JUNIPER NETWORKS | Engineering Simplicity

Quick Start

MX304

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Step 1: Begin

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In this guide, we provide a simple, three-step path, to quickly get you up and running with your new router. We've simplified and shortened the installation and configuration steps, and included how-to videos. You'll learn how to install the MX304 in a rack, power it up, and configure basic settings.

This guide covers how to install an AC-powered MX304 router. For instructions on installing DC-powered and HVAC/DC-powered MX304 routers, see the MX304 Hardware Guide.

Meet the MX304 Universal Router

The MX304 router provides a highly compact, 2 U platform with the flexibility to scale out services with 4.8 Tbps system capacity. Based on Juniper Networks Trio 6 chipset, the MX304 router is designed and optimized for a wide range of demanding edge requirements (business, residential, mobile, cable, data center and more) anywhere in the network.

The MX304 router runs the Junos operating system (Junos OS). It has pluggable Routing Engines (it supports one or two Routing Engines), two dedicated AC, DC, or HVAC/HVDC power supply modules, and front-to-back cooling. It accepts up to three line card MICs (LMICs), each with a Trio 6.0 chipset and 1.6 Tbps of forwarding capacity. The MX304 router supports a maximum of 12x400 Gbps ports, 48x100 Gbps ports or a combination (with three LMICs).

MX304

Install the MX304

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What's in the Box?

- MX304 router preinstalled with Routing Engines, LMICs, fan trays, power supplies, and cover panels for the empty line card slots.
- Rack mounting brackets (preinstalled on the chassis)
- AC power cables appropriate for your geographic location
- Cable management bracket with cable manager screws
- Ethernet cable, RJ-45 to DB-9 adapter

- SFP transceiver dust cover and QSFP transceiver dust cover
- An electrostatic discharge (ESD) grounding strap
- Grounding lug (Panduit LCD6-14A-L or equivalent) and screws

What Else Do I Need?

- Someone to help you secure the router to the rack
- Phillips (+) screwdrivers, numbers 1 and 2
- Management host such as a laptop or desktop PC
- Serial-to-USB adapter (if your laptop or desktop PC doesn't have a serial port)
- Grounding cable #6 AWG (4.11 mm^2) stranded wire

Install the MX304 Router in a Four-Post Rack

Here's how to install the router in a four-post rack or a cabinet:

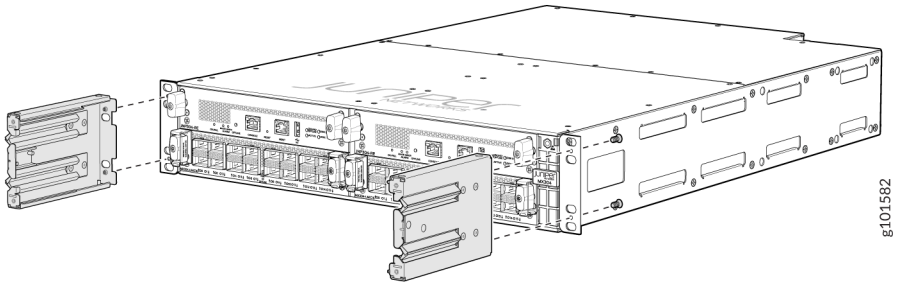
CAUTION: If you're installing more than one router in a rack, install them from the bottom up.

CAUTION: Before front-mounting the router in a rack, have a qualified technician verify that the rack is strong enough to support the router's weight and is adequately supported at the installation site.

CAUTION: Lifting the chassis and mounting it in a rack requires two people (one person to hold the router in place and a second person to install the screws). A fully loaded AC-powered router weighs up to 70.54 lb (32 kg).

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.

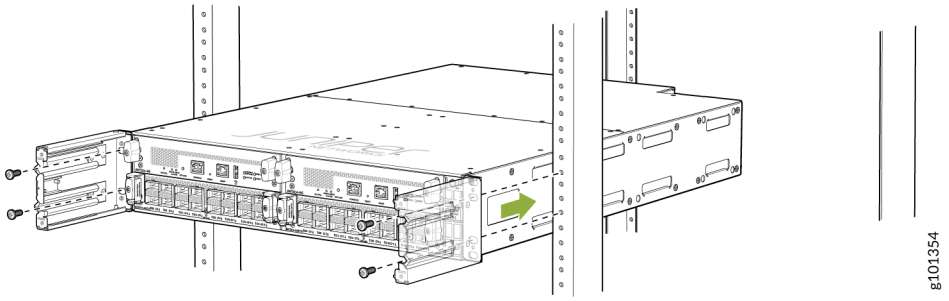
3. (Optional) Install the cable management brackets on each side of the front of the chassis. Secure each bracket with screws at the bottom and top of the bracket as shown:



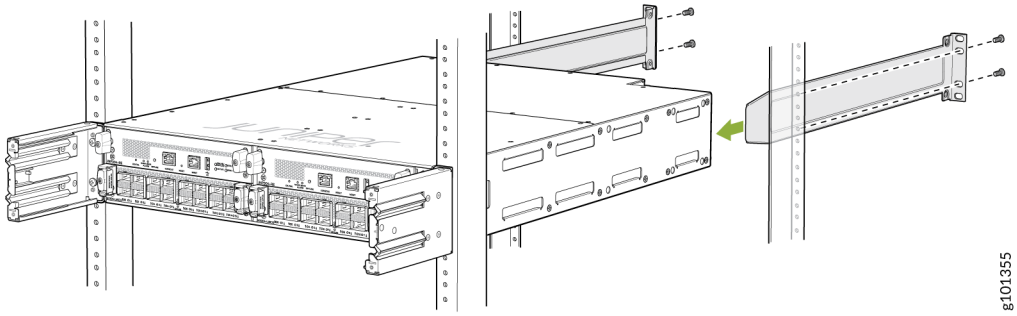
4. Position the router in front of the four-post rack or the cabinet.

5. With one person holding on to each side of the chassis, carefully lift the bottom of the chassis so that rack mounting brackets (with optional cable management brackets) contact the rack rails.

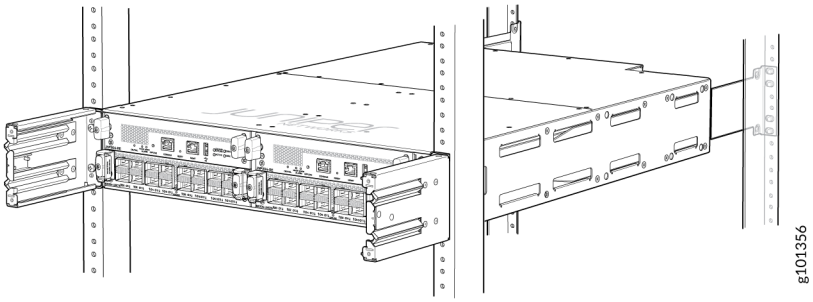
6. Attach the chassis to the front of the rack as shown:



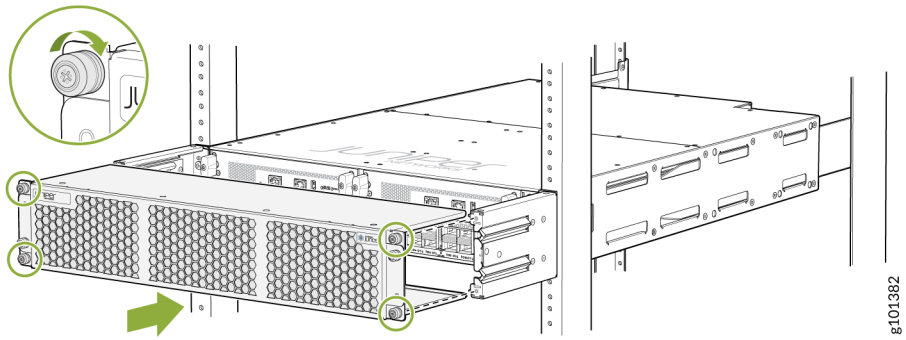
7. On the rear of the chassis, slide the rear-mounting brackets on both sides of the chassis until they contact the rack rails. Insert the rack mounting screws through the mounting brackets and mounting holes on the rack and tighten them. Be sure to tighten the screws in the two bottom holes first, and then tighten the screws in the top two holes.



8. Verify that the mounting brackets on each side of the rack are level.



9. (Optional) Secure the front cover with the air filter to the chassis. Tighten the four screws, turning them clockwise.



Power On

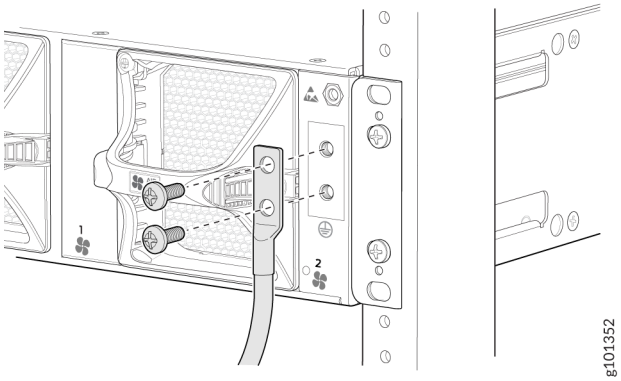
Now that you've mounted your router in the rack, you're ready to connect it to power.
The AC-powered MX304 router comes with two AC power supplies preinstalled on the rear panel.

WARNING: The router is a pluggable type A equipment installed in a restricted-access location. The chassis has a separate protective earthing terminal (sized for M6 hex screws) in addition to the power supply cord's grounding pin. This separate protective earthing terminal must be permanently connected to earth.

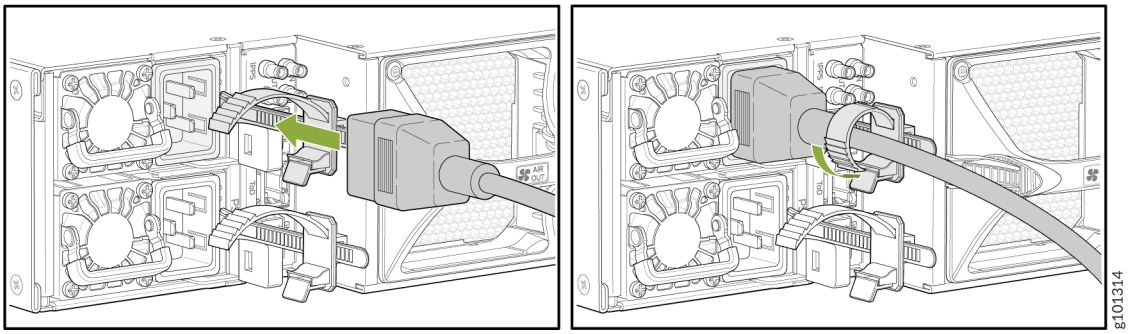
NOTE: Each power supply must be connected to a dedicated AC power feed and a dedicated customer-site circuit breaker. We recommend using a circuit breaker rated for 15 A (110 VAC) minimum, or as required by local code.

1. Verify that a licensed electrician has attached the cable lug that ships with the router to the grounding cable.
2. Ensure that all grounding surfaces are clean and brought to a bright finish before grounding connections are made.
3. 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.
4. Connect one end of the grounding cable to a proper earth ground, such as the rack.

5. Detach the ESD grounding strap from the site ESD grounding point and connect it to one of the ESD points on the chassis.
6. Place the grounding lug attached to the grounding cable over the grounding points on the chassis, and secure it with M6 pan head screws.



7. Dress the grounding cable, and ensure that it doesn't block access to or touch other device components, and that it doesn't drape where people could trip over it.
8. Ensure that the power supplies are fully inserted in the router.
9. Turn off the AC power switch on the power supply.
10. Plug in the AC power cord to the power socket on the power supply.
11. Push the retainer clip through the loop and tighten it until it fits snug around the power cord.



12. Route the power cord so that it doesn't block the air exhaust and access to router components, or drape where people could trip on it.
13. If the AC power source outlet has a power switch, turn it off.
14. Plug the power cord into the AC power source outlet.
15. If the AC power source outlet has a power switch, turn it on.
16. Repeat Step 8 through Step 15 to install the other power supply.

Step 2: Up and Running

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Now that the MX304 is powered on, let's do some initial configuration to get it up and running on the network. It's simple to configure and manage the MX304 using the CLI.

Plug and Play

The MX304 router ships with factory-default settings that enable some zero touch provisioning (ZTP) functions. These settings load as soon as you power on the switch. In our case we configure the router manually, so we remove the ZTP settings as part of our initial configuration.

Perform Initial Configuration

You can easily customize the factory-default configuration with just a few commands. When you commit changes to the configuration, a new configuration file is created. This becomes the active configuration. You can always revert to the factory-default configuration anytime you want.

When ZTP is not used you must perform the initial configuration of an MX304 router through the console port (**CON**) using the Junos OS command-line interface (CLI). If your MX304 has dual Routing-Engines, you should perform these steps on each Routing-Engine, being sure to specify a unique management IP address for the management interface on each Routing-Engine. See "Step 3: Keep Going" on page 12 for information on how to use configuration groups to share a single configuration file between both Routing-Engines.

Have the following information ready before you begin the initial configuration:

- The router's host and domain name
- IP address and subnet mask for the management Ethernet interface
- IP address of a default gateway for the management network
- IP address of a DNS server
- The root user's password

1. Verify that the router is powered on.

2. **NOTE**: You may see messages on the console relating to ZTP and DHCP. These messages stop once your remove the ZTP statements from the default configuration.

   Configure your serial port for 9600 bps/8-N-1, and attach the cable to the **CON** port of the desired Routing-Engine. Log in as the “root” user. No password is needed.

```
FreeBSD/amd64 (Amnesiac) (ttyu0)

login: root
root@:~ #
```

3. Start the CLI.

```
root@:~ # cli
root>
```

4. Enter configuration mode.

```
cli> configure
[edit]
root#
```

5. Set the root authentication password by entering either a plain text password, an encrypted password, or an SSH public key string (ECDSA, ED25519 or RSA).

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

   or

```
[edit]
root# set system root-authentication encrypted-password encrypted-password
```

   or

```
[edit]
root# set system root-authentication (ssh-ecdsa | ssh-ed25519 | ssh-rsa) public-key
```

6. Remove factory default configuration statements that relate to ZTP. After you commit these initial changes the ZTP process is stopped and the related console messages are no longer displayed.

```
[edit]
root@# delete system commit
root@# delete chassis auto-image-upgrade
root@# delete interfaces fxp0
```

7. Configure the IP address and prefix length for the router's management Ethernet interface (fxp0). You also configure an IPv4 address on the loopback interface in this step. Having a routible IP address on the loopback interface is a best practice and is generally needed later, when routing protocols are configured.

```
[edit]
root# set interfaces fxp0 unit 0 family inet address address/prefix-length
root# set interfaces lo0 unit 0 family inet address address/32
```

8. Perform an initial commit to activate the modified configuration.

```
[edit]
root# commit
commit complete
[edit]
root#
```

9. Configure the router's host name. If the name includes spaces, enclose the name in quotation marks (“ ”).

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

10. Configure the router's domain name.

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

11. Configure the IP address of a DNS server.

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

12. Configure one or more static routes to remote subnets that have access to the management subnet. Without static routing, access to the management port is limited to devices attached to the management subnet. Static routing is needed to access the management interface from devices attached to remote subnets. For more information about static routes, see Configure Static Routes.

In our example we define a single default static route to provide management network reachability to all possible remote destinations.

```
[edit]
root# set routing-options static route 0.0.0.0/0 next-hop destination-IP retain no-readvertise
```

13. Configure the IP address of a backup router. The backup router is only used while the routing protocol is not running. The primary use of the backup router is to provide routing capability for the management port on the backup Routing-Engine. This is because the backup Routing-Engine does not run the routing protocol daemon (rpd).
14. In most cases the backup router is the same IP next hop as used for the management network's static routes. We again use a default route to provide the back up Routing-Engine with reachability for all possible remote destinations.

```
[edit]
root# set system backup-router address
root# set system backup-router destination 0.0.0.0/0
```

15. Configure remote access for the root user over ssh. By default the root user is only able to log-in via the console port. The `root-login allow` statement permits remote log-in for the root user.

```
[edit]
root# set system services ssh root-login allow
```

16. (Optional) Display the configuration to verify it's correct.

```
[edit]
root# show
system {
    host-name host-name;
    root-authentication {
        authentication-method (encripted-password | public-key);
    }
     services {
        ssh {
            root-login allow;
        }
    }
    domain-name domain-name;
    backup-router address destination 0.0.0.0/0;

    name-server {
        address;
    }
```

```
}
interfaces {
    fxp0 {
        unit 0 {
            family inet {
                address address/prefix-length;
            }
        }
    }
lo0 {
        unit 0 {
            family inet {
                address address/32;
            }
        }
    }
}
routing-options {
    static {
        route 0.0.0.0/0 next-hop destination-IP;
    }
}
```

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

```
[edit]
root# commit
commit complete

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

18. When you've finished configuring the router, exit configuration mode.

```
[edit]
root@host-name# exit
Exiting configuration mode

root@host-name>
```

Congratulations. The initial configuration is complete. Remember to also configure the backup Routing Engine if your MX304 is equipped with redundant control planes. At this point you should be able to remotely access both of the Routing-Engines as the root user with ssh.

Step 3: Keep Going

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Congratulations! Now that you've done the initial configuration, your MX304 is ready to use. Here are some things you can do next:

What's Next?

If you want to	Then
Configure, monitor, and troubleshoot various interfaces installed on the MX304	See Interfaces Fundamentals for Junos OS
Configure essential user access and authentication features for your system	See User Access and Authentication Administration Guide for Junos OS
Install and upgrade Junos OS and related software	See Junos OS Software Installation and Upgrade Guide
Use configuration groups to share a configuration file between redundant Routing-Engines.	See Configuring Junos OS for the First Time on a Device with Dual Routing Engines

NOTE: You can monitor the performance of an MX304 router by using Juniper Mist Routing Assurance. You can use the routing insights that Juniper Mist Routing Assurance provides to proactively respond to network events and anomalies. For more information, see Juniper Mist Routing Assurance documentation.

General Information

If you want to	Then
See all documentation available for the MX304	Visit MX304 Documentation
See all documentation available for Junos OS	Visit Junos OS Documentation
Change configuration settings, get another device up and running, or both, install REs, LMICs, fan trays, and power supplies	See MX304 Hardware Guide
Stay up-to-date with new and changed features and known and resolved issues	See the 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
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 Videos on Juniper Networks main YouTube page
View a list of the many free technical trainings we offer at Juniper	Visit the Getting Started page on the Juniper Learning Portal

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