TrueNAS® R-Series Basic Setup Guide

Version 1.32
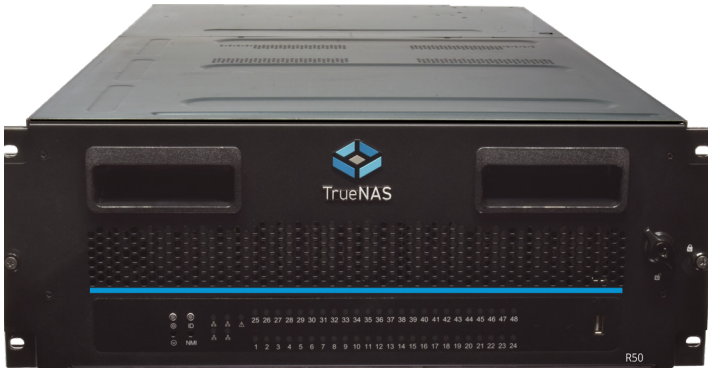
Contents

1 Introduction

TrueNAS R-Series systems are hard disk, hybrid, and all-flash storage arrays in 1U, 2U, and 4U configurations. You will receive the system and all installation components carefully packed and ready for installation. The packed items vary by what you purchased.

Your system comes with the TrueNAS operating system preloaded.

Review the safety considerations and hardware requirements before installing an M-Series system into a rack.

1.1 Safety

1.1.1 Static Discharge

Static electricity can build up in your body and discharge when touching conductive materials. Electrostatic Discharge (ESD) is harmful to sensitive electronic devices and components. Keep these safety recommendations in mind before opening the system case or handling non-hot-swappable system components:

*   Turn off the system and remove power cables before opening the case or touching internal components.
*   Place the system on a clean, hard work surface like a wooden tabletop. Using an ESD dissipative mat can also help protect the internal components.
*   Touch the metal chassis with your bare hand to dissipate static electricity in your body before touching any internal components, including components not yet installed in the system. Using an anti-static wristband and grounding cable is another option.
*   Store all system components in anti-static bags.

You can find more preventative tips and details about ESD at https://www.wikihow.com/Ground-Yourself-to-Avoid-Destroying-a-Computer-with-Electrostatic-Discharge.

1.1.2 Handling the System

> We recommend two people lift an R-Series system.
>
> **Never attempt to lift an R-Series system loaded with drives!** Install the system in a rack before adding drives, and remove drives before de-racking the system.
>
> When handling rails, system components, or drives, never force movement if a piece seems stuck. Gently removing the part and check for pinched cables or obstructing material before installing it again. Installing a component with excessive force can damage the system or cause personal injury.

Hold the system from the sides or bottom whenever possible. Always be mindful of loose cabling or connectors, and avoid pinching or bumping these elements whenever possible.

These instructions use "left" and "right" according to your perspective when facing the front of a system or rack.

1.2 Requirements

We recommend these tools when installing an M-Series system in a rack:

*   #2 Philips head screwdriver
*   Flat head screwdriver
*   Tape measure
*   Level

2 R10 Components

TrueNAS units are carefully packed and shipped with trusted carriers to arrive in perfect condition.
If there is any shipping damage or missing parts, please take photos and contact iXsystems support immediately at
support@ixsystems.com, **1-855-GREP4-iX (1-855-473-7449)**, or **1-408-943-4100**.

Please locate and record the hardware serial numbers on the back of each chassis for quick reference.

Carefully unpack the shipping boxes and locate these components:

The R10 is a 1U All-Flash Storage Array with 16 SSD bays, redundant power supplies, and one TrueNAS controller.

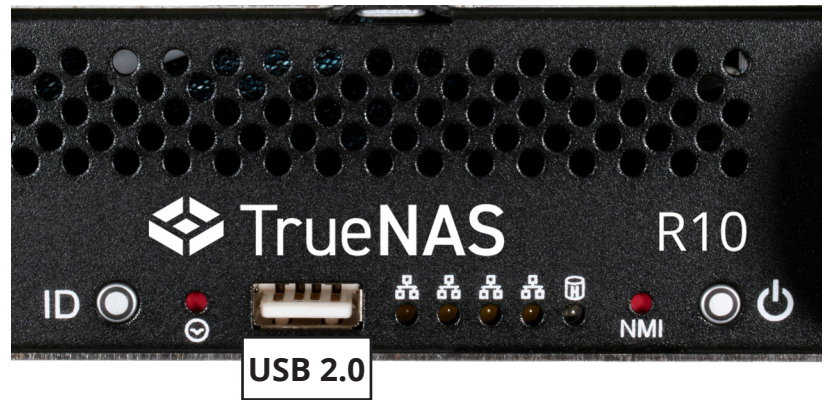|	
	R10 All-Flash Storage Array
	Set of rackmount rails and mounting hardware
	16 SSD drive trays with up to 16 drives installed
	Accessory kit with 2 IEC C13 to NEMA 5-15P power cords, 2 IEC C13 to C14 cords, and a set of velcro cable ties

2.1 Front Ports and Indicators

The R10 front panel has buttons for system ID and power, a USB 2.0 port, and lights for network and disk activity.

Light / Button	Color and Indication
ID	Blue: Locate ID Active
⊙	N/A: Reset Button
🖧	Amber: Link Active
🛢	Blue (Blinking): Disk Activity
⏻	Blue: System On

2.2 Rear Components and Ports

The back panel has redundant power supplies and various connection ports.

Not pictured: Serial number and IPMI password stickers are on the back of the chassis underneath the USB ports.

3 R20 Components

The R20 is a 2U Hybrid Storage Array that has 12 3.5" drive bays and 2 SSD drive bays, redundant power supplies, and a single TrueNAS controller. You will find these items when opening the R20 packaging:

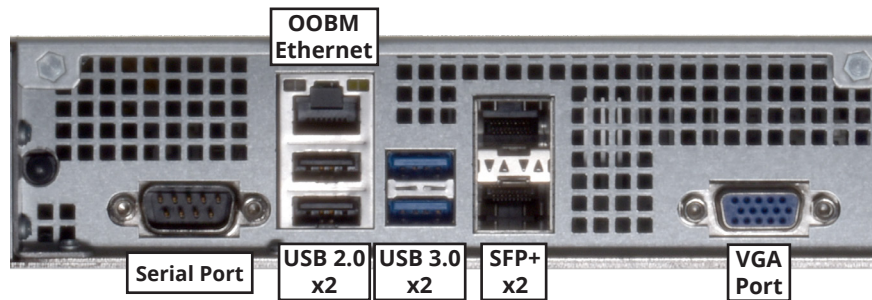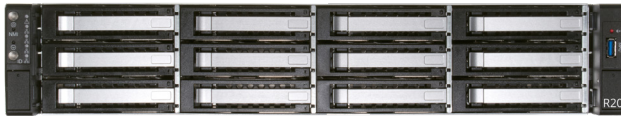|	
	R20 Hybrid Storage Array
	Locking Bezel
	Set of rackmount rails with mounting hardware
	12 3.5" drive trays with up to 12 hard drives installed
	2 SSD drive trays with up to 2 SSDs installed
	Accessory kit with 2 IEC C13 to NEMA 5-15P power cords, 2 IEC C13 to C14 cords, and a set of velcro cable ties

3.1 Front Ports and Indicators

The R20 front ears have button LEDs for power, system ID, and alarm mute. It also has lights for network activity and faults, and a USB 3.0 port.

The fault indicator is on during the initial power-on self-test (POST) and turns off during normal operation. It turns on if the TrueNAS software issues an alert.

Light / Button	Color and Indication
⏻	Blue: System On
⊙	N/A: Reset Button
ID	Blue: Locate ID Active
⚠	Green: Fault / Alert
品	Amber: Link Active
🔇	Red: Alarms Muted

USB 3.0

3.2 Rear Components and Ports

The back panel has redundant power supplies, two SSD SATA Cache bays, and various connection ports.

Power Supply 2
Power Supply 1
PCIe Slots
SATA Cache
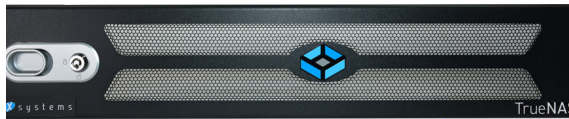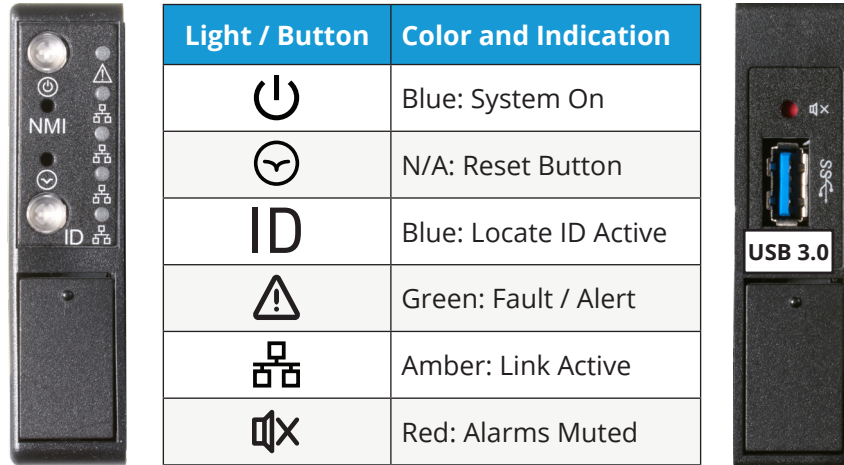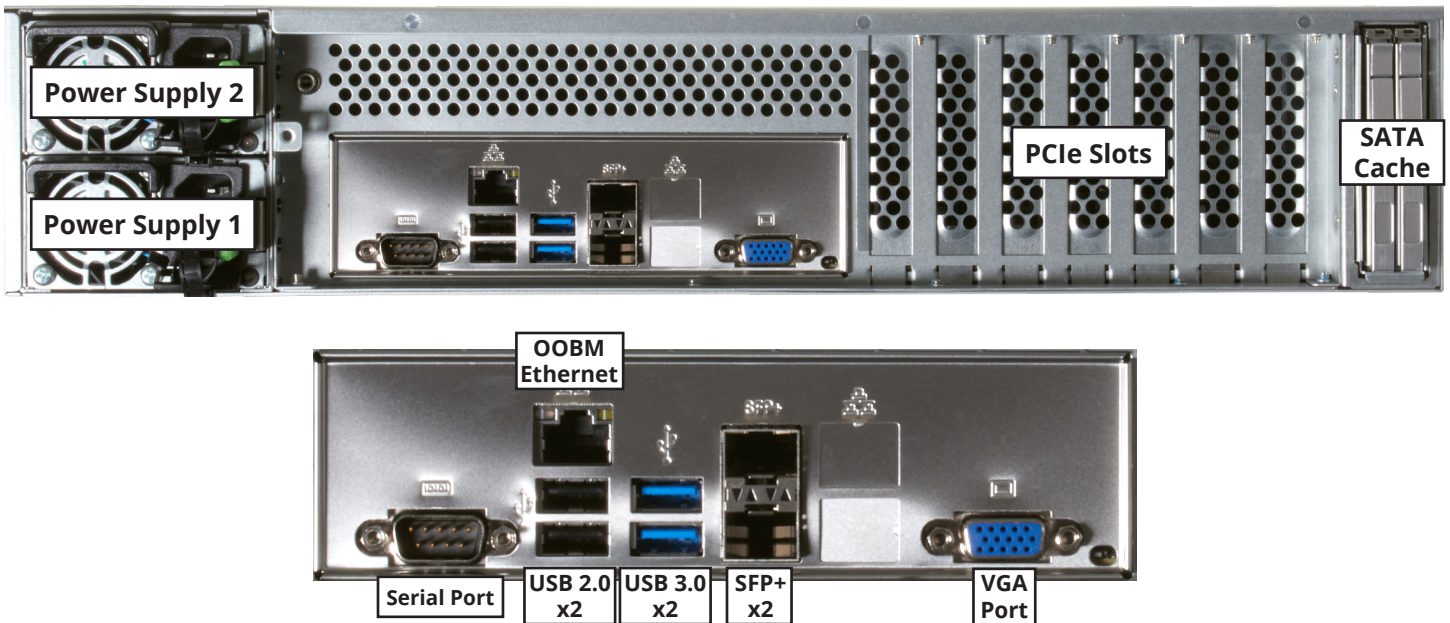
OOBM Ethernet
Serial Port
USB 2.0 x2
USB 3.0 x2
SFP+ x2
VGA Port

Not pictured: Serial number and IPMI password stickers are on the back of the chassis underneath the USB ports.

R20B Rear Components and Ports

The back panel has redundant power supplies, two SSD SATA Cache bays, and various connection ports.

Power Supply 2

Power Supply 1

PCIe Slots

SATA Cache

OOBM Ethernet

Serial Port

USB 2.0 x2

USB 3.0 x2

10Gb RJ-45 x2

VGA Port
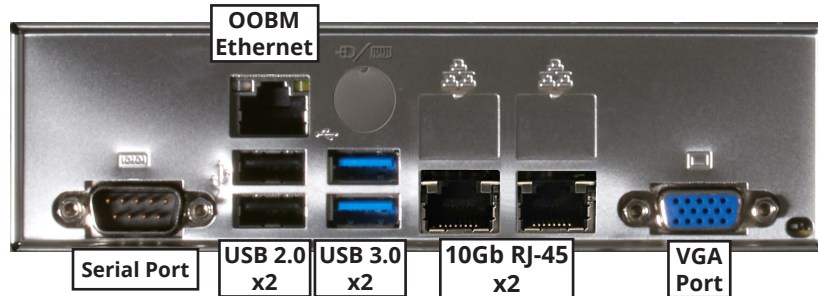
Not pictured: Serial number and IPMI password stickers are on the back of the chassis underneath the USB ports.
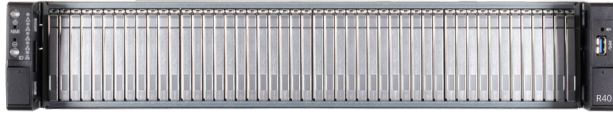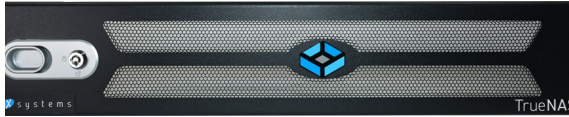
4 R40 Components

The R40 is a 2U All-Flash Storage Array that has 48 SSD drive bays, redundant power supplies, and a single TrueNAS controller. You will find these items when opening the R40 packaging:

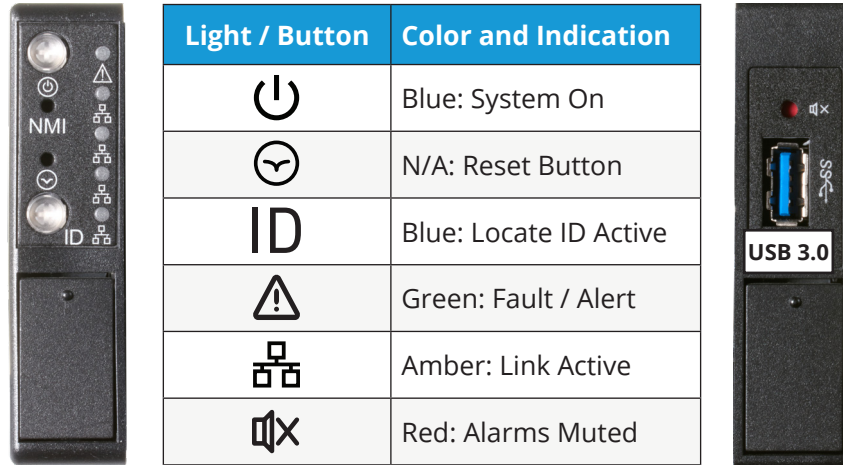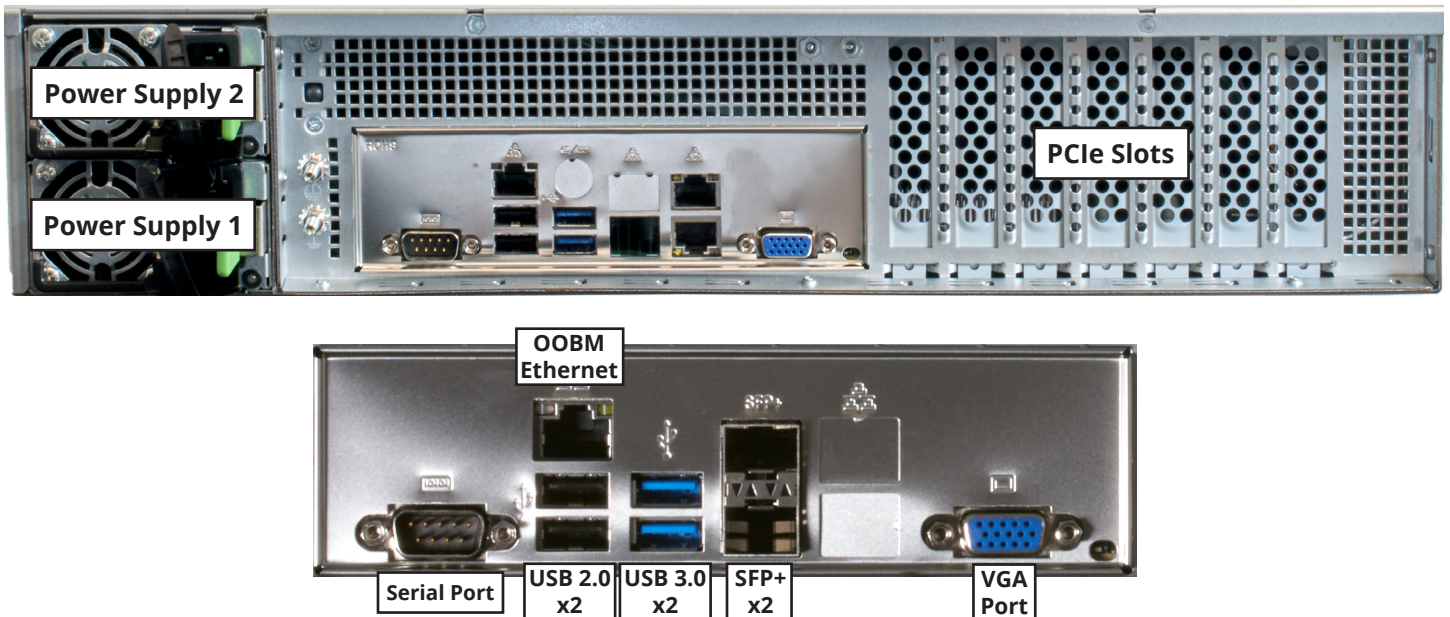|	
	R40 All-Flash Storage Array
	Locking Bezel
	Set of rackmount rails with mounting hardware
	48 SSD drive trays with up to 48 drives installed
	Accessory kit with 2 IEC C13 to NEMA 5-15P power cords, 2 IEC C13 to C14 cords, and a set of velcro cable ties

4.1 Front Ports and Indicators

The R40 front ears have button LEDs for power, system ID, and alarm mute. It also has lights for network activity and faults, and a USB 3.0 port.

The fault indicator is on during the initial power-on self-test (POST) and turns off during normal operation. It turns on if the TrueNAS software issues an alert.

Light / Button	Color and Indication
⏻	Blue: System On
⟳	N/A: Reset Button
ID	Blue: Locate ID Active
⚠	Green: Fault / Alert
🖧	Amber: Link Active
🔇	Red: Alarms Muted

USB 3.0

4.2 Rear Components and Ports

The back panel has redundant power supplies and various connection ports.

Power Supply 2

Power Supply 1

PCIe Slots

OOBM Ethernet

Serial Port

USB 2.0 x2

USB 3.0 x2

SFP+ x2

VGA Port

Not pictured: Serial number and IPMI password stickers are on the back of the chassis underneath the USB ports.

5 Rack the R10, R20, or R40

The R10, R20, and R40 share the same rail kit and racking process. Each system has slightly different dimensions, so we recommend double-checking the system's rack rail placement.

All three require an EIA-310 compliant rack. To properly install the rack rails, the front and rear vertical rack posts must be between **23" - 35.75" (584mm-908mm)** apart.

5.1 Install Chassis Rails

> There may be a screw on the side of the chassis that can interfere with adding rails. Removed it before continuing.
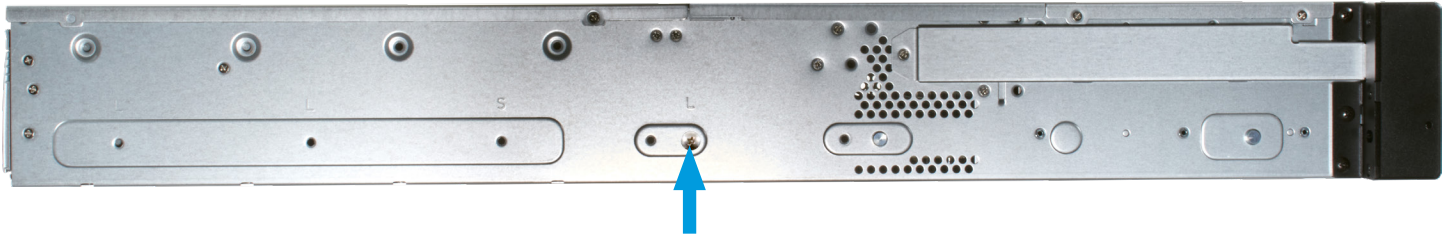
Each rail has two components, the outer rack rail and the inner chassis rail. Slide the chassis rail forward until the metal catch stops it. Push in the catch and slide the chassis rail forward until it is free of the rack rail.

PUSH

SLIDE

Align the chassis rail end stamped "FRONT" with the front of the system. Fit the rail keyholes over the mounting pegs on the side of the system and slide it into place. Use an M4 screw to secure the rail to the chassis.

For the R10, use the screw hole at the front of the chassis. Repeat the process for the second rail.

R10

M4 Screw
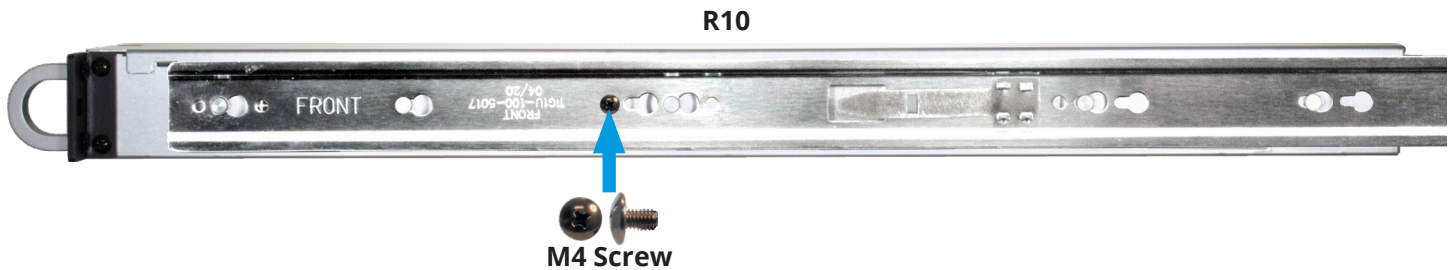
For the R20 and R40, use the screw hole at the back of the chassis. Repeat the process for the second rail.

R20/R40

M4 Screw

5.2 Install Rack Rails

Before installing the rack rail, make sure the rack has enough space for the system. The R10 needs 1U of space for both the system and rack rails. The R20 and R40 needs 2U of space with the rack rails installed into the bottom 1U.

Align a rack rail with the end stamped "FRONT" at the front of the rack. The "FRONT" text must point **inside** the rack so the chassis rails can slide into the rack rails. Align the rail front pegs with the rack attach points and push the rail into thm. Fit the rail retention clip over the front of the rack by pushing on the spring plate to open the clip. The rail kit includes two retention screw hole extenders that you can screw into the middle rail attach point.
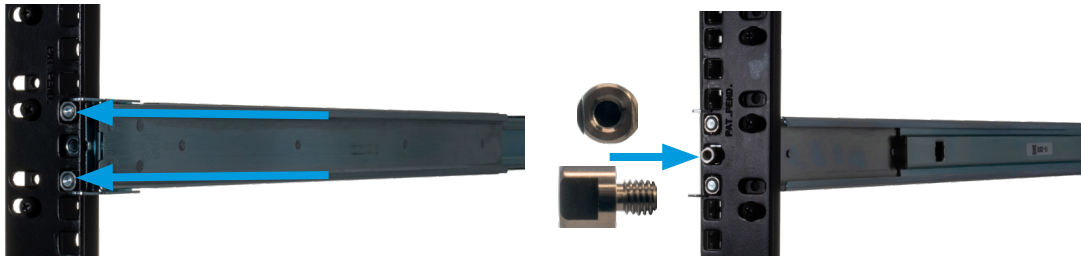
With the front of the rail installed, extend the back of the rack rail towards the equivalent attach points on the rear rack post. Make sure the rail remains level from front to back. Follow this process to install the other rack rail.

5.3 Mount the System in the Rack

> **Warning:** The R-Series requires two people to safely lift in and out of a rack. Do not install drives until after you mount the R-Series in the rack. Remove all drives before taking the M-Series out of the rack.

Align the chassis rails with the rack rails. Slide the ends of the chassis rails into the rack rails and push the system forward until the metal safety catches click into place. Squeeze the safety catches against the sides of the system and continue to gently push the system into the rack.

M4 Screw

The rail kit includes black M5 rack screws you can use to secure the chassis ears to the rack.

6 Install or Replace Drives

R-Series systems share many of the same drive trays. The general drive install and tray insertion procedures for each type of drive tray are described here:

6.1 Solid State Drives (R10, R20, R40)

Placing locked SED drives in the R20 rear bays may cause the R20 to hang on boot indefinitely.
We recommend not using SED drives with the R20 until we resolve the issue.

To remove a drive tray, push the button on the right end of the tray to release the locking arm. Gently open the arm until it stops, then pull the tray out from the system.
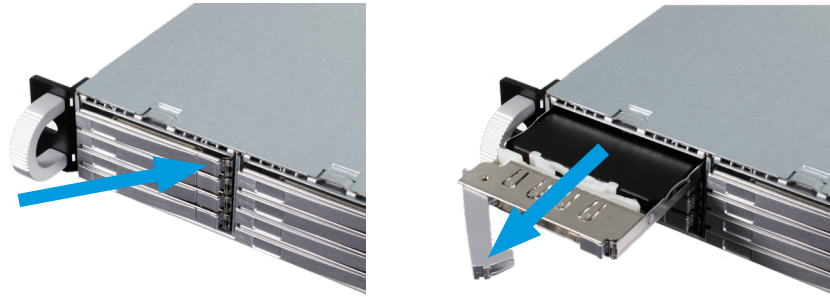
To replace a drive, unlatch and rotate the plastic clip on the tray to release the drive. Slide the drive out of the tray.
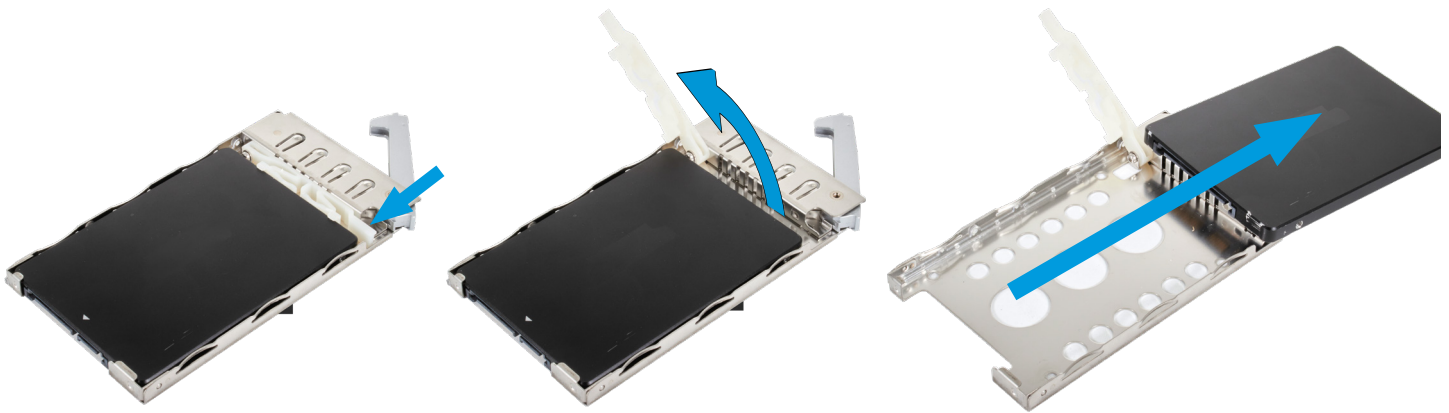
To add a drive to the tray, ensure the plastic clip out of the way, then slide the drive forward under the metal tabs and rotate the clip back until it snaps into place. Make sure the drive connectors are at the back of the tray.

To install an SSD drive tray into a system, align the tray with an opening on the chassis and slide it forward until the locking arm begins to swing closed. Gently swing the locking arm closed until it latches into place.

6.2 Hard Disk Drives (R20)

To remove a hard drive tray, press the locking arm release at the right side of the tray front. Swing the arm out until it completely stops, then pull the tray free from the system.


To remove a drive, push the side attached to the flexible pegs from underneath the tray, then lift the drive out.

To install a drive in a tray, ensure the drive connectors pointed out the back of the tray and push the drive side screw holes into the fixed retention pegs on one side of the tray. Push the other side of the drive down into the flexible retention pegs to secure the drive.
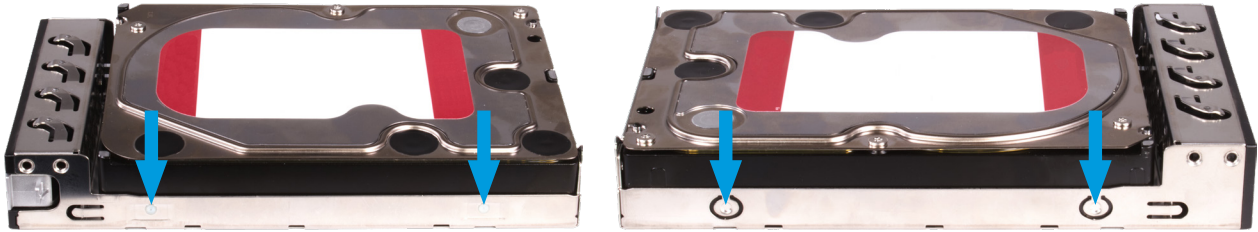

To install a hard drive tray into a system, push the tray into a slot until the locking arm begins to swing closed. Gently push the arm into place to seat the tray and secure it in the system.
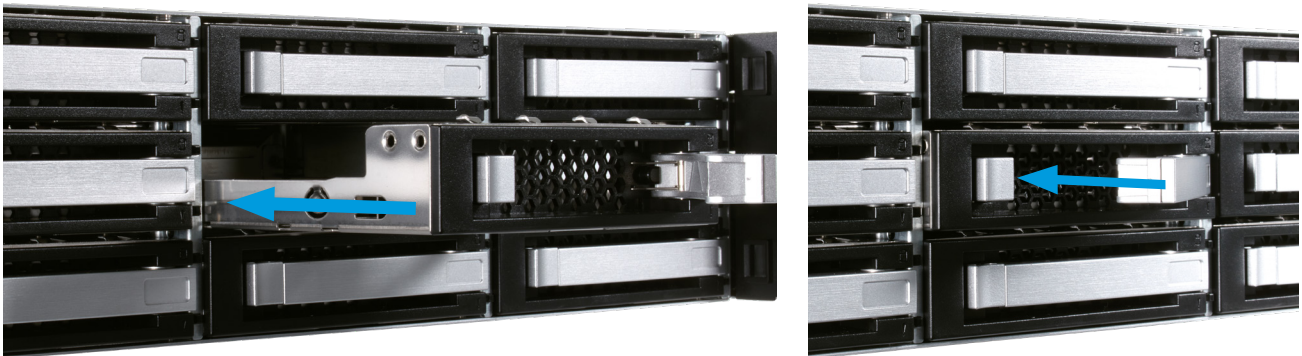
7 Attach Bezel (R20 and R40)

The **R20** and **R40** include an optional bezel you lock to prevent unauthorized access to the primary drive trays. Align the right side of the bezel with the attach points on the right ear and push the left side of the bezel into the attach points on the left ear until it clicks into place.
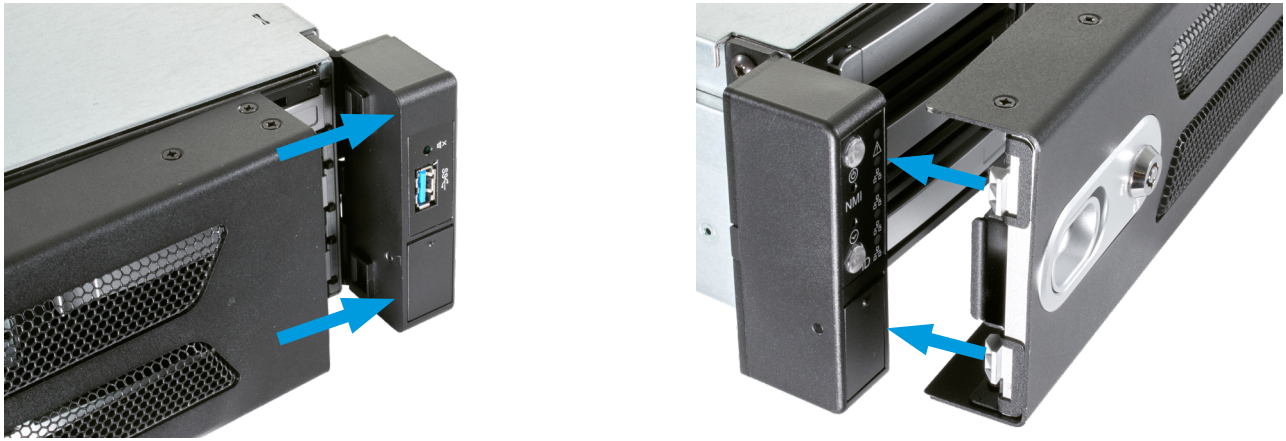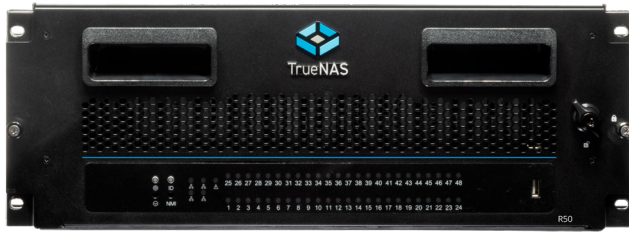

To remove the bezel, slide the front latch to the right and pull the bezel forward. To lock the bezel in place, insert the key and rotate the lock to the left.
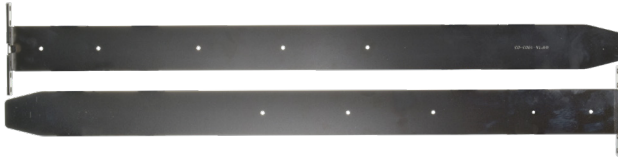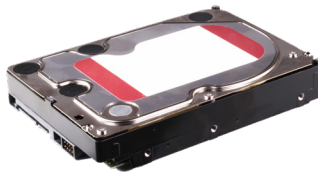

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8 R50 Components

The R50 is a 4U Hybrid Storage Array that has 48 3.5" and three 2.5" NVMe drive bays, redundant power supplies, and a single TrueNAS controller. You will find these items when opening the R50 packaging:
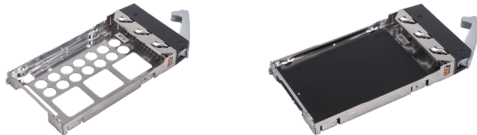

R50 Hybrid Storage Array

Set of fixed rackmount rails

Up to 48 hard drives, depending on the purchase (shipped separately)

3 NVMe drive trays with up to 3 drives installed

Accessory kit with 2 IEC C13 to NEMA 5-15P power cords, 2 IEC C13 to C14 cords, a set of velcro cable ties, and bags with installation hardware
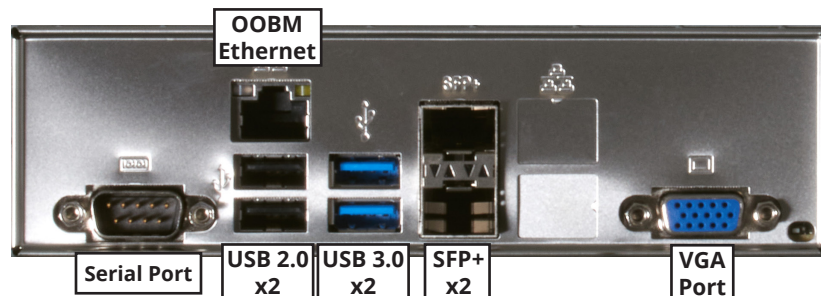
8.1 Front Ports and Indicators

The R50 front panel has buttons and indicators to help control the system. It also has one USB 2.0 port.

The fault indicator is on during the initial power-on self-test (POST) and turns off during normal operation. It turns on if the TrueNAS software issues an alert.
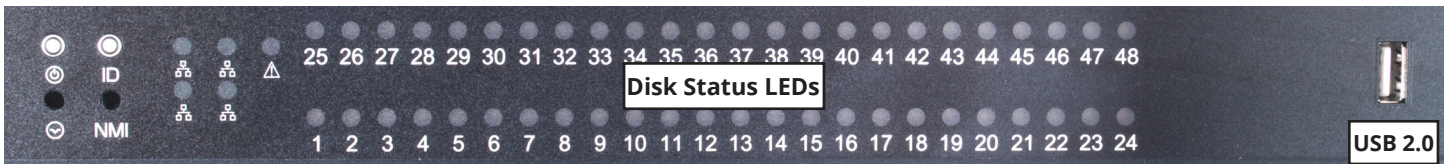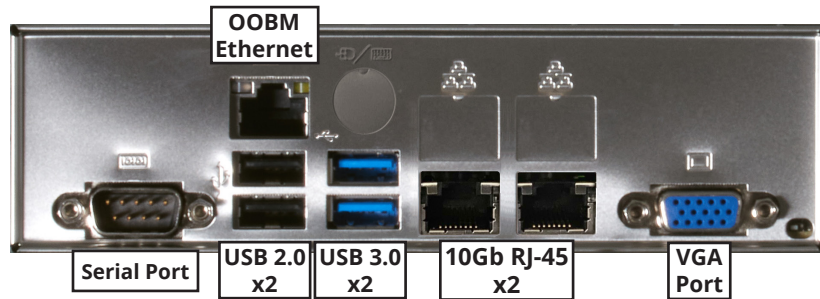
Light / Button	Color and Indication
⏻	Blue: System On
⟳	N/A: Reset Button
ID	Blue: Locate ID Active
⚠	Green: Fault / Alert
🖧	Amber: Link Active

8.2 R50 Rear Components and Ports

R50B Rear Components and Ports

Fan 1

Fan 2

Fan 3

NVMe Drives

Power Supply 2

Power Supply 1

PCIe Slots

OOBM Ethernet

Serial Port

USB 2.0 x2

USB 3.0 x2

10Gb RJ-45 x2

VGA Port
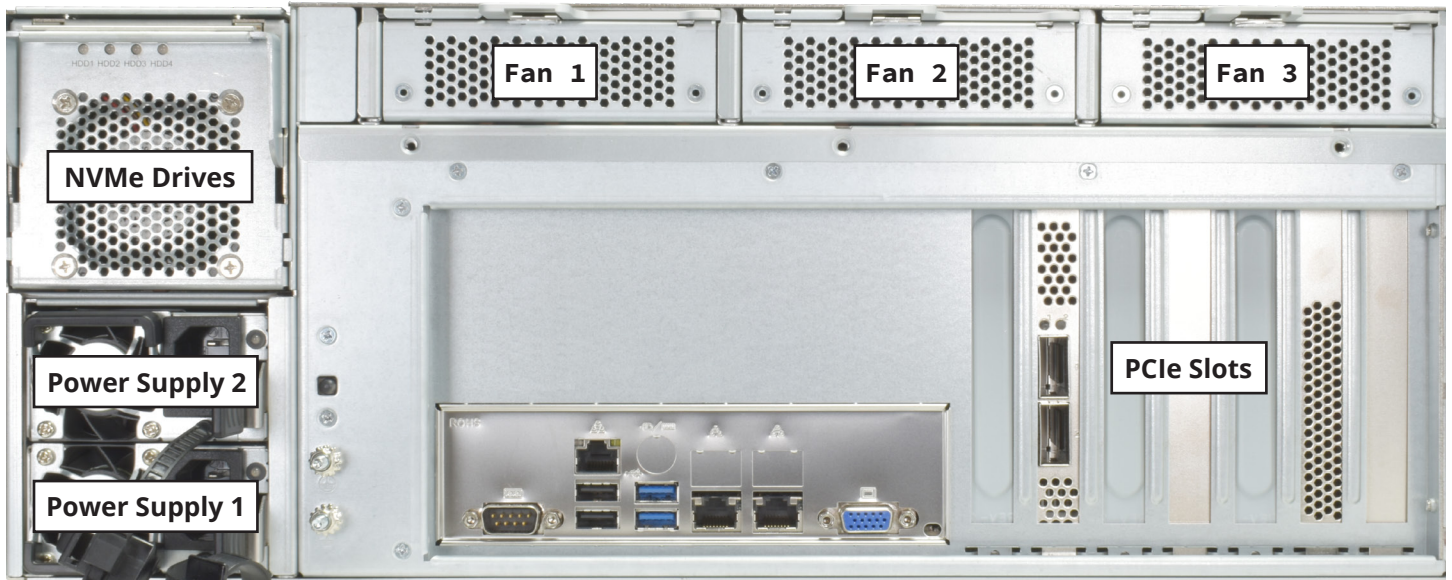
9 Rack the R50

The R50 requires 4U of rack space in an EIA-310-compliant rack. The temporary assist rails require another 1U of rack space underneath the R50. The front and rear rack posts can have a four-inch (101.6mm) tolerance in four different depth configurations. See section "9.4 Adjust Rail Sleeve" on page 18.

> You need 16 standard M5 cage nuts to rack the R50 in a standard square-hole rack.
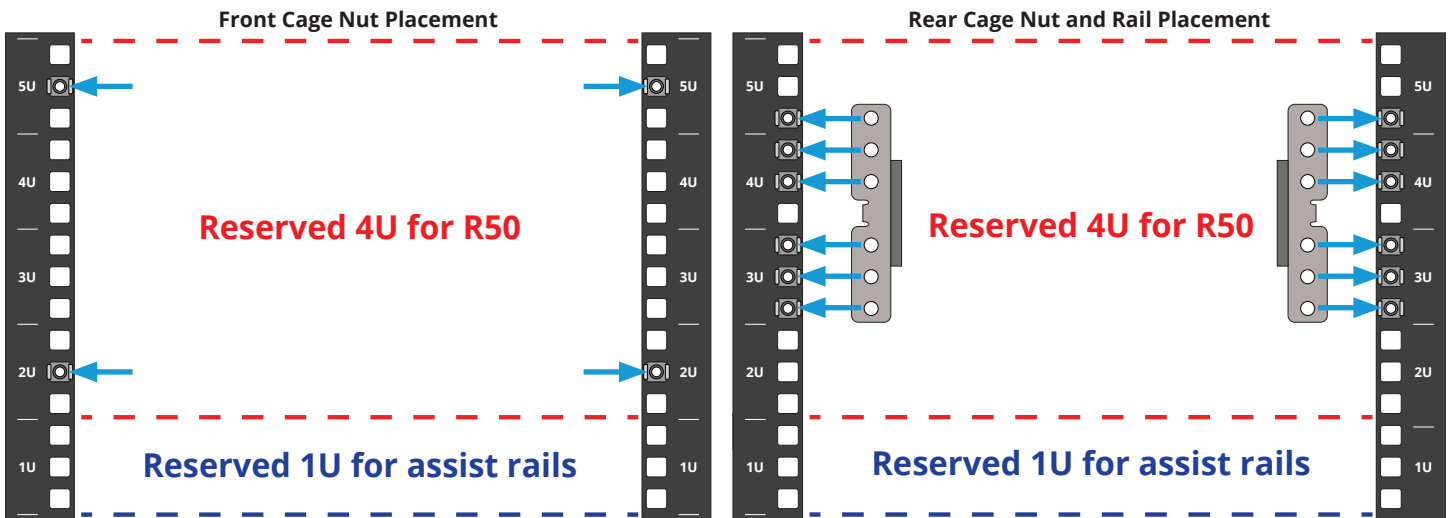
9.2 Install Cage Nuts

Cage nuts attach to holes in the rack posts, with the nut on the inside of the rack and "wings" pointed horizontally.

Attach four cage nuts in the rack front posts, two on each side. Place the first cage nut in the **middle of the top 1U** of the reserved 4U of rack space. Place the second cage nut **in the middle of the bottom 1U** of the reserved 4U of rack space. Place the remaining two cage nuts in the same points on the other front rack post.

You need **six** cage nuts for each rear rack rail (**twelve total**).

Starting from the **topmost** attach-point in the reserved 4U of rack space, **skip the first two attach points** and place cage nuts in the **next three descending attach-points**. **Skip one attach-point**, then place the last three cage nuts in the **next three descending attach-points**. Repeat for the other rear rack rail.


9.3 Install Rack Rails

Remove the rack rails from the system. Fit a rail over the cage nuts on one rear rack post (the tab fits into the empty slot between the cage nuts) and use six **M5 × 15mm screws** to secure it to the rack. Repeat for the other rail.
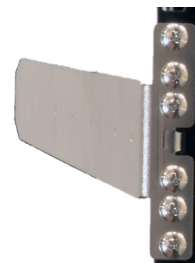
9.4 Adjust Rail Sleeve

The rail sleeve uses position 2 by default. To adjust it, remove the 12 screws (yellow circles) and move the sleeve to the position that accommodates your rack depth (see table).
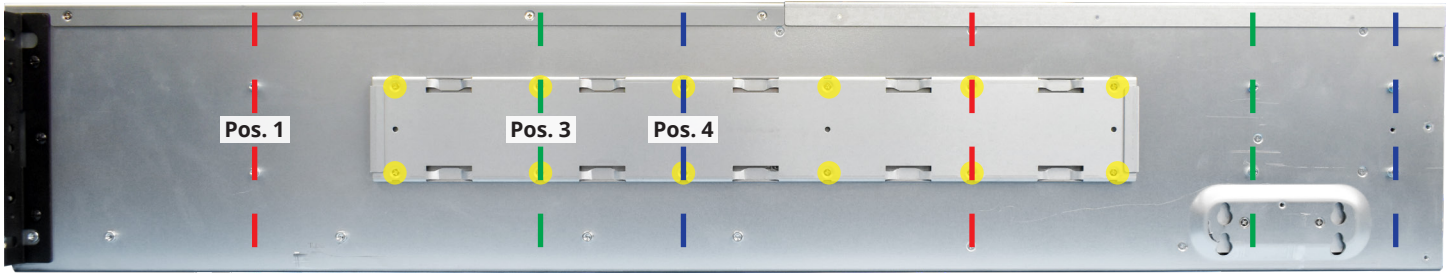
| Position	Depth w/ Standard Ears	Depth with 40mm Optional Extended Ears
1	27.5" - 32"	27" - 30 3/8"
2 (pictured)	28 13/16" - 35 11/16"	27.5" - 34 1/8"
3	32.5" - 43 1/8"	30 15/16" - 37.5"
4	36 1/4" - 43 1/8"	34 5/8" - 41.5"

9.5 Install Assist Rails

At the front rack post, install an assist rail front tab into the middle space of the bottom 1U, then use two of the **M5 × 10mm screws** to secure it to the rack. Extend the assist rail to the rear rack post and use two more screws to secure it. Tighten the four bolts inside the assist rail to set the length. Repeat for the other rail.

M5 × 10mm screws

9.6 Mount the R50 in the Rack

Two people should lift the R50. Set the system onto the assist rails and align the rail sleeves with the rails. Slide the system forward until it is flush with the front of the rack.
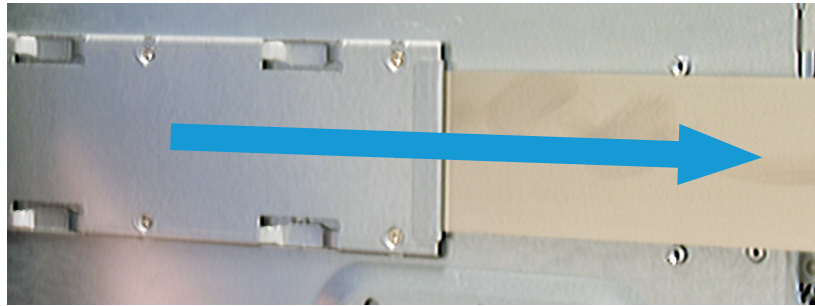
Use four M5 screws to secure the system to the rack.

10 Install Drives

The R50 drive drawer sits on internal rails and slides out of the system. Hard drives install into the drawer without drive trays. The NVMe drives are on the back of the system, and use removable trays to mount drives in the system.
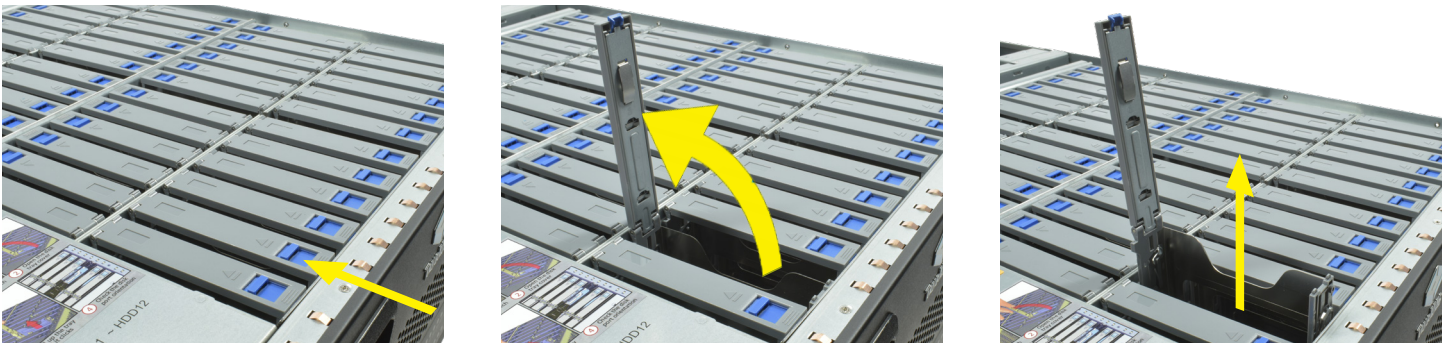
10.1 Open the Drive Drawer

Unlock the front and loosen the captive thumbscrews, then use the handles to pull the drawer out.

> **Warning:** To prevent overheating, do not open the drawer for more than 1 minute with the system running.
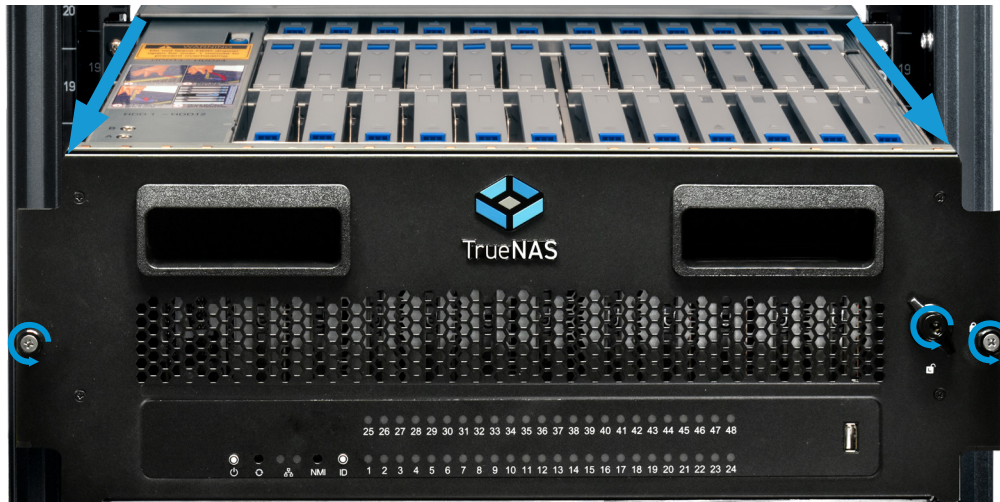

10.2 Insert Hard Drives

Push the blue release tab on a slot cover and lift. Gently grasp the inner tray and pull it up until it locks into place.


The R50 is certified to use WD Helium drives only. Align a hard drive with the connectors facing downwards into the system, then slide the drive into the slot. Squeeze the plastic release tabs on each side of the tray, then push the tray downwards to install the hard drive into the system. Close the slot cover and make sure it locks.
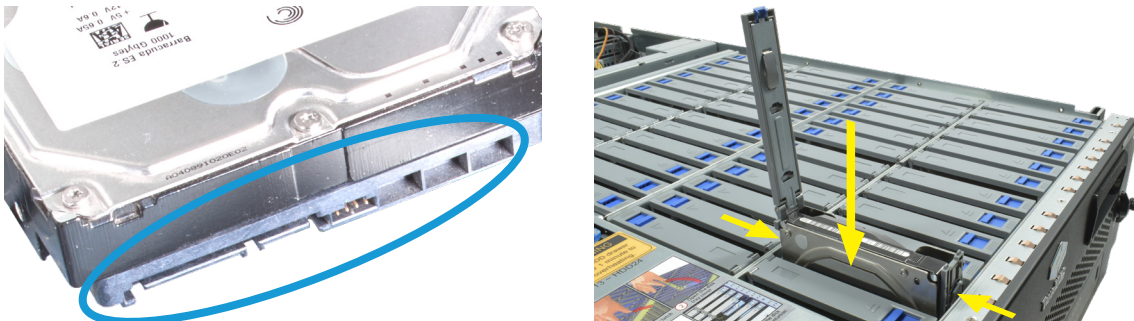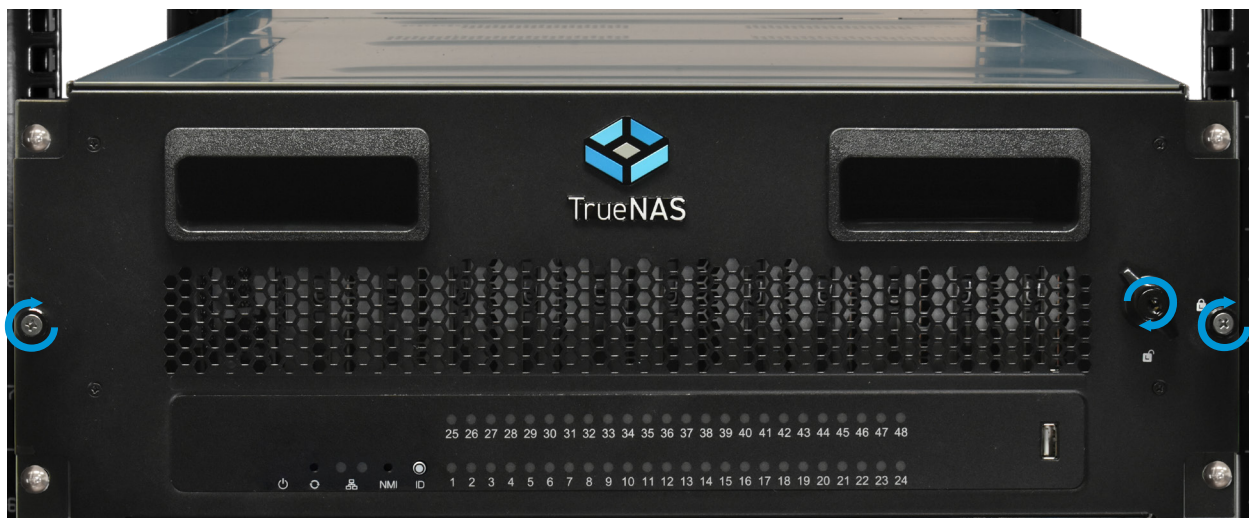
10.3 Close the Drive Drawer

Pull the blue release catches on each rail toward you, then push the drawer into the system.
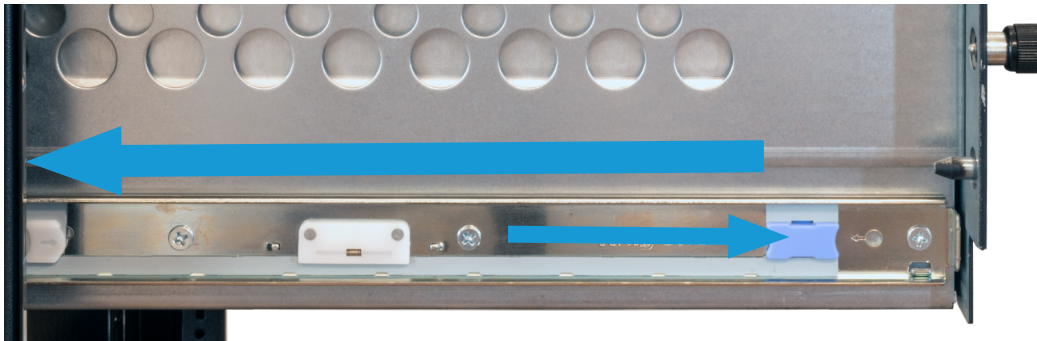

To secure the drive bay and prevent it from accidentally opening, tighten the captive thumbscrews on the front of the system. You can also use the included key to lock the drive drawer and prevent unauthorized access.

10.4 Access NVMe Trays

NVMe drives are hot-swappable, but the R50 won't add the drive until after a power cycle.

R50 NVMe drive bays are located behind a case fan on the back of the system. To remove the fan, rotate the handle downward, push down on the retention tab (**1**), and pull the fan free of the system (**2**).
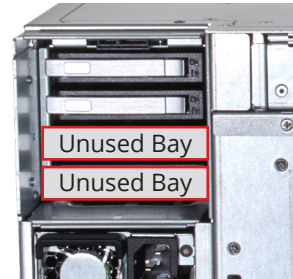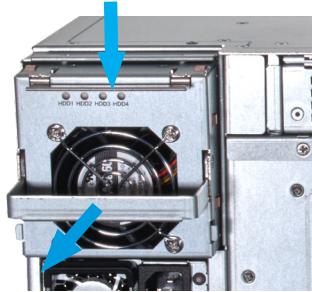
To remove a drive tray, push the release catch on the left side of the tray front, then swing the retention arm out until it fully stops. Gently pull the tray forward until it is completely free from the system. The bottommost drive bay is not used in the R50.
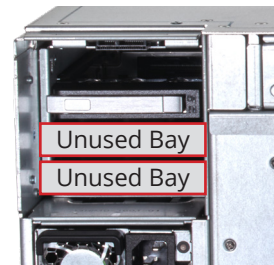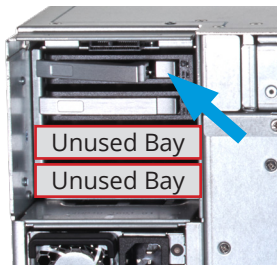
10.5 Replace NVMe Drives

To remove a drive from an NVMe tray, push on the drive from the bottom of the tray until the drive pops out of the side retention pegs on the drive tray. You may have to slightly bend the tabs opposite the posts to get the drive out.

To install a new drive in an NVMe tray, align the drive connectors with the back of the tray. Push the screw holes on the side of the drive into the fixed pegs on the tray, then push the drive down over the flexible pegs until the drive clicks into place.
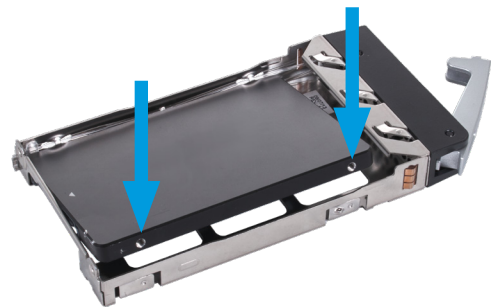
11 Connect R-Series Cables

Refer to the rear panel descriptions for each R-Series system in this guide for port identification. We recommend connecting the Out of Band Management port and a monitor and keyboard for the first boot so you can configure the system and view the initial TrueNAS web interface IP address. After connecting all other ports, plug in both power cables. Each system has retention clips that prevent accidentally unplugging the system.

> Your system is equipped with the optimal BIOS and IPMI firmware out of the box.
> **DO NOT UPGRADE** your system's BIOS and IPMI firmware.
>
> We recommend that IPMI be on a separate and secure network without Internet access.
> Please contact support if you need to upgrade your system's BIOS or IPMI firmware.
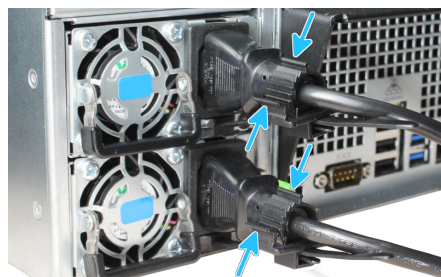

11.1 Connect SAS Cables

To set up SAS between your TrueNAS system and Expansion Shelves, cable the first port on the first TrueNAS Controller to the first port on the first Expansion Shelf Controller. High Availability systems require another cable from the first port on the second TrueNAS Controller to the first port on the second Expansion Shelf Controller. We **DO NOT** recommend other cabling configurations. Contact iX Support if you need other cabling methods.

> **Warning:** When setting up SAS connections, please adhere to the wiring example below. Connecting expansion shelves incorrectly causes errors. Never cable a single controller to different expanders on the same shelf.

When purchased with a SAS expansion card, the R20, R40, and R50 can connect to two Expansion Shelves.
This diagram shows an R50 connected to two iXsystems ES102s:
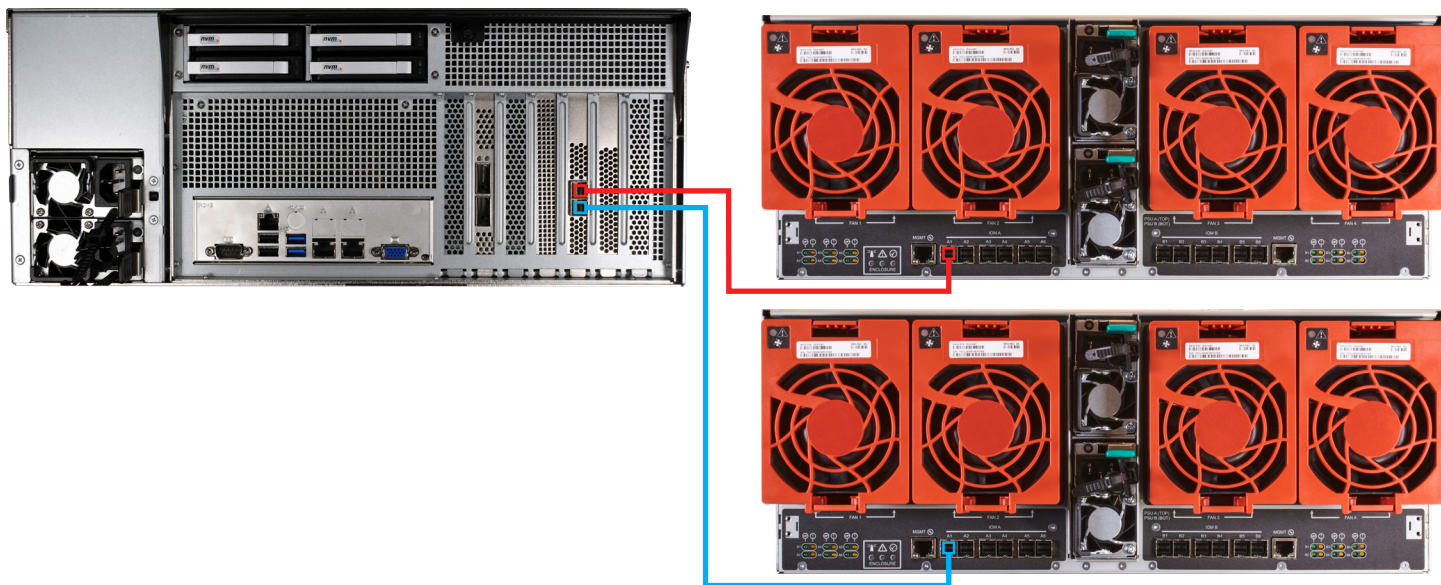
12 Access the TrueNAS Web Interface

Powering on the system and allowing it to boot to the system console will display the IP address of the TrueNAS R-Series graphical web interface, *192.168.100.231* in this example:

```
The web user interface is at:

http://192.168.100.231
https://192.168.100.231
```

The TrueNAS web interface uses default credentials for first-time logins:

Username: *root*
Password: *abcd1234*

After logging in, you can change the root account password in **Account > Users** to increase system security.

When more than one TrueNAS device is connected to the network, mDNS can experience name conflicts. Give each TrueNAS device a unique hostname like *truenas1.local* and *truenas2.local* to avoid this problem. The hostname is changed in **Network > Global Configuration > Hostname** in the TrueNAS web interface.

Out of band logins have separate credentials from the TrueNAS web interface. The credentials are randomized and attached to the back of the TrueNAS chassis. For more details, see https://www.truenas.com/docs/sb-327.

For additional details about out of band management, see the R-Series Out of Band Management guide: https://www.truenas.com/docs/hardware/rseries/rseriesoobm/

13 Additional Resources

The TrueNAS Documentation Hub has complete software configuration and usage instructions. Click **Guide** in the TrueNAS web interface or go directly to:

https://www.truenas.com/docs/

Additional hardware guides and articles are in the Documentation Hub's Hardware section:

https://www.truenas.com/docs/hardware/

The TrueNAS Community forums provide opportunities to interact with other TrueNAS users and discuss their configurations:

https://www.truenas.com/community/

14 Contacting iXsystems

For assistance, please contact iX Support:

Contact Method	Contact Options
Web	https://support.ixsystems.com
Email	support@iXsystems.com
Telephone	Monday-Friday, 6:00AM to 6:00PM Pacific Standard Time: • US-only toll-free: **1-855-473-7449** option 2 • Local and international: **1-408-943-4100** option 2
Telephone	Telephone After Hours (24x7 Gold Level Support only): • US-only toll-free: **1-855-499-5131** • International: **1-408-878-3140** (International calling rates will apply)

Notes: