

# ACX5448 Universal Metro Router

## Quick Start Guide

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- ACX5448 Quick Start Description ..... 1
- Step 1: Prepare the Site for ACX5448 Installation ..... 3
  - Rack Requirements for an ACX5448 Router ..... 3
  - Router Clearance Requirements ..... 4
  - Router Cooling and Airflow Requirements ..... 5
  - Tools Required to Prepare the ACX5448 Router for Installation ..... 6
- Step 2: Install the ACX5448 Chassis in the Rack ..... 6
- Step 3: Connect the Grounding Cable ..... 8
- Step 4: Connect Power Cables ..... 9
  - Connect Power to an AC Router ..... 9
  - Connect Power to a DC Router ..... 11
- Step 5: Connect External Devices and Cables ..... 13
  - Connect the Router to a Network for Out-of-Band Management ..... 13
  - Connect the Router to a Console Device ..... 14
  - Connect the Router to External Clocking and Timing Devices ..... 15
- Step 6: Perform Initial Software Configuration ..... 15
  - Enter Configuration Mode ..... 15
  - Configure User Accounts and Passwords ..... 16
  - Configure System Attributes ..... 16
  - Commit the Configuration ..... 17
- Safety Warnings ..... 17
- Compliance Statements for NEBS ..... 19
- Compliance Statements for EMC Requirements ..... 19
  - Canada ..... 19
  - European Community ..... 19
  - Israel ..... 19
  - Japan ..... 19
  - United States ..... 19
- Contacting Customer Support ..... 20

### ACX5448 Quick Start Description

This Quick Start Guide contains information you need to install and configure the router quickly. For complete installation instructions, see the *ACX5448 Universal Metro Router Hardware Guide* at <https://www.juniper.net/documentation/>, or scan the QR code at the bottom of the page to go directly to the router product page.

The Juniper Networks ACX5448 Universal Metro Router is available as Juniper Networks' top-of-rack router solution for data centers and campus distribution or aggregation environments. The ACX5448 router portfolio consists of high-performance fixed-configuration routers that add higher port densities, additional scalability, and improved latency to the ACX Series. The ACX5448 router offers a compact 1 U model that provides wire-speed packet performance, very low latency, and a rich set of



530-087939 Rev 01



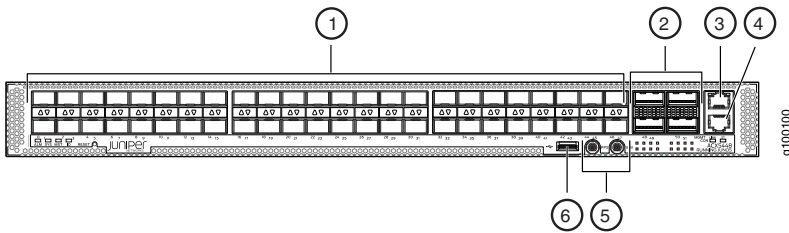
Layer 2 and Layer 3 features. The router have a high-throughput Packet Forwarding Engine, and the performance of the control plane running on ACX5448 router is enhanced by the 1.9 Ghz six-core Intel CPU with 32 GB of memory and two 100 GB of enterprise grade solid-state drive (SSD) storage.

The ACX5448 is a 10-Gigabit Ethernet enhanced small form-factor pluggable (SFP+) top-of-rack router with 48 SFP+ ports and 4 100-Gigabit Ethernet QSFP28 ports. Each SFP+ port (0 through 47) can operate as a native 10-Gigabit Ethernet port or as a 1-Gigabit Ethernet port when 1-gigabit optics are inserted. Each QSFP28 port (48 through 51) can be configured as either a native 100-Gigabit Ethernet port, 40-Gigabit Ethernet port, four 25-Gigabit Ethernet port, or as four 10-Gigabit Ethernet port by using breakout cables. The 4 QSFP28 ports can be used as either access ports or uplink ports. The ACX5448 provides full duplex throughput of 800 Gbps.

The ACX5448 router is a fixed-configuration router that supports one built-in Routing Engine. The router runs on AC or DC power, with two dedicated power supply modules on each device. Cooling is handled by six fan modules. The ACX5448 is shipped with redundant fans and redundant power supplies. The router can be ordered with front-to-back airflow (air out or AFO) or back-to-front airflow (air in or AFI), and with AC or DC power supplies.

Figure 1 shows the front of the ACX5448 router.

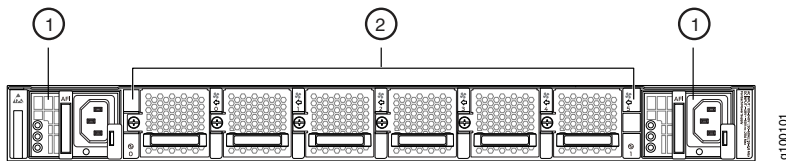
Figure 1: Front View of the ACX5448 Router



1— SFP+ ports	4— Console (CON) port
2— QSFP28 ports	5— 1—PPS and 10—MHz GPS output ports
3— Management (MGMT) port	6— USB port

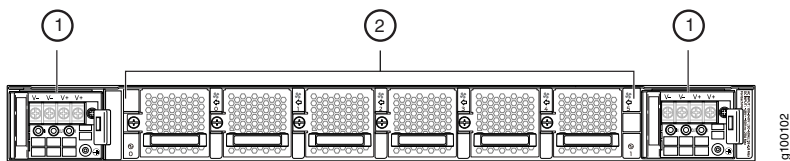
Figure 2 and Figure 3 show rear views of the fully configured ACX5448 routers, one with AC power and the other with DC power.

Figure 2: Rear View of the AC-Powered ACX5448 Router



1— Power supply modules (AC)	2— Fan modules
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Figure 3: Rear View of the DC-Powered ACX5448 Router



1— Power supply modules (DC)	2— Fan modules
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The electrostatic discharge (ESD) point on the router is located on the rear of the chassis. Figure 4 shows the ESD point on the router.

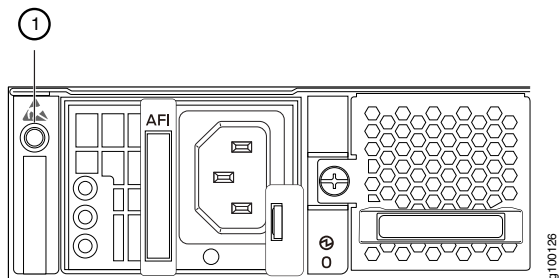


**CAUTION:** Before removing or installing components, attach an ESD strap to an ESD point, and attach the other end of the strap to your bare wrist. Failure to use an ESD strap can result in damage to the hardware components.



**WARNING:** This Quick Start contains a summary of safety warnings in “[Safety Warnings](#)” on page 17. For a complete list of warnings for this router, including translations, see the *ACX5448 Universal Metro Router Hardware Guide*.

Figure 4: ESD Point on the ACX5448 Router



1— ESD point

## Step 1: Prepare the Site for ACX5448 Installation

- [Rack Requirements for an ACX5448 Router on page 3](#)
- [Router Clearance Requirements on page 4](#)
- [Router Cooling and Airflow Requirements on page 5](#)
- [Tools Required to Prepare the ACX5448 Router for Installation on page 6](#)

### Rack Requirements for an ACX5448 Router

ACX5448 routers are designed to be installed on four-post racks.

Table 1 provides the rack requirements and specifications for an ACX5448 router.

Table 1: Rack Requirements for an ACX5448 Router

Rack Requirement	Guidelines
Rack type	Use a four-post rack that provides bracket holes or hole patterns spaced at 1-U increments (1.75 in. or 4.45 cm) and that the rack meets the size and strength requirements to support the weight.  A U is the standard rack unit defined in <i>Cabinets, Racks, Panels, and Associated Equipment</i> (document number EIA-310-D) published by the Electronics Industry Association.
Mounting bracket hole spacing	Ensure that the holes in the mounting brackets are spaced at 1 U (1.75 in. or 4.45 cm) so that the router can be mounted in any rack that provides holes spaced at that distance.

Table 1: Rack Requirements for an ACX5448 Router (continued)

Rack Requirement	Guidelines
Rack size and strength	<ul style="list-style-type: none"> <li>Ensure that the rack complies with the standards for a 19-in. rack as defined in <i>Cabinets, Racks, Panels, and Associated Equipment</i> (document number EIA-310-D) published by the Electronics Industry Association.</li> <li>Use a 800-mm rack as defined in the four-part <i>Equipment Engineering (EE) European telecommunications standard for equipment practice</i> (document numbers ETS 300 119-1 through 119-4) published by the European Telecommunications Standards Institute (<a href="http://www.etsi.org">http://www.etsi.org</a>). The horizontal spacing between the rails in a rack that complies with this standard is usually wider than the device's mounting brackets, which measure 19 in. (48.26 cm) from outer edge to outer edge. Use approved wing devices to narrow the opening between the rails as required.</li> <li>Ensure that the rack rails are spaced widely enough to accommodate the router chassis' external dimensions. The outer edges of the front-mounting brackets extend the width to 19 in. (48.26 cm).</li> <li>Ensure that for four-post installations, the front and rear rack rails are spaced between 23.6 in. (60 cm) and 36 in. (91.4 cm) front-to-back.</li> <li>Ensure that the rack is strong enough to support the weight of the router. The fully configured ACX5448 router weighs about 22.48 lb (10.2 kg).</li> <li>Ensure that the spacing of rails and adjacent racks allows for proper clearance around the router and rack.</li> </ul>
Rack connection to building structure	<ul style="list-style-type: none"> <li>Secure the rack to the building structure.</li> <li>If earthquakes are a possibility in your geographical area, secure the rack to the floor.</li> <li>Secure the rack to the ceiling brackets as well as wall or floor brackets for maximum stability.</li> </ul>

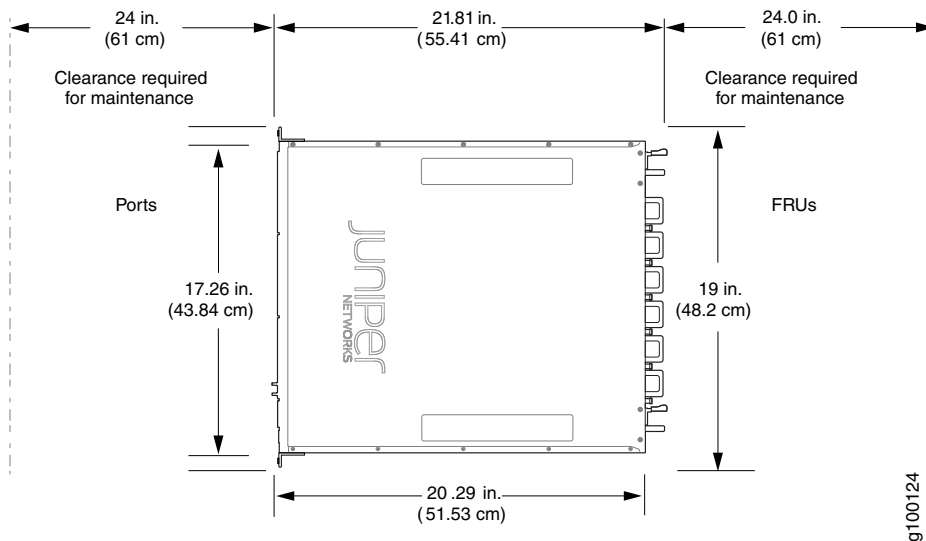
### Router Clearance Requirements

For the cooling system to function properly, the airflow around the chassis must be unrestricted. You must allow sufficient clearance around the installed chassis for cooling and maintenance.

If you are mounting an ACX5448 in a rack with other equipment, ensure that the exhaust from the other equipment does not blow into the intake vents of the ACX5448 chassis.

For service personnel to remove and install hardware components, and to accommodate the interface and power cable bend radius, there must be adequate space at the front and rear of the router. Allow at least 24 in. (61 cm) of space in the front and rear of the router. See Figure 5.

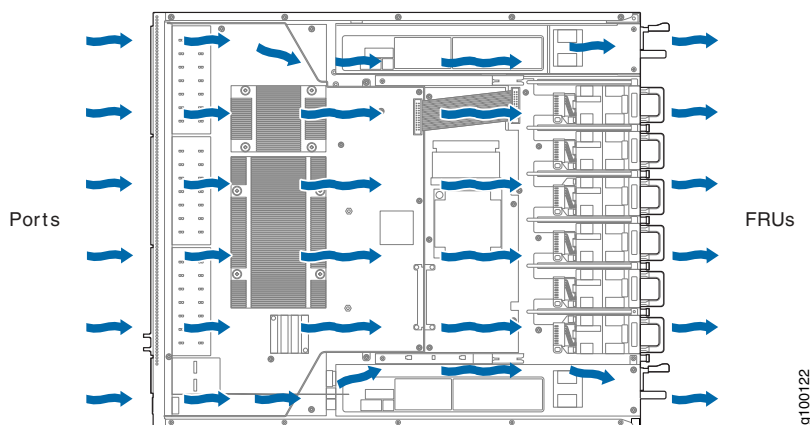
Figure 5: Clearance Requirements for Airflow and Hardware Maintenance for the ACX5448



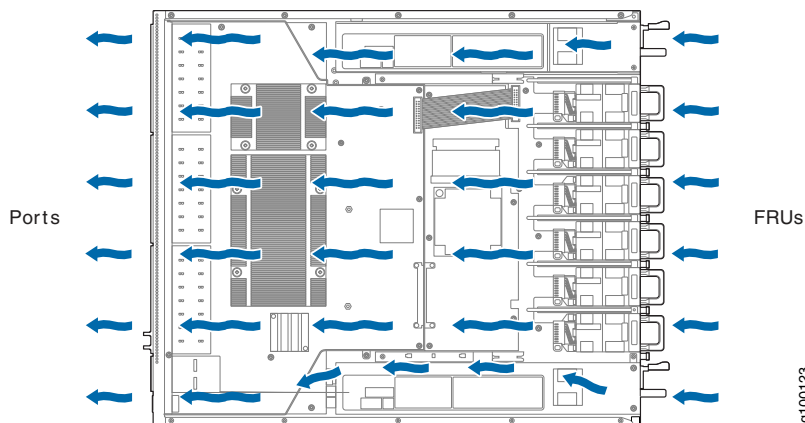
## Router Cooling and Airflow Requirements

- The ACX5448 router is available with either front-to-back airflow (air out, ports-to-FRUs or AFO), or back-to-front airflow (air in, FRUs-to-ports or AFI). In AFO models, the air is pulled through the front of the chassis toward the fan trays, from where it is exhausted out of the system. Whereas in AFI models, the air is pulled through the fan trays and towards the front of the chassis, from where it is exhausted out of the system. The fan modules and the power modules are available in both AFO and AFI variants. [Figure 6](#) and [Figure 7](#) show the airflow through the two router models.
- For the cooling system to function properly, the airflow around the chassis must be unrestricted. Allow at least 6 in. (15.2 cm) of clearance between side-cooled routers. Allow 2.8 in. (7 cm) between the side of the chassis and any non-heat-producing surface such as a wall.
- The power supplies are self-cooling and are located in the rear of the router. The exhaust for the power supplies are also located on the rear of the chassis.
- The rack or cabinet must have an adequate supply of cooling air.

*Figure 6: Airflow Through the ACX5448 Router—AFO*



*Figure 7: Airflow Through the ACX5448 Router—AFI*



**CAUTION:** Do not mix different types of airflow modules in the same chassis. The fan and power modules must be of same airflow type (AFO or AFI).

## Tools Required to Prepare the ACX5448 Router for Installation

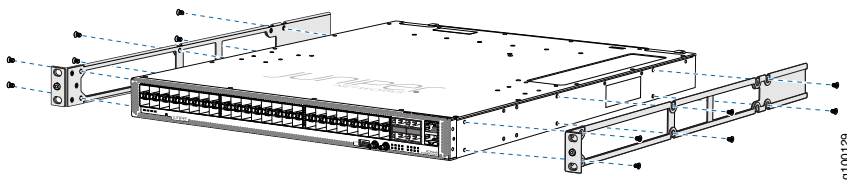
- Mounting brackets, supplied with the router
- Twelve screws for securing the mounting brackets to the chassis, supplied with the router
- Eight mounting screws, not supplied
- Phillips (+) screwdriver, number 2, not supplied

## Step 2: Install the ACX5448 Chassis in the Rack

To install the router in a rack or cabinet:

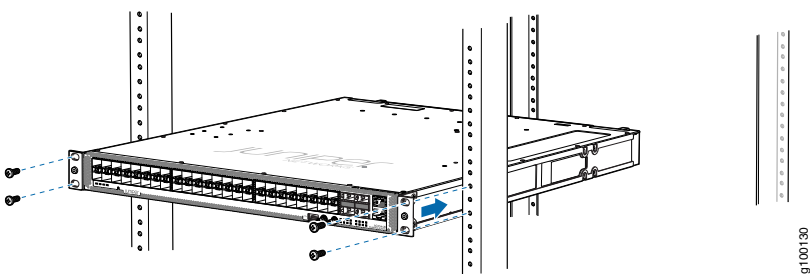
1. Position the router in front of the rack or cabinet.
2. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist and to a site ESD point.
3. Align the holes in the front mounting brackets with the holes on the side of the chassis (see [Figure 8](#)).

*Figure 8: Attaching the Mounting Brackets*



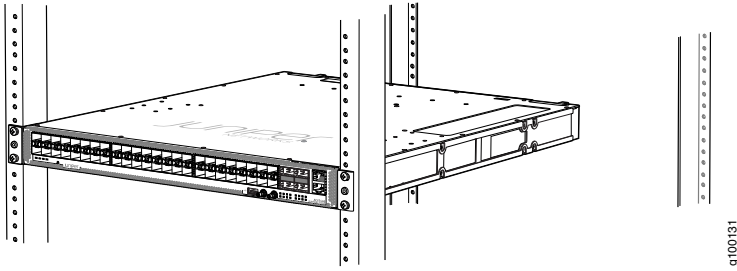
4. Using a Phillips (+) number 2 screwdriver, secure the mounting brackets to the router using the mounting screws.
5. With one person on each side, hold on to the bottom of the chassis and carefully lift it so that the mounting brackets contact the rack rails.
6. Carefully slide the router onto the mounting brackets until the front-mounting brackets attached to the chassis contact the rack rails (see [Figure 9](#)).

*Figure 9: Installing the Router in a Four-Post Rack*



7. Install mounting screws into each of the open front-mounting holes aligned with the rack, starting from the bottom, and secure them tightly. [Figure 10](#) shows the router fully secured to the front rails of the four-post rack.

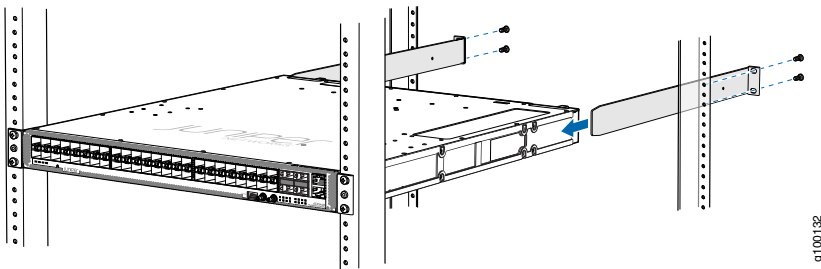
Figure 10: Router Secured by Front-Mounting Brackets



- On the rear of the chassis, slide the rear-mounting brackets on either side of the chassis until the rear-mounting brackets contact the rack rails (see Figure 11).

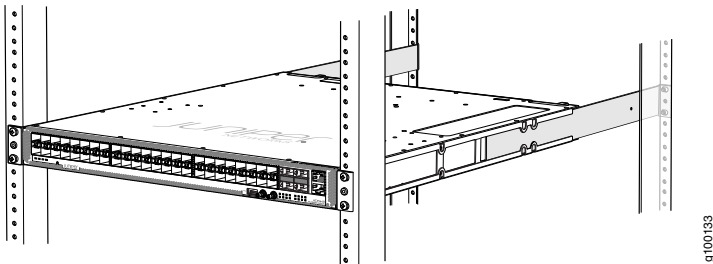
The rear-mounting brackets on each side of the chassis are movable. You can adjust the brackets according to the depth of the rack.

Figure 11: Installing the Rear-Mounting Brackets



- Install mounting screws into each of the open rear-mounting holes aligned with the rack, starting from the bottom, and secure them tightly.
- Visually inspect the alignment of the chassis. If the chassis is installed properly in the rack, all the mounting screws on one side of the rack are aligned with the mounting screws on the opposite side, and the router is level. Figure 12 shows the router fully secured and installed in a four-post rack.

Figure 12: Router Installed in the Rack



## Step 3: Connect the Grounding Cable

To meet safety and electromagnetic interference (EMI) requirements and to ensure proper operation, the router must be adequately grounded before power is connected.

A protective earthing terminal bracket is required for connecting the chassis to earth ground. This two-holed bracket attaches on the side of the chassis through the mounting rail and provides a protective earthing terminal for the router. The grounding points are in the form of studs sized for #10–32 pan head screws. The #10–32 pan head screws with integrated washers are not provided in the accessory kit. The grounding points are spaced at 0.63-in. (16-mm) centers.

You ground the router by connecting a grounding cable to earth ground and then attaching it to the chassis grounding points by using two #10–32 pan head screws. You must provide the grounding cables.

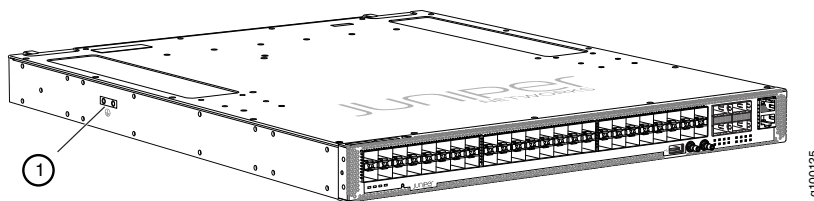


**NOTE:** The grounding lug required is a Panduit LCD10-10A-L or equivalent (not provided). The grounding lug accommodates 12 AWG (2.5 mm<sup>2</sup>) stranded wire. The grounding cable that you provide for the chassis must be the same size or heavier than the input wire of each power supply. Minimum recommendations are 12 AWG (2.5 mm<sup>2</sup>) stranded wire, 60° C wire, or as permitted by local code.

To ground the ACX5448 router:

1. Verify that a licensed electrician has attached the cable lug provided with the router to the grounding cable.
2. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist, and connect the other end of the strap to an approved site ESD grounding point. See the instructions for your site.
3. Ensure that all grounding surfaces are clean and brought to a bright finish before grounding connections are made.
4. Connect the grounding cable to a proper earth ground.
5. Detach the ESD grounding strap from the site ESD grounding point.
6. Connect the grounding strap to one of the ESD points on the chassis. [Figure 13](#) shows the ESD point on the router.

*Figure 13: Grounding Point on the ACX5448 Router*

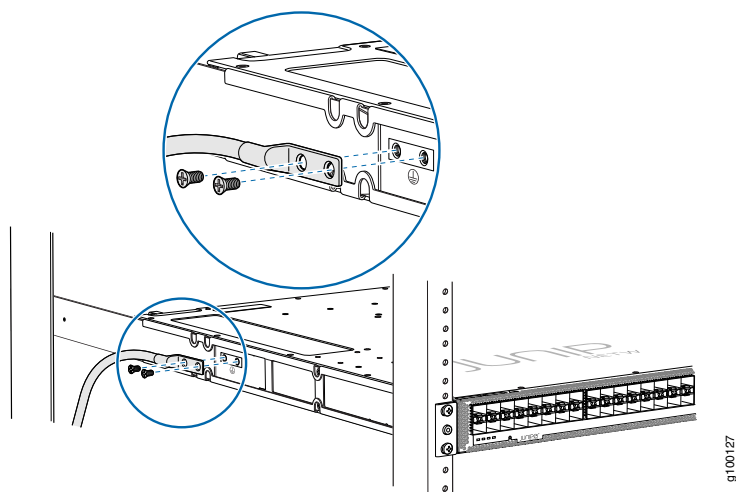


1—Grounding point

7. Place the grounding cable lug over the grounding point on the side of the chassis (see [Figure 14](#)).



Figure 14: Connecting the Grounding Cable to ACX5448 Router



8. Secure the grounding cable lug with the screws. The holes are sized to accommodate #10–32 pan head screws.
9. Dress the grounding cable and verify that it does not touch or block access to router components, and that it does not drape where people could trip on it.

## Step 4: Connect Power Cables

Depending on the configuration, your router uses either AC or DC power supplies. Perform the appropriate procedures for each power supply in your router. The power supplies are hot-insertable and are field-replaceable units (FRUs). ACX5448 supports two power supply modules. The power supplies install in the rear of the chassis in the slots provided.



**WARNING:** You must ground the router before connecting either the AC power cord or the DC power cable.



**CAUTION:** Do not mix AC and DC power supplies in the same chassis. Similarly, do not mix different airflow modules (AFO and AFI) in the same chassis.

- [Connect Power to an AC Router on page 9](#)
- [Connect Power to a DC Router on page 11](#)

### Connect Power to an AC Router

Table 2 gives the AC power system input voltage for the ACX5448 router.

Table 2: ACX5448 AC Power System Input Voltage

Item	Specification
AC input voltage	Operating range: 100–240 VAC

To connect power to an AC router:

1. Attach an ESD grounding strap to your bare wrist and connect the strap to one of the ESD points on the chassis.
2. Power off the AC input appliance inlet on the source power supply.

3. Connect the power cord to the power supply source.

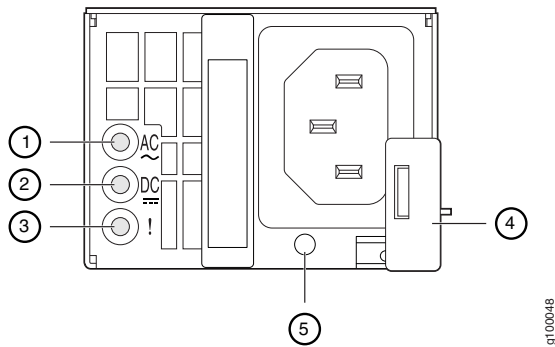


**NOTE:** Each power supply must be connected to a dedicated AC power feed and a dedicated customer-site 2-pole circuit breaker. We recommend that you use a dedicated customer-site circuit breaker rated for 20 A (110 VAC) or 16 A (220 VAC) minimum, or as required by local code.

4. Push the end of the AC power cord retainer strip into the hole next to the inlet on the power supply face plate on the router until it snaps into place. Ensure that the loop in the retainer strip faces toward the power cord.

Figure 15 shows the port on the AC power supply module where the power cord retainer is installed.

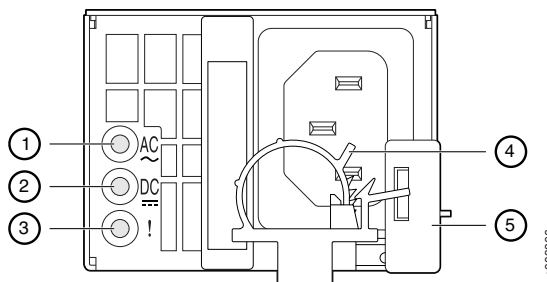
Figure 15: Power Cord Retainer Port on the AC Power Supply Module



1—Input status LED	4—Ejector lever
2—Output status LED	5—AC power cord retainer port
3—Fault LED	

Figure 16 shows the power cord retainer installed on the AC power supply module.

Figure 16: Power Cord Retainer Installed on the AC Power Supply Module

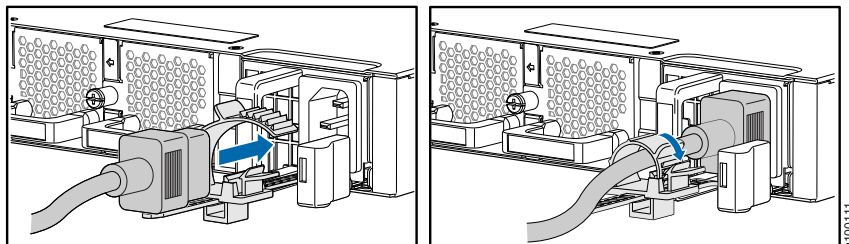


1—Input status LED	4—AC power cord retainer installed
2—Output status LED	5—Ejector lever
3—Fault LED	

5. Press the small tab on the retainer strip to loosen the loop. Slide the loop until you have enough space to insert the power cord coupler into the inlet.
6. Insert the power cord coupler firmly into the inlet.
7. Slide the loop toward the power supply until it is snug against the base of the coupler.
8. Press the tab on the loop and draw out the loop into a tight circle (see Figure 17).

9. Route the power cord appropriately. Verify that the power cord does not block the air exhaust and access to router components, or drape where people could trip on it.
10. Power on the power supply at source.
11. Repeat Step 3 through Step 9 for the installing the remaining power supply.

Figure 17: Connecting an AC Power Cord to an ACX5448



## Connect Power to a DC Router

Table 3 gives the DC power system input voltage for the ACX5448 router.

Table 3: ACX5448 DC Power System Input Voltage

Item	Specification
DC input voltage	Rated operating voltage: –48 VDC to –60 VDC Operating voltage range: –40.8 VDC through –72 VDC

To connect power to a DC router:

1. Attach the grounding strap to your bare wrist and to a site ESD point.
2. Verify that the DC power cables are correctly labeled before making connections to the power supply. In a typical power distribution scheme where the return is connected to chassis ground at the battery plant, you can use a multimeter to verify the resistance of the –48V and RTN DC cables to chassis ground:
  - The cable with very low resistance (indicating a closed circuit) to chassis ground is positive (+) and will be installed on the V+ (return) DC power input terminal.
  - The cable with very high resistance (indicating an open circuit) to chassis ground is negative (–) and will be installed on the V– (input) DC power input terminal.



**CAUTION:** You must ensure that power connections maintain the proper polarity. The power source cables might be labeled (+) and (–) to indicate their polarity. There is no standard color coding for DC power cables. The color coding used by the external DC power source at your site determines the color coding for the leads on the power cables that attach to the DC power input terminals on each power supply.

3. Ensure that the input 2-pole circuit breaker is open so that the voltage across the DC power source cable leads is 0 V and that the cable leads do not become active while you are connecting DC power.



**NOTE:** The V+ terminals are referred to as +RTN, and V– terminals are referred to as –48 V in *DC Power Wiring Sequence Warning*.

4. Ensure that the power supplies are fully inserted in the chassis.
5. Remove the terminal block cover. The terminal block cover is a piece of clear plastic that snaps into place over the terminal block (see [Figure 18](#)).
6. Remove the screws on the terminals using the screwdriver. Save the screws.



**WARNING:** Ensure that the power cables do not block access to device components or drape where people can trip on them.

7. Connect each power supply to the power sources. Secure power source cables to the power supplies by screwing the ring lugs attached to the cables to the appropriate terminals by using the screw from the terminals (see [Figure 18](#)).

The ACX5448 is designed to operate with a DC power supply that has a single, non-redundant, feed input. For source redundancy, two DC power supplies must be installed in ACX5448; connect source (A) to one power supply and connect source (B) to the second power supply. This configuration provides the commonly deployed A/B feed redundancy for the system.

The terminal block of the power supply has four terminals labeled V+, V+, V-, and V- for connecting DC power source cables labeled positive (+) and negative (-). The V+ terminals are shunted internally together, as are the V- terminals.



**CAUTION:** The connection between each power source and power supply must include a 2-pole circuit breaker.

Do not connect two sources to a single power supply because doing so can potentially cause circulating current in feed wires whenever there is any difference in the voltage of the two sources.

- a. Secure the ring lug of the positive (+) DC power source cable to the V+ terminal on the DC power supply.
- b. Secure the ring lug of the negative (-) DC power source cable to the V- terminal on the DC power supply.
- c. Tighten the screws on the power supply terminals until snug using the screwdriver. Do not overtighten—apply between 5 in-lb (0.56 Nm) and 6 in-lb (0.68 Nm) of torque to the screws.



**CAUTION:** The V+ terminals are shunted internally together, as are the V- terminals. The same polarity terminal can be wired together from the same source to provide an additional current path in a higher power chassis. Do not connect the terminals to different sources.

8. Replace the terminal block cover.
9. Close the input 2-pole circuit breaker.



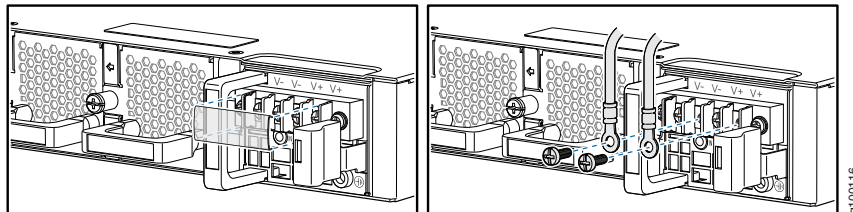
**NOTE:** The switch powers on as soon as power is provided to the power supply. There is no power switch on the device.

10. Verify that the **IN** and **OUT** LEDs on the power supply are lit green and are on steadily.



**CAUTION:** A system reboot with Routing Engine FPGA version 7.1 might not successfully boot the Junos OS software. In case of a system reboot failure, you need to power cycle the switch. To check the current FPGA version, issue the `show chassis firmware` command.

Figure 18: Connecting DC Power Cable to an ACX5448 Router



## Step 5: Connect External Devices and Cables

Figure 1 shows the front panel of the ACX5448 router. All the connections to the router are made through the front panel.

- Connect the Router to a Network for Out-of-Band Management on page 13
- Connect the Router to a Console Device on page 14
- Connect the Router to External Clocking and Timing Devices on page 15

### Connect the Router to a Network for Out-of-Band Management

To connect the router to a network for out-of-band management, connect an Ethernet cable with RJ-45 connectors to the **MGMT** port on the router. One Ethernet cable is provided with the router.



**NOTE:** Use shielded CAT5e cable for the **CON** and **MGMT** ports on the router.

To connect to the **MGMT** port on the router faceplate:

1. Turn off power to the management device.
2. Plug one end of the Ethernet cable (Figure 19 shows the connector) into the **MGMT** port on the router.
3. Plug the other end of the cable into the network device.

Figure 19: Ethernet Cable Connector

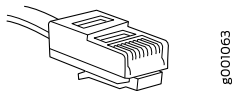


Table 4 describes the out-of-band management port for the ACX5448 router.

Table 4: Out-of-Band Management Port on the ACX5448 Router

Label	Callout	Description
MGMT	3 (See Figure 1.)	Dedicated management channel for device maintenance. It is also used by system administrators to monitor and manage the router remotely.

## Connect the Router to a Console Device

To use a system console to configure and manage the router, connect it to the appropriate **CON** port on the router. The console port is used to connect a laptop or console terminal to configure the router (see [Figure 20](#) and [Figure 21](#)). The console port accepts a cable with an RJ-45 connector. One serial cable with an RJ-45 connector and a DB-9 connector is provided with the router.



**NOTE:** Use shielded CAT5e cable for connecting the **CON** and **MGMT** ports on the router.

To connect a management console:

1. Turn off power to the console device.
2. Plug the RJ-45 end of the serial cable (see [Figure 19](#)) into the **CON** port on the router.
3. Plug the female DB-9 end into the device's serial port.

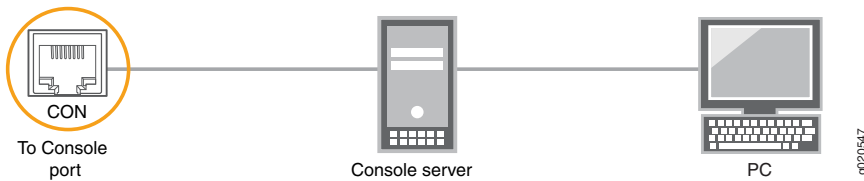


**NOTE:**

For console devices, configure the serial port as follows:

- Baud rate—9600
- Parity—N
- Data bits—8
- Stop bits—1
- Flow control—none

*Figure 20: Connecting the Router to a Management Console Through a Console Server*



*Figure 21: Connecting the Router Directly to a Management Console*



[Table 5](#) describes the console port for the ACX5448 router.

*Table 5: Console Port on the ACX5448 Router*

Label	Callout	Description
CON	4 (See <a href="#">Figure 1</a> .)	Connect a laptop or console terminal to configure the router.

## Connect the Router to External Clocking and Timing Devices

The router has two SMB connector ports that support 1-PPS and 10-MHz timing devices.



**NOTE:** Ensure that a cable of 3 m or less in length is used for the 10-MHz and 1-PPS connectors.

To connect the SMB to BNC coaxial cable to the external clocking input port:

1. Connect one end of the SMB to BNC coaxial cable to either the 1-PPS connector or the 10-MHz connector on the router.
2. Connect the other end of the SMB to BNC coaxial cable to the 1-PPS or 10-MHz measurement equipment.



**NOTE:** Ensure that the 10-MHz or 1-PPS source network equipment contains low voltage complementary metal oxide semiconductor (CMOS) or is compatible with low-voltage (3.3 V) transistor-transistor logic (TTL).

Table 6 describes the clocking port on the ACX5448 router.

*Table 6: Clocking Port on the ACX5448 Router*

Label	Callout	Description
10M	5	GPS ports.
PPS	(See Figure 1.)	

## Step 6: Perform Initial Software Configuration

This procedure connects the router to the network but does not enable it to forward traffic. For complete information about configuring the router to forward traffic, including examples, see the Junos OS configuration guides.

To configure the software:

- [Enter Configuration Mode on page 15](#)
- [Configure User Accounts and Passwords on page 16](#)
- [Configure System Attributes on page 16](#)
- [Commit the Configuration on page 17](#)

### Enter Configuration Mode

1. Verify that the router is powered on.
2. Log in as the root user. There is no password.
3. Start the CLI.

```
root# cli
root@host>
```

4. Enter configuration mode.

```
root@host> configure
[edit]
root@host#
```

## Configure User Accounts and Passwords

For information about using an encrypted password or an SSH public key string (DSA or RSA), see *Configuring the Root Password and authentication (Login)*.

1. Add a password to the root administration user account. Enter a cleartext password.

```
[edit]
root@host# set system root-authentication plain-text-password
New password: password
Retype new password: password
```

2. Create a management console user account.

```
[edit]
root@host# set system login user user-name authentication plain-text-password
New Password: password
Retype new password: password
```

3. Set the user account class to **super-user**.

```
[edit]
root@host# set system login user user-name class super-user
```

## Configure System Attributes

1. Configure the name of the router. If the name includes spaces, enclose the name in quotation marks (" ").

```
[edit]
root@host# set system host-name host-name
```

2. Configure the router's domain name.

```
[edit]
root@host# set system domain-name domain-name
```

3. Configure the IP address and prefix length for the router's Ethernet interface.

```
[edit]
root@host# set interfaces fxp0 unit 0 family inet address address/prefix-length
```

4. Configure the IP address of a backup router, which is used only while the routing protocol is not running.

```
[edit]
root@host# set system backup-router address
```

5. Configure the IP address of a DNS server.

```
[edit]
root@host# set system name-server address
```

6. (Optional) Configure the static routes to remote subnets with access to the management port. Access to the management port is limited to the local subnet. To access the management port from a remote subnet, you need to add a static route to that subnet within the routing table. For more information about static routes, see the *Junos OS Administration Library*.

```
[edit]
root@host# set routing-options static route remote-subnet next-hop destination-IP retain no-readvertise
```

7. Configure the Telnet service at the **[edit system services]** hierarchy level.

```
[edit]
root@host# set system services telnet
```



## Commit the Configuration

1. (Optional) Display the configuration to verify that it is correct.

```
[edit]
root@host# show
system {
  host-name host-name;
  domain-name domain-name;
  backup-router address;
  root-authentication {
    authentication-method (password | public-key);
  }
  name-server {
    address;
  }
}
interfaces {
  fxp0 {
    unit 0 {
      family inet {
        address address/prefix-length;
      }
    }
  }
}
}
```

2. Commit the configuration to activate it on the router.

```
[edit]
root@host# commit
```

3. (Optional) Configure additional properties by adding the necessary configuration statements. Then commit the changes to activate them on the router.

```
[edit]
root@host# commit
```

4. When you have finished configuring the router, exit configuration mode.

```
[edit]
root@host# exit
root@host>
```

## Safety Warnings



**WARNING:** See installation instructions before connecting the router. This is a summary of safety warnings. For a complete list of warnings for this router, including translations, see the *ACX5448 Universal Metro Router Hardware Guide* at <https://www.juniper.net/documentation/>.



**WARNING:** The intrabuilding port(s) of the router is suitable for connection to intrabuilding or unexposed wiring or cabling only. The intrabuilding port(s) of the router **MUST NOT** be metallically connected to interfaces that connect to the OSP or its wiring. These interfaces are designed for use as intrabuilding interfaces only (Type 2 or Type 4 ports as described in GR-1089-CORE, Issue 4) and require isolation from the exposed OSP cabling. The addition of primary protectors is not sufficient protection to connect these interfaces metallically to OSP wiring.



**CAUTION:** Before removing or installing components of a router, attach an ESD strap to an ESD point, and place the other end of the strap around your bare wrist. Failure to use an ESD strap could result in damage to the router.



**CAUTION:** Use an external surge protective device (SPD) at the AC input of the router.

- Only trained and qualified personnel must install or replace the router.
- Perform only the procedures described in this quick start or the *ACX5448 Universal Metro Router Hardware Guide* at <https://www.juniper.net/documentation/>. Other services should be performed by authorized service personnel only.
- Read the installation instructions before you connect the router to a power source.
- Before installing the router, read the guidelines for site preparation in the *ACX5448 Universal Metro Router Hardware Guide* at <https://www.juniper.net/documentation/> to make sure that the site meets power, environmental, and clearance requirements for the router.
- For the cooling system to function properly, the airflow around the chassis must be unrestricted. Allow at least 6 in. (15.2 cm) of clearance between side-cooled routers. Allow 2.8 in. (7 cm) between the side of the chassis and any non-heat-producing surface such as a wall.
- When installing the router, do not use a ramp inclined more than 10 degrees.
- Manually installing the router requires two people for an empty chassis and three people for a fully configured router to lift the chassis. Before lifting the chassis with only two people, remove the components as described in the *ACX5448 Universal Metro Router Hardware Guide* at <https://www.juniper.net/documentation/>. To prevent injury, keep your back straight and lift with your legs, not your back. Do not attempt to lift the chassis by the power supply handles.
- Mount the router at the bottom of the rack if it is the only unit in the rack.
- When mounting the router 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 router in the rack.
- When removing or installing an electrical component, always place it component-side up on a flat antistatic surface or in an electrostatic bag.
- When you install the router, always make the ground connection first and disconnect it last.
- Wire the DC power supply using the appropriate lugs. When connecting power, the proper wiring sequence is ground to ground, +RTN to +RTN, then -48 V to -48 V. When disconnecting power, the proper wiring sequence is -48 V to -48 V, +RTN to +RTN, then ground to ground. Always connect the ground wire first and disconnect it last.
- Do not work on the system or connect or disconnect cables during electrical storms.
- Before working on equipment that is connected to power lines, remove jewelry, including rings, necklaces, and watches. Metal objects heat up when connected to power and ground and can cause serious burns or become welded to the terminals.
- Failure to observe these safety warnings can result in serious physical injury.
- AC power cable warning (Japan):



**WARNING:** The attached power cable is only for this product. Do not use the cable for another product.

附属の電源コードセットはこの製品専用です。  
他の電気機器には使用しないでください。

## Compliance Statements for NEBS

- The equipment is suitable for installation as part of the Common Bonding Network (CBN).
- The equipment is suitable for installation in locations where the National Electrical Code (NEC) applies.
- The battery return connection is to be treated as an isolated DC return (that is, DC-I), as defined in GR-1089-CORE.
- You must provision a readily accessible device outside of the equipment to disconnect power. The device must also be rated based on local electrical code practice.

## Compliance Statements for EMC Requirements

- [Canada on page 19](#)
- [European Community on page 19](#)
- [Israel on page 19](#)
- [Japan on page 19](#)
- [United States on page 19](#)

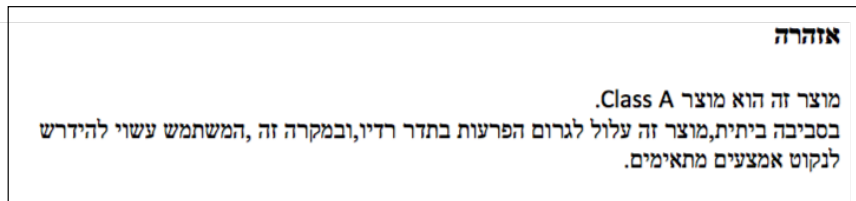
### Canada

CAN ICES-3 (A)/NMB-3(A)

### European Community

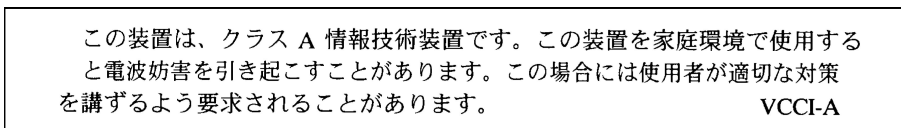
This is a Class A product. In a domestic environment, this product might cause radio interference in which case the user might be required to take adequate measures.

### Israel



Translation from Hebrew—Warning: This product is Class A. In residential environments, the product might cause radio interference, and in such a situation, the user might be required to take adequate measures.

### Japan



The preceding translates as follows:

This is a Class A product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this product is used near a radio or television receiver in a domestic environment, it might cause radio interference. Install and use the equipment according to the instruction manual. VCCI-A.

### United States

The hardware 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 harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not

installed and used in accordance with the instruction manual, might cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

## Contacting Customer Support

You can contact Juniper Networks Technical Assistance Center (JTAC) 24 hours a day, 7 days a week in one of the following ways:

- On the Web, using the Case Manager link at:

<https://www.juniper.net/support/>

- By telephone:

From the US and Canada: 1-888-314-JTAC

From all other locations: 1-408-745-9500

If contacting JTAC by phone, enter your 12-digit case number followed by the # key if this is an existing case, or press the \* key to be routed to the next available support engineer.

When requesting support from JTAC by telephone, be prepared to provide the following information:

- Your existing case number, if you have one
- Details of the failure or problem
- Type of activity being performed on the platform when the problem occurred
- Configuration data using one or more of the show commands