HP 10000 G2 Series Rack Options Installation Guide

Abstract

This document is for the person who installs racks and rack products. This procedure is performed only by trained personnel. HP assumes you are qualified in performing installations and trained in recognizing hazards in rack products.

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About this guide

Rack options installation guide

This installation guide includes the instructions for installing rack option kits that are compatible with the HP 10000 G2 Series Rack.

For more information, see the HP 10000 G2 Series Rack User Guide on the HP website (http://www.hp.com/go/rackandpower).

Important safety information

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

- The rear leveling feet are extended to the floor.
- The full weight of the rack rests on the rear leveling feet and front stabilizer feet.

WARNING: To reduce the risk of personal injury or damage to the rack and equipment, the racks must be positioned and secured together according to these instructions. Failure to do so could result in an unstable installation.

WARNING: Components can be very heavy. To reduce the risk of personal injury or damage to the equipment:

- Remove all pluggable power supplies and modules to reduce the weight of the product before lifting it.
- Observe local occupational health and safety requirements and guidelines for manual material handling.
- Get help to lift and stabilize the product during installation or removal, especially when the product is not fastened to the rails. When the component weighs more than 22.5 kg (50 lb), at least two people must lift the component into the rack together. If the component is loaded into the rack above chest level, a third person must assist in aligning the rails while the other two support the component.
- Use caution when installing the component in or removing the component from the rack; it is unstable when not fastened to the rails.

Additional rack considerations

Consider the following specifications and components, with regard to your specific rack configuration:

- Power—If a UPS is installed, do not exceed its output rating. Be sure to review the installation instructions provided with each component for important cautions and warnings.
- PDUs—Install PDUs before installing other components.
- Height—The height of the rack and of rack-mountable components is measured in U increments, where U = 4.5 cm (1.75 in). When you are configuring your rack installation, remember that the total U measurement of the components you want to install cannot exceed the stated U height of the rack.

- Keyboard—The rack keyboard requires installation of a 1U keyboard drawer rack option kit.
- Monitor—The monitor requires installation of a monitor/utility shelf rack option kit unless you are using a rack-mountable flat-panel monitor.
- Server console switch—If a console switch is configured, use the CPU-to-console switch cable included with the server. The standard distance between the console switch and the keyboard, monitor, and mouse can vary by 3-, 7-, 12-, 20-, and 40-ft lengths.

  NOTE: National electrical regulations governing the installation of building wiring require that an appropriate cable, meeting fire-safety standards, must be used any time cabling is routed:

  - Through an overhead drop-ceiling
  - Under raised flooring
  - From room to room
  - From floor to floor

  Be sure that the cable jacket or sleeving is made of material that does not burn easily and does not exude toxic fumes when exposed to heat. Be sure that the cable you have selected is appropriate for your installation site. If you require a U.S. plenum-rated (CL2P) cable, contact your local HP authorized reseller to obtain any of the following options:

  - 149363-B21-20-foot plenum cable
  - 149364-B21-40-foot plenum cable

- Rack baying option kits—The number of baying kits needed to join a series of racks is one less than the number of racks in the suite. Each baying kit supplies parts to bay two cabinets on 600 mm (24 in) center line spacing.
- Side panels—Only one set of side panels is required for each row of bayed racks.
- Stabilizer kit—A stabilizer kit is either required or recommended, depending on your rack configuration. There are four stabilizer kit options.
  - The standard 600-mm (23.6 in) or 800-mm (31.5 in) front foot is required with deployments of stand-alone racks. Rack rows with four or more bayed racks, without a single rack-mountable component exceeding 99.8 kg (220 lb), do not need a stabilizer kit installed.
  - The heavy duty 600-mm (23.6 in) or 800-mm (31.5 in) front foot is required when a single rack-mountable component weighing 99.8 kg (220 lb) or more is installed in a stand-alone rack or in a rack belonging to a rack row of three or fewer bayed racks.

Rack options

Ordering rack options

HP provides several rack option kits to complement or complete your rack solution. The following list is a sample of the many rack option kits available.

For information about ordering rack option kits, see the HP website (http://www.hp.com/go/rackandpower), or contact your nearest HP authorized reseller.

Rack option kit	Part number	Description
100 Kilo Sliding Shelf kit (on page 11)	234672-B21	Enables easy access to various rack components
Airflow Optimization kit (on page 17)	AF090A	Enables you to improve airflow of your rack
Ballast kit (on page 22)	120672-B21	Provides rack stability when you install, remove, or access heavy equipment within the rack
Baying kit (on page 25)	248929-B21	Joins multiple racks of the same series, height, and depth
Cable Management Bracket kit (on page 28)	AF099A	Enables you to manage your cable configurations
Cable Management Tray kit (on page 36)	383982-B21 383983-B21 383984-B21	Enables you to manage your cable configurations
Fan (110V/220V) kit (on page 42)	257414-B21	Enhances natural convection cooling by increasing the airflow in the rack
Filler Panel kit (on page 45)	AF072A	Enables you to control airflow by covering empty locations in your rack
Front Door kit (on page 46)	AF009A	Enables you to add a door to the front of your rack
Ground Bonding kit (on page 49)	AF074A	Reduces the level of electromagnetic emissions outside the rack
Heavy Duty Stabilizer kit (on page 69)	AF064A	Increases the stability of free-standing racks
Hook-and-Loop Cabling Strap Clip kit (on page 72)	379820-B21	Enables you to manage your cable configurations
Light kit (on page 76)	361589-B21	Provides additional light inside your rack
Mini Stabilizer kit (on page 83)	AF062A AF066A	Increases the stability of free-standing racks
Rack Air Duct kit (on page 86) • Top exhaust extension kit • Top exhaust field retrofit kit • Top exhaust rack	AF028A AF029A AF030A	Removes warm air from the rack by channeling the warm air into the data center ceiling return air plenum
Rear Extension kit (on page 105) • 42U rear extension kit • 47U rear extension kit	AF036A AF043A	Enables you to add 200-mm (7.87 in) of depth to the rear of your rack

Rack option kit	Part number	Description
Server/Utility Shelf kit (on page 112)	253449-B21	Holds rack components inside the rack
Side Panel kit (on page 116)	AF054A	Provides enclosures for the sides of a rack
Tie-Down kit (on page 119)	AF076A	Increases the stability of free-standing racks
Vertical PDU Mounting kit (on page 124)	H6L32A	Allows HP PDU vertical models to be mounted in the rack

100 Kilo Sliding Shelf kit

About this device

The HP 100 Kilo Sliding Shelf kit enables you to install a sliding shelf in your rack mount system for placement and easy access to various components. This option occupies 2Us of rack space.

Kit contents

Item	Quantity
Shelf with handle	1
Right rail with fixed brackets	1
Left rail with fixed brackets	1
Sliding rail	2
Cable management arm with hardware	1
Rack template	1
Hardware kit • M4 x 12 flat HD screw • M4 external washer • M4 x 10 pan HD screw • M6 x 12 pan HD screw • M4 plain washer • M4 nut • M6 external washer	 • 8 • 8 • 2 • 12 • 2 • 6 • 10

Extra hardware might be included for your convenience.

Required tools

The following tools are required for installation:

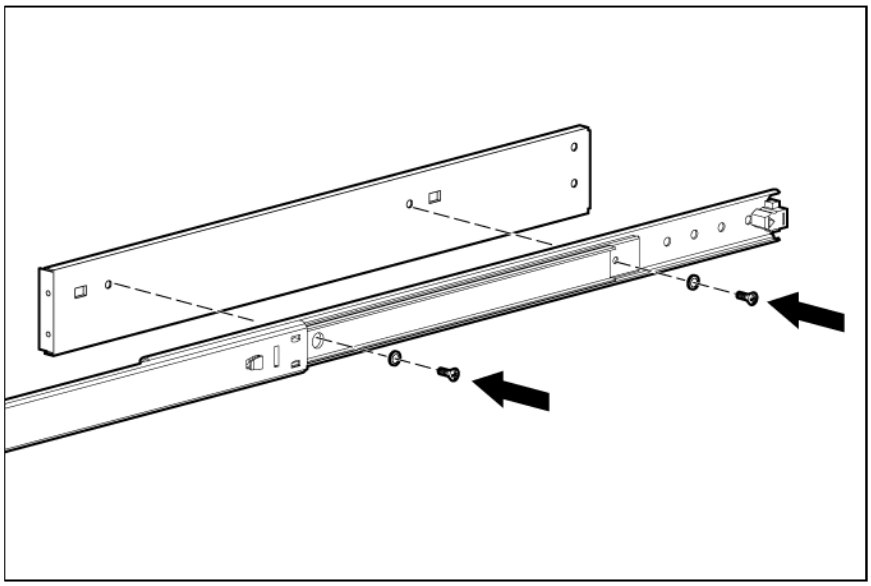
- No. 2 Phillips screwdriver
- No. 3 Phillips screwdriver

Preparing the sliding shelf rail assemblies for installation

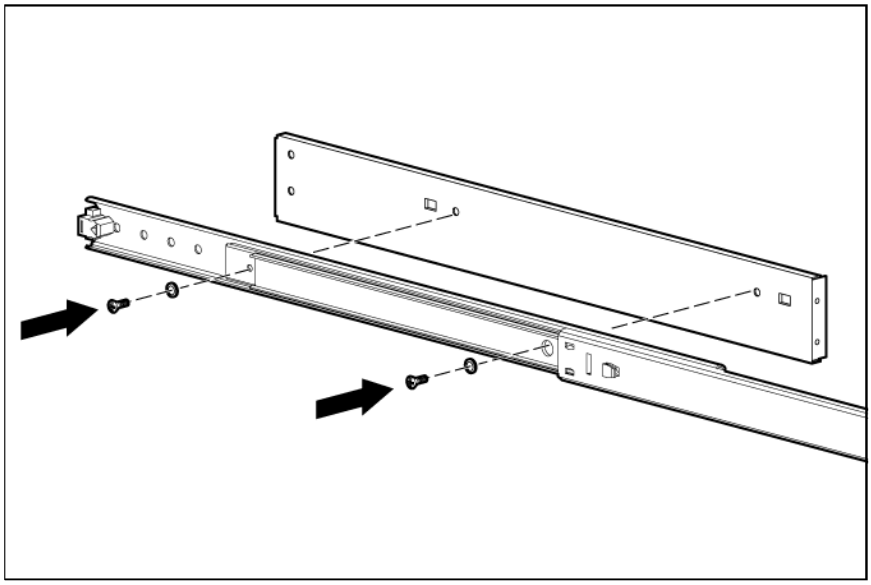
Each sliding shelf rail assembly consists of a rail with fixed brackets attached to a sliding rail. To construct the sliding shelf rail assemblies:

1. Hold the flat side of the left rail with fixed brackets facing toward you.
2. Place the sliding rail on top of the left rail with fixed brackets.

3. Extend the inner slides of the sliding rail until the screw holes on the sliding rail and the left rail with fixed brackets are aligned. Gently push down on the sliding rail to lock it into place.
4. Secure the rails together with two M4 x 12 flat HD screws and M4 external washers.



5. Repeat steps 1 through 4 for the right rail with fixed brackets.

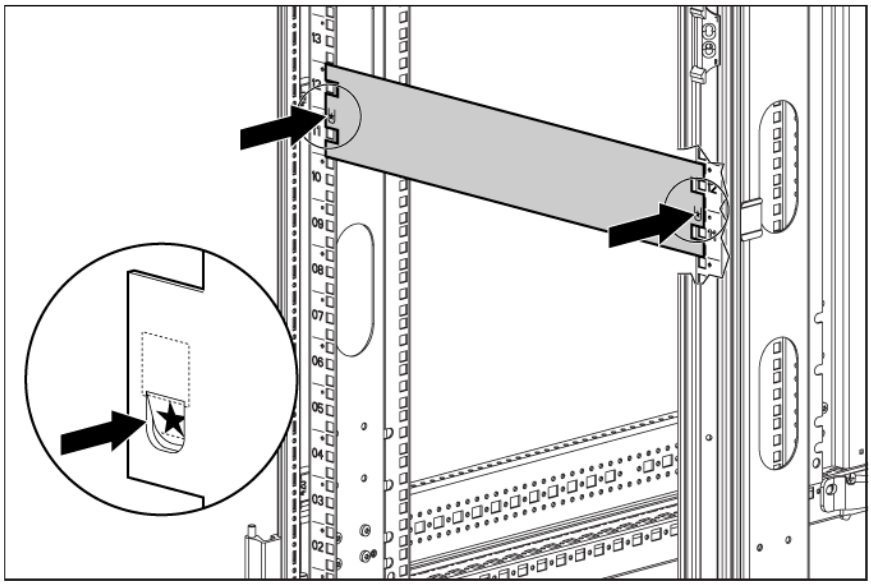


Installing the sliding shelf rail assemblies

⚠ **WARNING:** To reduce the risk of personal injury or damage to the equipment, be sure to secure mounted rack components when moving the rack.

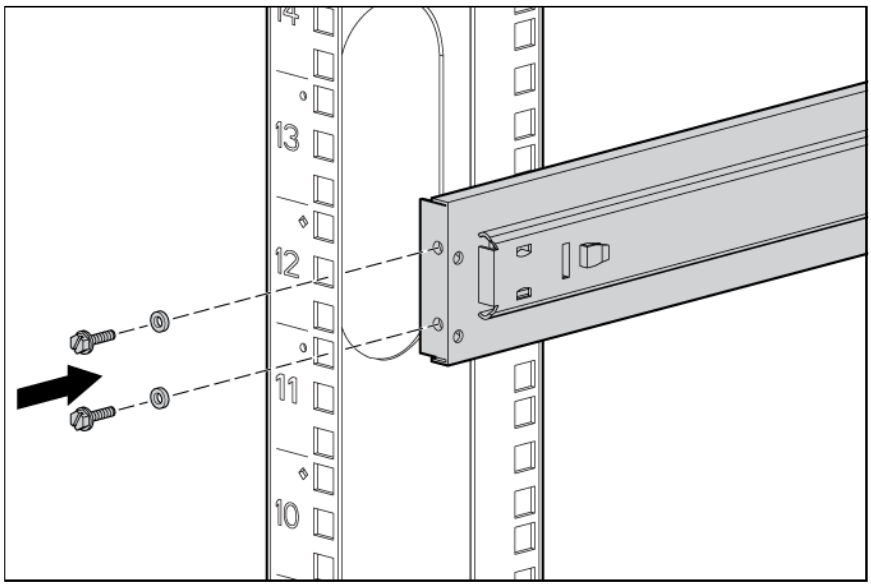
You must install the sliding shelf rail assemblies before installing the sliding shelf. Follow these steps closely to install the sliding shelf rail assemblies into the rack:

1. Use the template on the front and rear of the rack frame to mark the attachment points for the sliding shelf rail assemblies, by measuring from the top of the component installed below the desired position for the sliding shelf.

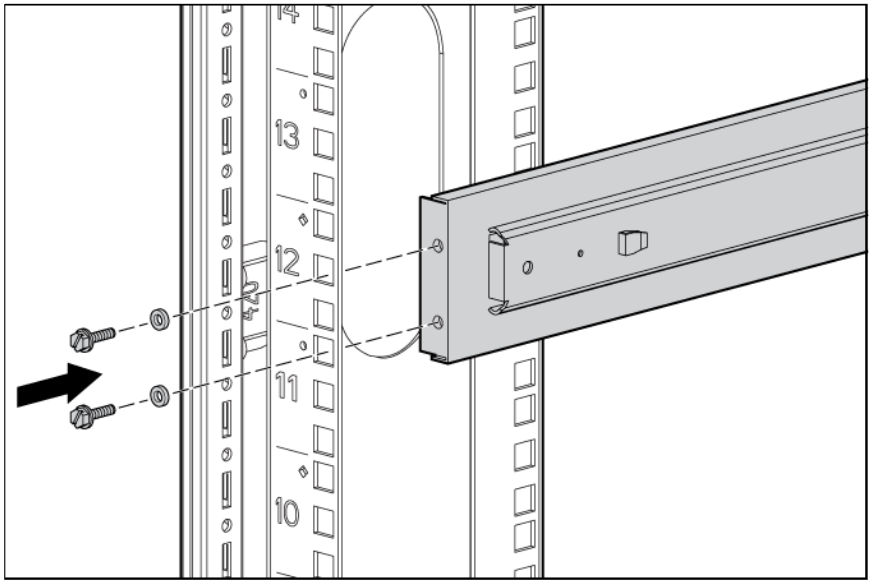


IMPORTANT: When using the template on the rear of the rack frame, mark the rack at the top of the template to help align the next rack component.

2. Align and secure the rear of the left sliding shelf rail assembly to the rear of the rack frame with two M6 x 12 pan HD screws and M6 external washers.



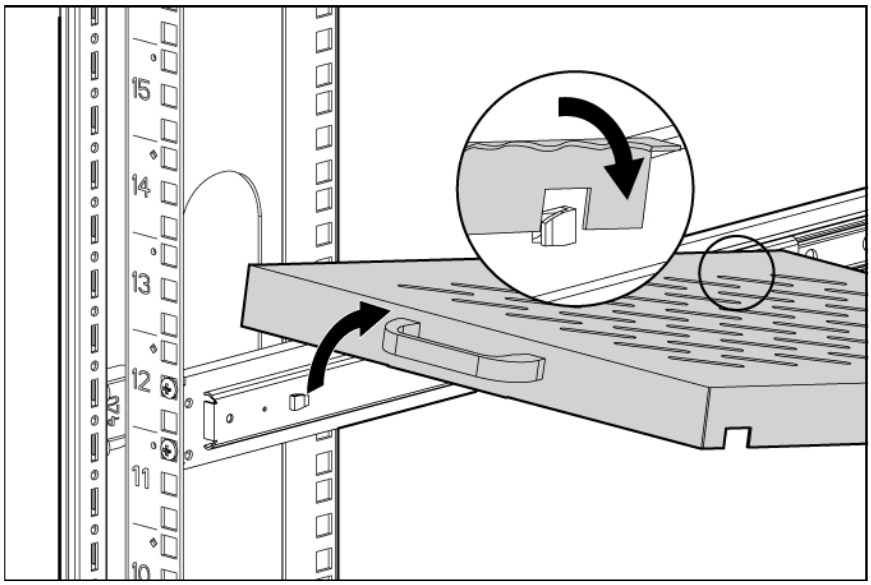
3. Secure the front of the left sliding shelf rail assembly to the front of the rack frame with two M6 x 12 pan HD screws and M6 external washers.



4. Repeat steps 2 and 3 to install the right sliding shelf rail assembly.

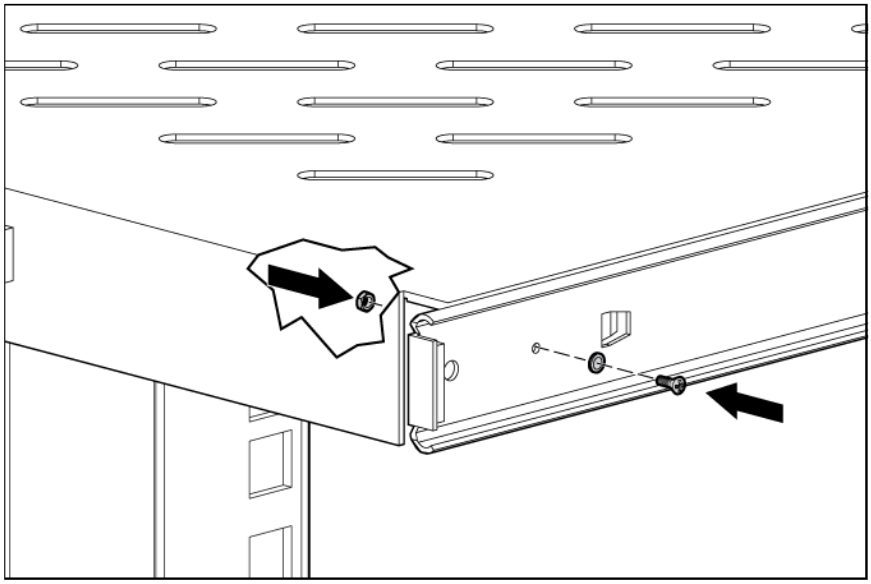
Installing the sliding shelf

1. Move the sliding shelf into the rack while tilting the front of the shelf up. Align the rear notches on the sliding shelf over the rear tabs on the sliding shelf rail assemblies.

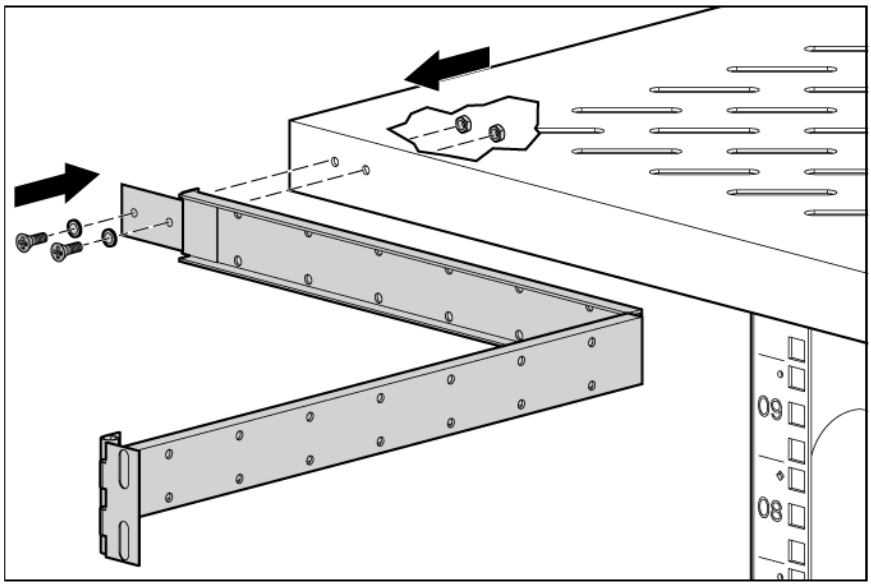


2. Push the sliding shelf down onto the rear tabs to align the front notches on the sliding shelf with the front tabs on the sliding shelf rail assemblies.
3. Lower the front of the sliding shelf over the tabs on the front of the sliding shelf rail assemblies and push down gently to lock the shelf into place.

4. Secure the sliding shelf to each sliding rail using one M4 x 12 flat HD screw and M4 external washer with one M4 nut on the inside of the shelf.

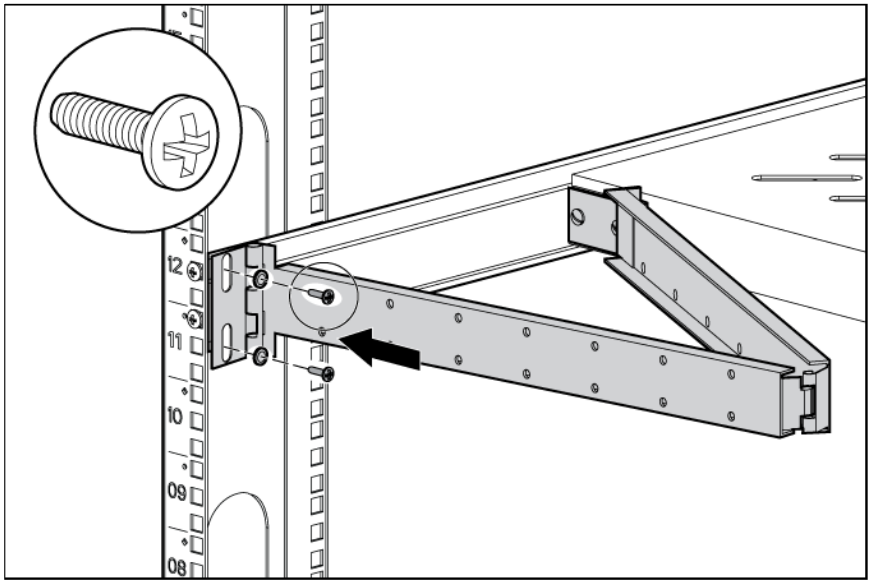


5. Attach the cable management arm to the sliding shelf with the flat side of the cable management arm mounting bracket flush with the sliding shelf.
6. Secure the cable management arm to the sliding shelf using two M4 x 12 flat HD screws and M4 external washers with two M4 nuts on the inside of the shelf.



NOTE: The cable management arm attaches to the rear of the sliding shelf on either the right or left side.

7. Secure the opposite end of the cable management arm to the rack using two M6 x 12 pan HD screws and M6 external washers.



Installation is complete.

Using the 100 Kilo Sliding Shelf

Use the handle on the front of the sliding shelf to slide it in and out of the rack. When sliding the shelf back into the rack, there may be resistance. Apply pressure as needed to fully move the shelf into the rack.

IMPORTANT: Be sure to secure all rack mount system components when moving the shelf out of the rack.

Airflow Optimization kit

About this device

The HP Airflow Optimization kit enables you to install foam rail gaskets in your HP 10000 G2 Series 22U, 36U, 42U, and 47U 600-mm (24-in) wide racks and in to 42U 800-mm (31-in) wide racks to improve separation between hot and cold aisles in the data center.

Kit contents

Item	Quantity
600-mm (24-in) perforated floor gasket —or— 800-mm (31-in) perforated floor gasket	1 1
Foam rail gasket roll	4

Extra hardware might be included for your convenience.

Required tools

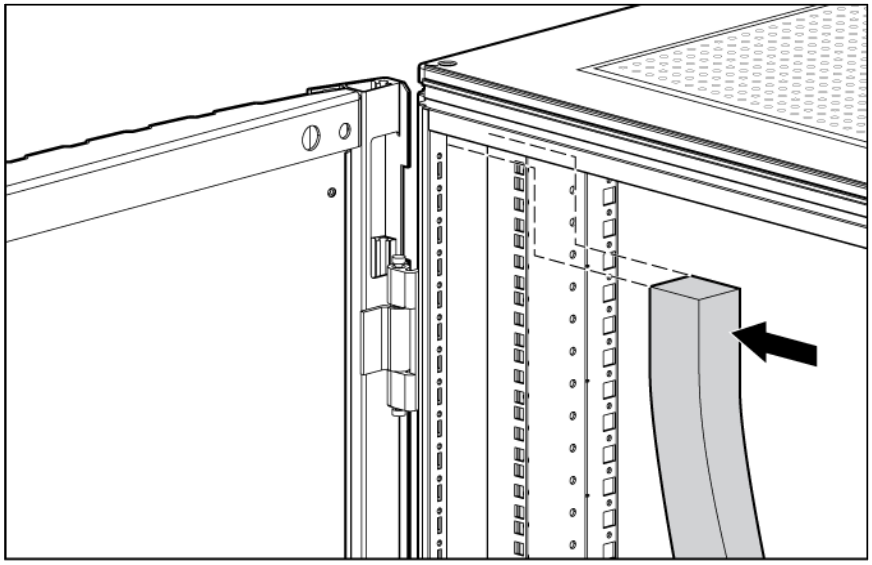
No tools are required for this procedure.

Installing foam rail gaskets

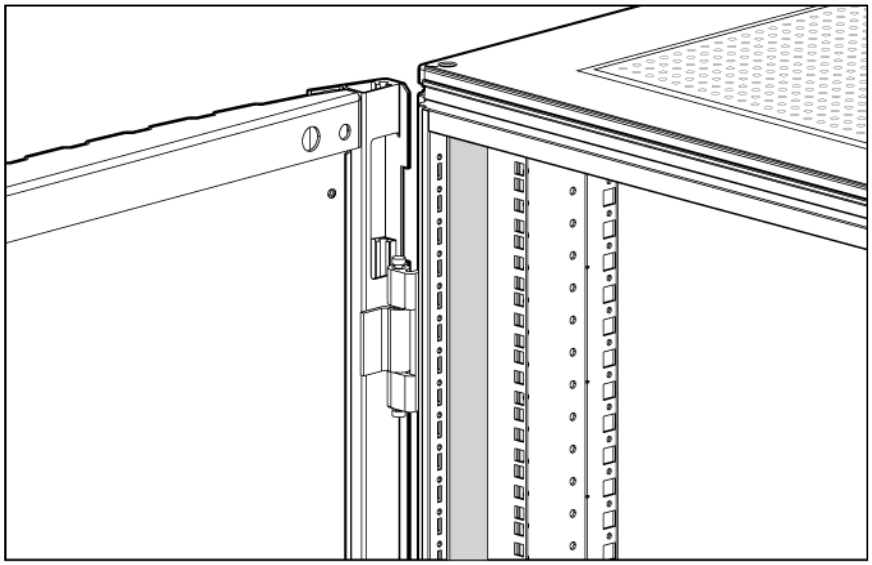
IMPORTANT: This option kit is only compatible with HP racks that are 600-mm (24 in) or 800-mm (31 in) wide.

1. Cut the foam rail gasket to fit the size of your rack.
2. Insert the foam rail gasket into the rack front door on both sides of the rack.

3. Insert the foam rail gasket into the space between the 19-in mounting rails and the vertical frame on both sides of the rack, with the closed cell side of the foam rail gasket facing the front of the rack.



4. Gently push the foam rail gasket into the space until it is flush with the vertical frame.



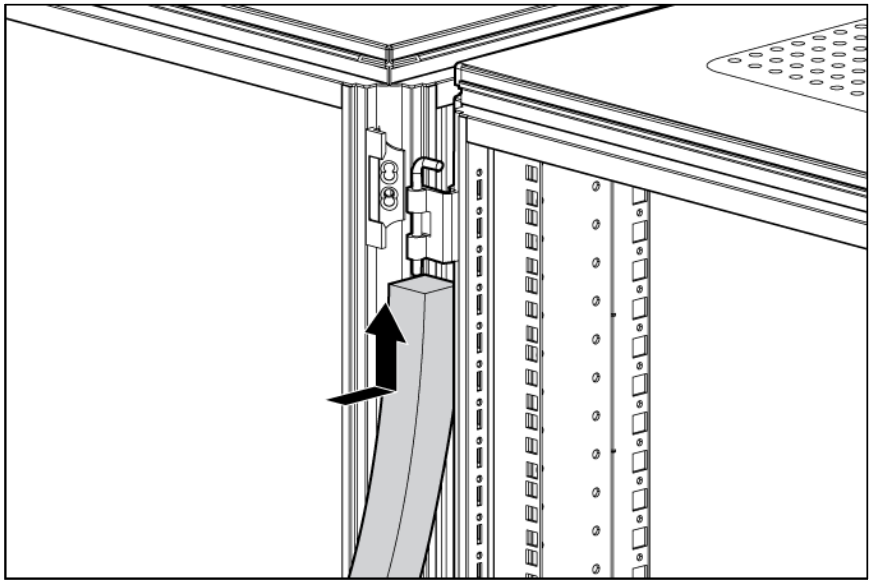
Installing foam rail gaskets between racks

CAUTION: The foam rail gasket must be installed into the rack before two or more racks can be bayed together. For additional information on baying racks, see the *HP Baying Rack Option Kit*.

If installing the foam rail gasket between racks that have a baying kit installed, the baying bracket must be removed before the foam rail gasket can be inserted between the racks.

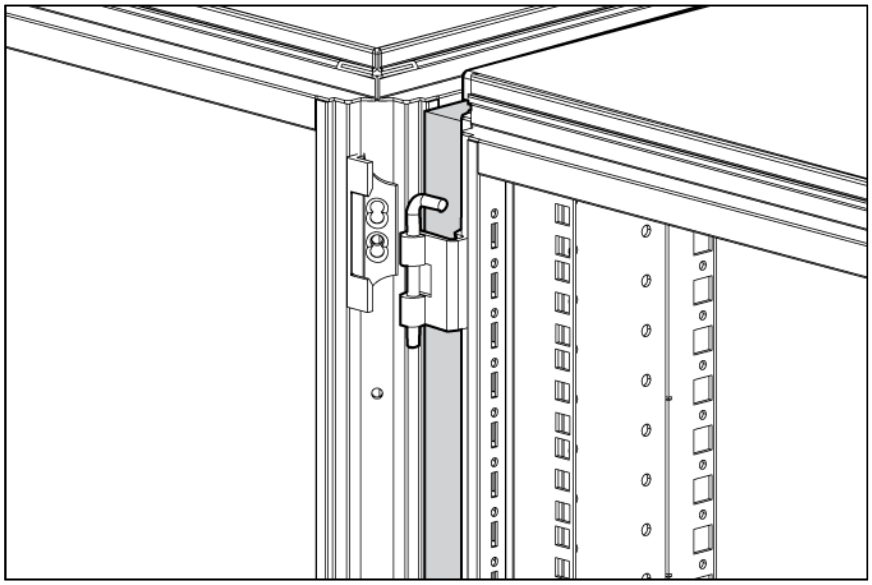
1. Position the racks side by side.
2. Cut the foam rail gasket to fit the size of your rack.

3. Insert the foam rail gasket into the space between the racks with the closed cell side of the foam rail gasket facing the front of the rack.

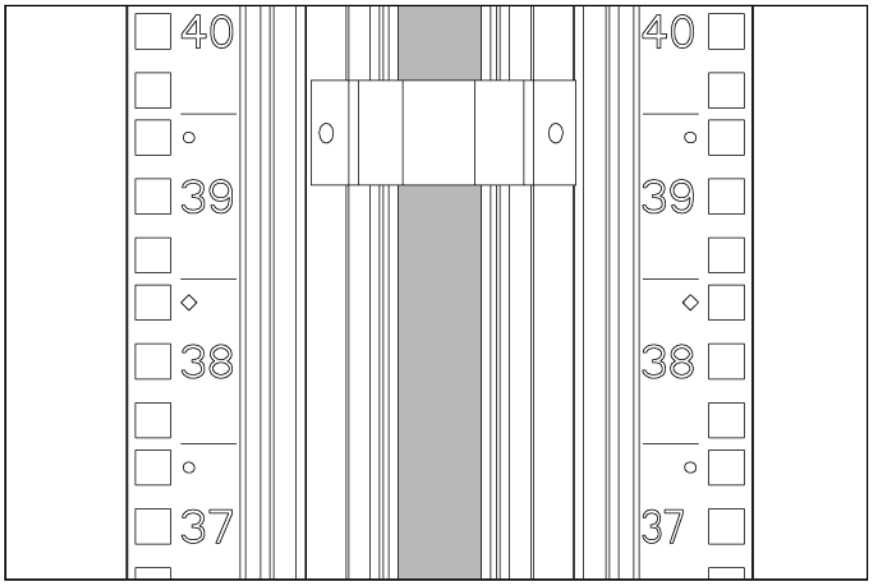


NOTE: Follow steps 1 through 3 to install the foam rail gasket into a rack that will be bayed using a 24-in. baying bracket.
If the rack will be bayed using a 600-mm baying bracket, rotate the foam rail gasket 90 degrees before inserting it into the space between the racks.

4. Gently push the foam rail gasket into the space between the racks until it is flush with the vertical frame.

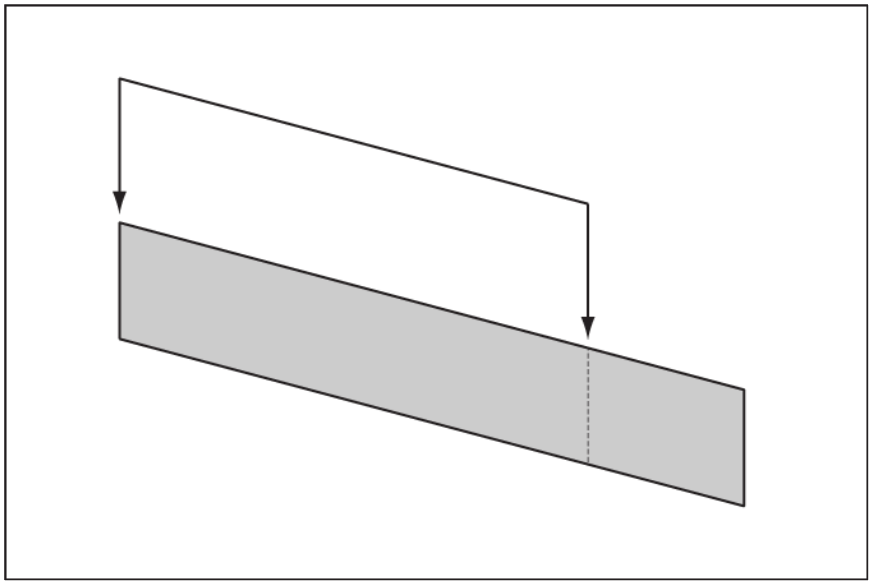


5. (Optional) See the *HP Baying Rack Option Kit* for specific information on baying racks.

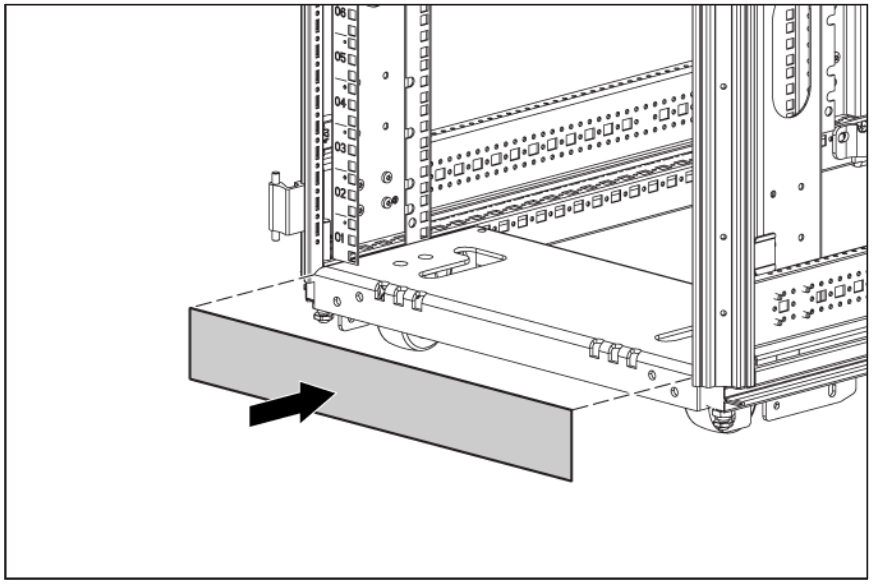


Installing the floor gasket

1. Depending on the size of your rack, cut the floor gasket at the perforation to reduce the length from 800-mm (31 in) to 600-mm (24 in).



2. Remove the protective tape from the bottom edge of the floor gasket, and apply it to the bottom of the rack with the adhesive strip facing the front of the rack.



Installation is complete.

Ballast kit

About this device

The HP Ballast kit provides additional stability with single-rack installations.

Kit contents

Item	Quantity
Ballast assembly	2
M6 screws	10
Cage nuts	10

Extra hardware might be included for your convenience.

Required tools

The following tools are required for installation:

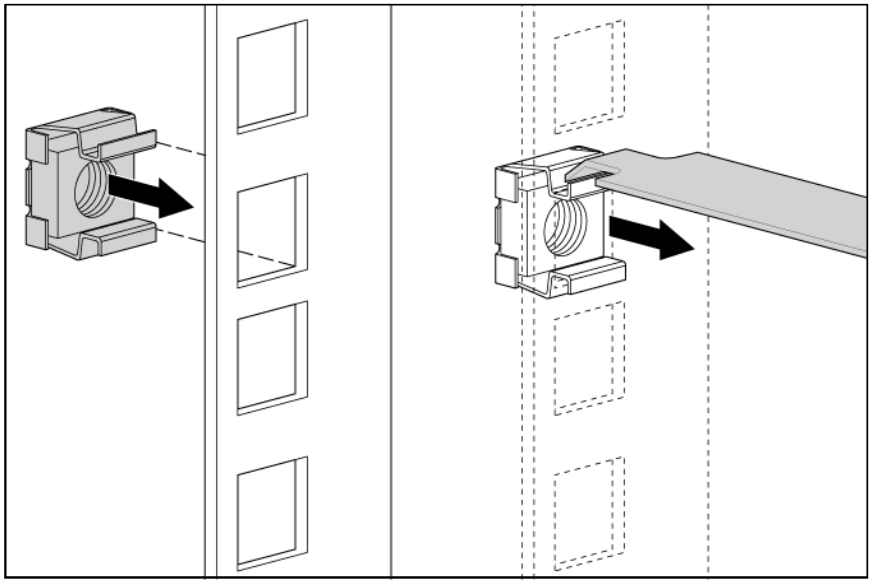
- Cage nut insertion tool (included in your original rack hardware kit)
- One of the following screwdrivers:
  - Flathead screwdriver
  - T-25 Torx driver

Installing the ballast kit

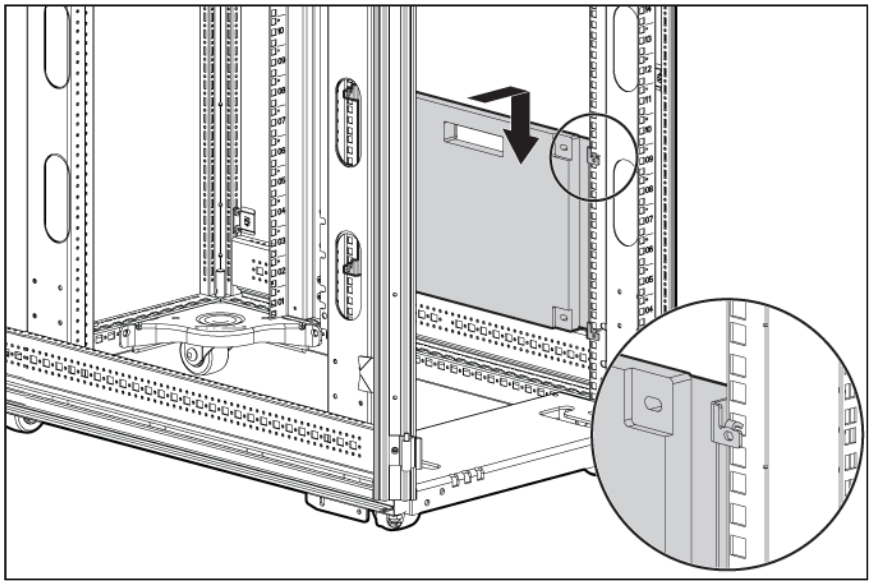
HP recommends installing a single ballast assembly as close to the bottom of the rack as possible. Occasionally, more than one ballast kit might be necessary. In these cases, install the first ballast assembly as close to the bottom of the rack as possible and move up the rack accordingly.

CAUTION: To reduce the risk of personal injury or damage to the equipment, HP recommends that you install the HP Ballast kit only in unconfigured racks.

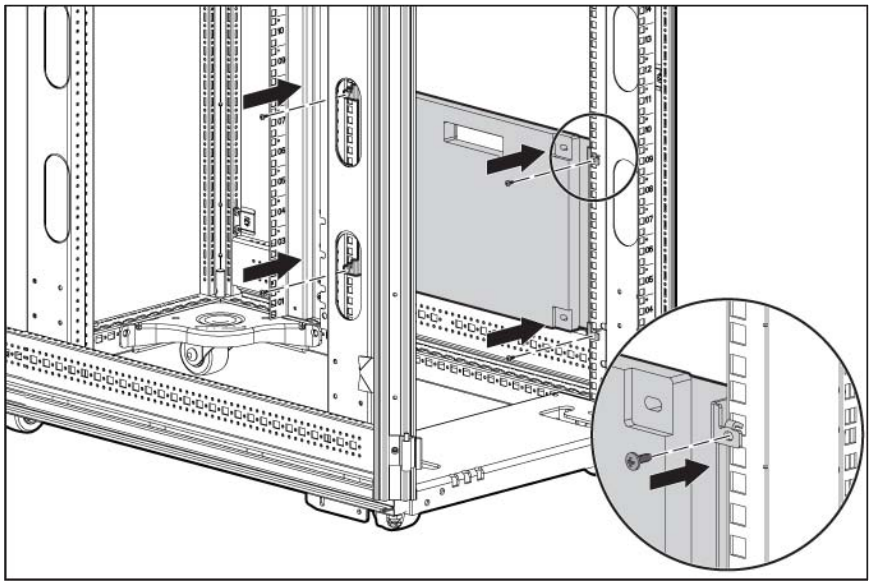
1. Install the two bottom cage nuts using the cage nut insertion tool included in your original rack hardware kit.



2. Count 16 holes up the rack, starting at the bottom cage nuts, and install the two top cage nuts using the cage nut insertion tool.
3. Align the screw holes of the ballast assembly with the installed cage nuts.



4. Insert the M6 screws into one side of the ballast assembly to secure it to the rack.



5. Repeat step 4 to secure the other side of the ballast assembly to the rack.

Installation is complete.

Baying kit

About this device

The HP Baying kit enables you to connect multiple racks of the same series (HP 10000 and 10000 G2 Series Racks), height, and depth. For example, two HP 10622 Racks can be bayed together, as well as two HP 10842 Racks.

Kit contents

Item	Quantity
24-inch baying brackets	6
600-mm baying brackets	6
T-30 Torx screws	15

Extra hardware might be included for your convenience.

Required tool

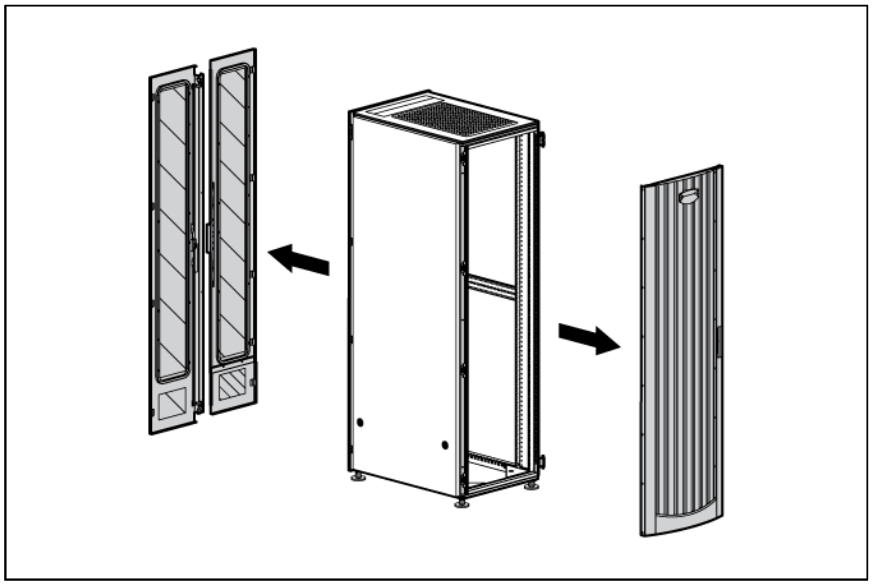
You will need a T-30 Torx driver.

Installing the baying kit

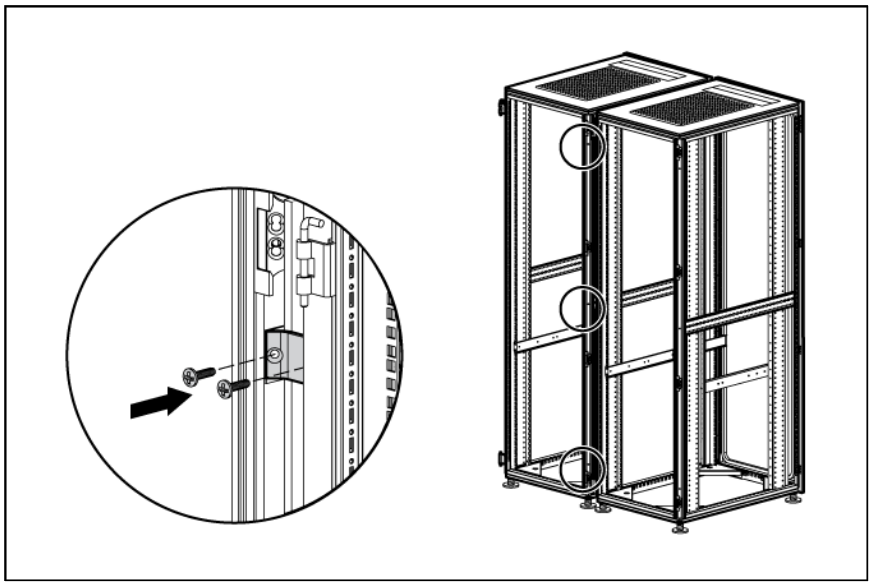
⚠ **WARNING:** To reduce the risk of personal injury or damage to the rack and equipment, the racks must be positioned and secured together according to these instructions. Failure to do so could result in an unstable installation.

NOTE: The appearance of the rack might vary depending on the model of the rack purchased.

1. Remove the front and rear doors.

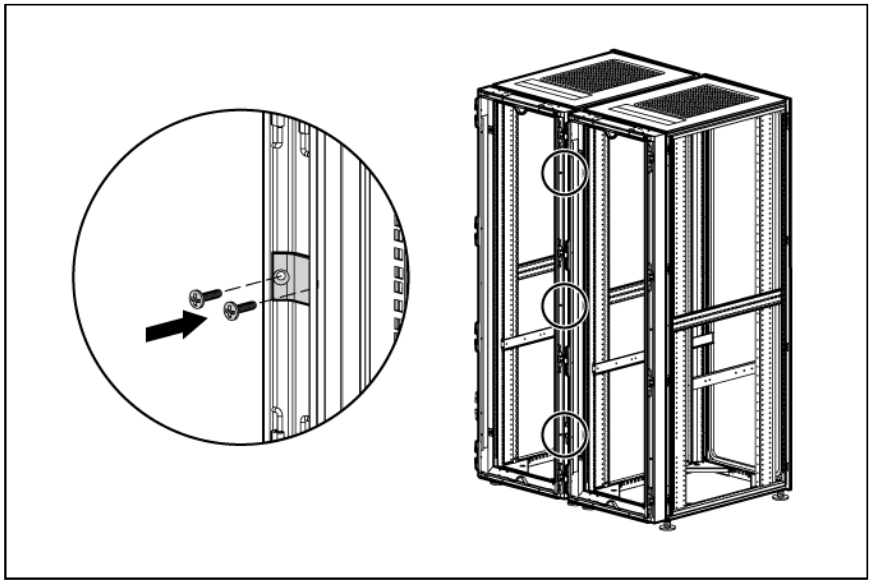


2. Remove the side panels (if present between the racks).
3. Position the racks side by side, ensuring that the feet of the racks are on solid flooring (no cracks or openings).
4. Attach three baying brackets (either 24-inch or 600-mm depending on the floor layout) to the front and rear of each rack set using two T-30 Torx screws in each bracket.

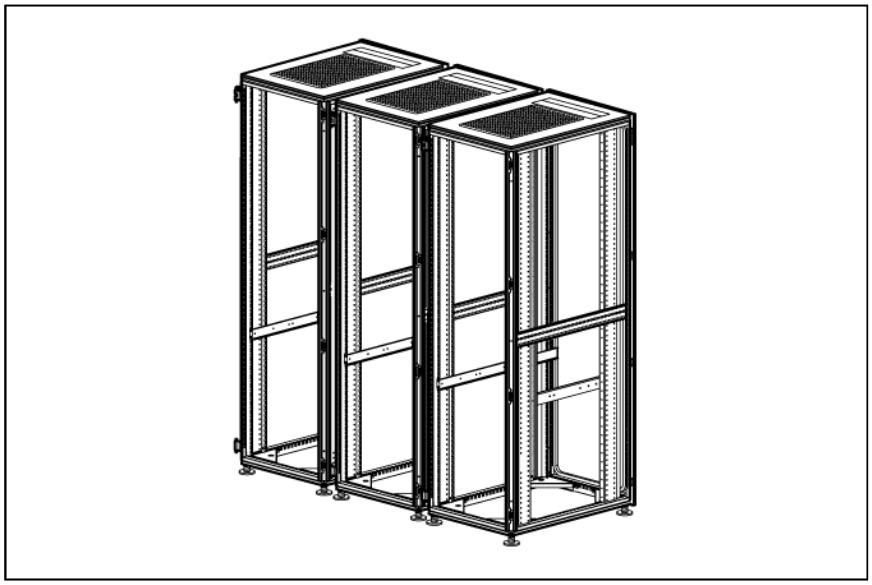


-or-

If you bay HP racks with a rear extension, you do not need to remove the rear extensions. Attach three baying brackets to the rear extensions using two T-30 Torx screws in each bracket.



5. Bay any additional racks.



6. Attach side panels to each end of the bayed racks, and reattach the front and rear doors.

Installation is complete.

Cable Management Bracket kit

About this device

The HP Cable Management Bracket kit assists with cable management and is designed for use with all HP racks.

Kit contents

Item	Quantity
1U cable management bracket	1
2U cable management bracket	1
Cable management D-ring bracket clips	10
Cable management D-ring bracket clamps	10
Cross-over brackets	2
12.7-cm (5-in) hook-and-loop cabling strap	10
20.3-cm (8-in) hook-and-loop cabling strap clips	10
M6 cage nuts	11
M6 x 16-mm Torx screws	11
M5.5-mm x 10-mm Torx screws	9
1/4 turn plastic latches	6

Extra hardware might be included for your convenience.

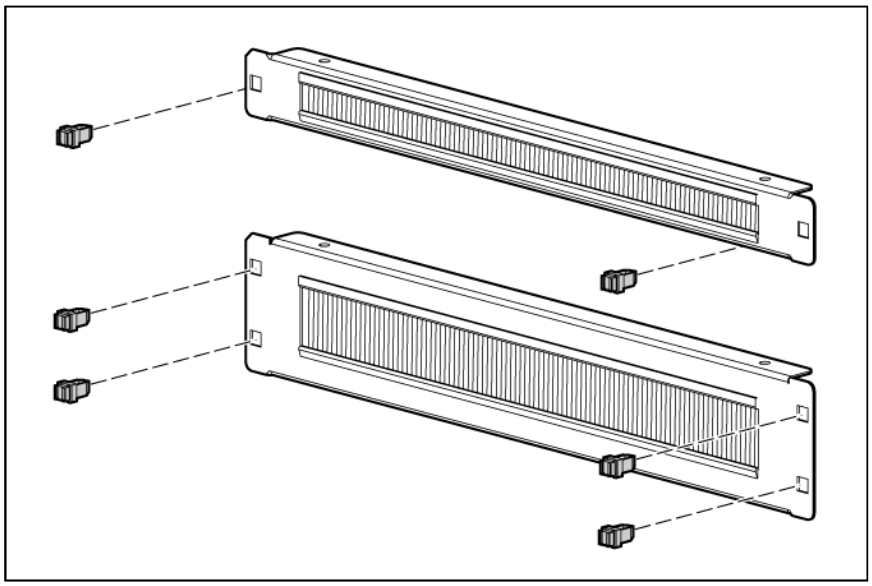
Required tools

The following tools are required for installation:

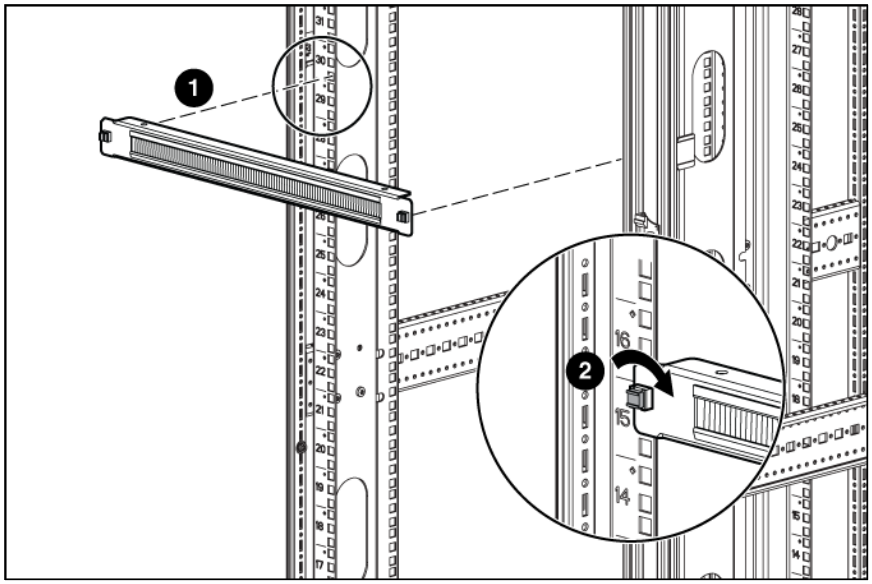
- T-25 Torx driver
- Cage nut insertion tool (included with your original rack hardware kit)

Installing the 1U cable management bracket

1. Insert one 1/4 turn plastic latch on either side of the 1U cable management bracket.

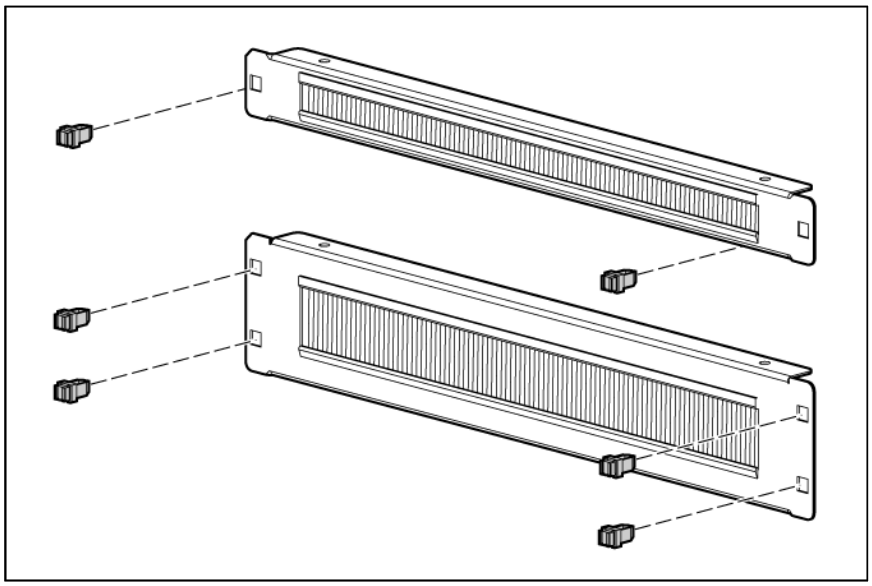


2. Align the 1U cable management bracket to the screw holes in the desired location of the rack (1).
3. Turn the 1/4 turn plastic latch on either side of the 1U cable management bracket clockwise until it locks in place (2).

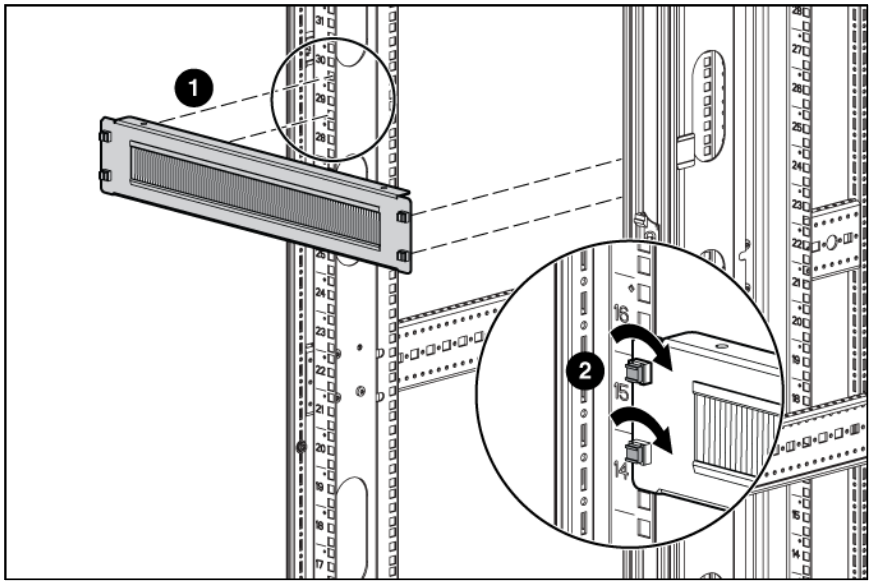


Installing the 2U cable management bracket

1. Insert two 1/4 turn plastic latches on either side of the 2U cable management bracket.



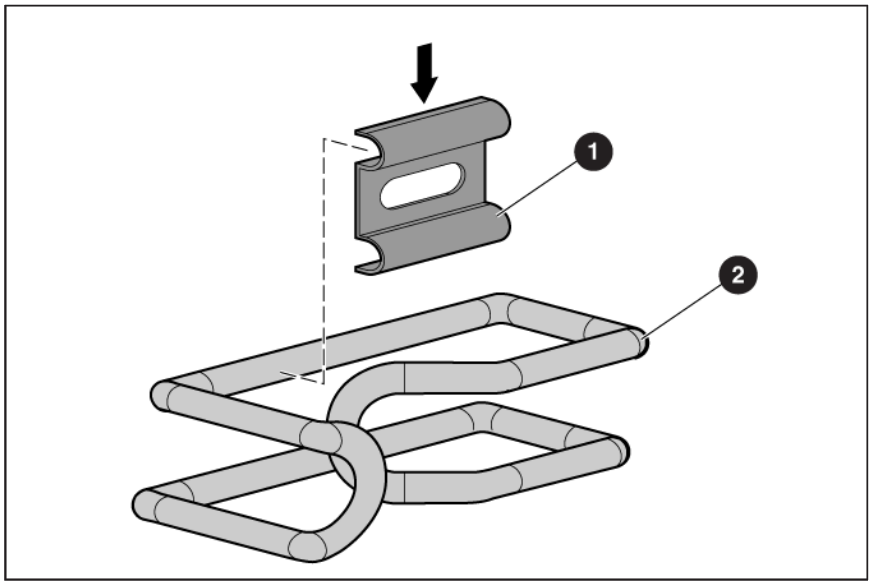
2. Align the 2U cable management bracket to the screw holes in the desired location of the rack (1).
3. Turn the two 1/4 turn plastic latches on either side of the 2U cable management bracket clockwise until they lock in place (2).



Installing the cable management D-ring bracket

The cable management D-ring bracket can be installed in either a front mount or a side mount, depending on your rack configuration.

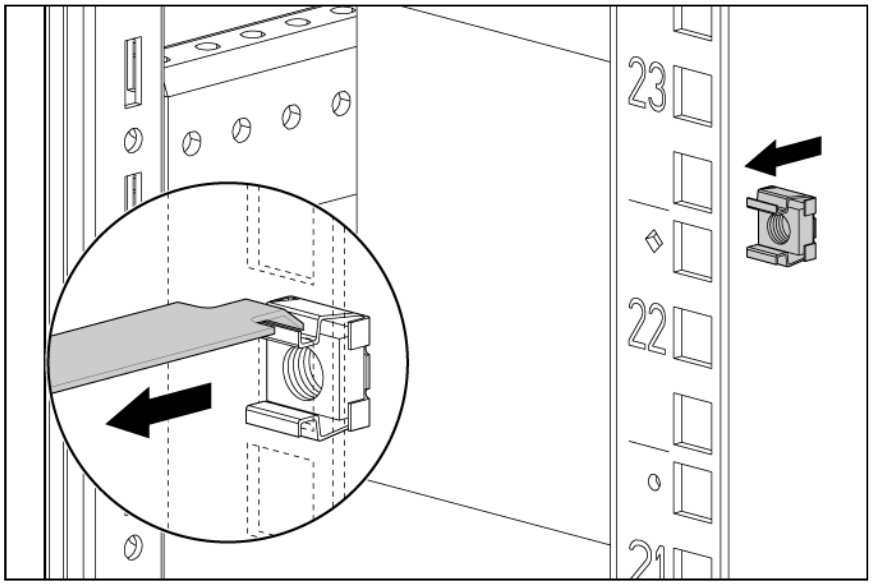
1. Place a cable management D-ring bracket clip (1) on a cable management D-ring bracket clamp (2).



2. Install the cable management D-ring bracket in a front mount ("Front mount" on page 31).
3. Install the cable management D-ring bracket in a side mount ("Side mount" on page 32).

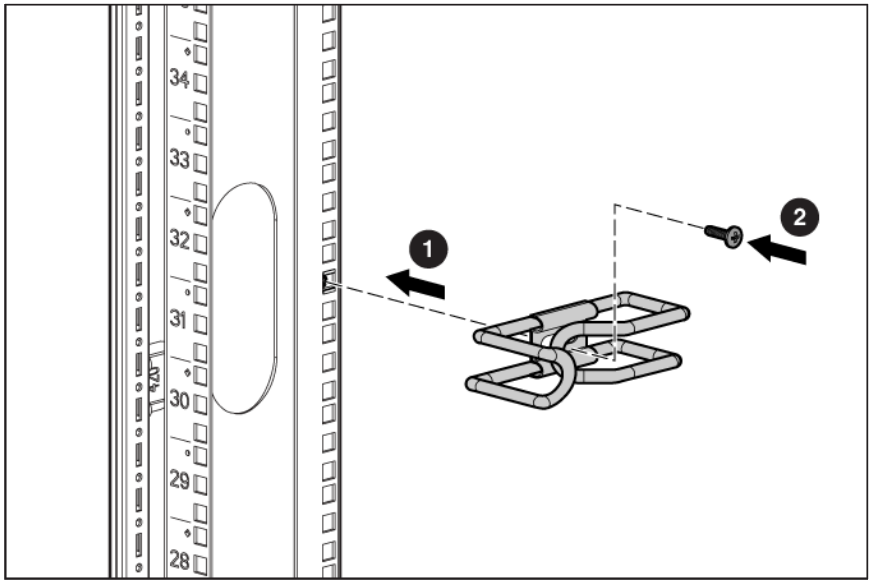
Front mount

1. Using a cage nut insertion tool, install an M6 cage nut into the desired location on the front of your rack.



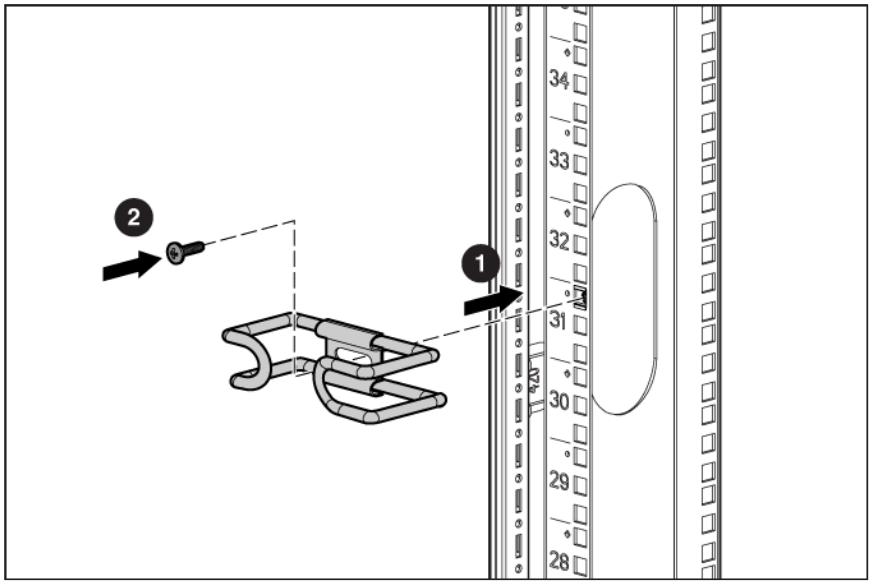
2. Align the cable management D-ring bracket with the previously installed M6 cage nut (1).

3. Using a T-25 Torx driver, insert one M6 x 16-mm Torx screw to secure the cable management D-ring bracket to the rack (2).



Side mount

1. Align the cable management D-ring bracket with the screw hole in the desired location on the side of your rack (1).
2. Using a T-25 Torx driver, insert one M5.5 x10-mm Torx screw to secure the cable management D-ring bracket to the rack (2).

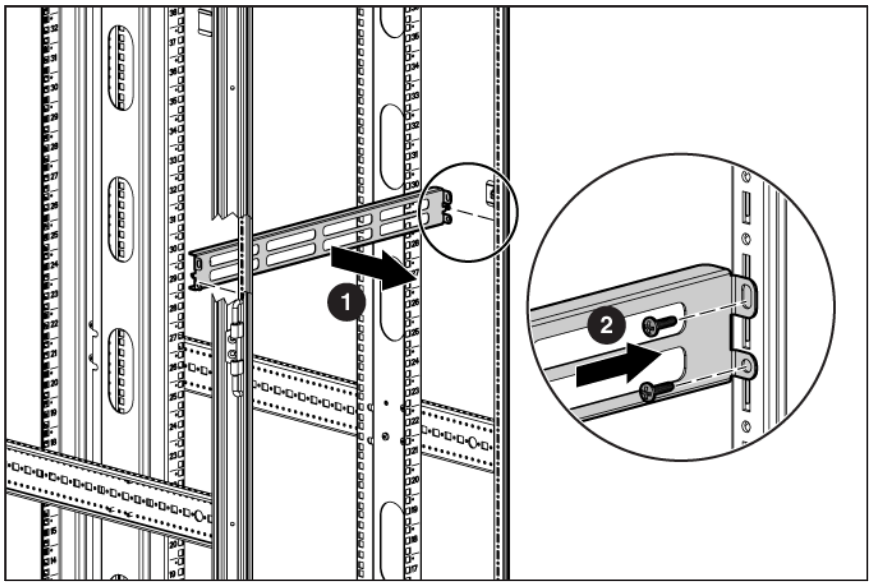


Installing the cross-over bracket

1. Align the cross-over bracket with the appropriate screw holes in the desired location across the back of the rack (1).

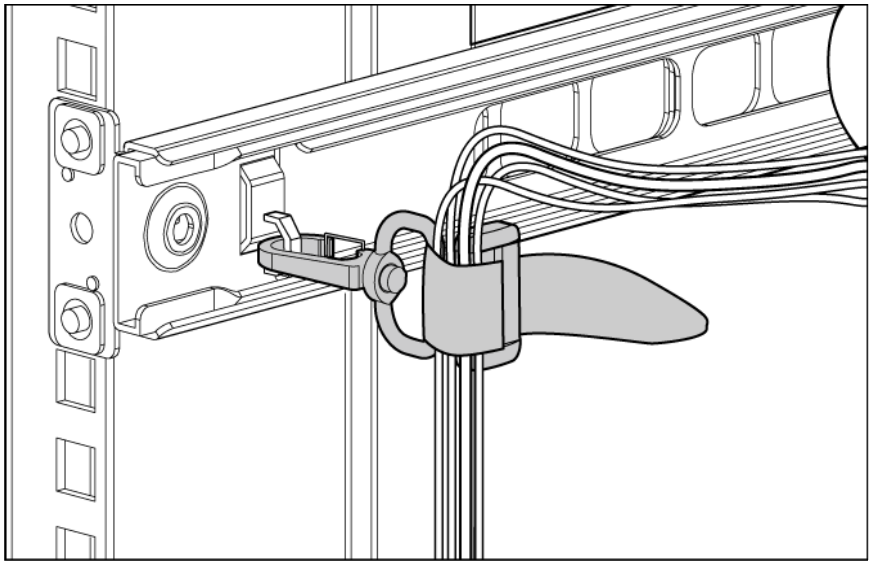
NOTE: The screw holes for the cross-over bracket are located on the side of the rear rack screw column, towards the inside of the rack.

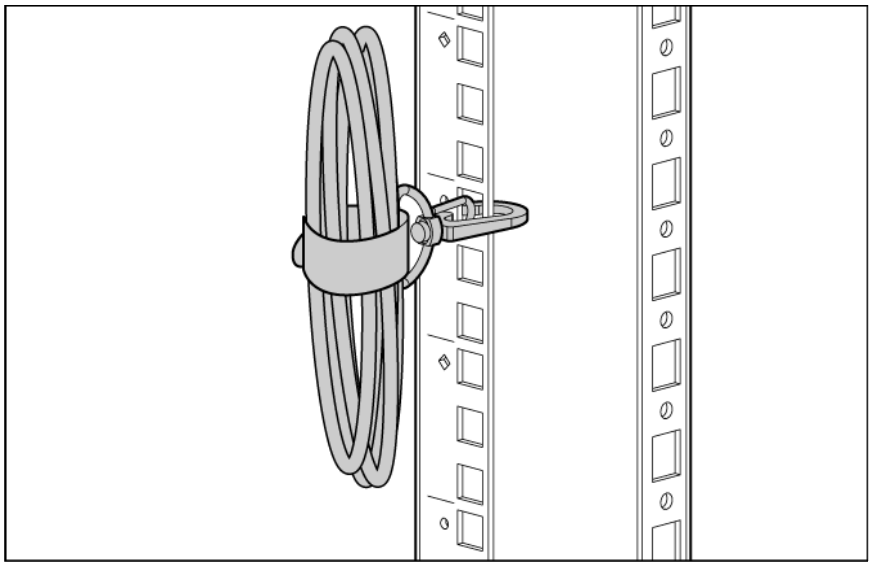
2. Using a T-25 Torx driver, insert two M5.5 x 10-mm Torx screws on either side of the cross-over bracket and secure to the rack frame (2).

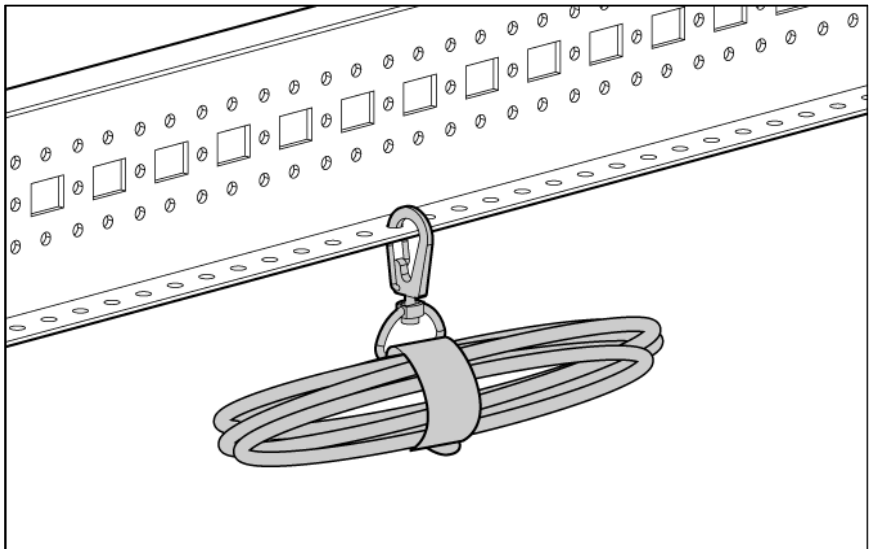


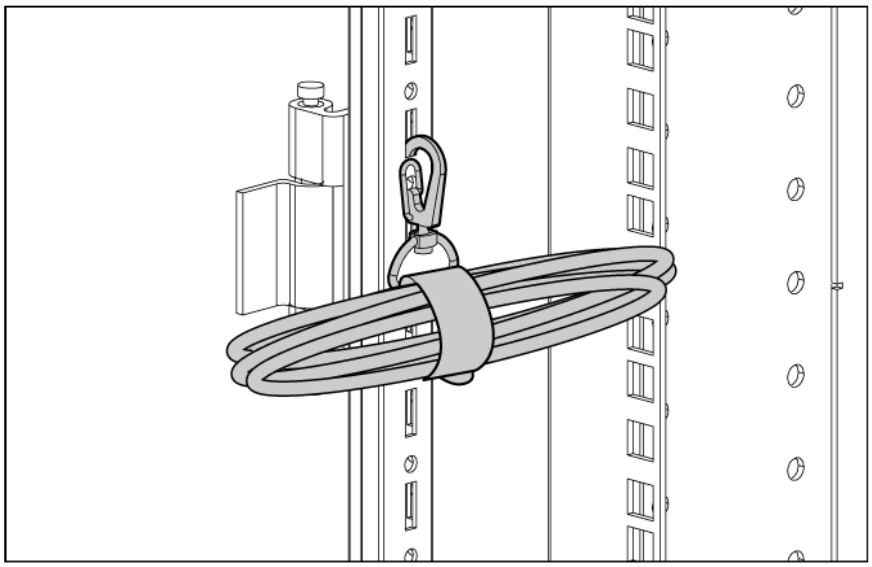
Installing the hook-and-loop cabling straps

Attach the clip to the rack in any of the following positions, then route and secure your cables with the hook-and-loop cabling straps.









Installation is complete.

Cable Management Tray kit

About this device

The HP Cable Management Tray kit enables you to attach cable management trays to the top of HP racks to improve cable management.

Kit contents

Depending on which kit you order, this kit includes the following items:

Item	Quantity
600-mm cable management tray	1
600-mm cable trough	8
Wire for trough	16
Cover	8

—or—

Item	Quantity
800-mm cable management tray	1
800-mm cable trough	1
Wire for trough	2
Cover	1

—or—

Item	Quantity
Cable trough inner tray	1
Cable trough outer tray	1

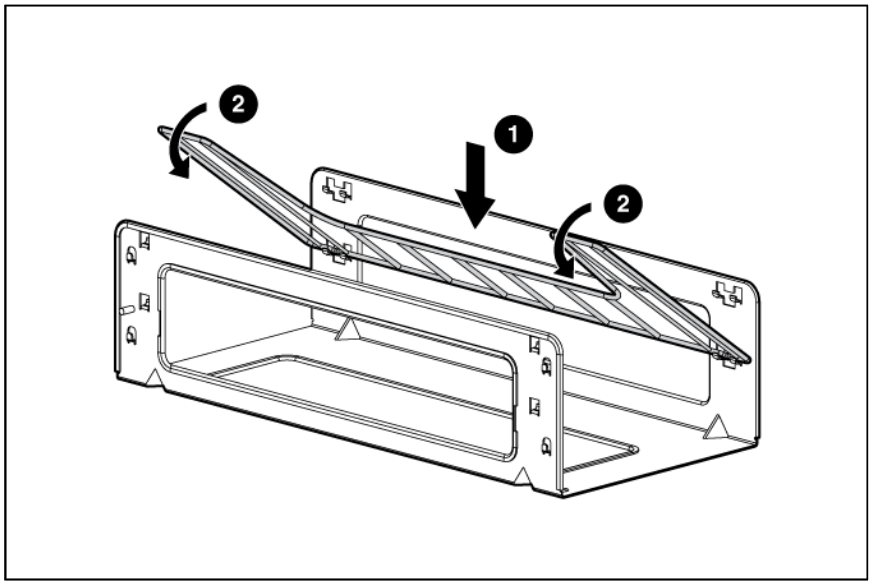
Extra hardware might be included for your convenience.

Required tool

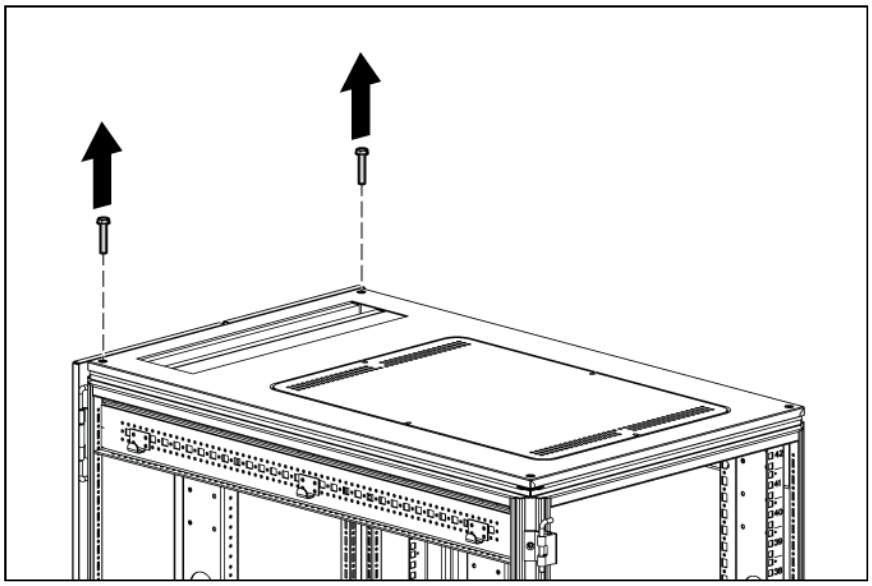
You will need a T-30 Torx driver.

Installing the cable management tray

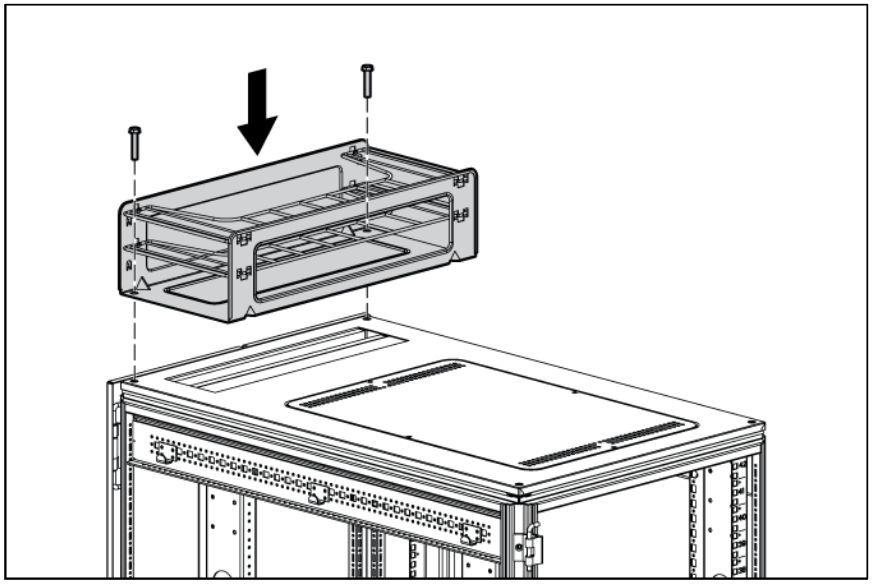
1. Attach the wire for the trough to the cable management tray.



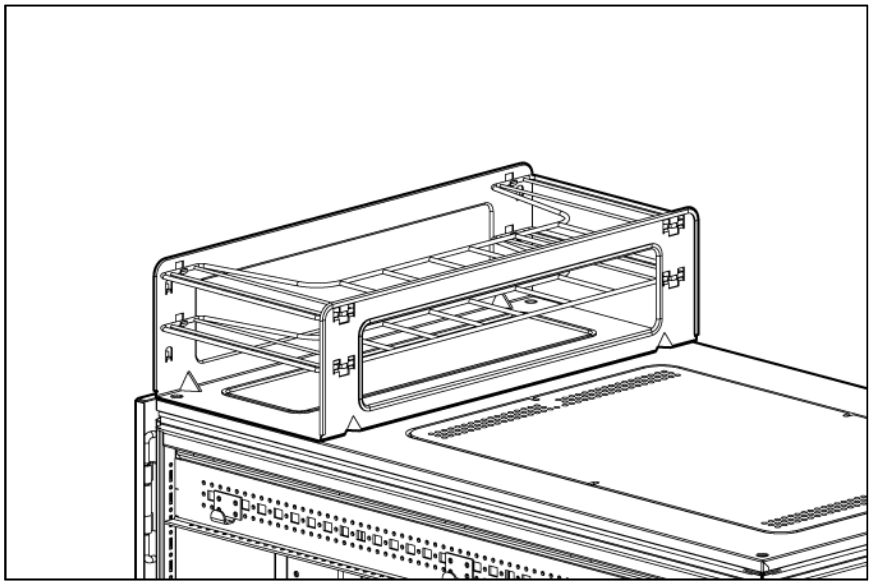
2. Remove the two screws from the rack top.



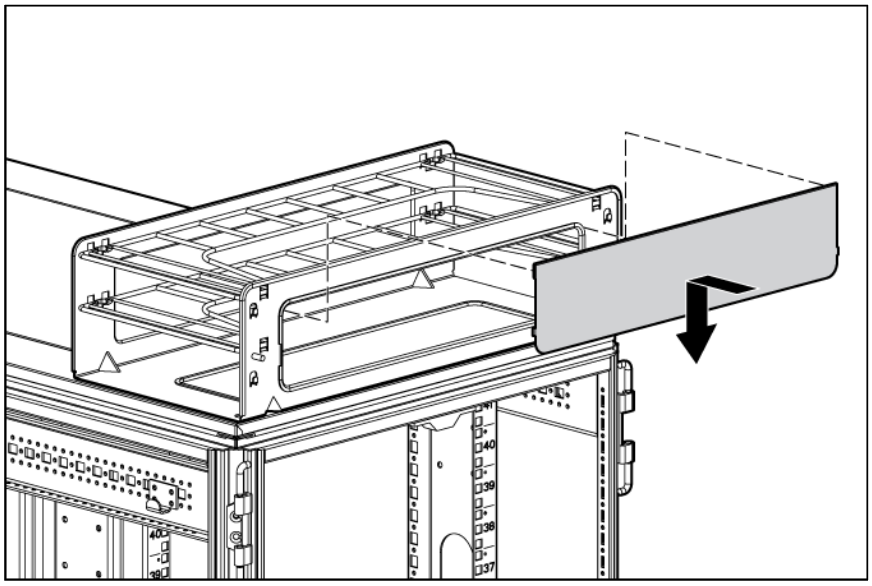
3. Install the cable management tray on top of the rack, using the same two screws you removed in step 2.



4. Route the cables through the cable management tray.

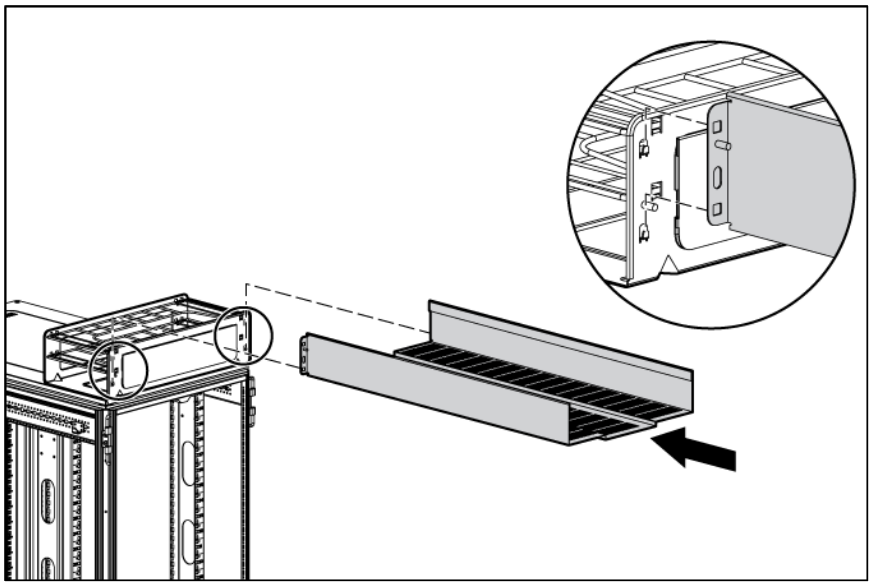


5. Hook and slide the cover into place.

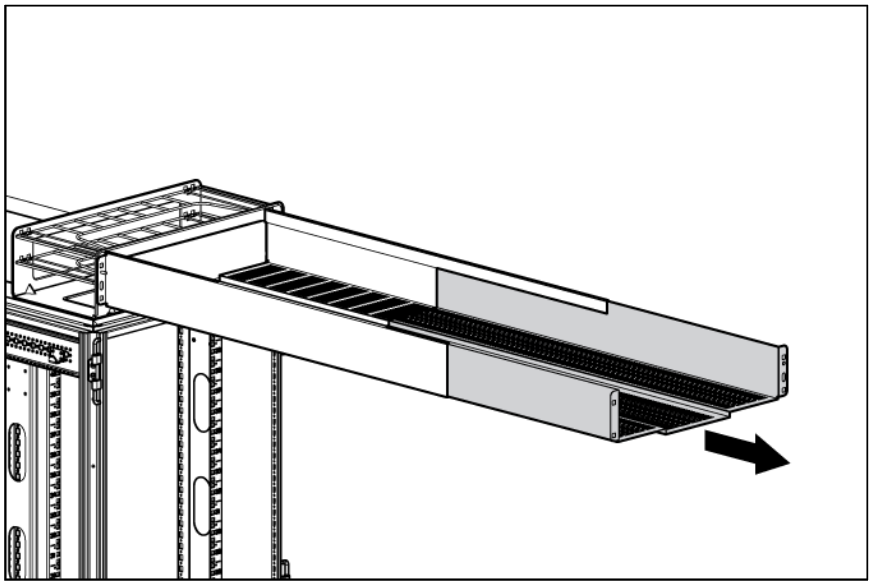


Installing the cable management inner and outer trays

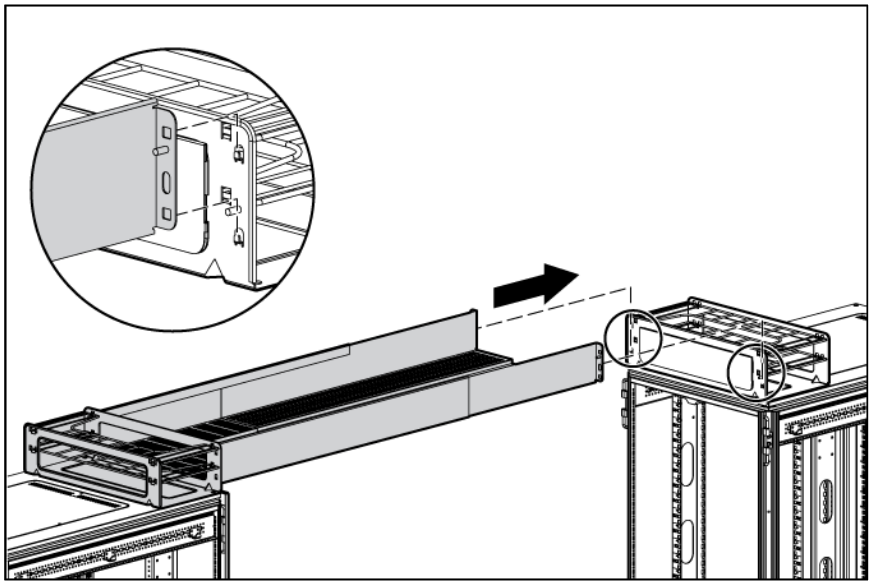
1. Attach the cable management outer tray to the cable management tray.



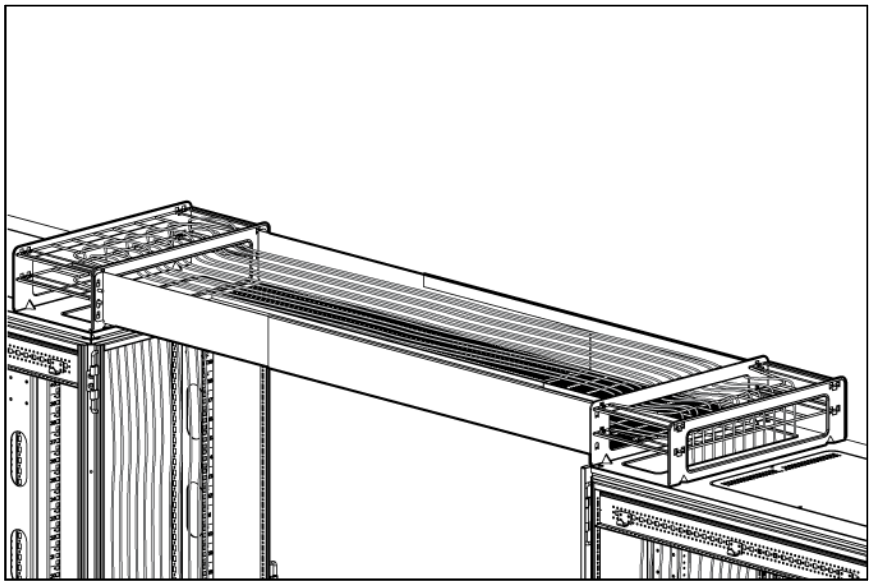
2. Slide the inner tray into the outer tray, and adjust them to the desired length.



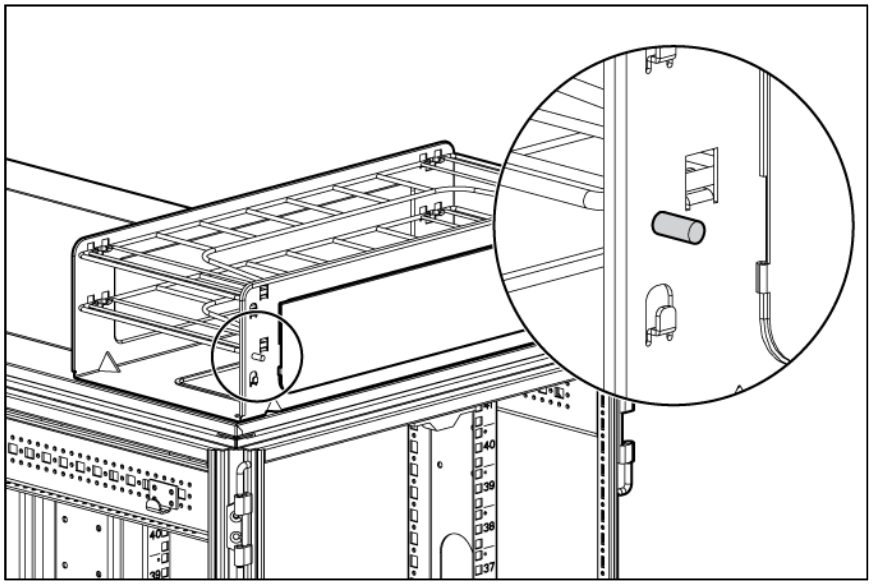
3. Attach the cable management inner tray to the cable management tray.



4. Route the cables through the cable management tray.



Ground bonding stud location



Fan (110V/220V) kit

About this device

The HP Fan (110V/220V) kit enhances the natural convection cooling by increasing rack airflow.

Kit contents

Item	Quantity
Fan assembly	1
Power cord	2
Cable fastener	4

This kit might contain extra hardware for your convenience.

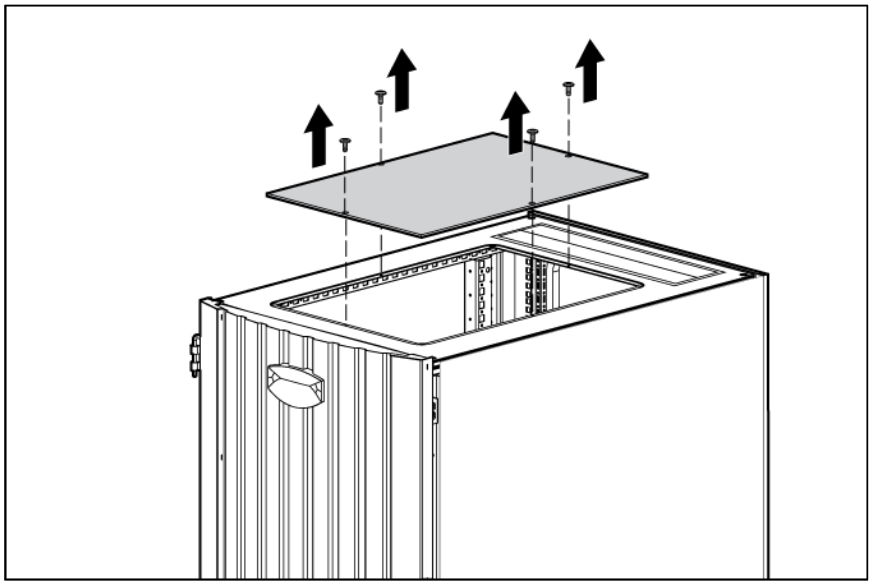
Required tools

You will need a T-30 Torx driver.

Installing the fan

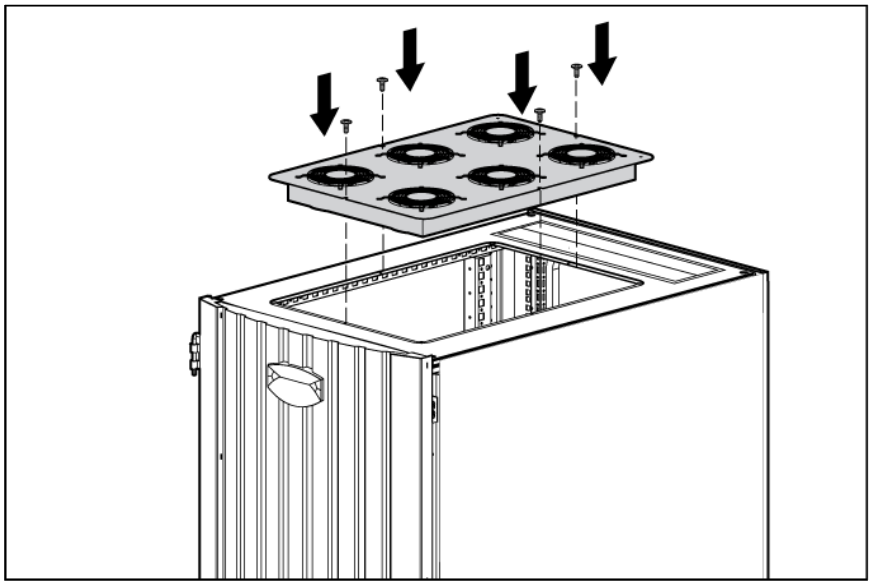
NOTE: The rack top covers might be different, but the installations are identical.

1. Using a T-30 Torx driver, remove the four T-30 Torx screws securing the rack top cover to the rack, and remove the rack top cover. Retain the screws.

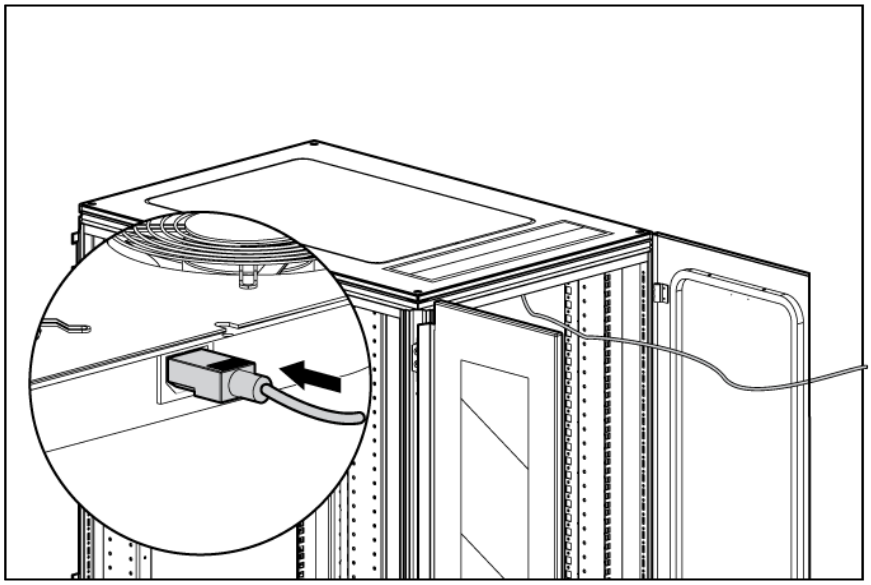


2. Align the fan assembly so that the power cord faces the rear of the rack.

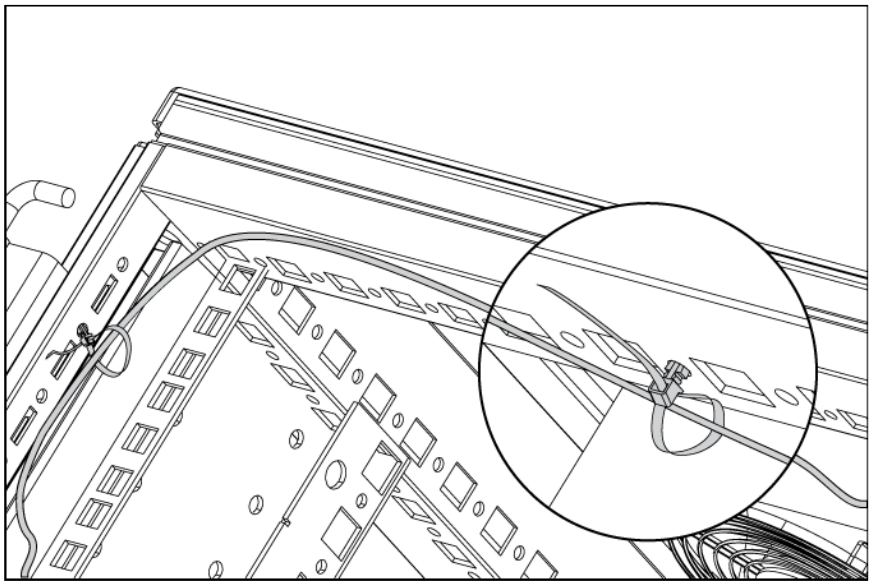
3. Insert the fan assembly into the top of the rack and secure using the four T-30 Torx screws from step 1.



4. Connect the power cord to the fan assembly.



5. Insert the notched end of the tie wrap into a small hole in the rack rail and push the tie wrap in to lock it in place. Encircle the power cord with the tie wrap by inserting the free end of the tie wrap into the hole on the other end of the tie wrap, pulling the tie wrap tight, and cutting off excess length.



Installation is complete.

Filler Panel kit

About this device

The HP Filler Panel kit enables you to cover open areas of the rack to better control airflow.

Kit contents

Item	Quantity
1U Filler panels —or— 1U Filler panels	10 100

This kit might contain extra hardware for your convenience.

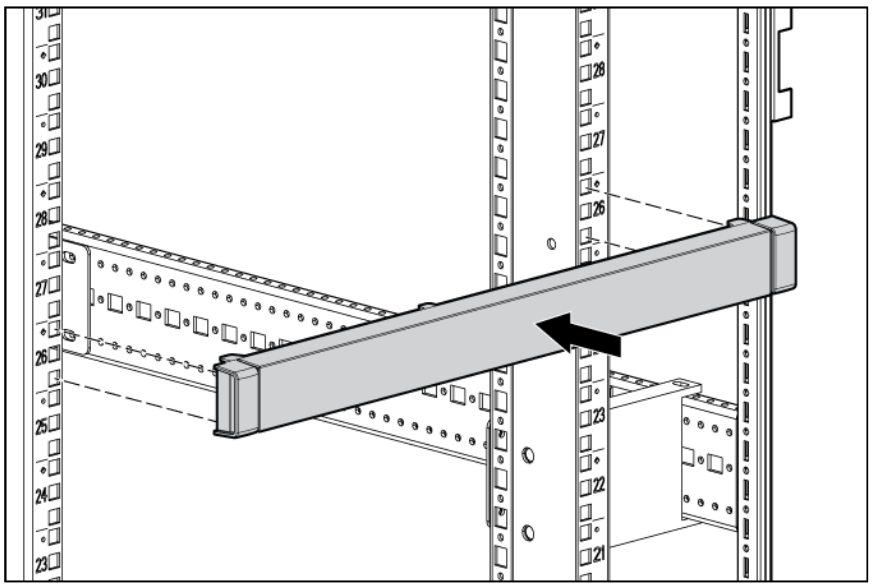
Required tools

No tools are required for this procedure.

Installing the filler panel

1. Position the filler panel in the desired rack location.
2. Snap the filler panel into place.

△ **CAUTION:** Always use filler panels to fill all remaining empty front panel U-spaces in the rack. This arrangement ensures proper airflow. Using a rack without filler panels results in improper cooling, which can lead to thermal damage.



Front Door kit

About this device

The HP Front Door kit enables you to add a front door to your HP 10000 G2 Series rack. You can also install this option kit on HP 10000 series racks of the same size.

Kit contents

Item	Quantity
Front door	1
Keys	2
Hinge brackets	2
Lock catches	2

This kit might contain extra hardware for your convenience.

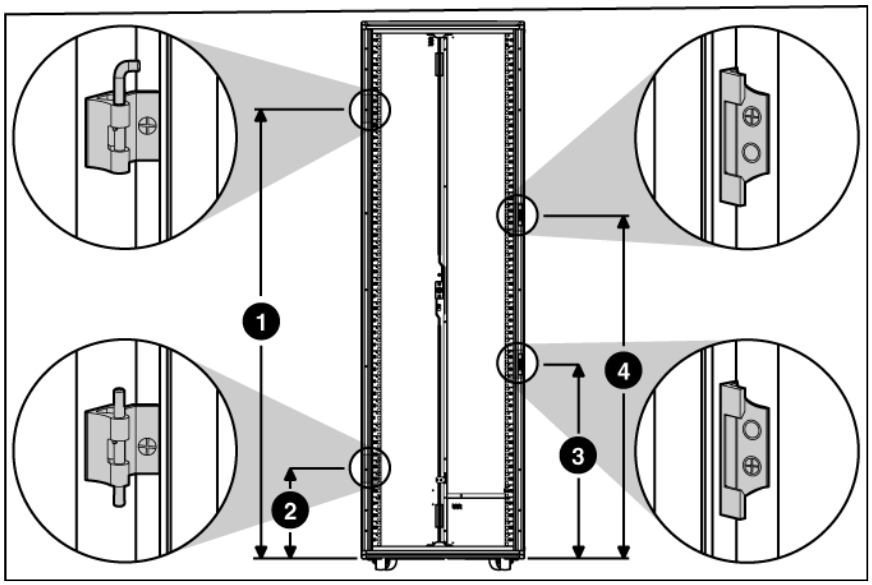
Required tools

The following tools are required for installation:

- T-25 Torx driver
- Phillips screwdriver

Installing the hinge brackets and lock catches

The following tables indicate where the hinge brackets and lock catches are to be mounted in a 36U or 42U front door installation. The distance is measured from the bottom of the rack to an indicated hinge bracket or lock catch fastening hole.



Hinge bracket mounting distance from the bottom of the rack

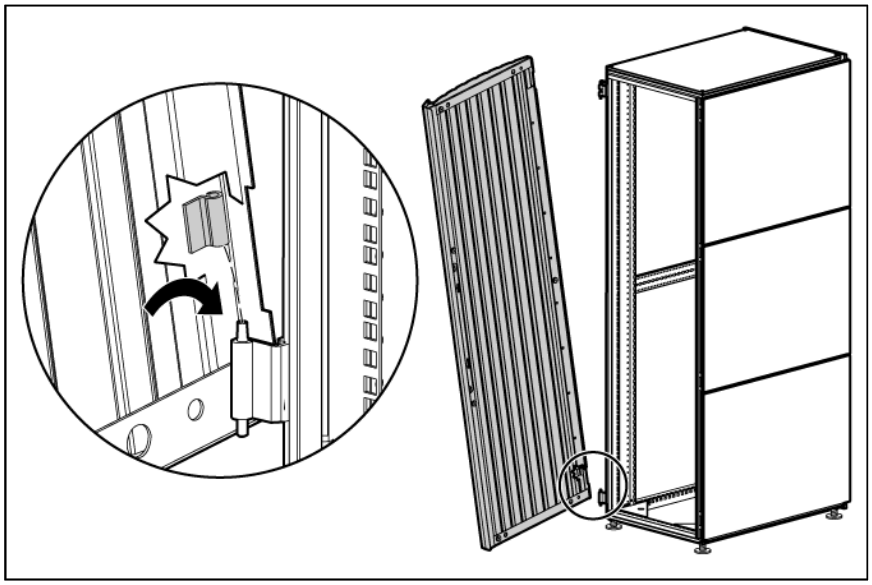
Position number	36U	42U
1	1598.5 mm (62.9 in)	1856 mm (73.1 in)
2	98.5 mm (3.9 in)	98.5 mm (3.9 in)

Lock catch mounting distance from the bottom of the rack

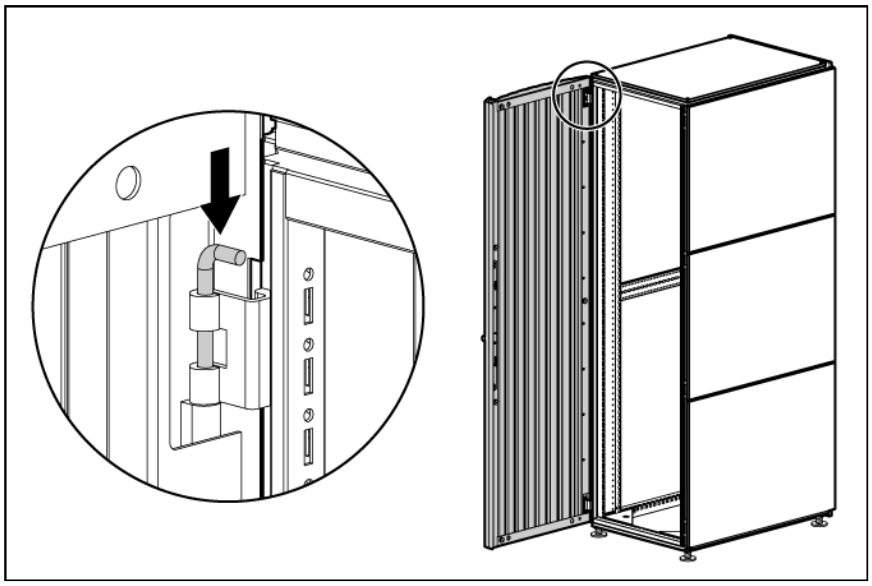
Position number	36U	42U
3	569.5 mm (22.4 in)	698.5 mm (27.5 in)
4	1127.5 mm (44.4 in)	1256.5 mm (49.5 in)

Installing the front door

1. Slide the bottom door hinge onto the hinge bracket on the rack frame.



2. Lift the top hinge pin up, and slide the upper door hinge into place.
3. Release the top hinge pin to secure the front door to the rack.



4. Close the front door.

Installation is complete.

Ground Bonding kit

About this device

The HP Ground Bonding kit reduces the electromagnetic emissions outside the rack. These emissions are produced during normal operation of the electronic components within the rack. Typically, rack-mounted equipment must meet class A emissions levels, but you might want to reduce these levels even further. Use this kit to tie all the conductive structural components together with conductive cables, and then attach the kit to a ground bonding point on the AC power distribution device of the rack or the building ground.

Kit contents

Item	Quantity
15.24-cm (6-in) grounding straps	6
15.24-cm (6-in) grounding straps (with a connector on one end)	6
36.83-cm (14.5-in) grounding straps	8
36.83-cm (14.5-in) grounding straps (with a connector on one end)	6
M8 internal serrated lock washer	20
M8 hex nut	20
M5.5 T-25 Torx screw	12
M6 x 10-mm Torx screw	1
M8 x 20-mm bolt	1
M8 Belleville toothed washer	1
M5 Belleville toothed washer	1

This kit might contain extra hardware for your convenience.

Required tools

The following tools are required for installation:

- T-25 Torx driver
- M8 socket

Installing the ground bonding rack option kit on HP 10000 G2 Series Racks

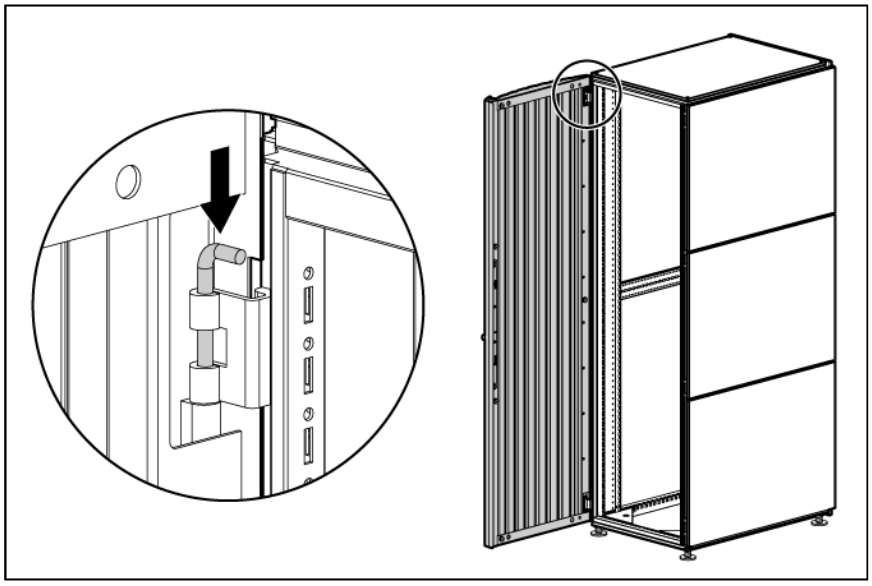
Attach the appropriate grounding straps to the following locations:

From the system chassis to the front door (without a grounding lug):

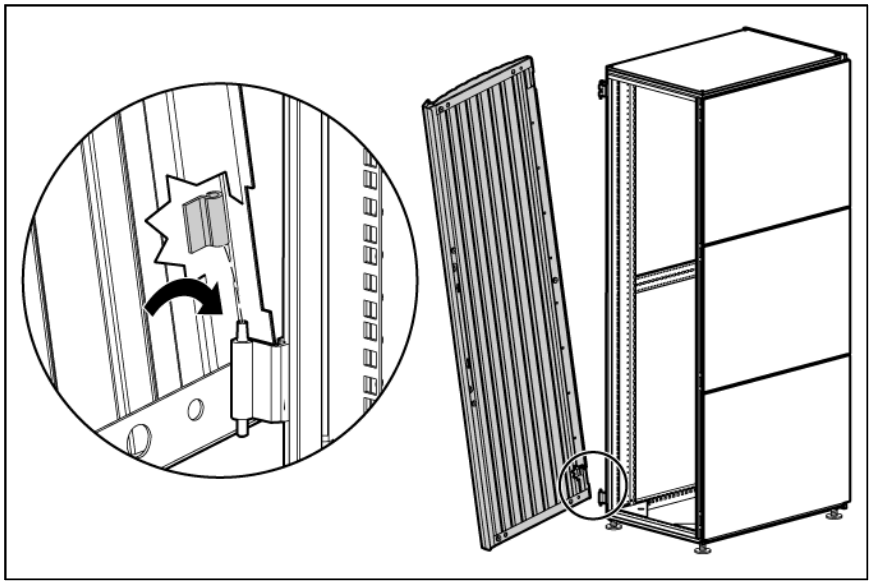
1. Remove the rack front door.

a. Unlock and open the front door.

b. Lift the top hinge pin up, and tilt the door away from the rack.

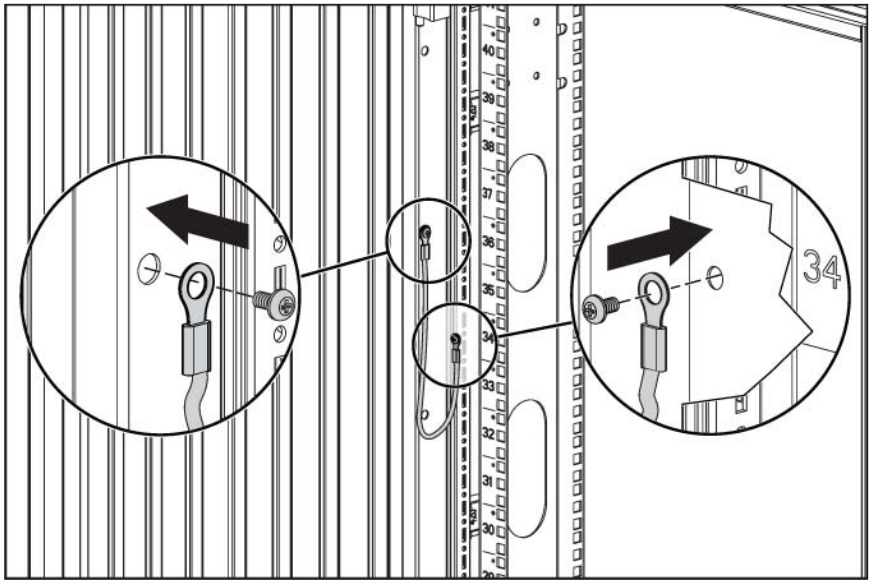


c. Lift the door up and out of the bottom hinge.



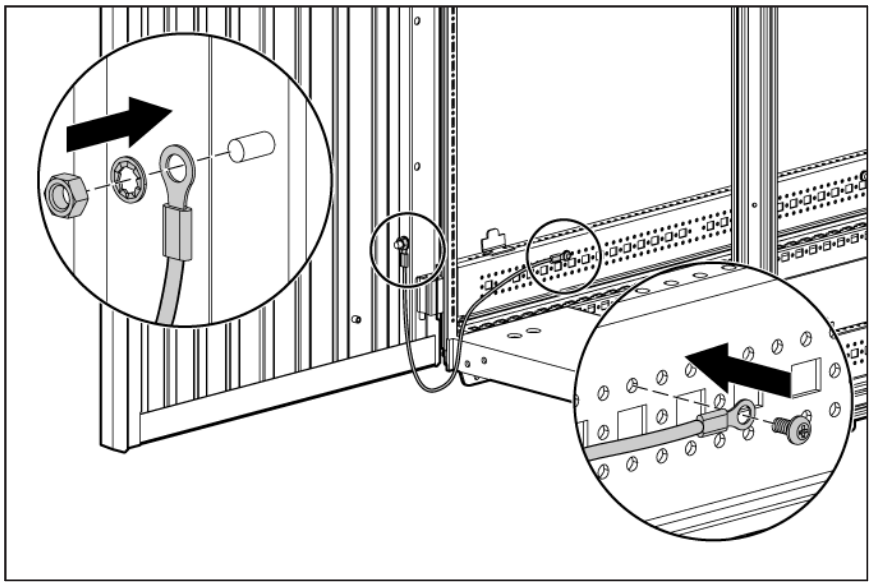
2. Insert an M6 T-25 Torx screw through one end of a 15.24-cm (6-in) grounding strap, and insert it in the second hole below the upper front door hinge on the vertical frame member of the rack. Tighten the screw.
3. Replace the rack front door.

4. Insert a T-25 Torx screw through the other end of the same grounding strap, and insert it in the hole on the rack front door. Tighten the screw.



From the system chassis rail to the front door (with a grounding lug):

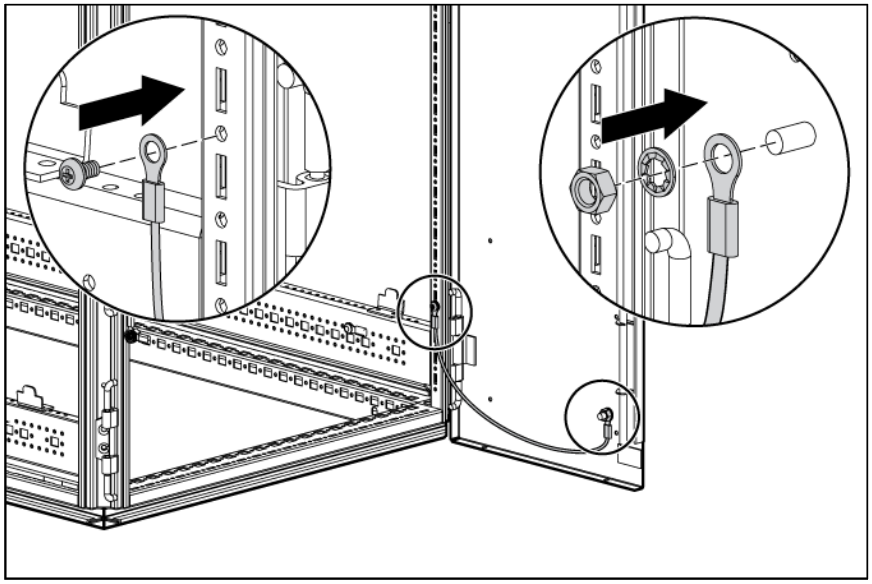
1. Insert a T-25 Torx screw through one end of a 36.83-cm (14.5-in) grounding strap, and secure it to the system chassis rail.
2. Place the other end of the same grounding strap over the grounding lug on the front door.
3. Place an M8 internal serrated lock washer and an M8 hex nut over the grounding lug on the front door and tighten.



From the system chassis rail to the right rear door:

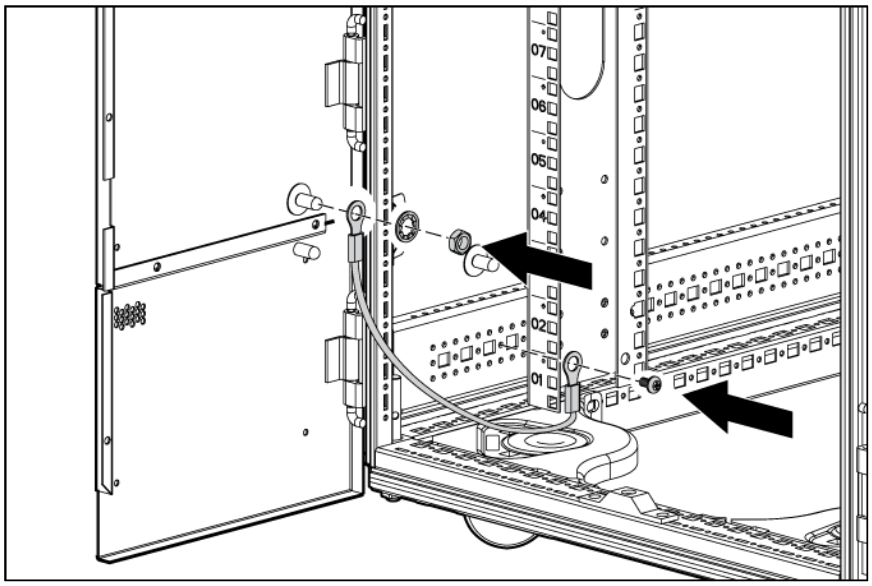
1. Insert a T-25 Torx screw through the end of a 36.83-cm (14.5-in) grounding strap, and secure it to the system chassis rail.
2. Place the other end of the same grounding strap over the grounding lug on the right rear door.

3. Place an M8 internal serrated lock washer and an M8 hex nut over the grounding lug on the right rear door and tighten.



From the system chassis rail to the left rear door:

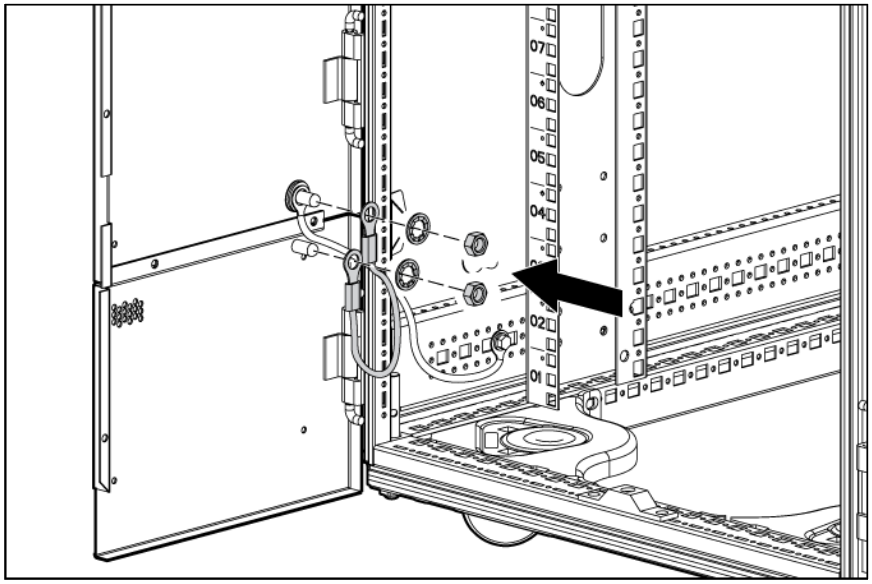
1. Insert a T-25 Torx screw through the end of a 36.83-cm (14.5-in) grounding strap, and secure it to the system chassis rail.
2. Place the other end of the grounding strap over the grounding lug on the left rear door.
3. Place an M8 internal serrated lock washer and an M8 hex nut over the grounding lug on the left rear door and tighten.



From the left rear door to the left rear door cable access panel:

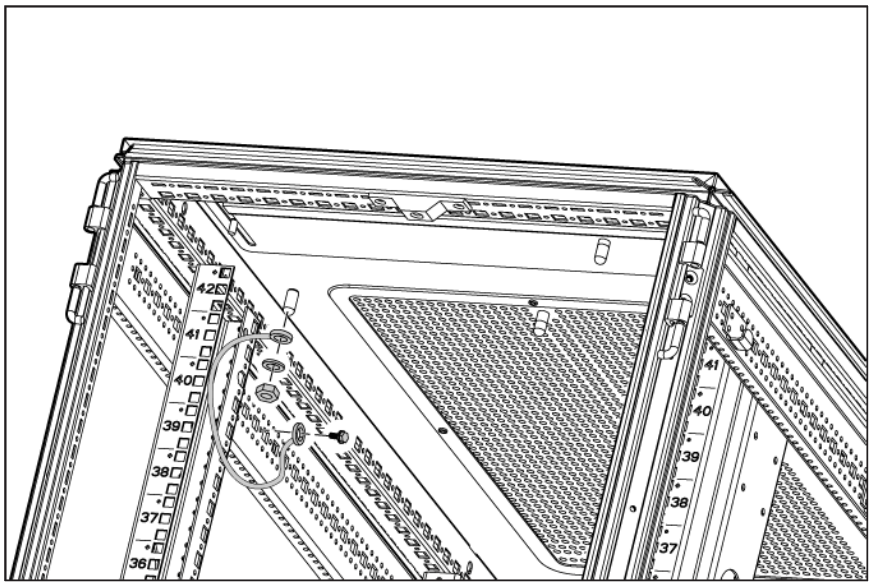
1. Place one end of a 15.24-cm (6-in) grounding strap over the grounding lug on the left rear door.
2. Place an M8 internal serrated lock washer and an M8 hex nut over the grounding lug on the left rear door and tighten.
3. Place the other end of the same grounding strap over the grounding lug on the cable access panel.

4. Place an M8 internal serrated lock washer and an M8 hex nut over the grounding lug on the cable access panel and tighten.



From the system chassis rail to the rack top:

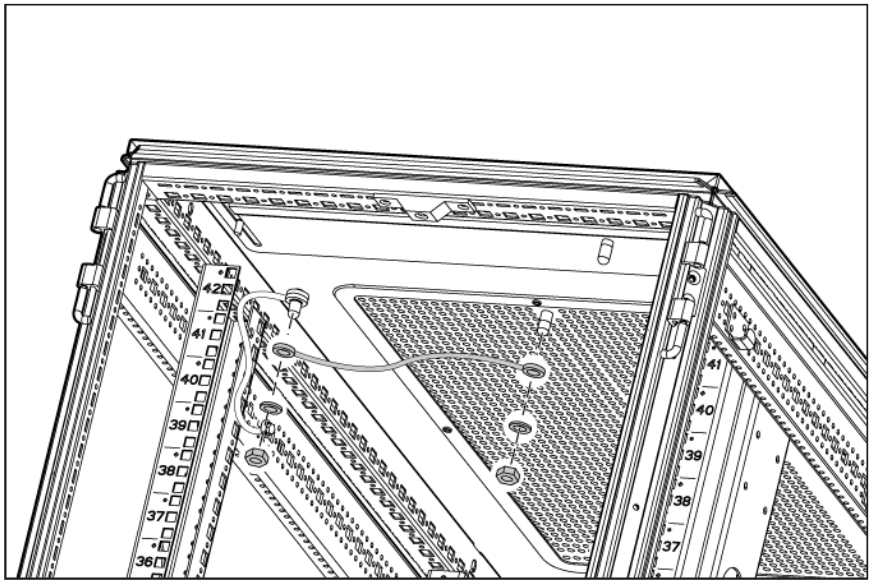
1. Insert a T-25 Torx screw through one end of a 15.24-cm (6-in) grounding strap, and secure it to the system chassis rail.
2. Place the other end of the same grounding strap over the grounding lug on the rack top.
3. Place an M8 internal serrated lock washer and an M8 hex nut over the grounding lug on the rack top and tighten.



From the grounding lug on the rack top to the grounding lug on the perforated panel:

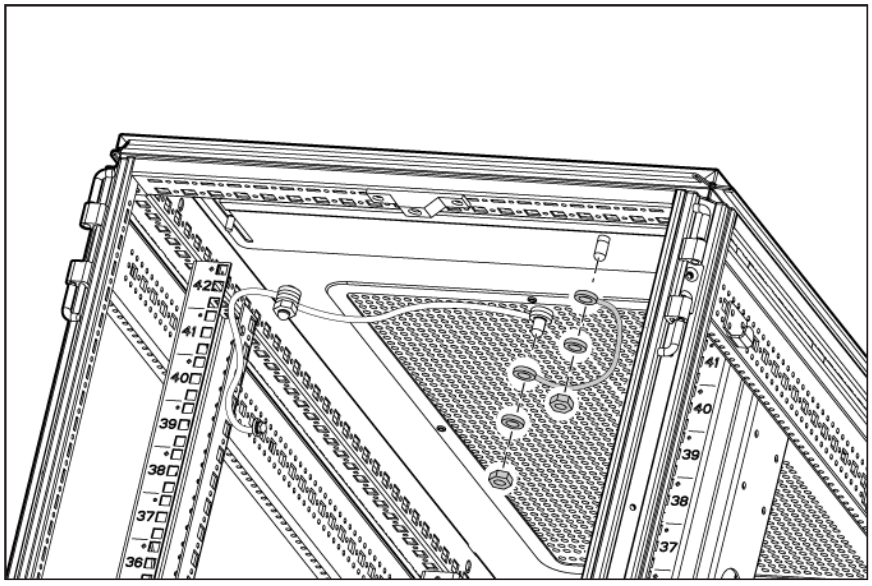
1. Place one end of a 36.83-cm (14.5-in) grounding strap over the grounding lug on the rack top.
2. Place an M8 internal serrated lock washer and an M8 hex nut over the grounding lug on the rack top and tighten.
3. Place the other end of the same grounding strap over the grounding lug on the perforated panel.

4. Place an M8 internal serrated lock washer and an M8 hex nut over the grounding lug on the perforated panel and tighten.

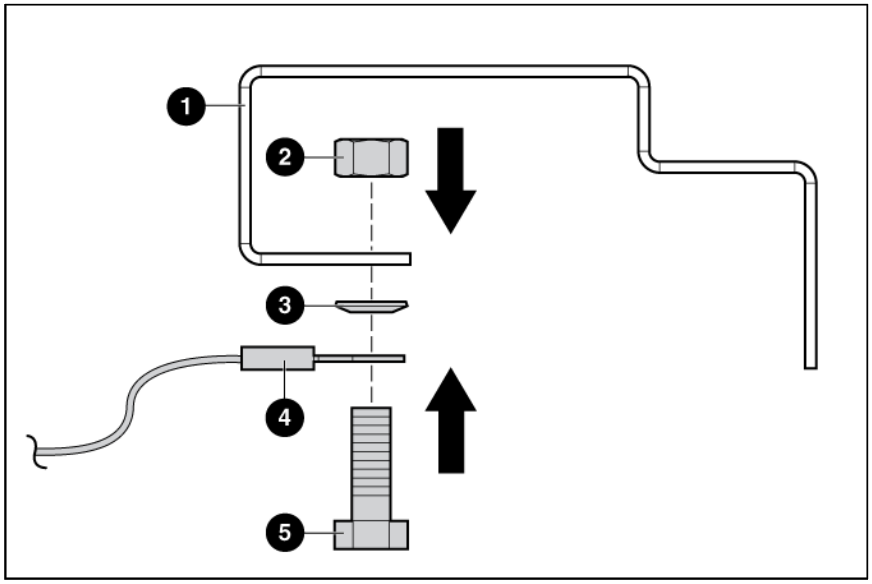


From the grounding lug on the perforated panel or fan kit to the grounding lug on the egress slot:

1. Place one end of a 15.24-cm (6-in) grounding strap over the grounding lug on the perforated panel or fan kit.
2. Place an M8 internal serrated lock washer and an M8 hex nut over the grounding lug on the perforated panel or fan kit and tighten.
3. Place the other end of the same grounding strap over the grounding lug on the egress slot.
4. Place an M8 internal serrated lock washer and an M8 hex nut over the grounding lug on the egress slot and tighten.



From the rack to a building facility, contact your building supervisor for more information. The following figure illustrates parts for this step.



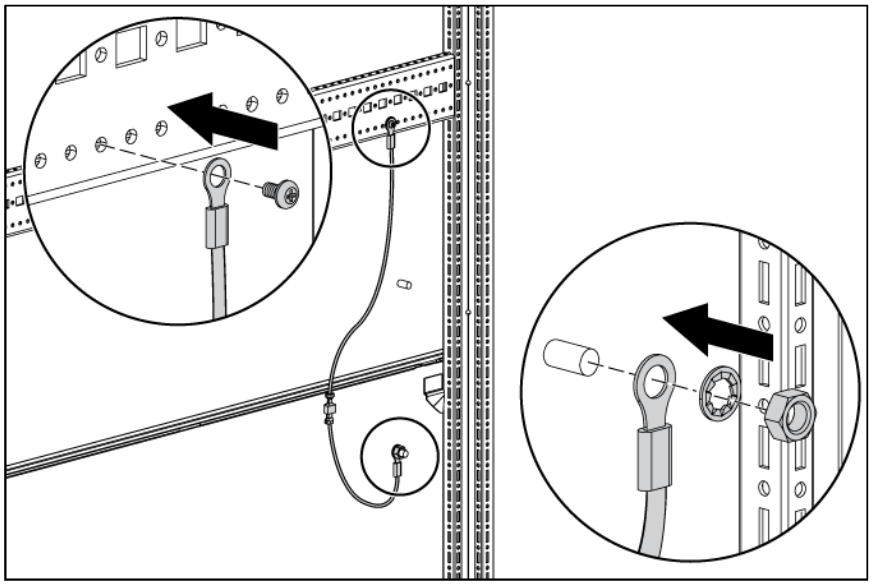
Reference	Item
1	48.26-cm (19-in) mounting rail (the mounting hole is located at the top or bottom of the rail)
2	M8 hex nut
3	M8 Belleville toothed washer
4	Facility ground (not included with this kit)
5	M8 x 20 bolt

Installing the ground bonding rack option kit on HP 10000 G2 Series Rack side panels

From the middle system chassis rail to the bottom side panel:

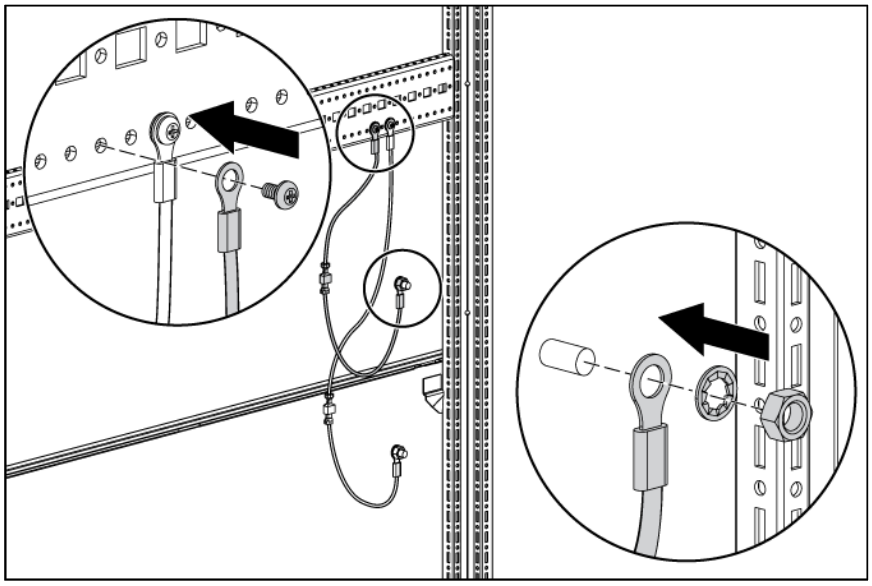
1. Connect a 36.83-cm (14.5-in) and a 15.24-cm (6-in) grounding strap with connectors together.
2. Insert a T-25 Torx screw through the end of the 36.83-cm (14.5-in) grounding strap, and secure it to the middle system chassis rail.
3. Place the end of the 15.24-cm (6-in) grounding strap over the grounding lug on the bottom side panel.
4. Place an M8 internal serrated lock washer and an M8 hex nut over the grounding lug on the bottom side panel and tighten.

5. Repeat steps 1 through 4 for the other bottom side panel.



From the middle system chassis rail to the middle side panel:

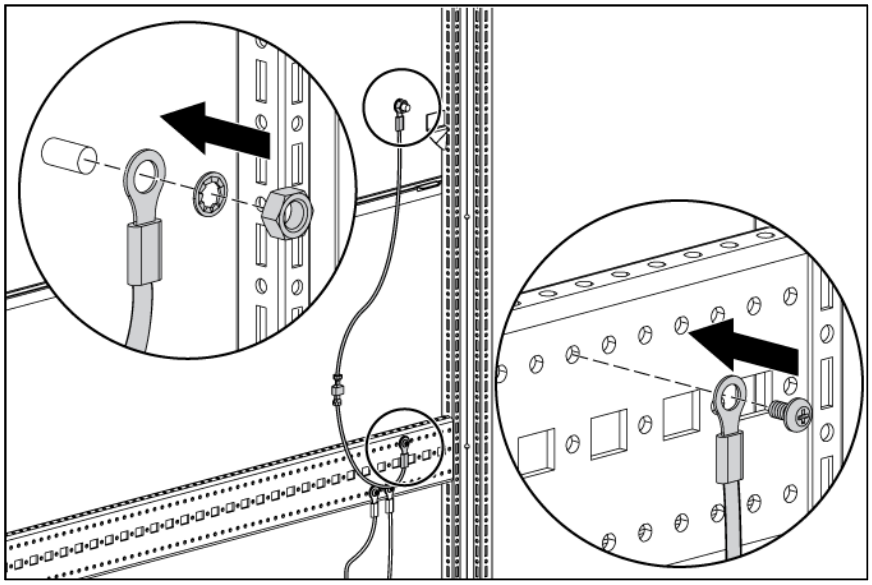
1. Connect a 36.83-cm (14.5-in) and a 15.24-cm (6-in) grounding strap with connectors together.
2. Insert a T-25 Torx screw through the end of the 36.83-cm (14.5-in) grounding strap, and secure it to the middle system chassis rail.
3. Place the end of the 15.24 (6-in) grounding strap over the grounding lug on the middle side panel.
4. Place an M8 internal serrated lock washer and an M8 hex nut over the grounding lug on the middle side panel and tighten.
5. Repeat steps 1 through 4 for the other middle side panel.



From the middle system chassis rail to the top side panel:

1. Connect a 36.83-cm (14.5-in) and a 15.24-cm (6-in) grounding strap with connectors together.
2. Insert a T-25 Torx screw through the end of a 36.83-cm (14.5-in) grounding strap, and secure it to the middle system chassis rail.

3. Place the end of the 15.24-cm (6-in) grounding strap over the grounding lug on the top side panel.
4. Place an M8 internal serrated lock washer and an M8 hex nut over the grounding lug on the top side panel and tighten.
5. Repeat steps 1 through 4 for the other top side panel.

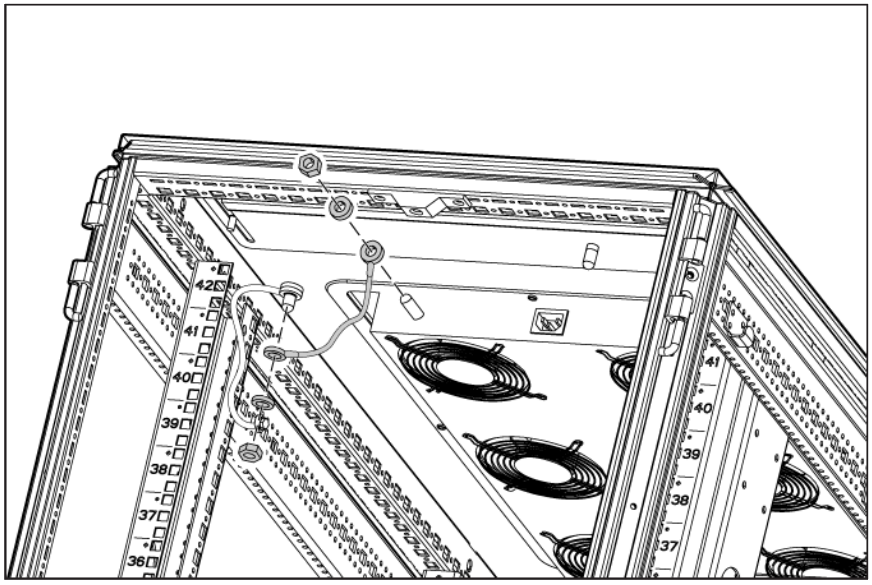


Installing the ground bonding rack option kit on HP 10000 G2 Series Rack fan kits

From the grounding lug on the rack top to the grounding lug on the fan kit:

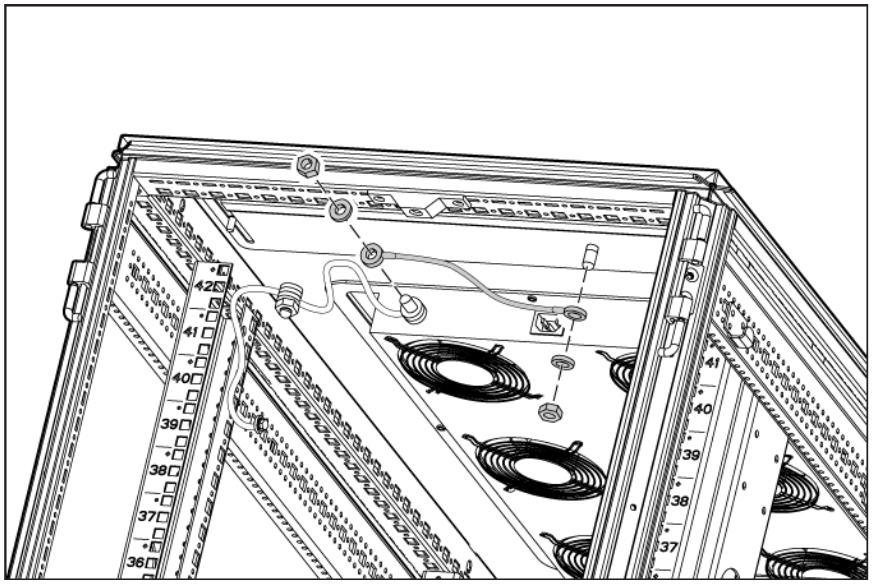
1. Place one end of a 15.24-cm (6-in) grounding strap over the grounding lug on the rack top.
2. Place an M8 internal serrated lock washer and an M8 hex nut over the grounding lug on the rack top and tighten.
3. Place the other end of the same grounding strap over the grounding lug on the perforated panel.

4. Place an M8 internal serrated lock washer and an M8 hex nut over the grounding lug on the perforated panel and tighten.



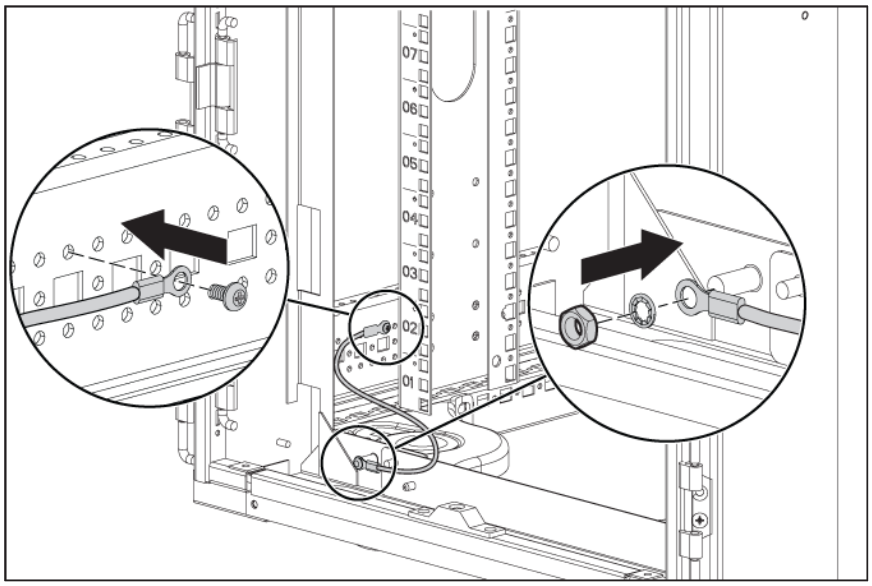
From the grounding lug on the fan kit to the grounding lug on the egress slot:

1. Place one end of a 36.83-cm (14.5-in) grounding strap over the grounding lug on the fan kit.
2. Place an M8 internal serrated lock washer and an M8 hex nut over the grounding lug on the fan kit and tighten.
3. Place the other end of the same grounding strap over the grounding lug on the egress slot.
4. Place an M8 internal serrated lock washer and an M8 hex nut over the grounding lug on the egress slot and tighten.



Installing the ground bonding rack option kit on HP 10000 G2 Series Rack 150-mm extension kits

1. Insert a T-25 Torx screw through one end of a 15.24-cm (6-in) grounding strap, and secure it to the rear rack chassis.
2. Place an M8 internal serrated lock washer and the other end of the same grounding strap over the grounding lug on the extension kit.
3. Place an M8 hex nut over the grounding lug and tighten.

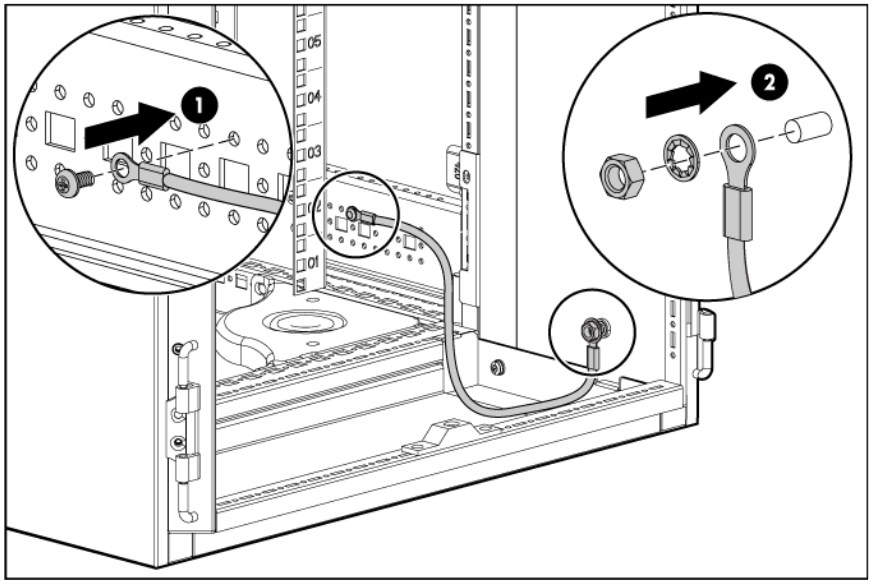


Installing the ground bonding rack option kit on HP 10000 G2 Series Rack 200-mm extension kits

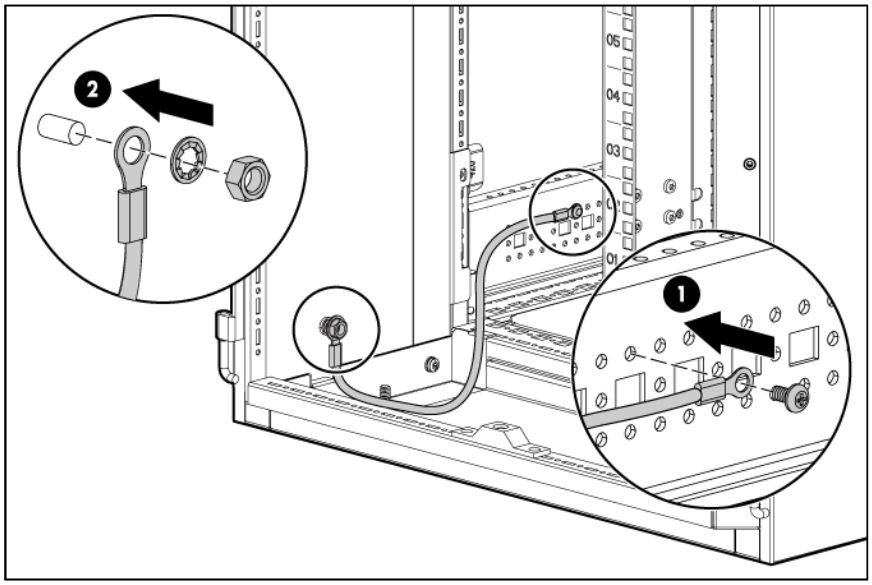
From the extension kit to the bottom rack side panel:

1. Insert a T-25 Torx screw through the end of the 36.83-cm (14.5 in) grounding strap, and secure it to the bottom side panel.
2. Place the other end of the same grounding strap over the grounding lug on the extension kit.

3. Place an M8 internal serrated lock washer and an M8 hex nut over the grounding lug on the extension kit and tighten.



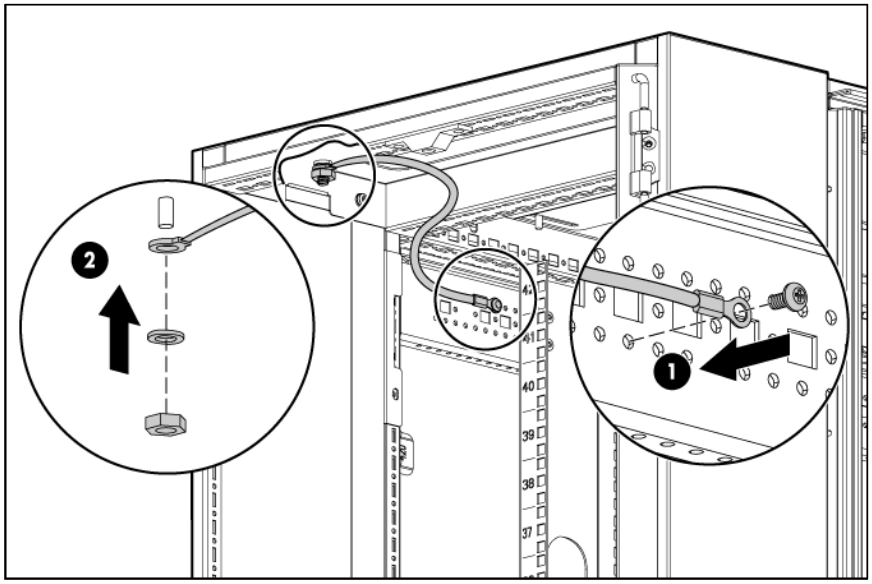
4. Repeat the previous steps for the opposite side of the rack.



From the extension kit to the top rack side panel:

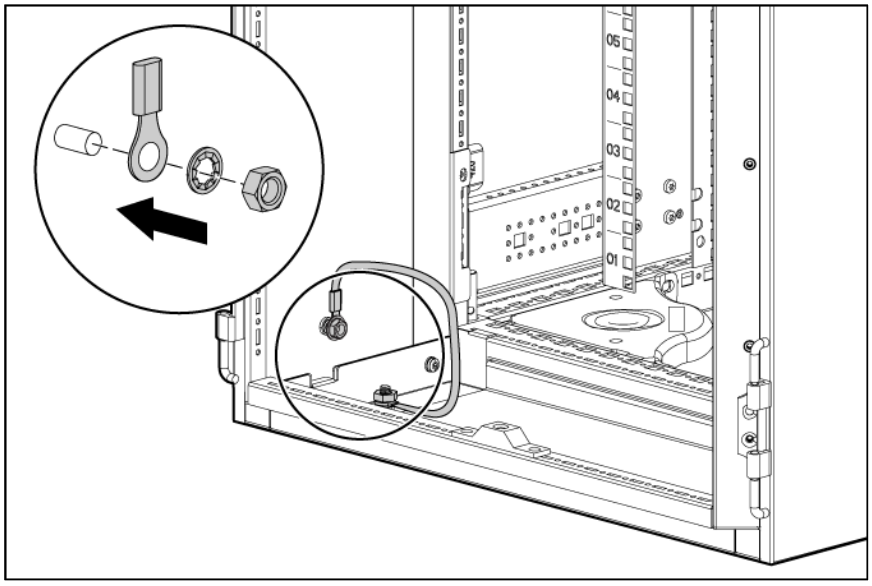
1. Insert a T-25 Torx screw through the end of the 36.83-cm (14.5 in) grounding strap, and secure it to the top side panel.
2. Place the other end of the same grounding strap over the grounding lug on the extension kit.

3. Place an M8 internal serrated lock washer and an M8 hex nut over the grounding lug on the extension kit and tighten.



From the side panel grounding lug to the bottom panel grounding lug:

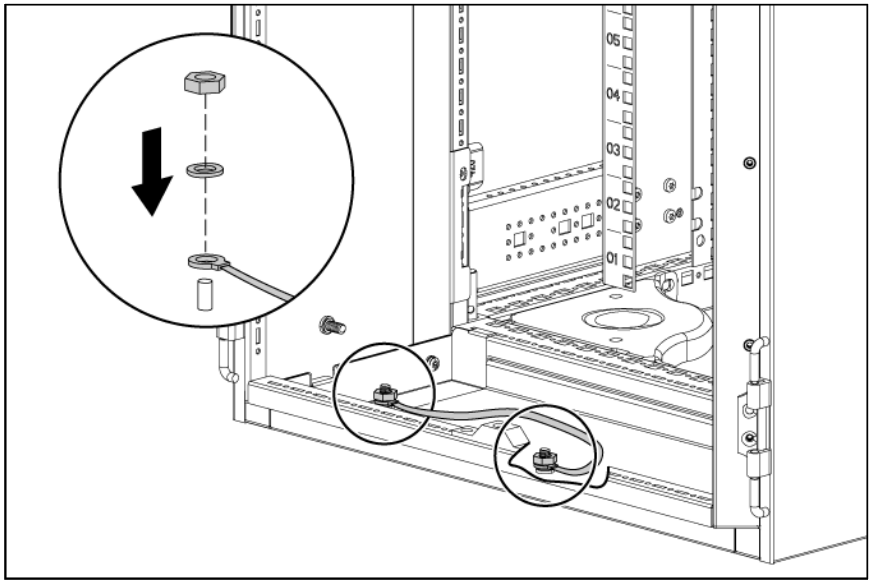
1. Place the 36.83-cm (14.5 in) grounding strap over the grounding lug on the side panel of the extension kit.
2. Place an M8 internal serrated lock washer and an M8 hex nut over the grounding lug on the side panel of the extension kit and tighten.
3. Repeat the previous steps to secure the other end of the same grounding strap to the grounding lug on the bottom panel of the extension kit.



From the egress panel grounding lug to the bottom panel grounding lug:

1. Place the 36.83-cm (14.5 in) grounding strap over the grounding lug on the egress panel of the extension kit.
2. Place an M8 internal serrated lock washer and an M8 hex nut over the grounding lug on the egress panel of the extension kit and tighten.

3. Repeat the previous steps to secure the other end of the same grounding strap to the grounding lug on the bottom panel of the extension kit.



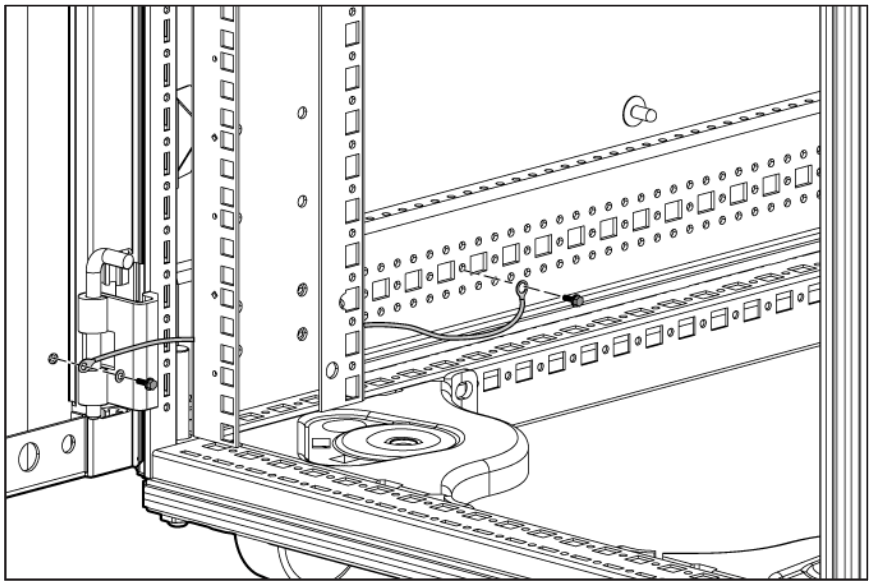
Installing the ground bonding rack option kit on HP 10000 Series Racks

Attach the appropriate grounding straps to the following locations:

From the system chassis rail to the front door:

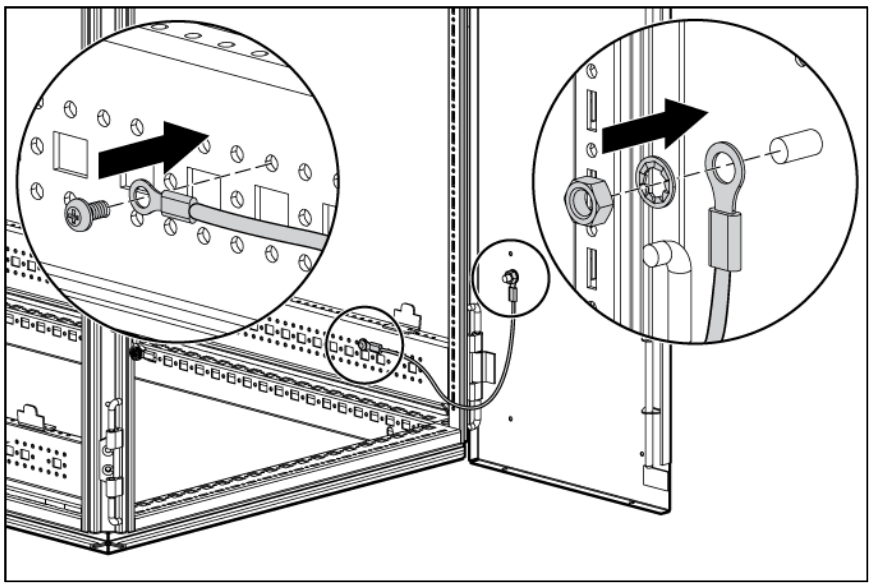
1. Insert a T-25 Torx screw through one end of a 36.83-cm (14.5-in) grounding strap, and secure it to the system chassis rail.
2. Remove the inside front door panel screw.
3. Place an M5 Belleville toothed washer and the other end of the grounding strap over the front door panel screw.

4. Reinsert and tighten the front door panel screw.



From the system chassis rail to the right rear door:

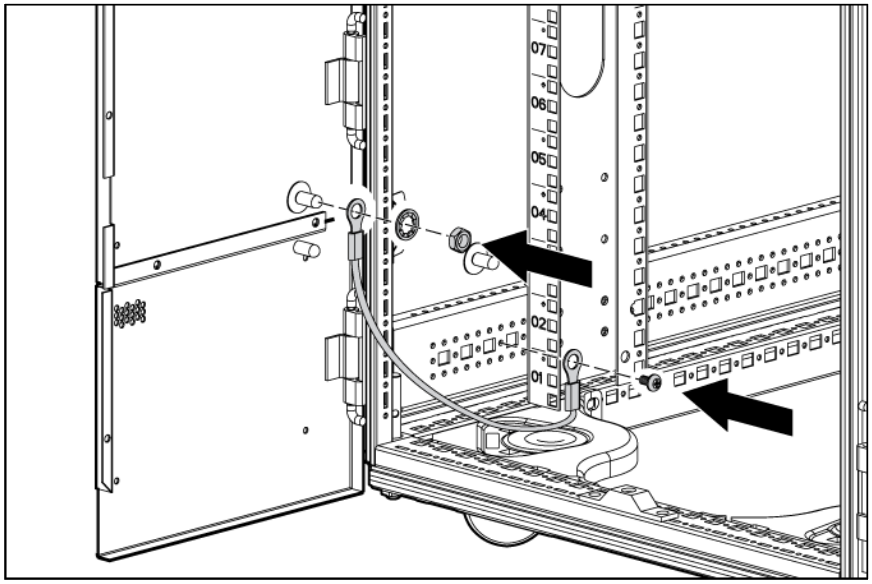
1. Insert a T-25 Torx screw through the end of a 36.83-cm (14.5-in) grounding strap, and secure it to the system chassis rail.
2. Place the other end of the same grounding strap over the grounding lug on the right rear door.
3. Place an M8 internal serrated lock washer and an M8 hex nut over the grounding lug on the right rear door and tighten.



From the system chassis rail to the left rear door:

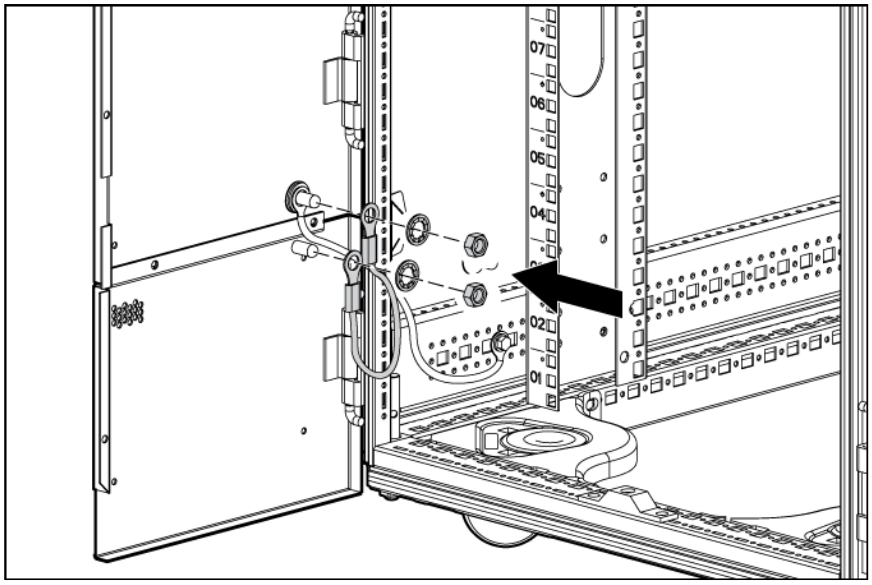
1. Insert a T-25 Torx screw through the end of a 36.83-cm (14.5-in) grounding strap, and secure it to the system chassis rail.
2. Place the other end of the same grounding strap over the grounding lug on the left rear door.

3. Place an M8 internal serrated lock washer and an M8 hex nut over the grounding lug on the left rear door and tighten.



From the left rear door to the left rear door cable access panel:

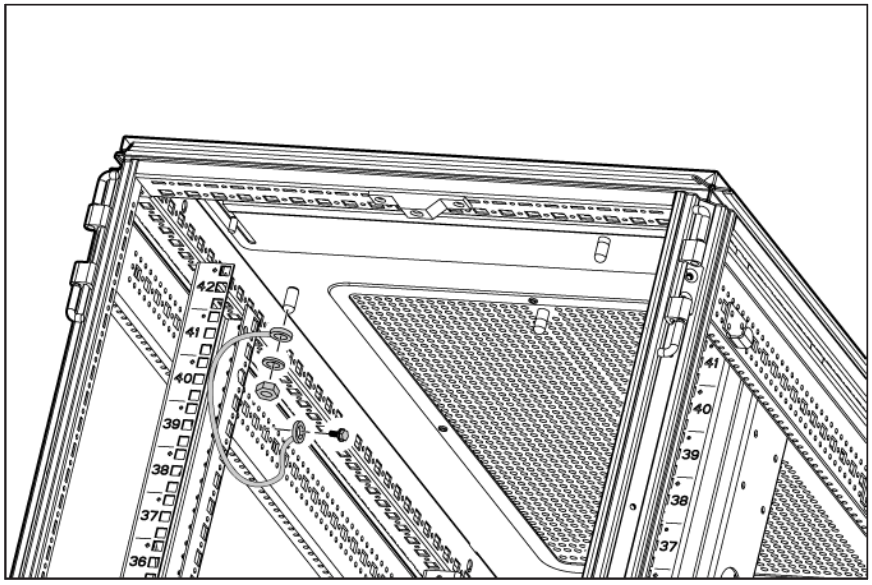
1. Place one end of a 15.24-cm (6-in) grounding strap over the same grounding lug on the left rear door.
2. Place an M8 internal serrated lock washer and an M8 hex nut over the grounding lug on the left rear door and tighten.
3. Place the other end of the same grounding strap over the grounding lug on the cable access panel.
4. Place an M8 internal serrated lock washer and an M8 hex nut over the grounding lug on the cable access panel and tighten.



From the system chassis rail to the rack top:

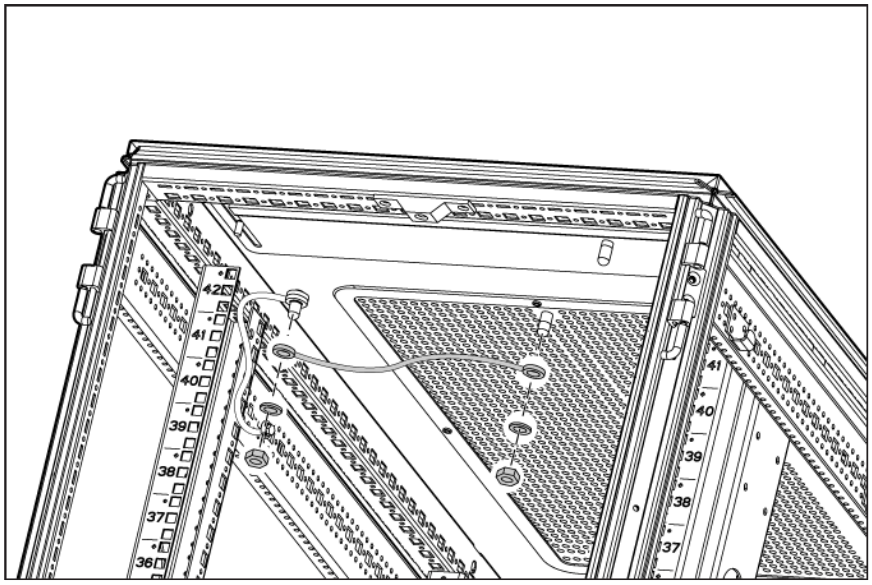
1. Insert a T-25 Torx screw through on end of a 15.24-cm (6-in) grounding strap and secure it to the system chassis rail.
2. Place the other end of the same grounding strap over the grounding lug on the rack top.

3. Place an M8 internal serrated lock washer and an M8 hex nut over the grounding strap on the rack top and tighten.



From the grounding lug on the rack top to the grounding lug on the perforated panel:

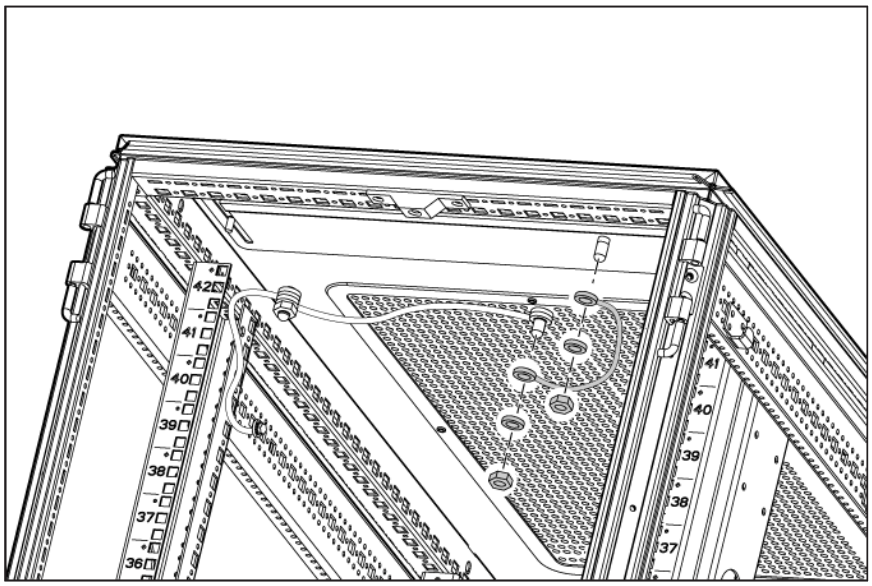
1. Place one end of a 36.83-cm (14.5-in) grounding strap over the same grounding strap on the rack top.
2. Place an M8 internal serrated lock washer and an M8 hex nut over the grounding lug on the rack top and tighten.
3. Place the other end of the same grounding strap over the grounding lug on the perforated panel.
4. Place an M8 internal serrated lock washer and an M8 hex nut over the grounding lug on the perforated panel and tighten.



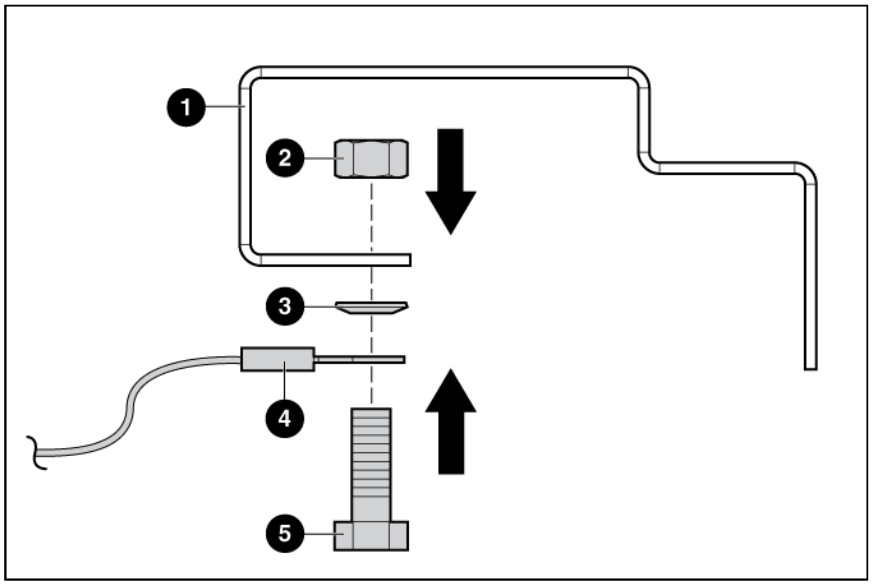
From the grounding lug on the perforated panel or fan kit to the grounding lug on the egress slot:

1. Place one end of a 15.24-cm (6-in) grounding strap over the grounding lug on the perforated panel or fan kit.
2. Place an M8 internal serrated lock washer and an M8 hex nut over the grounding lug on the perforated panel or fan kit and tighten.

3. Place the other end of the same grounding strap over the grounding lug on the egress slot.
4. Place an M8 internal serrated lock washer and an M8 hex nut over the grounding lug on the egress slot and tighten.



From the rack to a building facility, contact your building supervisor for more information. The following figure illustrates parts for this step.

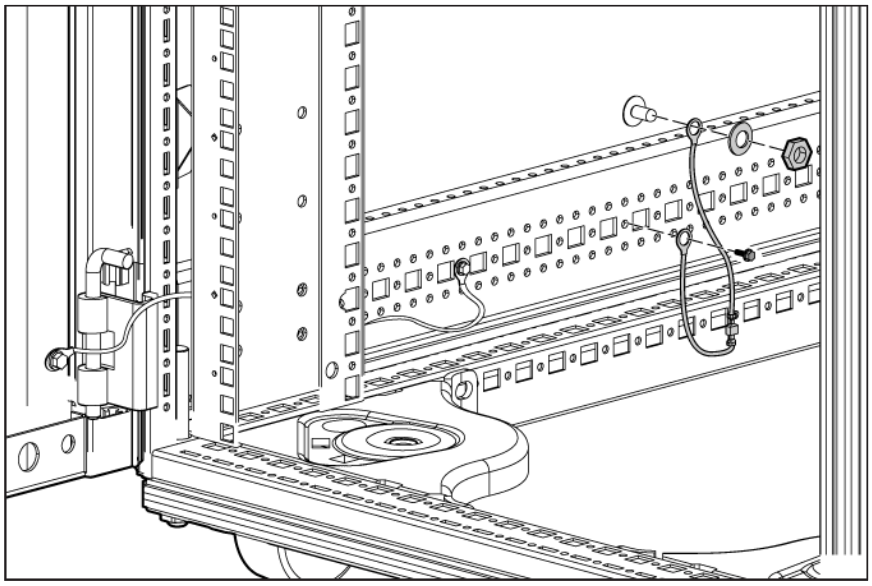


Reference	Item
1	48.26-cm (19-in) mounting rail (the mounting hole is located at the top or bottom of the rail)
2	M8 hex nut
3	M8 Belleville toothed washer
4	Facility ground (not included with this kit)
5	M8 x 20 bolt

Installing the ground bonding rack option kit on HP 10000 Series Rack side panels

From the system chassis rail to the side panel:

1. Connect a 36.83-cm (14.5-in) and a 15.24-cm (6-in) grounding strap with connectors together.
2. Insert a T-25 Torx screw through the end of the 36.83-cm (14.5-in) grounding strap, and secure it to the system chassis rail.
3. Place the end of the 15.24-cm (6-in) grounding strap over the grounding lug on the side panel.
4. Place an M8 internal serrated lock washer and an M8 hex nut over the grounding lug on the side panel and tighten.
5. Repeat steps 1 through 4 for the other side panel.

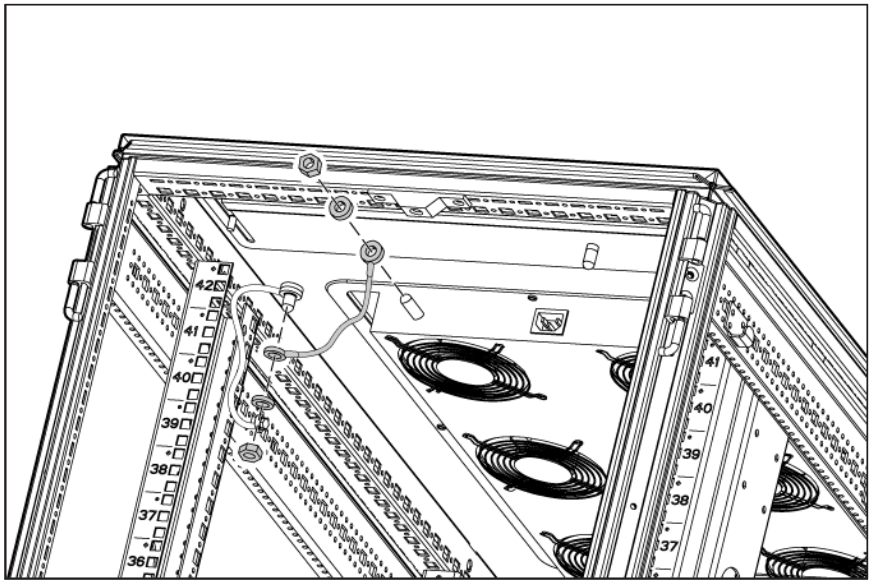


Installing the ground bonding rack option kit on HP 10000 Series Rack fan kits

From the grounding lug on the rack top to the grounding lug on the fan kit:

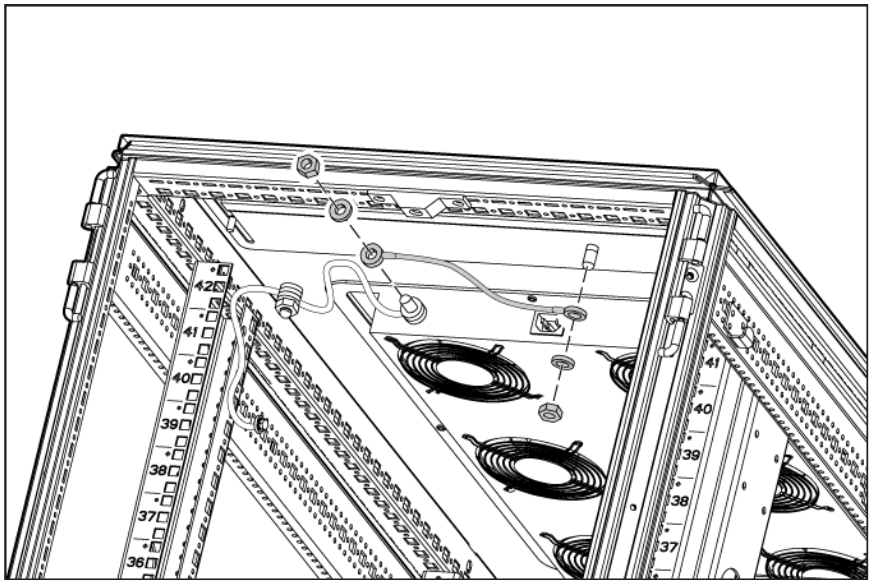
1. Place one end of a 15.24-cm (6-in) grounding strap over the grounding lug on the rack top.
2. Place an M8 internal serrated lock washer and an M8 hex nut over the grounding lug on the rack top and tighten.
3. Place the other end of the same grounding strap over the grounding lug on the perforated panel.

4. Place an M8 internal serrated lock washer and an M8 hex nut over the grounding lug on the perforated panel and tighten.



From the grounding lug on the fan kit to the grounding lug on the egress slot:

1. Place one end of a 36.83-cm (14.5-in) grounding strap over the grounding lug on the fan kit.
2. Place an M8 internal serrated lock washer and an M8 hex nut over the grounding lug on the fan kit and tighten.
3. Place the other end of the same grounding strap over the grounding lug on the egress slot.
4. Place an M8 internal serrated lock washer and an M8 hex nut over the grounding lug on the egress slot and tighten.



Heavy Duty Stabilizer kit

About this device

The HP Heavy Duty Stabilizer kit provides stability and support and prevents possible tipping when you install, remove, or access equipment within the rack.

If you have a stand-alone rack with a single rack-mountable component that exceeds 99.8 kg (220 lb) or if you have three or fewer bayed racks with a single rack-mountable component that exceeds 99.8 kg (220 lb), you must use the heavy duty stabilizer.

Kit contents

Item	Quantity
Heavy duty front stabilizer mount	1
Heavy duty stabilizer feet	2
M8 x 16-mm bolt	8
M8 x 30-mm bolt	2
M8 flat washer	10

This kit might contain extra hardware for your convenience.

Required tools

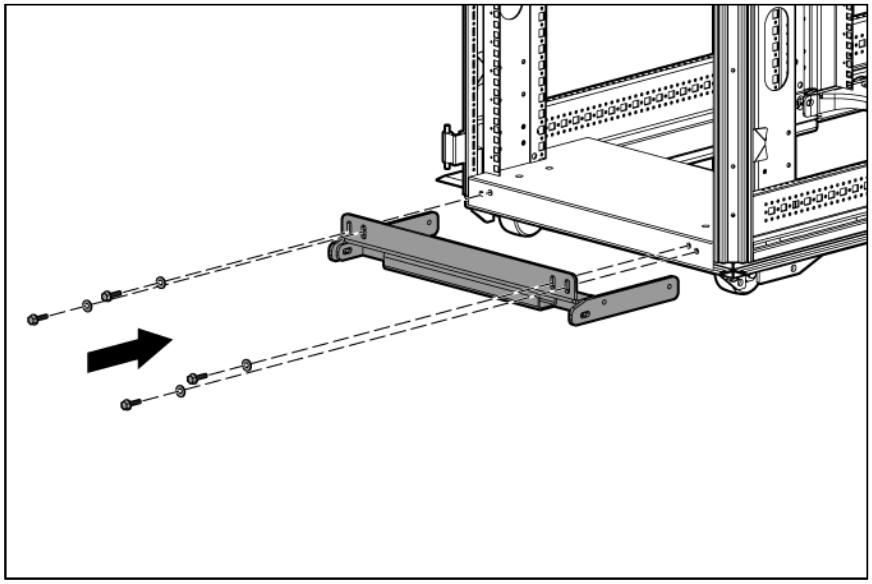
The following tools are required for installation:

- Ratchet with sockets
- Adjustable wrench

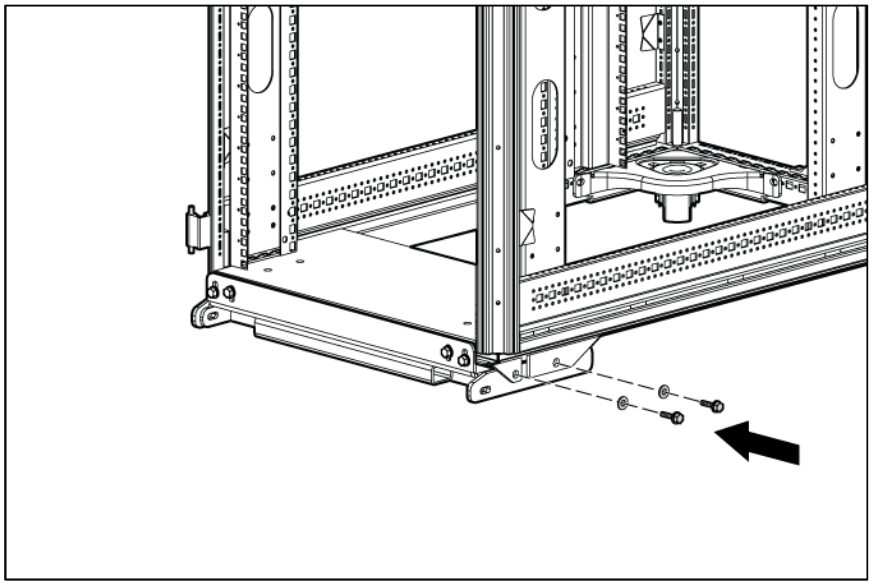
Installing the rack stabilizer option kit

1. Install the front stabilizer mount.
   a. Align the front stabilizer mount to the mounting holes on the rack front caster plate.

b. Insert and partially tighten four M8 x16-mm bolts with washers, securing the front stabilizer mount to the front caster plate.



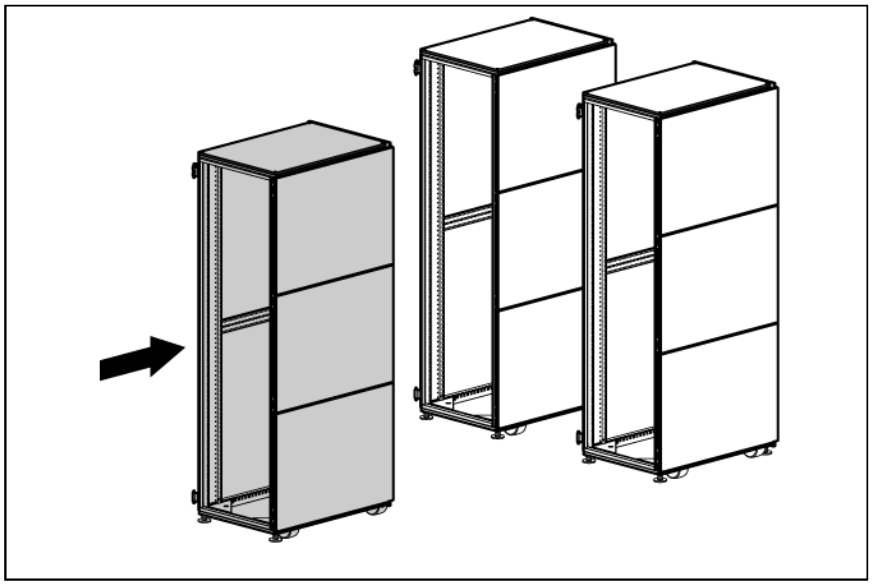
c. Insert and partially tighten two M8 x16-mm bolts with washers on each side of the caster plate skirt, securing the front stabilizer mount to the front caster plate.



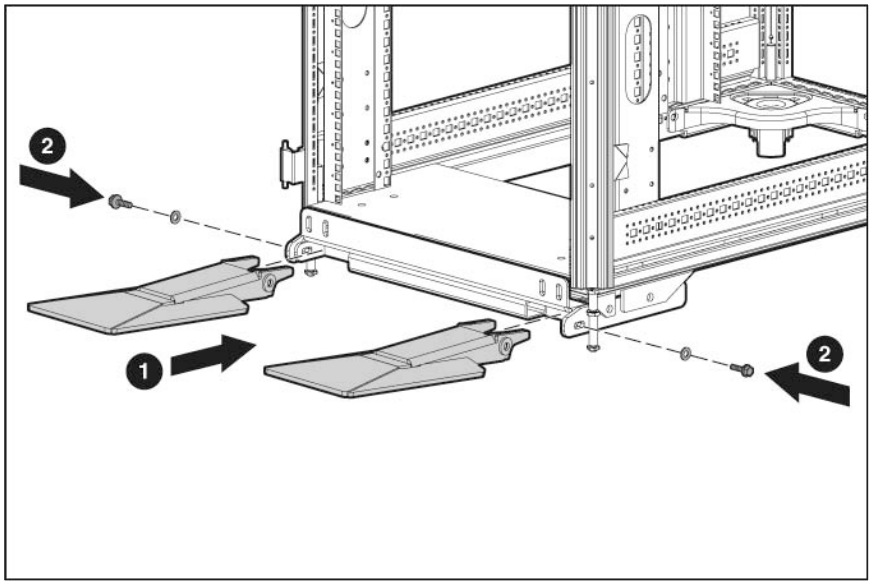
d. Tighten the bolts from step b.

e. Tighten the bolts from step c.

2. Slide the rack into its final location.



3. Raise the rack by lowering the leveling feet, raising the casters approximately 6.4 mm (0.25 in) off the floor.
4. Install one stabilizer foot on each side of the front stabilizer mount (1) by inserting and partially tightening one M8 x 30-mm bolt and washer on each foot (2).



5. Fully seat each stabilizer foot to the front stabilizer mount, and tighten the bolts from step 4.
6. Lower the rack so that the full weight of the rack rests on the rear leveling feet and the front stabilizer feet.

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

- The rear leveling feet are extended to the floor.
- The full weight of the rack rests on the rear leveling feet and front stabilizer feet.

Installation is complete.

Hook-and-Loop Cabling Strap Clip kit

About this device

The HP Hook-and-Loop Cabling Strap Clip kit enables you to add hook-and-loop cabling strap clips to manage your cable configurations.

Kit contents

Item	Quantity
12.7-cm (5-in) hook-and-loop cabling strap clip	20
20.3-cm (8-in) hook-and-loop cabling strap clip	20
30.5-cm (12-in) hook-and-loop cabling strap clip	10

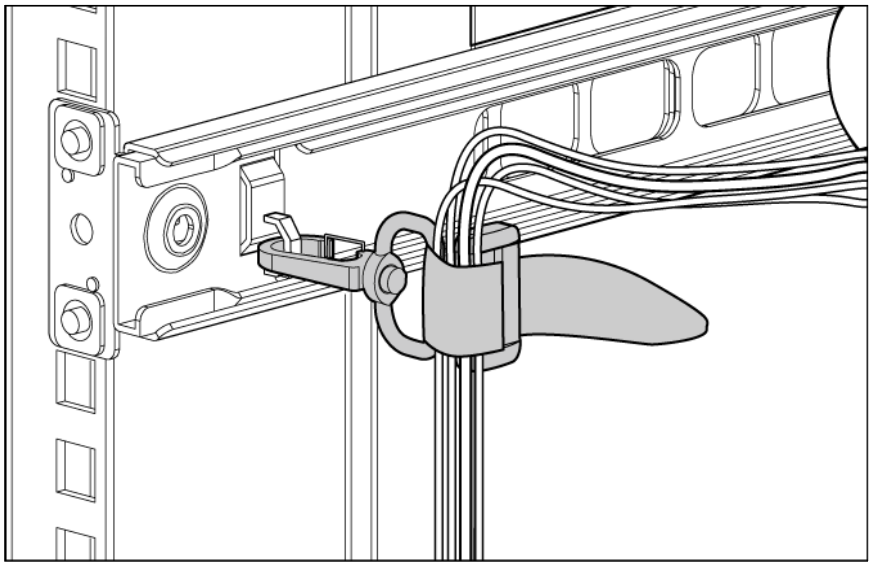
This kit might contain extra hardware for your convenience.

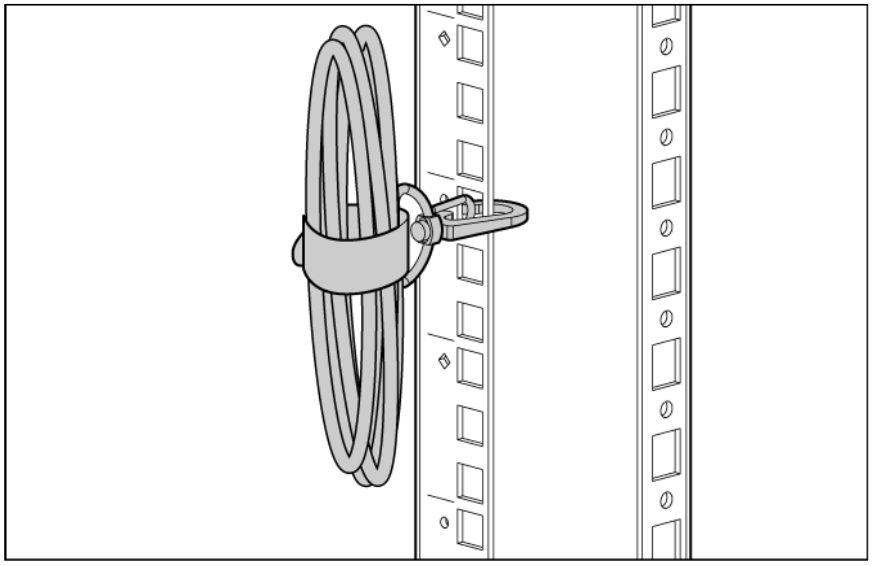
Required tools

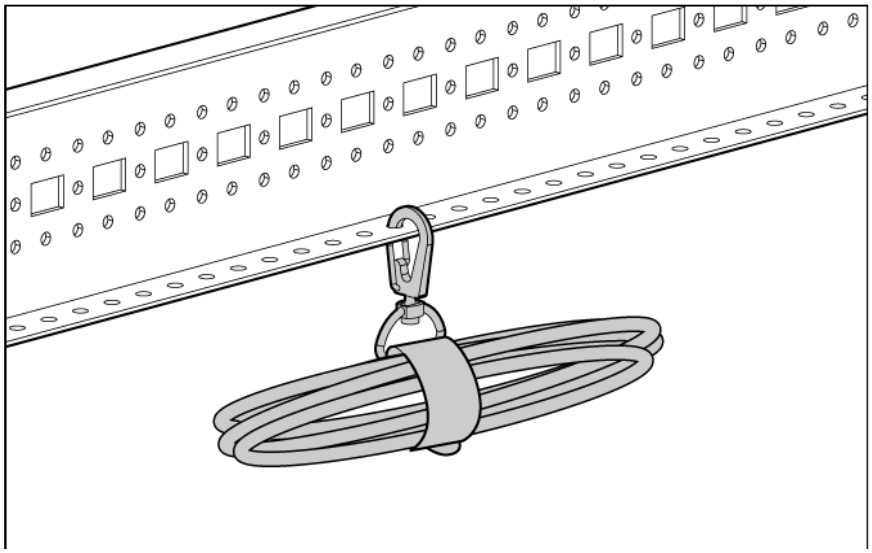
No tools are required for this procedure.

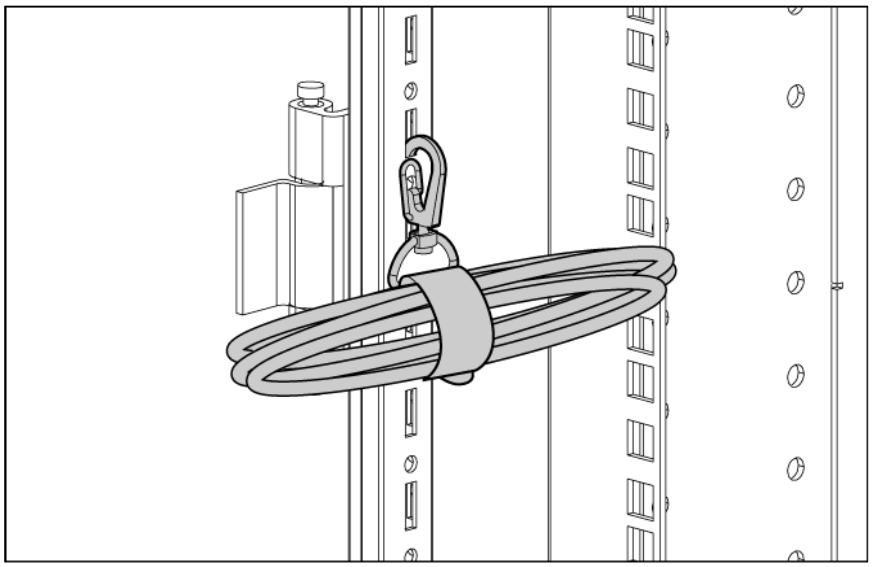
Installing the hook-and-loop cabling strap clips

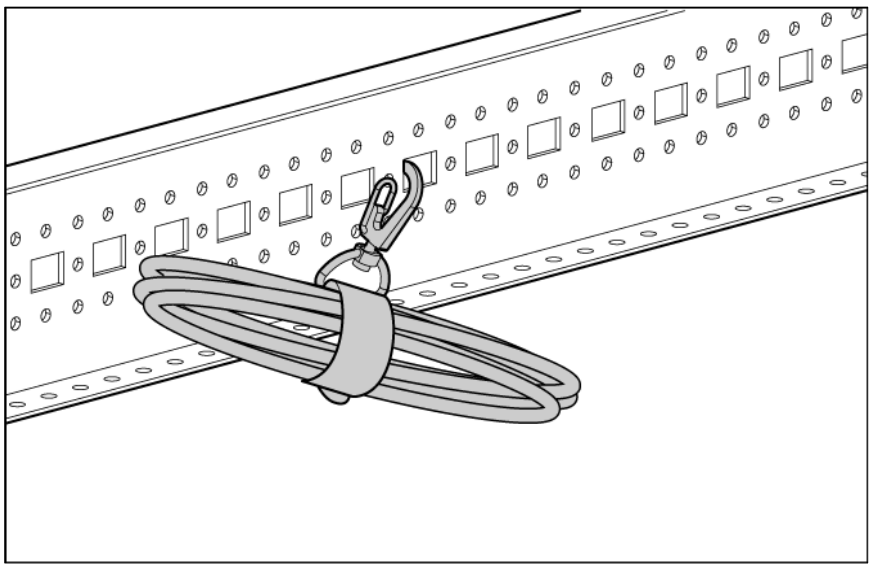
Route and secure your cables with the hook-and-loop cabling strap clips.

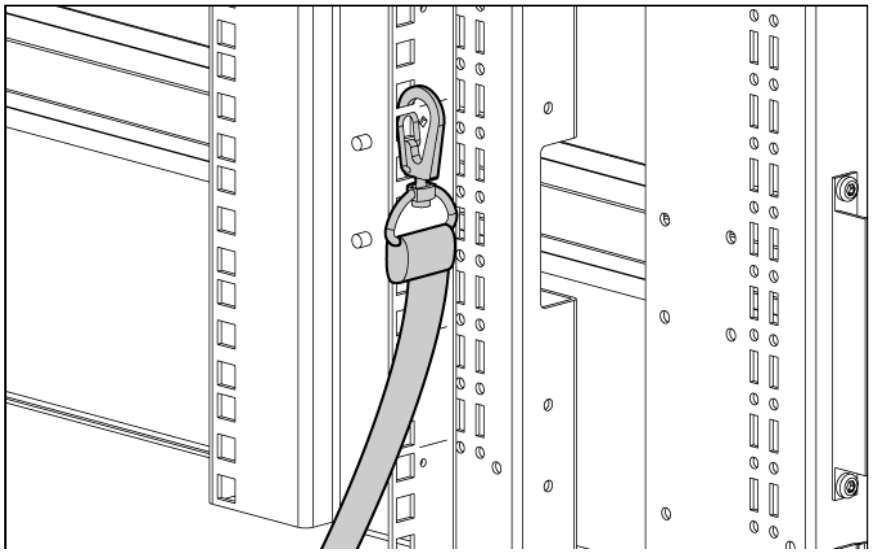


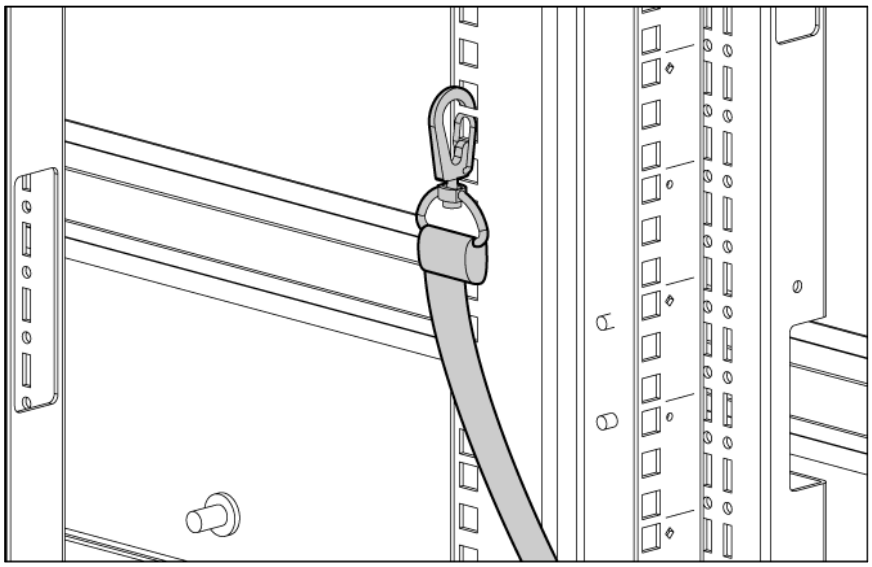












Installation is complete.

Light kit

About this device

The HP Light kit enables you to add a light to the rack.

Kit contents

Item	Quantity
110V/220V light assembly	1
Light cover	1
F14W/133-T8 fluorescent lamp	1
Power cord (10 ft), C13-C14	1
Mounting screws	2

This kit might contain extra hardware for your convenience.

Required Tool

You will need a flat-head screwdriver.

Important safety information

Before installing this product, read the *Important Safety Information* guide provided.

WARNING: To reduce the risk of personal injury, fire, or damage to the equipment, do not exceed the recommended voltage for the rack.

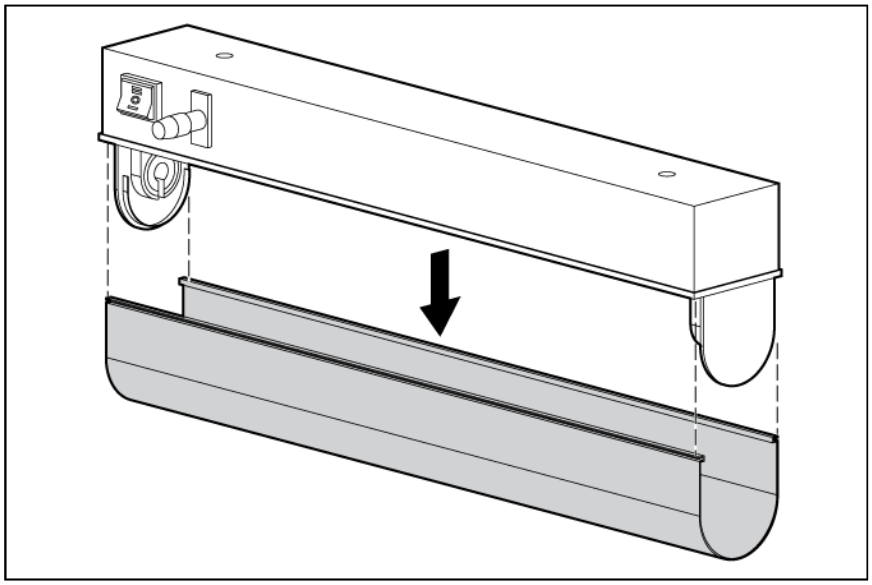
WARNING: The fluorescent lamp contains mercury. Therefore, at end-of-life, the fluorescent lamp may require special handling.

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

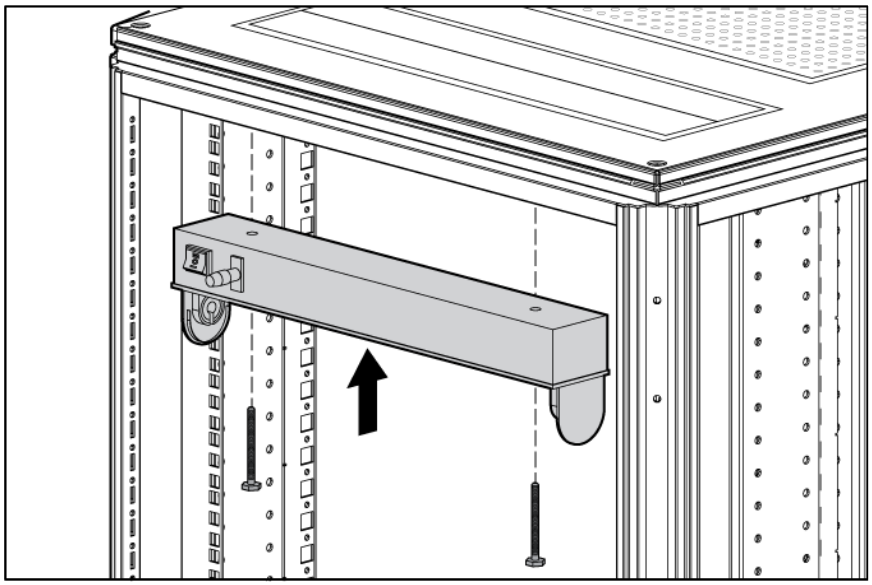
- The leveling feet are extended to the floor.
- The full weight of the rack rests on the leveling feet.
- The stabilizing feet are attached to the rack if it is a single-rack installation.
- The racks are coupled together in multiple-rack installations.
- Only one component is extended at a time. A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

Installing the 110V/220V Light

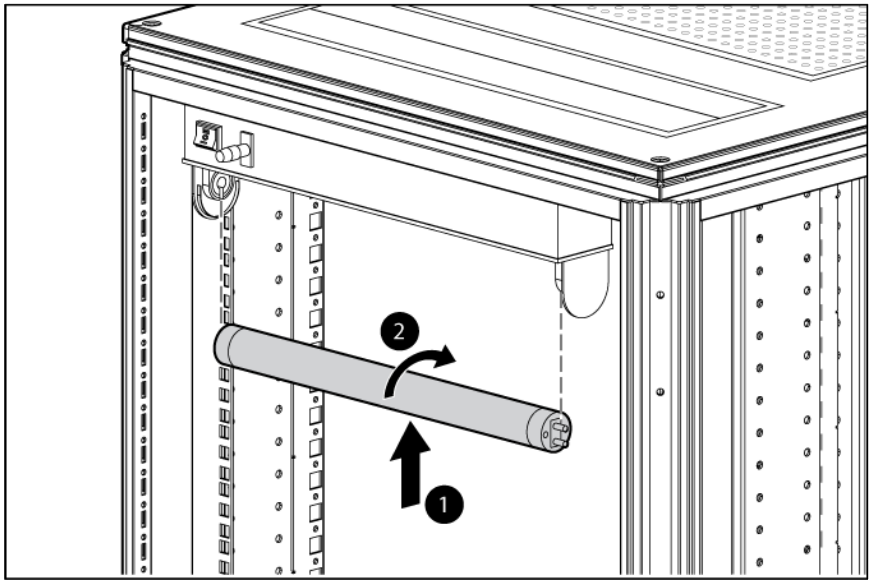
1. Remove the fluorescent lamp cover.



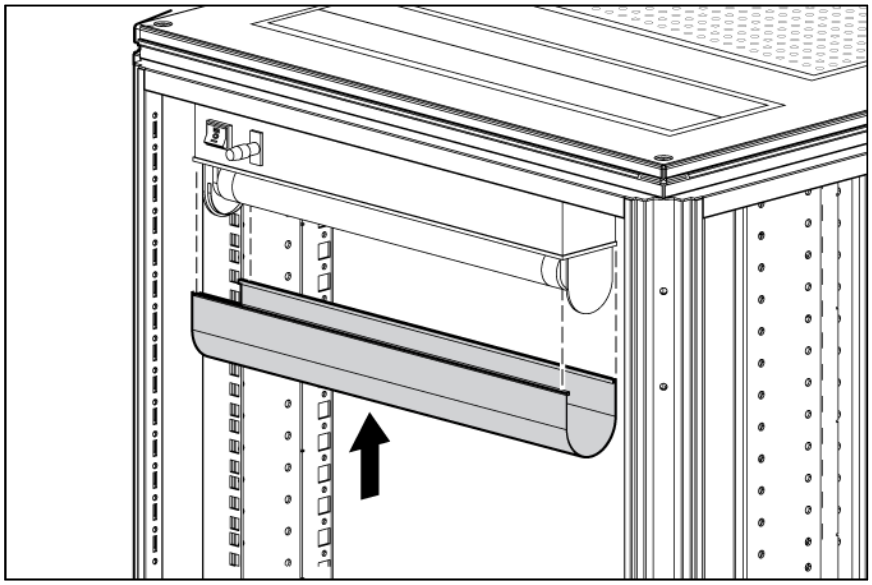
2. Insert two screws, securing the light to the rack frame.



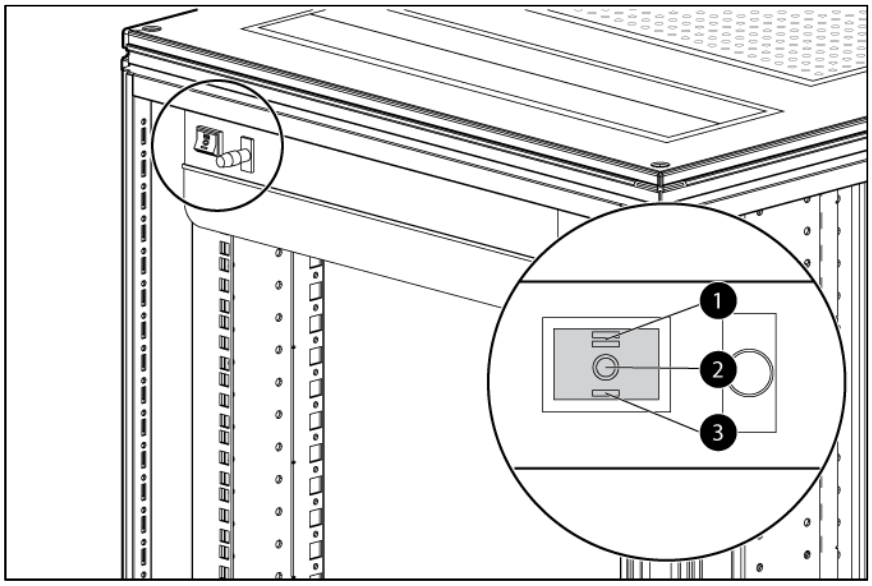
3. Insert the fluorescent lamp pins into the light socket (1) and gently turn the fluorescent lamp toward the rack (2) until the lamp locks into place.



4. Replace the fluorescent lamp cover.

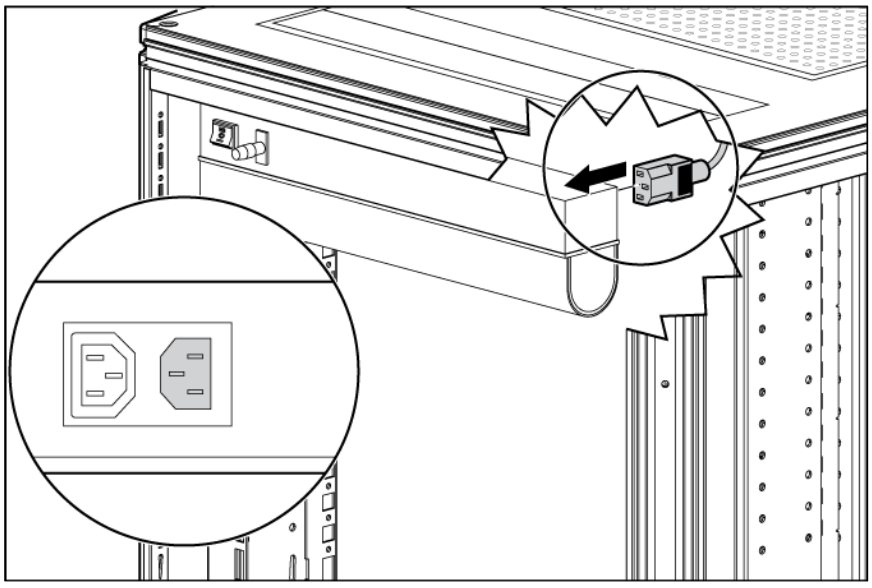


Operating the 110V/220V Light



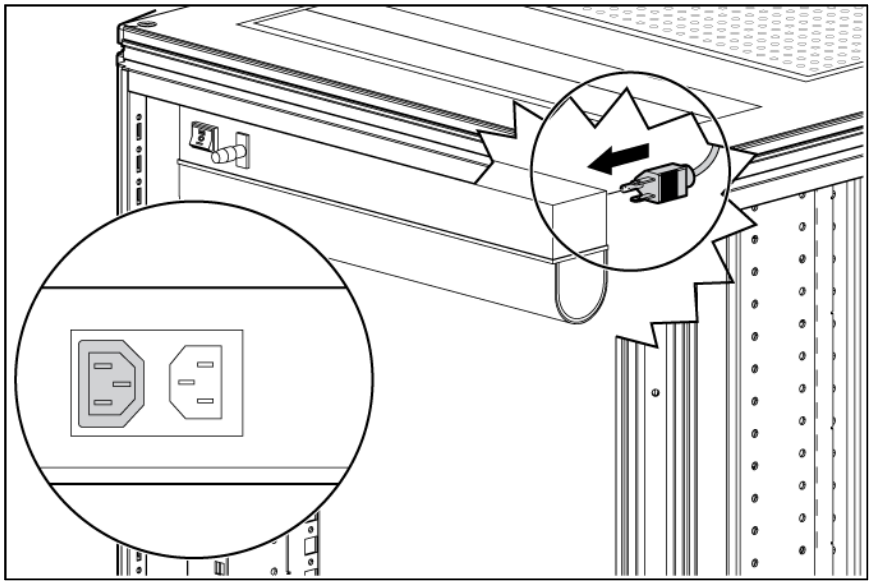
Item	Description	Status
1	On	Turns on the light.
2	Off	Turns off the light.
3	Standby mode	Turns on the light when the rack door is open, and turns off the light when the rack door is closed.

Connecting the power cord to the 110V/220V light



Connecting devices to the 110V/220V light

WARNING: To reduce the risk of personal injury, fire, or damage to the equipment, do not exceed the recommended voltage for the rack.



HP 110V/220V light kit specifications

Parameter	Value
Height	116 mm
Depth	50 mm
Width	452 mm
Weight	approximately 1 kg
Rated input	100–240 V, 50/60 Hz
Maximum rated output	10 A/250 VAC
Illuminant	F14W/133-T8, Coolwhite
Protection class	1
Degree of protection	IP20 (IEC 529/EN 60 529)
Power consumption	approximately 27 VA
Current consumption	0, 08 A at 240 V 0, 012 A at 230 V 0, 175 A at 100 V
Operating temperature	-25°C to 50°C
Type of start	Warm start
Candle power	700 lm
Illumination	approximately 90 1X (measured by 1 m distance)
Test standard	UL153, (Portable Lamps), File E243499 ENEC/GS according EN60598-1 (at test)
EMC	EN61547, EN55015, EN61000-6-3, EN61000-6-2, EN61000-3-3

F14W/133-T8 fluorescent lamp specifications

Electrical data*	Nominal value	Minimum	Maximum
Frequency	50 Hz	—	—
Lamp nominal wattage	14 W	—	—
Lamp rated wattage • Single operation • Series operation	14.0 W 30 W	12.8 W —	15.2 W —
Lamp operating voltage	38 V	28V	48 V
Lamp current • Single operation • Series operation	395 mA 330 mA	— —	— —
Preheat current • Single operation • Series operation	590 mA 660 mA	360 mA —	— —

*Lamps must comply with the requirements of IEC/EN 60081 and IEC/EN 61195, respectively.

Lamp life*	Nominal Value Minimum
Average life (50% failure rate)	14000 h
Individual life	6000 h

*Life test according to IEC/EN 60081, Annex C.

Operating conditions*	Value
Cap rim temperature	Nominal value maximum 125°C
Lamp ambient temperature	Nominal value minimum -20°C
Ballast impedance • Single operation • Series operation	285/127, 525/220, 566/230, 612/240 ΩN 507/220, 540/230, 580/240 ΩN
Starter • Single operation • Series operation	FS-11, FS-22, COP-22 FS-22, COP-22
Burning position	Any

*Starter and Ballast must comply with IEC/EN 60155 and IEC/EN 60921, respectively.

Photometric data

Color	No	Luminous Flux* Nominal Value	CRI	Color Temp	ILCOS-Code
Standard colors • Warm white • Cool white • Daylight	129 133 154	700 lm 700 lm 650 lm	3 group 2B group 2A group	3000 K 4300 K 6500 K	FD-14/30/3-E-G13-26/360 FD-14/43/2B-E-G13-26/360 FD-14/65/2A-E-G13-26/360

Color	No	Luminous Flux* Nominal Value	CRI	Color Temp	ILCOS-Code
Special colors • Activa • Gro-lux	172 gro	600 lm n/a	1A group n/a	6500 K n/a	FD-14/65/1A-E-G13-26/360 Not for general lighting purposes

*At 50-Hz operation, lamp aged for 100 h.

Material disposal

This HP product contains the following material that might require special handling at end-of-life:

- Mercury in the user replaceable fluorescent lamp.

Disposal of mercury might be regulated because of environmental considerations. For disposal or recycling information, contact your local authorities or the Electronic Industries Alliance (EIA) (http://www.eiae.org).

Mini Stabilizer kit

About this device

The HP Mini Stabilizer kit provides stability and support and prevents possible tipping when you install, remove, or access equipment within the rack.

Kit contents

Item	Quantity
600-mm (23.62-in) Front stabilizer mount —or— 800-mm (31.50-in) Front stabilizer mount	1 1
Stabilizer feet	2
M8 x 20-mm bolt	8
M8 flat washer	8

This kit might contain extra hardware for your convenience.

Required tools

The following tools are required for installation:

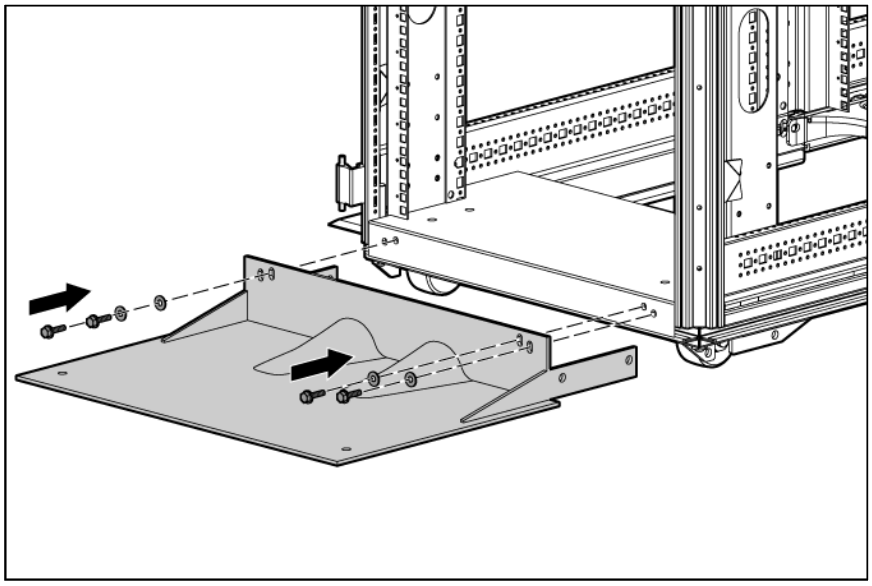
- Ratchet with sockets
- Adjustable wrench

Installing the stabilizer

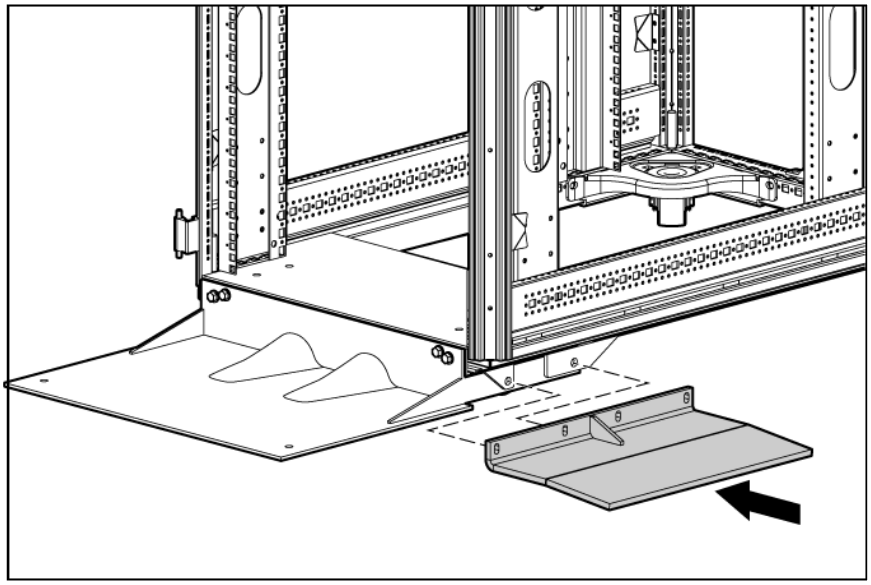
NOTE: HP recommends using the side feet, provided with this kit, to stabilize stand-alone racks from the side. If you are stabilizing racks that are secured together with baying kits, the side feet are optional on either end of the row.

1. Align the front foot with the front caster plate.

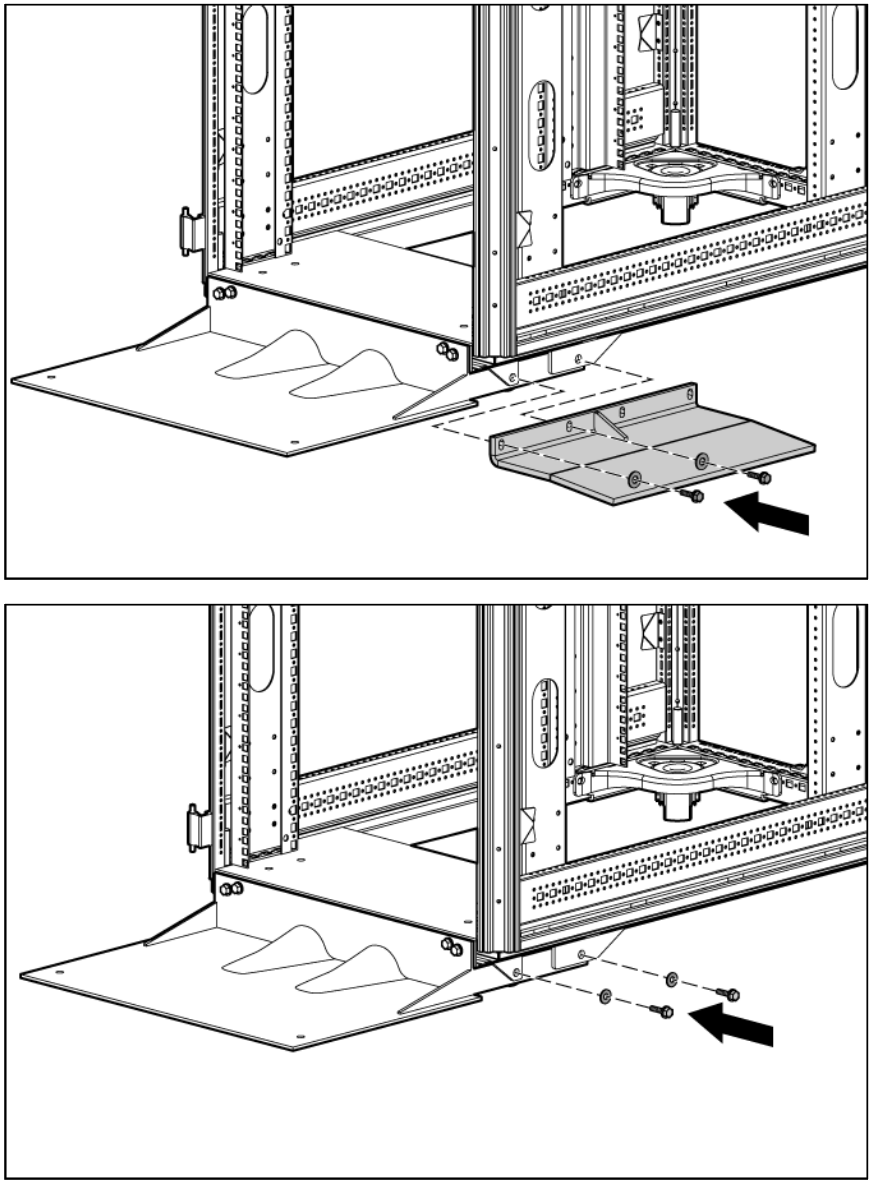
2. Insert and partially tighten four bolts with washers, securing the front foot to the front caster plate.



3. If you are using the side feet, align the side feet with the holes on the caster plate skirt and front foot.



4. Insert and partially tighten two bolts with washers, securing the side feet (if installed) and front foot to the caster plate skirt.



5. Tighten the bolts from step 2.
6. Tighten the bolts from step 4.

Installation is complete.

Rack Air Duct kit

About this kit

The HP 10000 G2 Rack Air Duct kit removes warm air from the rack by channeling the warm air into the data center ceiling return air plenum. The air duct sits on top of the rack, directly joined to the ceiling plenum, preventing the warm air from entering the data center aisle.

Three kits support this product.

Part number	Option kit name	Description
AF028A	HP 10642G2 Top Exhaust Extension Kit	This kit includes the rear extension assembly and rack air duct assembly.
AF029A	HP 10642G2 Top Exhaust Field Retrofit Kit	This kit includes a solid top and bottom rack plate, solid rear rack doors, and an airflow gasket, enabling you to convert your existing HP rack to accommodate the rack air duct assembly.
AF030A	HP 10642G2 Top Exhaust Rack	This factory custom-to-order rack arrives with a solid top and bottom rack plate preinstalled on the rack.

If you are converting your current HP rack to accommodate the HP 10000 G2 Rack Air Duct, you must install the AF029A kit prior to installing the AF028A kit.

If you ordered the AF030A rack, you must install the AF028A kit to the AF030A rack.

Kit contents

The following items are included in your rack option kit:

AF028A HP 10642G2 Top Exhaust Extension Kit

- Extension assembly
  - Extension left side (1)
  - Extension right side (1)
  - Extension top (1)
  - Extension base (1)
  - M5.5 self-tapping screw (6)
  - M6 machine screw (8)
- Air duct assembly
  - Upper air duct assembly (1)
    - M6 cap screw (4)
    - M6 star washer (4)
    - M6 flat washer (4)
    - M6 nut (4)

        - Draw latch assembly (1)
        - Plastic push fastener (4)
        - 510-mm foam gasket (2)
        - 520-mm foam gasket (2)
    - Lower air duct assembly (1)
        - M5.5 self-tapping screw (4)
    - M3.5 self-drilling screw (2)
    - M10 x 25 bolt (2)
- Baying gaskets
    - 876-mm foam gasket (2)
    - 1850-mm foam gasket (2)

AF029A HP 10642G2 Top Exhaust Field Retrofit Kit

- Top rack plate
- Base rack plate
    - Base plate (2)
    - Egress slot plate (2)
    - M5.5 self-tapping screw (4)
    - 6-mm plastic push fastener (2)
    - 10-mm plastic tree fastener (2)
- Solid rear rack doors (2)
- Airflow rail foam gasket (2)
- 600-mm plastic floor gasket (1)

AF030A HP 10642G2 Top Exhaust Rack

Factory custom-to-order HP 10642G2 rack with a solid top rack plate and a solid bottom rack plate

Required tools

The following tools are required for installation:

- T-25 Torx driver
- T-30 Torx driver
- Adjustable wrench or 17-mm wrench
- Scissors
- Electric drill
- 2.38-mm (3/32-in) drill bit

Installation video

HP recommends watching the HP 10000 G2 Rack Air Duct Installation video. The video provides a demonstration of installation strategies and techniques that might be helpful while installing the air duct.

To access the video:

1. Go to the HP website (http://www.hp.com/go/sml).
2. In the Product category section, select **Options and Accessories.**
3. In the Product family section, select **Server Rack and Rack Options.**
4. In the Product series section, select **HP 10000 G2 Rack Air Duct Kit.**
5. In the Media selection and resources section, select either the *Air duct installation video* or the *Retrofit kit installation video*.

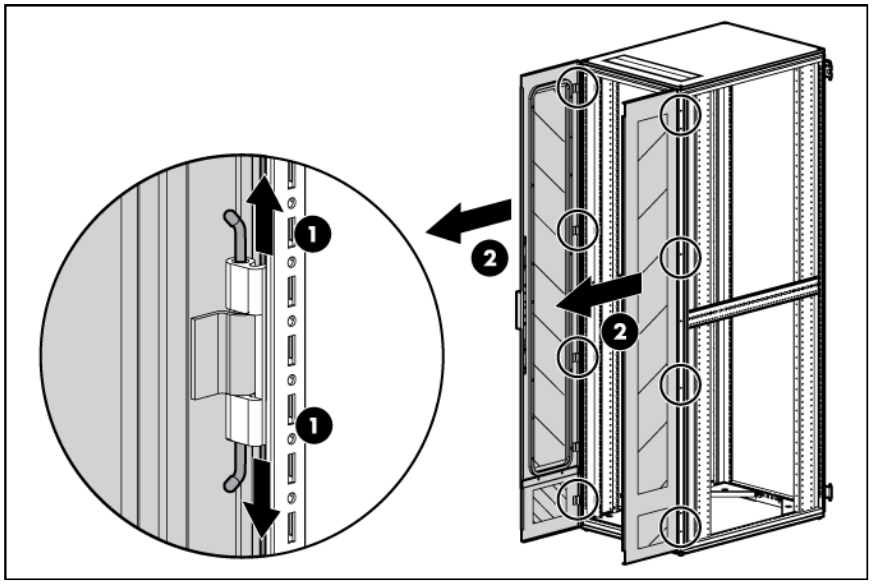
Installing the Top Exhaust Retrofit kit

Follow these instructions to convert your existing HP rack to accommodate the kit.

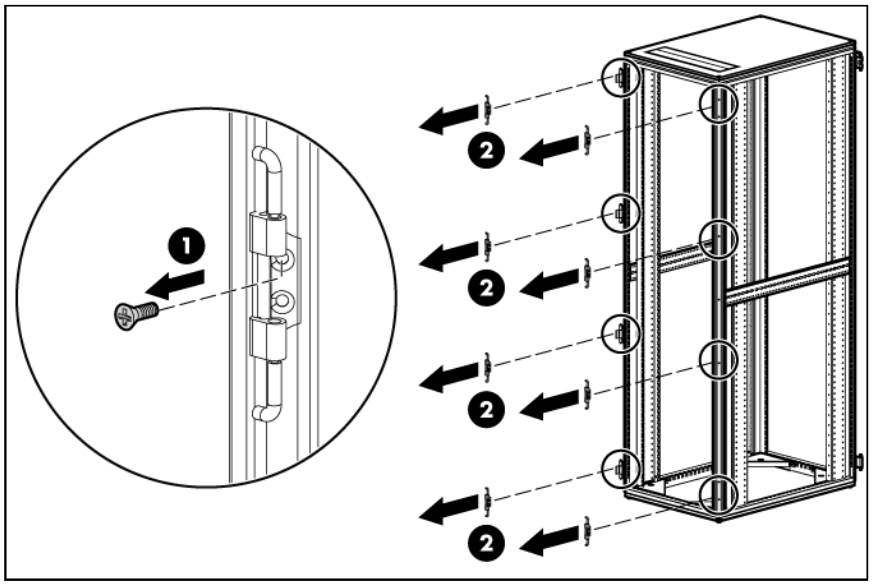
1. Remove the perforated rear doors of your rack.
2. Remove the perforated rack top plate and install the solid rack top plate ("Installing the solid rack top plate" on page 89).
3. If necessary, remove any installed components from the bottom two U spaces.
4. Install the solid rack base plate ("Installing the solid rack base plate" on page 90).
5. If necessary, replace the installed components in their original rack locations.
6. Install the airflow gasket to the inside of your rack ("Installing the airflow gasket" on page 91).
7. Install the floor gasket to your rack ("Installing the floor gasket" on page 93).

Removing the rear doors

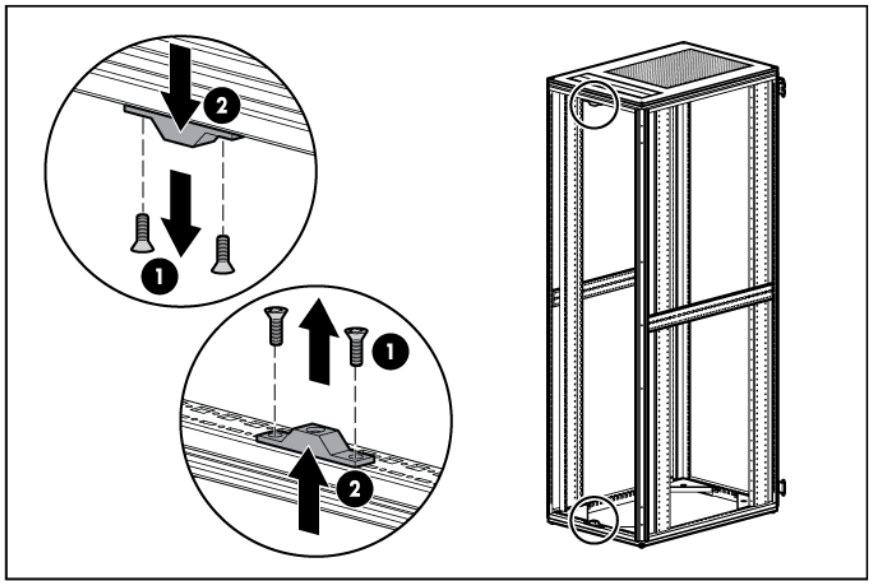
1. Open the hinge brackets by pulling up the top hinge pin and pulling down the bottom hinge pin (1).
2. Lift the rear doors off the hinge brackets, and then remove the doors from the rack (2).



3. Using a T-30 Torx screwdriver, remove the M6 flathead screw securing each hinge bracket to the rack (1), and then remove all of the hinge brackets from the rack (2). Retain the hinge brackets and screws for reinstallation.



4. Using a T-25 Torx driver, remove the upper and lower rear door lock catches by removing the two screws from each of the upper and lower rear door lock catches. Retain the door lock catches and screws for reinstallation.

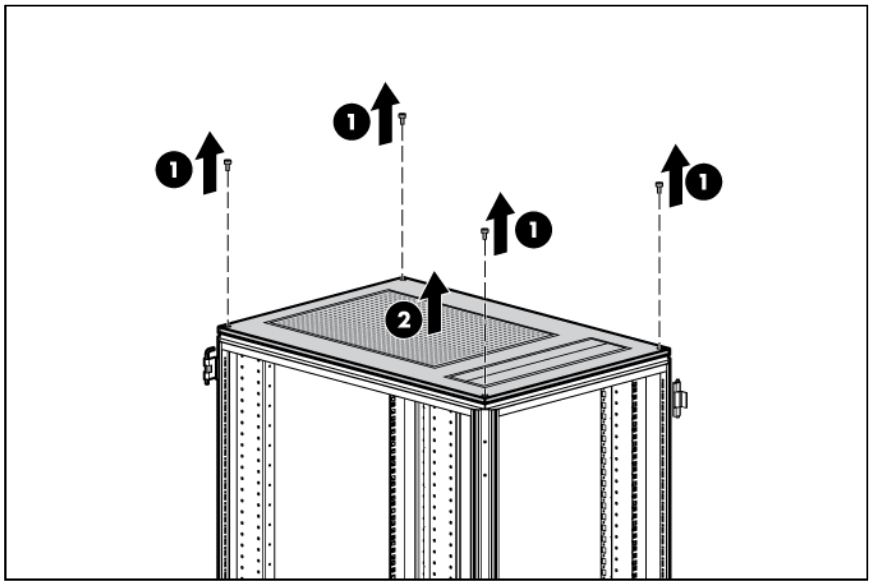


NOTE: Install the solid rear rack doors after you have installed the AF028A kit.

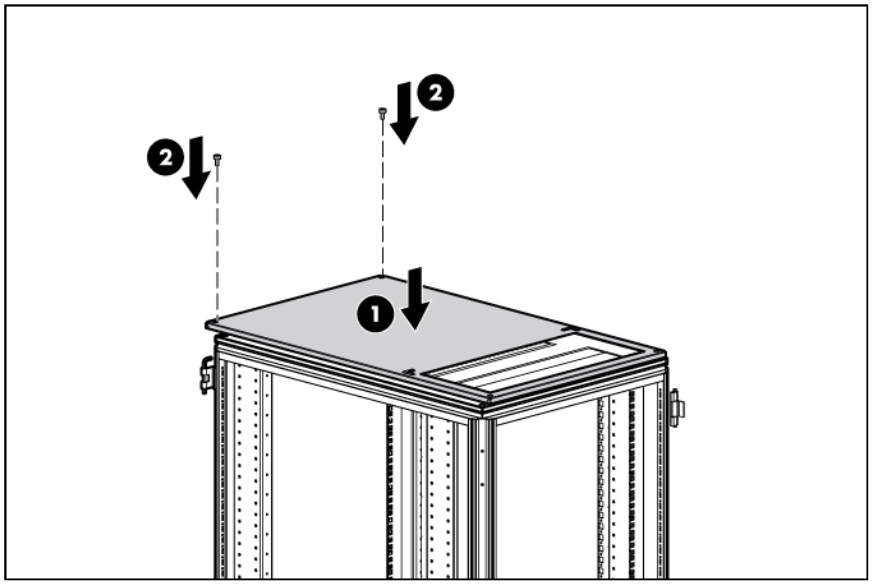
Installing the solid rack top plate

1. Using a T-30 Torx screwdriver, remove the four M-12 bolts at each corner of the perforated top plate of the rack (1). Retain the bolts for future use.

2. Remove the perforated top plate of the rack (2).



3. Align the solid plate with the top of the rack (1).
4. Using a T-30 Torx screwdriver, insert and tighten two of the four M-12 bolts (from step 1) into the two corner holes at the front of rack (2).



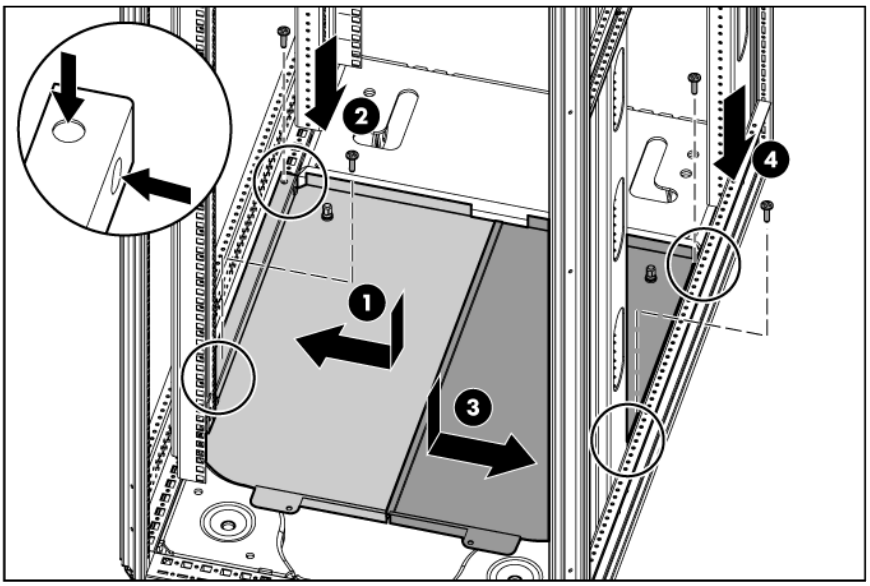
Installing the solid rack base plate

1. From the rear of the rack, insert the left side plate into the rack, and set the plate on the lip of the rack frame (1).

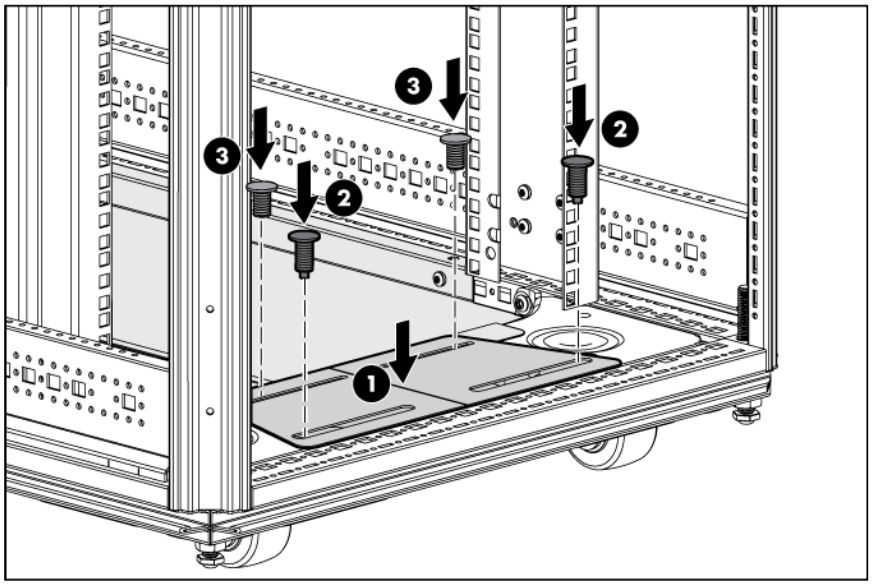
   NOTE: When you insert the sheet metal screws to secure the base plates, you can either use the top hole or the side hole, depending on your space allotment.

2. Using a T-25 Torx screwdriver, insert and tighten one M5.5 self-tapping screw at the rear, left corner and one M5.5 self-tapping screw at the front, left corner to secure the left side plate to the rack frame (2).

3. Insert the right side plate into the rack, overlapping the left side plate, and set it on the lip of the rack frame (3).
4. Using a T-25 Torx screwdriver, insert and tighten one M5.5 self-tapping screw at the rear, right corner and one M5.5 self-tapping screw at the front, right corner to secure the right side plate to the rack frame (4).



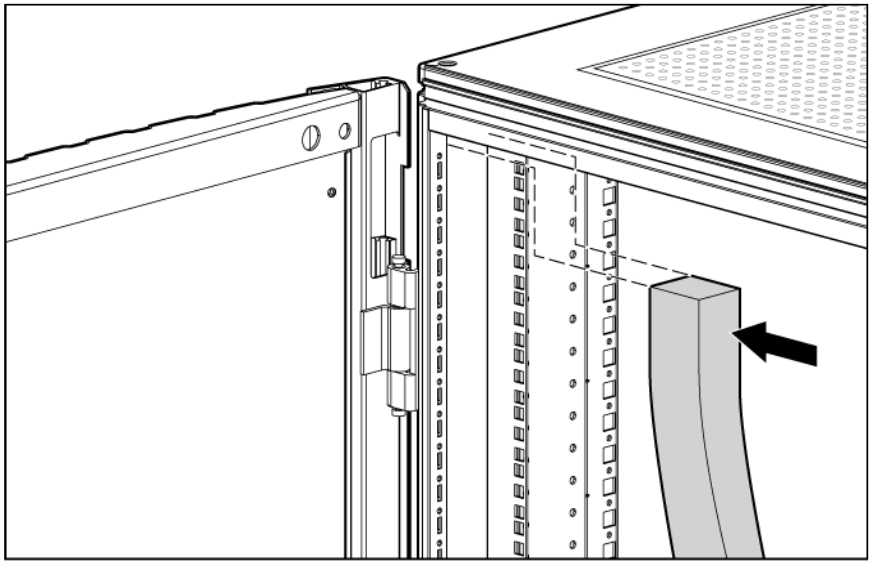
5. From the rear of the rack, align the two egress cover plates with the egress slot at the rear of the rack (1).
6. Secure the egress cover slot.
   a. Insert two 10-mm plastic tree fasteners into the two rear holes, through the caster plate (2).
   b. Insert two 6-mm plastic push fasteners into the two front holes, through the base plate (3).



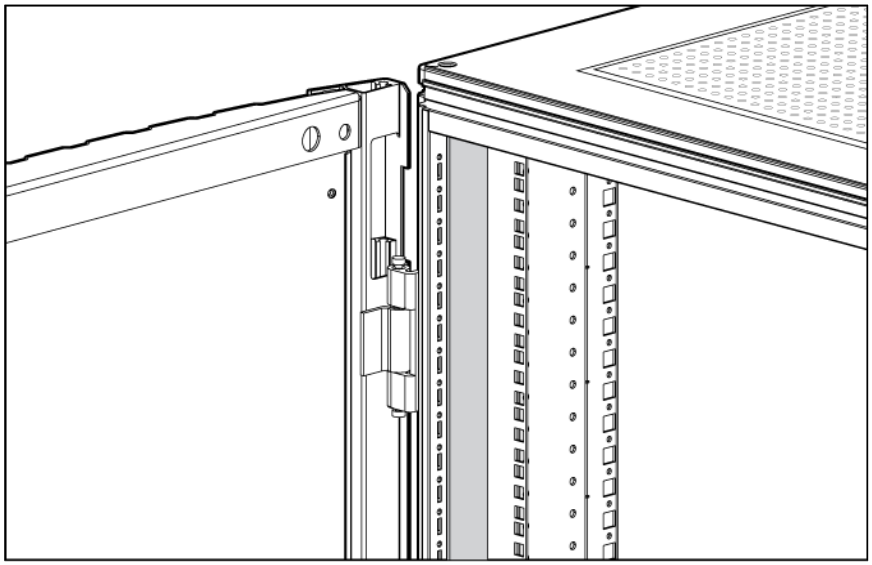
Installing the airflow gasket

1. Using scissors, cut the airflow rail gasket to fit the size of your rack.
2. Insert the airflow rail gasket into the rack front door on both sides of the rack.

3. Insert the airflow rail gasket into the space between the 19-in mounting rails and the vertical frame on both sides of the rack, with the closed cell side of the airflow rail gasket facing the front of the rack.



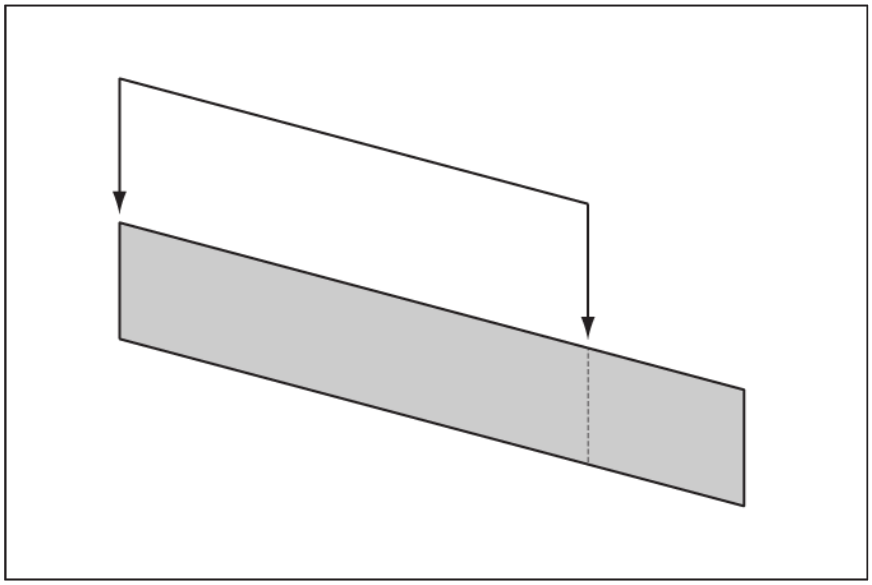
4. Gently push the airflow rail gasket into the space until it is flush with the vertical frame.



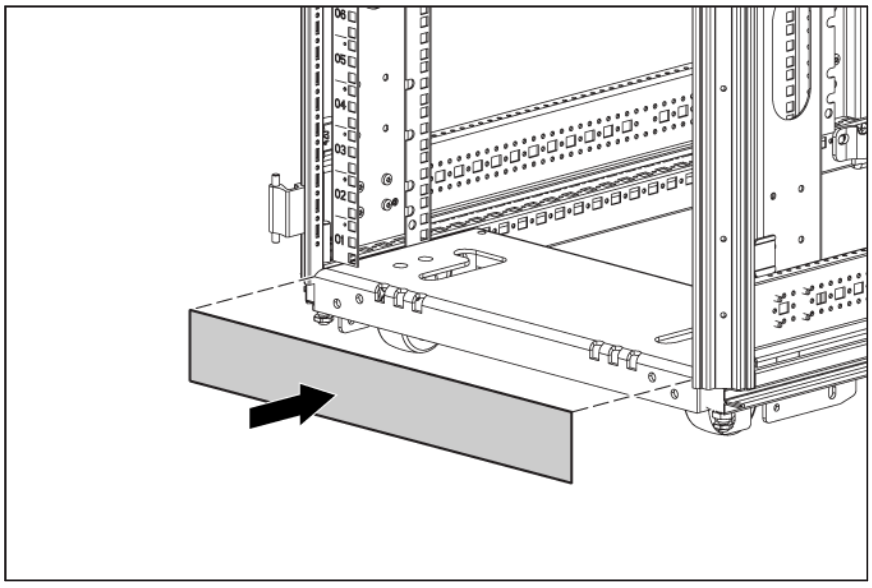
For more information, see the *HP Airflow Optimization Kit Installation Instructions (AF090A)*.

Installing the floor gasket

1. Cut the floor gasket at the perforation to reduce the length from 800-mm (31-in) to 600-mm (24-in).



2. Remove the protective tape from the bottom edge of the floor gasket, and then apply it to the bottom of the rack with the adhesive strip facing the front of the rack.



Installation is complete.

Installing the Top Exhaust Extension kit

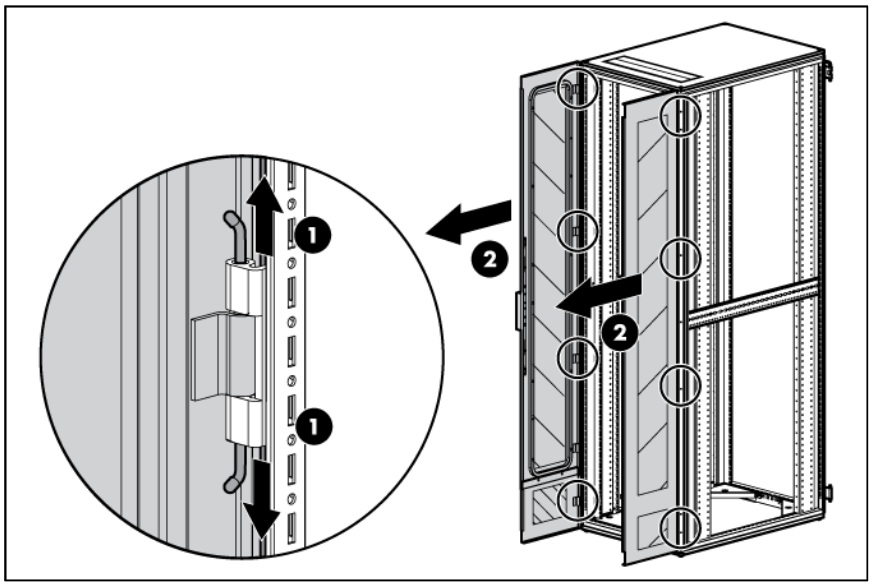
Follow these instructions to install the AF028A Top Exhaust Extension Kit, either to an AF030A Top Exhaust Rack or after you have installed the AF029A kit to an existing HP retrofit rack.

1. Remove the rear doors and door hinges from the rear of your rack.
2. Install the rear extension assembly to your rack.
3. Install the solid rear doors to the extension assembly.

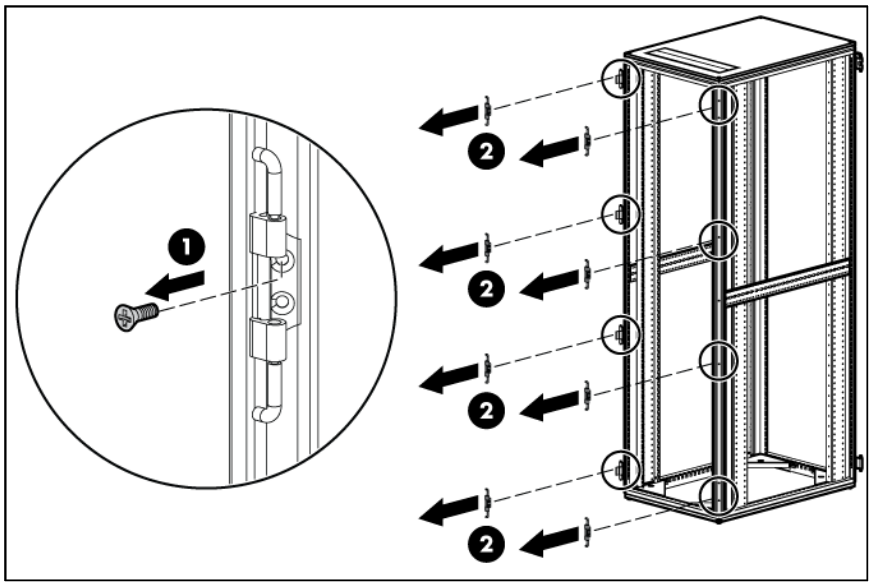
4. Assemble the kits ("Assembling the kits" on page 98).
5. Install the kit assembly to the top of your rack.
6. Adjust the height of the kit.

Removing the rear doors

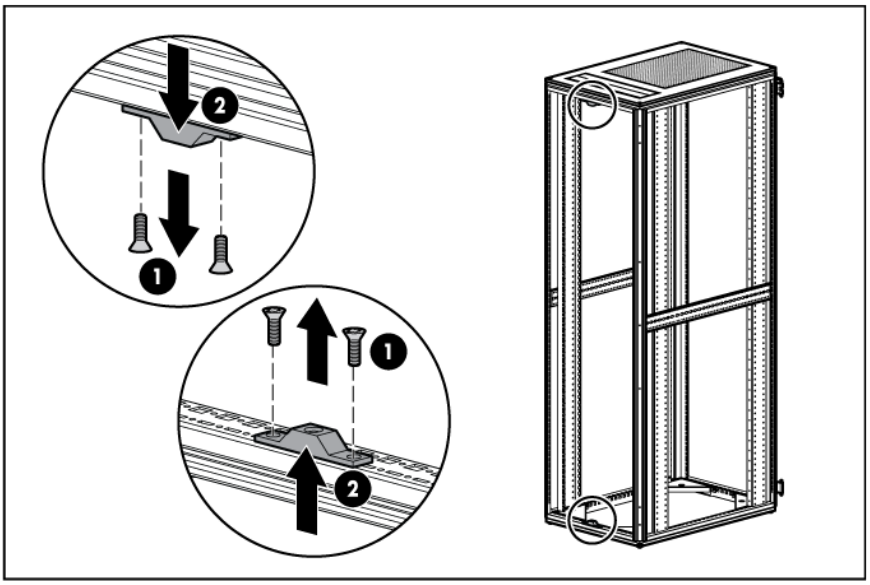
1. Open the hinge brackets by pulling up the top hinge pin and pulling down the bottom hinge pin (1).
2. Lift the rear doors off the hinge brackets, and then remove the doors from the rack (2).



3. Using a T-30 Torx screwdriver, remove the M6 flathead screw securing each hinge bracket to the rack (1), and then remove all of the hinge brackets from the rack (2). Retain the hinge brackets and screws for reinstallation.



4. Using a T-25 Torx driver, remove the upper and lower rear door lock catches by removing the two screws from each of the upper and lower rear door lock catches. Retain the door lock catches and screws for reinstallation.

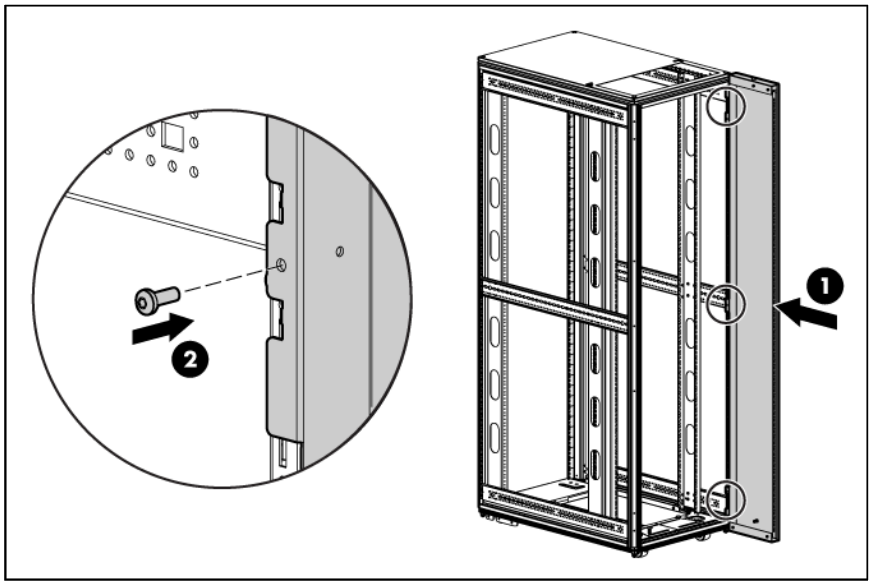


NOTE: Install the solid rear rack doors after you have installed the AF028A kit.

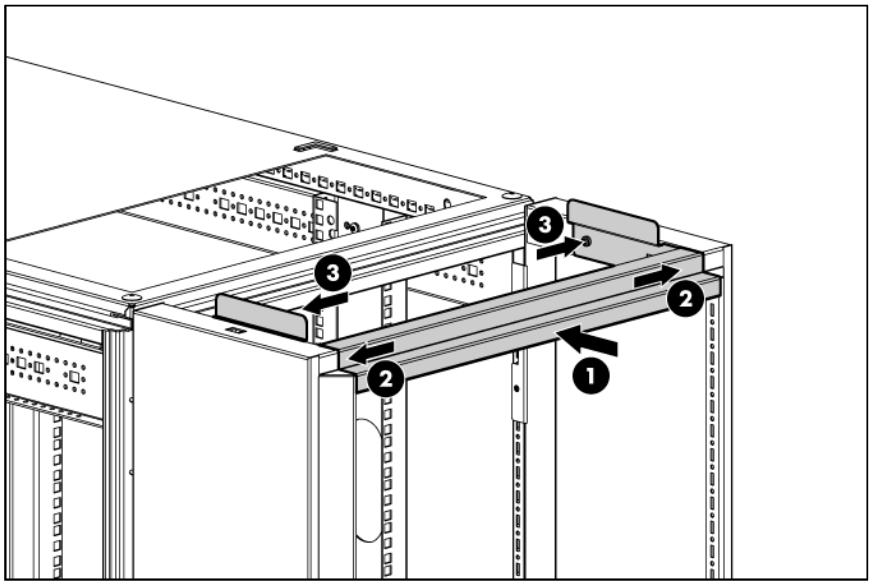
Installing the rear extension assembly

1. Install the side assemblies of the rear extension assembly.
   a. Align the right-side assembly with the rack frame (1).
   b. Hook the extension into the rack frame at the three hook locations at the top, middle, and bottom of the rack.
   c. Using a T-25 Torx screwdriver, insert and tighten one M5.5 self-tapping screws into each of the three hook locations to secure the side assembly to the rack frame (2).

d. Repeat steps a through c for the left-side assembly.

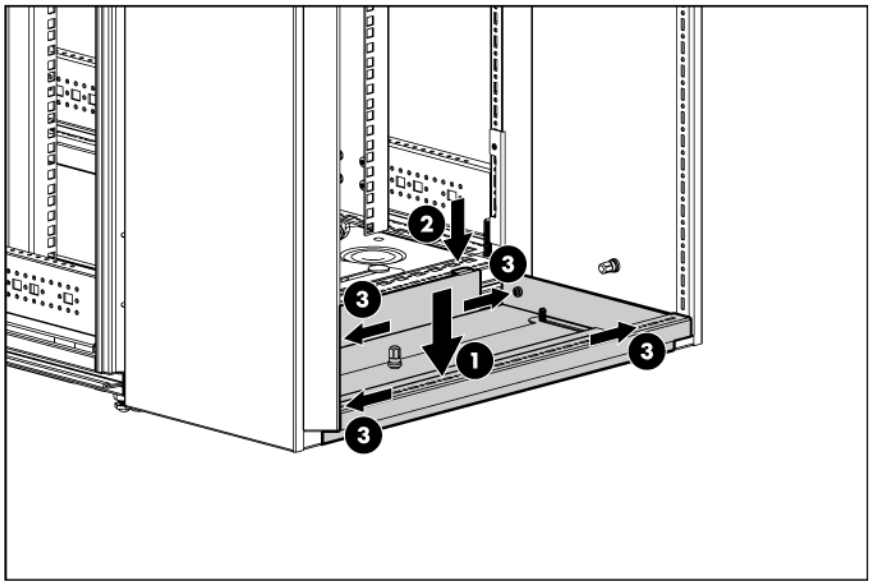


2. Install the top assembly of the rear extension assembly.
   a. Align the top assembly with the installed side assemblies (1).
   b. Using a T-25 Torx driver, insert and tighten two M6 machine screws into the rear screw holes (2).
   c. Using a T-25 Torx driver, insert and tighten two M6 machine screws into the front screw holes (3).



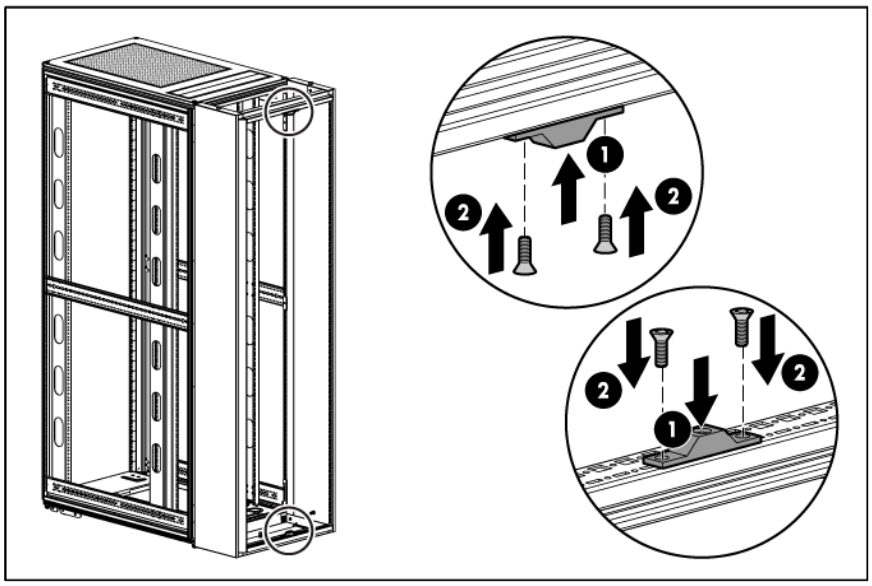
3. Install the bottom assembly of the rear extension assembly.
   a. Align the bottom assembly with the installed side assemblies (1), making sure to set the metal tab at the front of the assembly over the rear rack frame (2).

b. Using a T-25 Torx driver, insert and tighten four M6 machine screws into each corner hole (3).



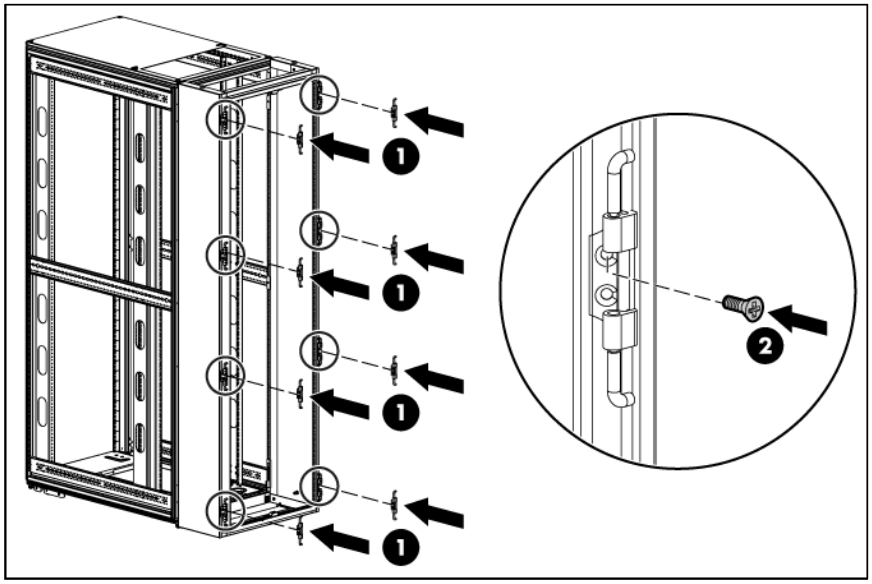
Installing the solid rear doors

1. Using a T-25 Torx driver, insert and tighten two screws into each of the upper and lower rear door lock catches.

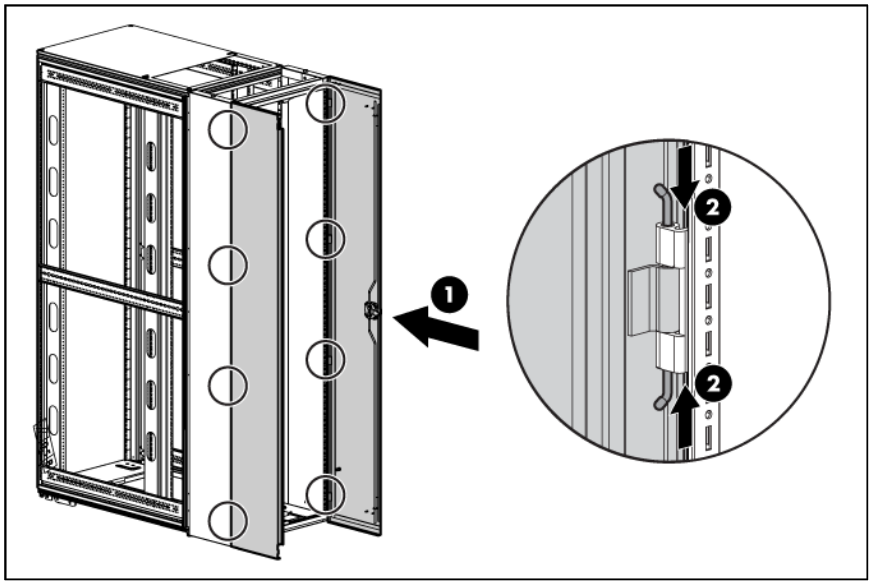


2. Install the hinges brackets.
   a. Align the eight hinge brackets that you removed from the rear of your rack to the designated locations on the rear extension assembly (1).

b. Using a T-30 Torx driver, insert and tighten one M6 flathead screw to secure each hinge bracket to the rear extension assembly (2).



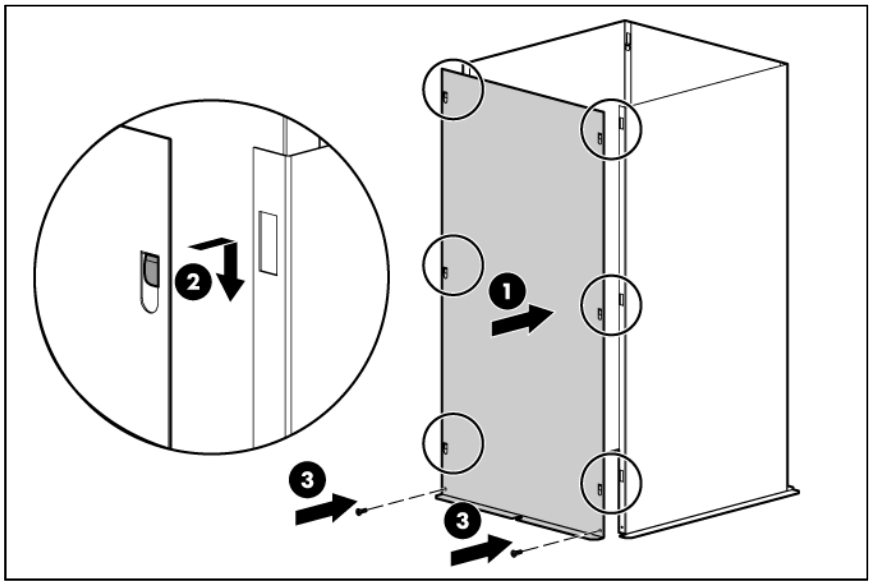
3. Lift the rear doors, aligning them with the hinge brackets on the rear extension assembly (1).
4. Push down the hinge pins, and then insert the hinge into the holes on the rear door (2).



Assembling the kits

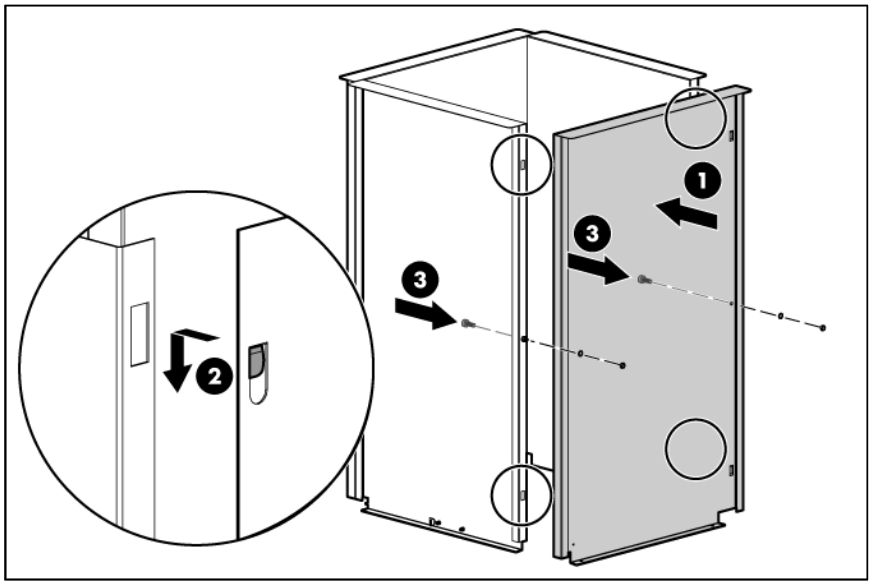
1. Assemble the lower duct.
   a. Align the hooks of the side panels with the slots of the front and back panels (1).
   b. Slide the six hooks into the slots, and then slide the panel down until it locks in place (2).

c. Insert one M5.5 self-tapping screw into each bottom corner of the assembly (3).



d. Repeat steps a through c for the other side panel.

2. Assemble the upper duct.
   a. Align the hooks of the side panels with the slots of the front and back panels (1).
   b. Slide the six hooks into the slots, and then slide the panel down until it locks in place (2).
   c. From the inside of the assembly, insert two M6 cap screws in the middle of the assembly. Using an adjustable wrench, secure the screws from outside the assembly with an M6 star washer, an M6 flat washer, and a nut (3).

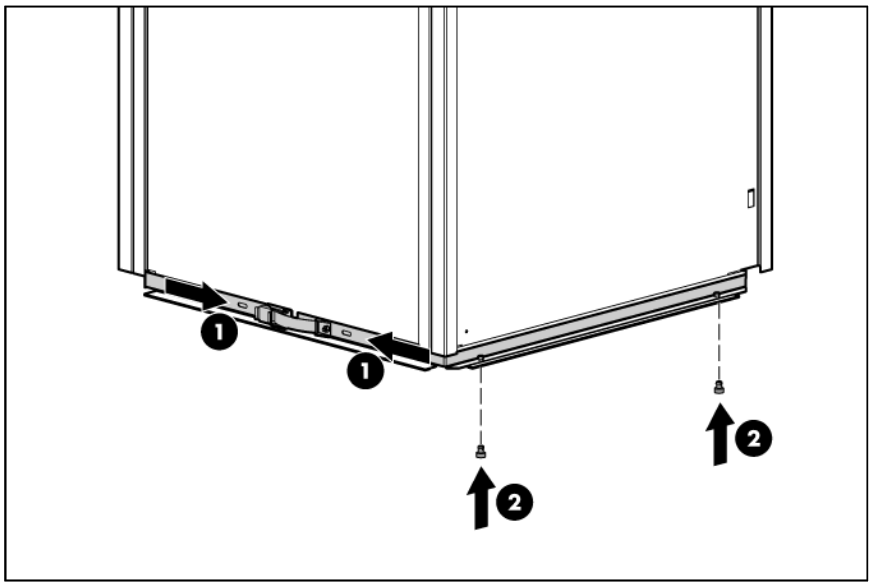


d. Repeat steps a through c for the other side panel.

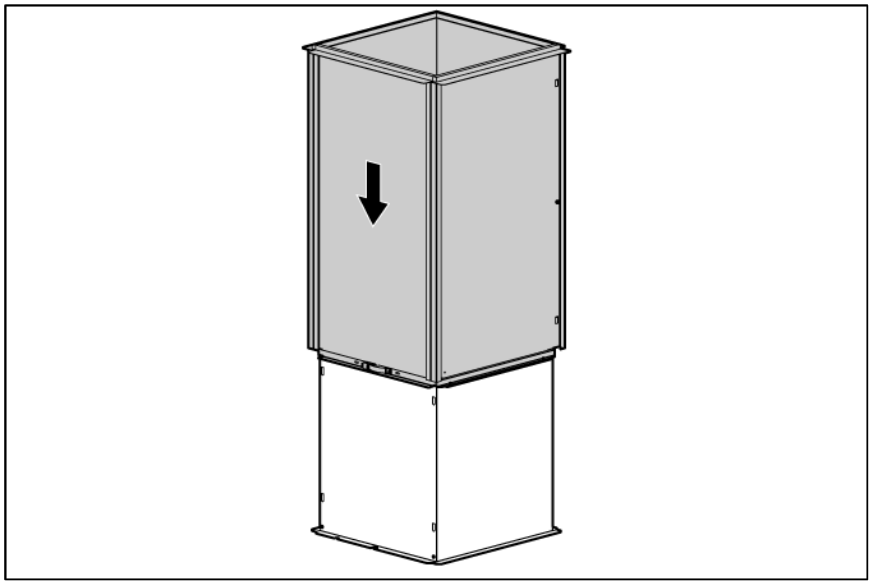
3. Install the draw-latch straps to the upper duct assembly.
   a. Slide the draw-latch strap around the bottom of the upper duct assembly (1).
   b. Align the holes of the draw-latch strap with the holes of the upper duct assembly.

c. Insert two plastic push fasteners into the holes on both sides of the assembly to secure the draw-latch strap to the upper duct assembly (2).

d. Repeat steps a through c for the second draw-latch strap.



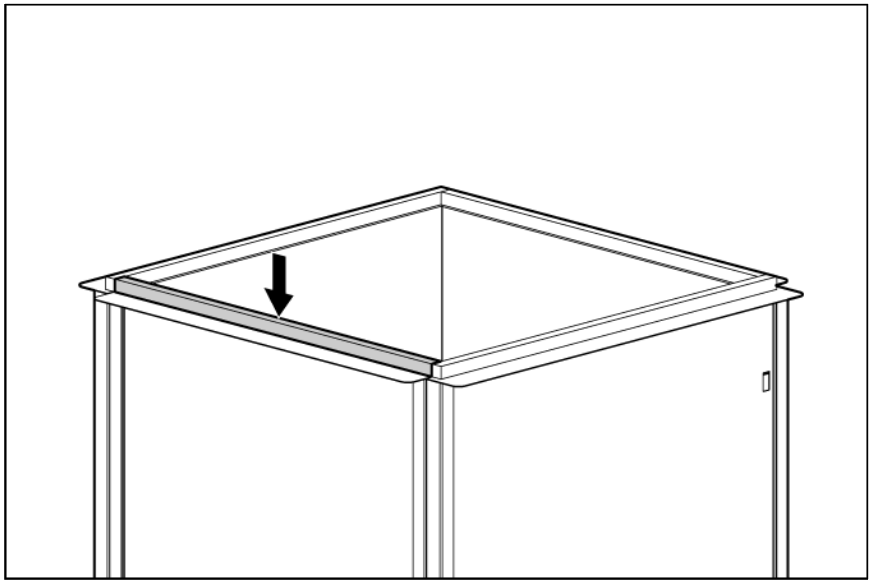
4. With the draw-latch straps in the loose position, slide the upper duct down over the lower duct.



5. Lock the draw-latch straps.

NOTE: The two 510-mm gaskets sit on the inside edges of the two 520-mm gaskets.

6. Apply the foam gasketing to the top of the upper duct by peeling the adhesive backing and aligning the gasketing with the top edges of the upper duct.



Installing the kit assembly

WARNING: The rack air duct weighs approximately 22.5 kg (50 lb). To reduce the risk of personal injury or damage to the equipment:

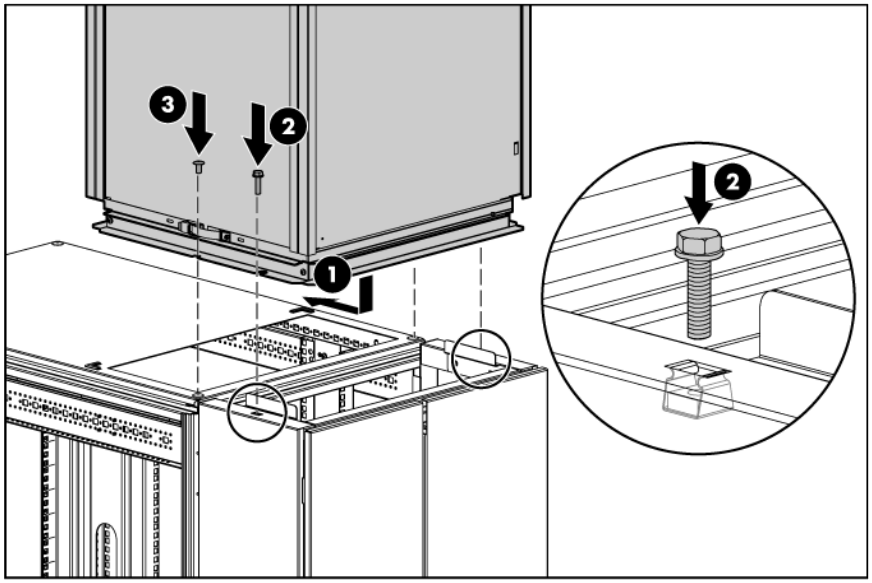
- Observe local occupational health and safety requirements and guidelines for manual material handling.
- Use at least two people to lift and stabilize the product during installation or removal.
- Use step stools to install the product to the top of the rack. Do not lift the air duct over your head.

1. Using a T-30 Torx screwdriver, remove the two rear M-12 bolts from the top plate of the rack. Retain the bolts for future use.
2. Align the open slots of the lower air duct to the mounting holes on the top of the rack.
3. Slide the air duct toward the front of the rack, until the front edge slides under the metal slots on the top plate of the rack (1).

NOTE: You might need to slightly raise the upper duct to access the bolts.

4. Using an adjustable wrench, insert and tighten two M-10 bolts through the holes of the air duct assembly and into the cage nut holes on top the side assemblies (2).

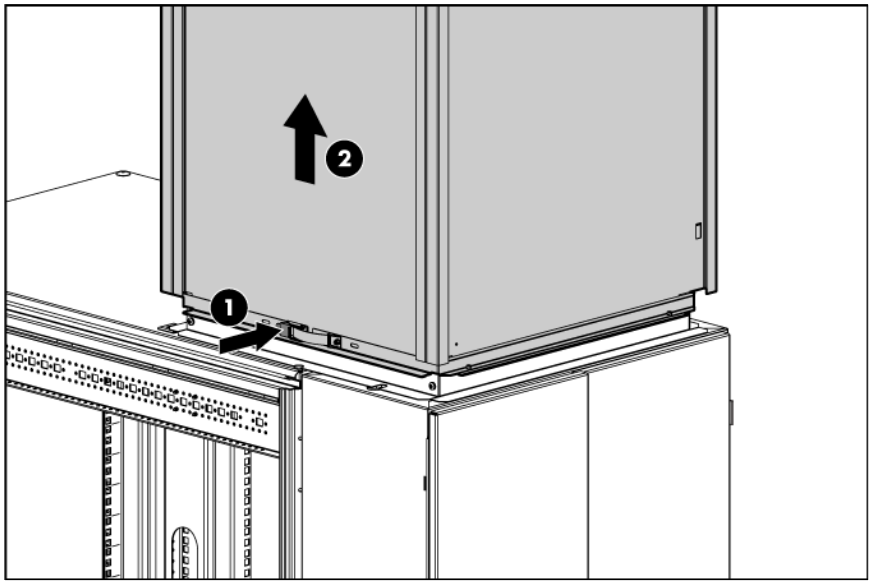
5. Using a T-30 Torx screwdriver, insert and tighten two M-12 bolts (from step 1) through the holes of the air duct assembly and into the two rear holes of the rack (3).



Adjusting the kit

After you have installed the air duct to the top of your rack:

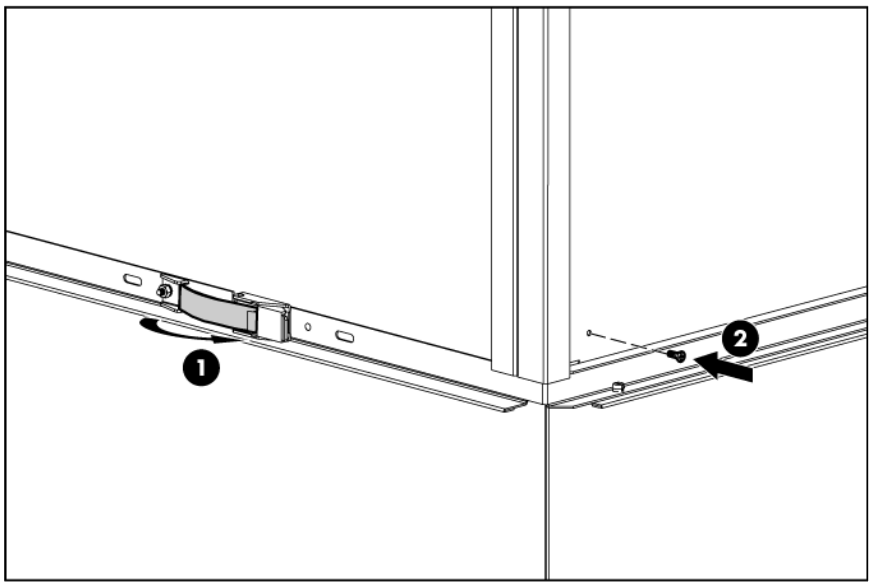
1. Loosen both draw-latch straps (1).
2. Raise the upper duct until it reaches the ceiling opening, and the gasketing is pressed firmly against the ceiling (2).



3. Tighten and lock both draw-latch straps to hold the upper duct in place (1).
4. To lock the air duct in the raised position:
   a. Mark through the pre-drilled hole on the upper duct, so you know where the hole should be on the lower duct.

b. Using an electric drill, drill one 2.38-mm (3/32-in) hole through the lower duct, in the location you marked.

c. Insert one M3.5 self-drilling screw through the holes in both the upper and lower ducts (2).



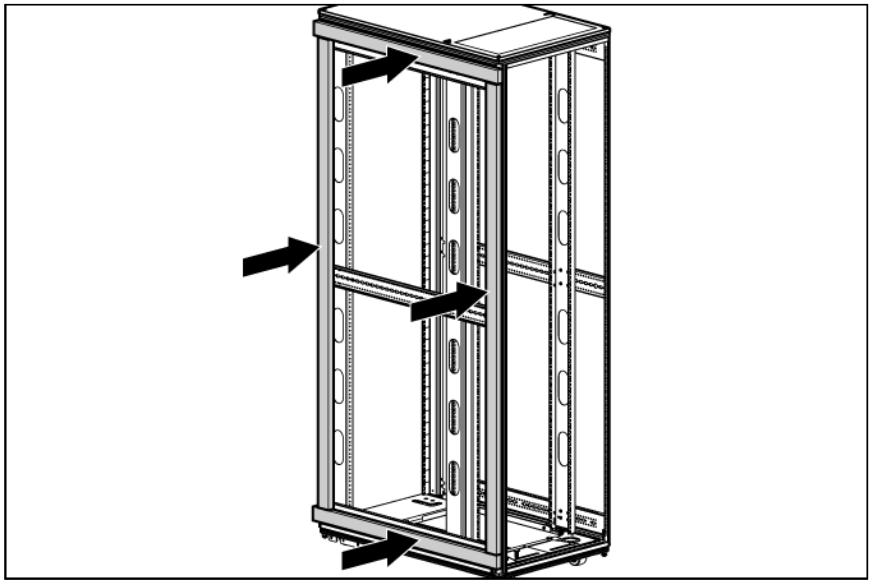
Baying options

You can order the HP Baying Rack Option Kit to bay your HP 10000 G2 Rack Air Duct rack to another HP 10000 G2 Rack Air Duct rack. You cannot bay an HP 10000 G2 Rack Air Duct rack to a standard rack.

You must install the included gaskets to your HP 10000 G2 Rack Air Duct rack prior to baying, to ensure that the air continues to be channeled up the air duct and not out the sides of the bayed rack.

To install the gasket strips to your rack:

1. Remove the liner backing from each of the four gasket strips.
2. Attach the two 876-mm gasket strips to the top and bottom frames of the side of the rack.
3. Attach the two 1875-mm gasket strips to the front and rear frames of the side of the rack.



For more information, see Baying kit (on page 25).

Rear Extension kit

About this device

The HP Rear Extension kit enables you to add 200-mm (7.87-in) of depth to the rear of the HP 10000 Series and HP 10000 G2 Series racks.

The HP Rear Extension kit only fits the 600-mm (23.62-inch) wide (42U and 47U) rack models.

Kit contents

Item	Quantity
Rear extension assembly • Left side assembly • Right side assembly • Top assembly • Bottom assembly	1
M5.5 self tapping screw	8
M6 machine screw	8
Rear extension cord	3
Cable management bracket	6

This kit might contain extra hardware for your convenience.

Required tools

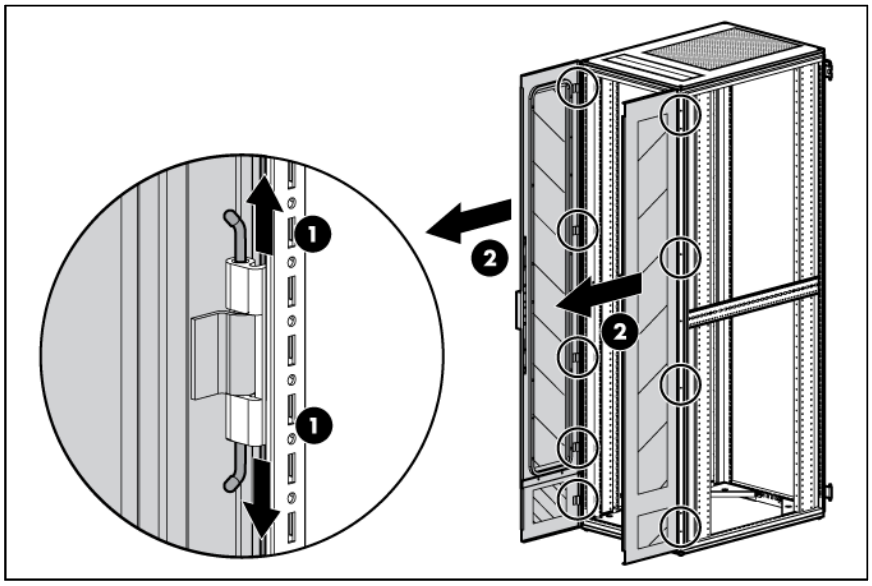
The following tools are required for installation:

- T-25 Torx driver
- T-30 Torx driver

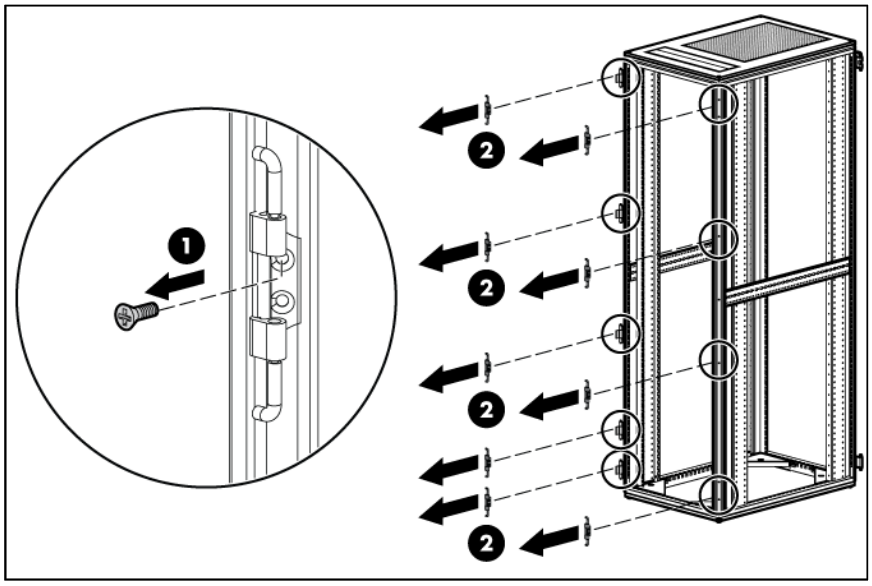
Removing the rear doors

1. Open the hinge brackets by pulling up the top hinge pin and pulling down the bottom hinge pin (1).

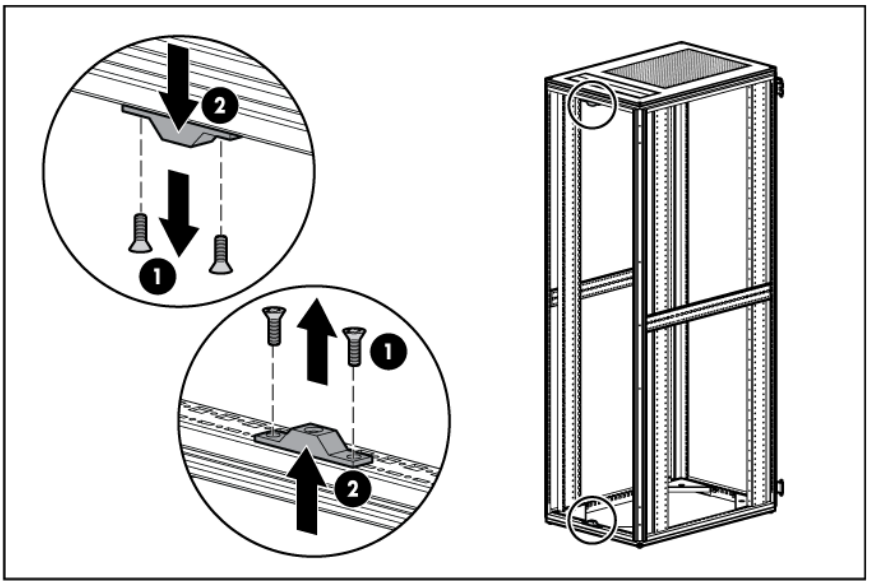
2. Lift the rear doors off the hinge brackets, and then remove the doors from the rack (2).



3. Using a T-30 Torx screwdriver, remove the M6 flathead screw securing each hinge bracket to the rack (1), and then remove all of the hinge brackets from the rack (2). Retain the hinge brackets and screws for reinstallation.

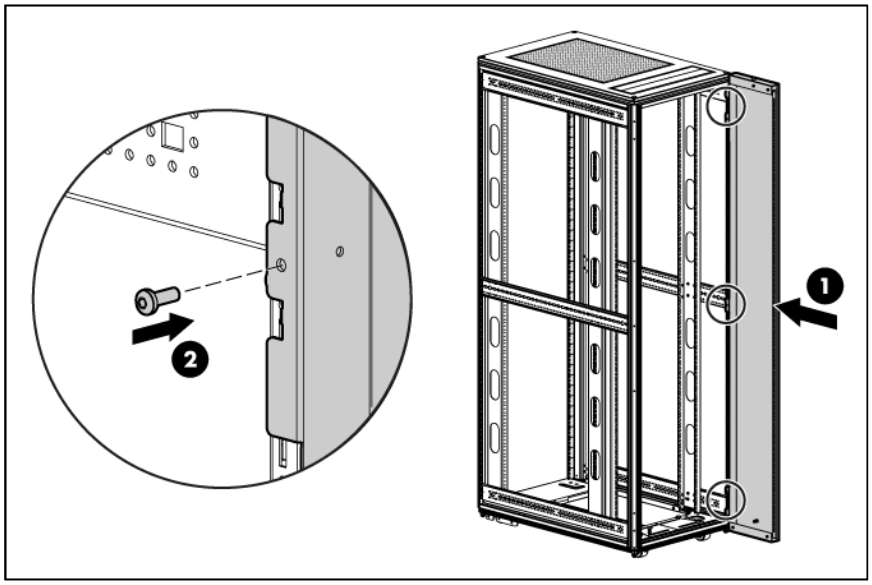


4. Using a T-25 Torx driver, remove the upper and lower rear door lock catches by removing the two screws from each of the upper and lower rear door lock catches. Retain the door lock catches and screws for reinstallation.



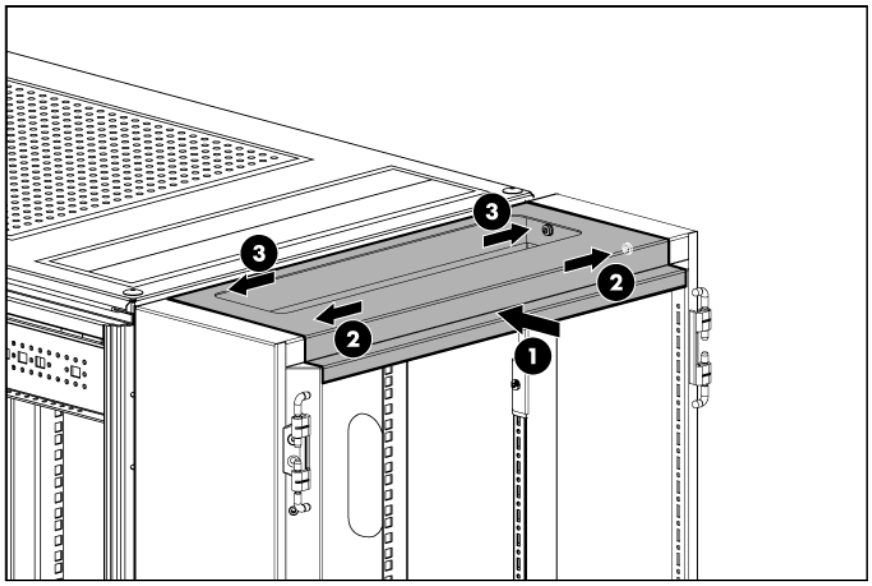
Installing the rear extension assembly

1. Install the side assemblies of the rear extension assembly.
   a. Align the right-side assembly with the rack frame (1).
   b. Hook the extension into the rack frame at the three hook locations at the top, middle, and bottom of the rack.
   c. Using a T-25 Torx screwdriver, insert and tighten one M5.5 self-tapping screws into each of the three hook locations to secure the side assembly to the rack frame (2).
   d. Repeat steps a through c for the left-side assembly.

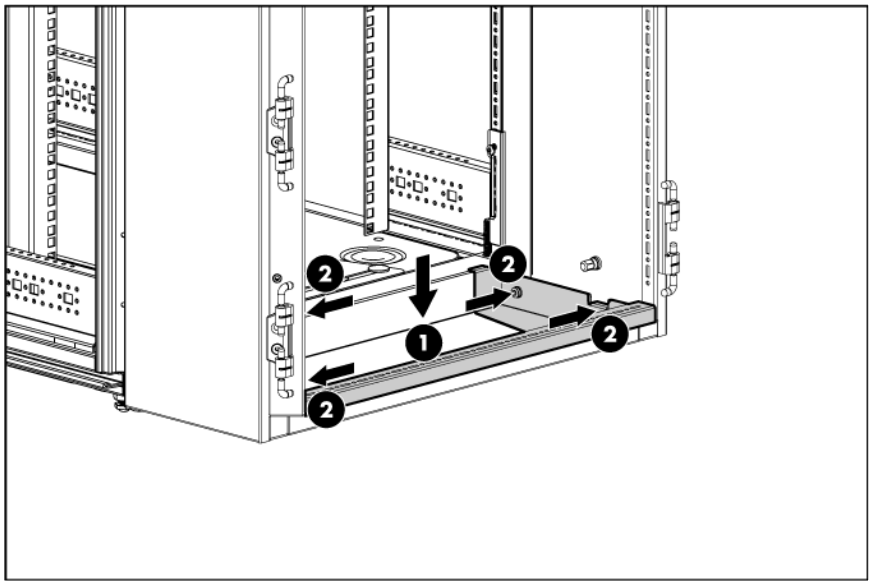


2. Install the top assembly of the rear extension assembly.

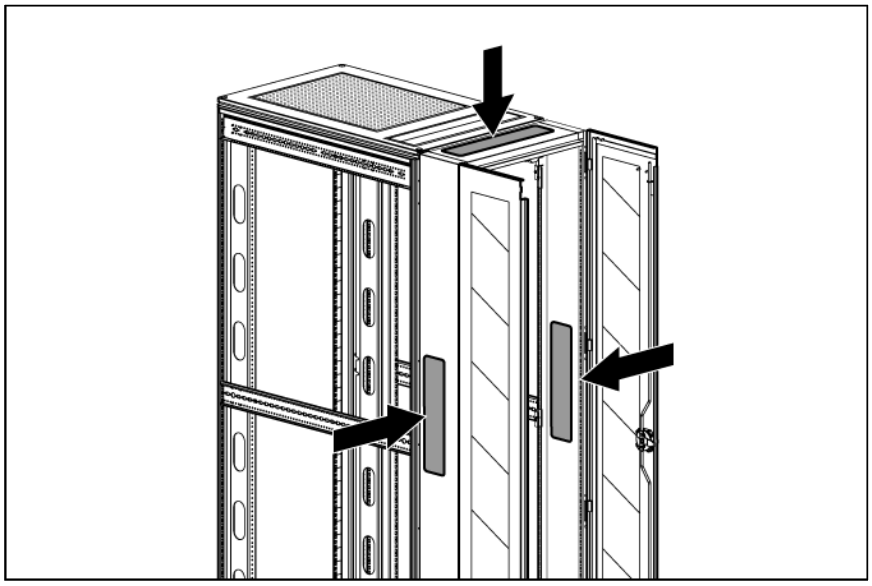
a. Align the top assembly with the installed side assemblies (1).
b. Using a T-25 Torx driver, insert and tighten two M6 machine screws into the rear screw holes (2).
c. Using a T-25 Torx driver, insert and tighten two M6 machine screws into the front screw holes (3).



3. Install the bottom assembly of the rear extension assembly.
a. Align the bottom assembly with the installed side assemblies (1), making sure to set the metal tab at the front of the assembly over the rear rack frame (2).
b. Using a T-25 Torx driver, insert and tighten four M6 machine screws into each corner hole (3).

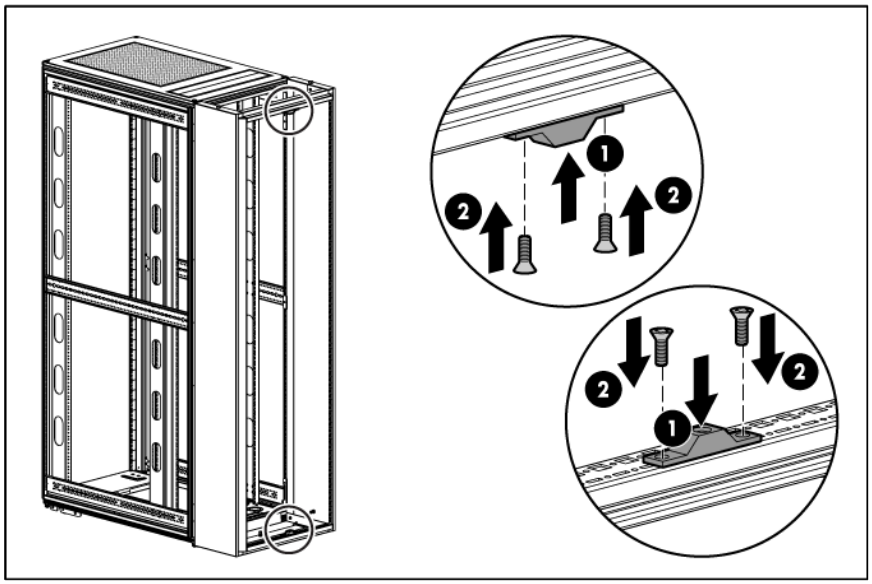


4. Insert the filler panels into the side and top assemblies.



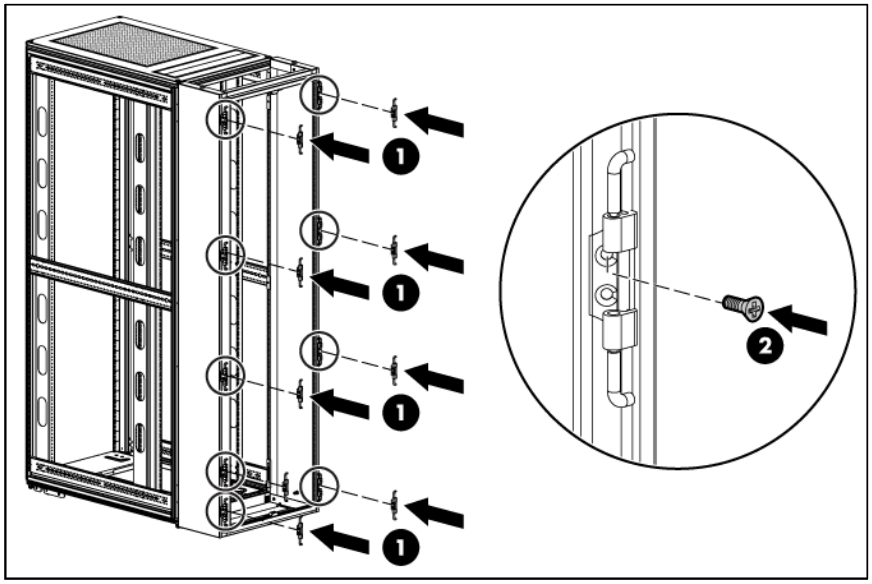
Installing the rear doors

1. Using a T-25 Torx driver, insert and tighten two screws into each of the upper and lower rear door lock catches.

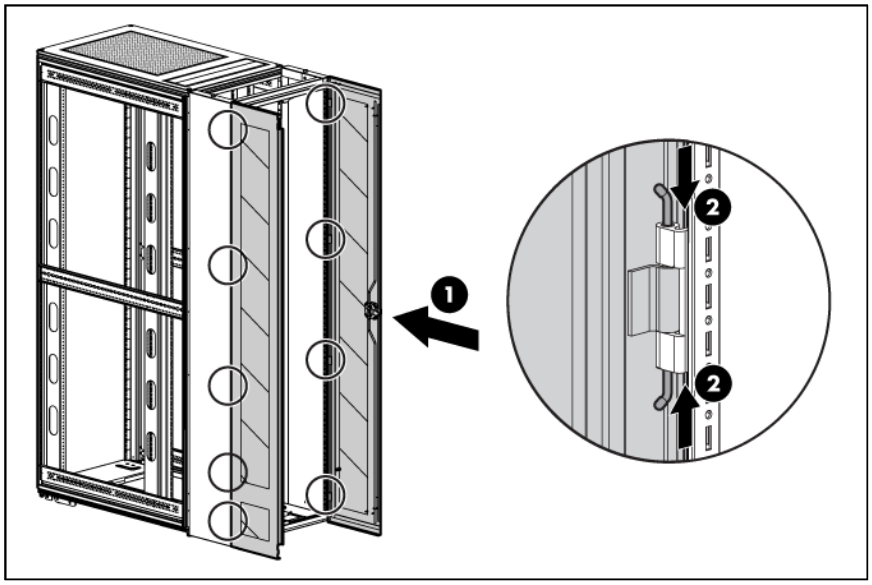


2. Install the hinges brackets.
   a. Align the hinge brackets that you removed from the rear of your rack to the designated locations on the rear extension assembly (1).

b. Using a T-30 Torx driver, insert and tighten one M6 flathead screw to secure each hinge bracket to the rear extension assembly (2).



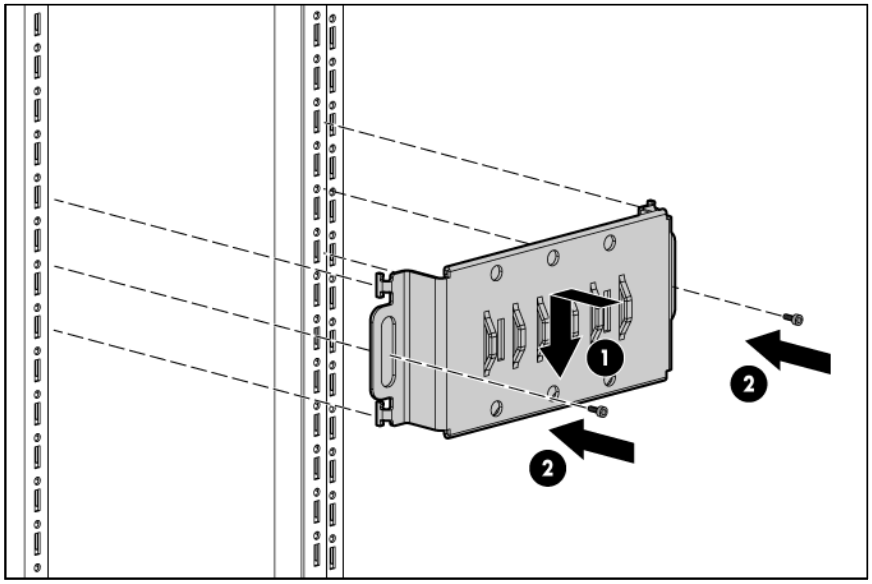
3. Lift the rear doors, aligning them with the hinge brackets on the rear extension assembly (1).
4. Push down the hinge pins, and then insert the hinge into the holes on the rear door (2).



Installing the cable management brackets

1. Position the cable management bracket so that one side is attached to the inside of the rack frame while the other side is attached to the inside of the extension kit.
2. Slide the cable management bracket into place (1).

3. Using a T-25 Torx driver, insert and tighten one M5.5 self-tapping screw into each side of the bracket to secure the cable management bracket to the rack frame and extension kit (2).



Installation is complete.

Server/Utility Shelf kit

About this device

The HP Server/Utility Shelf kit enables you to install a convenient shelf in your rack-mount system. This kit can be used with all HP racks.

Kit contents

Item	Quantity
Server/Utility shelf	1
Cage nut	2
M6 screw	2
Quick-release tie-down straps	2

This kit might contain extra hardware for your convenience.

Required tools

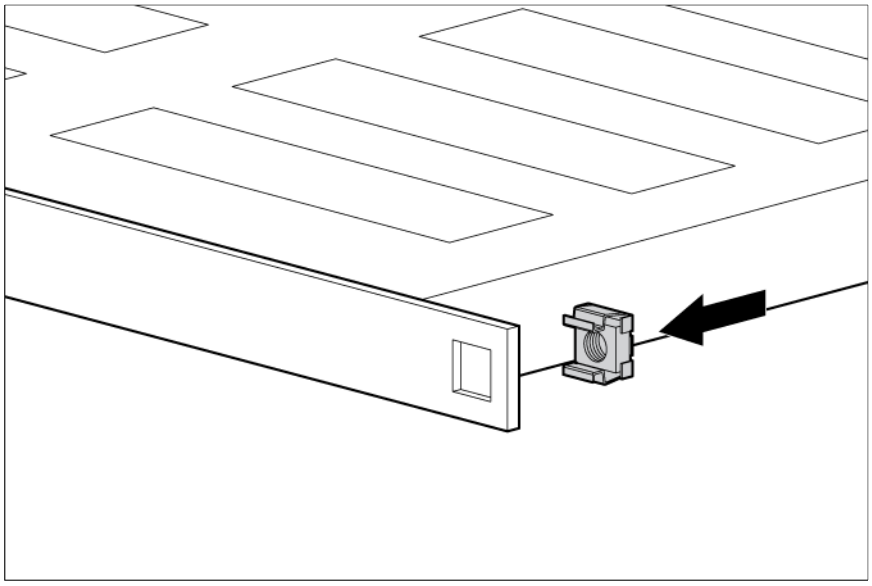
The following tools are required for installation:

- Phillips screwdriver
- Cage nut insertion tool

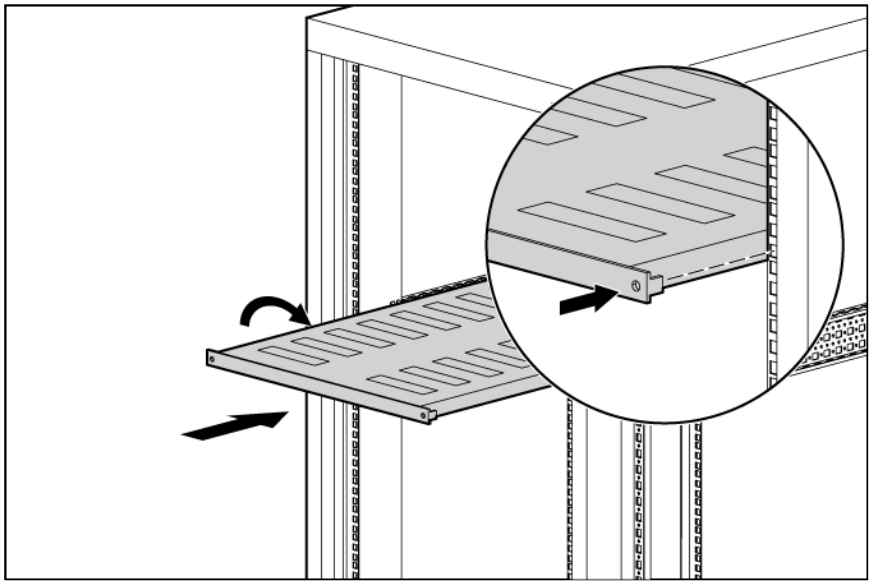
Installing the server/utility shelf

Always plan the rack installation so that the heaviest item is on the bottom of the rack. Install the heaviest item first, and then continue to populate the rack from the bottom to the top.

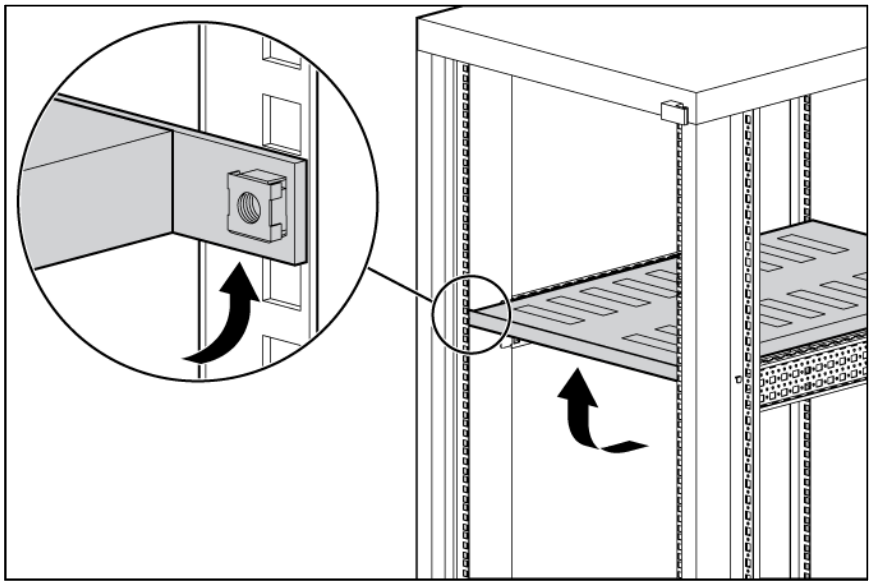
1. Align the cage nuts with the square-rail perforations on the front of the shelf.



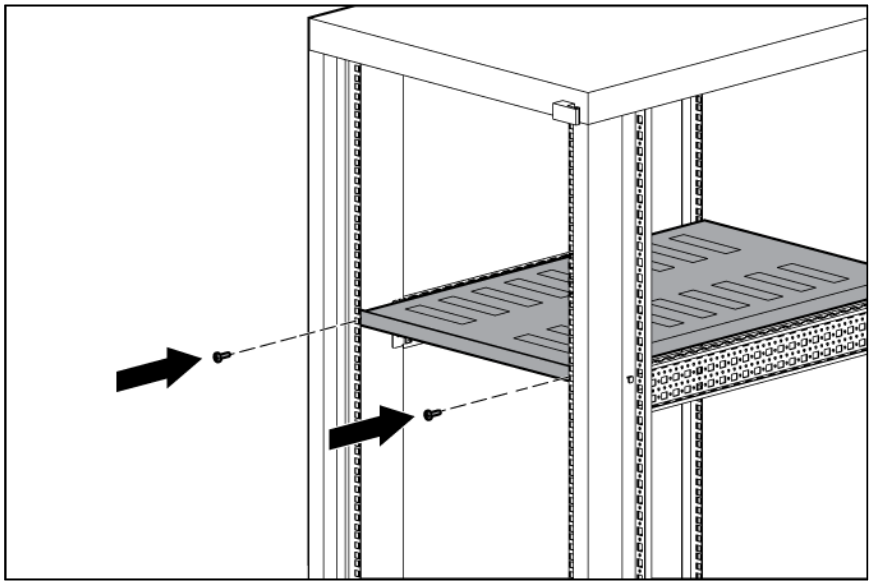
2. Use the cage nut insertion tool (not included) to secure each cage nut to the shelf.
   a. Hook the bottom lip of the cage nut in the square-rail perforation.
   b. Insert the tip of the insertion tool through the perforation, and then hook the top lip of the cage nut.
   c. Pull the cage nut through the square-rail perforation until the top lip snaps into position.
3. Firmly hold the shelf, and then insert the shelf into the rack, tilting the shelf slightly so that the rear teeth on the shelf clear the rear of the rack.
4. Straighten the shelf, and then insert the rear teeth into the mounting holes on the rear of the rack.



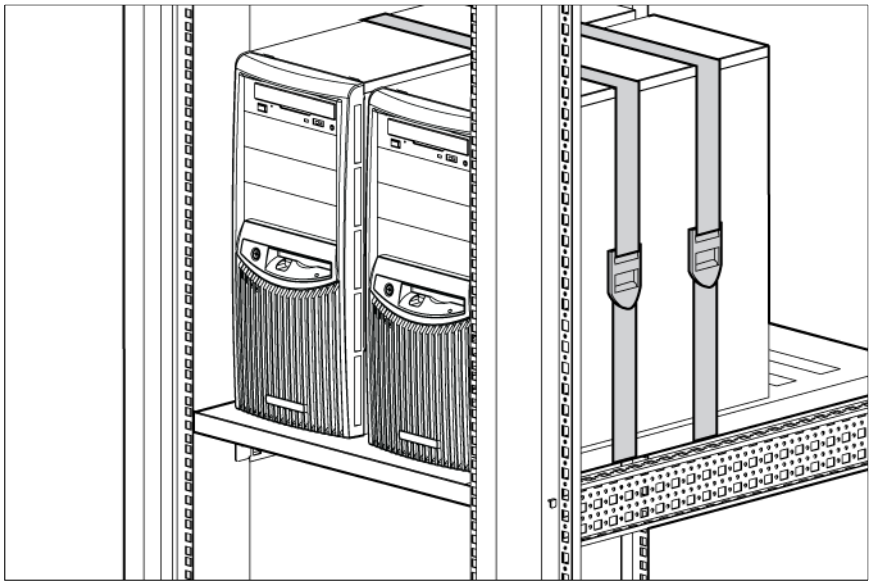
5. Align each cage nut assembly with the mounting holes on the inside front of the rack.



6. Secure the shelf to the rack with two M6 screws using a Phillips screwdriver.



7. Secure servers to the shelf using the quick-release tie-down straps.



Installation is complete.

Side Panel kit

About this device

The HP Side Panel kit enables you to attach side panels to HP 10000 G2 Series Racks.

Kit contents

Item	Quantity
Top side panel	2
Middle side panel	2
Bottom side panel	2
Key	2

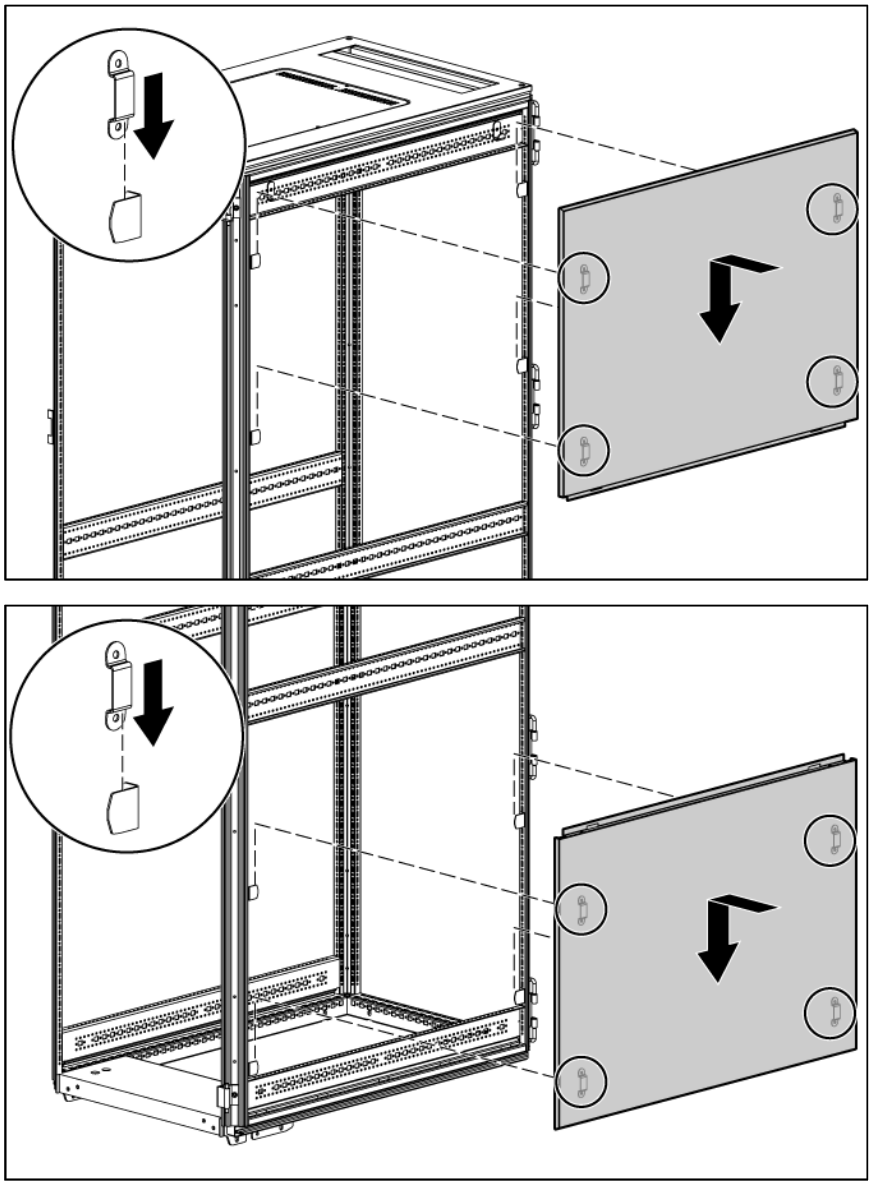
This kit might contain extra hardware for your convenience.

Required tools

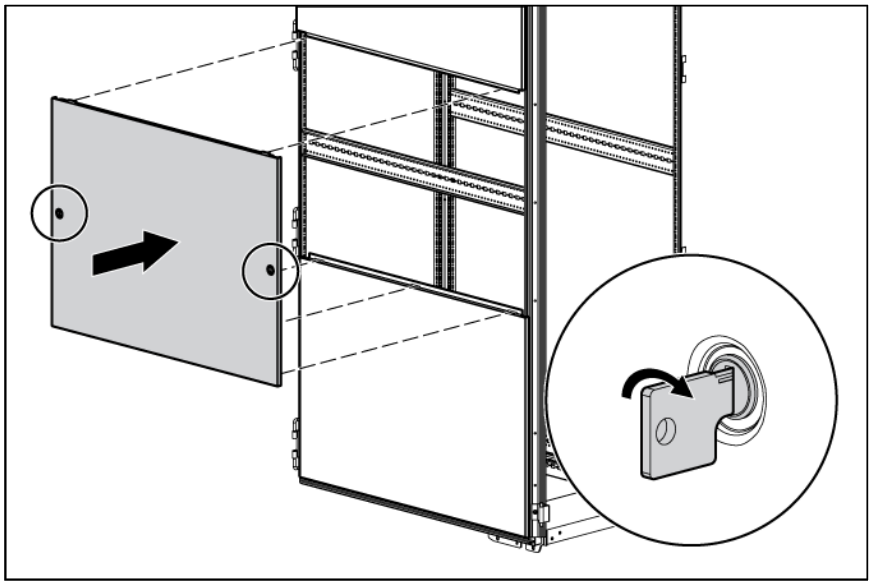
No tools are required for this procedure.

Installing the side panels

1. Install the top and bottom side panel by sliding the brackets on the side panel behind the tabs on the rack frame.



2. Install the middle side panel by locking the side panel locks, securing it to the rack.



3. Repeat steps 1 and 2 for the other side of the rack.

Installation is complete.

Tie-Down kit

About this device

The HP 10000 G2 Series Rack Tie-down Kit enables you to secure HP 10000 G2 Series Racks to the floor. This kit is for all 10000 G2 Series Racks except for Rack SKUs AF092A and AF094A.

A separate tie-down kit is used exclusively for the 1200 full frame racks. This separate kit is for Rack SKUs AF092A and AF094A only.

Required tools

The following tools are required for installation:

- Ratchet with sockets
- Adjustable wrench

Kit contents

Item	Quantity
Front tie-down bracket	1
Rear tie-down bracket	1
M8 x 20-mm bolt	8
M8 flat washer	8
M8 spring clip	4

This kit might contain extra hardware for your convenience.

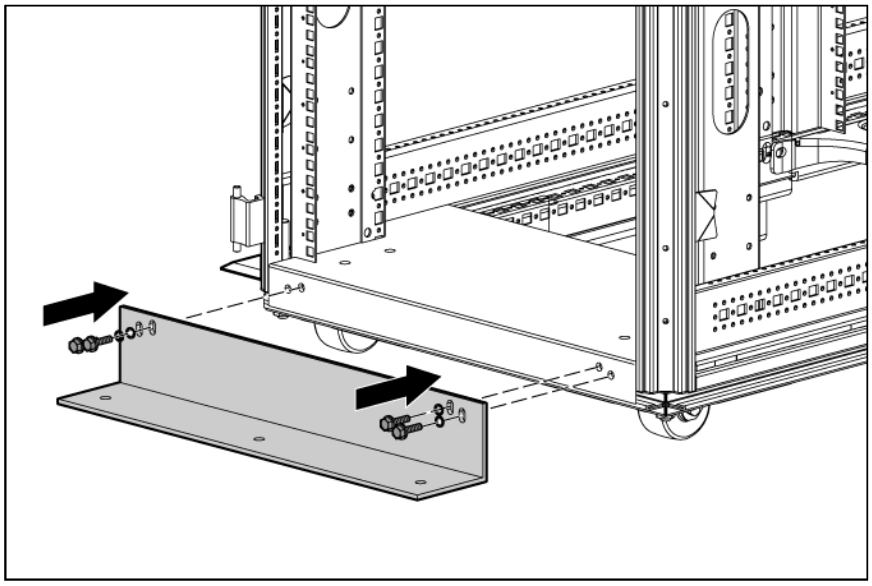
Installing the tie-down kit

This procedure is for all 10000 G2 Series racks except for Rack SKUs AF092A and AF094A.

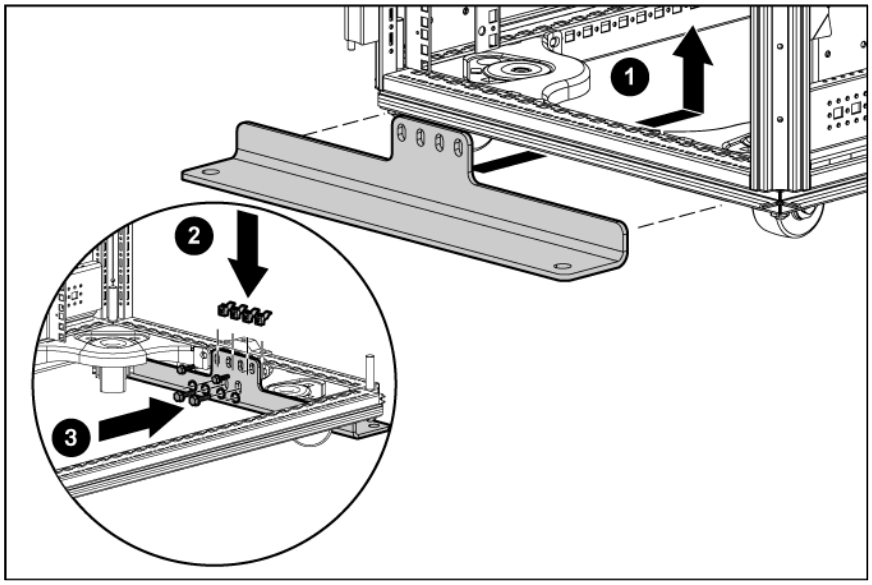
To install the tie-down kit:

1. Adjust the leveling feet on the rack so that the full weight of the rack rests on the leveling feet.
2. Align the front tie-down with the holes on the front caster plate.

3. Insert and partially tighten four bolts with washers, securing the front tie-down to the front caster plate.



4. Align the rear tie-down with the holes on the rear caster plate (1).
5. Insert the four spring clips (2), and then partially tighten four bolts with washers (3), securing the rear tie-down to the rear caster plate.

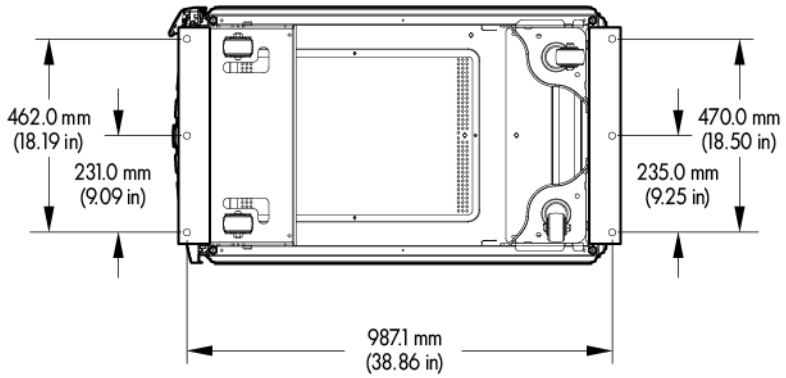


6. Tighten the bolts from step 3.
7. Tighten the bolts from step 5.
8. Secure the rack to the floor ("Securing the rack to the floor" on page 121).

Installation is complete.

Securing the rack to the floor

The following illustration indicates where to drill the holes to secure the rack to the floor. The distances are measured from the holes on the tie-downs. Have your building structural engineer drill the holes. After your holes have been drilled, insert a bolt with a washer into each hole to secure the rack to the floor.



1200 mm Full Frame Rack Tie-down Kit

The HP 10000 G2 Series Rack 1200mm Full Frame Pack tie-down kit is designed for greater stability in seismic environments. This tie-down kit is for Rack SKUs AF092A and AF094A only.

Required tools

The following tools are required for installation:

- Ratchet with sockets
- Adjustable wrench

1200 mm full frame rack tie-down kit contents

Item	Quantity
Front tie-down bracket	1
Rear tie-down bracket	1
M8 x 20-mm bolt	12
M8 x 20-mm bolt	12
M8 flat washer	12

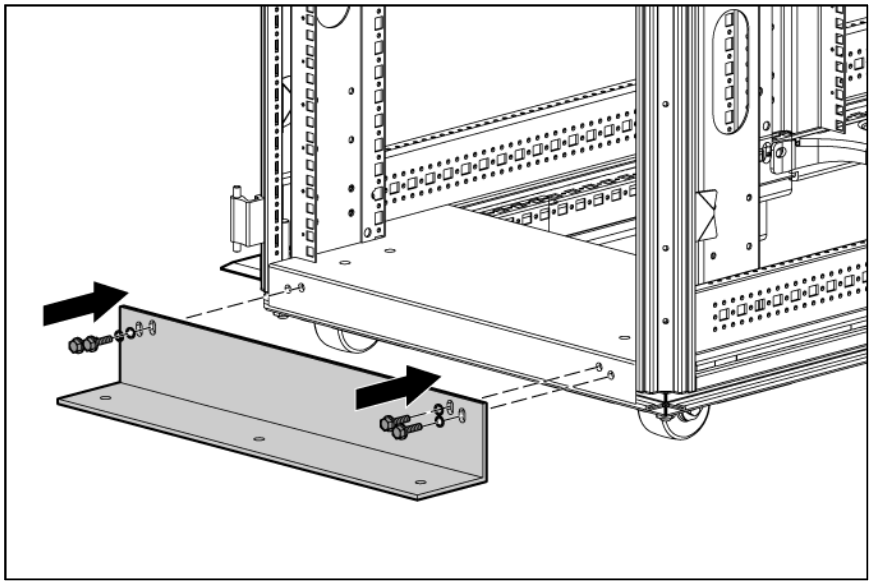
This kit might contain extra hardware for your convenience.

Installing the 1200 mm full frame rack tie-down kit

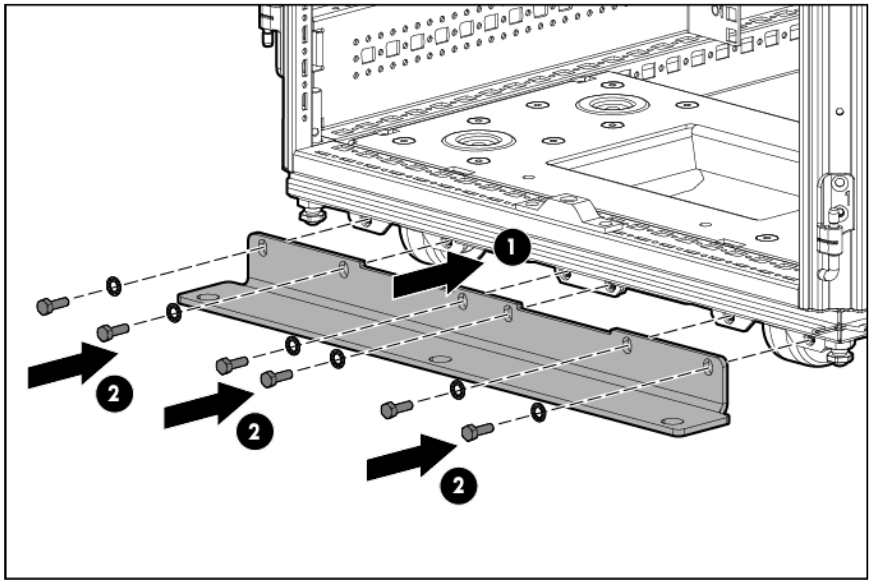
This procedure is only for rack SKUs AF092A and AF094A.

To install the kit:

1. Adjust the leveling feet on the rack so that the full weight of the rack rests on the leveling feet.
2. Align the front tie-down with the holes on the front caster plate.
3. Insert and then partially tighten four bolts with washers, securing the front tie-down to the front caster plate.



4. Align the rear tie-down with the holes on the rear caster plate (1).
5. Insert the six bolts with washers (2), securing the rear tie-down to the rear caster plate.

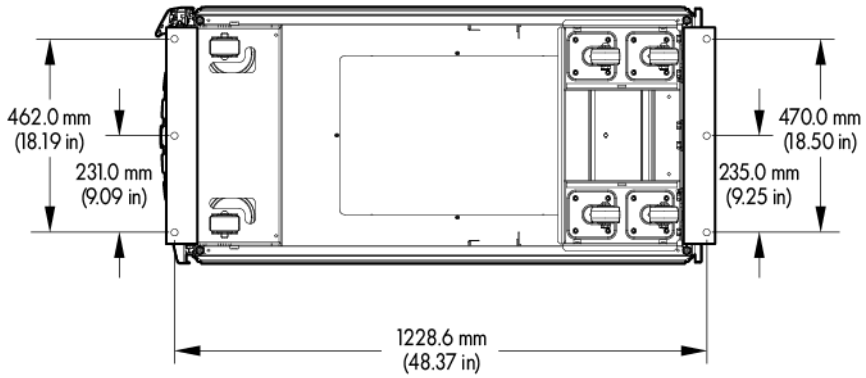


6. Tighten the bolts from step 3.
7. Tighten the bolts from step 5.
8. Secure the rack to the floor ("Securing the 1200 mm full frame rack to the floor" on page 123).

Installation is complete.

Securing the 1200 mm full frame rack to the floor

The following illustration indicates where to drill the holes to secure the 1200 mm full frame rack to the floor. The distances are measured from the holes on the tie-downs. Have your building structural engineer drill the holes. Then secure the rack to the floor by inserting a bolt with a washer into each hole.



Vertical PDU Mounting kit

About this device

The HP Vertical PDU Mounting kit allows HP PDU vertical models to be mounted in HP 10000 G2 Series Racks and in the HP V142 Rack.

Kit contents

Item	Quantity
Top bracket	1
Bottom bracket	1
Phillips self tapping screw	4
8-32 Torx machine screw	2

Required tools

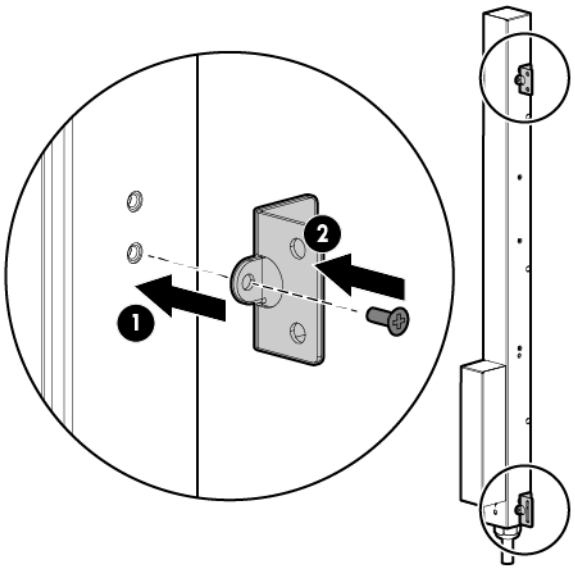
The following tools are required for installation:

- Phillips screwdriver
- 8-32 screwdriver

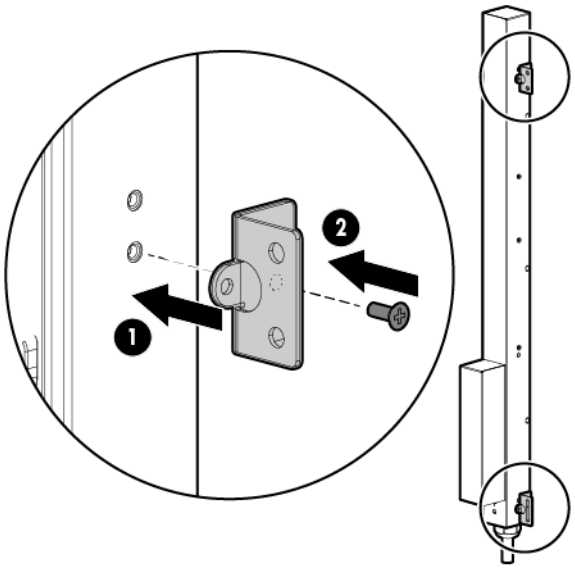
Installing the Vertical PDU Mounting kit

1. Install the brackets.

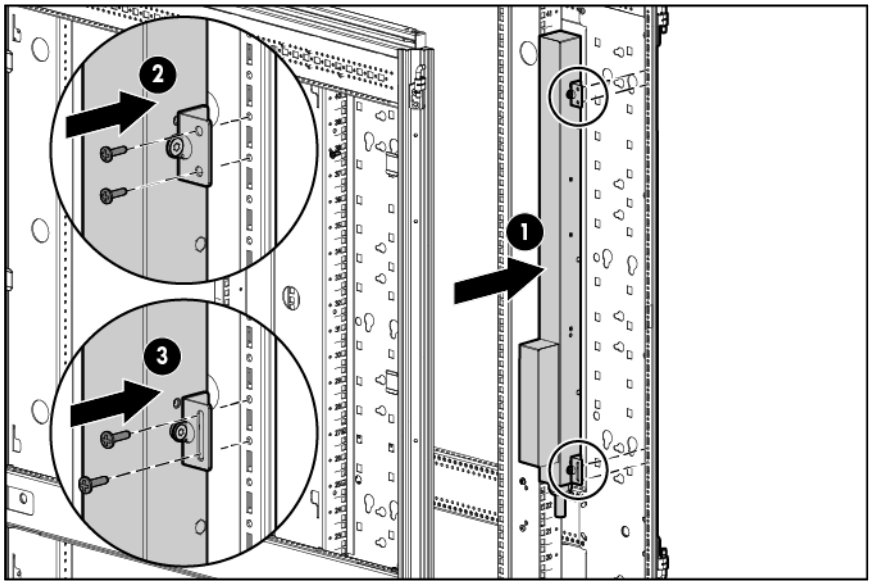
   HP basic PDU



HP monitored PDU



2. Install the PDU.



The installation is complete.

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.

Support and other resources

Before you contact HP

Be sure to have the following information available before you call HP:

- Active Health System log (HP ProLiant Gen8 or later products)

  Download and have available an Active Health System log for 3 days before the failure was detected. For more information, see the *HP iLO 4 User Guide* or *HP Intelligent Provisioning User Guide* on the HP website (http://www.hp.com/go/ilo/docs).
- Onboard Administrator SHOW ALL report (for HP BladeSystem products only)

  For more information on obtaining the Onboard Administrator SHOW ALL report, see the HP website (http://www.hp.com/go/OAlog).
- Technical support registration number (if applicable)
- Product serial number
- Product model name and number
- Product identification number
- Applicable error messages
- Add-on boards or hardware
- Third-party hardware or software
- Operating system type and revision level

HP contact information

For United States and worldwide contact information, see the Contact HP website (http://www.hp.com/go/assistance).

In the United States:

- To contact HP by phone, call 1-800-334-5144. For continuous quality improvement, calls may be recorded or monitored.
- If you have purchased a Care Pack (service upgrade), see the Support & Drivers website (http://www8.hp.com/us/en/support-drivers.html). If the problem cannot be resolved at the website, call 1-800-633-3600. For more information about Care Packs, see the HP website (http://pro-aq-sama.houston.hp.com/services/cache/10950-0-0-225-121.html).

Acronyms and abbreviations

KVM

keyboard, video, and mouse

PDU

power distribution unit

RKM

rackmount keyboard monitor

TMRA

recommended ambient operating temperature

UPS

uninterruptible power system

Documentation feedback

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