



Install and Connect the Router

This chapter describes how to install and connect Cisco 1100 Series Integrated Services Router (ISR) 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 1100 Series Aggregation Services Routers involve these tasks:

- [Unpack the Router, on page 1](#)
- [Set up Router on Desktop, Rack, or Wall, on page 1](#)
- [Connect Power Cable, on page 10](#)
- [Connect the Router to a Console, on page 11](#)
- [Connect WAN and LAN Interfaces, on page 13](#)
- [Configure the Router at Startup, on page 15](#)

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.

Set up Router on Desktop, Rack, or Wall

After unpacking, based on your requirements, you can set up a Cisco 1100 Series Integrated Services Routers (ISRs) 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 1100 ISR are:

Table 1: Models and Mounting Options

Model	Mounting Options
C111x	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

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

Rack Mount

The router is shipped with rack mounting brackets that are to be secured 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.



Note When stacking multiple Cisco 1100 ISRs, ensure that there is ample surrounding space. Ample space, in turn, ensures more heat removal to enable the surrounding air temperature to stay within the specified operating conditions.

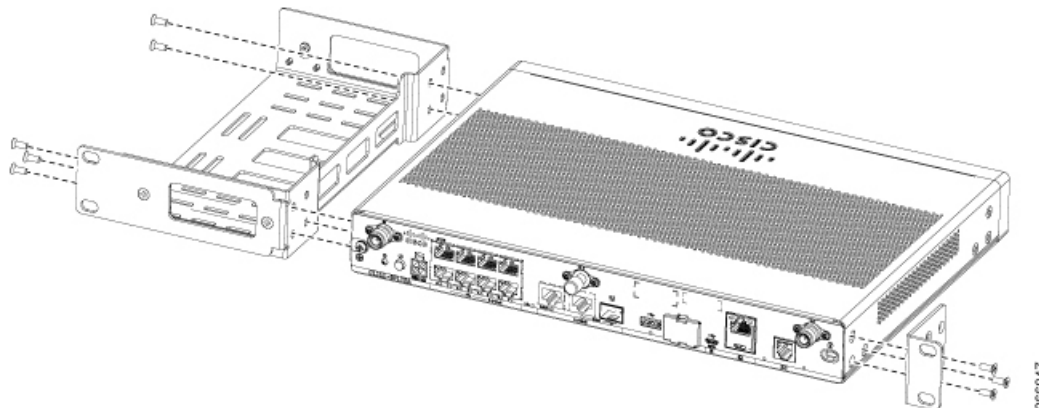
Attach the Brackets

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

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

Example:

Figure 1: Bracket Installation for Left-Side Mounting - C111x



Step 2 Similarly, secure the brackets on the right-side of the chassis for mounting the router.

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.

To install the router, use the screws provided with the accessory kit to secure the router when you mount it on the rack.

Wall Mount

Depending on the models of the Cisco 1100 Series Integrated Services Routers (ISRs), the tasks for mounting the router chassis on the wall may vary.



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.

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

Wall Mount Using Key-hole Slots

The Cisco 1100 Series Integrated Services Routers (ISRs) 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.

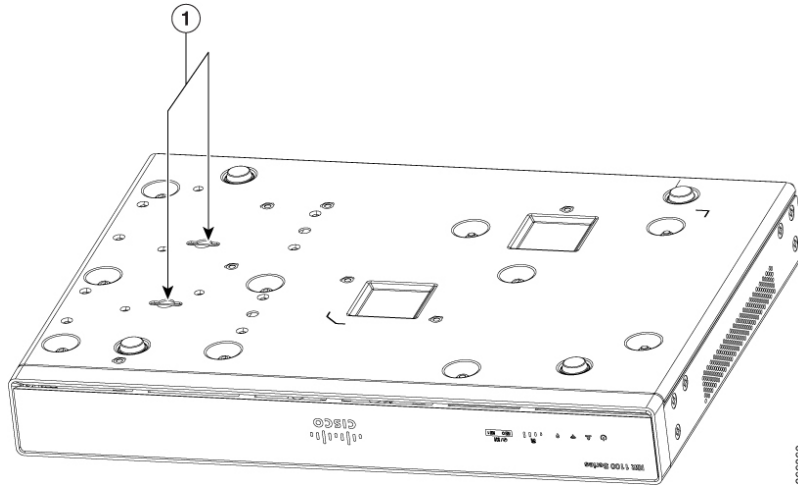


Note To attach a router to the wall stud, each bracket should have one number10 wood screw (pan-head) with number10 washers, or two number10 washer-head screws. The screws must be long enough to penetrate at least 1.5 inches (38.1 mm) into the supporting wood or metal wall stud.



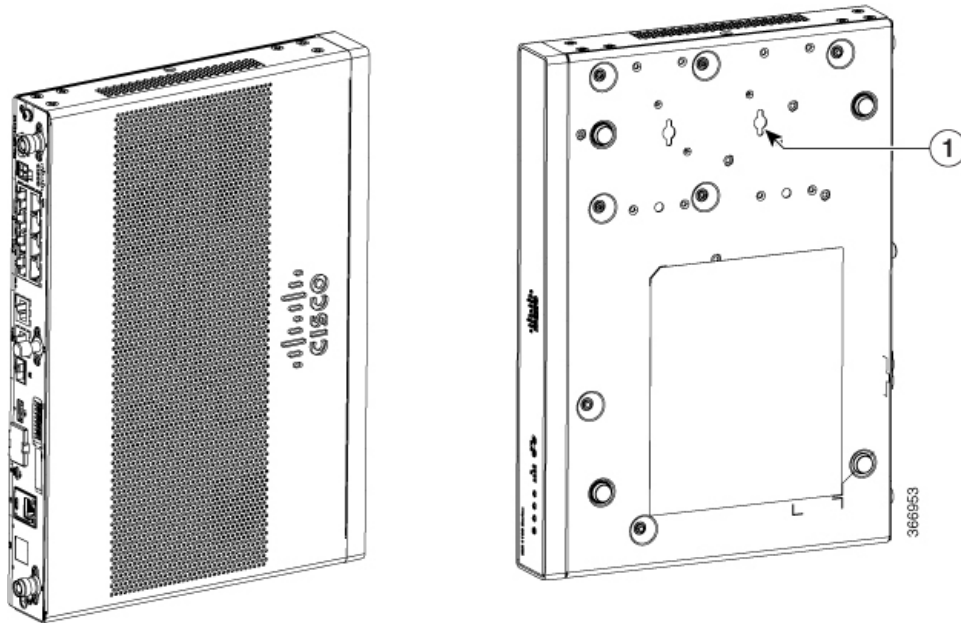
Note For hollow-wall mounting, each bracket requires two wall anchors with washers. Wall anchors and washers must be size number 6 (pan-head). Route the cables so that they do not put a strain on the connectors or mounting hardware.

Figure 2: Wall Mount Using Key-hole Slots



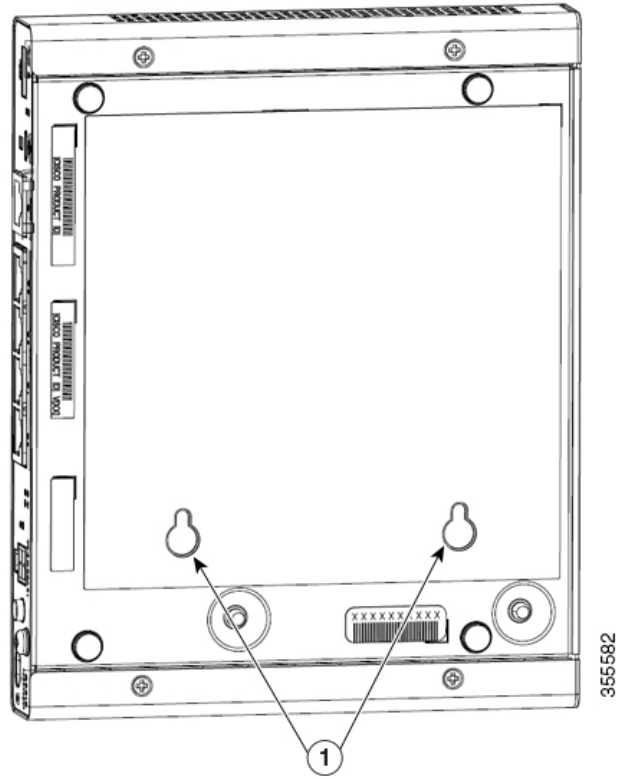
1	Key-hole slots
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Figure 3: Wall Mount Orientation-C111x Router



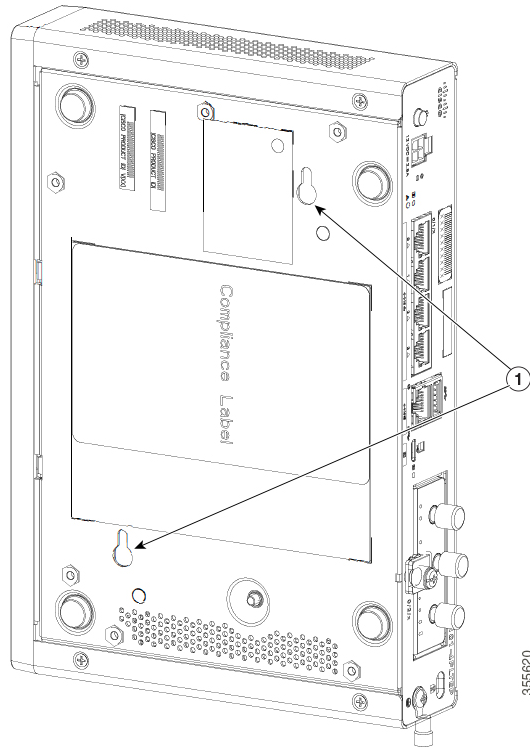
1	Key-hole slots
---	----------------

Figure 4: C1101-4P Router



1	Key-hole slots Key-hole slots-spacing: 3.024in (76.81mm)
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Figure 5: C1101-4PLTEP Router



1	<p>Key-hole slots</p> <p>Horizontal spacing: 3.100in (78.74mm)</p> <p>Vertical spacing: 5.758in (146.25mm)</p>
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Wall Mount Using DIN Rail Brackets

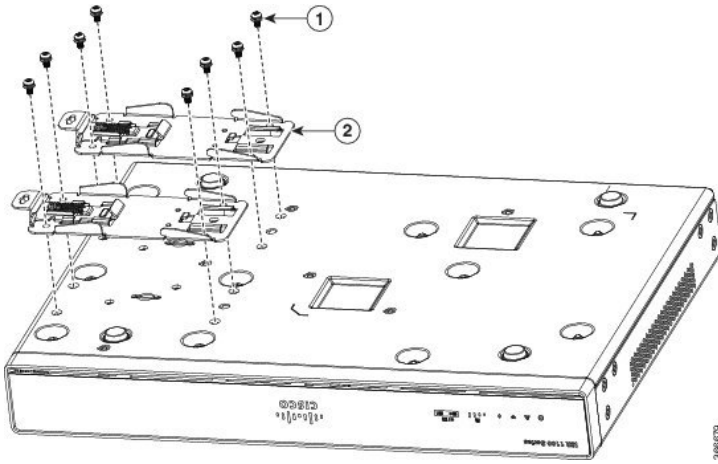
The router is shipped with DIN Rail brackets that are to be secured on the bottom side of the chassis. Your chassis installation must allow unrestricted airflow for chassis cooling.



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 6: DIN Rail Bracket Installation-C111x



1	Screws
2	DIN Rail Brackets

Figure 7: Orientation of DIN Rail Brackets

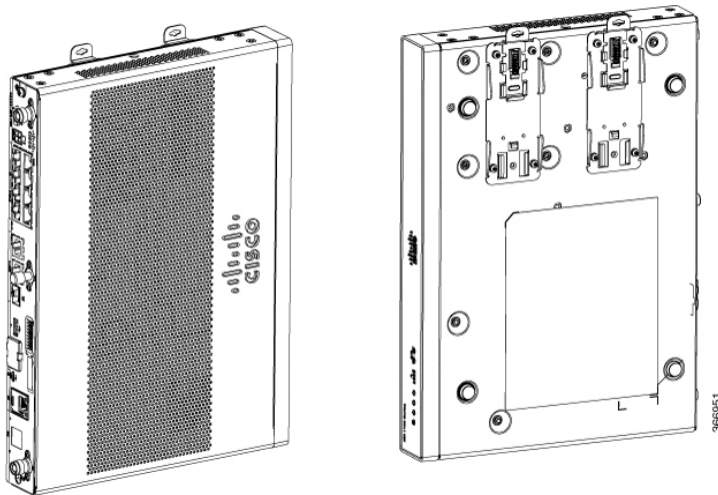
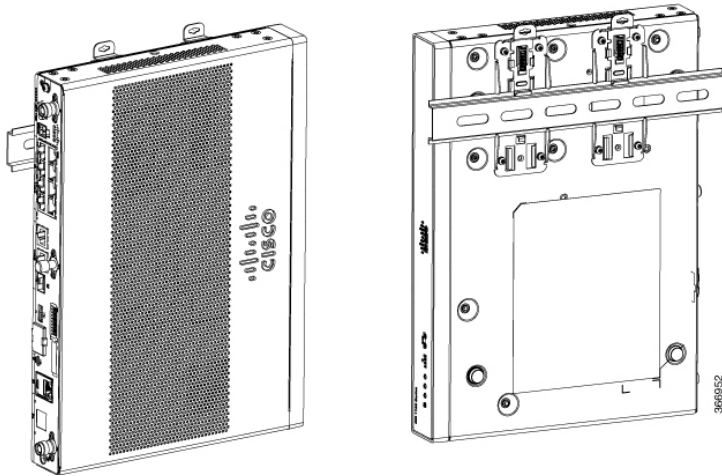


Figure 8: DIN Rail Brackets and Mount



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

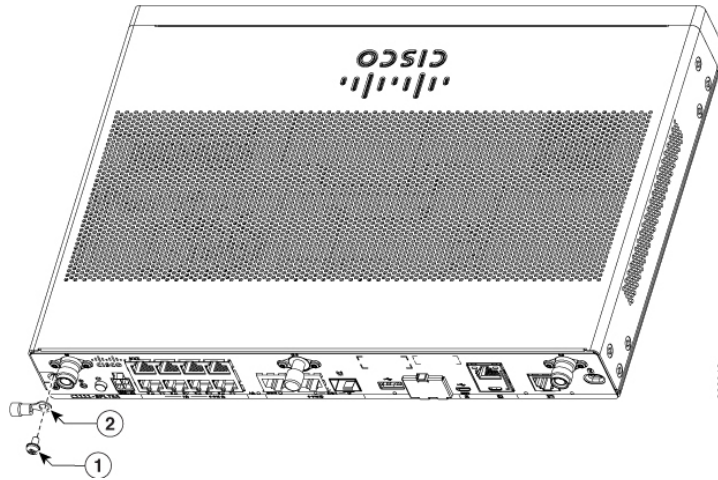
After you set up the router, connect the chassis to a reliable earth ground; the ground wire must be installed in accordance with local electrical safety standards. For safety information on grounding the chassis, refer to the chassis ground connection procedures.

1. For grounding the chassis, use size 14 AWG copper wire 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:

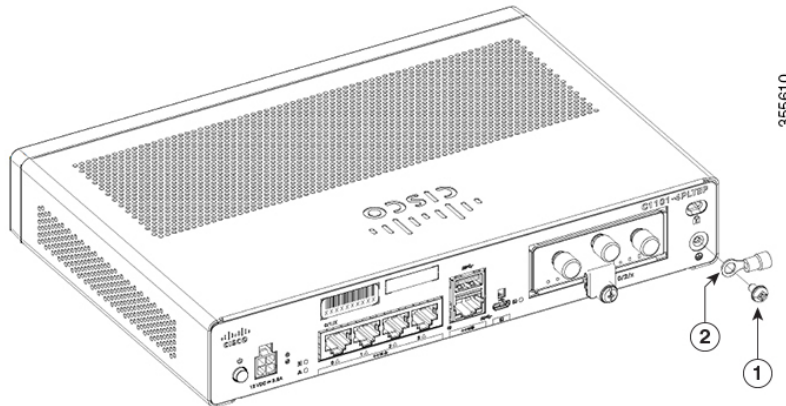
1. Strip one end of the ground wire to the length required for the ground lug or terminal.
 - For the ground lug—approximately 0.75 inch (20 mm)
 - For user-provided ring terminal—as required
2. Crimp the ground wire to the ground lug or ring terminal, using a crimp tool of the appropriate size.
3. Attach the ground lug or ring terminal to the chassis as shown in Figure. 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 9: Chassis Ground Connection-Cisco 111x



1	Screw (UNC 6-32)
2	Ground Lug

Figure 10: Chassis Ground Connection-Cisco 1101-4PLTEP

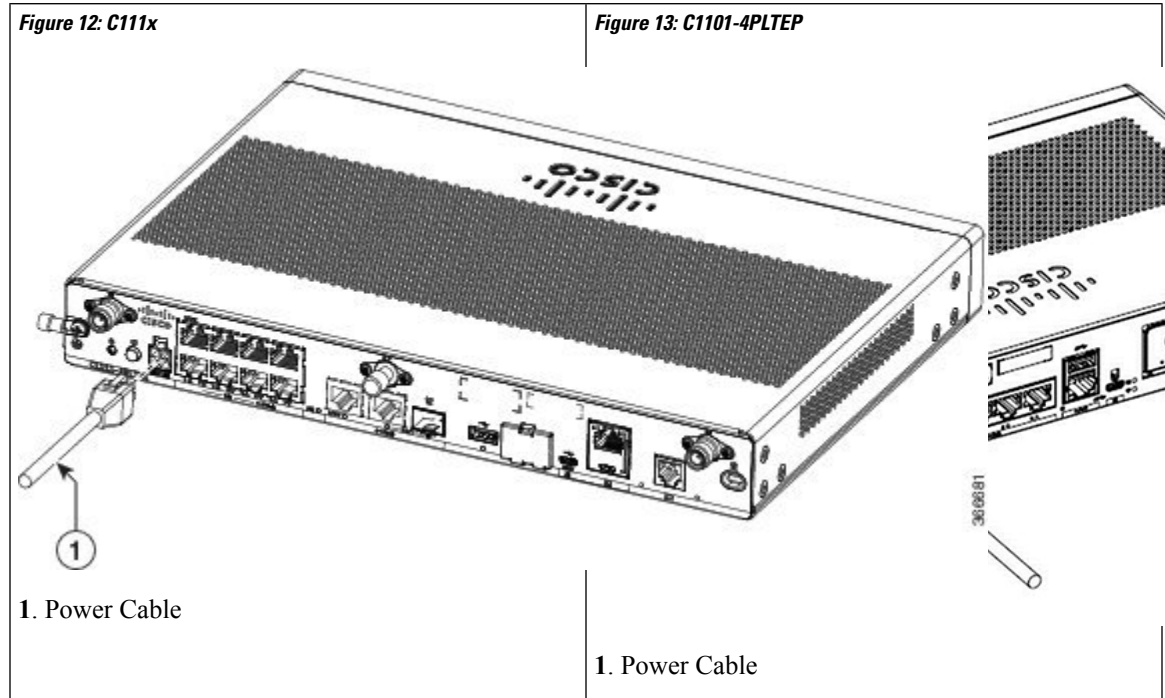


1	Screw (UNC 6-32)
2	Ground Lug

Connect Power Cable

Power supply of the Cisco 1100 Series ISRs is an external AC to DC power adapter. The external power adapter DC power connector plugs in to the router 4-pin power connector to power the unit.

Figure 11: Power Cable for Units-C111x and C1101-4PLTEP



Connect the Router to a Console

The Cisco 111x Series ISR has an asynchronous serial port. This port provides administrative access to the router through a console terminal or a PC.

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 2: Local and Remote Connections

Port Type	Cable	Section
Serial (RJ-45)	C111x: RJ-45 Serial console cable C110x: CAB-CON-USB (Serial USB to RJ-45 serial cable)	Connecting to the Serial Port with Microsoft Windows
Serial (USB)	USB 2.0 Standard-A to USB 2.0 Micro-B cable.	

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.

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- 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
```

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 Do not work on the system or connect or disconnect cables during periods of lightning activity. Statement 1001.



Warning Class 1 laser product. Statement 1008.



Warning Hazardous network voltages are present in WAN ports regardless of whether power to the unit is OFF or ON. To avoid electric shock, use caution when working near WAN ports. When detaching cables, detach the end away from the unit first. Statement 1026.



Caution Compliance with the Telcordia GR-1089 NEBS standard for electromagnetic compatibility and safety



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 1100 Series ISRs. The connections summarized here are described in detail in the Cisco Modular Access Router Cable Specifications document on cisco.com.

Table 3: 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

Port or Connection	Port Type, Color ¹	Connection	Cable
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](#).

