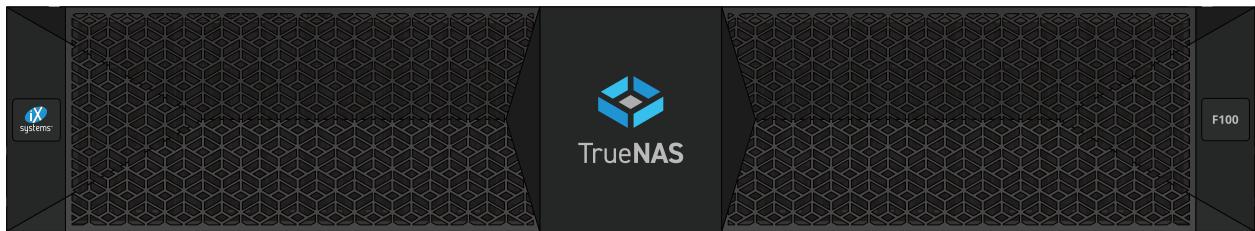


TrueNAS® F-Series User Manual

v.25101



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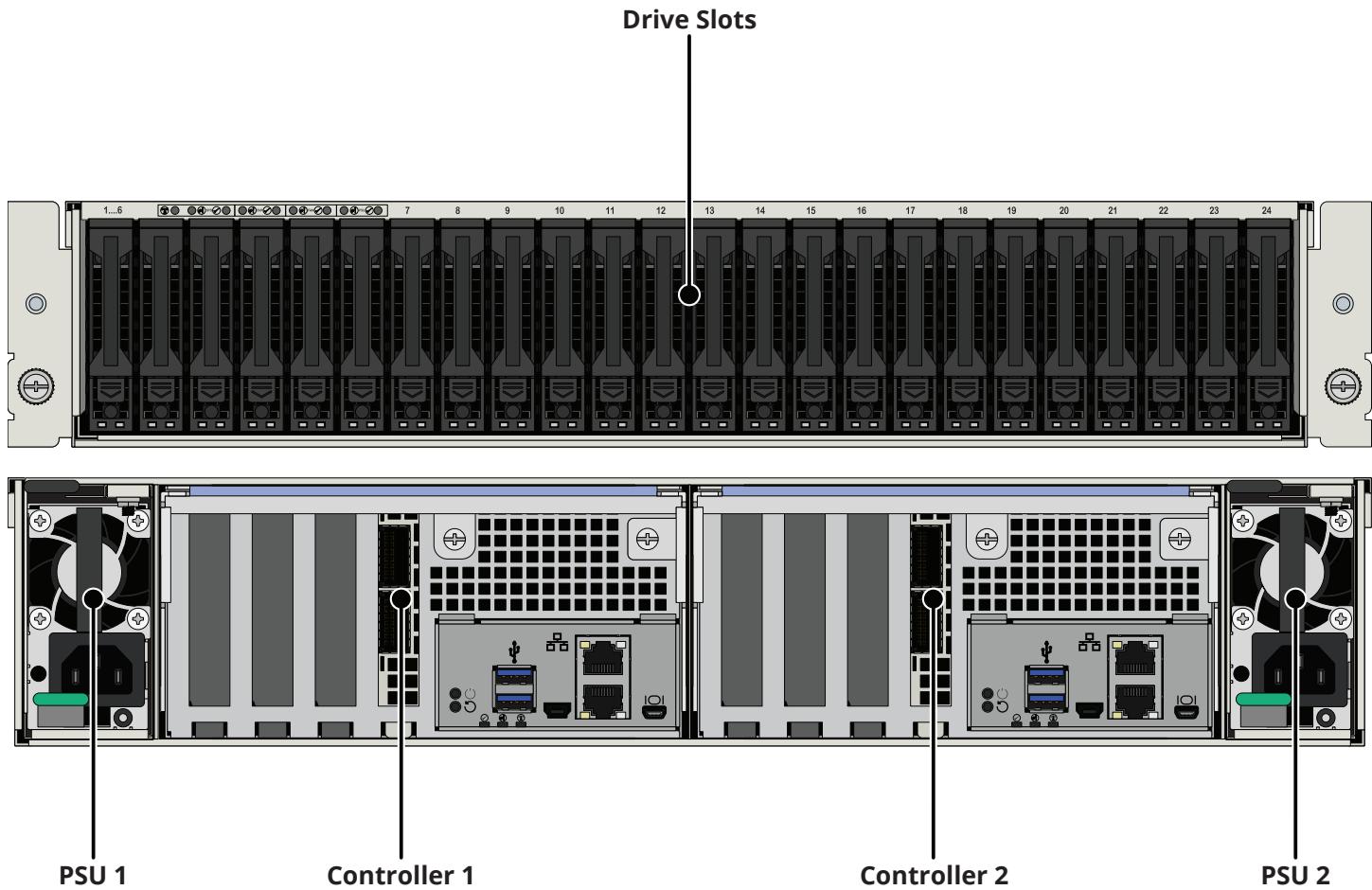
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1 Introduction

The TrueNAS F-Series is a 2U, 24-bay, High-Availability storage array with redundant power supplies.

Your system comes with the TrueNAS SCALE operating system preloaded.

Review the safety considerations and requirements before interacting with the F-Series.



2 Safety

2.1 Anti-Static Precautions

⚠ 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.

2.2 Personal Protective Equipment (PPE)

⚠ Warning - PPE

Wear proper PPE, like anti-static wrist straps and smocks before touching any sensitive equipment inside the chassis. If you are unsure how to properly replace any parts, contact iXsystems Support.

2.3 Handling 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.

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

⚠ Warning

The F-Series weighs 58 lbs fully-loaded and requires a minimum of **two** people to lift.

When handling rails, system components, or drives, never force movement if a component seems stuck. Gently remove the component 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.

3 Specifications

3.1 Enclosure

Drive Count	24 2.5" NVMe SSD		
Cooling Fans	5 plus one 1 redundant		
Power Supplies	2		
Power Draw	F60	F100	
Typical (HA)	600W	800W	
Max (HA)	996W	1152W	
Storage Controllers	2		
Dimensions (H x W x L)	3.43" x 17.2" x 27.44"		87mm x 438mm x 697mm
Net Weight (Fully Loaded)	58.7 lbs		26.7 kg
Operating Temperature	41°F ~ 95°F		5°C ~ 35°C
Non-Operating Temperature	-40°F ~ 140°F		-40°C ~ 60°C
Vibration	0.10G at 5 Hz to 500 Hz		

3.2 PCIe Population

Model	Slot 1	Slot 2	Slot 3	Slot 4
F60	100G NIC (Optional)	100G NIC (Optional)	--	--
F100	100G NIC	100G NIC (Optional)	100G NIC (Optional)	--

3.3 Memory Allocation

Model	A	B	C	D	E	F	G	H	Total
F60	64GB	512GB							
F100	64GB	512GB							

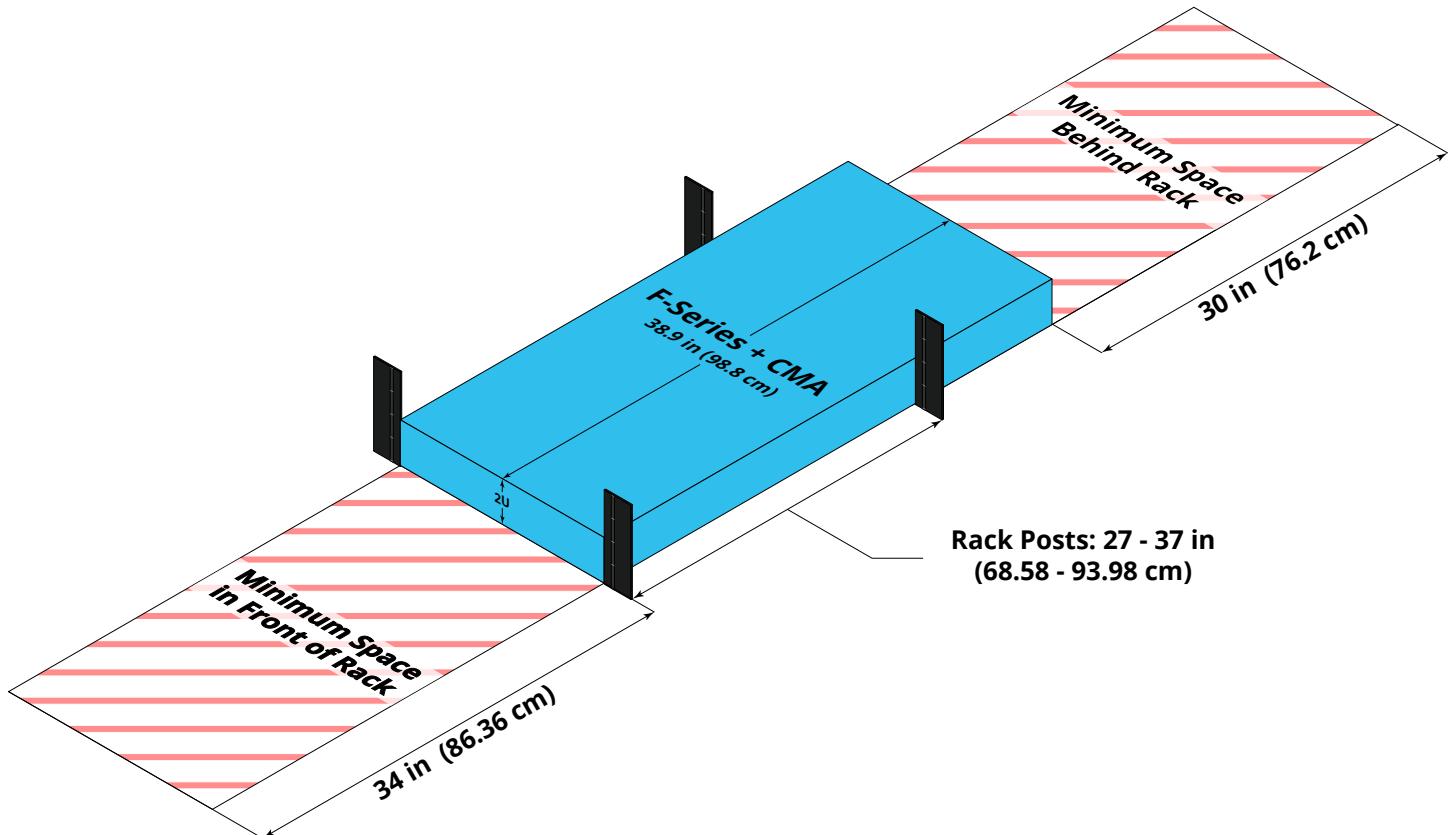
4 Space Requirements

The ES24N requires at least 2U of rack space in an EIA-310 compliant rack.

The system is 38.9" long with the CMA. The rack posts must be between 27" and 37" apart to install the rail kit.

You must have at least 34" (86.36 cm) of space in front of the rack to safely install the ES24N.

You must also have at least 30" (76.2 cm) of space behind the rack to install the cables.



5 Recommended Tools

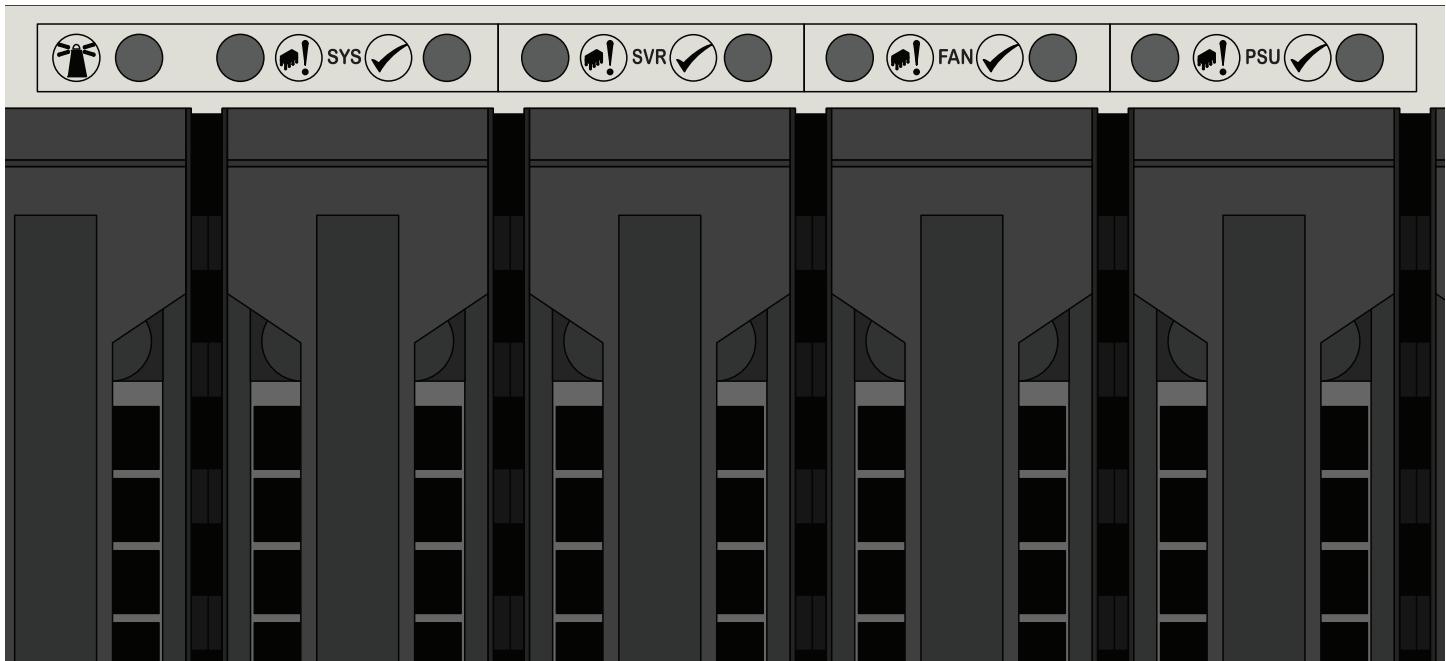
We recommend these tools when interacting with the TrueNAS F-Series:

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

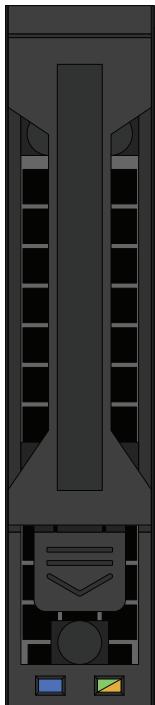
6 Buttons, Ports, and Indicators

6.1 Front Indicators

Light	Color and Indication
	Blue (Solid): Locate ID Active
	Amber (Solid): Component Fault
	Green (Solid): Component Ready

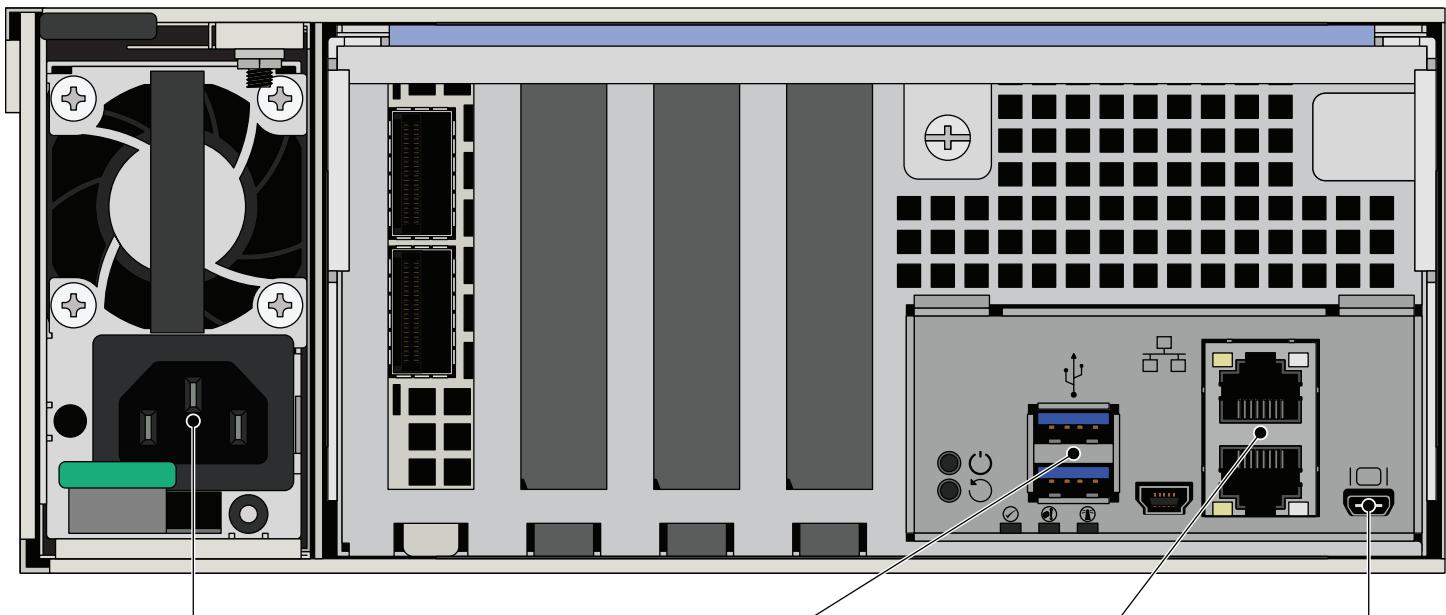


6.2 Drive Indicators



Light	Color and Indication
Left LED	Blue (Flashing): Locate ID Active
Right LED	Green (Flashing): Drive Activity
Right LED	Amber (Solid): Drive Fault
Right LED	Amber (1Hz Flashing): Linking
Right LED	Amber (2Hz Flashing): Link Failure

6.3 Rear Buttons, Ports, and Indicators

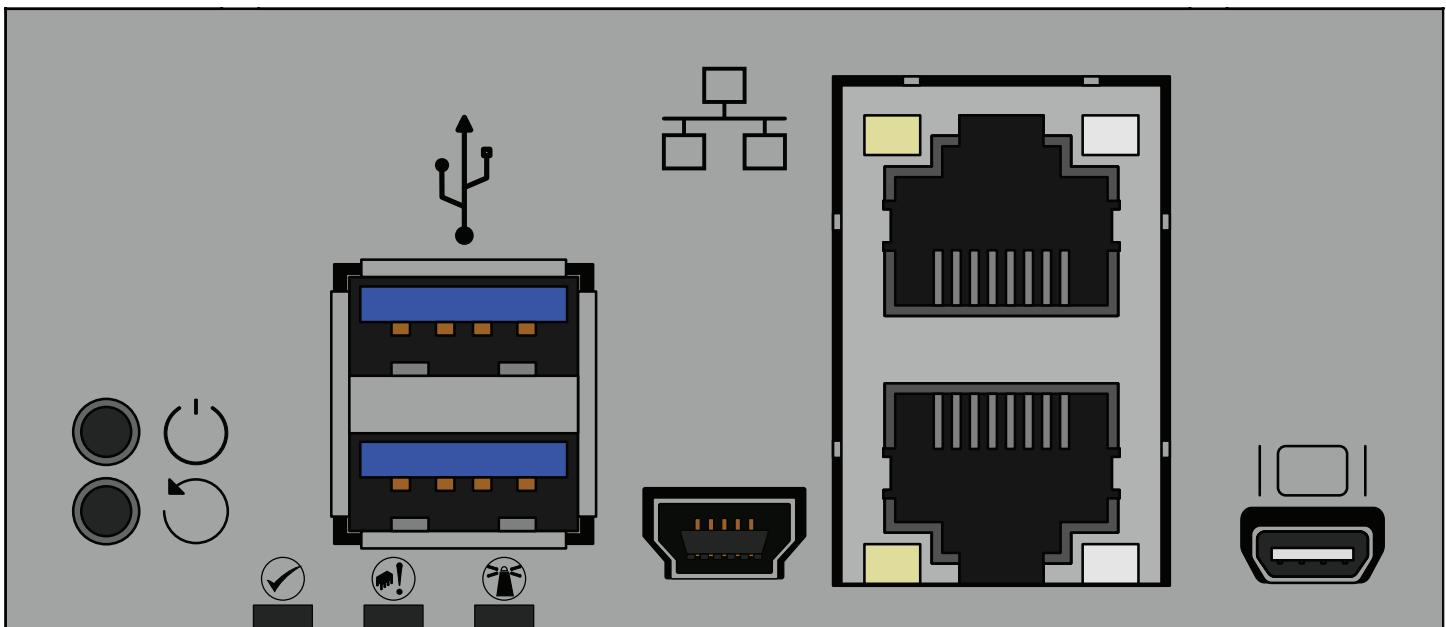


Power Supply

USB 3.1 x2

TrueNAS Management (Top)
OOBM (Bottom)

Micro HDMI



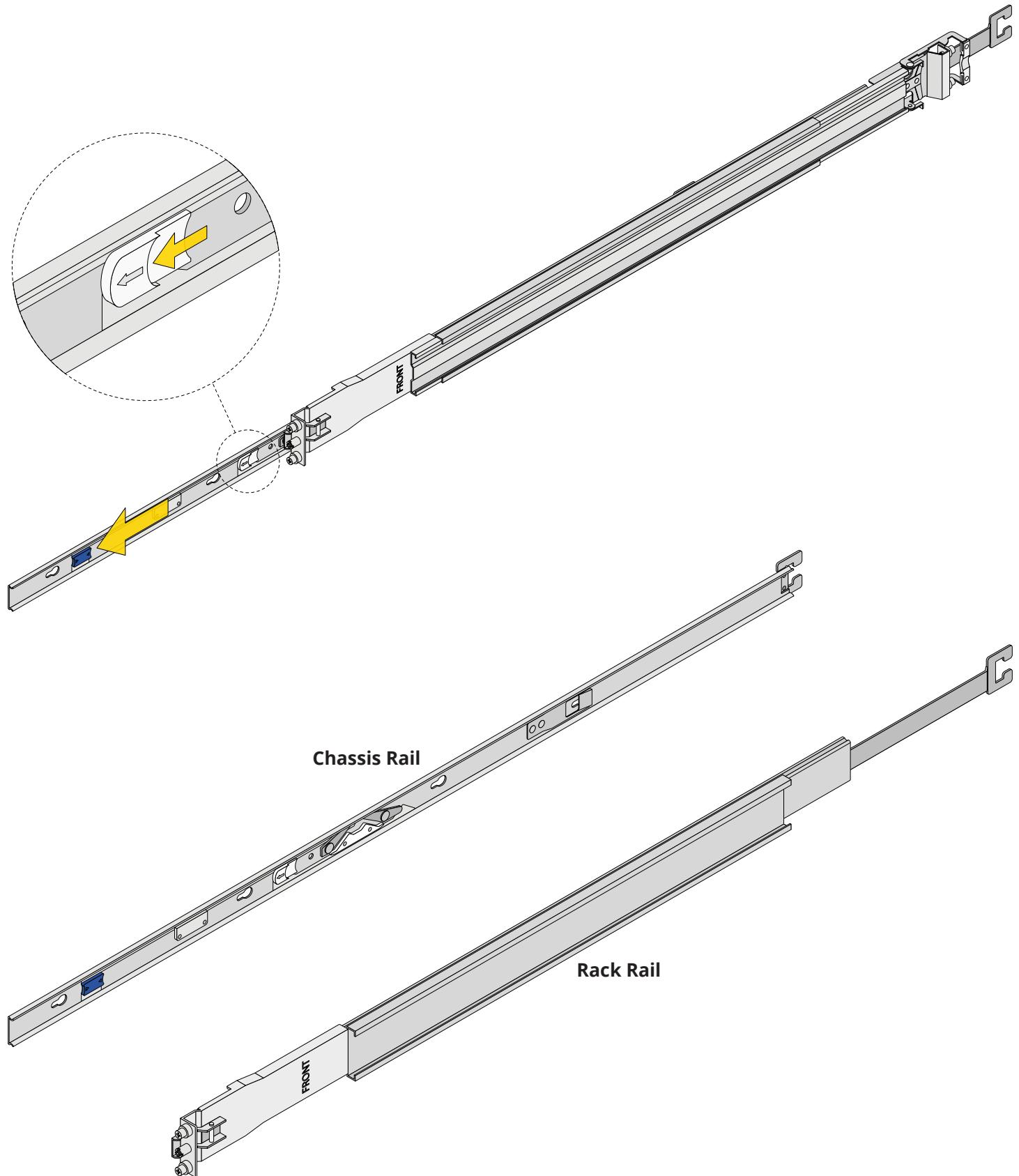
Light / Button	Color and Indication
	Blue (Solid): Locate ID active / Blue (Flashing): Service Allowed
	Amber (Flashing): Controller Fault
	Green (Solid): Controller Ready
	Powers the system on/off
	Resets the system.

7 Racking Procedure

7.1 Remove Chassis Rail from Rack Rail

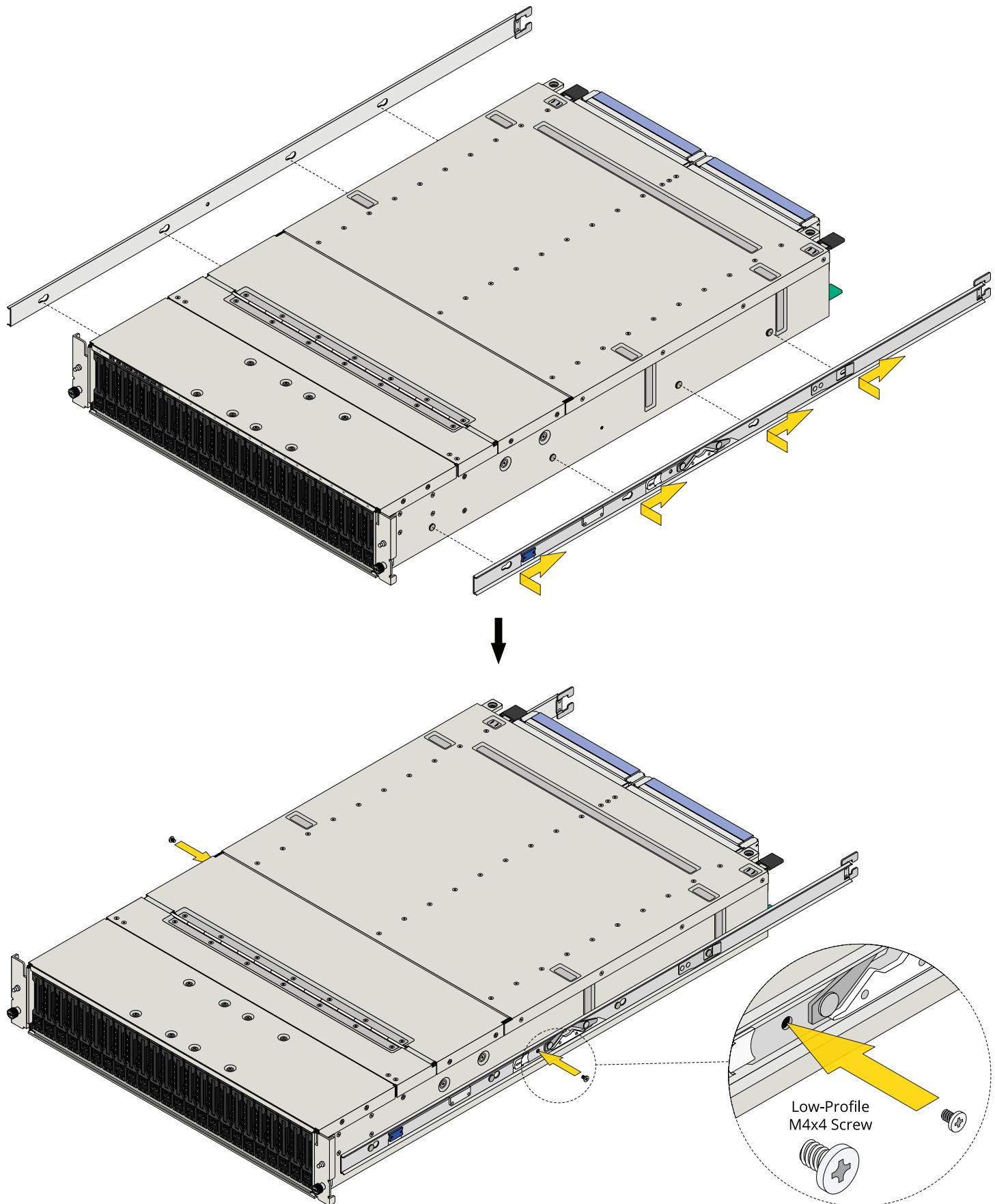
The rail kit separates into two pieces, the inner chassis rail and the outer rack rail.

Slide the inner chassis rail out of the rack rail until it stops, then pull the white tab and remove the chassis rail.



7.2 Install the Chassis Rail on the System

Fit the rail keyholes over the mounting pegs on the system and slide the rail toward the back of the system until it locks. Use a low-profile M4x4 screw to secure the rail to the chassis. Repeat the process for the second chassis rail.



7.3 Install the Rack Rail in the Rack

⌚ Tip - Rack Spacing

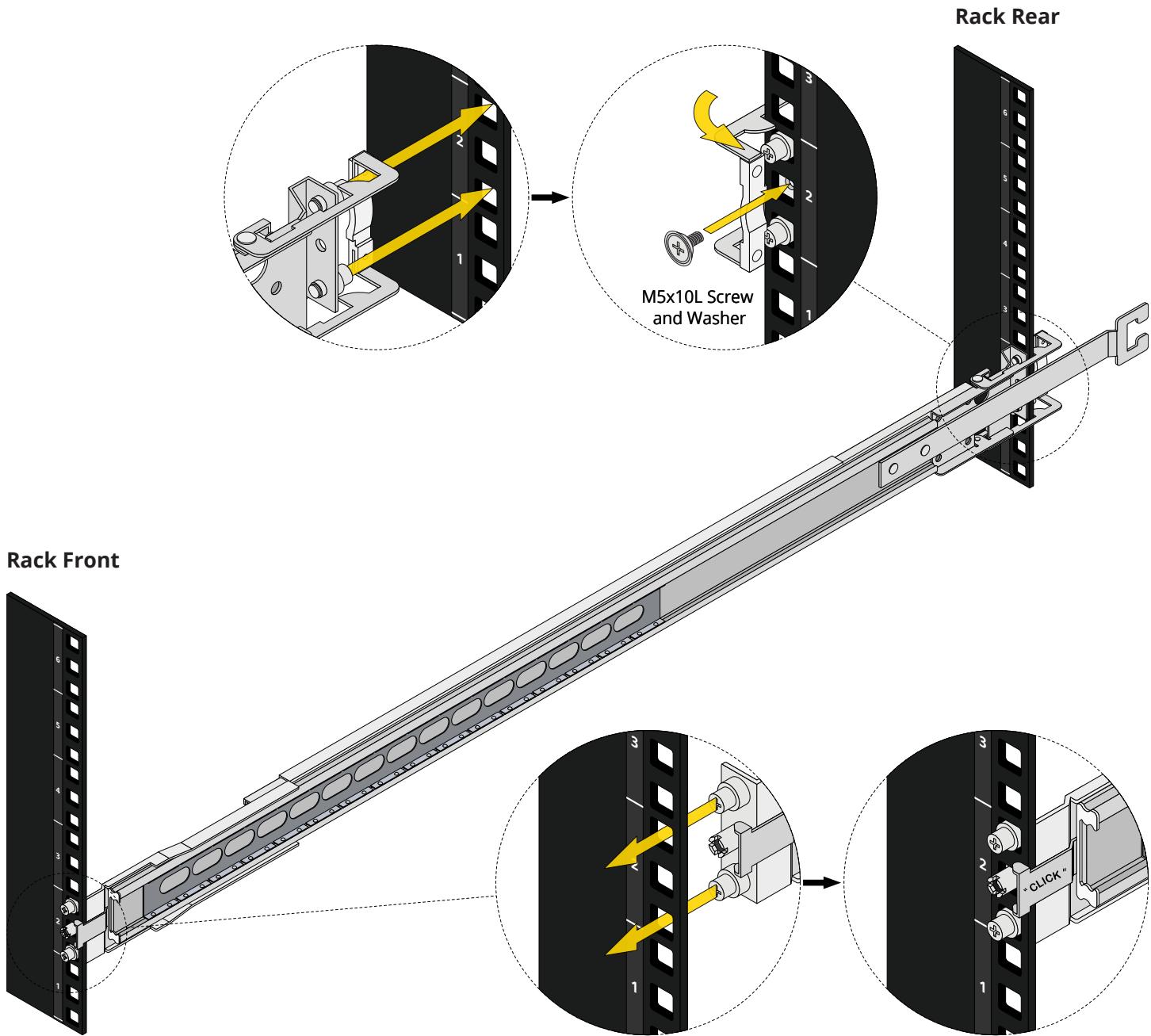
To ease field servicing, we recommend you avoid installing the F-Series between two other systems if possible.

Place the rail in the rack with the front end towards the front of the rack. Align the rear pins with the rear rack mounting holes in the bottom 2U of reserved rack space. Swing the gray latch handle open 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, then secure the rail to the rack by installing one M5x10L screw and washer between the rail pins.

At the front of the rail, align the pins with the front rack holes, then push the pins into the holes until the latch clicks.

Ensure you mounted the front and rear rail pins in the same U in the rack and that the rail is level.

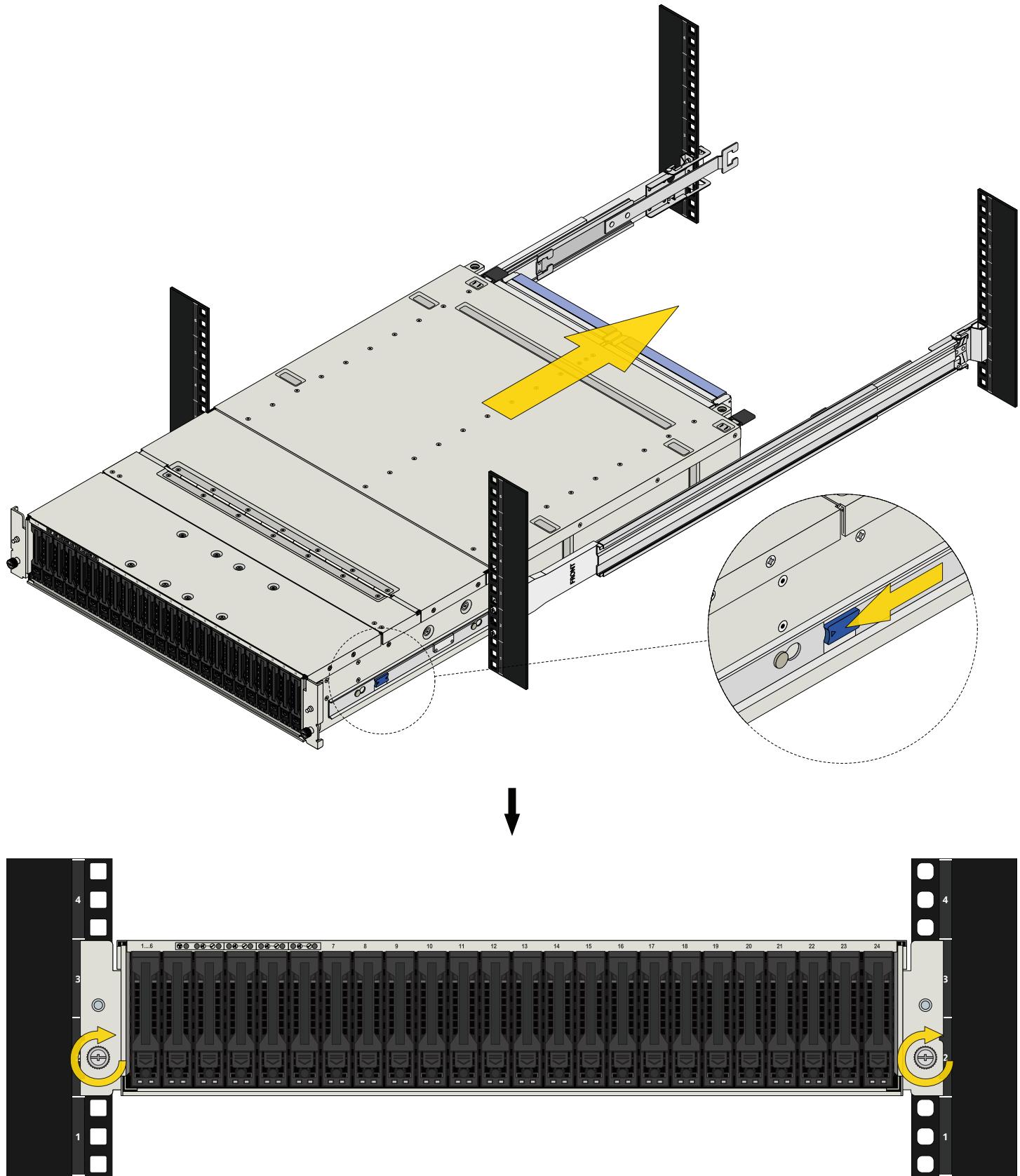
Repeat the process for the second rack rail.



7.4 Install the System in the Rack

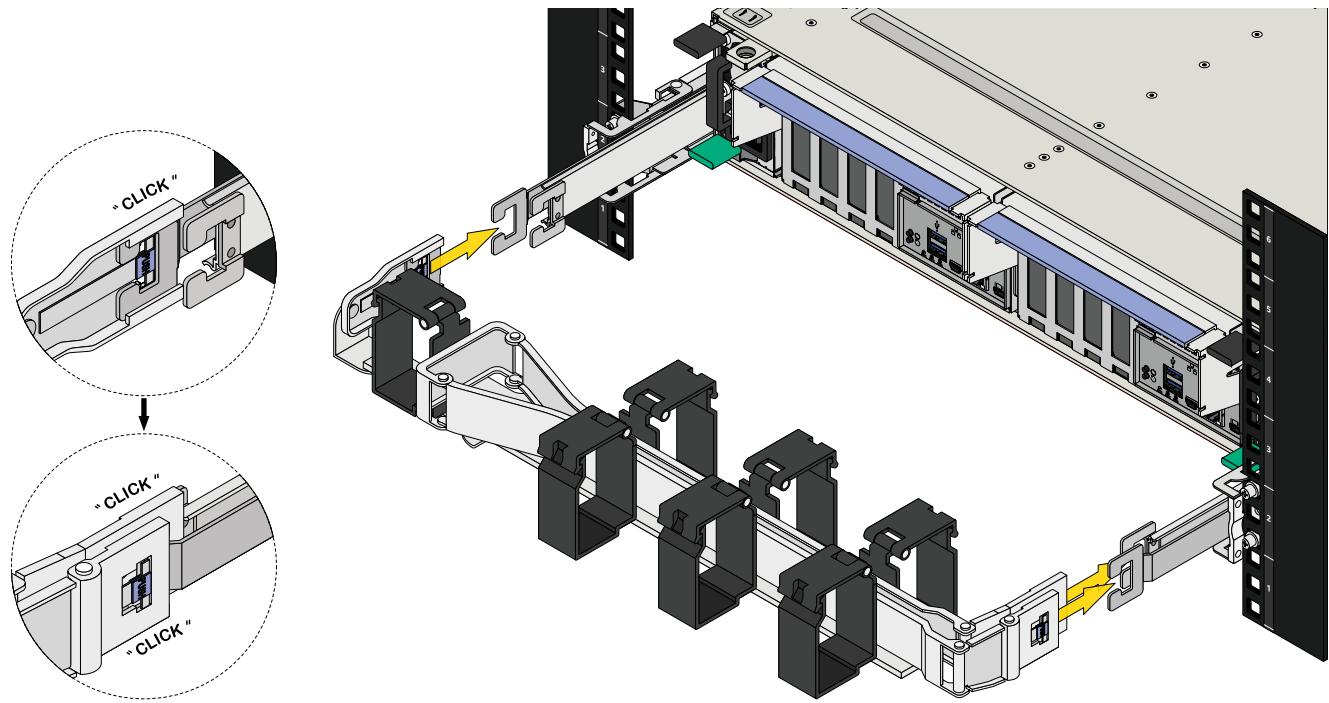
Team-lift the system and align the chassis rails with the rack rails. Slide the ends of the chassis rails into the rack rails and push the system into the rack until the metal safeties click and lock.

Pull the blue release tabs towards the front of the system and finish pushing the system into the rack. Tighten the thumbscrews to secure each system ear to the rack.



7.5 Install the Cable Management Arm (CMA)

Starting with the left side, push the post onto the left bracket. On the right side, push the inner post onto the inner bracket, then push the outer post onto the outer bracket. The CMA posts click and lock when installed correctly.

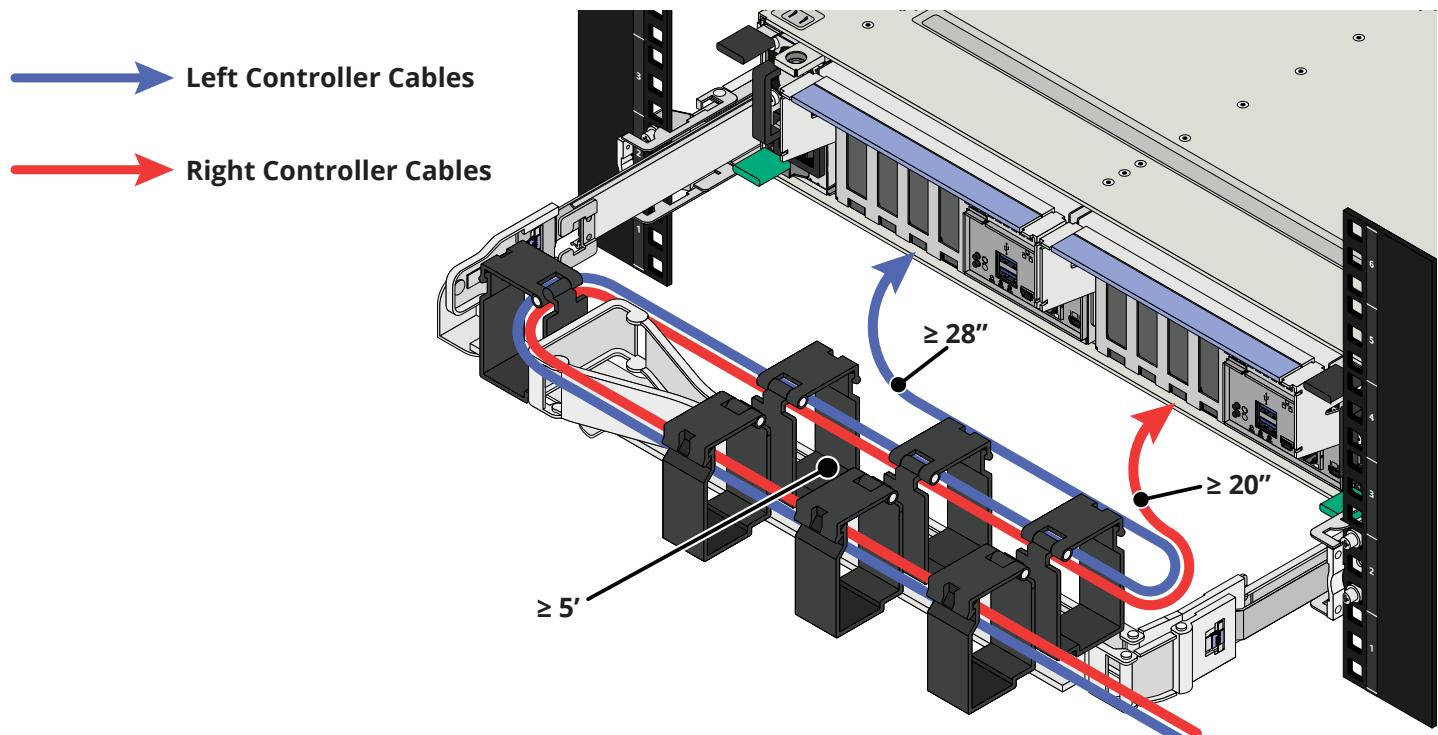


8 Install Cables

Open the black baskets on the CMA and route all the wires for both controllers. Ensure the left-side wires have at least 28 inches of slack between the system and the CMA. The right-side wires should have at least 20 inches of slack between the system and the CMA. All cables going through the CMA should be at least five feet long overall.

Tip - Cabling

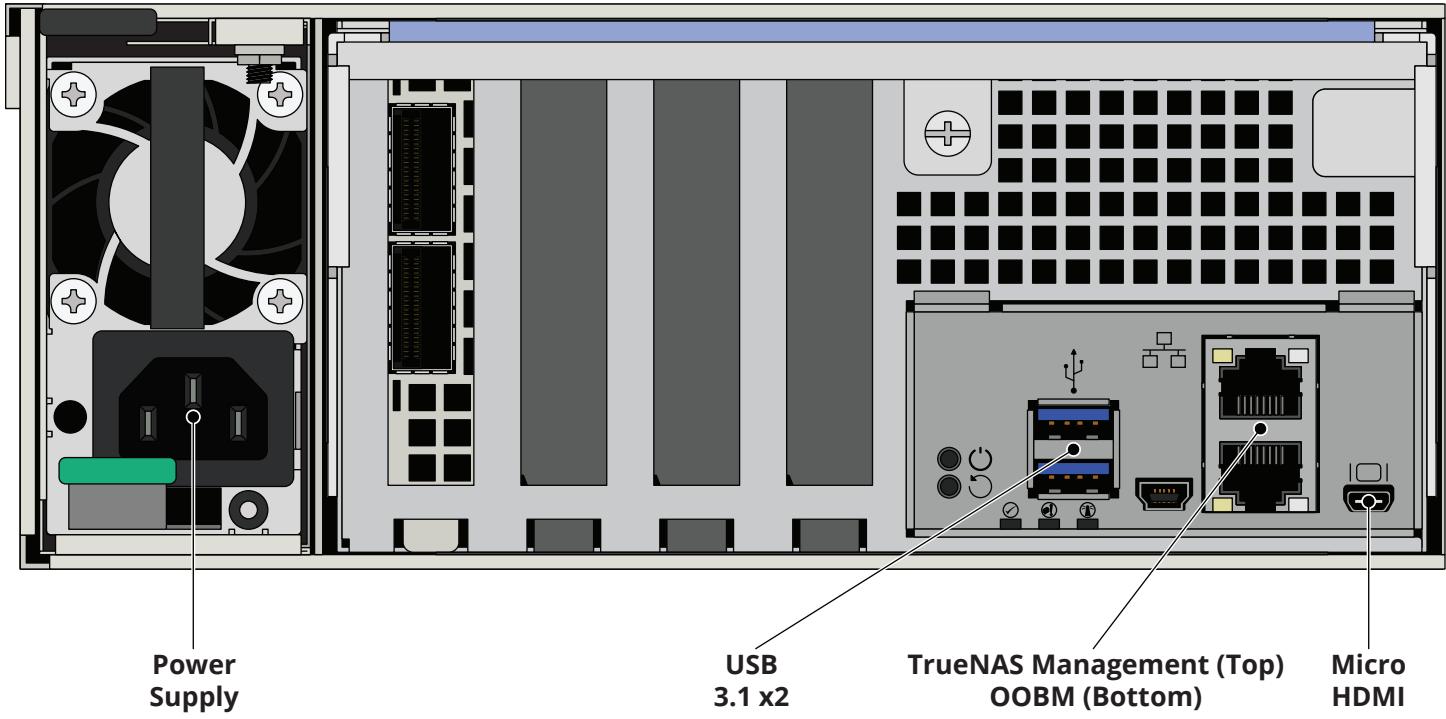
We recommend bundling the cables for each controller using the included velcro straps to make servicing easier.



Connect ethernet network cables from your local switch or management network to the OOBM and network ports on both controllers.

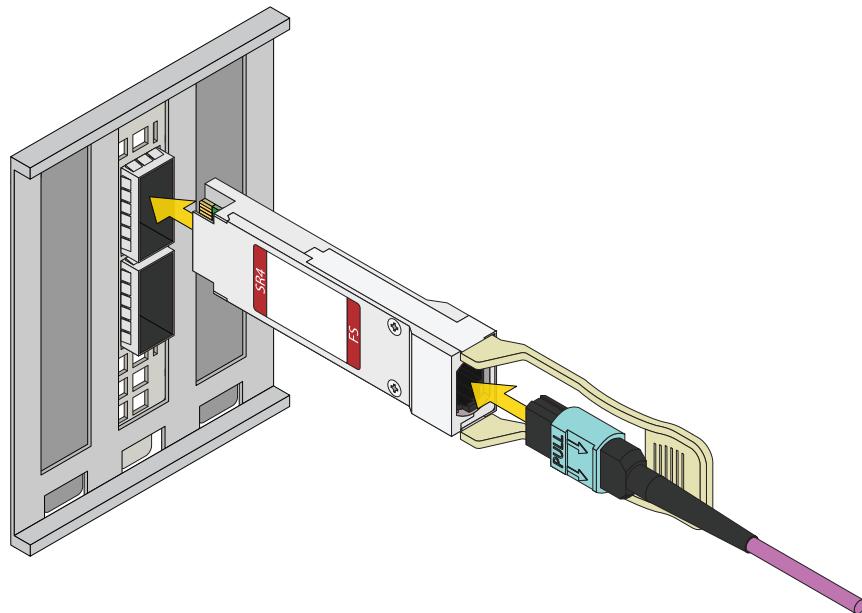
Next, connect a monitor to one of the Micro HDMI ports using the VGA adapter, then connect a keyboard to a USB port on the same controller.

Finally, connect the power cables to both power supplies, then plug them into a power distribution unit.



8.1 NIC Cabling

If you ordered additional networking cards with your system, you can set them up now. Insert the SR optics into the first port on the NIC, then plug the SR cable into the back of the SR optics. The optics and the cable click and lock into place when installed correctly. Repeat for all remaining ports.



Tip - Cable Management

Before continuing, test your cable setup by sliding the system out of the rack. The cables should move freely with the CMA without pinching or coming loose.

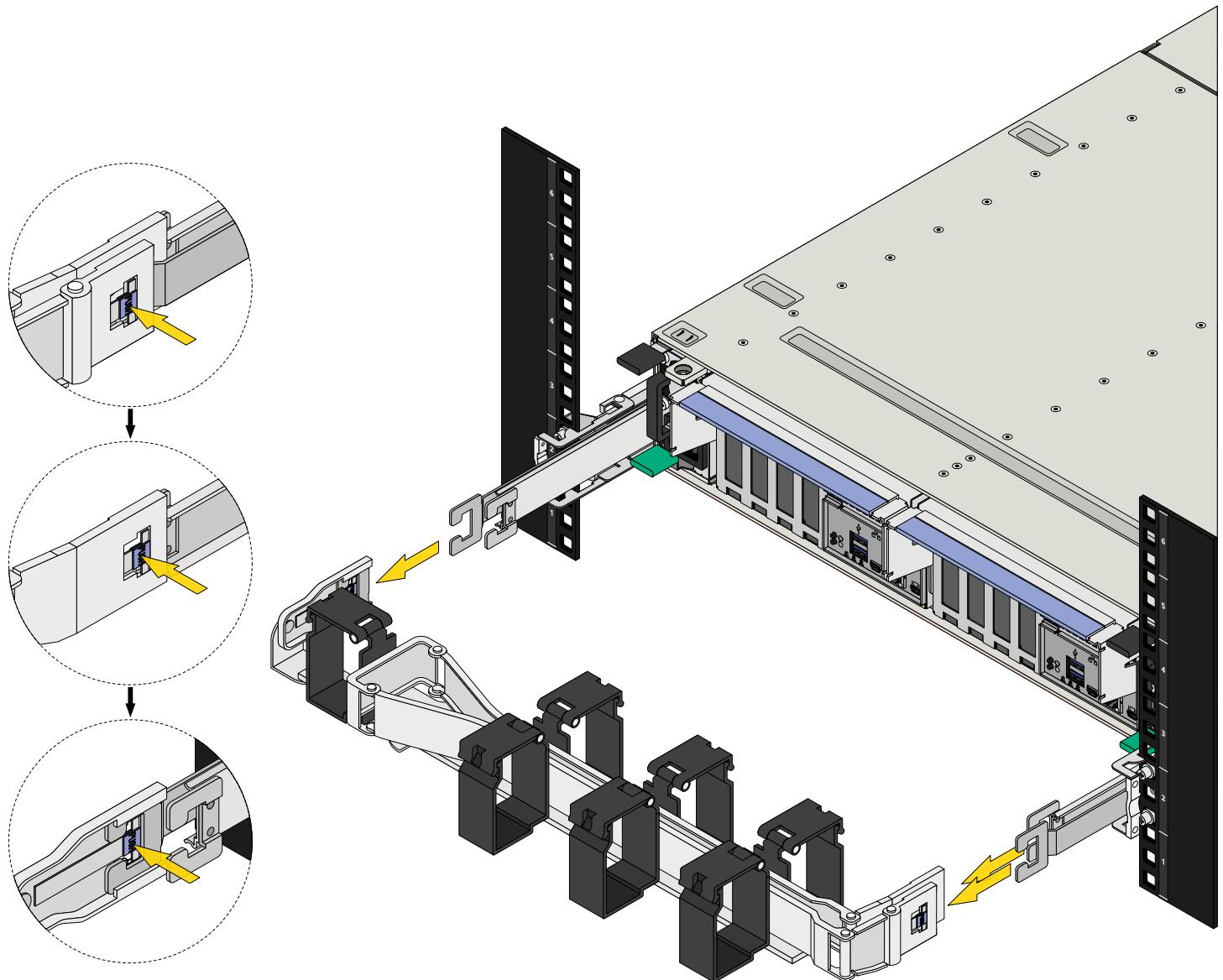
9 Unracking Procedure

Unplug all PSU, networking, and display cables, then open the baskets on the CMA and remove all the cables.

If you plan to re-install the system in the rack, be sure to label the cables so you can easily cable the system again.

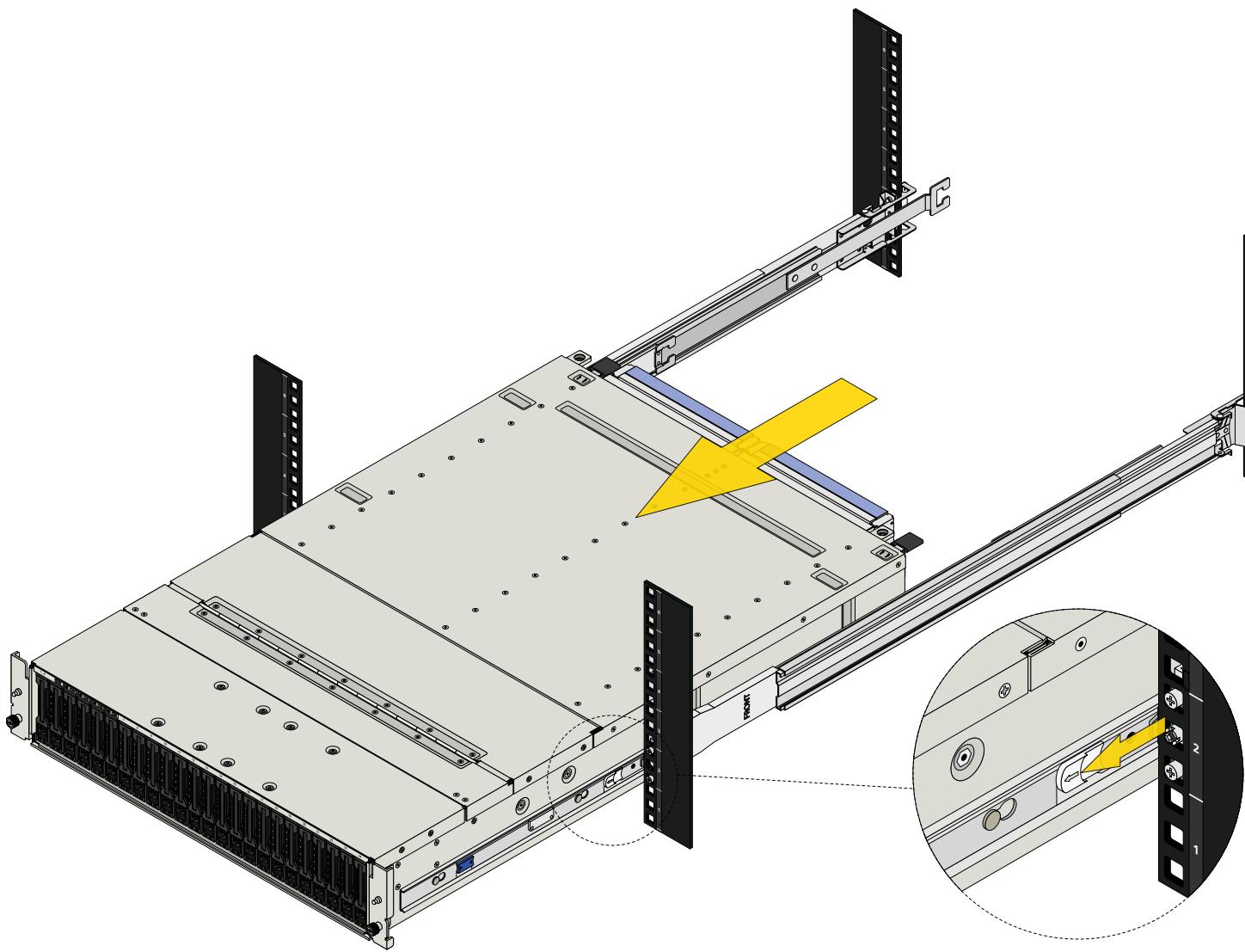
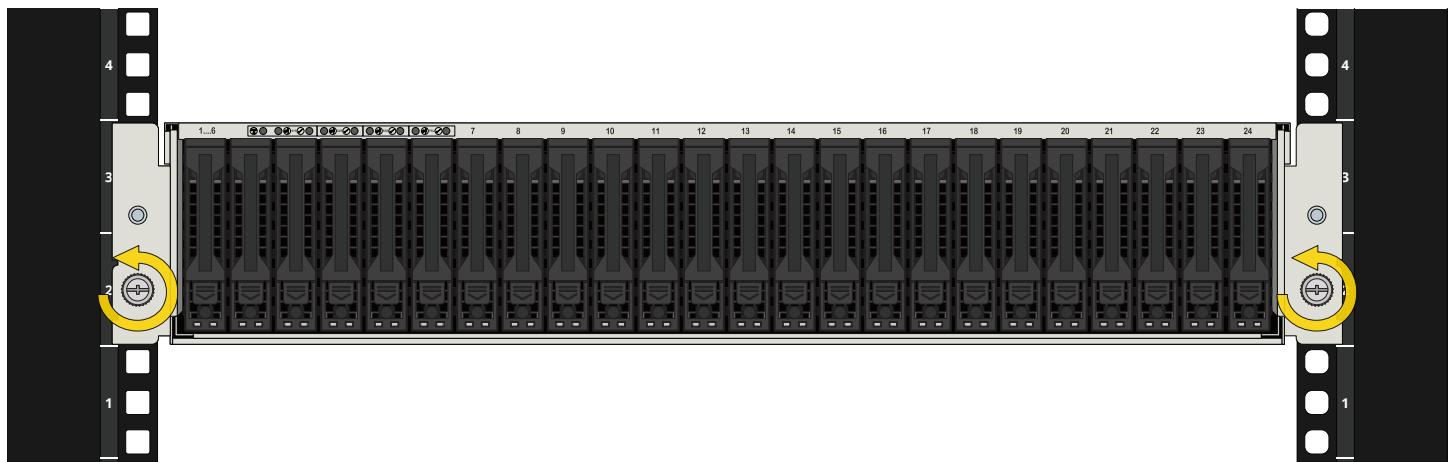
9.1 Remove the CMA

Starting with the right side, push the blue release on the outer post and pull the post off the bracket, then do the same for the inner post. Finally, push the blue release on the left CMA post and pull the CMA away from the system.



9.2 Uninstall the System from the Rack

Loosen the thumbscrews on the each system ear and pull the system out of the rack until it stops. Pull the white security tab on each chassis rail, then finish sliding the system out and team lift it out of the rack.

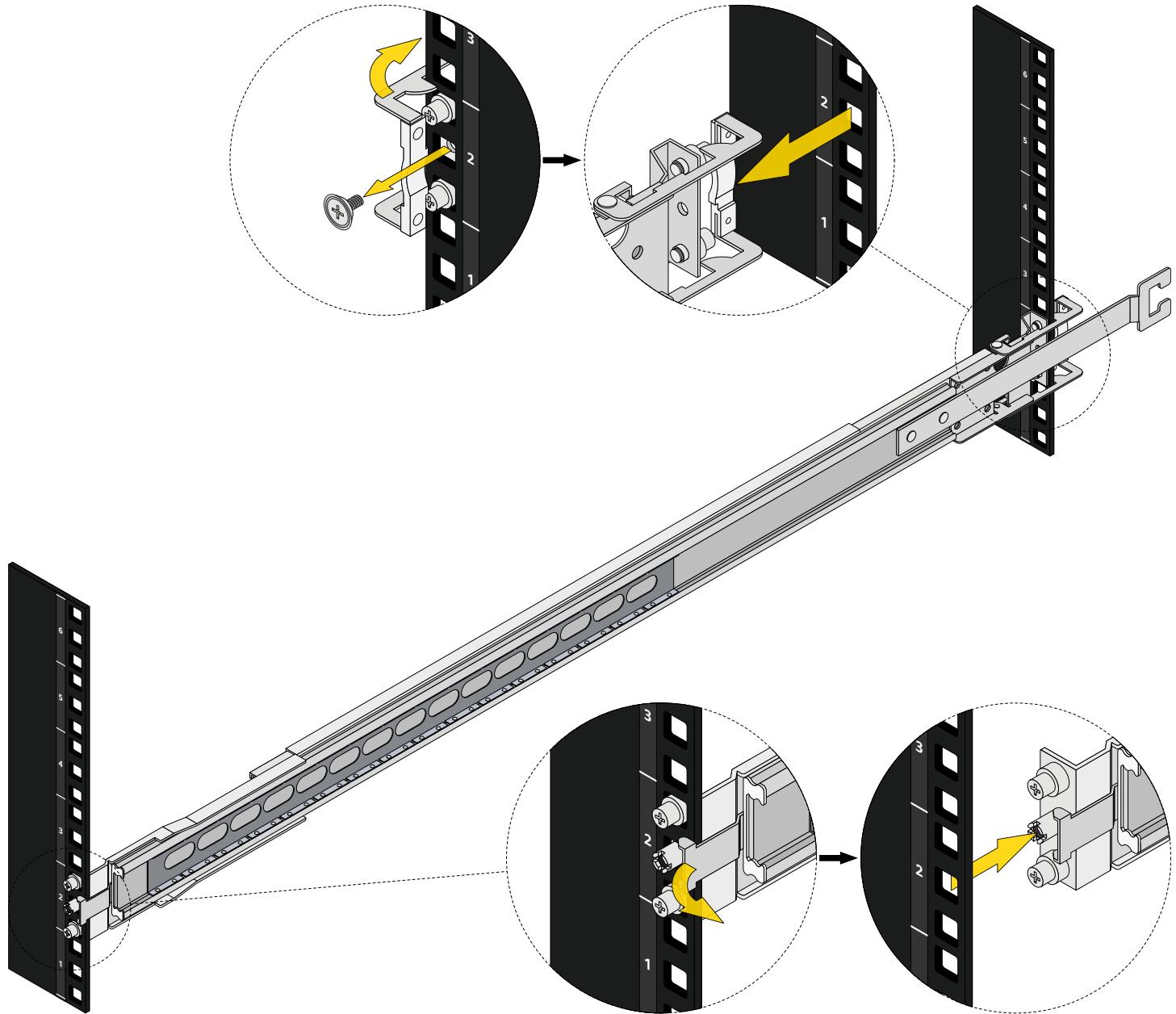


9.3 Remove the Rack Rails

At the back of one of the rails, remove the M5 screw, then swing the gray latch handle open and slide the end of the rail off the rack.

At the front of the rail, push the latch away from the rack and guide the rail pins out of the rack mounting holes.

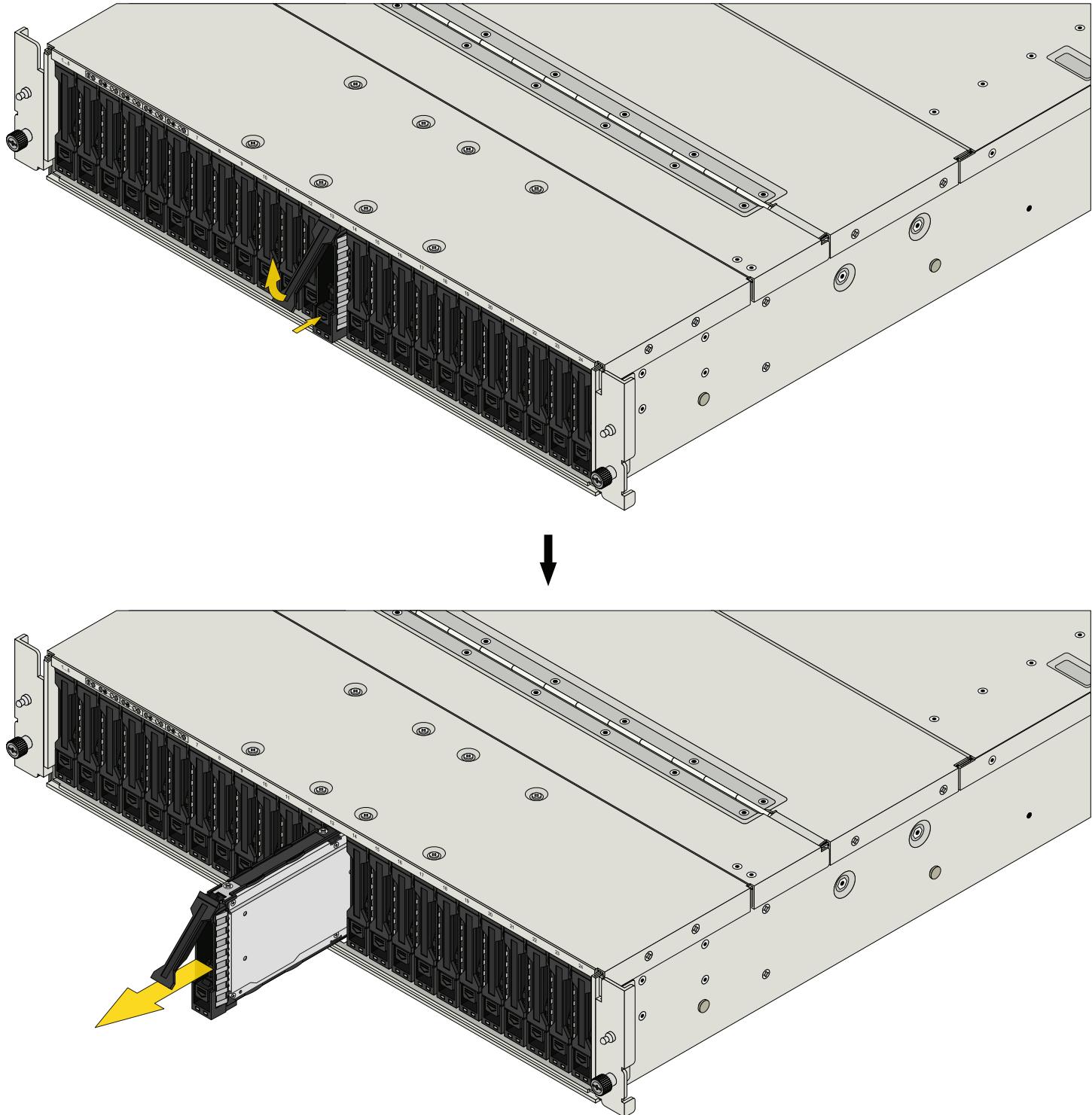
Repeat the process for the second rack rail.



10 Drive Replacement

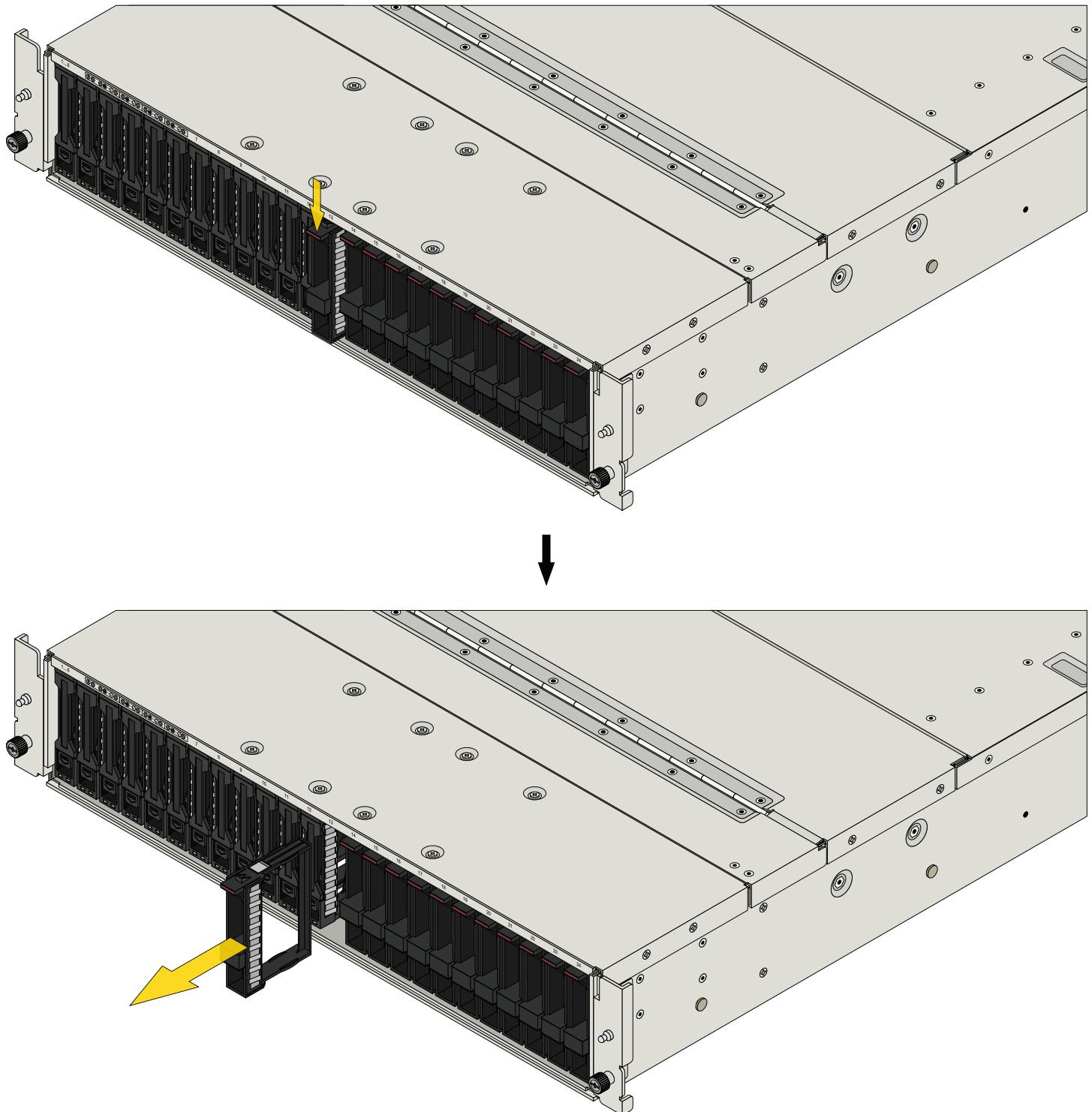
10.1 Remove Drive Tray

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



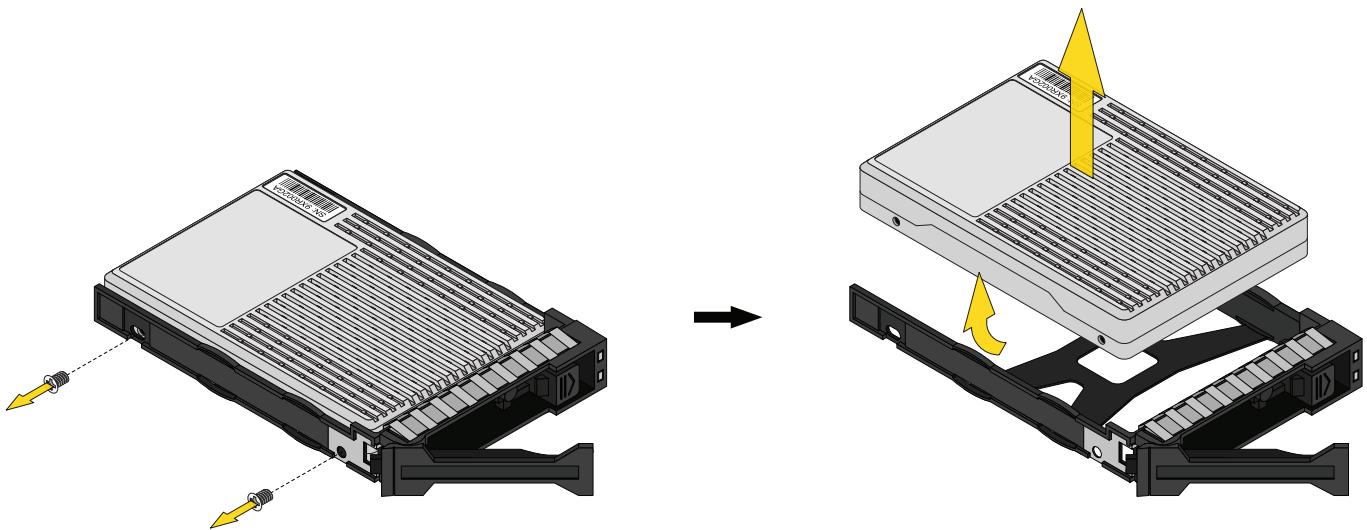
10.1.1 Remove Drive Blank

If you are replacing a drive blank with a drive assembly, remove the drive blank by pushing down on the drive blank locking tab and pulling it out of the system.



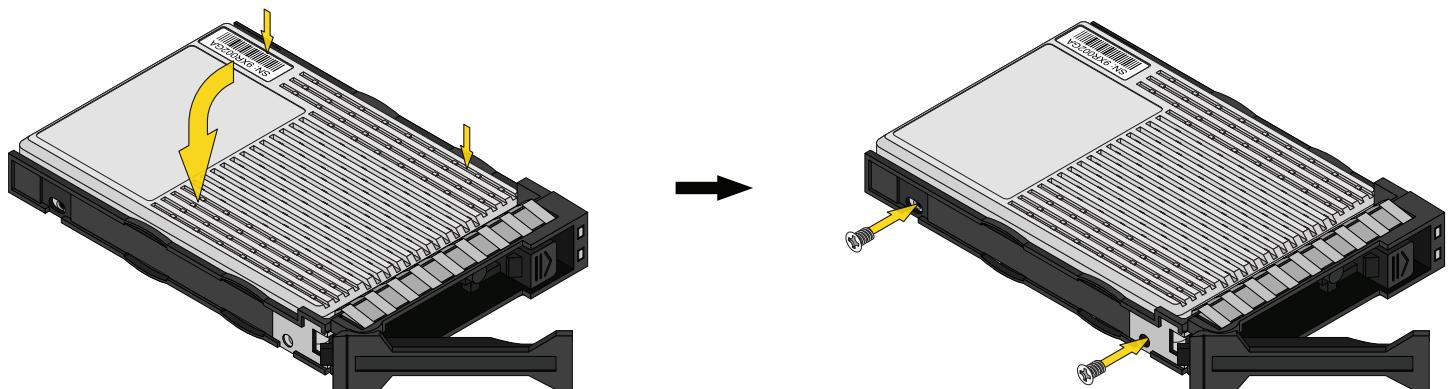
10.2 Remove a Drive From a Tray

Uninstall both SSD screws securing the drive to the tray, then gently lift the drive out of the tray screw-side first.



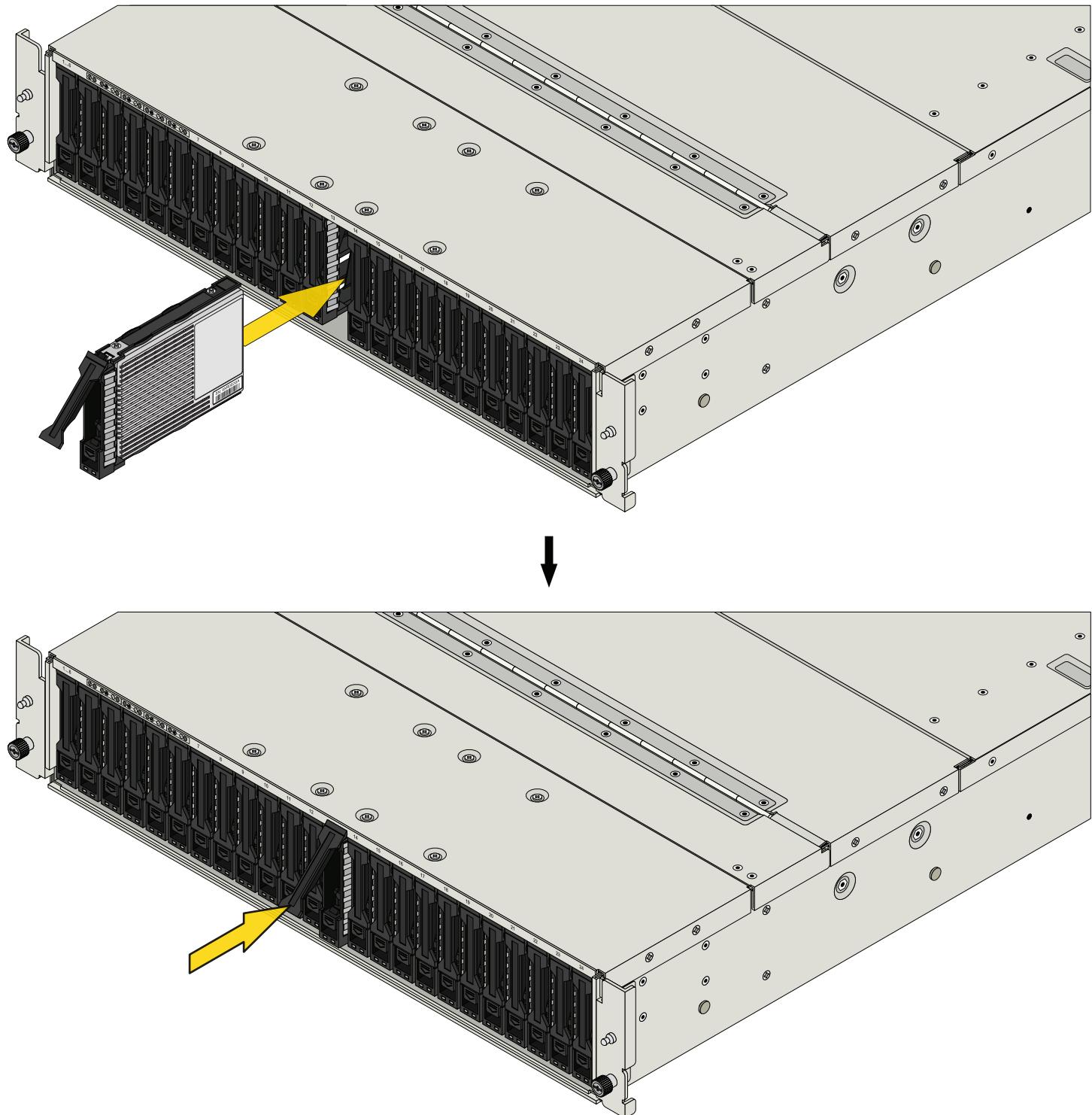
10.3 Install a Drive in a Tray

Ensure the drive connectors point out the back of the tray. Insert the drive into the tray peg-side first, then push the drive down into the tray. Secure the drive in the tray using two SSD screws.



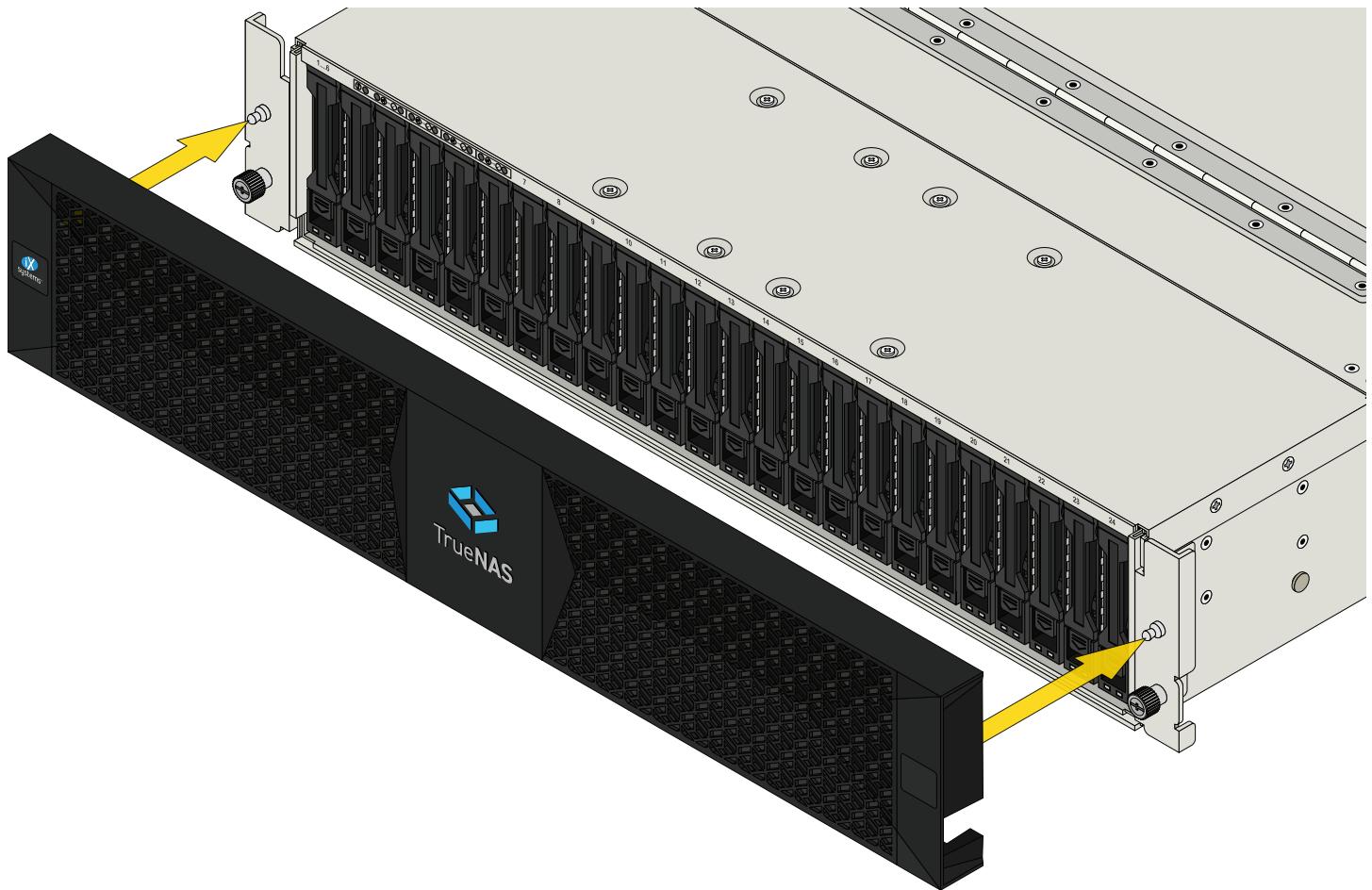
10.4 Install a Drive Tray in the System

To install a drive tray, align it with an empty slot and gently push it in until it stops, then close the locking arm.



11 Install Bezel

To install the bezel, align it with the front of the system. Make sure the two magnets on the bezel line up with the pegs on the system ears, then gently push the bezel on.



To remove the bezel, gently pull it off the front of the system.

12 Expansion

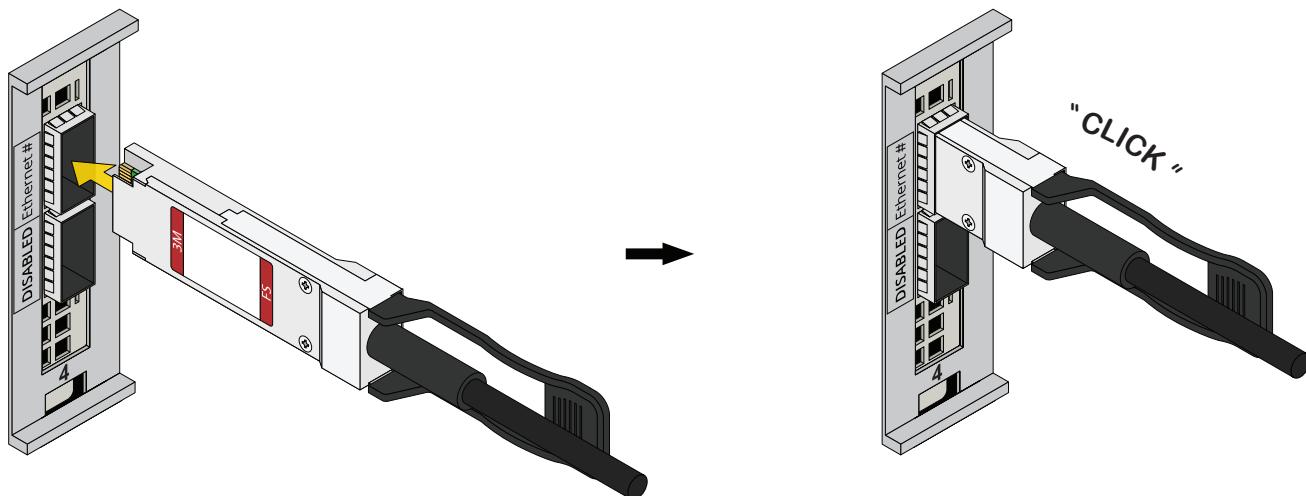
ⓘ Important

When setting up SAS connections, please adhere to the wiring examples below. Connecting expansion shelves incorrectly causes errors. Never cable a single TrueNAS controller to different controllers on one expansion shelf.

You can also find these diagrams in your [expansion shelf user manuals on our Docs Hub](#).

12.1 ES24N

Insert the DAC optics into the first (top) ethernet port. The optics cables click and lock into place when installed correctly. Repeat for the other controller.



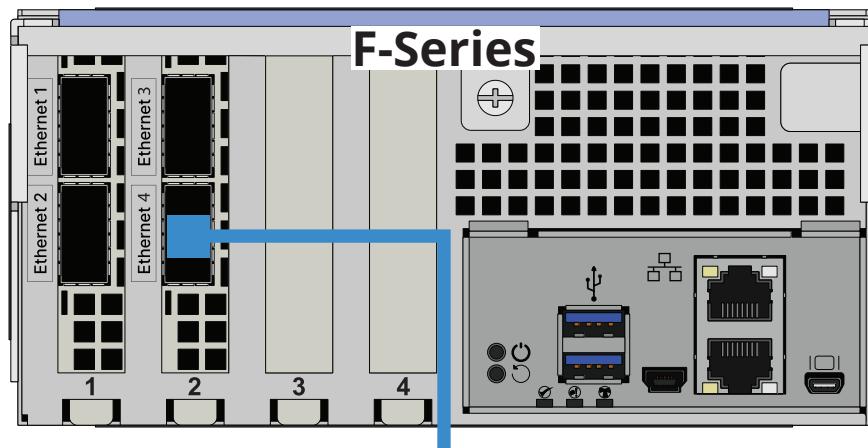
ⓘ Important - Cabling Sequence

You must connect the ES24N DAC cables to the F-Series numerical ethernet ports in descending order, starting with the ES24N that has the **lowest A1 serial number**.

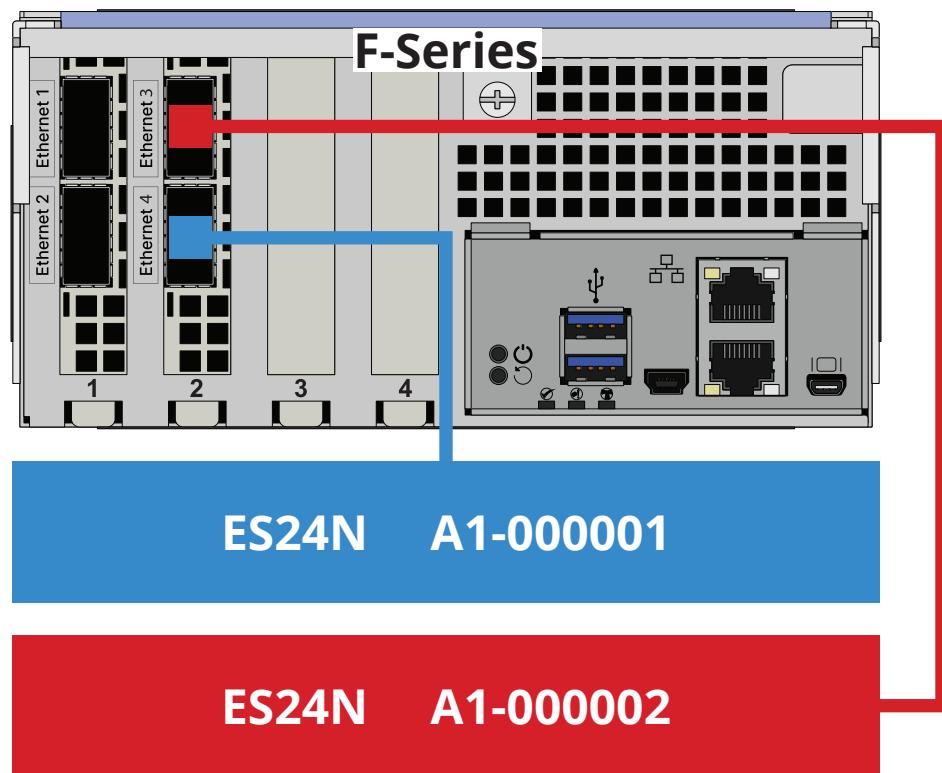
Connect the left ES24N IOM to the left F-Series controller, and the right ES24N IOM to the right F-Series controller.

The following diagrams show the correct connection sequences for two, four, and six shelf configurations on an F-Series with a single 100g NIC in the first slot.

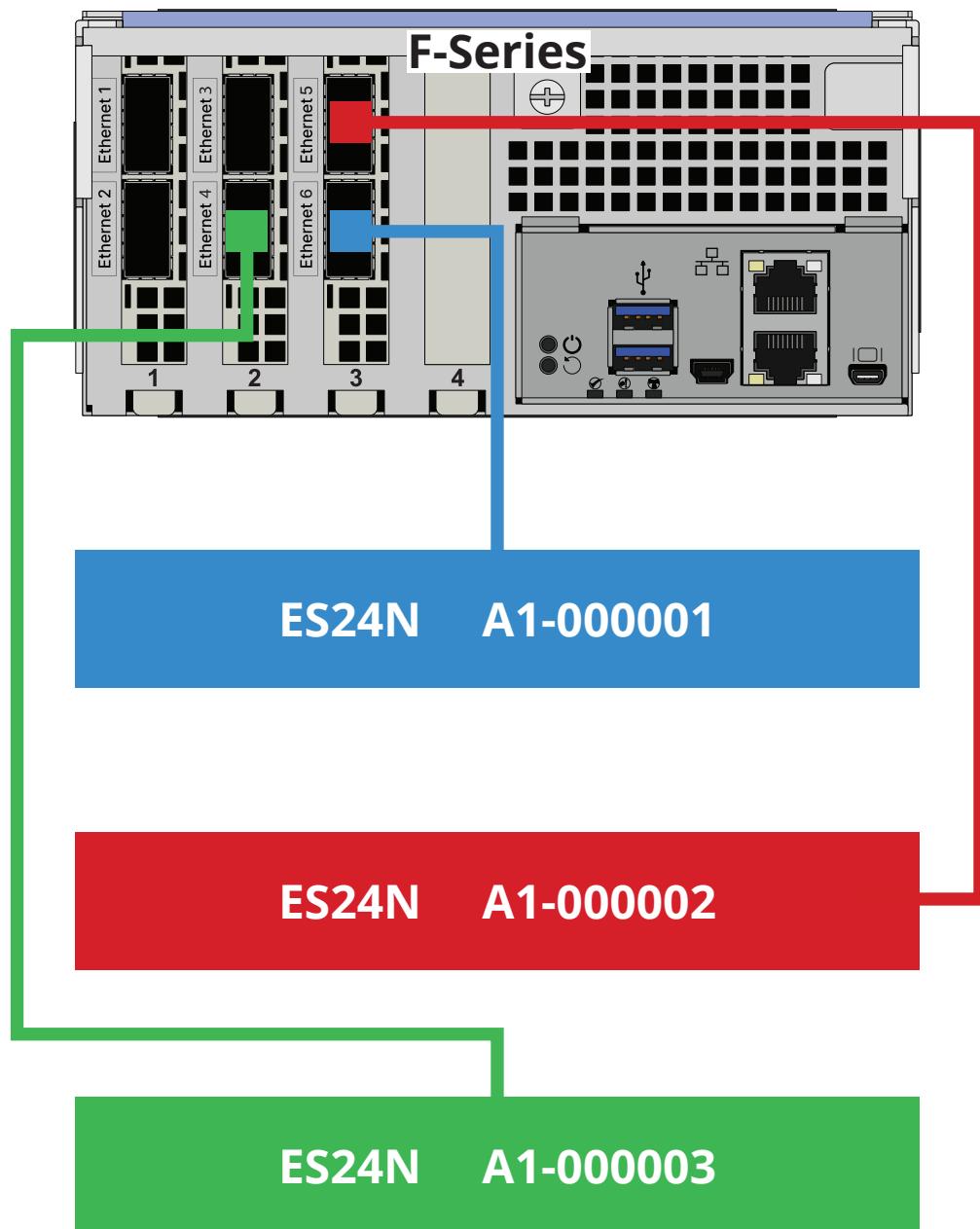
F-Series with one ES24N expansion shelf



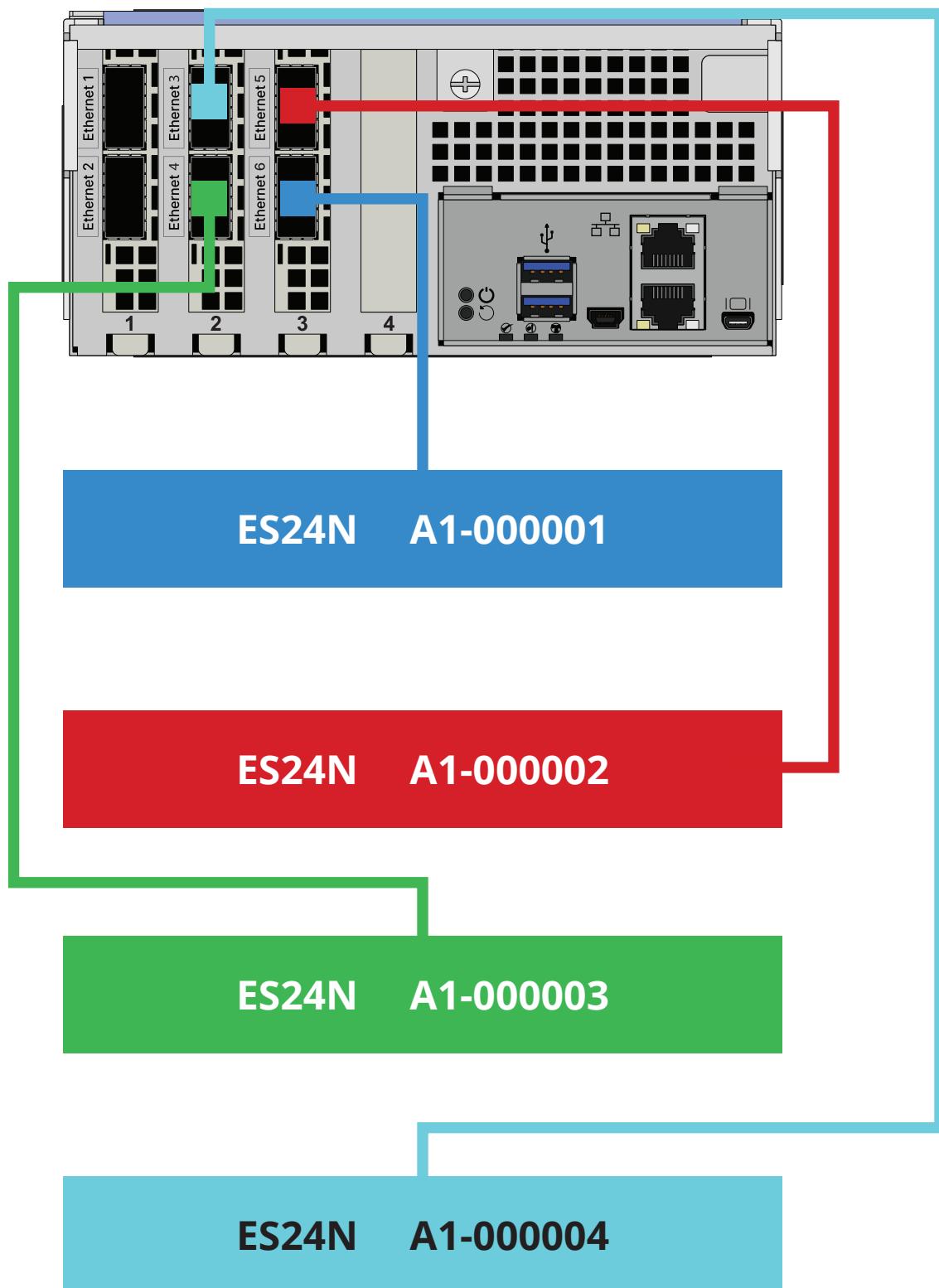
F-Series with two ES24N expansion shelves



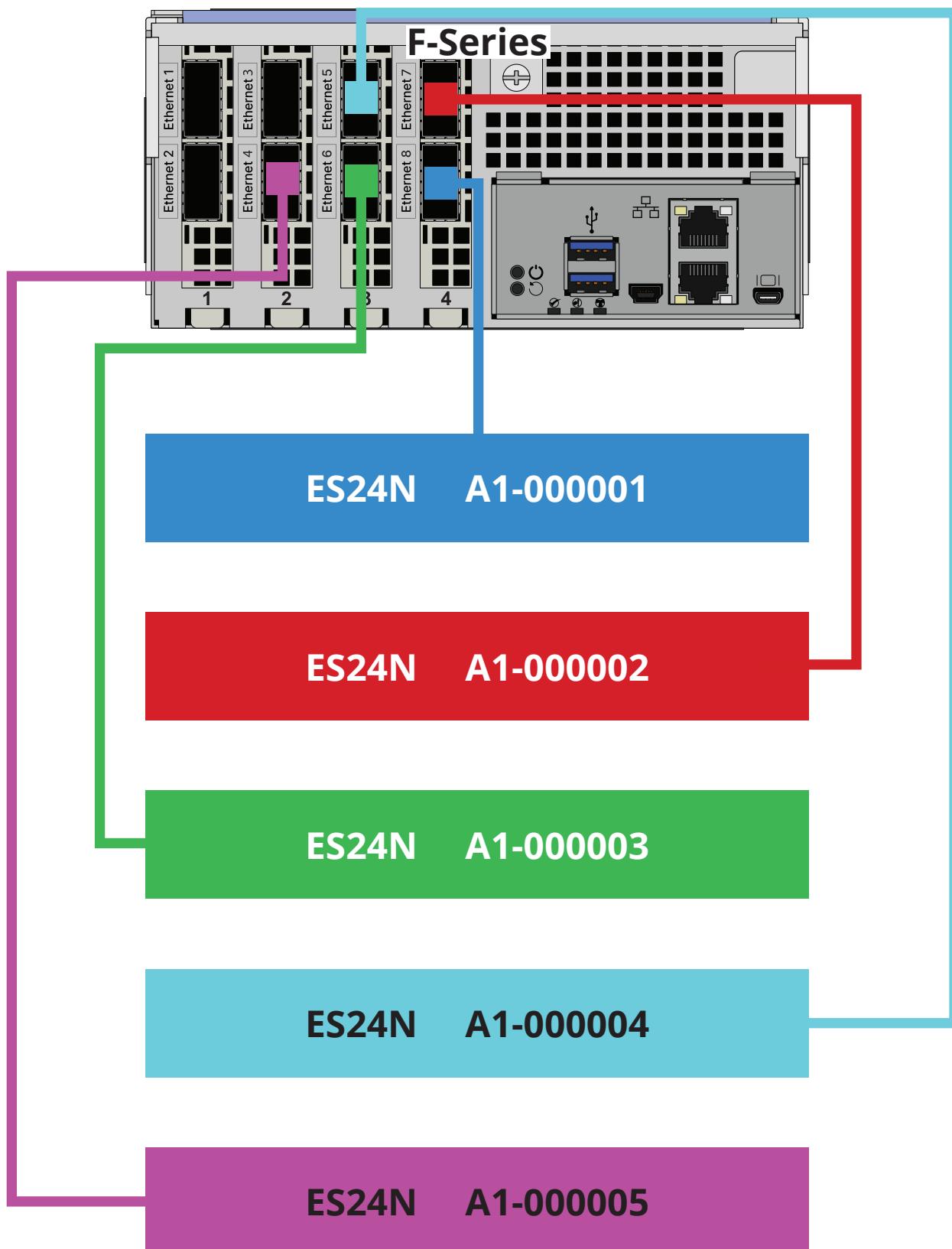
F-Series with three ES24N expansion shelves



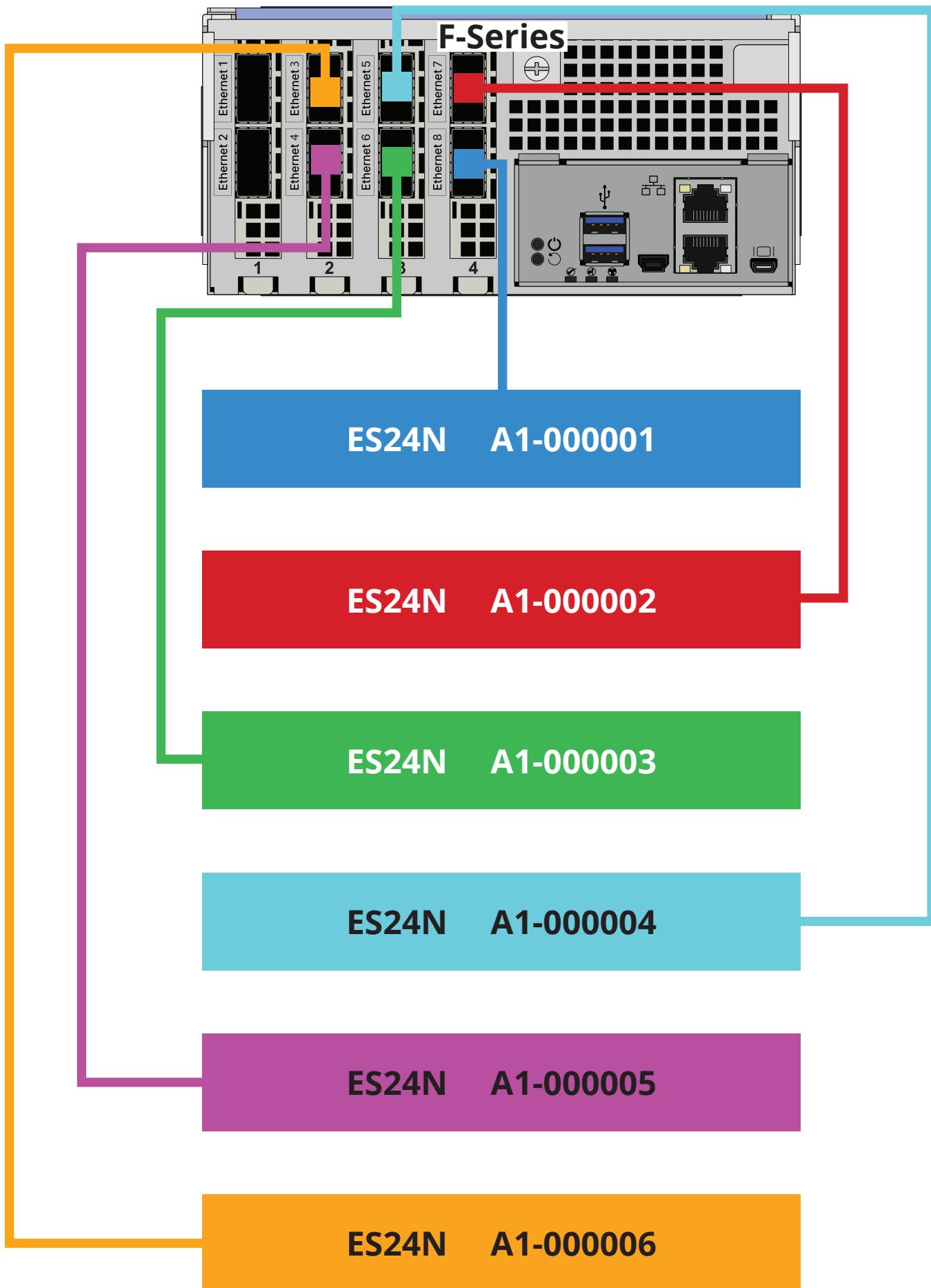
F-Series with four ES24N expansion shelves



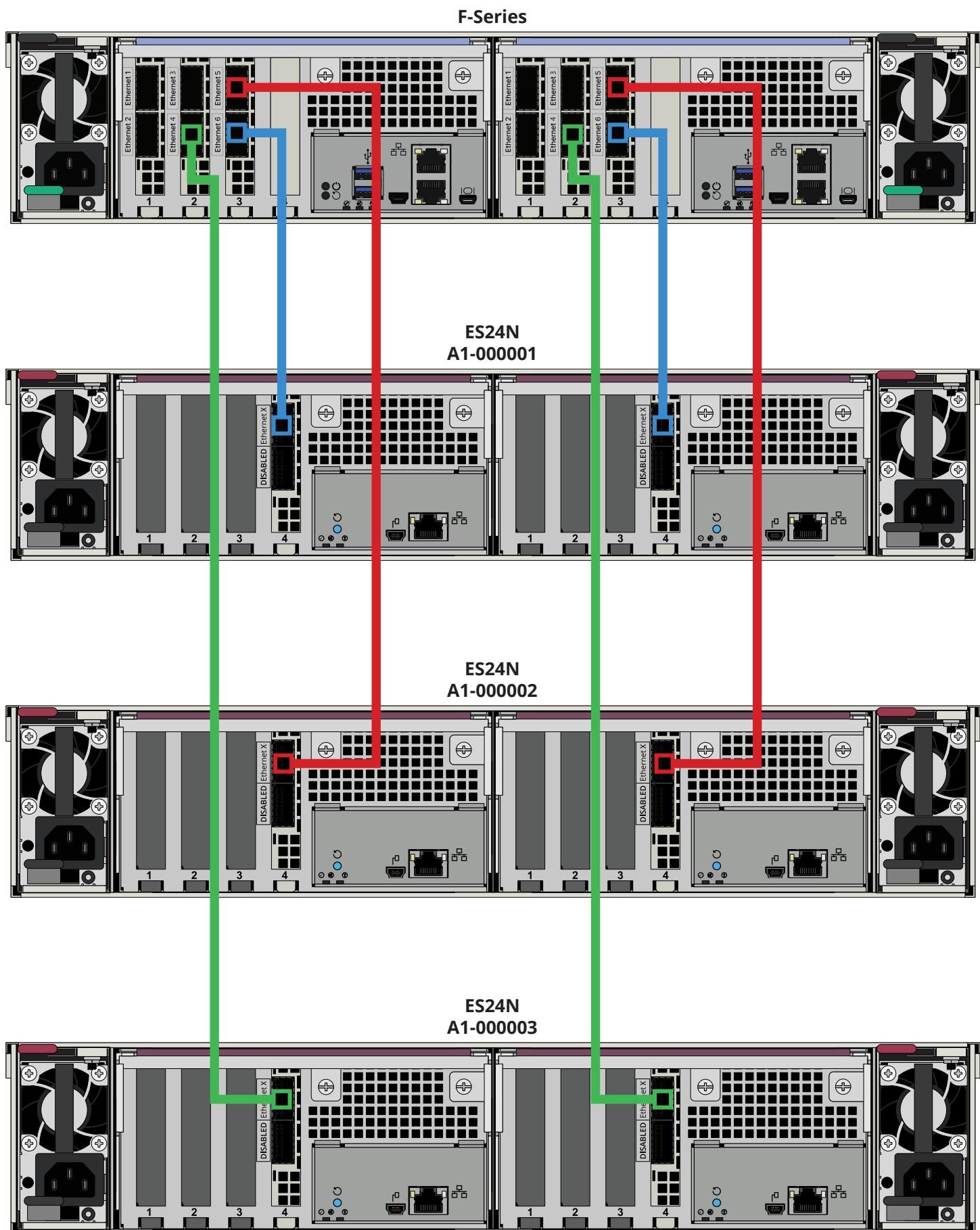
F-Series with five ES24N expansion shelves



F-Series with six ES24N expansion shelves



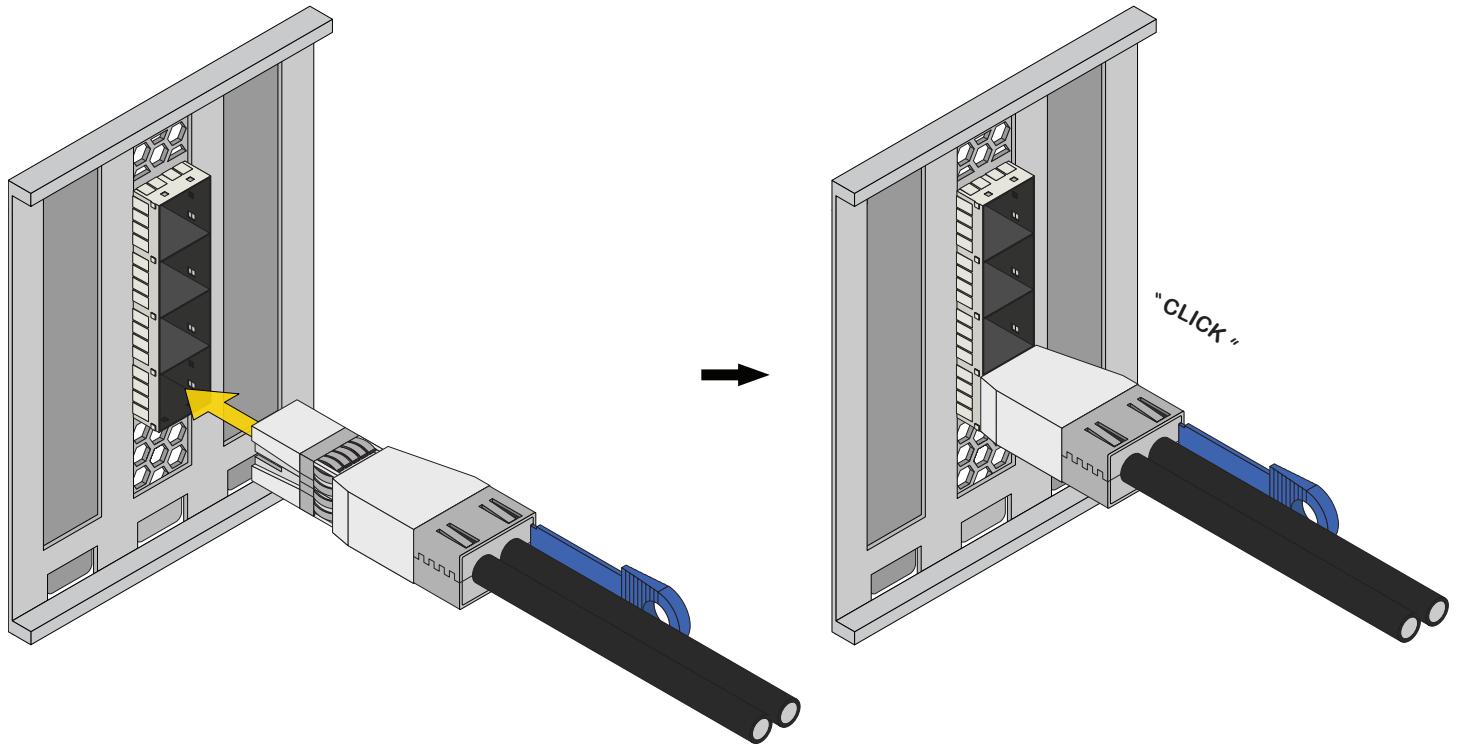
The following diagram is an example of three ES24N shelves connected to an F-Series system.



12.2 ES60

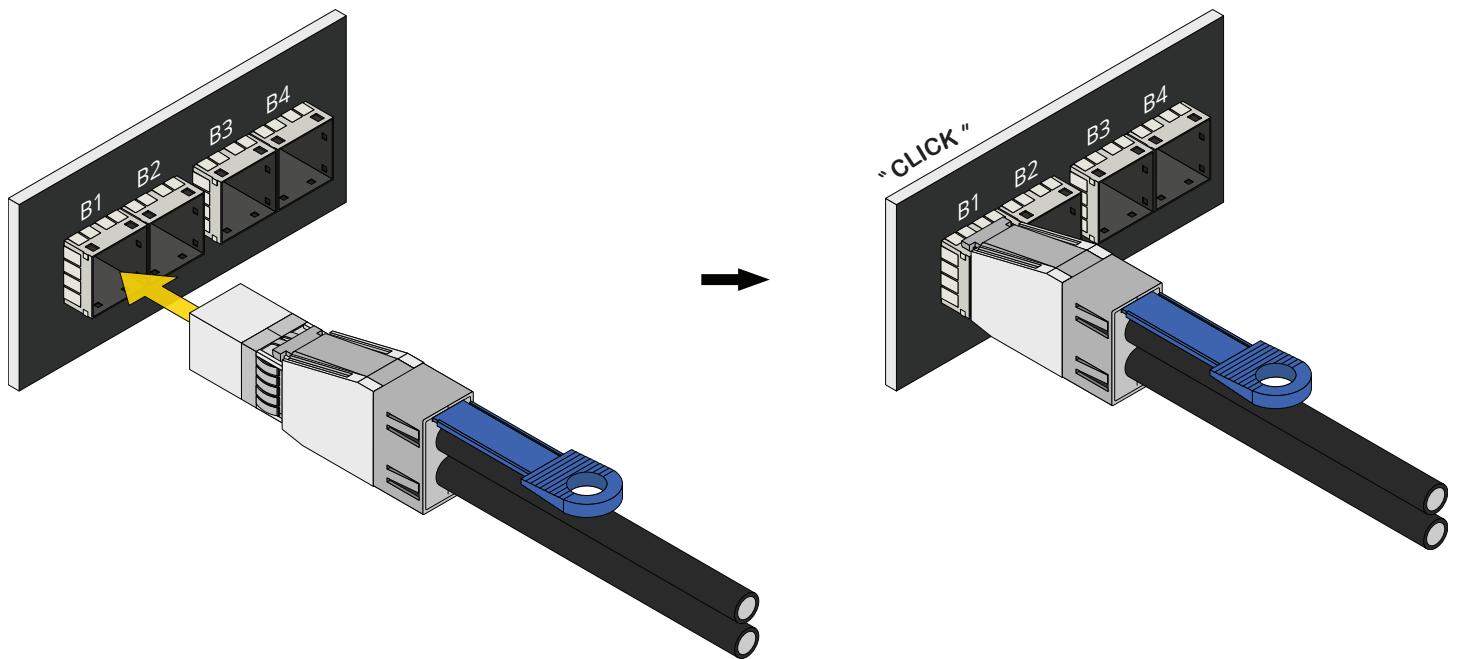
On the F-Series, line the SAS cable connector up with the first SAS port on the primary controller. Ensure the blue tab on the SAS cable is on the right.

Gently push the connector into the port until it clicks. Repeat for the second controller.

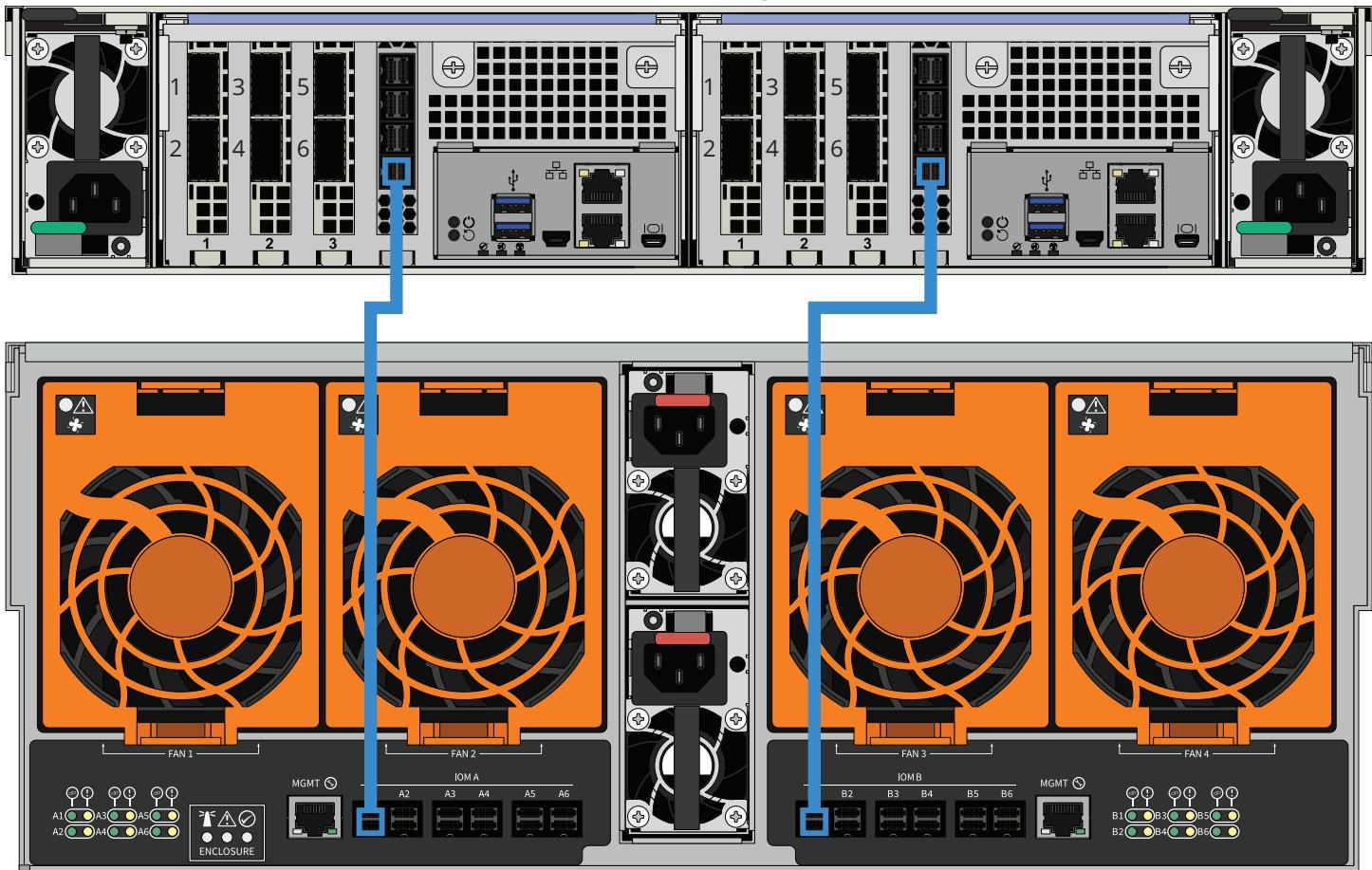


On the ES60, line the SAS cable connector up with the first SAS port IOM A. Ensure the blue tab on the SAS cable is on the top.

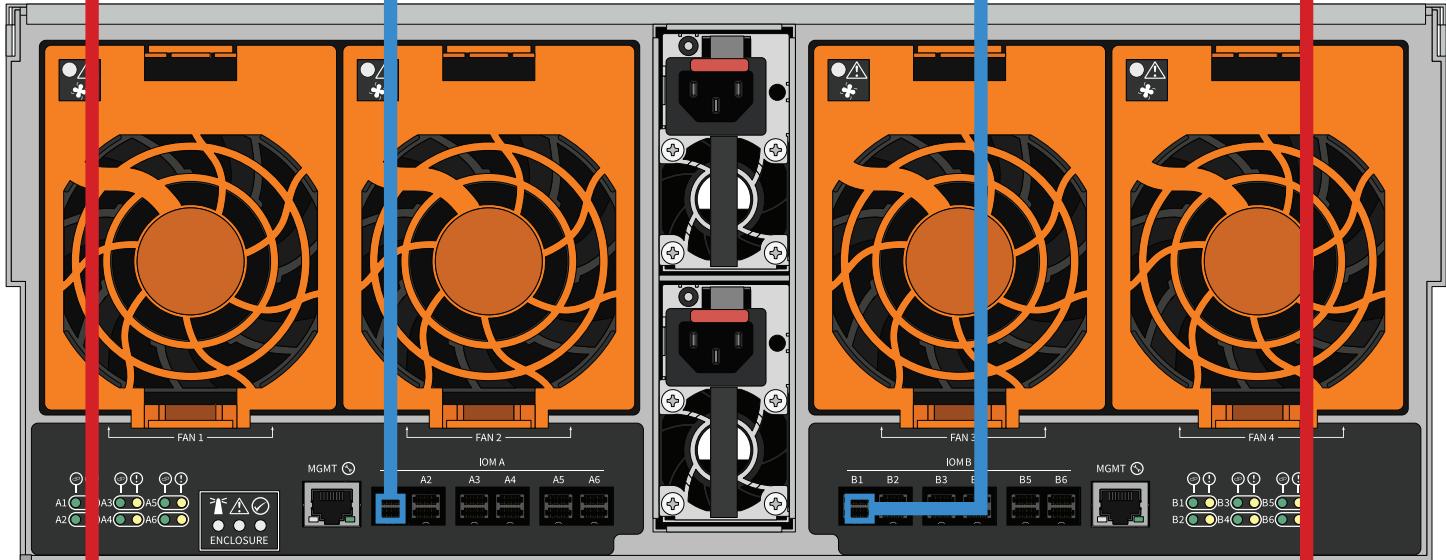
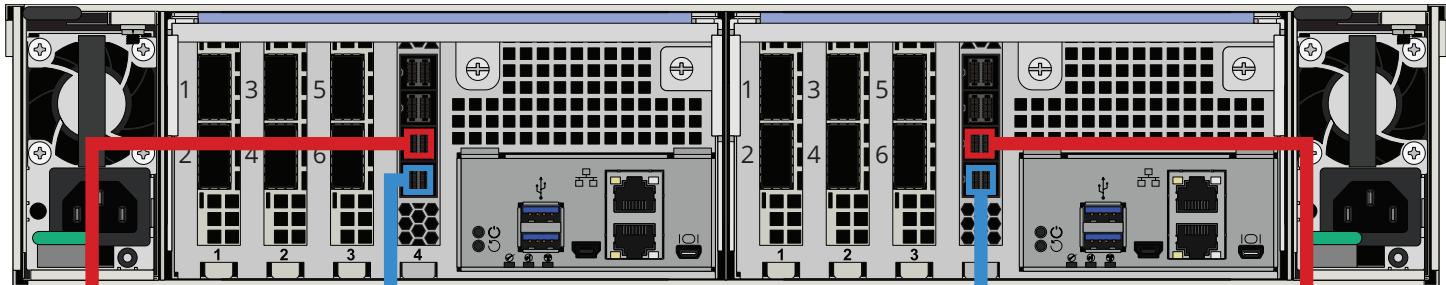
Gently push the connector into the port until it clicks. Repeat for IOM B.



F-Series with one ES60 expansion shelf



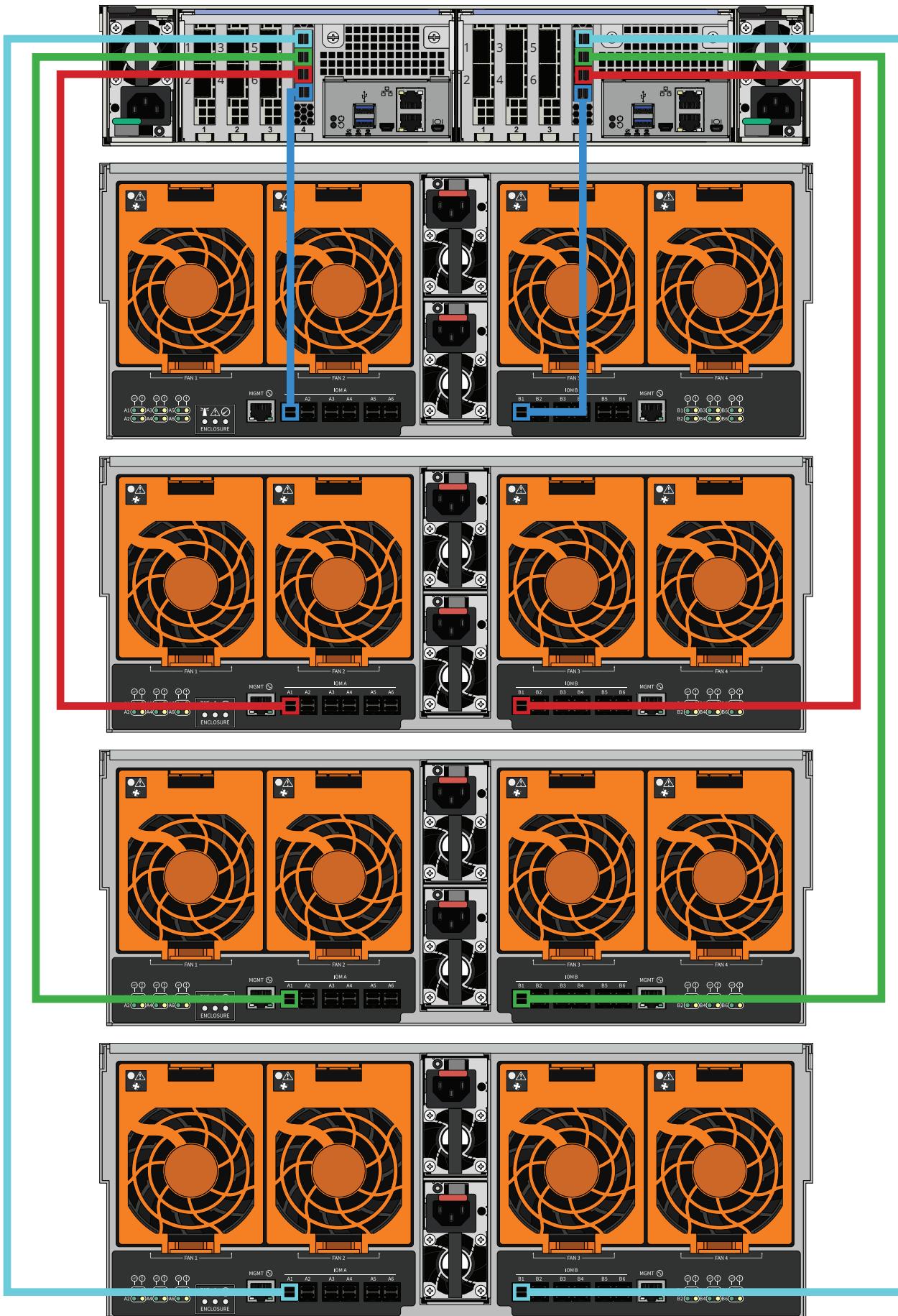
F-Series with two ES60 expansion shelves



F-Series with three ES60 expansion shelves



F-Series with four ES60 expansion shelves



12 HA Networking

ⓘ Note - Diagrams

The example diagrams in this document are independent from one another. The NAS, logical, and switch setups differ between each configuration.

ⓘ Tip - Disable Spanning Tree (STP)

We recommend disabling spanning tree (STP) for any network switch ports that you connect to an TrueNAS network interface.

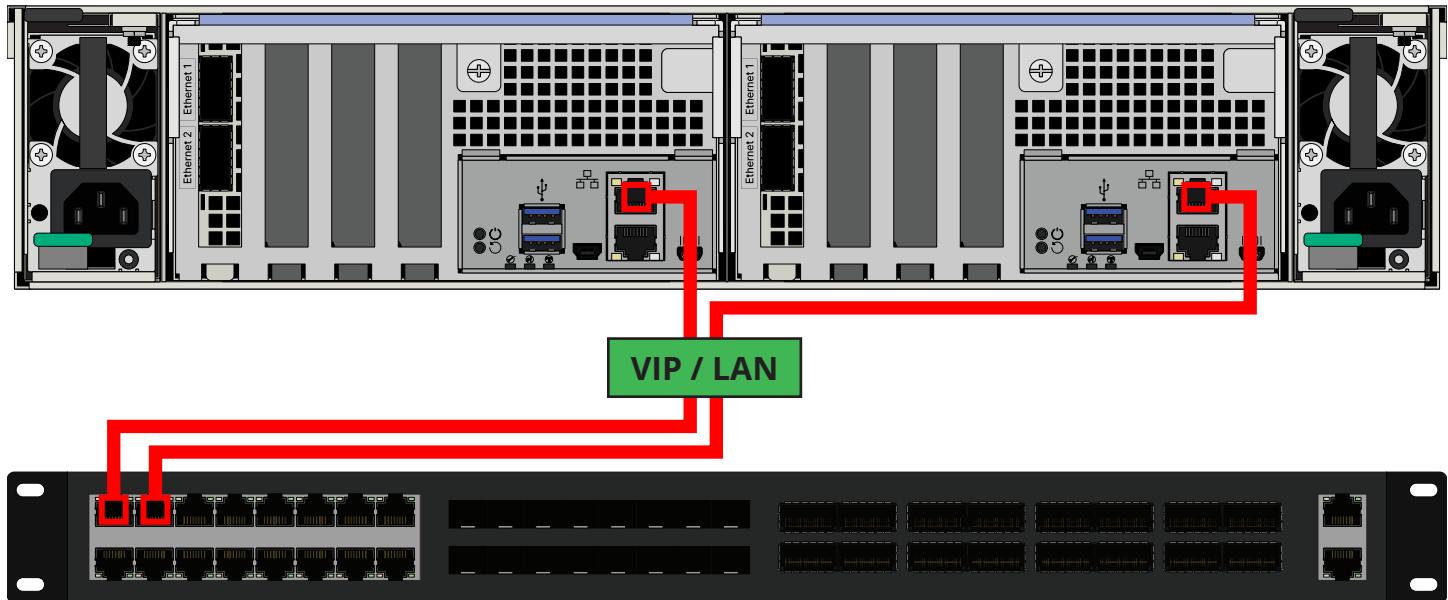
12.1 NIC Configured and Connected to Same Switch

Set up both switch ports in the same VLAN, or otherwise make them reachable from TrueNAS Web UI via the default gateway. Ports must be able to pass traffic between each other.

Configure **TrueNAS (TN) Management** interface on each controller and connect them to separate ports on the same switch.

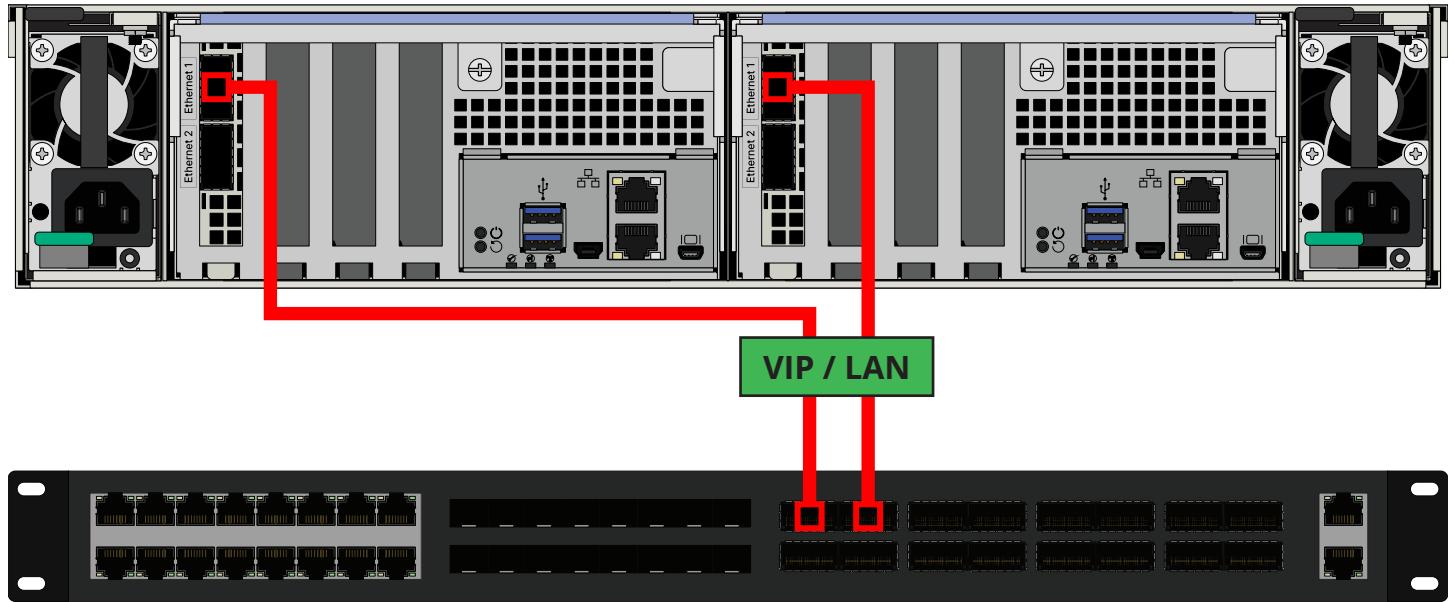
12.1.1 NIC on Same Switch Example with Onboard NICs

Configure the **TN Management** interface on each controller with its own IP address, then set up a **Virtual IP (VIP)** address that they can pass traffic to each other with. TrueNAS dynamically allocates the VIP to the active controller.



12.1.2 NIC on Same Switch Example with Additional 100G NIC

Configure the **Ethernet 1** interface on each controller with its own IP address, then set up a **Virtual IP (VIP)** address that they can pass traffic to each other with. TrueNAS dynamically allocates the VIP to the active controller.



12.2 Single Switch Active LACP Link Aggregation

Configure primary controller NIC **Ethernet 1** and **Ethernet 2** into a LAGG group.

Configure standby controller NIC **Ethernet 1** and **Ethernet 2** into another LAGG group.

You must configure each LAGG with ports of the same speed.

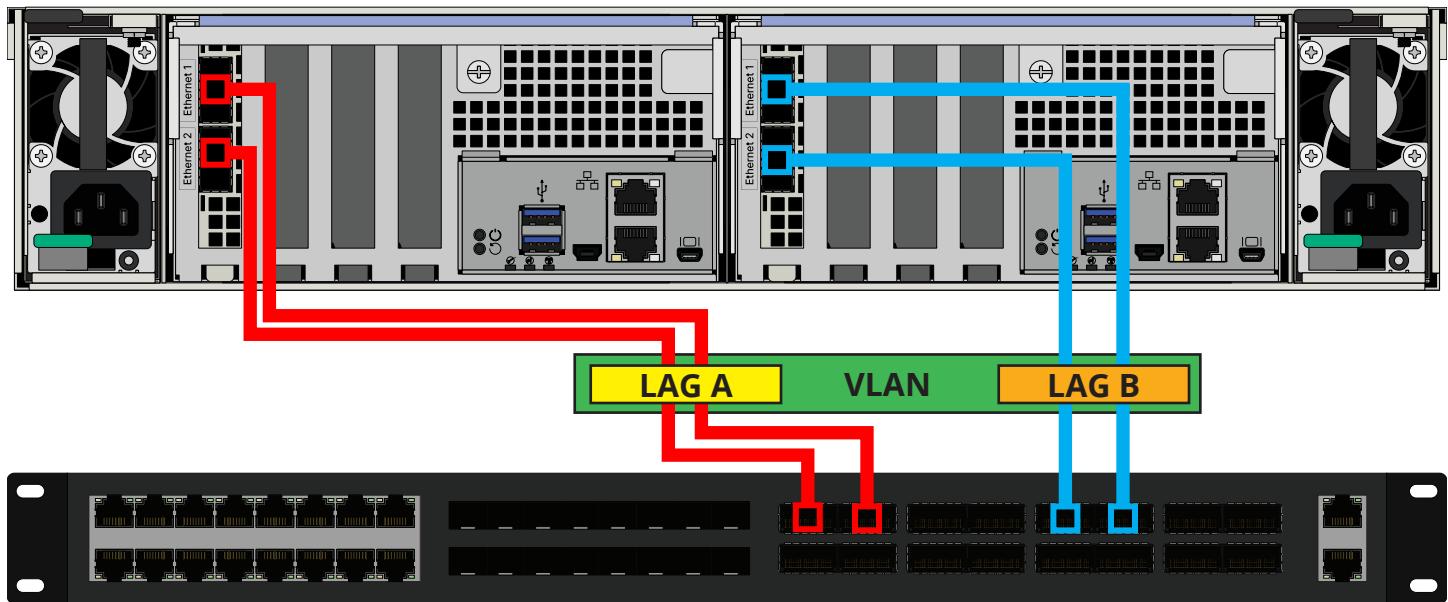
For LACP, you must configure the physical ports (Ethernet 1 and Ethernet 2) on each controller into the same LAGG group on a switch that uses Active LACP.

Note: When you configure LACP via the TrueNAS web UI, add Ethernet 1 and Ethernet 2 into the LAGG group, then apply IPs.

12.2.1 Single Switch LAGG Example with Additional 100G NIC

Configure LACP for active and standby LAGG groups **Ethernet 1** and **Ethernet 2**:

1. Set **Ethernet 1** and **Ethernet 2** on the active controller in the same LACP LAGG group (port channel on the active controller and the switch port.)
2. Set **Ethernet 1** and **Ethernet 2** on the standby controller in the same LACP LAGG group (port channel on the standby controller and the switch port.)
3. Ensure both LACP LAGG groups can send multicast traffic between each other on the same VLAN.

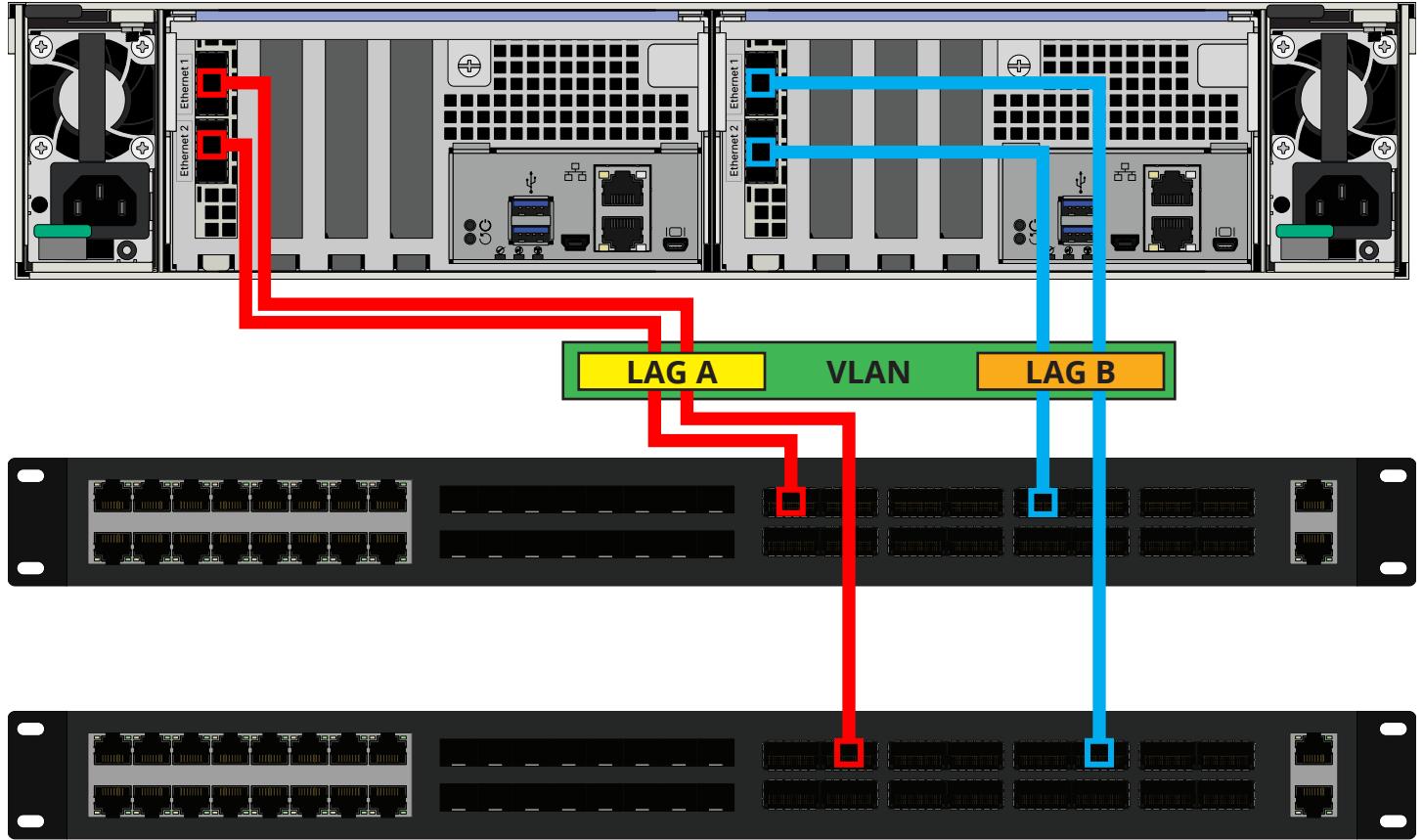


12.3 Two Switch Active LACP Link Aggregation

All of the setup methods from the 1 switch active LACP LAGG apply to the 2 switch setup with a few differences.

Both switches must support multi-chassis LAG (LAGG groups across different physical switches), since **ixl0** and **ixl1** connect to different switches for both controllers.

12.3.1 Two Switch LAGG Example with Additional 100G NIC



12.4 Multipath

Multipath networking is ideal for iSCSI and VMWare backend.

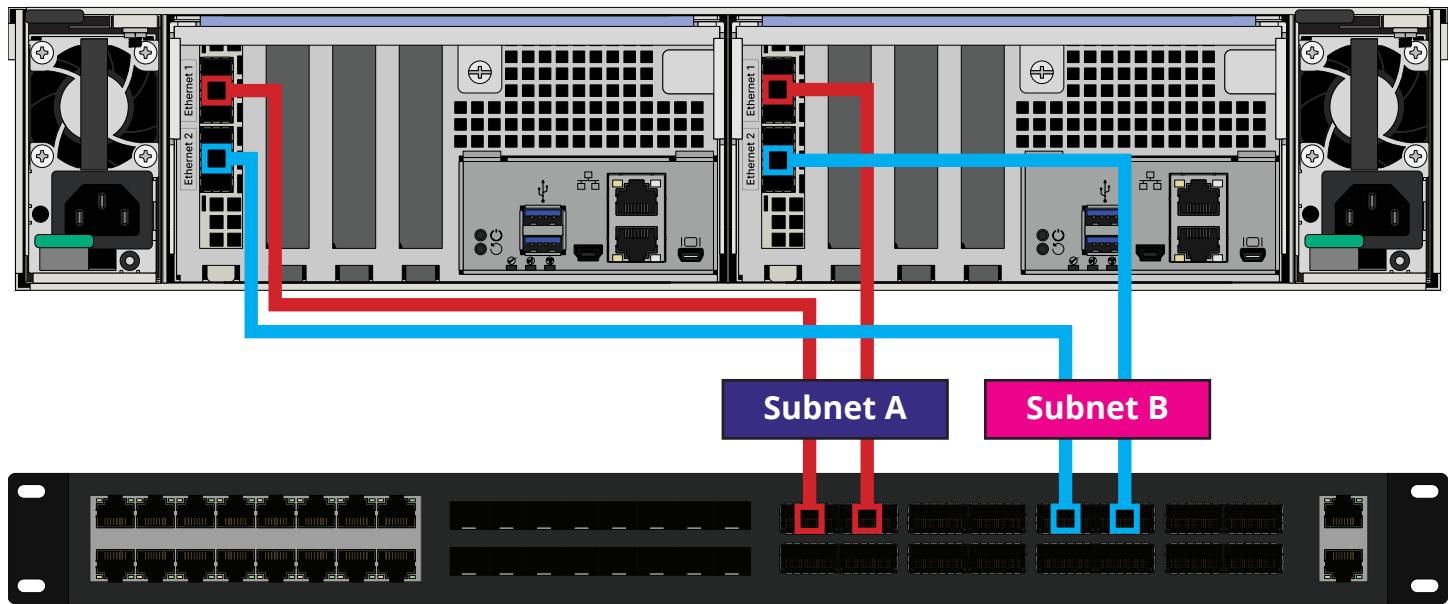
Starting with **Ethernet 1** on each controller:

1. Create an interface on its own subnet (e.g. Subnet A)
2. Configure each controller to have its own IP address
3. Define a unique Virtual IP (VIP) for the interface

Now move on to **Ethernet 2** on each controller:

1. Create an interface on its own subnet separate from Subnet A (e.g. Subnet B)
2. Configure each controller to have its own IP address
3. Define a unique Virtual IP (VIP) for the interface

12.4.1 Multipath Example with Additional 100G NIC



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

<https://forums.truenas.com/>

14 Contact Us

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

Contact Method	Contact Options
Web	https://www.truenas.com/support
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)