QXS 48-Drive Rackmount Install Guide

This document contains the following topics:

Before You Begin

These instructions are for the following systems:

- QXS-448
- QXS-648

Complete the following:

- Verify that the installation site meets the chassis's requirements for space and airflow, temperature, and power (see the web-posted setup guide for your chassis).
- Considering your system configuration and weight distribution, determine where you will install each chassis within the rack or cabinet. Install the first chassis in the lowest rack space you plan to use. Install each remaining chassis into the next-higher available space within the rack, until all chassis are secured in place.
- Confirm that you have cables of appropriate type and length to connect to hosts and to power outlets.

⚠ **Caution:** Be sure you are properly grounded before touching a static-sensitive component to minimize potential for electronic discharge.

The person using these instructions must be qualified to service and install storage products.

⚠ **Caution:** Two people are needed to lift and move the chassis. Use care to avoid injury.
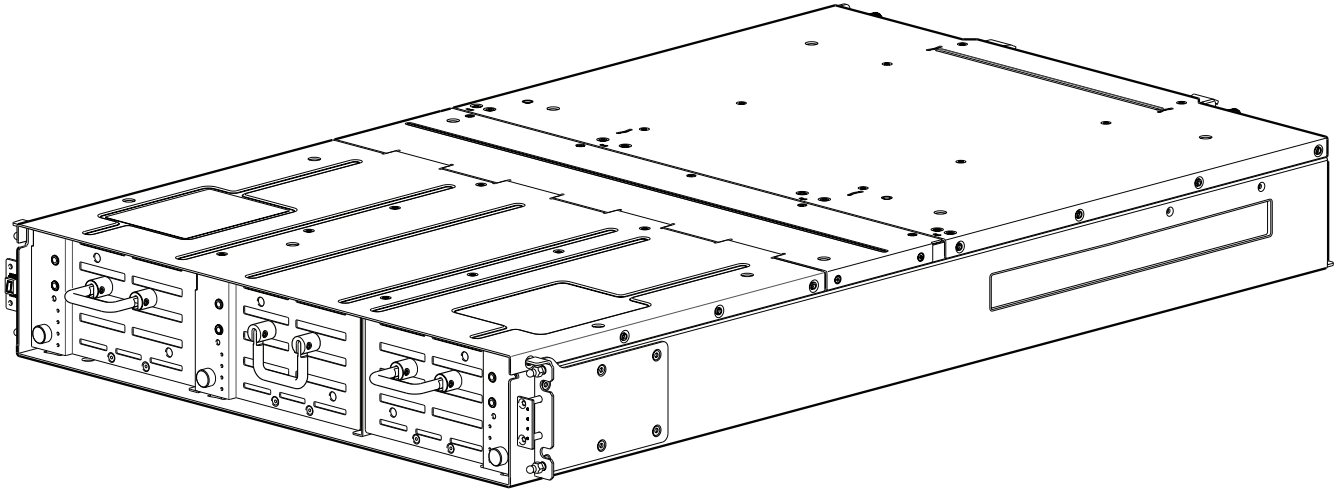
Required Tools

Required tools include:

- #2 Phillips screwdriver
- Antistatic protection devices.

Rackmount Bracket Kit Hardware

Use fasteners that pertain to your rack type.

Code	Part description	Qty
Rails and brackets		
-	Side bracket	2
-	Left rail (front sleeve with rear insert)	1-ea.
-	Right rail (front sleeve with rear insert)	1-ea.
Screws		
A	#8-32 x 3/16, FH100, PLP, SS	4
B	#8-32 x 3/8, FH, PLP2, SS	6
C	#10-32 x 3/4, Truss, PLP, SS; or M5 x 10, PH, PLP2, SS; or M6 x 10, PH, PLP2, SS; or #12-24 x 3/8, PH, PLP, SS	8
D	#10-32, Shoulder, Round hole mtg; or #10-32, Shoulder, Square hole mtg; or #10-32 x 0.319, FH100, PLP2, SS; or M5 x 8.4, FH, PLP2, SS; or M6 x 9.4, FH, PLP2, SS; or #12-24 x 0.354, FH100, PLP2, SS	4
E	#6-32 x 1/4, PH, PLP, SS, Patchlock	3
Nuts		
F	#10-32, STL - Cage Nut; or #10-32, UNF - Clip Nut	8

Use fasteners that pertain to your rack type.

Figure 1: 48-Drive Storage Chassis (bezel and disks are not installed)
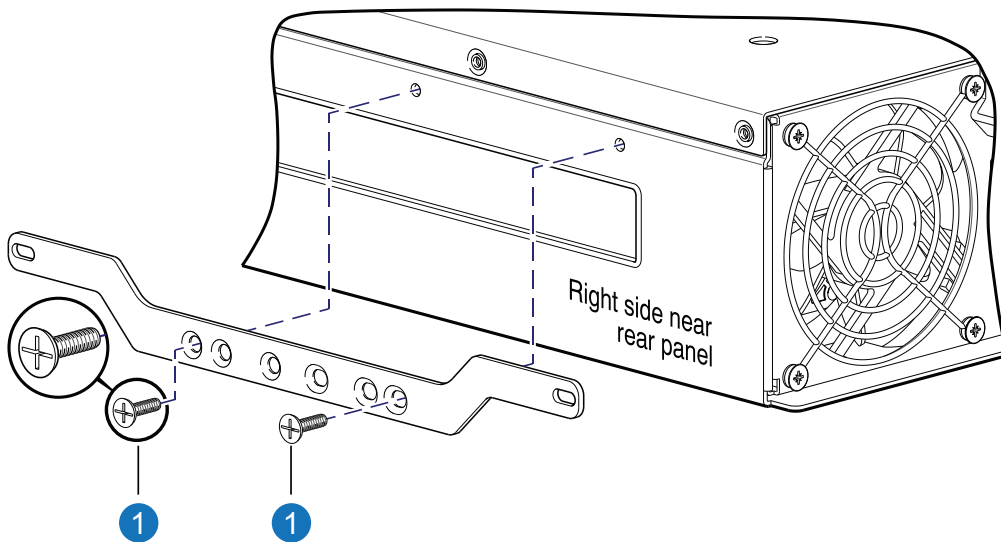

Attach side brackets

Using a total of four #8-32 x 3/16 flathead Phillips screws (two per bracket), attach the side bracket to rear mounting holes on each side of the chassis.

Figure 2: Attaching Side Brackets

Right side near rear panel

1. **Screw: Code A — P/N: 01-00000142**

Rails Assembly

> **ⓘ** **Note:** The two rail kit installation pictorials immediately following show the left and right rails viewed from the front and looking rearward. An assembly and an exploded view is provided for each rail.
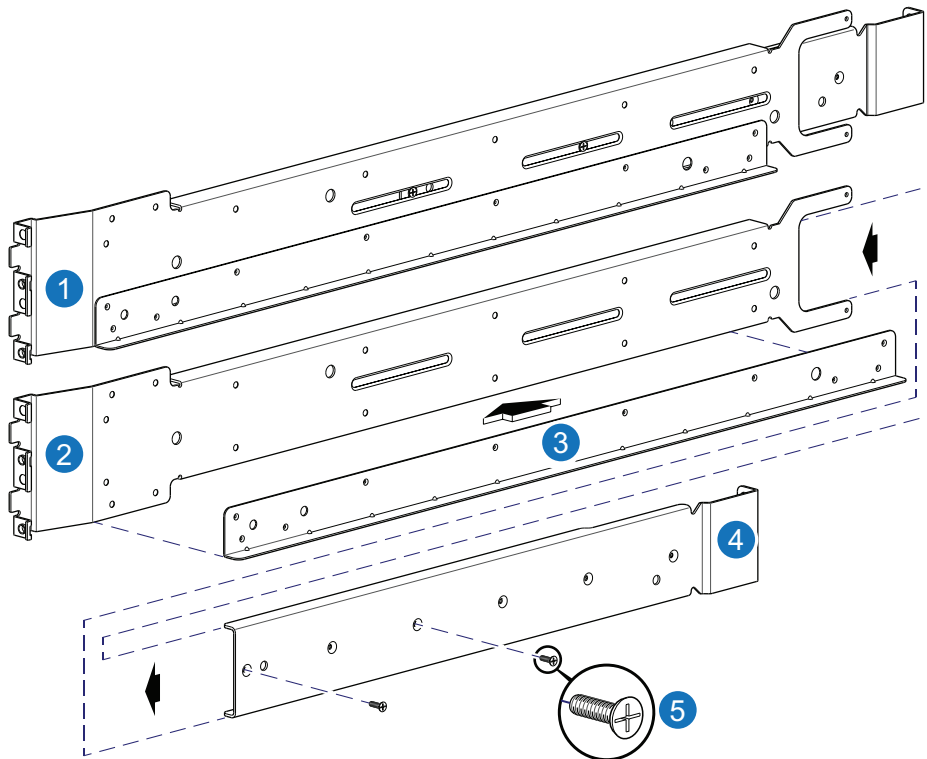
Left Rail Assembly

Complete steps 1–3 to assemble the rails.

> **ⓘ** **Note:** Refer to callout 1 in for the assembled left rail (ready for installation into the rack).

1. Slide the rear rail insert (callout 4,) into the front rail sleeve (callout 2,).

Figure 3: Left Rail Kit Components (assembly and exploded views)

1.	Left rail assembly	4.	Rear rail insert
2.	Front rail sleeve	5.	Screw: Code B - P/N: 01-00000262-00-01
3.	Rail shelf		

2. To determine the cabinet depth required by the rails, fit the rail assembly (callout 1) to the rack and note which tapped holes in the rear rails align with the front rail's slotted holes. If cage nuts are pre-installed, remove them.
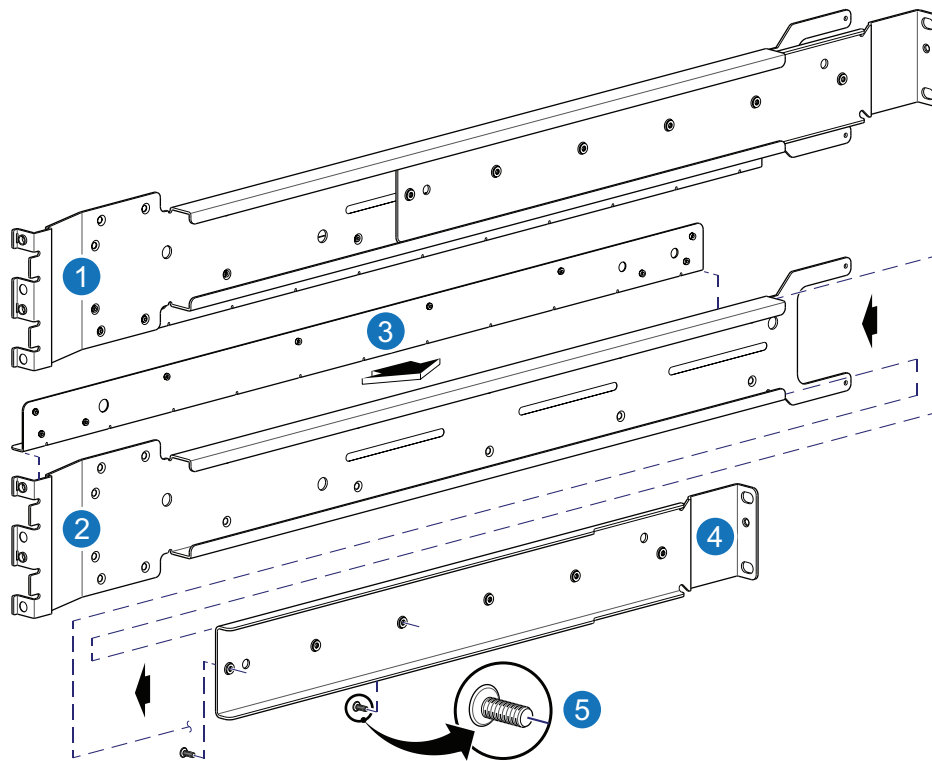
3. Using the measurements recorded in sub-step 2 above, select two or three #8-32 x 3/8 flathead Phillips screws (depending on your cabinet depth) to loosely attach the rear rail insert (callout 4) to the front rail sleeve (callout 2).

You will tighten the screws later.

Right Rail Assembly

Complete steps 1-3 above to assembly the right rail.

Figure 4: Right Rail Kit Components (assembly and exploded views)

1. **Right rail assembly**
2. **Front rail sleeve**
3. **Rail shelf**
4. **Rear rail insert**
5. **Screw: Code B - P/N: 01-00000262-00-01**

Install Rails (Square, Round, Pre-tapped Hole-Racks)

This section provides the rail installation of three different types of racks. Information is as follows:
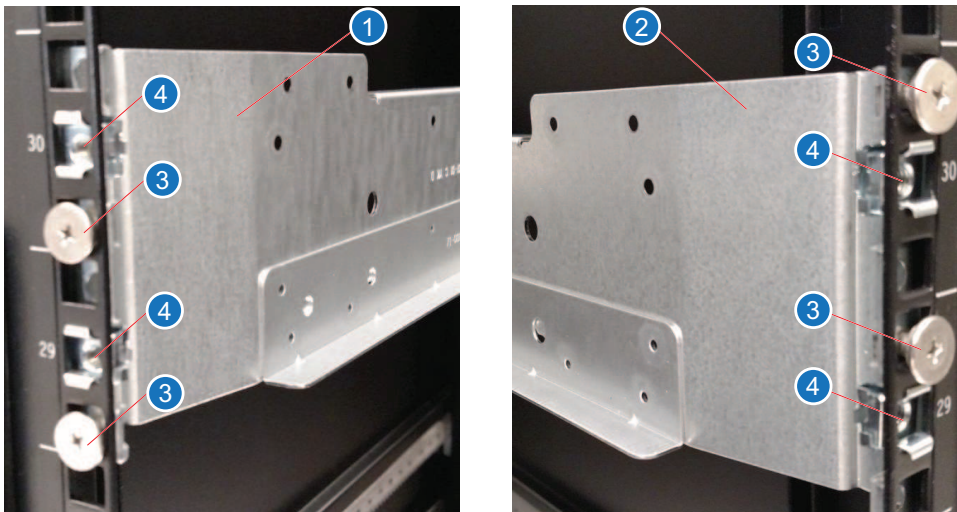
- Square Hole-Rack Rail Installation below
- Round Hole-Rack Rail Installation on page 12
- Pre-tapped Hole-Rack Rail Installation on page 16

Square Hole-Rack Rail Installation

Complete steps 1–4 to install the rails.

1. For square-hole racks, install cage nuts in the front rack holes where chassis ears will be attached.

    a. Before rail installation, refer to Figure 5 below for location of screws and cage nuts for the front of the chassis.

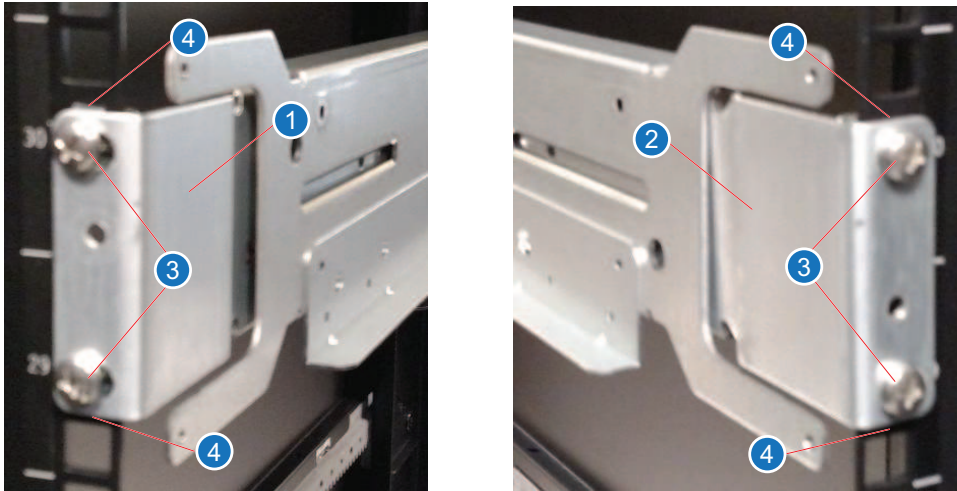**Figure 5:** Screws and Cage Nuts for Chassis Front

1.	**Left Rail**	**3.**	**Screws Installed into Threaded Holes in Rail**
2.	**Right Rail**	**4.**	**Cage Nut Installed (for chassis screws)**

    b. Before rail installation, refer to Figure 6 on the next page for location of screws and cage nuts for the rear of the chassis.

Figure 6: Screws and Cage Nuts for Chassis Rear

1.	**Left Rail**	3.	**Screws Installed into Cage Nut**
2.	**Right Rail**	4.	**Cage Nuts Installed in Rack**

> **Note:** If you insert the cage nuts incorrectly, use a Cage Nut Removal Tool to easily remove the cage nuts from the rack holes.

Position the rail's front and back mounting flanges so that through holes align with corresponding rack holes, and note the locations.

> **Note:** Align the bottom of the rail with the bottom of the rack unit where you would like to install the rails. Rails should not be installed where the rail will straddle rack units (U). Most racks provide alignment markers indicating the rack units used for rail installation.

Attach two cage nuts at the front of the rack, and two at the rear, per the red "**X**" marks shown in the following installation detail views ().
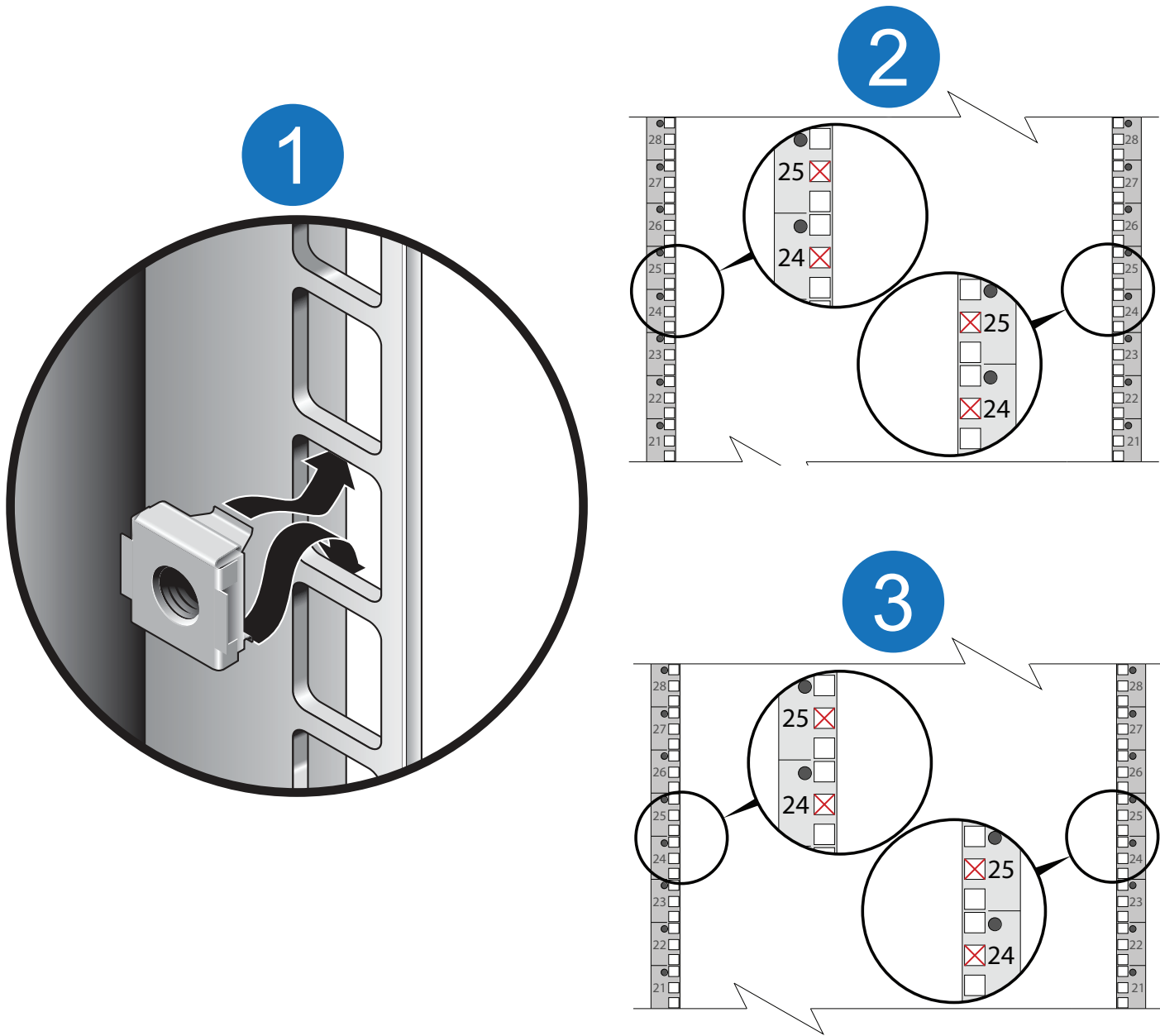
> **Note:** The rail kit supports either the RAID (controller) or expansion chassis.

On the following diagram, elevation numbers are arbitrary and represent vertical location within the rack.The 1U rack heights are shown next to cage nut installation locations.
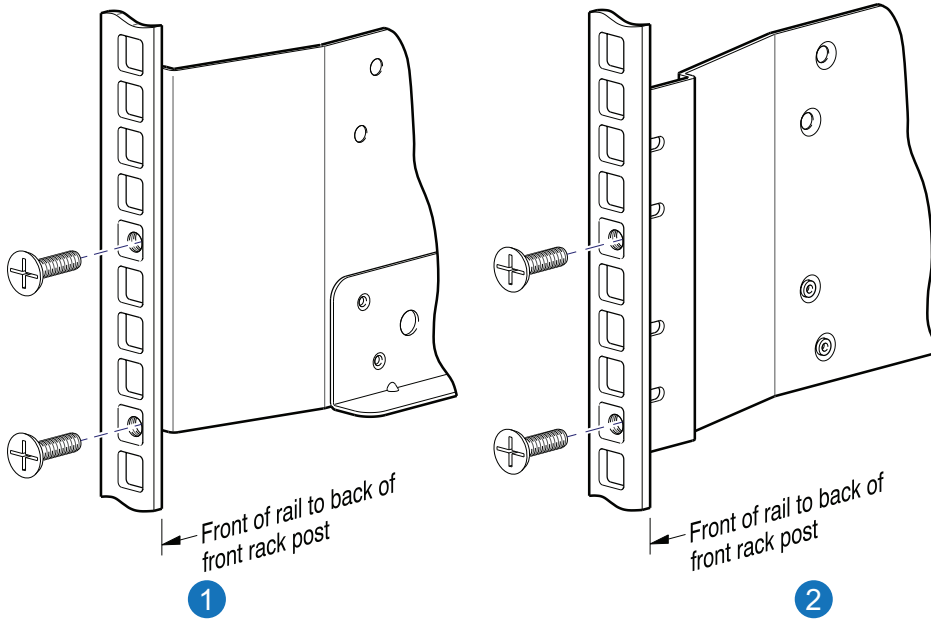
Figure 7: Cage Nut Placement

1. **Cage nut (Code F — P/N: 01-00000279-00-04** 3. **Rear View**
   or 01-00000270-00-01)

2. **Front View**

ⓘ **Note:** Install the cage nuts at the same square hole elevations—two per column—on all four rack posts.

2. For the square-hole racks, use two shoulder screws of the appropriate size (square-hole shoulder) to attach the front of the rail assembly to the front of the rack.

   Do so by attaching the screws through the two tapped holes on the front rail. See Figure 8 below.

   Figure 8: Rail Attachment to Front of Rack (screws fastened to back of rack post - facing rearward)

- 1. **Left rail with square holes**
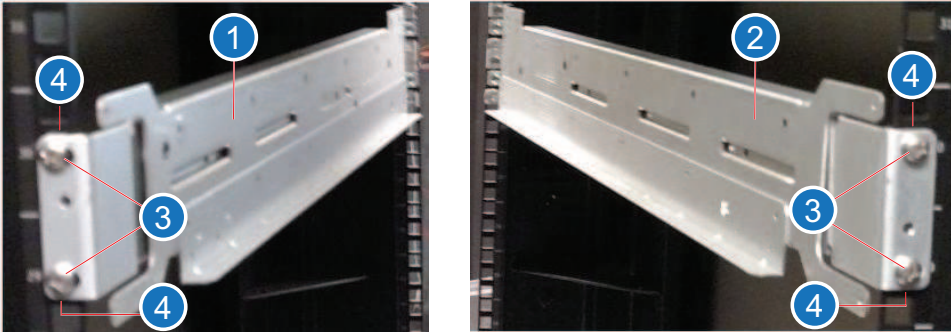- 2. **Right rail with square holes**

3. Depending upon rack type, use two #10-32 x 3/4 truss Phillips screws or #12-24 x 3/8 Phillips screws or appropriate metric (5 or 6 mm) pan head screws to attach the rear rail assembly to the rear of the rack. See Figure 9 on the next page.

   Use one of the following Code C screws (part numbers):

   - 01-00000264-00-01
   - 01-00000267-00-01
   - 01-00000269-00-01
   - 01-00000190

   ⓘ **Note:** While tightening the screws, push the rails outward to maximize the opening width.
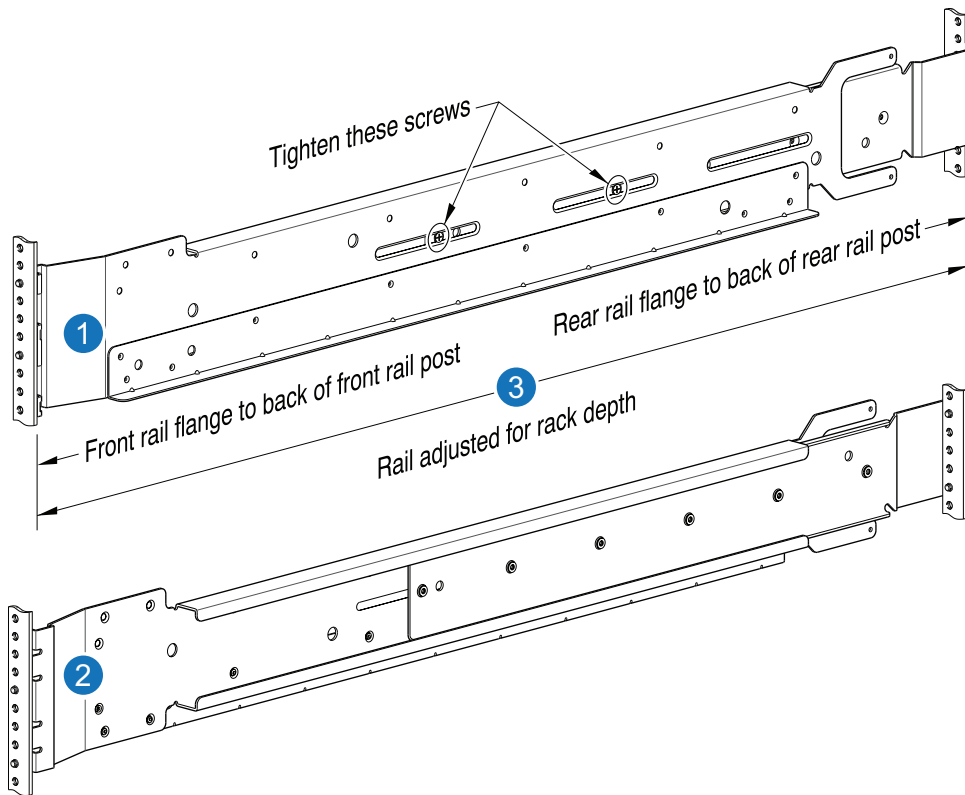
Figure 9: Rail Attachment to Rear of Rack (screws fastened to the cage nuts)

1. Left rail	**3. Screws**
2. Right rail	**4. Cage nuts (installed in rack)**

4. Tighten the two screws that secure the two rail pieces (front and rear). See Figure 10 below.

Figure 10: Installed Rail Kit Assemblies (securing two rail pieces together)

ℹ **Note:** Callouts apply to both rails

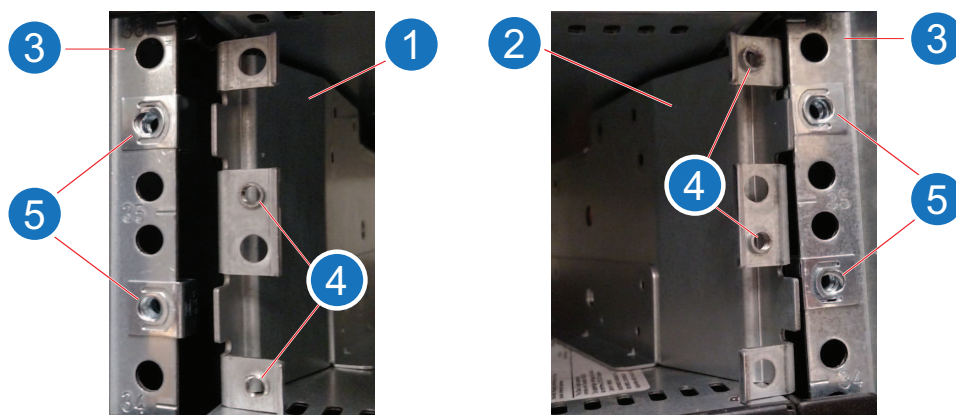|	
1. Left rail assembly	**3. Installed depth**
2. Right rail assembly	

5. Repeat steps 1–4 to secure the other side of the rail kit.

Round Hole-Rack Rail Installation

Complete steps 1–4 to install the rails.

1. For round-hole racks, install clip nuts in the front rack holes where chassis ears will be attached.

   a. Before rail installation, refer to Figure 11 below for location of screws and clip nuts for the front of the chassis.
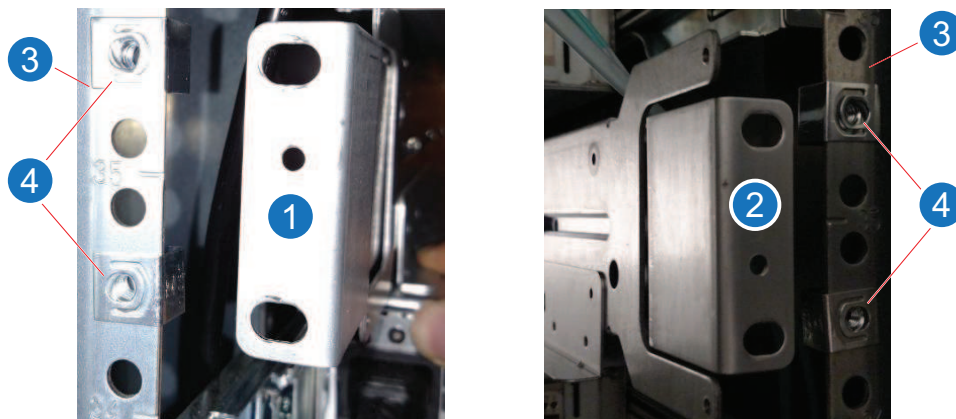
Figure 11: Screws and Clip Nuts for Chassis Front

1. **Left Rail**	**4.** **Threaded Holes on Rail (for installing rails into rack)**
2. **Right Rail**	**5.** **Clip Nuts Installed (for chassis screws)**
3. **Round-Hole Rack**	

   b. Before rail installation, refer to Figure 12 below for location of screws and clip nuts for the rear of the chassis.

Figure 12: Screws and Clip Nuts for Chassis Rear

1.	Left Rail	3.	Round-Hole Rack
2.	Right Rail	4.	Clip Nuts Installed in Rack

> **ℹ Note:** If you insert the clip nuts incorrectly, simply remove the nuts from the rack holes and reinsert.

Position the rail's front and back mounting flanges so that through holes align with corresponding rack holes, and note the locations.
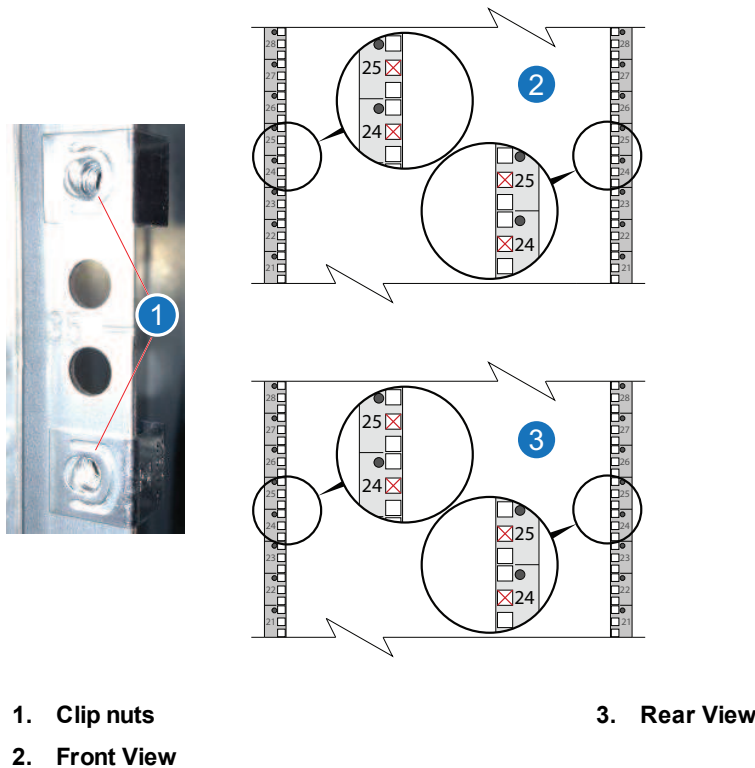
> **ℹ Note:** Align the bottom of the rail with the bottom of the rack unit where you would like to install the rails. Rails should not be installed where the rail will straddle rack units (U). Most racks provide alignment markers indicating the rack units used for rail installation.

Attach two clip nuts at the front of the rack, and two at the rear, per the red "**X**" marks shown in the following installation detail views (Figure 13 below).

> **ℹ Note:** The rail kit supports either the RAID (controller) or expansion chassis.

On the following diagram (representative rack only used for clip nut placement), elevation numbers are arbitrary and represent vertical location within the rack. The 1U rack heights are shown next to clip nut installation locations.

Figure 13: Clip Nut Placement

1.	Clip nuts	3.	Rear View
2.	Front View		

> ℹ **Note:** Install the clip nuts at the same round hole elevations—two per column—on all four rack posts.

2. For the round-hole racks, use two shoulder screws of the appropriate size (round-hole shoulder) to attach the front of the rail assembly to the front of the rack.

   Do so by attaching the screws through the two tapped holes on the front rail. See Figure 14 below.

   Figure 14: Rail Attachment to Front of Rack (screws fastened to back of rack post - facing rearward)

1. **Left rail (front)**	**3.** **Screws (for installing rails)**
2. **Right rail (front)**	

3. Depending upon rack type, use two #10-32 x 3/4 truss Phillips screws or #12-24 x 3/8 Phillips screws or appropriate metric (5 or 6 mm) pan head screws to attach the rear rail assembly to the rear of the rack. See Figure 15 on the next page.
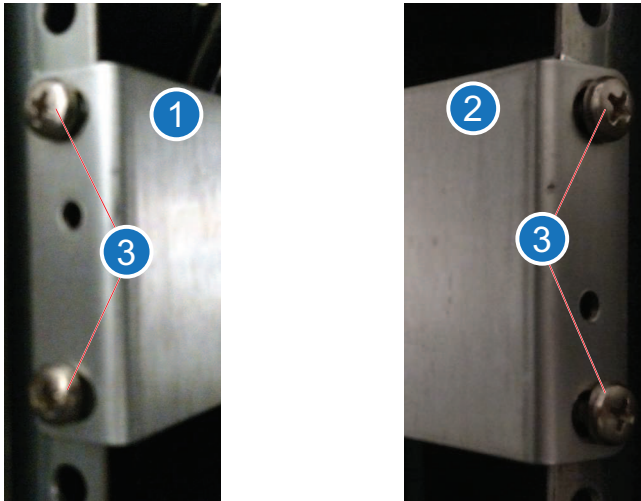
   Use one of the following Code C screws (part numbers):

   - 01-00000264-00-01
   - 01-00000267-00-01
   - 01-00000269-00-01
   - 01-00000190

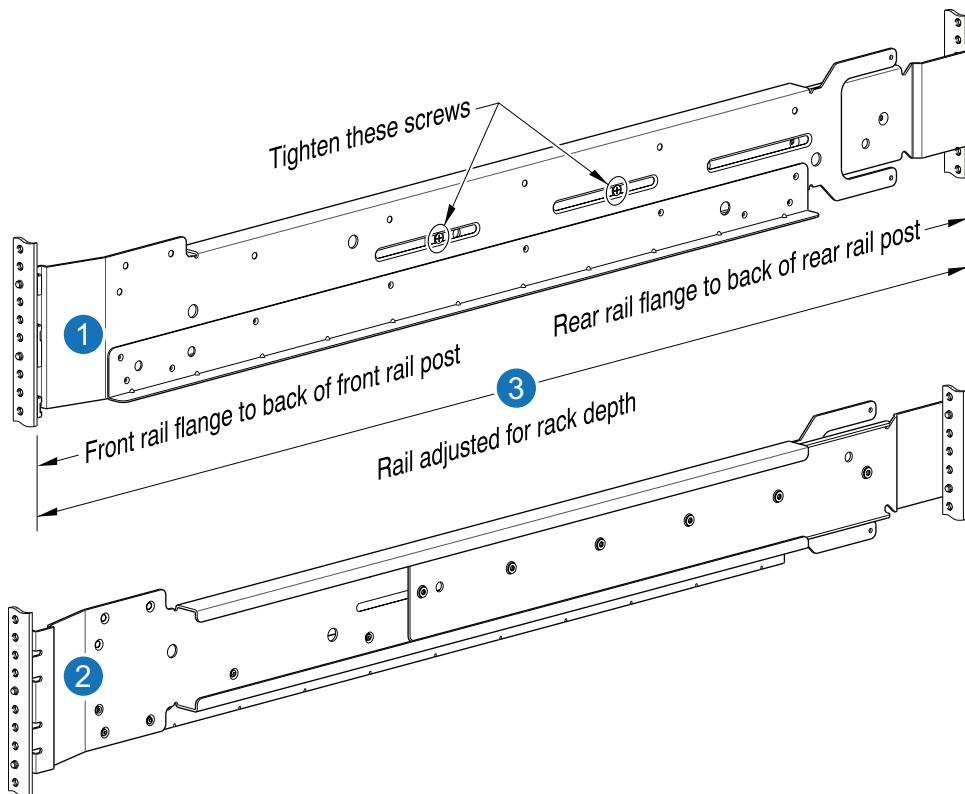> ℹ **Note:** While tightening the screws, push the rails outward to maximize the opening width.

Figure 15: Rail Attachment to Rear of Rack (screws fastened to the clip nuts)

1.	**Left rail**	3. **Screws (clip nuts installed in rack)**
2.	**Right rail**	

4. Tighten the two screws that secure the two rail pieces (front and rear). See .

Figure 16: Installed Rail Kit Assemblies (securing two rail pieces together)

> **ⓘ Note:** Callouts apply to both rails

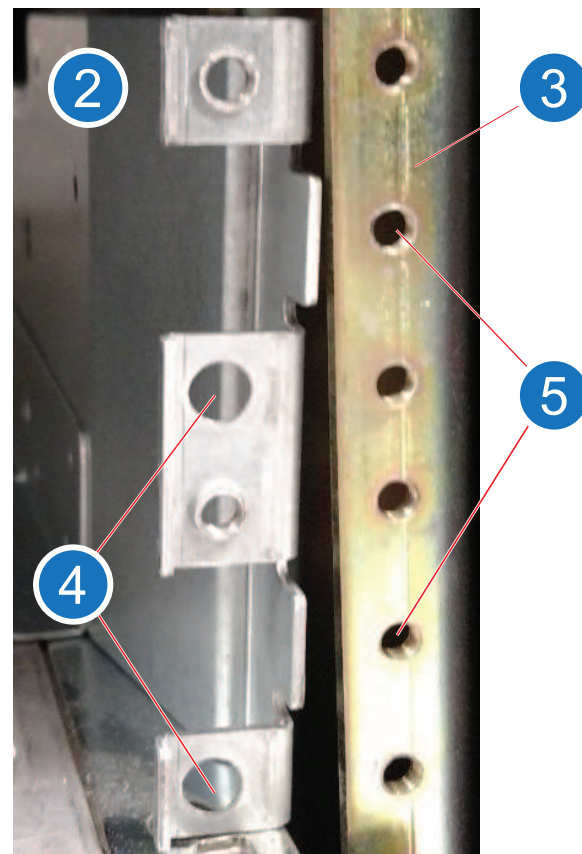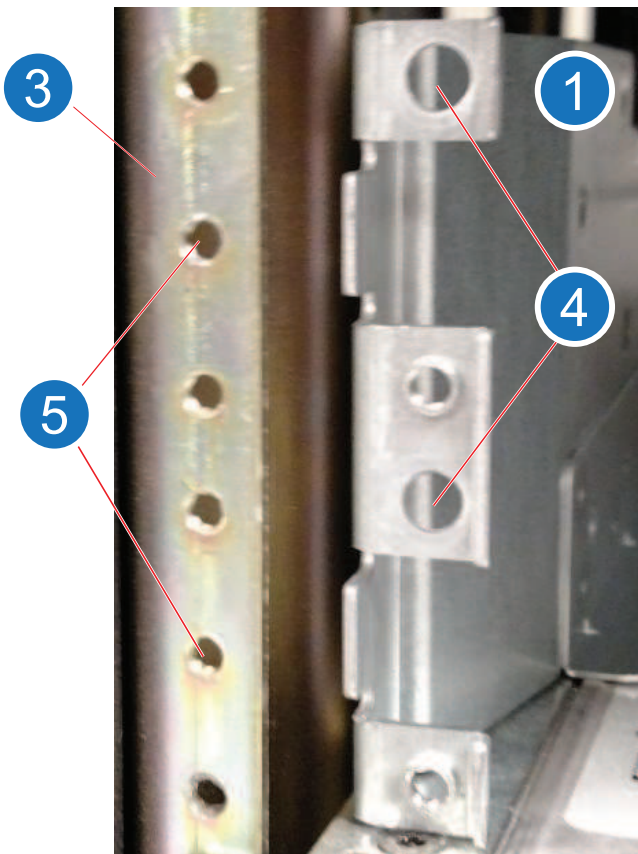|			
1.	**Left rail assembly**	3.	**Installed depth**
2.	**Right rail assembly**		

5. Repeat steps 1–4 to secure the other side of the rail kit.

Pre-tapped Hole-Rack Rail Installation

Complete steps 1–4 to install the rails.

1. For pre-tapped hole-racks, only screws are required to attach the rails to the rack.

   a. Before rail installation, refer to for location of screws and pre-tapped holes on the front of the rack.

   b. The rail slides in behind the pre-tapped section of the rack.

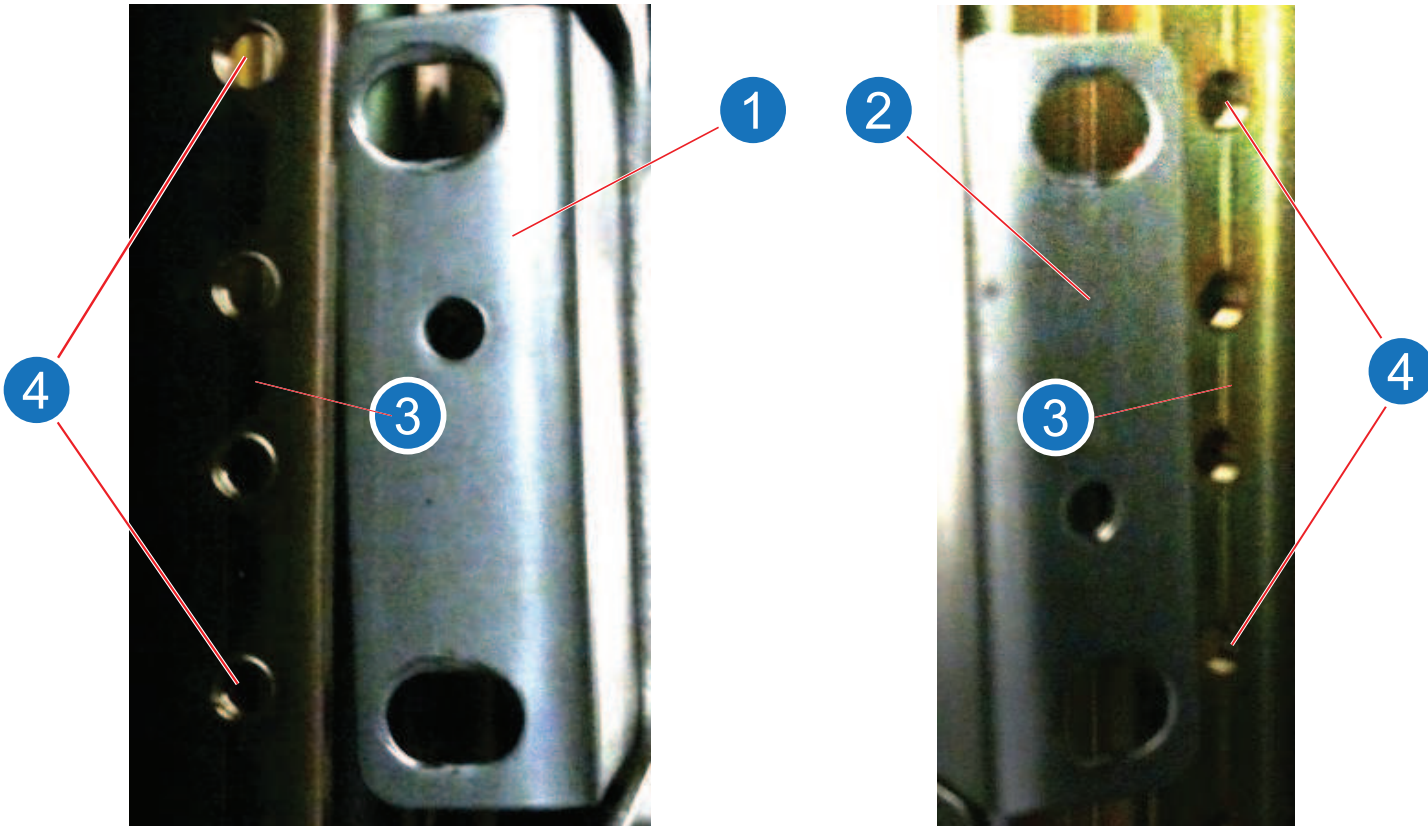**Figure 17:** Pre-tapped Holes to Mount Rails for Chassis Front

1.	**Left Rail**	4.	**Holes on Rail (for installing rail mounting screws to rack)**
2.	**Right Rail**		
3.	**Pre-tapped Hole-Rack**	5.	**Holes to Secure Chassis to Rack**

c. Before rail installation, refer to Figure 18 below for screw location and placement of the rail for mounting to the rear of the rack.

d. The rails go over the outside of the rack.

Figure 18: Screw Locations for Mounting Rails (rear)

1. **Left Rail**
2. **Right Rail**
3. **Pre-tapped Hole-Rack**
4. **Screw Locations to Install Rail**

Position the rail's front and back mounting flanges so that through holes align with corresponding rack holes, and note the locations.
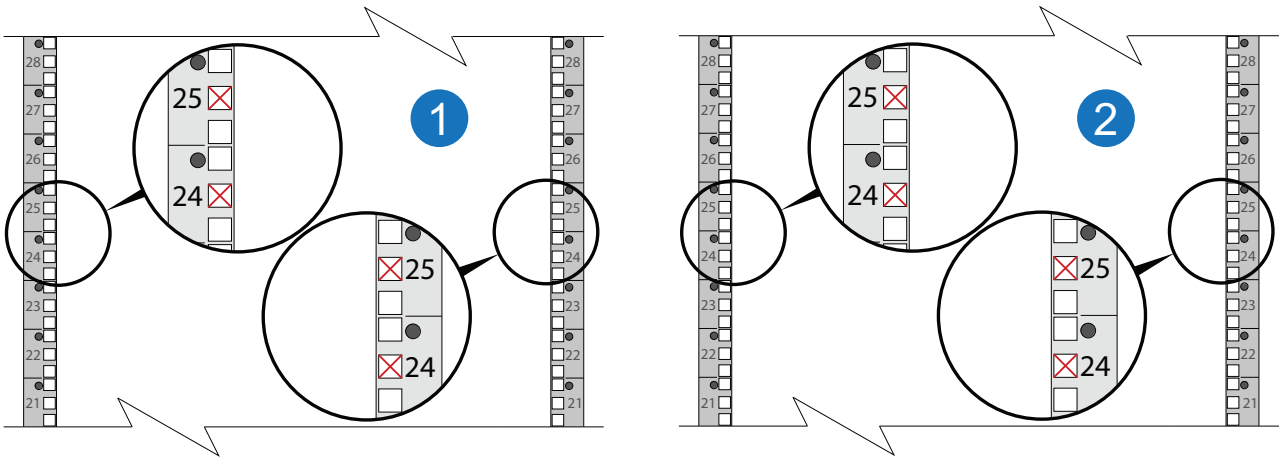
ⓘ **Note:** Align the bottom of the rail with the bottom of the rack unit where you would like to install the rails. Rails should not be installed where the rail will straddle rack units (U). Most racks provide alignment markers indicating the rack units used for rail installation.

Refer to Figure 19 on the next page for placement of the rails within the rack. The red "**X**" identifies the height of the chassis (2U) to be installed.

ⓘ **Note:** The rail kit supports either the RAID (controller) or expansion chassis.

On the following diagram (representative rack only used for chassis placement), elevation numbers are arbitrary and represent vertical location within the rack.

Figure 19: Rail Placement in Rack
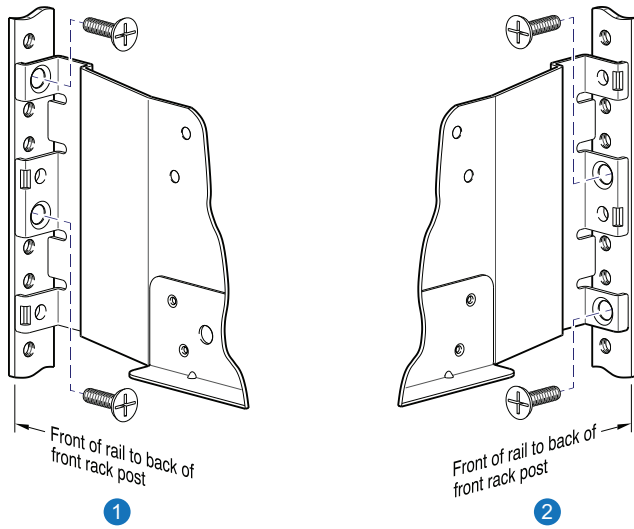

1. **Front View**
2. **Rear View**

2. For the racks with pre-tapped holes, use two flathead screws of the appropriate size (#10-32, #12-24, M5, or M6) to attach the front of the rail assembly to the front of the rack using the two countersunk holes.

Use one of the following Code D screws (part numbers):

- 01-00000312-00-01
- 01-00000313-00-01
- 01-00000314-00-01
- 01-00000318-00-01

Do so by attaching the screws through the two tapped holes on the front of the rail. See .

Figure 20: Rail Attachment to Front of Rack (screws fastened to back of rack post)
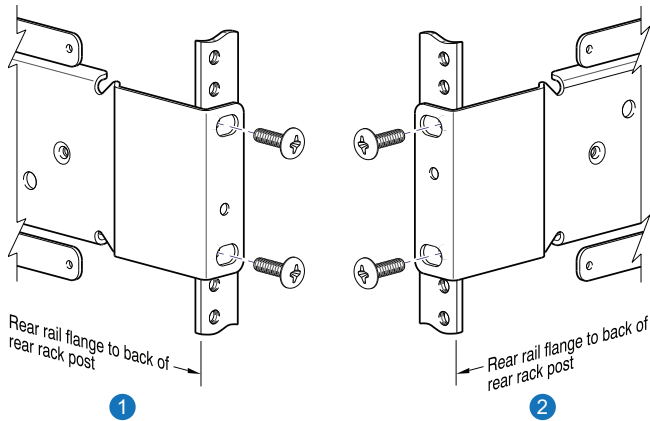

1. **Right rail**　　　　　　　　　　　　2. **Left rail**

3. Depending upon rack type, use two #10-32 x 3/4 truss Phillips screws or #12-24 x 3/8 Phillips screws or appropriate metric (5 or 6 mm) pan head screws to attach the rear rail assembly to the rear of the rack. See Figure 21 below.

   Use one of the following Code C screws (part numbers):

   - 01-00000264-00-01
   - 01-00000267-00-01
   - 01-00000269-00-01
   - 01-00000190

   ℹ Note: While tightening the screws, push the rails outward to maximize the opening width.

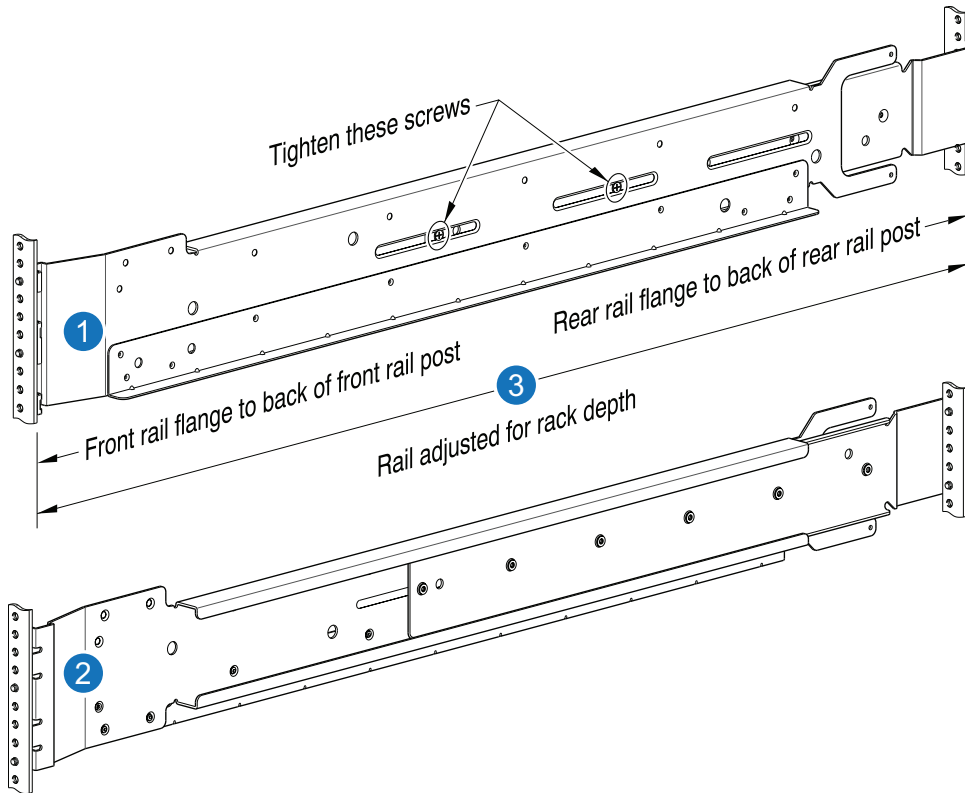**Figure 21:** Rail Attachment to Rear of Rack (pre-tapped hole in rack)

1.	**Right rail**	**2.**	**Left rail**

4. Tighten the two screws that secure the two rail pieces (front and rear). See .

Figure 22: Installed Rail Kit Assemblies (securing two rail pieces together)

ℹ **Note:** Callouts apply to both rails

1.	**Left rail assembly**	**3.**	**Installed depth**
2.	**Right rail assembly**		

5. Repeat steps 1–4 to secure the other side of the rail kit.
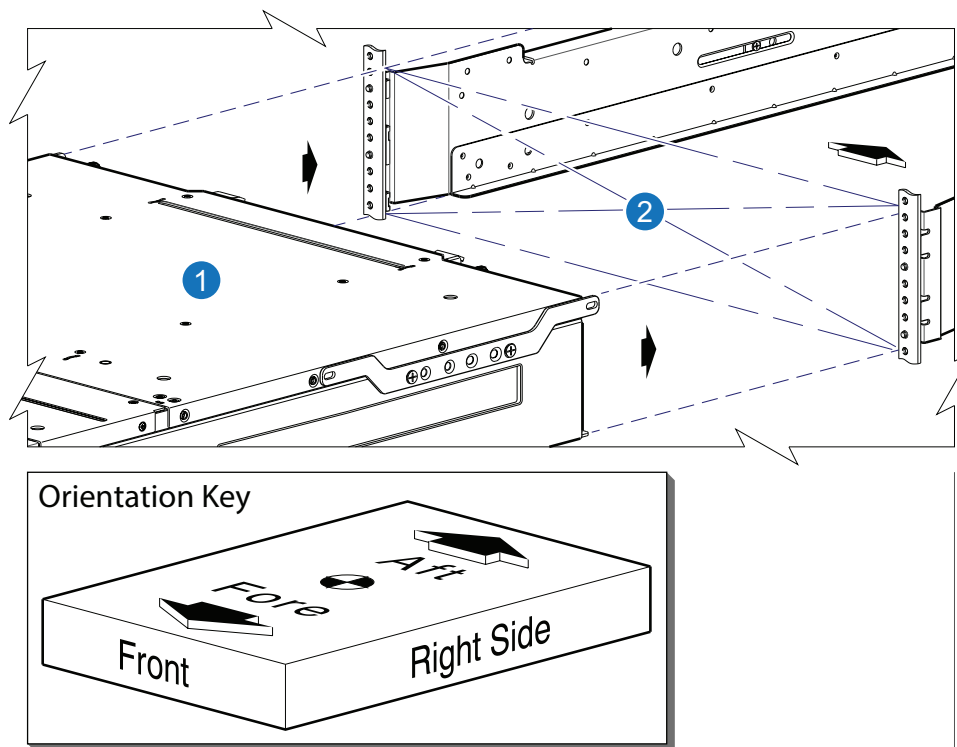
Install and Secure the Chassis

1. Carefully lift/align the chassis and slide it into the rack. Ensure that the chassis is level.

> ⚠️ **Caution:**
>
> - Chassis must be level (parallel to floor).
>
> - Rails might bend if the chassis is not level when inserted.
>
> - Replace the rail if it becomes deformed as a result of inserting the chassis in an unlevel position during installation.

> ℹ️ **Note:** The top of the chassis might have a protective film installed. Leave the protective film on the chassis. If the protective film does not allow the chassis to be installed (clearance issue in rack), remove the protective film and discard.
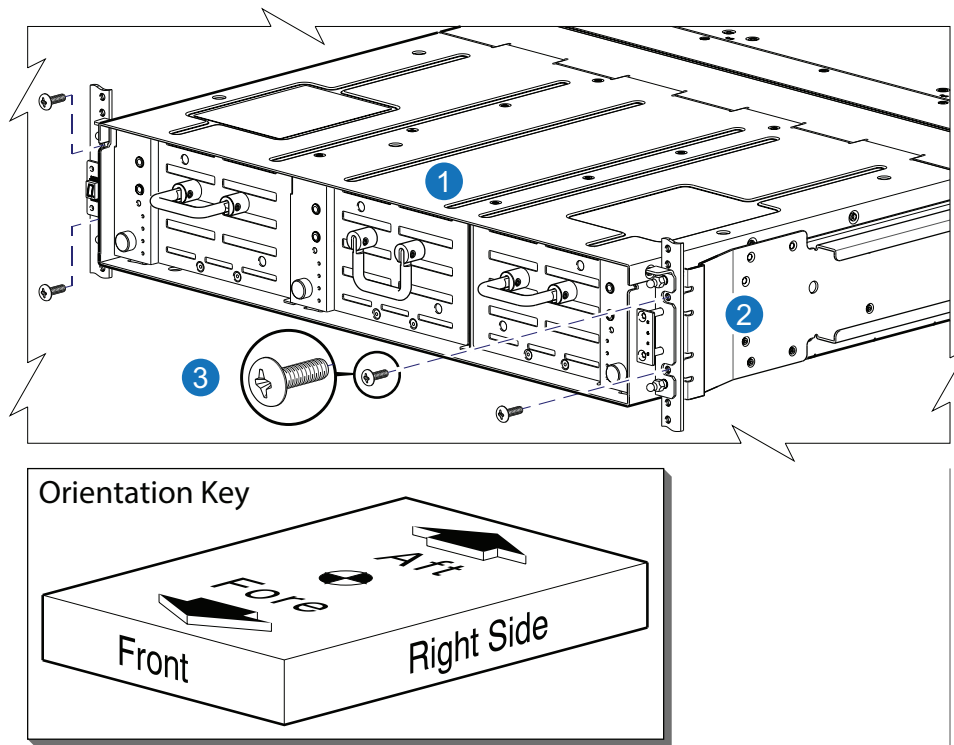
Figure 23: Sliding chassis into rack

1. **Chassis**
2. **Rack space**

2. Using a total of four #10-32 x 3/4 truss Phillips or #12-24 x 3/8 Phillips screws or appropriate metric (5 or 6 mm) panhead screws (two per ear), secure the mounting ears on the front of the chassis to the rack face.
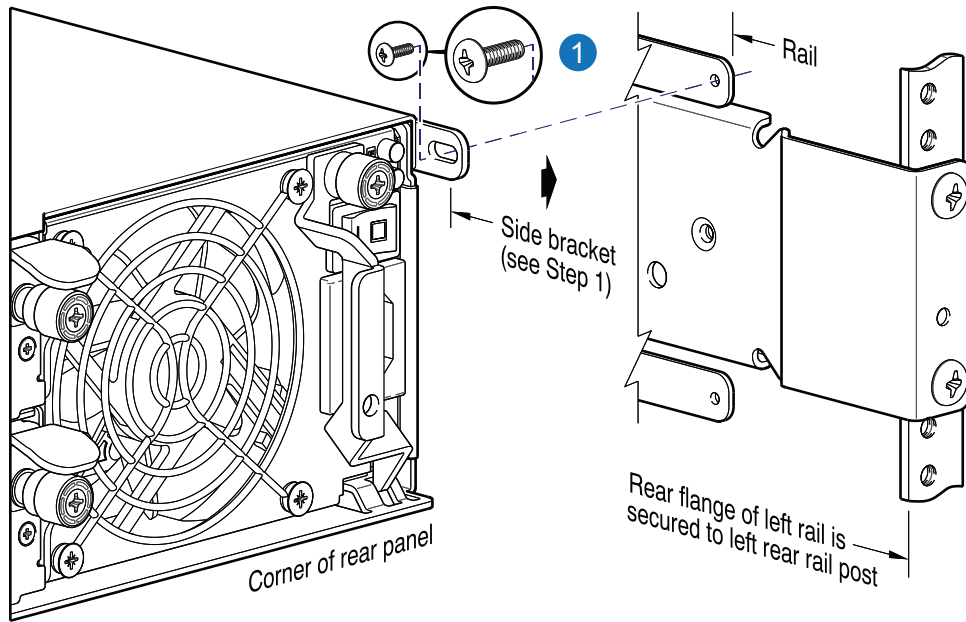
Figure 24: Securing front mounting ears

1. **Chassis**
2. **Right rail**
3. **Screws Code C - P/N:**
   01-00000264-00-01 or
   01-00000267-00-01 or
   01-00000269-00-01 or
   01-00000190

3. Using one #6-32 x 1/4 panhead Phillips screw for each rear bracket, secure the rear bracket to the horizontal rail spanning the depth of the rack (rear panel shown below).
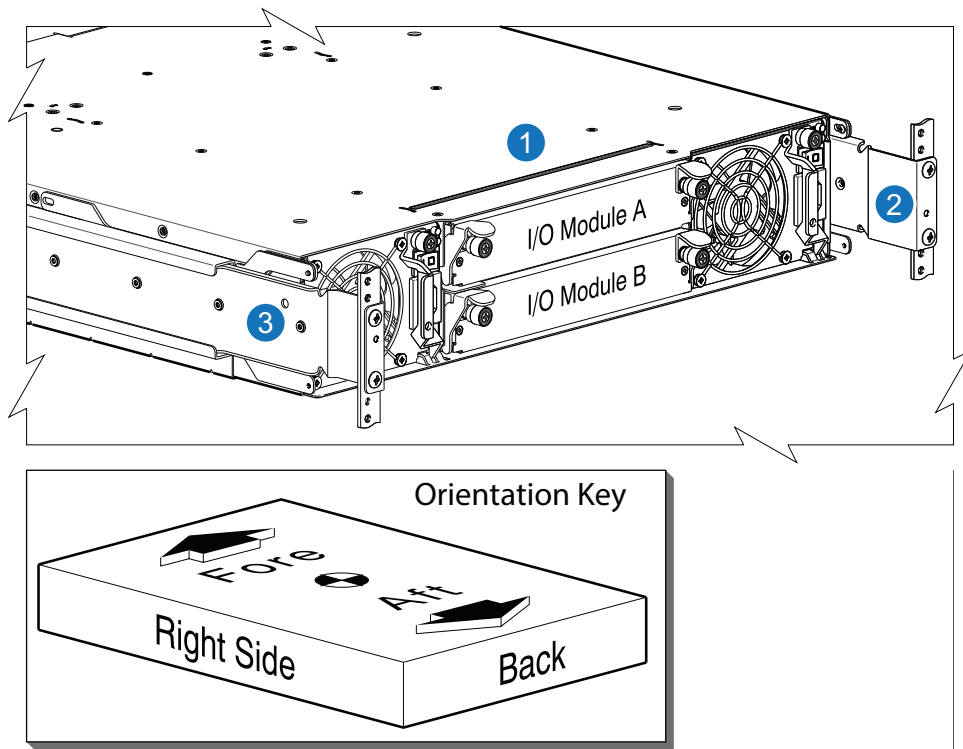
Figure 25: Securing rear bracket to horizontal rail

1. **Screw: Code E — P/N: 01-00000522-00-01**

ⓘ **Note:** You can improve screwdriver access by removing the PSUs from the chassis, when securing the chassis into the rack.

Figure 26: Removing PSUs

1. **Chassis**   3. **Right rail**
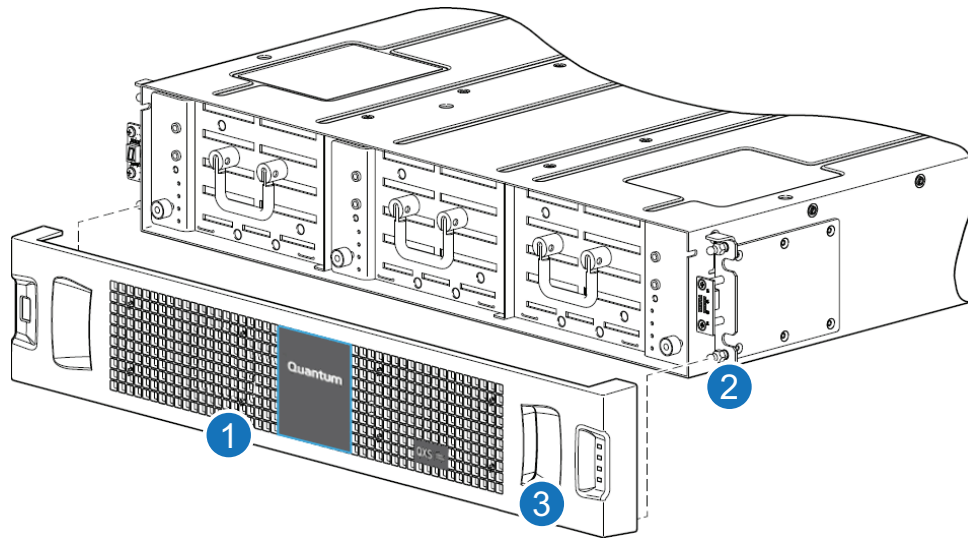2. **Left rail**

4. Repeat steps 1 - 3 for each chassis.

Next Steps

Perform the following steps to finish the installation of the storage system components:

1. Install the drives into the drawers as described in the Setup Guide.
2. Install the chassis bezel as described in the Bezel Installation Guide.

Figure 27: Installing bezel

1.	**Chassis bezel (includes EMI shield for drives)**	**3.**	**Pocket opening (typical 2 places on bezel)**
2.	**Ball stud on chassis ear (typical 4 places on chassis)**		

> ℹ **Note:** When the chassis is in operation, the bezel must be attached in order to provide EMI protection for the drives.

3. Install any additional options as described in instructions provided with the options.

4. Connect chassis, power up the system, and connect hosts as described in the Setup Guide.

5. Upon successful completion of the hardware installation, use the storage system's web-based management interface to configure and provision the system.

6. See the Quantum website for additional information.