TrueNAS® ES12 Basic Setup Guide

Version 1.81

Contents

1 Introduction

The TrueNAS ES12 is a 2U, 12-bay expansion shelf. It has redundant power supplies and up to two TrueNAS storage controllers.

Review the safety considerations and hardware requirements before installing an ES12 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 a TrueNAS system.

> Never attempt to lift a TrueNAS system loaded with drives! Install the system in a rack before adding drives. Remove drives before de-racking 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 ES12 in a rack:

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

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2 ES12 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:

|	
	ES12 Expansion Shelf
	ES12 Bezel
	Rail kit and hardware. The rail front ends are labeled. You must install the front ends of the rails facing the front of the rack.
	12 populated or air baffle drive trays. Up to ten drive trays arrive in a cardboard tray. Additional drive trays arrive with the accessory kit.
	Accessory kit with two IEC C13 to NEMA 5-15P power cords, two IEC C13 to C14 cords, and a set of velcro cable ties.
	Two 3-meter Mini SAS HD to Mini SAS HD cables.
	Rail Extenders for racks more than 30" (762mm) deep

2.1 Front Indicators

The ES12 has front panel indicators for power, locate ID, and fault. 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	Color and Indication
⏻	Green: System ready
ID	Blue: Locate ID active
⚠	Amber: Fault / Alert
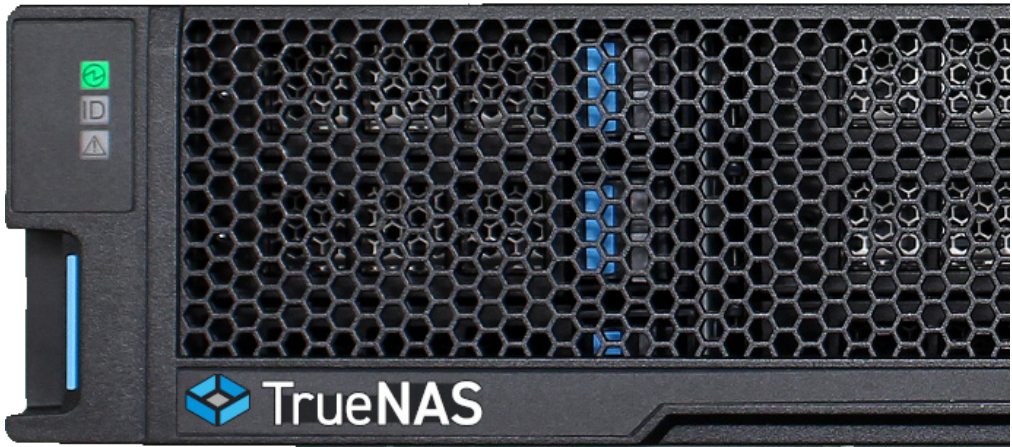
2.2 Rear Components and Ports

The ES12 has two expansion controllers in a side-by-side configuration:
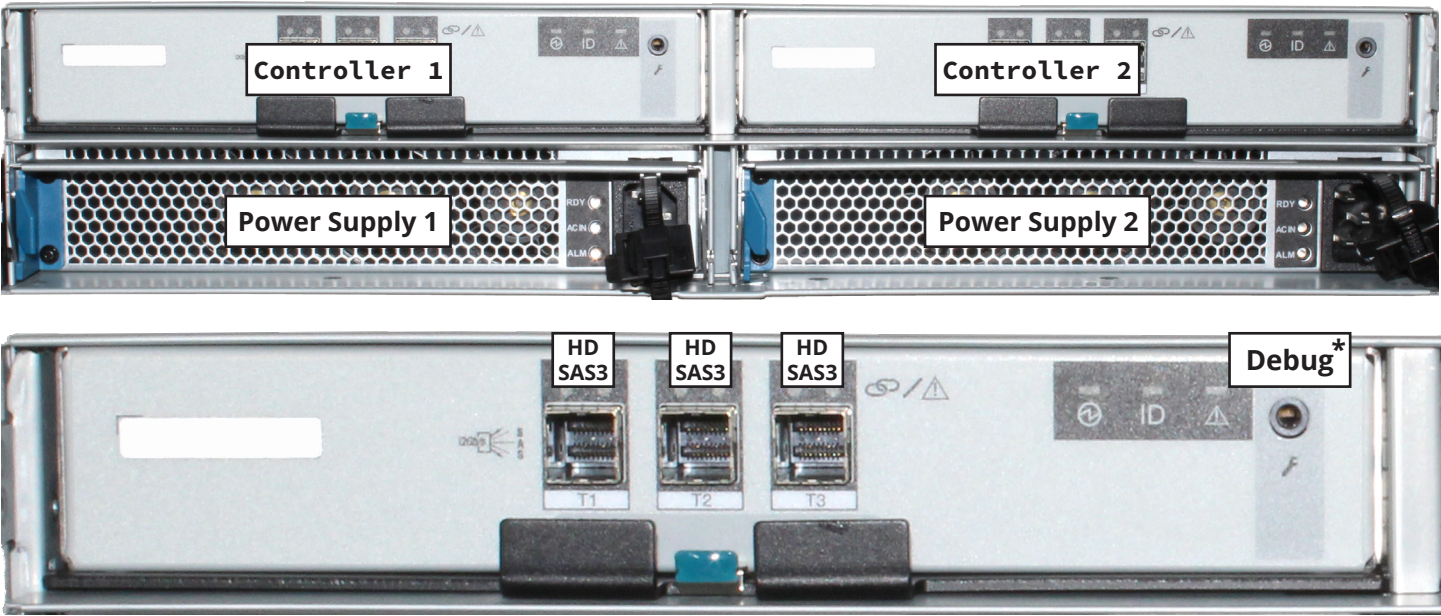

* TrueNAS internal use only

3 Assemble Rail Kit

If your rack is 30" deep or shorter, skip to section "3.2 Rail Spring".

3.1 Install Rail Extenders (Optional)

Racks that are 31" to 36" deep require the included rail extenders. Install cage nuts on the outside-rear of the rack.

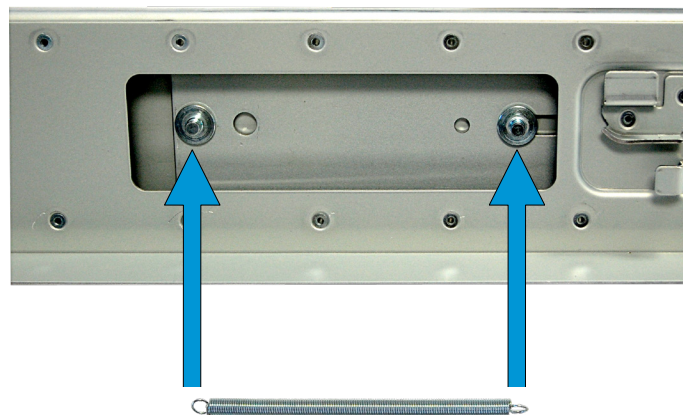Warning: The tabs on the cage nuts must be horizontal as shown.

Using the M5 screws, install the rail extender inside the rear of the rack. Repeat the for the other side.
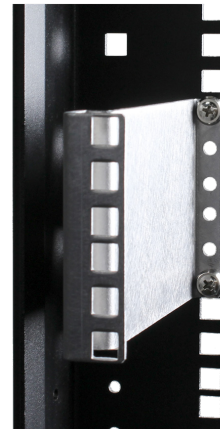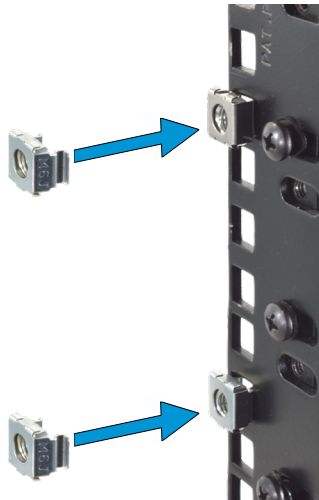
**Extender viewed from within the rack.**

3.2 Install Rail Spring

If not already present, install a spring on the silver posts in the side of each rail.

3.2 Install Rack Rails

Chassis rails attach to round hole racks by default. The rail kit includes additional pins to configure rails for square or 4mm hole racks. To reconfigure the rails, unscrew the pins at each end and replace them with the correct pins.

**Round Hole Pins**   **Square Hole Pins**   **4mm Hole Pins**
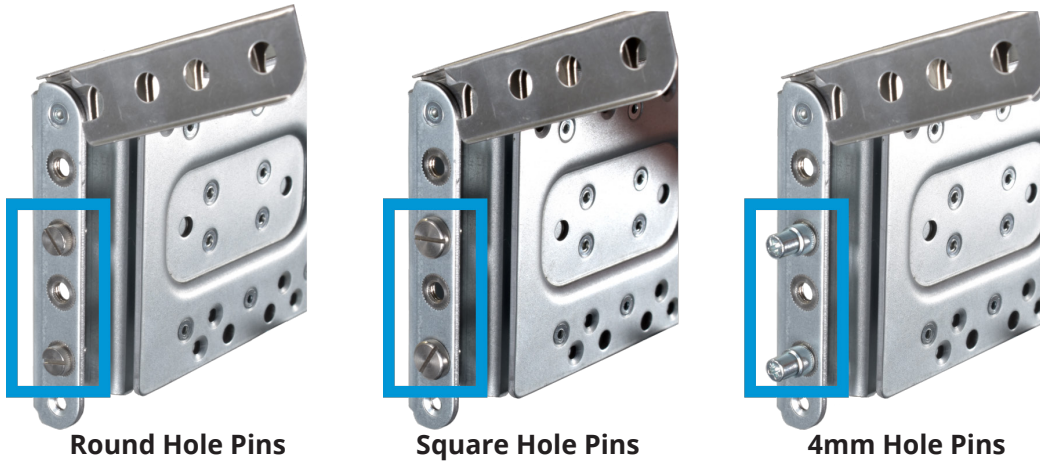
Open the clamp latches on the ends of each rail. Place the rail in the rack with the front end toward the front of the rack. Align the pins on both ends of the rail with the rack mounting holes. Swing the clamp latch closed to hold the rail in place. Use two M5 rail screws to secure the back end of the rail. Repeat the process for the second rail.
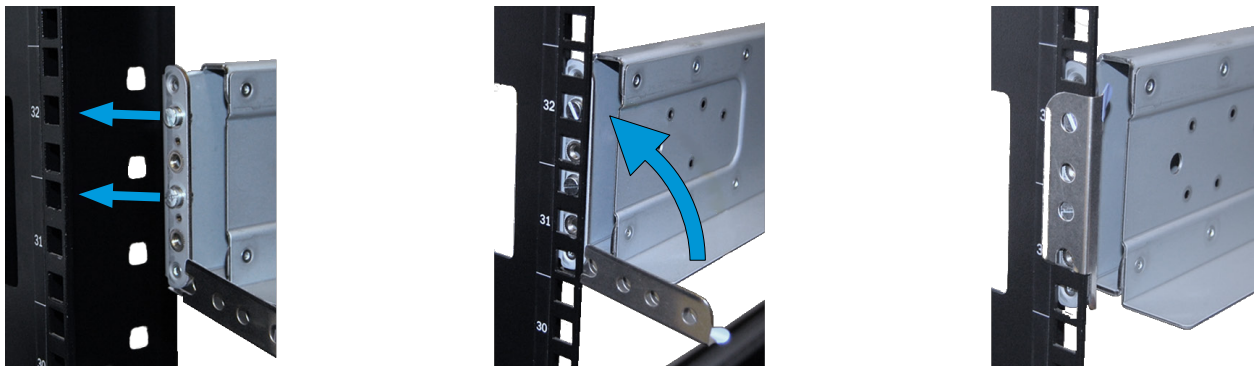
The clamp latch secures the rail to the rack before you install the M5 rack screws through the ES12 ears.
If the latches do not fit your rack, you can remove them. However, be aware that **modifying or not using the clamp latches increases the risk of system damage and personal injury**.

Two people should lift the X-Series. Do not install drives until you secure the chassis in the rack. Remove all drives before removing the chassis from the rack. Carefully place the system on the rails, then push the system in until the ears are flush with the rack. Use two black M5 rack screws to secure each ear to the rack.
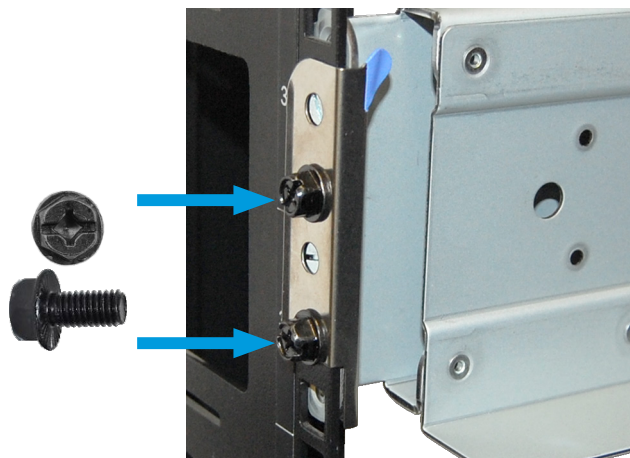
4 Install Drive Trays

TrueNAS appliances only support qualified HDDs and SSDs. Contact Support 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.

Drive trays have two LEDs. The top LED is blue when the drive is active or a hot spare. The bottom LED is amber if a fault has occurred.

You must place a tray in each drive bay to maintain proper airflow for cooling. If fewer than twelve drives are connected, empty "air baffle" trays must be placed in the empty bays. We strongly recommend using a standard drive tray install order to simplify support:

- SSD drives for read cache (R), if present
- SSD drives for write cache (W), if present
- Hard drives or SSD drives for data storage
- Air baffle filler trays to fill any remaining empty bays

Install the first drive tray in the top left bay. Install the next drive tray to the right of the first. Install remaining drive trays right across the row. After you fill a row with drives, move down to the next row and start with the left bay.

This example shows the proper order for a read cache (R) SSD, a write cache (W) SSD, nine drives, and one air baffle.

To remove an air baffle, press the blue button to open the latch, then pull the air baffle out of the system.
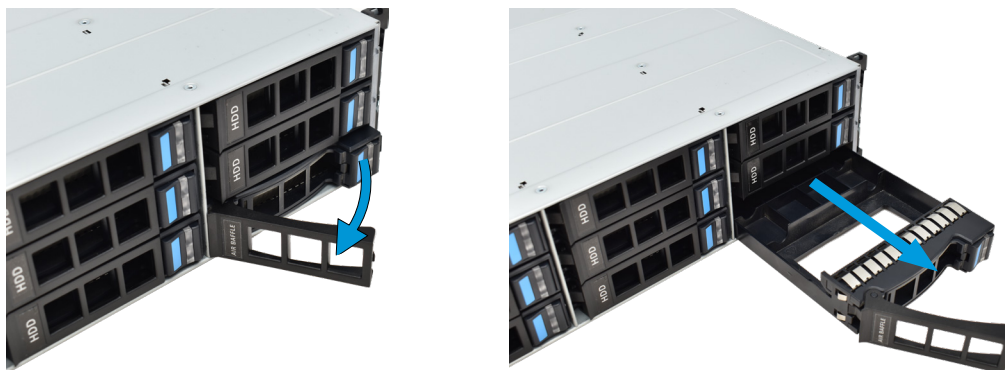
To load an individual drive tray into a bay, press the blue button to open the latch. Carefully slide the tray into a drive bay until the left side of the latch touches the metal front edge of the chassis, then gently swing the latch closed until it clicks into place.
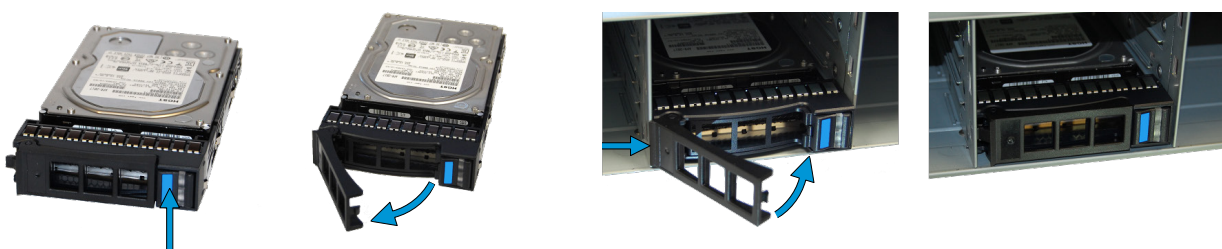
5 Connect Power Cables

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.
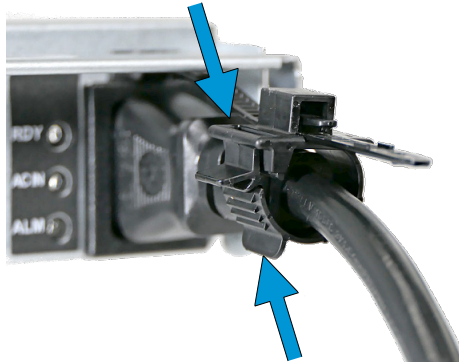

6 Connect SAS Cables

Plug the ES12 power cords into power outlets. **Wait two minutes for the drives to start.** The ES12 is compatible with several TrueNAS systems. Typical SAS cable connections for up to two ES12 expansion shelves on TrueNAS High Availability (HA) systems are shown here.

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
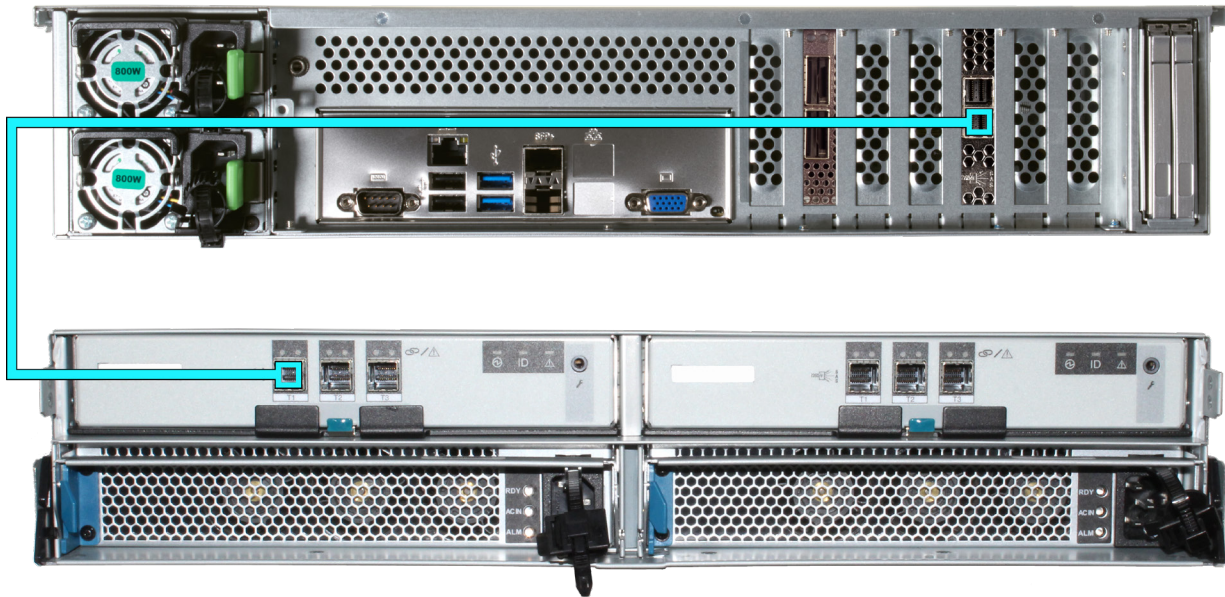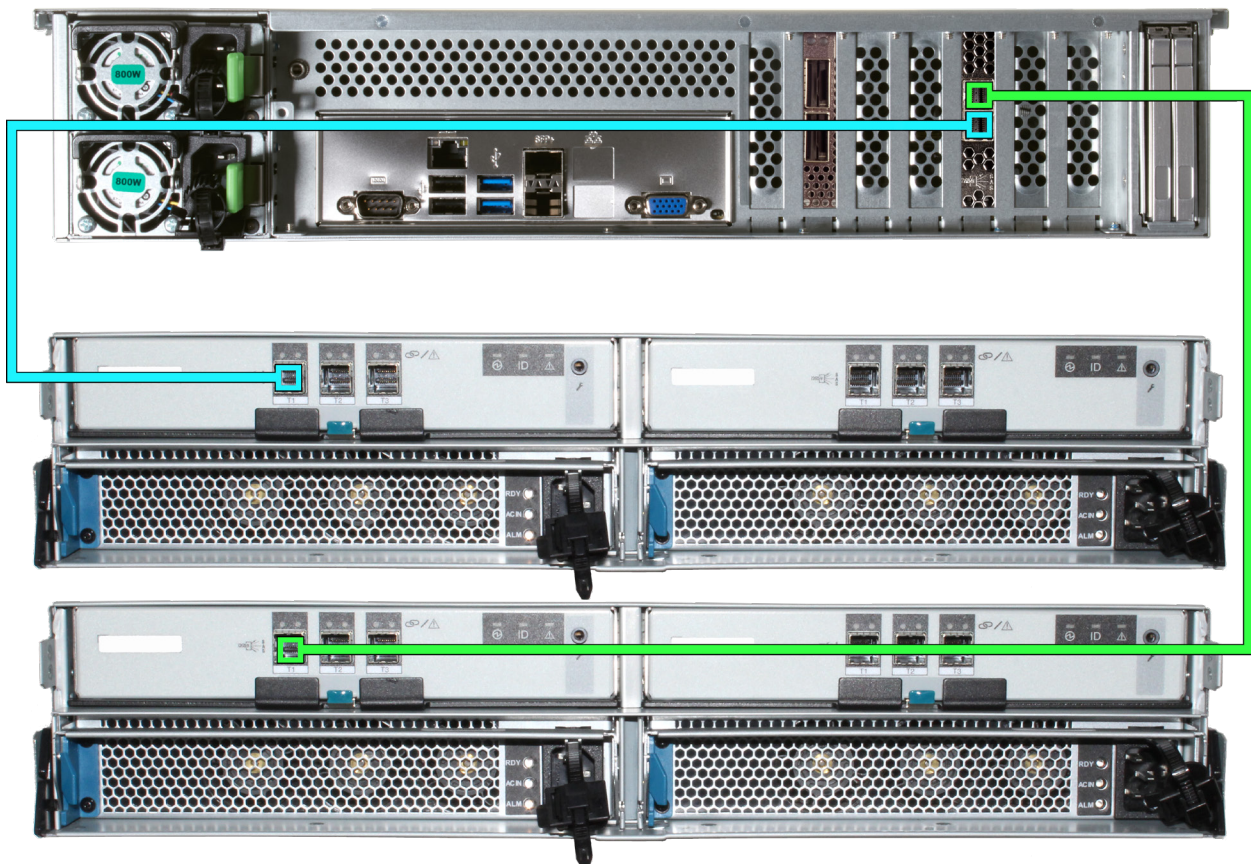
6.1 X-Series
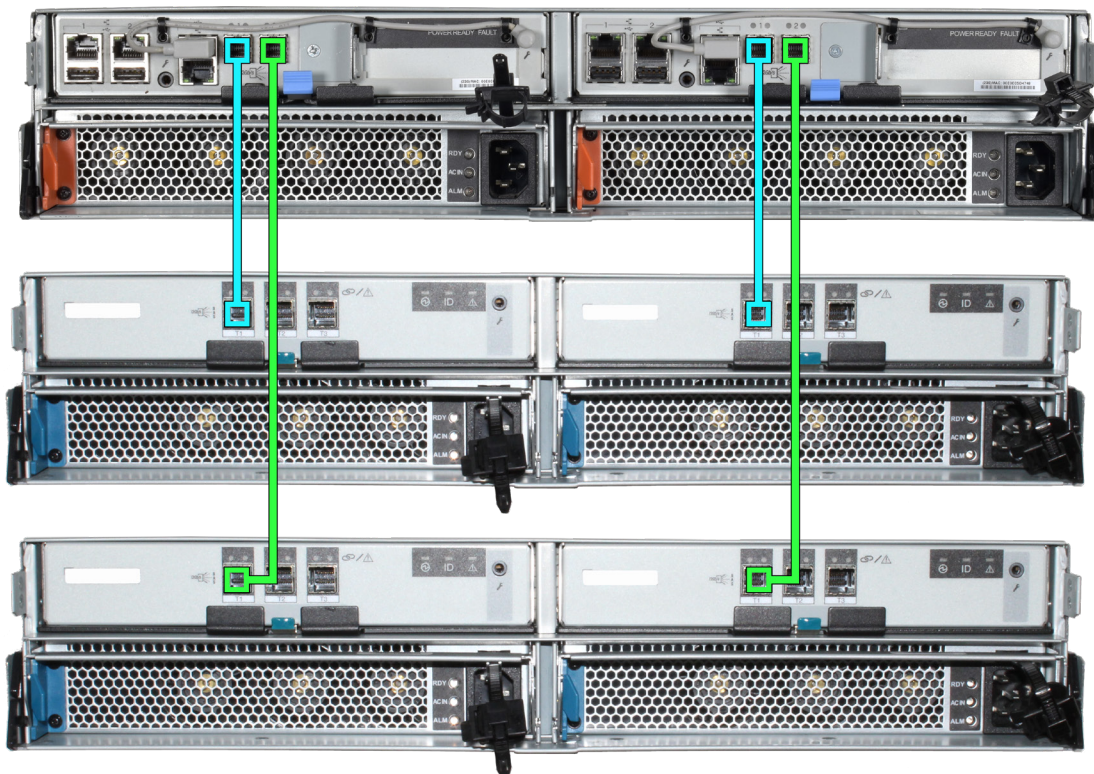
6.2 R-Series

6.2.1 R20

R20 with a single ES12 Expansion Shelf

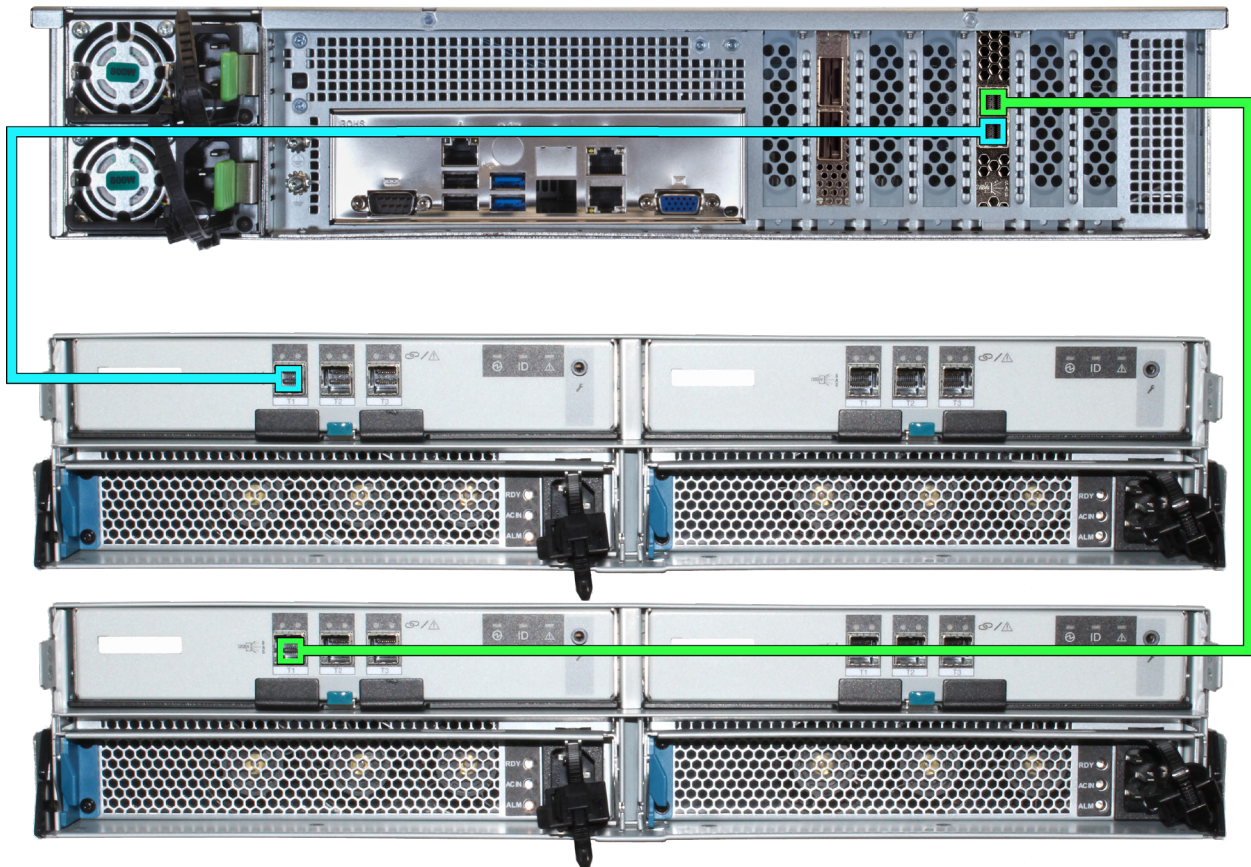R20 with two ES12 Expansion Shelves

6.2.2 R40

R40 with a single ES12 Expansion Shelf

R40 with two ES12 Expansion Shelves

6.2.3 R50

R50 with a single ES12 Expansion Shelf

R50 with two ES12 Expansion Shelves

6.3 M-Series

6.3.1 M40

M40 with a single ES12 Expansion Shelf

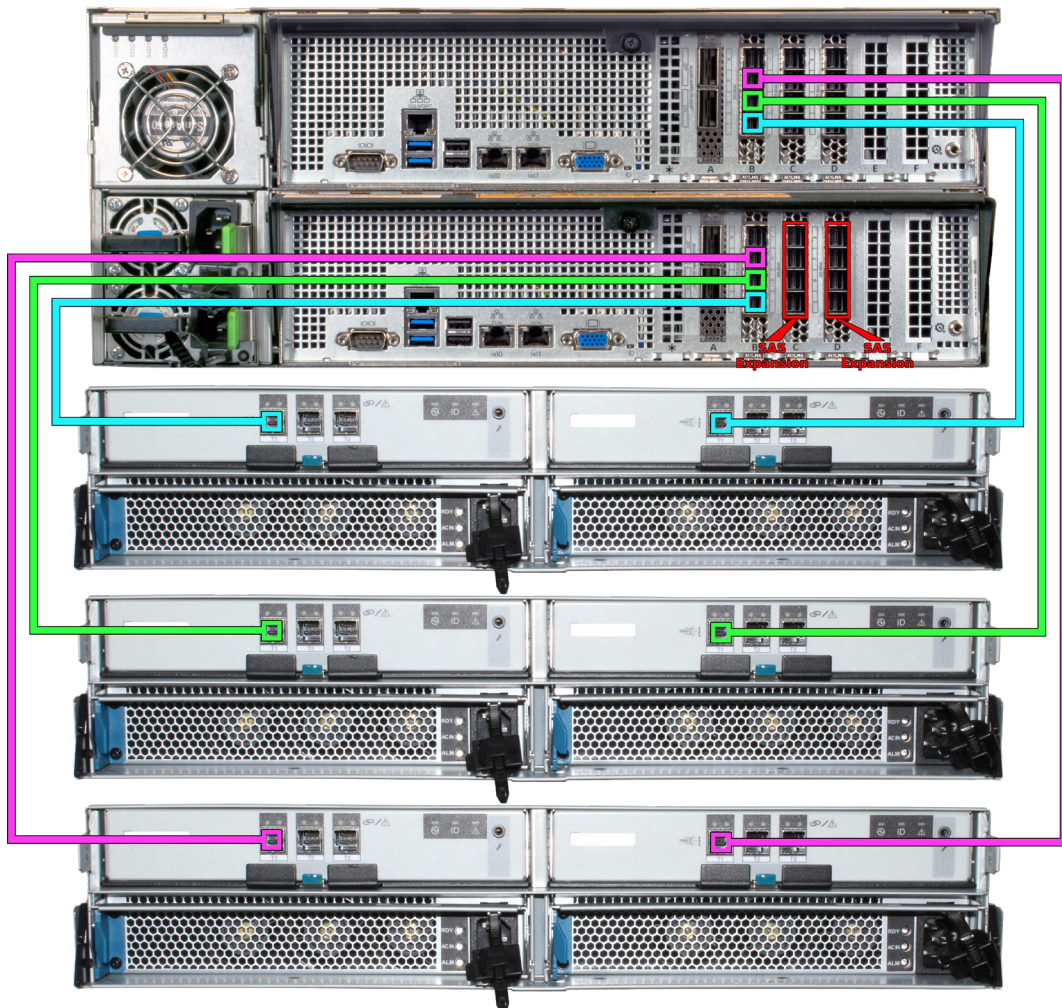

M40 with two ES12 Expansion Shelves

6.3.2 M50 and M60

M50/M60 with a single ES12 Expansion Shelf

M50/M60 with three ES12 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 Install Bezel (Optional)

The included bezel is not required for operation. If desired, install the bezel by aligning it with the pins on the bezel ears and pressing it into place.

8 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/

9 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)