

Hardware Installation Guide for the Cisco 1100 Terminal Gateway

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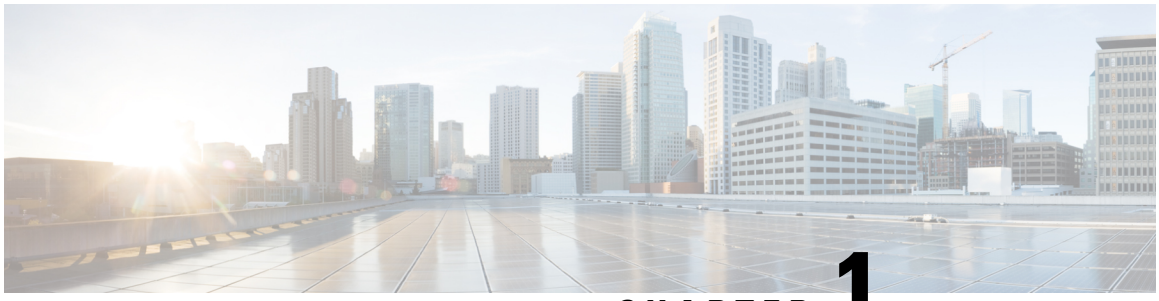
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CHAPTER 1

About Cisco 1100 Terminal Gateway Routers

Cisco 1100 Terminal Gateway Routers are terminal servers that provides asynchronous connections to the console ports for Cisco devices.

Table 1: Base Models of the Cisco 1100 Terminal Gateway Routers

Base Models	Asynchronous Ports	NIM Slot	Switch	Memory
C1100TG-1N32A	32	Yes	None	2GB Dram/ 4GB flash
C1100TG-1N24P32A	32	Yes	24 port L2 Switch	4GB Dram/ 4GB flash
C1100TGX-1N24P32A	32	Yes	24 port L2 Switch	8GB Dram/ 8GB flash

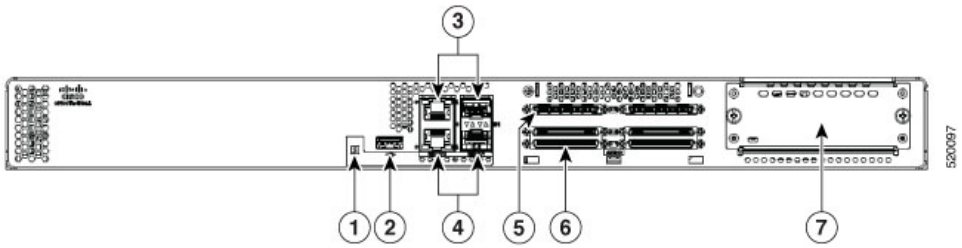
For more information on the features and specifications of Cisco 1100 Series Terminal Gateway Routers, refer to Cisco 1100 Terminal Gateway Routers datasheet.

- Chassis Views, on page 1
- LED Indicators, on page 3
- Power Supply, on page 4
- Slots and Interfaces, on page 5
- Fans, Ventilation and Airflow, on page 8
- Specifications of Cisco 1100 Series Integrated Services Routers, on page 9
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Chassis Views

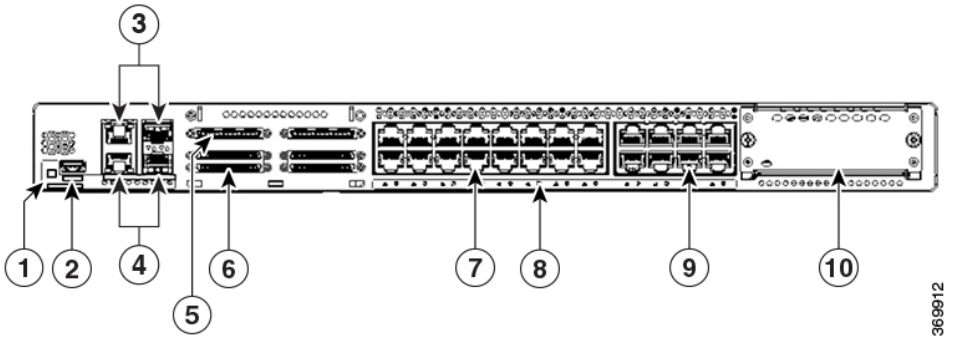
This section contains front and back panel views of the Cisco 1100 Terminal Gateway Routers-showing locations of the power and signal interfaces, interface slots, status indicators, and chassis identification labels.

Figure 1: C1100TG-1N32A - I/O View



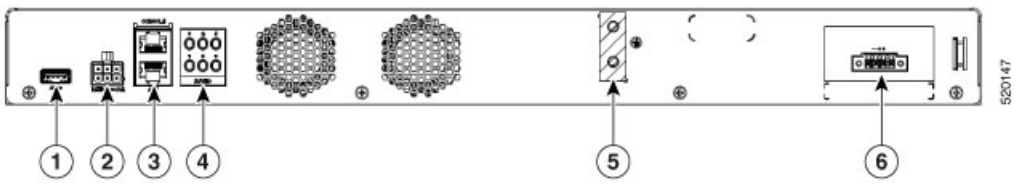
1	System LED	2	USB 2.0
3	GE WAN 0/0/0 - RJ45/SFP	4	GE WAN 0/0/1 – RJ45/SFP
5	ASYNC 16 port	6	ASYNC 32 port
7	NIM		

Figure 2: C1100TG-1N24P32A and C1100TGX-1N24P32A - I/O View



1	System LED	2	USB 2.0
3	GE WAN 0/0/0 - RJ45/SFP	4	GE WAN 0/0/1 – RJ45/SFP
5	ASYNC 16 port	6	ASYNC 32 port
7	Ethernet Switch 0-15	8	Ethernet Switch LED 0-23
9	Ethernet Switch 16-23	10	NIM

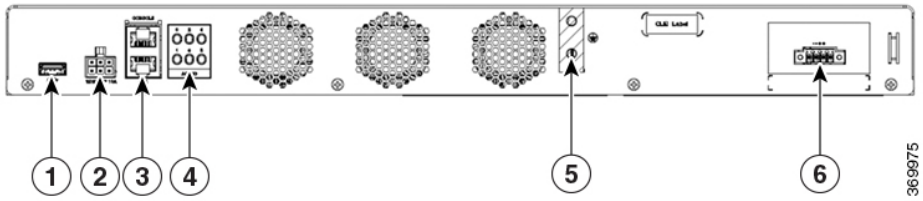
Figure 3: C1100TG-1N32A - Rear View



1	USB 3.0	2	6-pin Power Connector

3	RJ-45 Console, AUX	4	ASYNC LED
5	Grounding Attachment	6	Power Supply

Figure 4: C1100TG-1N24P32A and C1100TGX-1N24P32A - Rear View



1	USB 3.0	2	6-pin Power Connector
3	RJ-45 Console, AUX	4	ASYNC LED
5	Grounding Attachment	6	Power Supply

LED Indicators

The following figures and table summarizes the LED indicators that are located on the chassis of the Cisco 1100 Terminal Gateway Routers.

Figure 5: LED Indicators - C1100TG-1N32A I/O Side

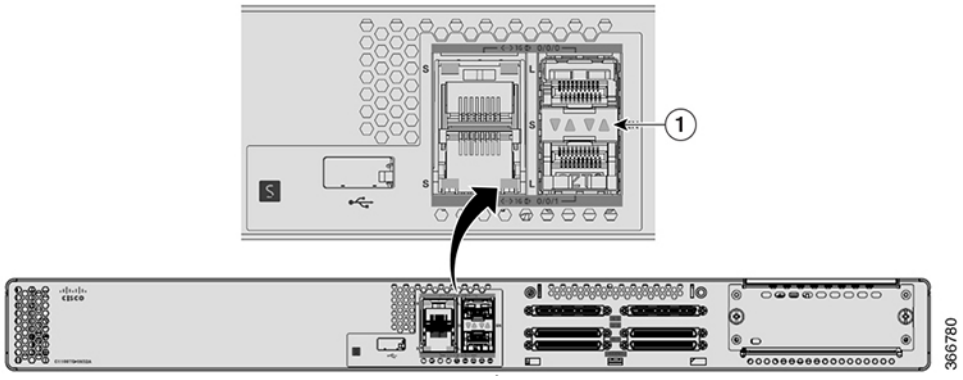


Figure 6: LED Indicators - C1100TG-1N24P32A and C1100TGX-1N24P32A I/O Side

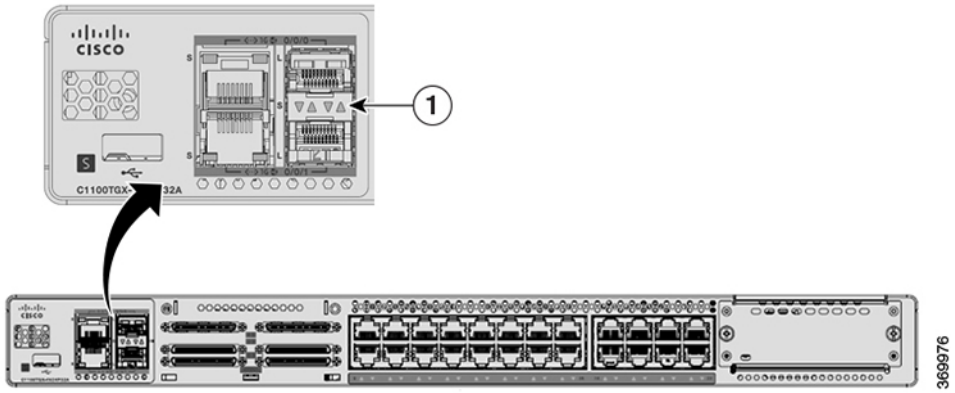


Table 2: LED Indicators for Cisco Cisco 1100 Terminal Gateway Router

Port	LED Color	Description	Control Source
System LEDs	Green and Amber	Off—Systempower off	Bezel side. All models.
		Steady Green - System operates normally.	
		Blinking Green — BIOS/Rommon is booting.	
		Steady Amber — Thermal trip.	
		Blinking Amber – Alarm, Secure boot failure.	
LAN Port LEDs	Green	Off— No link	Bezel Side
		Steady On— Link	
		Blink - TXD/RXD Data	
WAN Port LEDs	Green and Amber	Green - Indicates SFP module detected	Bezel Side
		Amber - Indicates SFP is not detected or at fault	
ASYNC Port LEDs	Green	link established	Rear side

Power Supply

The product power specifications are as follows:

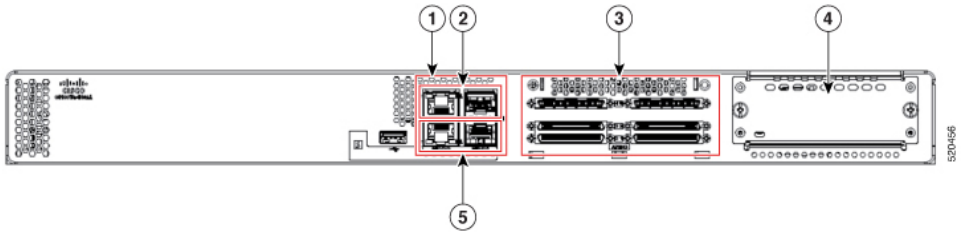
- AC input voltage: 100 to 240 VAC, 1.6 A, 50-60 Hz
- DC input voltage: 48 to 60 VDC or -48 to -60 VDC, 4.2 A
- External power supply option: 100 to 240 VAC, 50 - 60 Hz
- HVDC power supply: 240 VDC, 0.9 A

Slots and Interfaces

About Slots, Subslots, and Port Numbering

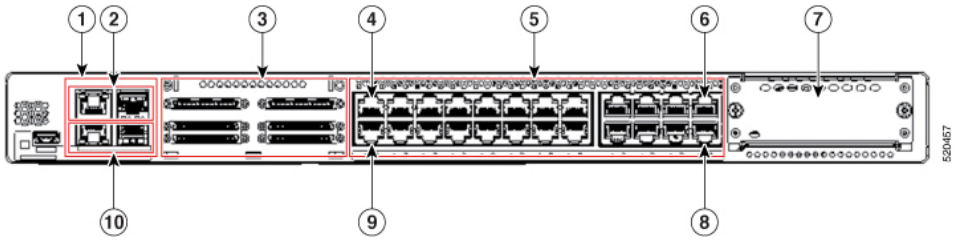
The following figure shows slots and subslots numbering for C1100TG-1N32A:

Figure 7: C1100TG-1N32A: Slots and Subslots



1	Slot 0/0 Front panel Gigabit Ethernet
2	RJ45/SFP combo GigaEthernet 0/0/0
3	Slot 0/1 onboard Async serial 1 = 0-7 2 = 8-15 3 = 16-23 4 = 24-31 5 = 32-39 6 = 40-47 Async 0/1/0 ~ Async 0/1/47
4	Slot 0/2 NIM slot
5	RJ45/SFP combo GigaEthernet 0/0/1

Figure 8: C1100TG-1N24P32A and C1100TGX-1N24P32A: Slots and Subslots

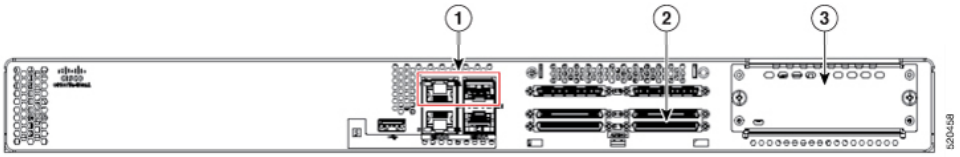


1	Slot 0/0 Front panel Gigabit Ethernet
2	RJ45/SFP combo GigaEthernet 0/0/0
3	Slot 0/1 onboard Async serial 1 = 0-7 2 = 8-15 3 = 16-23 4 = 24-31 5 = 32-39 6 = 40-47 Async 0/1/0 ~ Async 0/1/47
4	LAN 0
5	Slot 0/2 Onboard L2 switch GigaEthernet 0/2/0 ~ GigaEthernet 0/2/23
6	LAN 22
7	Slot 0/3 NIM slot
8	LAN 23
9	LAN 1
10	RJ45/SFP combo GigaEthernet 0/0/1

Async line Numbering

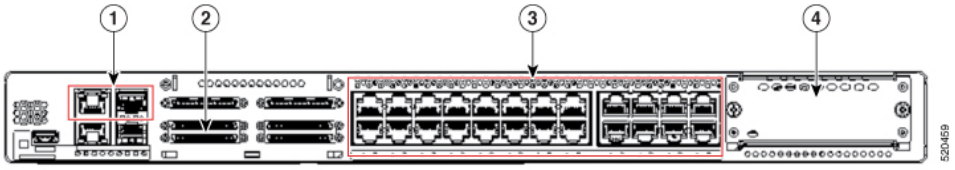
Cisco 1100 Terminal Gateway Routers has 32 onboard async ports, line number starts at 2 and ends at 33. An optional Daughter Card with 16 async ports can be added to Nanook base and Nanook+, line number for Daughter Card starts at 33 and ends at 49.

Figure 9: C1100TG-1N32A: Line Numbering



1	GigaEthernet 0/0/0 to 0/0/1
2	Async 0/1/0 to Async 0/1/47 0 = 2-9 1 = 10-17 2 = 18-25 3 = 26-33 4 = 34-41 5 = 42-49
3	NIM 0/2

Figure 10: C1100TG-1N24P32A and C1100TGX-1N24P32A: Line Numbering



1	GigaEthernet 0/0/0 to 0/0/1
2	Async 0/1/0 to Async 0/1/47 0 = 2-9 1 = 10-17 2 = 18-25 3 = 26-33 4 = 34-41 5 = 42-49
3	GigaEthernet 0/2/0 to 0/2/23
4	NIM 0/3

Fans, Ventilation and Airflow

Router and chassis temperature is regulated with internal fans. An onboard temperature sensor controls the fan speed. The fans are always on when the router is powered on. Under most conditions, the fans operate at the slowest speed to conserve power and reduce noise. When necessary, the fans operate at higher speeds under conditions of higher ambient temperature.

Figure 11: C1100TG-1N32A - Airflow

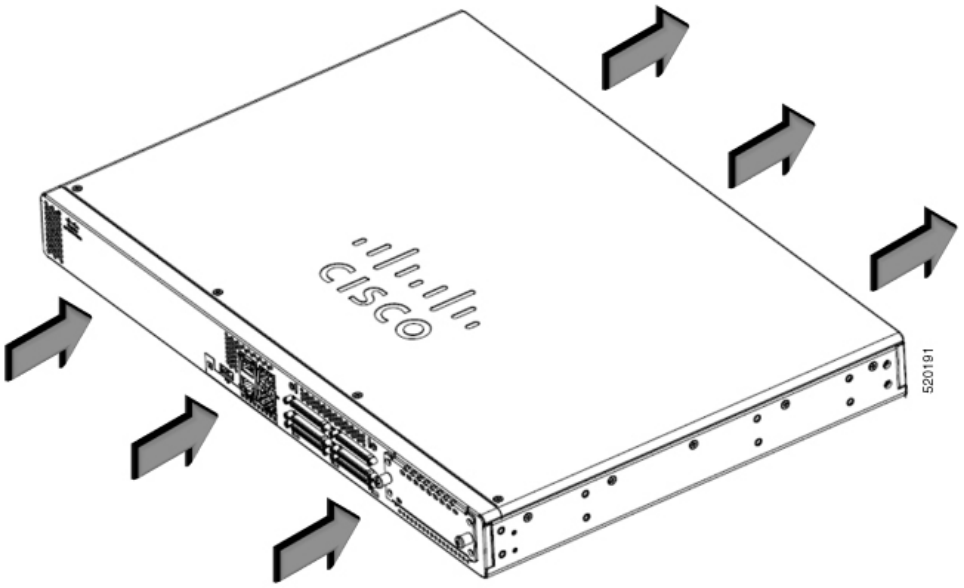
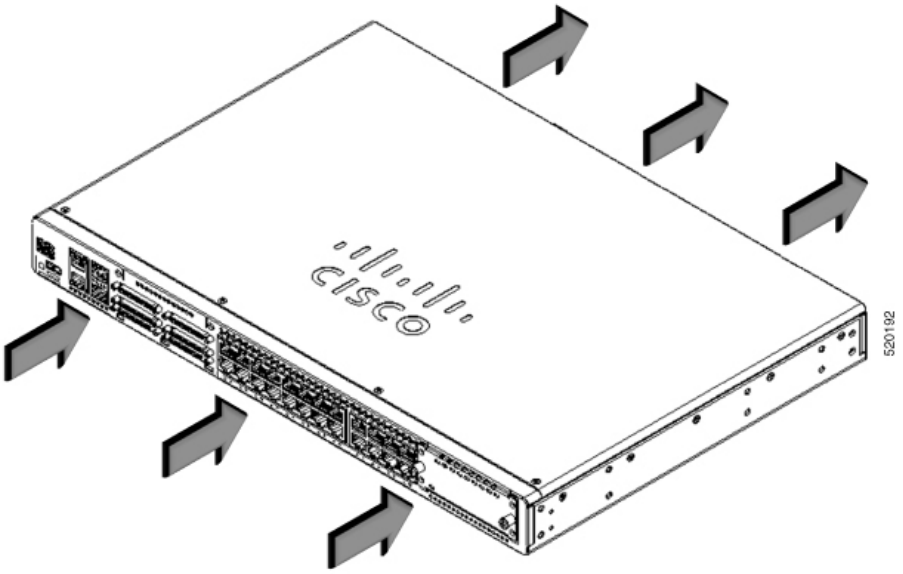


Figure 12: C1100TG-1N24P32A and C1100TGX-1N24P32A - Airflow



Specifications of Cisco 1100 Series Integrated Services Routers

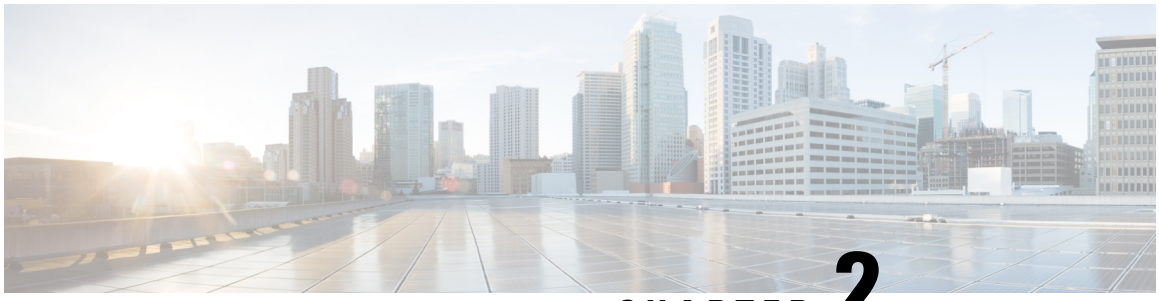
For specifications on the Cisco 1100 Series ISRs, refer to the Cisco 1100 Terminal Gateway Routers Specifications document.

Periodic Inspection and Cleaning

We recommend that you periodically inspect and clean the external surface of the router is recommended to minimize the negative impact of environmental dust or debris. The frequency of inspection and cleaning is dependent upon the severity of the environmental conditions, but we recommend a minimum 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 1100 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, on page 11
- Safety With Electricity, on page 12
- Prevent Electrostatic Discharge Damage, on page 12
- General Site Requirements, on page 13
- NEBS Deployment Site Requirements, on page 14
- Rack Requirements, on page 15
- Router Environmental Requirements, on page 16
- Power Guidelines and Requirements, on page 16
- Network Cabling Specifications, on page 16

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. SAVE THESE INSTRUCTIONS Statement 1071



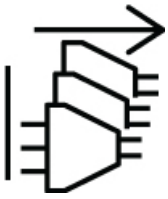
Warning Ultimate disposal of this product should be handled according to all national laws and regulations. Statement 1040.

Safety With Electricity

Warning Only skilled person should be allowed to install, replace, or service this equipment. Refer to statement 1089 for description of skilled person. Statement 1090

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

Warning This unit might have more than one power supply connection. To reduce risk of electric shock, all connections must be removed to de-energize the unit. Statement 1028



Warning Instructed person is someone who has been instructed and trained by a skilled person and takes the necessary precautions when working with equipment. Skilled person/Qualified personnel is someone who has training or experience in the equipment technology and understand potential hazards when working with equipment. Statement 1089

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



Warning To reduce risk of electric shock or fire, installation of the equipment must comply with local and national electrical codes. Statement 1074



Warning To reduce the risk of electric shock, the chassis of this equipment needs to be connected to permanent earth ground during normal use. Statement 445



Warning This product relies on the building's installation for short-circuit (overcurrent) protection. To reduce risk of electric shock or fire, ensure that the protective device is rated not greater than: 20A (AC), 5A (HVDC), 7A (DC). Statement 1005



Warning To reduce risk of electric shock and fire, a readily accessible two-poled disconnect device must be incorporated in the fixed wiring. Statement 1022



Warning This unit is intended for installation in restricted access areas. A restricted access area can be accessed by skilled, instructed or qualified personnel. Statement 1017



Warning To reduce the risk of fire or bodily injury, do not operate it in an area that exceeds the maximum recommended ambient temperature of: 40 °C Statement 1047

Site Selection Guidelines

The Cisco 1100 Series ISRs 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 1100 Series ISRs are designed to meet the industry EMC, safety, and environmental standards described in the Regulatory Compliance and Safety Information for the Cisco 1100 Series ISR document.

NEBS Deployment Site Requirements

The NEBS GR-1089-CORE and GR-63-CORE compliance statements and requirements are listed in this section. These statements only apply for deployments where NEBS compliance is mandated.



Warning The intra-building port(s) (LAN, WAN, Serial, and T1 (NIM-xMFT-T1/E1 module)) of the equipment or subassembly must use shielded intra-building cabling/wiring that is grounded at both ends. Statement 7003



Warning The intra-building port(s) (LAN, WAN, Serial, and T1 (NIM-xMFT-T1/E1 module)) of the equipment or subassembly is suitable for connection to intra-building or unexposed wiring or cabling only. The intra-building port(s) of the equipment or subassembly must not be metallically connected to interfaces that connect to the OSP or its wiring for more than 6 meters (approximately 20 feet). These interfaces are designed for use as intra-building interfaces only (Type 2, 4, or 4a ports as described in GR-1089) and require isolation from the exposed OSP cabling. The addition of Primary Protectors is not sufficient protection in order to connect these interfaces metallically to an OSP wiring system. Statement 7005



Warning The AC power ports have been evaluated for deployments where an external Surge Protective Device (SPD) is utilized at the AC power service equipment (see definition in National Electric Code). Statement 7012



Warning This product is designed for a Common Bonding Network (CBN) installation. Statement 7013



Warning This product can be installed in network telecommunication facilities or locations where the National Electric Code applies. Statement 8015 and 8016



Warning The DC return connection to this system should remain isolated from the system frame and chassis (DC-I). Statement 7016

Note **Statement 7018—**System Recover Time

The equipment is designed to boot up in less than 30 minutes provided the neighboring devices are fully operational.

The following instructions and requirements are mandated for the C1100TG series when the NIM-LTEA-EA module is installed in a NEBS deployment utilizing cables connected to outdoor antennas:

- Additional surge protection is required if an outdoor antenna is being connected to the GPS connector and/or the LTE TNC connectors. The Lightning Protector must be able to provide a low clamping voltage (less than 600V).
- Lightning protection must be mounted at the location where the antenna cable enters the building. The primary lightning protection must be capable of conducting all potentially dangerous electrical energy to PE (Protective Earth).
- Surge arrestors should support DC-pass and suitable for the frequency range with low attenuation.

Rack Requirements

Cisco 1100 Terminal Gateway Routers includes brackets for use with a 19-inch rack and 23-inch rack.

Note The 23-inch rack mount brackets have not been evaluated for NEBS compliance. If 23-inch racks are being used, 19-inch to 23-inch adapter plates compliant with GR-63-CORE Zone 4 waveforms must be used.

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

- Allow clearance around the rack for maintenance.
- Allowat least one rack unit of vertical space between routers; more clearance is required when stacking multiple Cisco 1100 Terminal Gateway 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. Heat generated by 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.

Router Environmental Requirements

Cisco 1100 Terminal Gateway Routerscan be placed on a desktop or installed in a rack. The location of your router and the layout of your equipment rack or wiring room are extremely important considerations for proper operation. Equipment placed too close together, inadequate ventilation, and inaccessible panels can cause malfunctions and shutdowns, and can make maintenance difficult. Plan for access to both front and rear panels of the router.

When planning your site layout and equipment locations, refer to the General Site Requirements , section. If you are currently experiencing shutdowns or an unusually high number of errors with your existing equipment, these precautions and recommendations may help you isolate the cause of failure and prevent future problems.

- Ensure that the room where your router operates has adequate air circulation. Electrical equipment generates heat. Without adequate air circulation, ambient air temperature may not cool equipment to acceptable operating temperatures.
- Always follow ESD-prevention procedures described in the Preventing Electrostatic Discharge Damage to avoid damage to equipment. Damage from static discharge can cause immediate or intermittent equipment failure.
- Baffles can help to isolate exhaust air from intake air, which also helps to draw cooling air through the chassis. The best placement of the baffles depends on the airflow patterns in the rack, which can be found by experimenting with different configurations.
- When equipment installed in a rack (particularly in an enclosed rack) fails, try operating the equipment by itself, if possible. Power off other equipment in the rack (and in adjacent racks) to allow the router under test a maximum of cooling air and clean power.

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 power conditioner if necessary.

Network Cabling Specifications

The following sections describe the cables and thee specifications required to install Cisco 1100 Series ISRs:

Console Port Connections

The Cisco 1100 Terminal Gateway Routers has EIA/TIA-232 asynchronous (RJ-45) and ASYNC ports. The console port does not have any hardware flow control.

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 portdoes 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.

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.

Preparing for Network Connections

When setting up your router, consider distance limitations and potential electromagnetic interference (EMI) as defined by the applicable local and international regulations.

Network connection considerations are provided for:

See the following online document for more information about network connections and interfaces:

- Cisco Modular Access Router CableSpecifications

Ethernet Connection



Note 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: ethernet. Statement 1044

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

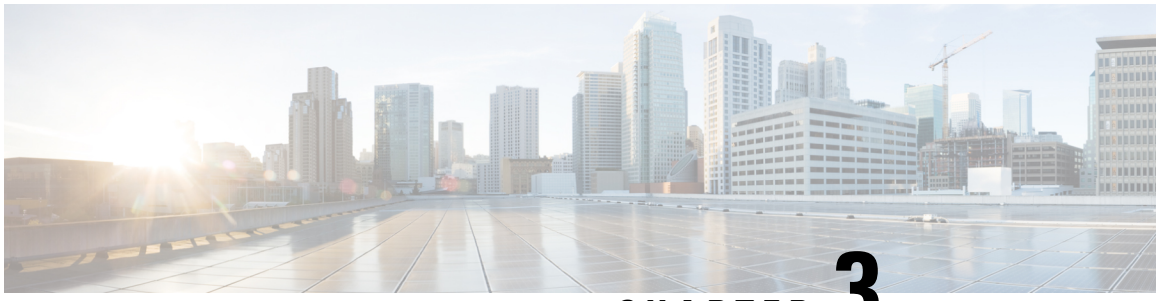
- 1000BASE-T—1000Mb/s full-duplex transmission over a Category 5 or better unshielded twisted-pair (UTP) cable. Supports the Ethernet maximum length of 328 feet (100 meters).
- 100BASE-T—100 Mb/s full-duplex transmission over a Category 5 or better unshieldedtwisted-pair (UTP) cable. Supports the Ethernet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

- ESD-preventive cord and wriststrap
- Number 2 Phillipsscrewdriver
- Phillips screwdrivers: small, 3/16-in. (4 to 5 mm) and medium, 1/4-in. (6 to 7mm)
- To install or removemodules
- Screws that fit yourrack
- Wire crimper
- Wire for connecting the chassis to an earthground:
    - 6 AWG



CHAPTER 3

Install and Connect the Router

This chapter describes how to install and connect Cisco 1100 Terminal Gateway Routers to LAN and WAN networks.

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

Warning Only skilled person should be allowed to install, replace, or service this equipment. Refer to statement 1089 for description of skilled person. Statement 1090

Installing the Cisco 1100 Series Terminal Gateway Routers involve these tasks:

- Unpack the Router, on page 19
- Rack Mount the Chassis, on page 20
- Chassis Grounding, on page 23
- Connect Power Cable, on page 24
- Connect WAN and LAN Interfaces, on page 34
- Configure the Router at Startup, on page 36

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 listed items.

Rack Mount the Chassis

The Cisco 1100 Terminal Gateway Router can be installed in 19-inch (48.26-cm) or 23-inch (58.42-cm) racks. Use the standard brackets shipped with the router for mounting the chassis.

You can front mount the device by attaching the brackets at the front of the chassis with the front panel facing forward

Attach Bracket to the Chassis

Attach the mounting bracket to each side of the device as shown in the figure below. You will need four screws to attach each bracket to the device; so, you will need eight screws in total to attach both the brackets to the device. Use the screws provided along with the mounting kit to attach the screws to the device.

Figure 13: C1100TG-1N32A – 19″ Bracket installation for rack mounting

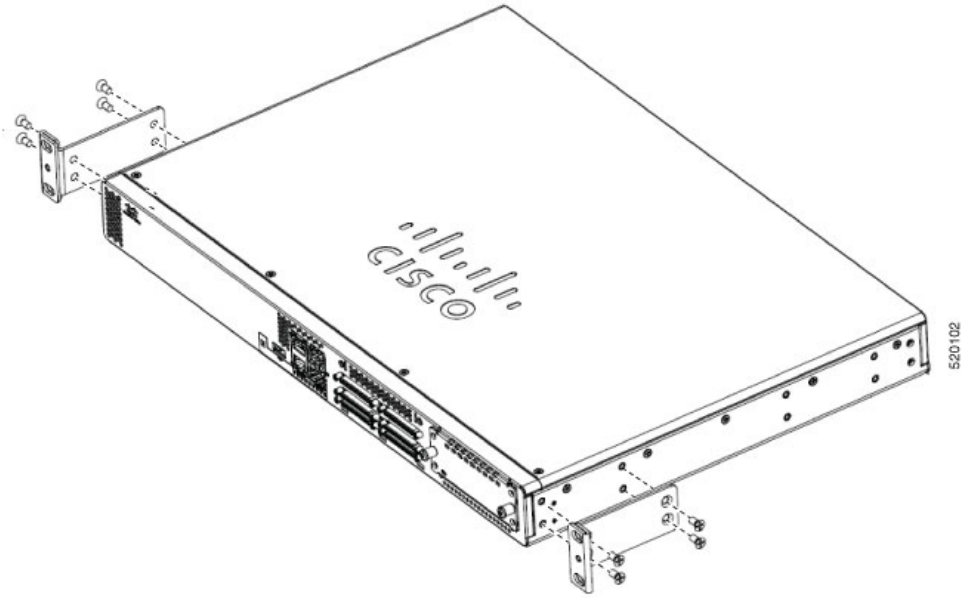


Figure 14: C1100TG-1N24P32A and C1100TGX-1N24P32A – 19" Bracket installation for rack mounting

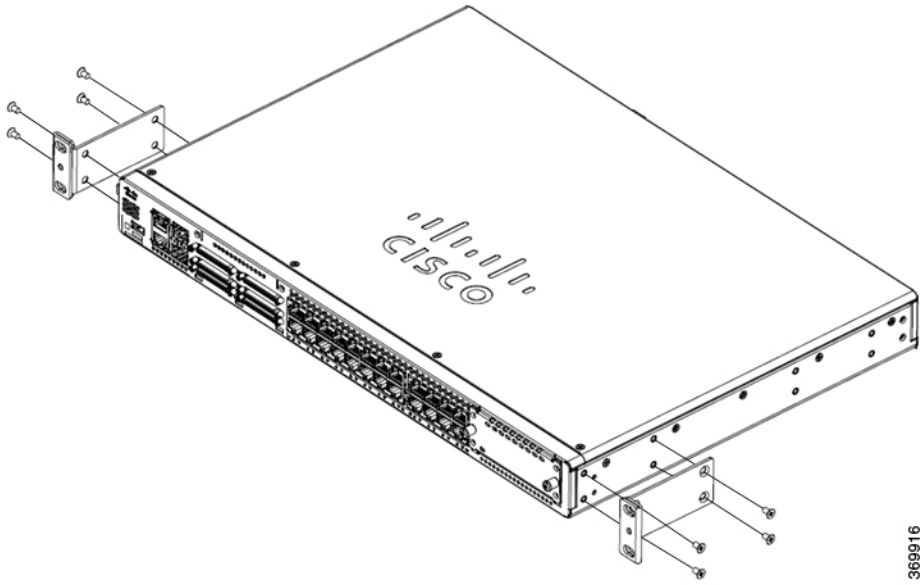


Figure 15: C1100TG-1N32A – 23" Bracket installation for rack mounting

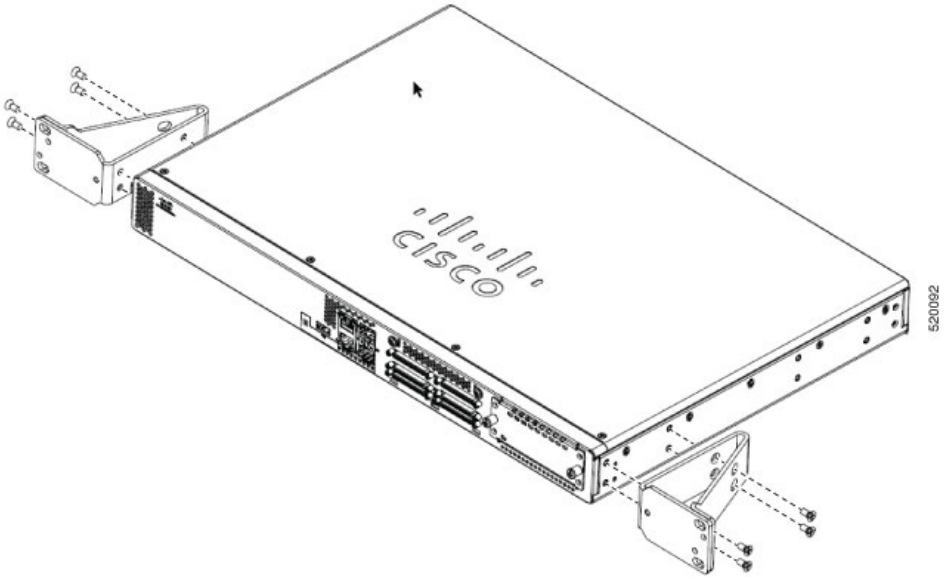
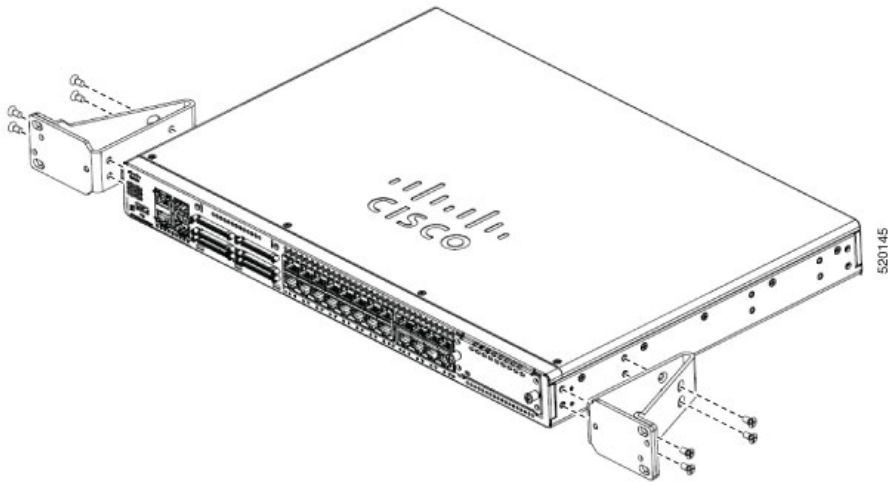


Figure 16: C1100TG-1N24P32A and C1100TGX-1N24P32A – 23" Bracket installation for rack mounting



Mount the Router on the Rack

To install the router, use the screws provided with the accessory kit to secure the router when you mount it on the rack. 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 reduce risk of electric shock and fire, take care when connecting units to the supply circuit so that wiring is not overloaded. Statement 1018

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 withthe heaviest component at the bottom of the rack.
- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicingthe unit in the rack. Statement 1006.

Chassis Grounding

Warning To reduce the risk of electric shock, the chassis of this equipment needs to be connected to permanent earth ground during normal use. Statement 445

Warning Only skilled person should be allowed to install, replace, or service this equipment. Refer to statement 1089 for description of skilled person. Statement 1090

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 6 AWG and the ground lug.
2. Use the M4 screws, which have a length of about 8 mm.

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 orterminal. (For the ground lug—approximately 0.75 inch (20mm)).
2. Crimp the ground wire to the ground lug, using a crimp tool of the appropriatesize.
3. Attach the ground lug 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 1.1N-m)

Figure 17: C1100TG-1N32A-Grounding

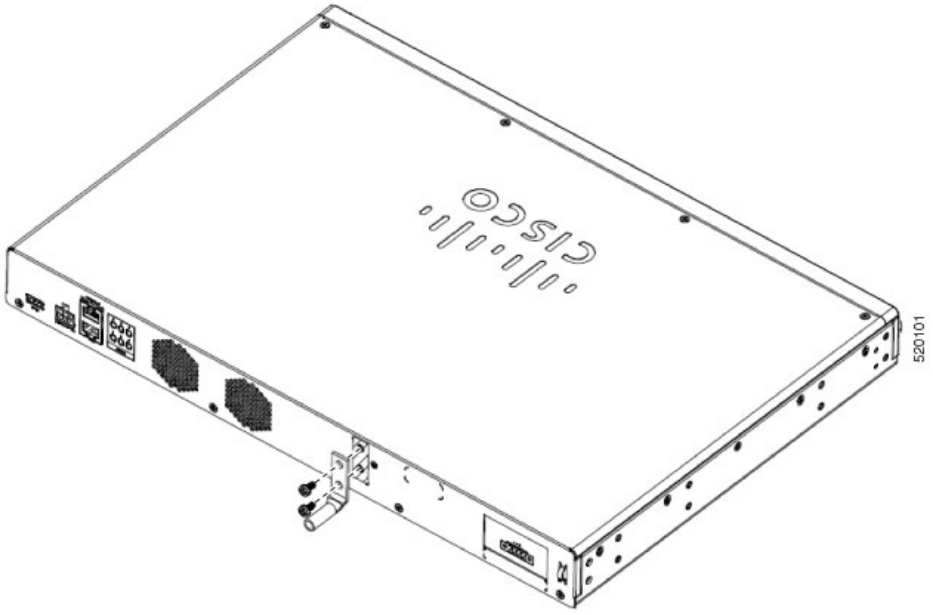
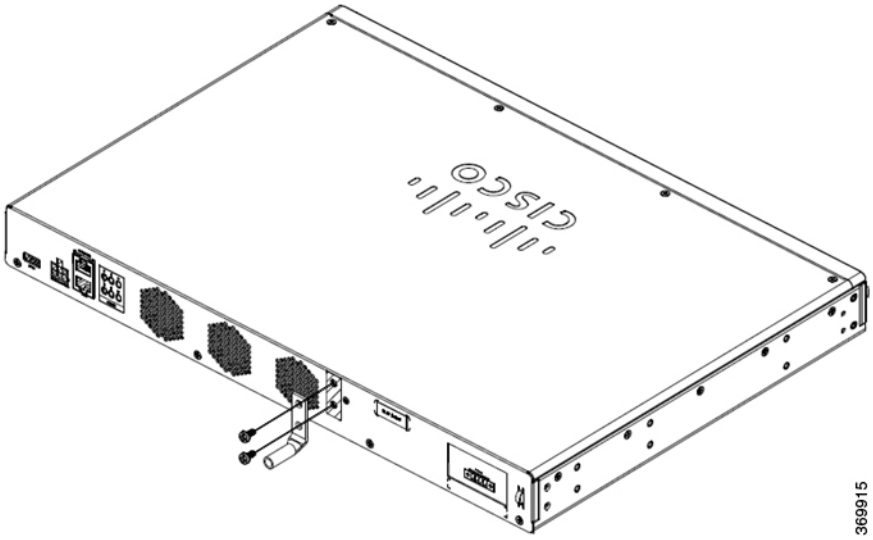


Figure 18: C1100TG-1N24P32A and C1100TGX-1N24P32A -Grounding



Connect Power Cable

Power supply of the Cisco 1100 Terminal Gateway Routers is through AC and DC power adapter.



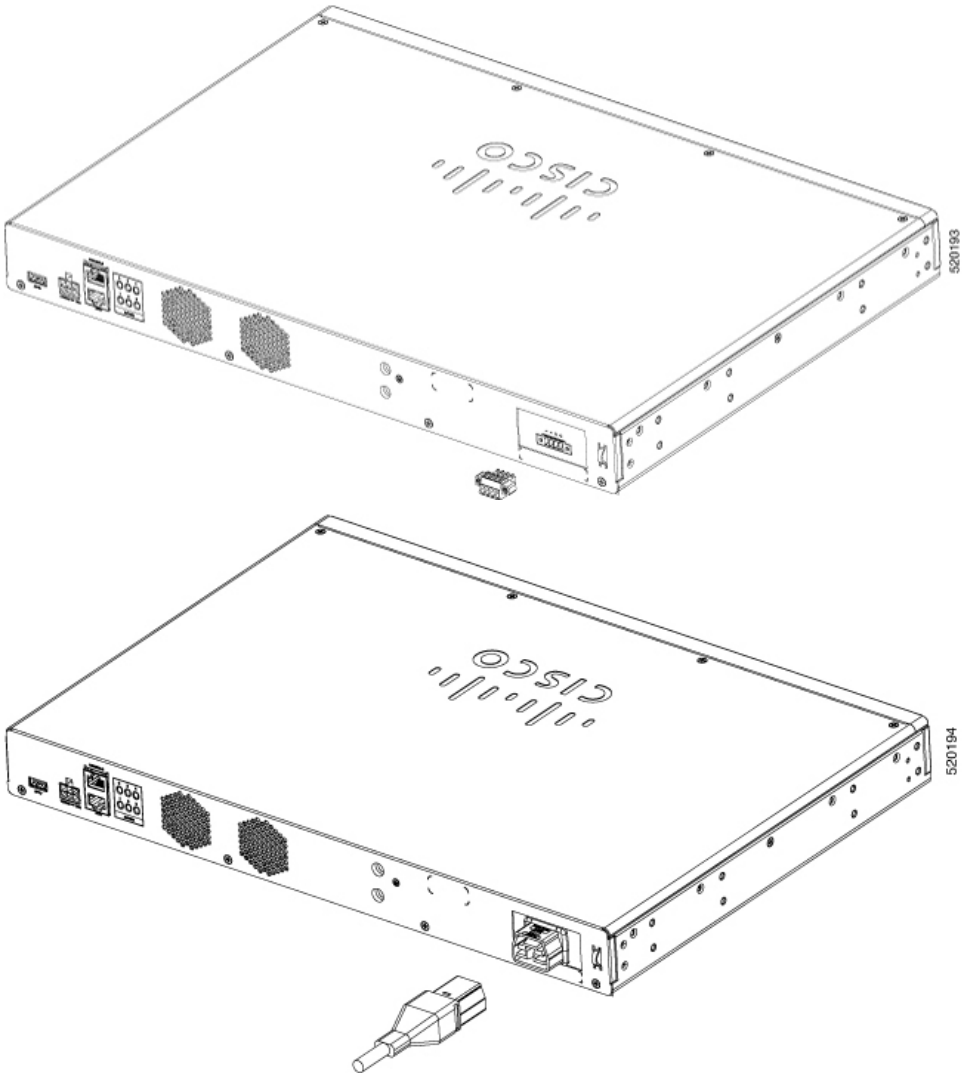
Warning This equipment must be grounded. To reduce the risk of electric shock, never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available. Statement 1024

For HVDC and DC systems:



Warning To reduce risk of electric shock and fire, a readily accessible two-poled disconnect device must be incorporated in the fixed wiring. Statement 1022

Figure 19: C1100TG-1N32A-Power Cable Connection



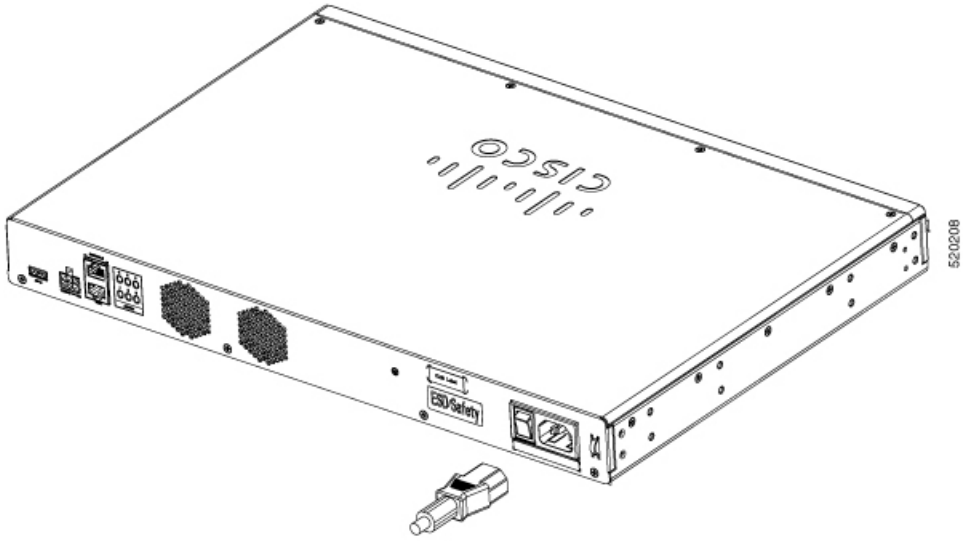
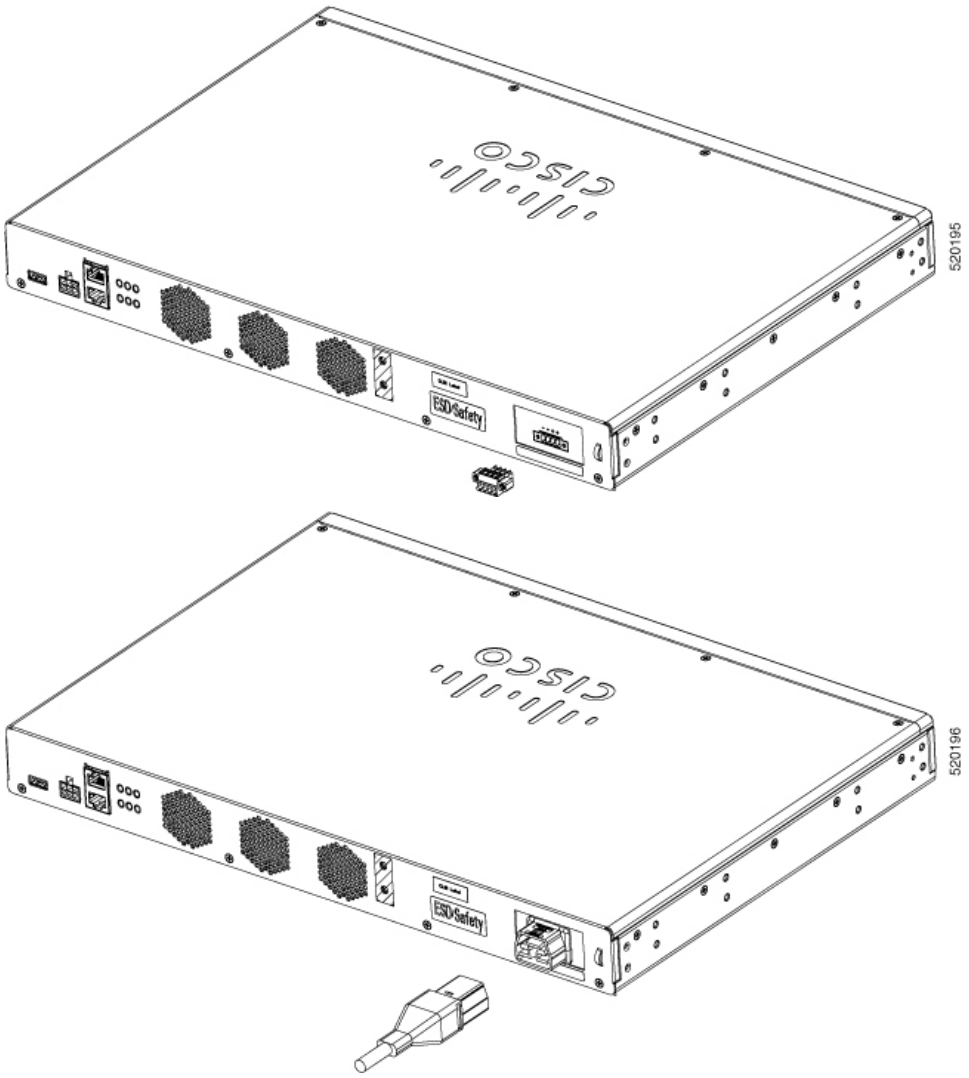
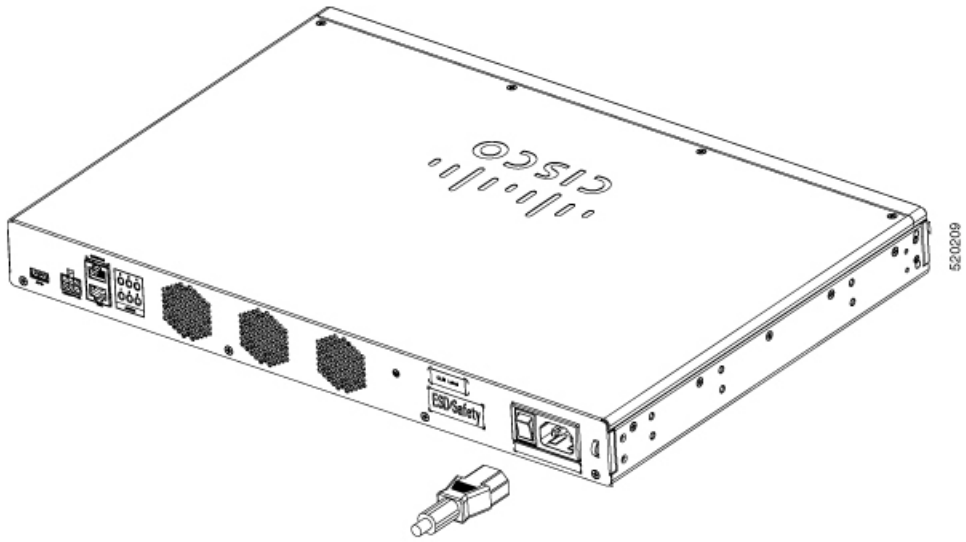

ESD-Safety
520208

Figure 20: C1100TG-1N24P32A and C1100TGX-1N24P32A - Power Cable Connection





Connecting to DC Power

Warning To reduce risk of electric shock or fire, installation of the equipment must comply with local and national electrical codes. Statement 1074

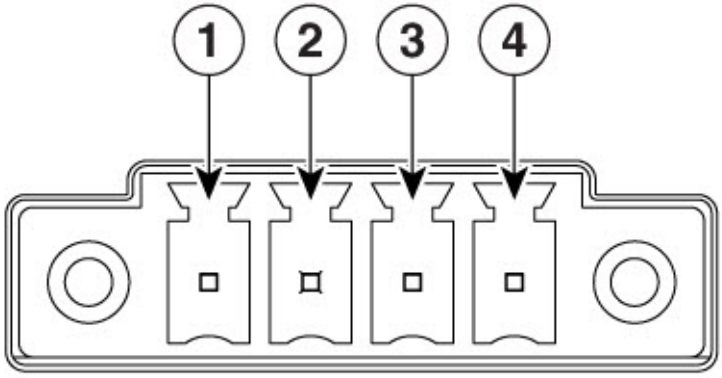
Warning To reduce risk of electric shock, when installing or replacing the unit, the ground connection must always be made first and disconnected last. Statement 1046

Warning To reduce risk of electric shock, before performing any of the following procedures, ensure that power is removed from the system. Statement 1003

Caution The two negative and two positive inputs are not intended for redundant connection to two independent sources of supply. The two negative and two positive input terminals are intended to increase current-carrying capacity by paralleling conductors.

If the two negative and two positive inputs are used, the negative inputs must be connected to the same source and the positive inputs must be connected to the same source.

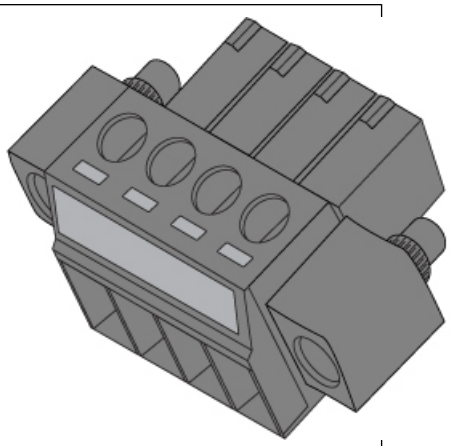
Figure 21: Power Connector Pin-Outs



366912

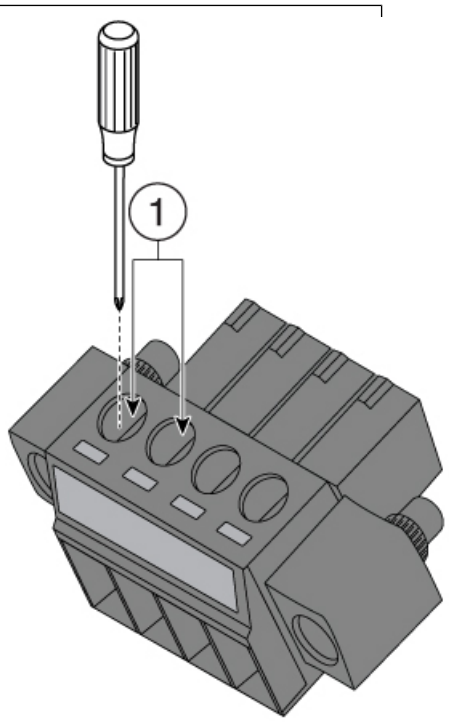
PIN Number	Name	Description
1	DC In -	DC Power Negative Input
2	DC In -	DC Power Negative Input
3	DC In +	DC Power Positive Input
4	DC In +	DC Power Positive Input

To connect the DC power connections on the terminal gateway, follow these steps:

1	Locate the power connector in the accessory package. In the connector, the pins from left to right are: 1—Negative DC power connection 2— Negative DC power connection 3— Positive DC power connection 4— Positive DC power connection	

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2	Identify the connector positive and return DC power connections. The connections left to right are: 1—Negative DC power connection 2—Negative DC power connection 3—Positive DC Power connection 4—Positive DC Power connection	
3	Measure two strands of copper wire long enough to connect to the DC power source. **Note** It is recommended to use 16AWG for the LVDC power supply wiring in order to safely supply sufficient power and to fit into the connectors for the LVDC power supply.	
4	Using a wire-stripping tool, strip each of the two wires coming from each DC-input power source to 0.25 inch (6.3 mm) ± 0.02 inch (0.5 mm). Do not strip more than 0.27 inch (6.8 mm) of insulation from the wire. Stripping more than the recommended amount of wire can leave exposed wire from the power connector after installation. **Note** Repeat steps 3 and 4 if you desire parallel connections.	

5	On the power connector, insert the exposed part of the negative wire into terminal 1 and the exposed part of the positive wire into terminal 3. Make sure that you cannot see any wire lead. Only wire with insulation should extend from the connector. **Note** Use the same method for wiring a parallel connection for terminals 2 and 4.	 520486
6	Use a ratcheting torque flathead screwdriver to torque the power connector captive screws (above the installed wire leads) to 2 in-lb (0.23 N-m).	
7	Insert the power connector to the mating connector on the rear of the terminal gateway and tighten the two captive screws that attach the connector to the terminal gateway.	
8	Connect the other end of the positive wire to the positive terminal on the DC power source and connect the other end of the negative wire to the negative terminal on the DC power source.	

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.

Procedure

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.

Procedure

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
```

To disconnect the Linux USB console from the Terminal window

Enter Ctrl-a followed by : then quit

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 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, Ethernet. Statement 1044.

Ports and Cabling

This section summarizes typical WAN and LAN connections for Cisco 1100 Terminal Gateway Server.

Table 3: WAN and LAN Connections

Port or Connection	Port Type, Color	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	GLC-SX, -LX, -LH, -ZX, -BX, -EX, -TE	Optical fiber as specified on applicable data sheet
Gigabit Ethernet SFP, copper	RJ-45	1000BASE-T	Category 5, 5e, 6 UTP

Supported cables for Async Ports

For asynchronous serial ports new Cable CAB-ASYNC-8 is supported.

Figure 22: C1100TG-1N32A - Async Bracket Installation

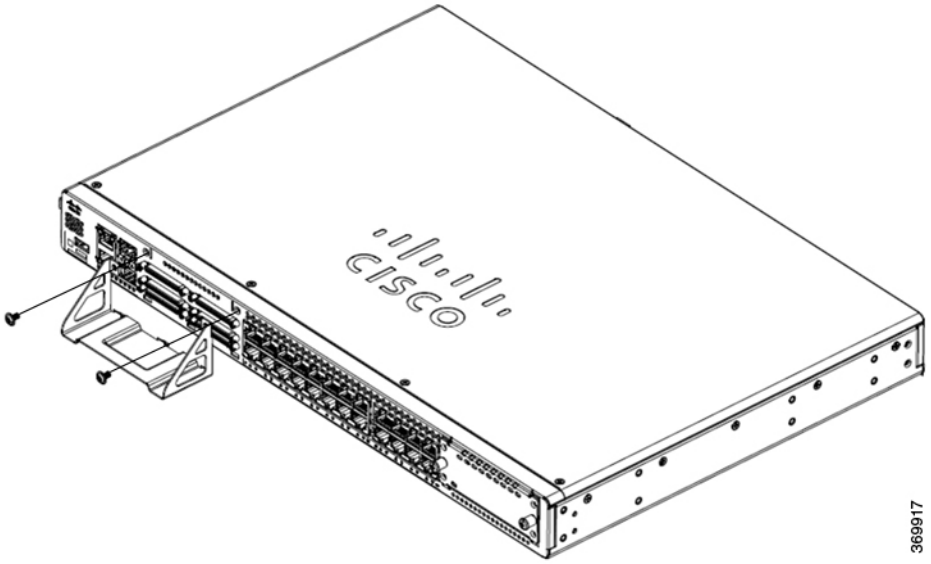
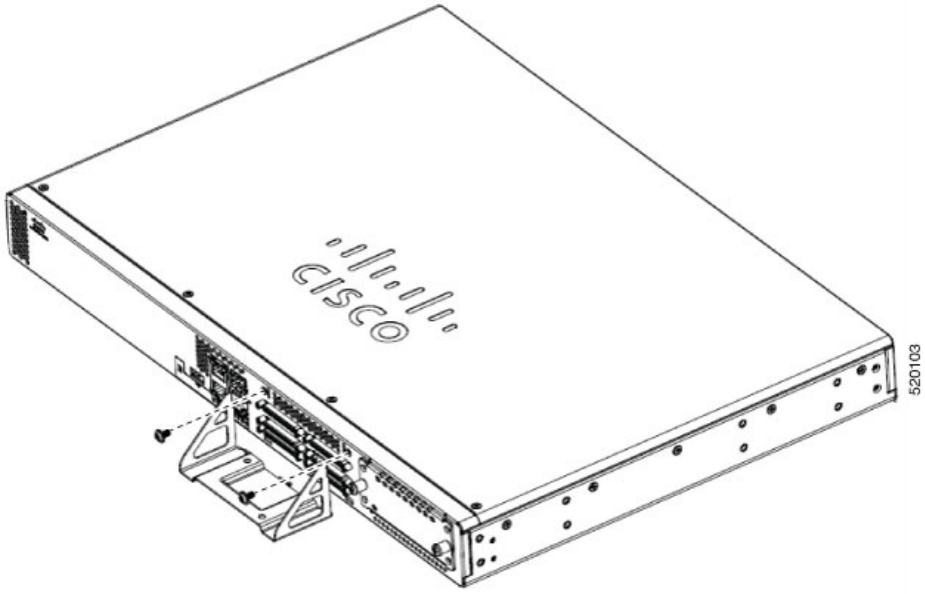


Figure 23: C1100TG-1N24P32A and C1100TGX-1N24P32A - Async Bracket Installation



1. Before connecting Async cables to the ports, mount Async bracket onto the front panel.
2. Align the the sides of the brackets to the Async port slots on the front panel.
3. Use a number 1 Phillips or flat-blade screwdriver to tighten the screws..

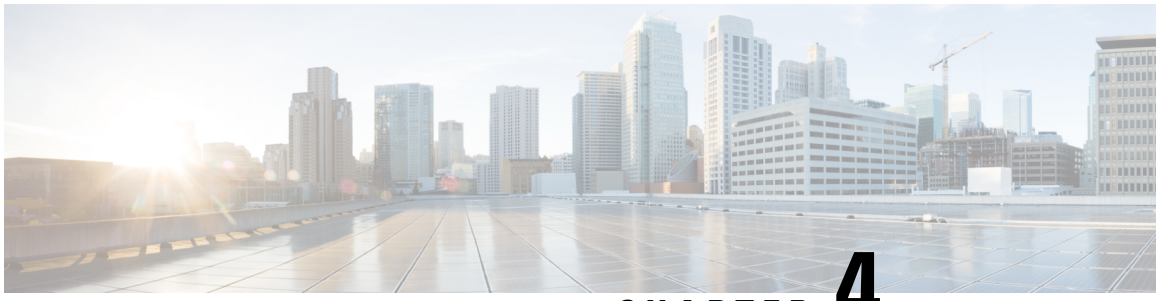
Connection Procedures and Precautions

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.



CHAPTER 4

Install and Remove Small Form-Factor Pluggable Modules and Field Replaceable Units

This section describes how to install and remove Small Form-Factor Pluggable (SFP) modules in the Cisco 1100 Terminal Gateway Routers. The information is contained in the following sections:

- Install Small Form-Factor Pluggable Module, on page 37
- Install Field Replaceable Units, on page 37
- Installing and Removing a NIM, on page 38
- Remove and Replace SSD Storage, on page 39
- LTE Dongle Support on Cisco 1100 Series Terminal Gateway, on page 41
- Remove and replace the battery, on page 43

Install Small Form-Factor Pluggable Module

This section describes how to install optional SFP modules in the Cisco 1100 Series Terminal Services Gateway to provide optical Gigabit Ethernet connectivity.



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 Field Replaceable Units

This section describes how to install and remove field replaceable modules in the Cisco 1100 Terminal Gateway Routers.

The Network Interface Modules (NIMs) supported on Cisco 1100 Terminal Gateway Server are:

- NIM-ES2-4
- NIM-ES2-8
- NIM-16A

- NIM-24A
- C-NIM-2T

Note From Cisco IOS XE Dublin 17.12.1a, only C1100TGX-1N24P32A SKU of the Cisco 1100 Terminal Services Gateway supports C-NIM-2T.

- NIM-VAB-A

Note From Cisco IOS XE 17.14.1a, NIM-VAB-A is supported on the Cisco 1100 Terminal Services Gateway.

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

Warning Hazardous network voltages may be present in interface ports regardless of whether power to the unit is OFF or ON. To avoid electric shock, before servicing, disconnect cables from the following ports: NIM-LTEA-EA, NIM-LTEA-LA Statement 1026

Warning To reduce the risk of electric shock, the shield of the coaxial cable must be connected to the building earth. Statement 1253

Warning To reduce the risk of electric shock, refer to national and local codes for proper installation and grounding of antennas. Statement 1052

Installing and Removing a NIM

To install a NIM, perform these steps:

- Locate the NIM slot on the front panel.
- Loosen the screws to open the NIM blank cover.
- Insert the NIM into the slot.
- Tighten the screws to secure the NIM in the slot.

To remove a NIM, perform these steps:

- If the NIM is up and running, shut down the NIM gracefully before removing it.



Warning If you do not shut down the NIM gracefully before removing it, the NIM card could get damaged.

- Locate the NIM slot on the front panel.
- Loosen the screws that secure the NIM.
- Gently pull out the NIM from the slot



Warning Blank faceplates and cover panels serve three important functions: they reduce the risk of electric shock and fire; 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

Remove and Replace SSD Storage

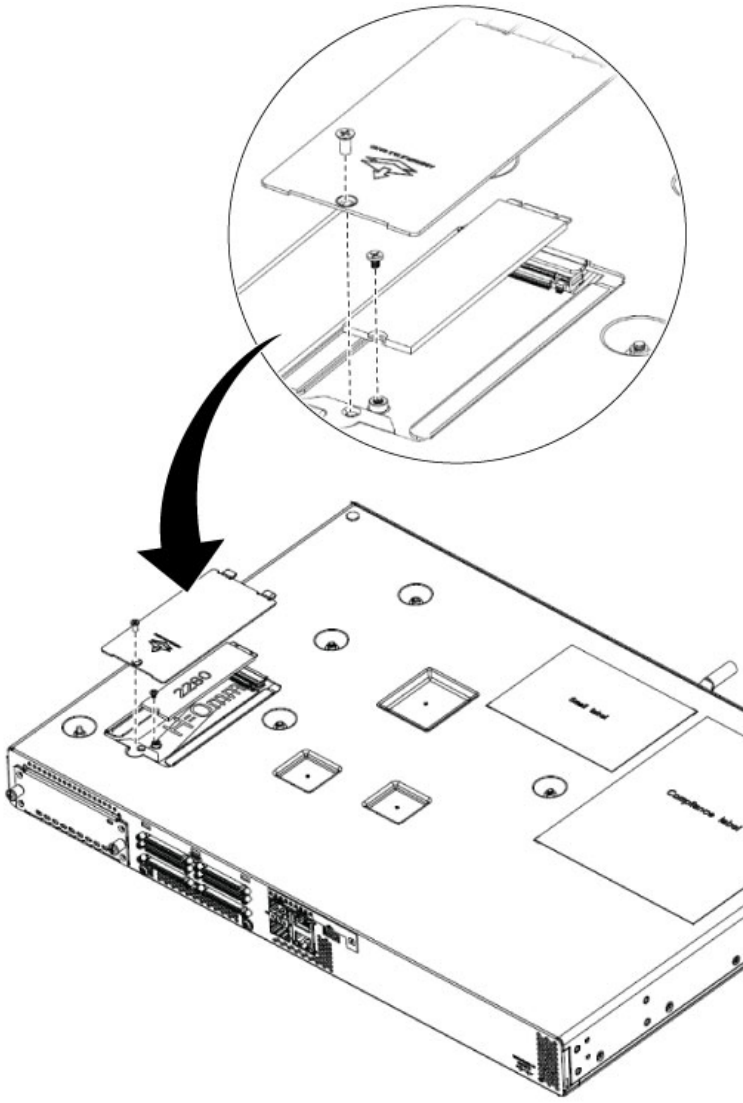
Before you begin

The M.2 storage module is a hardware that is 22mm wide and 80mm long. This hardware comes with different storage capacities.

To install the M.2 storage module, perform these steps:

Procedure

	Command or Action	Purpose
Step 1	Remove the SSD panel from the bottom side of chassis by unfastening the screws and keep the screws aside.	

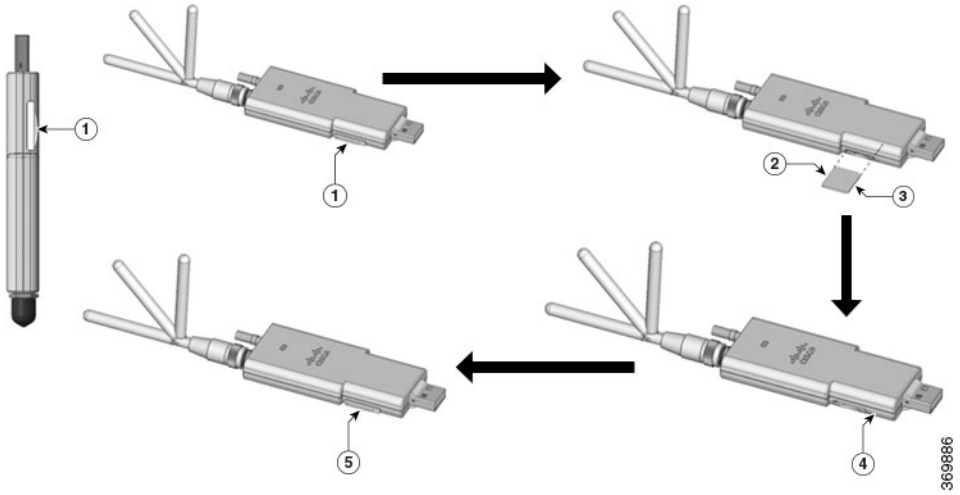
	Command or Action	Purpose
Step 2	Plug in the new M.2 storage module and secure it with the screws.	 Do not remove the main cover of the chassis as there are no user replaceable parts inside. **Warning** No serviceable parts inside. To avoid risk of electric shock, do not open. Statement 1073
Step 3	Install the SSD panel back with the screws.	

LTE Dongle Support on Cisco 1100 Series Terminal Gateway

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.

Figure 24: Micro-SIM Card Slot with Dust Cover



SUMMARY STEPS

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

DETAILED STEPS

Procedure

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.

Connecting the USB LTE Dongle to the Terminal Server

This section provides the necessary steps to establish a successful connection between the USB LTE Dongle and the Terminal server.

SUMMARY STEPS

1. Pick up the R-Brackets (700-121611-01) Place and fix the bracket at an appropriate location on the rack using two screws.
2. Tighten the screw, the recommended torque is 10-12 in-lb.
3. Assemble dongle, USB, cable and antenna together in advance.
4. Pick up the wall-mounting bracket (700-121609-01) and 2 SCREWS (48-0580-01).
5. Align and fasten the screws.
6. Plug the USB cable to the USB port on the chassis to complete the mounting procedure.

DETAILED STEPS

Procedure

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.

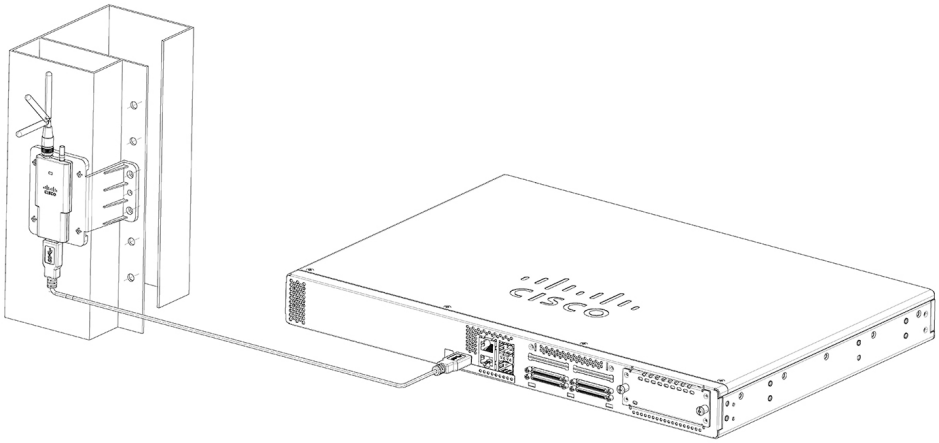
Step 2 Tighten the screw, the recommended torque is 10-12 in-lb.

Step 3 Assemble dongle, USB, cable and antenna together in advance.

Step 4 Pick up the wall-mounting bracket (700-121609-01) and 2 SCREWS (48-0580-01).

Step 5 Align and fasten the screws.

Step 6 Plug the USB cable to the USB port on the chassis to complete the mounting procedure.



Remove and replace the battery

These instructions are provided in order to comply with the EU Battery Replaceability Requirement.

- This product was not specifically designed for battery replacement in the field.
- It is recommended that, whenever possible, follow the standard repair or return process for battery issues.

Caution Always wear an ESD-preventive wrist strap and ensure that it makes good contact with your skin when you remove or install the internal modules. Connect the equipment end of the wrist strap to the metal part of the chassis.

Remove the battery

Perform this procedure when the battery requires replacement or maintenance on supported hardware.

Note Follow proper electrostatic discharge (ESD) precautions before handling the battery or device.

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.

Warning **Statement 1015**—Battery Handling

To reduce risk of fire, explosion or leakage of flammable liquid or gas:

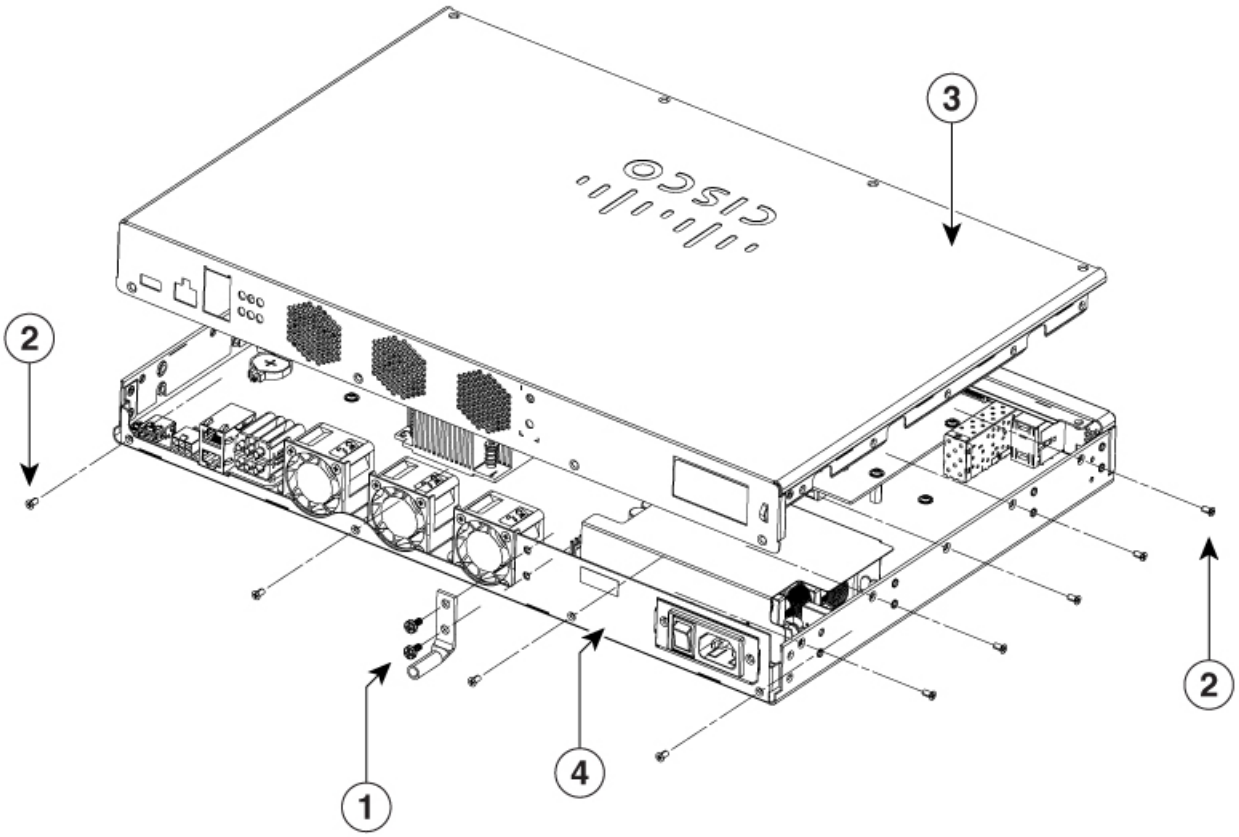
- Replace the battery only with the same or equivalent type recommended by the manufacturer.
- Do not dismantle, crush, puncture, use sharp tool to remove, short external contacts, or dispose of in fire.
- Do not use if battery is warped or swollen.

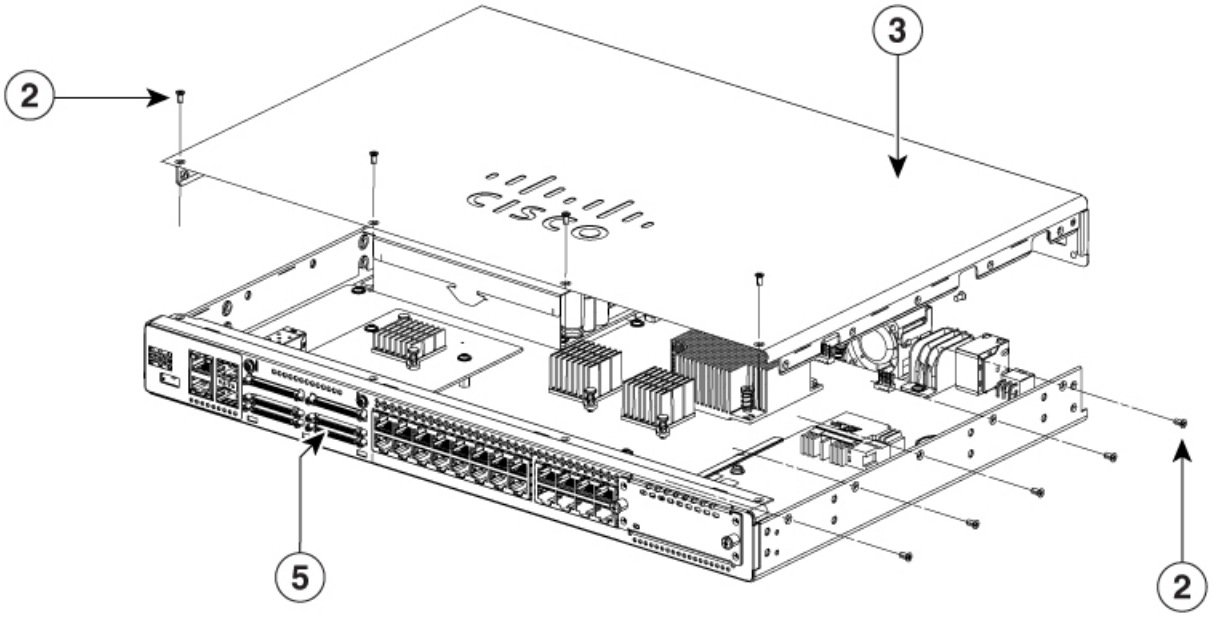
Procedure

Step 1 Before you perform any module replacement, read the Safety Warnings section and disconnect the power supplies.

Step 2 To access the battery, first remove the ground lug and the screws. Remove all the 18 screws from the cover and remove the cover.

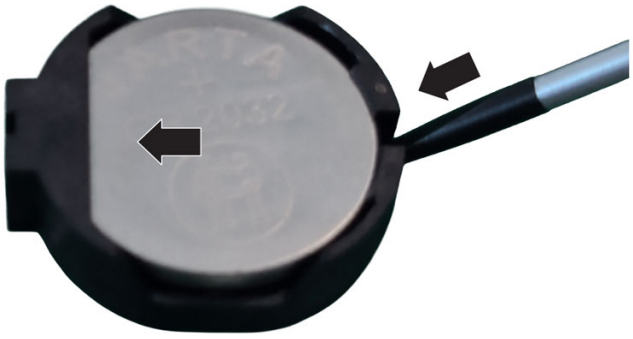
Figure 25: Remove the cover


3
2
2
1
4


3
2
5
2

1	Ground lug and screws
2	Chassis screws
3	Chassis cover
4	Power/ fan side of chassis
5	I/O side of chassis

Step 3 Insert a thin tipped screw-driver in the gap of the holder and gently push the battery away from the screw-driver tip.



Step 4 Rotate the screw tip to release the battery from the holder.



Replace the battery

Replace the battery in the chassis following the safety procedures to ensure proper device functionality.

Note Follow proper electrostatic discharge (ESD) precautions before handling the battery or device.

Before you begin

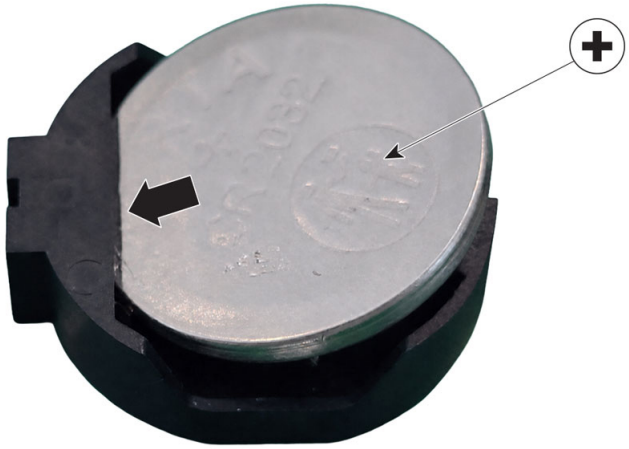
- The battery is a CR2032 type. Batteries should only be replaced with the same or an equivalent type recommended by the manufacturer.
  - JHT CR2032

Procedure

Step 1 Read the Safety Warnings instructions and disconnect the power supplies before you perform any module replacement.

Step 2 Orient the battery with positive polarity as shown.

Step 3 Insert the battery into the holder so that one edge is under the overhang.



Step 4 Press the opposite edge down so it snaps into the holder.



Step 5 Replace the cover and secure the screws.