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JUNIPER NETWORKS MX10004 Universal Routing Platforms User Guide

Contents

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SUMMARY

In this guide, we provide a simple, three-step path, to quickly get you up and running with your new MX10004 router. We've simplified and shortened the installation and configuration steps. You'll learn how to install the MX10004 in a rack, power it up, and configure basic settings.

Meet the MX10004

The Juniper Networks® MX10004 is the most compact, high-density, and power-efficient modular chassis in the MX10000 line of modular packet-routing transport routers. At only 7 U in height, the MX10004 is designed for today's space-constrained facilities. The MX10004 supports Juniper's 400 GbE architecture with inline Media Access Control Security (MACsec) on all ports for point-to-point security on Ethernet links. MX10004 provides 1 GbE, 10 GbE, 25 GbE, 40 GbE, 50 GbE, 100 GbE, or 400 GbE modular solutions that support up to 38.4 Tbps of throughput.

What's in the Box

Along with your MX10004 router, you'll find:

- Rack-mount kit
  - Twelve Phillips 8-32 x .375 in. flat-head screws
  - Two mounting blades
  - A mounting tray
  - A rear safety restraint
- Front door
- An accessory kit with:
  - RJ-45 Ethernet cable
  - RJ-45 to DB9 rollover cable
  - Electrostatic discharge (ESD) wrist strap with cable
  - Media kit (flash drives, PCMCIA card adapter)
  - Ground chassis lug, 2-hole, 10-32, 6 AWG
  - Six power cord retainer clips, for AC configurations

What Else Do I Need

- A mechanical lift rated for 250 lb (113.4 kg). You can mount an MX10004 router manually or by using a mechanical lift. Because of the router's size and weight, we strongly recommend that you use a mechanical lift to mount the MX10004. In this guide, we show you how to mount the router using a mechanical lift.
- 4 AWG (21.1 mm²) stranded wire grounding cable rated 75° C or per local electrical code
- A Phillips (+) screwdriver, number 2 or number 3, depending on the size of your rack-mount screws
- Twenty-eight rack mount screws appropriate for your rack to secure the mounting blades, mounting tray, chassis, and safety restraint to the rack
- A number 3 Pozidriv or Phillips (+) screwdriver for the grounding screws

CAUTION:
Ensure that a licensed electrician attaches the appropriate grounding lug to your grounding cable. Using a grounding cable with an incorrectly attached lug can damage the router.

Assemble the Rack Mount Kit

Here's how to assemble the MX10004 rack-mount kit in a four-post rack:

1. Review the General Safety Guidelines and Warnings.
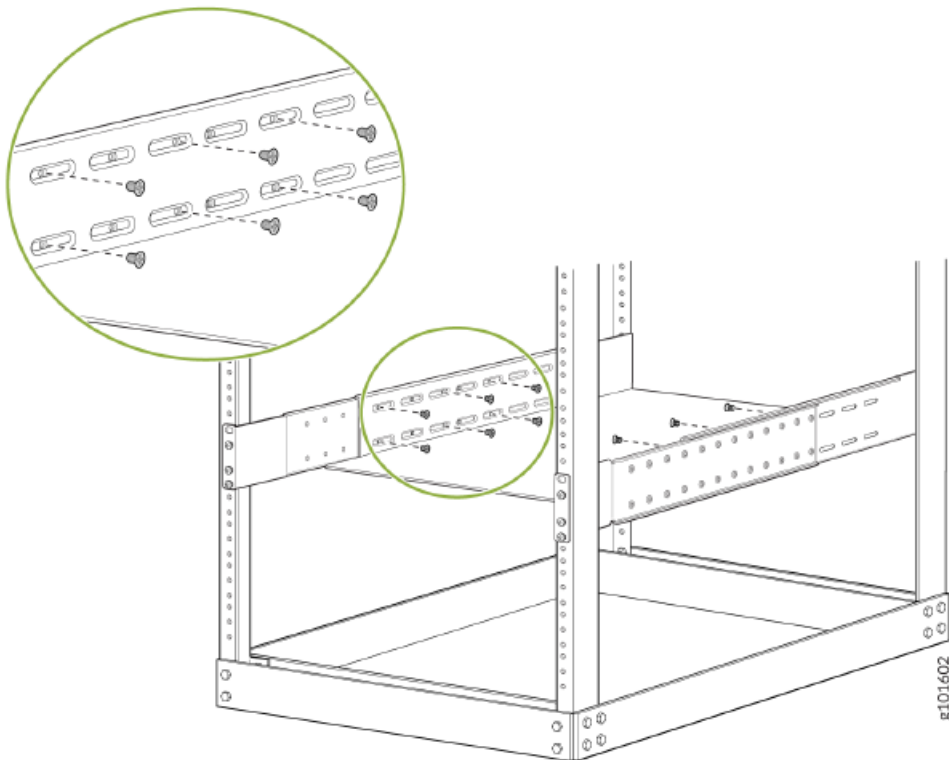2. Wrap and fasten one end of the ESD grounding strap around your bare wrist, and connect the other end to a site ESD point.
3. Attach the mounting blades to the front rack posts by using six rack mount screws.
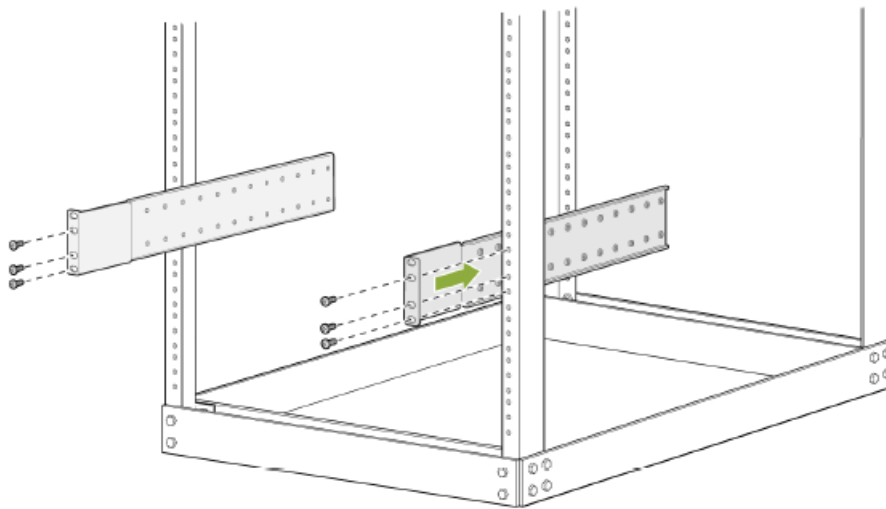
4. From the rear of the rack, slide the mounting tray into the rear posts of the rack such that the mounting blades slide into the grooves on the mounting tray.
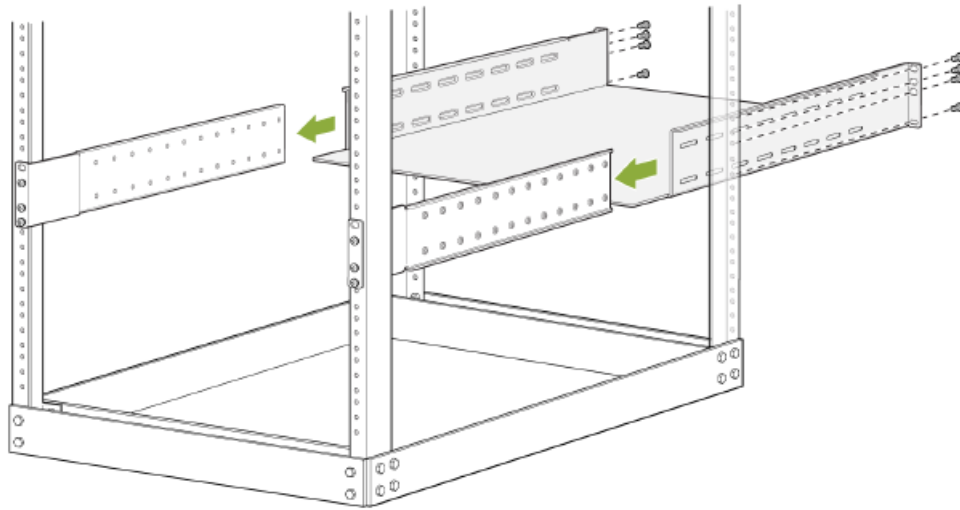
5. Attach the mounting tray to the rear rack posts by using eight rack mount screws.

6. Check that the mounting tray is level.

7. Attach the mounting tray to the mounting blades in the rack with the 12 Phillips 8-32 x .375 in. flat-head screws.

Mount the MX10004 in the Rack and Ground the Chassis

**Here's how to install the MX10004 in a four-post rack:**

1. Wrap and fasten one end of the ESD grounding strap around your bare wrist, and connect the other end to a site ESD point.

2. Load the router onto the lift, making sure it rests securely on the lift platform.

3. Align the router in front of the rack, centering it in front of the mounting tray.

4. Lift the chassis approximately 0.75 in. (1.9 cm) above the surface of the mounting tray. Align the chassis as close as possible to the mounting tray.

5. Carefully slide the chassis onto the mounting tray until the chassis flanges touch the rack rails.

6. Starting at the bottom, attach the chassis to the rack by inserting eight rack mount screws through each open flange hole and rack hole.
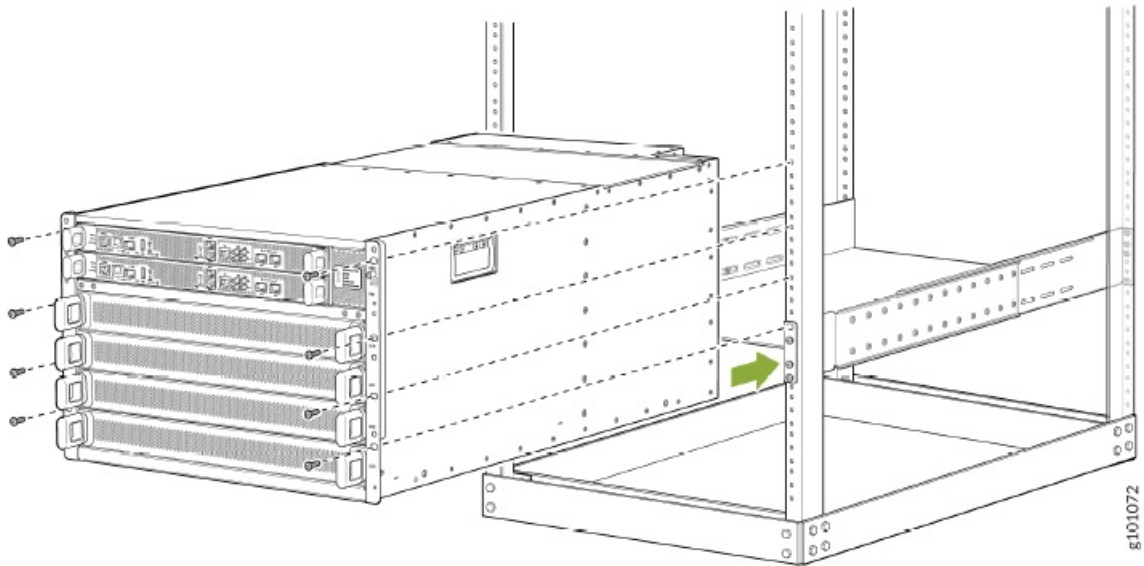
7. Move the lift away from the rack.

8. Check the alignment of the router. The rack mount screws on each side of the rack should line up, and the router should be level. Tighten the screws.

9. Insert the safety restraint between the rear posts of the rack. It should rest on the top of the chassis and align with the holes in the rack.

10. Attach the restraint to the rack by inserting six mounting screws through each flange hole and rack hole and tightening the screws.
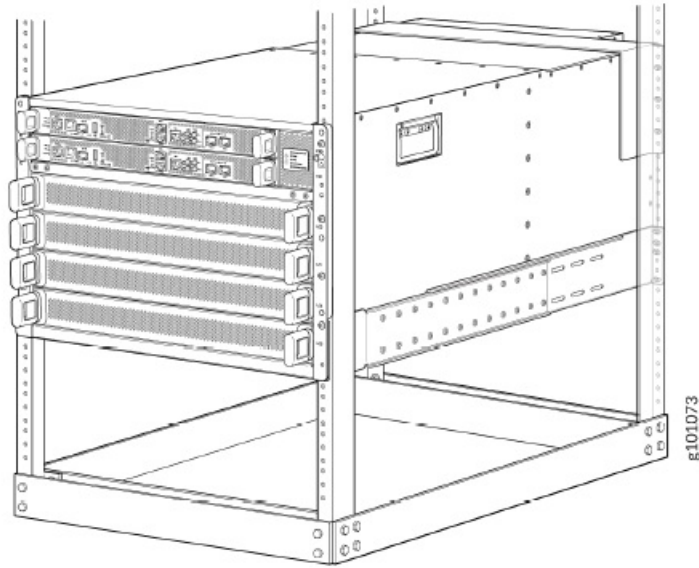
11. Install the line cards:
    - Remove the line card cover by grasping the handles and pulling straight out to expose the slot for the line card. Save the cover.
      NOTE: If you are not installing a line card do not remove the line card cover.
    - Slide the line card all the way into the slot until the handle holes line up.
    - Rotate the handles simultaneously into the chassis until the card is fully seated and the handles are vertical.
12. Install the optics and optional cable management system.
13. Lift the front door and line up the captive screws in the door with the holes in the chassis flange.
    Attach the door to the chassis and rack using the captive screws. Turn the screws until they are finger tight.
14. Have a licensed electrician attach the cable lug (provided in the accessory kit) to the grounding cable.
15. Remove the two M6 screws with attached washers below the bottom power supply using a Pozidriv or Phillips screwdriver.
16. Place the chassis grounding lug and cable over the screw holes with the cable connection pointing to the left.
    Place the two screws with attached washers over the grounding lug and grounding cable. Tighten the two M-6 screws using a Pozidriv or Phillips screwdriver.

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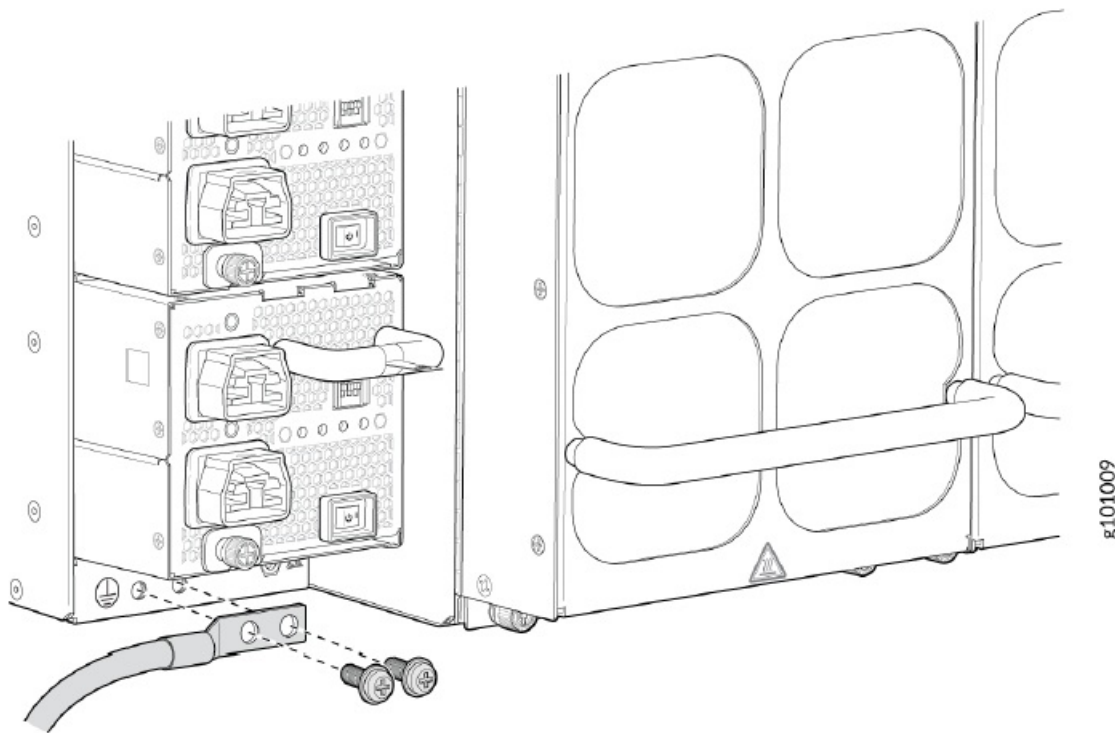
Power On

Now that you've installed your MX10004 in the rack and grounded the chassis, you're ready to connect it to power.

The MX10004 supports AC, DC, high-voltage alternating current (HVAC), and high-voltage direct current (HVDC). In this guide, we show you how to connect AC power. For DC, HVAC, and HVDC installations, see MX10004 Universal Routing Platform Hardware Guide.

1. Wrap and fasten one end of the ESD grounding strap around your bare wrist, and connect the other end to one of the ESD grounding points on the router.
2. Turn off the power switch on the power supply.
3. If the power source outlet has a power switch, turn it off.
4. Attach each AC power supply to a dedicated power source.
   NOTE: If you need power source redundancy, you can attach each power cable to separate power sources.
5. For each AC power cable, insert the end of the cable with the Anderson connector into the power supply. The connector snaps and locks the cable into position.
   WARNING: Ensure that the power cord does not block access to router components or drape where people can trip on it.
6. Set the three DIP switches on the power supply to indicate whether one or both power feeds are used, and to indicate the amperage of the feeds. Together, these switches determine if the chassis operates at 3,000 W, 5,000 W, or 5,500 W. If you're using both power feeds, set switch 1 and switch 2 to the on (|) position. Power is shared. If you're not using power source redundancy, set the unused source to the off (O) position. The LED turns red and indicates an error if a power source input is not in use and the DIP switch is on (|).

Switch	State	Description
1	On	INP1 is present.
	Off	INP1 is not present.
2	On	INP2 is present.
	Off	INP2 is not present.
3	On	Enabled for 30-A feed; 5,000 W for single feed, 5,500 W for dual feeds .
	Off	Enabled for 20-A feed; power supply capacity is 3,000 W.

7. Plug the AC power cord into the power outlet.

8. If the power source outlet has a power switch, turn it on.

9. Turn on the power switch on the power supply.

10. If you're using two power feeds, verify that the 1 and 2 LEDs on the power supply faceplates are steadily lit. These LEDs correspond to INP1 and INP2.

Up and Running

SUMMARY

Now that the MX10004 is powered on, let's do some initial configuration to get the router up and running on the network. It's simple to provision and manage the MX10004 on your network.

Connect to the Router and Enter Configuration Mode

Before you begin configuring the router:

- Ensure that the Routing Control Board (RCB) has the Junos OS Release 22.3R1 or later operating system installed.

- If you want to use an RCB that has Junos OS release prior to 22.3R1 or if the show version command displays the router model as mx10016-olive, you must use the USB install method (not the CLI method) to upgrade the Junos OS release on the RCB to 22.3R1 or later.

1. Connect the console port on the MX10004 to a laptop or PC using the supplied RJ-45 cable and RJ-45 to DB-9 adapter. The console (CONSOLE) port is located on the Routing and Control Board (RCB).

CON
To Console Port
(on device)

Laptop CPU

2. Verify that your laptop or PC has the following default values:

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

3. Log in as root. There is no password. If the software boots before you connect to the console port, you might need to press the Enter key for the prompt to appear.

- login: root

4. Start the CLI.

- root@% cli

5. Enter configuration mode.

- root> configure

6. 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

  NOTE: Optionally, instead of configuring the root password at the [edit system] hierarchy level, you can use a configuration group to strengthen security.

7. (Optional) Configure the name of the router. If the name includes spaces, enclose the name in quotation marks (" "). You can configure the router name at the [edit system] hierarchy level.

- [edit]

  root@# set system host-name host-name

  If your MX10004 router has two RCBs, it is recommended you use a configuration group. You can use group-name as re0 or re1.

- [edit]

  root@# set groups group-name system host-name host-name

  For Example:

- [edit]

  root@# set groups re0 system host-name alpha-router0

- [edit]

  root@# set groups re1 system host-name alpha-router1

8. Configure the default gateway.

- [edit]

  root@# set routing-options static route default next-hop address

9. Configure the IP address and prefix length for the router management interface.

- [edit]

  root@# set interfaces em0 unit 0 family inet address/prefix-length

  NOTE: The management port, em0 (MGMT for RJ-45 connections) is found on the front of the RCBs of the MX10004 router.

  If your MX10004 router has two RCBs, you can configure each RCB with a separate IP address for the management Ethernet interface.

  You can use group-name as re0 or re1.

- [edit]

  root@# set groups group-name interfaces em0 unit 0 family inet address/prefix-length

  For Example:

- [edit]

  root@# set groups re0 interfaces em0 unit 0 family inet address/prefix-length

- [edit]

  root@# set groups re1 interfaces em0 unit 0 family inet address/prefix-length

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

    - [edit]

      root@# set routing-options static route remote-prefix next-hop destination-ip retain no-readvertise

      For example:

    - [edit]

      root@# set routing-options static route 192.168.0.0/24 next-hop 10.0.3.2 retain no-readvertise

11. (Optional) Enable Telnet service.

    - [edit]

      root@# set system services telnet

      NOTE: When Telnet is enabled, you cannot log in to an MX10004 through Telnet using root credentials. Root login is allowed only for SSH access.

12. (Optional) If you used one or more configuration groups, apply the configuration groups, substituting the appropriate group name.

    - [edit]

      root@# set apply-groups group name

      For example:

    - [edit]

      root@# set apply-groups global

      global is a group where user log in details, routes, and other information is stored.

    - [edit]

      root@# set apply-groups re0

    - [edit]

      root@# set apply-groups re1

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

    - [edit]

      root@# commit

Keep Going

Congratulations! You've completed the initial steps to get your MX10004 up and running. Let's keep going and

learn more about what you can do with the MX10004 router.

What's Next

Now that you've done the initial configuration, here's some things you might want to do next.

If you want to	Then
Configure interfaces	See the **Interfaces Fundamentals for Junos OS** Guide
Manage software upgrades for your MX10004	See the **Junos® OS Software Installation and Upgrade Guide**
Download, activate, and manage your software licenses to unlock additional features for your MX Series router	See **Activate Junos OS Licenses** in the **Juniper Licensing Guide**
See, automate, and protect your network with Juniper Security	Visit the **Security Design Center**

General Information

If you want to	Do this
See all documentation available for the MX10004	Visit the **MX10004 Documentation for Junos OS** page in the Juniper TechLibrary
Find more in-depth information about how to install and configure the MX10004	See the **MX10004 Universal Routing Platform Hardware Guide**
Learn about Junos OS	See **Junos OS**
Stay up-to-date on new and changed features and known and resolved issues	See **Junos OS Release Notes**

Learn With Videos

Our video library continues to grow! We've created many, many videos that demonstrate how to do everything from install your hardware to configure advanced Junos OS network features. Here are some great video and training resources that will help you expand your knowledge of Junos OS.

If you want to	Then
Watch a video that shows you the appropriate connection and terminal requirements for connecting to a factory-defaulted Junos device	See **Juniper Basics: Connecting to a Junos Device**
Get short and concise tips and instructions that provide quick answers, clarity, and insight into specific features and functions of Juniper technologies	See **Learning with Juniper** on Juniper Networks main YouTube page
View a list of the many free technical pieces of training we offer at Juniper	Visit the **Getting Started** page on the Juniper Learning Portal

Documents / Resources

JUNIPER NETWORKS MX10004 Universal Routing Platforms [pdf] User Guide
MX10004 Universal Routing Platforms, MX10004, Universal Routing Platforms, Routing Platforms

References

- **Junos Basics: Connecting to a Junos Device**
- **Junos OS Documentation | Juniper Networks**
- **Junos OS Documentation | Juniper Networks**
- **MX10004 Documentation | Juniper Networks**
- **Security Design Center | Juniper Networks**
- **General Safety Guidelines and Warnings | Juniper Networks**
- **MX10004 Universal Routing Platform Hardware Guide | Juniper Networks**
- **Interfaces Fundamentals for Junos OS | Junos OS | Juniper Networks**
- **Junos® OS Software Installation and Upgrade Guide | Junos OS | Juniper Networks**
- **Juniper Licensing User Guide | Licensing | Juniper Networks**
- **Activate Your Licenses | Licensing | Juniper Networks**