

ACX500 Universal Metro Routers Quick Start—ACX500 Outdoor Routers

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This document describes how to install the Juniper Networks® ACX500 Universal Metro Routers—the ACX500 outdoor routers.

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ACX500 Routers Quick Start Description

This Quick Start contains information you need to install and configure the ACX500 outdoor router quickly. For complete installation instructions, see the *ACX500 Universal Metro Router Hardware Guide* at <https://www.juniper.net/documentation/>.



WARNING: This Quick Start contains a summary of safety warnings in “[Safety Warnings](#)” on page 25. For a complete list of warnings for this router, including translations, see the *ACX500 Universal Metro Router Hardware Guide* at <https://www.juniper.net/documentation/>.

The ACX Series Universal Metro Routers are Ethernet-optimized mobile backhaul routers that provide both switching and carrier-class Ethernet routing. The ACX Series routers enable a wide range of business and residential applications and services, including microwave cell site aggregation, mobile backhaul service cell site deployment, and service provider or operator cell site deployment. The routers have high-density Ethernet interfaces and high-capacity switching throughput.

An ACX Series router has a built-in Routing Engine and one Packet Forwarding Engine. The Packet Forwarding Engine has one “pseudo” Flexible PIC Concentrator (FPC 0). Because there is no switching fabric, the single Packet Forwarding Engine takes care of packet forwarding.

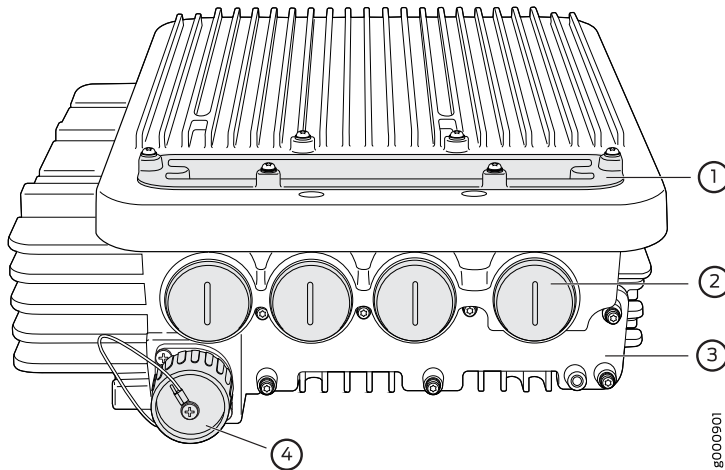
The compact are environmental-hardened, and can be deployed in a variety of outdoor locations, such as on outside street cabinets, walls, and utility poles. With the router orientation as shown in [Figure 1 on page 4](#), the chassis of the ACX500 outdoor router measures 12.3 in. (31.24 cm) deep, 4.3 in. (10.92 cm) high, and 10 in. (25.4 cm) wide. The ACX500 outdoor router is available in both AC and DC models.

The ACX500 outdoor routers contain three Gigabit Ethernet SFP ports and three RJ-45 ports—labeled **GE**.

The ACX500 outdoor routers meets the International Protection profile (IP-65) classification for dust proof and water splash proof environments.

[Figure 1 on page 4](#) shows the front view of the ACX500 outdoor router.

Figure 1: Front View of the ACX500 Outdoor Router



1—Interface port chamber with weather seal cover

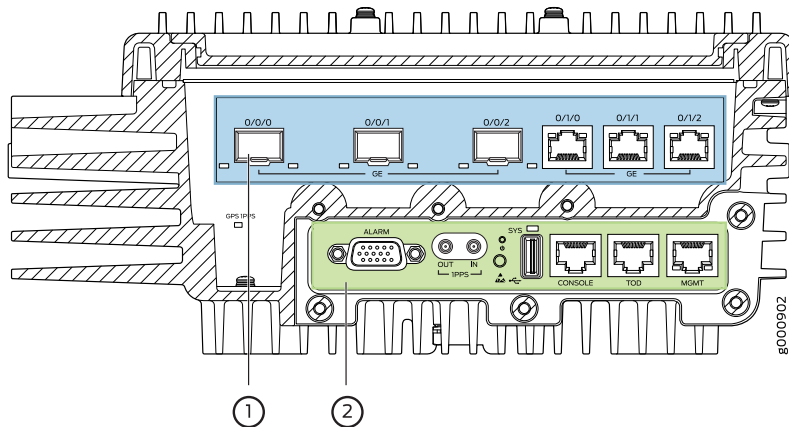
3—Management port chamber with weather seal cover

2—Cable connector ports with weather seal cap

4—Power port with weather seal cap

[Figure 2 on page 4](#) shows the front panel of the ACX500 outdoor router. For detailed information about the interface ports and the management ports, see [Figure 6 on page 13](#) and [Figure 7 on page 13](#).

Figure 2: Front Panel of the ACX500 Outdoor Router



1—Interface ports

2—Management ports

Step 1: Prepare the Site for Installation

Prepare your site for installation by observing the following guidelines:

- When choosing a location, allow at least 6 in. (15.2 cm) of clearance between the sides of the chassis (with the router in installed position) and adjacent equipment or walls.
- Ensure that the wall or the pole onto which the router is installed is stable and securely supported.
- Ensure that the wall or pole is able to carry the load of the fully configured router.
- If you are mounting the router in wallboard with a gypsum plaster core or in wallboard not backed by wall studs, use hollow wall anchors capable of supporting the combined weight of two fully loaded chassis. Insert the screws into wall studs wherever possible to provide added support for the chassis.
- The width of the pole must be within the range of 2 in. through 16 in. for the pole-mounting brackets to fit properly.
- To mount the router, use the pole-mount kit or the wall-mount kit from Juniper Networks.
- The pole-mount kit and the wall-mount kit are not part of the standard package and must be ordered separately.
- One person must be available to lift the router while another secures the router.
- For service personnel to remove and install hardware components, allow at least 24 in. (60.9 cm) on top of the router.
- When installing the ACX500 outdoor routers on a pole or on a wall, the chassis must be installed in a vertical orientation with the cables pointing downwards and the eye bolt for hoisting the router pointing upwards. See [Figure 3 on page 6](#).

Figure 3: ACX500 Outdoor Chassis Dimensions and Clearance Requirements—Front View

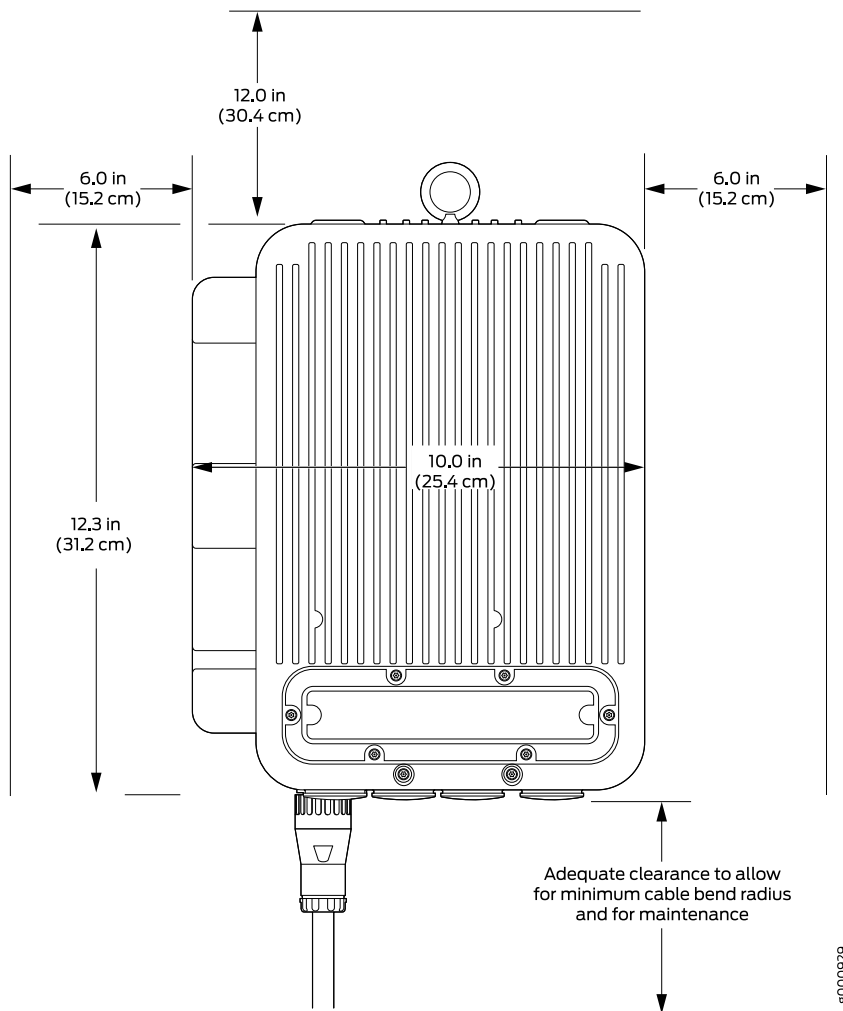
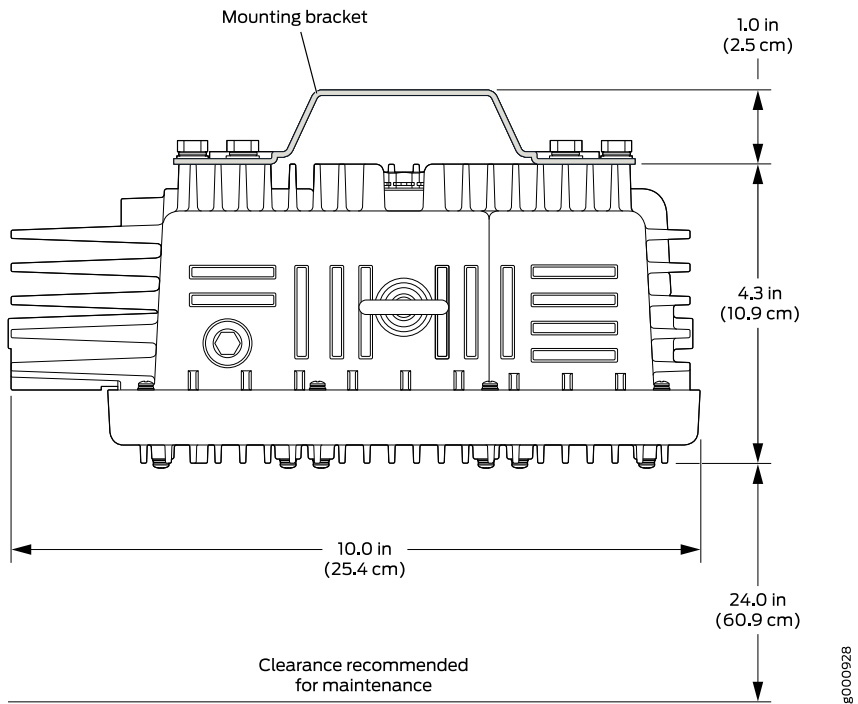


Figure 4: ACX500 Outdoor Chassis Dimensions and Clearance Requirements—Top View



Step 2: Install the Router

Based on your requirement, you can mount the ACX500 outdoor router either on a wall or on a pole:

- On a pole—You can mount the ACX500 outdoor router on a suitable telephone, electrical or an utility pole with the help of the pole-mounting kit. The pole-mounting kit is sold separately. It is not shipped with the ACX500 outdoor router.
- On a wall—You can mount the ACX500 outdoor router on a suitable wall with the help of a wall-mounting kit. The wall-mounting kit is sold separately. It is not shipped with the ACX500 outdoor router.

For complete and detailed installation instructions, see the *ACX500 Universal Metro Router Hardware Guide* at <https://www.juniper.net/documentation/>.

NOTE: When installing the ACX500 outdoor router, keep the following guidelines in mind:

- The router must not be installed until all unused chassis cable openings are closed with the weather sealed caps (cap with washer) to ensure protection of interior of the router from environment. Leaving chassis cable ports not covered will damage the router.
- Use certified outdoor enclosure (PDU or AC /DC connection box) for covering the AC and DC input wire terminals at the power source end of the power cable. Ensure that L, N, and earth wire terminals of the AC power cable is connected properly to the respective L, N and earth of the AC power source. Similarly, ensure that the positive (+) and the negative (-) DC source power cables are correctly connected to the respective positive (+) and the negative (-) DC power source. A faulty connection may damage the router and could cause shock hazard and severe injury.
- When installing the router outdoors, the branch circuit that powers the unit must have ground fault protection as per the local and national electrical codes (for example NEC code). Ensure that over current protection fuse in the branch circuit is not greater than 20 A.
- If you are installing the GPS antenna, ensure that antenna is located at location away from overhead power lines.

Step 3: Ground the ACX500 Outdoor Router

IN THIS SECTION

- [Tools Required to Ground the Router | 9](#)
- [Connect the Grounding Cable | 10](#)

You must ground both the AC-powered and the DC-powered routers before connecting them to power. Failing to ground the router properly may result in shock hazard.

Tools Required to Ground the Router

To ground the router, you need the following tools:

- Phillips (+) screwdriver, number 2
- Electrostatic discharge (ESD) grounding wrist strap
- Two 0.5-in. long stainless steel SS 316 SAE 10-32 screws, and flat washers (not provided)
- Grounding lug, Panduit LCCF6-14A-L or equivalent (not provided)
- Grounding cable, minimum 6 AWG (13.3 mm^2) 90° C wire (not provided)
- Corrosion-preventing compound such as NO-OX-ID (not provided)



WARNING: The ACX500 outdoor router has a provision for connecting a two-hole grounding lug (Panduit LCCF6-14A-L). Ensure that the router is permanently grounded with 6-AWG copper wire with this specified two-hole lug.

Connect the Grounding Cable

You ground the router by connecting a grounding cable to earth ground and then attaching it to the chassis grounding points. To ground the ACX500 outdoor router:

1. Verify that a licensed electrician has terminated and attached the two hole grounding lug with the 6 AWG ground wire.
2. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist, and connect 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 you make grounding connections.
4. Connect the grounding cable to a proper earth ground.
5. Detach the ESD grounding strap from the site ESD grounding point.
6. Wrap and fasten one end of the ESD grounding strap around your bare wrist, and connect the other end of the strap to the ESD point on the chassis.
7. Place the grounding lug over the grounding points on the back of the chassis (see [Figure 5 on page 11](#)).

NOTE: The grounding point location on the ACX500 routers is the same for both the AC and the DC models.

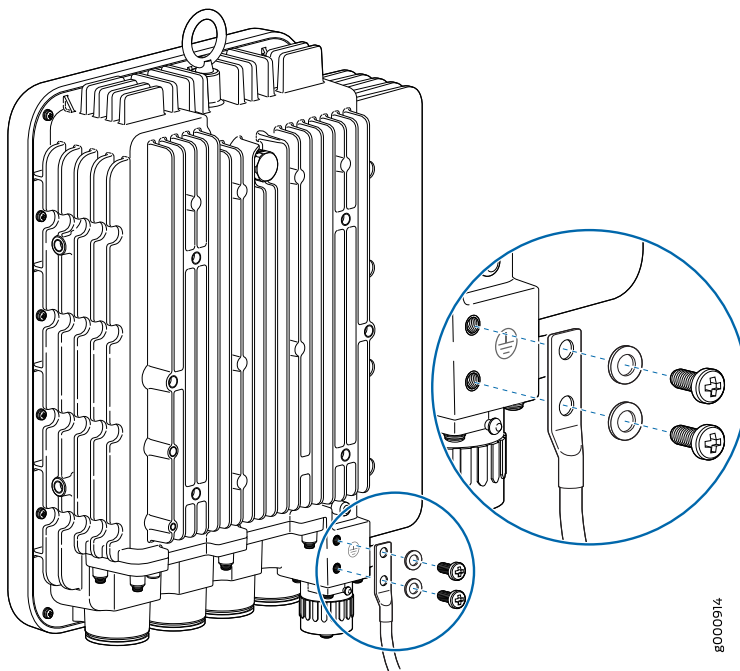
8. To protect the router from rust and corrosion, perform the following steps:
 - a. Clean both the mating surfaces (the grounding lug and the ACX500 outdoor router's grounding terminals).
 - b. Apply a thin film (1 mm or 0.04 in.) of corrosion-preventing compound, such as NO-OX-ID, on the router's grounding terminals.
 - c. Press the lug onto the conductive surface unit to force out the excess corrosive-preventing compound.
9. Secure the grounding lug with the washers and screws. The holes are sized for SAE 10-32 screws. Apply 4 lb-in. (0.49 N-m) of torque to each screw. Do not overtighten the screw. (Use a number 2 Phillips screwdriver.)

**CAUTION:**

- Ensure that each grounding lug sits flush against the surface of the grounding points as you are tightening the screws. Ensure that each screw is properly threaded into the grounding points. Applying installation torque to the screw when improperly threaded can damage the terminal.
- The maximum torque rating of the grounding screws on the router is 4 lb-in. (0.49 N-m). The grounding screws can be damaged if excessive torque is applied. Use only a torque-controlled driver to tighten screws. Use an appropriately sized driver, with a maximum torque capacity of 5 lb-in. or less. Ensure that the driver is undamaged and properly calibrated and that you have been trained in its use. You might want to use a driver that is designed to prevent overtorque when the preset torque level is achieved.

10. Verify that the grounding cabling is correct, 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.

Figure 5: Grounding Points on the ACX500 Outdoor Routers



Step 4: Connect External Devices and Cables

IN THIS SECTION

- Tools Required to Connect External Devices and Cables | 14
- Connect the ACX500 Router to a Network for Out-of-Band Management | 14
- Connect the ACX500 Router to a Management Console Device | 14
- Connect Network Interface Cables to the ACX500 Router | 15

Figure 6 on page 13 shows the ACX500 outdoor router's interface ports. The interface ports in the ACX500 outdoor router are located in a small chamber on the front top of the router, and are secured by a metallic interface port cover. To access the interface ports, you need to remove the metallic cover.

NOTE:

- Ensure that the interface port cover and management port cover are properly secured back to the router. Not fixing these to the unit would cause damage to the unit from environment elements like water, moisture, and dust.
- Use IP-65 compliant RJ-45 and SFP cables for the ACX500 outdoor routers.

Figure 6: ACX500 Outdoor Router—Interface Ports

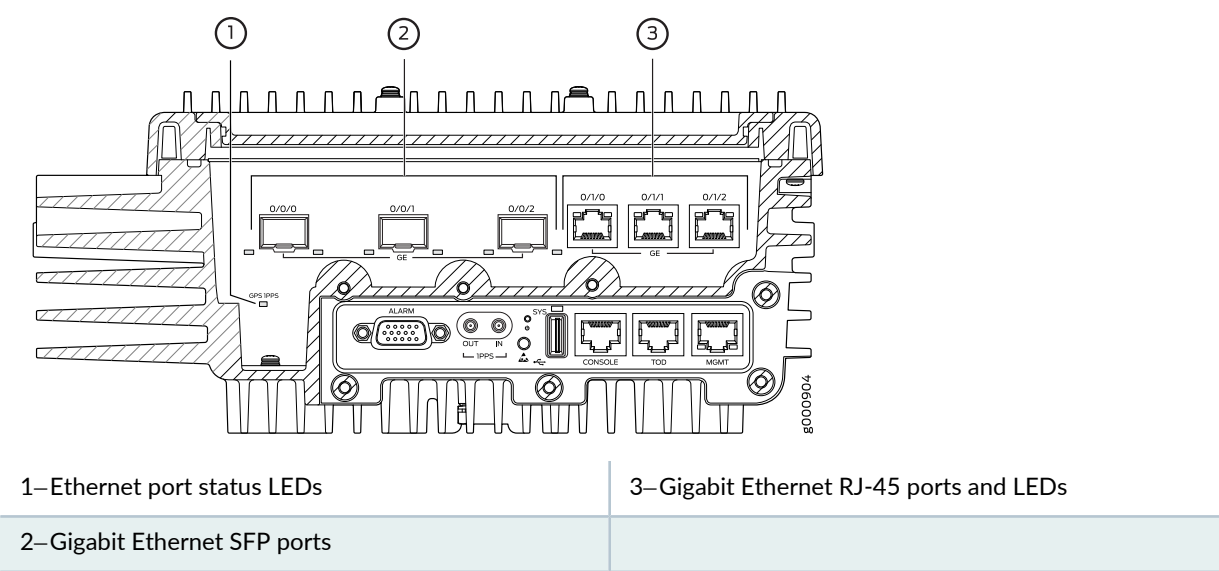
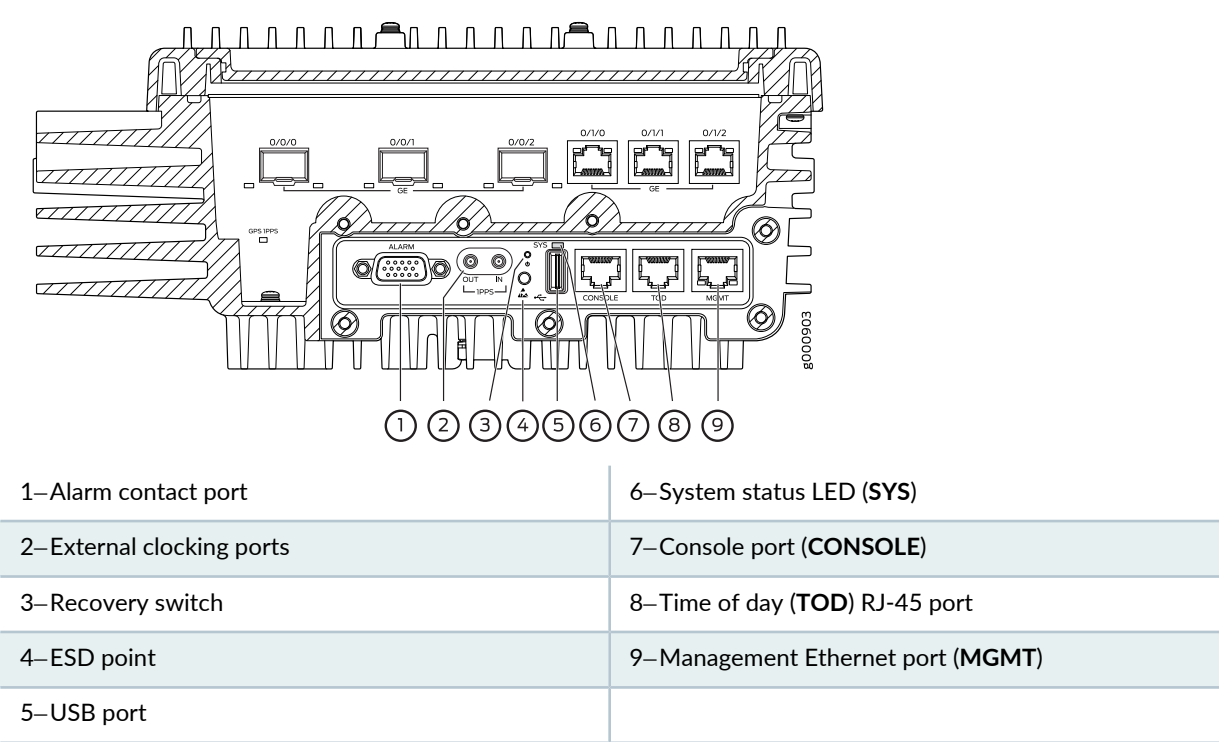


Figure 7 on page 13 shows the ACX500 outdoor router’s management ports. The management ports in the ACX500 outdoor router are located on the front of the router, and are also secured by a metallic management port cover. To access the management ports, you need to remove the metallic cover.

Figure 7: ACX500 Outdoor Router—Management Ports



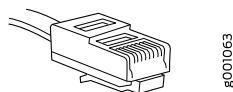
The following sections describe how to connect external devices and cables to the router:

Tools Required to Connect External Devices and Cables

To connect external devices and cables to the router, you need the following tools:

- Ethernet cable with an RJ-45 connector attached (provided)
- RJ-45 to DB-9 serial port adapter (provided)
- Management host, such as a PC, with an Ethernet port (not provided)

Figure 8: Ethernet Cable Connector



Connect the ACX500 Router to a Network for Out-of-Band Management

1. Turn off power to the management device.
2. Plug one end of the Ethernet cable ([Figure 8 on page 14](#) shows the connector) into the **MGMT** port on the front of the chassis. [Figure 7 on page 13](#) shows the port.
3. Plug the other end of the cable into the network device.

Connect the ACX500 Router to a Management Console Device

1. Turn off power to the console device.
2. Plug the RJ-45 end of the serial cable ([Figure 8 on page 14](#) shows the connector) into the **CONSOLE** port on the front panel. [Figure 7 on page 13](#) shows the port.
3. Plug the female DB-9 end into the device's serial port.

Connect Network Interface Cables to the ACX500 Router

1. Have ready a length of the type of cable used by the network ports. For cable specifications, see the *ACX500 Universal Metro Router Hardware Guide*.

NOTE: Shielded cables are required for outside deployment.

2. Remove the rubber safety plug from the cable connector port.



WARNING: Do not look directly into a fiber-optic transceiver or into the ends of fiber-optic cables. Fiber-optic transceivers and fiber-optic cable connected to a transceiver emit laser light that can damage your eyes.



CAUTION: Do not leave a fiber-optic transceiver uncovered except when inserting or removing cable. The safety cap keeps the port clean and prevents accidental exposure to laser light.

3. Insert the cable connector into the interface ports on the front panel. [Figure 6 on page 13](#) shows the port.
4. Arrange the cable to prevent it from dislodging or developing stress points. Secure the cable so that it does not support its own weight as it hangs to the floor. Place excess cable out of the way in a neatly coiled loop.



CAUTION: Avoid bending fiber-optic cable beyond its minimum bend radius. An arc smaller than a few inches in diameter can damage the cable and cause problems that are difficult to diagnose.



CAUTION: Do not let fiber-optic cable hang free from the connector. Do not allow fastened loops of cable to dangle, which stresses the cable at the fastening point.

Step 5: Connect Power to the ACX Series Router

IN THIS SECTION

- [Connect Power to an AC-Powered ACX500 Outdoor Router | 16](#)
- [Connect Power to a DC-Powered ACX500 Outdoor Router | 18](#)

Depending on your configuration, your router uses either AC or DC power supplies. Perform the appropriate procedures for each power supply in your router.

Power cords for the ACX500 outdoor routers does not come with the router. They must be purchased separately. These power cords are specifically designed to be used only with the specified ACX500 outdoor routers.

NOTE:

- Before making the AC or the DC power connection to the router, ensure that you disconnect power at the circuit breaker of the PDU, or the AC or the DC power connection box. Only when the connection is properly completed, switch on the breaker.
- To meet IEC/EN 60950-22 requirements, ensure additional protection is provided external to this equipment to reduce transient surge from OVC IV to OVC II at the input of this unit. The over voltage and fault current protection component used to achieve this protection must comply with IEC 61643.
- To meet CSA/CAN 22.2, UL 60950-22 requirements, use an alternative component to provide additional protection. These component must comply to ANSI/IEEE C62.11, CSA certification notice no.516, CSA 22.2 No.1, or UL 1449.

Connect Power to an AC-Powered ACX500 Outdoor Router

To connect power to the AC-powered router, you need the following tools:

- AC power cords for the ACX500 outdoor router (not provided, must be purchased separately)
- ESD grounding wrist strap

NOTE: Use the power cord that is purchased from Juniper Networks, and which is compatible with the ACX500 outdoor router. Using a power cord other than that is provided by Juniper Networks with the router can damage the power terminal.



WARNING: You must ground the router before connecting the power cables.

NOTE: For disconnecting power to the router, first remove or switch-off the power to the power cable by opening the circuit breaker or suitable service disconnect at the AC disconnect box or PDU. Then rotate the power cable connector ring to disconnect this from the router connector. This will ensure that the power cable is safe to handle.

1. Locate the power cord that is provided with the router.
2. Wrap and fasten one end of the ESD grounding strap around your bare wrist, and connect the other end of the strap to the ESD point on the chassis.
3. Remove the screw cover cap protecting the power terminal on the faceplate. [Figure 1 on page 4](#) shows the location of the power terminal.
4. Insert the appliance coupler terminal end of the power cord into the appliance inlet on the power supply. Ensure that the power cord terminal is connected properly.
5. Insert the AC power cord plug to the power terminal on the router. Ensure that the power plug sits tight.

NOTE: An AC-powered router need to connect with the outdoor AC power cord that is supplied with the router. Each power supply must be connected to a dedicated AC power feed and a dedicated customer-site circuit breaker. We recommend that you use a dedicated customer-site circuit breaker rated of 20 A (100 VAC) or 16 A (240 VAC), or as required by local electrical code.

6. Tighten the power cord plug screw.

The power cord plug screw prevents water and dust from entering the terminal.

7. Verify that the power cabling is correct, that the power cables are not touching or blocking access to router components, and that they do not drape where people could trip on them.
8. Observe the system LED on the router. If an AC power supply is functioning normally, the system LED lights green steadily.

If the system LED is not lit, the power supply is not functioning normally. Repeat the cabling procedure.

Connect Power to a DC-Powered ACX500 Outdoor Router

To connect power to the DC-powered router, you need the following tools:

- DC power cords for the ACX500 outdoor router (not provided, must be purchased separately)
- ESD grounding wrist strap

NOTE: Use the power cord that is purchased from Juniper Networks, and which is compatible with the ACX500 outdoor router. Using a power cord other than that is provided by Juniper Networks with the router can damage the power terminal. The nominal rating of the DC power source are +24 VDC, -48 VDC, and -60 VDC.



WARNING: You must ground the router before connecting the power cables.

NOTE: Ensure that the DC power source to the equipment meet requirement of SELV power source as per IEC /EN/UL 60950-1. This SELV power source must be electrically isolated from AC power source.

1. Locate the power cord that is provided with the router.
2. Wrap and fasten one end of the ESD grounding strap around your bare wrist, and connect the other end of the strap to the ESD point on the chassis.
3. Remove the screw cover cap protecting the power terminal on the faceplate. [Figure 1 on page 4](#) shows the location of the power terminal.

4. Insert the appliance coupler terminal end of the power cord into the appliance inlet on the power supply. Ensure that the power cord terminal is connected properly.
5. Insert the DC power cord plug to the power terminal on the router. Ensure that the power plug sits tight.

NOTE: A DC-powered router need to connect with the outdoor DC power cord that is supplied with the router. To supply sufficient power, the DC input wiring on the facility DC source is capable of supplying at least 5 A @-48 VDC per input for each power supply. We recommend that the 48-VDC facility DC source should be equipped with a circuit breaker rated at 5 A @ -48 VDC minimum, or as required by local code.

6. Tighten the power cord plug screw.

The power cord plug screw prevents water and dust from entering the terminal.

7. Verify that the power cabling is correct, that the power cables are not touching or blocking access to router components, and that they do not drape where people could trip on them.
8. Observe the system LED on the router. If an DC power supply is functioning normally, the system LED lights green steadily.

If the system LED is not lit, the power supply is not functioning normally. Repeat the cabling procedure.

Step 6: Perform Initial Software Configuration

IN THIS SECTION

- [Enter Configuration Mode | 20](#)
- [Configure User Accounts and Passwords | 21](#)
- [Configure System Attributes | 21](#)
- [Commit the Configuration | 23](#)

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

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

```
Amnesiac ttyd0  
login: root
```

3. Start the CLI.

```
root@% cli  
root>
```

4. Enter configuration mode.

```
root> configure  
Entering configuration mode.  
[edit]
```

```
root#
```

Configure User Accounts and Passwords

For information about using an encrypted password or an SSH public key string (DSA or RSA), see the [Junos OS System Basics Configuration Guide](#).

1. Add a password to the root administration user account. Enter a clear-text password.

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

2. Create a management console user account.

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

Configure System Attributes

For more information about configuring the backup routing and static routes, see the *Junos OS Administration Library for Routing Devices*.

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

```
[edit]
```

```
root@# set system host-name host-name
```

2. Configure the router's domain name.

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

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

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

5. Configure the IP address of a DNS server.

```
[edit]  
root@# 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 System Basics Configuration Guide](#).

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

Commit the Configuration

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

```
[edit]
root@# 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@# 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 *ACX500 Universal Metro Router Hardware Guide* at <https://www.juniper.net/documentation/>.



CAUTION: To comply with intrabuilding lightning and surge requirements, intrabuilding wiring must be shielded, and the shield for the wiring must be grounded at both ends.



WARNING: The intrabuilding ports of the router are suitable for connection to intrabuilding or unexposed wiring or cabling only. The intrabuilding ports of the router **MUST NOT** be metalically 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 metalically 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 should install or replace the router.
- Perform only the procedures described in this quick start or the *ACX500 Universal Metro Router Hardware Guide*. 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 *ACX500 Universal Metro Router Hardware Guide* to make sure that the site meets power, environmental, and clearance requirements for the router.
- To prevent injury, keep your back straight and lift with your legs, not your back.
- 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.
- 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.
- Power cable warning (Japan):



WARNING:

注意

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。

Translation from Japanese—The attached power cable is only for this product. Do not use the cable for another product.

g017253

- Some parts of the router may become hot. The following label on the router provides warning for the



- If you are installing the GPS antenna, ensure that the antenna is located at a location away from overhead power lines.

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.

Compliance Statements for EMC Requirements for ACX500 Routers

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Canada

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

European Community

This is a Class B product.

Japan

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスB情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。
取扱説明書に従って正しい取り扱いをして下さい。

The preceding statement translates as follows:

This is a Class B 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-B.

United States

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, might cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio or TV technician for help.

Junos OS Documentation and Release Notes

For a list of related Junos OS documentation, see <https://www.juniper.net/documentation/software/junos/>.

If the information in the latest release notes differs from the information in the documentation, follow the *Junos OS Release Notes*.

To obtain the most current version of all Juniper Networks® technical documentation, see the product documentation page on the Juniper Networks website at <https://www.juniper.net/documentation/>.

Requesting Technical Support

Technical product support is available through the Juniper Networks Technical Assistance Center (JTAC). If you are a customer with an active J-Care or Partner Support Service support contract, or are covered under warranty, and need postsales technical support, you can access our tools and resources online or open a case with JTAC.

- JTAC policies—For a complete understanding of our JTAC procedures and policies, review the *JTAC User Guide* located at <https://www.juniper.net/us/en/local/pdf/resource-guides/7100059-en.pdf>.
- Product warranties—For product warranty information, visit <https://www.juniper.net/support/warranty/>.
- JTAC Hours of Operation —The JTAC centers have resources available 24 hours a day, 7 days a week, 365 days a year.

Self-Help Online Tools and Resources

For quick and easy problem resolution, Juniper Networks has designed an online self-service portal called the Customer Support Center (CSC) that provides you with the following features:

- Find CSC offerings: <https://www.juniper.net/customers/support/>
- Search for known bugs: <https://prsearch.juniper.net/>
- Find product documentation: <https://www.juniper.net/documentation/>
- Find solutions and answer questions using our Knowledge Base: <https://kb.juniper.net/>
- Download the latest versions of software and review release notes:
<https://www.juniper.net/customers/csc/software/>

- Search technical bulletins for relevant hardware and software notifications:
<https://kb.juniper.net/InfoCenter/>
- Join and participate in the Juniper Networks Community Forum:
<https://www.juniper.net/company/communities/>
- Create a service request online: <https://myjuniper.juniper.net>

To verify service entitlement by product serial number, use our Serial Number Entitlement (SNE) Tool:
<https://entitlementsearch.juniper.net/entitlementsearch/>

Creating a Service Request with JTAC

You can create a service request with JTAC on the Web or by telephone.

- Visit <https://myjuniper.juniper.net>.
- Call 1-888-314-JTAC (1-888-314-5822 toll-free in the USA, Canada, and Mexico).

For international or direct-dial options in countries without toll-free numbers, see
<https://support.juniper.net/support/requesting-support/>.

Revision History

October 2015—530-066416. Initial release.

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