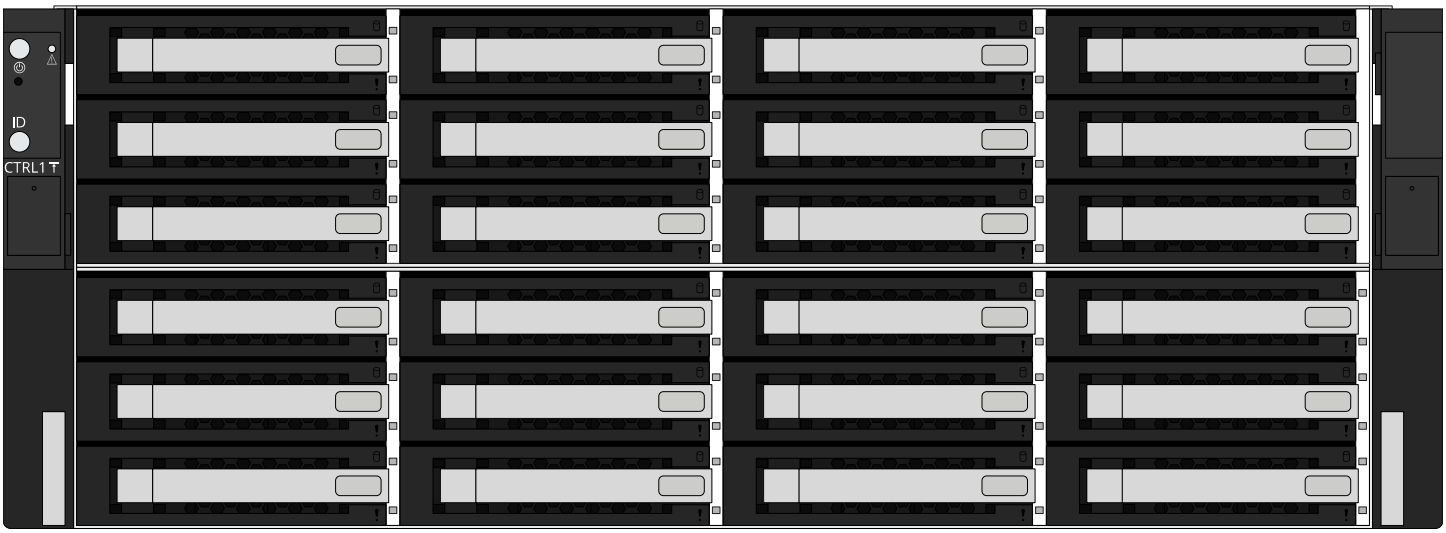
ES24 Basic Setup Guide
Version History

Version	Editors	Changes	Publish Date & Locations
1.5	Aaron St. John Tim Moore	Remove specific screw lengths (DOCS-95) Update cover image size/placem...(DOCS-33) Add Table of Contents (DOCS-53) Final release of Sphinx-built PD...(DOCS-256)	February 7, 2020: https://www.ixsystems.com/blog/knowledge-base_category/truenas/
1.6	Justin Pennington Tim Moore	Redesign for Adobe tools (DOCS-274)	March 19, 2020: https://www.ixsystems.com/blog/knowledgebase_category/truenas/
1.9	Justin Pennington Tim Moore	Bug fixes for ES24 images (DOCS-475) Remove artifacts from images (DOCS-286) Update SAS connections images (DOCS-76) Production request: make page...(DOCS-682) Release 1.9 ES24 BSG (DOCS-688)	June 25, 2020: https://www.truenas.com/docs/hub/hardware/expansion-shelves/es24-bsg/
1.11	Justin Pennington Tim Moore Tony Rivera	Add text for changing power m...(DOCS-27) Add drive install to tray proced...(DOCS-779) Style review (DOCS-929) Update Copyright Year DOCS-2320 R-Series and ES24 BSG: add no... DOCS-2904 Update and review ES12, ES24/... DOCS-2971 Update Hardware Documents...	Publication TBD: https://www.truenas.com/docs/hardware/expansionshelves/es24bsg/ and https://drive.google.com/drive/u/0/folders/1B0kVVlUS5kE9yacYbCWt-mChrh138HW1k
25111	Dan Pizappi	Add Compliance Information (PD-2389)	Publication TBD: https://www.truenas.com/docs/hardware/expansionshelves/es24bsg/ and https://drive.google.com/drive/u/0/folders/1B0kVVlUS5kE9yacYbCWt-mChrh138HW1k

TrueNAS® ES24 Basic Setup Guide

v.25111



Contents

1 Introduction

The TrueNAS ES24 is a 4U, 24-bay, SAS3 (12 Gb/s) expansion shelf with dual expansion controllers and redundant power supplies.

Review the safety considerations and hardware requirements before installing an ES24 into a rack

1.1 Safety

1.1.1 Static Discharge

Warning - Electrostatic Discharge (ESD)

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. Use an ESD dissipative mat if possible to protect the internal components.
- Touch the metal chassis with your bare hand to dissipate static electricity in your body before handling any internal components, including components not yet installed in the system. We always recommend wearing an anti-static wristband and using a grounding cable.
- Store all system components in anti-static bags.

1.1.2 Handling the System

We recommend at least two people lift a TrueNAS system.

Warning

Never attempt to lift a TrueNAS system loaded with drives! Install the system in a rack before adding drives. Remove drives before unracking the 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.

This document uses “left” and “right” according to your perspective when facing the front of a system or rack.

2.1 Requirements

We recommend these tools when installing a TrueNAS ES24 in a rack:

- #2 Phillips head screw driver
- Flat head screw driver
- Tape measure
- Level

ES24 Specifications	
Dimensions (H x W x L)	7 in x 19 in x 20.5 in (177.8 mm x 482.6 mm x 520.7 mm)
Length with Chassis Rail	32 in (812.8 mm)
Net Weight (Fully Loaded)	50 lbs (23 kg)
Operating Temperature	32°F - 95°F (0°C - 35°C)
Non-Operating Temperature	-4°F - 158°F (-20°C - 70°C)
Operating Humidity (non-condensing)	5% - 95%
Supply Voltage	100-240VAC, 10-5A 50-60 Hz

Compliance

TrueNAS

MODEL NAME:
TrueNAS ES24
資料儲存設備

VOLTAGE: 100-240VAC
Current 10-5A Max (x2)

FREQUENCY: 50/60Hz

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference. **(2)** This device must accept any interference received, including interference that may cause undesired operation. 警語: 為避免電磁干擾, 本產品不應安裝或使用於住宅環境。

CAN ICES (A) / NMB (A)

WARNING: To remove all hazardous voltages, disconnect all power cords.

CONTACT: support@TrueNAS.com | www.truenas.com | 1-866-TRUENAS

The TrueNAS ES24 is a **network storage server** intended for use in **enterprise and data center environments**.

The apparatus is designed to be operated:
- In controlled IT environments, within the specified ranges for temperature, humidity, and supply voltage
- In properly grounded electrical installations, in accordance with local electrical codes
- In accordance with the TrueNAS software documentation, including configuration, operation, and maintenance instructions

This product is not designed or intended for:
- Use in life-support systems or other safety-critical applications where failure could result in injury or loss of life
- Use in residential consumer environments, unless explicitly installed and operated in a controlled, non-domestic IT setting
- Any application outside the conditions and purposes described in this manual and the TrueNAS software documentation

For detailed configuration and operational guidance, refer to the TrueNAS software documentation provided with the product and available from TrueNAS.

The ES24 is FCC/CE-marked and complies with:
- **FCC 47 CFR Part 15, Class A -** Radiated and conducted emissions limits for commercial IT equipment (EMI/EMC)
- **Low Voltage Directive (LVD) 2014/35/EU** - Electrical safety
- **Electromagnetic Compatibility (EMC) Directive 2014/30/EU -** Electromagnetic interference and immunity
- **RoHS Directive 2011/65/EU, as amended by (EU) 2015/863** - Restriction of hazardous substances
- **WEEE Directive 2012/19/EU -** Waste electrical and electronic equipment
- **BSMI requirements for information technology equipment** - Safety and EMC, as applicable

For regulatory or compliance-related queries, contact compliance@truenas.com.
EU Authorized Representative: Obelis S.A. - Boulevard Général Wahis 53, B-1030 Brussels, BELGIUM

ⓘ Important - Battery Information

This product contains a lithium coin cell (CMOS battery) used to maintain system settings. Do not dispose of the battery with household waste. Used batteries must be collected and disposed of separately in accordance with local regulations and the EU Battery Directive 2006/66/EC. The crossed-out wheeled bin symbol indicates that the battery must be taken to an appropriate collection facility for recycling.

2 ES24 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 TrueNAS Support immediately at support@truenas.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:

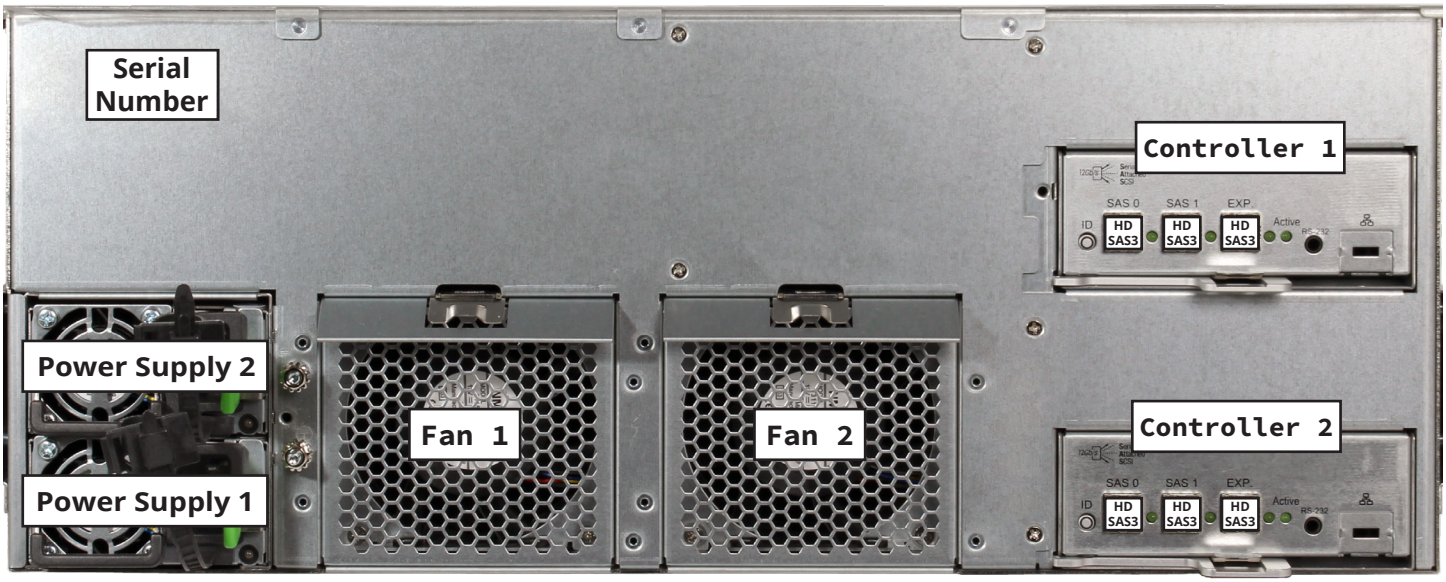
	ES24 Expansion Shelf
	Set of rackmount rails. The rails have a specific front end, identified by a label visible on the left above. The front ends of the rails must be installed facing the front of the rack.
	A total of 24 populated or empty “airbaffle” drive trays. Trays must be installed in all bays to maintain proper airflow for cooling.
	Two 3-meter Mini SAS HD to Mini SAS HD cables
	One Serial Cable
	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.
	Hardware for system racking.

2.1 Front Indicators

The ES24 has buttons/lights for power, alarm mute, locate ID, and fault. The fault light activates during the initial power-on self-test (POST) or when the TrueNAS software generates an alert.

Light / Button	Color and Indication
⏻	Blue: System On
🔇	N/A
ID	Blue: Locate ID active
⚠	Amber: Fault / Alert

2.2 Rear Components and Ports



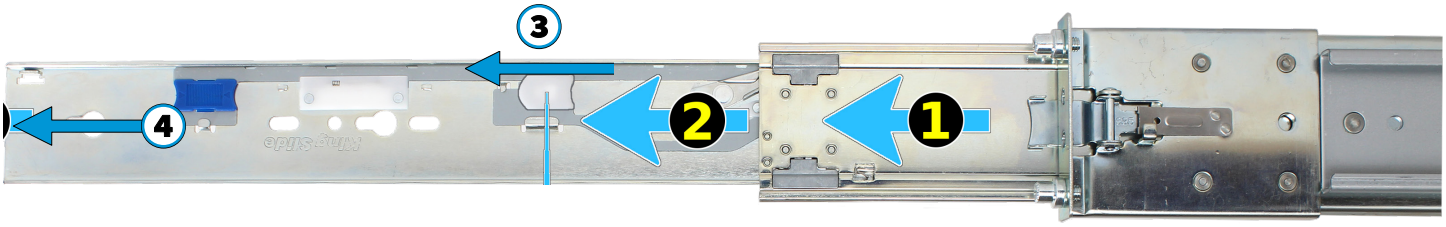
2 Rack the ES24

The ES24requires 4U of space in an EIA-310 compliant rack that is 27” (686mm) deep, frame to frame.

The vertical rack posts must be between 26” (660.4mm) and 36” (914.4mm) apart to install the rails properly.

2.1 Install Chassis Rails

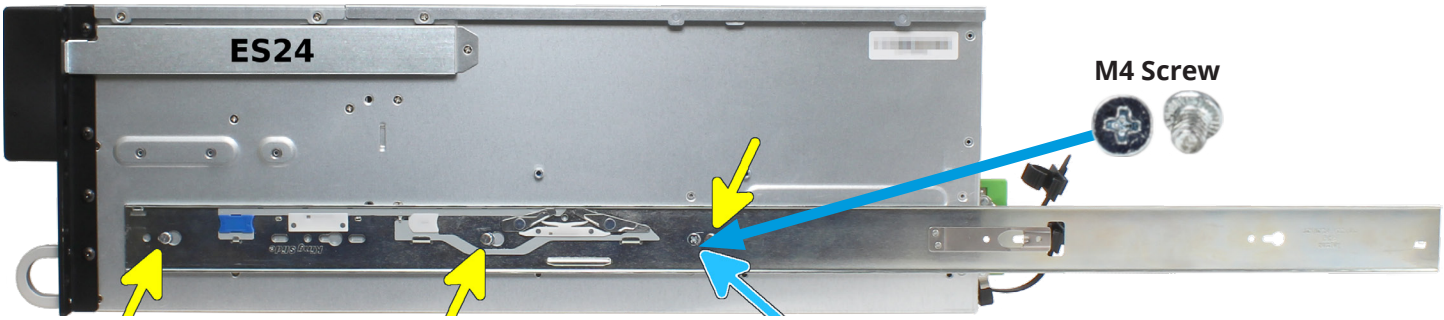
Extend the inner rack rail until it locks in place (**1**). Slide out the cabinet rail until it stops (**2**). Remove the cabinet rail by sliding the white release tab away from the inner rack rail (**3**), then pull the cabinet rail free (**4**).



The chassis rails mount on each side of the system.

Place the chassis rail keyholes over the posts on the side of the chassis so the posts go through the keyholes, then slide the rail towards the rear of the system until the metal tab clicks and secures the rail in place.

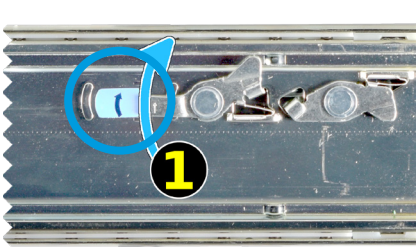
Secure the rail to the chassis using the low-profile M4 screws. Repeat this process on the other side.

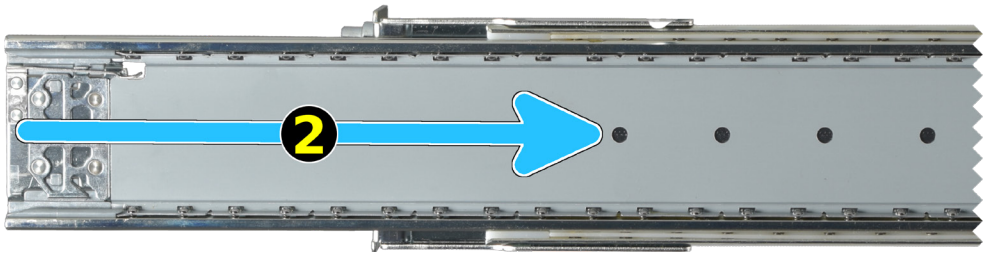


2.2 Install Rack Rails

The rack rails install in the center of the bottom 2U of the total 4U of reserved rack space.

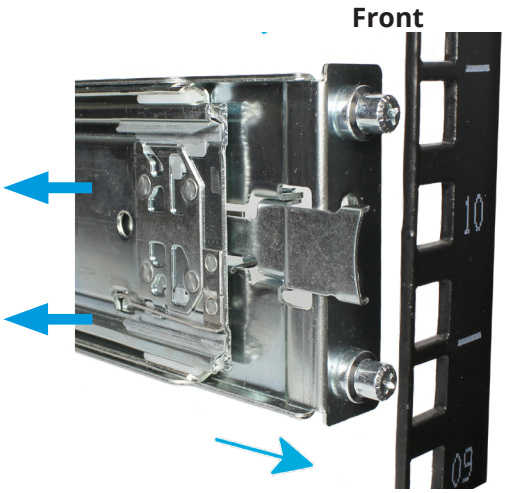
Unlock and retract the inner rack rail before installing it in the rack. Rotate the release lever on the back of the inner rail as shown on the arrow label, then push the inner rail towards the back of the assembly until it stops.

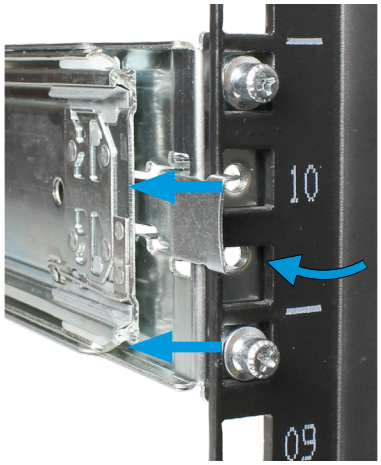


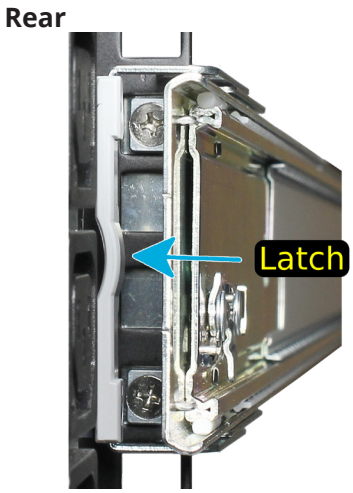


Place the rail in the rack with the front end towards the front of the rack. Align the pins with the front rack mounting holes. Push the pins into the holes until the latch clicks.

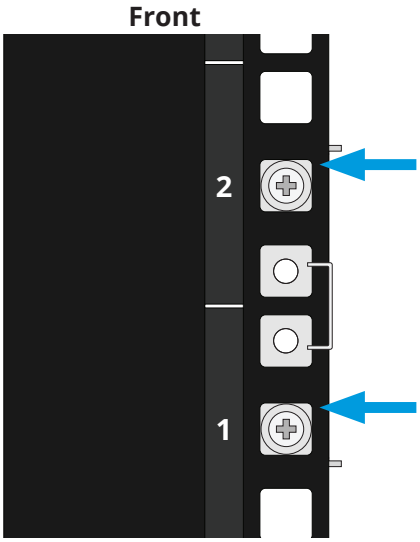
At the rear of the rail, align the pins with the rack holes. Swing the gray latch handle outwards and pull it to extend the rail until the rail pins are fully seated in the rack holes. Release the latch to lock the rail in place.
Repeat the process for the second rack rail.

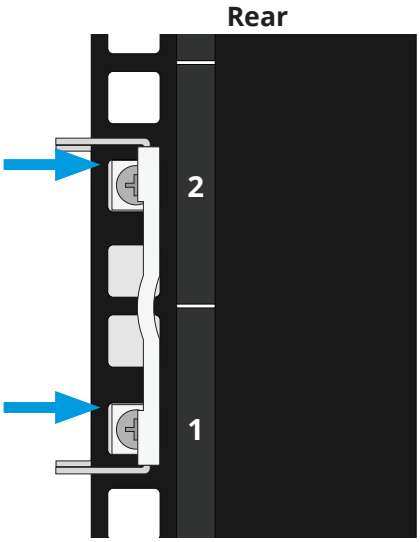






Ensure the rails are positioned in the middle of the bottom 2U of rack space. The pins that go through the rack should be in the middle holes of each U.



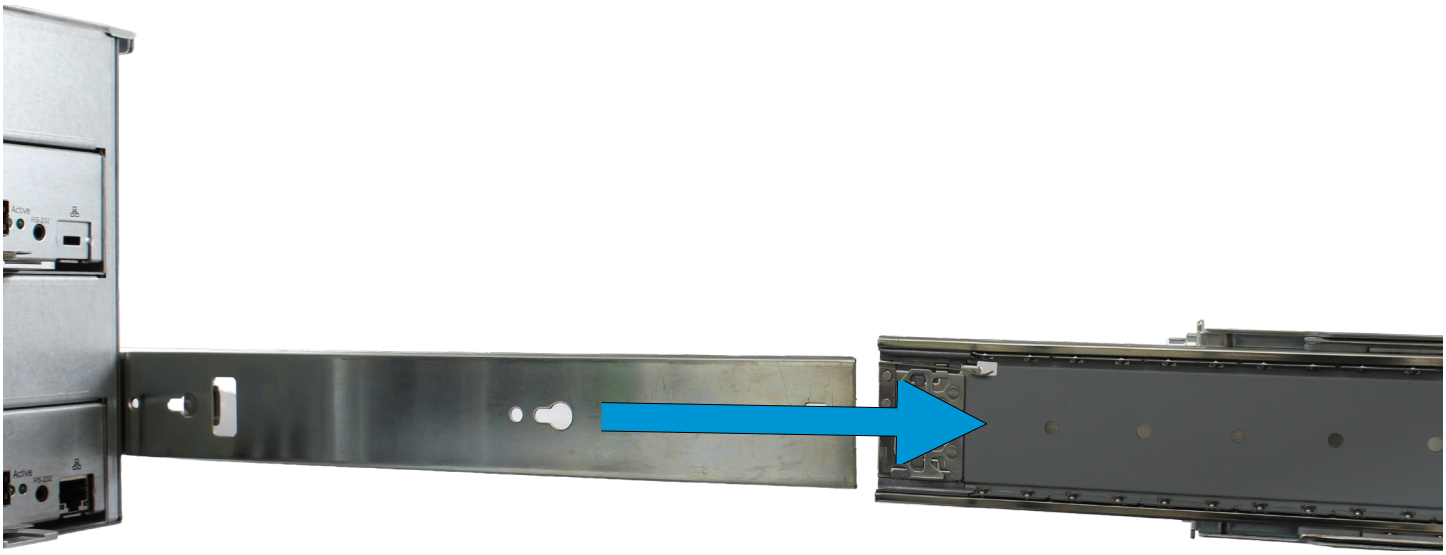


2.3 Mount the System in the Rack

Warning

The ES24 requires two people to safely lift in and out of a rack. Do not install drives until after you mount the ES24 in the rack. Remove all drives before taking the ES24 out of the rack.

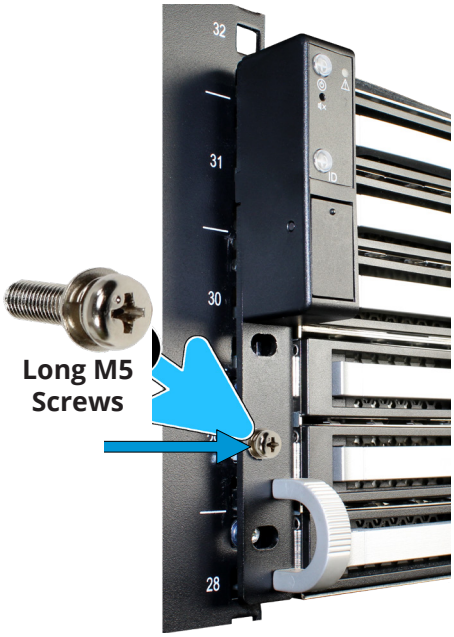
Extend both inner rails outwards from the rack until they lock in place. Align the cabinet rails with the inner rack rails and slide them into the rack rails until they are fully seated.



Warning - Pinch Point

The ES24 can pinch or crush fingers when sliding the rail sleeves onto the rack rails.

After you secure both cassis rails in the rack rails, gently push the ES24 until it stops halfway in. Slide the blue release tabs on both chassis rails towards the front of the system and slide the unit into the rack.

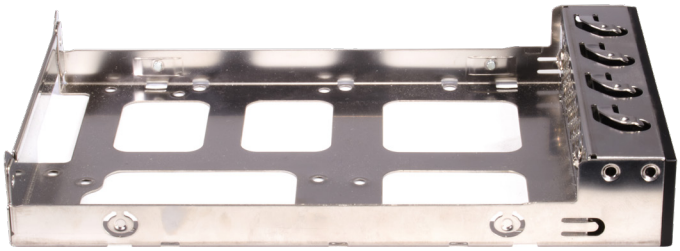


Secure the ES24 to the rack on both sides with long M5 screws.

4 Install Drives

TrueNAS appliances only support qualified hard drives and SSDs. Contact the Sales Team if you need more drives or replacements. Adding unqualified drives to the system voids the warranty. Call Support if drives are improperly installed in trays.

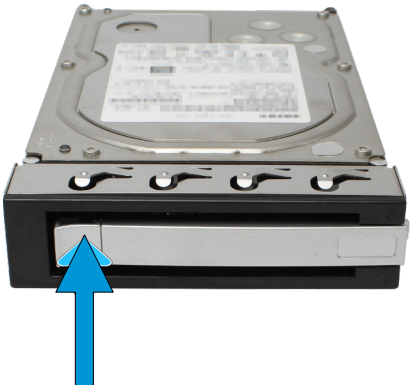
To add a new drive into an empty tray, place the tray on a flat survace and push the hard drive into the tray. Make sure the connector is at the rear of the tray.



Each drive bay in the chassis has two indicator lights to the right of the tray. The upper light is blue when the drive is active or a hot spare. The lower light is solid red if a fault has occurred.

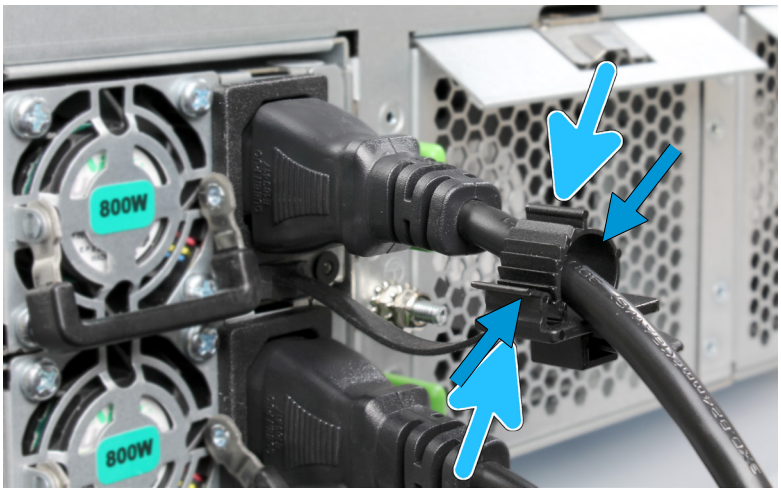
Press the silver button on the drive tray to open the latch. Carefully slide the tray into a drive bay until the right side of the latch touches the metal front edge of the chassis, then gently swing the latch closed until it clicks into place.

All drive bays must be filled to maintain proper air flow for cooling. If fewer than 24 drives are connected, place filler blanks in the empty bays.



5 Connect Power Cables

Do not plug the power cords into a power outlet yet. Connect a power cord to the back of one power supply. Place the cord in the plastic clamp and press the tab into the latch to lock it in place. Repeat the process for the second power supply and cord.



Warning - Grounded Connection

Always connect power cords to properly grounded connections.

5.1 Program Power Loss Mode

You can program the ES24 automatically restart if you lose and then regain power. By default, if the ES24 loses power, it does not automatically start when power restores. You must press the power button to turn the system on. However, you can set the ES24 to restart automatically when power restores to the system.

To activate this mode, quickly press the power button three times.

The power button blinks to indicate the current mode. When it blinks quickly, the system automatically starts when power restores. When the button blinks slowly, you must manually power on the system after power loss. To test the current setting, disconnect the power, wait a few moments, and plug the system back in.

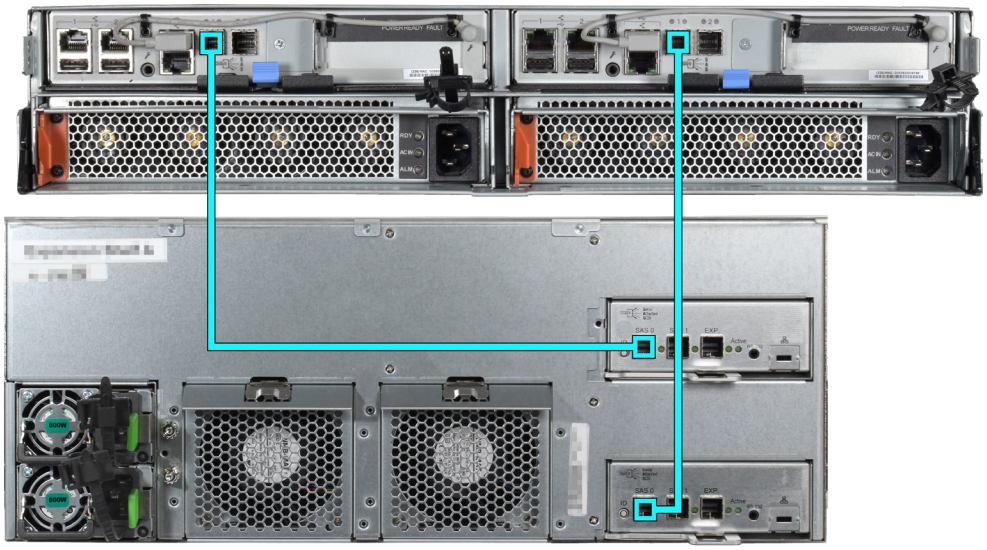
6 Connect SAS Cables

Plug the ES24 power cords into power outlets. **Wait two minutes for the drives to start.**

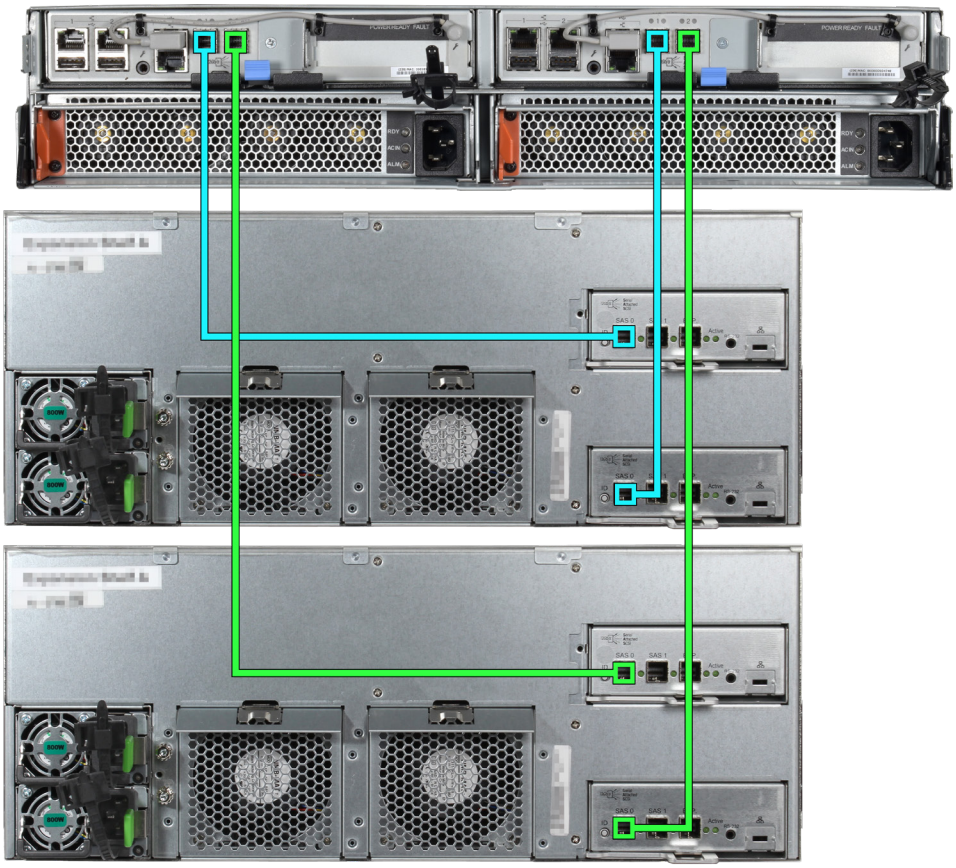
> **Important**
>
> When setting up SAS connections, please adhere to the wiring example below. Connecting expansion shelves incorrectly causes errors. Never cable a single controller to different expanders on the same shelf.

6.1 X-Series

X-Series with a single ES24 Expansion Shelf



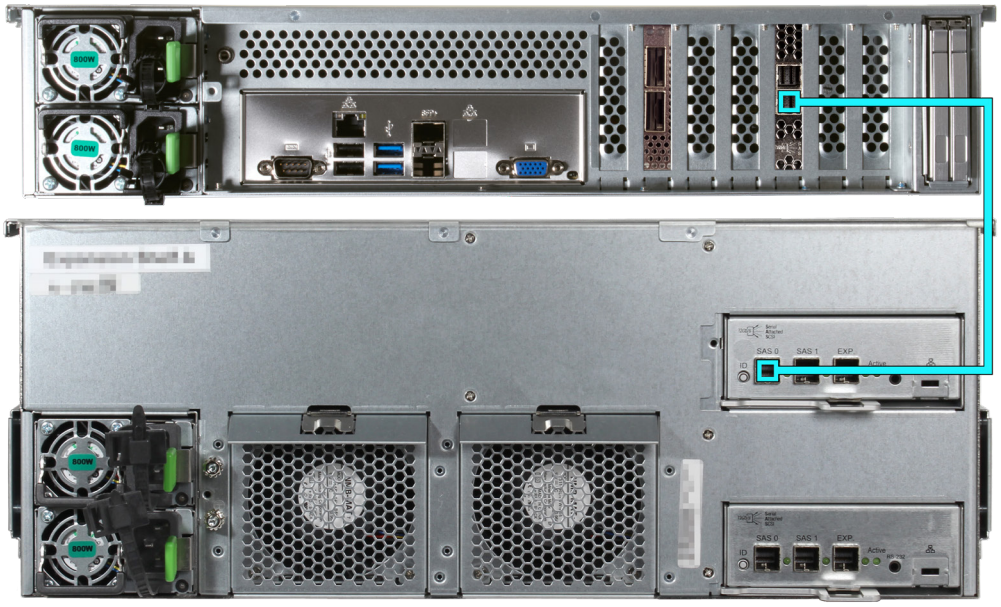
X-Series with two ES24 Expansion Shelves



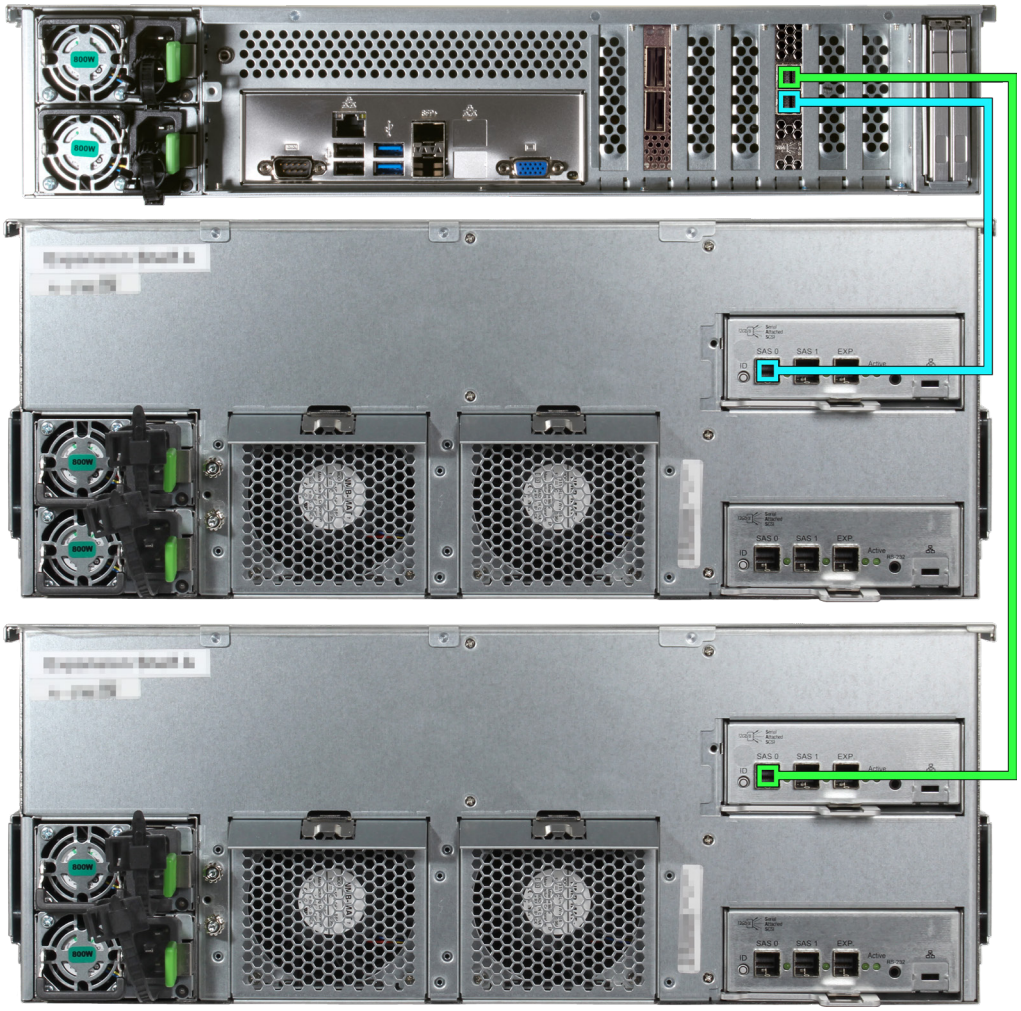
6.2 R-Series

6.2.1 R20

R20 with a single ES24 Expansion Shelf

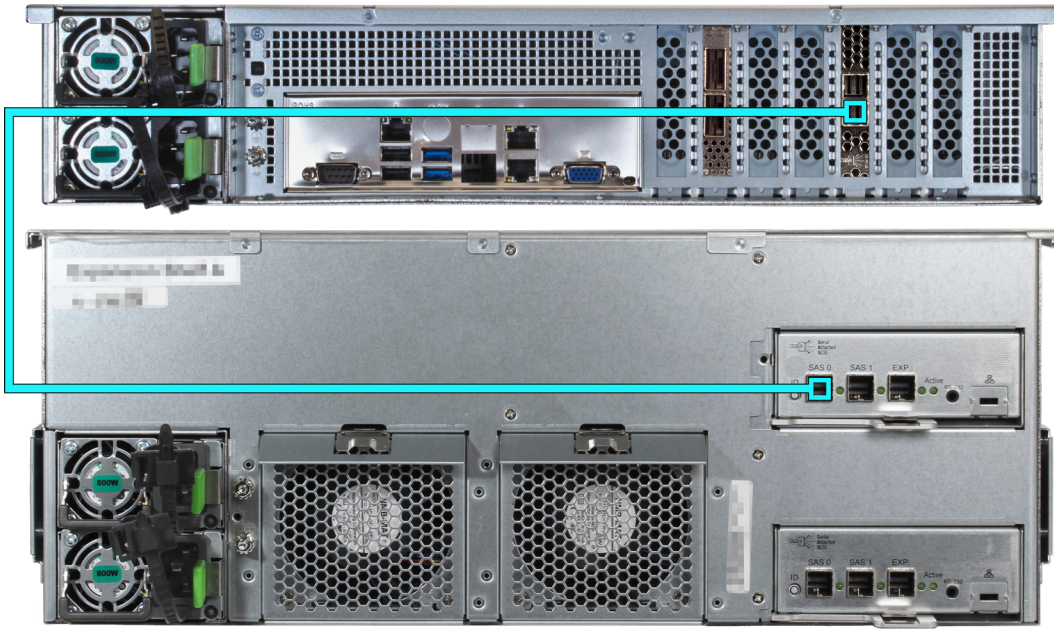


R20 with two ES24 Expansion Shelves

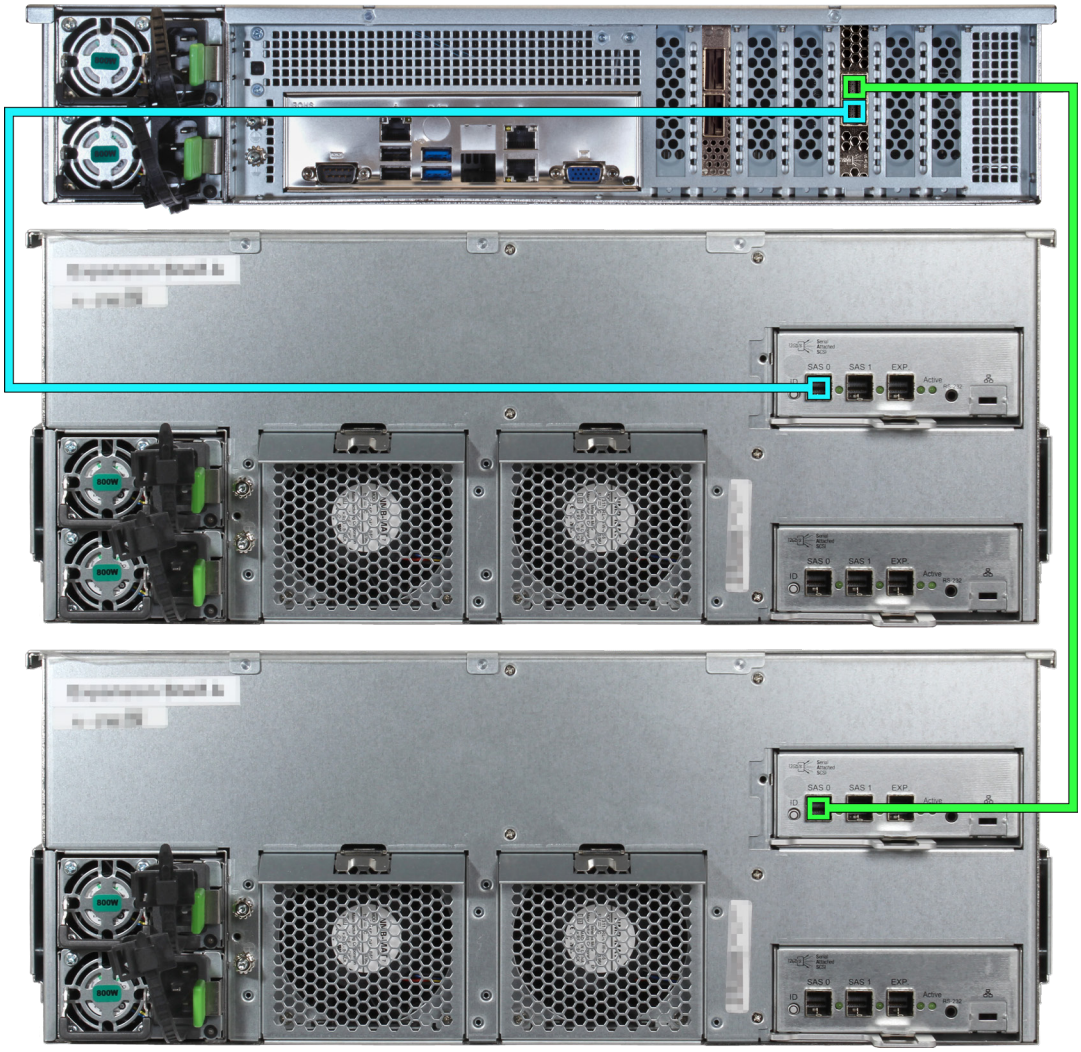


6.2.2 R40

R40 with a single ES24 Expansion Shelf

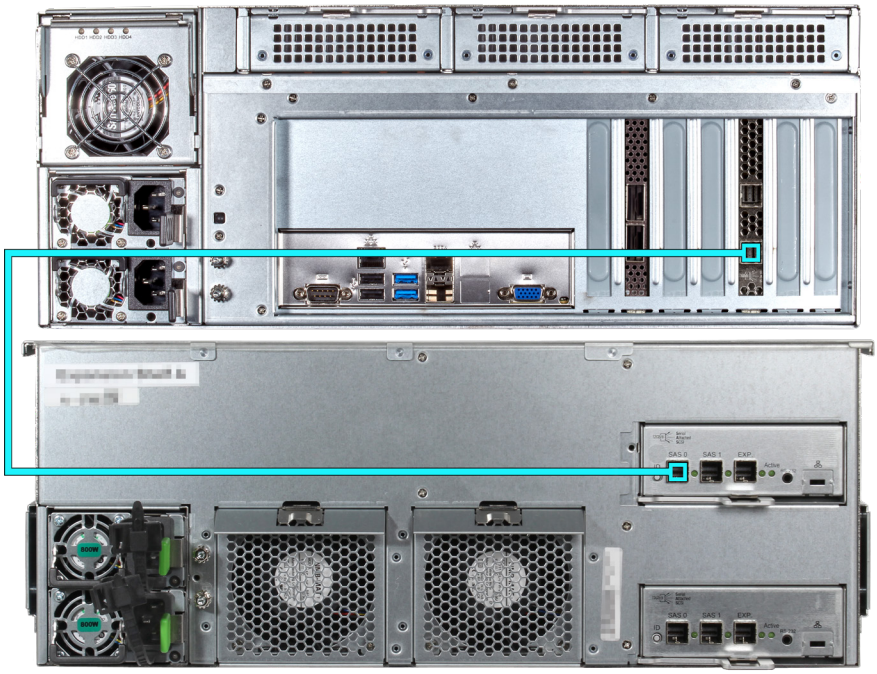


R40 with two ES24 Expansion Shelves

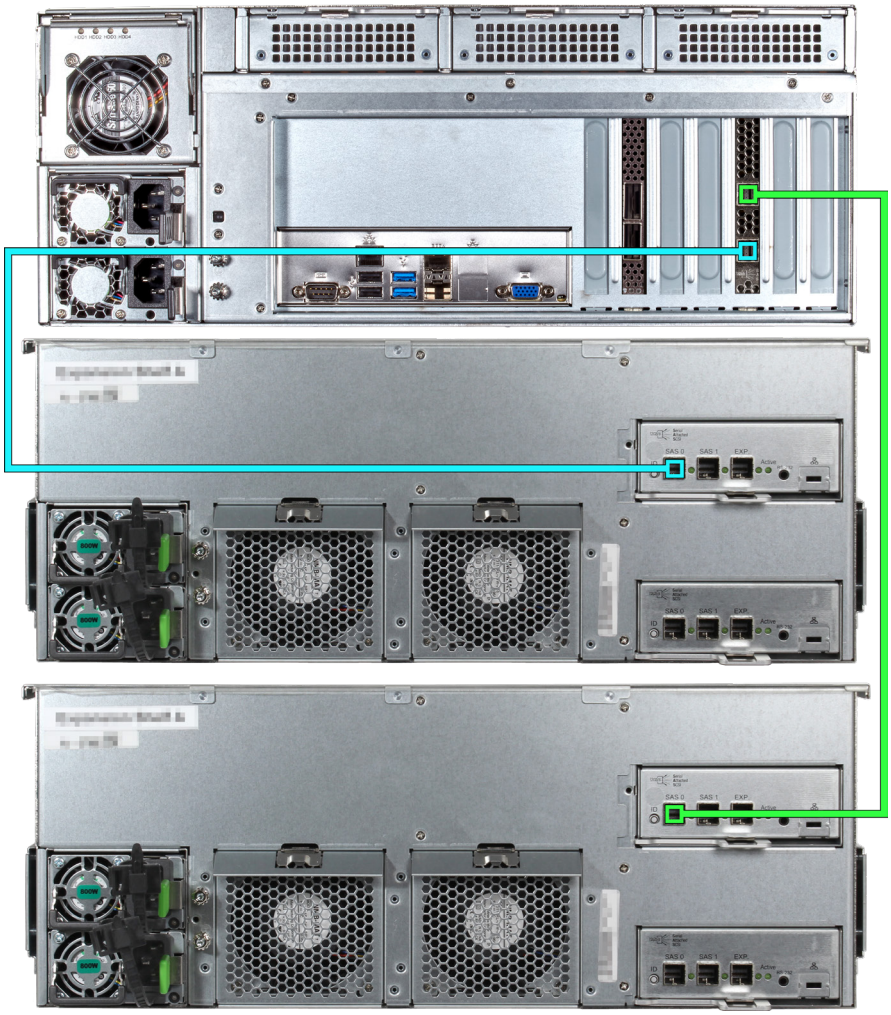


6.2.3 R50

R50 with a single ES24 Expansion Shelf



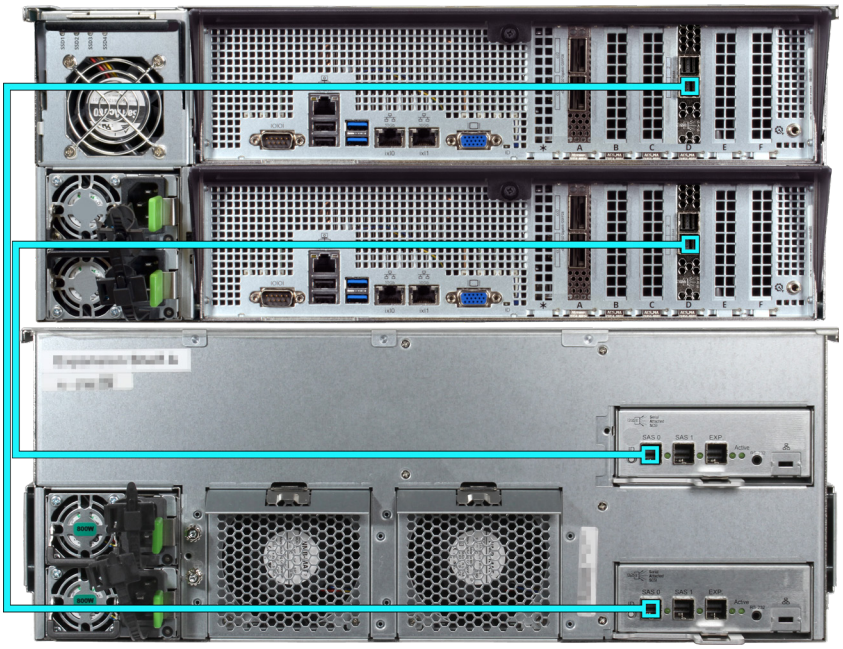
R50 with two ES24 Expansion Shelves



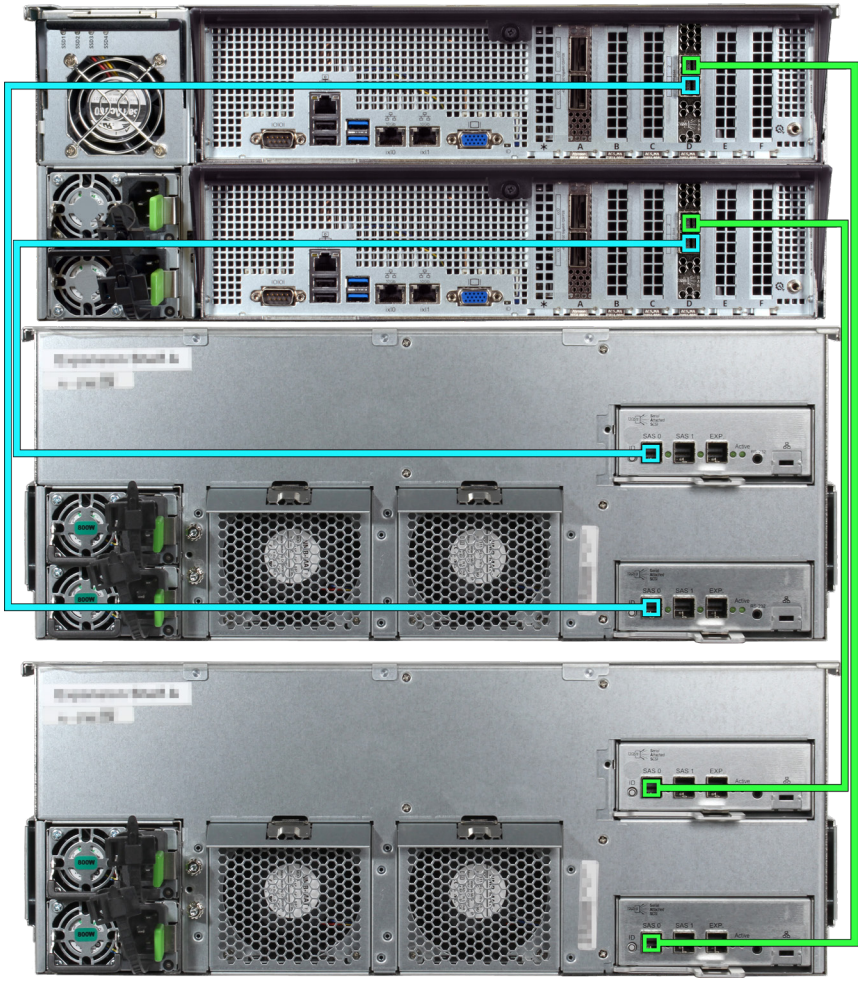
6.3 M-Series

6.3.1 M40

M40 with a single ES24 Expansion Shelf

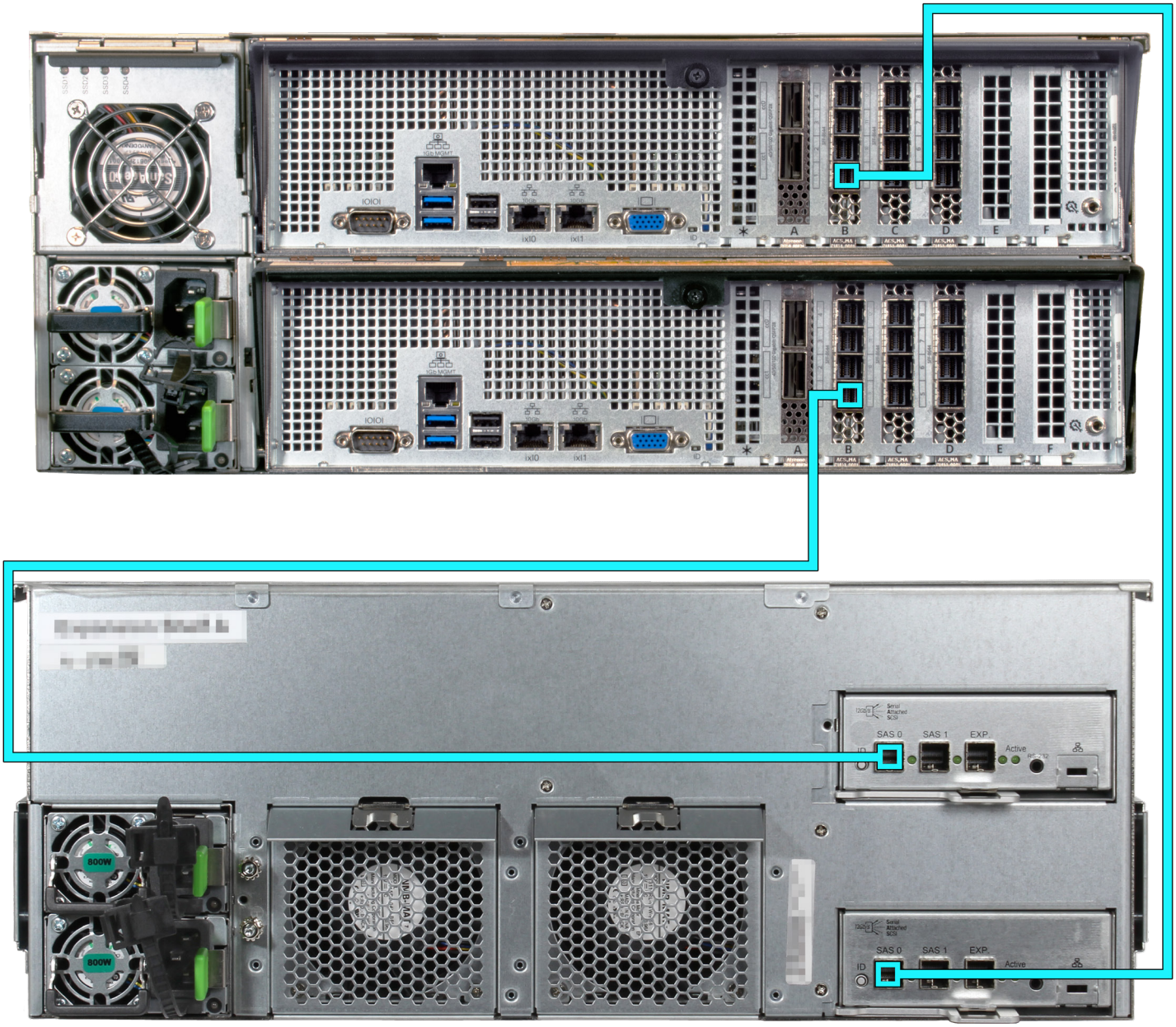


M40 with two ES24 Expansion Shelves

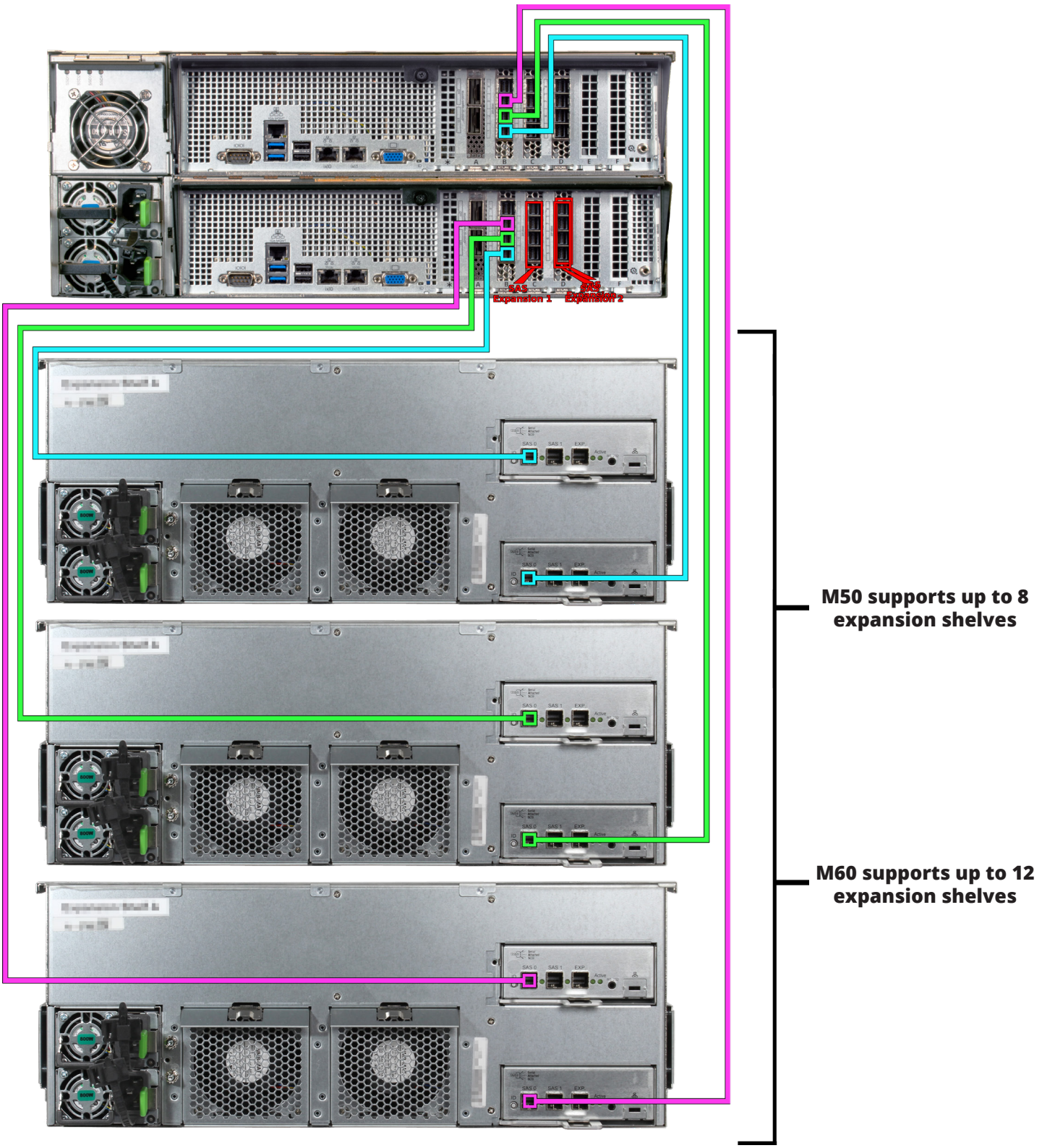


6.3.2 M50 and M60

M50 with a single ES24 Expansion Shelf



M50/M60 with three ES24 Expansion Shelves. The M50 can support up to 8 total Expansion Shelves with the use of additional SAS cards. The M60 can support up to 12 total Expansion Shelves with the use of additional SAS cards.



7 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[1]

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

https://www.truenas.com/docs/hardware[2]

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

https://forums.truenas.com/[3]

8 Contact Us

Having issues? Please contact TrueNAS Enterprise Support to ensure a smooth resolution.

Contact Method	Contact Options
Web	https://www.truenas.com/support [4]
Email	support@truenas.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)
Address	iXsystems, Inc. dba TrueNAS - 541 Division St, Campbell, CA 95008, USA

1 2 3 4