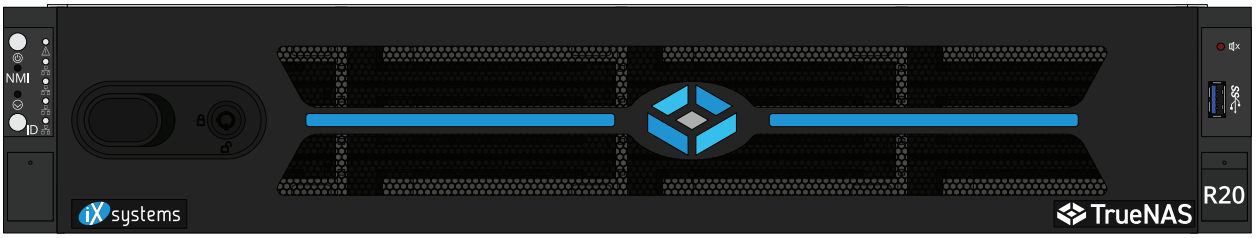
TrueNAS® R20 User Manual

v.25021



Contents

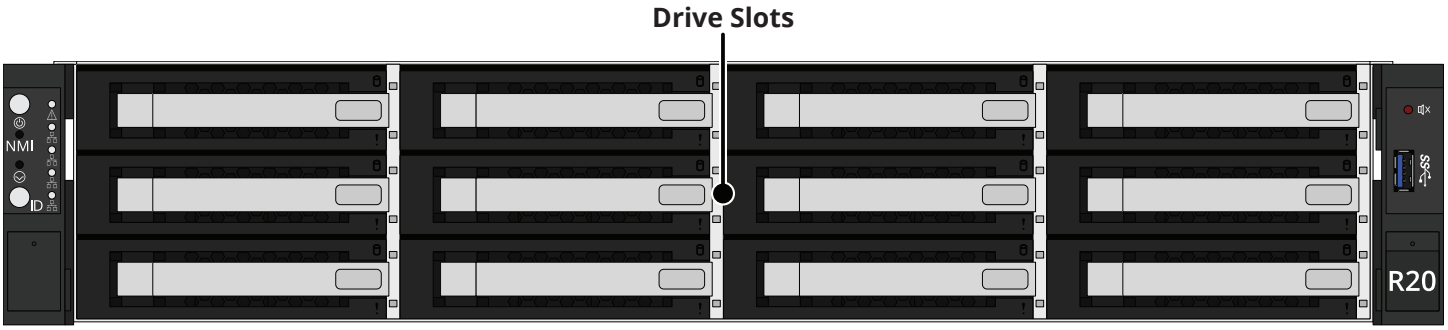
Contents (cont.)

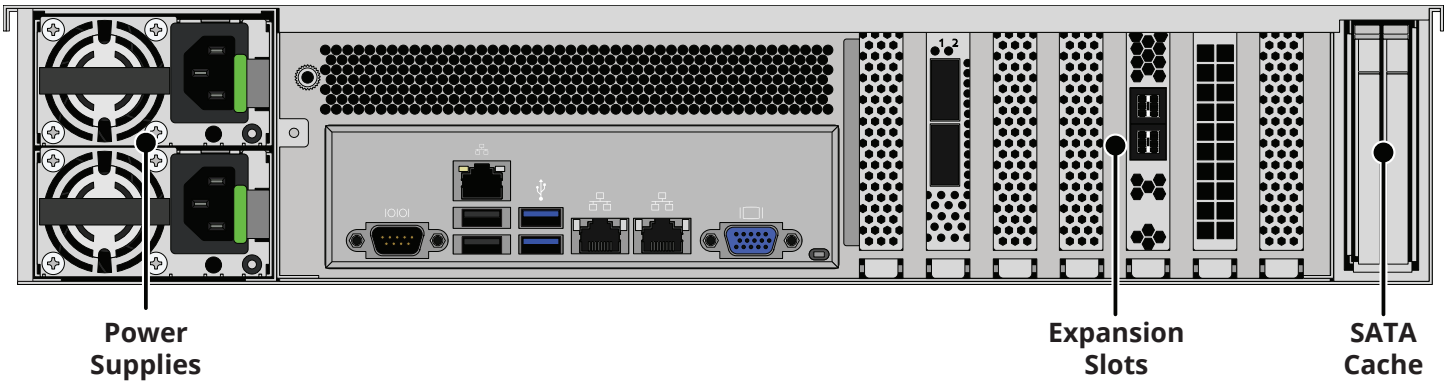
1 Introduction

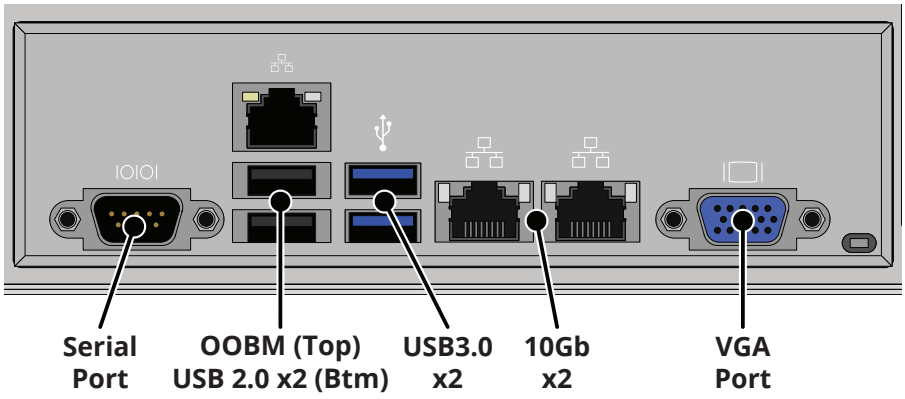
The TrueNAS R20 is a 2U, 12-bay, hybrid storage array with redundant power supplies.

Your system comes with the TrueNAS operating system preloaded.

Review the safety considerations and requirements before interacting with the R20.







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 R20 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 R20:

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

4 Specifications

R20 Hardware	
Drive Count	12 3.5-inch SAS HDDs or SSDs + 2 SATA Cache SSDs
Cooling Fans	5
Power Supplies (200v)	2
Power Distribution Requirements	200V - 240V
Processor	Hexa-Core, Deca-Core, or Hexadeca-Core
RAM	32 - 192 GB
Read Cache (Max)	960 GB
Write Cache (Max)	960GB
Onboard Networking	2x 10 GbE
Additional Networking 1 (Optional)	2x 10/40/100 GbE
Additional Networking 2 (Optional)	2x 1/10/25 GbE or 32 Gb Fibre Channel
Max Storage (Raw)	2.9 PB
Storage Expansion	2x ES24/F or ES60

R20 Dimensions and Weight	
Dimensions (H x W x L)	3.5” x 19” x 26” (89mm x 483mm x 660mm)
Net Weight (Fully Loaded)	50 lbs (23 kg)

R20 Environmental Specifications	
Operating Temperature	32°F - 95°F (0°C - 35°C)
Non-Operating Temperature	-4°F - 158°F (-20°C - 70°C)
Max Heat Output	1000 BTU/h

5 Space Requirements

Note - Rack Space

The R20 requires 2U of rack space and a #2 Phillips head screwdriver to install in a rack.

The system is 26” (66 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 R20.

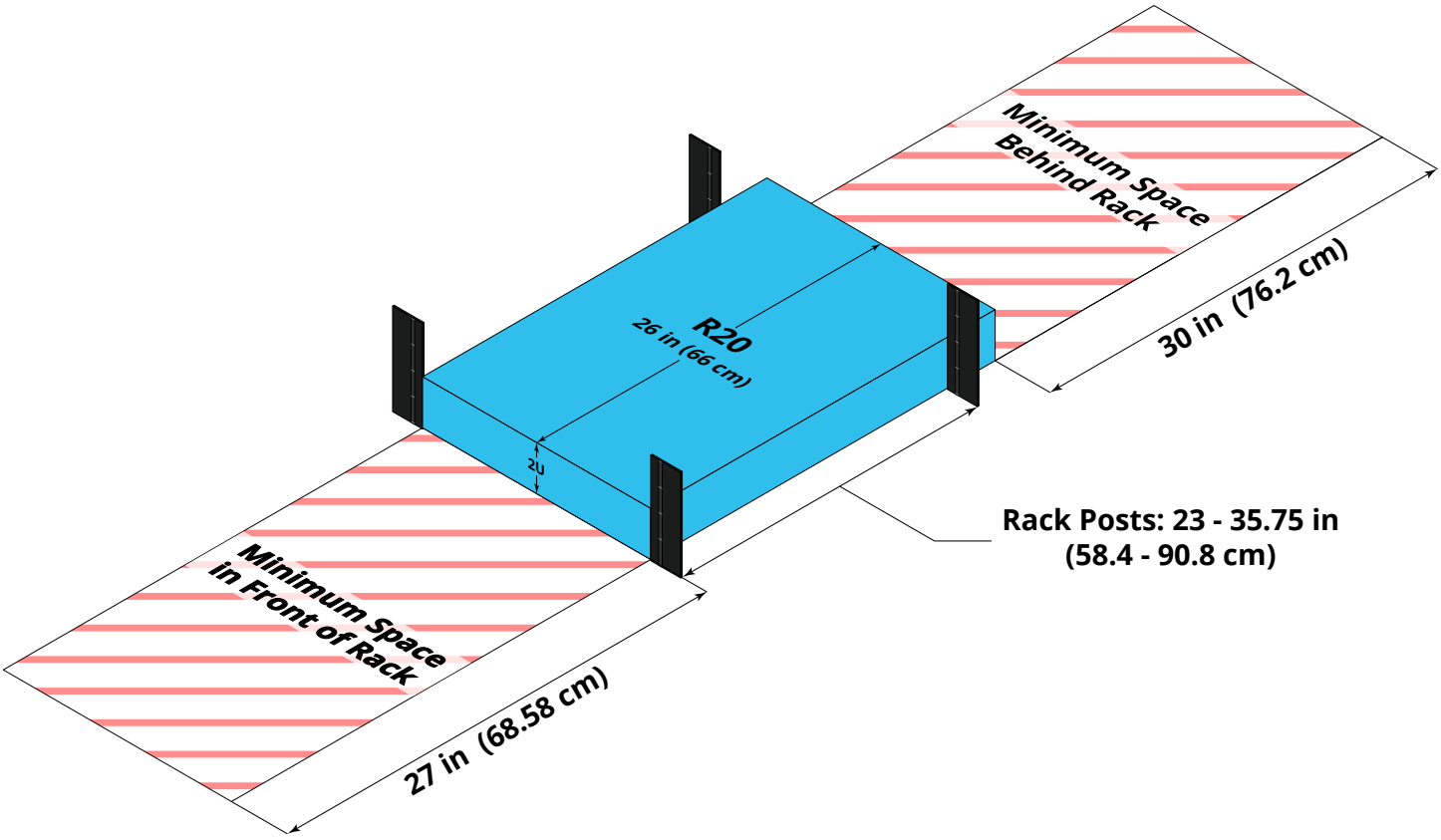
You must also have at least 30” (76.2) of space behind the rack to install the cables.

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.

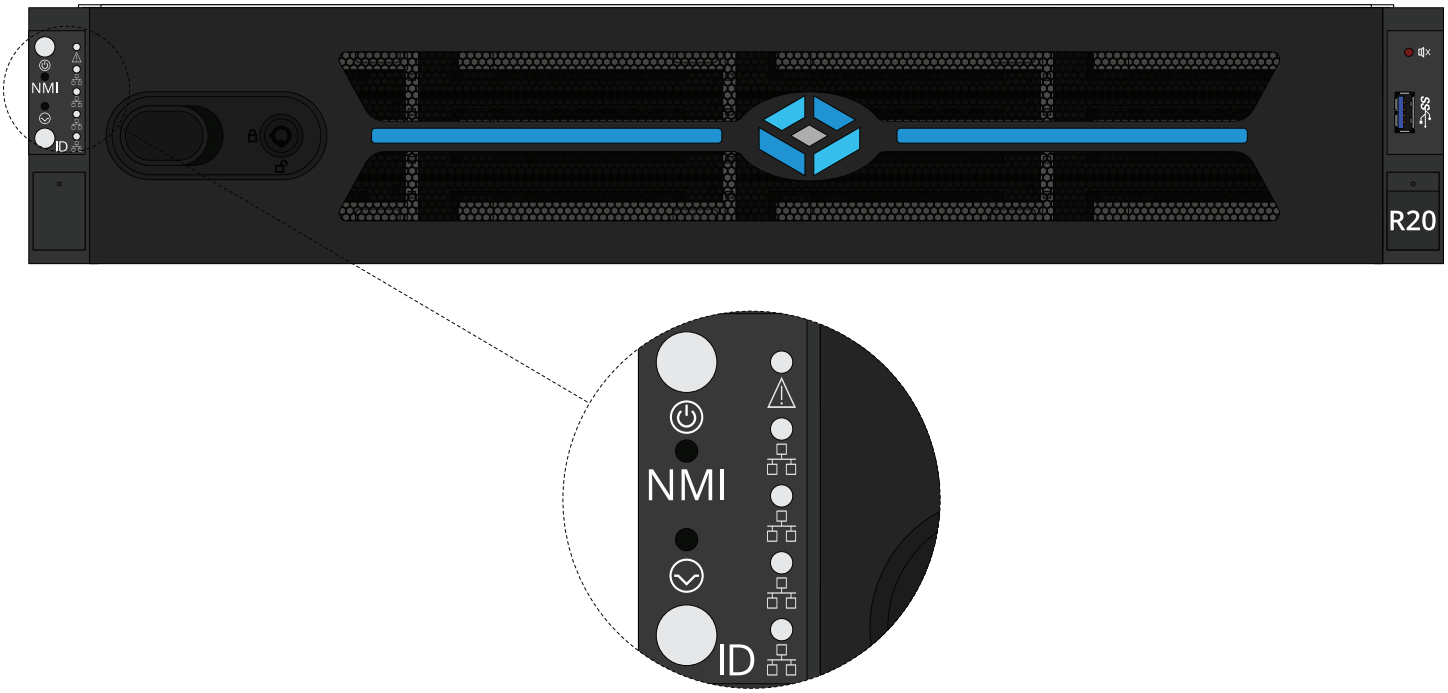
Warning - Team Lift

The R20 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

6.1 Front Indicators and Buttons



Light / Button	Function	Color and Indication
⏻	Powers the system on/off	Blue (Solid): System Ready
⌁	Resets the system	N/A
ID	Activates Locate ID	Blue (Flashing): Locate ID active
⚠	N/A	Green (Flashing): Component Fault
品	N/A	Amber (Flashing): Link Active

6.2 Drive Indicators

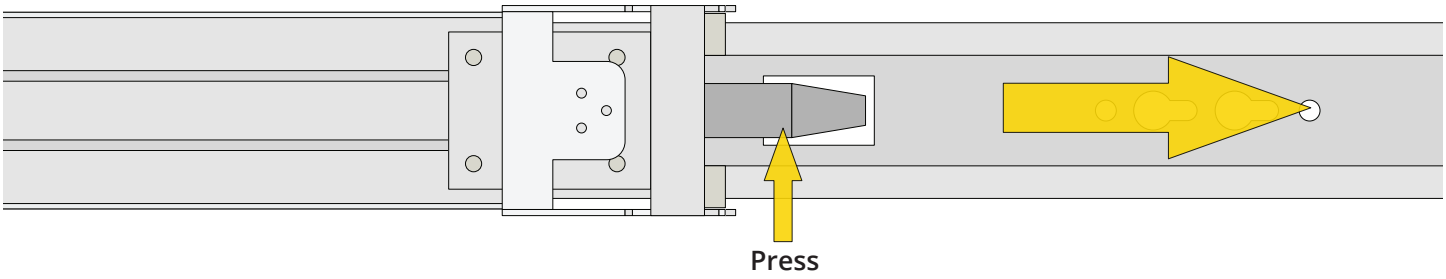
Light	Color and Indication
⛁	Blue (Flashing): Disk Activity
!	Amber (Solid): Drive Fault

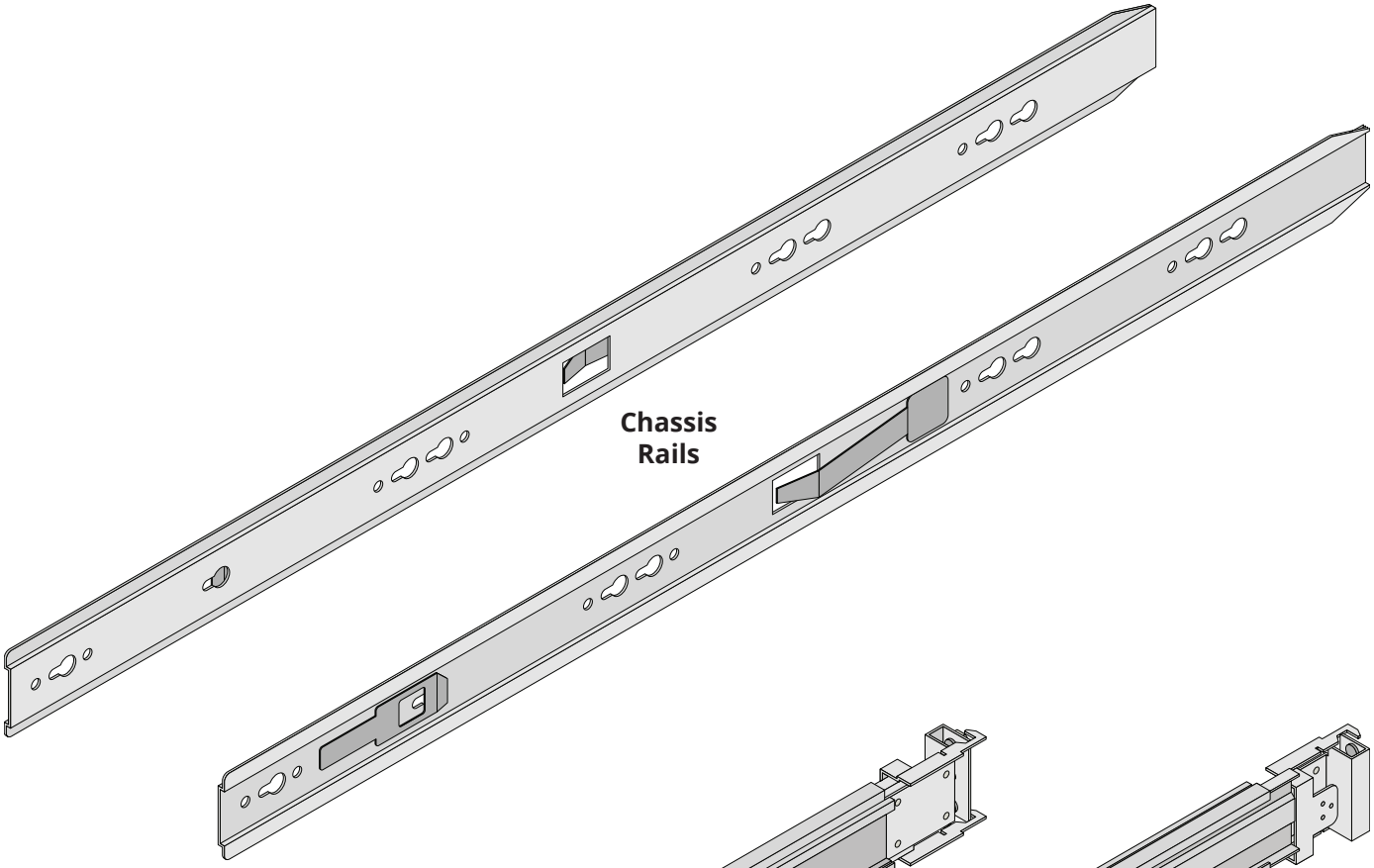
7 Racking Procedure

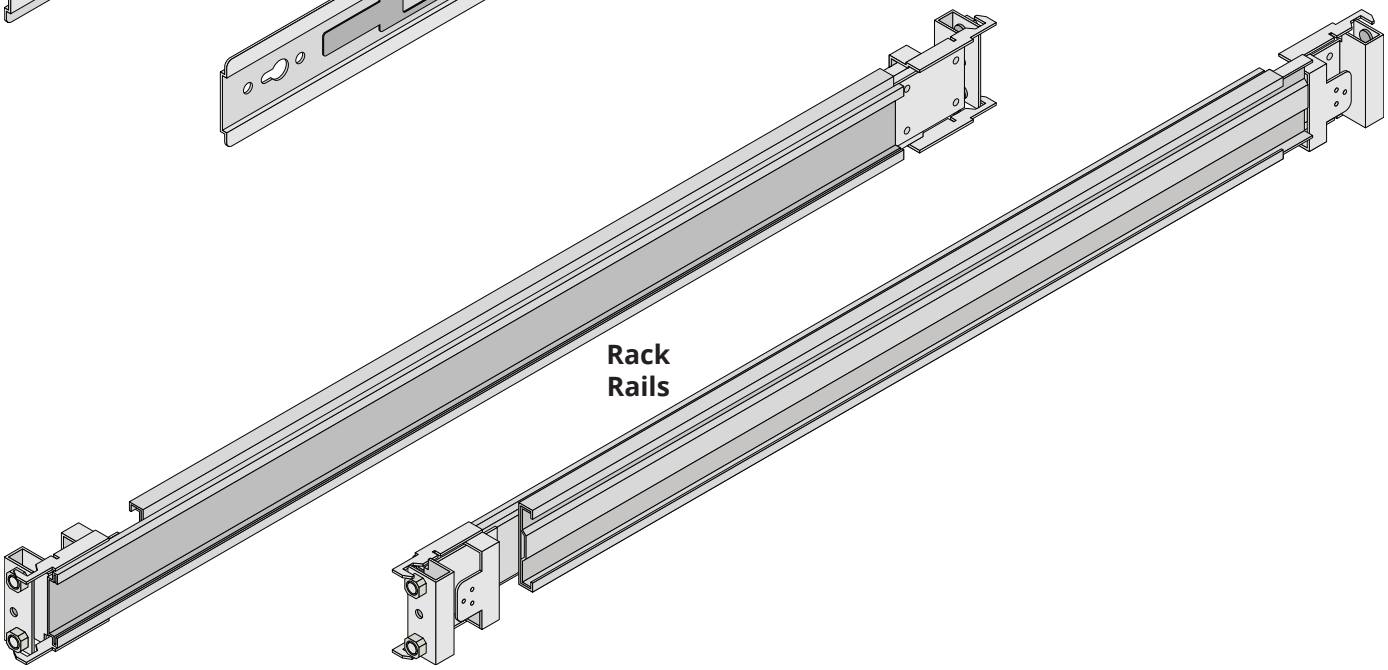
7.1 Remove Chassis Rail from Rack Rail

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.

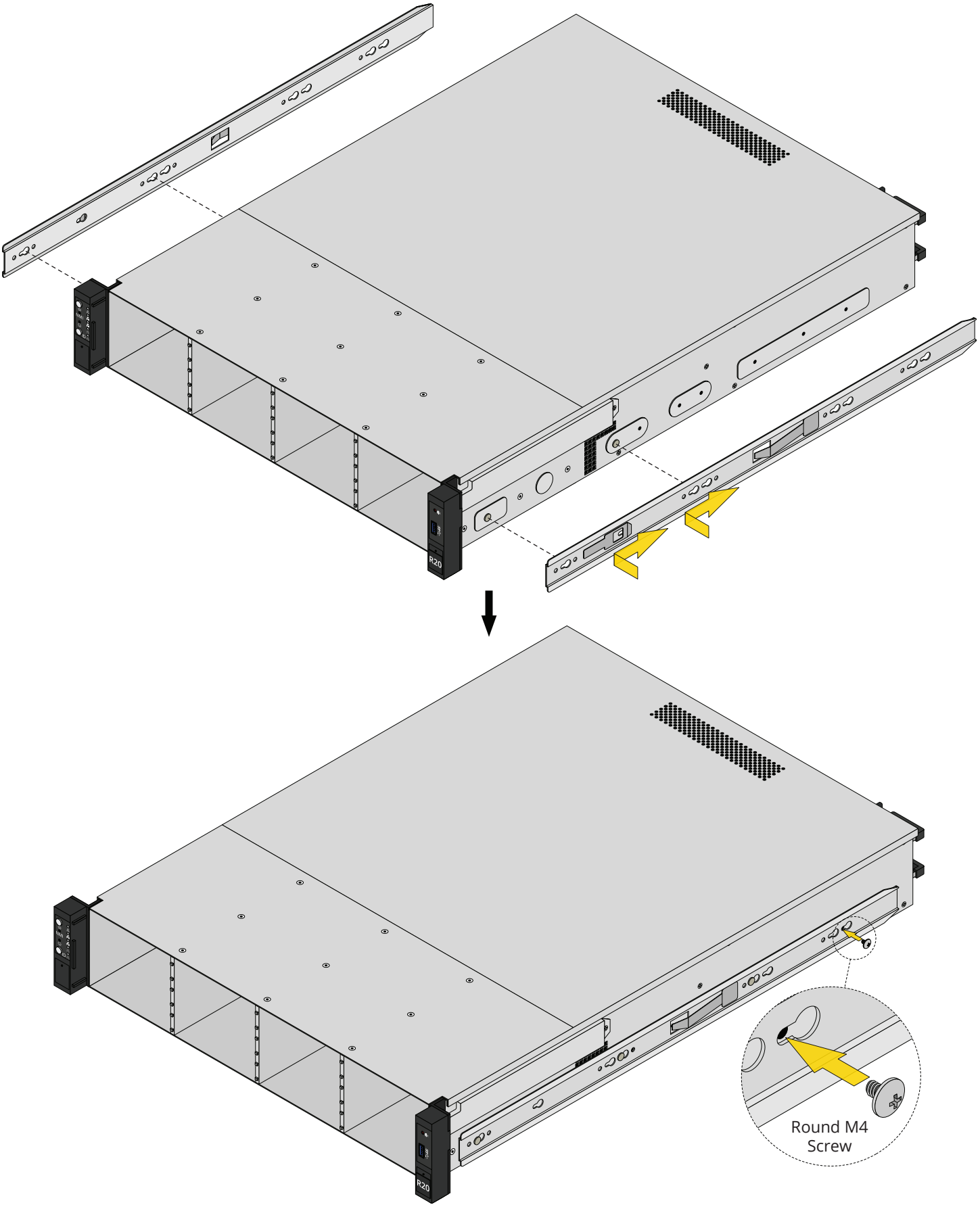






7.2 Install the Chassis Rail on the System

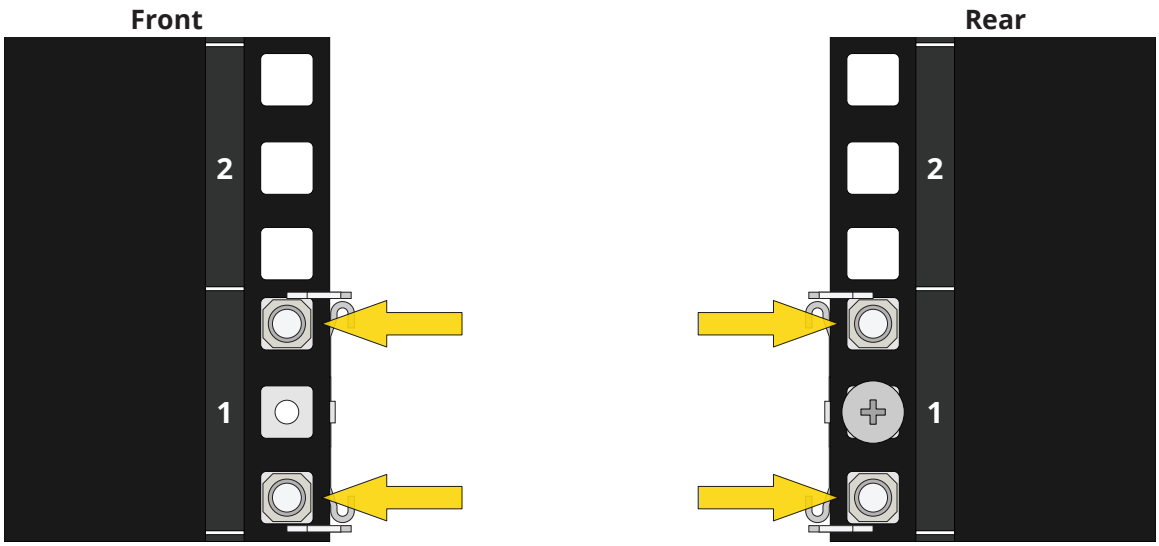
Fit the rail keyholes over the mounting pegs on the system and slide the rail toward the back of the system until it locks. Use a round M4 rail screw to secure the rail to the chassis. Repeat the process for the second chassis rail.

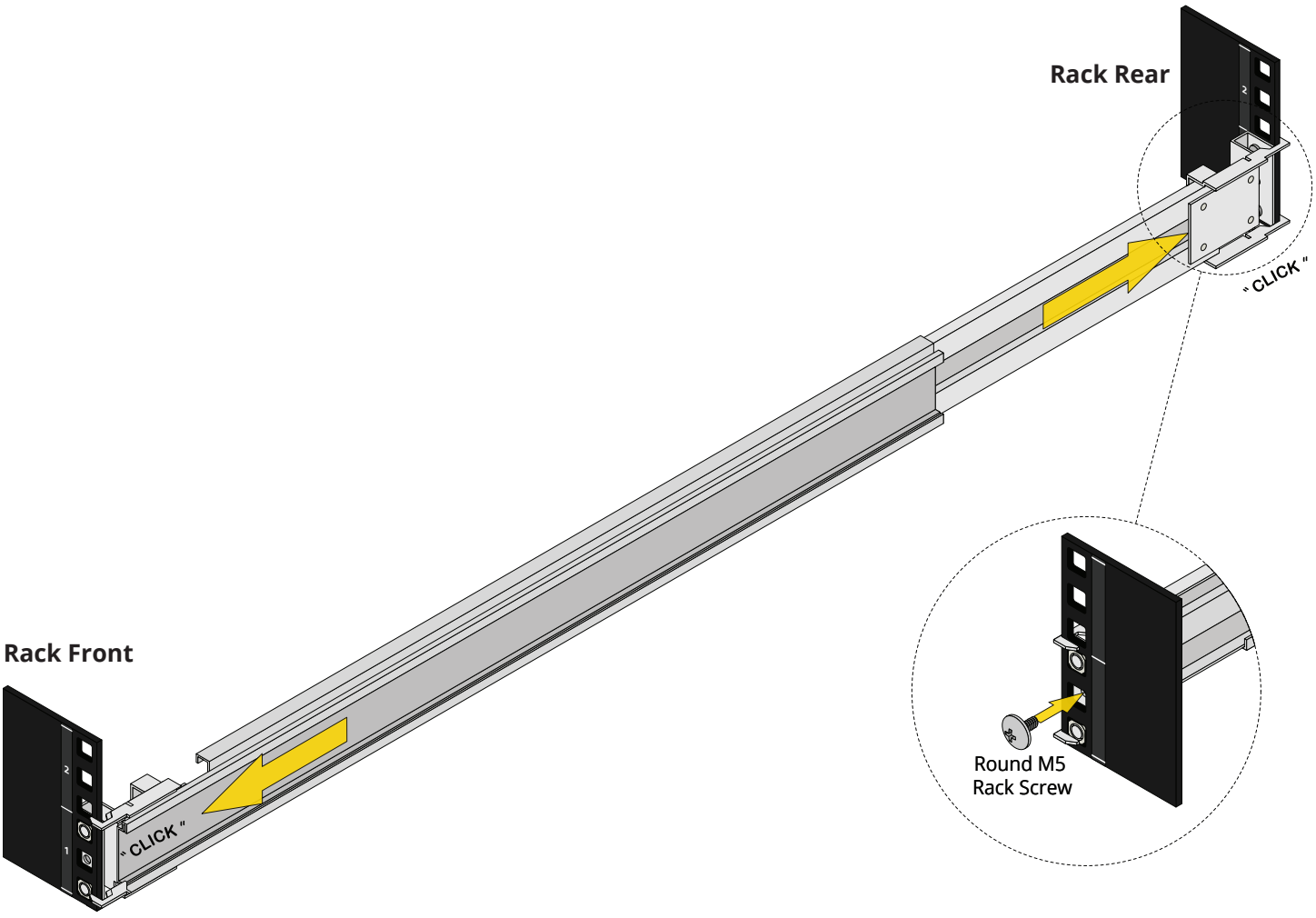


7.3 Install the Rack Rail in the Rack

Align the rail end stamped “FRONT” with the front of the rack. Face the “FRONT” text inside the rack so the chassis rails can slide into the rack rails. 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 equivalent attach points on the rear rack post. Make sure the rail remains level from front to back. Repeat this process to install the other rack rail.





7.4 Install the System in the Rack

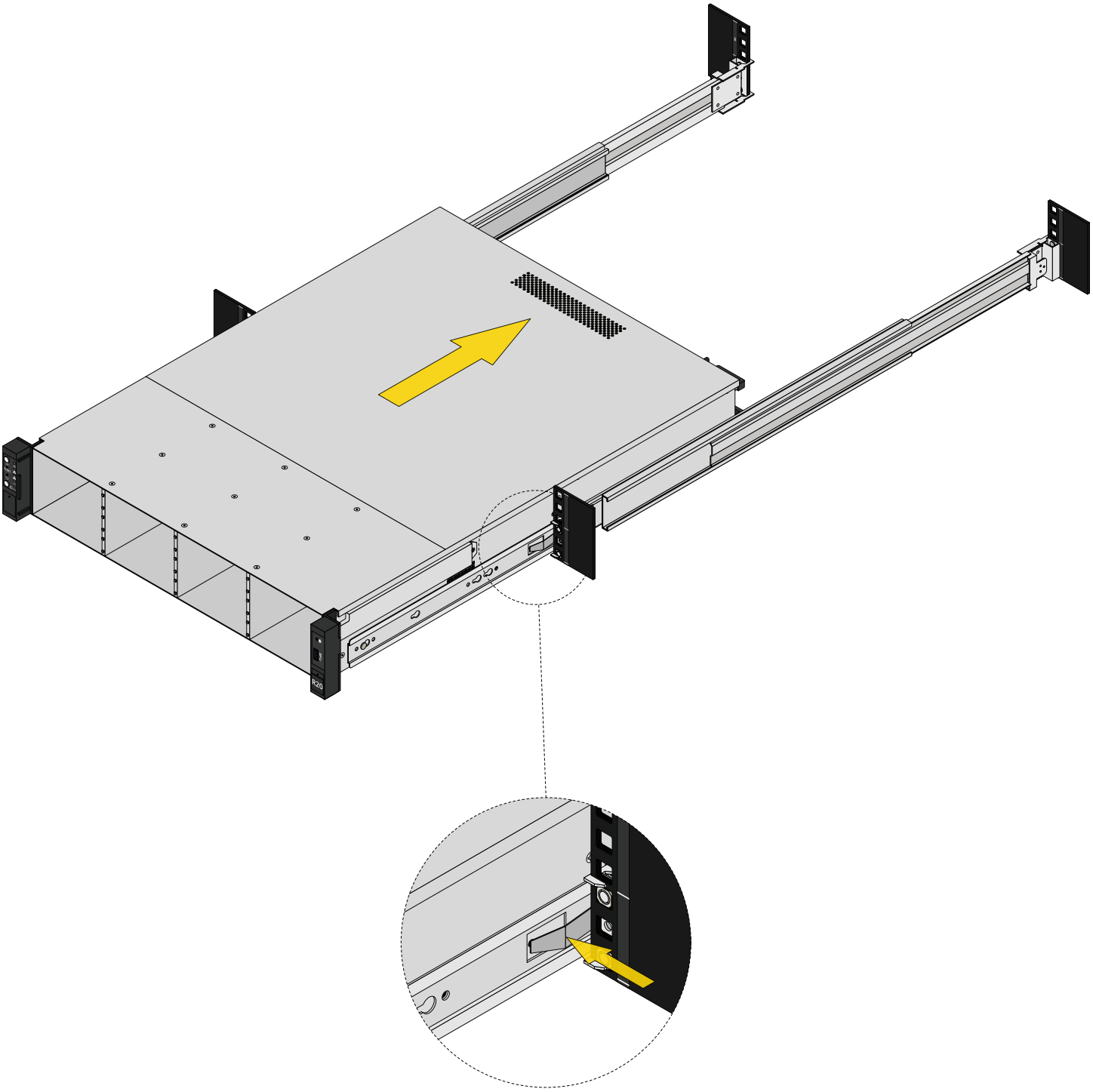
Team-lift the system and align the chassis rails with the rack rails.

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 rials 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

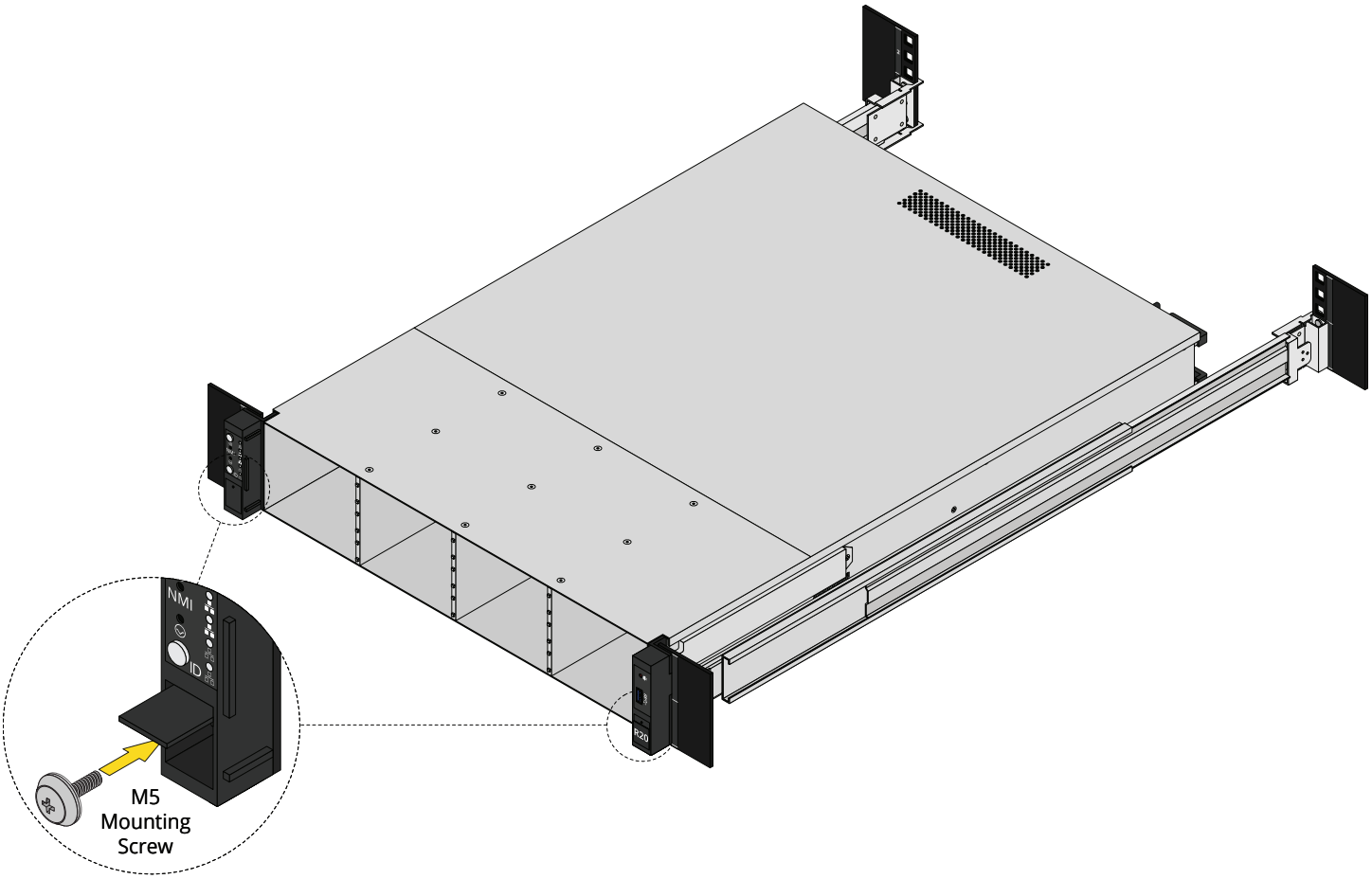
The R20 can pinch or crush fingers when sliding the rail sleeves onto the rack rails.



7.5 Secure the System to the Rack

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

Push in the hinged doors on each ear to open them, then install the round M5 rack screws.



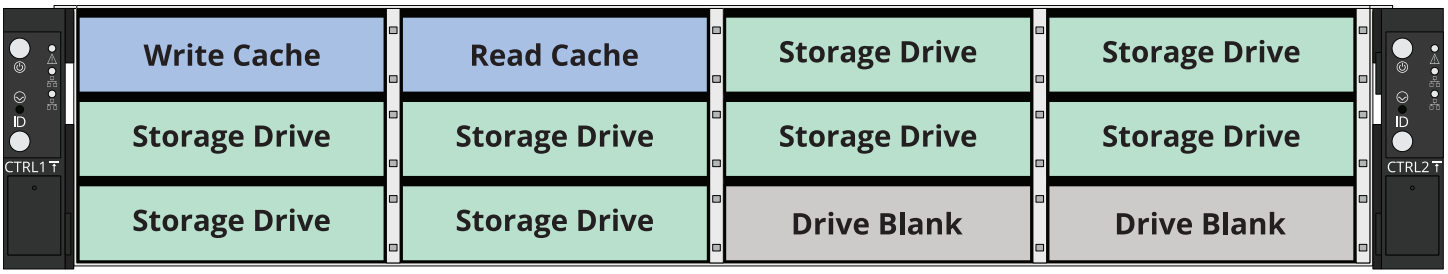
7.6 Install Drives

Tip - Drive Population

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)

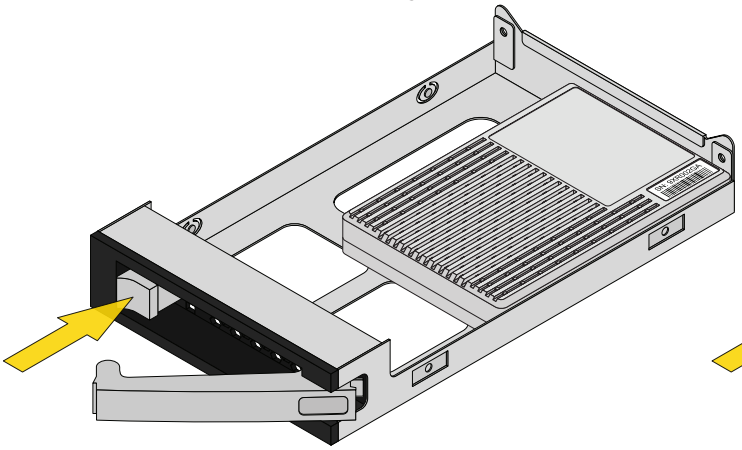
Install the first drive in the top left bay. Install the next drive to the right of the first. Install remaining drives to the right across the row. After filling a row, move down to the next row and start again with the left bay.



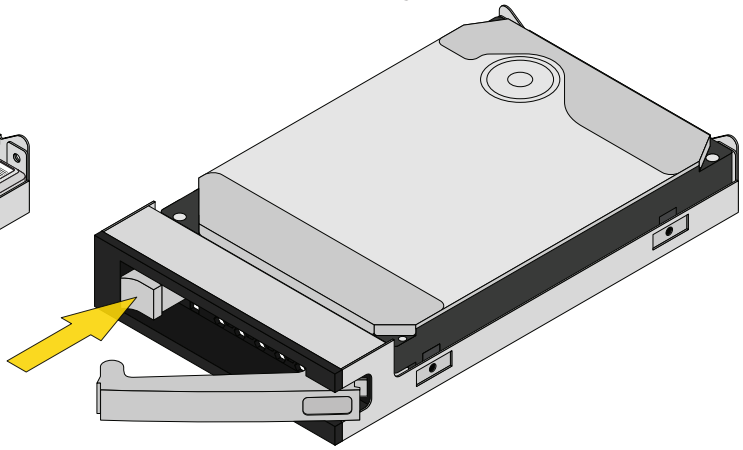
Retrieve a drive assembly and press the locking arm release on the left side of the tray. Drive trays either contain HDDs or SSDs depending on your order.

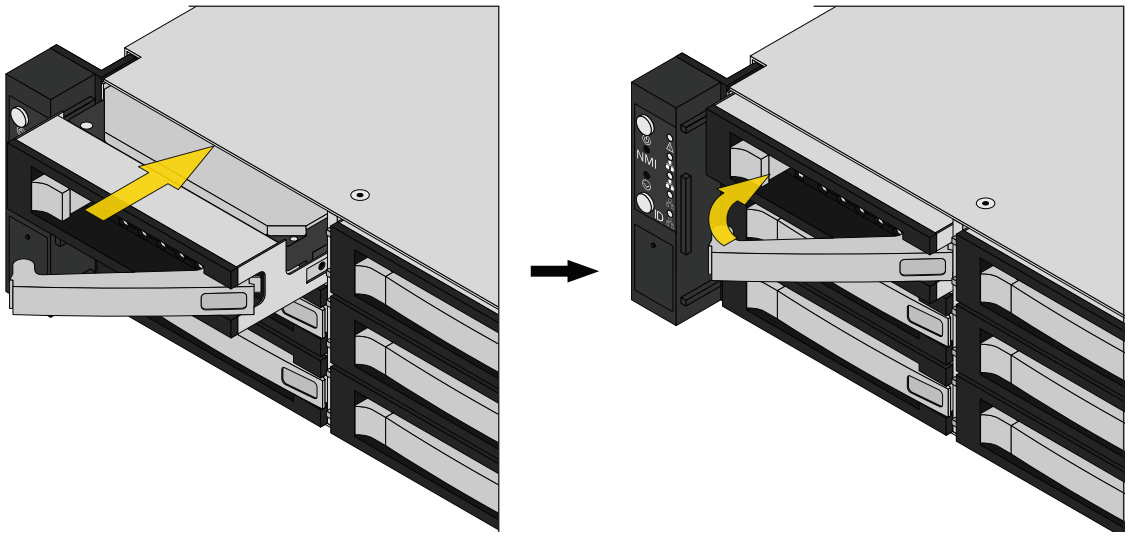
Align the drive assembly with an empty slot on the system and push it in until the locking arm begins to swing closed. Gently close the arm to fully seat the drive tray and lock it into the system.

Drive Assembly with SSD



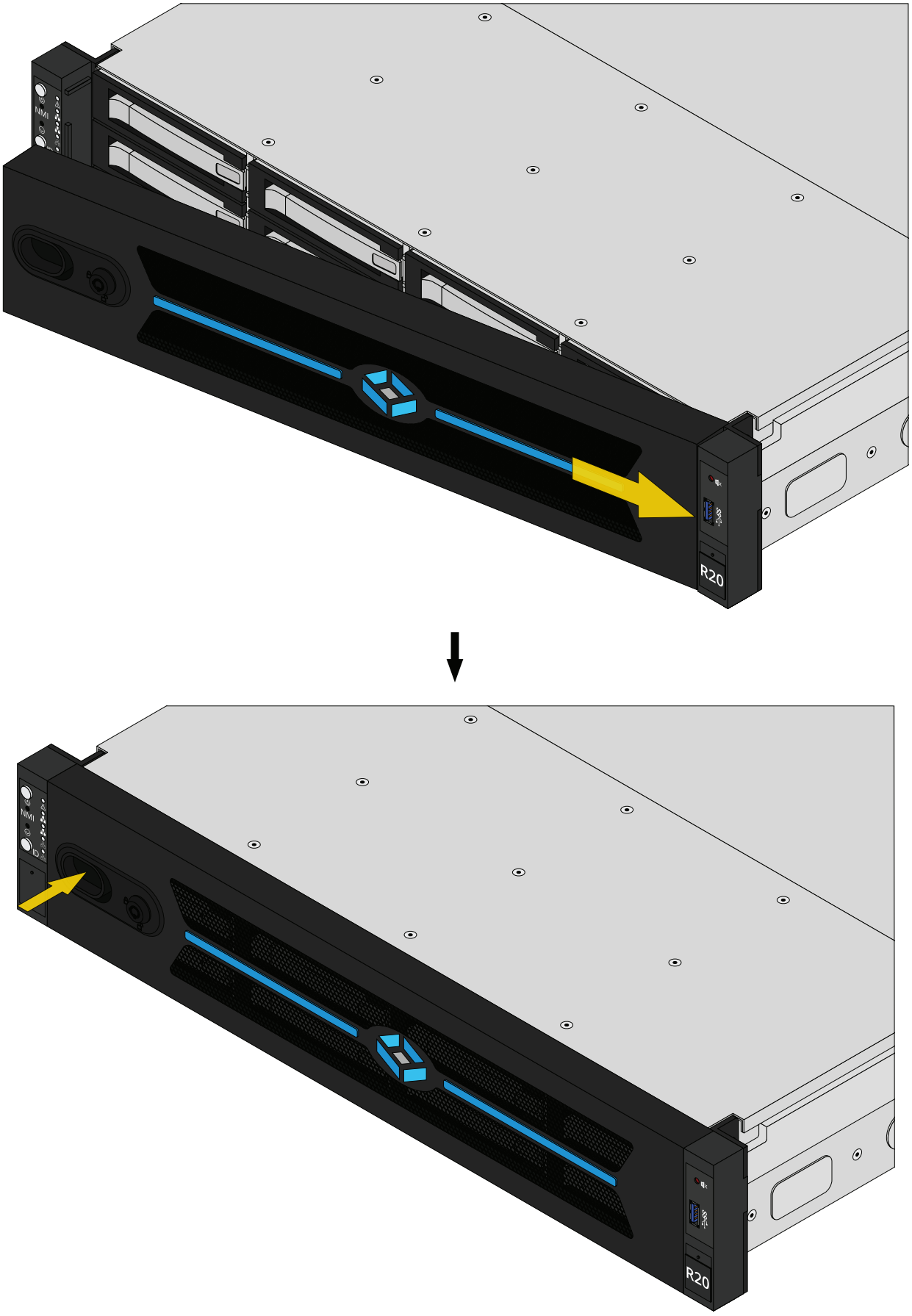
Drive Assembly with HDD





7.7 Install Bezel

Align the right side of the bezel with the attach points on the right ear, then push the left side of the bezel into the attach points on the left ear until it clicks and locks into place.



7.8 Install Cables

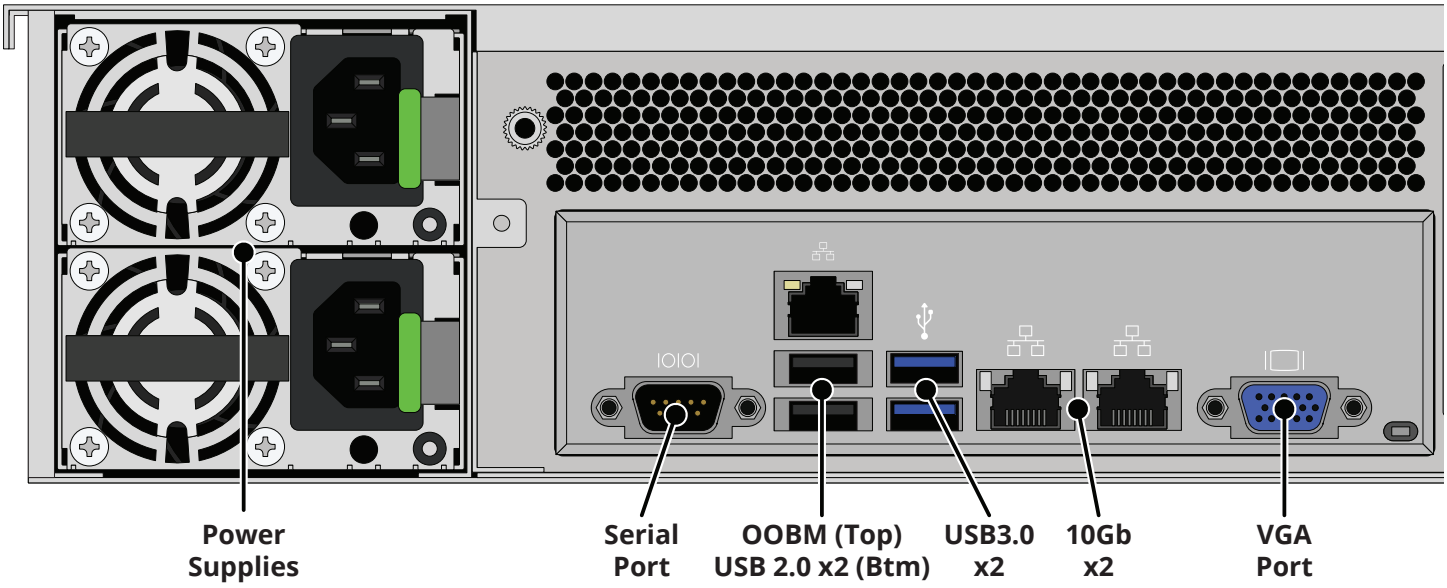
Connect one ethernet network cable from your local switch or management network to the Out-of-Band Management (OOBM) port, and another one to the first 1GbE ports (port 1) **on both controllers**.

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.

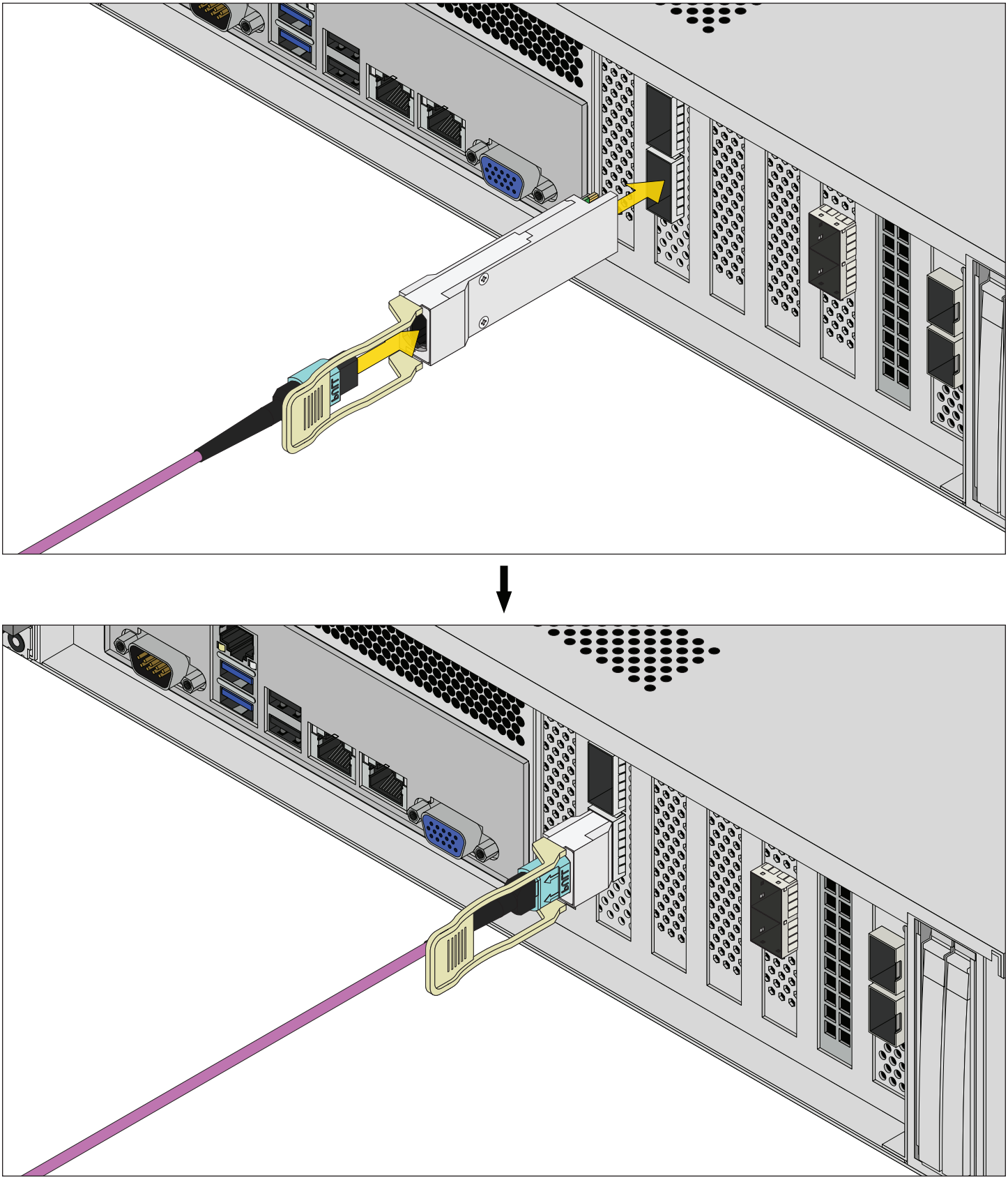


7.8.1 10/40/100GbE NIC Cabling

If you ordered your system with a 10, 40, or 100GbE NIC, you can connect the SR4 cables now.

Insert SR4 optics into the bottom port with the gold connectors facing left, then plug the SR cable into the optics.

Repeat for the other port.

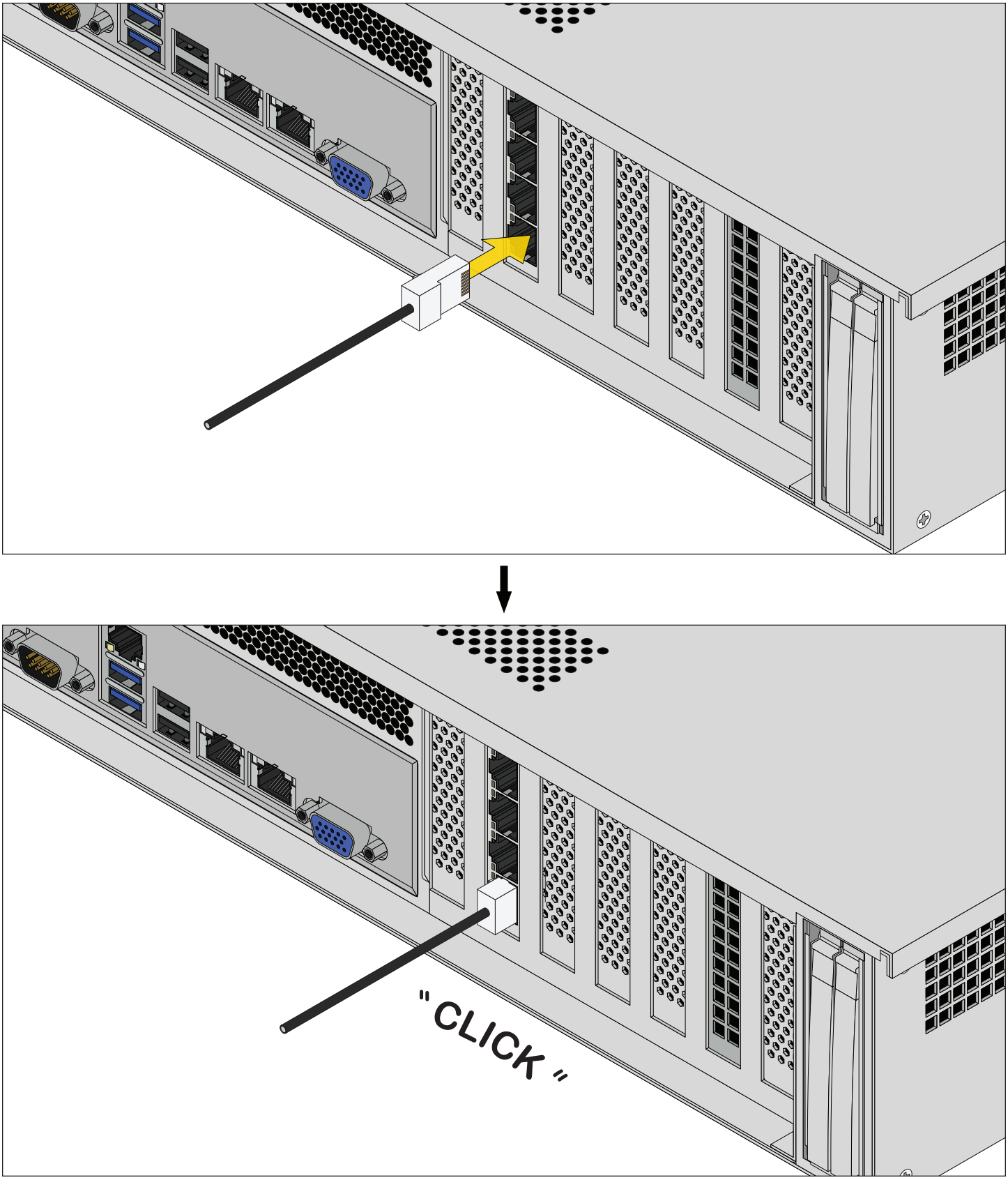


7.8.2 10G Base-T NIC Cabling

If you ordered your system with a 10, 40, or 100GbE NIC, you can connect the SR4 cables now.

Insert SR4 optics into the bottom port with the gold connectors facing left, then plug the SR cable into the optics.

Repeat for the other port.

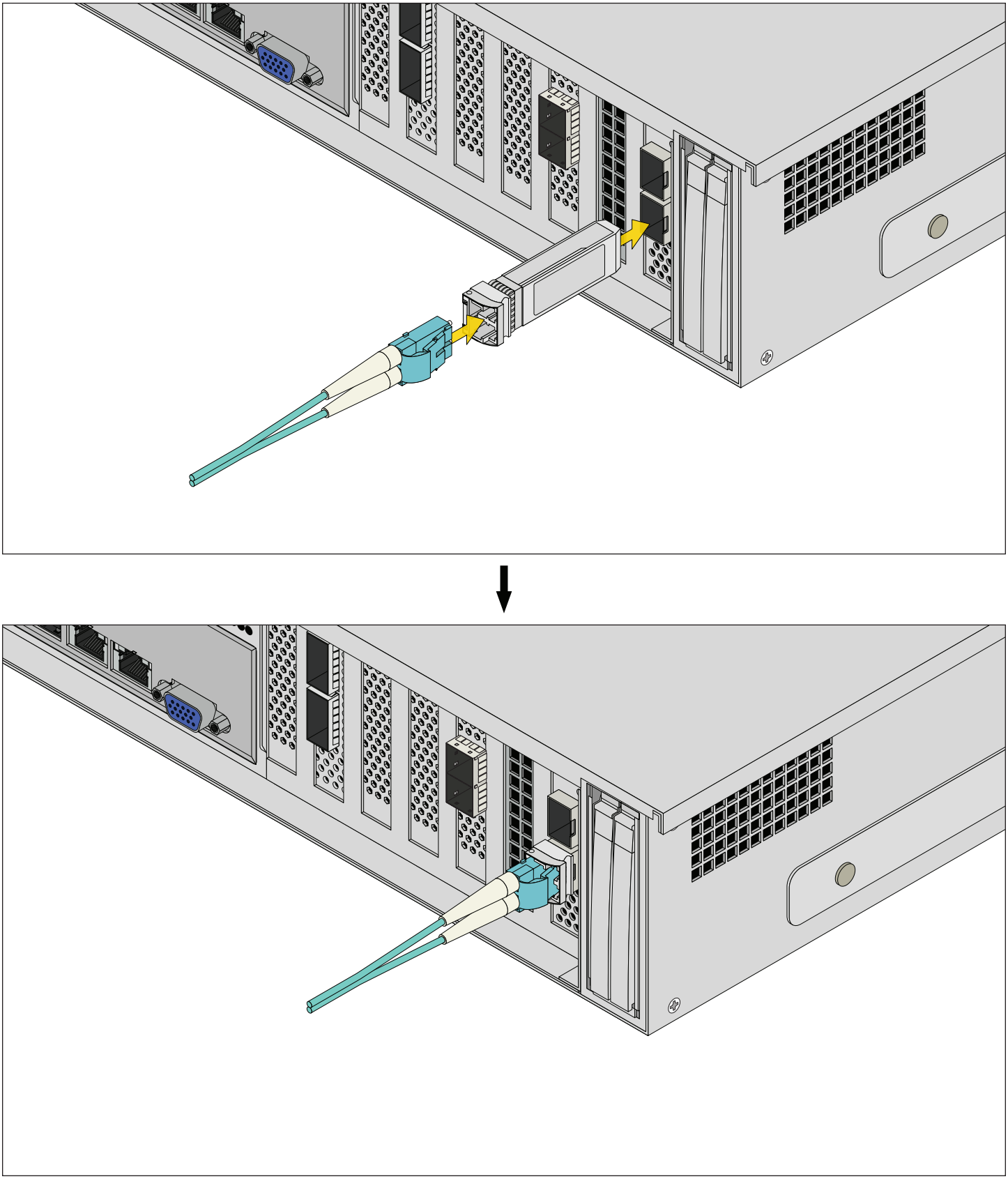


7.8.3 1/10/25GbE or Fibre Channel NIC Cabling

If you ordered your system with a 1, 10, or 25GbE NIC, or a Fibre Channel NIC, you can connect the SR cables now.

Insert SR optics into the bottom port with the gold connectors facing left, then plug the SR cable into the optics.

Repeat for the other port.

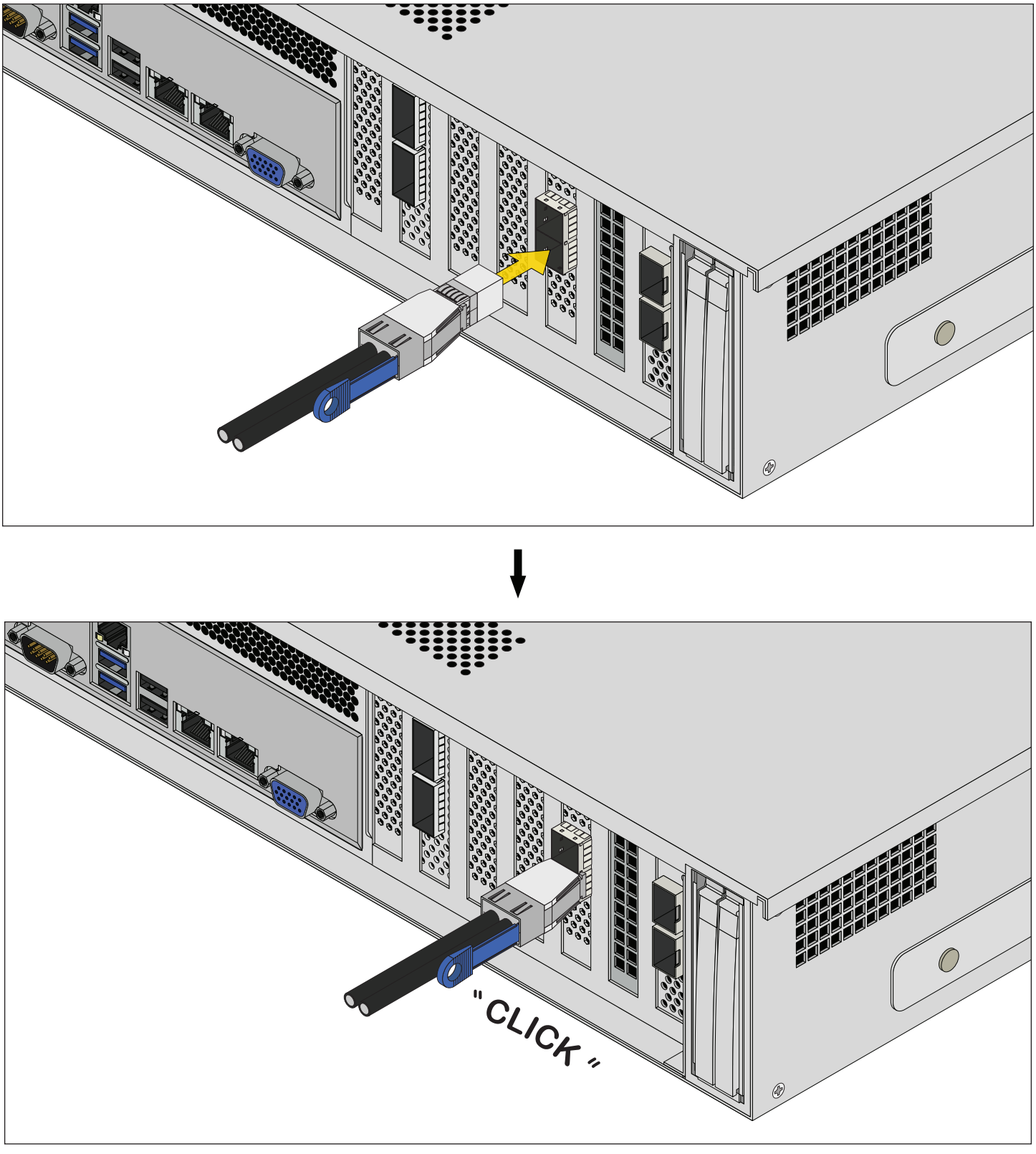


7.8.4 Expansion Cabling

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 19 or your expansion shelf documentation for SAS connection diagrams before booting the R20.



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.

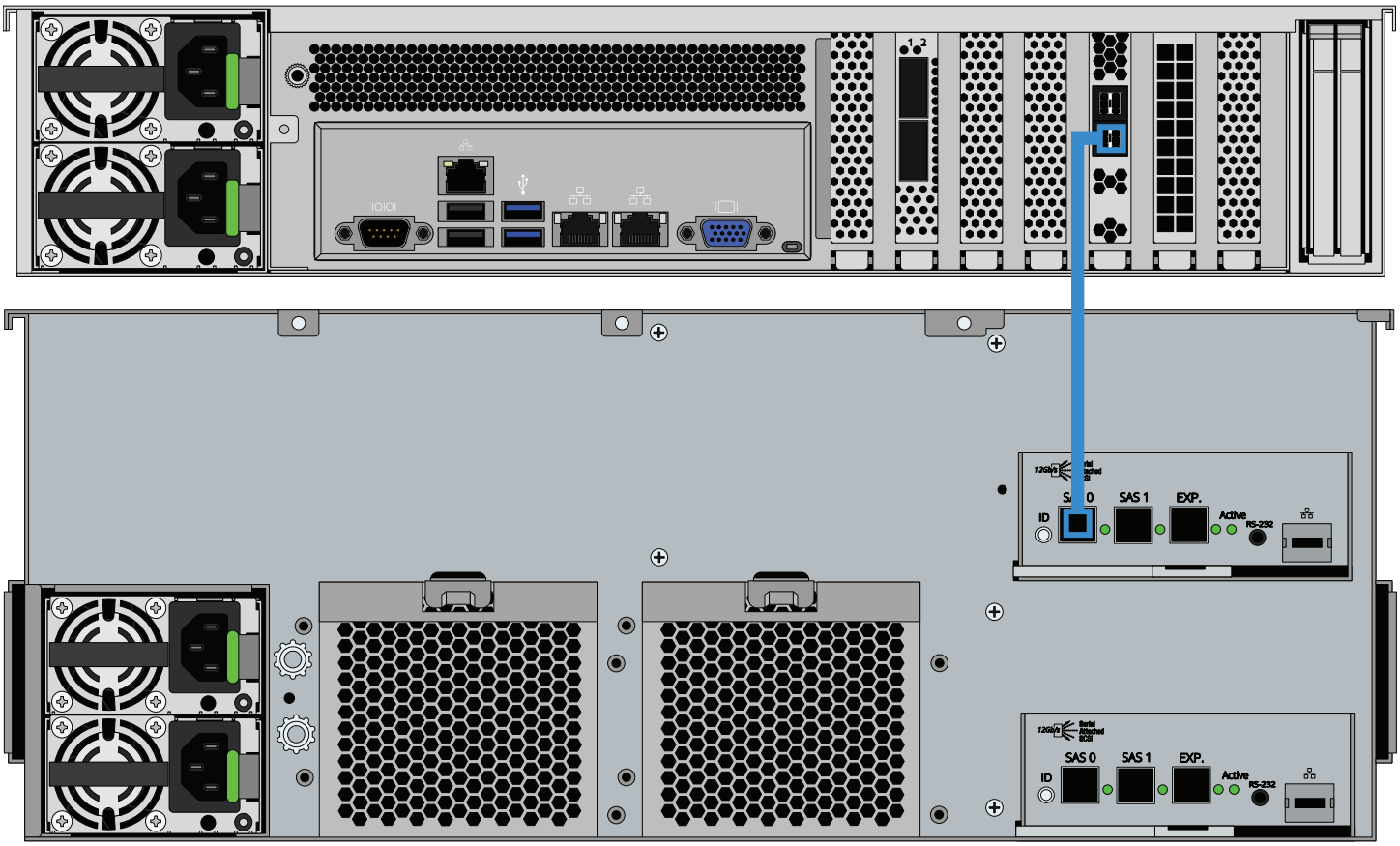
8 SAS Connections

⚠ Important - SAS Configuration

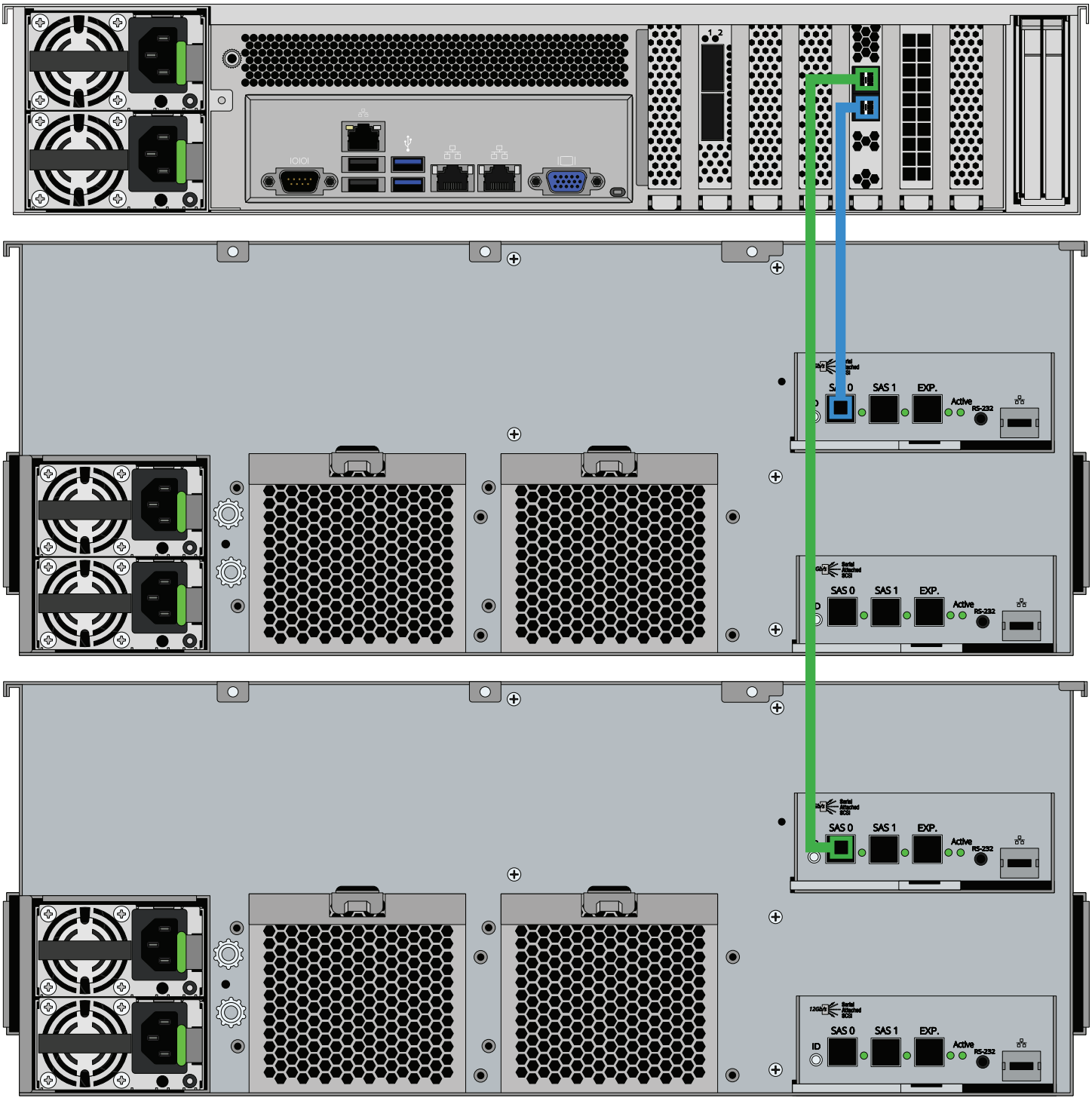
When setting up SAS connections, please adhere to the wiring example below. Connecting Expansion Shelves incorrectly causes errors. Never cable a single controller to different IOMs/expanders on the same shelf.

8.1 ES24

R20 connected to one ES24 shelf.

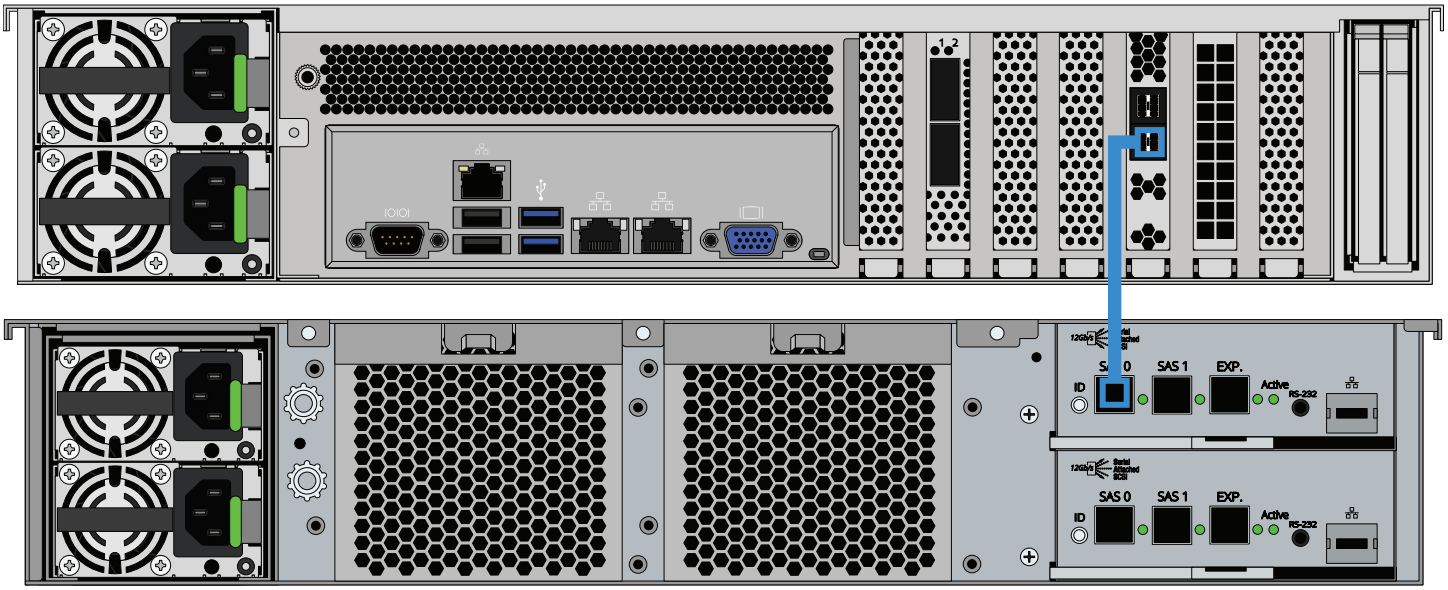


R20 connected to two ES24 shelves.

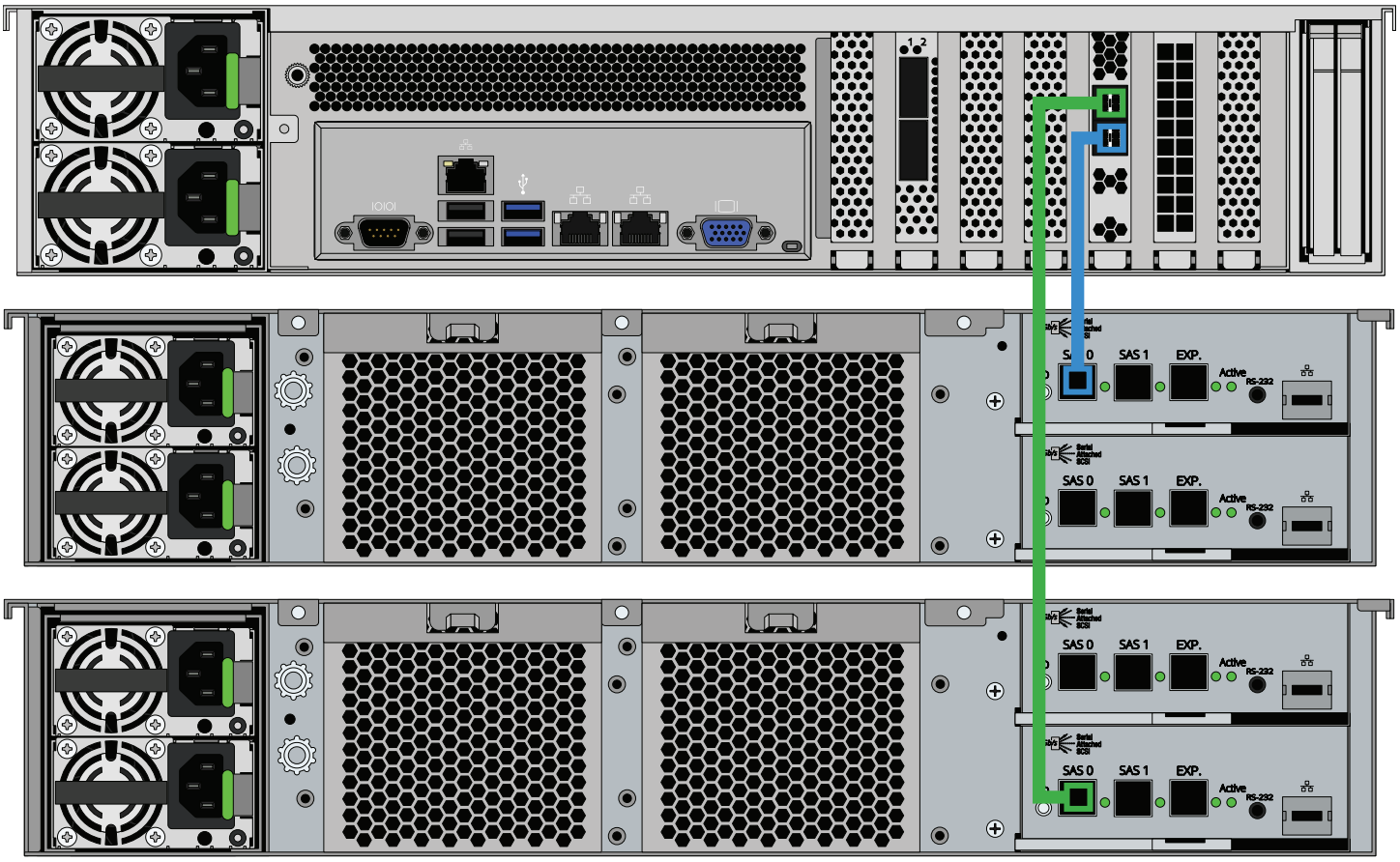


8.2 ES24F

R20 connected to one ES24F shelf.

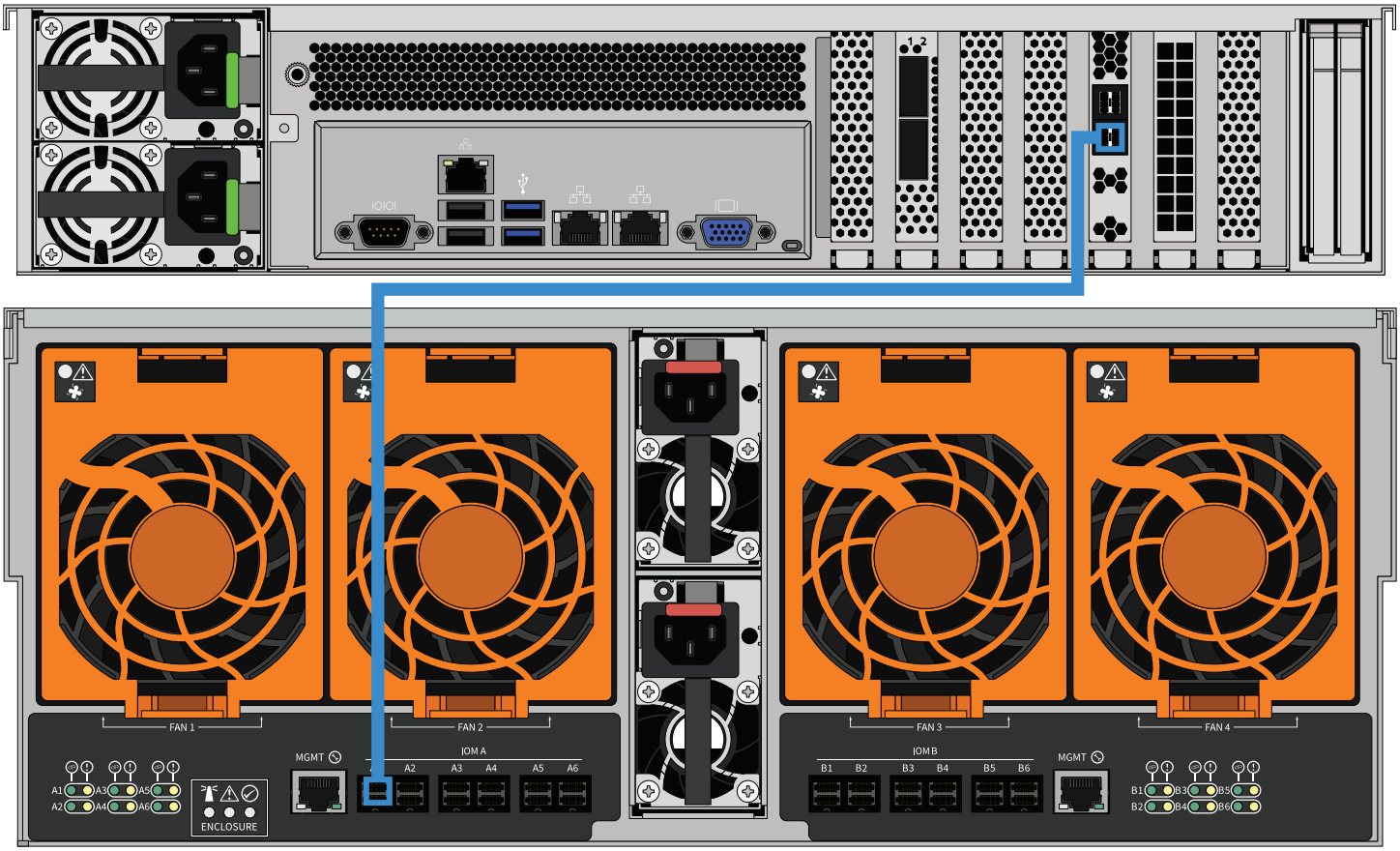


R20 connected to two ES24F shelves.

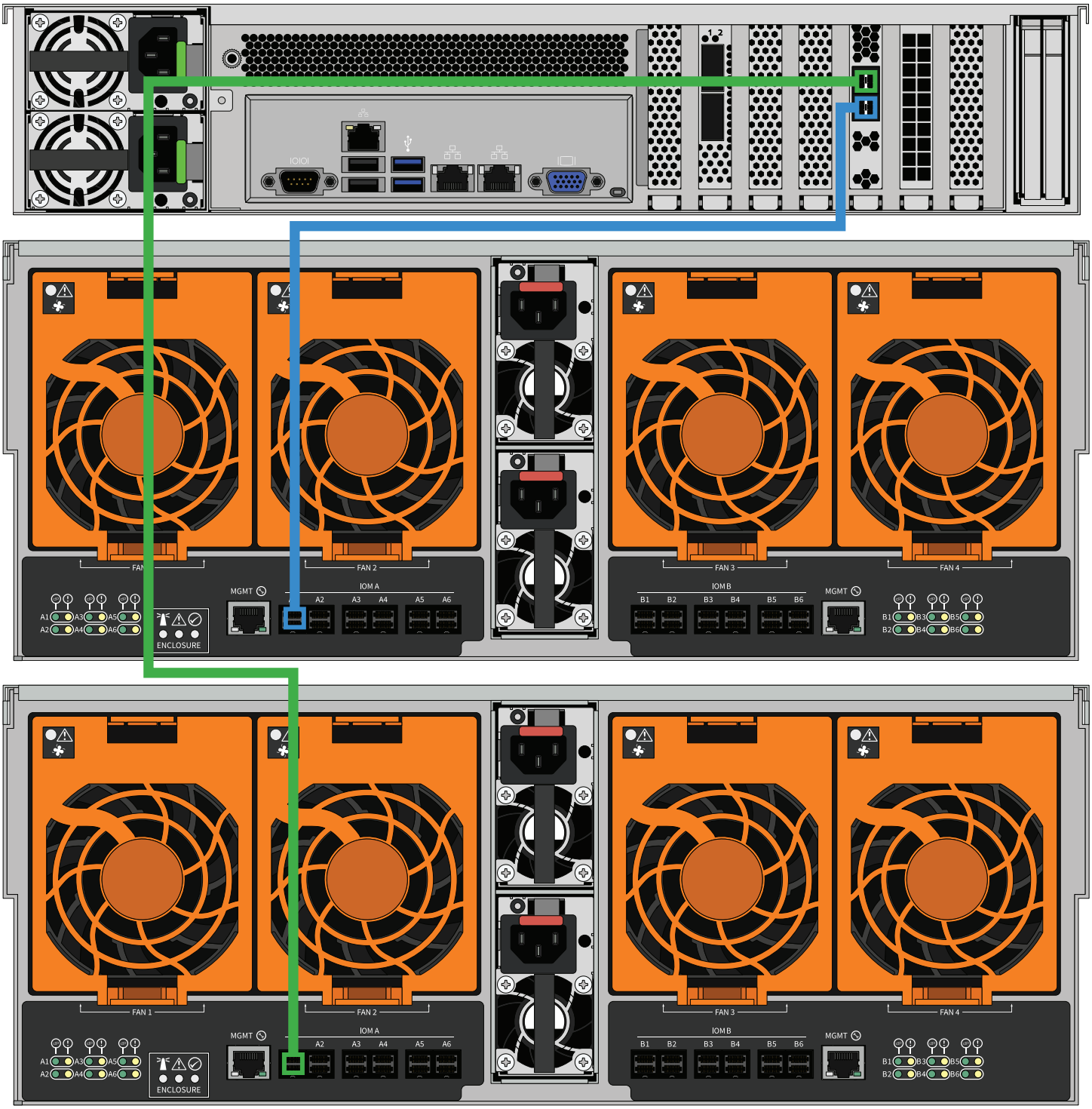


8.3 ES60

R20 connected to one ES60 shelf.



R20 connected to two ES60 shelves.



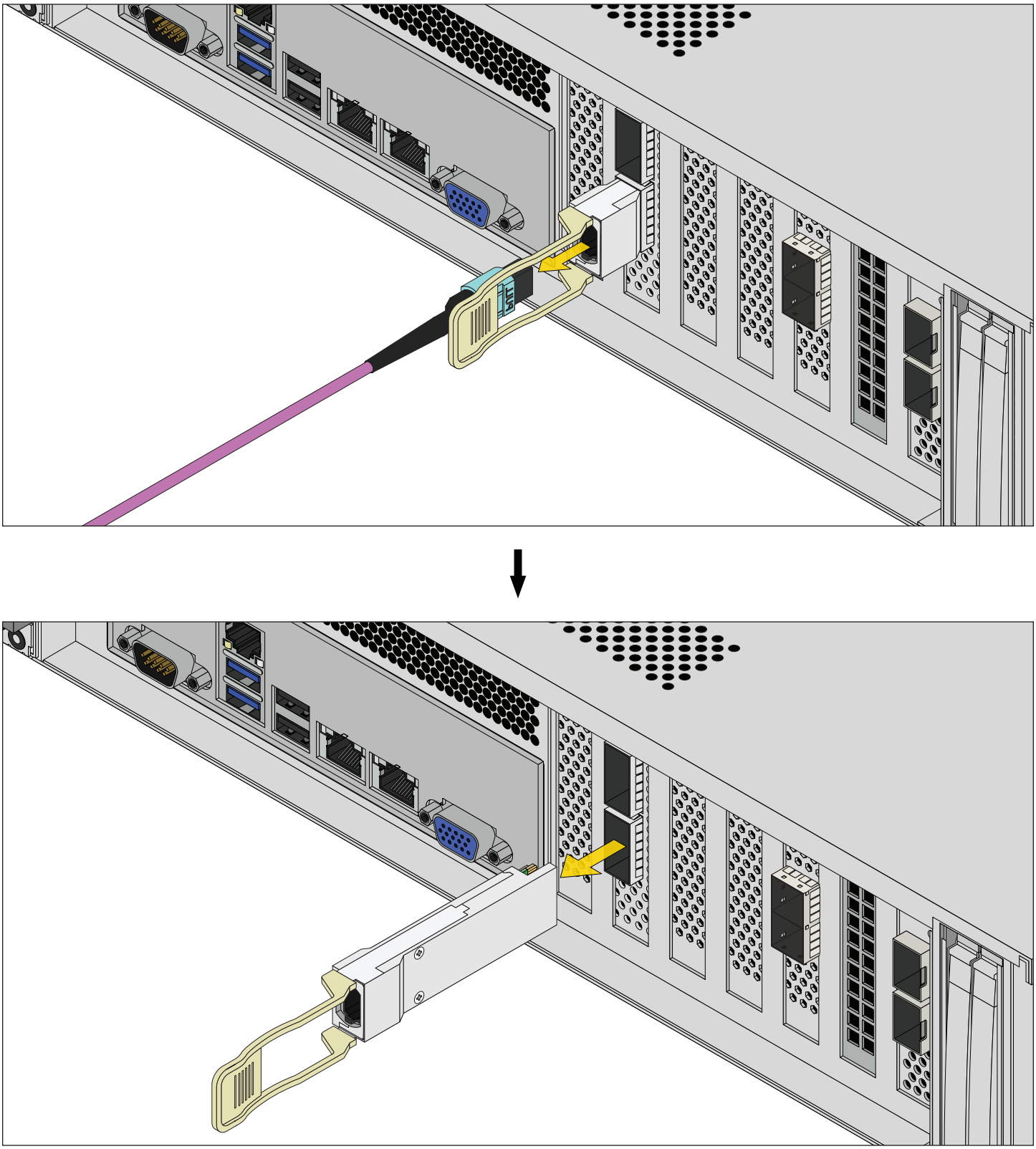
9 Unracking Procedure

9.1 Uninstall Cables

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

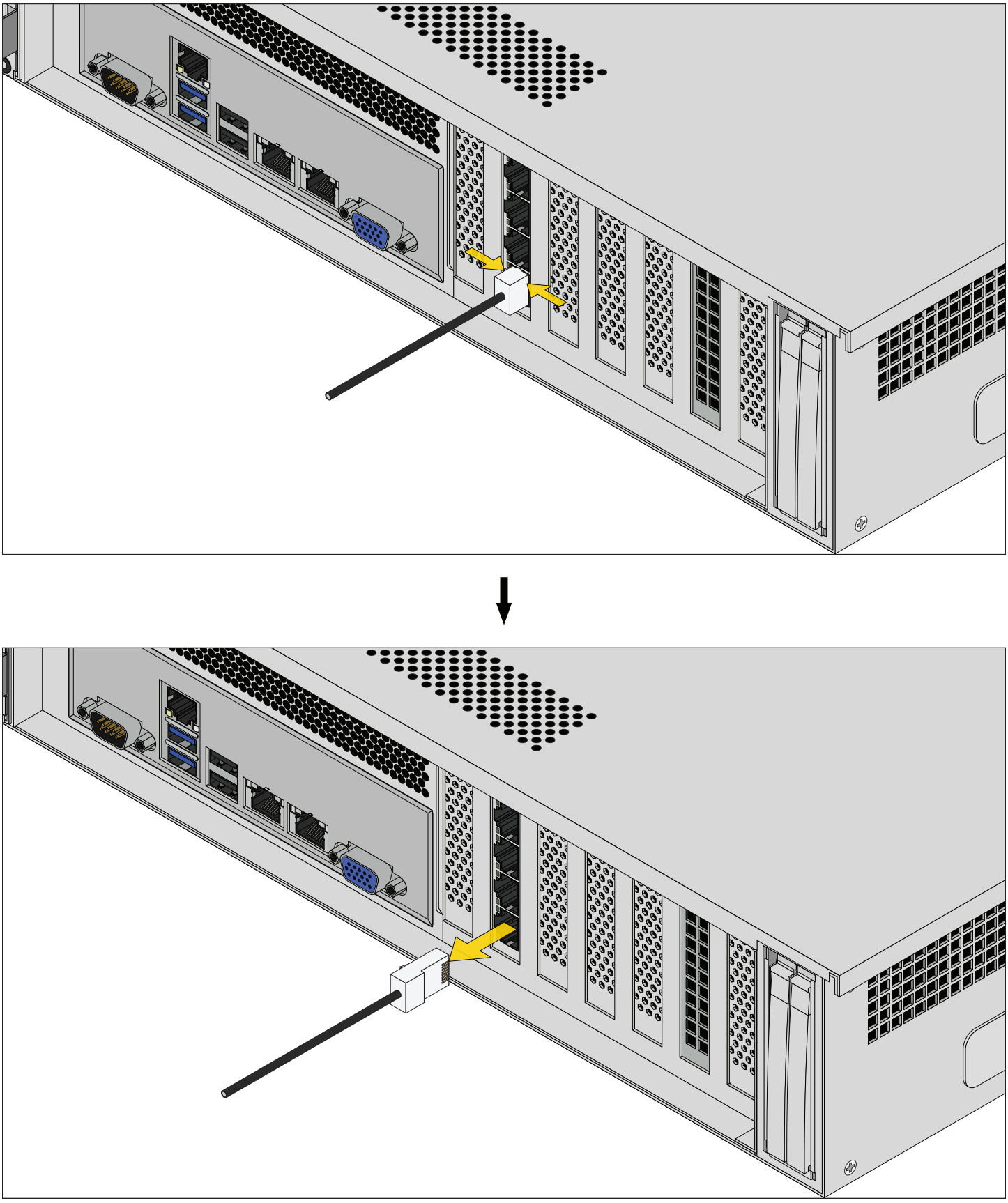
9.1.1 Disconnect 10/40/100GbE NIC Cabling

Pull the blue release tab on the cable to remove it from the optics, then pull the release handle on the optics and gently remove them from the network port.



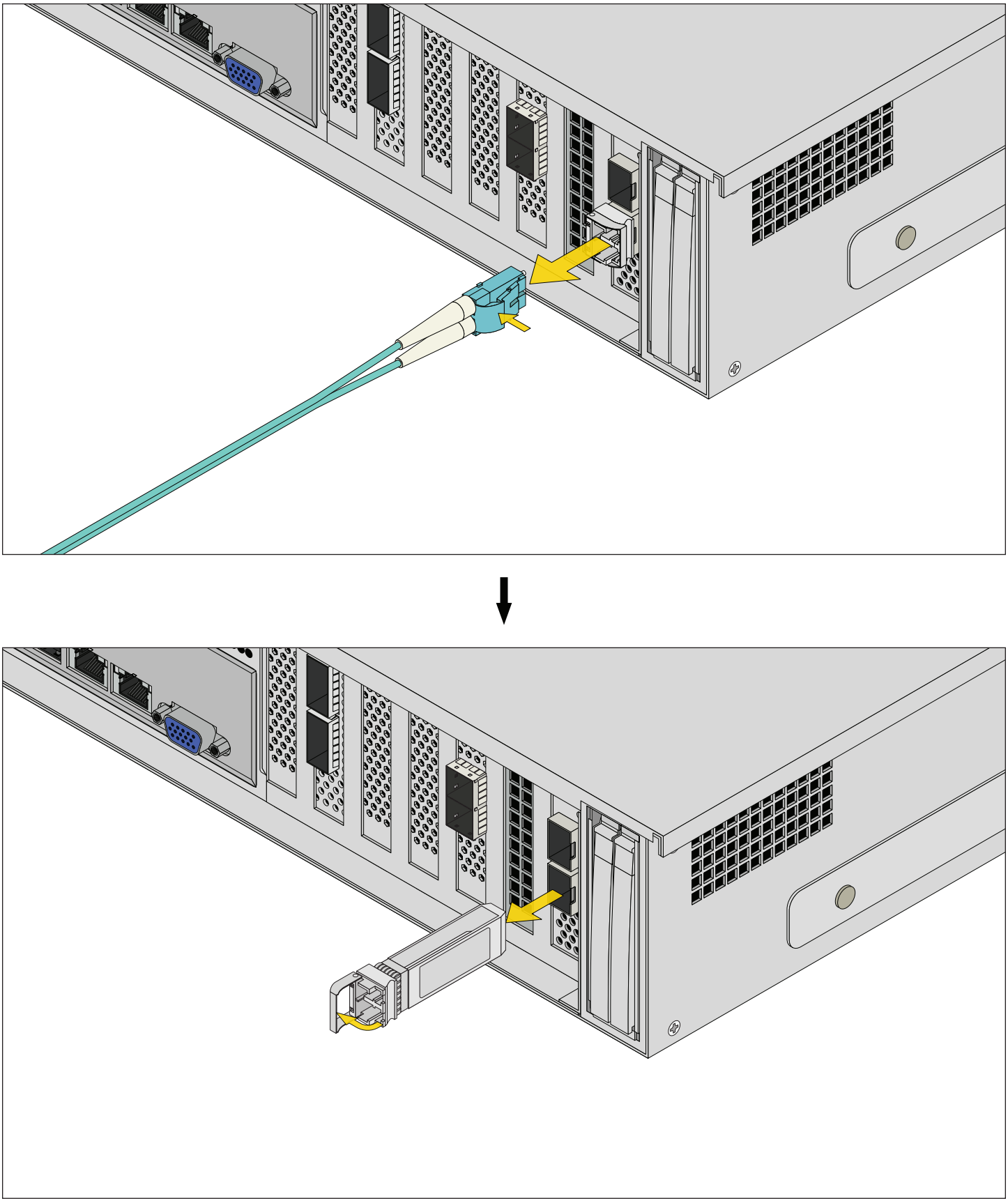
9.1.2 Disconnect 10G Base-T NIC Cabling

Squeeze the release tab on the connector and gently remove it from the port.



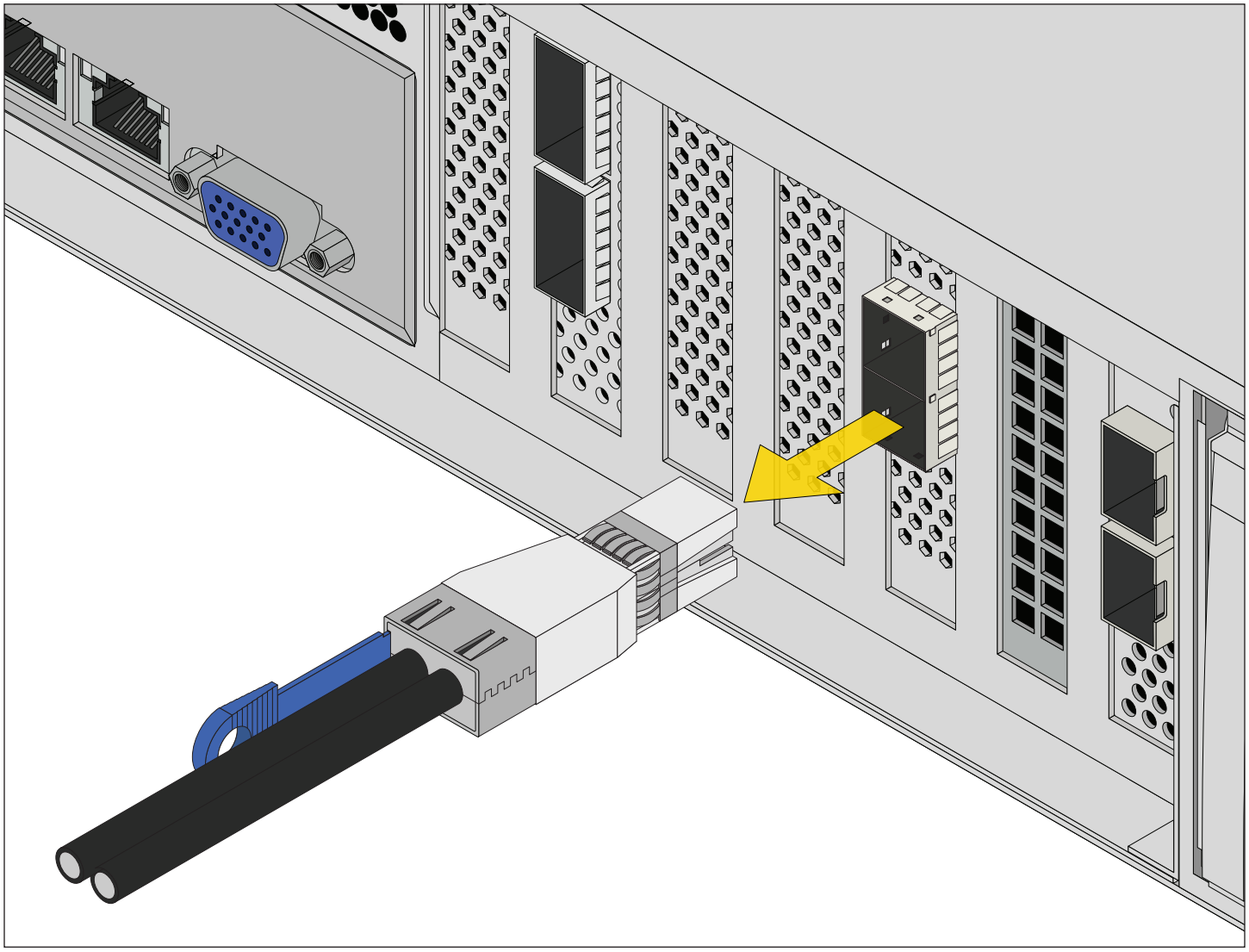
9.1.3 Disconnect 1/10/25GbE or Fibre Channel NIC Cabling

Squeeze the blue release tab on the cable to remove it from the optics. Pull the release on the optics gently remove them from the network port.



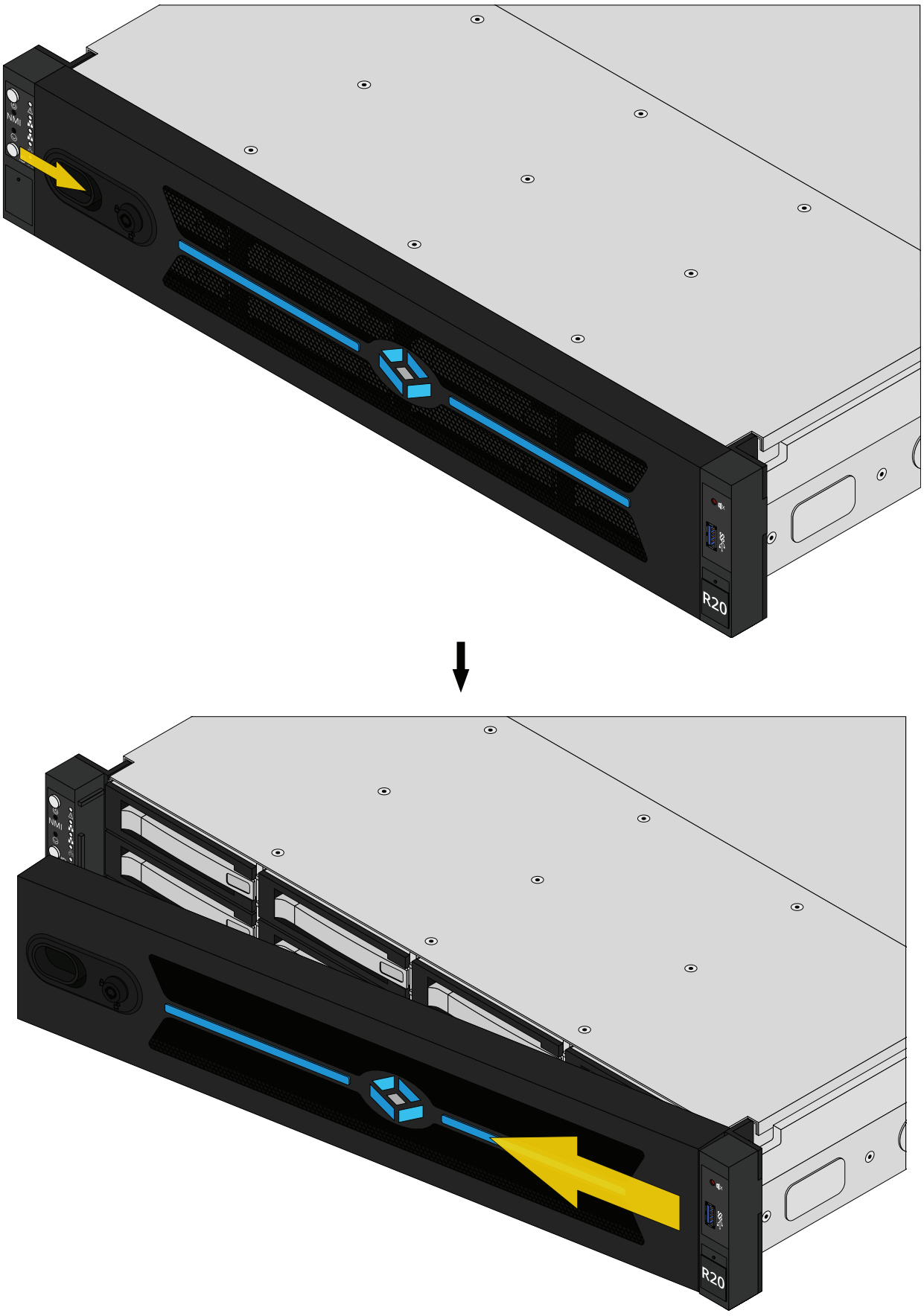
9.1.4 Disconnect Expansion Cables

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



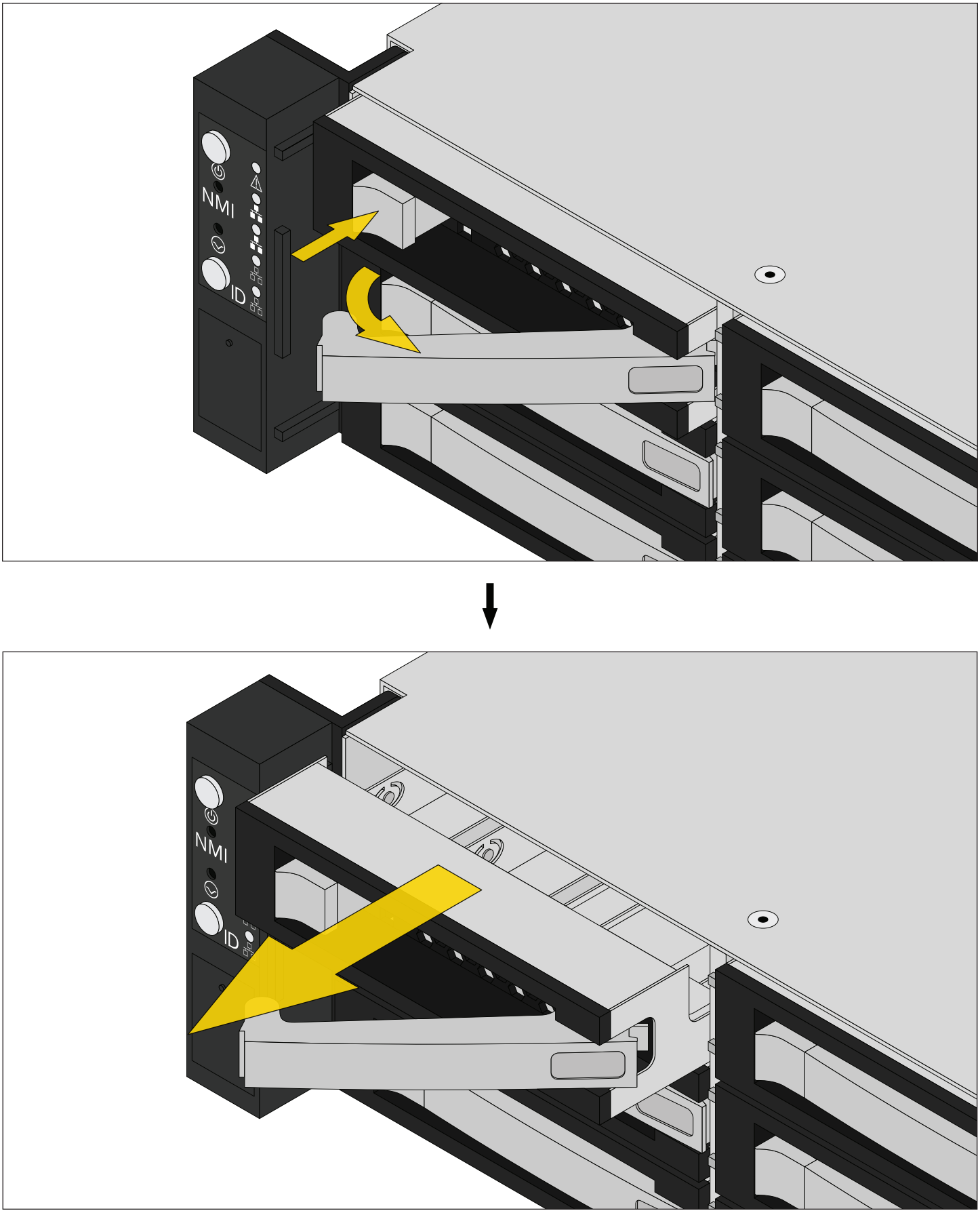
9.2 Remove Bezel

Unlock the bezel if needed, then push the bezel release to the right and gently pull the bezel away from the system.



9.3 Remove Drives

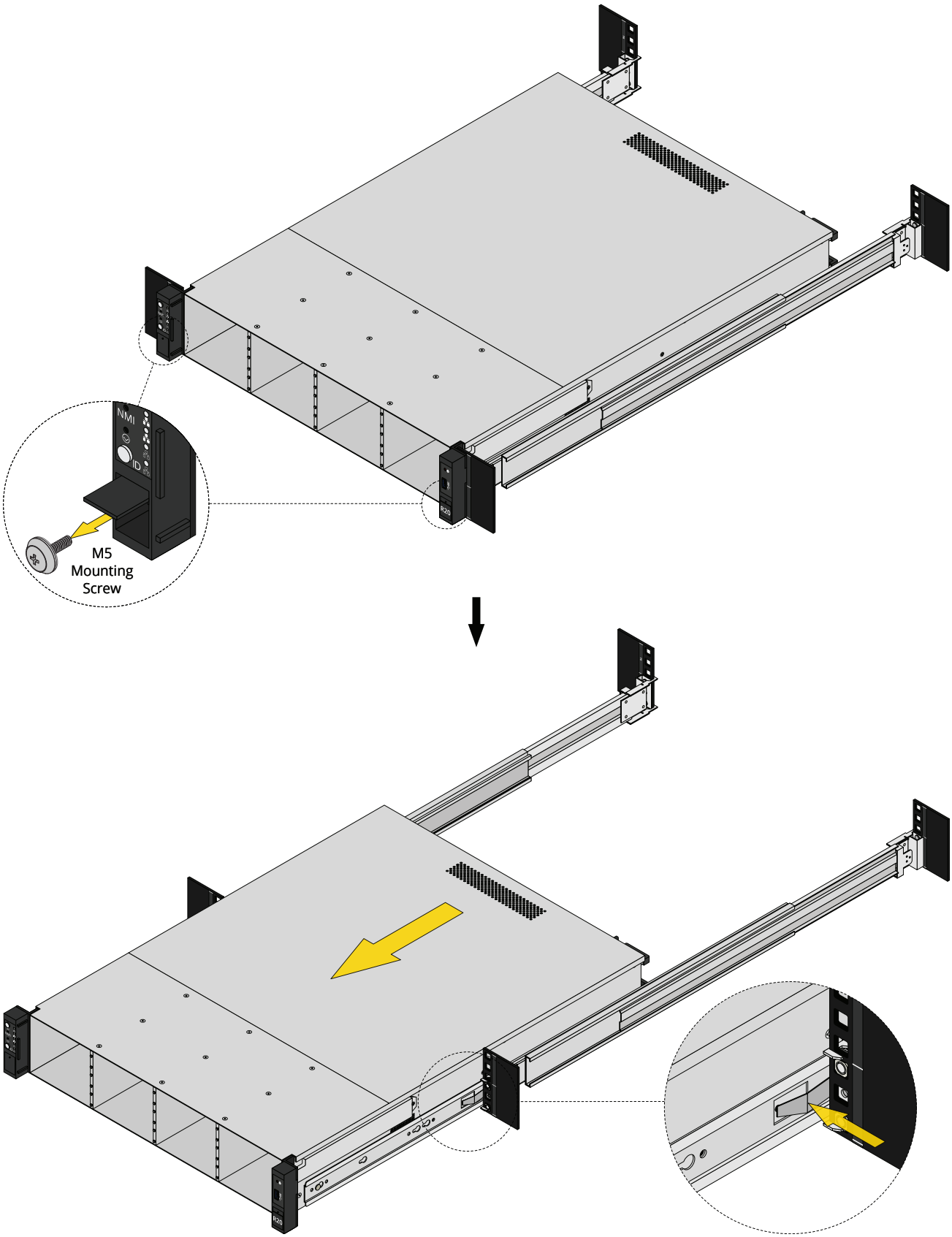
Press the locking arm release on the left side of a tray. Swing the locking arm out until it stops, then pull the tray out of the system.



9.4 Remove the System From the Rack

The rail kit includes two M5 mounting screws you can use to secure the chassis ears to the rack. Push in the hinged doors on each ear and remove the mounting screws.

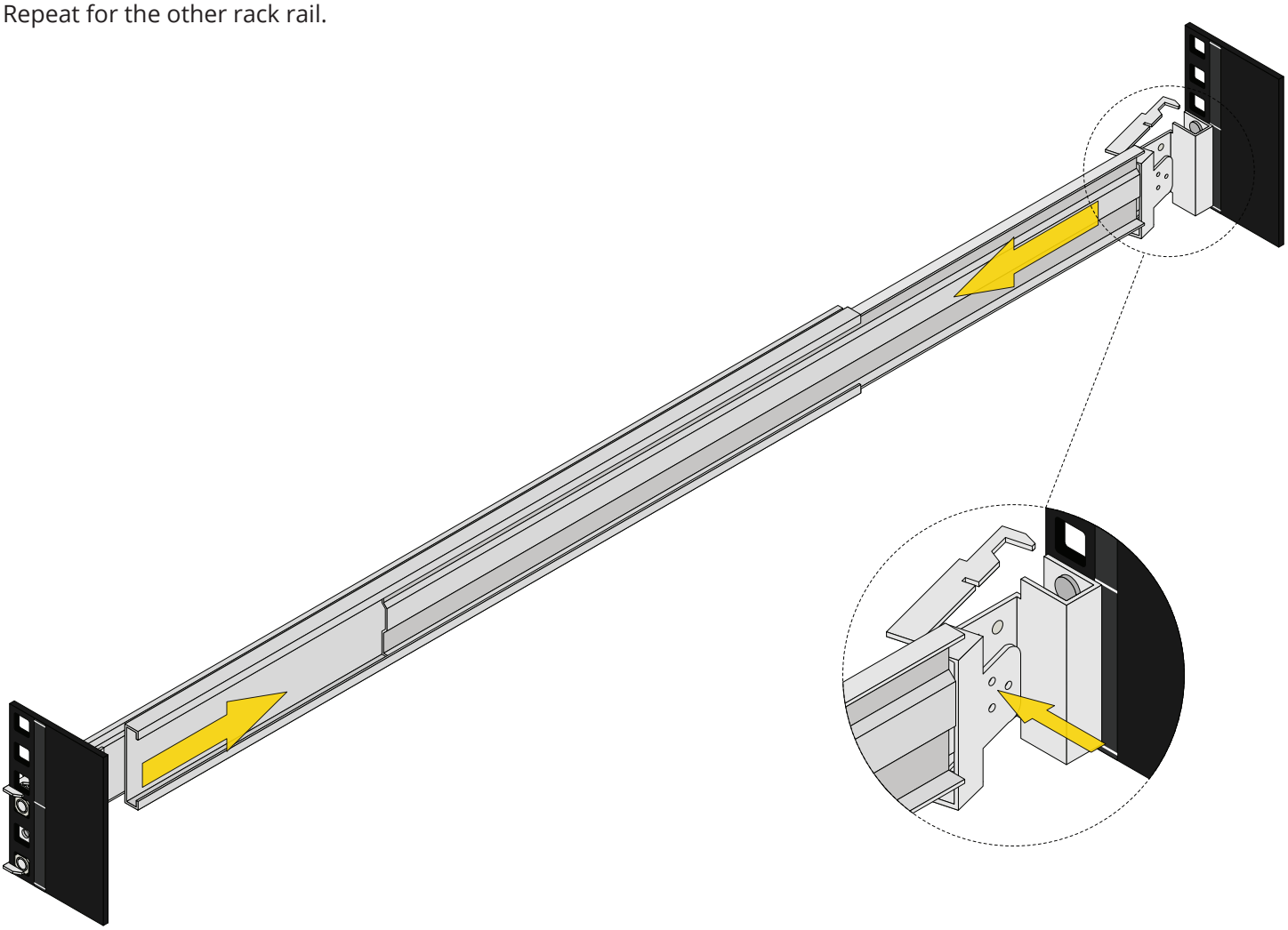
Pull the system out of the rack until the metal safeties click and lock. Squeeze the safety catches against the sides of the system and team-lift it out of the rack.



9.5 Remove the Rack Rail From the Rack

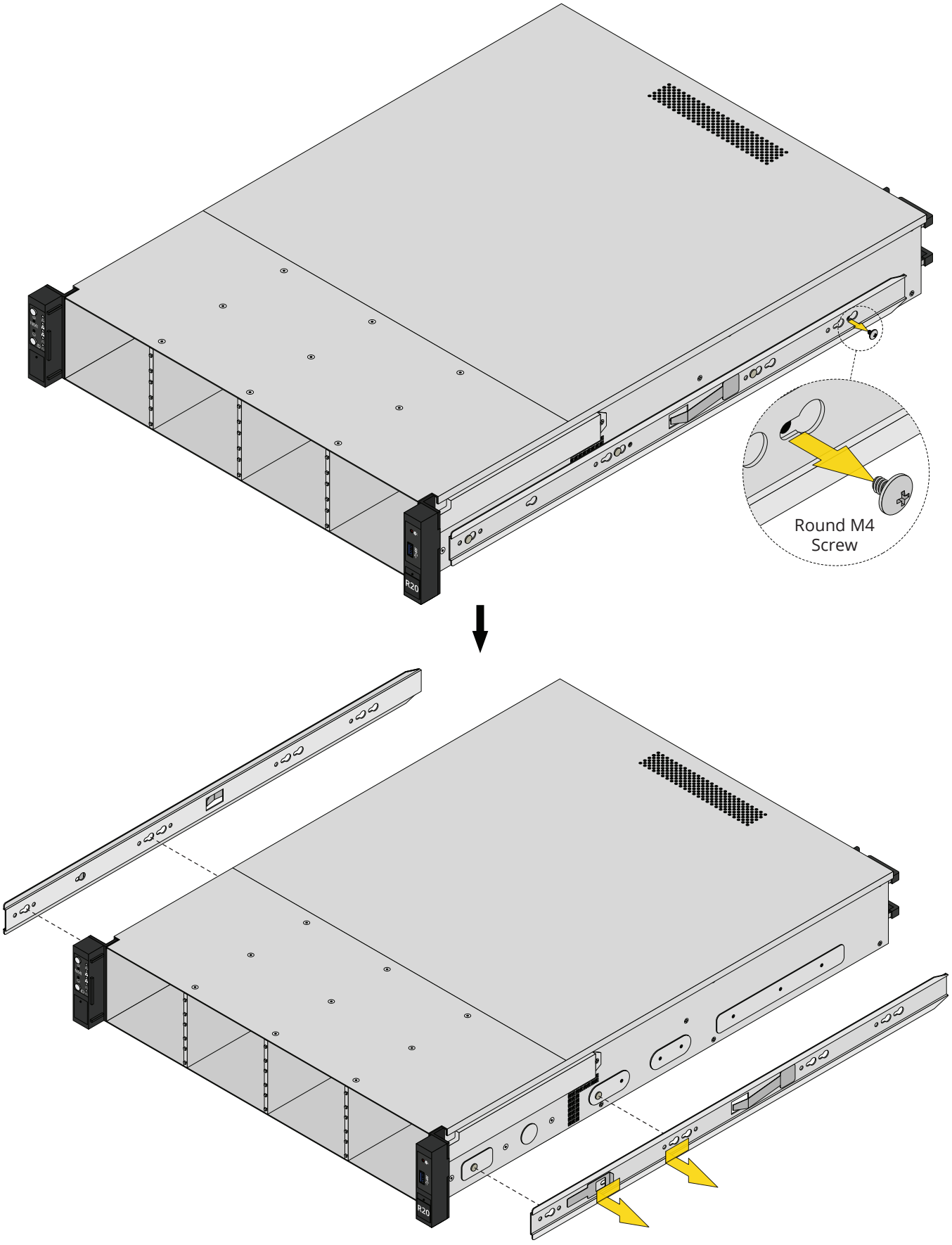
Remove the M5 screw holding the rack rail to the rear rack post, then, press the spring latch plate on each side of the rail to release it from the rack, the remove the rail from the rack.

Repeat for the other rack rail.



9.6 Remove the Chassis Rail From the System

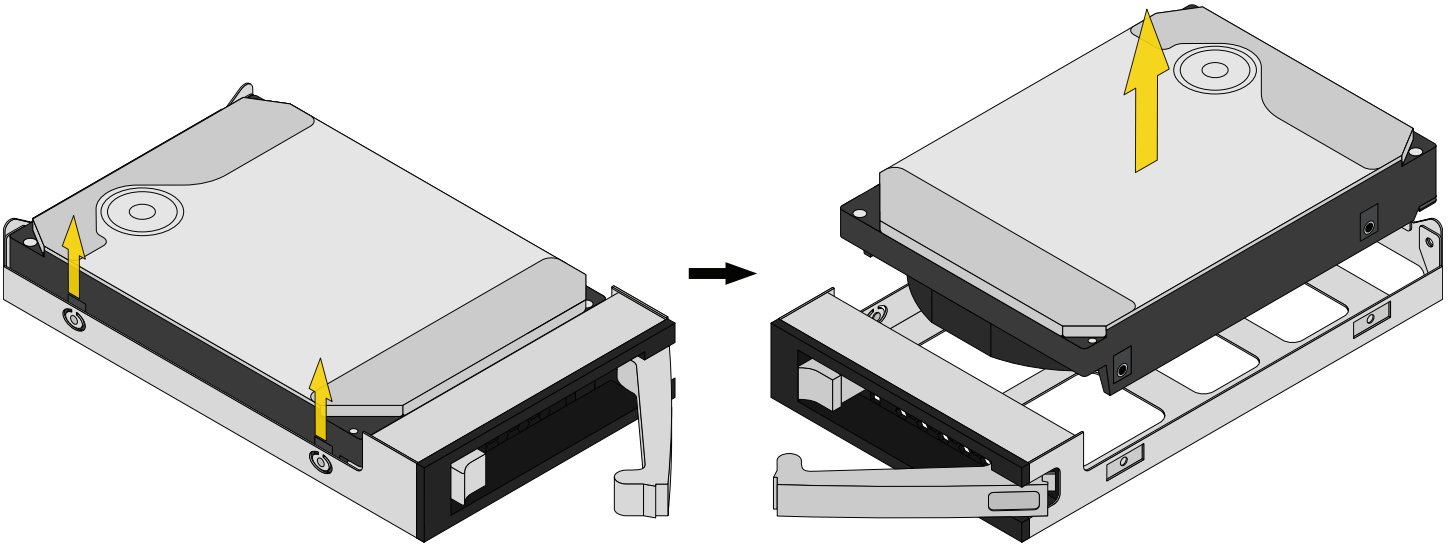
Remove the round M4 screws from the chassis rails, then pull the retention latches away from the chassis rails and slide them toward the front of the system. Pull the chassis rails over the mounting pegs and away from the system.



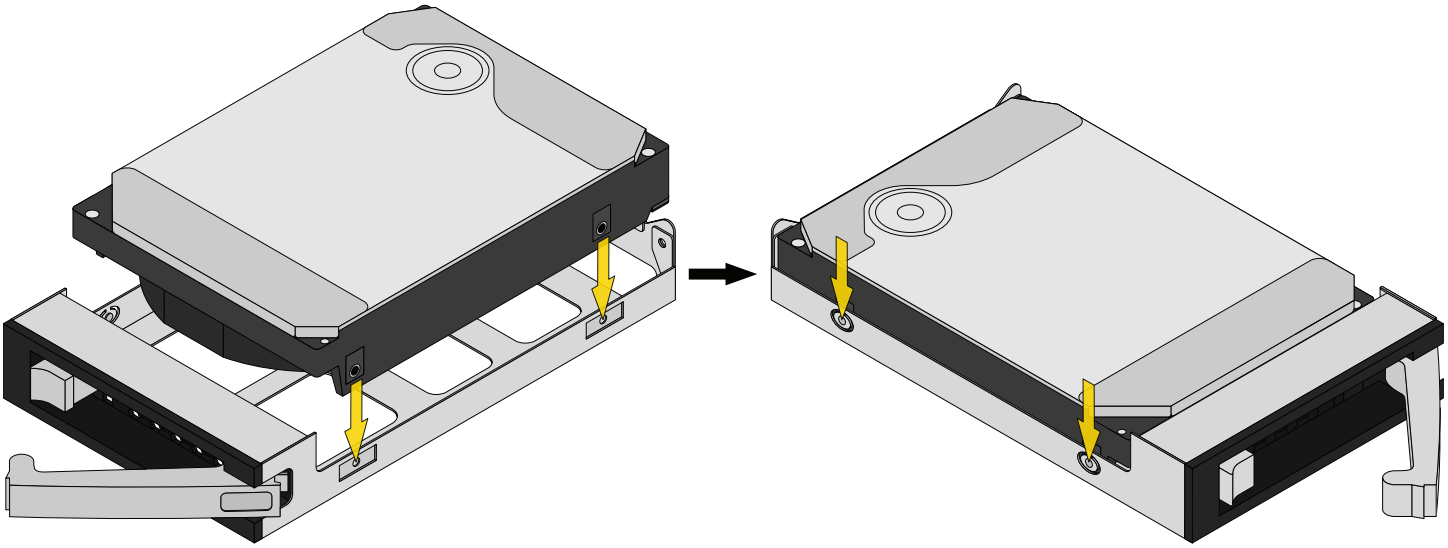
10 Drive Replacement

10.1 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.

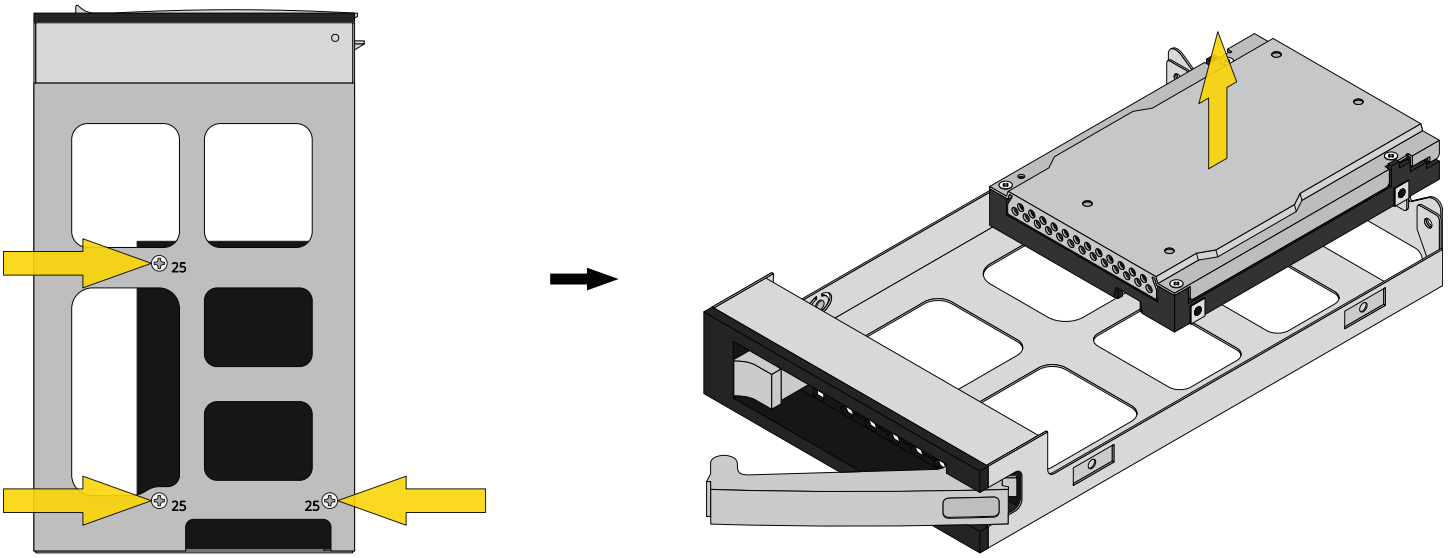


To install a drive in a tray, ensure the drive connectors point out the back of the tray and push the drive side screw holes into the fixed retention pegs on one side of the tray. Push the other side of the drive down into the flexible retention pegs to secure the drive.

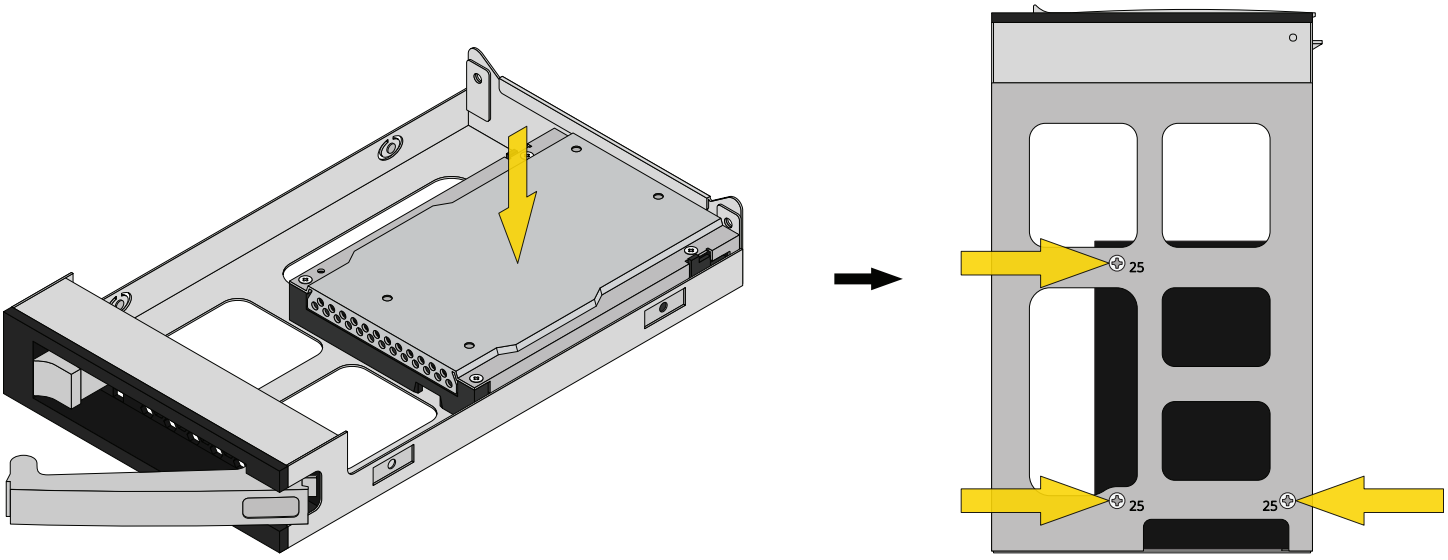


10.2 SSDs

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.



11 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/

12 Contact Us

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

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)