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Hardware Installation Guide for the Cisco 1000 Series Integrated Services Router

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Overview of Cisco 1000 Series Integrated Services Routers

Cisco 1000 Series Integrated Services Routers with Cisco IOS XE Software are high-performance devices that are easy to deploy and manage. The routers combine Internet access, comprehensive security, and wireless services (LTE Advanced 3.0, Wireless WAN and Wireless LAN).

About Cisco 1000 Series Integrated Service Routers

The Cisco 1000 Series Integrated Services Routers are the next generation, IOS XE-based, multi core, branch routers. They are available in both fixed and modular form factors. The Cisco 1000 Series Integrated Services Routers is best suited for small and midsize businesses, enterprise branches, and as customer premises equipment in managed services environments.

Table 1: Base Models of the Cisco 1000 Series Integrated Services Routers

Base Models	Front Panel Switch Ports	WAN Ports	Console Port	(Optional) POE	(Optional) WLAN	(Optional) LTE	(Optional) DSL
C111x-8P	8	2 (1 Combo RJ-45/SFP + 1 RJ-45)	Serial RJ-45, Micro USB	4PoE/2PoE+	None	4G LTE-Advanced (CAT6) with carrier aggregation	G.FAST, VDSL2 and ADSL2/2+
C1111X-8P	8	2 (1 Combo RJ-45/SFP + 1 RJ-45)	Serial RJ-45, Micro USB	4PoE/2PoE+	None	None	None

Base Models	Front Panel Switch Ports	WAN Ports	Console Port	(Optional) POE	(Optional) WLAN	(Optional) LTE	(Optional) DSL
C111x-4P	4	2 (1 Combo RJ-45/SFP + 1 RJ-45)	Serial RJ-45, Micro USB	2 POE/1 POE+	802.11ac WAVE 2	4G LTE-Advanced (CAT6) with carrier aggregation	VDSL2 and ADSL2/2+
C1101-4PLTEPWx	4	1 RJ-45	Micro USB	None	802.11ac WAVE 2 (C1101-4PLTEPWx)	4G pluggable LTE (CAT 4) and pluggable LTE Advanced (CAT 6) with carrier aggregation	None
C1101-4P	4	1 RJ-45	Micro USB	None	None	None	None
C1109-2PLTE	2	1 RJ-45	Micro USB	None	None	4G LTE (CAT 4)	None
C1109-4PLTE2P	4	1 RJ45	Micro USB	None	802.11ac WAVE 2 (C1094PLTE2PWx)	Dual pluggable modems - 4G pluggable LTE (CAT 4) and pluggable LTE Advanced (CAT 6) with carrier aggregation	None
C1121-4P	4	2(1 Combo RJ45/SFP+1 RJ45	Micro USB	2 POE/1 POE+	None	None	None

Base Models	Front Panel Switch Ports	WAN Ports	Console Port	(Optional) POE	(Optional) WLAN	(Optional) LTE	(Optional) DSL
C1121-4PLTEP	4	2(1 Combo RJ45/SFP+1 RJ45	Micro USB	2 POE/1 POE+	None	4G Pluggable LTE (CAT 4) and pluggable LTE Advanced (CAT 6) with carrier aggregation	None
C11x1(X)-8P *	8	2(1 Combo RJ45/SFP+1 RJ45	Micro USB	4 POE/2 POE+	None	None	None
C11x1(X)-8PLTEP *	8	2(1 Combo RJ45/SFP+1 RJ45	Micro USB	4 POE/2 POE+	None	4G Pluggable LTE (CAT 4) and pluggable LTE Advanced (CAT 6) with carrier aggregation	VDSL2, ADSL2/2+, G.SHDSL
C112lX-8PLTEPWx	8	2(1 Combo RJ45/SFP+1 RJ45	Micro USB	4 POE/2 POE+	802.11 AC WAVE 2	4G Pluggable LTE (CAT 4) and pluggable LTE Advanced (CAT 6) with carrier aggregation	None
C113lX-8PLTEPWx C1131-8PLTEPWx	8	2x L3 Gigabit RJ45/SFP Combo	Serial RJ45	4 POE/2 POE+	802.11 AX WiFi 6	5G Plugabble LTE	None
C1131X-8PWx C1131-8PWx	8	2x L3 Gigabit RJ45/SFP Combo	Serial RJ45	4 POE/2 POE+	802.11 AX WiFi 6	None	None

Table 2: Pluggable Modules of the Cisco 1000 Series Integrated Services Routers

Pluggable Interface Modules	Pluggable Interface Modules Technology
P-LTE-GB	CAT4 LTE Pluggable Europe SMS/GPS
P-LTE-GB=	CAT4 LTE Pluggable Europe SMS/GPS
P-LTE-IN	CAT4 LTE Pluggable India and China
P-LTE-IN=	CAT4 LTE Pluggable India and China
P-LTE-JN	CAT4 LTE Pluggable Japan
P-LTE-JN=	CAT4 LTE Pluggable Japan
P-LTE-NA	CAT4 LTE Pluggable for North America
P-LTE-NA=	CAT4 LTE Pluggable for North America
P-LTE-US	CAT4 LTE Pluggable for United States
P-LTE-US=	CAT4 LTE Pluggable for United States
P-LTE-VZ	CAT4 LTE Pluggable Verizon
P-LTE-VZ=	CAT4 LTE Pluggable Verizon
P-LTEA-EA	CAT6 LTE Advanced Pluggable for Europe and North America
P-LTEA-EA=	CAT6 LTE Advanced Pluggable for Europe and North America
P-LTEA-LA	CAT6 LTE Advanced Pluggable for APAC, LATAM, and ANZ
P-LTEA-LA=	CAT6 LTE Advanced Pluggable for APAC, LATAM, and ANZ
P-LTEAP18-GL	CAT6 LTE Advanced PRO Pluggable for ALL Global Regions
P-LTEAP18-GL=	CAT6 LTE Advanced PRO Pluggable for ALL Global Regions
P-5GS6-GL	5G Sub-6 GHz Pluggable Interface Module
P-5GS6-R16SA-GL	5G Sub-6 GHz Pluggable Interface Module
P-LTEA7-NA	CAT7 LTE Pluggable for North America
P-LTEA7-JP	CAT7 LTE Advanced PIM for Japan
P-LTEA7-EAL	CAT7 LTE Advanced PIM for EMEA, APAC, LATAM

Note P-5GS6-GL is supported on C8300, C8200, C8200L, and Cisco 1000 Series Integrated Service Routers.

P-5GS6-GL is supported on Cisco 1000 Series Integrated Service Routers from the Cisco IOS XE 17.9.2 release.

Note Base Models with an 'X' has 8GB of DRAM and Flash memory. Example: C1111X-8P

The C1131 models have 4GB of DRAM and 8G flash memory.

The C1131X models have 8GB of DRAM and 16G flash memory.

For the C1131 series, only the Class A statements in the Trademark notice, which is available at the beginning of this guide, is valid.

Base Models without an 'X' have 4GB of DRAM and Flash Memory. Example: C1111-8P

For base model-C11x1X-8PLTEP, 'x' represents the CPU performance level.

For more information on the features and specifications of Cisco 1000 Series Integrated Services Routers, refer to the Cisco 1000 Series Integrated Services Routers Solution Overview document and Cisco 1000 Series Integrated Services Routers datasheet.

Chassis Views

Note The compliance label is present at the bottom of the product.

This section contains front and back panel views of the Cisco 1000 Series Integrated Services Routers showing locations of the power and signal interfaces, interface slots, status indicators, and chassis identification labels.

Figure 1: C111x Series - Bezel View
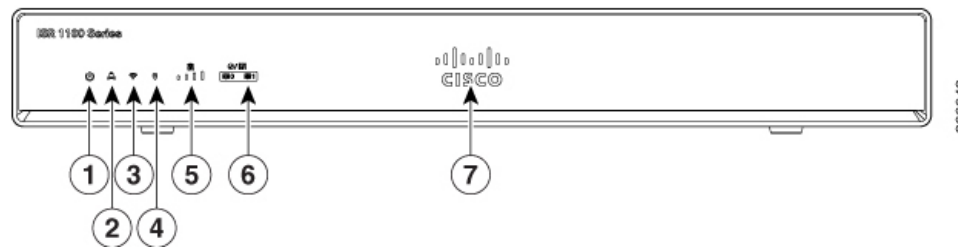
1	Status	2	VPN
3	Wi-Fi	4	GPS
5	LTE signal intensity	6	LTE data/SIM
7	Illuminated Cisco logo		

Figure 2: C111x-8P - I/O View
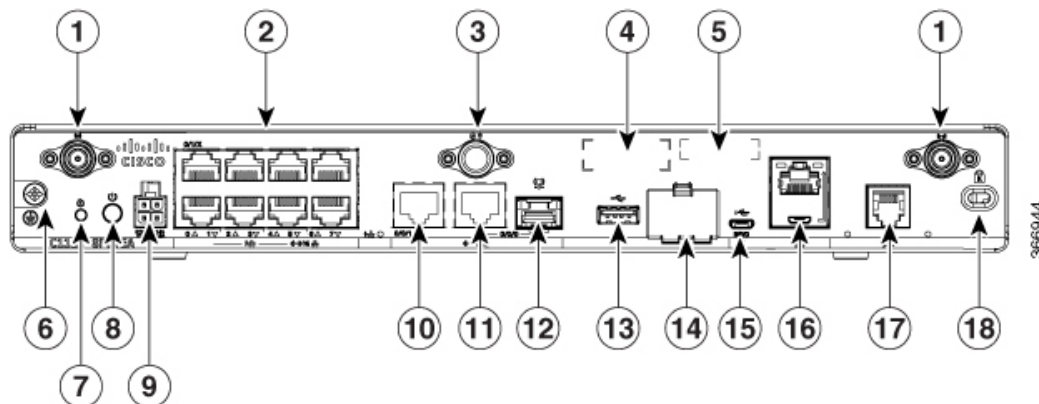
1	LTE antennas – main and diversity	2	Ethernet switch
3	GPS connection	4	CLEI label
5	Serial number	6	Grounding
7	Reset button	8	Power switch
9	4-pin power connector	10	GE 0/0/1
11	GE 0/0/0 - RJ45	12	GE 0/0/0 - SFP
13	USB3.0	14	Lower slot0 Upper slot1
15	LTE provisioning port	16	RJ45/Micro USB console
17	DSL	18	Kensington lock slot
19	Product Identification Number (PID)		

Note   For more information on the Reset Button, refer to the Reset Overview section in the ISR 1000 Series Integrated Services Routers.

Figure 3: C1101-4P ISR - Front View
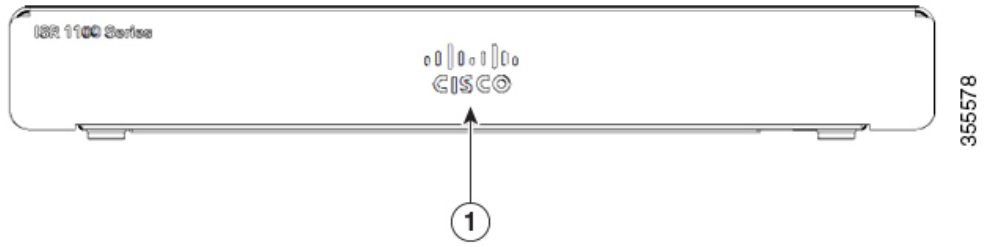
1	Non-illuminated Cisco logo	

Figure 4: C1101-4P ISR - I/O View
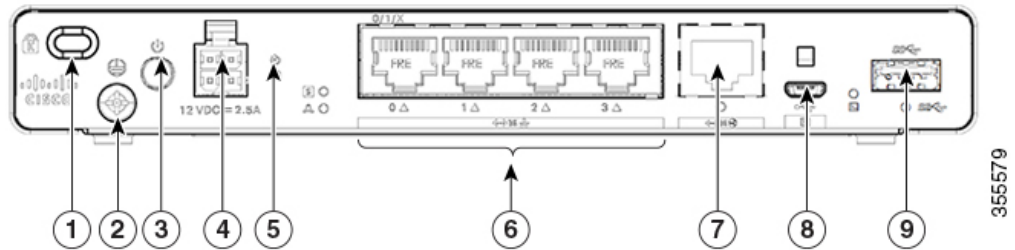
1	Kensington lock slot	2	Grounding
3	Power switch	4	4-pin power connector
5	Reset button	6	LAN: 0-4
7	GE WAN	8	Micro USB console
9	USB3.0		

Figure 5: C1101-4PLTEP-Bezel View
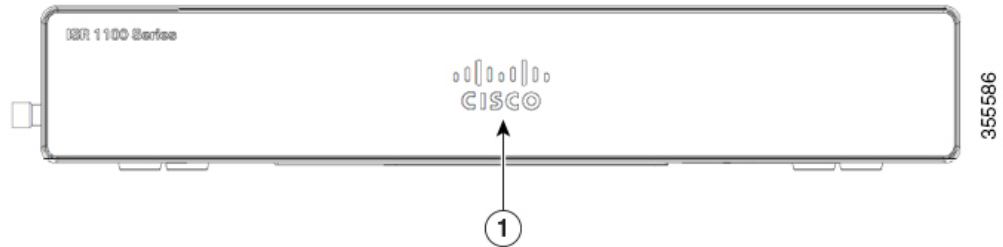
1	Non-illuminated Cisco logo

Figure 6: C1101-4PLTEP - I/O View
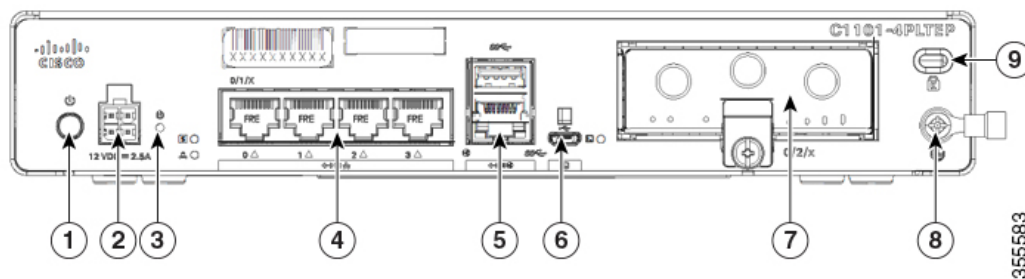
1	Power switch	2	4-pin power connector
3	Reset button	4	LAN:0-4
5	GE WAN	6	Micro-USB console port
7	Pluggable	8	Grounding
9	Kensington lock slot		

Figure 7: C1109-2PLTE - Bezel View
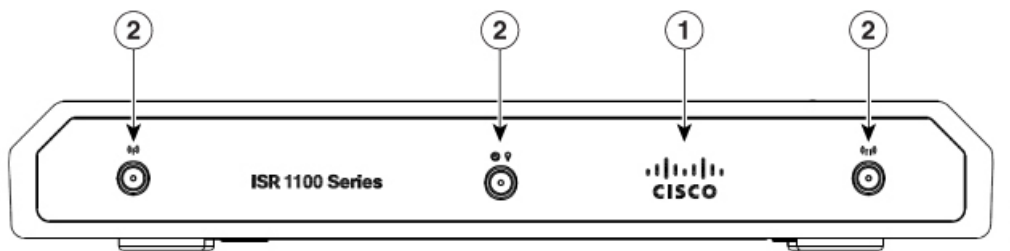
1	Non-illuminated Cisco logo
2	Main and diversity antenna

Figure 8: C1109-2PLTE - I/O View
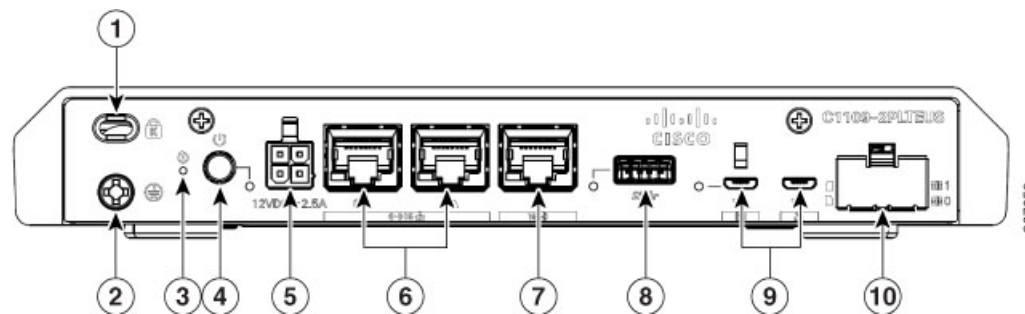
1	Kensington lock slot	2	Grounding

3	Reset button	4	Power switch
5	4-pin power connector	6	LAN: 0 & 1
7	GE WAN	8	Micro-USB console port
9	USB 3.0	10	Micro-SIM slots 0 and 1

Figure 9: C1109-4PLTE2PWX - I/O View
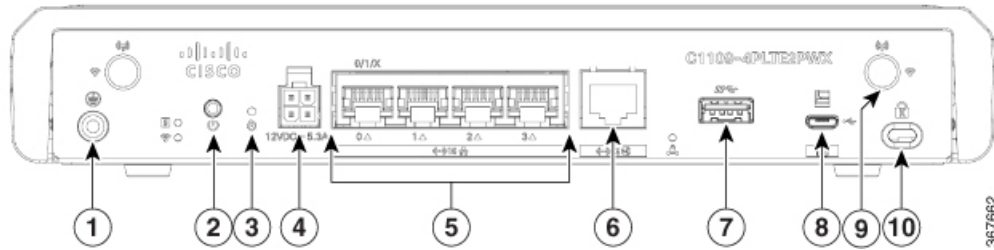
1	Grounding	2	Power switch
3	Reset button	4	4-pin power connector
5	LAN:0-4	6	GE WAN
7	USB 3.0	8	Micro-USB console port
9	LTE antenna	10	Kensington lock slot

Figure 10: C1121-4Px - Bezel View
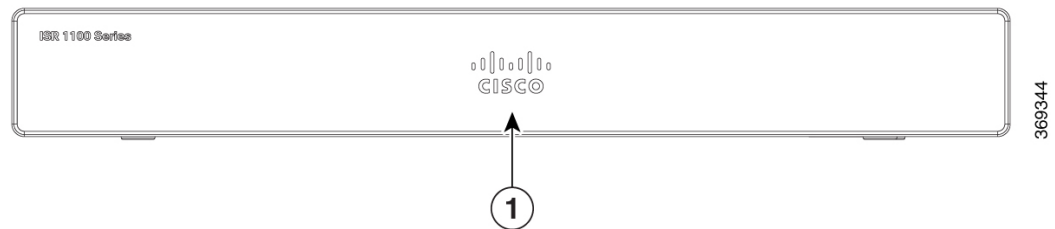
1	Non-illuminated Cisco logo		

Figure 11: C1121-4P I/O View
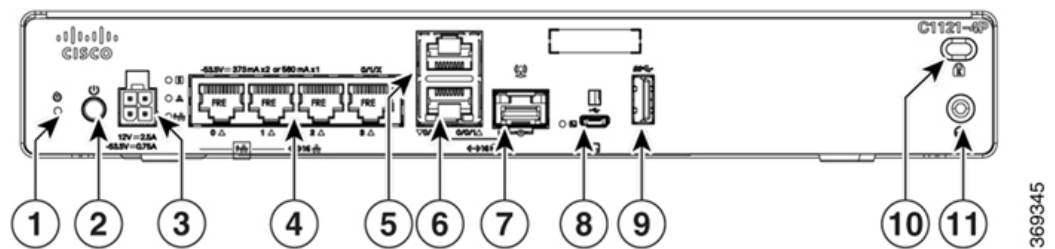
1	Reset button	2	Power switch

3	4-pin power connector	4	Ethernet switch
5	RJ-45 stacked connector	6	GE WAN 0/0/0 -RJ45
7	GE WAN 0/0/0 -SFP	8	Micro-USB console
9	USB 3.0	10	Kensington lock slot
11	Grounding		

Figure 12: C1121-4PLTEP I/O View
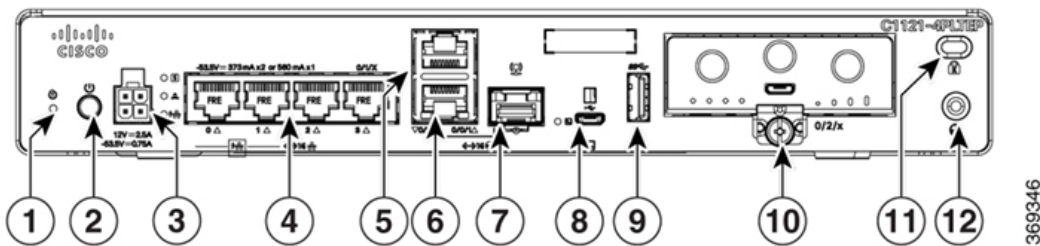
1	Reset button	2	Power switch
3	4-pin power connector	4	Ethernet switch
5	GE 0/0/1	6	GE WAN 0/0/0 -RJ45
7	GE WAN 0/0/0 -SFP	8	Micro-USB console
9	USB 3.0	10	Pluggable
11	Kensington lock slot	12	Grounding

Figure 13: C1121(X)-8P - Bezel View
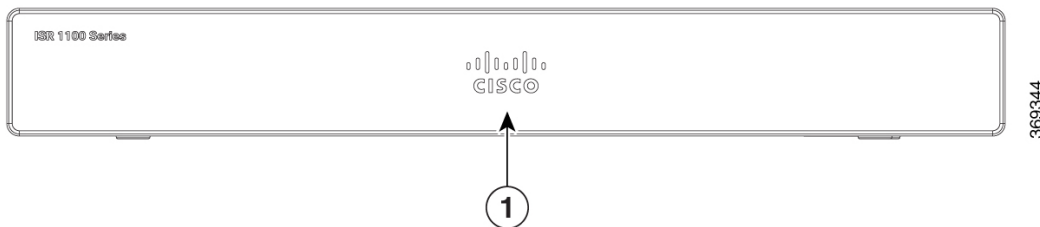
1	Non-illuminated Cisco logo		

Figure 14: C1121(X)-8P I/O View
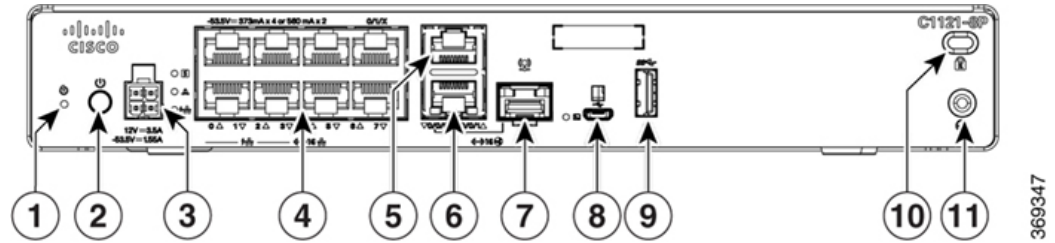
1	Reset button	2	Power switch
3	4-pin power connector	4	Ethernet switch
5	RJ-45	6	GE WAN 0/0/0 -RJ45
7	GE WAN 0/0/0 -SFP	8	Micro-USB console
9	USB 3.0	10	Kensington lock slot
11	Grounding		

Figure 15: C1121-8PLTEP I/O View
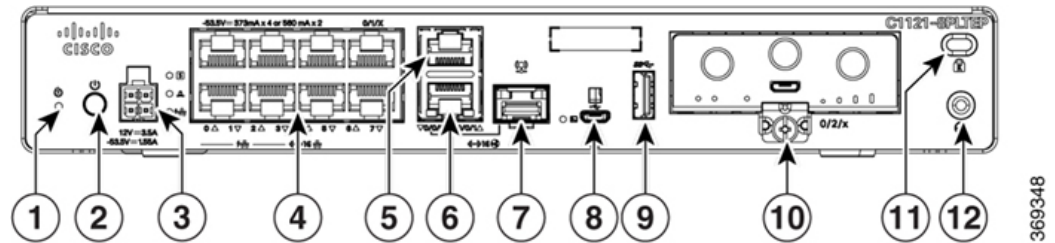
1	Reset button	2	Power switch
3	4-pin power connector	4	Ethernet switch
5	GE 0/0/1	6	GE WAN 0/0/0 -RJ45
7	GE WAN 0/0/0 -SFP	8	Micro-USB console
9	USB 3.0	10	Pluggable
11	Kensington lock slot	12	Grounding

Figure 16: C1121-8PLTEPWx Bezel View
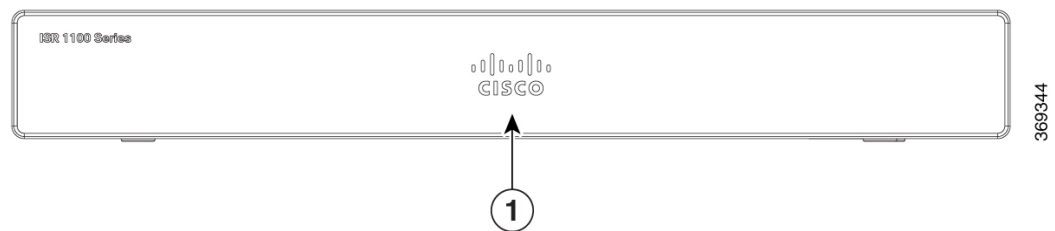
1	Non-illuminated Cisco logo	

Figure 17: C1121(X)-8PLTEPW I/O View
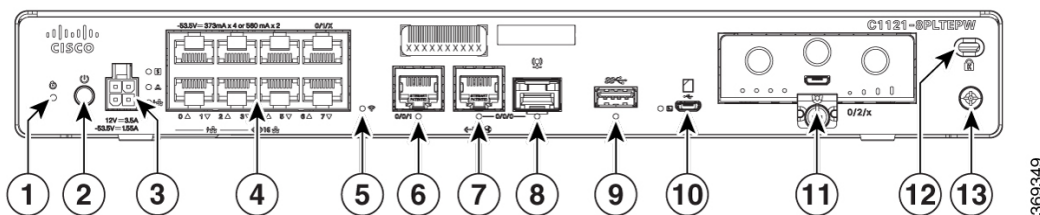
1	Reset button	2	Power switch
3	4-pin power connector	4	Ethernet switch
5	Wi-Fi status	6	GE 0/0/1
7	GE WAN 0/0/0 -RJ45	8	GE WAN 0/0/0 -SFP
9	Micro-USB console	10	USB 3.0
11	Pluggable	12	Kensington lock slot
13	Grounding		

Figure 18: C1127X-8PLTEP Bezel View
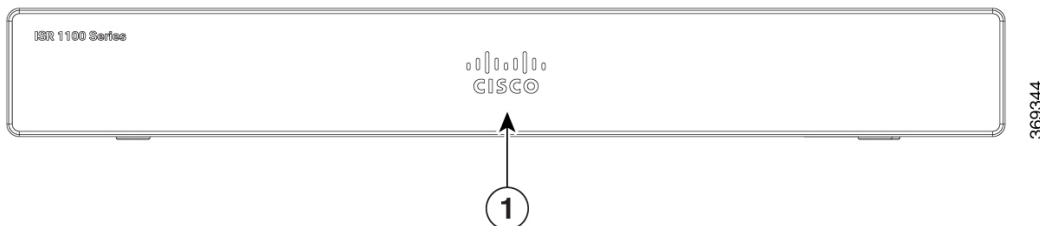
1	Non-illuminated Cisco logo	

Figure 19: C1127X-8PLTEP IO Panel View
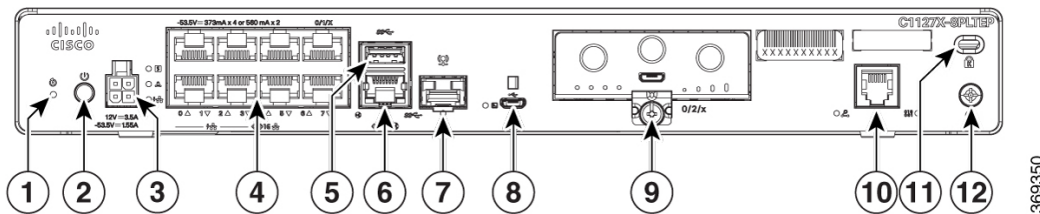
1	Reset button	2	Power switch
3	4-pin power connector	4	Ethernet switch
5	RJ-45	6	GE WAN 0/0/0 -RJ45

7	GE WAN 0/0/0 -SFP	8	Micro-USB console
9	Pluggable	10	DSL
11	Kensington lock slot	12	Grounding

Figure 20: C1128-8PLTEP Bezel View
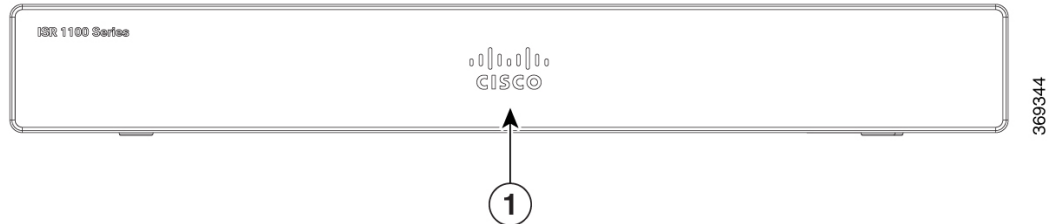
| 1 | Non-illuminated Cisco logo | |

Figure 21: C1128-8PLTEP I/O Panel View
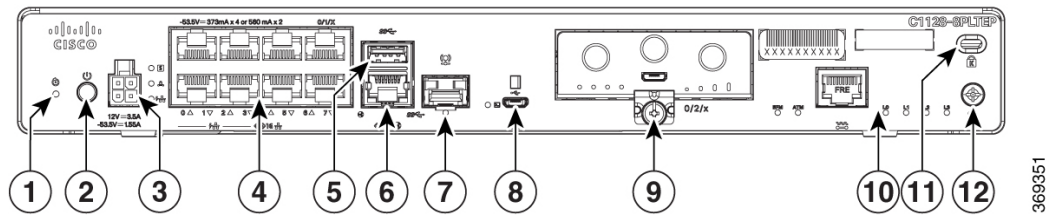
1	Reset button	2	Power switch
3	4-pin power connector	4	Ethernet switch
5	USB 3.0	6	GE WAN 0/0/0 -RJ45
7	GE WAN 0/0/0 -SFP	8	Micro-USB console
9	Pluggable	10	Symmetrical High-speed Digital Subscriber Lines (SHDSL)
11	Kensington lock slot	12	Grounding

Figure 22: C1131(X)-8PLTEPW Bezel View
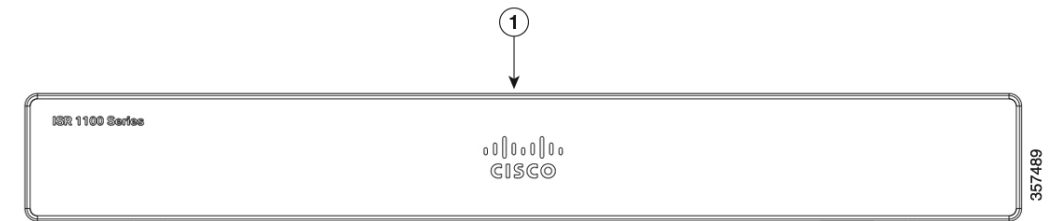
| 1 | Non-illuminated Cisco logo | |

Figure 23: C1131(X)-8PLTEPW I/O Panel View

357490
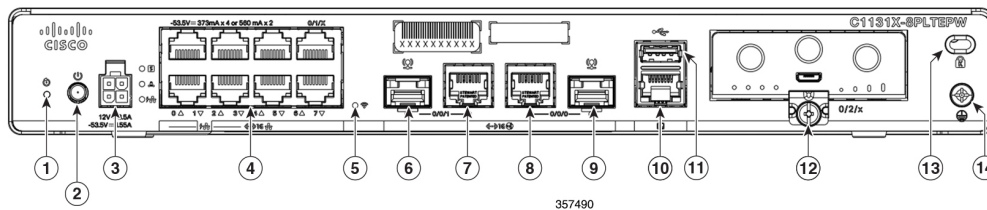
Figure 24: C1131-8PLTEPW I/O Panel View

357541
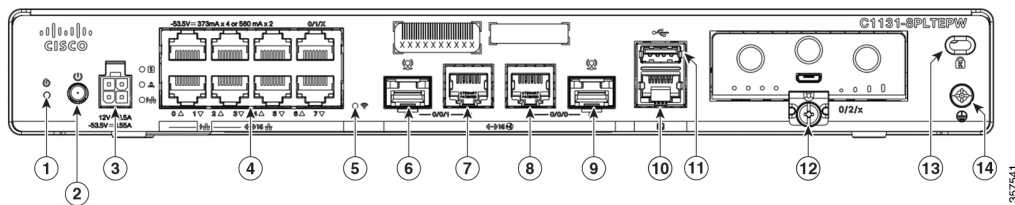
Table 3: C1131(X)-8PLTEPW/C1131-8PLTEPW I/O Panel View

1	Reset button	2	Power switch
3	4-pin power connector	4	Ethernet switch
5	Wi-Fi status	6	GE WAN 0/0/1 - SFP
7	GE WAN 0/0/1 -RJ45	8	GE WAN 0/0/0 -RJ45
9	GE WAN 0/0/0 - SFP	10	Console
11	USB 2.0	12	Pluggable
13	Kensington lock slot	14	Grounding

LED Indicators

The following figures and table summarizes the LED indicators that are located in the bezel or chassis of the C111x series.

Figure 25: LED Indicators - Bezel Side
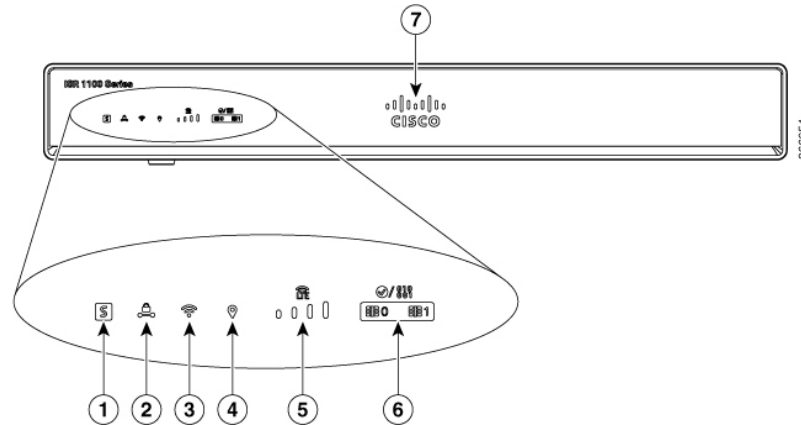
1	Status	2	VPN
3	WLAN	4	GPS
5	LTE RSSI/mode	6	LTE data/SIM
7	Cisco logo		

Figure 26: LED Indicators - I/O Side
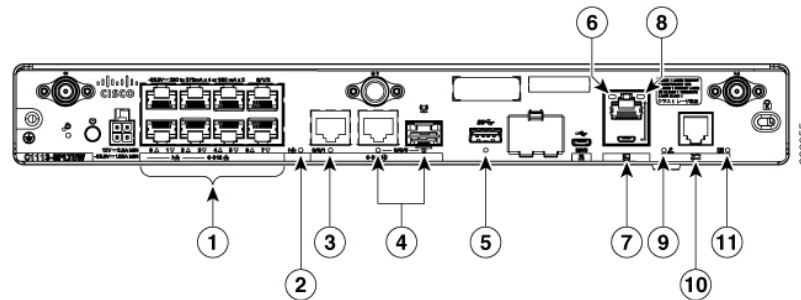
1	GE WAN ports: 0-7 (0, 2, 4, 6 at the top and 1, 3, 5, 7 at the bottom)	2	PoE LED
3	GE1 LED	4	GE0 LED
5	USB LED	6	RJ-45 console LED
7	USB console	8	Micro USB console LED
9	CD LED	10	DATA LED

Figure 27: Cisco 1121-4Px LED Indicators
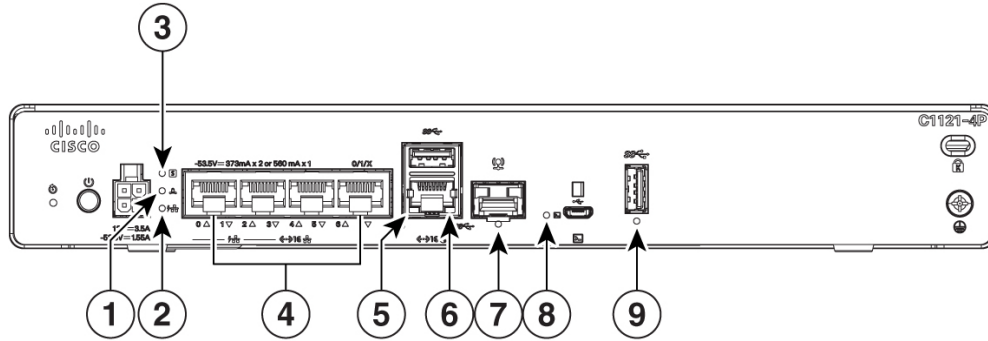
1	VPN	2	PoE LED
3	Status	4	Ethernet switch ports 0-3
5	GE 0/0/0 RJ45 LED	6	GE 0/0/1 LED
7	GE 0/0/0 RJ45 LED	8	Micro USB console LED
9	USB LED		

Figure 28: Cisco 1121-4PLTEP LED Indicators
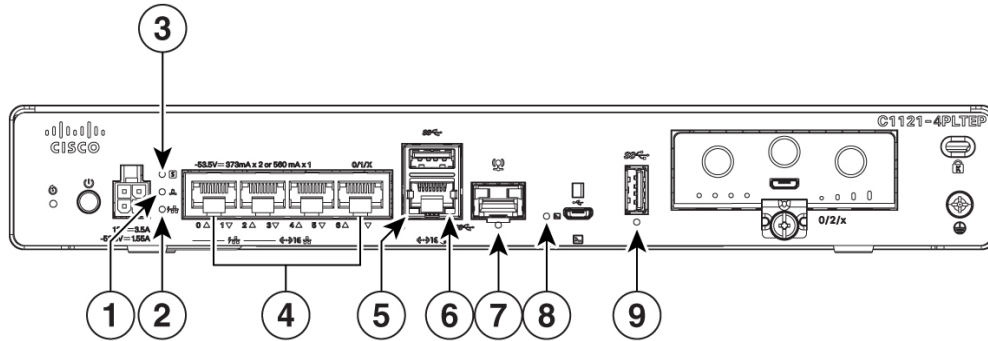
1	VPN	2	PoE LED
3	Status	4	Ethernet switch ports 0-3
5	GE 0/0/0 RJ45 LED	6	GE 0/0/1 LED
7	GE 0/0/0 RJ45 LED	8	Micro USB console LED
9	USB LED		

Figure 29: Cisco 11x1(X)-8P/ C11x1(X)-8PLTEP LED Indicators

1	VPN	2	PoE LED
3	Status	4	Ethernet switch ports 0-7 (0, 2, 4, 6 at the top and 1, 3, 5, 7 at the bottom)
5	GE 0/0/0 RJ45 LED	6	GE 0/0/1 LED
7	GE 0/0/0 RJ45 LED	8	Micro USB console LED
9	USB LED		

Figure 30: C1121(X)-8PLTEPWx LED Indicators
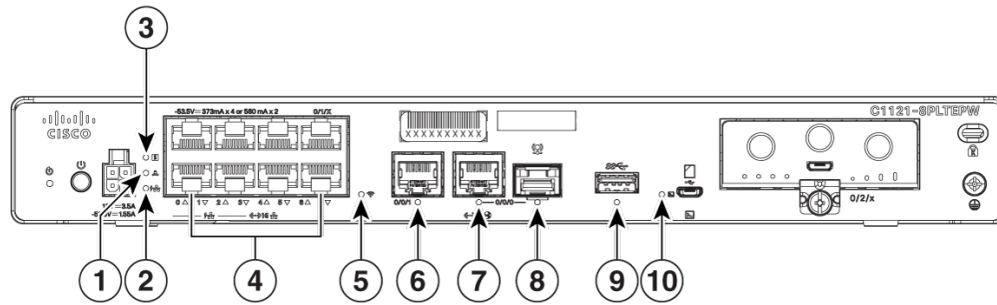
1	VPN	2	PoE LED
3	Status	4	Ethernet Switch Ports 0-7 (0, 2, 4, 6 at the top and 1, 3, 5, 7 at the bottom)
5	Wi-Fi	6	GE 0/0/0 RJ45 LED
7	GE 0/0/1 LED	8	GE 0/0/0 SFP LED
9	USB LED	10	Micro USB console LED

Figure 31: Cisco 1126(X)-8PLTEP/ C1127(X)-8PxLTEP LED Indicators
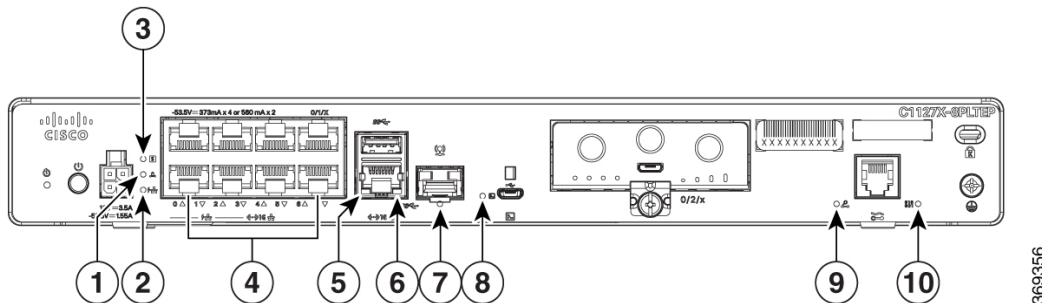
1	VPN	2	PoE LED
3	Status	4	Ethernet Switch Ports 0-7 (0, 2, 4, 6 at the top and 1, 3, 5, 7 at the bottom)
5	GE 0/0/0 RJ45 LED	6	USB5 LED
7	GE 0/0/0 SFP LED	8	Micro USB console LED
9	CD LED		

Figure 32: C1131(X)-8PW LED Indicators
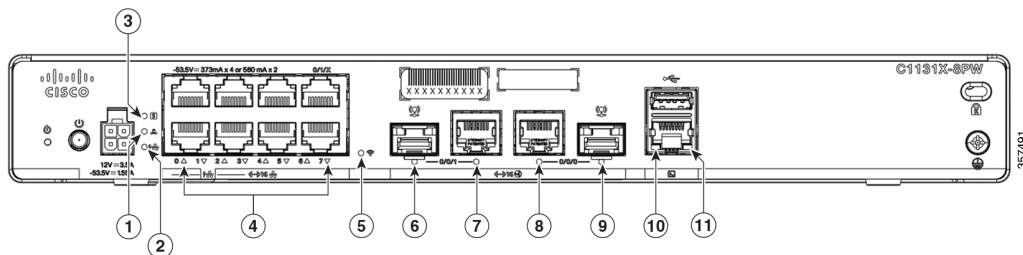
Figure 33: C1131-8PW LED Indicators
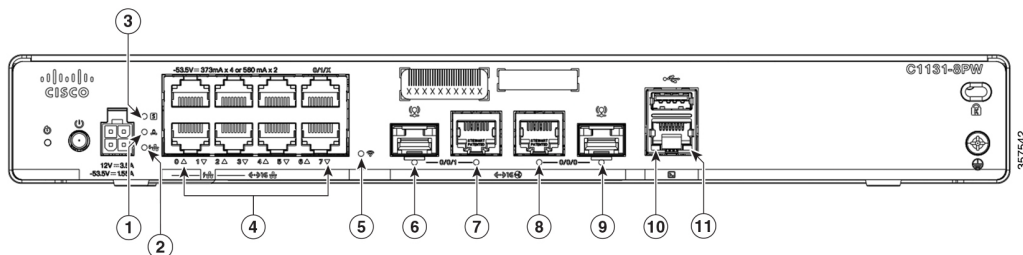
Table 4: C1131(X)-8PW/C1131-8PW LED Indicators

1	VPN	2	PoE LED
3	Status	4	Ethernet switch ports 0-7 (0, 2, 4, 6 at the top and 1, 3, 5, 7 at the bottom)

5	Wi-Fi	6	GE 0/0/1 SFP LED
7	GE 0/0/1 RJ45 LED	8	GE 0/0/0 RJ45 LED
9	GE 0/0/0 SFP LED	10	USB LED
11	Console LED		

The following table summarizes the LED indicators that are located in the bezel or chassis of the C111x series.

Table 5: LED Indicators for C111x

Port	LED Color	Description	Control Source
Cisco logo	Blue	Illuminated Cisco logo. Indicates that router is powered on.	Bezel side
Status (System status)	Green and Amber	Steady green - System is operating normally.	Bezel side. All models.
		Off—System is not out of reset mode or BIOS image is not loadable.	
		Blinking Amber — BIOS/ROMmon is booting.	
		Steady Amber — BIOS/ROMmon has completed booting, and the system is at the ROMmon prompt or booting the platform software.	
VPN OK	Green	Off— No tunnel.	Bezel side
		Steady On— At least one tunnel is up.	

Port	LED Color	Description	Control Source
LTE RSSI/mode	Green and Amber	No LEDs On—No service	Bezel side
		1 LED On— RSSI is under -100dBm.	
		2 LEDs On— Low RSSI, -99dbm <> -90dBm.	
		3 LEDs On— Medium RSSI -89dBm <> -70dBm.	
		4 LEDs On— High RSSI, > -69dBm.	
		Green— LTE	
		Amber— 3G	
GPS	Green	Off: GPS not configured	Bezel side
		On: GPS configured	
		Blink: GPS acquiring	
WLAN	Green, Red, and Amber	Green— Normal operating condition with at least one wireless client association.	Bezel side
		Red—Ethernet link is not operational or ethernet failure.	
		Amber—Software upgrade is in progress.	
Ethernet switch GE LAN ports, non-PoE	Green	Off— No link	I/O side
		Steady On— Link	
		Blink— TXD/RXD data	

Port	LED Color	Description	Control Source
Ethernet switch GE LAN ports, with PoE	Green and Amber	Off— No link, no device powered, PD denied power, power delivery fault PoE administratively disabled.	I/O side
		Green steady on— link; if PoE device, power is enabled.	
		Green Blink— TXD/RXD data	
		Amber - PoE fault	
PoE OK	Green	Green steady on— -53.5V PoE power supply connected and all powered port operating normally.	I/O side
		Off — No -53.5V PoE power supply connected to router.	
GE WAN ports	Green	Off— No link	I/O side
		Steady on— link	
		Blink— TXD/RXD data	
DSL CD	Green	Off— Shut	I/O side
		Green blink— Training, or no shut and cable disconnected.	
		Green steady on— Trained	
DSL data	Green	Off— No data activity	I/O side
		Green blink— TX/RX Data	
Console	Green	Green on— console enabled.	I/O side
USB console	Green	Off— No USB device discovered.	I/O side
		On— USB device discovered.	

Port	LED Color	Description	Control Source
USB	Green	Off: No USB device discovered.	I/O side
		On: USB device discovered.	

Table 6: LED Indicators for C1101 and C1109

LED	Color	Description	Control Source
Power	Green+Amber	System power status **Off**: No power **Green steady on**: Normal operation **Green blink**: Boot up phase or in ROM monitor mode **Amber steady on or blink**: Some issues with the system.	I/O
VPN OK	Green	VPN Status **Off**: No tunnel **Steady on**:At least one tunnel is up	I/O
Ethernet switch GE LAN ports	Green	Link activity **Off**: No link **Steady on**: Link **Blink**: TXD/RXD Data	I/O
GE WAN ports	Green	Link activity **Off**: No link **Steady on**: Link **Blink**: TXD/RXD Data	I/O

LED	Color	Description	Control Source
LTE DATA/SIM (C1101-4PLTEPWz C1101-4PLTEP/C1101-4PLTEPWx)	Green and Amber	Single LTE modem (one modem with SIM switch-over capability) **Off**: Modem not up or modem up and no SIM **Amber steady on**: Modem up, SIM installed but not active. **Green Blink**: LTE data activity.	Bezel side
WLAN (C1101-4PLTEPWx)	3-color LED: Green, Red and Amber;	WLAN functions	I/O
USB console	Green	USB console status **OFF**: USB console not active **ON**: USB console active	I/O
USB 3.0	Green	USB 3.0 status **OFF**: No USB device discovered **ON**: USB device discovered USB activity	I/O

Reset Button

The actuation of the Reset button is only recognized during ROMmon boot, that is, as the router comes to the ROMmon prompt.

The Reset button does not require much force to be pressed. The Reset button should be pressed only with a small implement such as the tip of a pen or a paper clip. When the Reset button is pressed at startup, the system LED turns green.

For more information, see the "Reset Overview" section of the Cisco 1100 Software Configuration Guide.

Power Supply

C111x, C1121x, and C1131 Series Integrated Services Routers support PoE and PoE+ power to endpoints. The product power specifications are as follows:

- AC input voltage: Universal 100 to 240 VAC

- Frequency: 50 to 60 Hz

- Maximum output power: Up to 66W for non-PoE supply and upto 150W for PoE supply

- Optional PoE and PoE+

- Output voltage: +12VDC for system power and -53.5VDC for PoE power

Slots and Interfaces

About Slots, Subslots, and Port Numbering

The Cisco 1100 series designates its interfaces using a 3-tuple notation that lists the slot, sub slot and port in the format slot/sub-slot/port. The slot number is reserved for the mother board, which is "0". Each interface type is allocated a sub slot and the port number is a unique port on the interface.

Table 7: Slot, Bay, and Port Numbering

Subslot	Interface Type
0	Ethernet LAN
1	Ethernet WAN
2	LTE
3	DSL
4	Wi-Fi

Specifications of Cisco 1000 Series Integrated Services Routers

For specifications on the Cisco 1000 Series Integrated Services Routers, refer to the Cisco 1100 Series ISR Specifications document.

Periodic Inspection and Cleaning

We recommend that you periodically inspect and clean the external surface of the router. Removing 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 we recommend cleaning the router once every six months. Cleaning involves vacuuming router air intake and exhaust vents.

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

CHAPTER 2

Prepare for Router Installation

Before you install the Cisco 1000 Series Integrated Services Routers, you must prepare your site for the installation. This chapter provides pre-installation information, such as recommendations and requirements that should be considered before installing your router.

See the following sections to prepare for installation:

Safety Recommendations

Warning IMPORTANT SAFETY INSTRUCTIONS

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device. Statement 1071

SAVE THESE INSTRUCTIONS

Warning Ultimate disposal of this product should be handled according to all national laws and regulations. Statement 1040.

Safety With Electricity

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

Warning   Do not locate the antenna near overhead power lines or other electric light or power circuits, or where it can come into contact with such circuits. When installing the antenna, take extreme care not to come into contact with such circuits, as they may cause serious injury or death. For proper installation and grounding of the antenna, please refer to national and local codes (for example, U.S.:NFPA 70, National Electrical Code, Article 810, Canada:Canadian Electrical Code, Section 54). Statement 1052

Prevent Electrostatic Discharge Damage

Electrostatic discharge (ESD) can damage equipment and impair electrical circuitry. It can occur if electronic printed circuit cards are improperly handled and can cause complete or intermittent failures. Always follow ESD prevention procedures when removing and replacing modules:

- Ensure that the router chassis is electrically connected to ground.

- Wear an ESD-preventive wrist strap, ensuring that it makes good skin contact. Connect the clip to an unpainted surface of the chassis frame to channel unwanted ESD voltages safely to ground. To guard against ESD damage and shocks, the wrist strap and cord must operate effectively.

- If no wrist strap is available, ground yourself by touching a metal part of the chassis.

Caution   For the safety of your equipment, periodically check the resistance value of the anti-static strap. It should be between 1 and 10 megohms (Mohm).

General Site Requirements

This section describes the requirements your site must meet for the safe installation and operation of your router. Ensure that the site is properly prepared before beginning installation. If you are experiencing shutdowns or unusually high errors with your existing equipment, the guidelines provided in this section can also help you isolate the cause of failures and prevent future problems.

Warning   **Statement 1005**—Circuit Breaker

This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than: 20 A

Warning   To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.

- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.

- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

Warning   **Statement 1044**—Port Connections

To reduce the risk of electric shock, the following ports must be connected through an approved network termination unit with integral circuit protection if the port cabling is routed outdoors:

Warning   **Statement 1047**—Overheating Prevention

To reduce the risk of fire or bodily injury, do not operate the unit in an area that exceeds the maximum recommended ambient temperature of:

Warning   **Statement 1076**—Clearance Around the Ventilation Openings

To prevent airflow restriction, allow clearance around the ventilation openings to be at least: 1.75 in. (4.4 cm)

Site Selection Guidelines

The Cisco 1000 Series Integrated Services Routers require specific environmental operating conditions. Temperature, humidity, altitude, and vibration can affect the performance and reliability of the router. The following sections provide specific information to help you plan for the proper operating environment.

The Cisco 1000 Series Integrated Services Routers are designed to meet the industry EMC, safety, and environmental standards described in the Regulatory Compliance and Safety Information for the Cisco 1000 Series Integrated Services Routers document.

Rack Requirements

For the Cisco 1000 Series Integrated Services Router, use brackets with a 19-inch rack.

Note   Rack requirements is applicable only for Cisco 1000 Series Integrated Services Routers.

The following information can help you plan your equipment rack configuration:

- Allow clearance around the rack for maintenance.

- Allow at least one rack unit of vertical space between routers; more clearance is required when stacking multiple Cisco 1000 Series Integrated Services Routers. Provide adequate heat removal mechanism to keep the surrounding air temperature well within the specified operating temperature condition.

✎

Note   More spacing may be required depending on the installation environment.

- Enclosed racks must have adequate ventilation. Ensure that the rack is not congested because each router generates heat. An enclosed rack should have louvered sides and a fan to provide cooling air. The heat generated by the equipment near the bottom of the rack can be drawn upward into the intake ports of the equipment above it.

- When mounting a chassis in an open rack, ensure that the rack frame does not block the intake or exhaust ports. If the chassis is installed on slides, check the position of the chassis when it is seated in the rack.

Safety Recommendations

⚠

Warning   IMPORTANT SAFETY INSTRUCTIONS

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device. Statement 1071

SAVE THESE INSTRUCTIONS

⚠

Warning   Ultimate disposal of this product should be handled according to all national laws and regulations. Statement 1040.

Power Guidelines and Requirements

Check the power at your site to ensure that you are receiving power that is free of spikes and noise. Install a power conditioner, if necessary.

This section lists the power requirements for the Cisco 1000 Series Integrated Services Router.

Table 8: Power Requirements for Cisco 1000 Series Integrated Services Router

Power Source	Input Rated	Output Rated
66W AC Power Adapter (PWR-66W-AC-V2)	100-240V, <=2A	12 VDC, 5.5A
115W AC Power Adapter (PWR-115W-AC)	100-240VAC, 1.8A	12V, 4.6A, -53.5V 1.12A
30W AC Power Adapter (PWR-30W-AC)	100-240 VAC, 1A	12V , 2.5A
150W AC Power Adapter (PWR-150W-AC)	100-240 VAC, 2.5A	12V 6.0A, -53.5V 1.55A
66W DC Power Adapter (PWR-66W-I-DC)	24 V DC Nominal (19.7V DC to 30 V DC input range)	12 VDC, 5.5A

Network Cabling Specifications

The following sections describe the cables and the specifications required to install Cisco 1000 Series Integrated Services Router:

Console Port Considerations

The router includes an asynchronous serial console port. The console ports provide access to the router using a console terminal connected to the console port. This section discusses important cabling information to consider before connecting the router to a console terminal or modem.

Console terminals send data at speeds slower than modems do; therefore, the console port is ideally suited for use with console terminals.

EIA/TIA-232

Depending on the cable and the adapter used, this port appears as a DTE or DCE device at the end of the cable. Only one port can be used at the same time.

The default parameters for the console port are 9600 baud, 8 data bits, 1 stop bit, and no parity. The console port does not support hardware flow control. For detailed information about installing a console terminal, see the Connecting to a Console Terminal or Modem section.

For cable and port pinouts, see the Cisco Modular Access Router Cable Specifications document located on Cisco.com.

USB Serial Console

The USB serial console port connects directly to the USB connector of a PC using a USB Type A to 5-pin micro USB Type-B cable. The USB Console supports full speed (12Mb/s) operation. The console port does not support hardware flow control.

> **Note** Always use shielded USB cables with a properly terminated shield.

USB Console OS Compatibility

- Windows 10, Windows 8, Windows 7, Windows 2000, Window XP 32 bit, Windows Vista 32 bit

- Mac OS X version 10.5.4

- Redhat / Fedora Core 10 with kernel 2.6.27.5-117

- Ubuntu 8.10 with kernel 2.6.27-11

- Debian 5.0 with kernel 2.6

- Suse 11.1 with kernel 2.6.27.7-9

The default parameters for the console port are 9600 baud, 8 data bits, no parity, and 1 stop bit. For detailed information about installing a console terminal, see the Connecting to a Console Terminal or Modem section on page 3-19.

For operation with a Microsoft Windows OS version older than Windows 7, the Cisco Windows USB Console Driver must be installed on any PC connected to the console port. If the driver is not installed, the prompts guide you through a simple installation process.

The Cisco Windows USB Console Driver allows plugging and unplugging the USB cable from the console port without affecting Windows HyperTerminal operations. No special drivers are needed for Mac OS X or Linux.

Only one console port can be active at a time. When a cable is plugged into the USB console port, the RJ-45 port becomes inactive. Conversely, when the USB cable is removed from the USB port, the RJ-45 port becomes active.

Baud rates for the USB console port are 1200, 2400, 4800, 9600, 19200, 38400, 57600, and 115200 bps.

> **Note** Only the 5-pin micro USB Type-B is supported.

Console Port Considerations

The router includes an asynchronous serial console port. The console ports provide access to the router using a console terminal connected to the console port. This section discusses important cabling information to consider before connecting the router to a console terminal or modem.

Console terminals send data at speeds slower than modems do; therefore, the console port is ideally suited for use with console terminals.

Prepare for Router Installation

Before you install the Cisco 1000 Series Integrated Services Routers, you must prepare your site for the installation. This chapter provides pre-installation information, such as recommendations and requirements that should be considered before installing your router.

See the following sections to prepare for installation:

Ethernet Connections

The IEEE has established Ethernet as standard IEEE 802.3. The routers support the following Ethernet implementations:

1000BASE-T—1000 Mb/s full-duplex transmission over a Category 5 or better unshielded twisted-pair (UTP) cable.	Supports the Ethernet maximum length of 328 feet (100 meters).
100BASE-T—100 Mb/s full-duplex transmission over a Category 5 or better unshielded twisted-pair (UTP) cable.	Supports the Ethernet maximum length of 328 feet (100 meters).
10BASE-T—10 Mb/s full-duplex transmission over a Category 5 or better unshielded twisted-pair (UTP) cable.	Supports the Ethernet maximum length of 328 feet (100 meters).

See the Cisco Modular Access Router Cable Specifications document at Cisco.com for information about Ethernet cables, connectors, and pinouts.

Required Tools and Equipment for Installation and Maintenance

You need the following tools and equipment to install and upgrade the router and its components:

- An ESD-preventive cord and a wrist strap

- A number 2 Phillips screwdriver

- Phillips screwdrivers: small, 3/16-in. (4 to 5 mm) and medium 1/4-in. (6 to 7 mm). You might need these when you install or remove modules, and when you remove the cover (when you upgrade the memory or other components)

- Screws that fit your rack

- A wire crimper

- A wire for connecting the chassis to an earth ground: AWG 14 (2 mm²) or larger wire

- An appropriate user-supplied UL or a CSA-certified ring terminal with an inner diameter of 1/4 in. (5 to 7 mm)

Install and Connect the Router

This chapter describes how to install and connect Cisco 1000 Series Integrated Services Router to LAN and WAN networks.

⚠️

Warning   Read the installation instructions before using, installing or connecting the system to the power source. Statement 1004

Installing the Cisco 1000 Series Integrated Services Router involve these tasks:

Unpack the Router

Unpack the router only when you are ready to install it. If the installation site is not ready, to prevent accidental damage, keep the chassis in its shipping container until you are ready to install.

The router, accessory kit, publications, and any optional equipment you order may be shipped in more than one container. When you unpack the containers, check the packing list to ensure that you have received all the listed items.

Set up Router on Desktop, Rack, or Wall

After unpacking, based on your requirements, you can set up a Cisco 1000 Series Integrated Services Router on a desktop, a rack, or the wall.

Note You can install external modules before or after mounting a router. However, if you choose to install the external modules after mounting the router on the rack or wall, ensure that you have optimal access to the back/front panel of the router.

For information on modules and Field Replaceable Units (FRUs), see the Install and Upgrade Modules and FRUs section.

Depending on the model, the available options for mounting a Cisco 1000 Series Integrated Services Router are:

Table 9: Models and Mounting Options

Model	Mounting Options
C111x and C1111X	Desktop, Rack Mount, Wall Mount using Key-hole Slots, Wall Mount using-Din-Rail
C1101-4P	Desktop, Wall Mount using Key-hole Slots
C1101-4PLTEPWx	Desktop, Wall Mount using Key-Hole Slots
C1109-2PLTExx	Desktop, Wall Mount using Key-Hole Slots,
C1121-4Px	Desktop, Rack Mounting using Din-Rail Brackets, Under Desk
C1126(X)-8PLTEP	Desktop, Rack Mounting using Din-Rail Brackets, Under Desk
C1128(X)-8PLTEP	Desktop, Rack Mounting using Din-Rail Brackets, Under Desk
C1131(X)-8PLTEPWx	Desktop, Rack Mounting using Din-Rail Brackets, Under Desk
C1131(X)-8PWx	Desktop, Rack Mounting using Din-Rail Brackets, Under Desk
C111x	Attach the C111x Top Plate (C1110-TOP-PLATE=) on Desktop, Attach the C111x Top Plate (C1110-TOP-PLATE=) for Rack Mount
C1121/C1161	Attach the C1121/C1161 Top Plate (C1120-TOP-PLATE=) on Desktop, Attach the C1121/C1161 Top Plate (C1120-TOP-PLATE=) for Rack Mount

If you choose to setup the router on a desktop, you can place the router on a desktop, bench top or on a shelf.

Rack Mount

Secure the rack mounting brackets on the sides of the chassis. You must first secure rack mounting brackets on the chassis before you set up the chassis on the rack.

⚠️

Caution   Do not stack multiple Cisco 1000 Series Integrated Services Routers when mounting the routers on a table top.

Do not put any object on the sides or on top of the routers ensuring that there is ample space for air circulation and heat removal.

☞

Important   **Periodic Inspection and Cleaning**: We recommend that you periodically inspect and clean the external surface of the router. Removing is recommended to minimize the negative impact of environmental dust, debris, and liquid contamination. The frequency of inspection and cleaning is dependent upon the severity of the environmental conditions, but we recommend cleaning the router once every six months. Cleaning involves vacuuming router air intake and exhaust vents.

✎

Note   Using the top plate on the chassis significantly helps in preventing any damages that may occur from rodent infestation.

✎

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

✎

Note   When mounting Cisco 1000 Series Integrated Services Routers on a rack, ensure that there is ample surrounding space. This ensures more heat removal, which in turn helps the surrounding air temperature to stay within the specified operating conditions.

Attach the Rack Mount Brackets for C111x

This procedure describes how to attach the rack mount brackets on the router chassis:

Step 1   Secure the brackets to the router chassis (on the left) as shown in figure below:

Example:

Figure 34: Bracket Installation for Left-Side Mounting - C111x
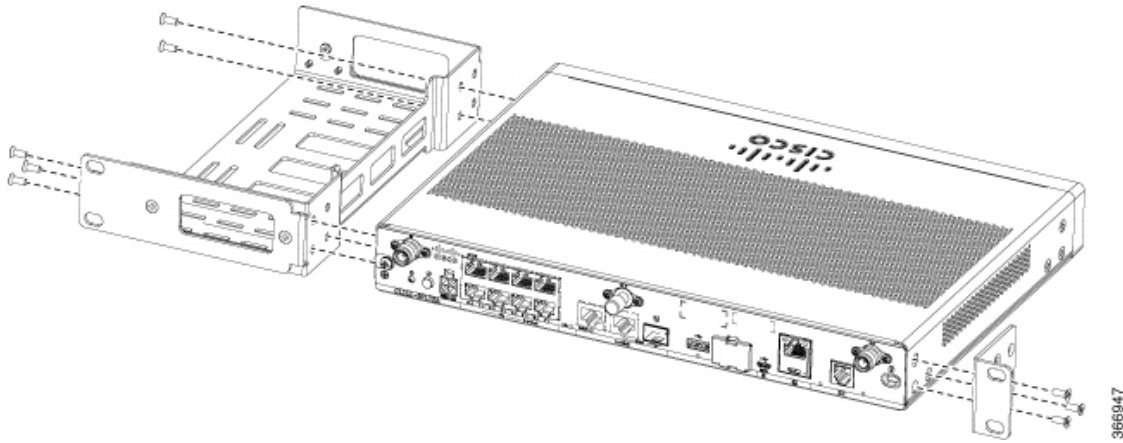
Step 2   Similarly, secure the brackets on the right-side of the chassis for mounting the router.

Attach the C111x Top Plate (C1110-TOP-PLATE=) on Desktop

This procedure describes how to attach the top plate on the router chassis:

Step 1   Use Phillips 2 screwdriver to remove two 6-32 screws on the sides of the unit.

Step 2   Orient the top plate with the Bezel Side arrow pointing outwards.

Example:

Figure 35: Removing side screws and orienting the top plate on C111x platforms
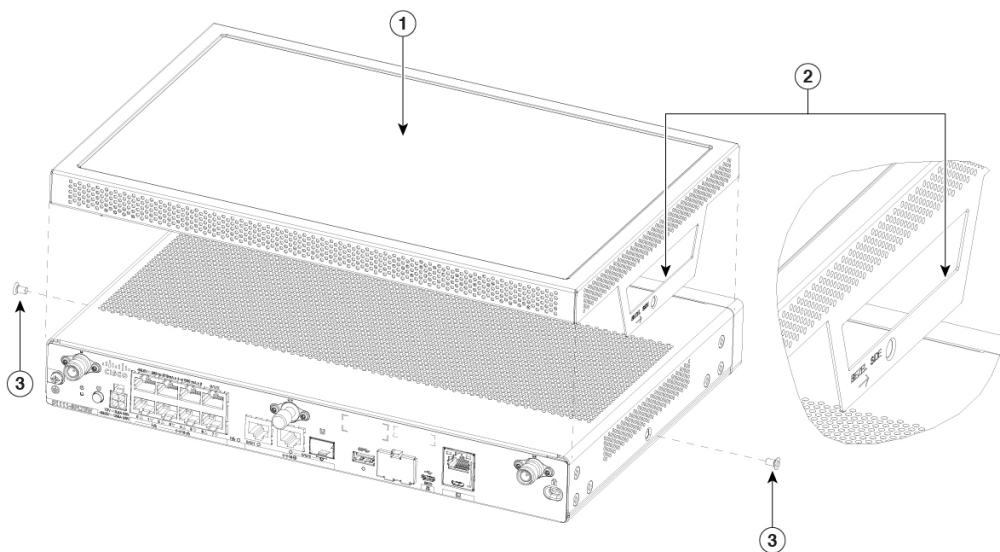
1	Top plate

2	Bezel side view pointing outwards
3	6-32 screws (2x)

Step 3   Lower the top plate and align side holes.

Step 4   Use Phillips 2 screwdriver to secure the screws, torque to 6-8 in-lbs.

    Example:

Figure 36: Aligning the side holes and securing the top plate with provided screws
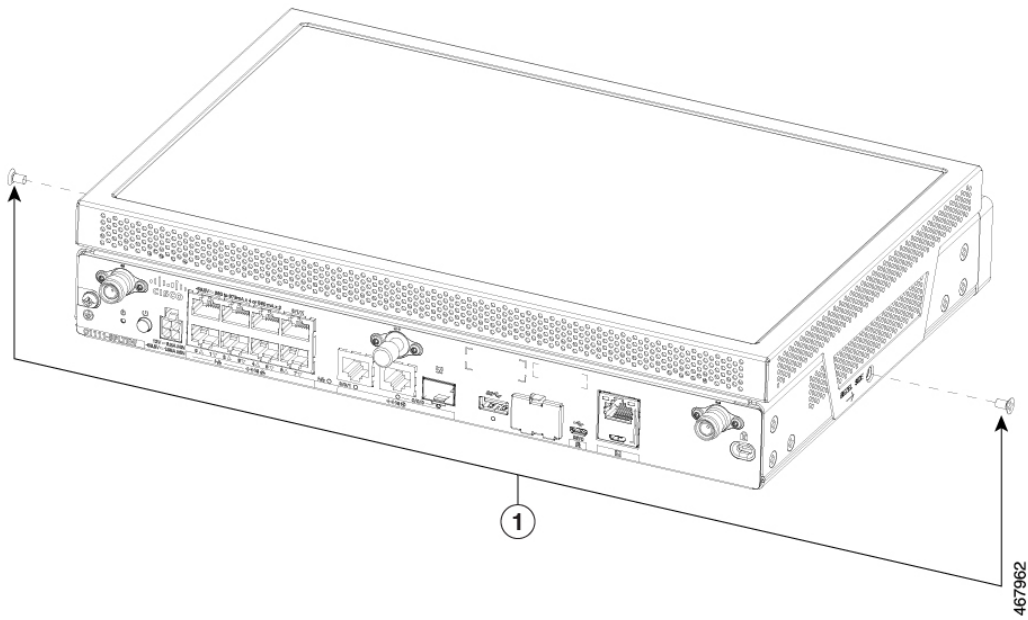
1	Secure the side screws

Step 5   The following figure displays the top plate fully secured to the unit.

    Example:

Figure 37: Fully assembled C111x unit with top plate
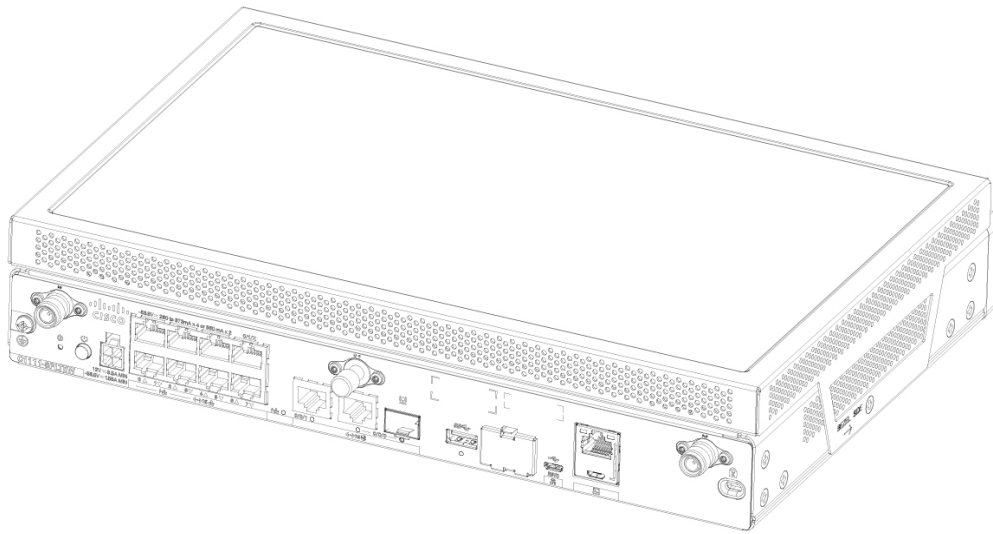
Attach the C111x Top Plate (C1110-TOP-PLATE=) for Rack Mount

This procedure describes how to rack mount top plate on the router chassis:

Step 1 Follow the Attach the C111x Top Plate (C1110-TOP-PLATE=) on Desktop to attach C111x Top Plate for Desktop.

Step 2 Assemble the C111x unit with top plate to rack mount brackets according to the Rack Mount procedure.

Step 3 The following figure shows a complete assembled C111x unit with top plate and rack mount brackets.

Example:

Figure 38: Fully assembled C111x unit with top plate on rack mount brackets
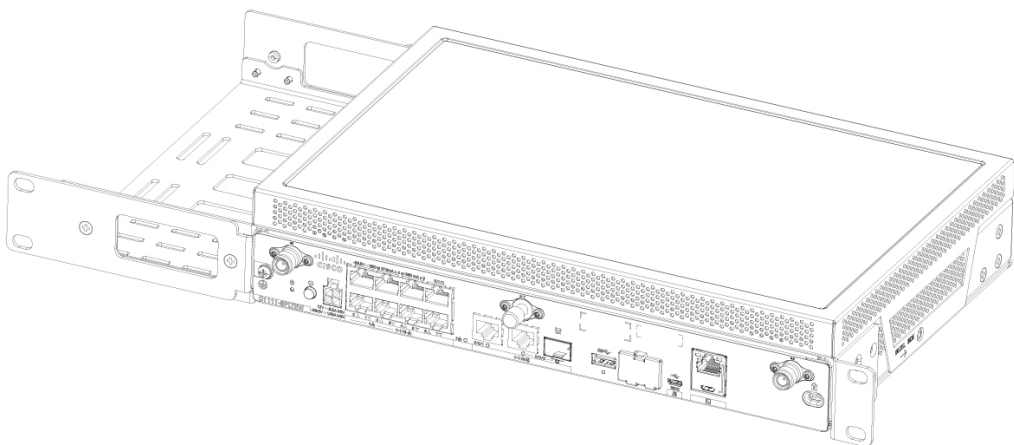
Attach the C1121/C1161 Top Plate (C1120-TOP-PLATE=) on Desktop

This procedure describes how to install the top plate on the router chassis:

Step 1 Verify the following PIDs (10.8in W x 7.85in D) for applicability:

- C1121-4P

- C1121-4PLTEP

- C1121-8PLTEP

- C1121X-8PLTEP

- C1121-8P

- C1121X-8P

- C1161-8P

- C1161X-8P

- C1161-8PLTEP

- C1161X-8PLTEP

Step 2 Use Phillips 2 screwdriver to remove four 6-32 screws from the bottom side of the unit.

Example:

Figure 39: Removing 4 screws from C1121/C1161 unit
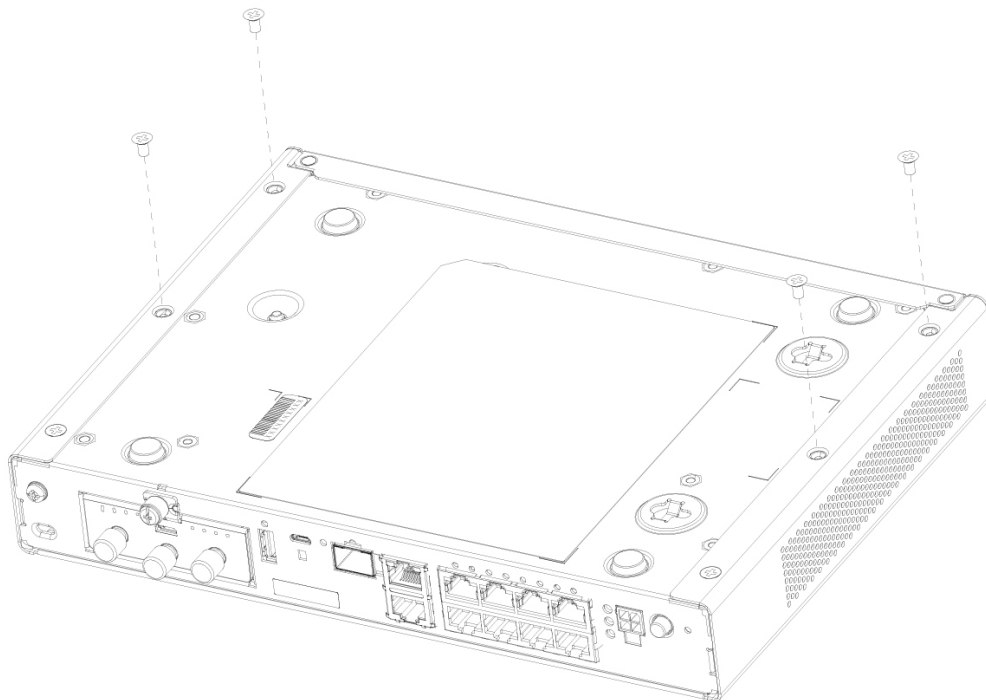
467965

Step 3 Orient the top plate and slide it on to the unit.

Example:

Figure 40: Installing top plate on to C1121/C1161
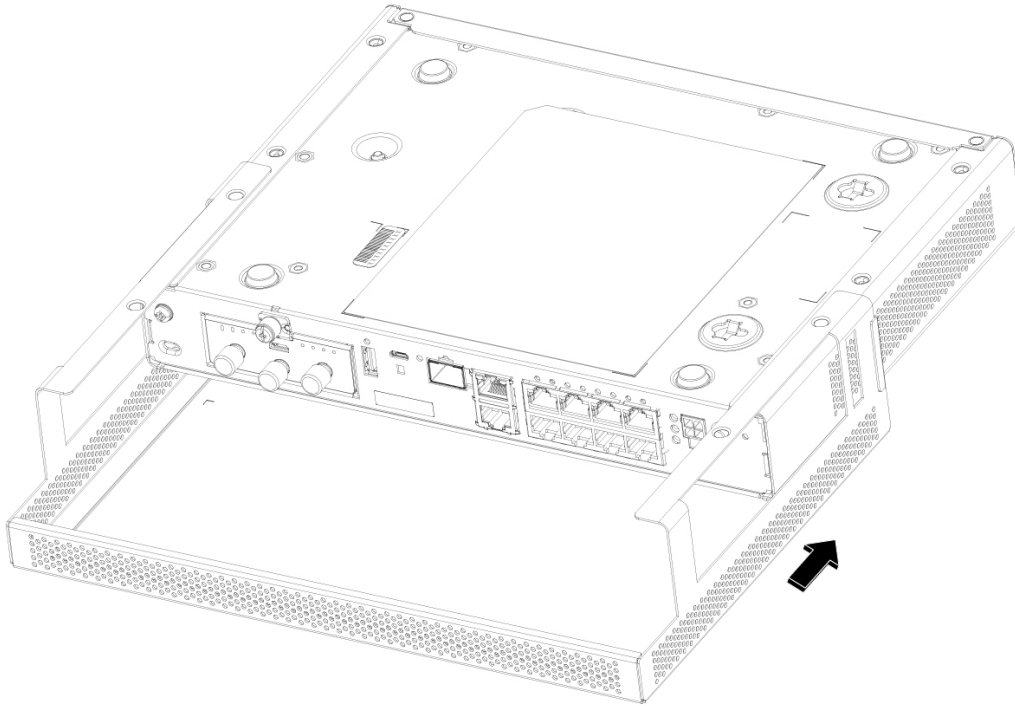
467966

Step 4 Aligning the securing holes of top plate to C1121/C1161.

Example:

Figure 41: Aligning the securing holes of top plate to C1121/C1161
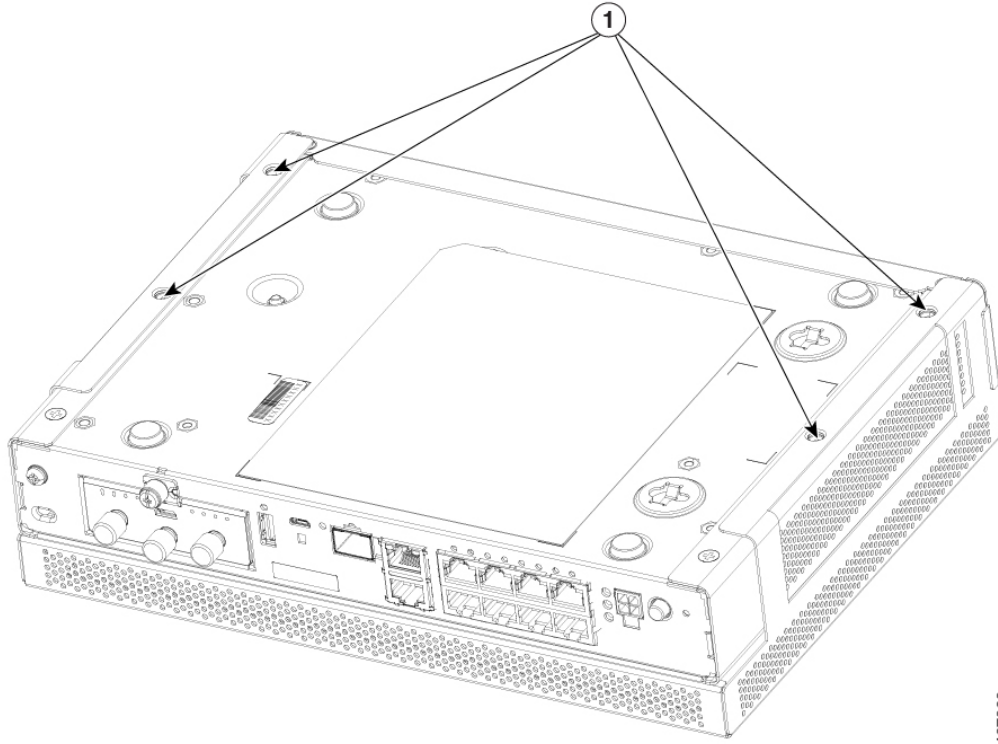
| 1 | Align securing holes |

Step 5 Use Phillips 2 screwdriver to secure screws to 6-8 in-lbs.

Example:

Figure 42: Securing top plate of C1121/C1161 with screws
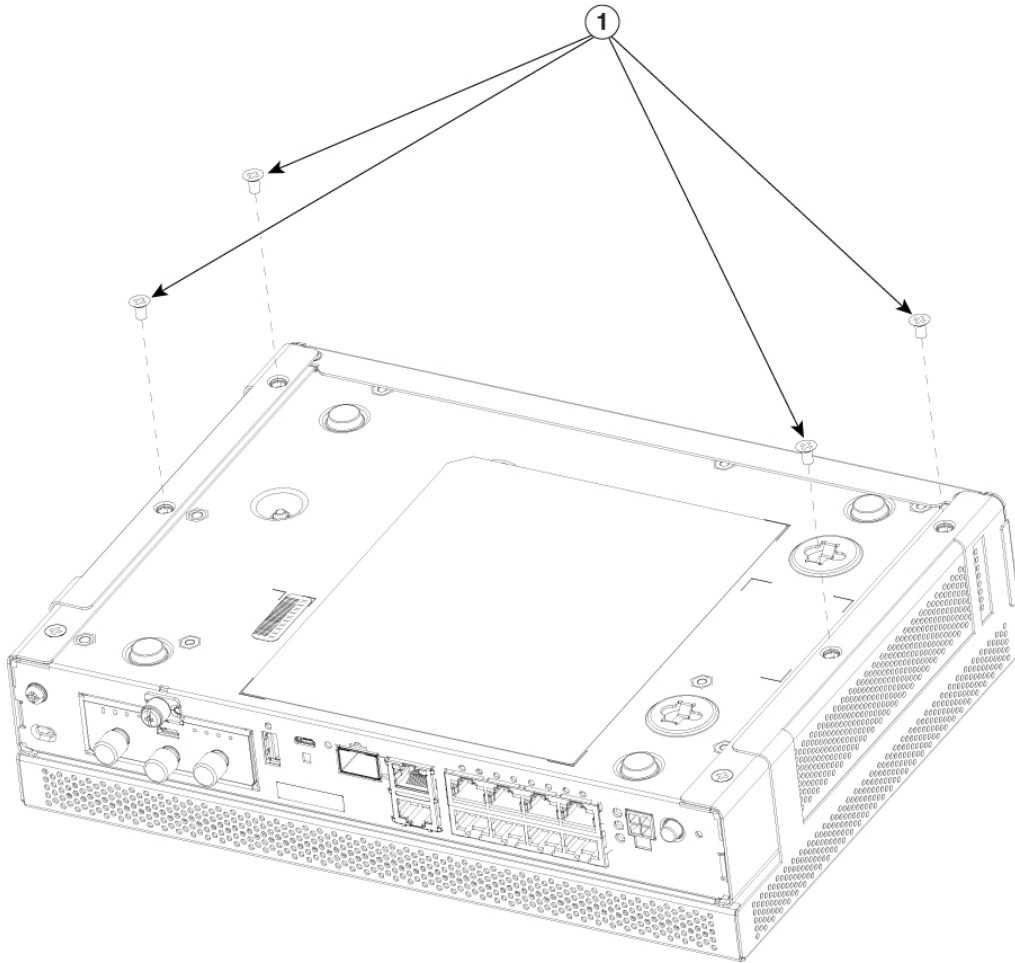
1	Securing the screws

Step 6 Fully assembled C1121/C1161 with secured top plate.

Example:

Figure 43: Fully assembled C1121/C1161 with top plate
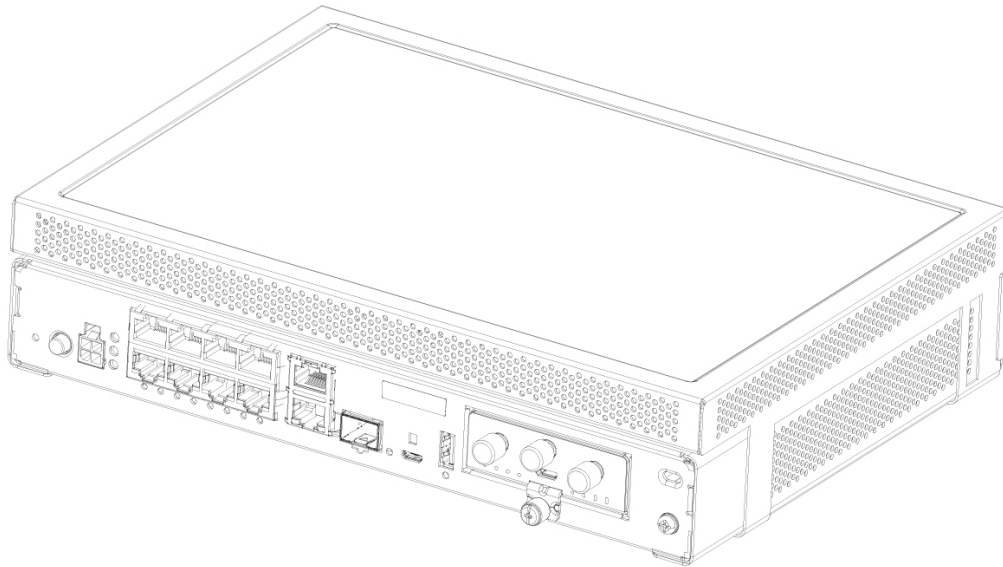
Attach the C1121/C1161 Top Plate (C1120-TOP-PLATE=) for Rack Mount

This procedure describes how to attach the top plate and rack mount the brackets on the router chassis:

Step 1 Verify the following PIDs (10.8in W x 7.85in D) for applicability:

- C1121-4P
- C1121-4PLTEP
- C1121-8PLTEP
- C1121X-8PLTEP
- C1121-8P
- C1121X-8P
- C1161-8P
- C1161X-8P
- C1161-8PLTEP
- C1161X-8PLTEP

Step 2 Follow the Attach the C1121/C1161 Top Plate (C1120-TOP-PLATE=) on Desktop to set up the router top plate (C1120-TOP-PLATE=) to the unit.

Step 3 Align and secure the unit with top plate to rack mount the brackets.

Step 4   Use Phillips 2 screwdriver to secure the screws to 6-8 in-lbs.

Example:

Figure 44: Aligning and securing C1121/C1161 with top plate to rack mount brackets
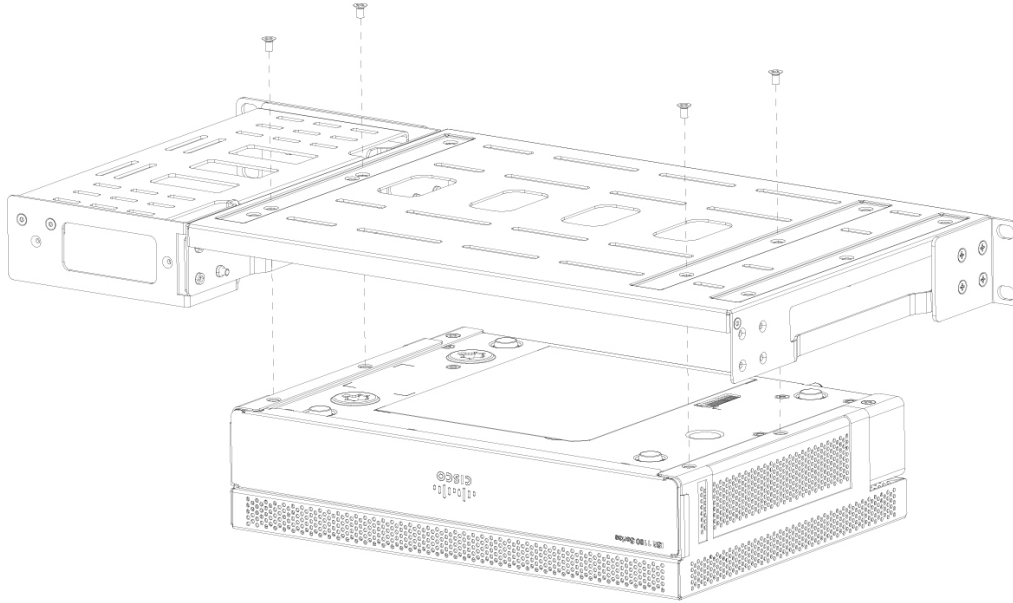
Step 5   Fully assembled C1121/C1161 secured with top plate and rack mount brackets.

Example:

Figure 45: Fully assembled C1121/C1161 with top plate and rack mount brackets
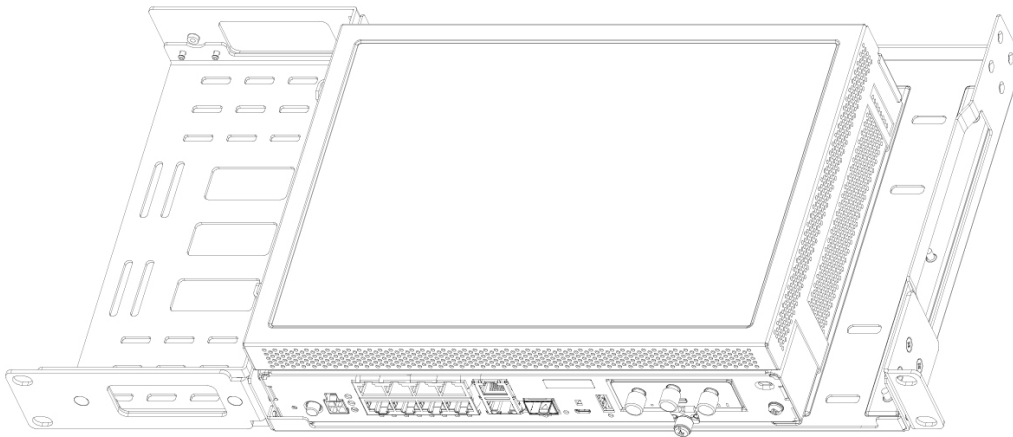
Attach the Rack Mounting Brackets for C112x

This procedure describes how to attach the brackets on the router chassis:

Step 1   Remove the 6 screws from the bottom of the chassis.

Step 2   Place the platform into the bottom tray.

Step 3   Secure the original screws from the bottom side of the tray.

Example:

Figure 46: Bracket Installation for C1121-4Px, C1126-8PLTEP and C1128-8PLTEP
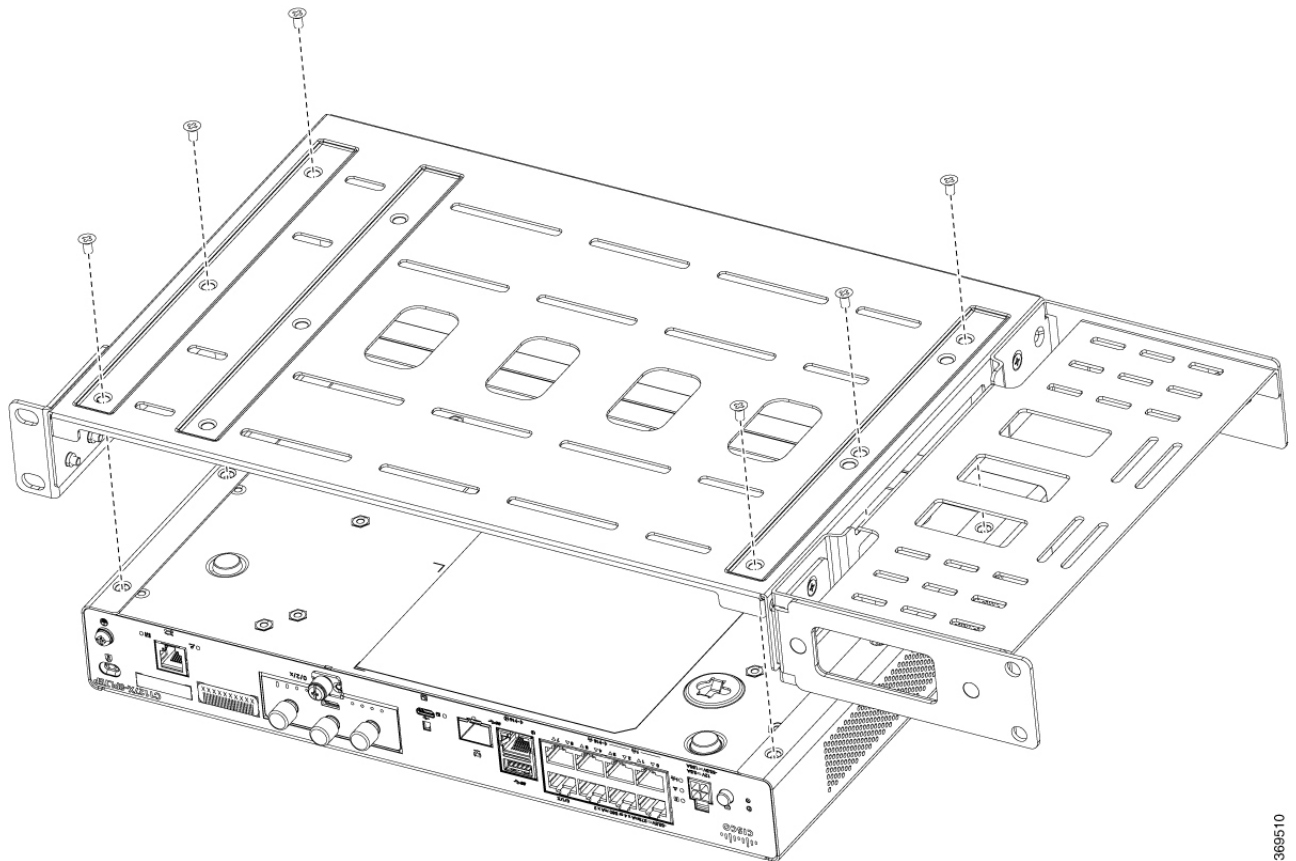
Mount the Router

Before mounting the router on to the rack, refer to the following safety warning statements:

⚠️

Warning   To prevent airflow restriction, allow clearance around the ventilation openings to be at least: 1.75 in. (4.4 cm). Statement 1076.

Warning

- To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.

- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.

- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack. Statement 1006.

Procedure

	Command or Action	Purpose
Step 1	To install the router, use the screws provided with the accessory kit to secure the router when you mount it on the rack.	

Mount the Router under a Desk or a Shelf

Installing the router under a desk requires an optional bracket kit that is not included with the router. The kit contains the rack-mount brackets and screws to secure the brackets to the router and the underside of the desk. You can order these kits from your Cisco representative. This procedure describes how to mount a router under a desk or a shelf .

Step 1 Attach a bracket to one side of the router using the flat-head screws. Follow the same steps to attach the second bracket to the opposite side.

Figure 47: Attaching Brackets to the Router
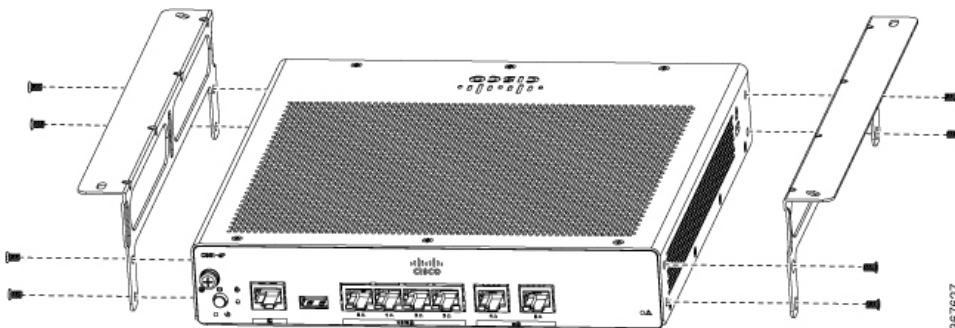
Figure 48: Flat-head Machine Screws
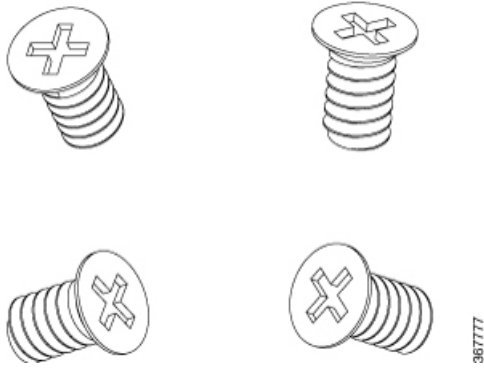
Figure 49: Router with the Brackets Attached
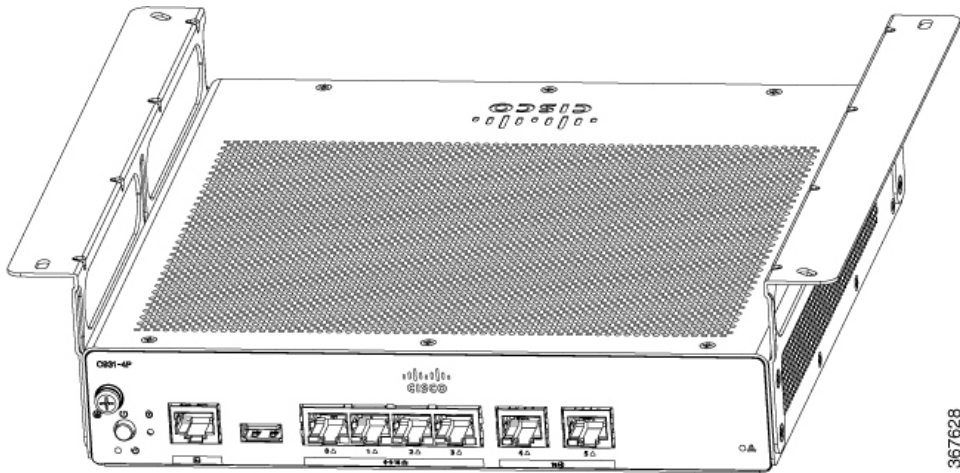
Step 2 After the brackets are attached, drill a 2 mm hole under the desk and insert the wooden screws provided. Mount the router under the desk or shelf using the pan-head wood screws).

Figure 50: Mounting the Router under a Desk or Shelf
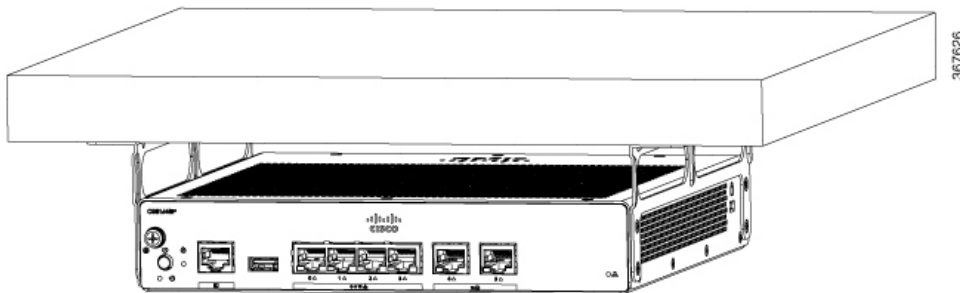
Figure 51: Pan-head Wood Screws

Mount Router using DIN Rail Brackets

The router is shipped with DIN Rail brackets that are to be secured on the bottom side of the chassis. Your chassis installation must allow unrestricted airflow for chassis cooling.

To attach the DIN Rail brackets to the router chassis, use the pan head machine screws and the plastic spacers provided for each bracket.

Attach Din-Rail Brackets on C112x

This procedure describes how to attach the brackets on the router chassis:

Step 1 Remove the 3 bottom screws from the chassis.

Step 2 Place the din-rail tray assy on the bottom side of the chassis.

Step 3 Secure the original screw from bottom side of tray, leverage the existing chassis screws to secure the din rail mounting bracket from the bottom of the chassis.

Step 4 Take the other two screws to secure the din-rail trail assy.

Example:

Figure 52: Attaching Din Rail Brackets for C1121-4Px, C1126-8PLTEP and C1128-8PLTEP
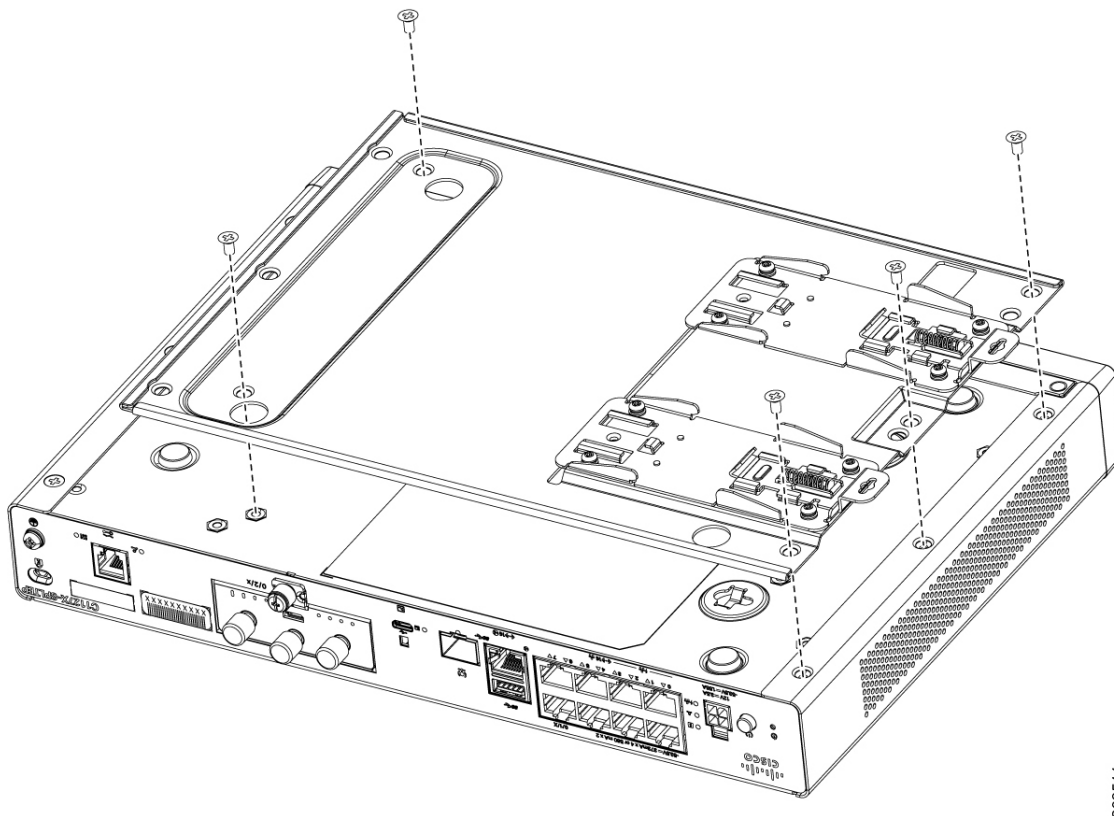
Wall Mount the Router

Depending on the models of the Cisco 1000 Series Integrated Services Router, the tasks for mounting the router chassis on the wall may vary.

There are two ways to mount a router on the wall, using Key-hole slots and DIN Rail Brackets.

Warning Read the wall-mounting instructions carefully before beginning installation. Failure to use the correct hardware or to follow the correct procedures could result in a hazardous situation to people and damage to the system. Statement 378.

Note The recommended clearance when a router is horizontally mounted is 1.5 inches on both sides for clearance and 1.75 inches on top. I/O side clearance is needed as it is required to access the cable connections. Clearance is not required on the backside (opposite side from I/O face) unless mounting on a DIN Rail. Clearance is required to attach and mount the DIN rail bracket.

Wall Mount Using Key-hole Slots

The Cisco 1000 Series Integrated Services Routers have key-hole slots at the bottom of the chassis for mounting on a wall or any vertical surface.

Note Do not mount the router with the output ports facing downwards. For the C111x series, ensure that the cables are placed on the sides.

Note When choosing a location for wall mounting the router, consider cable limitations and wall structure.

Note To attach a router to the wall stud, each bracket should have one number 10 wood screw (pan-head) with number 10 washers, or two number 10 washer-head screws. The screws must be long enough to penetrate at least 1.5 inches (38.1 mm) into the supporting wood or metal wall stud.

Note For hollow-wall mounting, each bracket requires two wall anchors with washers. Wall anchors and washers must be size number 6 (pan-head). Route the cables so that they do not put a strain on the connectors or mounting hardware.

Figure 53: Wall Mount Using Key-hole Slots - C111x
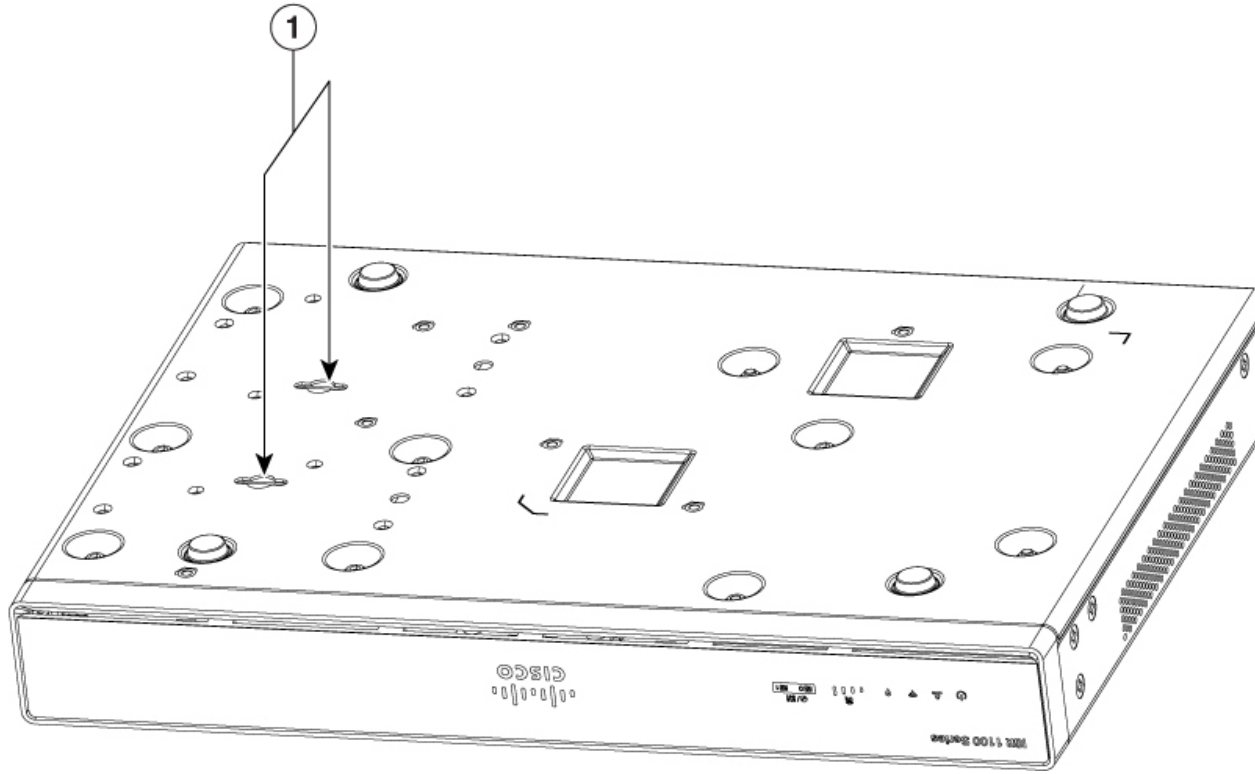
1	Key-hole slots

Figure 54: Wall Mount Orientation-C111x
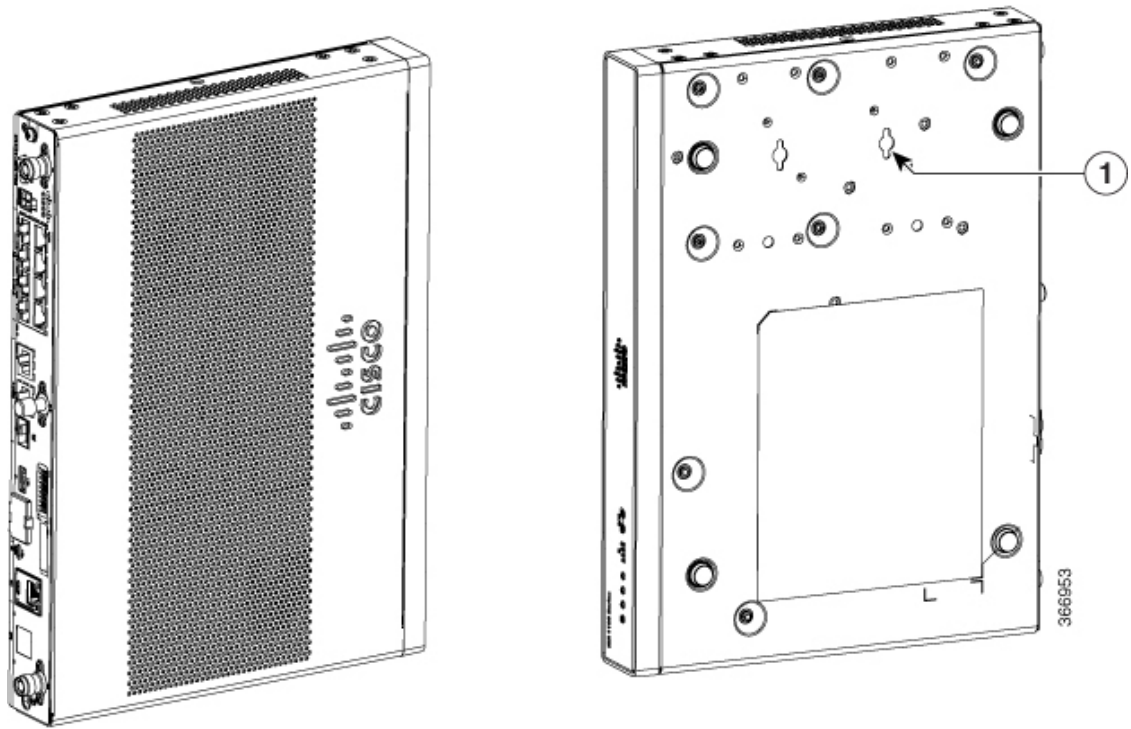
1	Key-hole slots

Figure 55: Wall mount using key-hole slots - C1101-4P
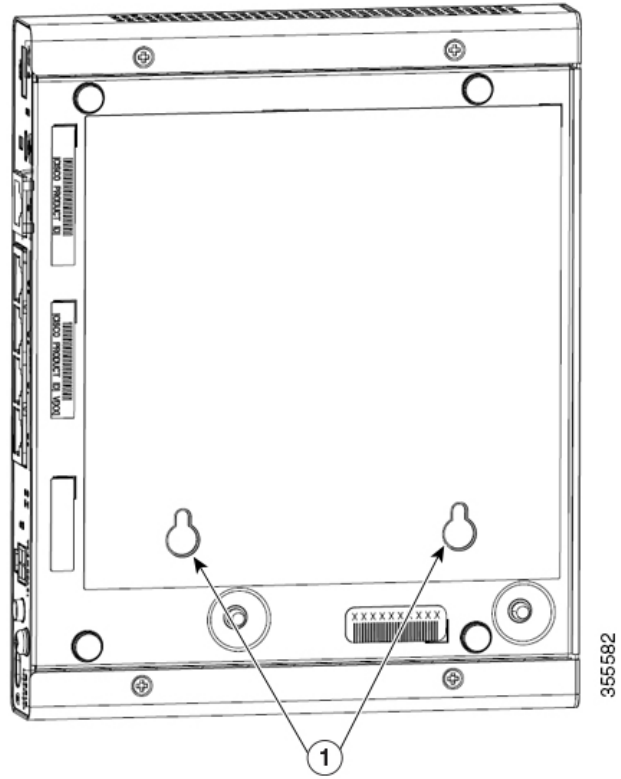
1	Key-hole slots
	Key-hole slots-spacing: 3.024 in (76.81 mm)

Figure 56: Wall mount using key-hole slots - C1101-4PLTEP
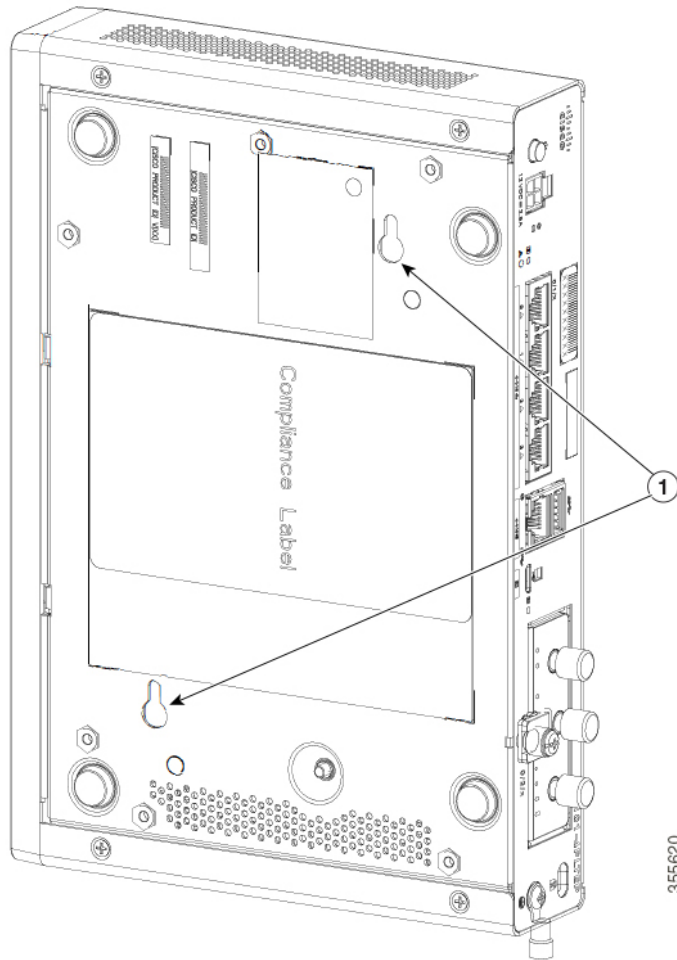
1	Key-hole slots Horizontal spacing: 3.100 in (78.74 mm) Vertical spacing: 5.758 in (146.25 mm)

Figure 57: Wall mount using key-hole slots - C1109-2P
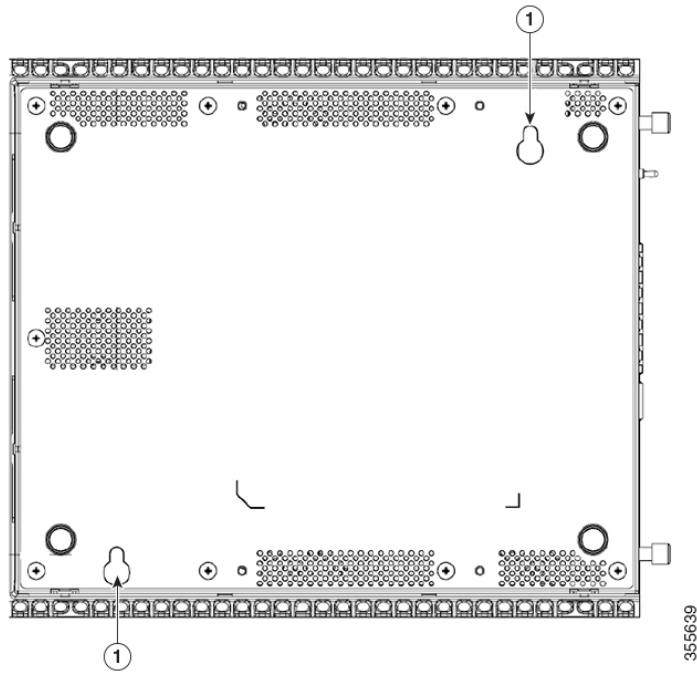
1	Horizontal spacing: 7.302 in (185.47 mm)
Key-hole slots	Vertical spacing: 7.430 in (188.72 mm)

Figure 58: Wall mount using key-hole slots - C1109-4PLTEP
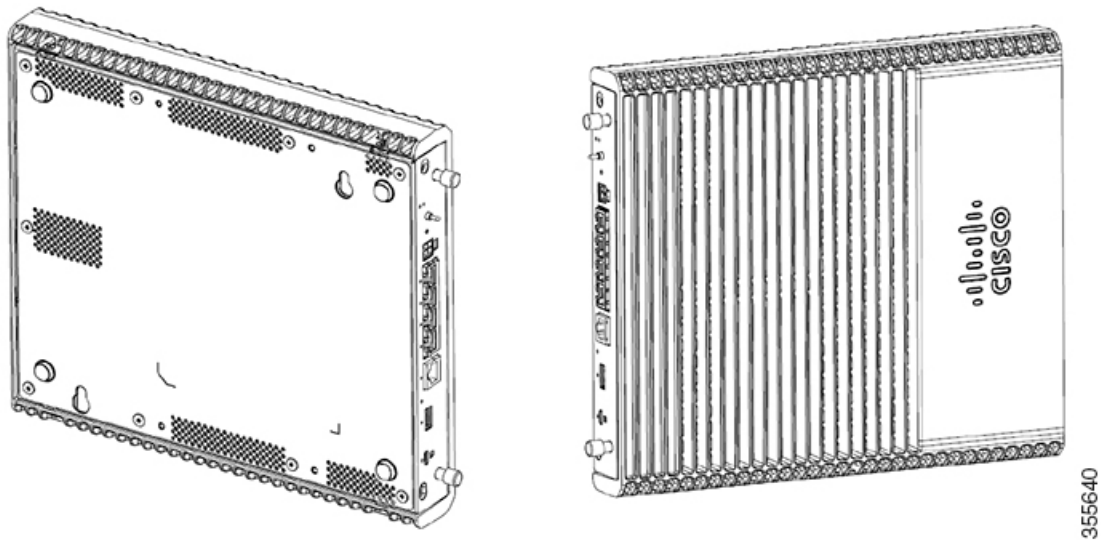
1	Key-hole slots
	Horizontal spacing: 3.100 in (78.74 mm)
	Vertical spacing: 5.758 in (146.25 mm)

Figure 59: Wall mount using key-hole slots - C1126-8PLTEP
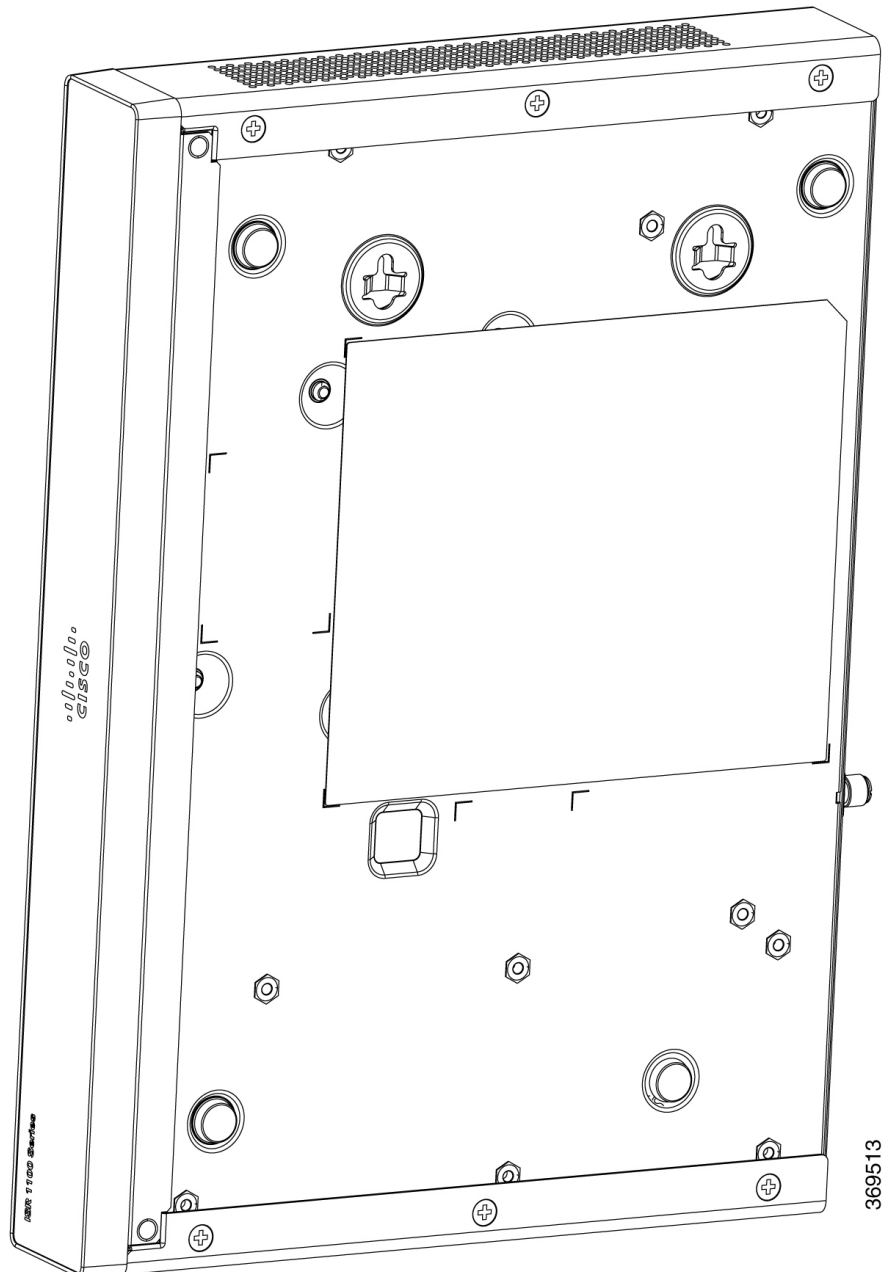
369513

Wall Mount using DIN Rail Brackets

The router is shipped with DIN Rail brackets that are to be secured on the bottom side of the chassis. Your chassis installation must allow unrestricted airflow for chassis cooling.

Note Wall mount using DIN Rail brackets is applicable only for C111x.

To attach the DIN Rail brackets to the router chassis, use the PHMS screws and the plastic spacers provided for each bracket.

Figure 60: DIN Rail Bracket Installation - C111x and C111X
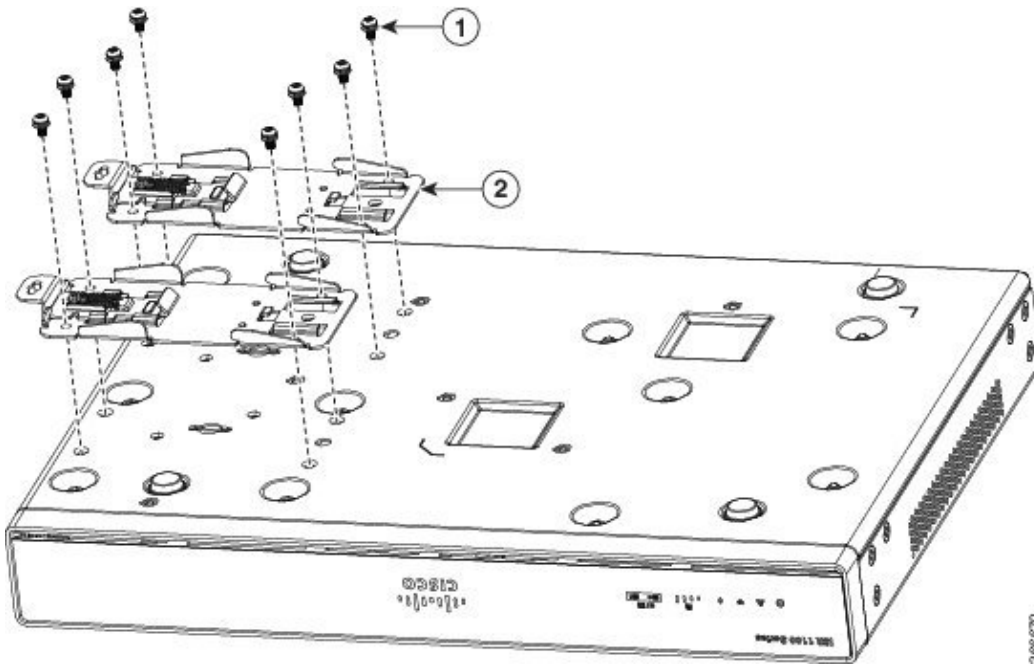
1	Screws
2	DIN Rail Brackets

Figure 61: Orientation of DIN Rail Brackets
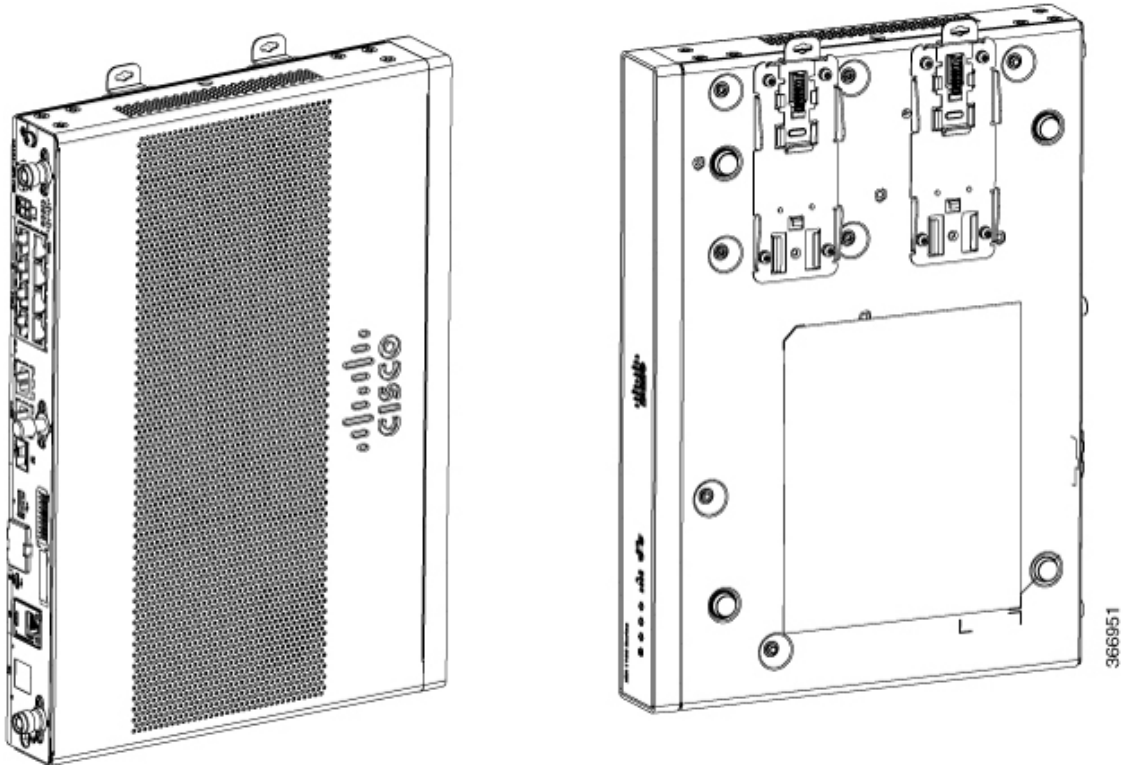
Figure 62: DIN Rail Brackets and Mount
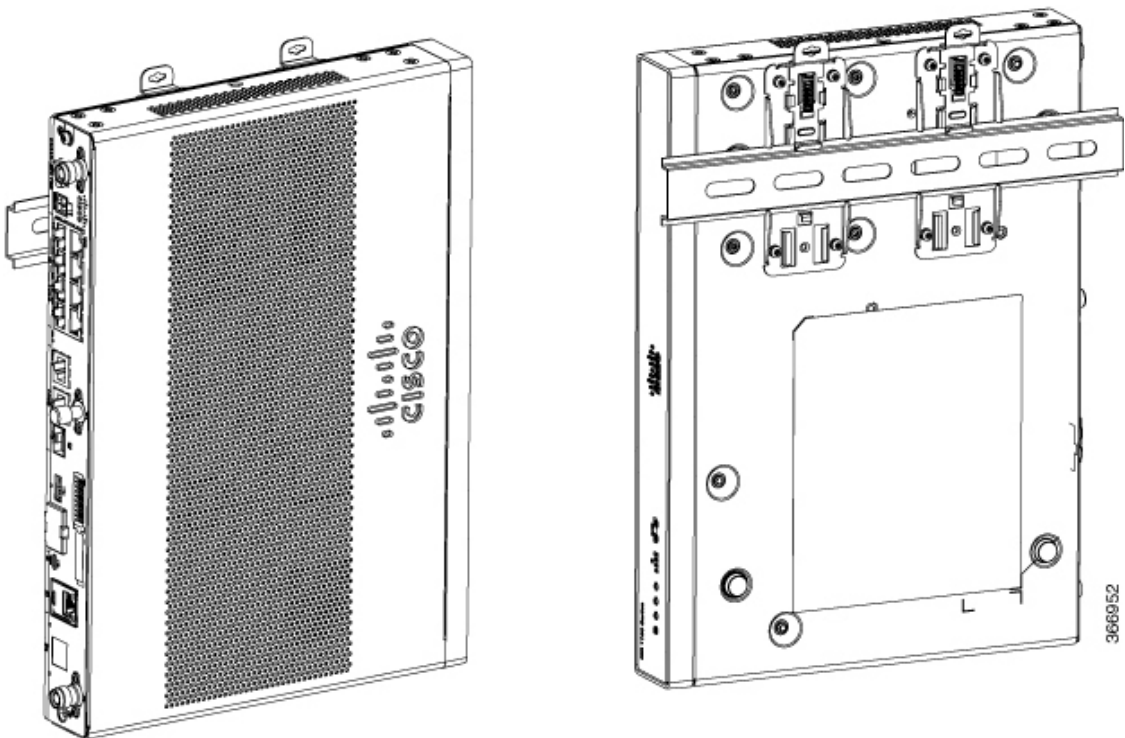
Note Do not over-torque the screws. The recommended torque is 8 to 10 inch-lbf (0.9 to 1.1 N-m).

Chassis Grounding

⚠

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

After you set up the router, connect the chassis to a reliable earth ground. The ground wire must be installed in accordance with local electrical safety standards. For safety information on grounding the chassis, refer to the chassis ground connection procedures.

1. For grounding the chassis, use a copper wire of size of 14 AWG (2 mm²) and the ground lug. These are not a part of the accessory kit.

2. Use the UNC 6-32 screws, which have a length of about 0.25 inches.

To install the ground connection for your router, perform these steps:

1. Strip one end of the ground wire to the length required for the ground lug or terminal.

    • For the ground lug—approximately 0.75 inch (20 mm)

    • For user-provided ring terminal—as required

2. Crimp the ground wire to the ground lug or ring terminal, using a crimp tool of the appropriate size.

3. Attach the ground lug or ring terminal to the chassis as shown in the below figures. The screw for the ground lug is provided. Tighten the screw; the recommended torque is 8 to 10 inch-lbf (0.9 to 1.1 N-m).

Figure 63: Chassis Ground Connection-Cisco 111x
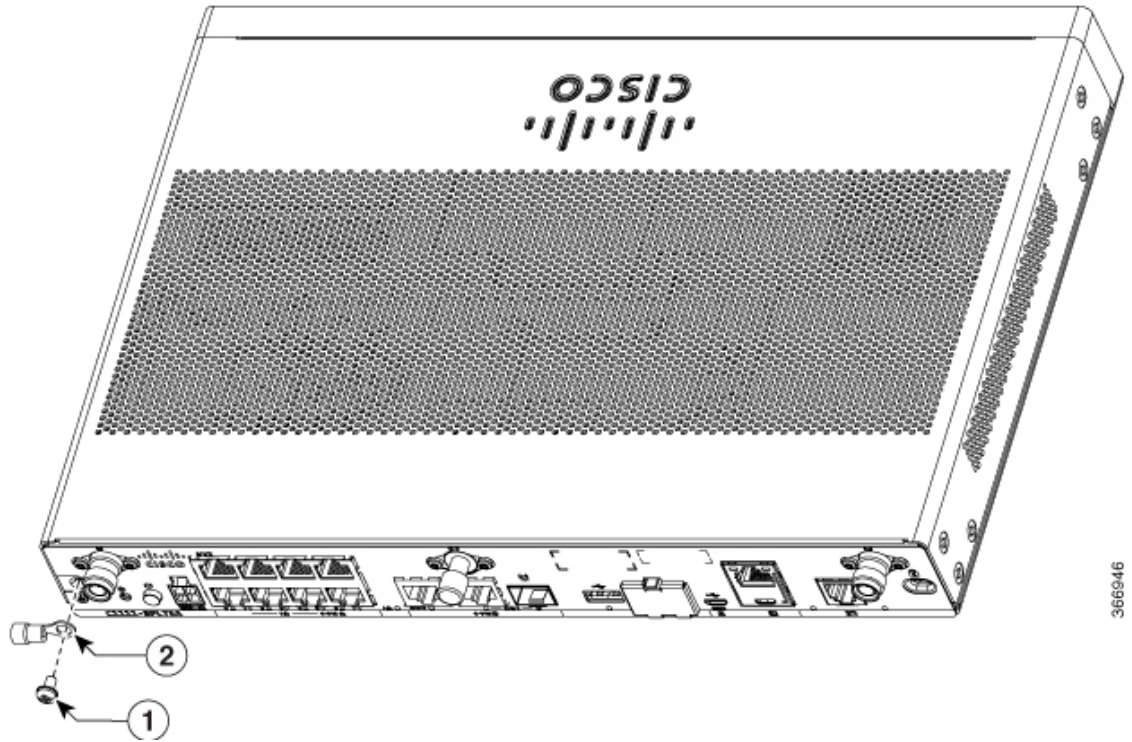
1	Screw (UNC 6-32)
2	Ground Lug

Figure 64: Chassis Ground Connection-Cisco 1101-4PLTEP
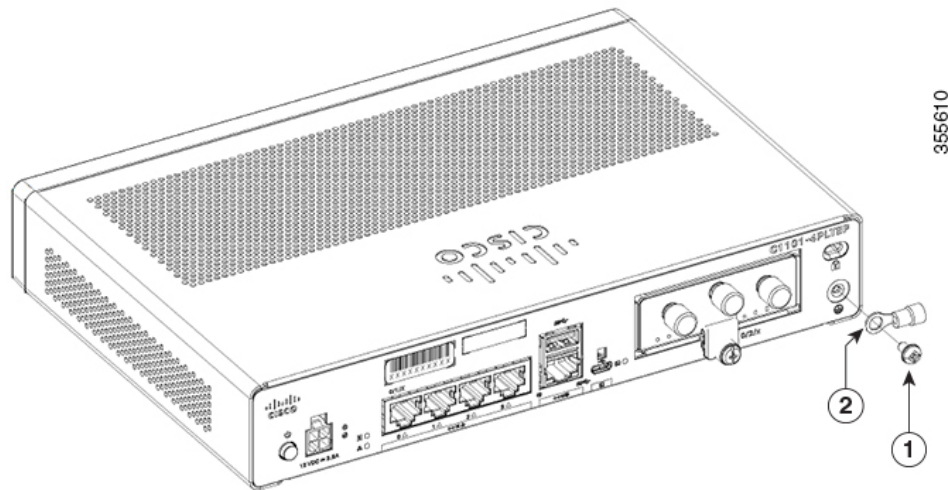
1	Screw (UNC 6-32)

2	Ground Lug

Figure 65: Chassis Ground Connection-Cisco 1121X-8PLTEP
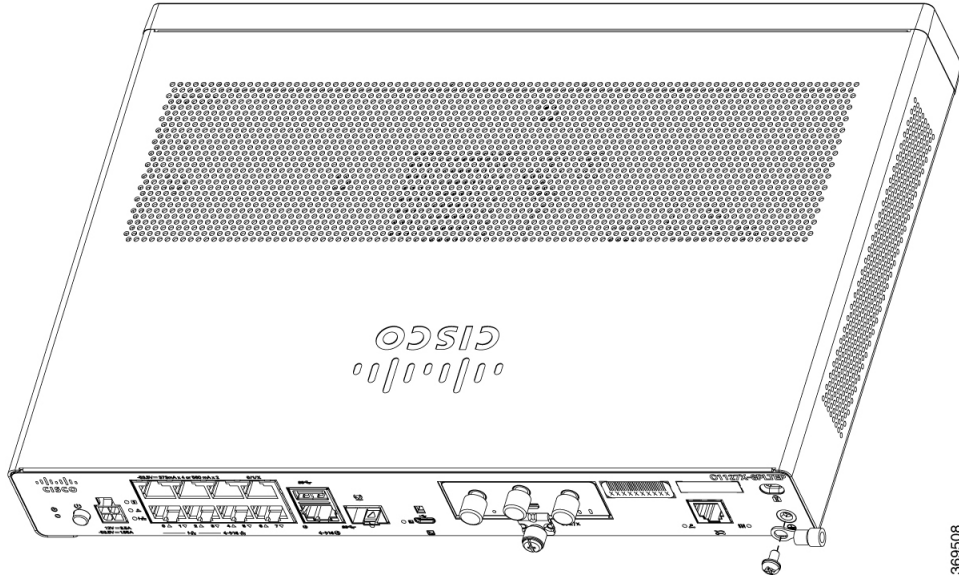
1	Screw (UNC 6-32)
2	Ground Lug

Connect Power Cable

Power supply of the Cisco 1000 Series Intergrated Services Routers is an external AC to DC power adapter. The external DC power connector plugs into the router's 4 points power connector.

Figure 66: Power Cable for C111x
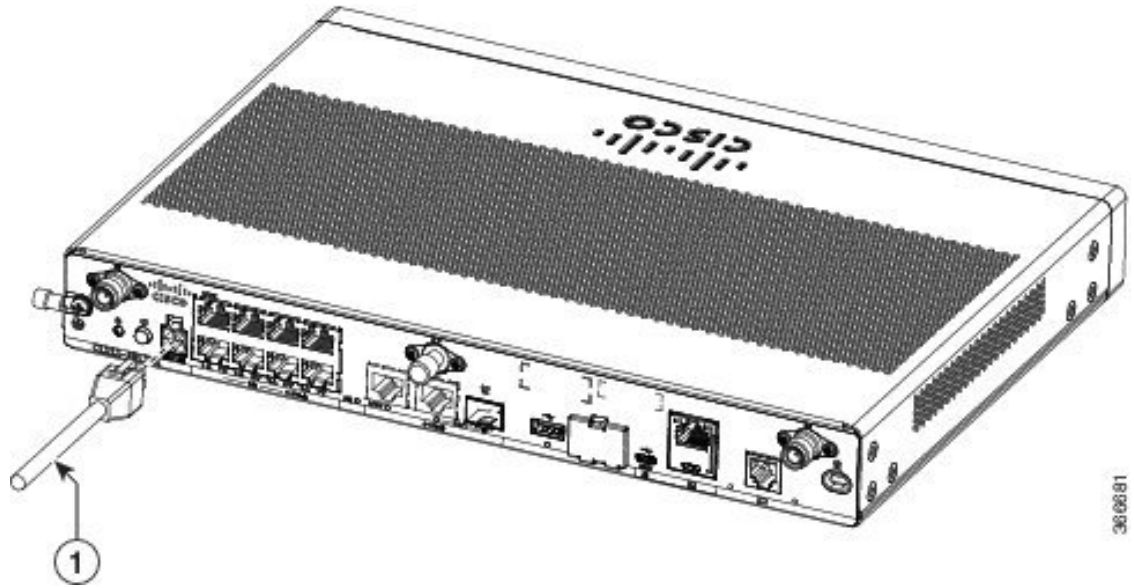
1.	Power Cable

Figure 67: Power Cable for C1127-8PLTEP
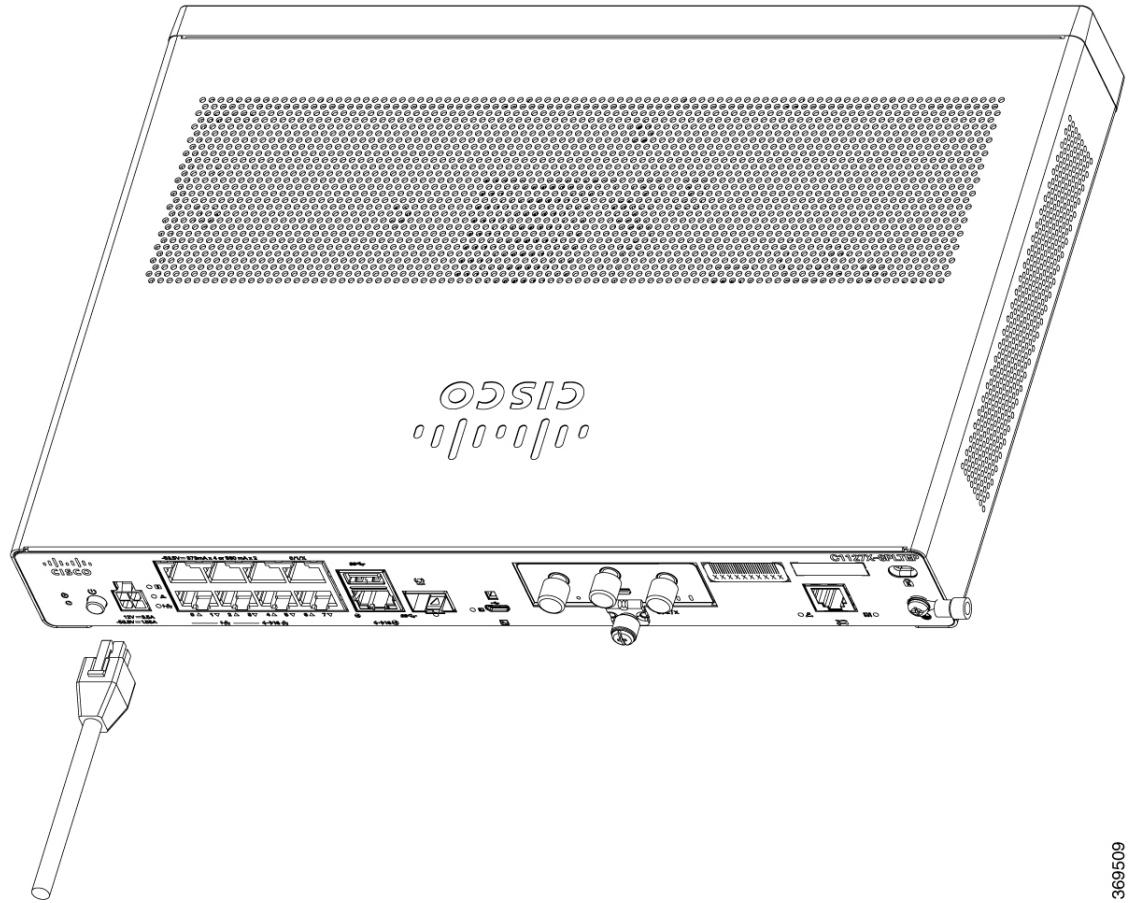
1.	Power Cable

Connect the Router to a Console

The Cisco 1000 Series Integrated Services Router has an asynchronous serial port. This port provides administrative access to the router through a console terminal or a PC.

Figure 68: Console Adapter for C1101-4PLTEP
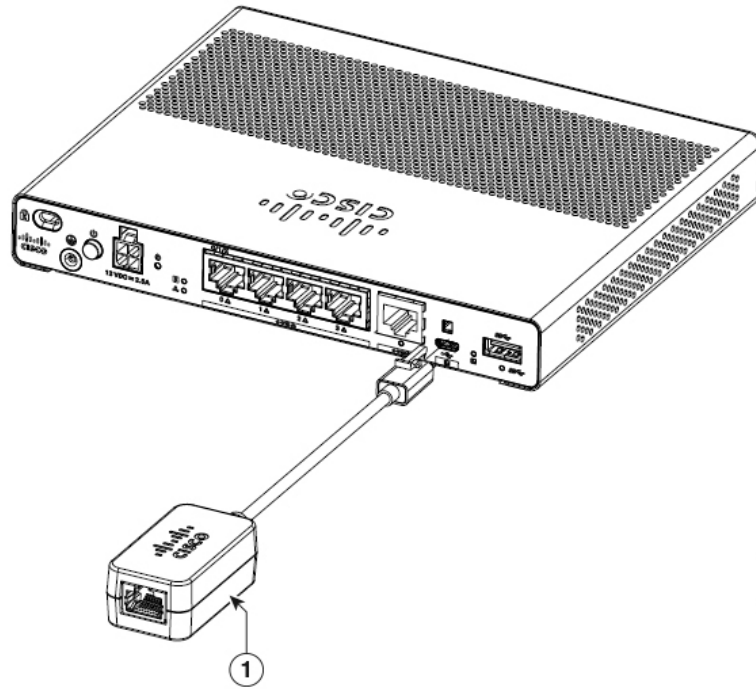
1.	Micro USB to RJ-45 console adapter

Figure 69: Console Adapter for C1127X-8PLTEP
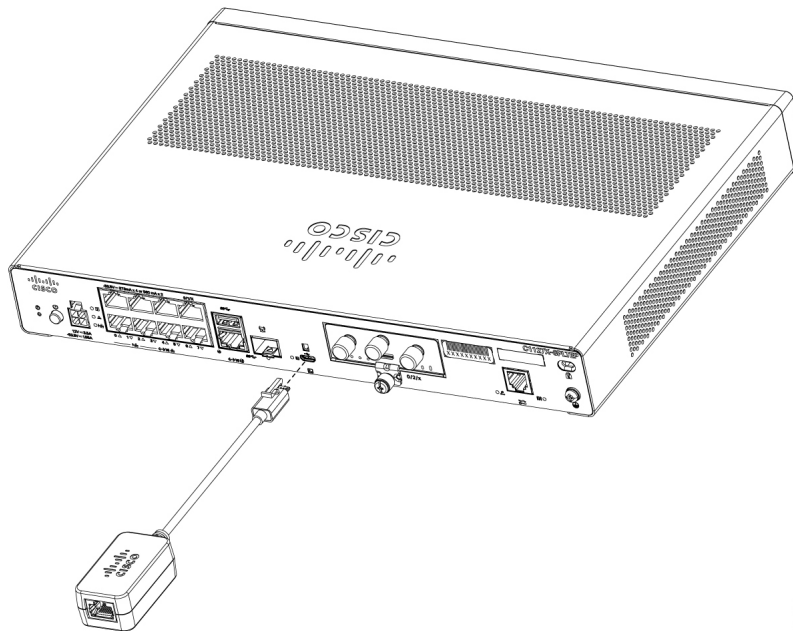
1.	Micro USB to RJ-45 console adapter

Use the USB or RJ-45 console port on the router to access the Cisco Internet Operating System (IOS-XE) command line interface (CLI) on the router and perform configuration tasks. A terminal emulation program is required to establish communication between the router and a PC.

To configure the router through the Cisco IOS CLI, you must establish a connection between the router console port and either a PC or a terminal.

Use the following cables and adapters to establish a local or remote connection.

Table 10: Local and Remote Connections

Port Type	Cable	Action
Serial (RJ-45)	C111x,C1111X: RJ-45 Serial console cable CAB-CON-USB (Serial USB to RJ-45 serial cable)	Connecting to the Serial Port with Microsoft Windows
Serial (USB)	C110x: CAB-CON-USB RJ-45	

Connect to the Serial Port with Microsoft Windows

To establish a physical connectivity between the router and a PC, you need to install a Microsoft Windows USB.

Use the USB Console cable plugged into the USB serial port to establish this connection.

1. Connect the end of the console cable with the RJ-45 connector to the light blue console port on the router.

2. OR

   Connect a USB 5-pin micro USB Type-B to the USB console port. If you are using the USB serial port for the first time on a Windows-based PC, install the USB driver.

   Note You cannot use the USB port and the EIA port concurrently. When the USB port is used it takes priority over the RJ-45 EIA port.

3. Connect the end of the cable with the DB-9 connector (or USB Type-A) to the terminal or PC. If your terminal or PC has a console port that does not accommodate a DB-9 connector, you must provide an appropriate adapter for that port.

4. Start a terminal emulator application to communicate with the router. Configure the software with the following parameters:

   - 9600 baud

   - 8 data bits

   - no parity

   - 1 stop bit

   - no flow control

Connect to the Console Port with Mac OS X

This procedure describes how to connect a Mac OS X system USB port to the console using the built in OS X Terminal utility.

Step 1 Use the Finder to go to Applications > Utilities > Terminal.

Step 2 Connect the OS X USB port to the router.

Step 3 Enter the following commands to find the OS X USB port number

Example:

```
macbook:user$ cd /dev
macbook:user$ ls -ltr /dev/*usb*
crw-rw-rw-  1 root    wheel        9,  66 Apr  1 16:46 tty.usbmodem1a21 DT-macbook:dev user$
```

Step 4 Connect to the USB port with the following command followed by the router USB port speed

Example:

```
macbook:user$ screen /dev/tty.usbmodem1a21 9600
```

To disconnect the OS X USB console from the Terminal window

Enter Ctrl-a followed by Ctrl-\

Connect to the Console Port with Linux

This procedure shows how to connect a Linux system USB port to the console using the built in Linux Terminal utility.

Step 1 Open the Linux Terminal window.

Step 2 Connect the Linux USB port to the router.

Step 3 Enter the following commands to find the Linux USB port number.

Example:

```
root@usb-suse# cd /dev
root@usb-suse /dev# ls -ltr *ACM*
crw-r--r--    1 root    root    188,  0 Jan 14 18:02 ttyACM0
root@usb-suse /dev#
```

Step 4 Connect to the USB port with the following command followed by the router USB port speed

Example:

```
root@usb-suse /dev# screen /dev/ttyACM0 9600
```

Note **To disconnect the Linux USB console from the Terminal window:**

Enter Ctrl-a followed by : then quit.

Install the Silicon Labs USB Device Driver

This section contains the following topics:

Install the Silicon Labs Windows USB Device Driver

Step 1 Go to the Silicon Labs website (www.silabs.com/developers/usb-to-uart-bridge-vcp-drivers?tab=downloads), and click **CP210x Universal Windows Driver**.

Step 2 Unzip the downloaded folder, and select the installer for your system configuration. The Device Driver Installation Wizard begins.

Step 3 Click**Next** on the Installation Wizard, then click **Finish** to complete installation.

Step 4 Open the **Device Manager** on your system and click the **Ports (COM & LPT)** dropdown.

Step 5 Insert the USB console cable and power into your system. The **Device Manager** refreshes and indicates the newly-detected COM port.

Step 6 Open a terminal emulator and click the **Serial** connection type. Input values for the **Serial Line** and **Speed** (or **Baud Rate**).

Step 7 Click **Open**.

Step 8 The terminal emulator opens. Click **Enter** to view the console output response.

Install the Silicon Labs Mac USB Device Driver

Step 1 Go to the Silicon Labs website (www.silabs.com/developers/usb-to-uart-bridge-vcp-drivers?tab=downloads), and click **CP210x VCP Mac OSX Driver**.

Step 2 Click the **Downloads** folder, then click **macOS_VCP_Driver** folder, and double-click the **SiLabsUSBDriverDisk.dmg** program.

Step 3 Click **Install CP210x VCP Driver**, and then click **Open.** The Driver Installer begins.

Step 4 Follow installer instructions. Click **Continue**, scroll all the way down, then click **Continue**, and click **Agree**.

Step 5 Click **Continue**, and enter your password. Then click **Install Helper**, and click **Close**.

Step 6 Insert the USB console cable and power into your system.

Step 7 Open a terminal and type **cd/dev**, and then type **ls-ltr**. Serial port **tty.SLAB_USBtoUART** appears.

Step 8 Type **screen /dev/tty.SLAB_USBtoUART <baudrate>** to see console output. Console shows response upon first **Enter** key if there is no output.

Connect WAN and LAN Interfaces

This section describes how to connect WAN and LAN interface cables. Before you connect the interface cables, refer to the following warning statements:

Warning   Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations. Statement 1036.

Warning   Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface. Statement 1037.

Warning   For connections outside the building where the equipment is installed, the following ports must be connected through an approved network termination unit with integral circuit protection, LAN, PoE. Statement 1044.

Warning   Avoid using or servicing any equipment that has outdoor connections during an electrical storm. There may be a risk of electric shock from lightning. Statement 1088.

Ports and Cabling

This section summarizes typical WAN and LAN connections for Cisco 1000 Series Integrated Services Router. The connections summarized here are described in detail in the Cisco Modular Access Router Cable Specifications document on cisco.com.

Table 11: WAN and LAN Connections

Port or Connection	Port Type, Color[1]	Connection	Cable
Ethernet	RJ-45, yellow	Ethernet hub or Ethernet switch	Category 5 or higher Ethernet
Gigabit Ethernet SFP, optical	LC, color according to optical wavelength	1000BASE-SX, -LX, -LH, -ZX, -CWDM	Optical fiber as specified on applicable data sheet
Gigabit Ethernet SFP, copper	RJ-45	1000BASE-T	Category 5, 5e, 6 UTP
xDSL (VDSL2 / ADSL2/2+)	RJ-11	POTS or ISDN line	RJ-11 telephone cable

[1] Cable color codes are specific to Cisco cables.

Connection Procedures and Precautions

After you have installed the router chassis, perform these steps to connect the WAN and LAN interfaces:

- Connect each WAN and LAN to the appropriate connector on the chassis.

- Position the cables carefully so that you do not strain the connectors.

- Organize cables in bundles so that cables do not intertwine.

- Inspect the cables to make sure that the routing and bend radius is satisfactory. If necessary, reposition the cables.

- Install cable ties in accordance with site requirements.

Configure the Router at Startup

After installing the router and connecting the cables, you can configure the router with basic configurations. For more information on how to configure the router, see the Cisco 1100 Series Software Configuration Guide.

Install and Upgrade Internal Modules and Field Replaceable Units

The Cisco 1000 Series Integrated Services Routers have internal modules and field-replaceable units (FRUs) that can be quickly and easily removed and replaced without having to send the entire router for repair.

This section describes how to install the internal modules and FRUs in the Cisco 1000 Series Integrated Services Routers. The information is contained in the following sections:

Replace the Chassis Covers for C111X and C1111x

To access the internal modules on the router, you must first remove the chassis cover. See the instructions below on how to remove and later replace the chassis cover on the routers.

⚠️

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

Cisco 1000 Series Integrated Services Routers have removable covers. Do not run the routers with the cover off. Doing so can cause the router to overheat very quickly.

Use a number-2 Phillips screw driver to perform the following tasks.

Remove the Cover

To remove the cover, do these
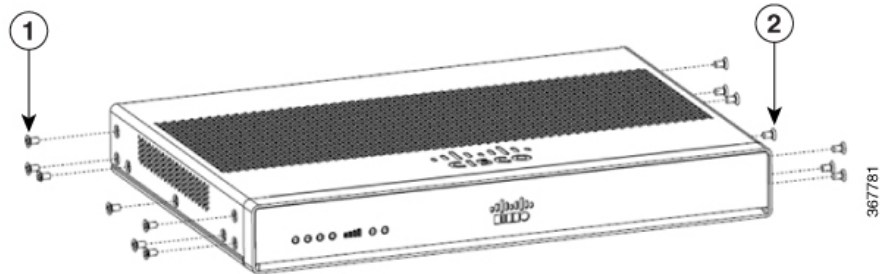
steps:

1 and 2	Remove the 14 screws from either side of the cover.
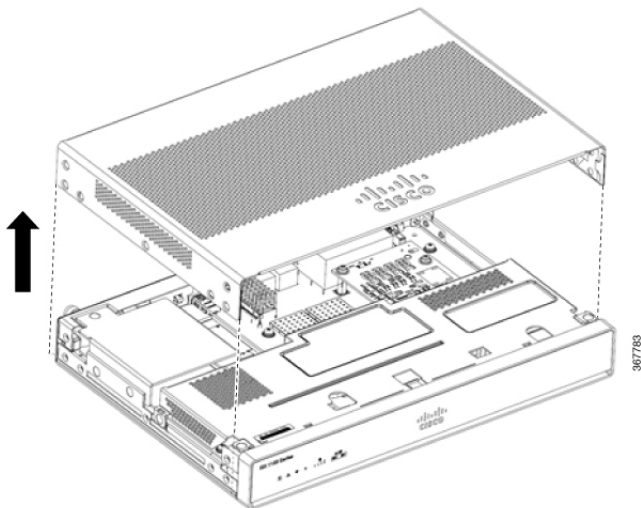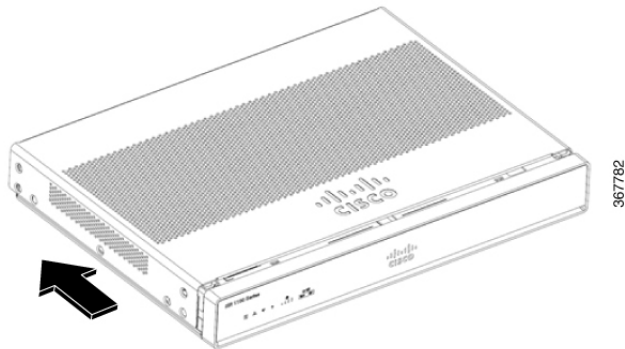
Step 1   Read the Safety Warnings and disconnect the power supply before you perform any module replacement.

Step 2   Confirm the router is turned off and disconnected from the power supply.

Step 3   Disconnect all port cables connected to the router. Ensure that you do not work on the router with cables still attached to the router in the event of lightning or surges.

Step 4   Place the chassis on a flat surface.

Step 5   Remove the 14 cover screws on the two sides of the router cover. See figure.

Step 6   Slide the cover from bezel side to I/O side until it stops.

Step 7   Pull the cover vertically to disengage from the chassis.

Replace the Cover

To replace the cover, do these steps:

⚠️

Warning   The covers are an integral part of the safety design of the product. Do not operate the unit without the covers installed. Statement 1077.
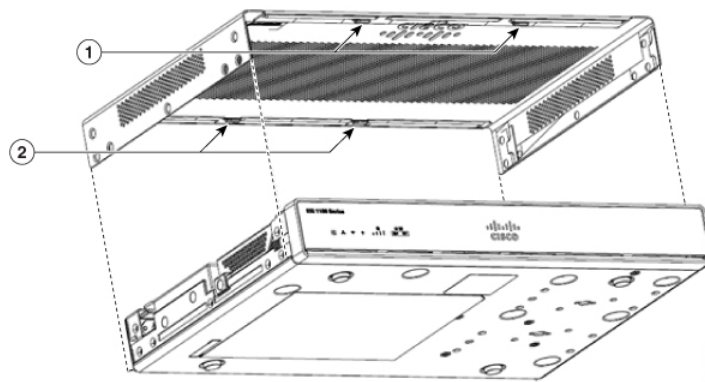
1 and 2	Replace the 14 screws on either side of the cover.
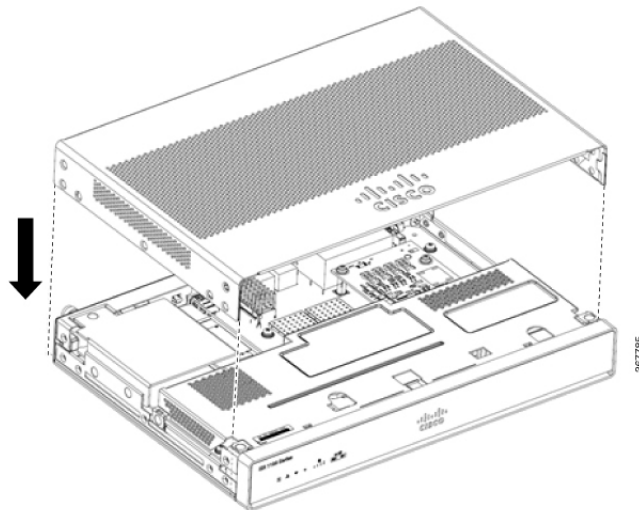
Step 1	Read the Safety Warnings and disconnect the power supply before you perform any module replacement.
Step 2	Confirm the router is turned off and disconnected from the power supply.
Step 3	Disconnect all port cables connected to the router. Ensure that you do not work on the router with cables still attached to the router in the event of lightning or surges.
Step 4	Place the chassis on a flat surface.
Step 5	Align hooks on the cover to slots on the chassis base and lower the cover onto chassis base.
Step 6	Slide the cover from the I/O side to the bezel side
Step 7	Install the fourteen screws on both sides of the chassis. Torque to 6-8 in-lbs.

External Modules

This section describes how to install external modules and FRUs in the Cisco 1000 Series Integrated Services Routers. The information is contained in the following sections:

⚠

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

Locate External Slots for Modules

This section describes the locations of external modules on the router motherboard.

Install and Remove Small Form Pluggable Modules

This section describes how to install and remove Small Form Pluggable (SFP) modules in the Cisco 1000 Series Integrated Services Routers. The information is contained in the following sections:

Install Small Form Pluggable Module

This section describes how to install optional small-form-factor pluggable (SFP) modules in the Cisco 1000 Series Integrated Services Routers to provide optical Gigabit Ethernet connectivity.

Only SFP modules certified by Cisco and complies with IEC 60825-1:2014 are supported on these routers. For more information, refer to SFPs Supported on Cisco 1100 ISRs.

Note   The SFP module-GLC-GE-100FX V01 is not supported on the Cisco111x Series.

Note   The DSL SFP module-SFP-VADSL2+-I is supported on the Cisco 1131 Series Integrated Services Routers.

Warning   Class 1 laser product. Statement 1008.

Warning   Pluggable optical modules comply with IEC 60825-1 Ed. 3 and 21 CFR 1040.10 and 1040.11 with or without exception for conformance with IEC 60825-1 Ed. 3 as described in Laser Notice No. 56, dated May 8, 2019.

Remove Small Factor Pluggable Module

To remove a small factor pluggable (SFP) module from the chassis:

Step 1   Disconnect all cables from the SFP.

Step 2   Disconnect the SFP latch.

Note   SFP modules use various latch designs to secure the module in the SFP port. For information on the SFP technology type and model, see the label on the side of the SFP module.

Tip   Use a pen, screwdriver, or other small straight tool to gently release a bale-clasp handle if you cannot reach it with your fingers.

Step 3   Grasp the SFP on both sides and remove it from the chassis.

Install a Pluggable Interface Module

⚠️

Warning   Blank faceplates and cover panels serve three important functions: they prevent exposure to hazardous voltages and currents inside the chassis; they contain electromagnetic interference (EMI) that might disrupt other equipment; and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place. Statement 1029.

⚠️

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

⚠️

Warning   Pluggable optical modules comply with IEC 60825-1 Ed. 3 and 21 CFR 1040.10 and 1040.11 with or without exception for conformance with IEC 60825-1 Ed. 3 as described in Laser Notice No. 56, dated May 8, 2019. Statement 1255.

Install a Pluggable Interface Module on a C1101-4P

To insert the pluggable interface module into the router, follow these steps:

Step 1   Insert and then gently push the LTE pluggable into the pluggable slot of C1101-4P until firmly fixed.

Step 2   Tighten the screw, the recommended torque is 10-12 in-lb.

Figure 70: LTE Pluggable Interface Module - C1101-4P
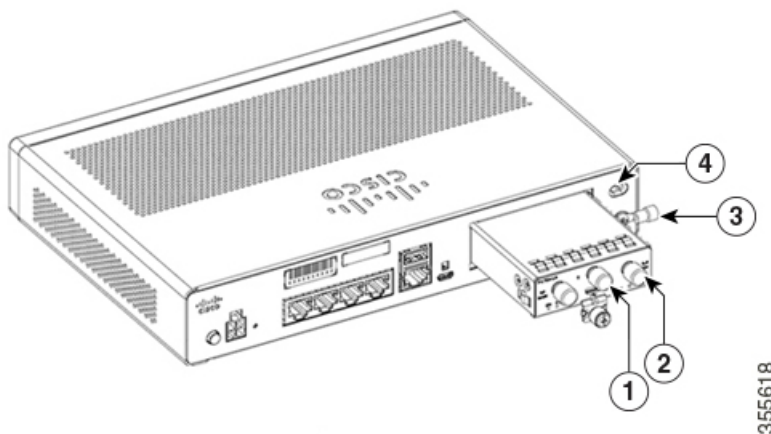
1	GPS antenna (SMA)
2	LTE antenna (SMA)

3	Ground lug
4	Kensingston lock slot

Figure 71: LTE Pluggable Interface Module - C1127X-8PLTEP
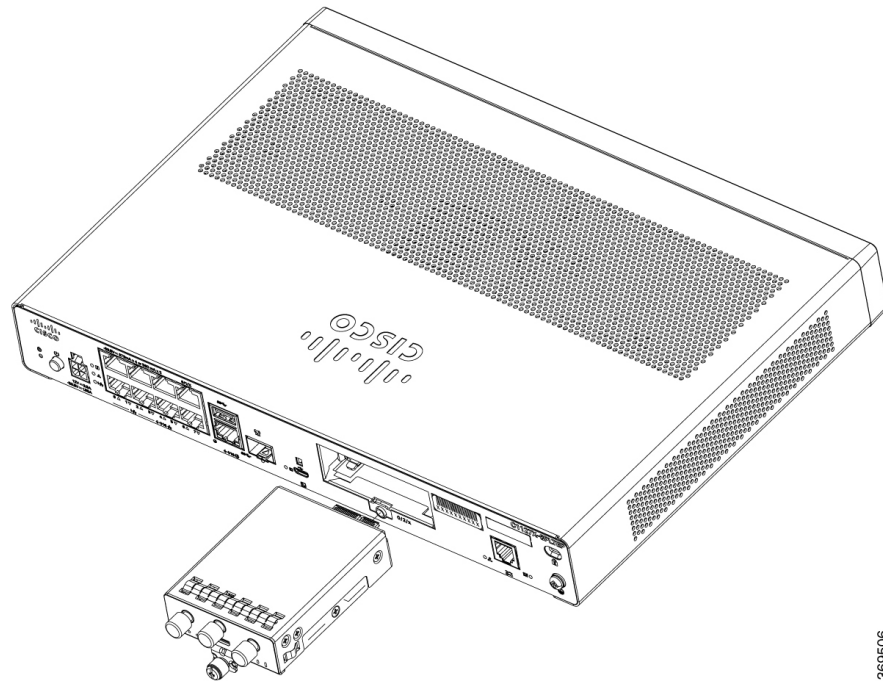
1	GPS antenna (SMA)
2	LTE antenna (SMA)
3	Ground lug
4	Kensingston lock slot

Figure 72: LTE Pluggable Interface Module - P-LTEAP18-GL
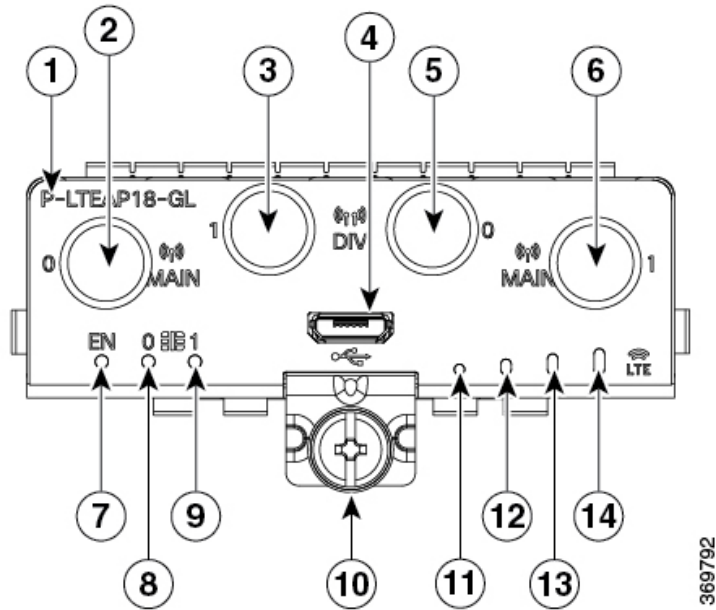
1	PID
2	Main 0 antenna (SMA)
3	Diversity 1 antenna (SMA)
4	Micro USB
5	Diversity 0 antenna (SMA)
6	Main 1 antenna (SMA)
7	Enable LED
8	SIM 0 LED
9	SIM 1 LED
10	M3.5 thumb-screw
11	RSSI 0 • Yellow: Very bad signal, 3G • Green: Very bad signal, 4G

2	RSSI 1
	• Yellow: Bad signal, 3G
	• Green: Bad signal, 4G
3	RSSI 2
	• Yellow: Good signal, 3G
	• Green: Good signal, 4G
4	RSSI 3
	• Yellow: Best signal, 3G
	• Green: Best signal, 4G

Figure 73: 5G Pluggable Interface Module - P-5GS6-GL
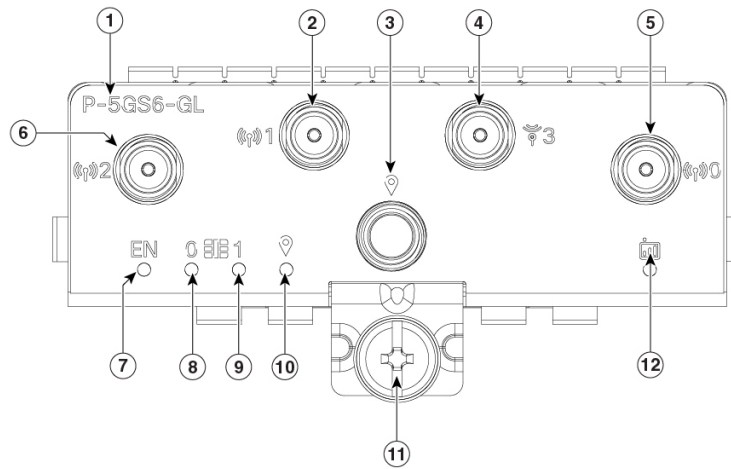
1	PID
2	antenna 1 (SMA)
3	GPS (SMA)
4	Antenna 3 (SMA, reception only)
5	Antenna 0 (SMA)
6	Antenna 2 (SMA)
7	Enable LED

8	SIM 0 LED
9	SIM 1 LED
0	GPS LED
1	M3.5 thumb-screw
2	Service LED

Figure 74: P-5GS6-R16SA-GL
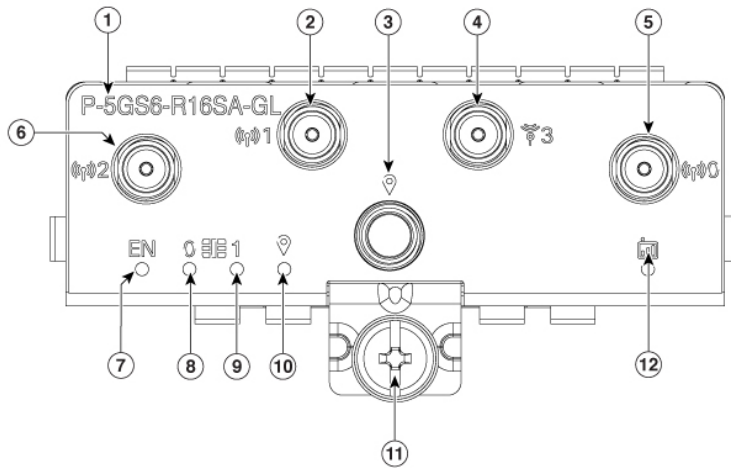
1	PID
2	Main antenna 1 (SMA)
3	GPS (SMA)
4	Antenna 3 (SMA, reception only)
5	Antenna 0 (SMA)
6	Antenna 2 (SMA)
7	Enable LED
8	SIM 0 LED
9	SIM 1 LED
0	GPS LED
1	M3.5 thumb-screw
2	Service LED

Figure 75: P-LTEA7-NA

1	PID
2	Main antenna (SMA)
3	GPS (SMA)
4	Diversity antenna (SMA)
5	Enable LED
6	SIM 0 LED
7	SIM 1 LED
8	GPS LED
9	M3.5 thumb-screw
0	RSSI 0 • Yellow: Very bad signal, 3G • Green: Very bad signal, 4G
1	RSSI 1 • Yellow: Bad signal, 3G • Green: Bad signal, 4G

2	RSSI 2
	• Yellow: Good signal, 3G
	• Green: Good signal, 4G
3	RSSI 3
	• Yellow: Best signal, 3G
	• Green: Best signal, 4G

Figure 76: PLTEA-LA with Micro SIM Slots
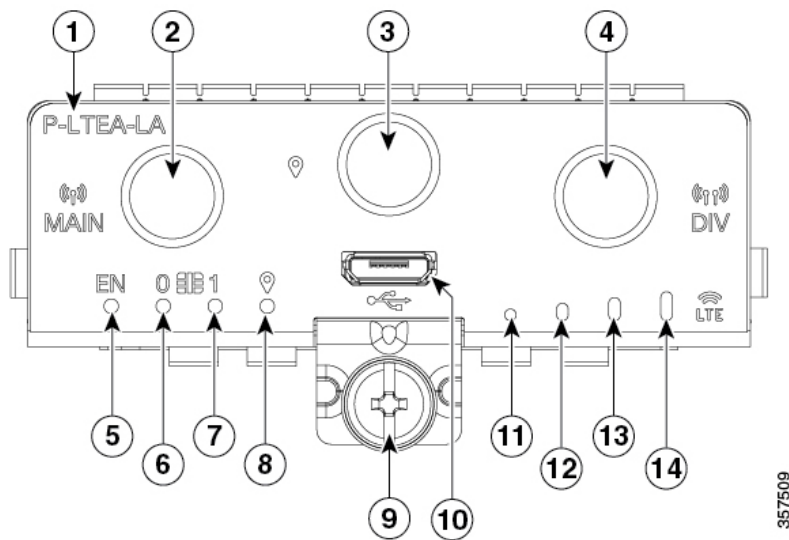
1	PID
2	Main antenna (SMA)
3	GPS (SMA)
4	Diversity antenna (SMA)
5	Enable LED
6	SIM 0 LED
7	SIM 1 LED
8	GPS LED
9	M3.5 thumb-screw

0	Micro USB 2.0
1	RSSI 0 • Yellow: Very bad signal, 3G • Green: Very bad signal, 4G
2	RSSI 1 • Yellow: Bad signal, 3G • Green: Bad signal, 4G
3	RSSI 2 • Yellow: Good signal, 3G • Green: Good signal, 4G
4	RSSI 3 • Yellow: Best signal, 3G • Green: Best signal, 4G

This section describes how to insert a Micro-SIM card into an LTE pluggable module.

To insert the Micro-SIM cards into an LTE Pluggable module:

Note Ensure to use the correct tool for removing the Micro-SIM door.

1. Place the pluggable module on its bottom side, remove the SIM door screw, use a #1 Philips screw driver for removing the screws, and then carefully remove the Micro-SIM cover from the pluggable module.

Caution Do not touch any part of the exposed PCB circuit area when the Micro-SIM cover is removed.

2. Slot 1 and slot 0 are the Micro-SIM slots. (see figure 5, step 2).

3. Install SIM 0 and SIM 1 in their respective slots. SIM 0 or SIM 1 is marked on the pluggable interface module above the Micro-SIM cover. The SIM icons show the correct orientation required to install the SIM into each respective connector (SIM connectors are a push-push type).

   To install, insert the SIM card in the connector until you feel it click, then let go and the SIM is locked to the connector. To remove the SIM card, depress the SIM in the connector slot again until you feel the

same click and let it go, the SIM connector should eject part way out of the connector. The SIM card can then be grabbed and removed).

Secure the Micro-SIM cover with a screw, use a number 1 Philips screw driver to secure the screw on the Micro-SIM cover. The recommended torque is 2.8 - 3.8 inch LBF.

Note We recommend using industrial-grade SIM cards.

4. You have now successfully inserted the Micro-SIM cards into the LTE pluggable module. The marking on the Mirco-SIM door should align with Micro-SIM 0 on the pluggable module with the arrow pointing upward.

Figure 77: Insert the Micro-SIM Cards
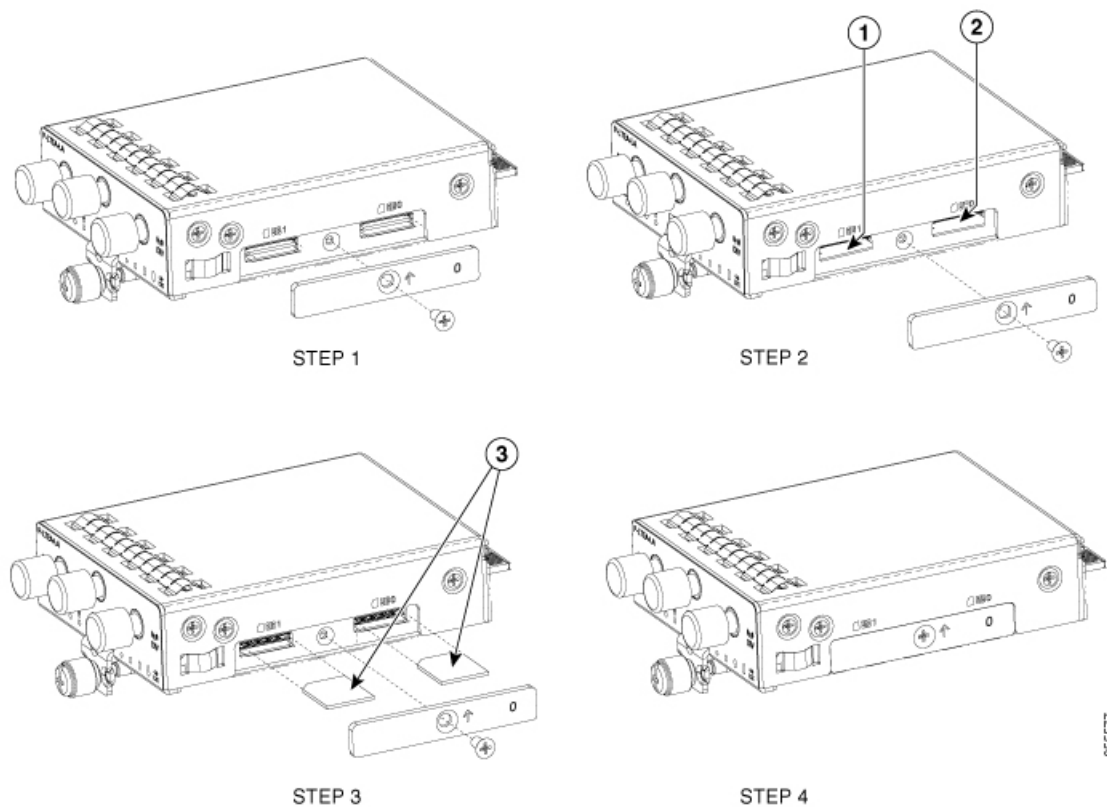
Configuring a Pluggable Interface Module

To insert the antenna in the Pluggable Interface Module, perform the following steps:

Figure 78: Attaching the Antennas
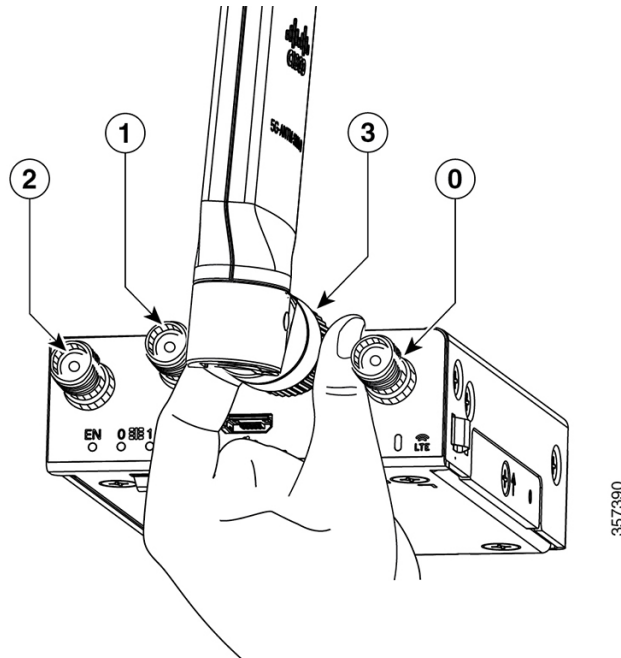
Step 1   Use your thumb and index finger to insert and tighten antenna 1 and antenna 3 in the middle antenna attachment slots, as indicated in the figure.

> **Note**   While installing the antennas, first install antenna 1 and antenna 3 (this instruction is for the two antenna attachments present in the middle) and secure it completely. If you install antenna 2 and antenna 0 first (this refers to the first and the last antenna attachments), there will be less space to insert your thumb and index finger and therefore, you may not be able to secure antenna 1 and 3.

Step 2   Insert antenna 2 and antenna 0 in the first and last antenna attachment slots.

Step 3   After installing the antennas, adjust the antenna orientation by spacing out each of them equally until they are spread out. This is important because it helps in getting higher RF performance.
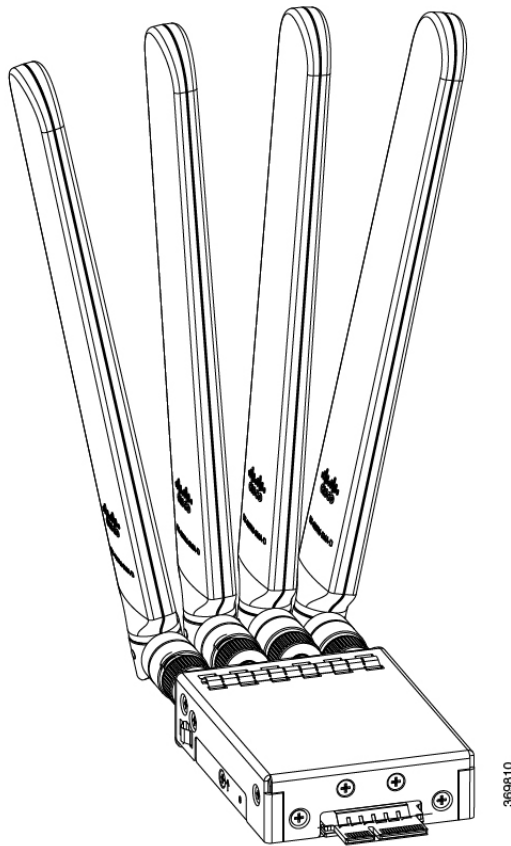
RF Band Mapping for Antenna Ports (For P-5GS6-GL and P-5GS6-R16SA-GL)

The following table lists the RF band mapping for antenna ports.

RF Band Mapping for Antenna Ports for P-5GS6-GL

Antenna Port	Technology	TX	RX
ANT 0	3G WDCMA	B1, B2, B3, B4, B5, B6, B8, B9, B19	B1, B2, B3, B4, B5, B6, B8, B9, B19
	LTE	B1, B2, B3, B4, B5, B7, B8, B12, B13, B14, B17, B18, B19, B20, B25, B26, B28, B30, B34, B38, B39, B40, B41, B66, B71	B1, B2, B3, B4, B5, B7, B8, B12, B13, B14, B17, B18, B19, B20, B25, B26, B28, B29, B30, B32, B34, B38, B39, B40, B41, B42, B43, B46, B48, B66, B71
	5G NR FR1	n1, n2, n3, n5, n7, n8, n12, n20, n28, n38, n40, n41, n66, n71	n1, n2, n3, n5, n7, n8, n12, n20, n25, n28, n38, n40, n41, n48, n66, n71, n77, n78, n79

Antenna Port	Technology	TX	RX
ANT 1	3G WDCMA	-	B1, B2, B3, B4, B5, B6, B8, B9, B19
	LTE	B5, B20, B42, B43, B48, B71	B1, B2, B3, B4, B5, B7, B8, B12, B13, B14, B17, B18, B19, B20, B25, B26, B28, B29, B30, B32, B34, B38, B39, B40, B41, B42, B43, B46, B48, B66, B71
	5G NR FR1	n5, n48, n77, n78, n79	n1, n2, n3, n5, n7, n8, n12, n20, n25, n28, n38, n40, n41, n48, n66, n71, n77, n78, n79
ANT 2	3G WDCMA	-	-
	LTE	B1, B2, B3, B4, B7, B41, B66	B1, B2, B3, B4, B7, B25, B30, B32, B34, B38, B39, B40, B41, B42, B43, B46, B48, B66
	5G NR FR1	n1, n2, n3, n7, n25, n41, n66, n77, n78, n79	n1, n2, n3, n7, n25, n38, n40, n41, n48, n66, n77, n78, n79
ANT 3	3G WDCMA	-	-
	LTE	-	B1, B2, B3, B4, B7, B25, B30, B32, B34, B38, B39, B40, B41, B42, B43, B46, B48, B66
	5G NR FR1	-	n1, n2, n3, n7, n25, n38, n40, n41, n48, n66, n77, n78, n79

RF Band Mapping for Antenna Ports for P-5GS6-R16SA-GL

Radio Access Technology (RAT)	Bands	Tx Antennas		Rx Antennas				GNSS Antenna
		Default	Alternate Path	ANT0	ANT1	ANT2	ANT3	GPS

Radio Access Technology (RAT)	Bands	Tx Antennas		Rx Antennas				GNSS Antenna
5GNR Sub-6G	29	-	-	Y	-	Y	-	-
	38, 41	ANT2	ANT0	Y	Y	Y	Y	-
	48	ANT3	ANT1	Y	Y	Y	Y	-
	75, 76	-	-	Y	Y	Y	Y	-
	77, 78	ANT3	ANT1 ANT2	Y	Y	Y	Y	-
	79	ANT3	ANT1	Y	Y	Y	Y	-
LB LTE/ 5GNR Sub-6G	5, 8, 12, 13, 14, 17, 18, 19, 20, 26, 28, 71	ANT0	-	Y	-	Y	-	-
MB/HB LTE/ 5G NR Sub-6G	1, 2, 3, 4, 7, 25, 30, 39, 40, 66, 70	ANT0	-	Y	Y	Y	Y	-
LTE	29	-	-	Y	-	-	Y	-
	34	ANT0	-	Y	-	Y	-	-
	46	-	-	Y	-	-	Y	-
	32	-	-	Y	Y	Y	Y	-
	38	ANT0	-	Y	Y	Y	Y	-
	41	ANT0	ANT2	Y	Y	Y	Y	-
	42, 43, 48	ANT3	ANT1	Y	Y	Y	Y	-
WCDMA	1, 2, 4, 5, 8, 19	ANT0	-	Y	-	Y	-	-
GNSS	-	-	-	-	-	-	-	L1

LED Behaviors

The following table lists the LED indicators and their behavior. The LEDs provide a visual indication of the status and the currently selected services.

LED Indicators:

LED	Color	Function
EN	Green, Yellow	**Enable LED** • Pluggable enable LED • Off: System power is off • Yellow: Module power is not functioning correctly • Green: Module power is on
SIM0	Green, Yellow	**SIM0 LED/Activity** • SIM0 LED status and WWAN activity • Off: SIM0 is not installed • Yellow: SIM0 is installed, but not active • Green: SIM0 installed and active • Green Blink: LTE data activity
SIM1	Green, Yellow	**SIM1 LED/Activity** • SIM1 LED status and WWAN activity • Off: SIM1 is not installed • Yellow: SIM1 is installed, but not active • Green: SIM1 installed and active • Green Blink: LTE data activity
GPS	Green, Yellow	**GPS LED** • Off: GPS is not configured • Yellow: Software is defined • Green: GPS is configured • Green Blink: GPS is functional
Service	Green, Yellow, Blue	**Service Indication LED (Applicable for P-5GS6-GL)** • Yellow: 3G • Green: 4G LTE

LED	Color	Function
		• Blue: 5G
RSSI	Green, Yellow	**RSSI LED (Applicable for P-LTE-XX, P-LTEA-XX, P-LTEAP18-GL)** • Green: 4G LTE • Yellow: 3G

Attaching the Antennas

To attach the antenna in the Pluggable Interface Module, perform the following steps.

Figure 79: Attaching the 5G New Radio (NR) Antenna (5G-ANTM-O4-B) to P-5GS6-GL PIM
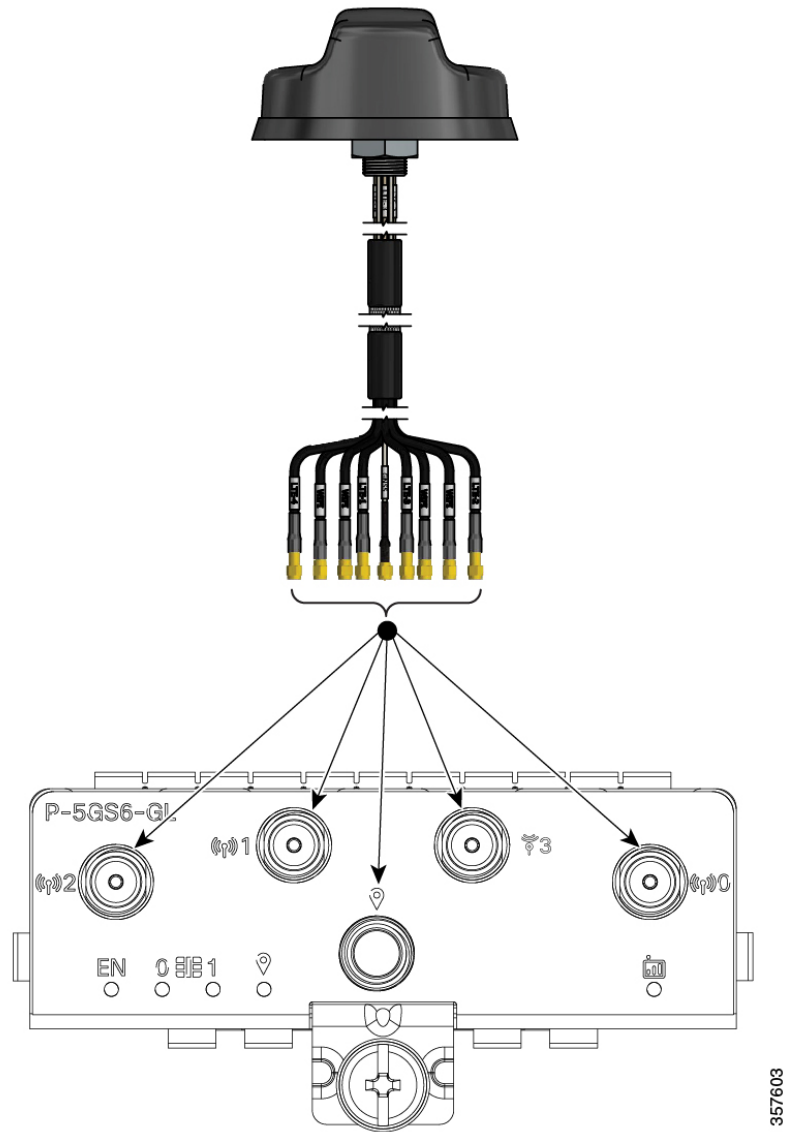
Note   5G NR Antenna (5G-ANTM-04-B) is supported on both P-LTEAP18-GL and P-5GS6-GL PIMs.

1. Attach each SMA cable to the ports as indicated in the table mappings.

2. Ensure that you tighten and secure each SMA cable into the SMA connector on the PIM.

Table 12: Port Mappings for 5G-ANTM-O-4-B on P-5GS6-GL and P-LTEAP18-GL PIMs

5G-ANTM-O-4-B	P-LTEAP18-GL	P-5GS6-GL
MAIN 0 (LTE1)	Main 0	ANT 0
MAIN 1 (LTE3)	Main 1	ANT 1
DIV 0 (LTE2)	DIV 0	ANT 2
DIV 1 (LTE4)	DIV 1	ANT 3
GNSS	No connection	GPS

The following link contains the antenna specifications and installation instructions for 5G NR (5G-ANTM-O-4-B):

https://www.cisco.com/c/en/us/td/docs/routers/connectedgrid/antennas/installing-combined/
b-cisco-industrial-routers-and-industrial-wireless-access-points-antenna-guide/m-5g-antm-04b.html#Cisco_
Generic_Topic.dita_e780a6fe-fa46-4a00-bd9d-1c6a98b7bcb9

Install a Micro-SIM Card into a USB LTE Dongle

This section describes how to insert a micro-SIM card into a USB LTE dongle in a C1101-4P router.

Figure 80: Micro-SIM Card Slot with Dust Cover
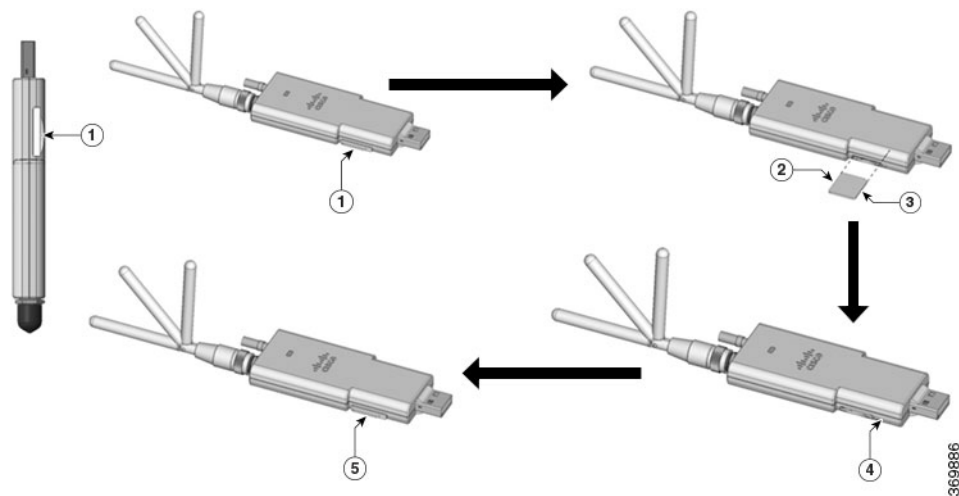
Step 1   To insert a micro-SIM card into a USB LTE dongle, do these steps:

a.   Tap open the micro-SIM protective cap on the USB dongle, gently insert the micro-SIM card with its edge oriented as shown in the figure until the SIM is seated in the socket.

b.   Tap close the micro-SIM protective cap on the USB to close the slot.

Step 2   To remove a micro-SIM card into a USB LTE dongle, do these steps:

    a. Tap open the dust cover, and then gently push the micro-SIM card to eject the card from the SIM slot.

    b. Tap close the micro-SIM protective cap on the USB to close the slot.

Note   The antenna orientation may need to be adjusted for optimal performance.

Perform the following steps to insert the USB LTE dongle with the SIM card into a horizontal slot on the rear panel of a C110x series router:

1. Ensure the micro-SIM is installed in the LTE USB dongle.

2. Plug the LTE USB dongle into the magnet holder.

3. Attach the magnet holder into the USB port on the metal front panel of C1101-4P.

Figure 81: LTE USB 2.0 Dongle for C1101-4P
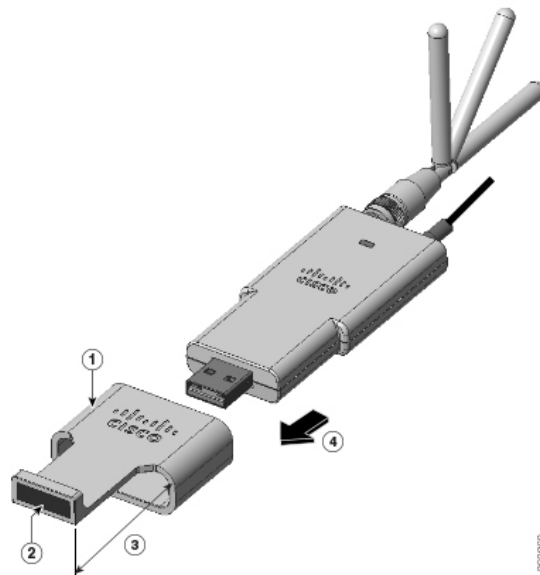
Number	Description
1	Supporting ring
2	Magnet
3	Extend outward 30mm
4	Plug-in direction
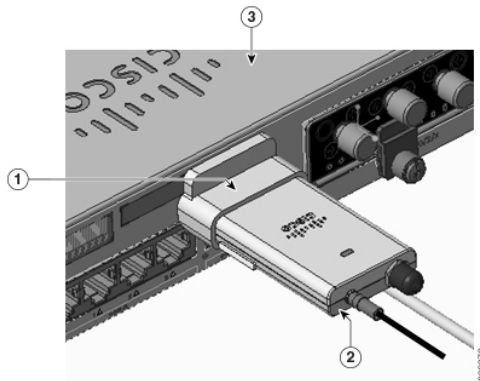
Number	Description
1	Supporting ring
2	Dongle holder with magnet
3	Router-C1101-4PLTEPW

Follow the same procedure to install the USB LTE dongle onto routers with a vertical USB slot.

Antenna Mounting Instructions

This section describes how to mount the antenna on the Cisco 1000 Series Integrated Services Router. The information is contained in the following sections:

Rack Mount of the Antenna

To install the antenna on a rack, do these steps:

Option A - Rack Mount at a Different Height with the Platform

Step 1   Pick up the R-Brackets (700-121611-01)

Step 2   Place and fix the bracket at an appropriate location on the rack using two screws.

Step 3   Tighten the screw, the recommended torque is 10-12 in-lb.

Option A - Rack Mount at the Same Height with the Platform

Step 1 Pick up the R-Brackets (700-121611-01)Place and fix the bracket at an appropriate location on the rack using two screws.

Step 2 Tighten the screw, the recommended torque is 10-12 in-lb.

Both options - A and B should follow these remaining steps to complete the mounting procedure:

1. Assemble dongle, USB, cable and antenna together in advance.

2. Pick up the wall-mounting bracket (700-121609-01) and 2 SCREWS (48-0580-01).

3. Align and fasten the screws.

4. Plug the USB cable to the USB port on the chassis to complete the mounting procedure.

Wall Mount of the Antenna

To install the antenna on a wall, do these steps:

Step 1   Pick up the C-Bracket (700-121628-01), place the bracket and then fix it on the wall using four screws.

Step 2   Assemble the USB cable (74-122795-01), dongle and antenna (07-100470-01) together. Pick up the wall-mount bracket (700-121609-01), two SCREWS (48-0580-01). Align and fasten the screws (recommended torque is 10-12 in-lb), the wall-mount is complete.
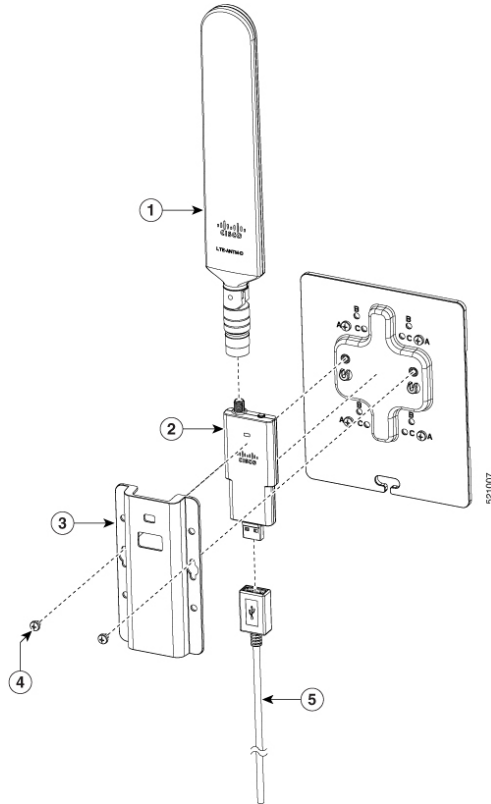
Connect the Antenna to the Device

Step 1   Ensure the reserved USB cable length is sufficient to reach the device.

Step 2   Ensure the use the cable clip within USB cable kit (74-122795-01) to manage cable routing and to hold the cable weight.

Step 3   Ensure there are no sharp radius within the USB cable routing.
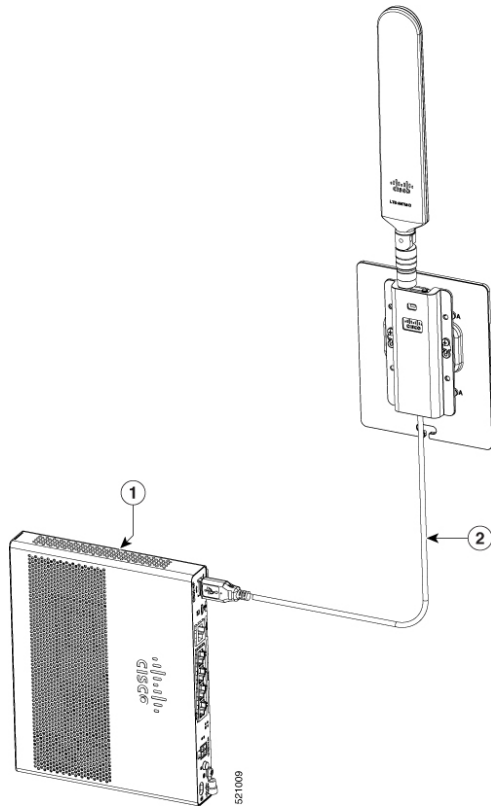
Ceiling Mount of the Antenna

To install the antenna on a rack, do these steps:

Option A - Rack Mount at a Different Height with the Platform

Step 1   Pick up the R-Brackets (700-121611-01)

Step 2   Place and fix the bracket at an appropriate location on the rack using two screws.

Step 3   Tighten the screw, the recommended torque is 10-12 in-lb.
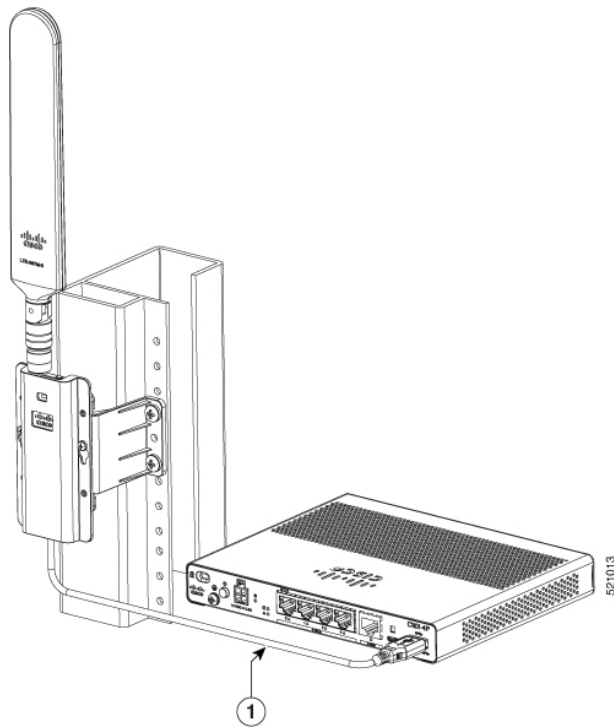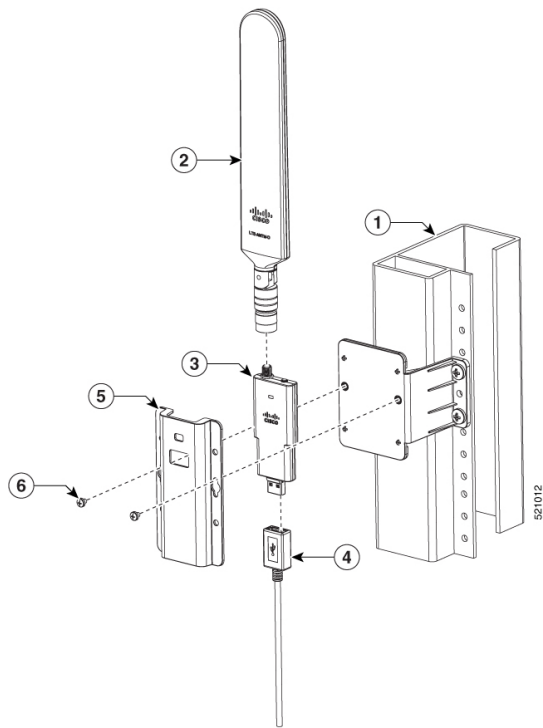
Option A - Rack Mount at the Same Height with the Platform

Step 1 Pick up the R-Brackets (700-121611-01)Place and fix the bracket at an appropriate location on the rack using two screws.

Step 2 Tighten the screw, the recommended torque is 10-12 in-lb.

Both options - A and B should follow these remaining steps to complete the mounting procedure:

1. Assemble dongle, USB, cable and antenna together in advance.

2. Pick up the wall-mounting bracket (700-121609-01) and 2 SCREWS (48-0580-01).

3. Align and fasten the screws.

4. Plug the USB cable to the USB port on the chassis to complete the mounting procedure.

Installing a SIM Card on C111X, C1109-2PX, C1109-4P

The SIM card socket is located on the I/O side of the unit.

Figure 82: Removing SIM Cover and Inserting SIMs into C111X
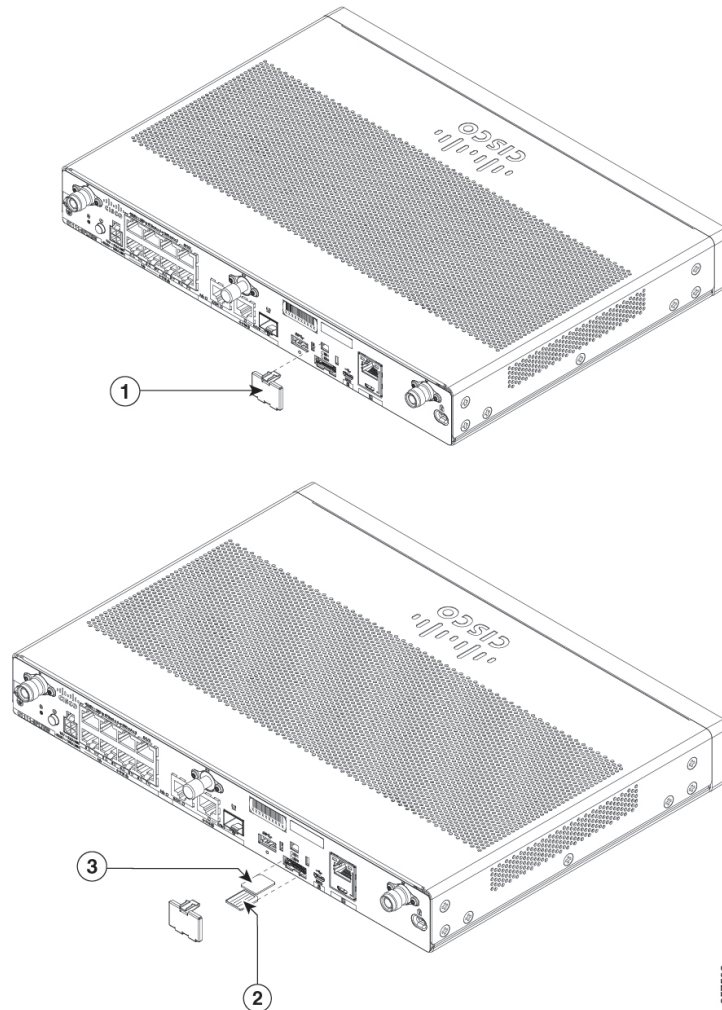
1	SIM Cover
2	SIM 0
3	SIM 1

The unit supports dual SIM cards behind a SIM cover. To insert the SIM cards, perform the following steps:

Figure 83: SIMs Inserted
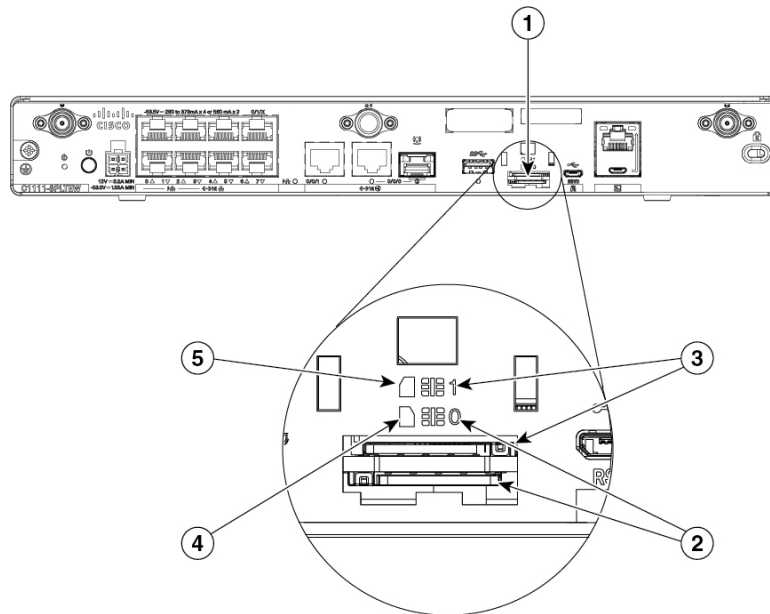
1	Micro SIM slots
2	SIM 0 slot
3	SIM 1 slot
4	Orientation notch (SIM 0)
5	Orientation notch (SIM 1)

1. Use a flat screw driver to pry and remove the SIM cover.

2. Install SIM 0 or SIM 1 in their respective slots. SIM location (0 or 1) is marked on both the unit panel face (visible when the SIM cover is removed). The SIM icons show the correct orientation required to install the SIM into each respective connector (SIM connectors are a push-push type).

3. To install, insert the SIM card into the connector until you feel it click, and then let go. The SIM is locked into the connector.

4. To remove the SIM card, depress the SIM in the connector slot until you feel the same click and let it go. The SIM connector should get ejected part way out of the connector. You can then grab the SIM and remove it.

5. When SIM cards are installed, replace the SIM-cover and secure using a flat screw-driver.

☞

Important   1. For accurate readings of the SIM-card in the micro-SIM slots, we recommend using the native industrial-grade micro-SIM cards.

2. If a nano-SIM (4FF) card is used, we recommend to use the cisco nano-to-micro-sim adapter - pid: Nano-micro-adpt=

     Not all off-the-shelf adapters are robust in positioning the nano-SIM card to be read accurately.

Installing a Nano-SIM Card into a Nano-To-Micro-SIM Adapter

Step 1   Place the nano-SIM card with the electrical contacts surface facing up to position it into the micro-SIM adapter as shown below.
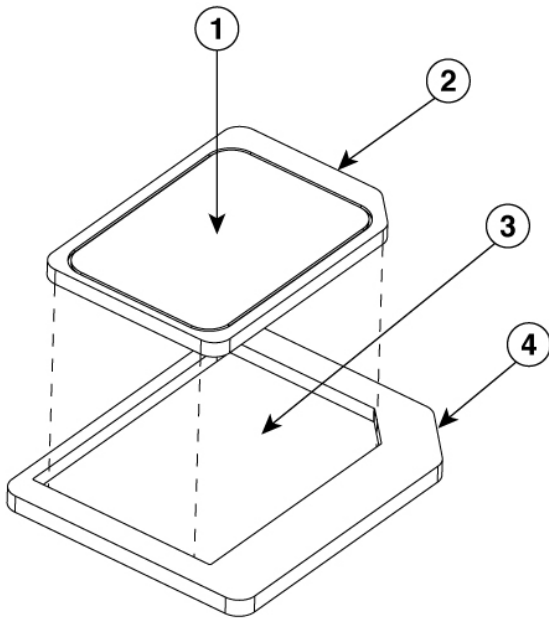
1	Electrical contact surface up
2	Nano-SIM card
3	Backing surface (cutout not open) for nano-sim
4	Nano-to-micro-sim adapter
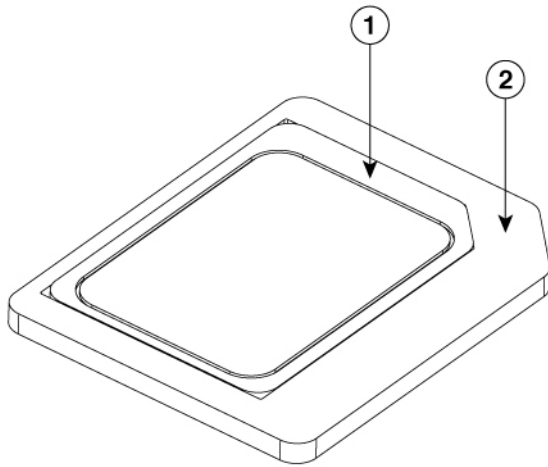
1	Nano-SIM card
2	Nano-to-micro-sim adapter

Step 2 Follow the instructions to install nano-SIM/adapters into micro-SIM slots of routers or Pluggable Interface Modules (PIMs).

ROM Monitor Overview

The ROMMON is the bootloader that initializes the hardware when the platform is powered on or reset. From the ROMMON prompt, a Cisco IOS XE image can be manually booted. There is also an autoboot option to boot a specified IOS XE image for every power-on or reset. When new features or significant defects are resolved, a newer ROMMON release is available on CCO. To determine the current ROMMON version and the location of the latest ROMMON release, these details are available in the following sections:

.

ROM Monitor Overview

The *ROM Monitor software* is also known as *ROMMON*, *boot software*, *boot image*, or *boot helper*. Although it is distributed with routers that use the Cisco IOS XE software, the ROMMON is a separate program from the Cisco IOS XE software. During normal startup, ROMMON initializes the router, and then, the control passes to the Cisco IOS XE software.

When you connect a terminal to the router that is in ROMMON mode, the ROMMON command-line interface (CLI) prompt is displayed.

Access the ROMMON mode to perform these tasks:

- • Specify config-register value to use for the next boot up

- • Boot a valid IOS XE image

- • Bypass NVRAM settings and config-register value for password recovery

Note After the Cisco IOS XE software boots up, ROMMON is no longer in use.

Environmental Variables and the Configuration Register

Two primary connections exist between ROMMON and the Cisco IOS XE software: the ROMMON environment variables and the configuration register.

The ROMMON environment variables define the location of the Cisco IOS XE software and describe how to load it. After ROMMON has initialized the router, it uses the environment variables to locate and load the Cisco IOS XE software.

The *configuration register* is a software setting that controls how a router starts up. One of the primary uses of the configuration register setting is to control whether the router starts in ROMMON mode or Administration EXEC mode. The configuration register is set in either ROMMON mode or Administration EXEC mode as needed. You can set the configuration register using the Cisco IOS XE software prompt when you need to use ROMMON mode. When maintenance in ROMMODE mode is complete, change the configuration register back so that the router reboots with the Cisco IOS XE software.

Access ROMMON Mode with a Terminal Connection

When the router is in ROMMODE mode, you can access the ROMMODE software only from a terminal connected directly to the console port of the card. Because the Cisco IOS XE software (EXEC mode) is in operatiion, the nonmanagement interfaces are not accessible. Therefore, all Cisco IOS XE software resources are unavailable.

Network Management Access and ROMMON Mode

ROMMON mode is a router mode, not a mode within the Cisco IOS XE software. The ROMMON software and the Cisco IOS XE software are two separate programs that run on the same router. At any given time, the router is running one of these programs, but it never runs both at the same time.

One area that can be confusing when using ROMMON and the Cisco IOS XE software is the area that defines the IP configuration for the Management Ethernet interface. Most users are comfortable with configuring the Management Ethernet interface in the Cisco IOS XE software. When the router is in ROMMON mode, however, the router is not running the Cisco IOS XE software, therefore, Management Ethernet interface configuration is not available.

When you want to access other devices, such as a TFTP server, while in ROMMON mode on the router, you must configure the ROMMON variables with IP access information.

For more information on ROMMON and Basic Procedures, refer to the Upgrading Field-Programmable Hardware Devices for Cisco 1000 Series ISRs

CHAPTER 6

Supplier Declaration of Conformity

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against any harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if it is not installed and used in accordance with the instruction manual, it may may cause harmful interference to radio communications.

- This device may not cause harmful interference.

- This device must accept any interference received, including interference that may cause an undesired operation.

The operation of this equipment in a residential area is likely to cause harmful interference, in which case, users are required to correct the interference at their own expense.

Radio Compliance

This system uses both licensed and licensed exempt radio frequencies. The radios are evaluated to the following regulations:

The Wi-Fi Radio is evaluated to 47 Code of Federal Regulations Part 15.247 and Part 15.407.

Part 15 Radio Systems operating outdoors in the 5150-5250 MHz band must comply with the antenna installation requirements as set forth in the FCC Part 15.407 rules.

The LTE radio is evaluated to 47 Code of Federal Regulation Part 24 and 27.

The LTE radio operates on licensed frequency bands and requires a radio license to operate. It must be operated under the control of a Licensed Service Provider or Wireless Carrier.

Modifications by User or Installer

Modifying the equipment without Cisco's authorization may result in the equipment being no longer compliant with FCC requirements for Class A digital devices. In that event, your right to use the equipment may be limited by FCC regulations, and you may be required to correct any interference to radio or television communications at your own expense.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC RF Exposure Compliance

This product has been found to be compliant to the requirements set forth in CFR 47 Section 1.1307 addressing RF Exposure from radio frequency devices, as defined in Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields.

To maintain compliance, the minimum separation distance from the antenna to general bystander is 20 cm (8,7 inches) or more.

CANADA

This Class [*] digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe [*] est conforme à la norme NMB-003 du Canada

Radio (Wi Fi)

This product complies with RSS-247 of the Industry Canada Rules. Its operation is subject to the following two conditions:

- This device may not cause harmful interference.

- This device must accept any interference received, including interference that may cause an undesired operation.

Ce dispositif est conforme à la norme RSS-247 d'Industrie Canada applicable aux appareils radio exempts de licence. Son fonctionnement est sujet aux deux conditions suivantes:

- le dispositif ne doit pas produire de brouillage préjudiciable

- ce dispositif doit accepter tout brouillage reçu, y compris un brouillage susceptible de provoquer un fonctionnement indésirable

The device for operation in the band 5150-5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite system.

For devices with detachable antenna(s), the maximum antenna gain permitted for devices in the bands 5250-5350 MHz and 5470-5725 MHz must be such that the equipment still complies with the e.i.r.p. limit.

For devices with detachable antenna(s), the maximum antenna gain permitted for devices in the band 5725-5850 MHz must be such that the equipment still complies with the e.i.r.p. limits as appropriate.

For systems that are capable of operating outdoors or with antennas mounted outdoors (where applicable antenna type(s), antenna models(s), and worst-case tilt angle(s)) are necessaryto remain compliant with the e.i.r.p, therefore, the elevation mask requirement set forth in section 6.2.2.3 should be clearly indicated.

Radio (Wi Fi)

This product complies with the RSS of the Industry Canada rules.

Radiation Exposure Statement

This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 cm (7.87 in.) between the radiator and yourself.

Note   C1109-4PLTE2P = 27 cm

Déclaration D'exposition Aux Radiations

Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm (7.87 in.) de distance entre la source de rayonnement et votre corps.

Note C1109-4PLTE2P = 27 cm

THAILAND

เครื่องโทรคมนาคมและอุปกรณ์นี้มีความสอดคล้องตามมาตรฐานหรือข้อกำหนดทางเทคนิค ของ กสทช

This telecommunication equipment conforms to NTC/NBTC technical requirement (optional)

Radiocommunication equipment has electromagnetic field strength in compliance with the Safety Standard for the Use of Radiocommunication Equipment on Human Health announced by the National Telecommunication Commission.