

TrueNAS® R-Series Unified Storage Arrays Basic Setup Guide

Version 1.31



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1 Introducing the TrueNAS R-Series

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 will come with the TrueNAS operating system preloaded.

Review the safety considerations and hardware requirements before installing an R-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 at least two people lift an R-Series system.

Never attempt to lift an R-Series system when loaded with drives! We recommend installing the system in a rack before adding drives and then removing them before de-racking an R-Series system.

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 R-Series system in a rack:

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

2 R10

The R10 is a 1U All-Flash Storage Array that has 16 SSD drive bays, redundant power supplies, and a single TrueNAS controller. You will find these items when opening the R10 packaging:

2.1 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:



R10 All-Flash Storage Array



Set of rackmount rails and mounting hardware



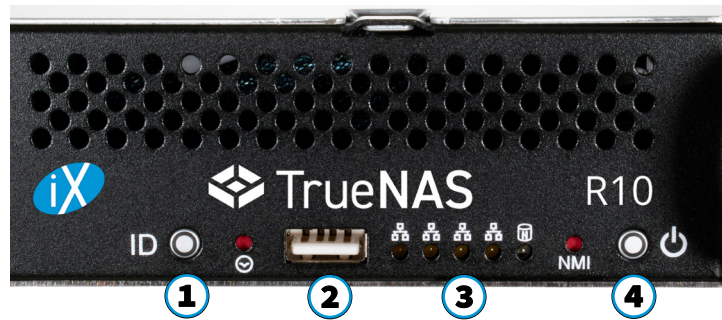
16 SSD drive trays with up to 16 drives installed



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

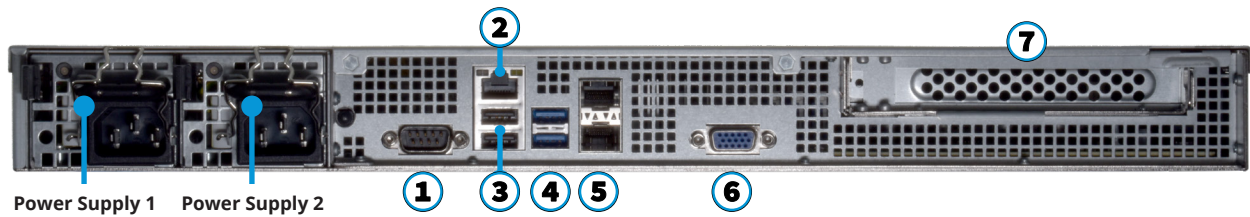
2.2 Ports and Indicators

The right side of the R10 front panel has buttons, ports and indicators for controlling the system.



There are lighted buttons for system ID (1) and power (4). There is also a USB 2.0 port (2) and lights for network and HDD activity (3).

The back panel has the power supplies and connection ports:



1. Serial port
2. 1Gb Ethernet Out of Band Management port
3. Two USB 2.0 ports
4. Two USB 3.0 ports
5. Two 10Gb SFP+ networking ports
6. VGA monitor port
7. PCIe Slot for additional network card.

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

3 R20

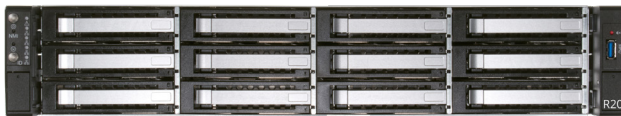
The R20 is a 2U Hybrid Storage Array that has 12 3.5" drive bays and 2 SSD drive bays, redundant power supplies, and a single TrueNAS controller. You will find these items when opening the R20 packaging:

3.1 R20 Components

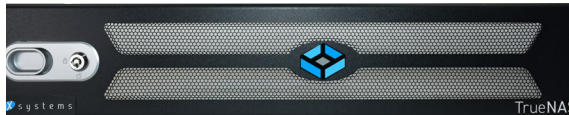
TrueNAS units are carefully packed and shipped with trusted carriers to arrive in perfect condition. If there is any shipping damage or missing parts, please take photos and contact iXsystems support immediately at support@ixsystems.com, 1-855-GREP4-iX (1-855-473-7449), or 1-408-943-4100.

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:



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

3.2 Ports and Indicators

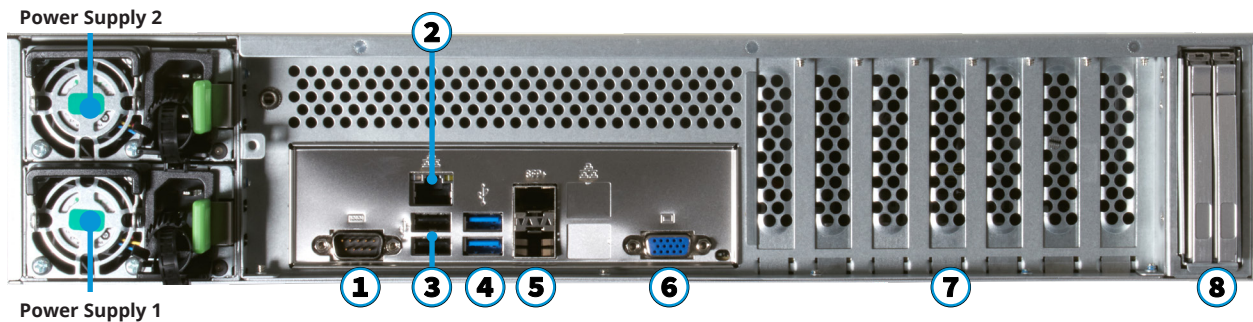
R20 buttons and indicators are located on the “ears” on the right and left edge of the system front.



The **left** ear has lighted buttons for power (1) and system ID (2). There are also fault (3) and network activity (4) indicators. Both ears have hinged covers over screw holes for securing the system to a rack (5). The **right** ear has a single USB 3.0 port (6) and a recessed button that silences the chassis alarm (7).

The fault indicator is on during the initial power-on self-test (POST) and off during normal operation. It also turns on if the TrueNAS software issues an alert. For details about software alerts and how to configure them, see <https://www.truenas.com/docs/core/system/alert/> on the TrueNAS Documentation Hub.

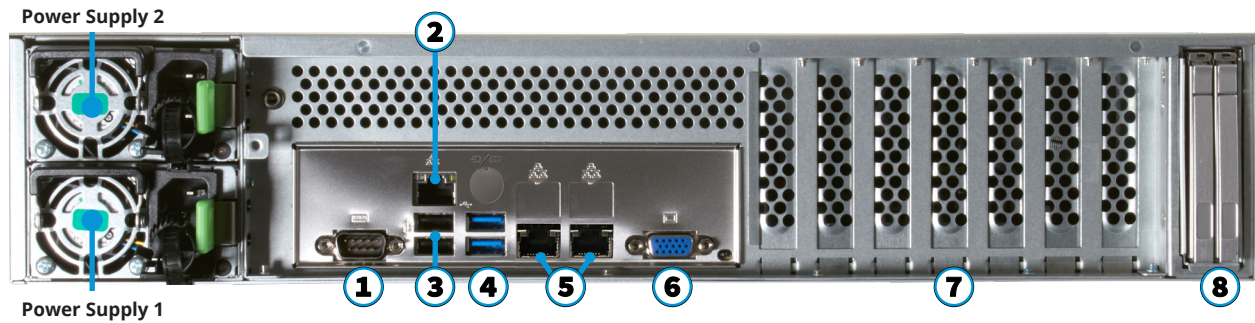
The back panel has the power supplies and connection ports:



1. Serial port
2. 1Gb Ethernet Out of Band Management port
3. Two USB 2.0 ports
4. Two USB 3.0 ports
5. Two 10Gb SFP+ networking ports
6. VGA monitor port
7. PCIe/NIC expansion slots
8. SSD Drive Bays

Not pictured: Serial number and IPMI password stickers are attached to the back of the chassis, underneath the VGA monitor port.

3.2.1 R20B Rear Components and Ports



1. Serial port
2. 1Gb Ethernet Out of Band Management port
3. Two USB 2.0 ports
4. Two USB 3.0 ports
5. Two RJ-45 10Gb networking ports
6. VGA monitor port
7. PCIe/NIC expansion slots
8. SSD Drive Bays

Not pictured: Serial number and IPMI password stickers are attached to the back of the chassis, underneath the VGA monitor port.

4 R40

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:

4.1 R40 Components

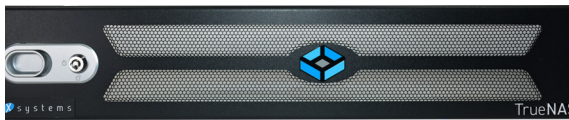
TrueNAS units are carefully packed and shipped with trusted carriers to arrive in perfect condition. If there is any shipping damage or missing parts, please take photos and contact iXsystems support immediately at support@ixsystems.com, 1-855-GREP4-iX (1-855-473-7449), or 1-408-943-4100.

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:



R40 All-Flash Storage Array



Locking Bezel



Set of rackmount rails with mounting hardware



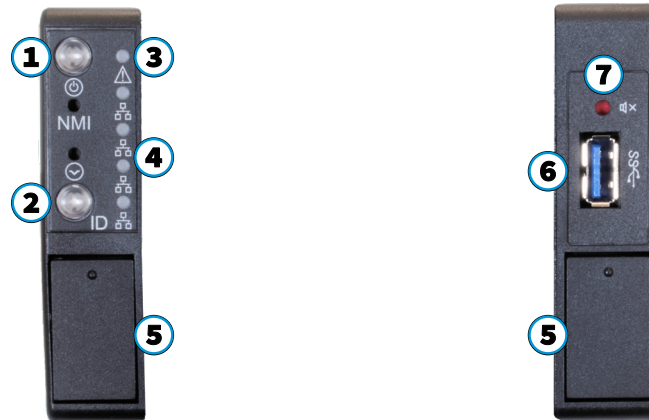
48 SSD drive trays with up to 48 drives installed



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

4.2 Ports and Indicators

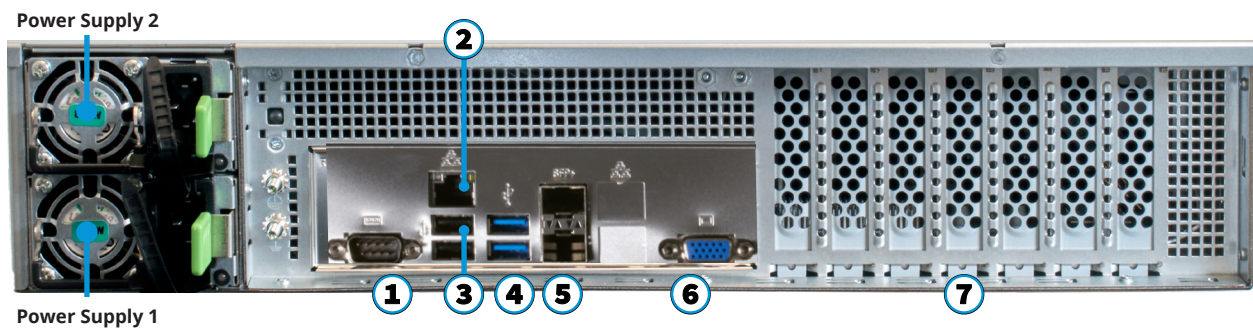
Buttons and indicators are on the front ears of the R40:



The **left** ear has lighted buttons for power (1) and system ID (2). There are also fault (3) and network activity (4) indicators. Both ears have hinged covers over screw holes for securing the system to a rack (5). The **right** ear has a single USB 3.0 port (6) and a recessed button that silences the chassis alarm (7).

The fault indicator is on during the initial power-on self-test (POST) and off during normal operation. It also turns on if the TrueNAS software issues an alert. For details about software alerts and how to configure them, see <https://www.truenas.com/docs/core/system/alert/> on the TrueNAS Documentation Hub.

The back panel has the power supplies and connection ports:



1. Serial port
2. 1Gb Ethernet Out of Band Management port
3. Two USB 2.0 ports
4. Two USB 3.0 ports
5. Two 10Gb SFP+ networking ports
6. VGA monitor port
7. PCIe/NIC expansion slots

Not pictured: Serial number and IPMI password stickers are attached to the back of the chassis, underneath the VGA monitor port.

5 Racking 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.

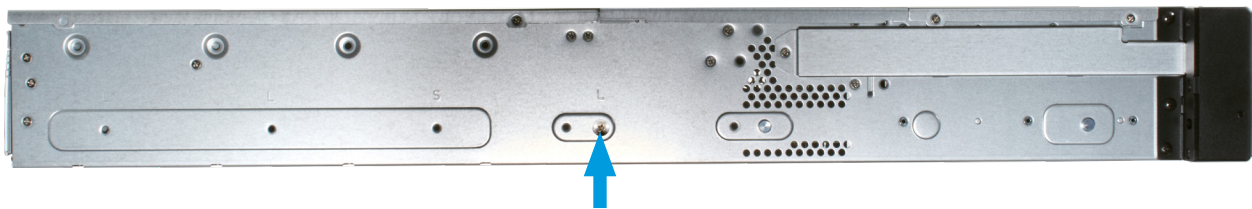
Only install drives into a system after placing it in the rack. We also recommend removing all installed drives before unracking a system. **Always team-lift a system when installing into a rack.**

5.1 Rack Requirements

The R10, R20, or R40 requires an EIA-310 compliant rack. To properly install the rack rails, the front and rear vertical rack posts need to be spaced between 23" - 35.75" (584mm-908mm) apart.

5.2 Attach the Chassis Rails

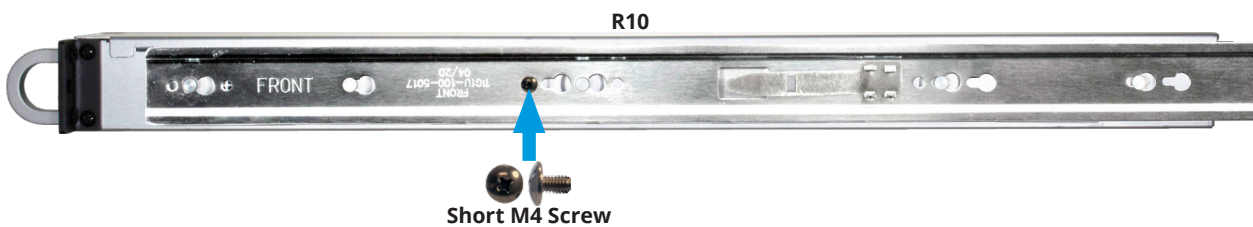
Note: There may be a screw on side of the chassis that should be removed because it can interfere with adding rails.



Each rail has two components, the outer rack rail and the inner chassis rail. To protect it during shipping, the chassis rail is inserted into the rack rail and must be removed before attaching to a system. 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.



Take the chassis rail and align the 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 system.

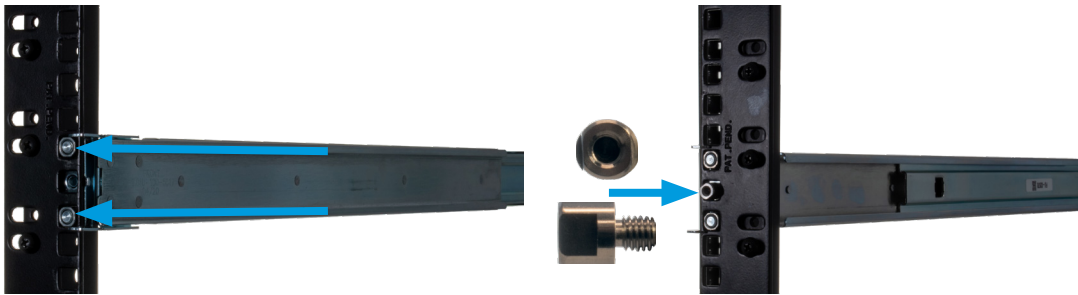


For the R10, use the screw hole at the front of the chassis to securing the rail. For the R20 and R40, use the screw hole at the back of the chassis to securing the rail. Follow this procedure to slide out and attach the second chassis rail to the other side of the system.

5.3 Install the 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 rack space, with the rack rails installed into the bottom 1U.

Take a rack rail and align the end stamped "FRONT" with the front of the rack. The "FRONT" text must be pointed **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 the attach points. Fit the rail retention clip over the front of the rack by pushing on the spring plate to open the clip. The rail kit also includes two retention screw hole extenders that can be screwed 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.



5.4 Push the System into the Rack

Team-lift the system and 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 push the system forward until it is flush with the front of the rack.



The rail kit includes additional M5 screws that can be used to secure the system to the rack rails using the screw holes in each chassis ear.

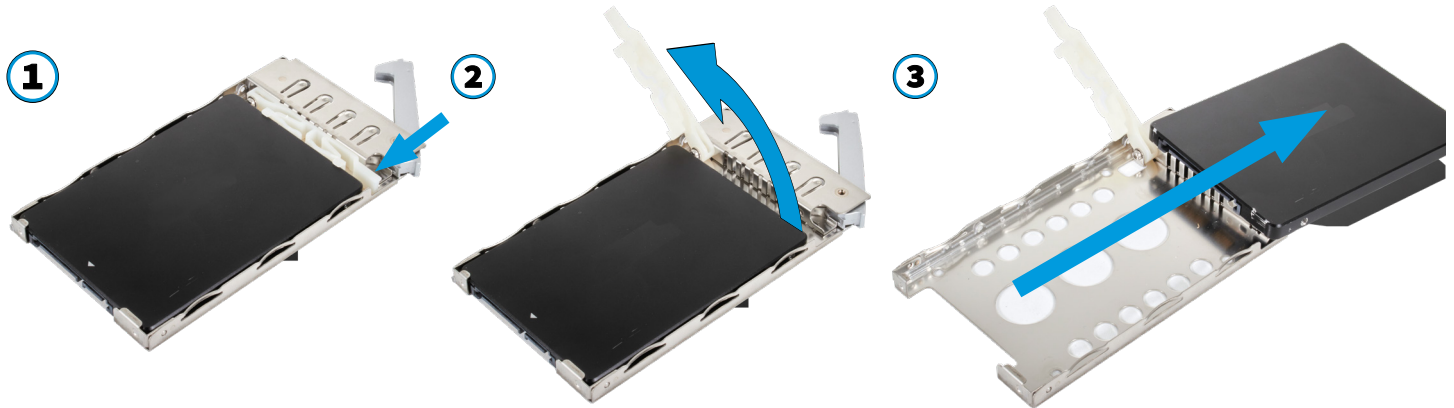
6 Handling Drive Trays

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 SSD Drive Trays (R10, R20, R40)

Warning for R20: Placing locked SED drives in the 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 replace a drive, unlatch (1) and rotate the plastic clip (2) on the tool-less tray to release the drive. Slide the drive out of the tray (3).



To add a drive to the tray, follow the same procedure to unlatch and rotate 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 accessible 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 forward until it latches into place.

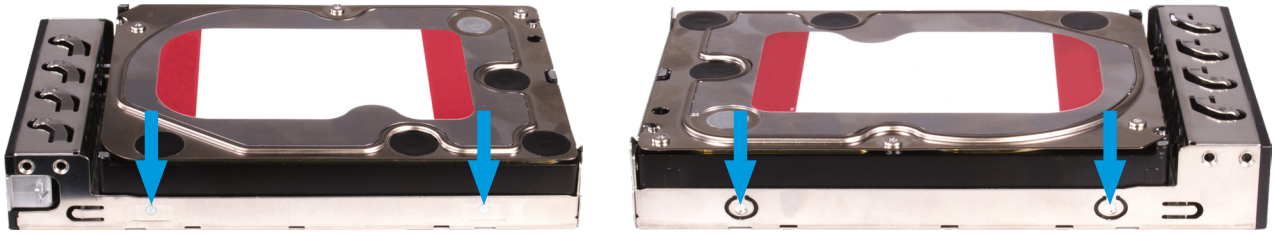


To remove a drive tray, push the button on the right end of the tray to release the tray locking arm. Gently swing the arm until it stops, then pull the tray out from the system.



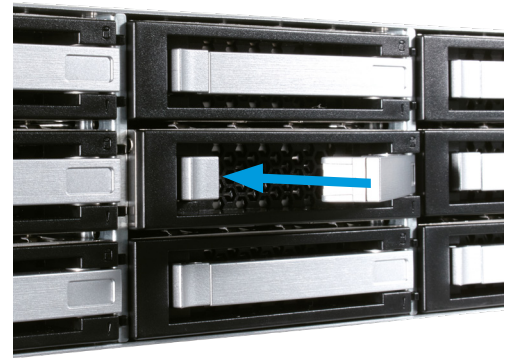
6.2 Hard Drive Trays (R20)

You do not need any tools to install a drive in a full size hard drive tray. Make sure the drive connectors are 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. Continue to push the other side of the drive down into the flexible retention pegs to secure the drive in place.

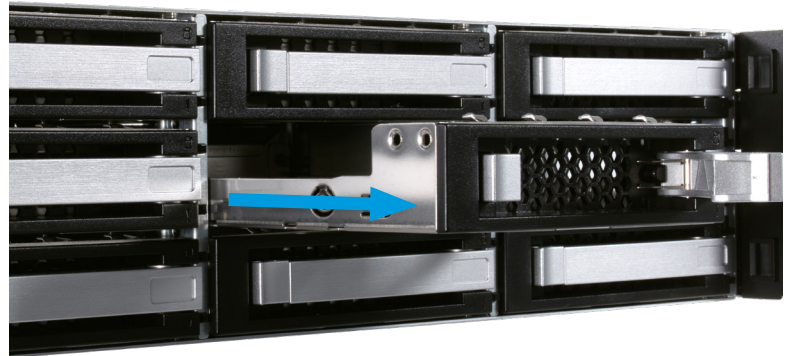
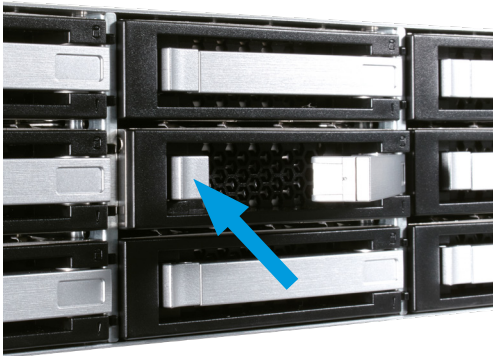


To remove a drive, push out the side attached to the flexible retention pegs from the bottom of the tray, then lift the drive free.

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.

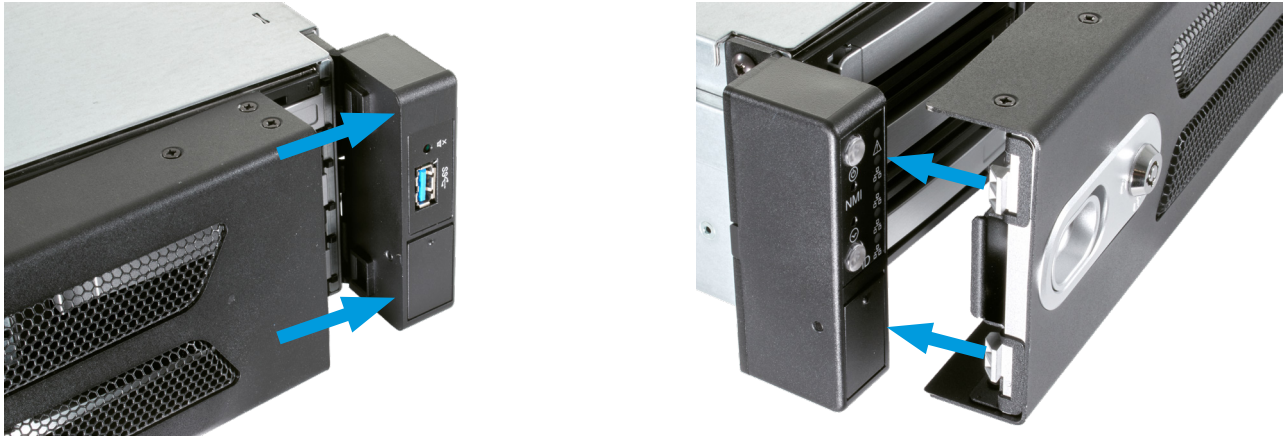


To remove a hard drive tray, press the locking arm release at the right side of the tray front. Swing the arm out until it completely stops, then pull the tray free from the system.



7 Bezel (R20 and R40)

The **R20** and **R40** include an optional bezel that can be locked to prevent unauthorized access to the primary drive trays. To attach the locking bezel, 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.



Removing the bezel requires sliding the front latch to the right and pulling the bezel forward (**1**). To lock the bezel in place, insert the key and rotate the lock to the left (**2**).



8 R50

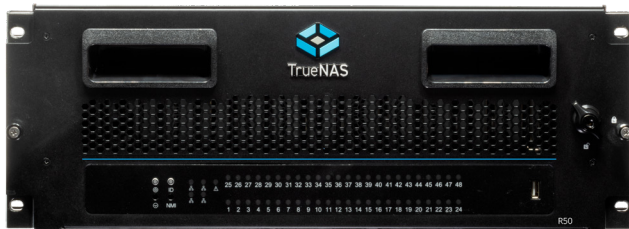
The R50 is a 4U Hybrid Storage Array that has 48 3.5" and three 2.5" NVMe drive bays, redundant power supplies, and a single TrueNAS controller. You will find these items when opening the R50 packaging:

8.1 R50 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.

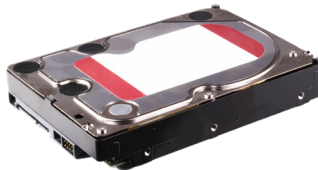
Carefully unpack the shipping boxes and locate these components:



R50 Hybrid Storage Array



Set of fixed rackmount rails



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



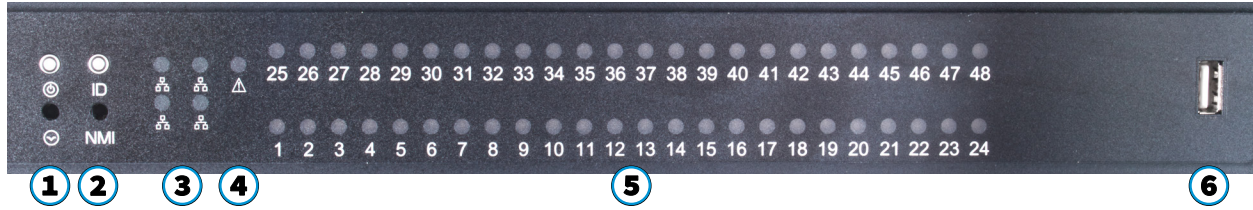
3 NVMe drive trays with up to 3 drives installed



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

8.2 Front Ports and Indicators

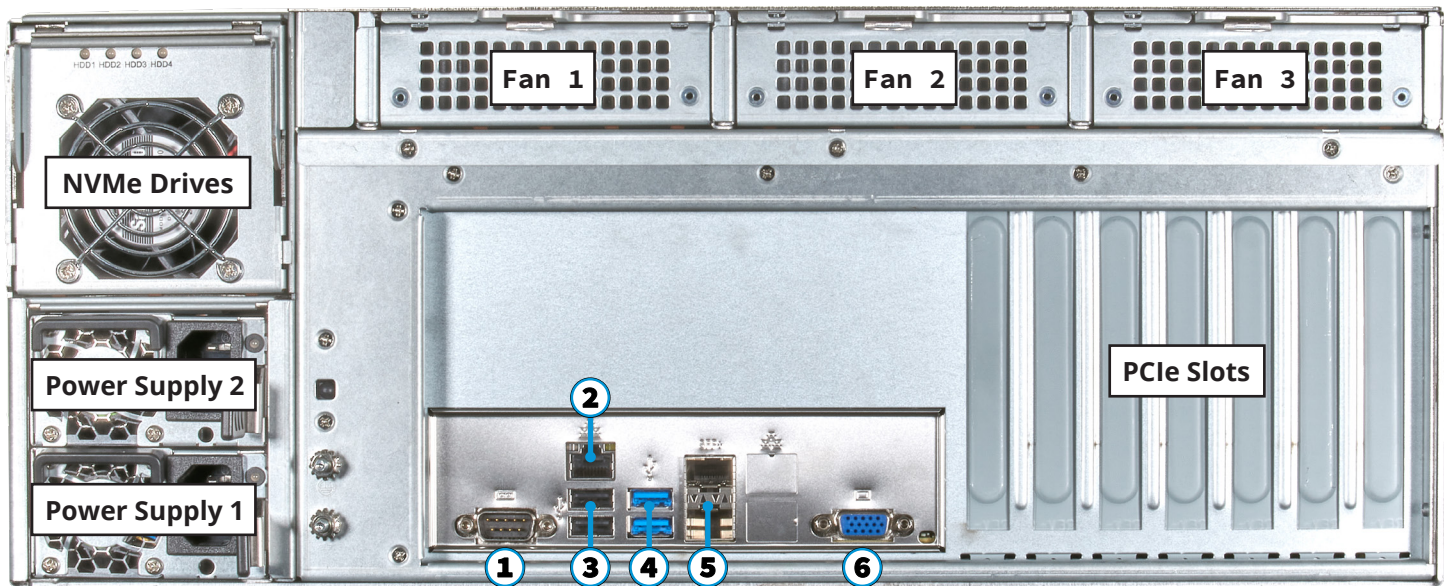
The lower section of the front panel has buttons and indicators to help control the system:



1. Power button/light
2. System ID button/light
3. Network activity indicators
4. Fault indicator
5. Disk status indicators
6. USB 2.0 port

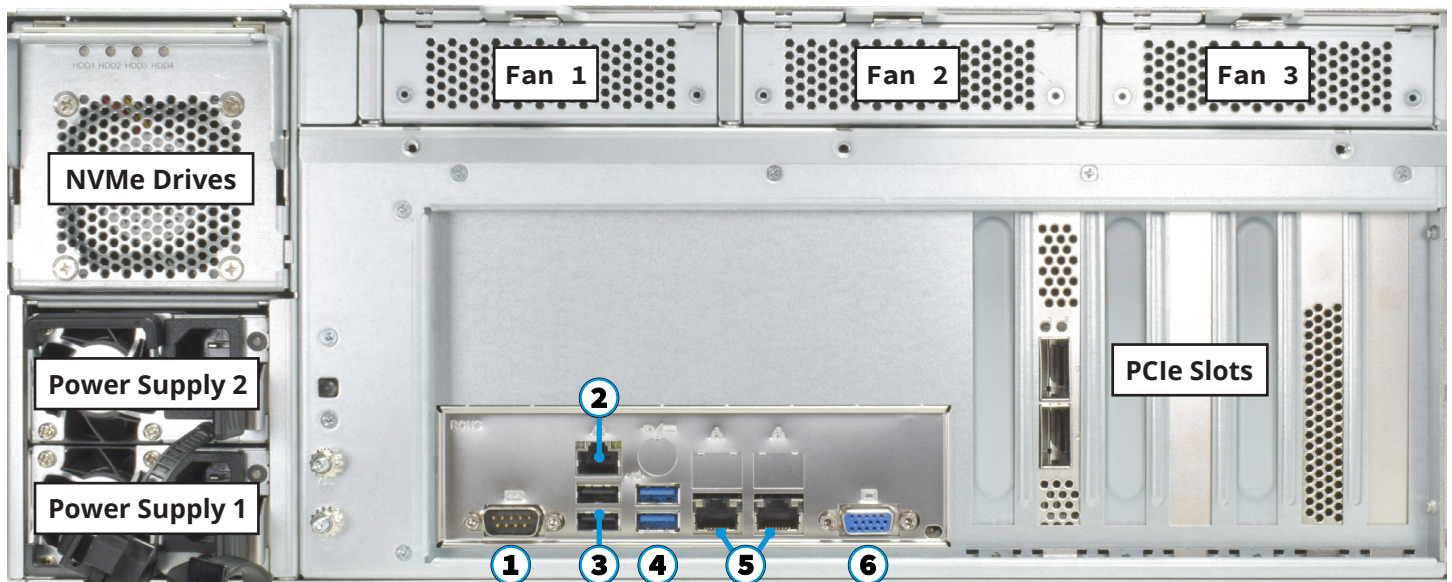
The fault indicator is on during the power-on self-test (POST) and off during normal operation. It turns on if TrueNAS issues an alert. For details on software alerts and configuration, see truenas.com/docs/core/system/alert.

8.3 R50 Rear Components and Ports



1. Serial port
2. 1Gb Ethernet OOBM port
3. Two USB 2.0 ports
4. Two USB 3.0 ports
5. Two 10Gb SFP+ networking ports
6. VGA monitor port

8.4 R50B Rear Components and Ports



1. Serial port
2. 1Gb Ethernet OOBM port
3. Two USB 2.0 ports
4. Two USB 3.0 ports
5. Two RJ-45 10Gb networking ports
6. VGA monitor port

8.5 Racking the R50

The R50 requires 4U of rack space and has a built-in rail system that provides access to the drive drawer.

The assist rails require another 1U of rack space underneath the R50.

You need 16 standard M5 cage nuts to rack the R50 in a standard square-hole rack.

8.5.1 Rack Requirements

The R50 requires an EIA-310-compliant rack. The front and rear rack posts can have a four-inch (101.6mm) tolerance in four different depth configurations. See section "3.4 Adjust the Rail Sleeve".

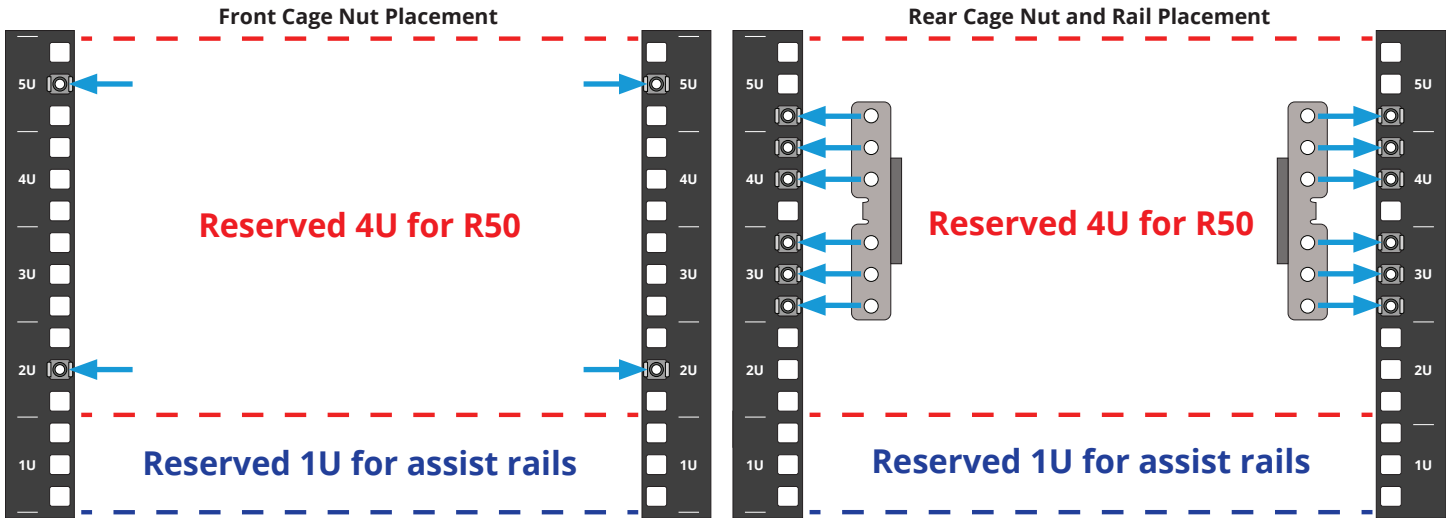
8.5.2 Install Cage Nuts

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.



8.5.3 Install the 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.



8.5.4 Adjust the Rail Sleeve

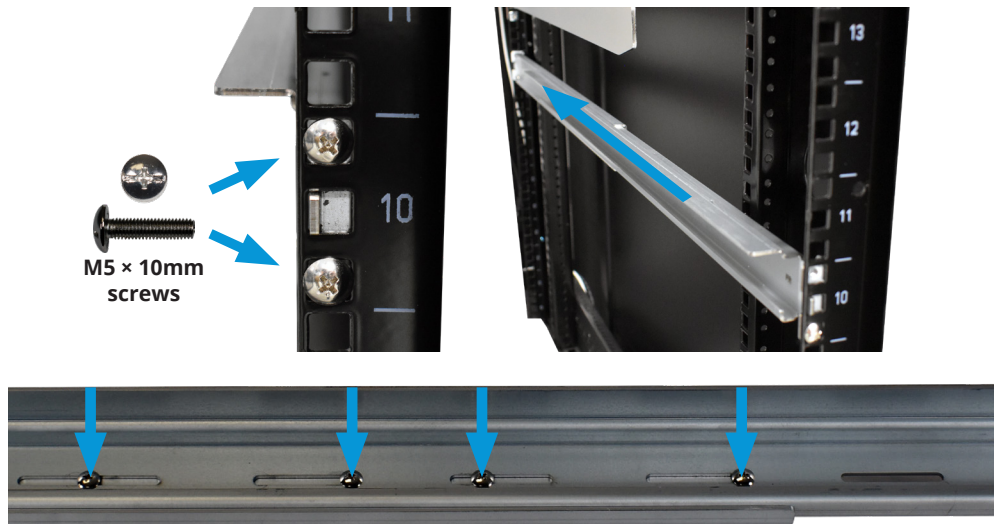
The rail sleeve ships in position 2 by default. To adjust it, remove the screws (blue circles) and move the sleeve to the position that accommodates your rack’s depth (see table).



Position	Rack Depth
1	28" - 32"
2 (pictured)	31" - 35"
3	34" - 38"

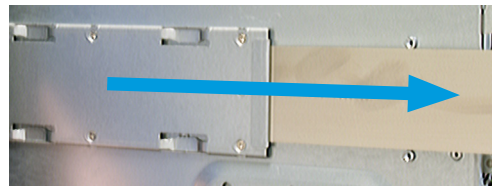
8.5.5 Install the Assist Rails

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.

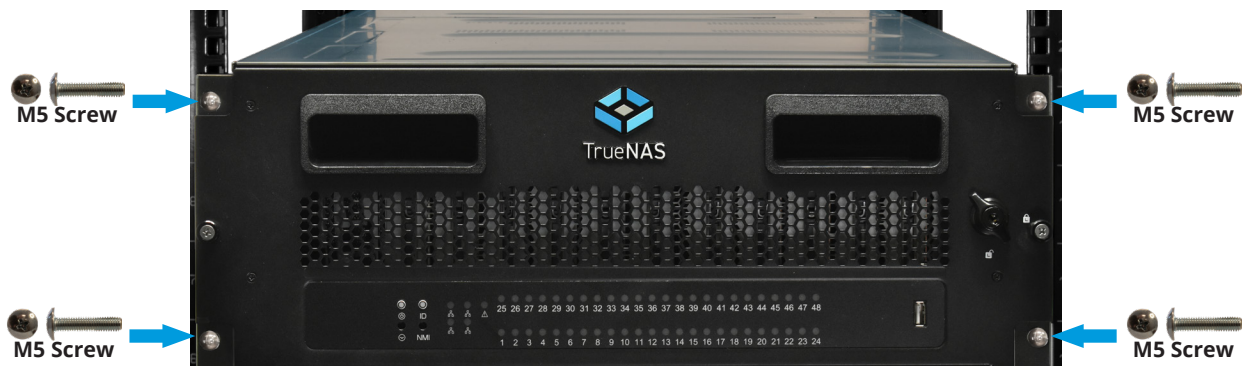


8.5.6 Mount the R50 in the Rack

Two people at minimum should lift the R50. Align the grooves on the sides of the system with the rails and 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.

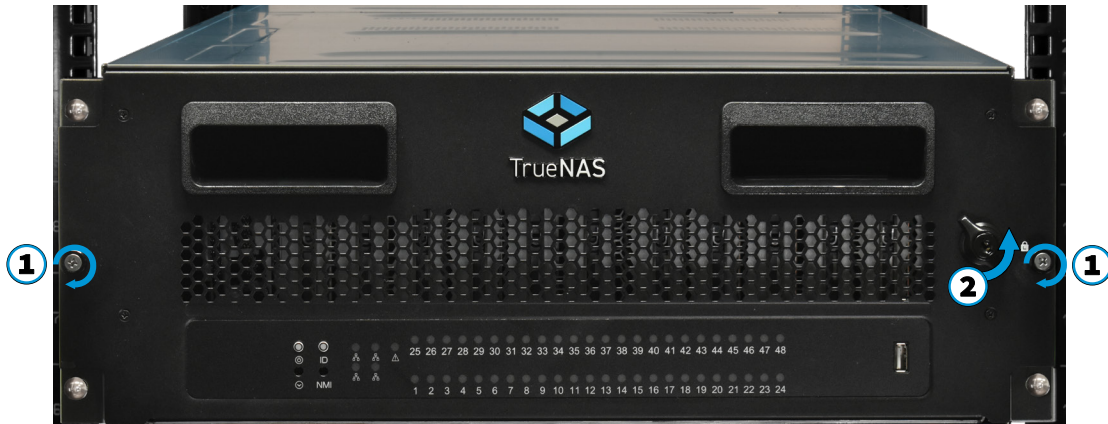


8.6 Managing Drives

The R50 primary drive bay is mounted on internal rails and slides out from the system. The NVMe drive bay is accessed by removing the NVMe fan on the rear of the system. Hard drives are installed directly into the system without any additional drive trays. NVMe drives use detachable trays to mount and secure the drive in the system.

8.6.1 Handling the Primary Drive Bay

To secure the drive bay and prevent it from accidentally opening, tighten the captive thumbscrews on the front of the system (1). The included key can also lock the drive bay and prevent unauthorized access (2).

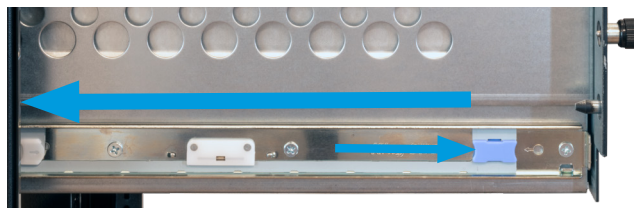


Open the drive bay by unlocking the front (1), loosening the captive thumbscrews (2), and using the handles (3) to pull the bay forward.

Warning: To prevent overheating, do not leave the drive bay open for more than 1 minute. The R50 is certified to use WD Helium drives only.

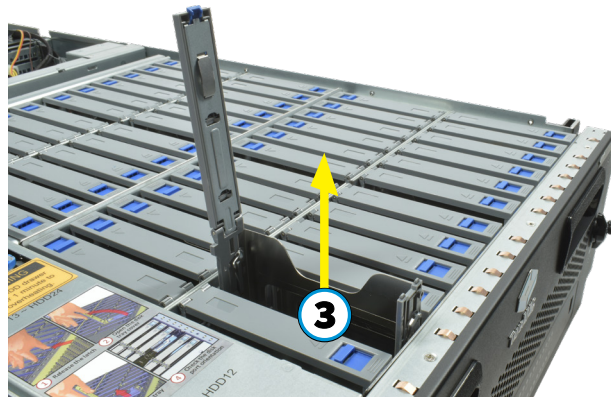
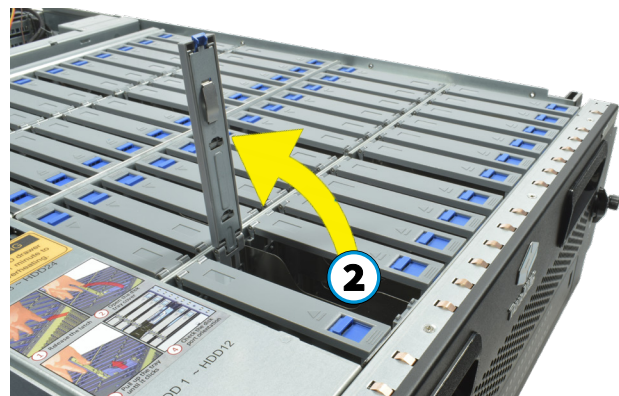
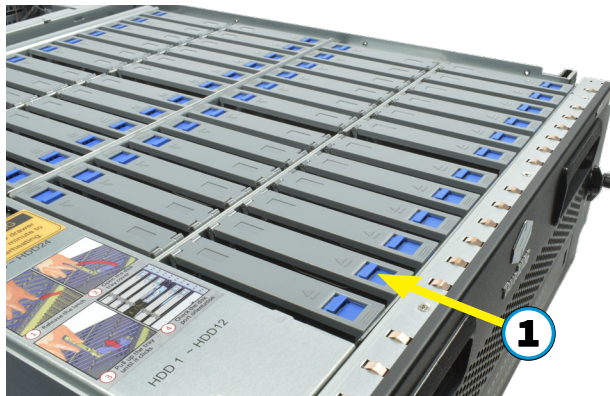


To insert the drive bay back into the system, slide the blue release catches on each rail and push the bay forward.

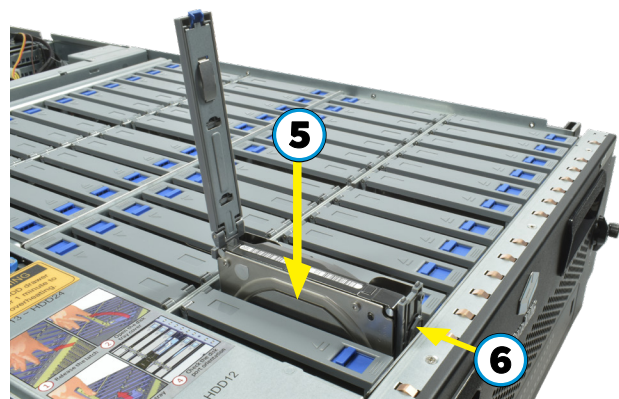


8.6.2 Installing Hard Drives

The R50 lets you insert hard drives directly into the system without requiring additional installation into a detachable tray. To install a hard drive, open the drive bay to expose the drive slot covers. Slide the blue release tab (1) on a slot cover and lift (2). Gently grasp the inner tray and slide it up until it clicks into place (3).



Take the hard drive and align the connectors facing downwards into the system (4). Slide the drive into the tray (5), then squeeze the plastic release tabs on each side of the tray and push the tray downwards (6) to install the drive into the system. Close the slot cover and make sure it clicks into place.



8.6.3 Accessing the NVMe Drive Bays

R50 NVMe devices are not hot-swappable. You must power down or reboot the system whenever you want to change R50 NVMe devices to avoid data loss.

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.



8.4.4 Replacing 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.

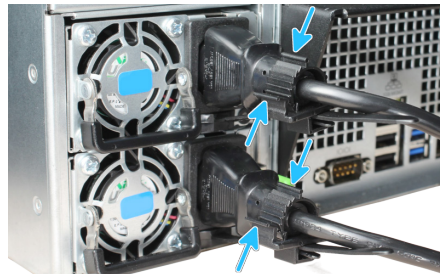


9 Cabling an R-Series System

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.

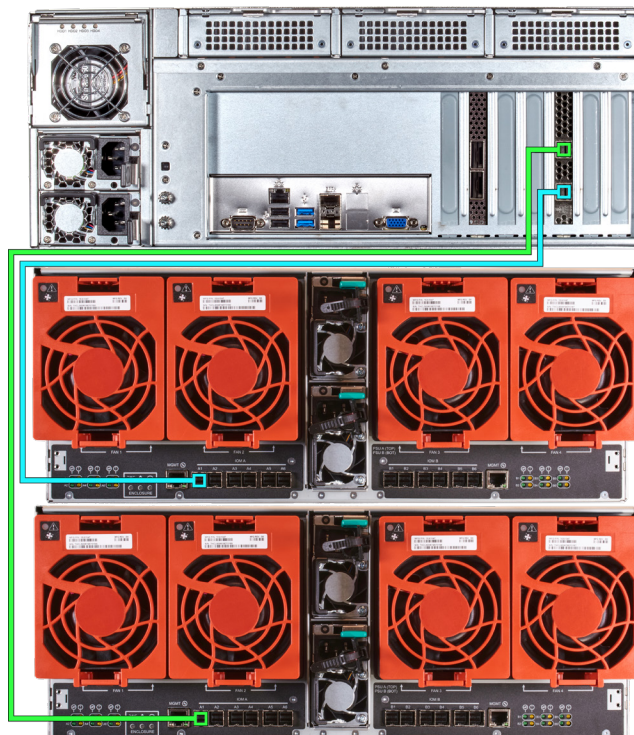
We recommend that IPMI be on a separate and secure network without Internet access. Please contact support if you need to upgrade your system's BIOS or IPMI firmware.



9.1 SAS Connections

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.

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](#):



10 Connecting to 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`

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/>

11 Additional Resources

The TrueNAS Documentation Hub has complete software configuration and usage instructions. It is available by clicking **Guide** in the TrueNAS web interface or going directly to:

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

Additional hardware guides and articles are available in the Hardware section of the Documentation Hub:

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

The TrueNAS Community forums provide an opportunity to interact with other TrueNAS users and to discuss their configurations. The forums are available at:

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

12 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: <ul style="list-style-type: none">• 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): <ul style="list-style-type: none">• US-only toll-free: 1-855-499-5131• International: 1-408-878-3140 (International calling rates will apply)

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