TrueNAS® H-Series User Manual

v.25111

Contents

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1 Introduction

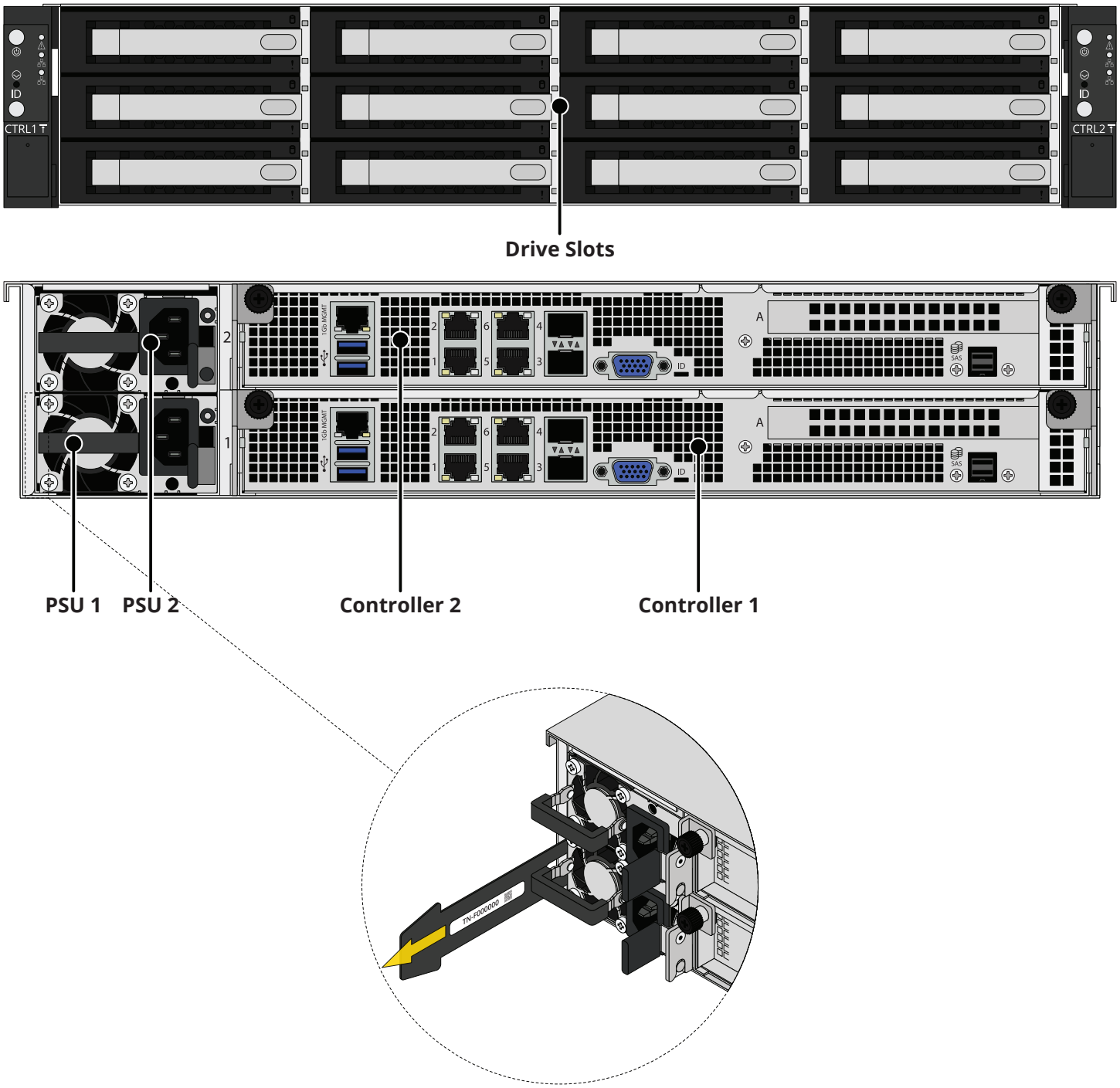
The TrueNAS H-Series is a 2U, 12-bay, High-Availability storage array with redundant power supplies.

You can find your system serial number on the pull-out black tab next to PSU1.

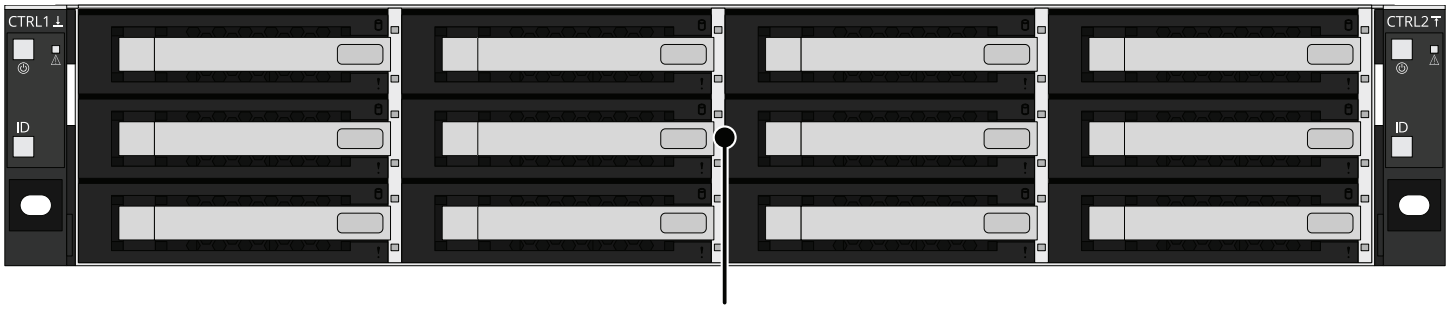
Your system comes with the TrueNAS operating system preloaded.

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

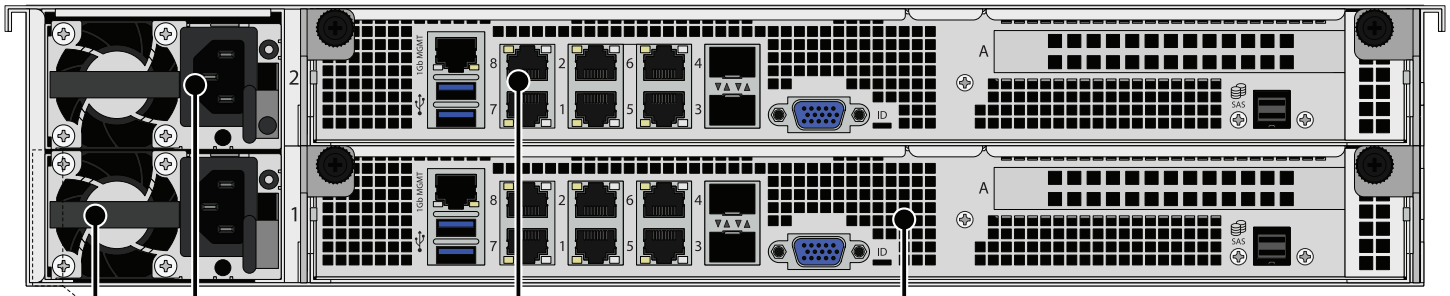
H10 and H20



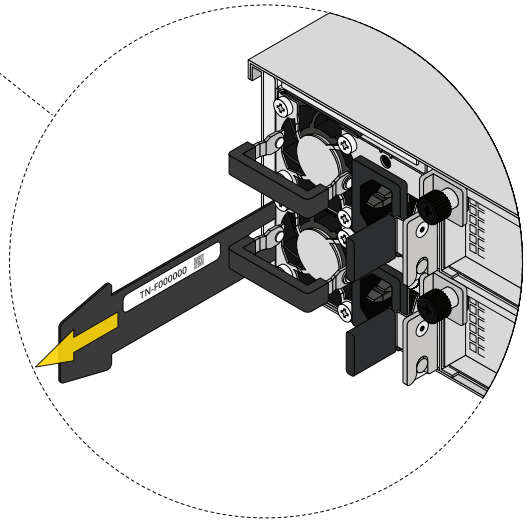
H30



Drive Slots



PSU 1 PSU 2 Controller 2 Controller 1



2 Safety

2.2 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.

2.3 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.

2.4 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 system or rack.

Warning - Damage or Injury

The H-Series weighs 67 lbs (30.4 kg) 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 Recommended Tools

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

- Long #2 Phillips head screwdriver
- Tape measure
- Level

4 Specifications

H-Series Components	
Drive Count	12 3.5-inch SAS HDDs or SSDs
Cooling Fans	4
Power Supplies (200v)	2
Power Distribution Requirements	200V - 240V
Controllers	2

	H10	H20	H30
Processor	Quad-Core	Deca-Core	Icosa-Core
RAM (Max)	64 - 128 GB	128-256 GB	256
Read Cache (Max)	1600 GB SAS SSD	2x 1600 GB SAS SSD	2x 1600 GB SAS SSD
Write Cache (Max)	16 GB SAS SSD	2x 16 GB SAS SSD	2x 16 GB SAS SSD
Onboard Networking	4x 1GBase-T	4x 1GBase-T	2x 10GBase-T 4x 1GBase-T
Additional Networking (Optional)	Up to 4x 10/25GbE	Up to 4x 10/25GbE or 2x 10/25GbE + 2x 40/100GbE	Up to 4x 10/25GbE or 2x 10/25GbE + 2x 40/100GbE
Max Storage (Raw)	1.5 PB	2.5 PB	2.5 PB
Storage Expansion	1x ES24/F or ES60	1x ES24/F, ES60, or ES102	1x ES24/F, ES60, or ES102
Average Power Draw	200W	300 Watts	300 Watts
Peak Power Draw	250W	350 Watts	350 Watts
Max Heat Output	700 BTU/h	1000 BTU/h	1000 BTU/h

H-Series Specifications	
Dimensions (H x W x L)	3.5 in x 19 in x 26.8 in (89 mm x 483 mm x 681 mm)
Net Weight (Fully Loaded)	68 lbs (30.4 kg)
Operating Temperature	41°F - 95°F (5°C - 35°C)
Non-Operating Temperature	-22°F - 140°F (-30°C - 60°C)
Operating Humidity (non-condensing)	5% - 95%
Supply Voltage	200-240VAC, 10-5A 50-60 Hz

Compliance

TrueNAS

MODEL NAME:
TrueNAS Model H
雙插槽網路儲存伺服器

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 H-Series 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 H-Series 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.

5 Space Requirements

Note - Rack Space

The H-Series requires 2U of rack space and a #2 Phillips head screwdriver to install in a rack.

The system is 26.7” (68 cm) long. Rack posts must be 23” - 35.75” (58.4 cm-90.8 cm) apart to install the rail kit.

You must have at least 27” (68.58 cm) of space in front of the rack to safely install the H-Series.

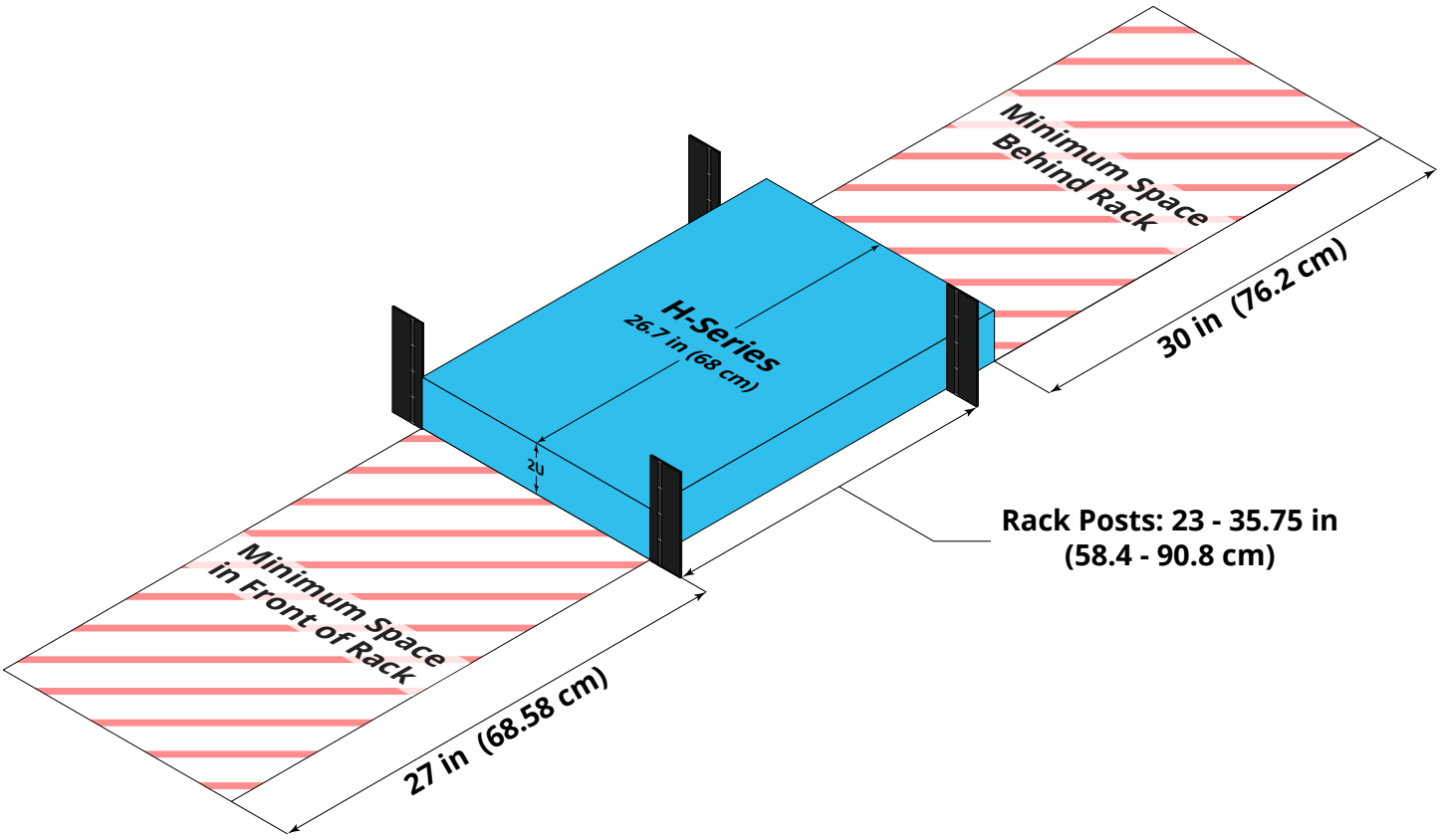
You must also have at least 30” (76.2) of space behind the rack to install the cables.

Important - Damage or Injury

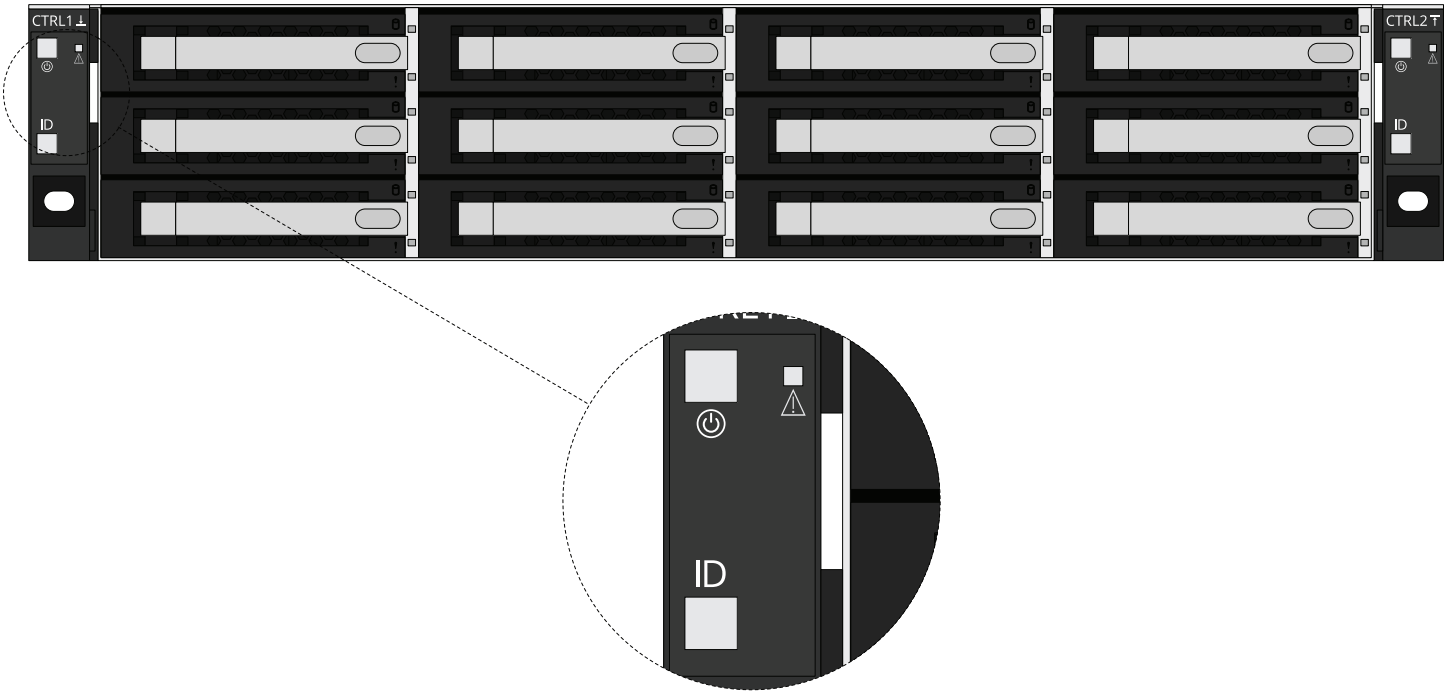
When handling rails, system components, or drives, never force movement if a part seems stuck or does not insert properly. Gently remove the part and check for pinched cables or obstructing material before installing it again. Installing a part with excessive force can damage the system or cause personal injury.

Warning - Team Lift

The H-Series requires two people to lift safely. Failure to follow safety recommendations can lead to severe system damage or personal injury.



6 Buttons and LED Indicators



Light / Button	Function	Color and Indication
⏻	To restart the system, press and hold for three seconds before release. To shut down the system, press and hold for five seconds before release.	Blue (Solid): System Ready Off, No Light (Solid): System Powered Off
ID	Activates Locate ID	Blue (Flashing): Locate ID active
⚠	N/A	Red (Flashing): Fan or PSU Fault Red (Solid): Overheat Condition

6.4 H30 Drive Indicators

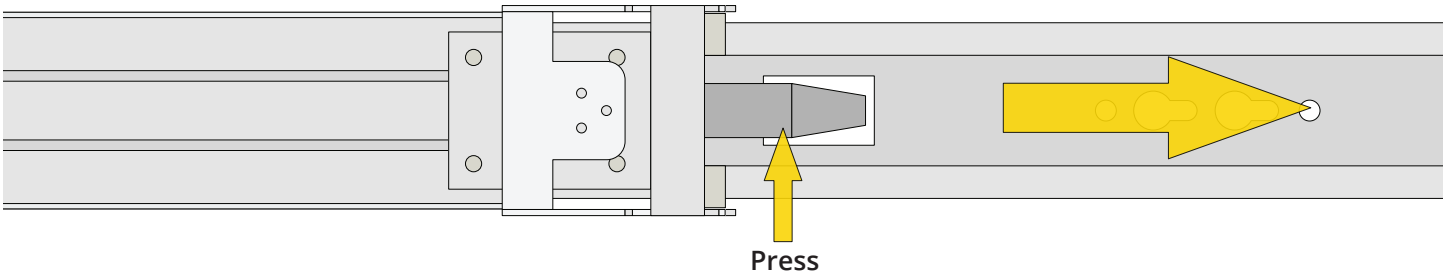
Light	Color and Indication
🛢	Blue (Flashing): Disk Activity
!	Amber (Solid): Drive Fault

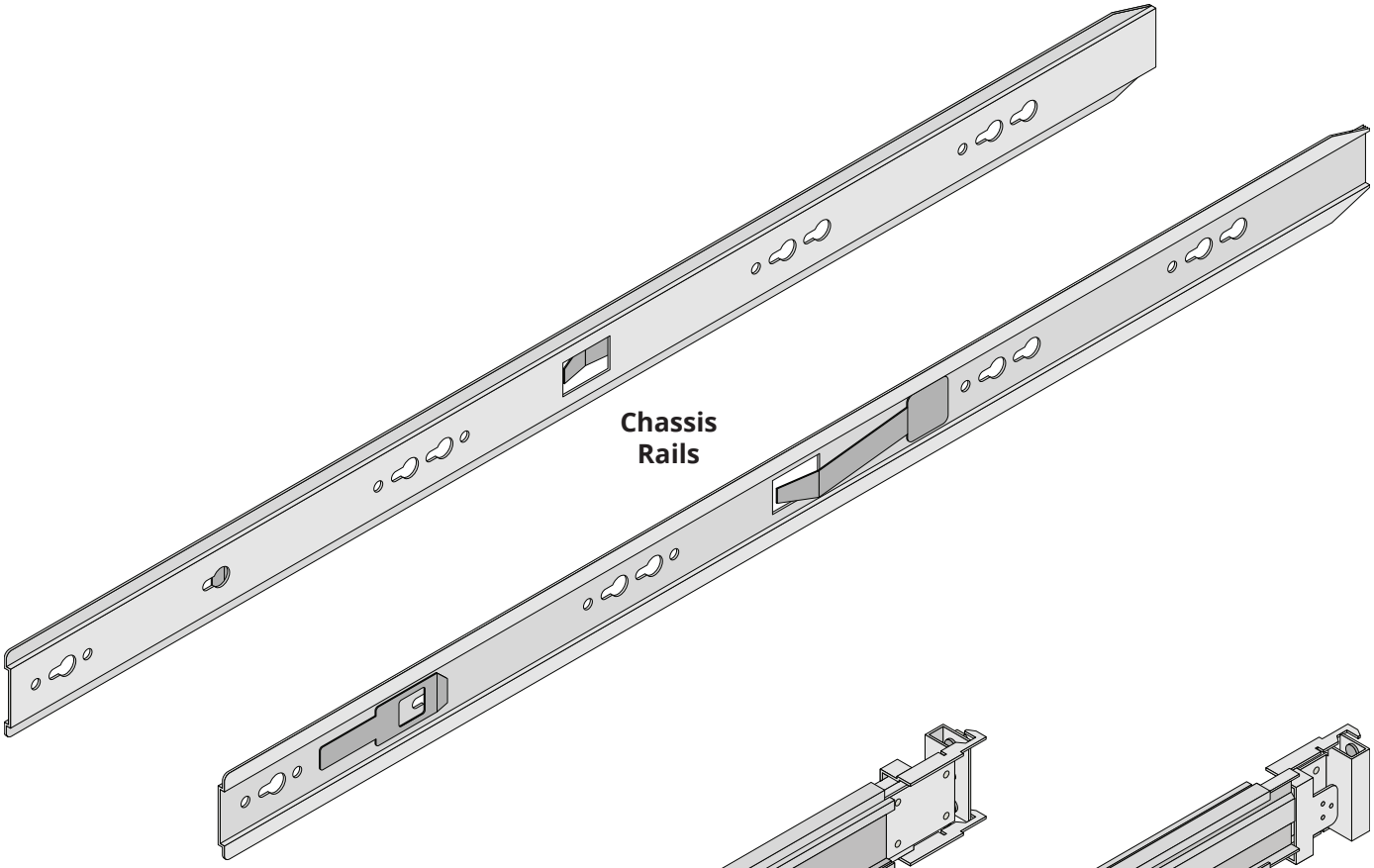
7 Racking Procedure

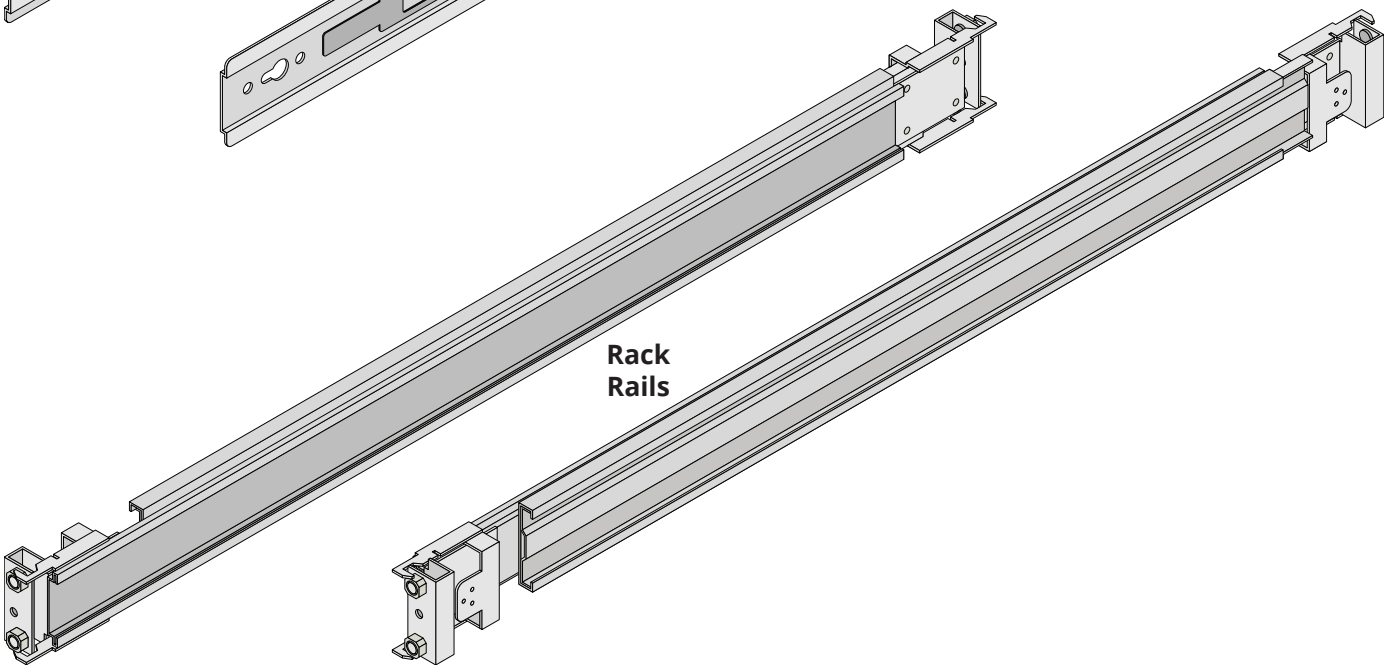
7.1 Remove Chassis Rail from Rack Rail

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

Slide the chassis rail out of the rack rail until it stops, then push the metal safety catch and remove the chassis rail.

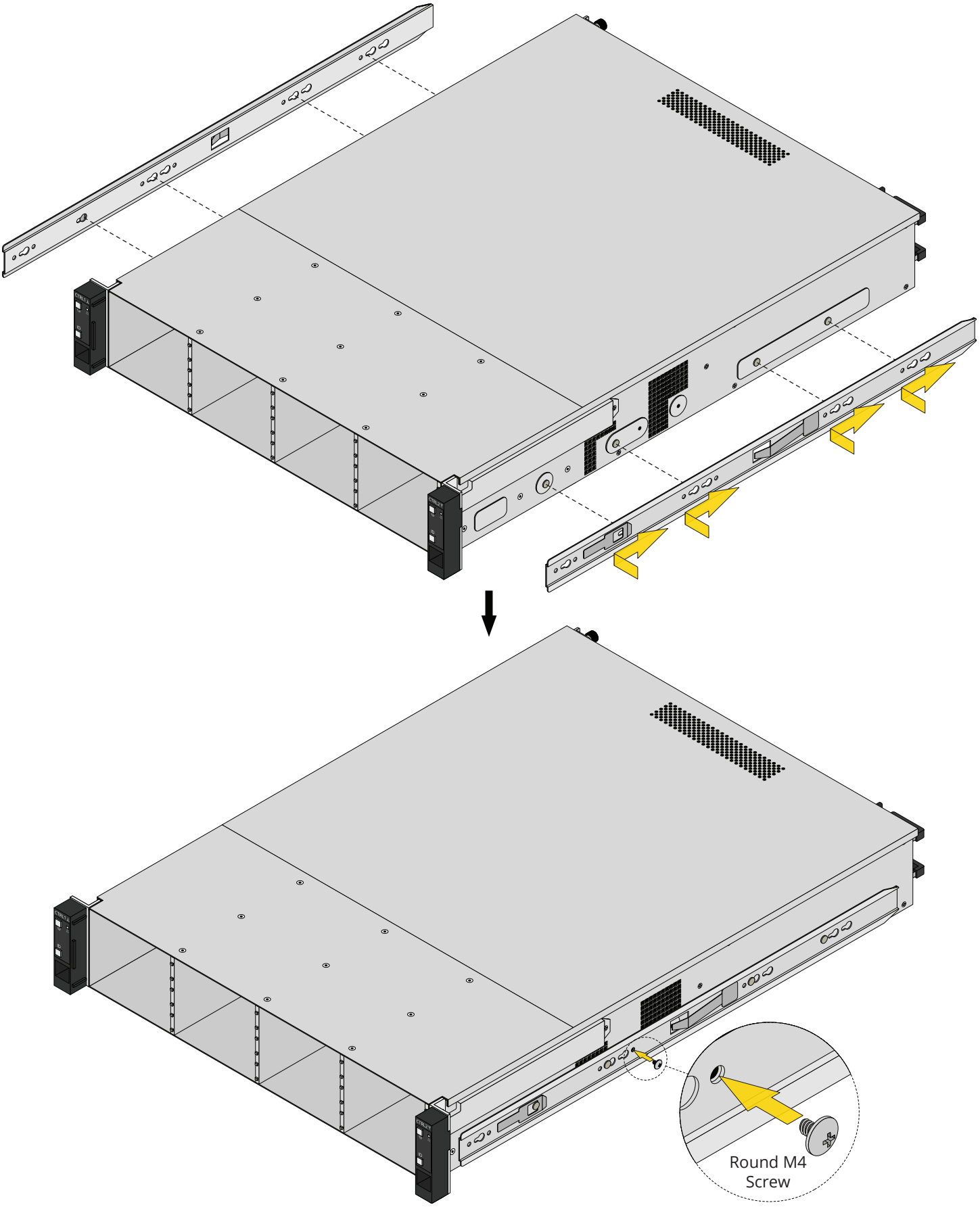






7.2 Install the Chassis Rail on the System

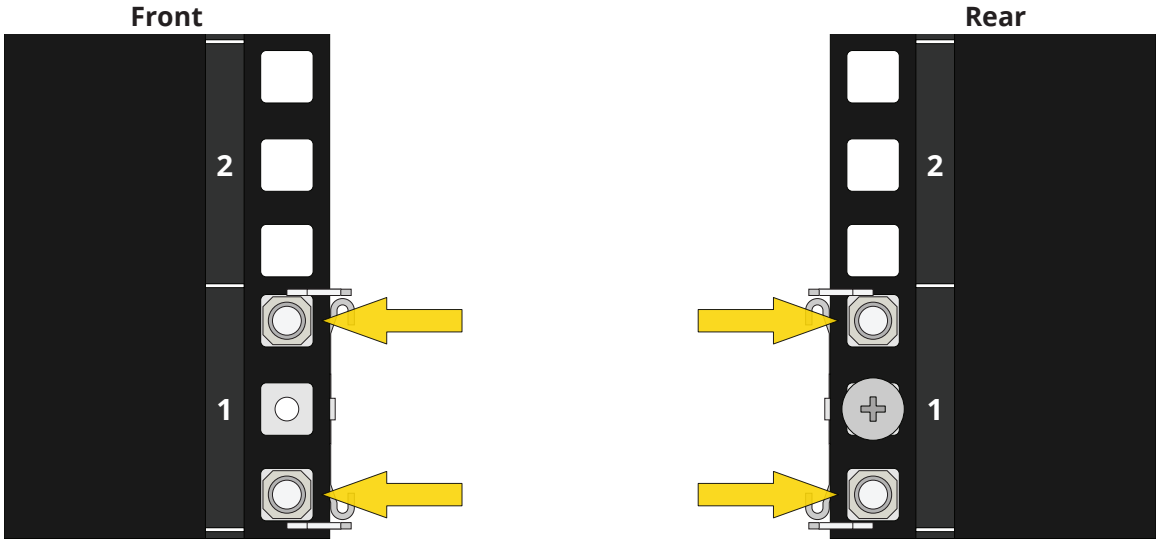
Fit the rail keyholes over the mounting pegs and slide the rail toward the back of the system until it locks. Use a round M4 rail screw to secure the rail to the chassis. Repeat for the second chassis rail.

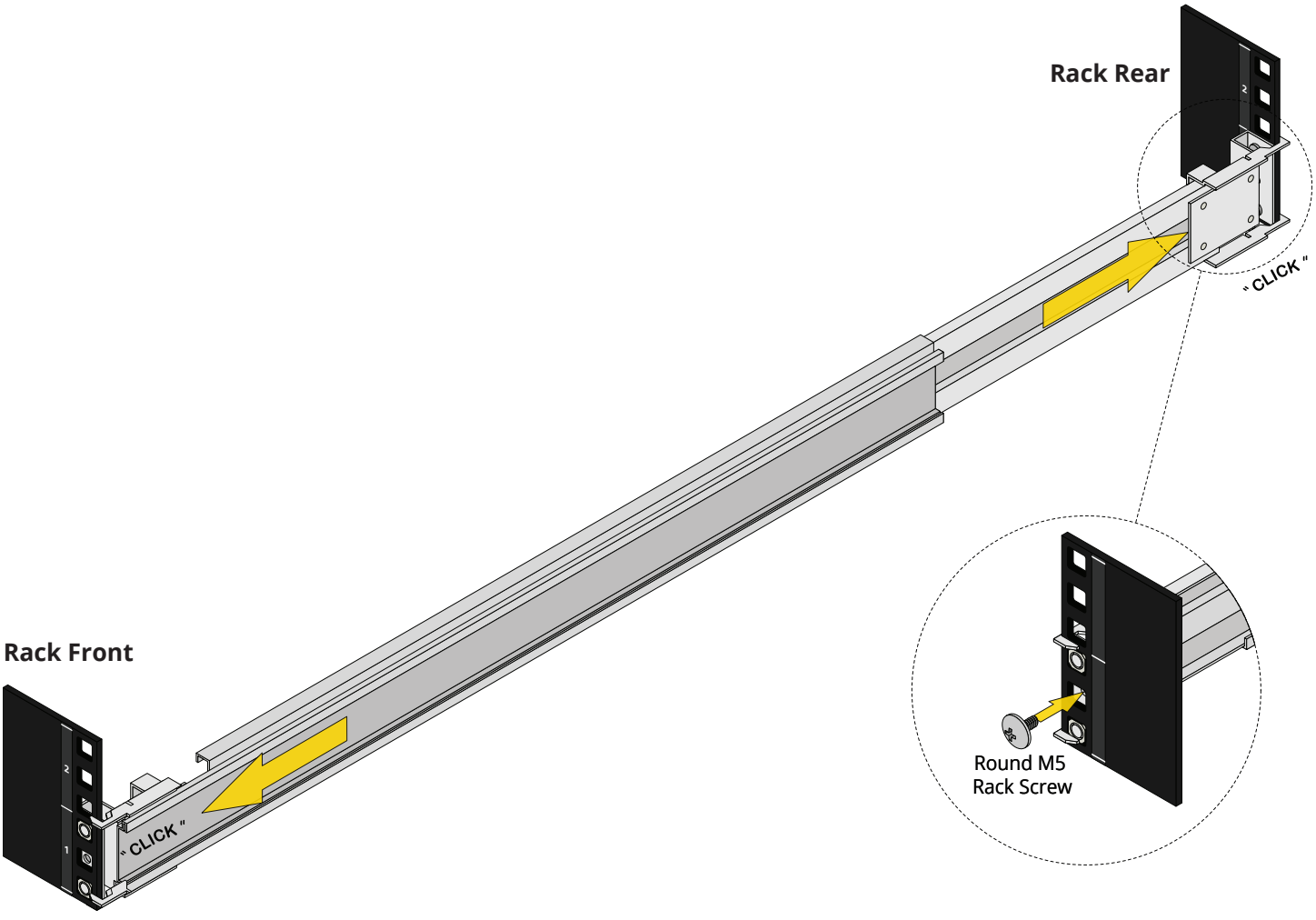


7.3 Install the Rack Rail in the Rack

Align the rail end stamped “FRONT” with the front of the rack. Align the rail front pegs with the top and bottom holes in the bottom 1U and push the rail into the holes until the spring latch locks the rail in place.

After you install the front of the rail, extend the back of the rack rail towards the rear rack post. Make sure the rail remains level from front to back. Secure the back of the rail to the rear rack post using a round M5 rack screw. Insert an M5 standoff in the front rail. Repeat this process to install the other rack rail.





7.4 Install the System in the Rack

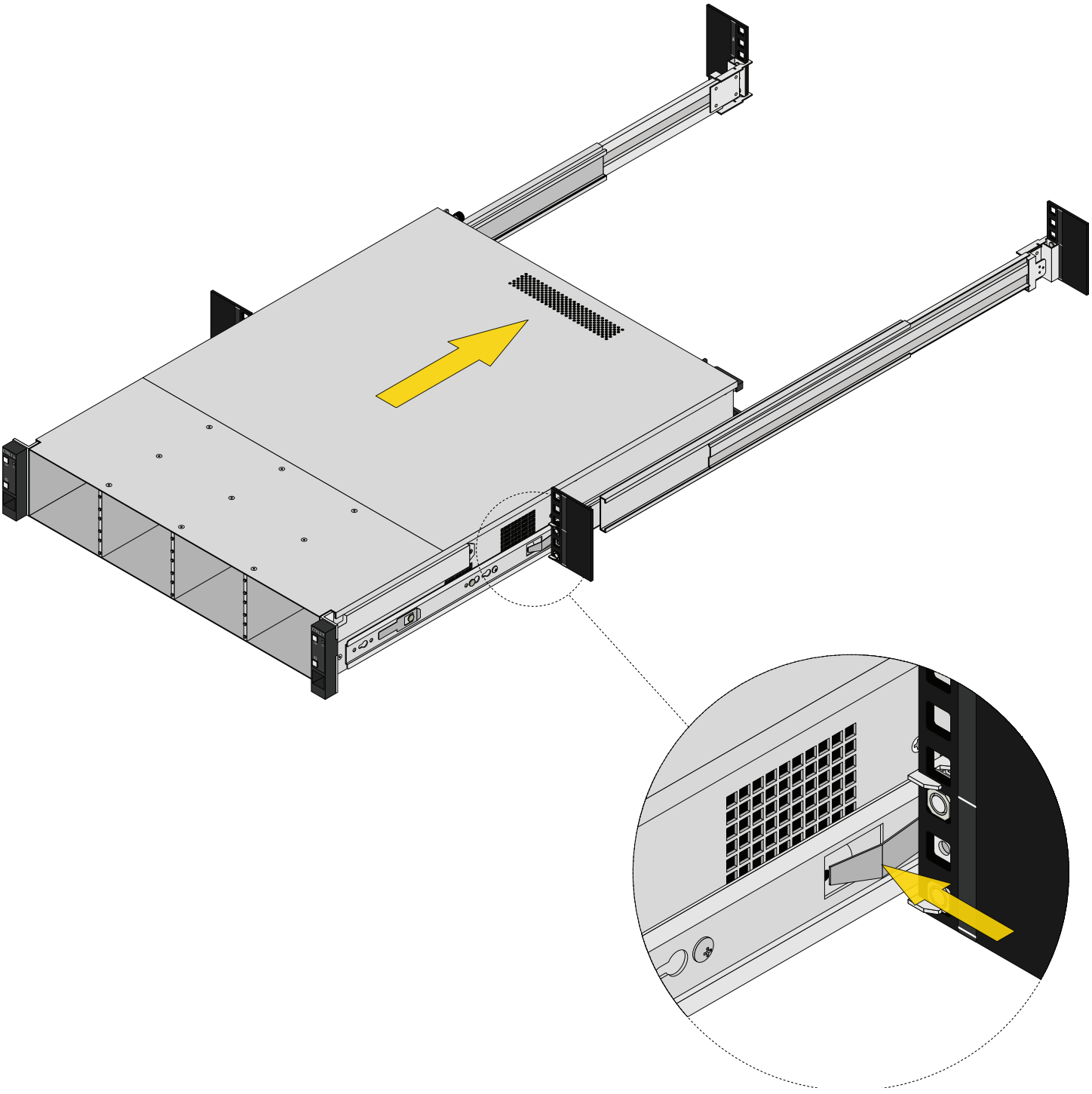
Team-lift the system and align the chassis rails with the rack rails.

Slide the ends of the chassis rails into the rack rails and push the system into the rack until the metal safety catches on the chassis rails click and lock the system into place.

Squeeze the safety catches against the sides of the system and slide the system into the rack.

Warning - Pinch Point

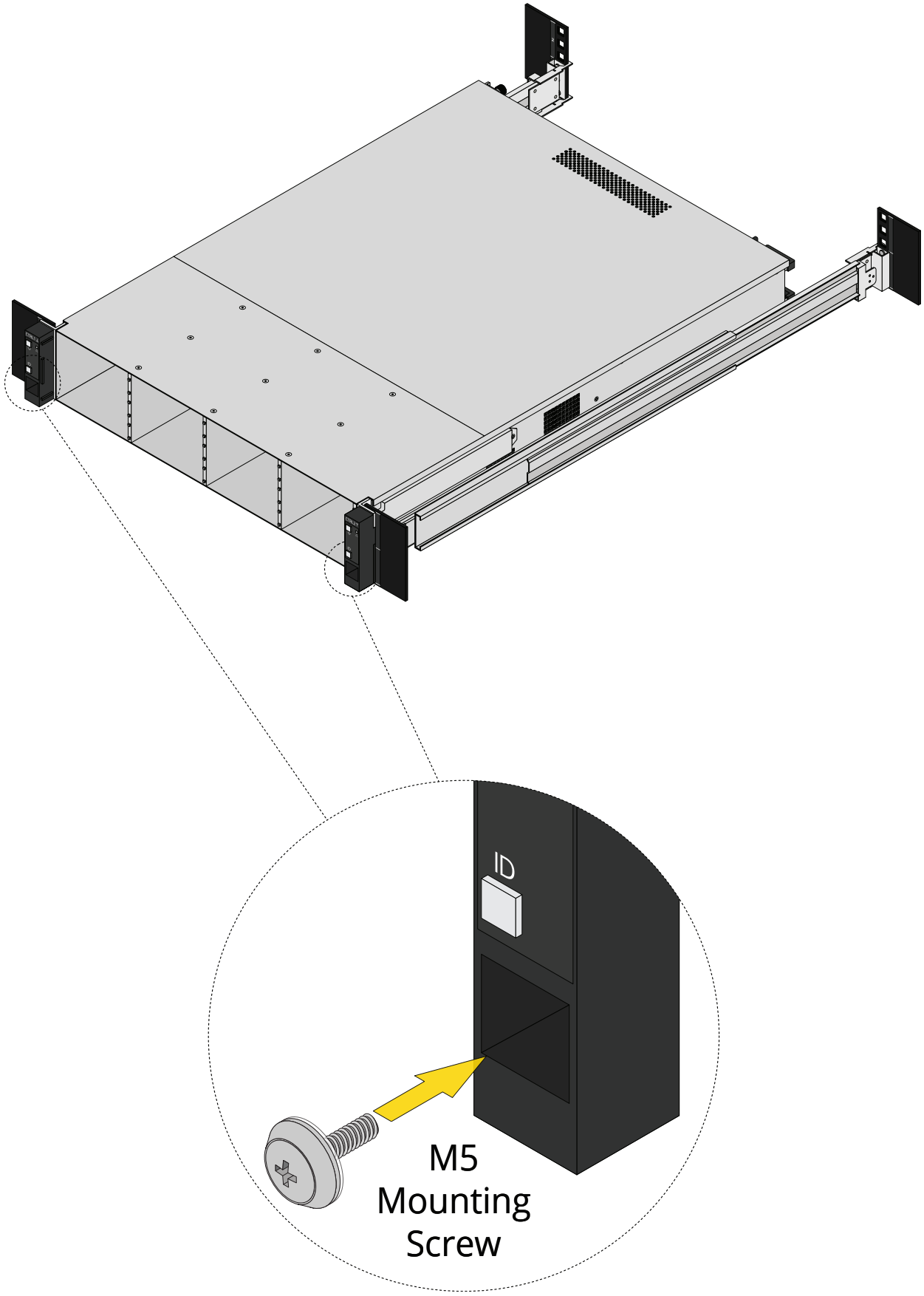
The H-Series can pinch or crush fingers when sliding the rail sleeves onto the rack rails.



7.5 Secure the System to the Rack

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

Install the M5 mounting screws in each ear.



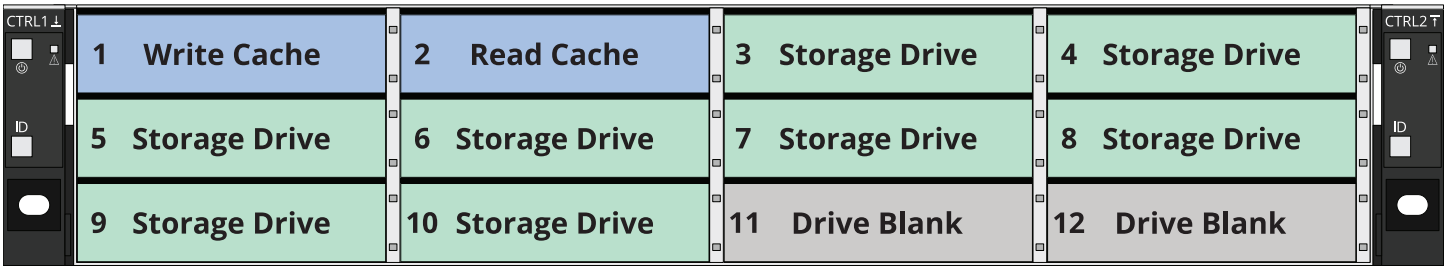
7.6 Install Drives

Tip - Description

We recommend a standard drive tray installation order to simplify support:

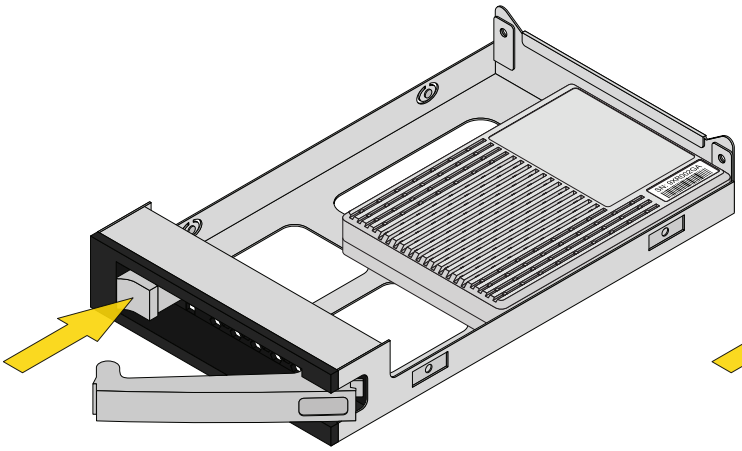
- SSD drives for write and read caches (if present)
- HDDs or SSDs for data storage
- Air baffles for remaining empty bays (if present)

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

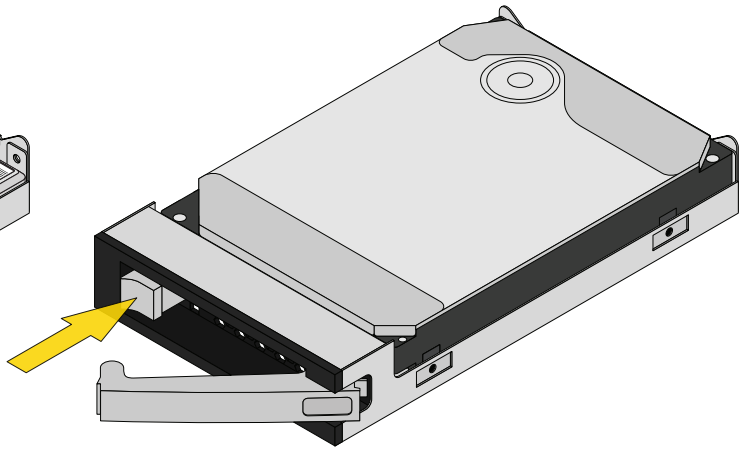


Retrieve a drive assembly and press the locking arm release on the left side of the tray. Drive trays either contain HDDs or SSDs depending on your order.

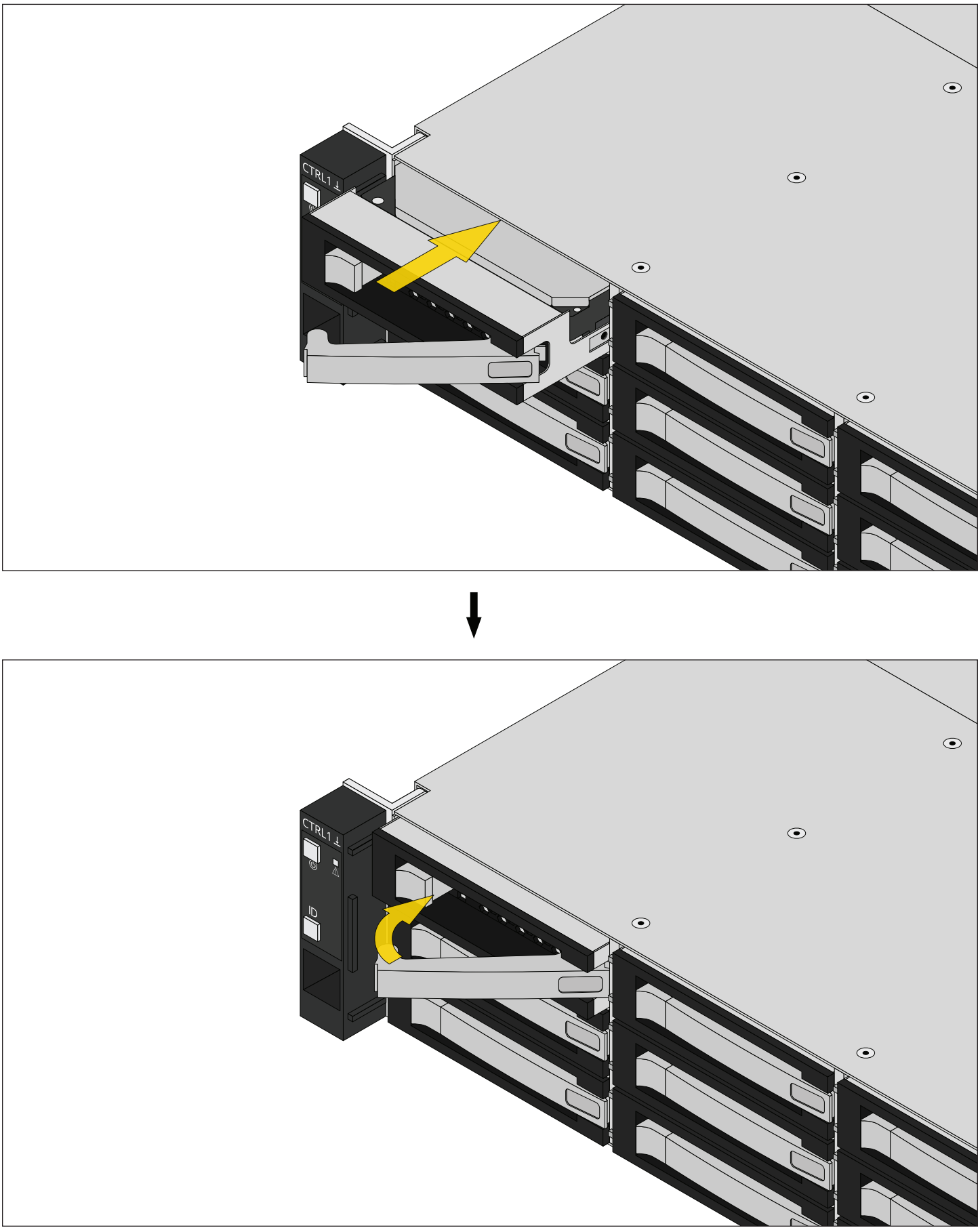
Drive Assembly with SSD



Drive Assembly with HDD

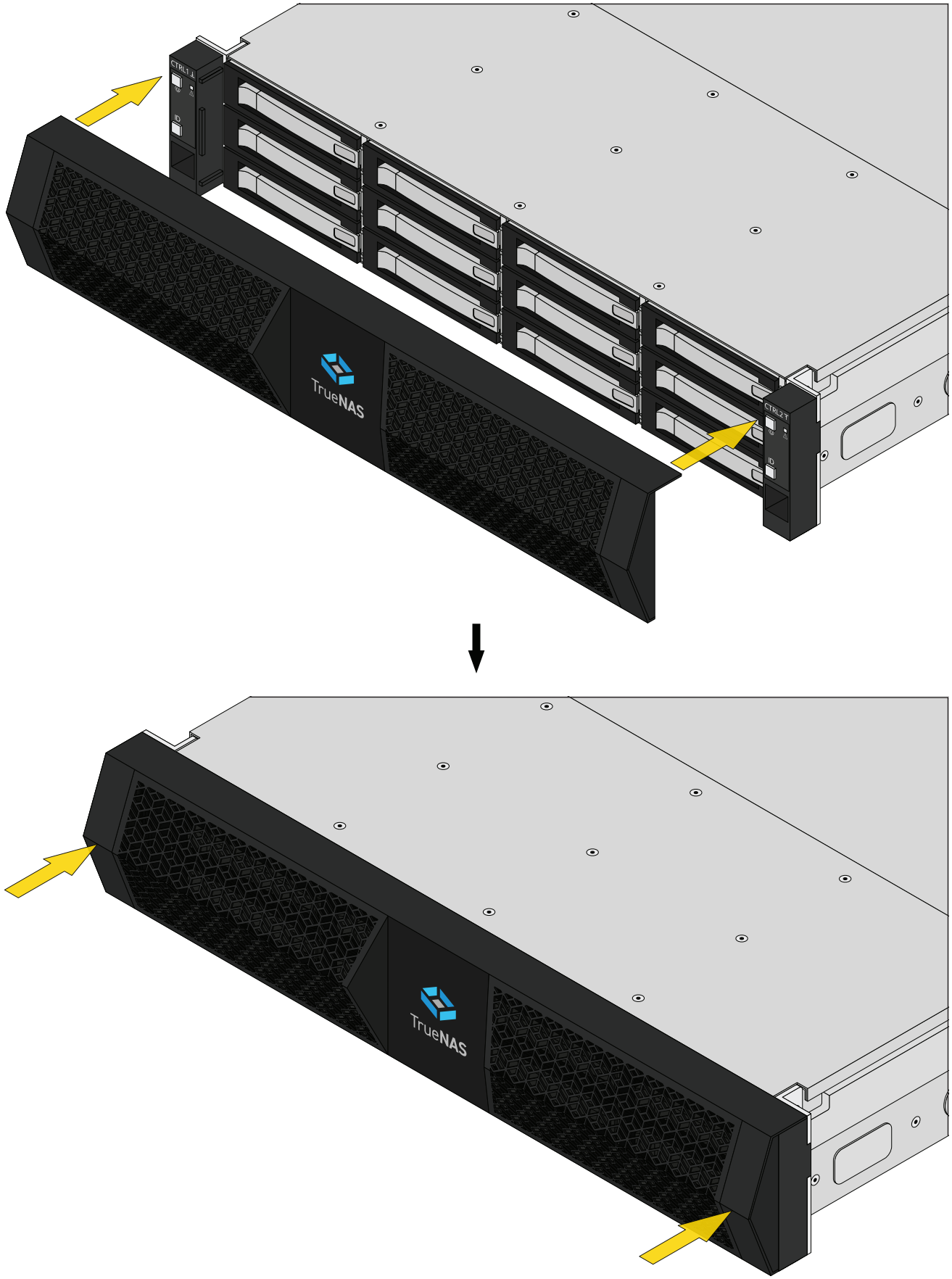


Align the drive assembly with an empty slot on the system and push it in until the locking arm begins to swing closed. Gently close the arm to fully seat the drive tray and lock it into the system.



7.7 Install Bezel

Align the bezel with the front of the H-Series and fit it over the chassis ears. The bezel attaches magnetically.



7.8 Install Cables

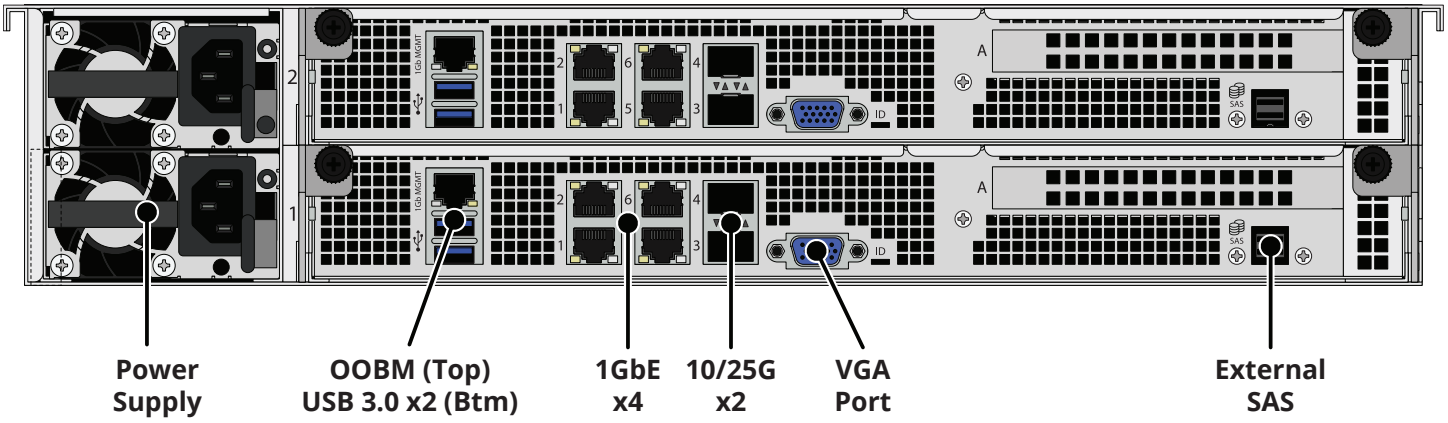
Connect one ethernet network cable from your local switch or management network to the Out-of-Band Management (OOBM) port, and another one to the first 1GbE ports (port 1) **on both controllers**.

Next, connect a monitor and keyboard to the VGA and USB ports on the same controller.

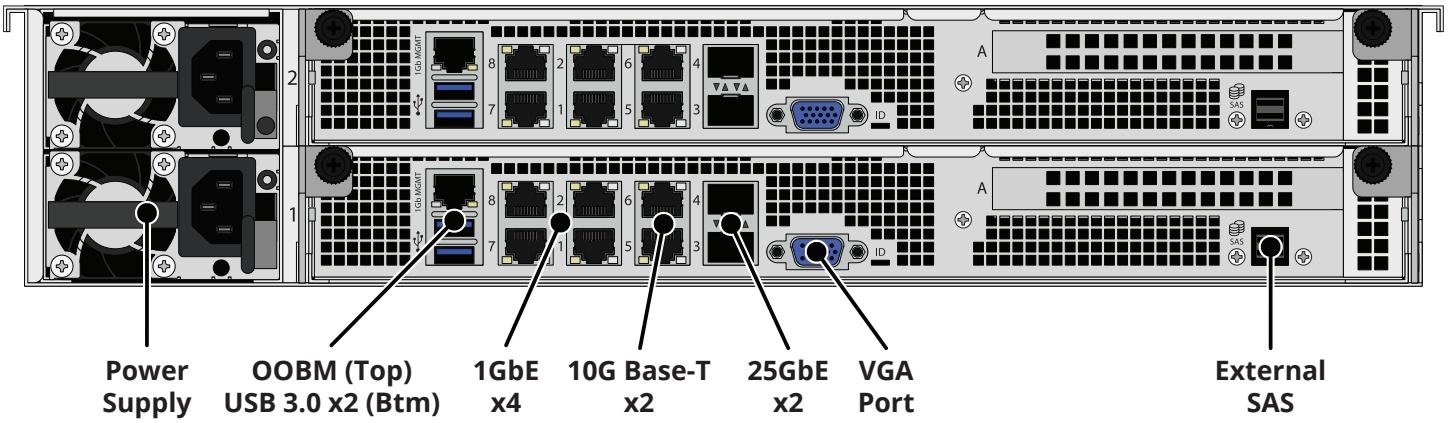
Finally, connect the power cables **to both power supplies**, then plug them into a power distribution unit.

> **Warning - Grounded Connection**
>
> Always connect power cords to properly grounded connections.

H10 and H20



H30

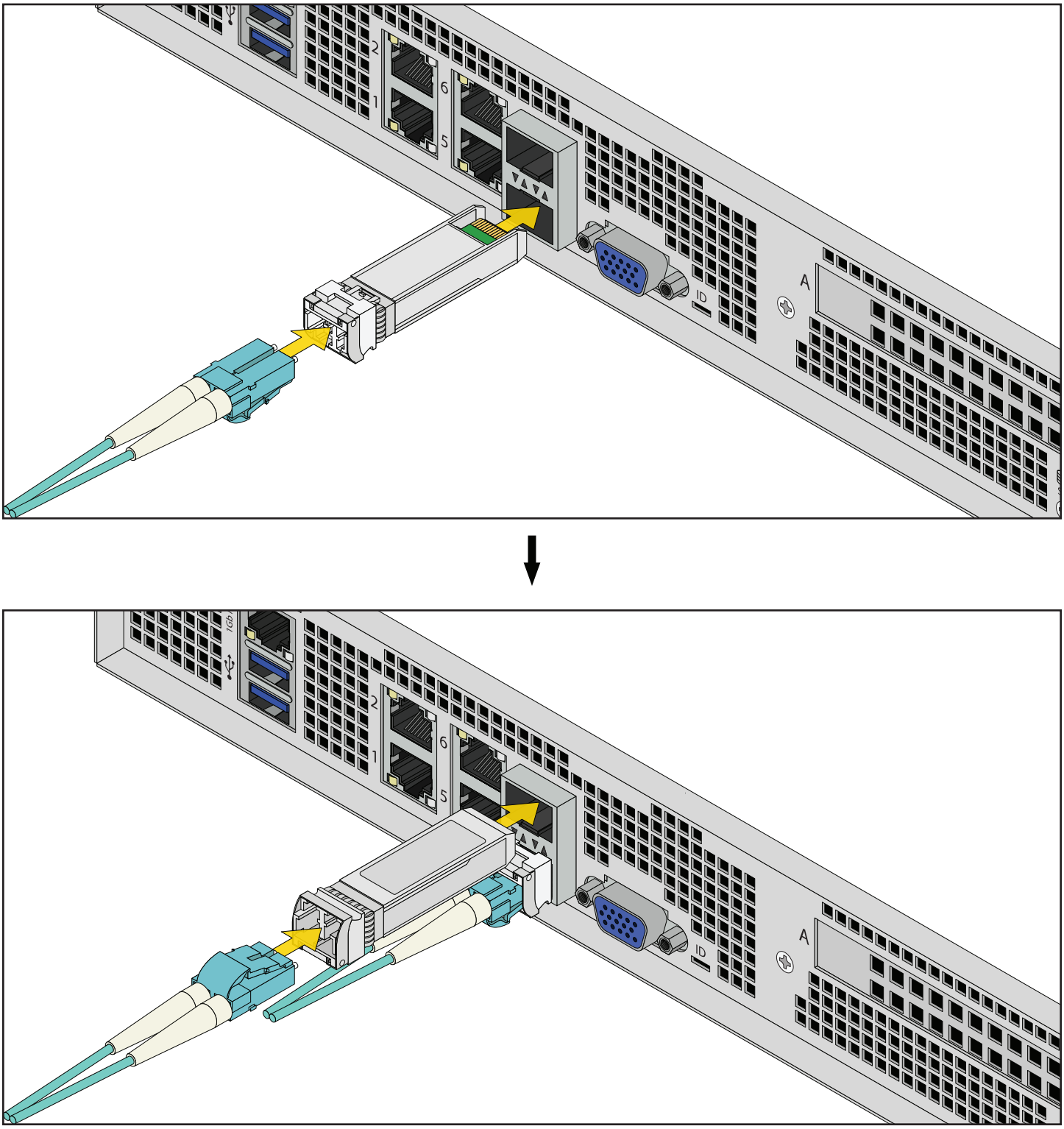


7.8.1 10/25G Cabling

If you wish to use the 10/25G networking ports, you can set them up now. Insert SR optics into the bottom port with the gold connectors facing up, then plug the SR cable into the back of the optics.

Insert the other optics in the top port with the gold connectors facing down, then plug the cable into the optics.

> ⓘ **Note - 10GBase-T Transceivers**
>
> 10GBase-T optics (transceivers) in the H-Series SFP+ ports can not operate at 1G. They can only operate using 10G connections to other 10G devices.

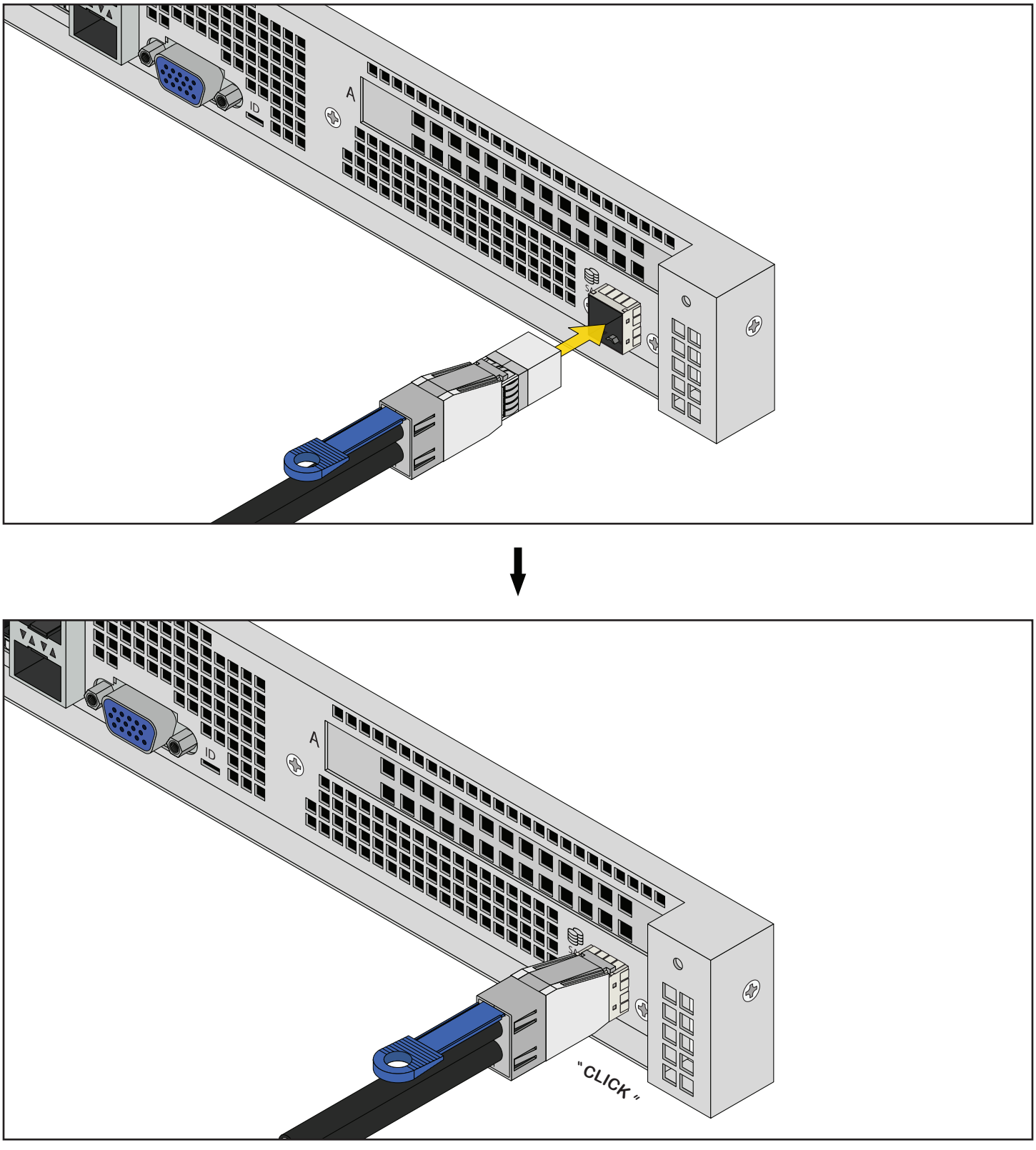


7.8.2 SAS Cabling

If you ordered your system with an expansion shelf, you can set up the SAS3 cable now. Line the SAS3 cable connector up with the SAS port on the back of the system.

Ensure the blue tab on the SAS cable is facing up. Gently push the connector into the port until it clicks.

See “8 SAS Connections” on page 20 or your expansion shelf documentation for SAS connection diagrams before booting the H-Series.



7.9 Boot the System

After plugging the power cables into outlets, the system powers on and boots into TrueNAS.

When booted, the system console displays the TrueNAS web UI IP address, which is either preconfigured according to customer guidelines or automatically generated with DHCP.

Enter the IP address into a browser on a computer on the same network to access the web user interface.

See your welcome email or the password stickers on each controller at the rear of the unit for login credentials.

8 HA Networking

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

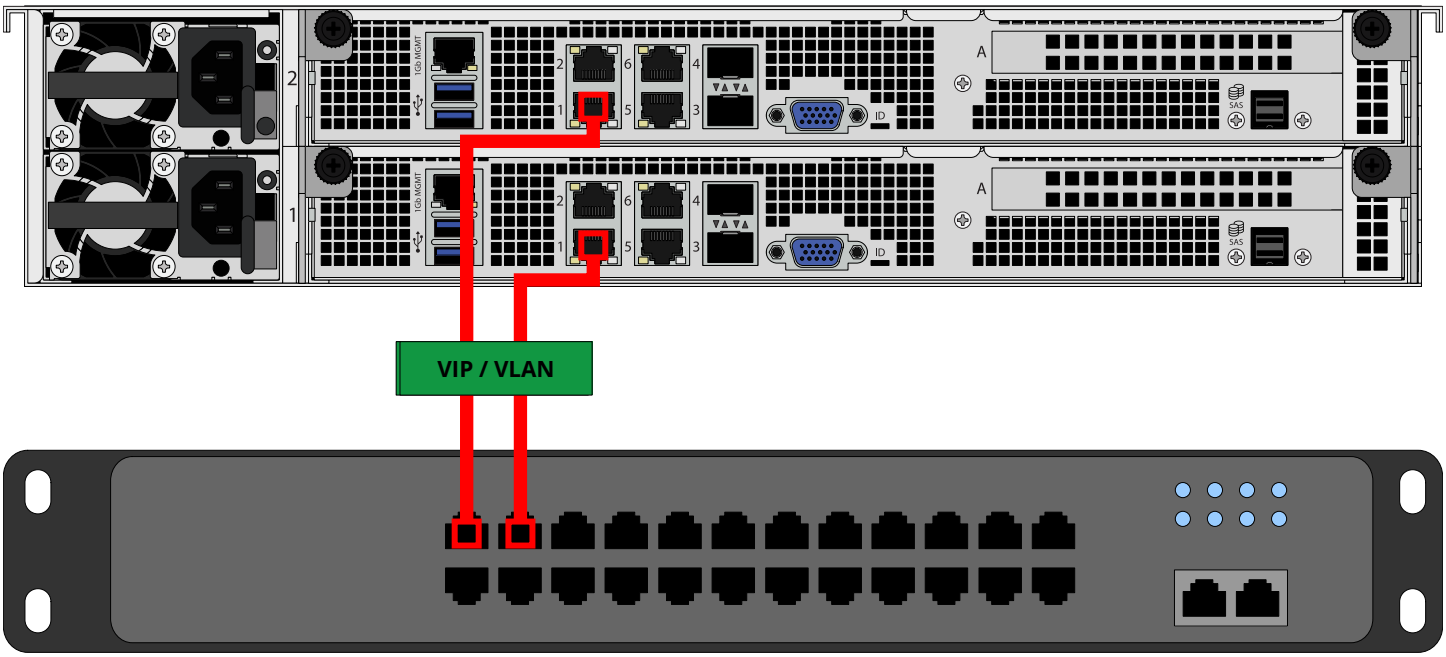
8.1 NIC Configured and Connected to Same Switch

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 ablt to pass traffic between each other.

Configure **1** interface on each controller and connect them to seperate ports on the same switch.

8.1.1 Example

Configure the **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.



8.2 Single Switch Active LACP Link Aggregation

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

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

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

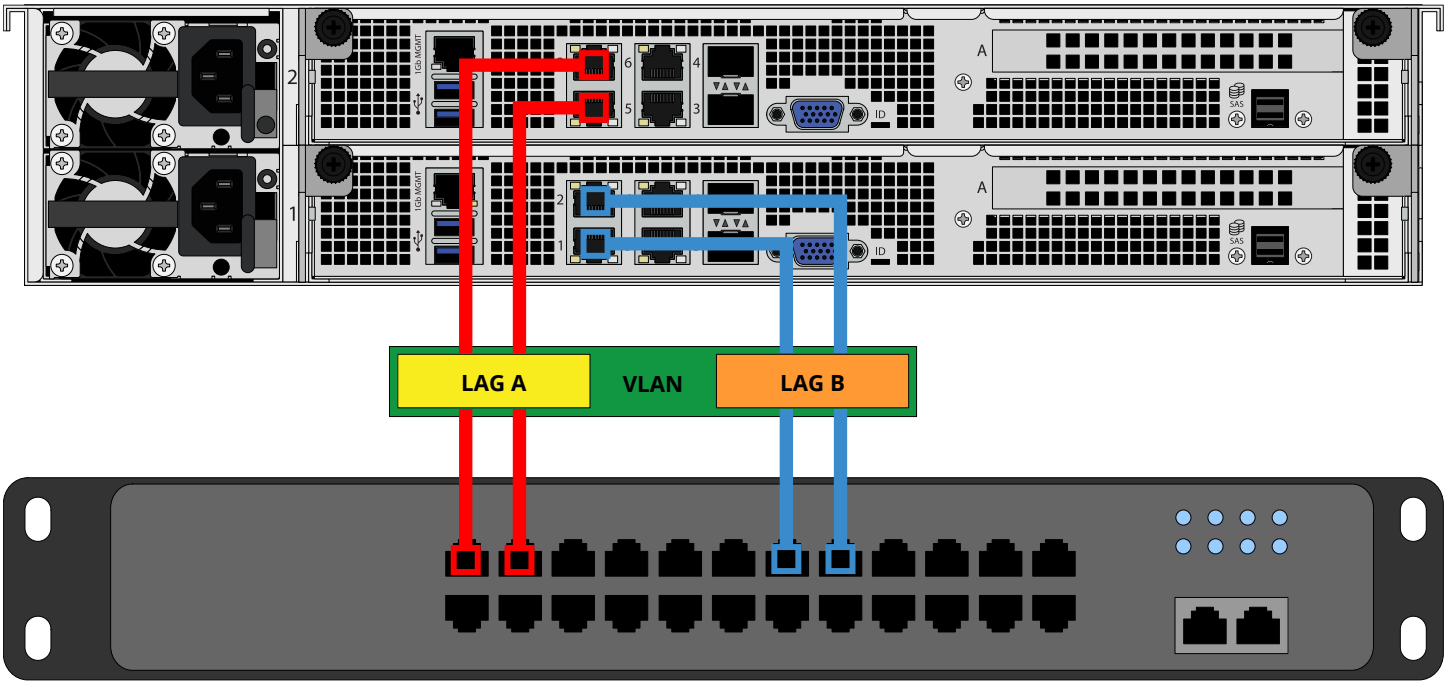
For LACP, you must configure the physical ports (1 and 2) on each controller into the same LAGG group on a switch that uses Active LACP.

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

8.2.1 Example

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

1. Set **1** and **2** on the active controller in the same LACP LAGG group (port channel on the active controller and the switch port.)
2. Set **1** and **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.

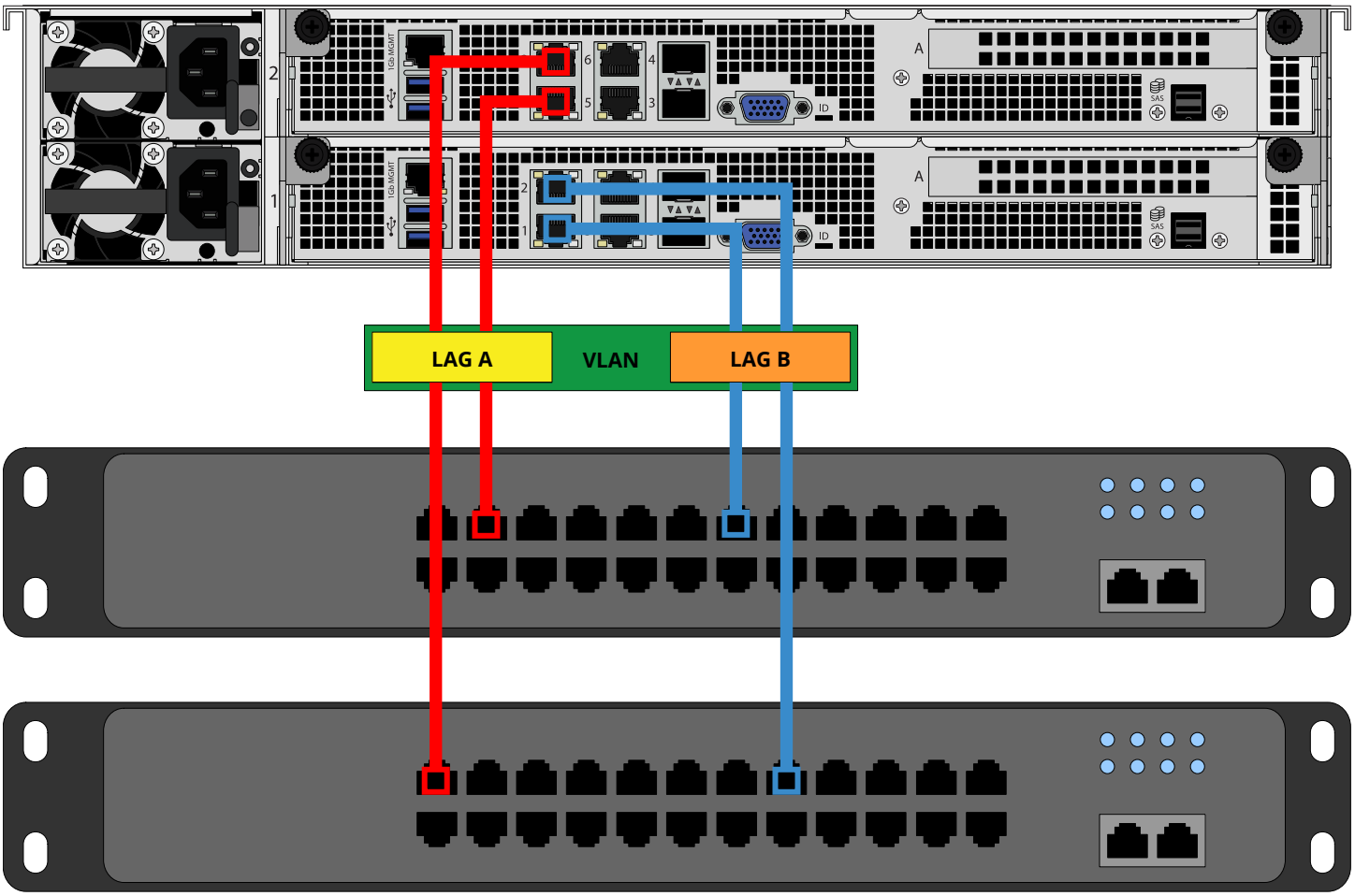


8.3 Two Switch Active LACP Link Aggregation

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 **1** and **2** connect to different switches for both controllers.

8.3.1 Example



8.4 Multipath

> Multipath networking is ideal for iSCSI and VMWare backend.

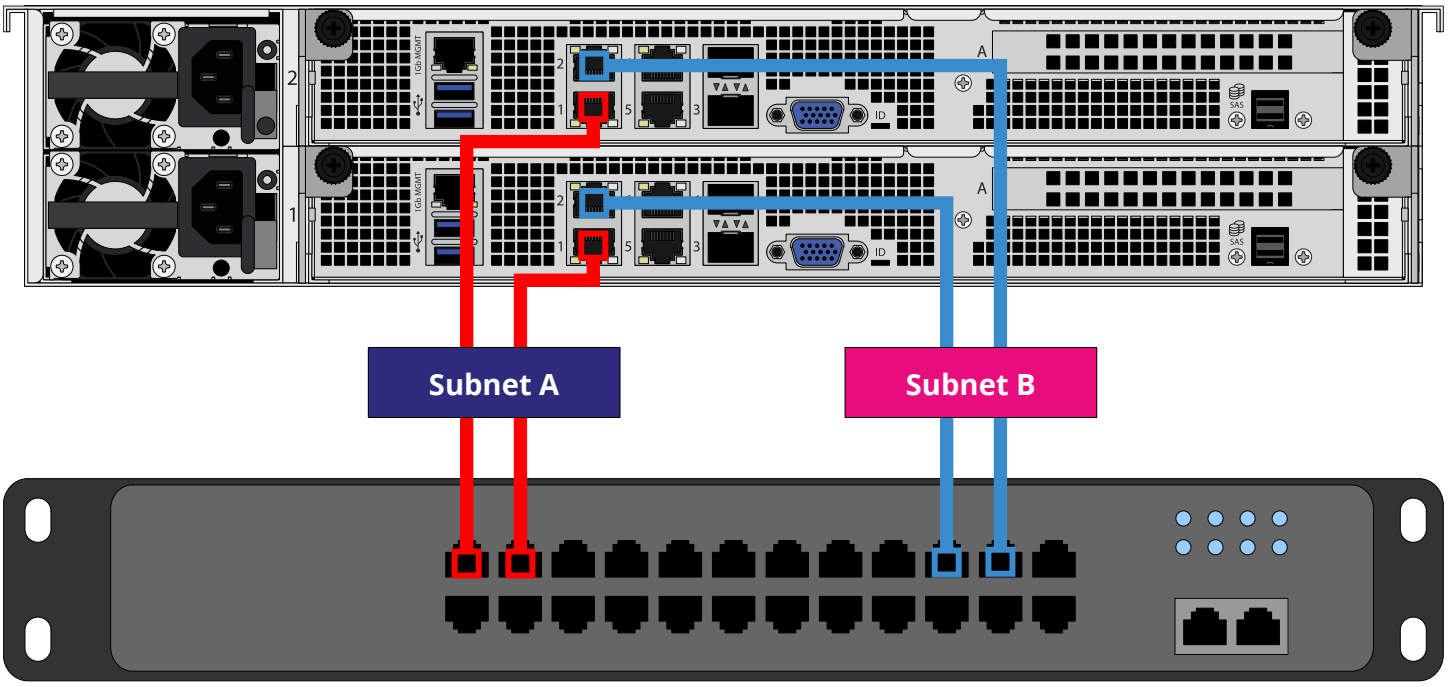
Create an interface with **1** on the active controller and set IPs. Connect it to a port on the switch.

Create an interface with **2** on the active controller, and **1** and **2** on the standby controller. Connect it to a different port on the switch.

Make sure all IPs are on different subnets.

> **Note:** TrueNAS does not allow you to configure multiple IPs on the same subnet.

8.4.1 Example

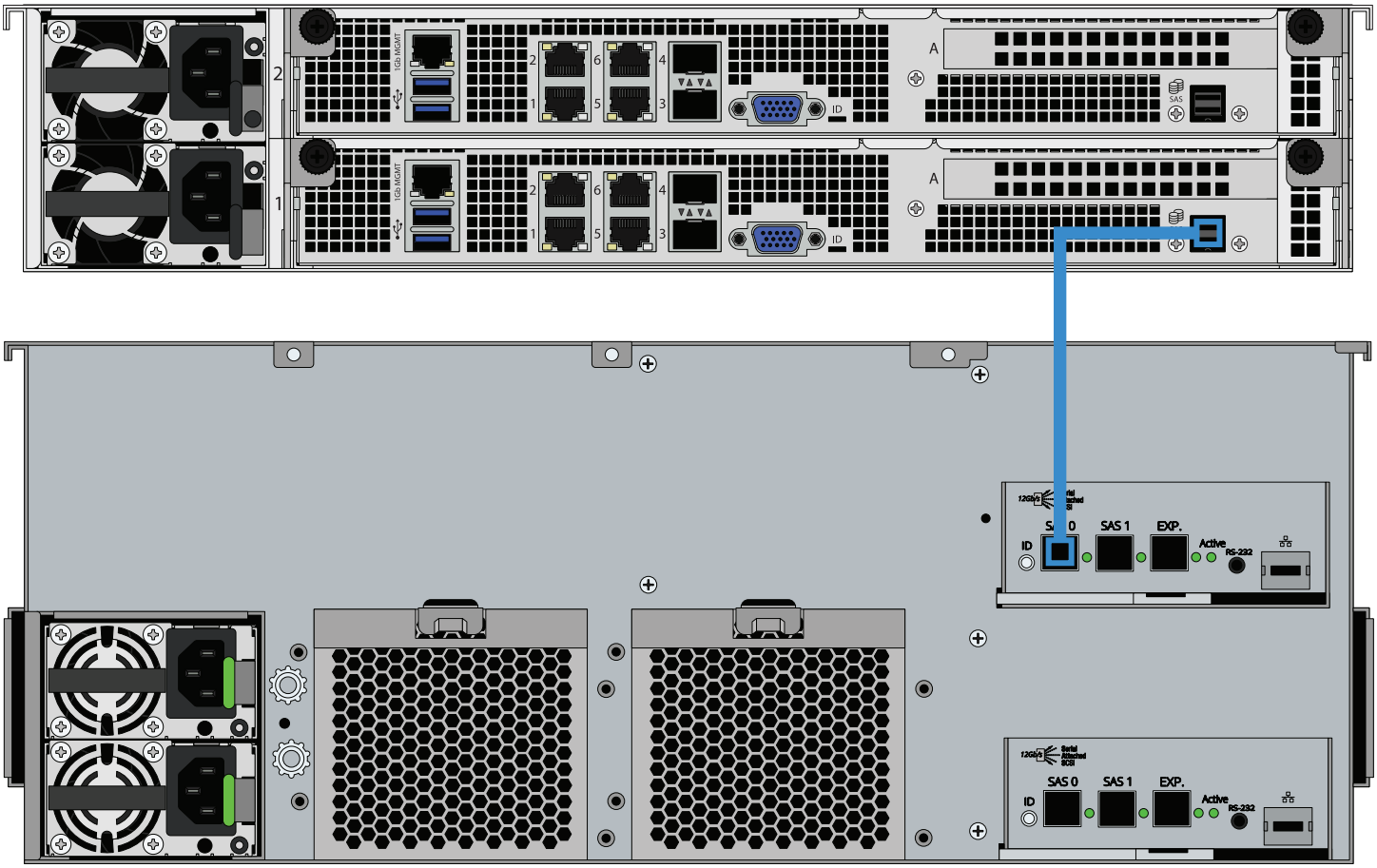


9 Storage Expansion

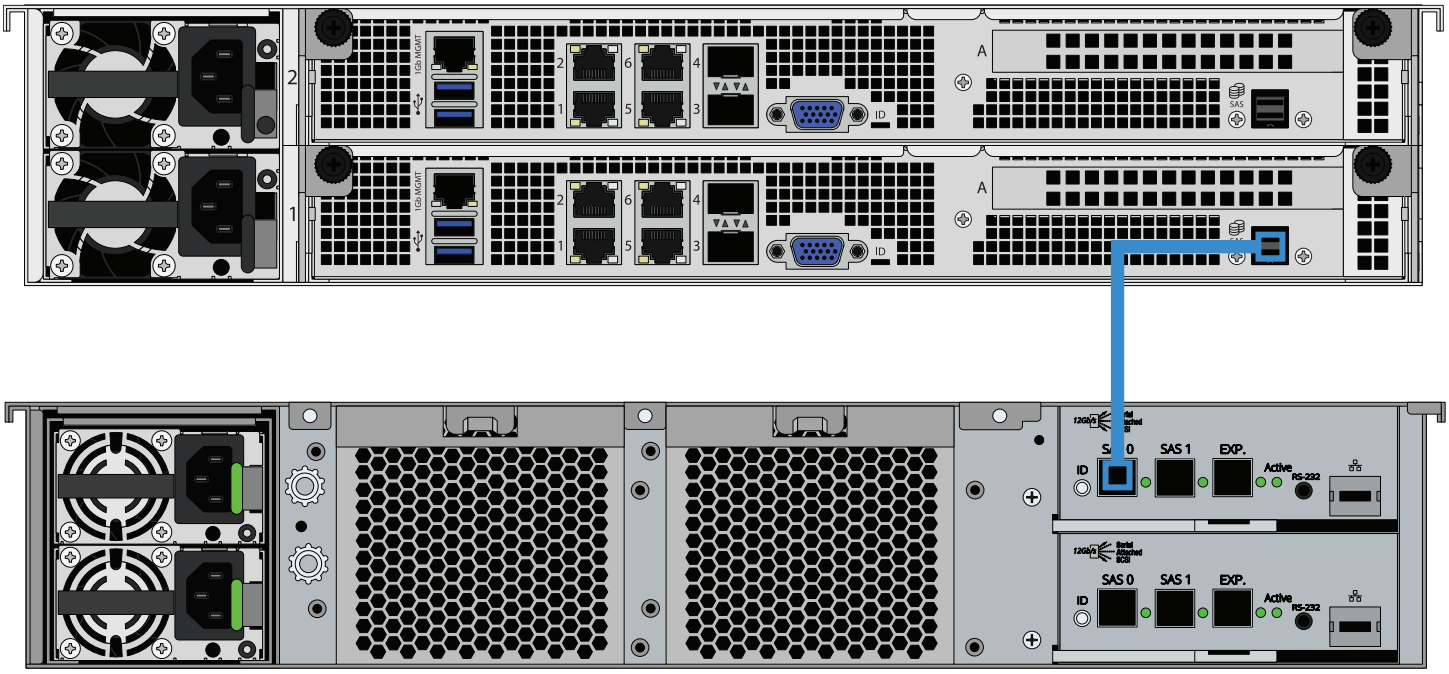
Important - SAS Configuration

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 IOMs/expanders on the same shelf.

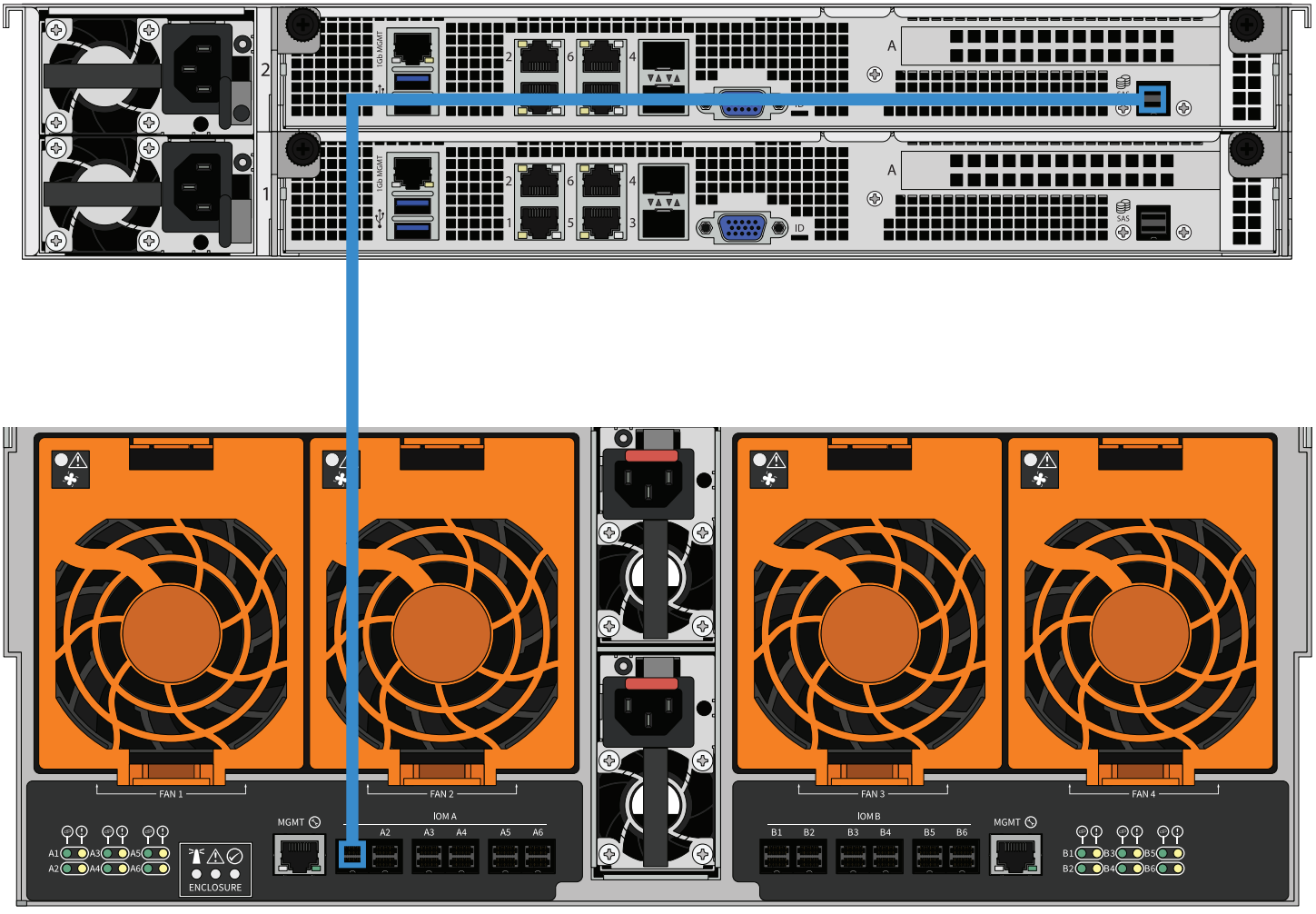
9.1 ES24



9.2 ES24F



9.3 ES60



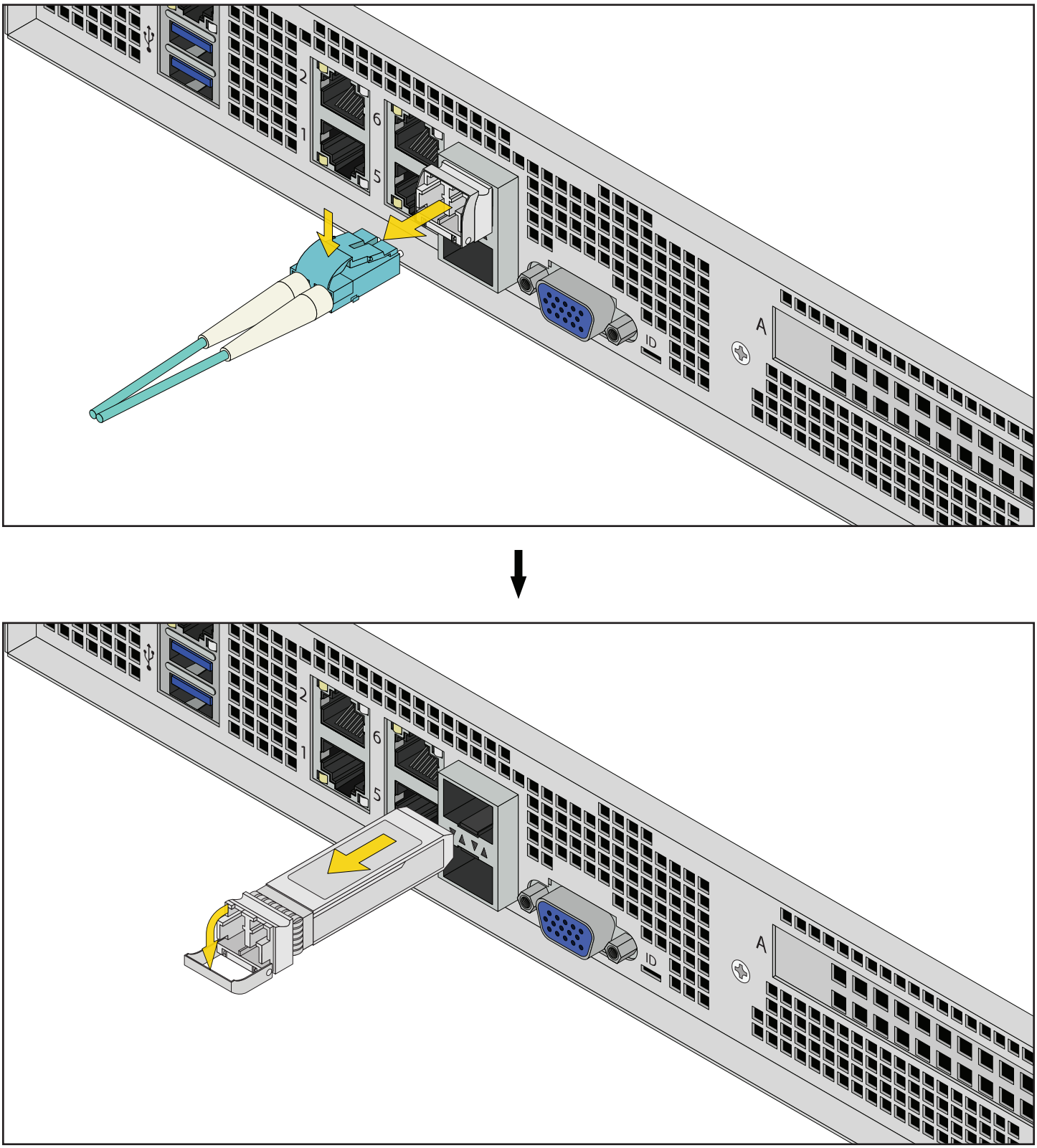
10 Unracking Procedure

10.1 Uninstall Cables

Disconnect both power cables from the PSUs, then disconnect all USB and networking cables.

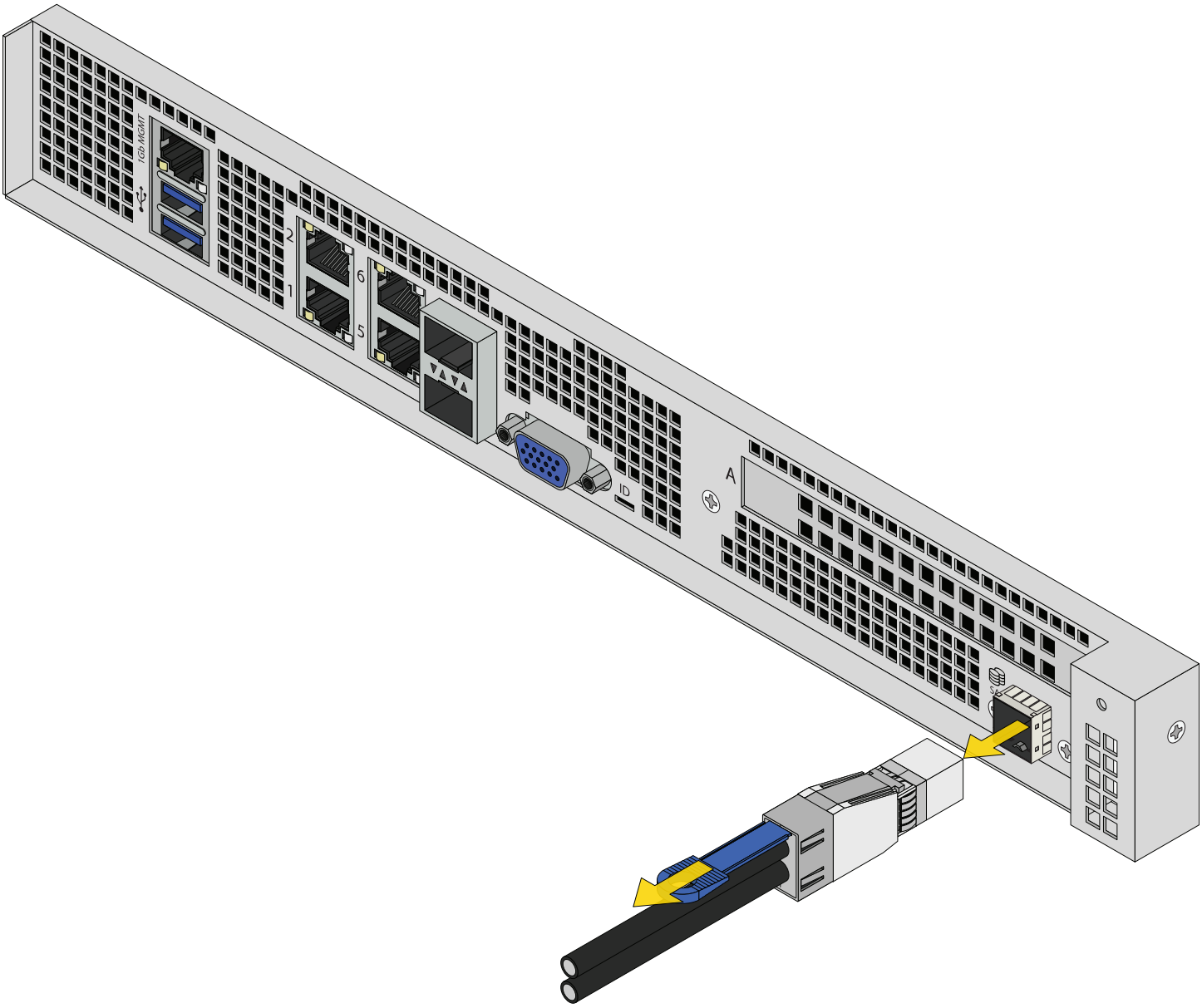
10.1.1 Disconnect 10/25G SR Cabling

Push the blue tab down on the connector to remove it from the optics. Pull the release on the optics to release them from the network port.



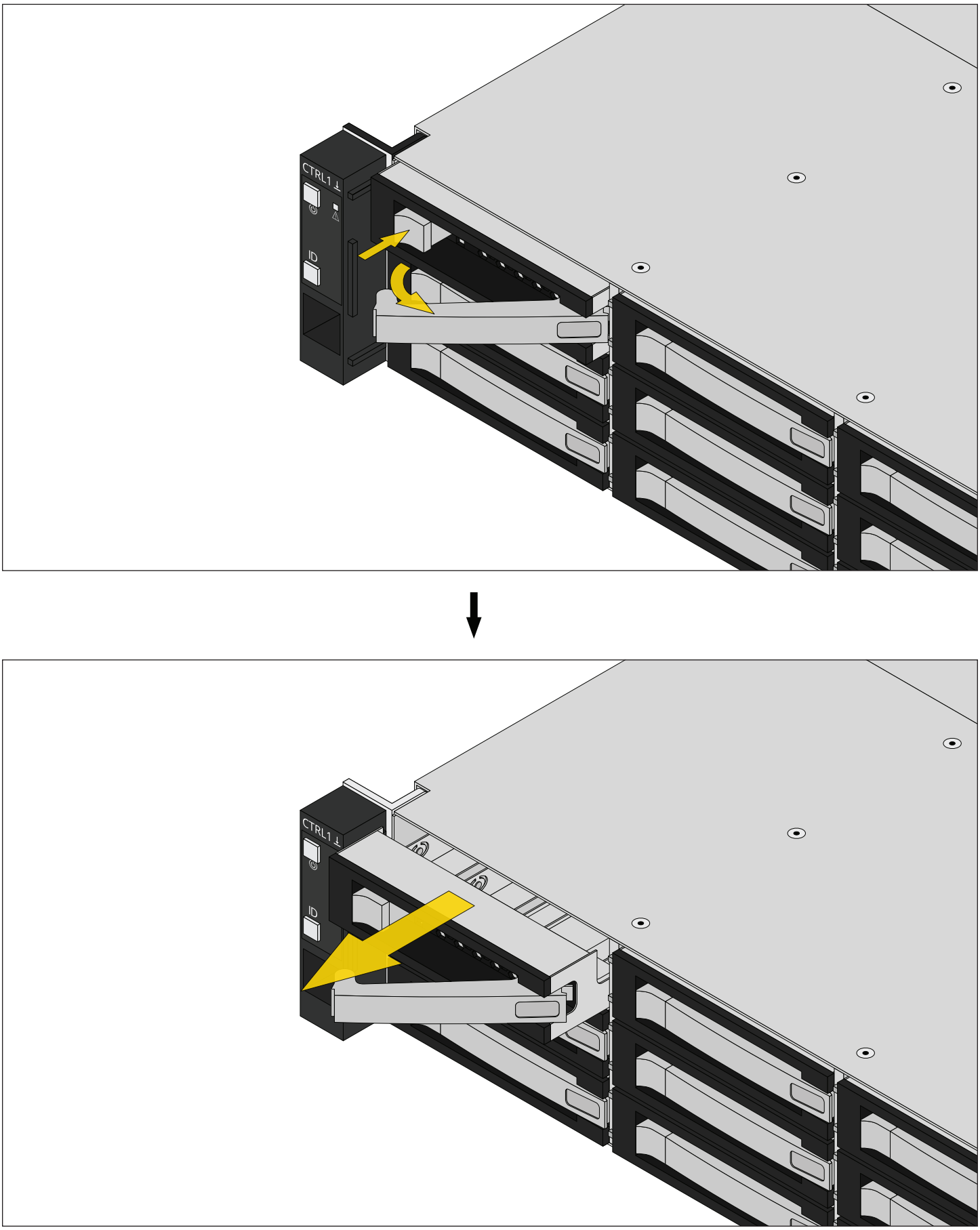
10.1.2 Disconnect SAS Cables

Pull the blue tab on top of the SAS cable to release it from the SAS port.



10.2 Remove Drives

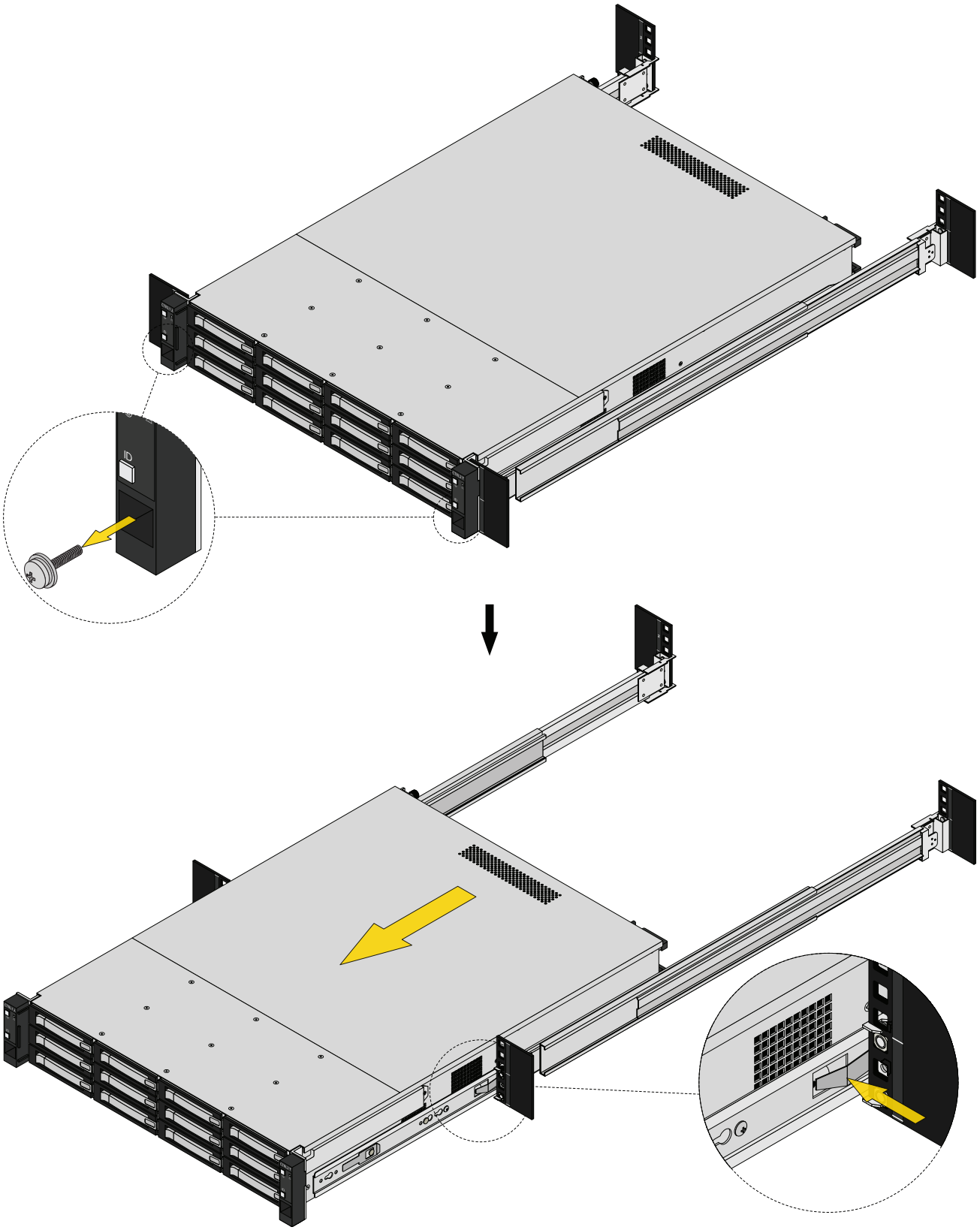
Press the release button on the left side of a tray. Swing the locking arm out, then pull the tray out of the system.



10.3 Remove the System From the Rack

Remove the rack screws from each ear.

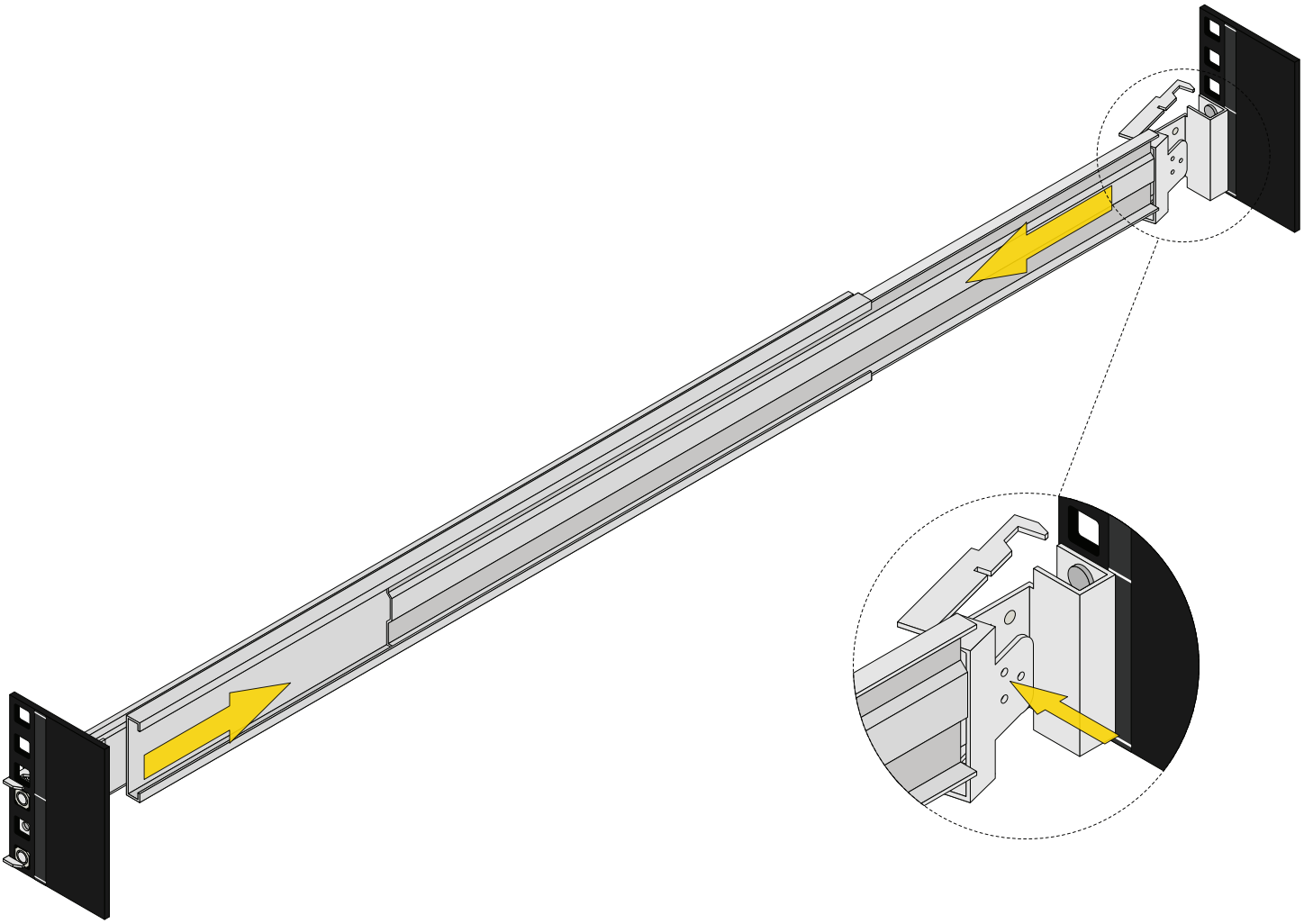
Pull the system out of the rack until the metal safeties click and lock. Squeeze the safety catches against the sides of the system and team-lift it out of the rack.



10.4 Remove the Rack Rail From the Rack

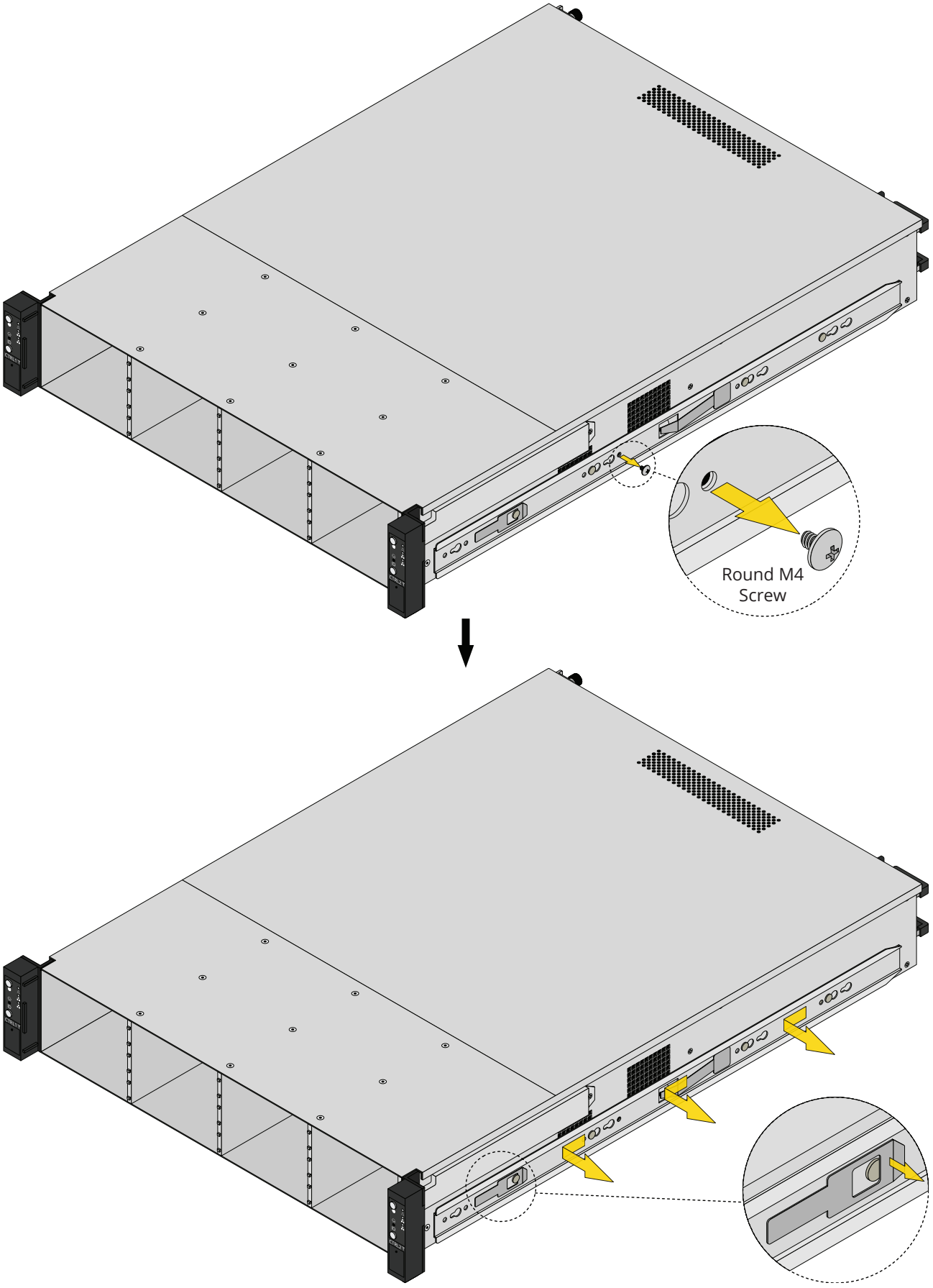
Press the spring latch plate on each side of the rail to release it from the rack, the remove the rail from the rack.

Repeat for the other rack rail.



10.5 Remove the Chassis Rail From the System

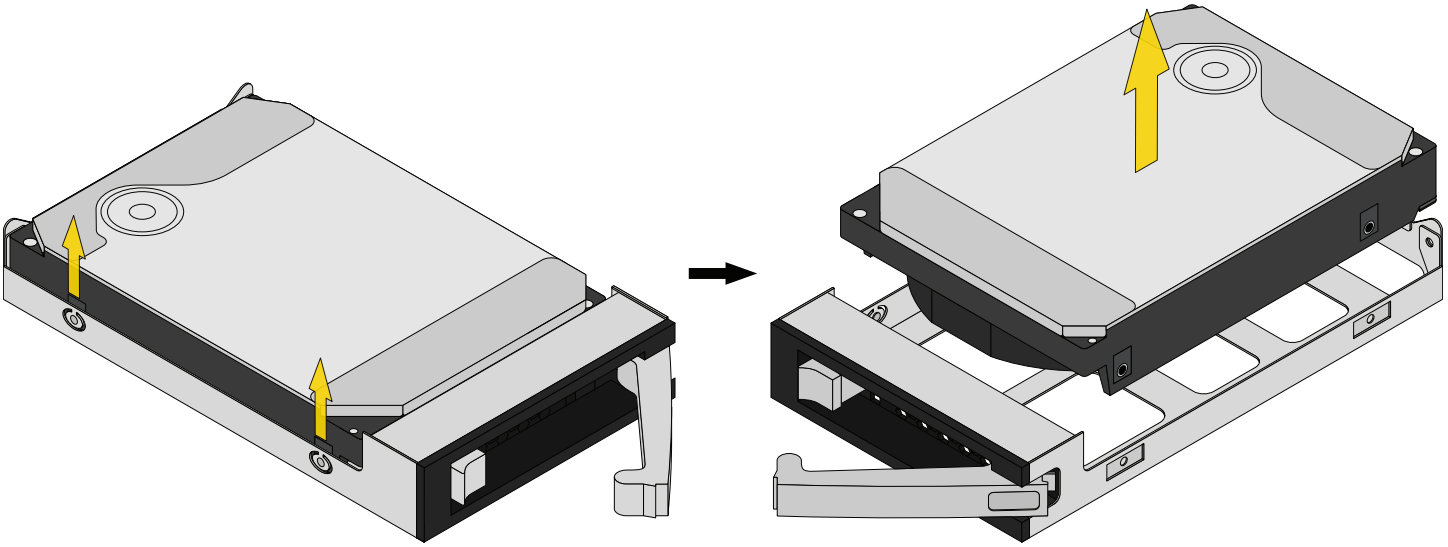
Remove the round M4 screws from the chassis rails, then pull the retention latches away from the chassis rails and slide them toward the front of the system. Pull the chassis rails over the mounting pegs and away from the system.



11 Drive Replacement

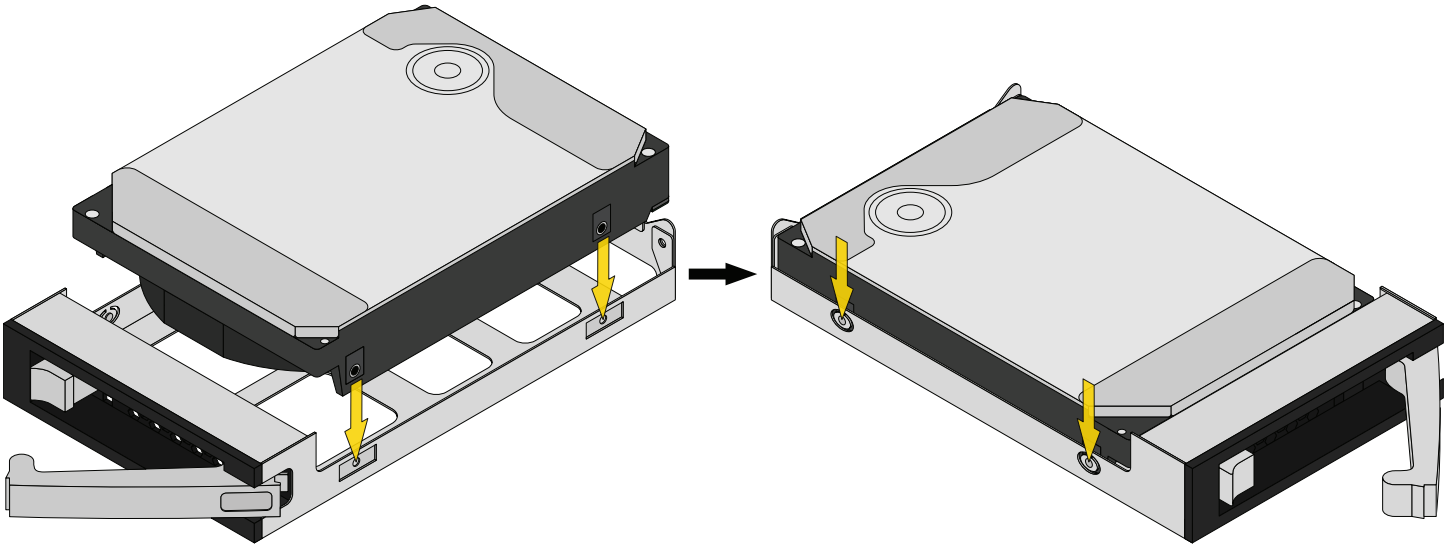
11.1 HDDs

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



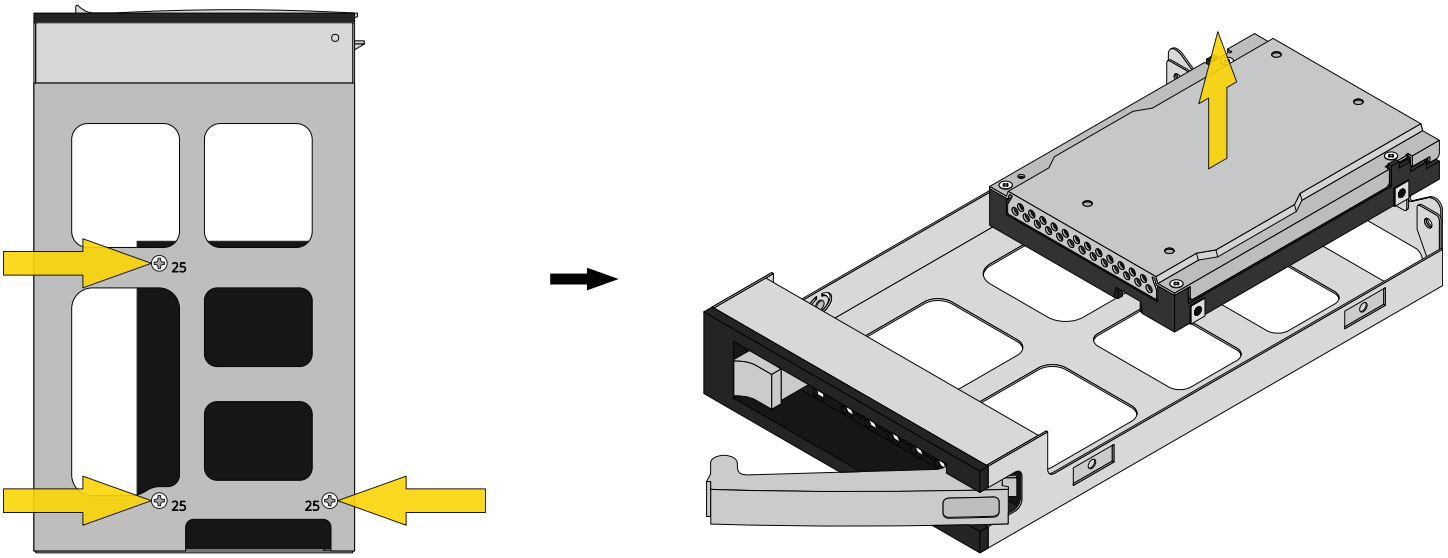
To install a drive in a tray, ensure the drive connectors point out the back of the tray and push the drive side screw holes into the fixed retention pegs on one side of the tray.

Push the other side of the drive down into the flexible retention pegs to secure the drive.

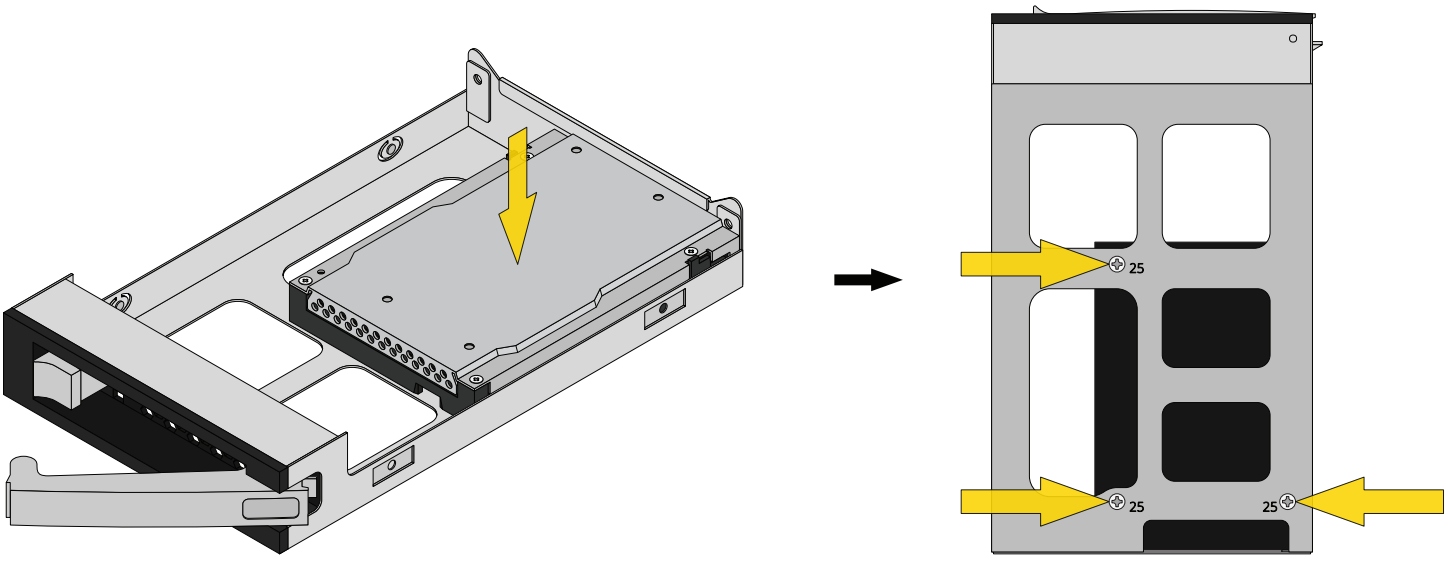


11.2 SSDs

To remove an SSD from a tray, remove the three 2.5” SSD screws from the bottom of the tray, then remove the drive from the tray.



To install an SSD in a tray, ensure the drive connectors point out the back of the tray, then lower the drive into the tray. Install three 2.5” SSD screws to secure the drive to the tray.



12 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/

13 Contact Us

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

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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)
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