StorageTek LTO 1U Rackmount Media Tray

Reference Guide

LTO

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About this guide

This guide provides information about:

- Features and components of the 1U Rackmount Media Tray
- Racking the media tray
- Specifications

Intended audience

This guide is intended for system administrators with knowledge of:

- Storage systems
- Backup systems

Document conventions and symbols

Table 1 Document conventions

Convention	Element
Blue text: (page 5)	Cross-reference links and e-mail addresses
Blue, underlined text: http://www.oracle.com	website addresses
Bold text	• Keys that are pressed • Text typed into a GUI element, such as a box • GUI elements that are clicked or selected, such as menu and list items, buttons, tabs, and check boxes
Italic text	Text emphasis
`Monospace` text	• File and directory names • System output • Code • Commands, their arguments, and argument values
`Monospace, italic` text	• Code variables • Command variables
`Monospace, bold` text	Emphasized monospace text

WARNING! Indicates that failure to follow directions could result in bodily harm or death.

CAUTION: Indicates that failure to follow directions could result in damage to equipment or data.

IMPORTANT: Provides clarifying information or specific instructions.

NOTE: Provides additional information.

Rack stability

Rack stability protects personnel and equipment.

WARNING! To reduce the risk of personal injury or damage to equipment:

- Extend leveling jacks to the floor.
- Ensure that the full weight of the rack rests on the leveling jacks.
- Install stabilizing feet on the rack.
- In multiple-rack installations, fasten racks together securely.
- Extend only one rack component at a time. Racks can become unstable if more than one component is extended.

Technical support

Telephone numbers for worldwide technical support are listed on the support website: http://www.oracle.com/us/support/contact.html.

Collect the following information before calling:

- Contract number
- Product serial numbers
- Product model names and numbers
- Error messages
- Operating system type and revision level
- Detailed questions

For continuous quality improvement, calls may be recorded or monitored.

Websites

For additional information, see the following websites:

- http://www.oracle.com — Corporate website
- http://www.oracle.com/us/products/servers-storage/storage/tape-storage/index.html — Storage products
- http://www.oracle.com/us/support/contact.html — Support website
- http://www.oracle.com/technetwork/documentation/tape-storage-curr-187744.html — Products documentation

1 Introduction

The 1U Rackmount Media Tray is a rack-mountable storage system capable of holding up to two half-height 5.25 inch devices. It is compatible with most standard 19-inch racks. There are two models of the 1U Rackmount Media Tray, one for SAS tape drives, the other for SCSI tape drives.

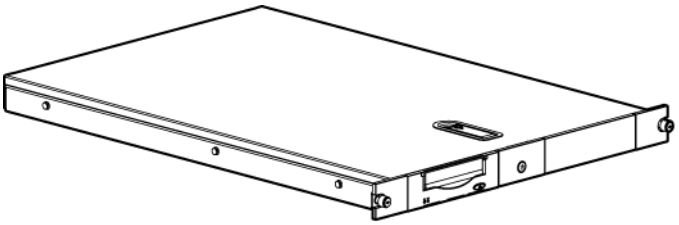

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Figure 1 The 1U Rackmount Media Tray

Standard features

The standard features of the 1U Rackmount Media Tray are summarized below:

- Supports one or two 5.25 inch half-height devices
- Installation in standard 19–inch racks with round, square, or threaded holes

NOTE: Daisy-chaining of two or more SCSI version 1U Rackmount Media Trays is not supported. Daisy-chaining of devices within the media tray is supported only with the SCSI interface.

NOTE: The 1U media tray will automatically power up after a power interruption.

SAS cabling recommendations

CAUTION: High quality external SAS cables rated at the transfer rate of the tape drive are required. Always verify the external SAS cable you are using is rated for the data transfer speed of the interface of your components. SAS cables described as "equalized" may not support 6 Gb/s data rates and should not be used with LTO-6 and LTO-5 tape drives unless these cables are verified for 6Gb/s data rates.

The SAS interface board has two external ports and the supplied internal SAS cable, illustrated below, supports connection of two devices. Several cabling configurations are possible, but the following cabling configuration is recommended to provide the most consistent layout between devices and external connectors.

Looking at the rack from the rear, the right-most external port is Port 1 and the left-most external port is Port 2.

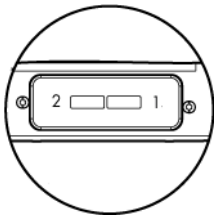


Figure 2 External SAS ports on the 1U enclosure

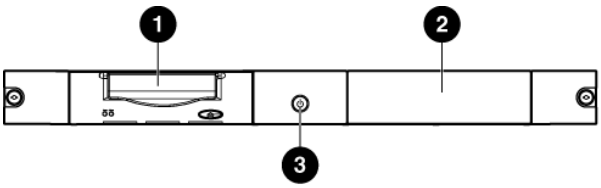
When two SAS devices are installed, the right–most connector of the internal cable is connected to the device on the right and the left-most connector of the internal cable is connected to the device on the left. This routes the right-hand device to external port 1 and the left-hand device to external port 2.

NOTE: The interface board has text, “Port 1–0” and “Port 2–0”, on the PCI board near the internal SAS connector, which also helps identify the routing to the external ports.

NOTE: Power for all LTO–5 and later tape drives is supplied through the SAS cable. For all earlier models of LTO tape drive, a separate power cable is required.

Media tray components

Media tray front panel components



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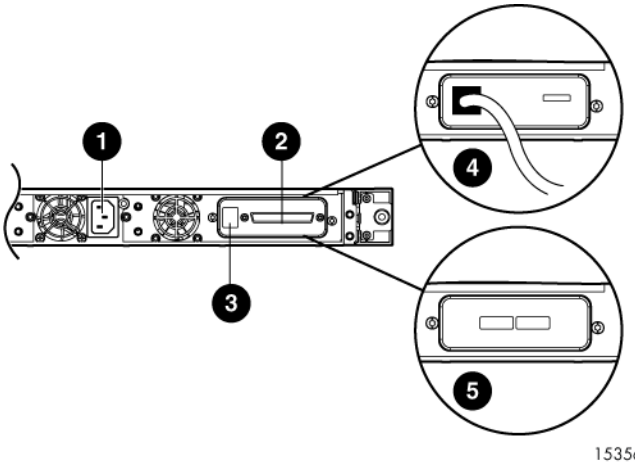
1. Device
2. Expansion device bay
3. Power switch/LED

Figure 3 Front panel components

Media tray rear panel components



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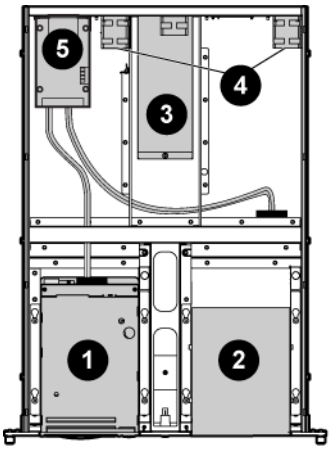
1. AC Power Connector
2. SCSI Connector (SCSI models)
3. SCSI ID Switch (SCSI mode Only)
4. SAS Connector (SAS models)

Figure 4 Rear panel components

Media tray internal components (SAS version shown)



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1. Device
2. Device blank
3. Power supply
4. Fan assemblies (2)
5. SAS Repeater Board (SAS Models only)

Figure 5 Internal components

2 Device installation

A 3/16″ (5mm) flat-blade screwdriver or T-15 Torx driver may be required to install a device in the 1U media tray.

CAUTION: To avoid damaging the equipment due to electrostatic discharge, be sure to review and practice the procedures in Electrostatic discharge (page 23) before handling the devices.

To install a device:

1. Remove the top access panel as shown.

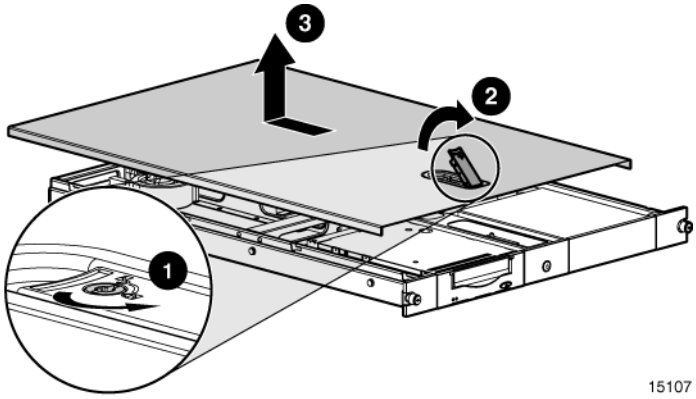

Figure 6 Removing the top access panel

2. Remove the device blank:
   a. Pull the spring-loaded button on the right mounting rail up.
   b. Slide the assembly forward and then lift up.

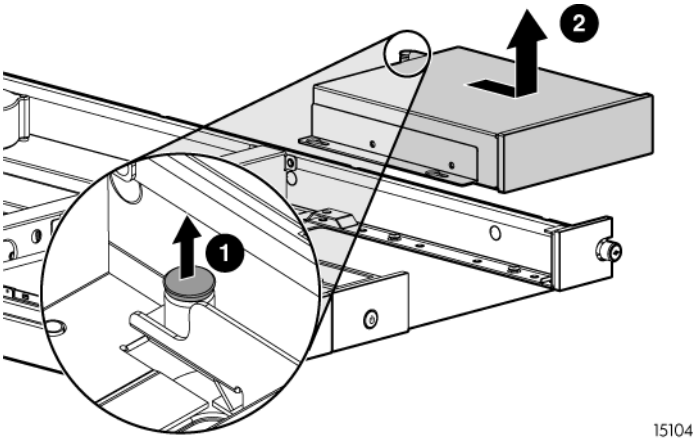

Figure 7 Removing the device blank

3. Remove the mounting brackets from the device blank.

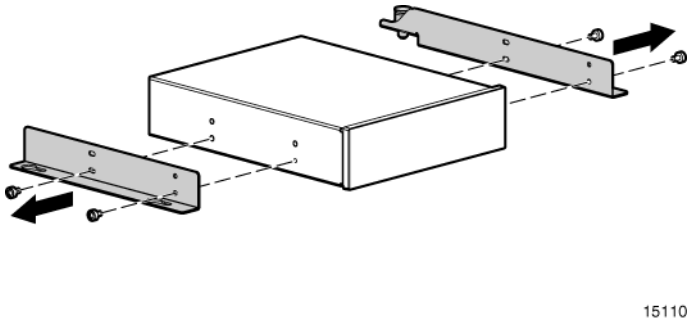

Figure 8 Removing the mounting brackets

4. Install the mounting brackets to the sides of the device.

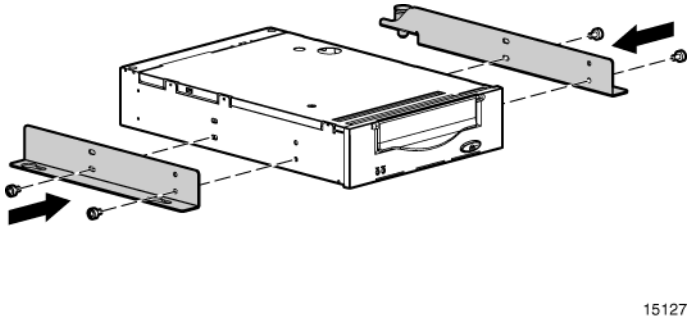

Figure 9 Installing the mounting brackets

CAUTION: When installing an LTO half-height tape drive, it is particularly important that you use the 6 mm M3 screws provided with the drive. If the screws are too long, they may damage the mechanism and void the warranty. Do not overtighten the screws; use the washers provided in the screw pack.

---

5. Install the device in the media tray:
   a. Position the mounting bracket keyhole slots over the mounting posts.
   b. Slide the device toward the back of the media tray.
   c. The spring-loaded button will automatically snap into place.

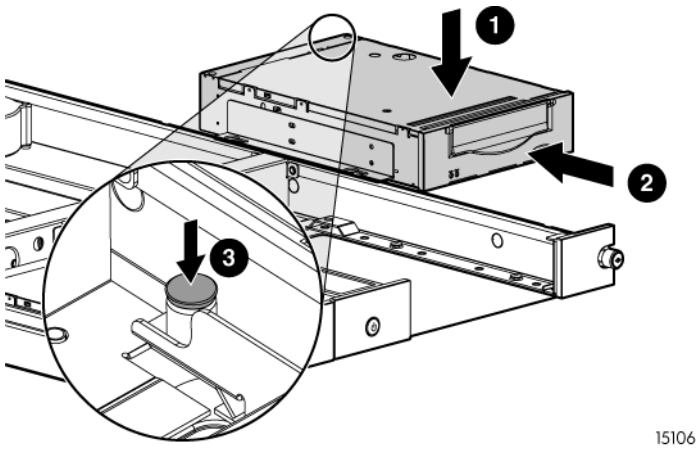

Figure 10 Installing the device

6. Attach the following cables:

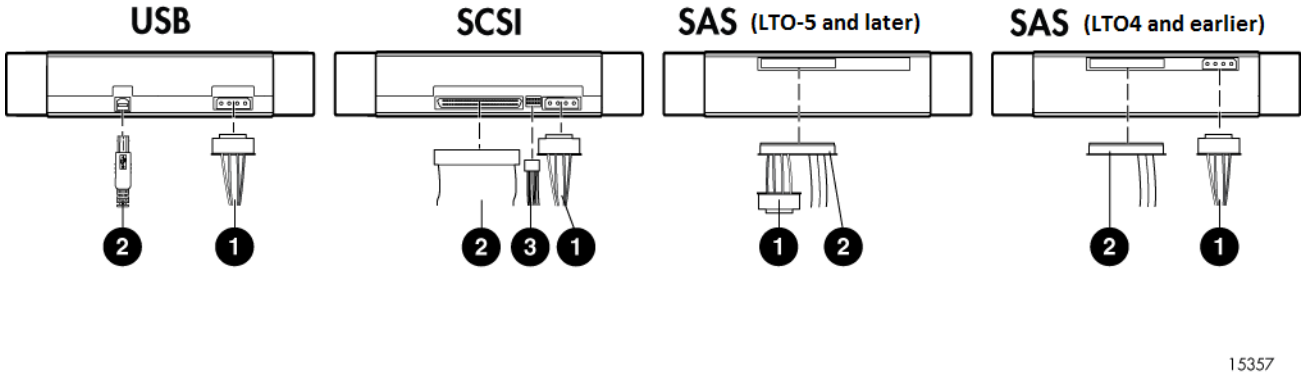

Figure 11 Attaching the cables

1. Power
2. Signal
3. SCSI ID selector (SCSI drives only)

NOTE: Fold excess cable length and secure with the clips provided in the media tray.

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7. Replace the top access panel as shown.

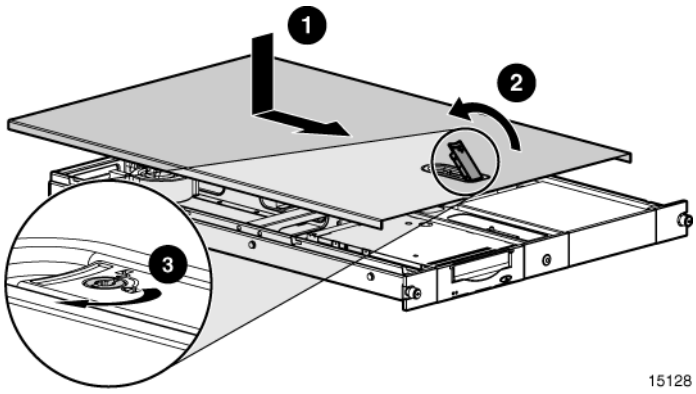


Figure 12 Replacing the access panel

Cabling with two devices

The 1U Media Tray supports operation of two devices.

SAS devices

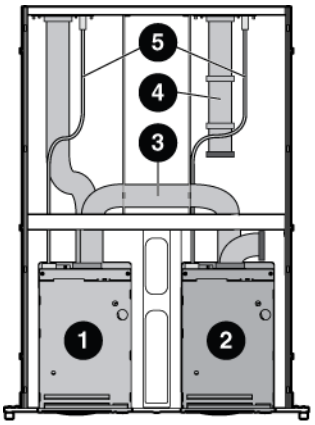
Each device must be connected directly to a dedicated SAS channel that supports it. (For example, when connecting a tape drive device, be sure to check that the SAS channel supports tape.) The SAS interface does not support daisy chaining.

SCSI devices

The 1U Media Tray supports operation of two devices on either one or two SCSI buses. Two internal 2-port SCSI cables are installed in the media tray, so completing the device installation is just a matter of connecting the correct SCSI port according to your configuration.

Two devices on one SCSI bus

Use the configuration shown below when connecting both devices to the same SCSI bus.



1. Device 1
2. Device 2
3. SCSI bus 1 cable; SCSI connector nearest terminator is used for device 2, center connector is used for device 1
4. SCSI bus 2 cable (not used)
5. SCSI ID cables, one for each device

Figure 13 Two-device SCSI configuration

NOTE: When adding a second device for configurations using a single SCSI bus.

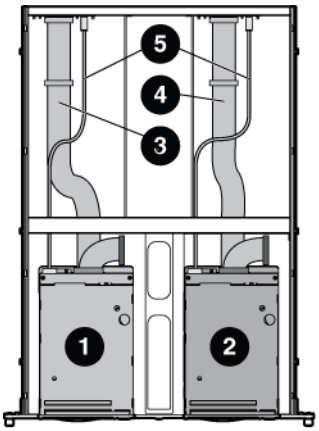
1. Unplug the SCSI cable from device 1.
2. Pass the end of the cable through internal chassis openings.
3. Plug the end port into device 2.
4. Then plug the middle port into device 1.

The SCSI terminator is at the end of the cable and should be behind device 2.

NOTE: Each SCSI device on the same SCSI bus must have a unique SCSI ID. Be sure that the SCSI ID is different for each device and that neither is set to SCSI ID 7, which is reserved for the SCSI controller.

One device per SCSI bus

Use the configuration shown below when connecting each device to a separate SCSI bus.



1. Device 1
2. Device 2
3. SCSI bus 1 cable, SCSI connector nearest terminator is used for device 1
4. SCSI bus 2 cable, SCSI connector nearest terminator is used for device 2
5. SCSI ID cables, one for each device

Figure 14 Single-device SCSI configuration

CAUTION: To prevent possible data errors, when there is only one device on a SCSI bus that device must be connected to the SCSI port closest to the terminator.

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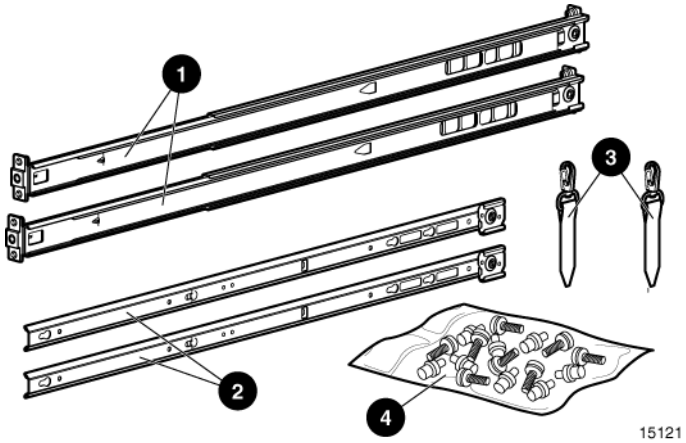
3 Rack installation

Rail mounting kit

The rack rails supplied with the 1U rackmount media tray can be used to install the unit in racks that have round, square, or threaded holes in the vertical mounting bars. The rails will fit racks with 23 - 34 inches (58 - 86 cm) separation between the front and rear vertical mounting bars. The rails are identical and may be mounted on either the left or the right side.



1. Outer rack rails
2. Inner component rails
3. Cable support clips
4. Fasteners

Figure 15 Rail mounting kit components

Tools required

If you are installing the media tray in a rack with unmarked holes in the vertical mounting bars, the following items will make the rack installation easier:

- Pencil
- Tape measure

If you are installing the media tray in a rack with threaded holes in the vertical mounting bars, you will need the following tool:

- 3/16" (5mm) flat-blade screwdriver

Installing the media tray in a rack

WARNING! To reduce the risk of personal injury or equipment damage, be sure that:

- The rack leveling jacks are extended to the floor
- The full weight of the rack rests on the leveling jacks
- The stabilizing feet are attached to the rack if it is a single rack installation
- The racks are coupled in multiple rack installations
- Only one component is extended at a time. A rack may become unstable if more than one component is extended for any reason.

When installing the media tray in a rack:

- Start at the bottom of the rack, or at the top of a previously mounted component, and work upward
- If possible, install the heaviest components at the bottom and lighter ones toward the top of the rack
- Make sure that the rack-mounting rails are level from front to back

Before you begin

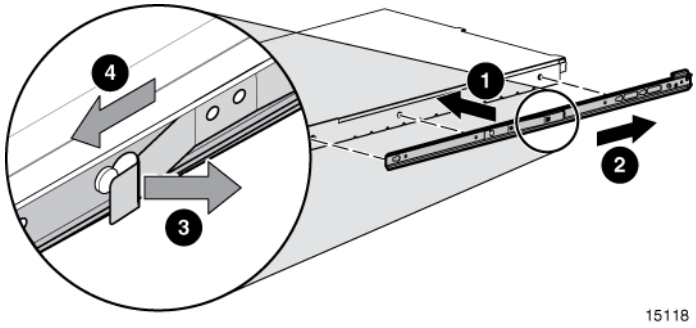
If you are installing the media tray in a rack with unmarked holes in the vertical mounting bars, identify and mark the correct mounting holes in the rack before you begin rail installation.

CAUTION: It is important to make sure that the rack components are level. To ensure that the 1U media tray is installed correctly it may be necessary to measure the height of the correct mounting holes in the front and rear vertical mounting bars.

Installing the component rails

Component rails are the inner portion of the rack rail system that are attached to the media tray.

1. Align the slotted holes on the left and right component rails with the three pins on the sides of the media tray (1).
2. Slide the component rails toward the rear of the media tray (2) until they lock into place.



1. Media tray pins
2. Rear slide
3. Spring-loaded tab
4. Forward slide

Figure 16 Installing the rails

NOTE: To remove the component rail, pull out the spring-loaded tab (3) on the side of the rail and slide it forward (4).

IMPORTANT: If you are returning the 1U Rackmount Media Tray for service, be sure to remove and save the component rail.

Installing the rack rails

Installation procedures vary depending on the rack type. The rails are shipped ready for installation in racks with round or square holes. If the rails are to be installed in racks with 10-32 threaded holes, the mounting pins must first be removed. Refer to one of the following sections for installation instructions for your rack.

- Installation in racks with round or square holes
- Installation in racks with 10-32 threaded holes

Installation in racks with round or square holes

NOTE: The ends of the rack rails are marked FRONT and REAR for proper orientation.

1. Insert the pins in the front mounting plate of the outer rack rails into the previously marked holes in the front vertical mounting bars of the rack. The rack rails will lock securely into place.

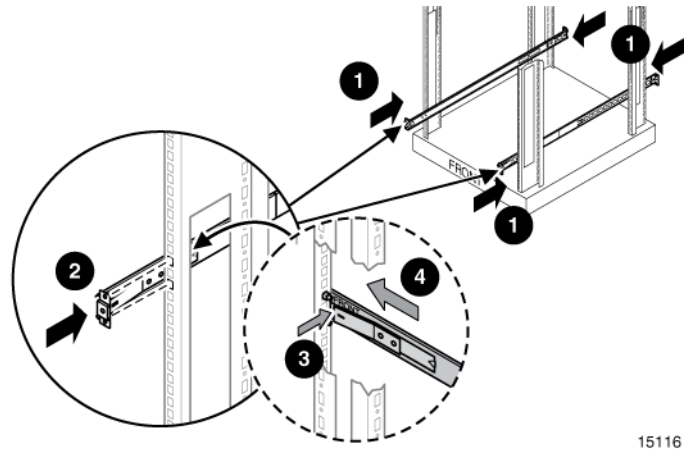


Figure 17 Inserting the pins in racks with round or square holes

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NOTE: To remove the rail for repositioning, push the spring-loaded tab (3) on the outside of the rack rail and slide it forward (4).

---

2. Extend the rack rails past the rear vertical mounting bar and insert the pins in the mounting bracket into the previously marked holes in the rack. The rack rails will lock securely into place when the end of the rails are pushed forward.

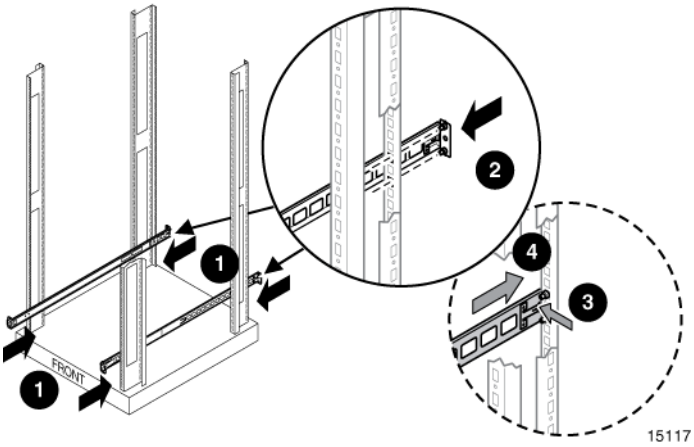

Figure 18 Locking the rails in racks with round or square holes

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NOTE: To remove the rail for repositioning, push the spring-loaded tab (3) on the outside of the rack rail and slide rearward (4).

Rail installation in a rack is complete. Continue with ”Completing the installation”

Installation in racks with 10-32 threaded holes

For installation in racks with 10-32 threaded holes in the vertical mounting bars, the pins supplied on the rails must be removed. The rails will be attached with user-supplied 10-32 x .375 screws.

1.

Remove the pins and threaded plates from both ends of each outer rack rail. These pieces will not be used.

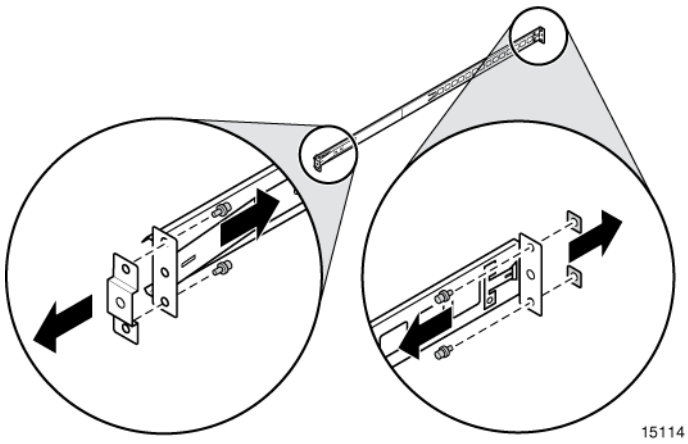

Figure 19 Removing the pins in racks with 10–32 threaded holes

NOTE: The ends of the rack rails are marked FRONT and REAR for proper orientation.

2. Attach the front mounting plate of each outer rail to the rack using four 10-32 screws in the previously marked holes in the front vertical mounting bars of the rack.

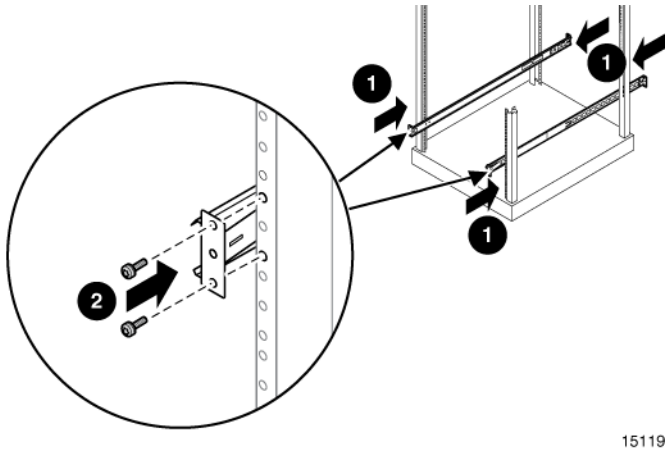

Figure 20 Attaching the front mounting plate

3. Extend the rack rails past the rear vertical mounting bars and attach the back mounting plate of each outer rail to the rack using four 10-32 screws in the previously marked holes.

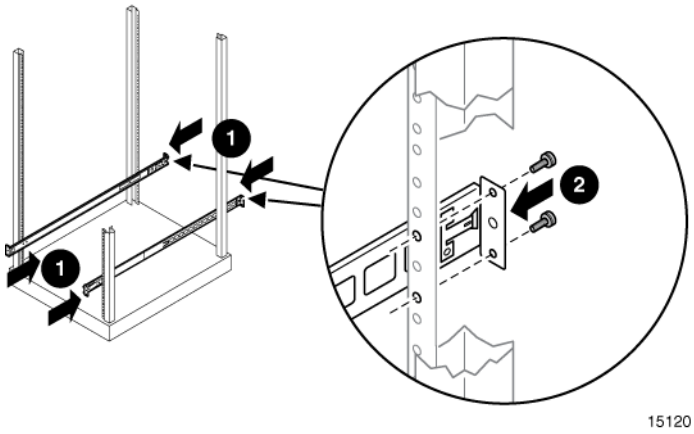

Figure 21 Locking the rails in racks with 10–32 threaded holes

Completing the installation

1. Extend the stabilizing feet, if provided, on your rack.
2. Extend the left and right rack rails from the front of the rack.
3. Align the rear of the component rails on the media tray with the front ends of the rack rails, then slide the unit fully into the rack.

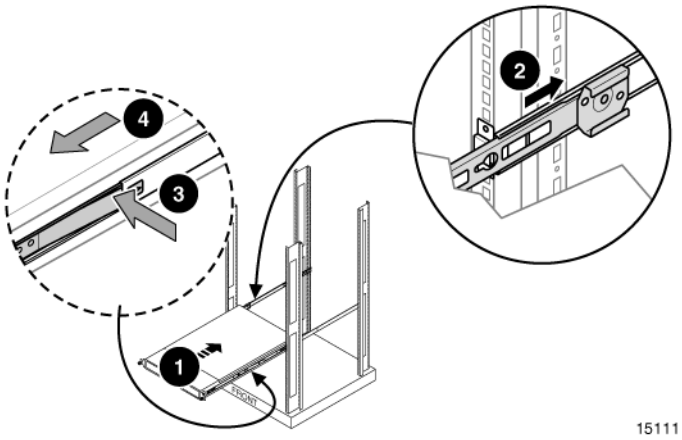

Figure 22 Completing the installation

CAUTION: Be sure to keep the media tray parallel to the floor when sliding the component rails into the rack rails. Tilting the media tray up or down could damage the rails.

NOTE: To remove the media tray from the rack, disconnect the cables from the back of the unit. Press the latches on each side (3) and pull the media tray from the rack (4). See Completing the installation (page 21) for the location of the latches.

---

4. Tighten the front panel thumbscrews.
5. If used, retract the stabilizing feet of the rack.
6. Plug the signal cable (SAS or SCSI) from the server into the signal connector(s) on the rear panel of the media tray.
7. Plug the AC power cord into the power cord connector, then into a grounded outlet.

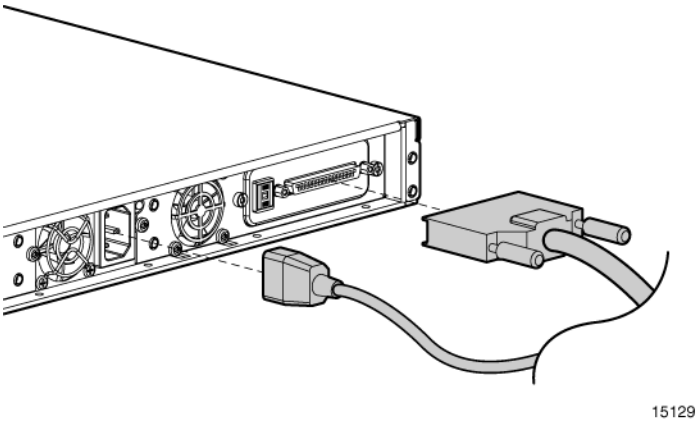

Figure 23 Plugging in the power cord

8. Install the cable support clip(s) at the back of the rack rail(s) on one or both sides of the media tray.

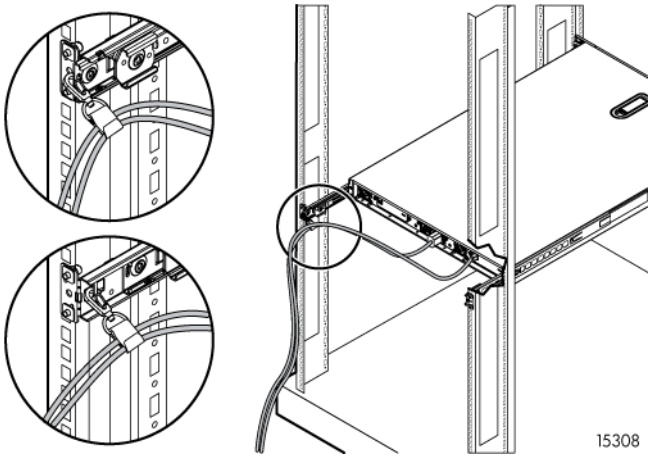

Figure 24 Installing the cable support clips

9. Turn on the power to the media tray with the front panel power button.

A Electrostatic discharge

Preventing electrostatic discharge

To prevent damaging the system, be aware of the precautions you need to follow when setting up the system or handling parts. A discharge of static electricity from a finger or other conductor may damage system boards or other static-sensitive devices. This type of damage may reduce the life expectancy of the device.

To prevent electrostatic damage:

- Avoid hand contact by transporting and storing products in static-safe containers.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free workstations.
- Place parts on a grounded surface before removing them from their containers.
- Avoid touching pins, leads, or circuitry.
- Always be properly grounded when touching a static-sensitive component or assembly.

Grounding methods to prevent electrostatic discharge

Several methods are used for grounding. Use one or more of the following methods when handling or installing electrostatic-sensitive parts:

- Use a wrist strap connected by a ground cord to a grounded workstation or computer chassis. Wrist straps are flexible straps with a minimum of 1 megohm ±10 percent resistance in the ground cords. To provide proper ground, wear the strap snug against the skin.
- Use heel straps, toe straps, or boot straps at standing workstations. Wear the straps on both feet when standing on conductive floors or dissipating floor mats.
- Use conductive field service tools.
- Use a portable field service kit with a folding static-dissipating work mat.

If you do not have any of the suggested equipment for proper grounding, have an authorized reseller install the part.

For more information on static electricity or assistance with product installation, contact an authorized reseller.

B Specifications

Specification	S.A.E.	Metric
Dimensions:		
Height	1.75 in	4.44 cm
Depth	25.25 in	64.1 cm
Width	19.0 in	48.3 cm
Weight (1 device installed)	20 lb	9.07 kg
Input power requirements		
	90 to 264 VAC	90 to 264 VAC
	2.4 A 47 - 63 Hz	2.4 A 47 - 63 Hz
	140 W *	140 W *
Heat Dissipation (max)	478 BTU/hr*	478 BTU/hr*
Temperature range		
Operating	41° to 104° F	5° to 40° C
Non-operating	-40° to 158° F	-40° to 70° C
Relative humidity		
Operating (non-condensing)	20% to 80%	20% to 80%
Non-operating	5% to 95%	5% to 95%
Wet bulb temperature (max)	79° F	26° C
Altitude (max)		
Operating	0 to 15,000 ft	0 to 4600 m
Non-operating	0 to 50,000 ft	0 to 15200 m
* Input power and Heat dissipation specifications are maximum values and apply to worst-case conditions at full-rated power supply load. The power/heat dissipation for your installation will vary depending on the equipment configuration.		

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