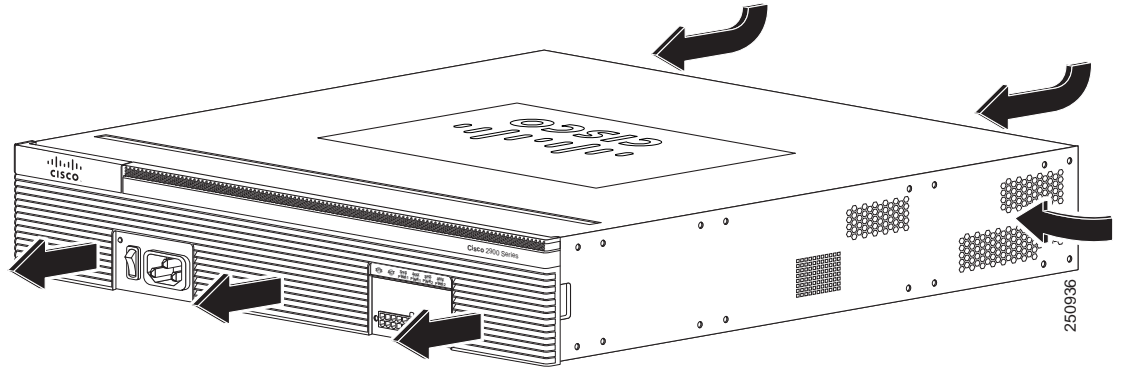


Figure 1-22 Cisco 3900 Series (Non NEBS) Router Airflow

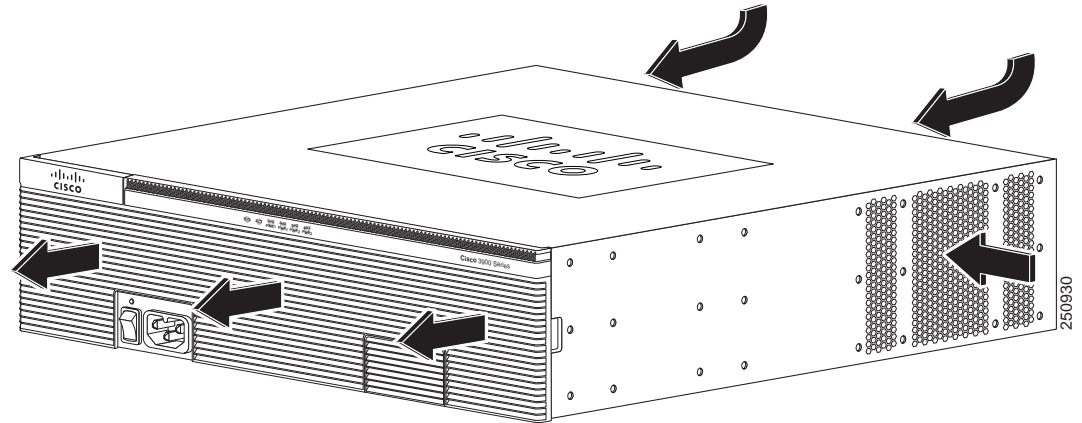
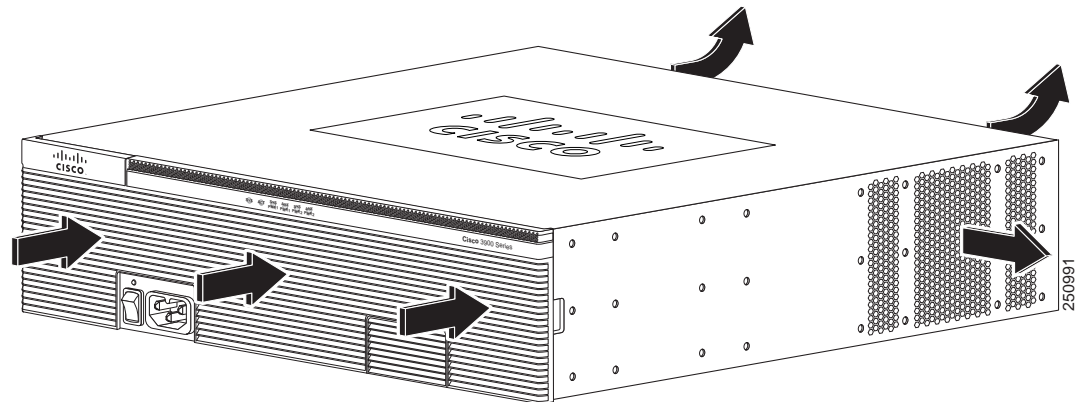


Figure 1-23 Cisco 3900 Series NEBS Router Airflow



Real-Time Clock

Upon system power up, the internal real-time clock with battery backup provides the system software with the time of day. This allows the system to verify the validity of the certification authority (CA) certificate. The Cisco 2900 and Cisco 3900 series routers have a lithium battery. This battery lasts for the life time 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 2900 or Cisco 3900 series ISR 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

Secure Key

A hardware secure key storage unit is provided on the Cisco 3925 and Cisco 3945 routers to safely store passwords and credentials. The secure key storage unit is a self-contained tamper-resistant computer key-store that acts as a black box for credential storage by accepting credentials and never returning them.

Cryptographic Accelerator

Cisco 3925E and Cisco 3945E ISRs ship with a Services Performance Engine that includes an onboard cryptographic accelerator. It shares security processing for SSLVPN and IPsec. By default, acceleration of SSL is disabled so IPsec performance is maximized.

If you want to set up the router as an SSLVPN gateway, enable the SSLVPN feature with the **crypto engine accelerator bandwidth-allocation ssl fair** command. To learn more about the cryptographic accelerator, see the *Configuring the Security Features* module in the *Cisco 3900 series, 2900 series, and 1900 series Integrated Services Routers Software Configuration Guide* at Cisco.com.

Slot, Port, and Interface Information

[Table 1-11](#) and [Table 1-12](#) show slot, port, and interface numbering ranges.

On the Cisco 2901 router, the numbering format for slots and ports is defined as follows: **interface type 0/slot/port**. “0” indicates slots that are built into the chassis of a router. On the Cisco 2901 router, all slots begin with “0,” because all slots are built into the chassis. On the Cisco 2911, 2921, 2951, and Cisco 3900 series routers, some slots are built into the chassis and some are external.

Slots that are part of a network module or an extension voice module have numbers that begin with “1” or “2,” respectively. See the module documentation for more information.

Table 1-11 Slot, Port, and Interfaces

Slots, Ports, Interface	2901 ¹	2911 & 2921	2951 & 3925 & 3945	3925E & 3945E
GE	Gi0/0,Gi0/1	Gi0/0,Gi0/1,Gi0/2	Gi0/0,Gi0/1,Gi0/2	Gi0/0,Gi0/1,Gi0/2, Gi0/3
USB	<i>usbflash0, usbflash1</i> <i>usbtoken0, usbtoken1</i>	<i>usbflash0, usbflash1</i> <i>usbtoken0, usbtoken1</i>	<i>usbflash0, usbflash1</i> <i>usbtoken0, usbtoken1</i>	<i>usbflash0, usbflash1</i> <i>usbtoken0, usbtoken1</i>
Logical ISM-GE interface via PCIe	<i>interface ISM 0/0</i>	<i>service-module-name-Gi 0/0</i>	<i>service-module-name-Gi 0/0</i>	—
Logical ISM-GE interface via MGF	<i>interface ISM 0/1</i>	<i>service-module-name-Gi 0/1</i>	<i>service-module-name-Gi 0/1</i>	—
HWIC and VWIC interface	<i>interface0/0/port</i> <i>interface0/1/port</i> <i>interface0/2/port</i> <i>interface0/3/port</i>	<i>interface0/0/port</i> <i>interface0/1/port</i> <i>interface0/2/port</i> <i>interface0/3/port</i>	<i>interface0/0/port</i> <i>interface0/1/port</i> <i>interface0/2/port</i> <i>interface0/3/port</i>	<i>interface0/0/port</i> <i>interface0/1/port</i> <i>interface0/2/port</i>
Double-Wide HWIC interface	<i>interface0/1/port</i> <i>interface0/3/port</i>	<i>interface0/1/port</i> <i>interface0/3/port</i>	<i>interface0/1/port</i> <i>interface0/3/port</i>	<i>interface0/1/port</i>
SM interface	not supported	<i>interface1/port</i>	<i>interface1-2/port</i> ² <i>interface1-4/port</i> ³	<i>interface1-2/port</i> <i>interface1-4/port</i>
Double-Wide SM interface	not supported	<i>interface1/port</i> ⁴	<i>interface2/port</i> ⁵ <i>interface4/port</i> ⁶	<i>interface2/port</i> <i>interface4/port</i>
HWIC on SM interfaces VWIC on SM interfaces	not supported	<i>interface1wic-slot/port</i>	<i>interface1-2/wic-slot/port</i> ⁷ <i>interface1-4/wic-slot/port</i> ⁸	<i>interface1-2/wic-slot/port</i> <i>interface1-4/wic-slot/port</i>

1. On the Cisco 2901 router, the numbering format for configuring an asynchronous interface is 0/slot/port. To configure the line associated with an asynchronous interface, 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.
2. Applies only to Cisco 2951, Cisco 3925, and Cisco 3925E routers.
3. Applies only to Cisco 3945 and Cisco 3945E routers.
4. Applies only to Cisco 2921 router.
5. Applies only to Cisco 2951, Cisco 3925, and Cisco 3925E routers.
6. Applies only to Cisco 3945 and Cisco 3945E routers.
7. Applies only to Cisco 2951, Cisco 3925, and Cisco 3925E routers.
8. Applies only to Cisco 3945 and 3945E routers.

Table 1-12 Interface Numbering on Cisco 2911, 2921, 2951 ISRs and Cisco 3900 ISRs

Port Location	IOS Command Line Interface	Examples ^{1, 2}
Interface card (DW-EHWIC, EHWIC, HWIC, HWIC-D, WIC, VWIC, VIC) plugged directly into an EHWIC slot	<i>Interface-type 0 / interface-card-slot³ / port</i>	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
Interface card (WIC, VWIC, VIC) plugged into a service or network module	<i>Interface-type 1⁵ / interface-card-slot / port</i>	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 service or network module (NME, NME-X, NMD, NME-XD)	<i>Interface-type 1⁵ / port</i>	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)	<i>Interface-type 2 / 0 / port</i> 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
Voice port in a BRI expansion module (internal slot) in an extension voice module (EVM)	<i>Interface-type 2 / 0 / port</i> 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	<i>Interface-type 2 / port</i> 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. Only interface card slot numbers 1 and 3 are used for double-width (HWIC-D).
4. Specify the line number in the Cisco IOS command-line interface (CLI) by using the interface number for the associated asynchronous serial interface.
5. The network module slot number is 1 for all Cisco 2900 series routers.

**Note**

On the Cisco 2911, 2921, 2951 routers and Cisco 3900 series routers the interface numbering scheme is the same for asynchronous interfaces as for other types of interfaces. To configure the line associated with an async interface, 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 an WIC-2A/S in slot 3. Similarly, line 1/22 specifies the line associated with interface async 1/22 on an NM-32A in network module slot 1.

LED Indicators

Table 1-13 summarizes the LED indicators that are located on the router bezel or chassis, but not on the removable modules or interface cards.

For descriptions of LEDs in removable modules and interface cards, see the applicable documentation for those products.

For LED troubleshooting information, including possible trouble causes and corrective actions, see Table 1-13.

Table 1-13 Cisco 2900 and 3900 Series Routers LED Indicators

LED	Color	Description	Cisco 2900 Routers	Cisco 3900 Routers
POE	Green	IP phone power is on.	Front bezel	Front bezel
	Amber	IP phone power is not on.		
POE Boost	Green	IP Phone power is supplied by POE Boost power supply.	—	—
	Off	External POE Boost power supply is not on.	—	—
PS/PS1	Off	PS/PS1 is off.	Front bezel	Front bezel
	Green	PS/PS1 is on and system is running.		
	Amber	PS/PS1 is in failed state and system is not running.		
PS2	Off	PS2 is off.	Front bezel	Front bezel
	Green	PS2 is on and system is running.		
	Amber	PS2 is in failed state and system is not running.		
AC OK ¹	Green	AC power connected.	Front bezel, not available on 2901	Front bezel
	Off	No AC power connected		
RPS	Green	System is running on external RPS power supply.	Front bezel, not available on 2901	—
SYS	Solid green	Solid green indicates normal operation.	Front bezel	Front bezel
	Blinking green	System is booting or is in ROM monitor mode.		
	Amber	System error.		
	Off	Power is off or system board is faulty.		

Table 1-13 Cisco 2900 and 3900 Series Routers LED Indicators (continued)

LED	Color	Description	Cisco 2900 Routers	Cisco 3900 Routers
ACT	Solid or blinking green	Solid or blinking indicates packet activity between the forwarding and routing engine and any I/O port.	Front bezel	Front bezel
	Off	No packet transfers are occurring.		
RJ-45 CON	Green	Serial console is active.	Back panel	Back panel
USB CON	Green	USB console is active.	Back panel	Back panel
GE: Link	Green	Solid green indicates the Ethernet port has a link partner.	Back panel	Back panel
SFP S	Blinking green	Blinking frequency indicates port speed. See the definition for the S LED.	Back panel	Back panel
SFP EN	Off	Not present.	Back panel	Back panel
	Green	Present and enabled.		
	Amber	Present with failure.		
CF0/CF1	Green	Flash memory is being accessed; do not eject the CompactFlash memory card.	Back panel	Back panel
	Amber	CompactFlash error.	Back panel	Back panel
	Off	Flash memory is not being accessed; okay to eject the CompactFlash memory card.	Back panel	Back panel
S (Speed)	1 blink + pause	FE or GE port operating at 10 Mb/s.	Back panel	Back panel
	2 blink + pause	FE or GE port operating at 100 Mb/s.		
	3 blink + pause	GE port operating at 1000 Mb/s.		
L (Link)	Green	FE or GE link is established.	Back panel	Back panel
	Off	No FE or GE link is established.		
PVDM 0,1,2, and 3	Green	PVDM is initialized.	Back panel	Back panel
	Amber	PVDM is detected but not initialized.	Back panel	Back panel
	Off	No PVDM installed.	Back panel	Back panel
ISM	Green	Initialized.		
	Amber	Initialized with error.		
	Off	Not installed.		

1. LED goes off if the AC power fails or is disconnected. It does not go on and off with the switch.

Specifications

The following tables provide ISR specifications.

- Cisco 2901—[Table 1-14](#)
- Cisco 2911—[Table 1-15](#)
- Cisco 2921—[Table 1-16](#)
- Cisco 2951—[Table 1-17](#)
- Cisco 3900 series—[Table 1-18](#)

Table 1-14 Cisco 2901 Router Specifications

Description	Specification
Physical	
Dimensions (H x W x D)	1.75 x 17.25 x 17.3 in. (44.5 x 438.2 x 439.4 mm), 1 RU height
Weight - with AC PS (without modules)	13.4 lbs (6.08 kg)
Weight - with AC-POE PS (without modules)	14.3 lbs (6.49 kg)
Weight - fully configured	16.0 lb (7.26 kg)
Power	
AC input	
• Voltage	100 to 240 VAC, autoranging
• Frequency	47 to 63 Hz
• Current	1.5 A to 0.3 A (configuration dependent)
• Current with AC-POE	3.4 A to 0.3 A (configuration dependent)
• Surge current	30 A maximum at 115 VAC 60Hz, 60 A maximum at 230 VAC 50 Hz
Power consumption	
• AC power supply	55 W to 145 W, 188 to 495 BTU/hr (configuration dependent)
• AC-POE power supply	60 W to 330 W, 205 to 1126 BTU/hr (configuration dependent)
Ports	
Console	One RJ-45 connector and one mini USB Type B, USB 2.0 compliant
Auxiliary ports	RJ-45 connector
USB ports	Two USB Type A, USB 2.0 compliant, 2.5 W (500 mA) max. ¹
10/100/1000 Gigabit Ethernet	Two RJ-45 connectors (GE0/0, GE0/1), auto-MDIX ²
Environmental	
Operating humidity	10 to 85% RH
Operating humidity (short-term per NEBS)	NA
Operating temperature - up to 5906 ft (1800 m) elevation	32 to 104°F (0 to 40°C)

Table 1-14 Cisco 2901 Router Specifications (continued)

Description	Specification
Operating temperature - up to 9843 ft (3000 m) elevation	32 to 77°F (0 to 25°C)
Operating altitude maximum	10,000 ft (3000 m)
Transportation and Storage Environment	
Nonoperating temperature	-40 to 158°F (-40 to 70°C)
Nonoperating humidity	5 to 95% RH
Nonoperating altitude	15,000 ft (4570 m)
Acoustic	
Sound Pressure (Typ/Max)	41/53
Sound Power (Typ/Max)	49/61 dBA
Regulatory	
Safety compliance	IEC 60950-1, Safety of information technology equipment EN 60950-1, Safety of information technology equipment UL 60950-1, Standard for safety for information technology equipment [US] CAN/CSA C22.2 No. 60950-1, Safety of information technology equipment including electrical business equipment [Canada] AS/NZS 60950.1 2003 IEC60950, 3rd edition [PRC] IEC60950, 2nd Edition [Mexico] For detailed compliance information, see the Regulatory Compliance and Safety Information for Cisco 2900 Series Integrated Services Router document.

Table 1-14 Cisco 2901 Router Specifications (continued)

Description	Specification
Immunity compliance	<p>CISPR24 ITE-Immunity characteristics, Limits and methods of measurement</p> <p>EN 55024 ITE-Immunity characteristics, Limits and methods of measurement</p> <p>EN50082-1 Electromagnetic compatibility - Generic immunity standard - Part 1</p> <p>EN300-386 Electromagnetic compatibility for TNE SD/EMI</p> <p>EN61000-6-1</p> <p>For detailed compliance information, see the <i>Regulatory Compliance and Safety Information for Cisco 2900 Series Integrated Services Routers</i> document.</p>
EMC compliance	<p>EN 55022, class A</p> <p>CISPR22, class A</p> <p>CFR47, Part 15, Subpart B, class A</p> <p>EN300386, Class A</p> <p>AS/NZS CISPR22, Class A</p> <p>VCCI, Class A</p> <p>SD/EMI, Class A</p> <p>Harmonic Current Emission</p> <p>EN61000-3-2 for EUT Power requirements <16A</p> <p>EN61000-3-12 for EUT Power requirements >16A</p> <p>Voltage Fluctuation and Flicker</p> <p>EN61000-3-3 for EUT Power requirements <16</p> <p>EN61000-3-11 for EUT Power requirements >16A</p> <p>For detailed compliance information, see the <i>Regulatory Compliance and Safety Information for Cisco 2900 Series Integrated Services Router</i> document.</p>

1. 480 Mb/s individually, bandwidth is shared when both are used.
2. Auto-MDIX = auto media-dependent interface cross over.

Table 1-15 Cisco 2911 (including 2911-T) Router Specifications

Description	Specification
Dimensions (H x W x D)	3.5 x 17.25 x 12.0 in. (88.9 x 438.2 x 304.8mm), 2 RU height
Weight - with AC power supply (without modules)	18.0 lbs (8.2 kg)
Weight - with AC-POE power supply (without modules)	19.0 lbs (8.6 kg)

Table 1-15 Cisco 2911 (including 2911-T) Router Specifications (continued)

Description	Specification
Weight - with DC-POE power supply (without modules)	18.8 lbs (8.5 kg)
With DC power supply (without modules)	Not Available
Weight - fully configured	21 lb (9.5 kg)
Power	
AC input	
• Voltage	100 to 240 VAC, autoranging
• Frequency	47 to 63 Hz
• Current	2.3 A to 0.35 A (configuration dependent)
• Current with AC-POE	3.5 A to 0.4 A (configuration dependent)
• Surge current	30 A maximum at 115 VAC 60 Hz, 60 A maximum at 230 VAC 50 Hz
DC input (for DC-POE power supply)	
• Voltage	-40 to -60 VDC
• Current	9 A to 1 A (configuration dependent)
Power Consumption	
• AC power supply	65 W to 220 W, 221 to 751 BTU/hr (configuration dependent)
• AC-POE power supply	70 W to 330 W, 239 to 1126 BTU/hr (configuration dependent)
• DC-POE power supply	60 W to 320 W (configuration dependent)
Ports	
Console port	One RJ-45 connector and one mini USB Type B, USB 2.0 compliant
Auxiliary port	RJ-45 connector
USB ports	Two USB Type A, USB 2.0 compliant, 2.5 W (500 mA) max. ¹
10/100/1000 Gigabit Ethernet	Three RJ-45 connectors (GE0/0, GE0/1, GE0/2), auto-MDIX ²
Environmental	
Operating humidity	5 to 85% RH
Operating humidity (short-term per NEBS)	5% to 90%, but not to exceed 0.024 kg water/kg of dry air
Operating temperature up to 5906 ft (1800 m) elevation	Cisco 2911 model: 32 to 104°F (0 to 40°C) Cisco 2911-T model: 32 to 140°F (0 to 60°C)
Operating temperature up to 5906 ft (1800 m) elevation, with filter	Cisco 2911 model: 32 to 104°F (0 to 40°C) Cisco 2911-T model: 32 to 122°F (0 to 50°C)
Operating temperature up to 9843 ft (3000 m) elevation, with or without filter	32 to 104°F (0 to 40°C)

Table 1-15 Cisco 2911 (including 2911-T) Router Specifications (continued)

Description	Specification
Operating temperature up to 13,123 ft (4000 m) elevation	32 to 86°F (0 to 30°C)
Temperature - (Short-term per NEBS/1800m max altitude)	23°F to 122°F (-5°C to 50°C)
Operating altitude maximum	13,123 ft (4000 m)
Transportation and Storage	
Non-operating temperature	-40 to 176°F (-40 to 80°C)
Non-operating humidity	5 to 95% RH
Non-operating altitude	15,000 ft (4570 m)
Acoustic	
Acoustic: Sound Pressure (Typical/Maximum)	51.8/62.9 dBA
Acoustic: Sound Power (Typical/Maximum)	58.5/70.3 dBA
Regulatory	
Safety compliance	IEC 60950-1, Safety of information technology equipment EN 60950-1, Safety of information technology equipment UL 60950-1, Standard for safety for information technology equipment [US] CAN/CSA C22.2 No. 60950-1, Safety of information technology equipment including electrical business equipment [Canada] AS/NZS 60950.1 2003 IEC60950, 3rd edition [PRC] IEC60950, 2nd Edition [Mexico] For detailed compliance information, see the Regulatory Compliance and Safety Information for Cisco 2900 Series Integrated Services Router document.

Table 1-15 Cisco 2911 (including 2911-T) Router Specifications (continued)

Description	Specification
Immunity compliance	CISPR24 ITE-Immunity characteristics, Limits and methods of measurement EN 55024 ITE-Immunity characteristics, Limits and methods of measurement EN 50082-1 Electromagnetic compatibility - Generic immunity standard - Part 1 EN 300-386 Electromagnetic compatibility for TNE SD/EMI EN 61000-6-1 For detailed compliance information, see the Regulatory Compliance and Safety Information for Cisco 2900 Series Integrated Services Router document.
EMC compliance	EN 55022, class A CISPR22, class A CFR47, Part 15, Subpart B, class A EN300386, Class A AS/NZS CISPR22, Class A VCCI, Class A SD/EMI, Class A Harmonic Current Emission EN61000-3-2 for EUT Power requirements <16A EN61000-3-12 for EUT Power requirements >16A Voltage Fluctuation and Flicker EN61000-3-3 for EUT Power requirements <16 EN61000-3-11 for EUT Power requirements >16A For detailed compliance information, see the Regulatory Compliance and Safety Information for Cisco 2900 Series Integrated Services Router document.

1. 480 Mb/s individually, bandwidth is shared when both are used.
2. Auto-MDIX = auto media-dependent interface crossover

Table 1-16 Cisco 2921 Router Specifications

Description	Specification
Physical	
Dimensions (H x W x D)	3.5 x 17.25 x 18.5 in. (88.9 x 438.2 x 469.9 mm), 2 RU height
Weight with AC PS (w/o modules)	29.0 lbs (13.15 kg)
Weight with AC-POE PS (w/o modules)	30.0 lbs (13.6 kg)

Table 1-16 Cisco 2921 Router Specifications (continued)

Description	Specification
With DC PS (w/o modules)	NA
Weight (fully configured)	34 lb, 14.42 kg
Power	
AC input power	
• Input voltage	100 to 240 VAC, autoranging
• Frequency	47 to 63 Hz
• Input current	0.4 A to 3.3 A (configuration dependent)
• Input current with AC-POE	0.4 A to 7.6 A (configuration dependent)
• Surge current	60 A peak and less than 12 Arms per half cycle
Power consumption	75 W to 320 W, 256 to 1092 BTU/hr (configuration dependent)
• With AC-POE	80W to 750 W, 273 to 753 BTU/hr (configuration dependent)
Ports	
Console ports	One RJ-45 connector and one mini USB Type B, USB 2.0 compliant
Auxiliary port	RJ-45 connector
USB ports	Two USB Type A, USB 2.0 compliant, 2.5 W (500 mA) max. ¹
10/100/1000 Gigabit Ethernet	Three RJ-45 connectors (GE0/0, GE0/1, GE0/2), auto-MDIX
SFP	One RJ-45 connector supports an SFP module. When an SFP module is installed, the adjacent RJ-45 GE connector is disabled.
Environmental	
Operating humidity	10 to 85% RH
Operating temperature up to 5906 ft (1800 m) elevation	32 to 104°F (0 to 40°C)
Operating temperature up to 9843 ft (3000 m) elevation	32 to 104°F (0 to 40°C)
Operating altitude	9842 ft (3000 m) maximum
Transportation and Storage	
Nonoperating temperature	-40 to 158°F (-40 to 70°C)
Nonoperating humidity	5 to 95% RH
Nonoperating altitude	15,000 ft (4570 m)
Acoustic	
Acoustic: Sound Pressure (Typical/Maximum)	54.4 to 67.4 dBA
Acoustic: Sound Power (Typical/Maximum)	62.6 to 74.5 dBA

Table 1-16 Cisco 2921 Router Specifications (continued)

Description	Specification
Regulatory	
Safety compliance	IEC 60950-1, Safety of information technology equipment EN 60950-1, Safety of information technology equipment UL 60950-1, Standard for safety for information technology equipment [US] CAN/CSA C22.2 No. 60950-1, Safety of information technology equipment including electrical business equipment [Canada] AS/NZS 60950.1 2003 IEC60950, 3rd edition [PRC] IEC60950, 2nd Edition [Mexico] For detailed compliance information, see the <i>Regulatory Compliance and Safety Information for Cisco 2900 Series Integrated Services Router</i> document.

Table 1-16 Cisco 2921 Router Specifications (continued)

Description	Specification
Immunity compliance	<p>CISPR24 ITE-Immunity characteristics, Limits and methods of measurement</p> <p>EN 55024 ITE-Immunity characteristics, Limits and methods of measurement</p> <p>EN 50082-1 Electromagnetic compatibility - Generic immunity standard - Part 1</p> <p>EN 300-386 Electromagnetic compatibility for TNE SD/EMI</p> <p>EN 61000-6-1</p> <p>For detailed compliance information, see the <i>Regulatory Compliance and Safety Information for Cisco 2900 Series Integrated Services Routers</i> document.</p>
EMC compliance	<p>EN 55022, class A</p> <p>CISPR22, class A</p> <p>CFR47, Part 15, Subpart B, class A</p> <p>EN 300386, Class A</p> <p>AS/NZS CISPR22, Class A</p> <p>VCCI, Class A</p> <p>SD/EMI, Class A</p> <p>Harmonic Current Emission</p> <p>EN 61000-3-2 for EUT Power requirements <16A</p> <p>EN 61000-3-12 for EUT Power requirements >16A</p> <p>Voltage Fluctuation and Flicker</p> <p>EN 61000-3-3 for EUT Power requirements <16</p> <p>EN 61000-3-11 for EUT Power requirements >16A</p> <p>For detailed compliance information, see the <i>Regulatory Compliance and Safety Information for Cisco 2900 Series Integrated Services Router</i> document.</p>

1. 480 Mb/s individually, bandwidth is shared when both are used.

Table 1-17 Cisco 2951 Router Specifications

Description	Specification
Physical	
Dimensions (H x W x D)	3.5 x 17.25 x 18.5 in. (88.9 x 438.2 x 469.9 mm), 2 RU height
Weight with AC power supply (without modules)	29.0 lbs (13.15 kg)
Weight with AC-POE power supply (without modules)	30.0 lbs (13.6 kg)

Table 1-17 Cisco 2951 Router Specifications (continued)

Description	Specification
With DC power supply (without modules)	NA
Weight (fully configured)	34 lb (14.42 kg)
Power	
AC input power	
• Input voltage	100 to 240 VAC, autoranging
• Frequency	47 to 63 Hz
• Input current	0.4 to 3.3 A (configuration dependent)
• Input current with AC-POE	0.4 to 7.6 A (configuration dependent)
• Surge current	60 A peak and less than 12 Arms per half cycle
Power consumption	75 to 320 W, 256 to 1092 BTU/hr (configuration dependent)
• With AC-POE	80 to 750 W, 273 to 753 BTU/hr (configuration dependent)
Ports	
Console port	One RJ-45 connector and one mini USB Type B, USB 2.0 compliant
Auxiliary port	RJ-45 connector
USB ports	Two USB Type A, USB 2.0 compliant, 2.5 W (500 mA) max. ¹
10/100/1000 Gigabit Ethernet	Three RJ-45 connectors (GE0/0, GE0/1, GE0/2), auto-MDIX
SFP	One RJ-45 connectors supports an SFP module. When an SFP module is installed the adjacent RJ-45 GE connector is disabled. See Table 1-4 for a list of supported modules.
Environmental	
Operating humidity	5 to 85% RH
Operating humidity (short-term per NEBS)	5 to 90%, but not to exceed 0.024 kg water/kg of dry air
Operating temperature - up to 5906 ft (1800 m) elevation	32 to 104°F (0 to 40°C)
Operating temperature - up to 9843 ft (3000 m) elevation	32 to 104°F (0 to 40°C)
Operating temperature - up to 13,123 ft (4000 m) elevation	32 to 86 °F (0 - 30 °C)
Temperature - Short-term per NEBS/1800m max altitude	23 to 122°F (-5°C to 50°C)
Operating altitude maximum	13,123 ft (4000 m)
Transportation and Storage	
Nonoperating temperature	-40 to 158°F (-40 to 70°C)
Nonoperating humidity	5 to 95% RH
Nonoperating altitude	15,000 ft (4570 m)

Table 1-17 Cisco 2951 Router Specifications (continued)

Description	Specification
Acoustic	
Acoustic: Sound Pressure (Typical/Maximum)	54.4 to 67.4 dBA
Acoustic: Sound Power (Typical/Maximum)	62.6 to 74.5 dBA
Regulatory	
Safety compliance	IEC 60950-1, Safety of information technology equipment EN 60950-1, Safety of information technology equipment UL 60950-1, Standard for safety for information technology equipment [US] CAN/CSA C22.2 No. 60950-1, Safety of information technology equipment including electrical business equipment [Canada] AS/NZS 60950.1 2003 IEC60950, 3rd edition [PRC] IEC60950, 2nd Edition [Mexico] For detailed compliance information, see the Regulatory Compliance and Safety Information for Cisco 2900 Series Integrated Services Router document

Table 1-17 Cisco 2951 Router Specifications (continued)

Description	Specification
Immunity compliance	<p>CISPR24 ITE-Immunity characteristics, Limits and methods of measurement</p> <p>EN 55024 ITE-Immunity characteristics, Limits and methods of measurement</p> <p>EN 50082-1 Electromagnetic compatibility - Generic immunity standard - Part 1</p> <p>EN 300-386 Electromagnetic compatibility for TNE SD/EMI</p> <p>EN 61000-6-1</p> <p>For detailed compliance information, see the Regulatory Compliance and Safety Information for Cisco 2900 Series Integrated Services Router document</p>
EMC compliance	<p>EN 55022, class A</p> <p>CISPR22, class A</p> <p>CFR47, Part 15, Subpart B, class A</p> <p>EN 300386, Class A</p> <p>AS/NZS CISPR22, Class A</p> <p>VCCI, Class A</p> <p>SD/EMI, Class A</p> <p>Harmonic Current Emission</p> <p>EN 61000-3-2 for EUT Power requirements <16A</p> <p>EN 61000-3-12 for EUT Power requirements >16A</p> <p>Voltage Fluctuation and Flicker</p> <p>EN 61000-3-3 for EUT Power requirements <16</p> <p>EN 61000-3-11 for EUT Power requirements >16A</p> <p>For detailed compliance information, see the Regulatory Compliance and Safety Information for Cisco 2900 Series Integrated Services Router document.</p>

1. 480 Mb/s individually, bandwidth is shared when both are used.

Table 1-18 Cisco 3900 Series Router Specifications

Description	Specification
Physical	
Dimensions (H x W x D)	5.25 x 17.25 x 18.75 in. (133.4 x 438.2 x 476.2 mm), 3 RU height
Weight with AC PS (w/o modules)	39.0 lbs (17.69 kg)
Weight with AC-POE PS (w/o modules)	40.0 lbs (18.14 kg)
With DC PS (w/o modules)	Not available (NA)

Table 1-18 Cisco 3900 Series Router Specifications (continued)

Description	Specification
Weight (fully configured)	60 lb (27.21 kg)
Power	
AC input power (Cisco 3945)	
• Input voltage	100 to 240 VAC, autoranging
• Frequency	47 to 63 Hz
• Input current	0.4 to 3.5 A (configuration dependent)
• Input current with AC-POE	0.4 to 7.0 A (configuration dependent)
• Surge current	30 A maximum at 115 VAC 60 Hz, 60 A maximum at 230 VAC 50 Hz
Power consumption (Cisco 3945)	85 to 400 W, 600 to 1370 BTU/hr (configuration dependent)
• With AC-POE	85 to 800 W, 600 to 2740 BTU/hr (configuration dependent)
Ports	
Console port	One RJ-45 connector and one mini USB Type B, USB 2.0 compliant
Auxiliary port	RJ-45 connector
USB ports	Two USB Type A, USB 2.0 compliant, 2.5 W (500 mA) max. ¹
10/100/1000 Gigabit Ethernet	Three or Four RJ-45 connectors (GE0/0, GE0/1, GE0/2, GE0/3), auto-MDIX ² . Note Cisco 3925E and Cisco 3945E routers have four RJ-45 connectors that support Gigabit Ethernet networks.
SFP	Two RJ-45 connectors support SFP modules. When an SFP module is installed the adjacent RJ-45 GE connector is disabled. See Table 5-3 for a list of supported modules.
Environmental	
Operating humidity	5 to 85% RH
Operating humidity (short-term per NEBS)	5% to 90%, but not to exceed 0.024 kg water/kg of dry air
Operating temperature up to 5906 ft (1800 m) elevation	32 to 104°F (0 to 40°C)
Operating temperature up to 9843 ft (3000 m) elevation	32 to 104°F (0 to 40°C)
Operating temperature up to 13,123 ft (4000 m) elevation	32 to 86 °F (0 - 30 °C)
Temperature - Short-term per NEBS/1800m max altitude	23 to 122°F (-5°C to 50°C)
Operating altitude maximum	13,123 ft (4000 m)
Transportation and Storage	
Nonoperating temperature	-40 to 158°F (-40 to 70°C)
Nonoperating humidity	5 to 95% RH

Table 1-18 Cisco 3900 Series Router Specifications (continued)

Description	Specification
Nonoperating altitude	15,000 ft (4570 m)
Acoustic	
Acoustic: Sound Pressure (Typical/Maximum)	57.6 to 77.6 dBA
Acoustic: Sound Power (Typical/Maximum)	67.8 to 84.7 dBA
Environmental	
Operating humidity	5 to 85% RH
Operating humidity (short-term per NEBS)	5 to 90%, but not to exceed 0.024 kg water/kg of dry air
Operating temperature up to 5906 ft (1800 m) elevation	32 to 104°F (0 to 40°C)
Safety compliance	IEC 60950-1, Safety of information technology equipment EN 60950-1, Safety of information technology equipment UL 60950-1, Standard for safety for information technology equipment [US] CAN/CSA C22.2 No. 60950-1, Safety of information technology equipment including electrical business equipment [Canada] AS/NZS 60950.1 2003 IEC60950, 3rd edition [PRC] IEC60950, 2nd Edition [Mexico] For detailed compliance information, see the Regulatory Compliance and Safety Information for Cisco 3900 Series Integrated Services Routers document.

Table 1-18 Cisco 3900 Series Router Specifications (continued)

Description	Specification
Immunity compliance	CISPR24 ITE-Immunity characteristics, Limits and methods of measurement EN 55024 ITE-Immunity characteristics, Limits and methods of measurement EN 50082-1 Electromagnetic compatibility - Generic immunity standard - Part 1 EN 300-386 Electromagnetic compatibility for TNE SD/EMI EN 61000-6-1 For detailed compliance information, see the <i>Regulatory Compliance and Safety Information for Cisco 3900 Series Integrated Services Routers</i> document.
EMC compliance	EN 55022, class A CISPR22, class A CFR47, Part 15, Subpart B, class A EN300386, Class A AS/NZS CISPR22, Class A VCCI, Class A SD/EMI, Class A Harmonic Current Emission EN 61000-3-2 for EUT Power requirements <16A EN 61000-3-12 for EUT Power requirements >16A Voltage Fluctuation and Flicker EN 61000-3-3 for EUT Power requirements <16 EN 61000-3-11 for EUT Power requirements >16A For detailed compliance information, see the <i>Regulatory Compliance and Safety Information for Cisco 3900 Series Integrated Services Routers</i> document.

1. 480 Mb/s individually, bandwidth is shared when both are used.
2. Auto-MDIX = auto media-dependent interface crossover

Periodic Inspection and Cleaning

Periodic inspection and cleaning of the external surface of the router is recommended to minimize the negative impact of environmental dust or debris. The frequency of inspection and cleaning is dependent upon the severity of the environmental conditions, but a minimum of every six months is recommended. Cleaning involves vacuuming of router air intake and exhaust vents and replacement of air filters. See the [“Fans, Ventilation, and Airflow”](#) section on page 1-26 and the [“Replacing a Fan Tray or Air Filter”](#) section on page 5-44.



Caution

Sites with ambient temperatures consistently above 25°C or 77°F and with potentially high levels of dust or debris may require periodic preventative maintenance cleaning.
