Juniper Networks | Engineering Simplicity

PTX10003-80C and PTX10003-160C Quick Start Guide

Published
2024-05-28

RELEASE

Table of Contents

PTX10003 Fixed Packet Transport Router Overview

IN THIS SECTION

The PTX10003 is a fixed-configuration core router featuring a compact, 3 U form factor that is easy to deploy in space-constrained Internet exchange locations, remote central offices, and embedded peering points throughout the network, including cloud-hosted services. With Juniper's industry-leading 400-Gbps QSFP56-DD optical technology, the PTX10003 addresses the massive bandwidth demands of fast-growing applications such as cloud, 5G mobility, software defined WAN (SD-WAN), and artificial intelligence (AI). The PTX10003 provides power-constrained environments with unprecedented power efficiency of 0.2 W/Gbps. Two models with differing capacities are available. The PTX10003-160C supports 16 Tbps throughput and the PTX10003-80C supports 8 Tbps throughput—each in a compact 3 U footprint.

For more information about the PTX10003 hardware, see the PTX10003-80C and PTX10003-160C Fixed Packet Transport Router Hardware Guide.

For information about features supported on PTX Series routers, see Feature Explorer.

Registering Products—Mandatory for Validating SLAs

Register all new Juniper Networks hardware products and changes to an existing installed product using the Juniper Networks website to activate your hardware replacement service-level agreements (SLAs).

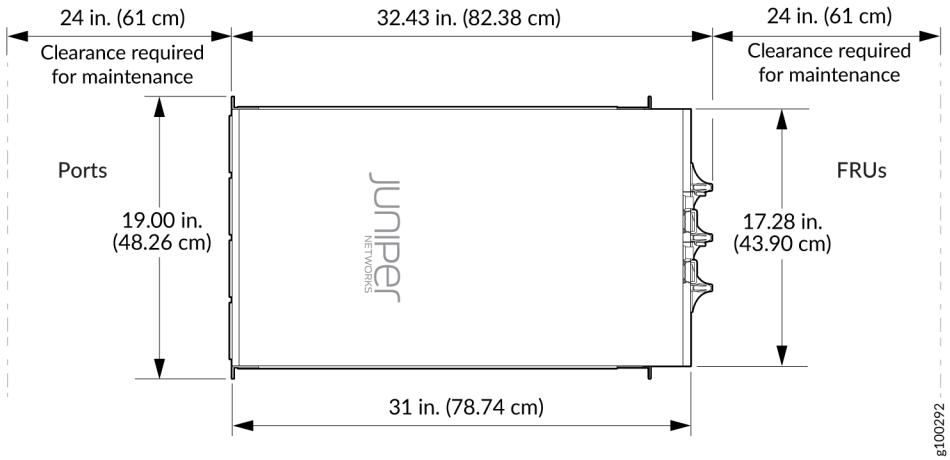
CAUTION: Register product serial numbers on the Juniper Networks website and update the installation base data if there is any addition or change to the installation base or if the installation base is moved. Juniper Networks will not be held accountable for not meeting the hardware replacement SLA for products that do not have registered serial numbers or accurate installation base data.

Register your product(s) at https://tools.juniper.net/svcreg/SRegSerialNum.jsp.
Update your installation base at https://www.juniper.net/customers/csc/management/updateinstallbase.jsp.

PTX10003 Clearance Requirements for Airflow and Hardware Maintenance

When planning the site for a PTX10003 installation, you must allow sufficient clearance around the installed chassis (see Figure 1 on page 2).

Figure 1: Clearance Requirements for Airflow and Hardware Maintenance for the PTX10003



Follow these guidelines:

- For the cooling system to function properly, the airflow around the chassis must be unrestricted. See *PTX10003 Cooling System Description and Airflow* for more information about the airflow through the chassis.
- If you are mounting a PTX10003 in a rack with other equipment, ensure that the exhaust from other equipment does not blow into the intake vents of the chassis.

- You must leave at least 24 in. (61 cm) both in front of and behind the PTX10003 for service personnel to remove and install hardware components.

Prepare for the Installation

To install the PTX10003, you'll need either a mechanical lift or two persons to lift it into place. An additional person is needed to secure the router to the rack.

You'll also need to have the following items available (none are provided):

- ESD wrist strap with cable
- Screwdriver appropriate for the rack-mounting screws
- Management host, such as a PC laptop, with a serial port
- Grounding cable kit with bracket, lug, and three nuts with integrated washers. We provide a grounding lug for 4 AWG (8.4 mm^2), #10-32 screws, and 0.75 hole spacing.
- Grounding cable—The grounding cable that you provide must be the same size or heavier than the input wire of each power supply. The minimum recommendation is 4 AWG (8.4 mm^2) stranded wire, 90° C wire, or as permitted by local code.
- Two #10-32 screws and washers.
- Screwdriver appropriate for the #10-32 screws.

Unpack the PTX10003

1. Move the shipping carton to a staging area as close to the installation site as possible, but where you have enough room to remove the system components.
2. Position the carton so that the arrows point upward.
3. Open the top flaps on the shipping carton.
4. Remove the accessory kit.
5. Pull out the packing material holding the PTX10003 in place.
6. Verify the following components are in the box:

- For the PTX10003-160C, the router chassis with five fan modules and four power supplies installed. For the PTX10003-80C, the router chassis with three fan modules and two power supplies installed.
- Two side-mounting blades with rails attached to each side of the chassis.
- For PTX10003-160C AC/HVDC installations, four power cords with plugs that are appropriate for your geographical location. For PTX10003-80C AC/HVDC installations, two power cords with plugs that are appropriate for your geographical location.

  NOTE: Power cords are not provided for DC installations.

- Accessory kit containing:
  - DC power cable lug (for DC installations)
  - Four M4 x 8 mm flat head screws
  - Four M5 x 10 mm pan head screws
  - End User License Agreement
  - Cable management assembly
  - Road Map card

7. Save the shipping carton and packing materials in case you need to move or ship the chassis later.

Mount the PTX10003 in a Rack

The mounting rails and mounting blades are preattached to the PTX10003. To mount the chassis in a 19-in (48.26 cm) four-post rack, you simply remove one screw to release the sliding rail and then attach the mounting blades to the rack. The sliding mounting rails enable the PTX10003 to be mounted flush with the rack and still be adjustable for racks with different depths. The minimum distance the front and rear rack rails can be spaced apart is 26 in. (66.04 cm) front to back. The maximum distance the front and rear rack rails can be spaced apart is 36 in. (91.4 cm) front to back.

WARNING: PTX10003 routers must be supported at all four corners.

CAUTION: PTX10003 routers require at least three people for installation, two people to lift the device into place and another person to attach the device to the rack. You can remove the power supplies and fan modules to minimize the weight before attempting to install the PTX10003. See Removing the AC/HVDC Power Supply from the PTX10003 and *Removing the PTX10003 Fan Modules*. For overhead installation—for example, if you are installing the PTX10003 above 60 in. (152.4 cm) from the floor—we recommend that you use a mechanical lift.

CAUTION: If you are mounting multiple units in the rack, mount the heaviest unit at the bottom and mount the others from bottom to top in order of decreasing weight. The PTX10003-160C weighs approximately 110 lb (50 kg) fully loaded and the PTX10003-80C weighs approximately 88 lb (40 kg) fully loaded.

1. Wrap and fasten one end of the ESD wrist strap around your bare wrist, and connect the other end of the strap to the ESD point on the device.
2. Decide whether to place the field-replaceable unit end or the port end of the PTX10003 at the front of the rack. Position the PTX10003 in such a manner that the **AIR OUT** label on the handle is next to the hot aisle.
3. Using a Phillips screwdriver, remove the screw on each side of the chassis that holds the mounting rails to the chassis. (see Figure 2 on page 5 and Figure 3 on page 6).
4. Slide the mounting rail out of the mounting blades.

Figure 2: Removing the Slide Rail Screw (PTX10003-160C)

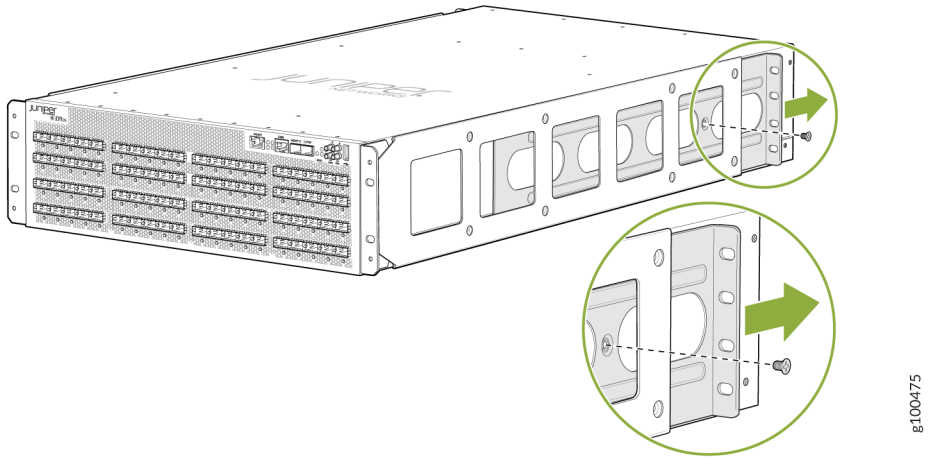
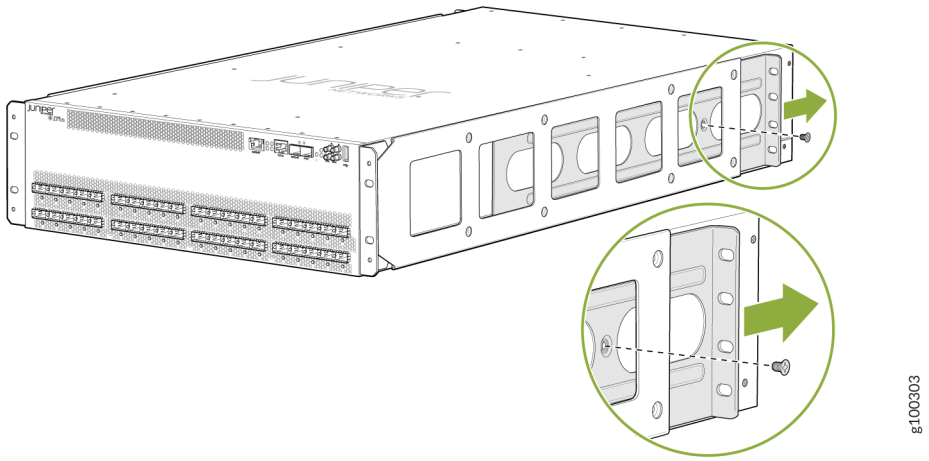


Figure 3: Removing the Slide Rail Screw (PTX10003-80C)



5. Perform one of the following steps:

   - Use a mechanical lift to position the PTX10003 in the rack so that the front brackets on the front mounting rails are aligned with the rack holes.
   - Have two people grasp both sides of the PTX10003, lift it, and position it in the rack so that the front brackets on the front-mounting rails are aligned with the rack holes.

6. Continue to support the PTX10003 while sliding the rear-mounting blades into the channel of the side-mounting rails. See Figure 4 on page 6 and Figure 5 on page 7.

Figure 4: Securing the Side Rails (PTX10003-160C)

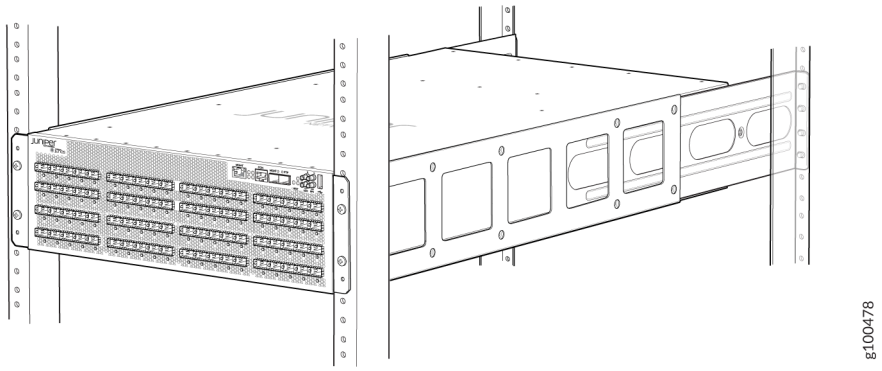
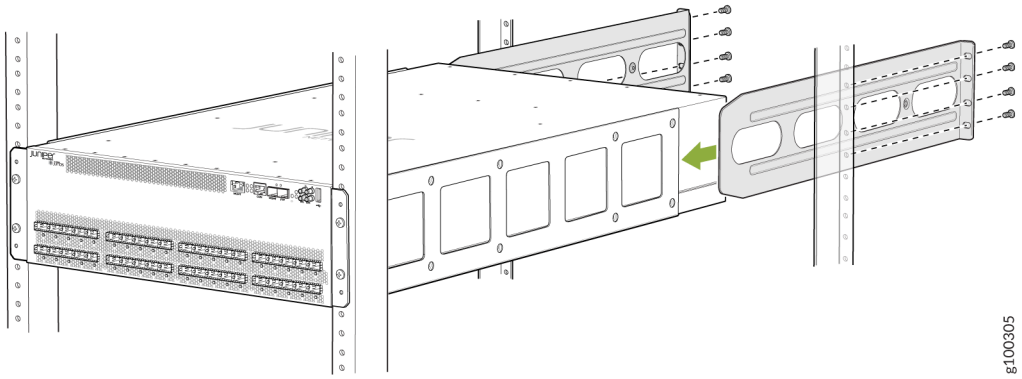


Figure 5: Securing the Side Rails (PTX10003-80C)



7. Ensure that the PTX10003 chassis is level by verifying that all the screws on the front of the rack are aligned with the screws at the back of the rack. See Figure 6 on page 7 and Figure 7 on page 8.

Figure 6: PTX10003 Secured in Rack (PTX10003-160C)

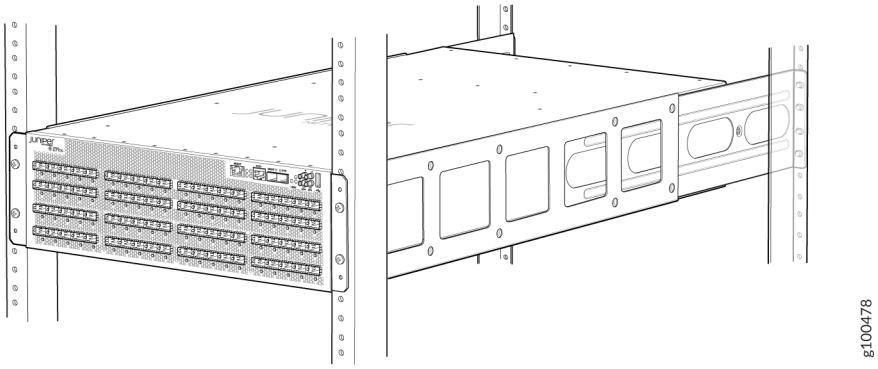
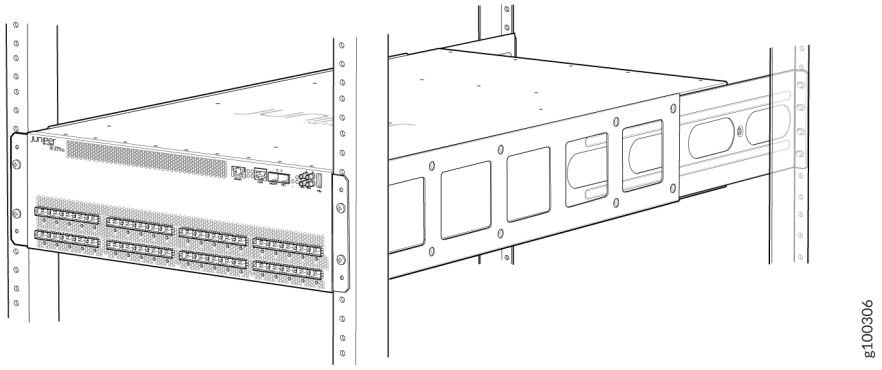


Figure 7: PTX10003 Secured in Rack (PTX10003-80C)



8. Connect the PTX10003 to ground. See the *Connect the PTX10003 to Ground* procedure that follows this one.

9. If you removed the power supplies and fan modules from the chassis before installation, reinstall them. Refer to Install the AC/HVDC Power Supply in the PTX10003 and *Installing the PTX10003 Fan Modules*.

Connect the PTX10003 to Ground

To meet safety and electromagnetic interference (EMI) requirements and to ensure proper operation, you must connect the chassis to earth ground before you connect it to power. For installations that require a separate grounding conductor to the chassis, use the protective earthing terminal on the PTX10003 chassis to connect to the earth ground.

CAUTION: Before you connect power to the PTX10003, a licensed electrician must attach a cable lug to the grounding cables and power cables that you supply. A cable with an incorrectly attached lug can damage the PTX10003 (for example, by causing a short circuit).

NOTE: An AC-powered PTX10003 gains additional grounding when you plug the power supply into a grounded AC power outlet by using an AC power cord appropriate for your geographical location.

To connect a grounding cable to the PTX10003:

1. Attach a grounding cable to earth ground (such as the rack in which the PTX10003 is mounted) and then attach it to the chassis grounding point. Figure 8 on page 9 and Figure 9 on page 9 show the location of the chassis grounding point.

Figure 8: Chassis Grounding Point (PTX10003-160C)

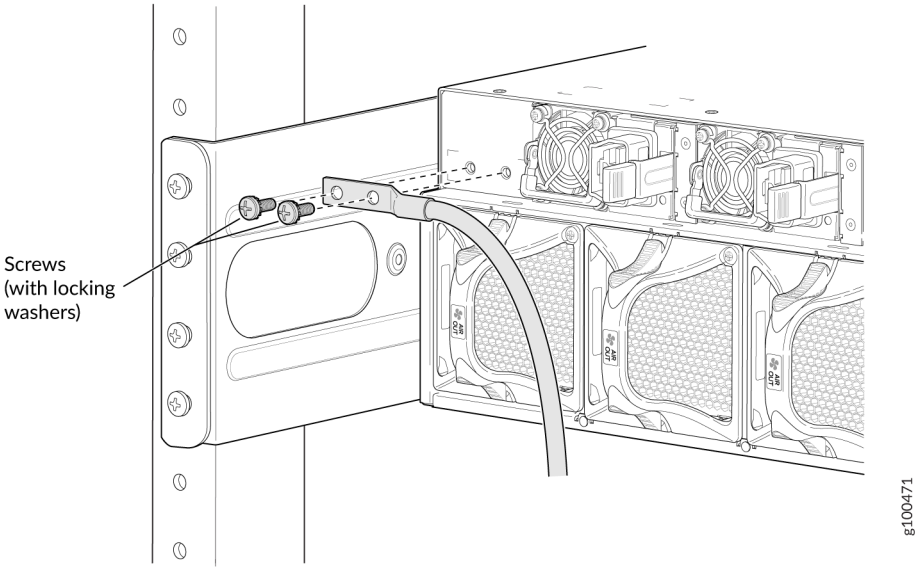
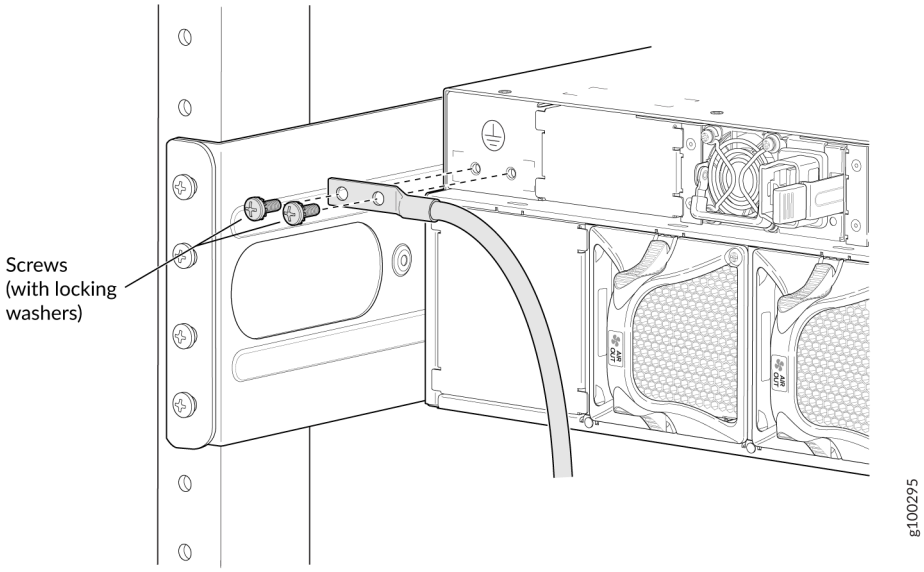


Figure 9: Chassis Grounding Point (PTX10003-80C)



2. Secure the grounding lug to the protective earthing terminal with the washers and screws.
3. Dress the grounding cable and ensure that it does not touch or block access to other device components and that it does not drape where people could trip over it.

Connect AC/HVDC Power to the PTX10003

This procedure is for AC/HVDC installations only. For DC installations, refer to the PTX10003-80C and PTX10003-160C Fixed Packet Transport Router Hardware Guide.

CAUTION: Do not mix AC/HVDC and DC power supplies in the same chassis.

The PTX10003 power supplies automatically detect whether there is AC or HVDC input voltage and manage the power accordingly. Each 3000-W AC/HVDC power supply has a single AC or HVDC input and provides 12 V power to the system. The power supply in a PTX10003 is a hot-removable and hot-insertable field-replaceable unit (FRU). After removing the power cord from an individual power supply, you can remove and replace it without powering off the router or disrupting router functions.

Before you begin to connect AC/HVDC power to the PTX10003:

- Ensure that you have a power cord appropriate for your geographical location available to connect AC power to the router. See *PTX10003 Power Cord Specifications*.
- Read *General Electrical Safety Guidelines and Warnings* and *Action to Take After an Electrical Accident*.
- Ensure that you have taken the necessary precautions to prevent electrostatic discharge (ESD) damage (see *Prevention of Electrostatic Discharge Damage*).
- Ensure that you have connected the PTX10003 chassis to earth ground.
- Ensure that you have an ESD grounding strap.
- If not already installed, install the power supplies in the router. See Installing the AC/HVDC Power Supplies in the PTX10003.

NOTE: Each power supply must be connected to a dedicated power source outlet.

To connect AC/HVDC power to a PTX10003:

1. Wrap and fasten one end of the ESD wrist strap around your bare wrist, and connect the other end of the strap to the ESD point on the device.
2. Ensure that the power supplies are fully inserted in the chassis and the latches are secure.
3. Locate the power cords shipped with the PTX10003; the cords have plugs appropriate for your geographical location. See *PTX10003 Power System*.
4. Insert the coupler end of the power cord into the AC/HVDC power cord inlet on the AC/HVDC power supply faceplate (see Figure 10 on page 11 and Figure 11 on page 12).

> **NOTE**: The coupler end of the power cord model is APP-400.

Figure 10: Connecting the AC/HVDC Power Cord (PTX10003-160C)

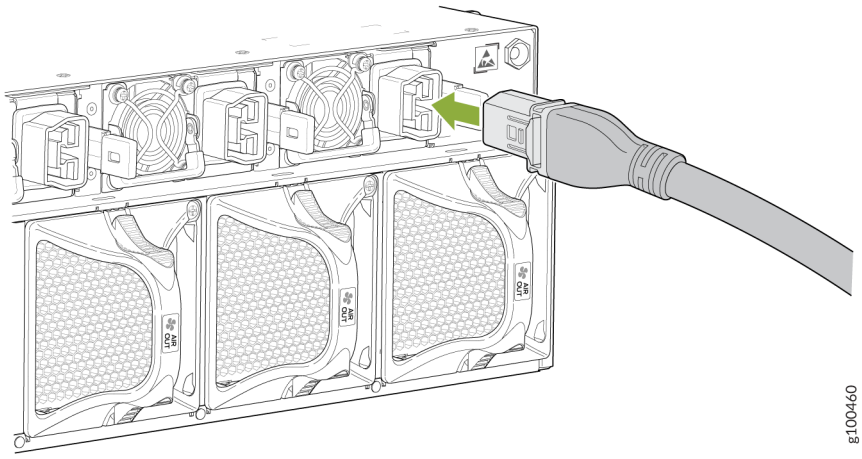
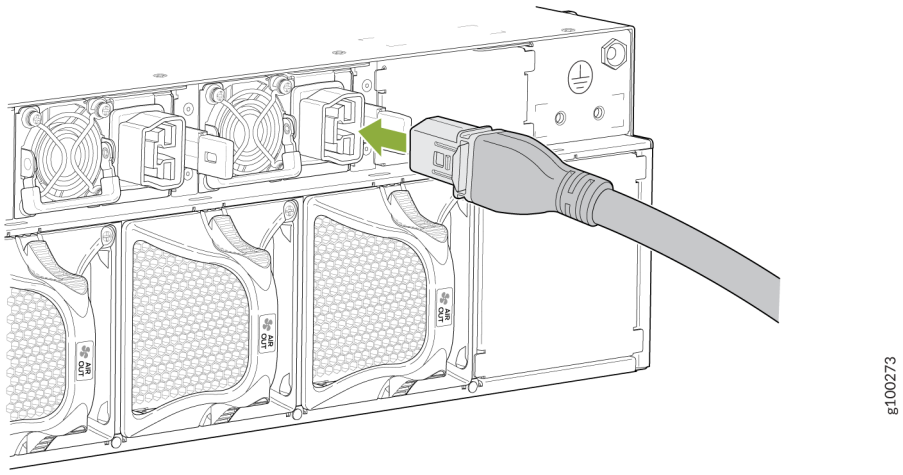


Figure 11: Connecting an AC/HVDC Power Cord (PTX10003-80C)



5. If the AC/HVDC power source outlet has a power switch, set it to the off (**O**) position.

   NOTE: The PTX10003 powers on as soon as power is provided to the power supply. There is no power switch on the router.

6. Insert the power cord plug into an AC/HVDC power source outlet.

7. If the AC/HVDC power source outlet has a power switch, set it to the on (**|**) position.

8. Verify that the status LEDs on each power supply are lit green.

   If the status LED is lit amber, remove power from the power supply, and replace the power supply (see *Replacing an AC/HVDC Power Supply in the PTX10003*). Do not remove the power supply until you have a replacement power supply ready.

Perform the Initial Configuration

You'll need to perform the initial configuration of the PTX10003 through the console port using the CLI or through Zero Touch Provisioning (ZTP). To provision the PTX10003 using ZTP, you'll need access to a Dynamic Host Control Protocol (DHCP) server and a File Transfer Protocol (anonymous FTP), Hypertext Transfer Protocol (HTTP), or Trivial File Transfer Protocol (TFTP) server on which the software image and configuration files are stored.

Before you begin connecting and configuring a PTX10003, set the following parameter values on the management console or console server:

- Baud Rate—9600
- Flow Control—None
- Data—8
- Parity—None
- Stop Bits—1
- DCD State—Disregard

To connect and configure the PTX10003 using the CLI:

1. Connect the console port to a laptop or PC by using a RJ45 cable and RJ45 to DB9 adapter (not provided). The console port (labeled **CON**) is located on the management panel of the PTX10003 (see *Connecting the PTX10003-80C to a Management Console*).

   NOTE: We no longer include the RJ-45 console cable with the DB-9 adapter as part of the device package. If the console cable and adapter are not included in your device package, or if you need a different type of adapter, you can order the following separately:

   - RJ-45 to DB-9 adapter (JNP-CBL-RJ45-DB9)
   - RJ-45 to USB-A adapter (JNP-CBL-RJ45-USBA)
   - RJ-45 to USB-C adapter (JNP-CBL-RJ45-USBC)

   If you want to use RJ-45 to USB-A or RJ-45 to USB-C adapter you must have X64 (64-Bit) Virtual COM port (VCP) driver installed on your PC. See, https://ftdichip.com/drivers/vcp-drivers/ to download the driver.

2. Log in as **root**. A password is not required. If the software boots before you are connected to the console port, you might need to press the Enter key for the prompt to appear.

   ```
   login: root
   ```

3. Start the CLI.

   ```
   root@% cli
   ```

4. Enter configuration mode.

```
root> configure
```

5. Add a password to the root administration user account.

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

6. (Optional) Configure the name of the PTX10003. If the name includes spaces, enclose the name in quotation marks (“ ”).

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

7. Configure the default gateway.

```
[edit]
root@# set routing-options static route default next-hop address
```

8. Configure the IP address and prefix length for the management interface.

```
[edit]
root@# set interfaces re0:mgmt-0 unit 0 family inet address address/prefix-length
```

NOTE: The RJ45 management port is labeled **mgmt-0** and the SFP management port is labeled **mgmt-1**.

9. (Optional) Configure the static routes to remote prefixes with access to the management port.

```
[edit]
root@# set routing-instances mgmt_junos routing-options static route remote-prefix next-hop
destination-ip retain no-readvertise
```

10. Enable the Telnet service.

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

> **NOTE**: When Telnet is enabled, you cannot log in to a PTX10003 through Telnet by using root credentials. Root login is allowed only for SSH access.

11. Commit the configuration to activate it on the PTX10003.

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

Safety Warnings Summary

This is a summary of safety warnings. For a complete list of warnings, including translations, see the PTX10003-80C and PTX10003-160C Fixed Packet Transport Router Hardware Guide.

The following guidelines help ensure your safety and protect the device from damage. The list of guidelines might not address all potentially hazardous situations in your working environment, so be alert and exercise good judgment at all times.

- Perform only the procedures explicitly described in the hardware documentation for this device. Make sure that only authorized service personnel perform other system services.
- Keep the area around the device clear and free from dust before, during, and after installation.
- Keep tools away from areas where people could trip over them while walking.
- Do not wear loose clothing or jewelry, such as rings, bracelets, or chains, which could become caught in the device.
- Wear safety glasses if you are working under any conditions that could be hazardous to your eyes.
- Do not perform any actions that create a potential hazard to people or make the equipment unsafe.
- Never attempt to lift an object that is too heavy for one person to handle.
- Never install or manipulate wiring during electrical storms.

- Never install electrical jacks in wet locations unless the jacks are specifically designed for wet environments.
- Operate the device only when it is properly grounded.
- Ensure that the separate protective earthing terminal provided on this device is permanently connected to earth.
- Replace fuses only with fuses of the same type and rating.
- Do not open or remove chassis covers or sheet-metal parts unless instructions are provided in the hardware documentation for this device. Such an action could cause severe electrical shock.
- Do not push or force any objects through any opening in the chassis frame. Such an action could result in electrical shock or fire.
- Avoid spilling liquid onto the chassis or onto any device component. Such an action could cause electrical shock or damage the device.
- Avoid touching uninsulated electrical wires or terminals that have not been disconnected from their power source. Such an action could cause electrical shock.
- Some parts of the chassis, including AC and DC power supply surfaces, power supply unit handles, SFB card handles, and fan tray handles might become hot. The following label provides the warning of the hot surfaces on the chassis:

- Always ensure that all modules, power supplies, and cover panels are fully inserted and that the installation screws are fully tightened.

Power Cable Warning (Japanese)

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

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。

Contacting Juniper Networks

For technical support, see: https://www.juniper.net/support/requesting-support.html.