

Hardware Information

Installing racks, rack
features, and systems or
expansion units

ESCALA POWER5



REFERENCE
86 A1 32EW 00

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systems or expansion units

Hardware

July 2006

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Installing racks, rack features, and systems or expansion units

The following procedures describe how to install racks, rack features, and systems or expansion units into a rack. You can perform these tasks or contact a service provider to perform the tasks for you. You might be charged a fee by the service provider for this service.


For a PDF version of this information, click [PDF](#). Select the appropriate instructions from the following list:

- [Rack Safety Notices](#)
 - [Installing the rack](#)
 - [Installing rack features](#)
 - [Installing a system or expansion unit into a rack](#)
-

Rack Safety Notices

Before installing a rack, rack features, or a system or expansion unit into a rack, read the following safety information:

DANGER Observe the following precautions when working on or around your IT rack system:

- Heavy equipment personal injury or equipment damage might result if mishandled.
 - Always lower the leveling pads on the rack cabinet.
 - Always install stabilizer brackets on the rack cabinet.
 - To avoid hazardous conditions due to uneven mechanical loading, always install the heaviest devices in the bottom of the rack cabinet. Always install servers and optional devices starting from the bottom of the rack cabinet.
 - Rack-mounted devices are not to be used as shelves or work spaces. Do not place objects on top of rack-mounted devices.
- 
- Each rack cabinet might have more than one power cord. Be sure to disconnect all power cords in the rack cabinet when directed to disconnect power during servicing.
 - Connect all devices installed in a rack cabinet to power devices installed in the same rack cabinet. Do not plug a power cord from a device installed in one rack cabinet into a power device installed in a different rack cabinet.
 - An electrical outlet that is not correctly wired could place hazardous voltage on the metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock.

CAUTION

- Do not install a unit in a rack where the internal rack ambient temperatures will exceed the manufacturer's recommended ambient temperature for all your rack-mounted devices.
- Do not install a unit in a rack where the air flow is compromised. Ensure that air flow is not blocked or reduced on any side, front, or back of a unit used for air flow through the unit.
- Consideration should be given to the connection of the equipment to the supply circuit so that overloading of the circuits does not compromise the supply wiring or overcurrent protection. To provide the correct power connection to a rack, refer to the rating labels located on the equipment in the rack to determine the total power requirement of the supply circuit.
- *(For sliding drawers.)* Do not pull out or install any drawer or feature if the rack stabilizer brackets are not attached to the rack. Do not pull out more than one drawer at a time. The rack might become unstable if you pull out more than one drawer at a time.
- *(For fixed drawers.)* This drawer is a fixed drawer and must not be moved for servicing unless specified by the manufacturer. Attempting to move the drawer partially or completely out of the rack might cause the rack to become unstable or cause the drawer to fall out of the rack.

(R001)

If you are installing equipment into a rack, the rack must comply with the Electronics Industries Association (EIA) 310D specifications. If you do not have a rail kit designed for the equipment in the rack, do not install the equipment into the rack as damage to the equipment or personal injury could occur.

Lift precautions:

Installing racks, rack features, and systems or expansion units



≥ 18 kg (39.7 lb)



≥ 32 kg (70.5 lb)



≥ 55 kg (121.2 lb)

IPHBF442-0



Completing a parts inventory

If you have not done so, complete a parts inventory before proceeding with the installation:

1. Locate the kitting report in an accessory box.
2. Ensure that you received all the parts that were ordered.

If there are incorrect, missing or damaged parts contact:

- Your reseller
-

Installing racks, rack features, and systems or expansion units

Installing the rack

The following procedures describe how to install a rack.

If you are installing a system unit into an existing rack, see [Install the system unit or expansion unit into a rack](#).

- [Installing the 14T/00, 14T/42, 0551, and 0553 racks](#)
 - [Installing the 14S/11 rack](#)
 - [Installing the 14S/25 rack](#)
-

Installing the 14T/00, 14T/42, 0551, and 0553 racks

If your rack is the 14T/00, 14T/42, 0551, or 0553 complete the following instructions for installing the rack.

If you are installing a rack security kit in this rack, see [Installing the rack security kit](#) after you have installed the rack.

Before installing a rack, read the [Rack Safety Notices](#).

1. [Completing a parts inventory](#)
2. [Positioning the rack](#)
3. [Leveling the rack](#)
4. [Attaching the stabilizer brackets](#)
5. [Attaching the rack to a concrete floor](#)
6. [Attaching the rack to the concrete floor beneath a raised floor](#)
7. [Connecting the power distribution system](#)
8. [Check the ac outlets](#)
9. [Attaching the front or back ac electrical outlet](#)
10. [Connecting a dc power source](#)

Parent topic: [Installing the rack](#)

Completing a parts inventory

If you have not done so, complete a parts inventory before installing the system unit in the rack:

1. Locate the kitting report in an accessory box.
2. Ensure that you received all the parts that you ordered.

If there are incorrect, missing, or damaged parts then contact:

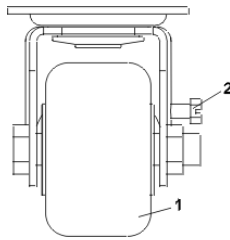
- Your reseller

Next topic: [Positioning the rack](#)

Positioning the rack

The -48 V dc rack must be installed only in restricted access areas, such as dedicated equipment rooms or equipment closets, in accordance with Articles 110-16, 110-17, and 110-18 of the National Electrical Code, ANSI/NFPA No. 70.

After the rack has been placed into its location on the floor, lock each caster by tightening the locking screw. See the following illustration for the locking screw location. Remove all of the tape and packing materials from the rack.



- 1 Caster
- 2 Locking screw

Figure 1. Tightening the locking screw.

Use the following to determine the next step:

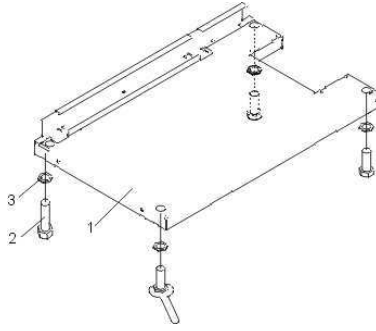
- If the rack is being bolted to a concrete floor, go to [Attaching the rack to a concrete floor](#).
- If the rack is being bolted to a concrete floor beneath a raised floor, go to [Attaching the rack to the concrete floor beneath a raised floor](#).
- If the rack is not being attached to the floor, go to [Leveling the rack](#).

Parent topic: [Installing the 14T/00, 14T/42, 0551, and 0553 racks](#) Previous topic: [Completing a parts inventory](#) Next topic: [Leveling the rack](#)

Leveling the rack

To level the rack, do the following:

1. Loosen the jam nut on each leveling foot.
2. Rotate each leveling foot downward until it contacts the surface on which the rack is placed.
3. Adjust the leveling feet downward as needed until the rack is level. When the rack is level, tighten the jam nuts against the base.



- 1 Rack Front (base)
- 2 Leveling Foot (quantity 4)
- 3 Jam Nut (quantity 4)

Figure 1. Adjusting the leveling feet.

Next topic: [Attaching the stabilizer brackets](#).

Parent topic: [Installing the 14T/00, 14T/42, 0551, and 0553 racks](#) Previous topic: [Positioning the rack](#) Next topic: [Attaching the stabilizer brackets](#)

Attaching the stabilizer brackets

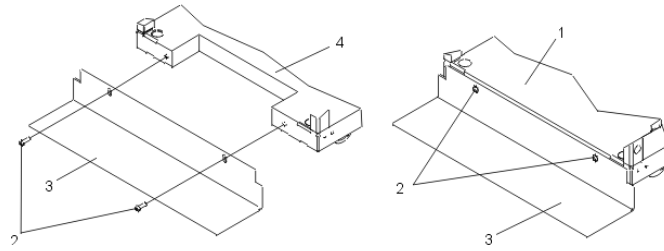
Stabilizer brackets are used only if you will not be bolting the rack to the floor. If you are going to bolt the rack to the floor, go to [Attaching the rack to a concrete floor](#).

If the front or back ac electrical outlets are going to be installed in the rack, you cannot attach the stabilizer brackets. The rack must be bolted to the floor.

To attach the stabilizer brackets to the bottom of the rack, do the following:

Note: Before installing the stabilizer brackets, refer to [Attaching the front or back ac electrical outlet](#) for instruction on installing the ac outlet-mounting plates.

1. Align the slots of one of the stabilizer brackets with the mounting holes at the bottom front of the rack.
2. Install the two mounting screws.
3. Ensure that the base of the stabilizer bracket rests firmly on the floor. Use the Allen wrench that was supplied with the rack to tighten the mounting screws alternately until they are tight.



- | | |
|------------------------------|--------------------|
| 1 Rack Front (base) | 3 Stabilizer |
| 2 Stabilizer Mounting Screws | 4 Rack Rear (base) |

Figure 1. Attaching the stabilizer brackets.

4. To install the second stabilizer bracket on the back of the rack, repeat steps 1 through 3.

Next topic: [Connecting the power distribution system.](#)

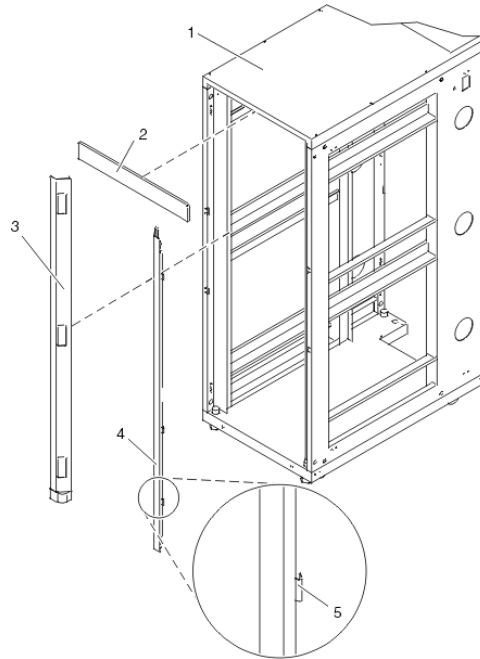
Parent topic: [Installing the 14T/00, 14T/42, 0551, and 0553 racks](#) **Previous topic:** [Leveling the rack](#) **Next topic:** [Attaching the rack to a concrete floor](#)

Attaching the rack to a concrete floor

Obtain the services of a mechanical contractor to attach the rack-mounting plates to the concrete floor. The mechanical contractor needs to determine that the hardware being used to secure the rack-mounting plates to the concrete floor is sufficient to meet the requirements for the installation.

To attach the rack to a concrete floor, do the following:

1. Put the rack in its predetermined location and tighten the locking screws on the casters.
2. If installed, remove the top, left, and right trim panels. The trim panels are held in place with spring clips. See the following illustration.



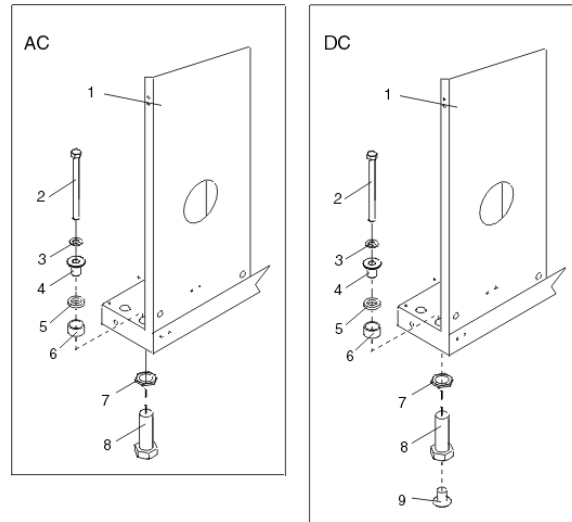
- | | |
|------------------------|-------------------------|
| 1 Rack chassis | 4 Right-side trim panel |
| 2 Top trim panel | 5 Spring clip |
| 3 Left-side trim panel | |

Figure 1. Removing the trim panels.

3. If installed, remove the front and back doors. To remove a rack door, go to [Attaching the rack doors](#). After the rack doors have been removed, go to the next substep.
4. Locate the hardware mounting kit and the two mounting plates. Refer to the following illustration when reviewing the contents of the hardware mounting kit. The mounting hardware kit contains the following:
 - ◆ 4 Rack-mounting bolts
 - ◆ 4 Thin washers
 - ◆ 8 Plastic isolator bushings
 - ◆ 4 Thick washers
 - ◆ 4 Spacers
5. If you are installing a dc-powered rack, insert each bushing into a leveling foot as shown in the following illustration. On a dc-powered rack, *do not* remove the lower plastic isolator bushings from the leveling feet.

Note: If you are installing an ac-powered rack, temporarily install the lower plastic isolator bushings to help you locate the mounting locations for the stabilizer bracket. After the stabilizer bracket has been correctly located, remove the lower plastic isolator bushings.

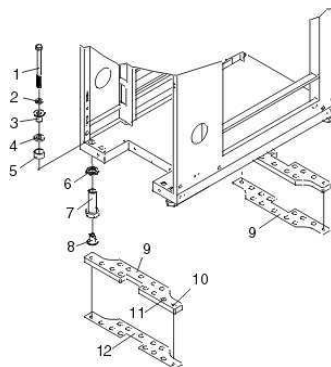
Installing racks, rack features, and systems or expansion units



- | | |
|--------------------------------|--|
| 1 Rack chassis | 7 Jam nut |
| 2 Rack-mounting bolt | 8 Leveling foot |
| 3 Thin washer | 9 Lower plastic isolator bushing (used only on dc powered systems) |
| 4 Top plastic isolator bushing | AC Typical leveling foot installation for an ac-powered Rack |
| 5 Thick washer | DC Typical leveling foot installation for an dc-powered rack |
| 6 Spacer | |

Figure 2. Installing ac and dc power-mounting plates.

6. Position the two mounting plates in the approximate mounting location under the rack.
7. Create a rack-mounting bolt assembly by adding the following items, in the order listed, to each rack-mounting bolt.
 - a. Thin flat washer
 - b. Top plastic isolator bushing
 - c. Thick flat washer
 - d. Spacer
8. Insert a rack-mounting bolt assembly through each of the leveling feet.
9. Reposition the rack-mounting plates under the four rack-mounting bolts so that the mounting bolts are centered directly over the threaded bolt holes.
10. Turn the rack-mounting bolts four complete turns into the mounting plate's threaded bolt holes.



- | | |
|--------------------------------|--|
| 1 Rack-Mounting Bolt | 7 Leveling Foot |
| 2 Thin Washer | 8 Lower Plastic Isolator Bushing (Used only on dc powered systems) |
| 3 Top Plastic Isolator Bushing | 9 Mounting Plate |
| 4 Thick Washer | 10 Threaded Hole (Used to secure the rack to stabilizer bracket.) |
| 5 Spacer | 11 Anchor Bolt Hole |
| 6 Jam Nut | 12 Traced Pattern (Pattern to be traced onto the floor using the stabilizer bracket as a template) |

Figure 3. Securing the rack to the floor.

11. Mark the floor around the edges of both stabilizer brackets.
12. Mark the plate bolt-down holes that are accessible through the opening in the rear of the rack.
13. Remove the rack-mounting bolt assemblies.
14. If you are installing an ac-powered rack, remove the bottom isolator bushing from each of the leveling feet. If you are installing a dc-powered rack, the bottom isolator bushings *must* remain installed in each of the leveling feet.
15. Remove the stabilizer brackets from the marked locations.
16. Loosen each of the locking screws on the casters.
17. Move the rack so that it is clear of both areas that were marked on the floor for the stabilizer brackets locations.
18. Reposition the stabilizer brackets within the marked areas.
19. Mark the floor at the center of all holes in both stabilizer brackets.
20. Remove the two rack-mounting plates from the marked areas.
21. At the marked location of the threaded rack-mounting bolt holes, drill four clearance holes into the concrete floor. Each clearance hole should be approximately 1-inch deep. This allows the rack-mounting bolts enough room to protrude past the thickness of the stabilizer brackets.

Note: You *must* use a minimum of two anchor bolts for each rack-mounting plate to securely attach the plate to the concrete floor. Because some of the holes in each rack-mounting plate may align with concrete reinforcement rods embedded in the concrete, some of the rack-mounting plate holes may not be usable.

22. Select at least two suitable hole locations for each stabilizer bracket bolt. The selected locations should be as close to the threaded bolt holes as possible. Be sure that the holes selected at the back of the rack are accessible. Drill holes at the selected locations into the concrete floor.

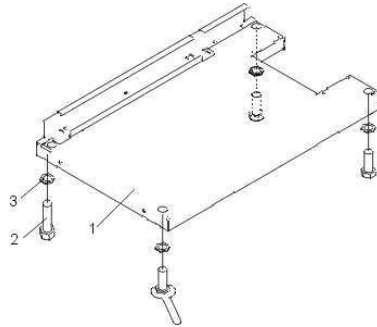
Note: The size of the anchor bolts and concrete anchors *must* be determined by the mechanical contractor doing the installation.

23. Position the stabilizer brackets over the concrete anchors.
24. Securely bolt the front stabilizer bracket to the concrete floor.
25. Position the stabilizer bracket over the concrete anchors.
26. Securely bolt the back stabilizer bracket to the concrete floor.

Note: The size of the anchor bolts and concrete anchors *must* be determined by the mechanical contractor doing the rack-mounting plate installation.

27. Position the rack over the stabilizer bracket.
28. Insert each of the stabilizer bracket bolts through a flat washer, a plastic isolator bushing and a thick washer, and through a leveling foot.

29. Align the four stabilizer brackets bolts with the four tapped holes in the two mounting plates and turn three to four rotations.
30. Tighten the locking screw on each caster.
31. Adjust the leveling feet downward as needed until the rack is level. When the rack is level, tighten the jam nuts against the base of the rack.



- 1 Rack front (base)
- 2 Leveling foot (quantity 4)
- 3 Jam nut (quantity 4)

Figure 4. Adjusting the leveling feet.

32. If you have multiple racks that are connected in a suite (bolted to each other), go to [Connecting multiple racks with rack-to-rack attachment kit](#). Otherwise, torque the four bolts to 40-50 ft-lbs (54-67 nm).
33. If you are not installing doors on your rack, install the top, left, and right trim panel.
34. Connect the power distribution system as described in [Connecting the power distribution system](#).
35. After all racks are bolted down, go to [Attaching the front or back ac electrical outlet](#).
36. If you are not going to attach a front electrical outlet and you are installing rack doors, go to [Attaching the rack doors](#)

Next topic: [Connecting the power distribution system](#).

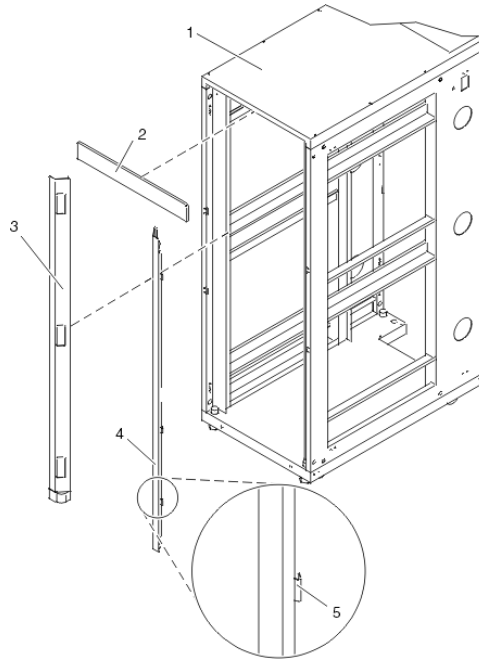
Parent topic: [Installing the 14T/00, 14T/42, 0551, and 0553 racks](#) **Previous topic:** [Attaching the stabilizer brackets](#) **Next topic:** [Attaching the rack to the concrete floor beneath a raised floor](#)

Attaching the rack to the concrete floor beneath a raised floor

Obtain the services of a mechanical contractor to attach the rack-mounting plates to the concrete floor. The mechanical contractor needs to determine that the hardware being used to secure the rack-mounting plates to the concrete floor is sufficient to meet the requirements for the installation.

To attach the rack to a concrete floor beneath a raised floor, do the following:

1. Put your rack in its predetermined location and tighten the locking screws on the casters.
2. If installed, remove the top, left and right trim panels. The trim panels are held in place with spring clips. See the following illustration.

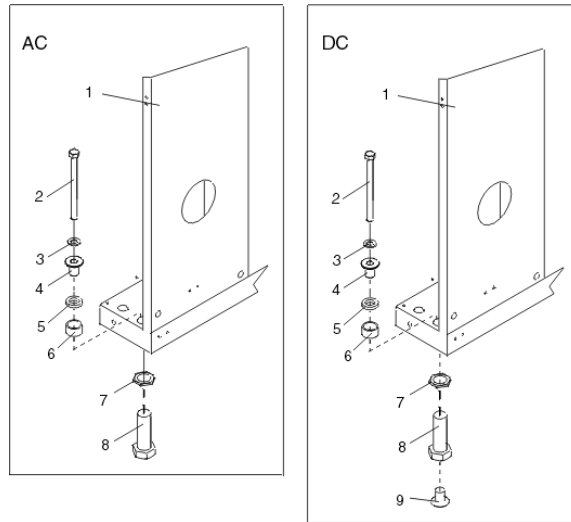


- | | |
|------------------------|-------------------------|
| 1 Rack chassis | 4 Right-side trim panel |
| 2 Top trim panel | 5 Spring clip |
| 3 Left-side trim panel | |

Figure 1. Removing the trim panels.

3. If installed, remove the front and rear doors. To remove a rack door, go to [Attaching the rack doors](#). After the rack doors have been removed, go to the next substep.
4. Locate the hardware mounting kit and the two mounting plates. Refer to the following illustration when reviewing the contents of the hardware mounting kit. The mounting hardware kit contains the following:
 - ◆ Four rack-mounting bolts
 - ◆ Four thin washers
 - ◆ Eight plastic isolator bushings
 - ◆ Four thick washers
 - ◆ Four spacers
5. If you are installing a dc-powered rack, insert each bushing into a leveling foot as shown in the following illustration. On a dc-powered rack, *do not* remove the lower plastic isolator bushings from the leveling feet.

Note: If you are installing an ac-powered rack, temporarily install the lower plastic isolator bushings to help you locate the rack-mounting plate. After the mounting plate has been correctly located, remove the lower plastic isolator bushings.



- | | |
|--------------------------------|--|
| 1 Rack chassis | 7 Jam nut |
| 2 Rack-mounting bolt | 8 Leveling foot |
| 3 Thin washer | 9 Lower plastic isolator bushing (used only on dc powered systems) |
| 4 Top plastic isolator bushing | AC Typical leveling foot installation for an ac-powered rack |
| 5 Thick washer | DC Typical leveling foot installation for an dc-powered rack |
| 6 Spacer | |

Figure 2. Installing the ac and dc power-mounting plates.

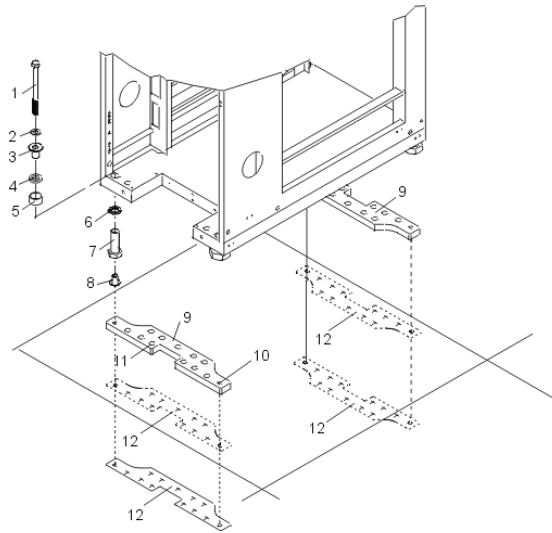
6. Position the two mounting plates in the approximate mounting location under the rack.
7. Create a rack-mounting bolt assembly by adding the following items, in the order listed, to each rack-mounting bolt.
 - a. Thin flat washer
 - b. Top plastic isolator bushing
 - c. Thick flat washer
 - d. Spacer
8. Insert a rack-mounting bolt assembly through each of the leveling feet.
9. Reposition the rack-mounting plates under the four rack-mounting bolts so that the mounting bolts are centered directly over the threaded bolt holes.
10. Turn the rack-mounting bolts four complete turns into the mounting plate's threaded bolt holes.
11. Mark the raised-floor panel around the edges of front and back rack-mounting plates.
12. Mark the plate bolt-down holes that are accessible through the opening in the back of the rack.
13. Remove the rack-mounting bolt assemblies.
14. If you are installing an ac-powered rack, remove the bottom isolator bushing from each of the leveling feet. If you are installing a dc-powered rack, the bottom isolator bushings *must* remain installed in each of the leveling feet.
15. Remove the rack-mounting plates from the marked locations.
16. Loosen each of the locking screws on the casters.
17. Move the rack so that it is clear of both areas that were marked on the floor for the rack-mounting plate locations.
18. Reposition the mounting plates within the marked areas.
19. Mark the raised-floor panel at the center of each hole in the rack-mounting plates (including the tapped holes).
20. Remove the two rack-mounting plates from the marked locations on the raised floor panel.
21. Drill two clearance holes on each end of each rack-mounting plate. The drilled holes should be approximately 1-inch deep. This will accommodate any rack-mounting bolt extending past the rack-mounting plate when securing the rack to the rack-mounting plate.
22. For each rack-mounting plate, select at least two suitable hole locations. Select the hole locations as close to the threaded hole areas as possible. Be sure the hole locations selected at the back of the

rack are accessible.

23. Drill pass-through holes in the raised-floor panel. The pass-through holes allow the anchor-bolts to be inserted into the rack-mounting plate and pass through the raised floor panel to the concrete floor.

Note: You *must* use a minimum of two anchor bolts for each rack-mounting plate to securely attach the rack-mounting plate through the raised-floor panel to the concrete floor. Because some of the holes in each rack-mounting plate may align with concrete reinforcement rods imbedded in the concrete, some of the rack-mounting plate holes may not be usable.

24. Transfer the locations of the anchor bolt holes (exclude the clearance holes drilled for the rack-mounting bolts) from the raised-floor panel to the concrete floor directly beneath, and mark the hole locations on the concrete floor.
25. Drill holes in the concrete floor to secure the anchor bolts.
26. Position the raised-floor panel back into position over the anchor bolt holes.
27. Position the front stabilizer bracket within the marked area on the raised-floor panel.
28. Using your anchor bolts, secure the front stabilizer brackets on top of the raised floor and through to the concrete floor.
29. Position the rear stabilizer brackets within the marked area on the raised-floor panel.



- | | |
|--------------------------------|--|
| 1 Rack-mounting bolt | 7 Leveling foot |
| 2 Thin washer | 8 Lower plastic isolator bushing (used only on dc-powered systems) |
| 3 Top plastic isolator bushing | 9 Stabilizer brackets |
| 4 Thick washer | 10 Threaded hole (used to secure the rack to mounting plate.) |
| 5 Spacer | 11 Anchor bolt hole |
| 6 Jam nut | 12 Traced pattern (pattern to be traced onto the floor using the mounting plate as a template) |

Figure 3. Securing the rack to the floor.

30. Using your anchor bolts, secure the back stabilizer bracket on top of the raised floor and through to the concrete floor.
31. Replace all raised-floor panels that may have been removed when aligning and securing the anchor bolts to the concrete floor.
32. Align the rack over the front and back stabilizer brackets.
33. Insert each of the bolt assemblies through a leveling foot.

34. Align the rack-mounting bolts with the threaded holes in each stabilizer bracket. Turn each bolt three to four rotations.
35. Tighten the locking screw on each caster.
36. Adjust the leveling feet downward as needed until the rack is level. When the rack is level, tighten the jam nuts against the base of the rack.
37. If you have multiple racks that are connected as a suite (bolted to each other), go to [Connecting multiple racks with rack-to-rack attachment kit](#). Otherwise, torque the four bolts to 40-50 ft-lbs (54-67 nm).
38. If you are not installing doors on your rack, install the top, left, and right trim panel.
39. Connect the power distribution system as described in [Connecting the power distribution system](#).
40. After the rack is bolted down and you are going to attach a front electrical outlet, go to [Attaching the front or back ac electrical outlet](#).
41. If you are not going to attach a front electrical outlet and you are installing rack doors, go to [Attaching the rack doors](#).

Next topic: [Connecting the power distribution system](#).

Parent topic: [Installing the 14T/00, 14T/42, 0551, and 0553 racks](#) **Previous topic:** [Attaching the rack to a concrete floor](#) **Next topic:** [Connecting the power distribution system](#)

Connecting the power distribution system

Select from the following items:

- [Check the ac outlets](#)
- [Connecting a dc power source](#)

Parent topic: [Installing the 14T/00, 14T/42, 0551, and 0553 racks](#) **Previous topic:** [Attaching the rack to the concrete floor beneath a raised floor](#) **Next topic:** [Check the ac outlets](#)

Check the ac outlets

Before plugging the rack into the ac power source, do the following checks on the ac power source.

1. Turn off the branch circuit breaker for the ac power outlet that the rack will plug into. To the circuit breaker switch, attach tag S229-0237, which reads "Do Not Operate."

Note: All measurements are made with the receptacle faceplate in the usual installed position.

2. Some receptacles are enclosed in metal housings. For this type of receptacle, do the following:
 - a. Check for less than 1 volt from the receptacle case to any grounded metal structure in the building, such as a raised-floor metal structure, water pipe, building steel, or similar structure.
 - b. Check for less than 1 volt from the receptacle ground pin to a grounded point in the building.

Note: If the receptacle case or faceplate is painted, be sure the probe tip penetrates the paint and makes good electrical contact with the metal.

- c. Check the resistance from the receptacle ground pin to the receptacle case. Check resistance from the ground pin to the building ground. The readings should be less than 1.0 ohm, which indicates the presence of a continuous grounding conductor.
3. If any of the three checks made in substep 2 are not correct, ask the customer to remove the power from the branch circuit and make the wiring corrections; then check the receptacle again.

Note: Do not use a digital multimeter to measure grounding resistance in the following steps.

4. Check for infinite resistance between the ground pin of the receptacle and each of the phase pins. This is a check for a wiring short to ground or a wiring reversal.
5. Check for infinite resistance between the phase pins. This is a check for a wiring short.
6. Turn on the branch circuit breaker. Measure for the appropriate voltages between phases. If no voltage is present on the receptacle case or grounded pin, the receptacle is safe to touch.
7. With an appropriate meter, verify that the voltage at the ac outlet is correct.
8. Verify that the grounding impedance is correct by using the ECOS 1020, 1023, B7106, C7106, or an appropriately approved ground-impedance tester.

Next topic: [Attaching the front or back ac electrical outlet](#)

Parent topic: [Installing the 14T/00, 14T/42, 0551, and 0553 racks](#) **Previous topic:** [Connecting the power distribution system](#) **Next topic:** [Attaching the front or back ac electrical outlet](#)

Attaching the front or back ac electrical outlet

Attention: The front and back ac outlet-mounting plates mount through the same mounting holes in that secure the stabilizer brackets to the rack chassis. Therefore, if the rack must be bolted to the floor, the stabilizer brackets must be removed.

Install the ac outlet-mounting plates only after the rack has been bolted to the floor and the stabilizer brackets have been removed.

The following items are installed at the customer's site:

- The ac outlet-mounting plates for installing customer-supplied ac electrical outlets on the front or back of the rack. The ac outlet-mounting plate provides the mounting location for an ac electrical outlet.
- The brass ground lug for an electrostatic discharge (ESD) connection.

Note: The customer is responsible for providing both the outlets and the power cables that attach to the power source. The customer is also responsible for connecting the ac outlet correctly. These items are not field-replaceable units (FRUs).

- [Installing the ac outlet-mounting plates with ac outlets](#)
- [Installing the ac outlet-mounting plate without ac outlets](#)

Parent topic: [Installing the 14T/00, 14T/42, 0551, and 0553 racks](#) **Previous topic:** [Check the ac outlets](#) **Next topic:** [Connecting a dc power source](#)

Installing the ac outlet-mounting plates with ac outlets

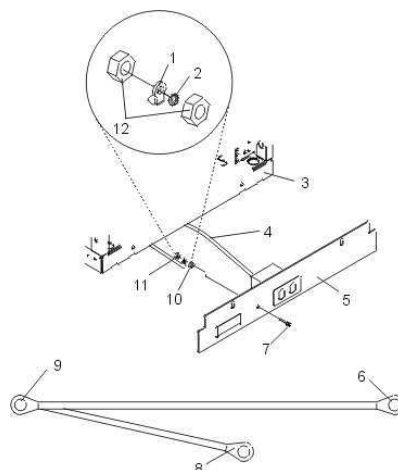
If you do not want ac outlets installed on the rack, go to [Installing the ac outlet-mounting plate without ac outlets](#).

If you want ac outlets installed on the front or back ac outlet-mounting plate, do the following:

1. Determine the number of ac outlets that you are installing.
2. Confirm with your contractor that the number and location of ac outlets to be installed are correct.
3. Remove the blank filler plates from the ac outlet-mounting plates for the number of ac outlets being installed.
4. Install the ac outlets on the ac outlet-mounting plate.
5. Install the ground lug in the ac outlet-mounting plate using only one nut, as shown in the following illustration.
6. Securely tighten the one nut on the ground lug.
7. Locate the "Y"-shaped ground cable supplied with the mounting plate.

Note: The following steps can be used to install ac outlets on the front or the back of the rack.

8. Place the star washer onto the ground lug of the front ac outlet-mounting plate.
9. Place the lug on the long end of the ground cable onto the ground lug.
10. Place a ground lug nut onto the ground lug and securely tighten it.
11. Position the front ac outlet-mounting plate onto the rack frame with the ground lug fully inserted through the mounting holes in the rack.
12. Route the cable under the rack.
13. Place the star washer onto the ground lug of the back ac outlet-mounting plate.
14. Place the lug on the short end of the ground cable onto the ground lug.
15. Place a ground lug nut onto the ground lug and securely tighten it.



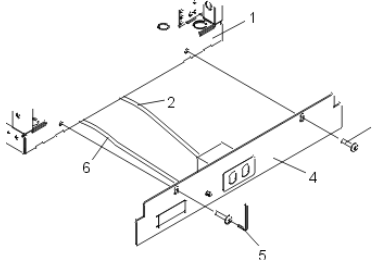
1 Ground cable lug
2 Star washer

7 Ground lug
8 Ground connector (short end of ground cable)

- | | |
|-------------------------------------|--------------------------------|
| 3 Front of rack | 9 "Y" End of ground cable |
| 4 Power cable from the power source | 10 Ground lug nut (quantity 2) |
| 5 Mounting plate | 11 Long end of ground cable |
| 6 Long end of ground cable | 12 Ground lug nut (quantity 2) |

Figure 1. Installing the ground lug.

16. Position the back ac outlet-mounting plate onto the rack frame with the ground lug fully inserted through the mounting holes in the rack.
17. Install the front ac outlet-mounting plate screws (stabilizer mounting screws) into the mounting plate and through the mounting holes in the rack. Securely tighten the screws.

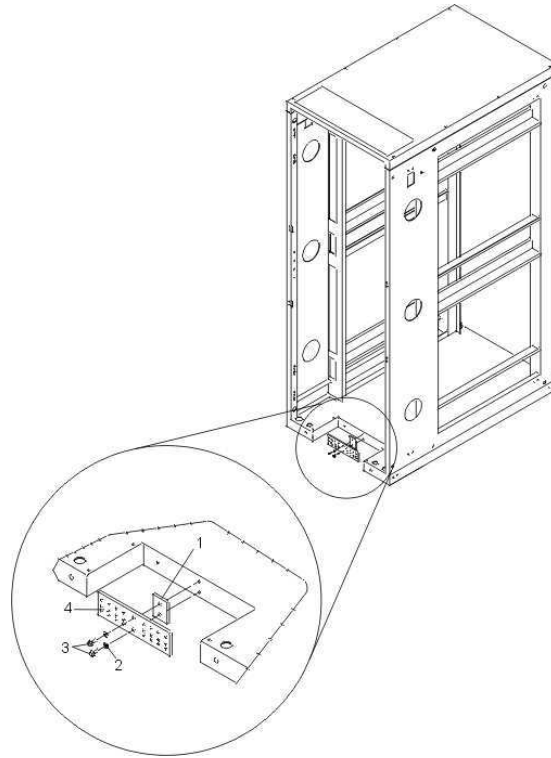


- | | |
|---|----------------------------|
| 1 Front or back of rack (as applicable) | 4 Mounting plate |
| 2 Power cable from power source | 5 Allen wrench |
| 3 Button-head screw | 6 Long end of ground cable |

Figure 2. Installing the front mounting plate.

18. Connect the "Y"-shaped end of the ground cable to the rack frame, either near the center in the back of the rack or to the ground bus bar at the back of the rack.
19. Install the back ac outlet-mounting plate screws (stabilizer mounting screws) into the mounting plate and through the mounting holes in the rack. Securely tighten the screws.

Note: The bus bar might be located at either the top or bottom of the rack.



- 1 Bus bar mounting plate
- 2 Lock washer (quantity 2)

- 3 Hex screws (M5 x 20) (quantity 2)
- 4 Ground bus bar

Figure 3. Installing the back mounting plate.

Next topic: [Connecting drawer and device cables](#)

Parent topic: [Attaching the front or back ac electrical outlet](#)

Installing the ac outlet-mounting plate without ac outlets

If you do not want any ac outlets installed on the front or rear ac outlet-mounting plate, perform only [Attaching the rack to the concrete floor beneath a raised floor](#) through [Connecting the power distribution system](#).

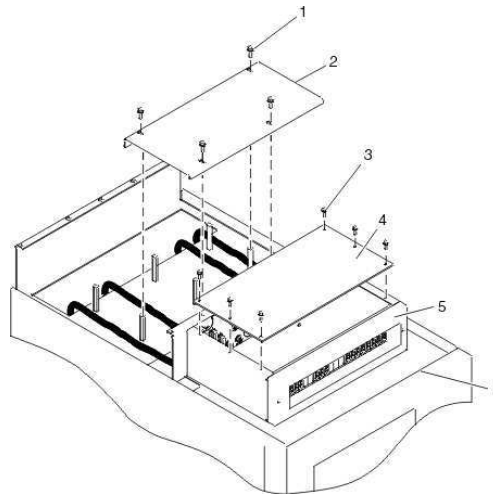
For front or rear ac outlet-mounting plates, refer to [Installing the ac outlet-mounting plates with ac outlets](#).

Parent topic: [Attaching the front or back ac electrical outlet](#)

Connecting a dc power source

Note: The customer is responsible for providing and connecting the -48 V dc power source and -48 V dc power return cables from the customer's source -48 V dc to the bus bars in the power distribution panel. The customer is also responsible for connecting the ground cable to the rack frame. This procedure provides information about accessing the power distribution panel.

1. Remove the six mounting screws from the top cover of the dc power distribution panel and remove the top cover.
2. If installed, remove the four screws from the cable channel cover.
3. Remove the cable channel cover.



- | | |
|---|----------------------------|
| 1 Cable channel cover retaining screw | 5 Shield |
| 2 Cable channel cover | 6 Power distribution panel |
| 3 Power distribution panel top cover retaining screws | 7 Front of rack |
| 4 Power distribution panel top cover | |

Figure 1. Removing the cable channel cover.

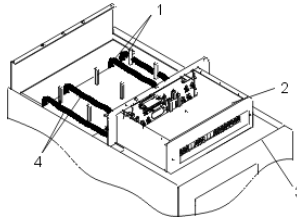
4. Remove the -48 V dc bus bar shield from the power distribution panel.

Attention: The bus bar shield must be correctly reinstalled over the -48 V dc return bus bars to protect against injury while servicing the power distribution panel.

5. Ensure that the following steps are performed when connecting the dc power source.
 - a. At -48 V dc power source, turn off any -48 V dc power sources that will be connected to the power distribution panel.
 - b. After the -48 V dc power sources are turned off, be sure there is a tag or label over the power source switches or fuses (lock-out/tag-out) to indicate that the power source is turned off intentionally.

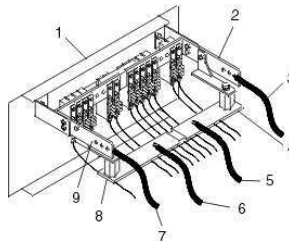
Note: Ensure that any oxidation on the copper bus bars is removed.

- c. If this is a raised-floor installation and you are working at the back of the rack, route the power cables up the rack's right side.
- d. Ensure that the external -48 V dc power cable is connected correctly to the -48 V dc bus bar.
- e. Ensure that the external -48 V dc return cable is routed correctly and installed on the return bus bar.



- 1 -48 V dc power cable and return power cable
- 2 Power distribution panel
- 3 Front of rack
- 4 -48 V dc power cable and return power cable

Figure 2. Routing the power cables.



- | | |
|-------------------------------------|--------------------------------|
| 1 Front of power distribution panel | 6 (B) Return (-) power cable |
| 2 (A) -48 V dc (-) bus bar | 7 (B) -48 V dc (-) power cable |
| 3 (A) -48 V dc (-) power cable | 8 (B) Return (-) bus bar |
| 4 (A) Return (-) bus bar | 9 (B) -48 V dc (-) bus bar |
| 5 (A) Return (-) power cable | |

Figure 3. Return bus bar.

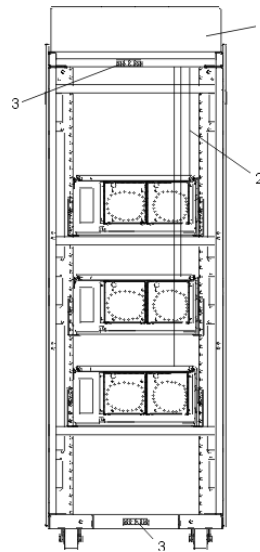
- f. If you want to install a power status alarm, connect the alarm cable to the terminal board on the back cover of the dc power distribution panel.

Note: Ensure that the oxidation on the copper bus bars is removed.

- g. Ensure that the power-source ground cable is routed correctly and connects the power-source ground cable to the copper bar at the lower-back or upper-back center of the

rack.

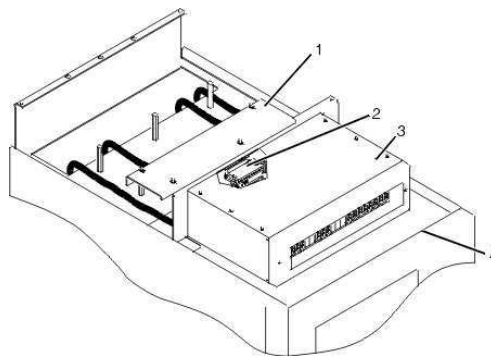
- h. If the rack is on a raised floor, attach the -48 V dc power source cables to the back of the rack with cable-restraint straps.



- 1 Back view of rack (dc)
- 2 Power cable, power return cable, and ground
- 3 Ground cable (Install at either top or bottom of the rack)

Figure 4. Cable locations.

- 6. Reinstall the -48 V dc bus bar shield.
- 7. Reinstall the top cover on the dc power distribution panel.
- 8. Reinstall the cable channel cover.



- 1 Cable channel cover
- 2 Terminal block (both sides)
- 3 Power distribution panel
- 4 Front of rack

Figure 5. Reinstalling the cable channel cover.

Next topic: [Connecting drawer and device cables](#)

Parent topic: [Installing the 14T/00, 14T/42, 0551, and 0553 racks](#) Previous topic: [Attaching the front or back ac electrical outlet](#)

Installing the 14S/11 rack

If you are installing the 14S/11 rack, complete the following steps:

1. Read the [Rack Safety Notices](#).
2. Open all boxes that you received with your order.
3. Follow the unpacking instructions that came with the rack to unpack the boxes.
4. Complete a parts inventory before installing the rack by following these steps:
 - a. Locate the kitting report in an accessory box.
 - b. Ensure that you received all the parts that you ordered.If there are incorrect, missing or damaged parts contact:

◆ Your reseller

5. Place the rack at the site you identified when completing your planning tasks.

Important: The 14S/11 rack cannot be stacked and it is not designed to support equipment on top of the rack.

6. Detach the rack keys from the door if they are still present and place them in a secure location.
7. Tighten the caster locking screws on each of the four casters to prevent the rack cabinet from moving.

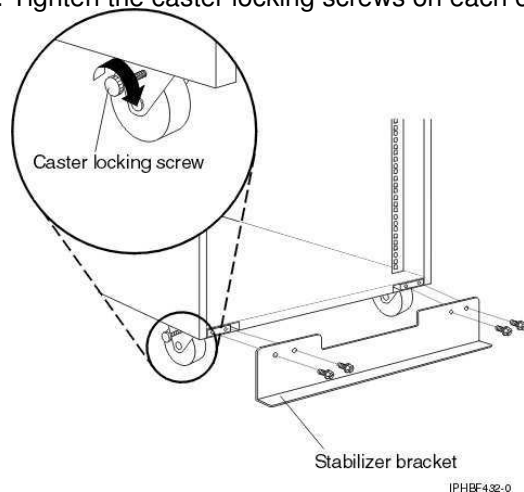


Figure 1. Tightening the caster locking screw and attaching the stabilizer.

8. Attach the stabilizer bracket by doing the following:
 - a. Locate the four screws that came with the bracket.
 - b. Align the holes on the bracket with the four holes on the rack cabinet. Make sure the lip of the stabilizer bracket is facing away from the rack cabinet.
 - c. Attach each of the four screws securely.

Important: You must extend the stabilizer bracket when installing heavy devices or extending existing devices on the rails in the rack cabinet.

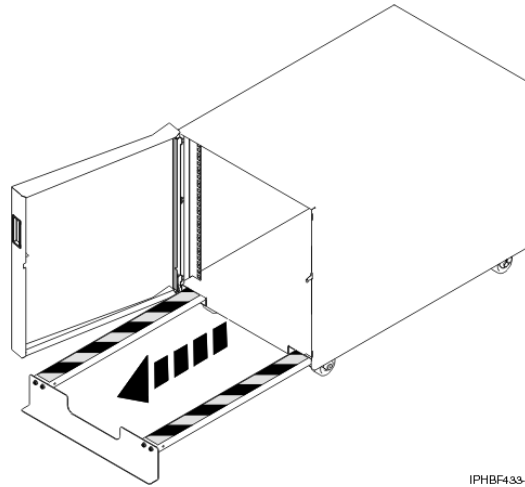


Figure 2. Extending the stabilizer bracket.

9. To attach the cage nuts, see [Installing the cage nuts in a 14S/25 or 14S/11 rack](#) and return to these instructions.

Note: You must use cage nuts to install optional devices that do not have threaded holes. Cage nuts install on the inside of the rack-mounting flanges with either a mounting tool or flat-blade screwdriver.

10. If you need to install the system unit in the rack, go to [Install the system unit or expansion unit into a rack](#). If your new system unit was preinstalled in the rack, return to the [initial server setup](#) checklist.

Note: The 14S/11 rack supports a maximum of 400 pounds (181.4 kg) of installed equipment.

Parent topic: [Installing the rack](#)

Installing the 14S/25 rack

If you are installing the 14S/25 rack, complete the following steps:

1. Read the [Rack Safety Notices](#).
2. Open all boxes that you received with your order.
3. Follow the unpacking instructions that came with the rack to unpack the boxes.
4. Complete a parts inventory before installing the rack:
 - a. Locate the kitting report in an accessory box.
 - b. Ensure that you received all the parts that you ordered.If there are incorrect, missing or damaged parts contact:

◆ Your reseller

- Place the rack at the site you identified when you completed your planning tasks for this order.

Note: The 14S/25 rack cannot be stacked and it is not designed to support equipment on top of the rack.

- Detach the rack keys from the door if they are still present and place them in a secure location.
- Tighten the caster locking screws on each of the two front casters to prevent the rack cabinet from moving.
- Locate and lower the four leveling feet until each pad touches the floor, using the small end of the wrench included in the hardware kit.

Note: The leveling feet only need to touch the floor so the rack cabinet does not move. The casters support the weight of the rack cabinet.

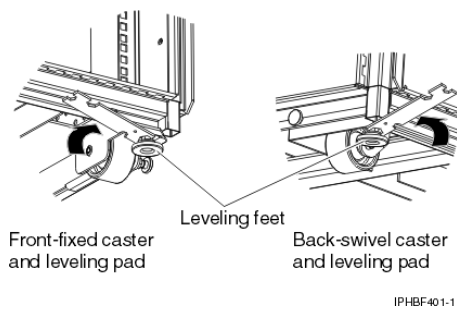


Figure 1. Lowering the leveling feet.

- Attach the stabilizer bracket by doing the following:
 - Locate the three screws that came with the stabilizer bracket.
 - Align the holes on the tip plate with the three holes on the rack cabinet. Make sure the lip of

the stabilizer bracket is facing away from the rack cabinet.

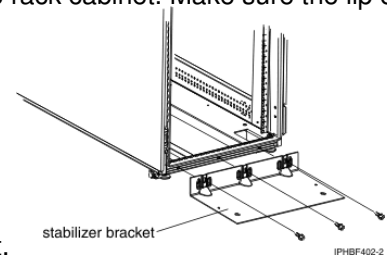


Figure 2. Installing the stabilizer bracket.

- Attach each of the three screws securely.

Note: If necessary, the rack cabinet may be bolted to the floor through the holes in the stabilizer bracket.

- To review the procedure for inserting the cage nuts, see [Installing the cage nuts in a 14S/25 or 14S/11 rack](#).

Note: You must use cage nuts to install optional devices that do not have threaded holes. Cage nuts are installed on the inside of the rack mounting flanges with either a cage-nut-insertion tool or flat-blade screwdriver.

11. If you need to install the system unit in the rack, go to [Install the system unit or expansion unit into a rack](#). If your new system unit was preinstalled in the rack, return to the [initial server setup](#) checklist.

Note: The 14S/25 rack supports a maximum of 1200 pounds (544.3 kg) of installed equipment.

- [Removing and replacing 14S/25 doors](#)
- [Removing and replacing 14S/25 side panels](#)
- [Installing the cage nuts in a 14S/25 or 14S/11 rack](#)

Parent topic: [Installing the rack](#)

Removing and replacing 14S/25 doors

To remove a 14S/25 front door, follow these steps.

1. Unlock and open the door.

Note: This action will release the door from the hinges.

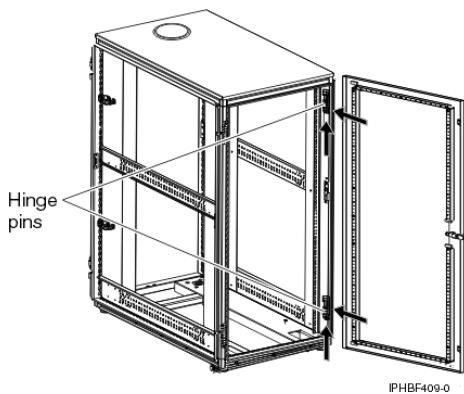


Figure 1. Removing the door.

2. Grasp the door firmly with both hands and pull it away from the hinges.

Parent topic: [Installing the 14S/25 rack](#)

Installing a 14S/25 front door

1. Grasp the door firmly with both hands and align the slots in the door with the hinge pins.
 2. While holding the door firmly with one hand, push each of the hinge pins down into the closed position.
-

Removing and replacing 14S/25 side panels

The 14S/25 standard racks come with side panels installed. Remove the side panels from a rack before you install or remove optional devices.

1. Unlock the side panels by pressing out on both locking latches to release the latches.

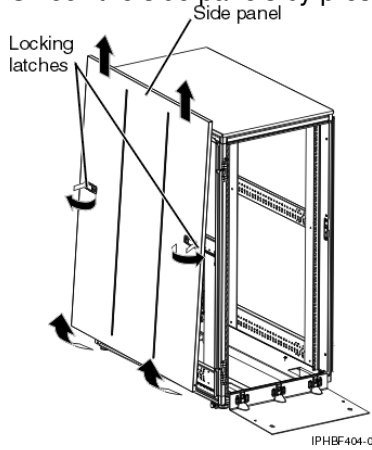


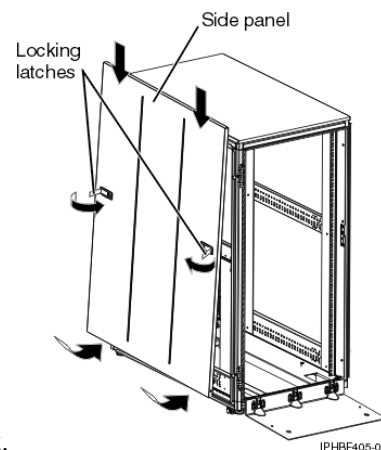
Figure 1. Removing the side panel.

2. Tilt the bottom of the side panel slightly toward you.
3. Lift the side panel away from the ridge on the top of the rack.
4. Repeat this procedure for the other side panel.

Parent topic: [Installing the 14S/25 rack](#)

Replacing a 14S/25 side panel

1. Tilt the bottom of the side panel slightly toward you.
- 2.



Place the top of the side panel onto the ridge on the top of the rack.

Figure 2. Replacing the side panel.

3. Slide the bottom of the side panel into place and close the locking latches.

Installing the cage nuts in a 14S/25 or 14S/11 rack

You must use cage nuts for all optional devices that do not have threaded holes. The rack comes with a supply of cage nuts. Cage nuts are installed on the inside of the rack-mounting flanges with either the cage-nut-insertion tool or a flat-blade screwdriver. The cage-nut-insertion tool comes with the rack and some optional devices.

To install the cage nuts with the cage-nut-insertion tool, complete the following steps.

1. Mark the precise place where you will mount optional equipment. For more information see, [Install the system unit or expansion unit into a rack](#) then return to these instructions.
2. To insert a cage nut using the cage-nut-insertion tool, complete the following steps:
 - a. From the inside of the rack-mounting flange, insert one edge of the cage nut into the hole.

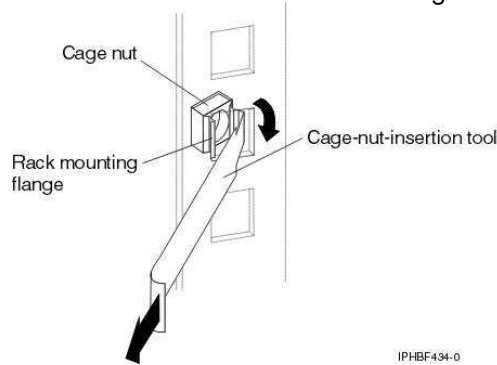


Figure 1. Inserting a cage nut using the insertion tool.

- b. Push the tool through the hole and hook the other edge of the cage nut.
 - c. Pull the tool and the cage nut back through the hole.
3. **Optional:** To install the cage nut using a flat-blade screwdriver, complete the following steps:
 - a. Hold the cage nut in one hand and compress the cage-nut clip with a flat-blade screwdriver.

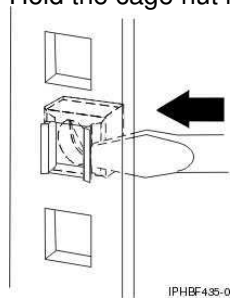


Figure 2. Inserting a cage nut using a flat-blade screwdriver.

- b. With the clip compressed, push the edge of the cage nut fully into the hole from the inside of the rack-mounting flange.
- c. Release the screwdriver pressure on the clip to lock the cage nut into place.

If you are installing the cage nuts as a part of installing a system unit into a rack, return to those instructions, or see [Install the system unit or expansion unit into a rack](#).

Parent topic: [Installing the 14S/25 rack](#)

Installing rack features

The following procedures describe how to install rack features. You can perform these tasks or contact a service provider to perform the tasks for you. You might be charged a fee by the service provider for this service.

For a PDF version of this information, click [PDF](#). Select the appropriate instructions from the following list:

- [Attaching the rack doors](#)
 - [Installing the rack security kit](#)
 - [Ruggedized kit](#)
 - [Connecting multiple racks with rack-to-rack attachment kit](#)
 - [Rack status beacon](#)
 - [Installing or removing a rack-mounted system-unit latch bracket](#)
-

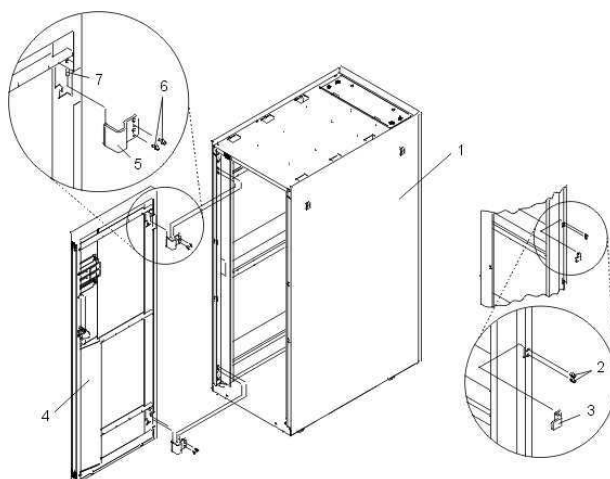
Attaching the rack doors

Depending on the model of the rack, the front door of a rack may be optional feature. If your system already has the front door installed, or does not have a front door to install, skip this step.

The following types of front doors are available:

- The front door is attached to open in only one direction, from the right to the left, while you are facing the front of the rack.
- The front door is attached to open either from the right to the left, or from the left to the right, while you are facing the front of the rack.
- The high-perforation front door is attached to open only in one direction, from the left to the right, while you are facing the front of the rack.

If you are attaching an or high-perforation front door, see [Attaching an high-perforation front door](#). If you are attaching a front door, go to [Attaching a front door](#).



- | | |
|-------------------------------------|-------------------------------|
| 1 Rack chassis | 5 Door hinge |
| 2 Front door latch retaining screws | 6 Door hinge retaining screws |
| 3 Front door latch | 7 Hinge pin |
| 4 Rack front door | |

Figure 1. Attaching the rack door.

- [Removing and replacing 14T/00, 14T/42, 0551, and 0553 side panels](#)
- [Attaching a front door](#)
- [Attaching an high-perforation front door](#)

Parent topic: [Installing rack features](#)

Removing and replacing 14T/00, 14T/42, 0551, and 0553 side panels

The 14T/00, 14T/42, 0551, and 0553 might have optional side panels. To remove and replace a side panel, complete the following procedure:

1. Unlock the side panels by pressing down on both locking latches to release the latches.

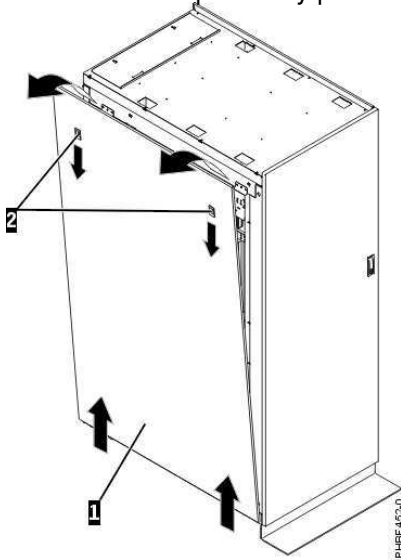


Figure 1. Removing the side panel.

Note: If your rack uses a ruggedized kit, you must remove the securing screw to allow each side panel to be removed. Refer to [Releasing the side panel with a ruggedized kit](#).

2. Tilt the top of the side panel slightly toward you.
3. Lift the side panel away from the ridge on the bottom of the rack.
4. Repeat this procedure for the other side panel.

Parent topic: [Attaching the rack doors](#)

Replacing a 14T/00, 14T/42, 0551, and 0553 side panel

1. Tilt the top of the side panel slightly toward you.
2. Place the bottom of the side panel onto the ridge on the bottom of the rack.

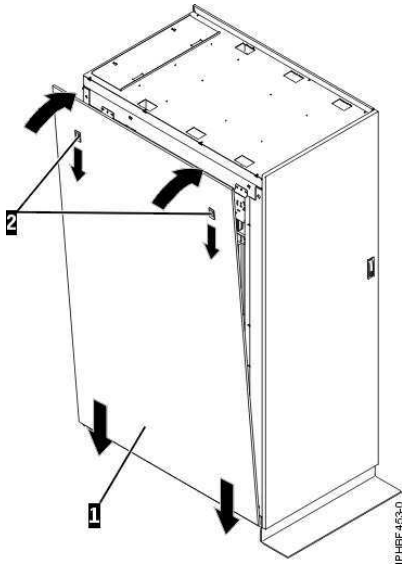


Figure 2. Replacing the side panel.

- Slide the top of the side panel into place and close the locking latches.

Note: If your rack uses ruggedized kit, you must install a securing screw into each side panel that was installed. Refer to [Ruggedized kit](#).

Attaching a front door

To install a front door to open from right to left, follow the installation steps described in [Attaching an high-perforation front door](#).

To install a front door to open from left to right, refer to the previous illustration, and perform the following steps:

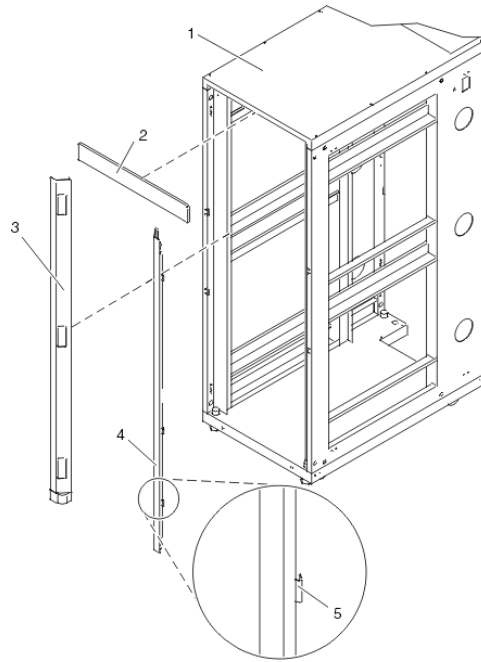
- Read the [Rack Safety Notices](#).
- Remove the door latch and cover plate and reinstall them on the opposite side of the door.
- Remove the door hinges and reinstall them on the opposite side of the door.
- Install the rack latch on the opposite side of the rack.
- Align the front door with the hinge pins, and lower the door into position.
- Adjust the latch so the door latches securely.

Parent topic: [Attaching the rack doors](#)

Attaching an high-perforation front door

To install the front door, do the following:

1. Read the [Rack Safety Notices](#).
2. Remove the top, left, and right trim panels.



- 1 Rack chassis
- 2 Top trim panel
- 3 Left side trim panel
- 4 Right side trim panel
- 5 Spring clip

Figure 1. Removing the trim panels.

3. Install the door latch and door hinges.
4. Align the lower hinge pin on the front door with the hinge, then partially insert the hinge pin into the hinge.
5. Align the upper hinge pin with the hinge, then seat the hinge pins into both the upper and the lower hinges.
6. For an front door, align the front door with the hinge pins, and lower the door into position.
7. For a high-perforation front door, align the door over the rack hinge, then move the hinge pin on the door up and lower the hinge pin into the hinge.
8. Adjust the latch so the door latches securely.

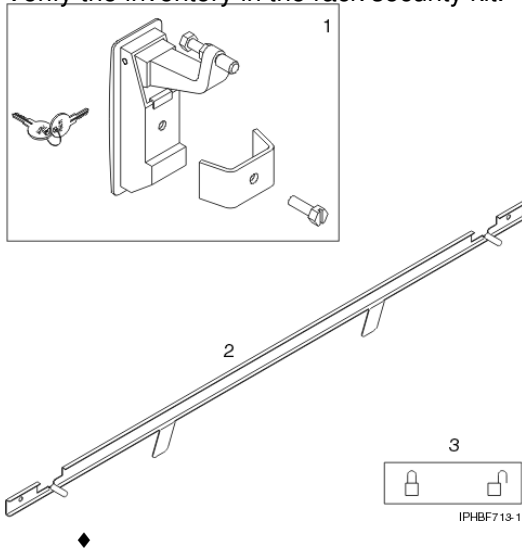
Note: If you are going to mount a door that opens from left to right, the components are mounted to the opposite side of the rack. The door latch will also need to be moved to the opposite side of the door.

Parent topic: [Attaching the rack doors](#)

Installing the rack security kit

To install a rack security kit (feature 6580) that consists of the security lock and security slide bars, complete the following procedure:

1. [Rack Safety Notices](#).
2. Verify the inventory in the rack security kit.



1 Two lock hardware kits. Each kit contains:

- Rack lock
- Bracket
- Screw
- Two keys

2 Two security slide bars

3 Two locked/unlocked stickers

Figure 1. Rack security kit inventory.

3. Remove the existing door latch.

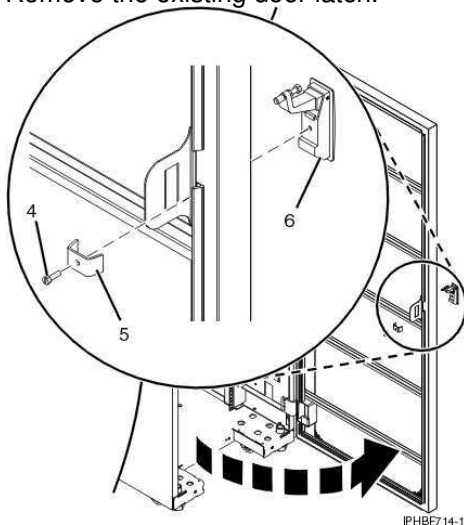


Figure 2. Removing the existing door latch.

- a. Open the front rack door.
- b. On the inside of the door, remove the screw 4 in [Figure 2](#), that secures the lock to the rack door.
- c. Remove the bracket 5.
- d. From the outside of the door, remove the door latch 6.

Note: If the rack is equipped with the ruggedized kit, remove the jam nut and hex nut from the existing door latch and reinstall it on the new door lock latch.

4. Install the locking latch.
 - a. Insert the keyed rack lock into the latch slot on the front of the door 6 in [Figure 2](#).
 - b. Secure the lock by attaching the lock bracket 5 with the screw 4, on the inside of the door.
5. Repeat steps 3 and 4 to install the second lock on the back rack door.
6. Install a security slide bar on the right side of the rack.

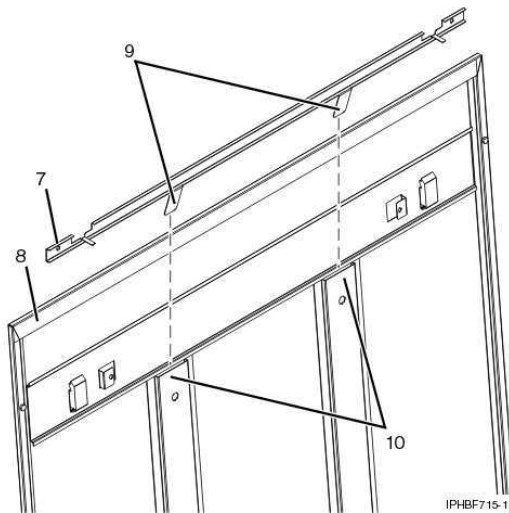


Figure 3. Installing a security slide bar.

Note: Each slide bar rail has two long tabs on the bottom of the rail. The slide bar rails are identical and can be installed on either the right or left side cover panel.

- a. Unlatch right-side cover panel and lean the panel back so that you can access the top of the panel.
- b. With the flat side of the slide bar rail 7 in [Figure 3](#), facing the inside of the cover panel 8, insert the two tabs 9, on the slide bar rail into the two vertical support channels 10 on the side cover panel.

Note: The slide rail should move front to back when installed correctly.

- c. Reinstall the side panel cover on to the rack.
- d. Lock the side panel covers by sliding the bars to the front of the rack.
- e. Place a locked/unlocked sticker on the inside of the cover panel so that when the slide bar is in the locked position the tab is over the locked symbol as shown in, 11, [Figure 4](#) and over the unlocked symbol, 12, when the slide bar is unlocked.

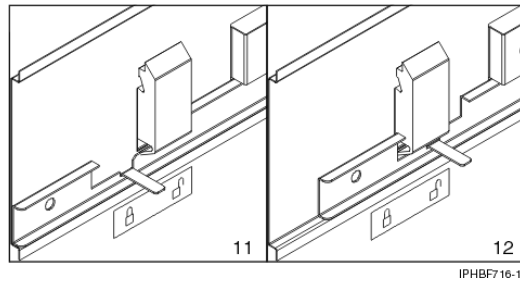


Figure 4. Placing the locked/unlocked sticker on the cover panel.
f. Repeat the above procedure for the left side of the rack.

Parent topic: [Installing rack features](#)

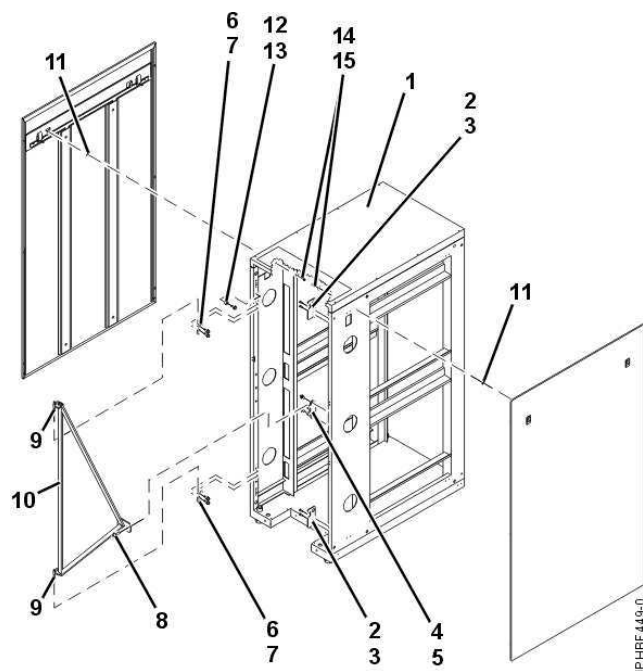
Ruggedized kit

The ruggedized kit should be ordered at the same time the rack is ordered. The ruggedized kit brackets are installed at the manufacturer.

Note: If you are installing a rack with the ruggedized kit and need to secure the rack to the floor, refer to [installing the rack](#).

The following illustration highlights the contents of the kit and the approximate location of each bracket and hinges if you need to uninstall and reinstall a part.

Figure 1. Ruggedized kit parts.



1 Rack

9 Brace hinges

- | | |
|-----------------------|-----------------------------------|
| 2 Spacer | 10 Brace |
| 3 Brace hinge | 11 Side-door securing screw mount |
| 4 Hinge pivot studs | 12 Spacer |
| 5 Brace latch bracket | 13 Screw |
| 6 Spacer | 14 Washer |
| 7 Screw | 15 Side door securing screw |
| 8 Brace thumbscrew | |

- [Releasing the ruggedized brace](#)
- [Releasing the side panel with a ruggedized kit](#)

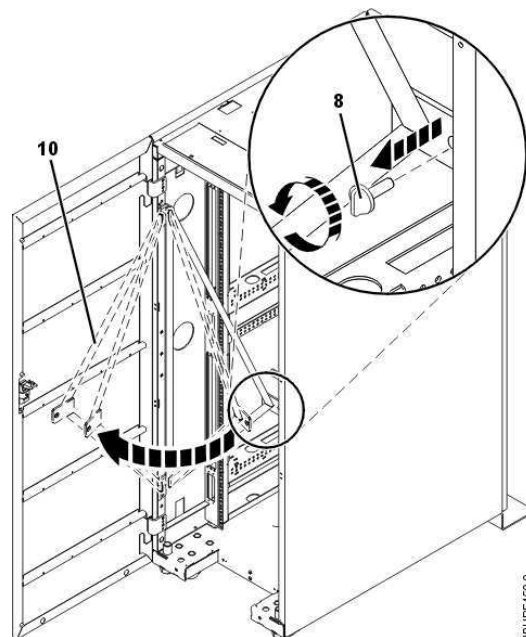
Parent topic: [Installing rack features](#)

Releasing the ruggedized brace

To access the back of a system that is installed in a rack with a ruggedized kit, complete the following steps to release the ruggedized brace:

1. Remove the brace thumbscrew 8.

Figure 1. Releasing the brace to access systems.



2. Swing the brace 10 out of the rack.
3. Access the system and reinstall the brace.

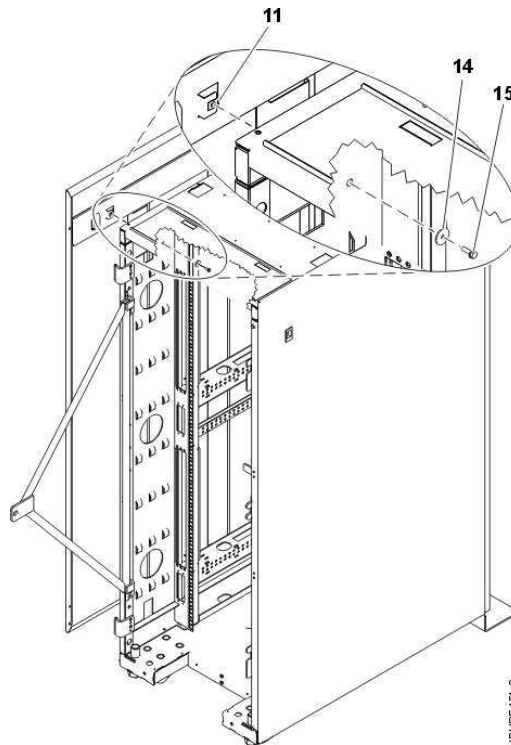
Parent topic: [Ruggedized kit](#)

Releasing the side panel with a ruggedized kit

The ruggedized kit contains securing screws that secure the side panels to the rack. To remove a securing screw, complete the following steps:

1. If necessary, open or remove the back rack door.
2. Locate the securing screw mount 11 for the side door that will be removed.

Figure 1. Removing the securing screws on the side panel.



3. Using a screwdriver, remove the securing screw 15 and washer 14 from the side panel. To remove the side panel, see [Removing and replacing 14T/00, 14T/42, 0551, and 0553 side panels](#).

Parent topic: [Ruggedized kit](#)

Connecting multiple racks with rack-to-rack attachment kit

This topic describes how to connect multiple racks to each other using a rack-to-rack attachment kit. To do this, you will need the rack-to-rack attachment kit (feature 7840):

1. Read the [Rack Safety Notices](#).
2. Remove the side panels from each rack, if they are installed. Only remove side panels from the sides that will be attached to each other. To do this:
 - a. Lift the two panel-release tabs up.
 - b. Pull the panel up and away from the rack chassis. This motion will release the panel from the two lower J brackets.
 - c. Store the side panels.
3. Remove the two Z brackets and the two J brackets. These brackets are used to hang the side panels.
4. Install the first two standoffs in the upper-left and lower-right corners of the first rack as shown in [Figure 1](#).
5. Install the second two standoffs in the upper-left and lower-right corners of the second rack as shown in [Figure 1](#).
6. Attach the long foam as shown in [Figure 1](#). For a model T42 rack, join the short foam to the end of the long foam, and adhere it to the frame length of the rack.
7. Position the racks together.
8. Align the standoff holes. You might need to adjust the leveling feet to do this.
9. Install a screw and washer into all four positions, but do not tighten.

Figure 1. Removing the side panels, Z and J brackets, and installing standoffs and long foam to connect multiple racks.

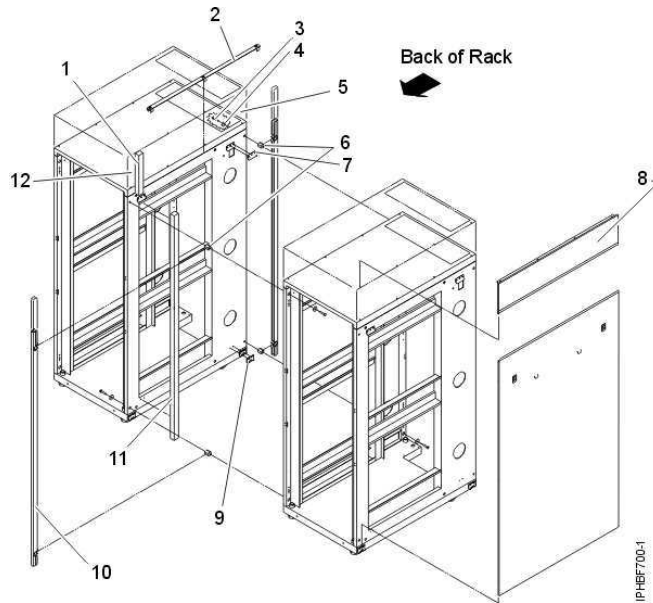
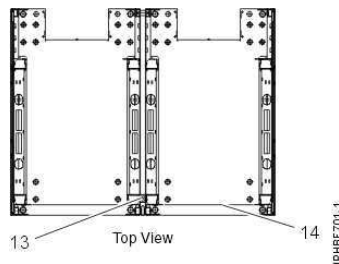


Figure 2. Location of foam strips (top view).



10. After all racks are bolted together, level the racks.
11. Tighten all four screws.
12. Snap on the trim pieces that go between the front and back racks.
13. Snap on the trim piece that goes on top and between the racks.
14. Install rack filler panels to cover the open areas at the front of the racks. All the gaps in the front of the rack must also be sealed, including the gaps between equipment. This step ensures that proper airflow within the rack is maintained.
15. Connect the cables that go between the racks.
16. If you are installing tip plates, go to step 5 in [Install a rack](#).

Parent topic: [Installing rack features](#)

Rack status beacon

This topic describes how to install a rack status beacon. This is a customer task. You can perform this task yourself, or contact a service provider to perform the task for you. The service provider might charge you for this service.

These procedures assume that the system units have been installed into the rack and have been connected to the power supply. If the system units have not been installed, refer to the installation instructions for your system unit.

The rack status beacon is designed to be placed on top of a rack and cabled to multiple system units inside the rack. The server firmware will illuminate the rack status beacon in response to any detected problems in the status. This helps you locate the problem more quickly.

- [Installing the rack status beacon](#)

- **Connecting multiple junction boxes**

Parent topic: [Installing rack features](#)

Installing the rack status beacon

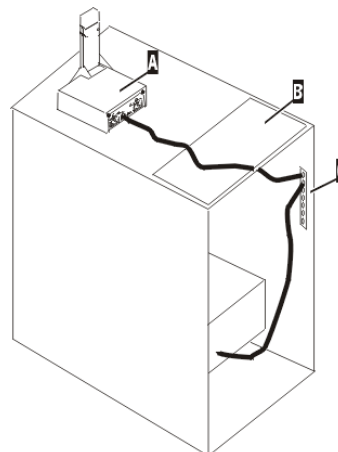
To install the rack status beacon, you need the following:

- Rack status beacon assembly.
- Two or more rack status beacon cables. You need one cable to connect the beacon to the junction box and one for each system unit that you want to connect to the beacon.
- One or two power cords.
- One or more rack status beacon junction boxes.
- One or more junction box cables.

To install the rack status beacon, follow these steps:

1. Place the rack status beacon, A, on top of the rack so that the light is pointing to the front of the rack.

Figure 1. Connecting the rack status beacon to the system unit through the junction box.

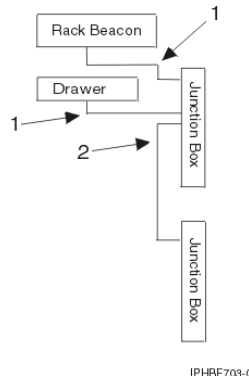


- A** Rack Beacon
- B** Cable Access Cover
- C** Junction Box

IPHBF702-0

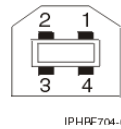
2. Plug the one end of the rack status beacon cable 1 into the port on the back of the rack status beacon assembly.

Figure 2. Connecting the rack status beacon and system unit to the junction box.



3. Thread the rack status beacon cable through the rack's cable access cover, B.
4. Plug the other end of the rack status beacon cable into the output port on the junction box, C.
5. To connect the junction box to the system unit, plug one end of a rack status beacon cable, 1, into an input port on the junction box.
6. Plug the other end of the second rack status beacon cable into the beacon port on the system unit. This port is labeled with a beacon symbol.

Figure 3. Rack status beacon port.



Note: On some system units, the orientation of the port is rotated.

7. To add additional system units to this rack status beacon, repeat steps 4 and 5 for each additional system unit. You can connect multiple junction boxes to add additional system units. Refer to [Connect multiple junction boxes](#).
8. Plug the power cords into the rack status beacon assembly. Only one power cord is required, but you can use two power cords for backup.
9. Plug the other end of the power cords into the rack power supply.

If you install the rack status beacon during initial server setup, the initial program load (IPL) will read the rack identification information. If you install the rack status beacon on system units that are running, you will need to start the system again.

Parent topic: [Rack status beacon](#)

Connecting multiple junction boxes

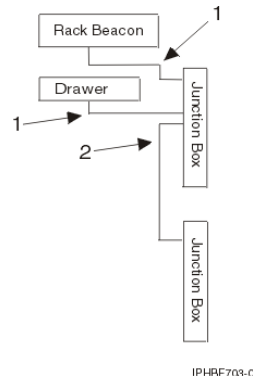
You can connect multiple junction boxes so that additional system units can be added to the rack status beacon.

To connect multiple junction boxes, you need the following additional equipment:

- One or more rack status beacon junction boxes
- One or more junction box cables. You need a junction box cable for each junction box that you want to add.

1. Plug the one end of the junction box cable, 2, into an input port on the first junction box.

Figure 1. Connect the rack status beacon and system unit to the junction box.



2. Plug a junction box cable into the output port of the additional junction box.
3. Connect additional system units to the additional junction box as described in [Installing the rack status beacon](#).
4. Repeat steps 1–3 for each additional junction box.

Parent topic: [Rack status beacon](#)

Installing or removing a rack-mounted system-unit latch bracket

These procedures describe how to install or remove the rack-mounted system-unit latch bracket. You can perform this task yourself, or contact a service provider to perform the task for you. The service provider might charge you for this service.

To install or remove a latch bracket, complete the following steps:

Note: The illustrations in these procedures may differ from your machine type and model.

1. Read the [Rack Safety Notices](#).
2. Open the front rack door.
3. To reinstall the latch brackets, align the latch bracket posts C with the holes in the system unit. Push the latch bracket A or B into place on the side of the system unit.

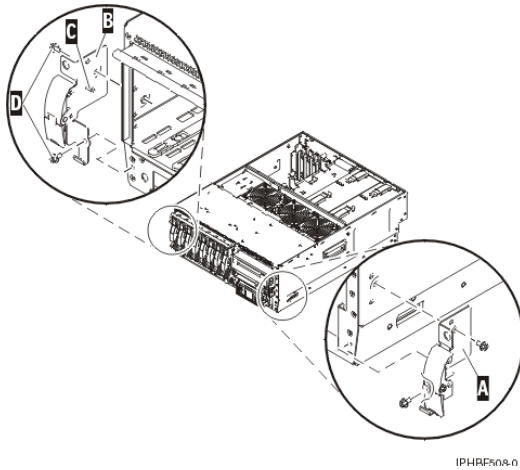


Figure 1. Reinstalling the latch brackets.

4. Secure the latch bracket with two retaining screws D, one on the front, and one on the side of the latch bracket.
5. Replace the front cover. See the instructions for your model.
6. Close the front rack door.

To remove a latch bracket, complete the following steps:

1. Remove the cover from the front of the system. See the instructions for your model.
2. Place the system in the service position. See the appropriate model's instructions.
3. Remove the retaining screws D located on the front and side of the latch bracket A or B.

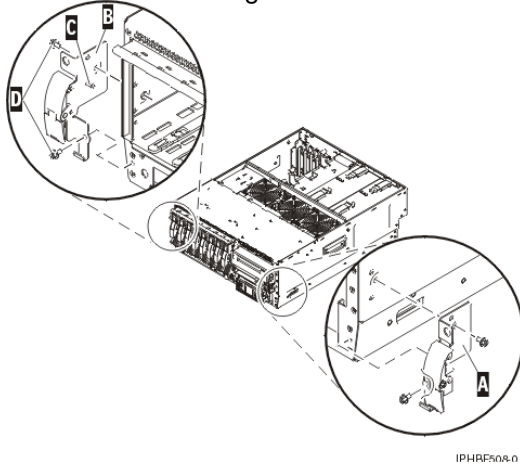


Figure 2. Removing the retaining screws.

4. Remove the latch bracket from the system unit.

Parent topic: [Installing rack features](#)

Installing a system or expansion unit into a rack

The following procedures describe how to install system units or expansion units into a rack. You can perform this task or contact a service provider to perform the task for you. You might be charged a fee by the service provider for this service. To view the PDF version, click [PDF](#). Select the appropriate instructions from this list:

- [Installing the model ESCALA PL 250R-VL or ESCALA PL 450R-XS or ESCALA PL 250R-VL or ESCALA PL 450R-XS into a rack](#)
 - [Installing the ESCALA PL 250R-L, PL 250R-L+ or PL 450R-VL+, or ESCALA PL 250R-L+ or ESCALA PL 450R-VL+ into a rack](#)
 - [Installing the ESCALA PL 250T/R, PL 250T/R+ or PL 450T/R-L+ in a rack](#)
 - [Installing the model ESCALA PL 450T/R, PL 450T/R+ or PL 850T/R-L+, ESCALA PL 450T/R, in a rack](#)
 - [Installing the model ESCALA PL 245T/R into a rack](#)
 - [Installing the model D24 into a rack](#)
 - [Installing the 50/88 or 05/88 expansion unit into a rack](#)
 - [Installing the 50/95, 05/95, or 11D/20 expansion unit into a rack](#)
 - [Installing the 57/90 or 11D/11 expansion unit into a rack](#)
-

Installing the model ESCALA PL 250R-VL or ESCALA PL 450R-XS or ESCALA PL 250R-VL or ESCALA PL 450R-XS into a rack

This topic describes how to install the model ESCALA PL 250R-VL or ESCALA PL 450R-XS or ESCALA PL 250R-VL or ESCALA PL 450R-XS into a rack. This is a customer task. You can perform this task yourself, or contact a service provider to perform the task for you. You might be charged a fee by the service provider for this service.

This procedure assumes that you are installing the model ESCALA PL 250R-VL or ESCALA PL 450R-XS or ESCALA PL 250R-VL or ESCALA PL 450R-XS into an existing rack. If the rack is not installed, go to the instructions for installing a rack and then return to this procedure for instructions on installing the system unit into the rack. See [Install a rack](#)

To install the model ESCALA PL 250R-VL or ESCALA PL 450R-XS or ESCALA PL 250R-VL or ESCALA PL 450R-XS into a rack, complete the following steps:

Attention: Installing the rails in the rack is a complex procedure. To install the rails correctly, you must perform each task in the following order.

1. Read the [Rack Safety Notices](#).
2. Complete a parts inventory (See [Complete a parts inventory](#)).
3. Locate the rack-mounting hardware kit and the system rail assemblies that were included with your system unit.

There are two types of rail kits for the model ESCALA PL 250R-VL or ESCALA PL 450R-XS or ESCALA PL 250R-VL or ESCALA PL 450R-XS. A sliding-rail kit A-G and a fixed rail kit H-K.

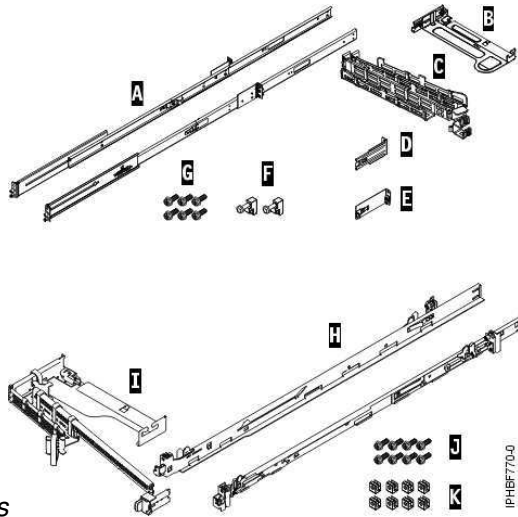


Figure 1. Rail Kits

Table 1. Rail kit parts

Sliding-rail kit parts	Fixed-rail kit parts
A- slide rails	H- fixed rails
B- cable-management arm mounting plate	I- cable-management arm
C- cable-management arm	J- screws
D- cable-management bracket	K- cage nuts
E- cable-management support bracket and security tab	
F- latch strikes	
G- screws	

Use the next topic to determine where to place your system unit in the rack.

Important: This system unit is one EIA unit high; you will need this information to complete the next section.

- [Determining the location](#)
- [Installing the slide-rail kit into the rack](#)
- [Installing the fixed-rail kit to the rack](#)

Parent topic: [Installing a system or expansion unit into a rack](#)

Determining the location

Before installing the system unit or expansion unit into a rack, complete the following steps:

1. Read the [Rack Safety Notices](#).
2. Plan where you will place the units. Place the larger and heavier units in the lower part of the rack.
3. If the rack contains filler panels, remove the filler panels to allow access to the inside of the rack enclosure where you plan to place the unit.

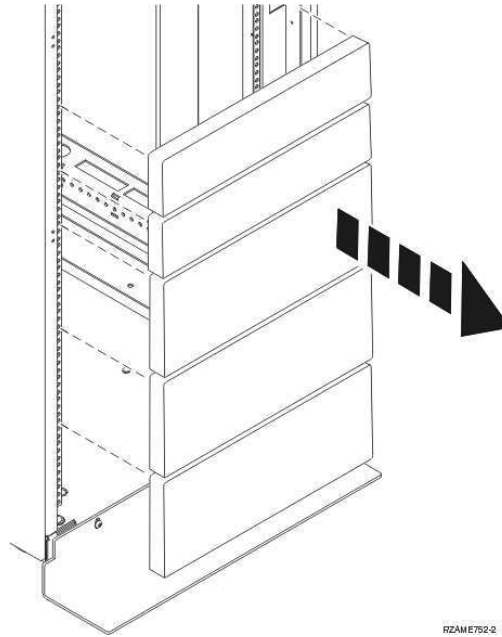


Figure 1. Removing the filler panels.

4. Remove the front and back rack doors if necessary.
5. Follow the instructions for marking the location without a template, see [Marking the location without a rack-mounting template](#).

- **Marking the location without a rack-mounting template**

Parent topic: [Installing the model ESCALA PL 250R-VL or ESCALA PL 450R-XS or ESCALA PL 250R-VL or ESCALA PL 450R-XS into a rack](#)

Marking the location without a rack-mounting template

A rack-mounting template is not included with the model ESCALA PL 250R-VL or ESCALA PL 450R-XS or ESCALA PL 250R-VL or ESCALA PL 450R-XS. These systems are one EIA unit tall.

To determine the mounting location, complete the following steps:

1. Determine where in the rack to place the system. Record the EIA location.

Note: An EIA unit on your rack consists of a grouping of three holes.

2. Facing the front of the rack and working from the right side, place a supplied self-adhesive dot next to the top hole of the EIA unit.

Note: The self-adhesive dots are used to aid in identifying locations on the rack. If you no longer have any of the dots, use some other form of marking tool to aid you in identifying hole locations (for example, tape, a marker, or pencil). If you are installing slide rails, place mark or self-adhesive dot on lower and the middle hole of each EIA unit.

3. Place another self-adhesive dot next to the bottom hole of the above the EIA unit.

Note: If you are counting the holes, begin with the hole identified by the first dot and count up two holes. Place the second dot next to the third hole.

4. Repeat steps 1 through 4 for the corresponding holes located on the left side of the rack.
5. Go to the back of the rack.
6. On the right side, find the EIA unit that corresponds to the bottom EIA unit marked on the front of the rack.
7. Place a self-adhesive dot at the bottom EIA unit.
8. Place a self-adhesive dot at the top hole of the EIA unit.
9. Mark the corresponding holes on the left side of the rack.

Next topic: [Attaching the mounting hardware to the rack](#) or [Attaching the mounting hardware to a tapped-hole rack](#).

Parent topic: [Determining the location](#)

Installing the slide-rail kit into the rack

If you are installing a model ESCALA PL 250R-VL or ESCALA PL 450R-XS or ESCALA PL 250R-VL or ESCALA PL 450R-XS that has the slide-rail kit, complete the procedures in the following subsections. If you are installing a system that has the fixed-rail kit, refer to [Installing the fixed-rail kit to the rack](#).

- [Installing the slide rails into the rack](#)
- [Installing the system unit on the slide rails](#)
- [Installing the cable-management arm](#)

Parent topic: [Installing the model ESCALA PL 250R-VL or ESCALA PL 450R-XS or ESCALA PL 250R-VL or ESCALA PL 450R-XS into a rack](#)

Installing the slide rails into the rack

Attention: Installing the rails in the rack is a complex procedure. To install the rails correctly, you must perform each task in the following order.

To install the slide rails into the rack, complete the following steps:

1. Insert the right-slide rail A marked "right" into the back-right rack mounting flange B locations. The two rail pins will protrude through the bottom and middle holes B on the EIA unit.

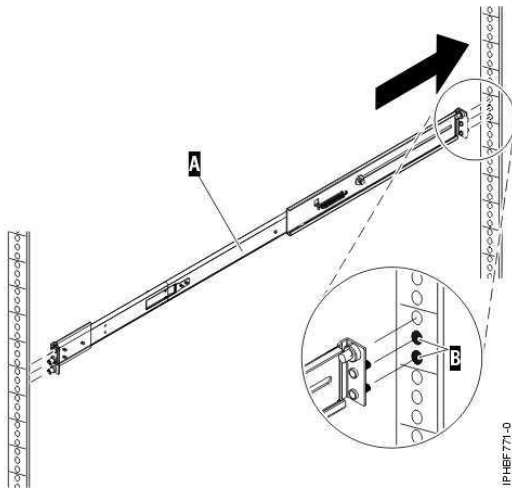


Figure 1. Installing the right-slide rail into the back of the rack

2. Push on the end of the rail A to compress the rail's spring-loaded mechanism and insert the rail into the front-right rack mounting flange B locations. The rail will decompress and the two rail pins will protrude through the bottom and middle holes B on the EIA unit.

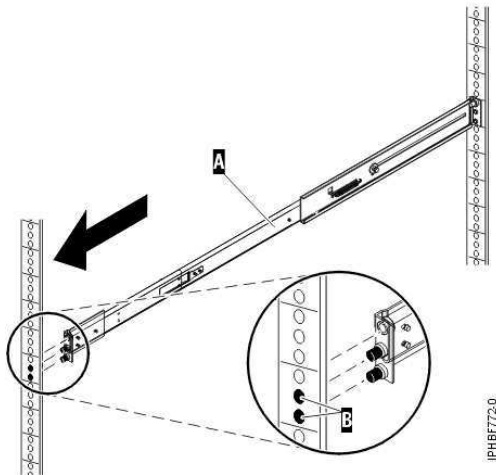


Figure 2. Installing the right-slide rail into the front of the rack

3. Repeat these steps to install the left-slide rail marked "left" into the rack.
4. From the front of the rack, install one latch strike C to the top pin of front of the right-slide rail A using the captive screw D. Finger-tighten the captive screw D.

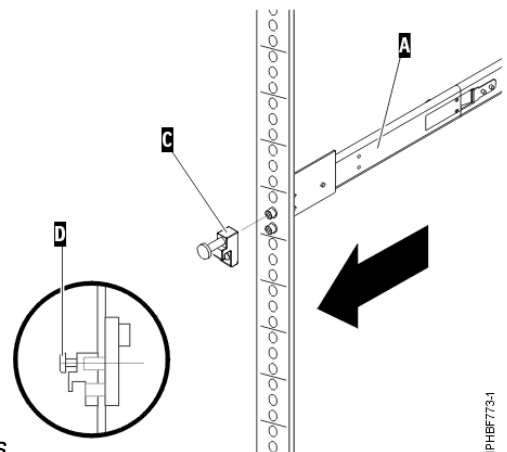
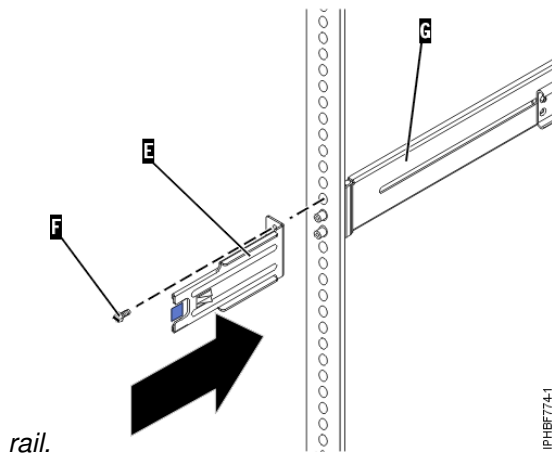


Figure 3. Installing the latch strike to the front of the rails.

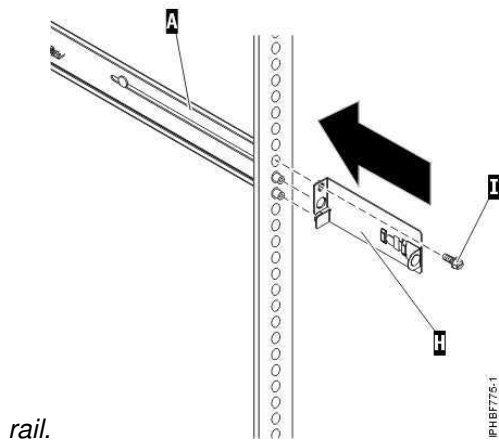
5. Repeat steps 1 and 2 to install the latch strike on the front of the left-slide rail.
6. Move to the back of the rack.
7. Insert screw F to attach the cable-management arm mounting bracket E to the back of the left rail G. Finger-tighten the screw.

Figure 4. Attaching the cable-management bracket to the back-left



8. Insert screw I to attach the cable-management arm support bracket H to the back-right rail A. Finger-tighten the screw.

Figure 5. Attaching the cable-management support bracket to the back-right



Note: The cable-management arm support bracket can be used to secure the cable-management arm during transport. If the mechanism is engaged after the cable-management arm is installed, you will not be able to slide the system from the rack.

Parent topic: [Installing the slide-rail kit into the rack](#)

Installing the system unit on the slide rails

Before installing the system unit on the slide rails, ensure that the stabilizers are extended and the rack stabilizer bracket is attached to the bottom front of the rack to prevent the rack from falling forward when the

rails are pulled out of the rack. Refer to [Installing the rack](#).

To install the system unit on the slide-rail assembly, complete the following steps:

1. From the front of the rack, fully extend the slide rails until the rails lock into place in the extended position A.

CAUTION:The latch strikes on the front of the rail and the cable-management arm brackets must be installed *before* installing a system unit onto the rails. If these parts are not installed, the installation may cause the rails to compress and the system may fall out of the rack.

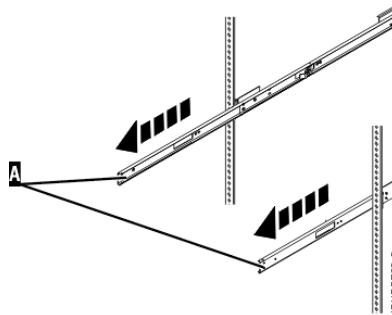


Figure 1. Extending the slide rails.

2. Lift the system to the height of the rails and position the set of wheels B at the back of the system between the rail guides.

CAUTION:This unit weighs approximately 17 kg (37 pounds), be sure you can safely support this weight when placing the system unit into the rack.

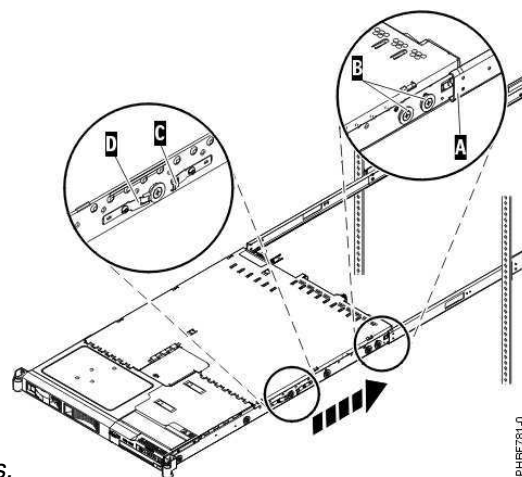


Figure 2. Installing the system on the slide rails.

3. Push the system into the slide rails until the slide release catches C lock into place. This locks the system in the service position on the slides. You will hear an audible click.
4. Press the front-slide rail release latches D on both sides of the slides rails.

Note: Take care not to pinch your fingers as you are holding down the release latches and pushing the system into the rack.

- Slide the server into and out of the rack to verify that the server moves freely without binding.

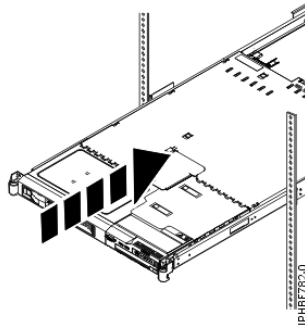


Figure 3. Slide the system into the rack.

Attention: Do not, under any circumstances, force the system unit into the slide rails. If the system does not glide freely into the rack, completely remove the system from the rails. After the system is clear of the rails, reposition the system, then reinsert the system into the rails. Repeat this process until the system glides freely into the rack.

- Completely tighten each the four screws were installed in the front and back of both rails.
- Push the system unit into place until the rack latches F lock into place.

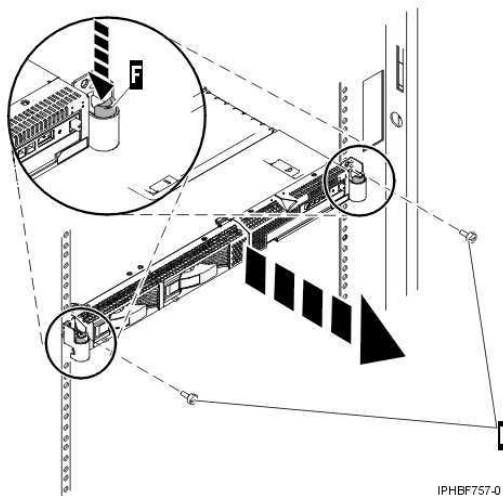


Figure 4. Rack latches and screws.

- If the rack will be transported, insert and tighten the two rack security screws E.

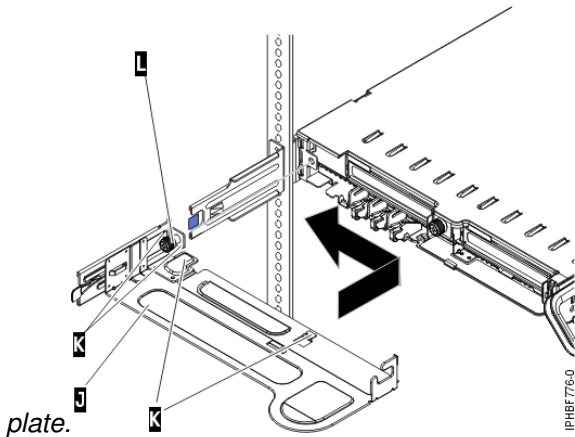
Parent topic: [Installing the slide-rail kit into the rack](#)

Installing the cable-management arm

To install the cable-management arm with the slide-rail kit, complete the following steps:

- From the back of the rack, align the tabs K on the cable-management arm mounting plate J with the slots on the back of the system unit. Slide the mounting plate J to the left to engage the tabs. Tighten the thumbscrew L to secure the mounting plate to the server.

Figure 1. Attaching the cable-management arm mounting



2. Align the ends of the cable-management arm N with the two mounting latches M. Slide the arm toward the server until both latches L lock into place in their mounting brackets with audible clicks. To verify installation of the cable-management arm, fully extend the server from the front of the rack and ensure that the arm moves freely without binding. Push the server back into the rack cabinet.

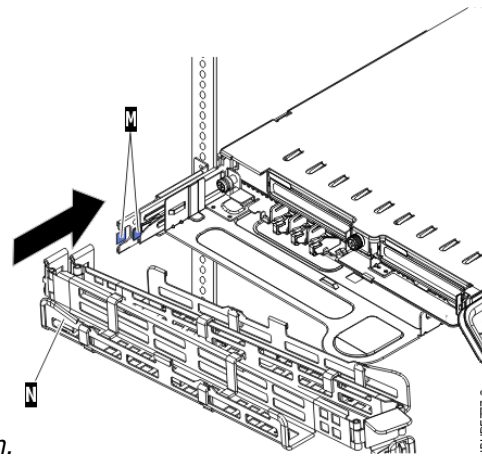


Figure 2. Attaching the cable-management arm.

3. Loosen the cable straps O on the cable-management arm N to prepare to cable the system.

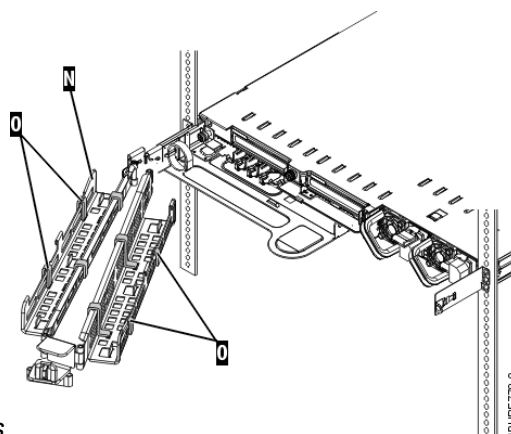


Figure 3. Loosening the cable straps.

4. Cable the system. See [Connect the power cables to the system](#) and return here.
 5. For additional security when you move or ship the rack, you can secure the cable-management arm to the support bracket P by inserting the tab Q on the arm into the support bracket P and installing the latch pin R.

Note: Performing this step prevents the system from sliding out of the rack. The cable-management arm must be disengaged from the support bracket for the system to slide out of the rack.

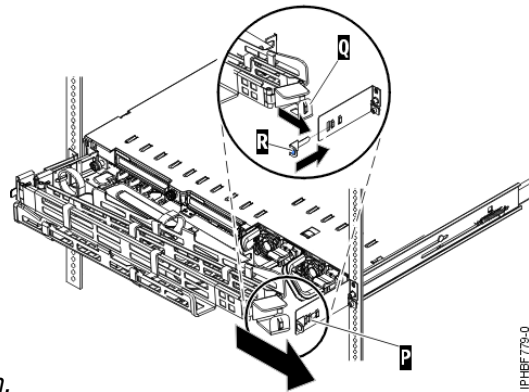


Figure 4. Securing the cable-management arm.

Parent topic: [Installing the slide-rail kit into the rack](#)

Installing the fixed-rail kit to the rack

If you are installing a model ESCALA PL 250R-VL or ESCALA PL 450R-XS that has fixed rails, complete the procedures in the following subsections. If you are installing a system that has slide rails, refer to [Installing the slide-rail kit into the rack](#).

- [Attaching the mounting hardware to the rack](#)
- [Attaching the mounting hardware to a tapped-hole rack](#)
- [Installing the cable-management arm](#)
- [Installing the system unit on the rail assembly](#)

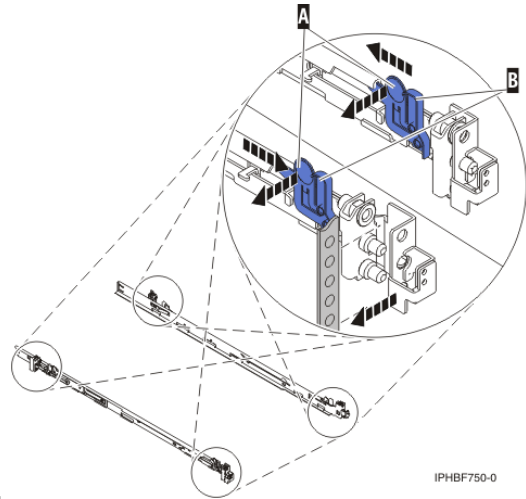
Parent topic: [Installing the model ESCALA PL 250R-VL or ESCALA PL 450R-XS or ESCALA PL 250R-VL or ESCALA PL 450R-XS into a rack](#)

Attaching the mounting hardware to the rack

Attention: Installing the rails in the rack is a complex procedure. To install the rails correctly, you must perform each task in the following order.

To install the rack-mounting hardware into the rack, complete the following steps:

1. Set the system rails to allow correct assembly with the rack and system unit. Refer to [Figure 1](#).
2. Pull the back latch assembly release tab A to the retracted position and lock the latch assembly B.



The back-alignment pins should be fully retracted.

Figure 1. System rail assembly setup

3. Pull the front latch assembly release tab to the retracted position and lock the latch assembly. The front-alignment pins should be fully retracted.

Note: Although the rail installation can be completed by one person, it is recommended that one person hold the rail in place in the front position while another locks the latch assembly in place.

4. Pull the back latch assembly release tab to the retracted position and lock the latch assembly. The back-alignment pins should be fully retracted.
5. From the back of the rack, insert the back-alignment pins (Figure 1) into the hole at the back of the rack identified by the self-adhesive placement dot that you previously installed. Have a second person hold the rail securely in the back hole.

Note: It may take some force to manipulate the alignment pins into their mounting locations. Be careful not to bend the alignment pins when inserting them into the rack.

6. Press the release tab A (Figure 1) to extend the back-alignment pins into the back of the rack. Ensure that the pin passes through the correct hole in the rack frame.

Note: After the back-alignment pins are in place, the rail may be adjusted to fit the rack depth by sliding the rail forward to align the front-alignment pins.

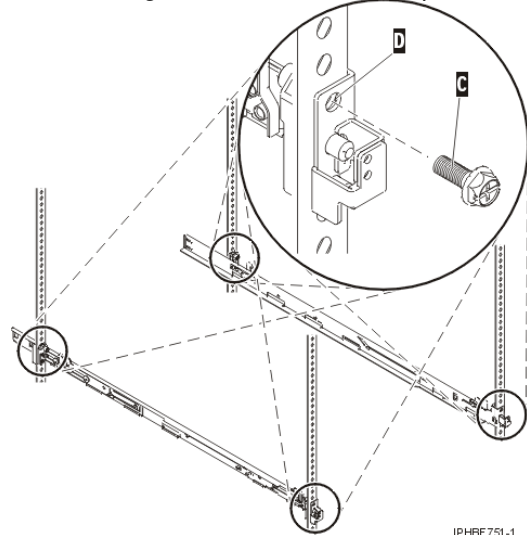
7. From the front of the rack, align the front-alignment pins of the rail with the holes at the front of the rack identified by the self-adhesive placement dot that you previously installed. The back EIA location will be one position higher than the front rail position. Ensure that the rails are level.
8. Press the release tab A (Figure 1) to extend the two front-alignment pins into the front of the rack. Ensure that the pins have passed through the correct holes in the rack frame.
9. From the back of the rack, finger-tighten one of the rail-retaining screws into the hole that is located between the two back-alignment pins.

Note: This action is necessary to ensure the rail stays in the correct location.

10. Repeat steps 1 through 9 for the rail assembly for the opposing rail assembly.

Note: If more than one person is available to install the rails, one person can be located at the back of the rack and one at the front of the rack to speed the installation of multiple sets of rails.

Note: If you will be transporting the rack to a new location or if the installation is located in an earthquake-prone area, secure each rail by attaching a system-retaining screw C into the hole position D



between the two front-alignment pins as shown in [Figure 2](#).

Figure 2. Securing the system rails.

Note: Depending on the type of rack that the rails are installed into, there may be leftover parts that were included for other types of racks.

Parent topic: [Installing the fixed-rail kit to the rack](#)

Attaching the mounting hardware to a tapped-hole rack

Attention: Installing the rails in the rack is a complex procedure. To install the rails correctly, you must perform each task in the following order.

To install the rack-mounting hardware into a tapped-hole rack, complete the following steps:

1. Press latch A and hold the rail slide to prevent the rail slide from moving to the extended position.

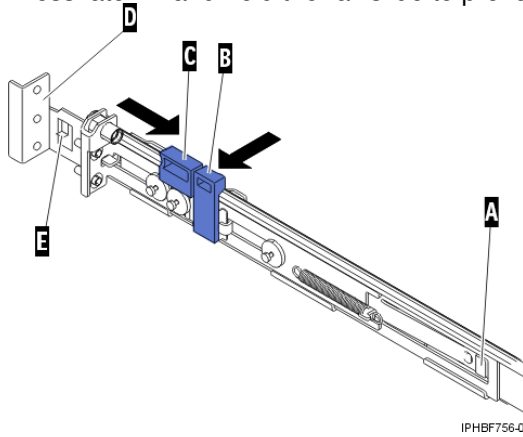


Figure 1. Tapped-hole rack rail assembly setup

2. Press tab B away from the rail.
3. Press tab C away from the back rail flange.
4. Pull the back latch assembly release tab to the retracted position and lock the latch assembly. The back-alignment pins should be in the fully retracted (open) position.

Attention: Do not remove tab E unless you are installing the rails into a tapped-hole rack with a thickness greater than 3.175 mm (0.125 in.). If you remove tab E, you must insert an M6 screw through all of the bottom holes in the rail-mount flange on each of the four flanges of the rack.

5. From the back of the rack, insert the back-alignment pins (Figure 1) into the hole at the back of the rack identified by the self-adhesive placement dot that you previously installed. Have a second person hold the rail securely in the back hole.
6. Press the release tab A (Figure 1) to extend the back-alignment pins into the back of the rack. Ensure that the pin passes through the correct hole in the rack frame.

Note: After the back-alignment pins are in place, the rail can be adjusted to fit the rack depth by sliding the rail forward to align the front-alignment pins.

7. From the front of the rack, align the front-alignment pins of the rail with the holes at the front of the rack identified by the self-adhesive placement dot that you previously installed. The back EIA location will be one position higher than the front rail position. Ensure that the rails are level.
8. Press the release tab A (Figure 1) to extend the two front-alignment pins into the front of the rack. Ensure that the pins have passed through the correct holes in the rack frame.
9. From the back of the rack, finger-tighten one of the rail-retaining screws into the hole that is located between the two back-alignment pins.

Note: This action is necessary to ensure the rail stays in the correct location.

10. Repeat the previous steps for the rail assembly on the opposing rail assembly.

Note: If more than one person is available to install the rails, one person can be located at the back of the rack and one at the front of the rack to speed the installation of multiple sets of rails.

Parent topic: [Installing the fixed-rail kit to the rack](#)

Installing the cable-management arm

To install the cable-management arm, complete the following steps:

1. From the back of the rack, locate the cable-management arm flange A located on the fixed back portion of the left system rail assembly (viewing from the back of the rack).
2. Attach the cable-management arm clasp B to the rail by pushing the clasp onto the rail until it locks into place.

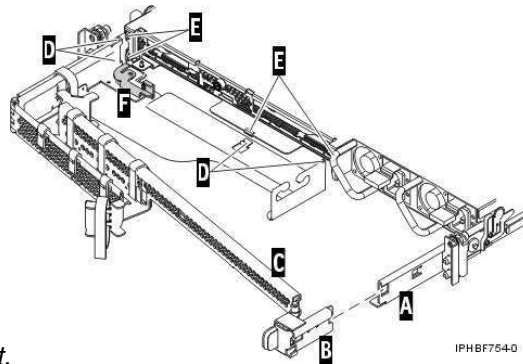


Figure 1. Cable-management arm and system unit.

3. Attach the other end of the cable-management arm C to the back of the system unit by doing the following:
 - a. Align the tabs D on the cable-management arm with the slots E on the back of the system unit.
 - b. Slide the cable-management arm to the left, securing it into place. Make sure all the tabs fit into the slots.
 - c. Push the locking lever F into the locked position.

Note: Ensure that the cable-management arm C is level so that it moves freely.

Next topic: [Connect the power cables to the system.](#)

Parent topic: [Installing the fixed-rail kit to the rack](#)

Installing the system unit on the rail assembly

Before installing the system unit on the rail assembly, ensure that the stabilizers are extended and the rack stabilizer bracket is attached to the bottom front of the rack to prevent the rack from falling forward when the rails are pulled out of the rack. Refer to [Installing the rack..](#)

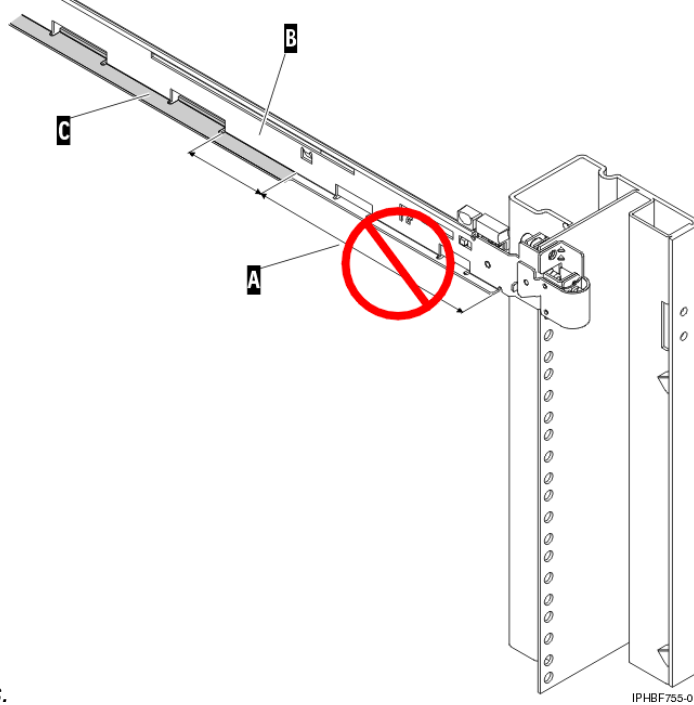
To install the system unit on the rail assembly, complete the following steps:

1. Lift the system unit, and position the back of the system unit over the rails.

CAUTION:This unit weighs approximately 17 kg (37 pounds) be sure you can safely support this weight when placing the system unit into the rack.

If you are installing a system into a tapped hole rack, *do not* use the area A to support the system during installation. The back of the system chassis will be located on position B and area C is the acceptable installation support area.

Figure 1. Tapped-hole rack installation



areas.

2. Simultaneously depress the safety latches D located near the middle of each side of the system, and slide the system unit into the rack.

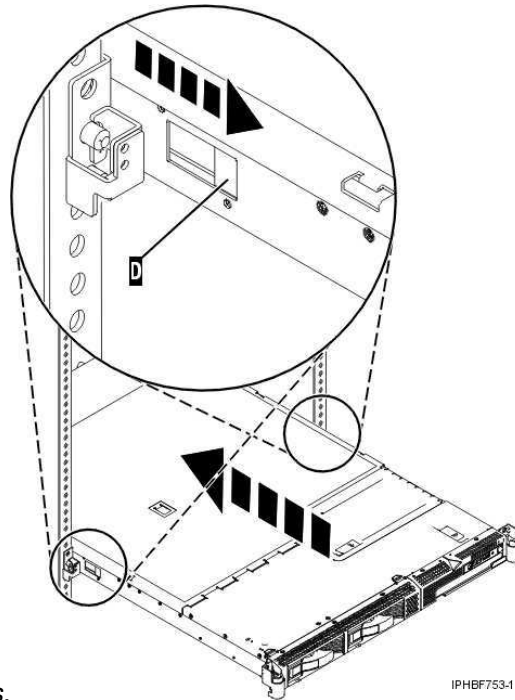


Figure 2. Rack safety latches.

Attention: Do not, under any circumstances, force the system unit onto the rails. If the system drawer does not glide freely into the rack, completely remove the drawer from the rails. After the drawer is clear of the rails, reposition the system, then reinsert the system onto the rails. Repeat this process until the system drawer glides freely into the rack.

3. During the installation process you should hear the safety guides engage into the rails. You may have to move the drawer side-to-side to ensure the safety guides engage properly. The back of the system should be in the A area of the rails.
4. Push the system unit into place until the rack latches F lock into place.

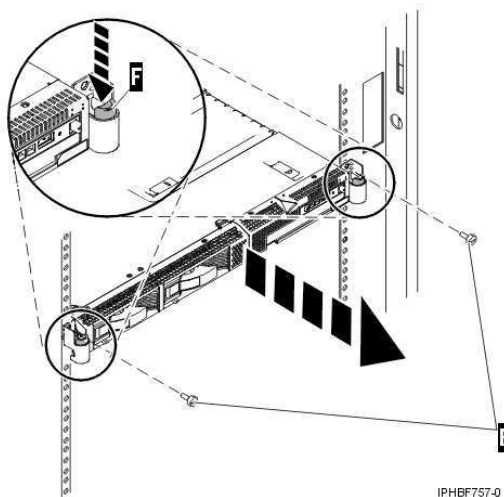


Figure 3. Rack latches and screws.

5. Replace and tighten the two screws E that secure the system unit to the rack as shown in [Figure 3](#).

Parent topic: [Installing the fixed-rail kit to the rack](#)

Installing the ESCALA PL 250R-L, PL 250R-L+ or PL 450R-VL+, or ESCALA PL 250R-L+ or ESCALA PL 450R-VL+ into a rack

Use this procedure if you are installing the model ESCALA PL 250R-L, PL 250R-L+ or PL 450R-VL+, or ESCALA PL 250R-L+ or ESCALA PL 450R-VL+ into an existing rack. If the rack is not installed, go to the instructions for [installing the rack](#), and then return to this procedure for instructions on installing the system unit into the rack.

To install model ESCALA PL 250R-L, PL 250R-L+ or PL 450R-VL+, or ESCALA PL 250R-L+ or ESCALA PL 450R-VL+ into a rack, complete following procedure:

1. Read the [Rack Safety Notices](#). Failure to read these notices could cause damage to the equipment or injury to the installer.
2. Complete a parts inventory (See [Complete a parts inventory](#)).
3. Locate the rack-mounting template, the rack-mounting hardware kit, and the system rail assemblies that were included with your system unit.

The system rails are front-to-back and left-to-right side dependent. The rails are labeled "left" and "right" to indicate their placement when you face the front of the rack. There two large latch assemblies at the back of each rail. These latch assemblies go in the back of the rack.

4. Determine where you will locate the expansion unit in the rack. See [Determining location](#).
5. Mark the location. See [Mark the location using rack-mounting template](#). If you do not have the rack-mounting template, see [Mark the location without a rack-mounting template](#).

Next topic: [Attach the mounting hardware to the rack](#).

1. [Determining the location](#)
2. [Attaching the mounting hardware to the rack](#)
3. [Installing the system unit on the rail assembly](#)
4. [Installing the cable-management arm](#)

Parent topic: [Installing a system or expansion unit into a rack](#)

Determining the location

Before installing the system unit or expansion unit into a rack, complete the following steps:

1. Read [Rack Safety Notices](#). Failure to read these notices could cause damage to the equipment or injury to the installer.
2. Plan where you will place the units. Place the larger and heavier units in the lower part of the rack. The ESCALA PL 250R-L, PL 250R-L+ or PL 450R-VL+, and ESCALA PL 250R-L+ or ESCALA PL 450R-VL+ system units are two EIA units high.
3. If necessary, remove the filler panels to allow access to the inside of the rack enclosure where you plan to place the unit.

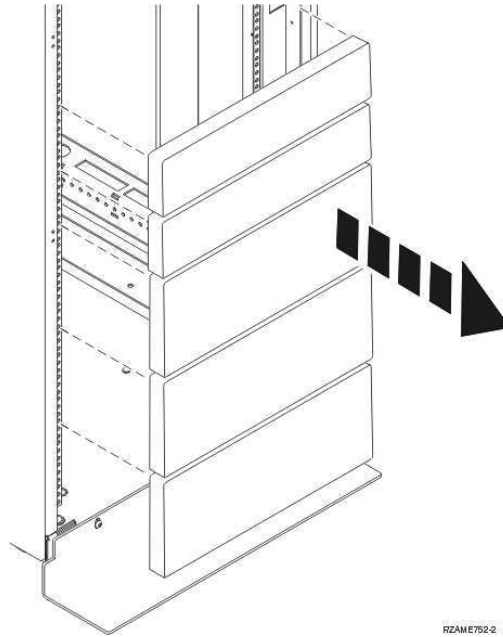


Figure 1. Removing the filler panels.

4. Remove the front and back rack doors if necessary.
5. Use the rack-mounting template to mark the location (see [Mark location using rack-mounting template](#).) Or, if you do not have a rack-mounting template, follow the instructions for marking the location without a template (see [Mark location without rack-mounting template](#)).

- [Marking the location using a rack-mounting template](#)
- [Marking the location without a rack-mounting template](#)

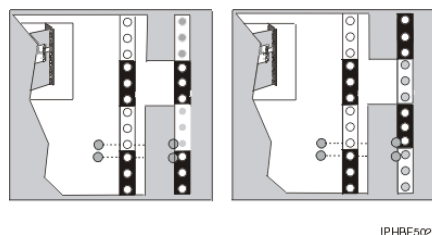
Parent topic: [Installing the ESCALA PL 250R-L, PL 250R-L+ or PL 450R-VL+, or ESCALA PL 250R-L+ or ESCALA PL 450R-VL+ into a rack](#) **Next topic:** [Attaching the mounting hardware to the rack](#)

Marking the location using a rack-mounting template

If you have a rack-mounting template, review the following information:

1. Using the rack-mounting template, determine where in the rack to place the system unit. Install units in the lower part of the rack first. Place larger and heavier units in the lower part of the rack.

Figure 1. Example of a rack-mounting template.

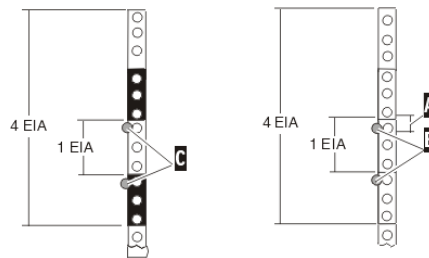


Note: The front of the rack-mounting template has printed illustrations designed to help you identify the EIA location holes to be used when you add units to the rack. Do not use the rack-mounting template without completing the following steps.

2. Note the following when using the rack-mounting template:
 - ◆ Each black or white unit on the template is equal to one EIA unit.
 - ◆ Each EIA unit consists of three holes.
 - ◆ The EIA units illustrated on the template must be aligned with the EIA units located on the rack.
 - ◆ It is not necessary to align like-colored EIA units. For example, a black EIA unit on the rack-mounting template can be aligned with a white EIA unit located on the rack.
 - ◆ The template is two-sided. When using the template, ensure that the appropriate side of the template is facing out.

Figure 2 shows one EIA unit and four EIA units. Depending on the rack manufacturer, the EIA units might be separated either by color or by a line. The holes along the rail are not evenly spaced. If your rack has no color or line separation between EIA units, each EIA unit begins where the hole spacing A is closest together.

Figure 2. EIA units.



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To use the rack-mounting template, complete the following steps:

- a. Remove the protective coating from each adhesive strip located on the back of the rack-mounting template. Lightly press the template into position on the rack. Ensure that both the left and right sides are at the corresponding EIA locations.

Note: The tabs on each side of the template show a notch to indicate the correct spacing between the front flanges.

- b. Locate the dots, printed on the left and right side of the template. Place a self-adhesive dot directly across from the template's printed dots on or near the rack's EIA numbering strip. You will be using these dots to aid in correctly positioning the rail-alignment pins located on the front of each rail.
- c. Remove the rack-mounting template from the front of the rack. The front of your rack now contains dots.
- d. Mount the rack-mounting template to the rack's back EIA frame. Place the rack-mounting template at the same EIA-numbered location that was used on the front of the rack.
- e. Wrap a self-adhesive dot directly across from the template's printed dots. Ensure that a portion of the self-adhesive dot wraps around the rack frame so that it can be seen from the front of the rack.
- f. Remove the rack-mounting template from the back of the rack. The back of your rack now contains dots that have been partially wrapped around the frame.

Parent topic: [Determining the location](#)

Marking the location without a rack-mounting template

If you do not have a rack-mounting template, complete the following steps:

1. Determine where in the rack to place the system. Record the EIA location.
2. Note the following information:
 - ◆ Each EIA unit consists of three holes.
 - ◆ The model ESCALA PL 250R-L, PL 250R-L+ or PL 450R-VL+, and ESCALA PL 250R-L+ or ESCALA PL 450R-VL+ system units are two EIA units high.
3. Facing the front of the rack and working from the right side, place a supplied self-adhesive dot next to the middle hole of the bottom EIA unit that you selected.

Note: The self-adhesive dots are used to aid in identifying locations on the rack. If do not have any of the dots, use some other form of marking tool to aid you in identifying hole locations (for example, tape, a marker, or pencil).

4. Place another self-adhesive dot next to the bottom hole of the above EIA unit. There will be one hole between the dots.
5. Repeat steps 3 through 4 for the corresponding holes located on the left side of the rack.
6. Go to the back of the rack. On the right side, find the EIA unit that corresponds to the bottom EIA unit marked on the front of the rack.
7. Place a self-adhesive dot at the middle hole of the bottom EIA unit.
8. Place a self-adhesive dot at the bottom hole of the next (above) EIA unit.
9. Mark the corresponding holes on the left side of the rack.

Parent topic: [Determining the location](#)

Attaching the mounting hardware to the rack

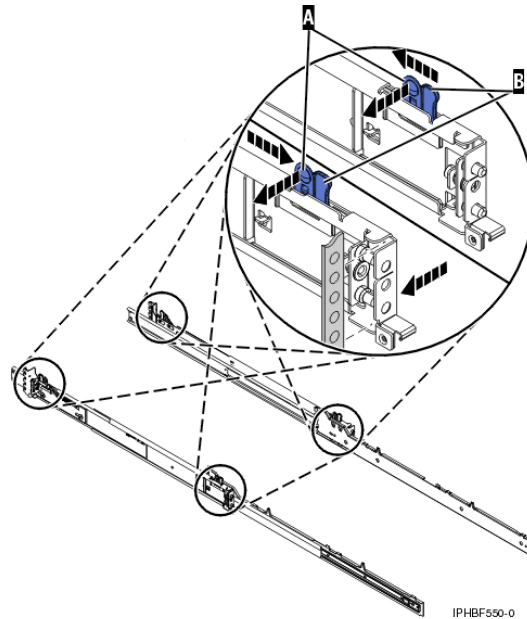
Attention: Installing the rails in the rack is a complex procedure. To install the rails correctly, you must perform each task in the following order. Failure to do so might cause rail failure and potential danger to yourself and the system unit.

To install the rack-mounting hardware into the rack, complete the following steps:

1. Setup the system rails to allow correct assembly with the rack and system unit. Refer to [Figure 1](#) and then follow these steps:
 - a. Fully extend each rail assembly.
 - b. Pull the back latch assembly release tab A to the retracted position and lock the latch assembly B. The back-alignment pins should be fully retracted.
 - c. Pull the front latch assembly release tab to the retracted position and lock the latch assembly. The front-alignment pins should be fully retracted.

Note: Although the rail installation can be completed by one person, it is easier if one person holds the rail in place in the front position while another person locks the latch assembly in place.

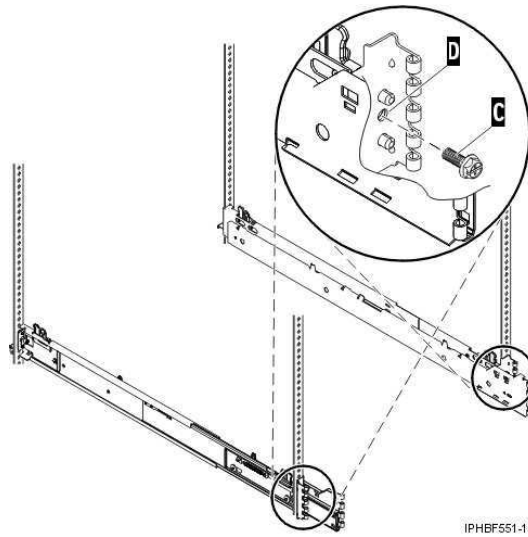
Figure 1. System rail assembly setup.



2. From the back of the rack, insert the front-alignment pins (Figure 1) into the hole at the front of the rack identified by the self-adhesive placement dot that you previously installed. Have a second person hold the rail securely in the front hole.
3. Press the release tab A (Figure 1) to extend the front-alignment pins into the front of the rack. Ensure that the pin passes through the correct hole in the rack frame.
4. From the front of the rack, align the back-alignment pins of the rail with the holes at the back of the rack identified by the self-adhesive placement dot that you previously installed. The back EIA location will be one position higher than the front rail position. Ensure that the rails are level.
5. Press the release tab A (Figure 1) to extend the two back-alignment pins into the back of the rack. Ensure that the pins have passed through the correct holes in the rack frame.
6. From the back of the rack, finger tighten one of the rail-retaining screws into the hole that is located between the two back alignment pins.
7. Repeat steps 2 through 6 for the rail assembly on the other side of the rack.

Note: If you are transporting the rack to a new location, secure each rail by attaching a system-retaining screw C into the hole position D between the front-alignment pins as shown in Figure 2.

Figure 2. Securing the system rails.



Next topic: [Install the system unit on the rail assembly.](#)

Parent topic: [Installing the ESCALA PL 250R-L, PL 250R-L+ or PL 450R-VL+, or ESCALA PL 250R-L+ or ESCALA PL 450R-VL+ into a rack](#) **Previous topic:** [Determining the location](#) **Next topic:** [Installing the system unit on the rail assembly](#)

Installing the system unit on the rail assembly

Before installing the ESCALA PL 250R-L, PL 250R-L+ or PL 450R-VL+, or ESCALA PL 250R-L+ or ESCALA PL 450R-VL+ system unit on the rail assembly, ensure that the stabilizers are extended and the tip plate is attached to the bottom front of the rack to prevent the rack from falling forward when the rails are pulled out of the rack. Refer to [Installing the rack](#).

To install the system unit on the rail assembly, complete the following steps:

1. Fully extend both rails.
2. Using two people, lift the system unit, and position the system on the extended rails.

CAUTION: This unit weighs between 17.7 kg (39 pounds) and 21.7 kg (48 pounds). Two people are required to safely move it.

3. Align the slots on the system unit chassis with the tabs A on the rails.
4. Lower the system unit so that the tabs slide into the slots on the chassis B. The system unit will lock into place.
5. Simultaneously release the blue safety latches C located near the front of the rail assembly, and push the system unit into the rack.

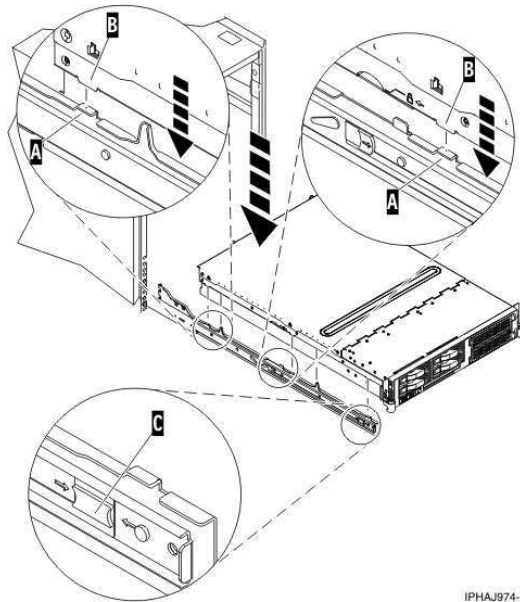


Figure 1. Lowering the system onto the rails.

6. Slide the system unit into and out of the rack two or three times to align the system unit to the rails. The system unit should glide on the rails.

Attention: *Do not*, under any circumstances, force the rails. If the system drawer does not glide freely into the rack, completely remove the drawer from the outer rails. After the drawer is clear of the outer rails, reposition the system, then reinsert the inner rails. Repeat this process until the system drawer glides freely into the rack

7. Push the system unit into the rack.

After the system rails are installed, do not extend them past their safety latches. The safety latches prevent the rails from overextending and separating, thereby preventing the system unit from being pulled out too far and being dropped.

Next topic: [Install the cable-management arm.](#)

Parent topic: [Installing the ESCALA PL 250R-L, PL 250R-L+ or PL 450R-VL+, or ESCALA PL 250R-L+ or ESCALA PL 450R-VL+ into a rack](#) **Previous topic:** [Attaching the mounting hardware to the rack](#) **Next topic:** [Installing the cable-management arm](#)

Installing the cable-management arm

To install the cable-management arm, complete the following steps:

1. From the back of the rack, locate the cable-management arm flange C located on the fixed back portion of the left system rail assembly B.

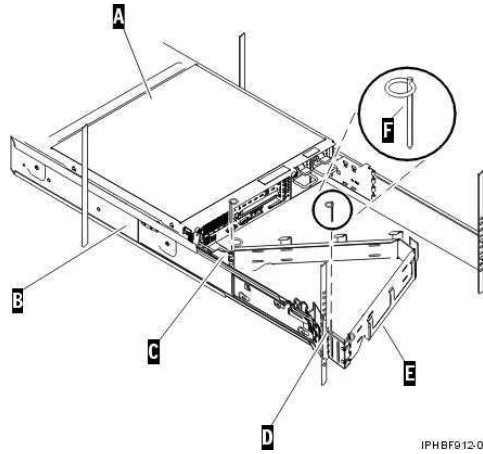


Figure 1. Installing the cable management arm.

2. Use pin F to pin the cable-management arm E to the rack frame D.

Note: If access to the back of the rack is obscured by a large number of existing cables, it might be easier to remove the small connecting hinge from the cable-management arm and attach it first. Then, you can attach the remaining section of the cable-management arm to the connecting hinge.

3. Use pin F to pin the other end of the cable-management arm to the flange C attached to the sliding portion of the left system rail assembly B.

Note: Ensure that the cable-management arm is level so that it moves freely.

Next topic: [Connect the power cables to the system.](#)

Parent topic: [Installing the ESCALA PL 250R-L, PL 250R-L+ or PL 450R-VL+, or ESCALA PL 250R-L+ or ESCALA PL 450R-VL+ into a rack](#) **Previous topic:** [Installing the system unit on the rail assembly](#)

Installing the ESCALA PL 250T/R, PL 250T/R+ or PL 450T/R-L+ in a rack

This topic describes how to install the ESCALA PL 250T/R, PL 250T/R+ or PL 450T/R-L+ or server into a rack. You can perform this task yourself, or contact a service provider to perform the task for you. You might be charged a fee by the service provider for this service.

This procedure assumes that you are installing the ESCALA PL 250T/R, PL 250T/R+ or PL 450T/R-L+ into an existing rack. If the rack is not installed, go to the instructions for installing a rack and then return to this procedure for instructions on installing the system unit into the rack. See [Installing a rack](#)

Note: This procedure applies only to the models that are designed to be mounted in a rack. Do not attempt to install a stand-alone model in a rack unless you have the conversion kit and have converted the stand-alone

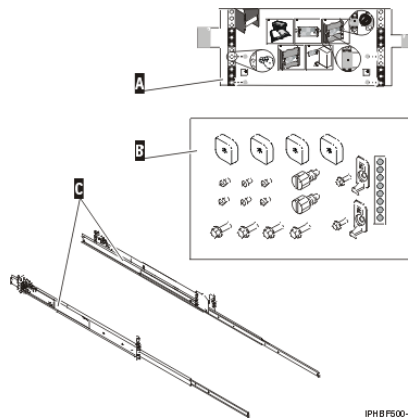
system unit for rack installation. See [Converting the stand-alone model ESCALA PL 250T/R for rack installation](#).

To install ESCALA PL 250T/R, PL 250T/R+ or PL 450T/R-L+ into a rack, complete the following steps:

CAUTION: Installing the rails in the rack is a complex procedure. To install the rails correctly, you must perform each task in the following order. Failure to do so might cause rail failure and potential danger to yourself and the system unit.

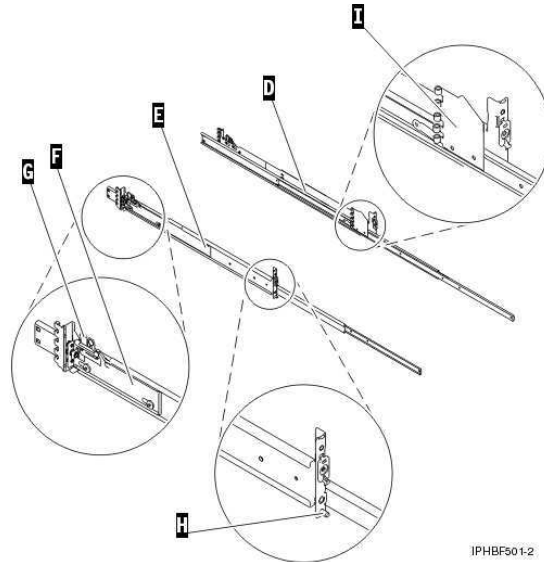
1. Read the [Rack Safety Notices](#). Failure to read these notices could cause damage to the equipment or injury to the installer.
2. Complete a parts inventory (See [Complete a parts inventory](#)).
3. Locate the rack-mounting template A, the rack-mounting hardware kit B, and the system rail assemblies C that were included with your system unit as shown in [Figure 1](#).

Figure 1. Rack-mounting kit.



The system rails D and E are front-to-back and left-to-right side dependent as shown in [Figure 2](#). The rails are labeled "left" and "right" to indicate their placement when you face the front of the rack. There two large latch assemblies, G are located at the back of each rail. These latch assemblies go in the back of the rack.

Figure 2. System rails.



4. Determine where you will locate the expansion unit in the rack. See [Determining the location](#). This system unit is 4 EIA units high.
5. Mark the location. See [Marking the location using a rack-mounting template](#). If you do not have the rack-mounting template, see [Marking the location without a rack-mounting template](#).

Next topic: [Attach the mounting hardware to the rack](#).

1. [Converting the stand-alone model ESCALA PL 250T/R for rack installation](#)
2. [Determining the location](#)
3. [Attaching the mounting hardware to the rack](#)
4. [Installing the system unit onto the rail assembly](#)
5. [Installing the cable-management arm](#)

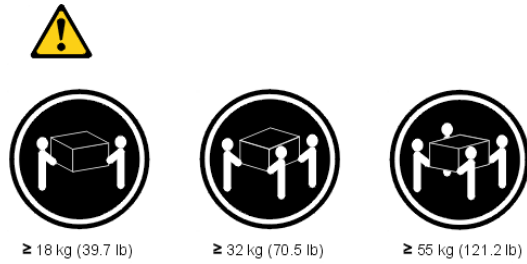
Parent topic: [Installing a system or expansion unit into a rack](#)

Converting the stand-alone model ESCALA PL 250T/R for rack installation

These procedures describe how to convert the stand-alone model ESCALA PL 250T/R (7885) to a rack-installable model ESCALA PL 250T/R (7884).

This feature is customer installable. However, the installation of this feature is intended for an experienced user who understands industry terminology.

Attention: After you have converted the stand-alone model, three people are needed to safely lift the unit onto the rack.



IPHBF442-0

When you use these instructions, you will perform some or all of the following tasks:

- Perform prerequisite tasks.
- Remove the system unit covers.
- Install new hardware.
- Install covers.
- Reconnect power cords and cables.
- Perform an IPL your operating system.
- Verify your new hardware configuration.

You can perform these tasks yourself or a contact service provider to perform these tasks. You might be charged a fee by the service provider for this service.

Note: If you have additional hardware to install in this server, complete and test this conversion and installation before installing new hardware.

Before you begin, read the safety instructions. See [Rack Safety Notices](#) and return to this topic.

Next topic: [Preparing the stand-alone ESCALA PL 250T/R, PL 250T/R+ or PL 450T/R-L+](#)

- [Preparing the stand-alone ESCALA PL 250T/R, PL 250T/R+ or PL 450T/R-L+](#)

Parent topic: [Installing the ESCALA PL 250T/R, PL 250T/R+ or PL 450T/R-L+ in a rack](#) **Next topic:** [Determining the location](#)

Preparing the stand-alone ESCALA PL 250T/R, PL 250T/R+ or PL 450T/R-L+

To prepare the stand alone ESCALA PL 250T/R, PL 250T/R+ or PL 450T/R-L+, complete the following procedure:

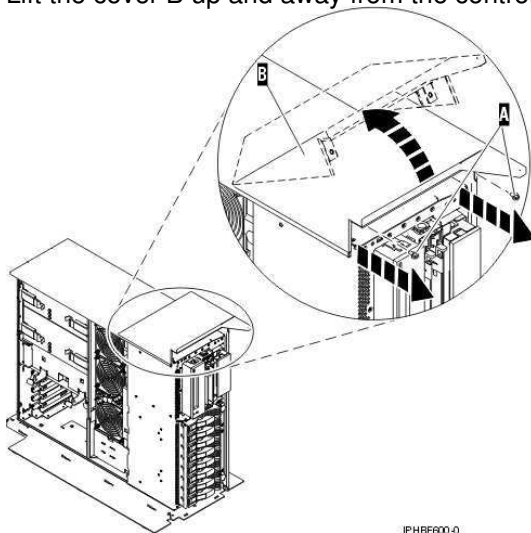
1. Read the [Rack Safety Notices](#). Failure to read these notices could cause damage to the equipment or injury to the installer.
2. Perform the prerequisite tasks described in [Before beginning](#).
3. Complete a parts inventory. See [Complete a parts inventory](#). The kit for converting a stand-alone unit to a rack-mounted unit includes:
 - ◆ Left and right rails
 - ◆ Cable-management arm
 - ◆ Left and right rack release latches
 - ◆ Rack-mounting template

- ◆ Screws
- ◆ Handles
- ◆ Top cover and front cover
- ◆ Brackets

4. Stop the system if it is running. See [Stop the system](#).
5. Shut down and disconnect the Hardware Management Console (HMC), if an HMC is connected to this system unit. See [Managing the Hardware Management Console \(HMC\)](#).

Note: If the HMC is powered off or disconnected from a nonpartitioned managed system for a period of 14 days, the managed system will no longer recognize the HMC. If this situation occurs and the managed system fails to recognize the HMC, you will need to set up the HMC again.

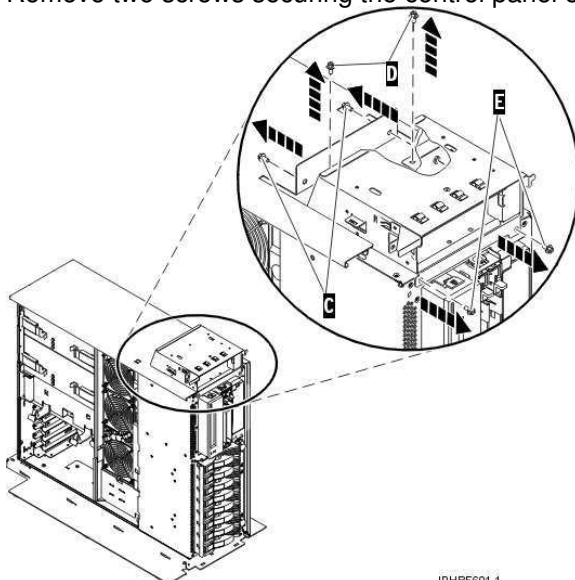
6. Disconnect and label the cables, and unplug the power source.
7. Remove the service access cover. See [Remove the service access cover](#).
8. Remove the front door. See [Remove the door](#).
9. Remove the front cover. See [Remove the front cover](#).
10. Remove the control panel cover.
 - a. Remove two screws A that are inset to the left and right of the front of the control panel as shown in the following figure.
 - b. Lift the cover B up and away from the control panel.



IPHBF600-0

Figure 1. Removing the control panel cover.

11. Remove the wraparound cover.
 - a. Remove two screws securing the control panel enclosure to the chassis, [Figure 2, C](#).

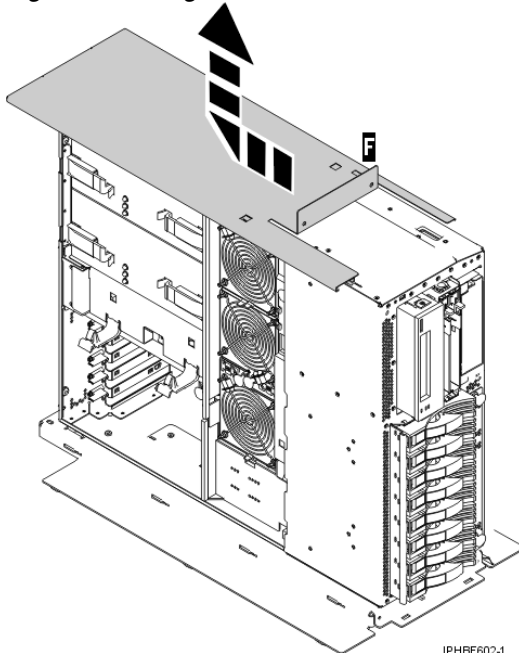


IPHBF601-1

Figure 2. Removing the control panel screws.

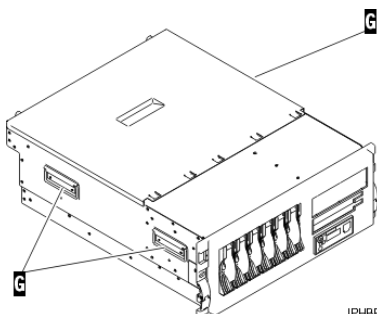
- b. Slide the cover F toward the back of the unit and lift it away from the unit as shown in the next figure.

Figure 3. Sliding the cover.



IPHBF602-1

12. Remove the control panel. See [Remove the control panel with power off](#).
13. Remove the top control panel enclosure.
 - a. Remove the screws connecting the control panel enclosure to the system unit, as shown in [Figure 2](#), D and E.
 - b. Lift the control panel enclosure.
 - c. Thread the control panel cable through the control panel enclosure.
 - d. Remove the control panel enclosure.
14. Remove the control panel filler (next to the media devices). See [Remove the control panel filler](#).
15. Route the control panel cable from the top of the system unit into the slot in the open control panel enclosure.
16. Install the control panel. See [Replace the control panel](#).
17. Carefully place the system unit down with the open side facing up.
18. Remove the four screws from the bottom to remove the base.
19. Install the service access cover (included in the conversion kit). See [Installing the service access cover](#).
20. Attach the handles (included in the conversion kit) to the sides of the chassis.
 - a. Put the handle in the handle bracket.
 - b. Position the handle as shown in [Figure 4](#), G.
 - c. Use two screws to attach the each handle G to the chassis.



IPHBF511-2

Figure 4. Attaching the handles.

The unit is now ready to install into the rack.

21. Follow the steps for attaching the mounting hardware to the rack and installing the system unit on the rail assembly in [Installing the ESCALA PL 250T/R, PL 250T/R+ or PL 450T/R-L+ in a rack](#). Return to these procedures.
22. Install the cable-management arm and return to these procedures. See [Installing the cable-management arm](#).

Next topic: [Reconnecting cables to the system](#).

Parent topic: [Converting the stand-alone model ESCALA PL 250T/R for rack installation](#)

Determining the location

Before installing the system unit or expansion unit into a rack, complete the following steps:

1. Read the [Rack Safety Notices](#).
2. Plan where you will place the units. Place the larger and heavier units in the lower part of the rack.
3. If the rack contains filler panels, remove the filler panels to allow access to the inside of the rack enclosure where you plan to place the unit.

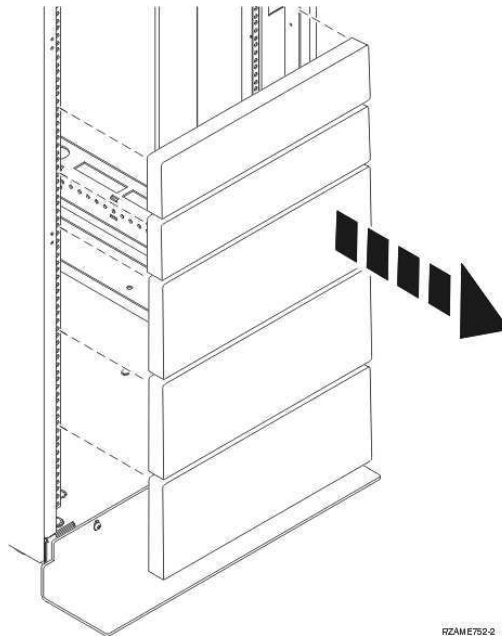


Figure 1. Removing the filler panels.

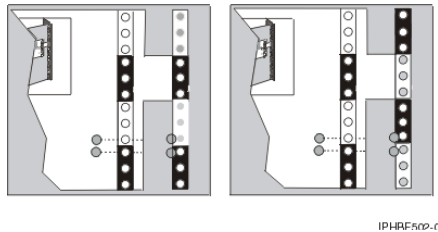
4. Remove the front and back rack doors if necessary.
 5. Follow the instructions for either [Marking the location without a rack-mounting template](#) or [Marking the location using a rack-mounting template](#).
1. [Marking the location using a rack-mounting template](#)
 2. [Marking the location without a rack-mounting template](#)

Parent topic: [Installing the ESCALA PL 250T/R, PL 250T/R+ or PL 450T/R-L+ in a rack](#) Previous topic: [Converting the stand-alone model ESCALA PL 250T/R for rack installation](#) Next topic: [Attaching the](#)

Marking the location using a rack-mounting template

- Using the rack-mounting template, determine where in the rack to place the system unit. Install units in the lower part of the rack first. Place larger and heavier units in the lower part of the rack.

Figure 1. Rack-mounting template.



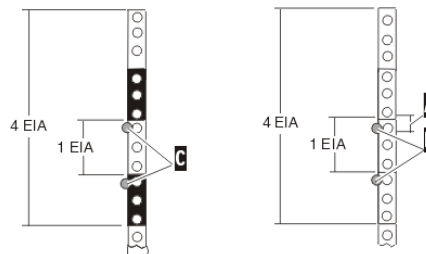
IPHRF500.c

Note: The front of the rack-mounting template has printed illustrations designed to help you identify the EIA location holes to be used when you add units to the rack. *Do not* use the rack-mounting template without completing the following steps.

- Note the following when using the rack-mounting template:
 - ◆ Each black or white unit on the template is equal to 1 EIA unit.
 - ◆ Each EIA unit consists of three holes.
 - ◆ The EIA units illustrated on the template must be aligned with the EIA units located on the rack.
 - ◆ It is not necessary to align like-colored EIA units. For example, a black EIA unit on the rack-mounting template can be aligned with a white EIA unit located on the rack.
 - ◆ The template is two-sided. When using the template, ensure that the appropriate side of the template is facing out.

Figure 2 shows one EIA unit and four EIA units. Depending on the rack manufacturer, the EIA units might be separated either by color or by a line. Notice that the holes along the rail are not evenly spaced. If your rack has no color or line separation between EIA units, assume that each EIA unit begins where the hole spacing A is closest together.

Figure 2. EIA units.



IPHRF503.c

To use the rack-mounting template, complete following steps:

- a. Remove the protective coating from each adhesive strip located on the back of the rack-mounting template. Lightly press the template into position on the rack. Ensure that both the left and right sides are at the corresponding EIA locations.

Note: The tabs on each side of the template show a notch to indicate the correct spacing between the front flanges.

- b. Locate the dots, printed on the left and right side of the template. Place a self-adhesive dot directly across from the template's printed dots on or near the rack's EIA numbering strip. You will be using these dots to aid in correctly positioning the rail-alignment pins located on the front of each rail.
- c. Remove the rack-mounting template from the front of the rack. The front of your rack should now contain dots.
- d. Mount the rack-mounting template to the rack's back EIA frame. Place the rack-mounting template at the same EIA-numbered location that was used on the front of the rack.
- e. Wrap a self-adhesive dot directly across from the template's printed dots. Ensure that a portion of the self-adhesive dot wraps around the rack frame so that it can be seen from the front of the rack.
- f. Remove the rack-mounting template from the back of the rack. The back of your rack should now contain dots that have been partially wrapped around the frame.

Next topic: [Attaching the mounting hardware to the rack.](#)

Parent topic: [Determining the location](#) Next topic: [Marking the location without a rack-mounting template](#)

Marking the location without a rack-mounting template

If you do not have a rack-mounting template, complete the following steps:

1. Determine where in the rack to place the system. Record the EIA location.

Note: An EIA unit on your rack consists of a grouping of three holes.

2. Facing the front of the rack and working from the right side, place a supplied self-adhesive dot next to the top hole of the EIA unit.

Note: The self-adhesive dots are used to aid in identifying locations on the rack. If you no longer have any of the dots, use some other form of marking tool to aid you in identifying hole locations (for example, tape, a marker, or pencil).

3. Place another self-adhesive dot next to the bottom hole of the above EIA unit.

Note: If you are counting the holes, begin with the hole identified by the first dot and count up two holes. Place the second dot next to the third hole.

4. Repeat steps 1 through 4 for the corresponding holes located on the left side of the rack.
5. Go to the back of the rack.
6. On the right side, find the EIA unit that corresponds to the bottom EIA unit marked on the front of the rack.
7. Place a self-adhesive dot at the bottom EIA unit.

8. Place a self-adhesive dot at the top hole of the EIA unit.
9. Mark the corresponding holes on the left side of the rack.

Next topic: [Attaching the mounting hardware to the rack.](#)

Parent topic: [Determining the location](#) Previous topic: [Marking the location using a rack-mounting template](#)

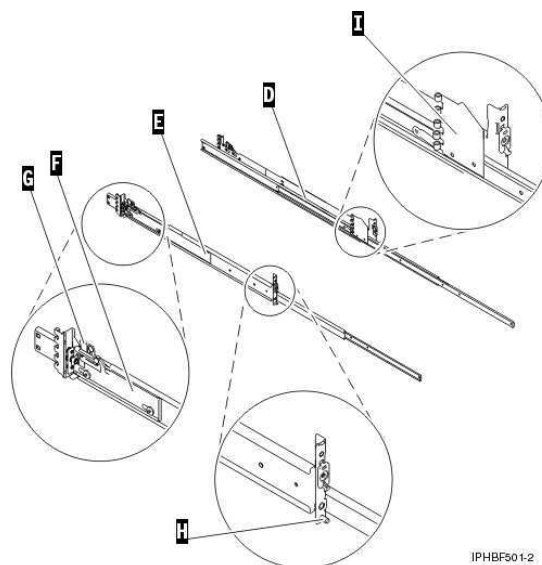
Attaching the mounting hardware to the rack

To install the rack-mounting hardware into the rack, complete the following steps:

1. From the front of the rack, set the system rails to allow correct assembly with the rack and system unit. Refer to [Figure 1](#) and complete the following steps:
 - a. Fully extend each rail assembly, D and E.
 - b. Pull the back latch assembly release tab G to the retracted position and lock the latch assembly F. The back-alignment pins should be fully retracted.
 - c. Pull the front latch assembly release tab to the retracted position and lock the latch assembly. The front-alignment pin should be fully retracted.

Note: Although the rail installation can be completed by one person, it is recommended that one person hold the rail in place in the front position while another locks the latch assembly in place.

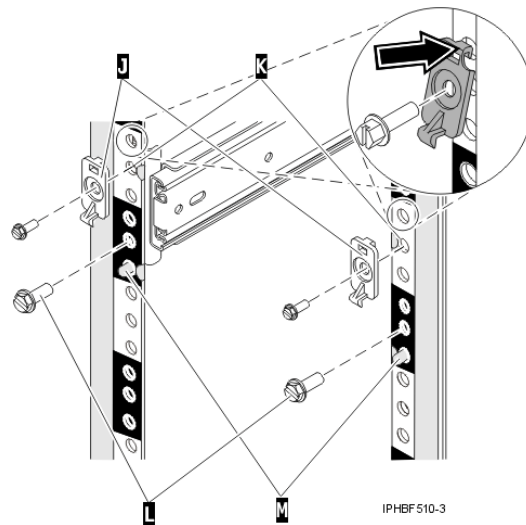
Figure 1. Setting up the system rail assembly.



2. From the back of the rack, insert the front-alignment pin H ([Figure 1](#)) into the hole at the front of the rack identified by the self-adhesive placement dot that you previously installed. Have a second person hold the rail securely in the front hole.
3. Press the release tab G ([Figure 1](#)) to extend the front-alignment pin into the front of the rack. Ensure that the pin passes through the correct hole in the rack frame.

4. From the front of the rack, align the back-alignment pins, H and of the rail with the holes at the back of the rack identified by the self-adhesive placement dot that you previously installed. The back EIA location will be one position higher than the front rail position. Ensure that the rails are level.
5. Press the release tab G (Figure 1) to extend the two back-alignment pins into the back of the rack. Ensure that the pins have passed through the correct holes in the rack frame.
6. From the back of the rack, finger-tighten one of the rail-retaining screws into the hole that is located above the two back alignment pins.
7. From the front of the rack, finger-tighten one of the system-retaining screws L into the first hole position above the front-alignment pin M as shown in Figure 2.
8. From the front of the rack, attach the system-unit latch bracket as follows:
 - a. Locate a system-unit latch bracket J and its screw.
 - b. Align the latch bracket J with the hole K. The top of the latch bracket hooks into the hole above.
 - c. Finger-tighten the screw into place.

Figure 2. Securing the system rails to the front of the rack.



9. Repeat steps 2 through 8.c for the rail assembly on the other side of the rack.

Next topic: [Install the system unit on the rail assembly.](#)

Parent topic: [Installing the ESCALA PL 250T/R, PL 250T/R+ or PL 450T/R-L+ in a rack](#) **Previous topic:** [Determining the location](#) **Next topic:** [Installing the system unit onto the rail assembly](#)

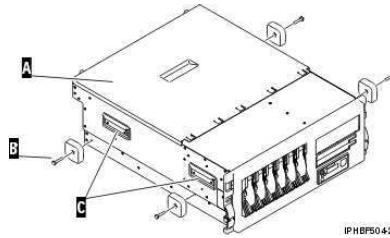
Installing the system unit onto the rail assembly

Before installing the ESCALA PL 250T/R, PL 250T/R+ or PL 450T/R-L+ onto the rail assembly, ensure that the stabilizers are extended and the tip plate is attached to the bottom front of the rack to prevent the rack from falling forward when the rails are pulled out of the rack. Refer to [Install a rack](#).

To install the system unit onto the rail assembly, complete the following steps:

1. Attach the four knobs B to the system unit as shown in Figure 1.

Figure 1. Attach knobs to system unit.



2. Fully extend both rails.
3. Using three people, grasp the handles C located on each side of the system unit, and position the system unit on the extended rails as shown in [Figure 2](#). Align the three holes in the inner rails with the holes in the sides of the system unit.

CAUTION:This unit weighs between 32 kg (70.5 pounds) and 55 kg (121.2 pounds). Three people are required to safely move it. Using fewer than three people to move it can result in injury.

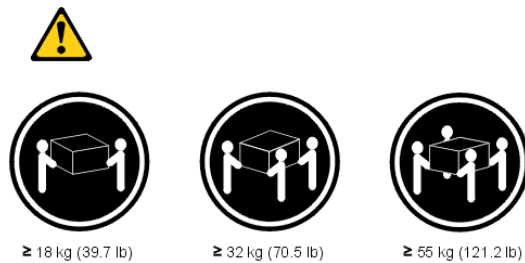
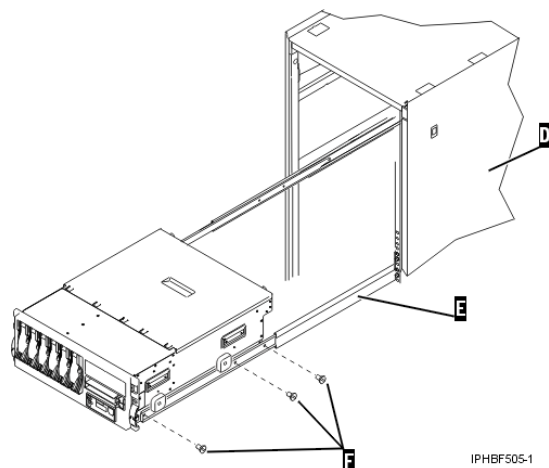
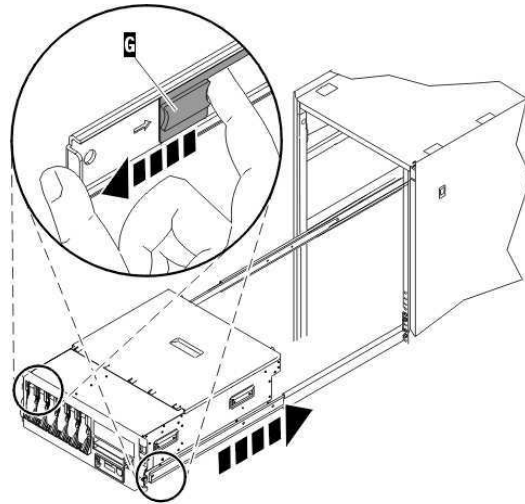


Figure 2. Attaching the rails to system.



4. Attach the rails E to each side of the system unit by using the system-to-rail screws F. Tighten each of the screws with a screwdriver or similar tool.
5. Remove the four knobs, B.
6. Simultaneously release the blue safety latches, G, located near the front of each system rail assembly, and push the system unit into the rack as shown in [Figure 3](#).

Figure 3. Release the safety latches.



IPHBF508-2

7. Slide the system unit into and out of the rack two or three times to align the system unit to the rails. The system unit should glide on the rails.
8. Push the system unit into the rack. Using a screwdriver or similar tool, tighten the two retaining screws that secure the slide rails to the back of the rack.
9. Slide the system unit halfway out of the rack.
10. Using a screwdriver or similar tool, tighten the front four retaining screws that secure the slide rails to the frame of the rack.

Note: After the system rails are installed, do not extend them past their safety latches. The safety latches prevent the rails from overextending and separating, thereby preventing the system unit from being pulled out too far and being dropped.

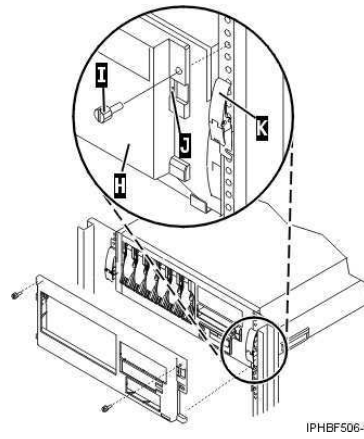
11. Slide the system unit into the rack.

Attention: If it does not slide smoothly, loosen the six rail-retaining screws (front and back), and repeat steps 6 through 11.

12. Install the service access cover. Refer to [Replace the front cover](#).
13. Install the rack latch brackets. Refer to [Installing or removing a rack-mounted system-unit latch bracket](#).
14. To provide additional stability when transporting the rack, fasten the system unit to the rack by inserting the two system-retaining thumbscrews I through the front cover H, and screwing them into the rack frame as shown in [Figure 4](#).

Note: If you are installing the retaining thumbscrews, you will need to install the optional bezel on the front of the system.

Figure 4. Secure the system unit to the rack.



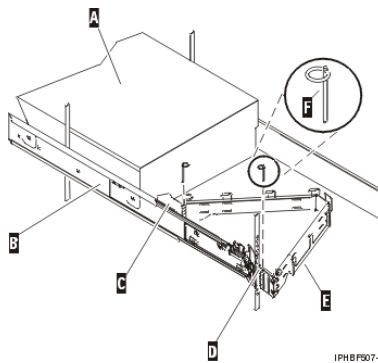
Next topic: [Install the cable-management arm.](#)

Parent topic: [Installing the ESCALA PL 250T/R, PL 250T/R+ or PL 450T/R-L+ in a rack](#) **Previous topic:** [Attaching the mounting hardware to the rack](#) **Next topic:** [Installing the cable-management arm](#)

Installing the cable-management arm

To install the cable-management arm, complete the following steps:

1. From the back of the rack, locate the cable-management arm flange C located on the fixed back portion of the left system rail assembly B.



- Figure 1. Installing the cable-management arm.*
2. Use pin F to pin the cable-management arm E to the rack frame D.

Note: If access to the back of the rack is obscured by a large number of existing cables, it might be easier to remove the small connecting hinge from the cable-management arm and attach it first. Then, you can attach the remaining section of the cable-management arm to the connecting hinge.

3. Use pin F to pin the other end of the cable-management arm to the flange C attached to the sliding portion of the left system rail assembly B.

Note: Ensure that the cable-management arm is level so that it moves freely.

Next topic: [Connect the power cables to the system.](#)

Parent topic: [Installing the ESCALA PL 250T/R, PL 250T/R+ or PL 450T/R-L+ in a rack](#) **Previous topic:** [Installing the system unit onto the rail assembly](#)

Installing the model ESCALA PL 450T/R, PL 450T/R+ or PL 850T/R-L+, ESCALA PL 450T/R, in a rack

This topic describes how to install the model ESCALA PL 450T/R, PL 450T/R+ or PL 850T/R-L+, ESCALA PL 450T/R, in a rack. This is a customer task. You can perform this task yourself, or contact a service provider to perform the task for you. You might be charged a fee by the service provider for this service.

Note: To complete this procedure, it is suggested that you use two people to attach the rail assembly to the rack, one in front of the rack and one at the back of the rack. You will need three people to lift the system unit onto the rack.

This procedure assumes that you are installing the model ESCALA PL 450T/R, PL 450T/R+ or PL 850T/R-L+, ESCALA PL 450T/R, into an existing rack. If the rack is not installed, go to the instructions for [installing the rack](#) and then return to this procedure for instructions on installing the system unit in a rack.

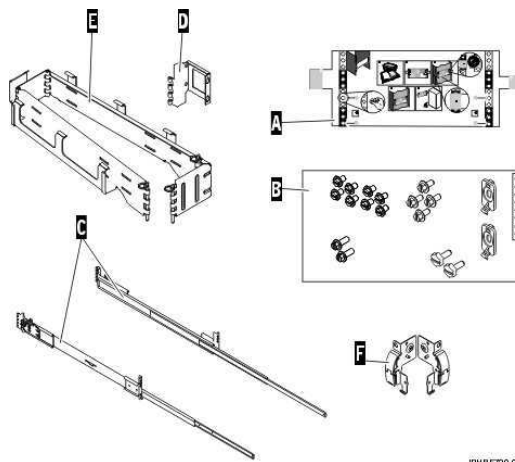
Note: This procedure applies only to the models that are designed to be mounted in a rack. Do not attempt to install a stand-alone model in a rack.

To install model ESCALA PL 450T/R, PL 450T/R+ or PL 850T/R-L+, ESCALA PL 450T/R, in a rack, complete the following steps:

CAUTION: Installing the rails in the rack is a complex procedure. To install the rails correctly, you must perform each task in the following order. Failure to do so might cause rail failure and potential danger to yourself and the system unit.

1. Read the [Rack Safety Notices](#).
2. Complete a parts inventory, if you have not done so.

Figure 1. Rack-mounting kit.



IPHF720-0

- ◆ A Rack-mounting template
- ◆ B Rack-mounting hardware kit
- ◆ - Four large retaining screws
- ◆ - Eight small retaining screws
- ◆ - Two blue thumbscrews
- ◆ - Two rack latch brackets
- ◆ - Two rack-latch bracket screws
- ◆ - Self-adhesive placement dots (these may be included on the rack-mounted template or on a separate sheet)
- ◆ C Left and right rack rails with rack brackets
- ◆ D Cable-management arm bracket
- ◆ E Cable-management arm
- ◆ F Two rack latches

If there are incorrect, missing or damaged parts contact:

- ◆ Your reseller

3. Locate the rack-mounting template A, the rack-mounting hardware kit B, and the system rail assemblies C that were included with your system unit as shown in [Figure 1](#).

The system rails C are front-to-back and left-to-right side dependent. The rails are labeled left and right to indicate their placement when you face the front of the rack. There two large latch assemblies at the back of each rail. These latch assemblies go in the back of the rack.

4. Determine where you will locate the system unit in the rack. See [Determine the location](#).

Next topic: [Attach the mounting hardware to the rack](#).

1. [Determining the location](#)
2. [Attaching the mounting hardware to the rack](#)
3. [Installing the system unit on the rail assembly](#)
4. [Installing the cable-management arm](#)

Parent topic: [Installing a system or expansion unit into a rack](#)

Determining the location

Before installing the system unit into a rack, complete the following steps:

1. Read the [Rack Safety Notices](#).
2. Plan where you will place the units. Place the larger and heavier units in the lower part of the rack. This system unit is four EIA units high.
3. If necessary, remove the filler panels to allow access to the inside of the rack enclosure where you plan to place the unit.

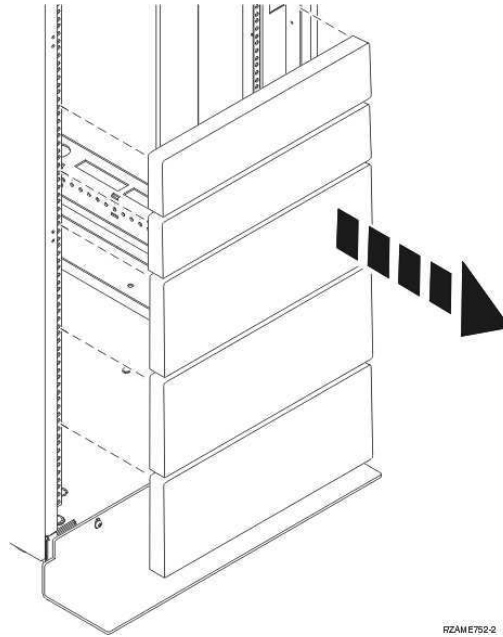


Figure 1. Removing the filler panels.

4. If necessary, remove the front and back rack doors.
5. Use the rack-mounting template to mark the location (see [Mark location using the rack-mounting template](#).) If you do not have a rack-mounting template, following instructions for marking the location without a template (see [Mark the location without rack-mounting template](#)).

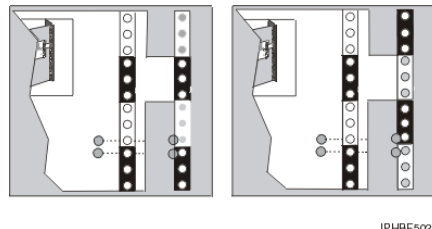
- [Marking location using the rack-mounting template](#)
- [Marking the location without a rack-mounting template](#)

Parent topic: [Installing the model ESCALA PL 450T/R, PL 450T/R+ or PL 850T/R-L+, ESCALA PL 450T/R, ___ in a rack](#) **Next topic:** [Attaching the mounting hardware to the rack](#)

Marking location using the rack-mounting template

1. Using the rack-mounting template, determine where in the rack to place the system unit. Install units in the lower part of the rack first. Place larger and heavier units in the lower part of the rack.

Figure 1. Rack-mounting template.



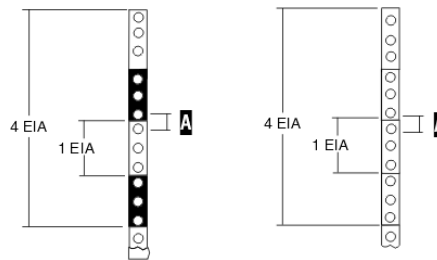
Note: The front of the rack-mounting template has printed illustrations designed to help you identify the EIA location holes to be used when you add units to the rack. *Do not* use the rack-mounting template without completing the following steps.

2. Note the following when using the rack-mounting template:

- ◆ Each black or white unit on the template is equal to one EIA unit.
- ◆ Each EIA unit consists of three holes.
- ◆ The EIA units illustrated on the template must be aligned with the EIA units located on the rack.
- ◆ It is not necessary to align like-colored EIA units. For example, a black EIA unit on the rack-mounting template can be aligned with a white EIA unit located on the rack.
- ◆ The template is two-sided. When using the template, ensure that the appropriate side of the template is facing out.

Figure 2 shows one EIA unit and four EIA units. Depending on the rack manufacturer, the EIA units might be separated either by color or by a line. Notice that the holes along the rail are not evenly spaced. If your rack has no color or line separation between EIA units, assume that each EIA unit begins where the hole spacing is closest together as shown, A in Figure 2.

Figure 2. EIA units.



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To use the rack-mounting template, complete the following steps:

- a. Remove the protective coating from each adhesive strip located on the back of the rack-mounting template. Lightly press the template into position on the rack. Ensure that both the left and right sides are at the corresponding EIA locations.

Note: The tabs on each side of the template show a notch to indicate the correct spacing between the front flanges.

- b. Locate the dots, printed on the left and right side of the template. Place a self-adhesive dot directly across from the template's printed dots on or near the rack's EIA numbering strip. You will be using these dots to aid in correctly positioning the rail-alignment pins located on the front of each rail.
- c. Remove the rack-mounting template from the front of the rack. The front of your rack should now contain dots.
- d. Mount the rack-mounting template to the rack's back EIA frame. Place the rack-mounting template at the same EIA-numbered location that was used on the front of the rack.
- e. Wrap a self-adhesive dot directly across from the template's printed dots. Ensure that a portion of the self-adhesive dot wraps around the rack frame so that it can be seen from the front of the rack.
- f. Remove the rack-mounting template from the back of the rack. The back of your rack should now contain dots that have been partially wrapped around the frame.

Next topic: [Attach the mounting hardware to the rack.](#)

Parent topic: [Determining the location](#)

Marking the location without a rack-mounting template

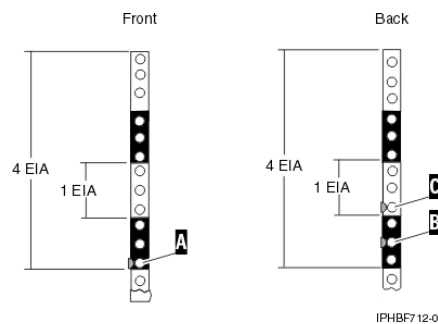
If you do not have a rack-mounting template, complete the following steps:

1. Determine where in the rack to place the system. Install units in the lower part of the rack first. Place larger and heavier units in the lower part of the rack. Record the EIA location.
 - ◆ Each EIA unit consists of three holes.
 - ◆ The model ESCALA PL 450T/R, PL 450T/R+ or PL 850T/R-L+, ESCALA PL 450T/R, is four EIA units high.
2. Facing the front of the rack and working from the right side, place a self-adhesive dot next to the bottom hole of the bottom EIA unit of the four you will be using for this system unit A in [Figure 1](#).

Note: The self-adhesive dots are used to aid in identifying locations on the rack. If do not have the dots, use some other form of marking tool to aid you in identifying hole locations (for example, tape, or a marker). You will need to identify the marked hole from both the front and back of the rack.

3. Place another self-adhesive dot next to the bottom hole of the bottom EIA unit on the left side of the rack.
4. Go to the back of the rack. On the right side, find the EIA unit that corresponds to the bottom EIA unit marked on the front of the rack.

Figure 1. Marking holes on the front and back of the rack frame.



5. Place a self-adhesive dot at the middle hole of the bottom EIA unit, B in [Figure 1](#).
6. Place a self-adhesive dot at the bottom hole of the next (above) EIA unit, C in [Figure 1](#).
7. Mark the corresponding holes on the left side of the rack.

Next topic: [Attach the mounting hardware to the rack.](#)

Parent topic: [Determining the location](#)

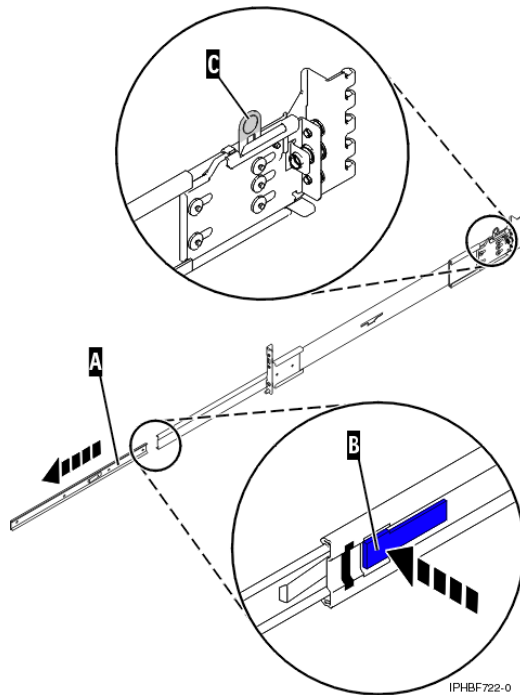
Attaching the mounting hardware to the rack

CAUTION: Installing the rails in the rack is a complex procedure. To install the rails correctly, you must perform each task in the following order. Failure to do so might cause rail failure and potential danger to yourself and the system unit.

To install the rack-mounting hardware into the rack, complete the following steps:

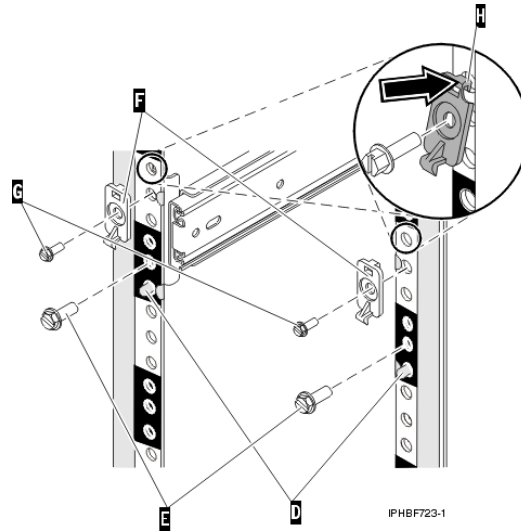
1. Beginning with the right slide rail, remove the right inner rail, A in [Figure 1](#). To do this, complete the following substeps:
 - a. Extend the rail.
 - b. Press the blue release button, B in [Figure 1](#), to release the inner rail.
 - c. Remove the inner rail.
 - d. Repeat the preceding steps for the left slide rail.

Figure 1. Removing the inner rail from the rail assembly.



2. Pull the back latch assembly release tab, C in [Figure 1](#), to the retracted position and lock the latch assembly. The back-alignment pins should be fully retracted.
3. Insert the right side rail's front-alignment pin, D in [Figure 2](#), into the rack front flange hole identified by the self-adhesive placement dot that you previously installed. Have a second person hold the rail securely in the front hole.

Figure 2. Front slide rail alignment pin, retaining screws, and latch bracket.



4. Align the back-alignment pins of the rail with the holes at the back of the rack identified by the self-adhesive placement dots on the back of the rack. The back EIA location will be one position higher than the front rail position. Ensure that the rails are level.
5. Press the release tab, C in [Figure 1](#), outward to extend the two back-alignment pins into the back of the rack. Ensure that the pins have passed through the correct holes in the rack frame.
6. From the back of the rack, insert one of the large rail-retaining screws into the hole that is located between the two back alignment pins. Partially tighten the screw. Do not tighten completely at this time.
7. From the front of the rack, finger-tighten one of the large rail-retaining screws into the hole that is located above the front alignment pin, E in [Figure 2](#).
8. Locate one of the latch brackets, F in [Figure 2](#). Insert the tab at the top of the latch bracket into the rack as shown H.
9. Attach the latch bracket to the rack with a small rail-retaining screw G in [Figure 2](#). Finger-tighten the screw.

Attention: Do not tighten any of the screws completely until instructed to do so. Tightening the screws prevents the rails from self-aligning when the system drawer is attached.

10. Repeat steps [2](#) through [9](#) for the left side rail.
11. After both rails have been installed, ensure that none of the rail's retaining screws are more than finger-tight. The rails *must* be level from front to back and from left to right.

Next topic: [Install the system unit on the rail assembly.](#)

Parent topic: [Installing the model ESCALA PL 450T/R, PL 450T/R+ or PL 850T/R-L+, ESCALA PL 450T/R, ___ in a rack](#) **Previous topic:** [Determining the location](#) **Next topic:** [Installing the system unit on the rail assembly](#)

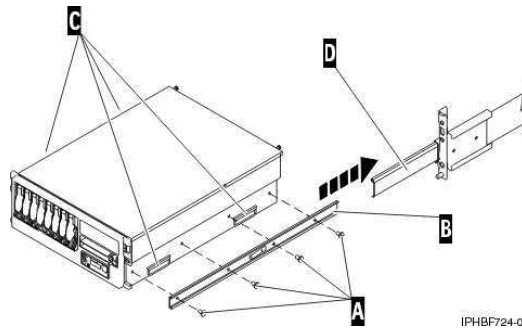
Installing the system unit on the rail assembly

Before installing the ESCALA PL 450T/R, PL 450T/R+ or PL 850T/R-L+, ESCALA PL 450T/R, system unit on the rail assembly, ensure that the stabilizers are extended and the tip plate is attached to the bottom front of the rack to prevent the rack from falling forward when the rails are pulled out of the rack. Refer to [Install the rack](#).

To install the ESCALA PL 450T/R, PL 450T/R+ or PL 850T/R-L+, ESCALA PL 450T/R, on the rail assembly, complete the following steps:

1. Using the eight rail-to-system-unit retaining screws A in [Figure 1](#), four on each side, mount the inner rails B to each side of the system drawer. Tighten each of the screws with a screwdriver or similar tool.

Figure 1. Attaching the system rails and slide the system unit onto the rail assembly.

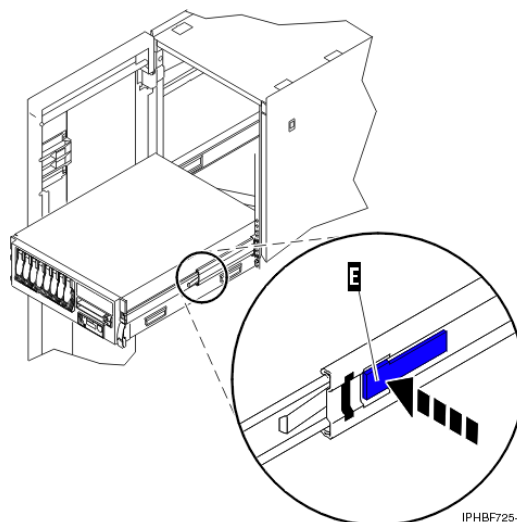


2. Ensure that the rails on the rack are extended and latched.
3. Using three people, grasp the two handles located on each side of the system drawer, C in [Figure 1](#), and lift the system drawer.
4. Insert the inner rails located on the system drawer B in [Figure 1](#), into the rails mounted in the rack D.

Attention: When matching the inner rails to the outer rails, ensure that both rail faceplates glide past each other. *Do not*, under any circumstances, force the rails. If the system drawer does not glide freely into the rack, completely remove the drawer from the outer rails. After the drawer is clear of the outer rails, reposition the system, then reinsert the inner rails. Repeat this process until the system drawer glides freely into the rack.

5. Simultaneously press the safety latches, located on each side of the system drawer E in [Figure 2](#), and push the system unit into the rack.

Figure 2. Press the safety latches and push the system unit into the rack.



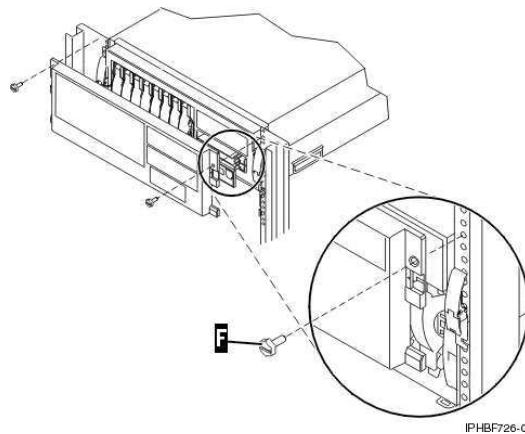
6. Slide the system drawer in and out of the rack two or three times. This action aligns the system drawer to the rails. The system drawer should glide on the rails.
7. Push the system drawer back into the rack. Using a screwdriver or similar tool, tighten the rail-retaining screws that secure the slide rails to the rack's rear flange on each side of the rack.
8. Slide the system drawer about halfway out of the rack.
9. Using a screwdriver or similar tool, tighten the front rail-retaining screws that secure the slide rails to the rack's front flange on each side of the rack.

Note: After the system rails are installed, do not extend them past their safety latches. The safety release latches stop the rails from overextending and separating. This action prevents the system drawer from being accidentally pulled out too far and dropped.

Attention: If any binding is detected, loosen the rail-retaining screws (front and back), and repeat steps 5 through 9.

10. When transporting the rack, fasten the system drawer to the rack enclosure by inserting a thumbscrew (transport retaining screw) through the bezel and chassis bracket, and screwing it to the rack flange as shown F in [Figure 3](#).

Figure 3. Transport retaining screw.



Next topic: [Install the cable-management arm.](#)

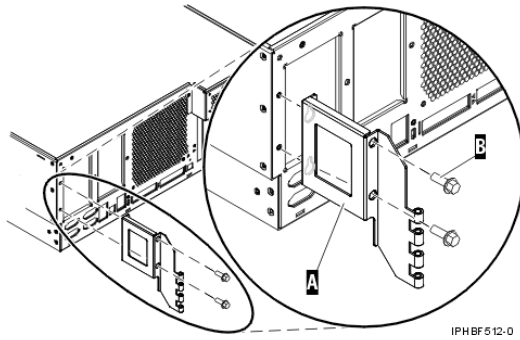
Parent topic: [Installing the model ESCALA PL 450T/R, PL 450T/R+ or PL 850T/R-L+, ESCALA PL 450T/R, ___ in a rack](#) **Previous topic:** [Attaching the mounting hardware to the rack](#) **Next topic:** [Installing the cable-management arm](#)

Installing the cable-management arm

To install the cable-management arm, complete the following steps:

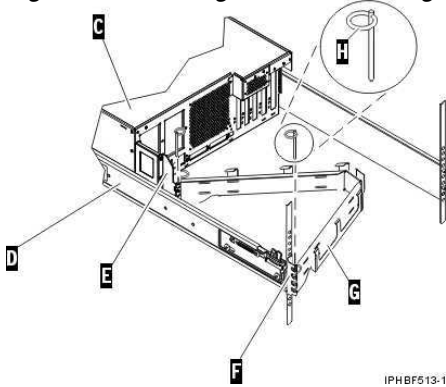
1. From the back of the rack, use two screws B to attach the cable-management arm bracket A to the back left side of the server as shown in [Figure 1](#).

Figure 1. Attaching the cable-management arm bracket to the back of the server.



2. Use pin H to pin the cable-management arm G to the rack frame F as shown in [Figure 2](#).

Figure 2. Attaching the cable-management arm.



Note: If access to the back of the rack is obscured by a large number of existing cables, it might be easier to remove the small connecting hinge from the cable-management arm and attach it first. Then, you can attach the remaining section of the cable-management arm to the connecting hinge.

3. Use the second pin H to pin the other end of the cable-management arm to the flange E attached to the sliding portion of the left system rail assembly D as shown in [Figure 2](#).

Note: Ensure that the cable-management arm is level so that it moves freely.

Next topic: [Connect the power cables to the system.](#)

Parent topic: [Installing the model ESCALA PL 450T/R, PL 450T/R+ or PL 850T/R-L+, ESCALA PL 450T/R, ___ in a rack](#) **Previous topic:** [Installing the system unit on the rail assembly](#)

Installing the model ESCALA PL 245T/R into a rack

This topic describes how to install the model ESCALA PL 245T/R into a rack. You can perform this task yourself, or contact a service provider to perform the task for you. You might be charged a fee by the service provider for this service.

Note: To complete this procedure, it is easier if two people to attach the rail assembly to the rack with one person in front of the rack and one person at the back of the rack. Three people are needed to safely lift the system unit onto the rails in the rack.

This procedure assumes that you are installing the model ESCALA PL 245T/R into an existing rack. If the rack is not installed, go to the instructions for [Installing the rack](#) and then return to this procedure for instructions on installing the system unit in a rack.

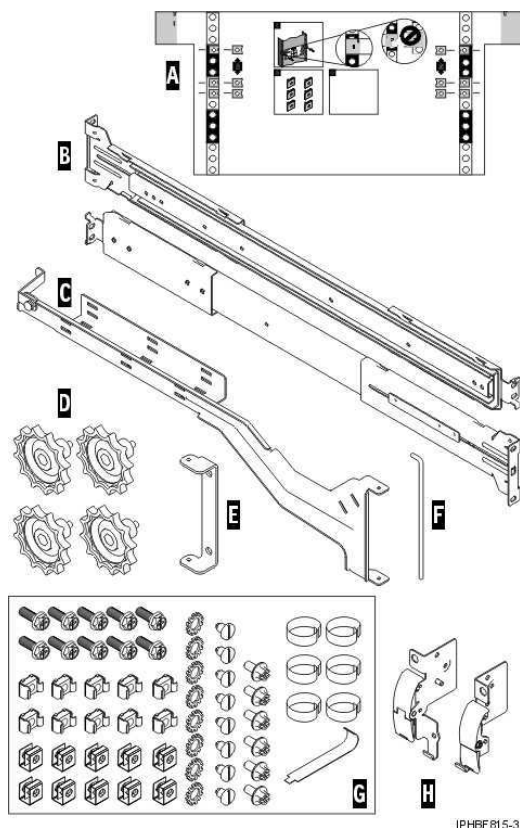
Note: This procedure applies only to the models that are designed to be mounted in a rack. Do not attempt to install a stand-alone model in a rack.

To install model ESCALA PL 245T/R in a rack, complete the following steps:

Attention: Installing the rails in the rack is a complex procedure. To install the rails correctly, you must perform each task in the following order.

1. Read the [Rack Safety Notices](#).
2. Complete a parts inventory, if you have not done so.

Figure 1. Rack-mounting hardware.



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- ◆ A (one) rack-mounting template
- ◆ B (two) rack rails
- ◆ C (one) cable management arm
- ◆ D (four) rack support wheels
- ◆ E (one) hinge bracket

- ◆ F (one) hinge pin
 - ◆ G Rack-mounting hardware kit:
 - ◆ - (ten) cable clamps
 - ◆ - (ten) cage nuts
 - ◆ - (ten) nut clips
 - ◆ - (ten) M6 screws
 - ◆ - (ten) M4 screws
 - ◆ - (six) cable straps
 - ◆ - (one) cable-retainer bracket
 - ◆ - (one) cage nut insertion tool
 - ◆ H (two) rack latches (might be preinstalled on the system)
- If there are incorrect, missing or damaged parts, contact:

- ◆ Your reseller.
3. Locate the rack-mounting template , the rack-mounting hardware kit, and the system rail assemblies that were included with your system unit as shown in [Figure 1](#)
 4. Determine where you will locate the system unit in the rack. See [Determining the location](#).

Next topic: [Determining the location](#).

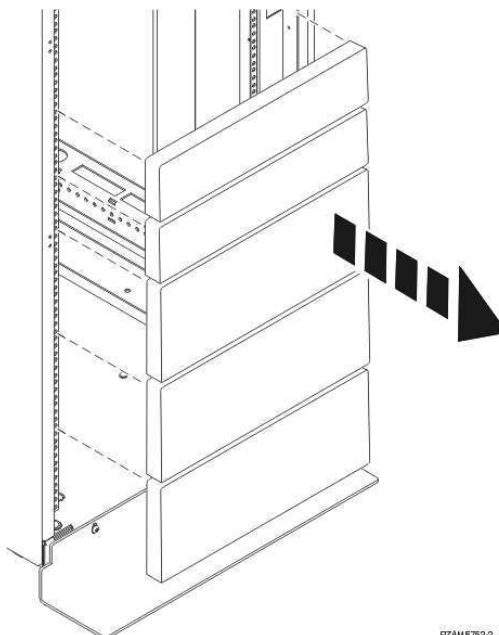
- [Determining the location](#)
- [Attaching the mounting hardware to the rack](#)
- [Installing the cable-management arm](#)
- [Installing the system unit on the rail assembly](#)

Parent topic: [Installing a system or expansion unit into a rack](#)

Determining the location

Before installing the system unit into a rack, complete the following steps:

1. Read the [Rack Safety Notices](#).
2. Plan where you will place the units. Place the larger and heavier units in the lower part of the rack. This system unit is five EIA units high.
3. If necessary, remove the filler panels to allow access to the inside of the rack enclosure where you plan to place the unit.



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Figure 1. Removing the filler panels.

4. If necessary, remove the front and back rack doors.
5. Use the rack-mounting template to mark the location (see [Marking the location using the rack-mounting template](#)). If you do not have a rack-mounting template, following instructions for marking the location without a template (see [Marking the location without a rack-mounting template](#)).

Next topic: [Marking the location using the rack-mounting template](#) or [Marking the location without a rack-mounting template](#).

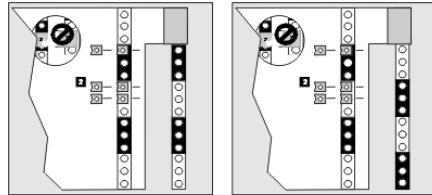
- [Marking the location using the rack-mounting template](#)
- [Marking the location without a rack-mounting template](#)

Parent topic: [Installing the model ESCALA PL 245T/R into a rack](#)

Marking the location using the rack-mounting template

1. Using the rack-mounting template, determine where in the rack to place the system unit. Install units in the lower part of the rack first. Place larger and heavier units in the lower part of the rack.

Figure 1. Rack template



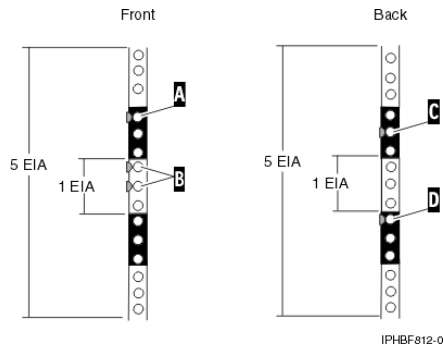
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Note: The front of the rack-mounting template has printed illustrations designed to help you identify the EIA location holes to be used when you add units to the rack. *Do not* use the rack-mounting template without completing the following steps.

2. Note the following when using the rack-mounting template:
 - ◆ Each black or white unit on the template is equal to one EIA unit.
 - ◆ Each EIA unit consists of three holes.
 - ◆ The EIA units illustrated on the template must be aligned with the EIA units located on the rack.
 - ◆ It is not necessary to align like-colored EIA units. For example, a black EIA unit on the rack-mounting template can be aligned with a white EIA unit located on the rack.
 - ◆ The template is two-sided. When using the template, ensure that the appropriate side of the template is facing out.

Figure 1 shows one EIA unit and five EIA units. Depending on the rack manufacturer, the EIA units might be separated either by color or by a line. Notice that the holes along the rail are not evenly spaced. If your rack has no color or line separation between EIA units, assume that each EIA unit begins where the hole spacing is closest together as shown, A in **Figure 2**.

Figure 2. EIA units



To use the rack-mounting template, complete the following steps:

- a. Remove the protective coating from each adhesive strip located on the back of the rack-mounting template. Lightly press the template into position on the rack. Ensure that both the left and right sides are at the corresponding EIA locations.

Note: The tabs on each side of the template show a notch to indicate the correct spacing between the front flanges.

- b. Locate the dots, printed on the left and right side of the template. Place a self-adhesive dot directly across from the template's printed dots on or near the rack's EIA numbering strip. You will be using these dots to aid in correctly positioning the rail-alignment pins located on the front of each rail.
- c. Remove the rack-mounting template from the front of the rack. The front of your rack should now contain dots.
- d. Mount the rack-mounting template to the rack's back EIA frame. Place the rack-mounting template at the same EIA-numbered location that was used on the front of the rack.
- e. Wrap a self-adhesive dot directly across from the template's printed dots. Ensure that a portion of the self-adhesive dot wraps around the rack frame so that it can be seen from the front of the rack.
- f. Remove the rack-mounting template from the back of the rack. The back of your rack should now contain dots that have been partially wrapped around the frame.

Next topic: [Attach the mounting hardware to the rack.](#)

Parent topic: [Determining the location](#)

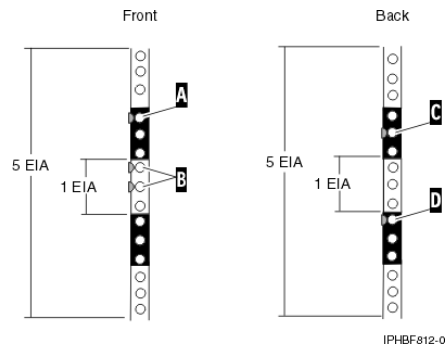
Marking the location without a rack-mounting template

If you do not have a rack-mounting template, complete the following steps:

1. Determine where in the rack to place the system. Install units in the lower part of the rack first. Place larger and heavier units in the lower part of the rack. Record the EIA location.
 - ◆ Each EIA unit consists of three holes.
 - ◆ The model ESCALA PL 245T/R is five EIA units high.
2. Facing the front of the rack and working from the right side, place a self-adhesive dot next to the top hole of the third EIA unit (from the bottom) of the five EIA units you will be using for this system unit as shown in A in [Figure 1](#).

Note: The self-adhesive dots are used to aid in identifying locations on the rack. If do not have the dots, use some other form of marking tool to aid you in identifying hole locations (for example, tape or a marker).

Figure 1. Marking holes on the front and back of the rack frame.



3. Place another self-adhesive dot next to the top hole of the second EIA unit from the bottom as shown in B in [Figure 1](#).
4. Place another self-adhesive dot next to the middle hole of the second EIA unit from the bottom as show in B in [Figure 1](#).
5. Mark the identical locations on the front left-side of the rack.
6. Go to the back of the rack. On the right side, place a self-adhesive dot next to the middle hole of the third EIA unit from the bottom, C in [Figure 1](#).
7. Place a self-adhesive dot at the top hole of the first EIA unit, D in [Figure 1](#).
8. Mark the corresponding holes on the left side of the rack.

Next topic: [Attaching the mounting hardware to the rack.](#)

Parent topic: [Determining the location](#)

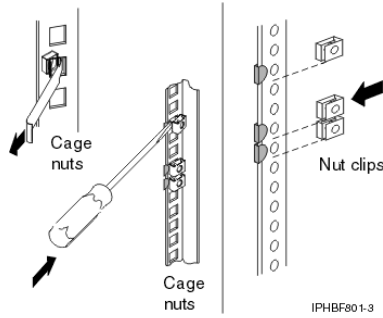
Attaching the mounting hardware to the rack

CAUTION: Installing the rails in the rack is a complex procedure. To install the rails correctly, you must perform each task in the following order. Failure to do so might cause rail failure and potential danger to yourself and the system unit.

To install the rack-mounting hardware into the rack, complete the following steps:

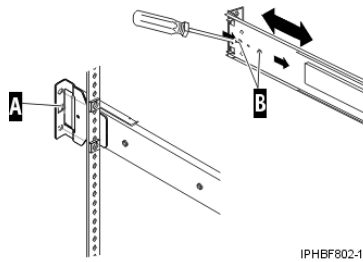
1. Using the cage-nut insertion tool or a flat-blade screwdriver, install cage nuts (for square rack-rail mounts) or clip nuts (for round rack-rail mounts) into the marked locations on the left and right rack rails.

Figure 1. Attaching the cage nuts or nut clips to the rack rails.



2. From the back of the rack, use the tab A on the back of the slide rails to align the slide rail to the back of the rack.

Figure 2. Aligning and adjusting the length of the rails.

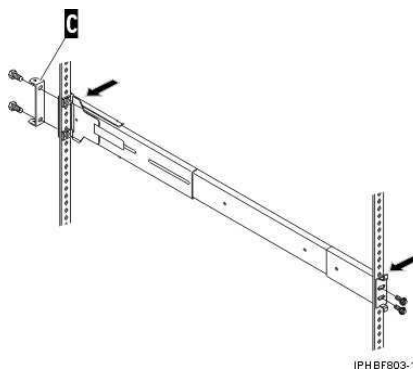


3. If necessary, adjust the length of the slide rail by using a flat-blade screwdriver to loosen the two adjustment screws B on the back of the rail to expand or contract the rail.

Note: You might need to extend the rail slides to access the adjustment screws B.

4. Locate the cable-management arm pivot bracket C. Using two M6 screws, secure the cable-management arm pivot bracket to the *left rail* (when you are facing the front of the rack) and into the rack.

Figure 3. Attaching the rails to the rack (cable-management arm pivot bracket pictured).



5. Using two M6 screws, attach the right rail to the back left of the rack.

Note: There is no bracket for the right rail.

6. Moving to the front of the rack, use two M6 screws to secure the right rail to the front of the rack.
7. Use two M6 screws to secure the left rail to the front of the rack.
8. Tighten the screws that you used to adjust the length of the rail in [Figure 2](#)

Next topic: [Installing the cable-management arm.](#)

Parent topic: [Installing the model ESCALA PL 245T/R into a rack](#)

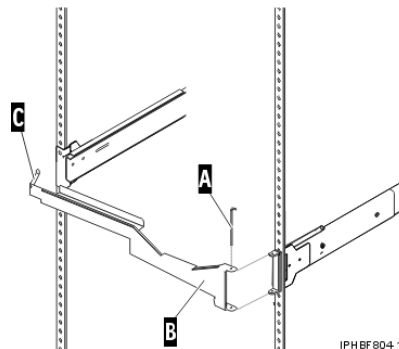
Installing the cable-management arm

To install the cable-management arm, complete the following steps:

Use the hinge pin A to attach the cable-management arm B to the cable-management hinge bracket.

Note: Ensure that the lever C is in the horizontal position inside the rack cabinet to prevent the cables from touching the back door of the rack.

Figure 1. Attaching the cable-management arm bracket.



Next topic: [Installing the system unit on the rail assembly.](#)

Parent topic: [Installing the model ESCALA PL 245T/R into a rack](#)

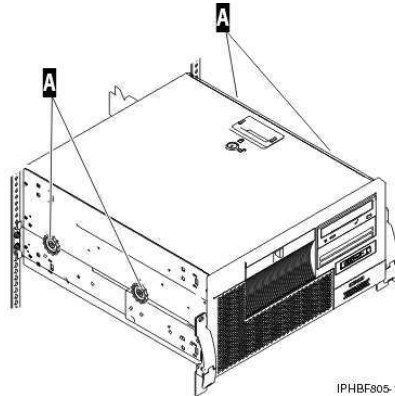
Installing the system unit on the rail assembly

Before installing the ESCALA PL 245T/R system unit on the rail assembly, ensure that the stabilizers are extended and the stabilizer plate is attached to the bottom front of the rack to prevent the rack from falling forward when the rails are pulled out of the rack. Refer to [Install the rack](#).

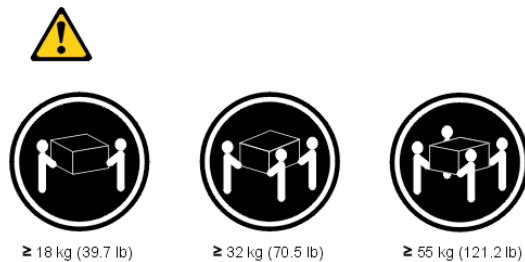
To install the ESCALA PL 245T/R on the rail assembly, complete the following steps:

1. The optional latch brackets may be preinstalled. If the latch brackets are not preinstalled and you want to install them, see [Installing or removing a rack-mounted system-unit latch bracket](#) and return to this section.
2. Ensure that the four blue rack-support wheels A are securely installed on the side of the system.

Figure 1. Rack-support wheels.



3. Fully extend the slide rails out of the rack.
4. Using at least two people, lift the system above the rails and rest the system on the rack-support wheels A on the rails.

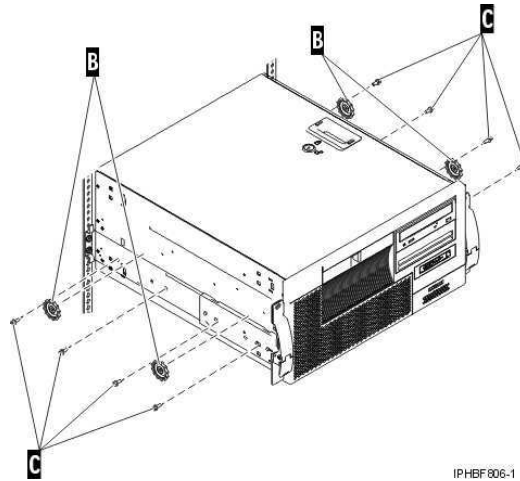


5. Carefully slide the system to align the screw holes on the slide rails with the system chassis.

Note: The front hole of the rail will align with the first hole in the system chassis.

6. Attach four M4 screws C on each side of the system to secure the system to the rails.

Figure 2. Securing the system to the rails and removing the rack-support wheels.



IPHEF806-1

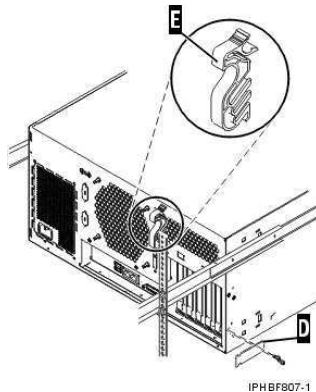
7. Remove the four blue rack-support wheels B.

CAUTION: Ensure that all eight screws are securely attached through the rail and into the system before removing the rack-support wheels. If the screws have not been inserted, the system may fall when the rack-support wheels are removed.

8. Using two M4 screws, install the cable bracket restraint D on the back left-side of the system.

Note: The bracket will face and be bent slightly outward.

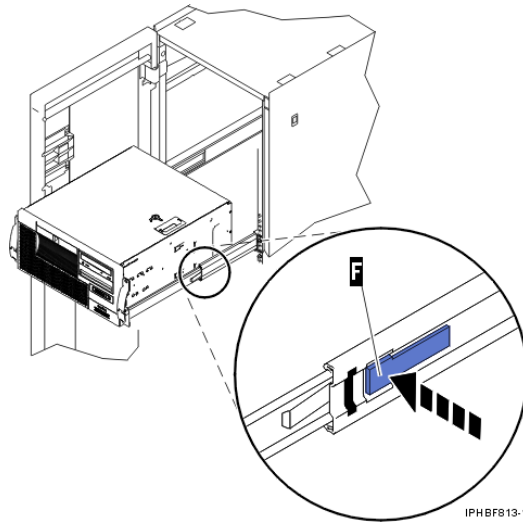
Figure 3. Securing the system to the rails and removing the rack-support wheels.



IPHEF807-1

9. Install the cable clamp E on the back of the system.
10. Attach and route the cables.
11. Simultaneously depress the safety latches, located on both sides of the rails F in [Figure 4](#) and push the system unit into the rack.

Figure 4. Press the safety latches and push the system unit into the rack.



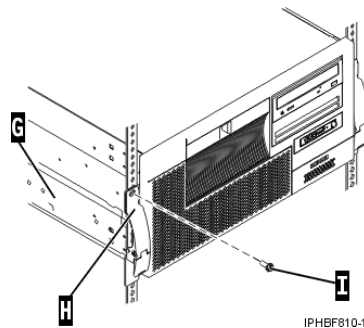
12. Slide the system drawer in and out of the rack two or three times. This action aligns the system drawer with the rails.
13. Push the system drawer back into the rack. Using a screwdriver, tighten the rail-retaining screws that secure the slide rails to the rack's rear flange on each side of the rack.
14. Slide the system drawer about halfway out of the rack.
15. Using a screwdriver or similar tool, tighten the front rail-retaining screws that secure the slide rails to the rack's front flange on each side of the rack.

Note: After the system rails are installed, do not extend them past their safety latches. The safety release latches stop the rails from overextending and separating. This action prevents the system drawer from being accidentally pulled out too far and dropped.

Attention: If any binding is detected, loosen the rail-retaining screws (front and back), and repeat steps 11 through 15.

16. When transporting the rack, fasten the system drawer to the rack enclosure by inserting the transport retaining screw I through the bezel and latch bracket H, and screwing it to the rack and second optional screw G that prevents the rail from sliding as shown in [Figure 5](#).

Figure 5. Transport retaining screws.



Parent topic: [Installing the model ESCALA PL 245T/R into a rack](#)

Installing the model D24 into a rack

This procedure assumes that you are installing the model D24 into an existing rack. If the rack is not installed, go to the instructions for [installing the rack](#) and then return to this procedure for instructions on installing the system unit into the rack.

When you have installed the D24 into the rack, you will need the instructions in [Disk drive](#) to connect and configure the D24.

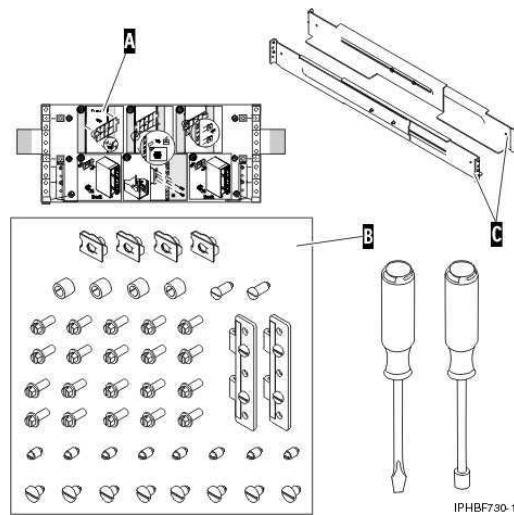
Note: This procedure applies only to the models that are designed to be mounted into a rack.

To install model D24 into a rack, perform the following tasks:

Attention: Installing the rails in the rack is a complex procedure. To install the rails correctly, you must perform each task in order. Failure to do so might cause rail failure and potential danger to yourself and the system unit.

1. Read the [Rack Safety Notices](#). Failure to read these notices could cause damage to the equipment or injury to the installer.
2. Complete a parts inventory (See [Complete a parts inventory](#)).
3. Locate the rack-mounting template A, the rack-mounting hardware kit B, and the system rail assemblies C that were included with your system unit. The system rails are identical.

Figure 1. Parts inventory



Note: The 8-mm nut driver and the flat-blade screwdriver are not included in the inventory, but these tools will assist you in completing the installation.

4. Determine where you will locate the expansion unit in the rack. See [Locate in rack](#). This system unit is 4 EIA units high.
5. Mark the location. See [Mark the location using rack-mounting template](#). If you do not have the rack-mounting template, see [Mark the location without a rack-mounting template](#).

Next topic: [Determining the location](#).

1. [Determining the location](#)
2. [Attaching the mounting hardware to the rack](#)
3. [Installing the D24 on the rail assembly](#)

Parent topic: [Installing a system or expansion unit into a rack](#)

Determining the location

Before installing the D24 into a rack, complete the following steps:

1. Read the [Rack Safety Notices](#).
2. Plan where you will place the units. Place the larger and heavier units in the lower part of the rack. The D24 system units are four EIA units high.
3. Remove the filler panels to allow access to the inside of the rack enclosure where you plan to place the unit.

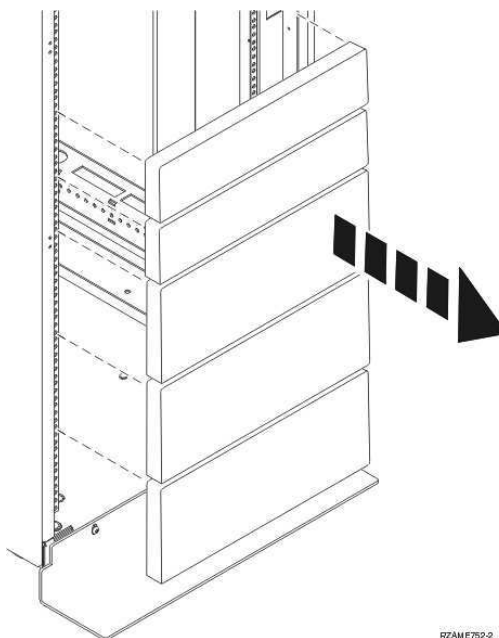


Figure 1. Removing the filler panels.

4. Remove the front and back rack doors if necessary.
5. Use the rack-mounting template to mark the location (see [Mark location using rack-mounting template](#)). If you do not have a rack-mounting template, follow the instructions for marking the location without a template (see [Mark location without rack-mounting template](#)).

Next topics:

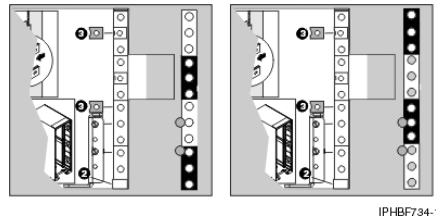
- [Marking the location without a rack-mounting template.](#)
 - [Marking the location using rack-mounting template.](#)
-
- **[Marking the location using rack-mounting template](#)**
 - **[Marking the location without a rack-mounting template](#)**

Parent topic: [Installing the model 31D/24 into a rack](#) **Next topic:** [Attaching the mounting hardware to the rack](#)

Marking the location using rack-mounting template

- Using the rack-mounting template, determine where in the rack to place the system unit. Install units in the lower part of the rack first. Place larger and heavier units in the lower part of the rack.

Figure 1. Example of a rack-mounting template.

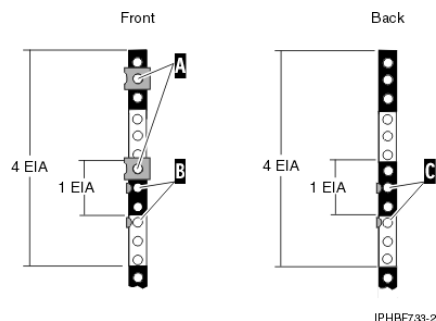


Note: The front of the rack-mounting template has printed illustrations designed to help you identify the EIA location holes to be used when you add units to the rack. *Do not* use the rack-mounting template without completing the following steps.

- Note the following when using the rack-mounting template:
 - ◆ Each black or white unit on the template is equal to one EIA unit.
 - ◆ Each EIA unit consists of three holes.
 - ◆ The EIA units illustrated on the template must be aligned with the EIA units located on the rack.
 - ◆ It is not necessary to align like-colored EIA units. For example, a black EIA unit on the rack-mounting template can be aligned with a white EIA unit located on the rack.
 - ◆ The template is two-sided. When using the template, ensure that the appropriate side of the template is facing out.

Figure 2 shows one EIA unit and four EIA units. Depending on the rack manufacturer, the EIA units might be separated either by color or by a line. Notice that the holes along the rail are not evenly spaced. If your rack has no color or line separation between EIA units, assume that each EIA unit begins where the hole spacing A is closest together.

Figure 2. EIA units example.



To use the rack-mounting template, follow these steps:

- a. Remove the protective coating from each adhesive strip located on the back of the rack-mounting template. Lightly press the template into position on the rack. Ensure that both the left and right sides are at the corresponding EIA locations.

Note: The tabs on each side of the template show a notch to indicate the proper spacing between the front flanges.

- b. Locate the dots, printed on the left and right side of the template. Place a self-adhesive dot directly across from the template's printed dots on or near the rack's EIA numbering strip. You will be using these dots to aid in correctly positioning the rail-alignment pins located on the front of each rail.
- c. Remove the rack-mounting template from the front of the rack. The front of your rack should now contain dots.
- d. Mount the rack-mounting template to the rack's back EIA frame. Place the rack-mounting template at the same EIA-numbered location that was used on the front of the rack.
- e. Wrap a self-adhesive dot directly across from the template's printed dots. Ensure that a portion of the self-adhesive dot wraps around the rack frame so that it can be seen from the front of the rack.
- f. Remove the rack-mounting template from the back of the rack. The back of your rack should now contain dots that have been partially wrapped around the frame.

Next topic: [Attaching the mounting hardware to the rack.](#)

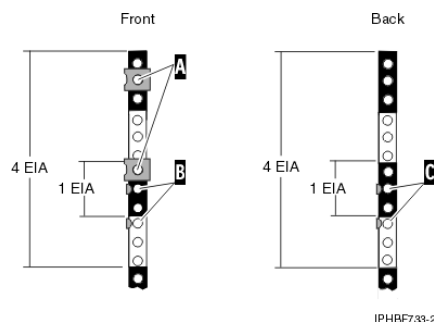
Parent topic: [Determining the location](#)

Marking the location without a rack-mounting template

If you do not have a rack-mounting template, complete the following steps:

1. Determine where in the rack to place the system. Record the EIA location.
2. Note the following:
 - ◆ Each EIA unit consists of three holes.
 - ◆ The D24 is four EIA units high.
3. Facing the front of the rack and working from the left side, place a supplied self-adhesive dot next to the top hole B of the first EIA unit that you selected.

Figure 1. Marking the installation locations.



Note: The self-adhesive dots are used to aid in identifying locations on the rack. If do not have any of the dots, use some other form of marking tool to aid you in identifying hole locations (for example, tape, a marker, or pencil).

4. On the left rail, place another self-adhesive dot next to the middle hole B of the second (EIA unit above) EIA unit. There will be one hole between the dots.
5. Repeat these steps to place the two adhesive dots on the front-right rail.
6. Go to the back of the rack. On the left side, find the EIA unit that corresponds to the bottom EIA unit marked on the front of the rack.
7. Place a self-adhesive dot at the top hole C of the bottom EIA unit.
8. Place a self-adhesive dot at the middle hole C of the second (above) EIA unit.
9. Mark the corresponding holes on the right side of the rack.

Next topic: [Attaching the mounting hardware to the rack.](#)

Parent topic: [Determining the location](#)

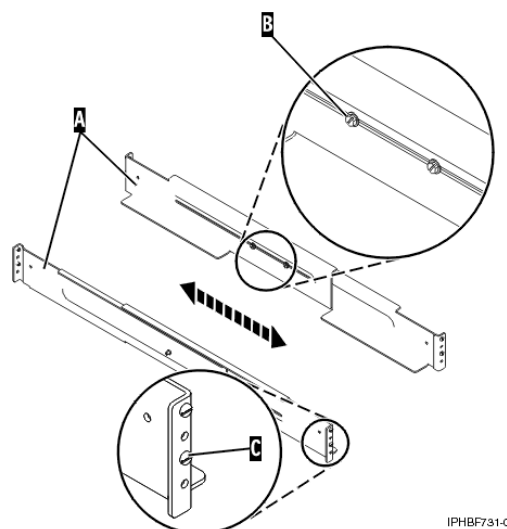
Attaching the mounting hardware to the rack

CAUTION: Installing the rails in the rack is a complex procedure. To install the rails correctly, you must perform each task in the following order. Failure to do so might cause rail failure and potential danger to yourself and the system unit.

To install the mounting hardware into the rack, follow these steps:

1. Loosen the two screws B in the middle of both rails A to allow each rail to extend.

Figure 1. Extending the system rails.

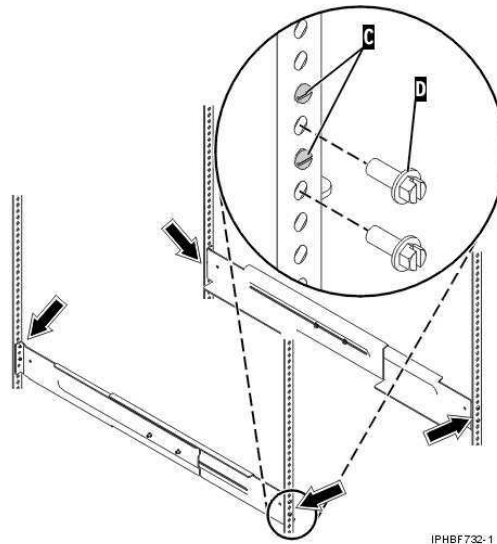


2. Starting at the back of the rack, extend the left rail and insert the rail pins C into the marked locations the rack so that the rail is facing upward.

Note: Although the rail installation can be completed by one person, the installation will be easier if one person is positioned at the front of the rack and one person is positioned at the back of the rack.

3. From the back of the rack, extend the right rail and insert the rail pins C into the marked locations.
4. Moving to the front of the rack, extend the left rail and insert the rail pins C into the marked locations.
5. Extend the right rail and insert the rail pins C into the marked locations.
6. Using two M5 screws D, secure the left rail to the front of rack below each rail pin C.

Figure 2. Attaching the system rails.



7. Using two M5 screws D, secure the right rail to the front of the rack.
8. Moving to the back of the rack and using two M5 screws D, secure the left rail to the back of the rack.
9. Using two M5 screws D, secure the right rail to the back of the rack.
10. Tighten the two screws in the middle of the left rail and the two screws in the middle of the right rail. Refer to [Figure 2](#).
11. Insert two nut clips at the marked location on the front-left rail.
12. Insert two nut clips at the marked locations on the front-right rail.

Next topic: [Installing the D24 on the rail assembly](#).

Parent topic: [Installing the model 31D/24 into a rack](#) Previous topic: [Determining the location](#) Next topic: [Installing the D24 on the rail assembly](#)

Installing the D24 on the rail assembly

Before installing the D24 on the rail assembly, ensure that the stabilizers are extended and the tip plate is attached to the bottom front of the rack to prevent the rack from falling forward when the rails are pulled out of the rack. Refer to [Rack Safety Notices](#).

To install the system unit on the rail assembly, follow these steps:

1. If the bezel is installed on the front of the system, remove it by pressing in on the two release buttons.

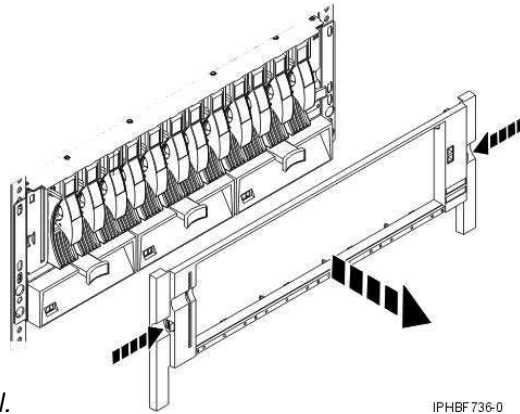


Figure 1. Removing the bezel.

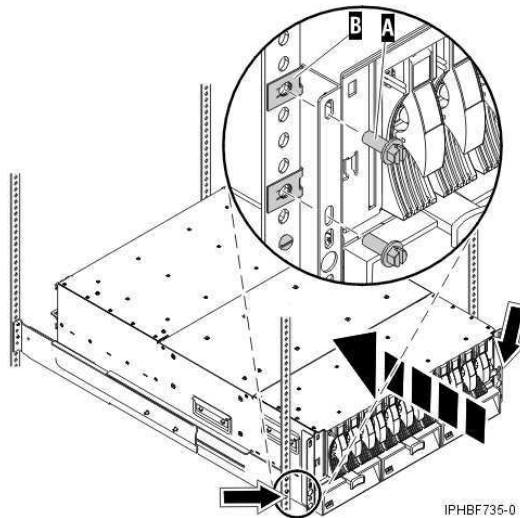
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- Using three people, lift the system unit and position it over front of the rails.

Attention: Three people are required to safely lift the system. Using fewer than three people to lift the system can result in injury.

- Push the system into the rack until it is completely installed into the rack.
- If the securing plates are not preinstalled on the back of the system, attach the plates to the back left and back right of the system. The securing plates are illustrated in [Figure 3](#).
- Install the two M5 securing screws A through the chassis and into the nut clips B on the left and right rail.

Figure 2. Installing the securing screws.



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- At the back of the rack, install two M5 securing screws C through both (two) the back of left and right securing plates and into the rack rail.

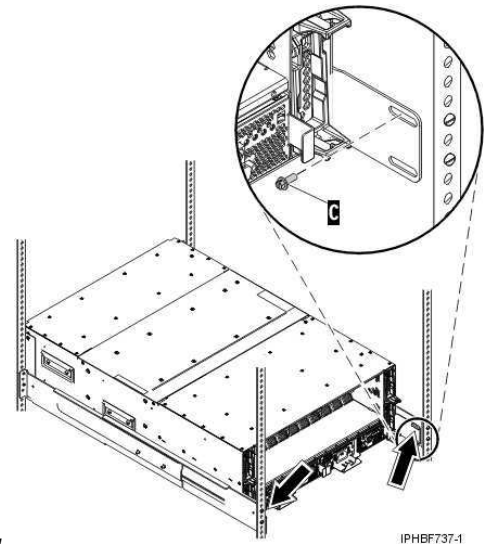


Figure 3. Securing the system to the back of the rack.
7. Install the bezel onto the system.

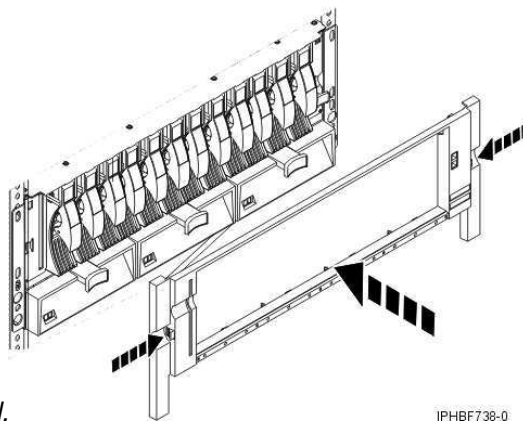


Figure 4. Installing the bezel.

For instructions on how to connect and configure the D24 when you have completed installing the D24 into the rack, see [Connecting the 7031-D24 or 7031-T24 SCSI disk drive enclosure](#).

Parent topic: [Installing the model 31D/24 into a rack](#) **Previous topic:** [Attaching the mounting hardware to the rack](#)

Installing the 50/88 or 05/88 expansion unit into a rack

This procedure assumes that you are installing the model 50/88 or the 05/88 expansion unit into an existing rack. If the rack is not installed, go to the instructions for [Install the rack](#), and then return to this procedure for instructions on installing the expansion unit into the rack.

Note: This procedure applies only to the models that are designed to be mounted in a rack. Do not attempt to install a stand-alone model in a rack.

To install the 50/88 or the 05/88 expansion unit into a rack, complete the following steps:

CAUTION: Installing the rails in the rack is a complex procedure. To install the rails correctly, you must perform each task in the following order. Failure to do so might cause rail failure and potential danger to yourself and the system unit.

1. Read the [Rack Safety Notices](#).
2. Complete a parts inventory.
 - ◆ Locate the kitting report in an accessory box.
 - ◆ Ensure that you received all the parts that you ordered.
 If there are incorrect, missing or damaged parts contact:
 - ◆ Your reseller
3. If necessary, remove the front and the back doors of the rack to gain adequate access to EIA rails.
4. Install the right rail.
 - a. Starting with the lowest EIA unit available, or EIA unit one in an empty rack, insert the rail with pins toward the front of the rack.
 - b. Install four nut clips in the EIA rail in the back of the rack.
 - c. Secure the drawer rail to the back EIA rail using four screws.
5. Attach the cable bracket to the right drawer rail.
 - a. Insert the flange of the cable bracket into the hole of drawer rail with the cable bracket facing up.
 - b. Rotate the cable bracket down until the screw can be installed through the drawer rail and into the cable bracket.
 - c. Install the back rack bracket.

Note: The 50/88 or the 05/88 expansion units are eight EIA units high.

- ◇ Install two nut clips on the back of the EIA rail.
 - ◇ Secure the back rack bracket to back EIA rail with two screws. *Do not* fully tighten the bracket at this time to allow space for sliding in the expansion unit later.
6. Repeat the rail mounting procedure for left rail, cable bracket, and the back rack bracket.
 7. Remove the black outer cover from the front of the expansion unit.
 8. Remove the perforated ESD cover from the front of the expansion unit.
 9. Remove the plenum assembly from the back of the expansion unit.
 10. Remove the power supplies.
 - a. Unplug the power cord from power supply.
 - b. Pull out the blue knob and pull handle down.
 - c. Slide the power supply out of the chassis.
 - d. Repeat the above substeps for the second supply (if applicable).
 11. Using two people, place expansion unit into the rack. Position the expansion unit with the power supplies facing toward the front of the rack.
 12. Attach the expansion unit to the rack.
 - a. Install two nut clips on each EIA rail on the front of rack and secure them with four screws.
 - b. With 50/88 or the 05/88 expansion unit secured to front of rack, position and secure the back rack brackets.
 13. Reinstall the power supplies in the expansion unit. Ensure that the power supplies are fully seated in the chassis.
 14. Install the front perforated ESD cover on the expansion unit.
 15. Install the plenum assembly on back of expansion unit. The plenum assembly slides on top of the L-shaped brackets on the inner sides of the expansion unit.
 16. Connect the ac power cords from the expansion unit to power distribution unit (PDU) power outlets. If the dual line cord feature is present on system, ensure that the ac power line cords are connected to separate PDU power outlets.
 17. Install the black outer cover to front of expansion unit.
 18. Install the front or the back door to the rack if they were previously removed from the rack.

Parent topic: [Installing a system or expansion unit into a rack](#)

Installing the 50/95, 05/95, or 11D/20 expansion unit into a rack

This procedure assumes that you are installing the model 50/95, 05/95, or 11D/20 expansion unit into an existing rack. If the rack is not installed, go to the instructions for [Install the rack](#). and then return to this procedure for instructions on installing the system unit into the rack.

Note: This procedure applies only to the models that are designed to be mounted in a rack. Do not attempt to install a stand-alone model in a rack.

To install the 50/95, 05/95, or 11D/20 into a rack, complete the following steps:

1. Read the [Rack Safety Notices](#).
2. Unpack the template and rack hardware.

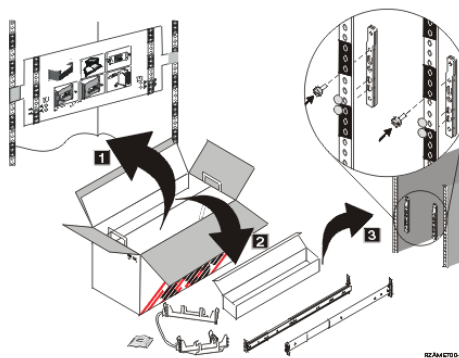


Figure 1. Unpacking the rack template and hardware.

3. Complete a parts inventory (See [Complete a parts inventory](#)).
4. Determine where you will locate the expansion unit in the rack. See [Locate in rack](#).
5. Mark the location. See [Mark the location using rack-mounting template](#). If you do not have the rack-mounting template, see [Mark the location without a rack-mounting template](#).

- [Attaching the cable-management arm to the standard rails](#)
- [Determining the location](#)
- [Installing the 50/95, 05/95, or 11D/20 expansion unit onto the rail assembly](#)
- [Installing the 50/95, 05/95, or 11D/20 expansion unit into a rack](#)

Parent topic: [Installing a system or expansion unit into a rack](#)

Attaching the cable-management arm to the standard rails

If the system was shipped with the standard (fixed length) rails and the cable-management arm is not attached to the rails, complete the following steps. Otherwise, go to [Determining the location](#).

1. Insert the cable-management arm rail tab B into the rail.
2. Rotate the cable-management arm A as shown in the following illustration.

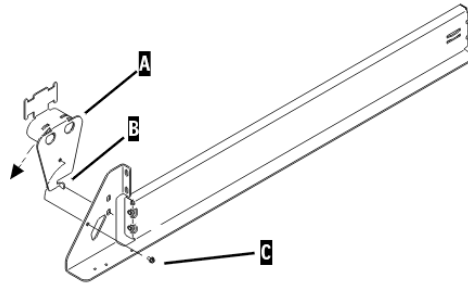


Figure 1. Rotating the cable-management arm.

3. Secure the cable-management arm A with the retaining screw C.
4. Repeat steps 1 through 3 for the other rail.

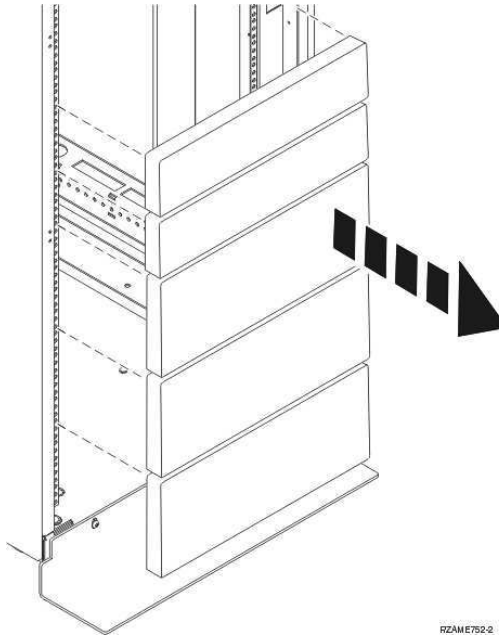
Next topic: [Determining the location](#).

Parent topic: [Installing the 50/95, 05/95, or 11D/20 expansion unit into a rack](#)

Determining the location

Before installing the system unit or expansion unit into a rack, complete the following steps:

1. Plan where you will place the units. Place the larger and heavier units in the lower part of the rack.
2. If necessary, remove the filler panels to allow access to the inside of the rack enclosure where you plan to place the unit.



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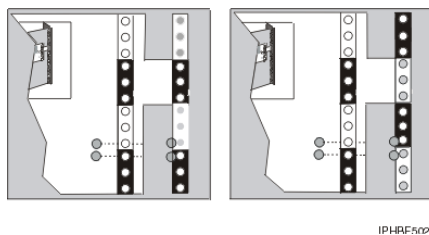
3. If necessary, remove the front and back rack doors.
 4. Use the rack-mounting template to mark the location (see [Mark location using rack-mounting template.](#)) If you do not have a rack-mounting template, follow the instructions for marking the location without a template, see [Mark location without rack-mounting template.](#)
- [Marking the location using a rack-mounting template](#)
 - [Marking the location without a rack-mounting template](#)

Parent topic: [Installing the 50/95, 05/95, or 11D/20 expansion unit into a rack](#)

Marking the location using a rack-mounting template

1. Using the rack-mounting template, determine where in the rack to place the system unit. Install units in the lower part of the rack first. Place larger and heavier units in the lower part of the rack.

Figure 1. Rack-mounting template



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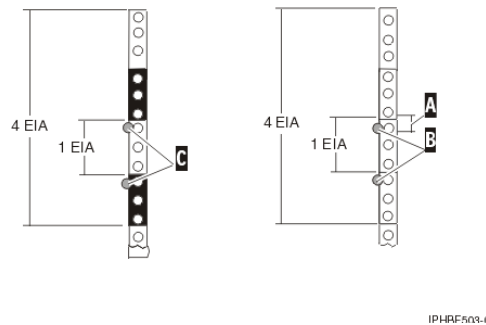
Note: The front of the rack-mounting template has printed illustrations designed to help you identify the EIA location holes to be used when you add units to the rack. *Do not* use the rack-mounting template without completing the following steps.

2. Note the following when using the rack-mounting template:
 - ◆ Each black or white unit on the template is equal to one EIA unit.
 - ◆ Each EIA unit consists of three holes.
 - ◆ The EIA units illustrated on the template must be aligned with the EIA units located on the rack.

- ◆ It is not necessary to align like-colored EIA units. For example, a black EIA unit on the rack-mounting template can be aligned with a white EIA unit located on the rack.
- ◆ The template is two-sided. When using the template, ensure that the appropriate side of the template is facing out.

Figure 2 shows one EIA unit and four EIA units. Depending on the rack manufacturer, the EIA units might be separated either by color or by a line. Notice that the holes along the rail are not evenly spaced. If your rack has no color or line separation between EIA units, assume that each EIA unit begins where the hole spacing A is closest together.

Figure 2. EIA units



To use the rack-mounting template, complete the following steps:

- a. Remove the protective coating from each adhesive strip located on the back of the rack-mounting template. Lightly press the template into position on the rack. Ensure that both the left and right sides are at the corresponding EIA locations.

Note: The tabs on each side of the template show a notch to indicate the proper spacing between the front flanges.

- b. Locate the dots, printed on the left and right side of the template. Place a self-adhesive dot directly across from the template's printed dots on or near the rack's EIA numbering strip. You will be using these dots to aid in correctly positioning the rail-alignment pins located on the front of each rail.
 - c. Remove the rack-mounting template from the front of the rack. The front of your rack should now contain dots.
 - d. Mount the rack-mounting template to the rack's back EIA frame. Place the rack-mounting template at the same EIA-numbered location that was used on the front of the rack.
 - e. Wrap a self-adhesive dot directly across from the template's printed dots. Ensure that a portion of the self-adhesive dot wraps around the rack frame so that it can be seen from the front of the rack.
 - f. Remove the rack-mounting template from the back of the rack. The back of your rack should now contain dots that have been partially wrapped around the frame.
3. Attach the rail assembly to the rack. See [Attaching the mounting hardware](#).

Parent topic: [Determining the location](#)

Marking the location without a rack-mounting template

If you do not have a rack-mounting template, do the following:

1. Determine where in the rack to place the system. Record the EIA location.
2. Note the following:

- ◆ Each black or white unit is equal to 1 EIA unit.
 - ◆ Each EIA unit consists of three holes.
 - ◆ The 50/95 and 11D/20 expansion units are four EIA units high and the 05/95 is five EIA units high.
3. Facing the front of the rack and working from the right side, place a supplied self-adhesive dot next to the top hole of the bottom EIA unit.

Note: The self-adhesive dots are used to aid in identifying locations on the rack. If you no longer have any of the dots, use some other form of marking tool to aid you in identifying hole locations (for example, tape, a marker, or pencil).

4. Place another self-adhesive dot next to the bottom hole of the next (above) EIA unit.
5. Repeat steps 3 through 4 for the corresponding holes located on the left side of the rack.
6. Go to the back of the rack. On the right side, find the EIA unit that corresponds to the bottom EIA unit marked on the front of the rack.
7. Place a self-adhesive dot at the middle hole of the bottom EIA unit.
8. Place a self-adhesive dot at the middle hole of the next (above) EIA unit. There will be two holes between the two dots.
9. Mark the corresponding holes on the left side of the rack.
10. Attach two nut clips to the left side of the rack.
 - a. Put the first nut clip in the top hole of the third EIA unit. There will be three holes between this nut clip and the highest dot on the left side.
 - b. Put the second nut clip in the middle hole of the fourth nut clip. There will be one hole between the two nut clips.

Parent topic: [Determining the location](#)

Installing the 50/95, 05/95, or 11D/20 expansion unit onto the rail assembly

To install the 50/95, 05/95, or 11D/20 rails into the rack, complete the following steps:

1. Using two screws A, attach the left rail assembly to the front of the rack.

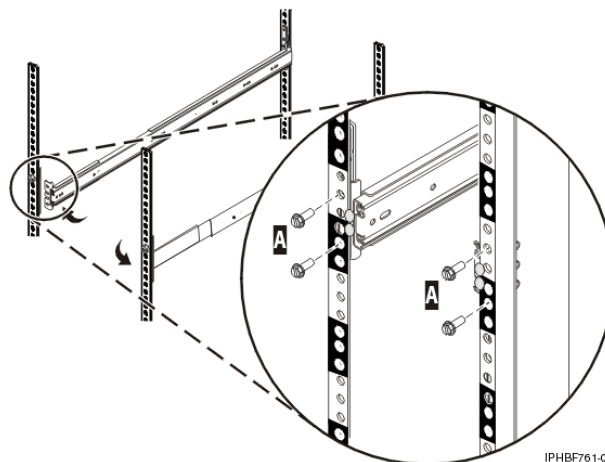


Figure 1. Attaching the rails to the front of the rack.

2. Using two screws A, attach the right rail assembly to the front of the rack.
3. Move to the back of the rack.
4. Extend the left and right rails.
5. Using two screws B, attach the left rail assembly to the back of the rack.

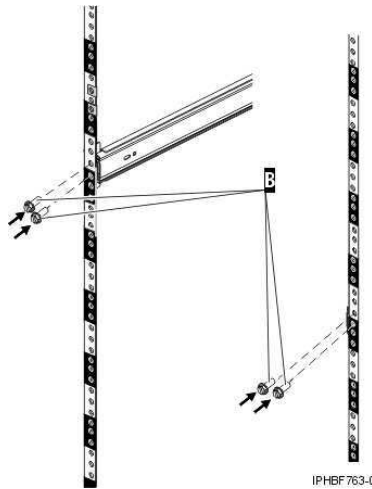


Figure 2. Attaching the rails to the back of the rack.

6. Using two screws B, attach the right rail assembly to the back of the rack.

Parent topic: [Installing the 50/95, 05/95, or 11D/20 expansion unit into a rack](#)

Installing the 50/95, 05/95, or 11D/20 expansion unit into a rack

To install the 50/95, 05/95, or 11D/20 into a rack, complete the following steps:

Attention: This expansion unit weighs in excess of 100 pounds (45 kg). A minimum of three people are required to lift the unit and install it on the rails.

1. Using four screws A, install the rail-mounting guides B to the left and right side of the expansion unit chassis.

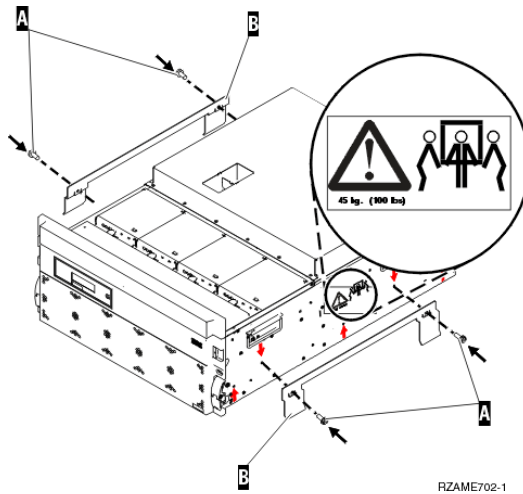


Figure 1. Attaching the rail-mounting guides.

2. Extend the rails from the rack until they lock into place.
3. Using at least three people, lift the expansion unit onto the rails. The rail guides B will go over the rails.
4. Align the mounting holes on the chassis with their corresponding holes on the rail.
5. Install the six screws C through the rails and secure the screws to the expansion unit chassis.

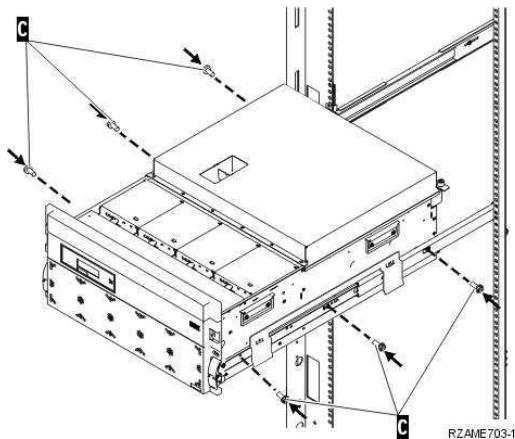
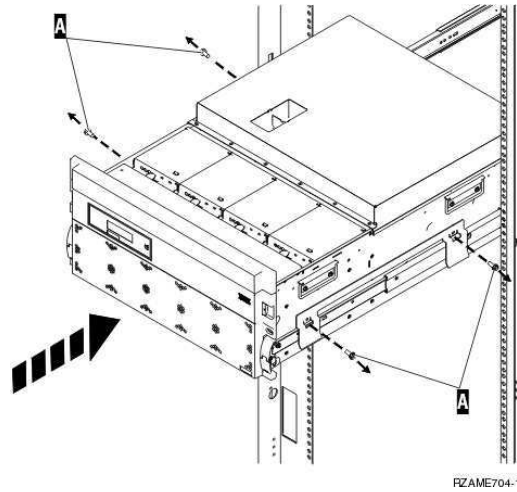


Figure 2. Installing the expansion unit onto the rails.

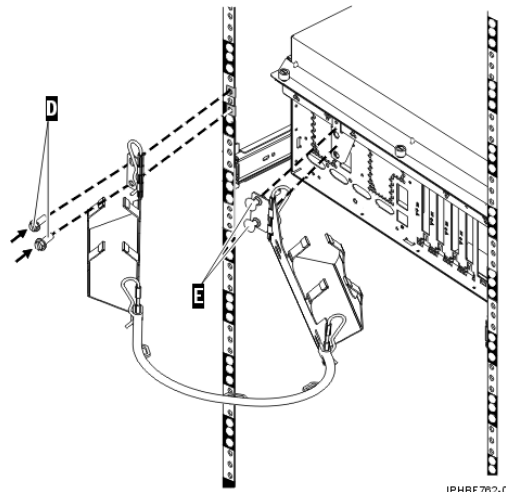
6. Remove the four screws A securing the rail-mounting guides B to the expansion unit and remove the rail mounting guides.



PZAME704-1

Figure 3. Removing the rail-mounting guides.

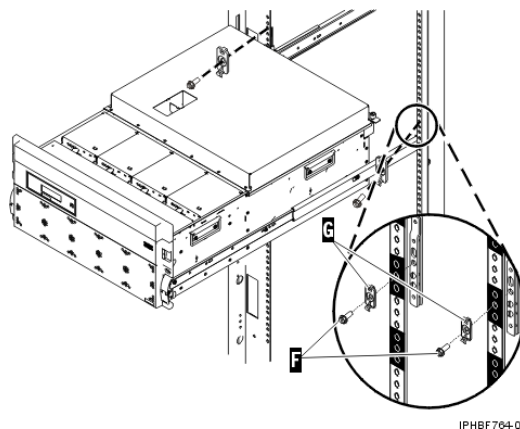
7. Slide the system approximately three-quarters of the way into the rack.
8. Move to the back of the rack.
9. Attach one end of the cable-management arm to the back of the rack with two screws D and to other end of the arm to the back of the expansion unit with two screws E.



IPHBF762-0

Figure 4. Attaching the cable-management arm.

10. Attach the securing screws mounts G with two screws F to the left and right rack rails.



IPHBF764-0

Figure 5. Attaching the securing screw mounts.

11. Slide the expansion unit into the rack.

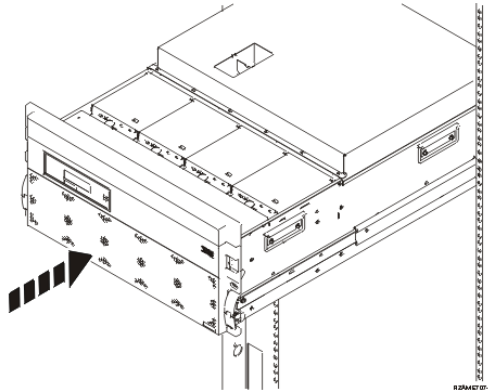


Figure 6. Sliding the expansion unit into the rack.

12. If the system will be transported, install the two securing screws through the front of the expansion unit and into the securing screw mounts.

Parent topic: [Installing the 50/95, 05/95, or 11D/20 expansion unit into a rack](#)

Installing the 57/90 or 11D/11 expansion unit in a rack

This procedure provides instructions for installing the model 57/90 or 11D/11 expansion unit into an existing rack. If the rack is not installed, go to the instructions for [Installing the rack](#), and then return to this procedure for instructions on installing the system unit into the rack.

Restriction: This procedure applies only to the models that are designed to be mounted in a rack. Do not attempt to install a stand-alone model in a rack.

If you are installing a drawer into an existing shell, skip to [Power off](#). To install the drawer in a new shell, complete the following steps:

CAUTION: Installing the rails in the rack is a complex procedure. To install the rails correctly, you must perform each task in the following order. Failure to do so might cause rail failure and potential danger to yourself and the system unit.

1. Read the [Rack Safety Notices](#).
2. Complete a parts inventory.
 - ◆ Locate the kitting report in an accessory box.
 - ◆ Ensure that you received all the parts that you ordered. There are two types of rail kits and templates for this system.

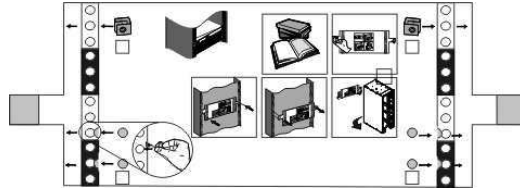


Figure 1. Rack-mounting template for the standard (fixed length) rails.

- ◆ Two rails with cable-management arms

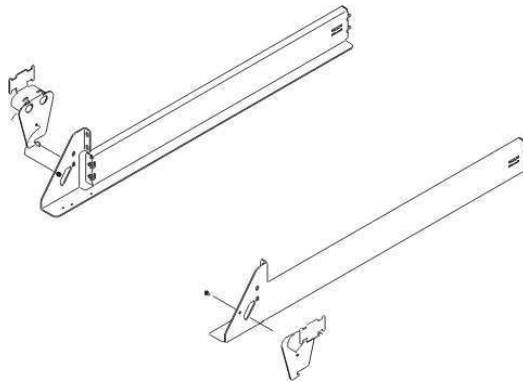


Figure 2. Standard rails with cable-management arms.

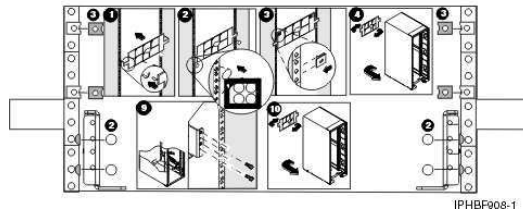


Figure 3. Rack-mounting template for the expandable rails.

- ◆ Two expandable rails with extension brackets

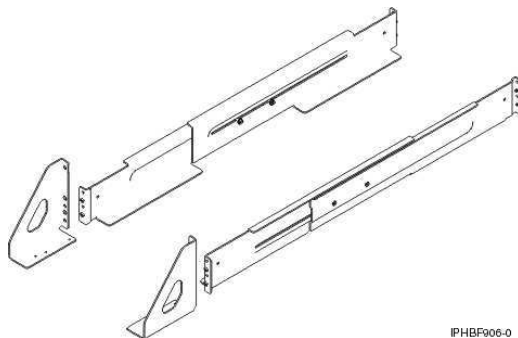
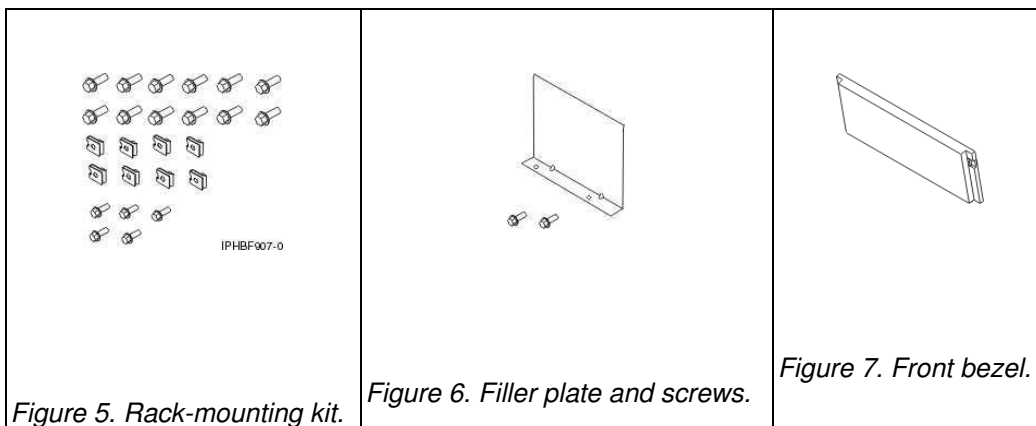


Figure 4. Expandable rails with extension brackets.

Note: There are two versions of the rail kits for the 57/90 or 11D/11.



If there are incorrect, missing, or damaged parts contact:

◆ Your reseller

3. Ensure that there is an empty slot in an existing shell or that there is enough room in the rack to install a new shell.

- [Powering off the system and removing power](#)
- [Marking the location using the rack-mounting template](#)
- [Marking the location without a rack-mounting template](#)
- [Installing the standard rails](#)
- [Installing the expandable rails and extension bracket into the rack](#)
- [Installing the shell](#)
- [Installing the system unit](#)
- [Attaching the RIO, power controller \(SPCN\), and power cables](#)
- [Powering on the system unit](#)

Parent topic: [Installing a system or expansion unit into a rack](#)

Powering off the system and removing power

1. Ensure that the system you are attaching to is running the latest level of firmware. For information on checking or upgrading the firmware level or your system, refer to the firmware updates section of your system's installation guide.
2. After ensuring that your firmware is at the latest level, shut down the and power off the system that you are attaching to. For information about shutting down and powering off the system, see the documentation provided with your expansion unit.
3. If you are installing a drawer into an existing shell, continue with [Installing the system unit](#). Otherwise, refer to [Marking the location using the rack-mounting template](#) or [Marking the location without a rack-mounting template](#).

Parent topic: [Installing the 57/90 or 11D/11 expansion unit in a rack](#)

Marking the location using the rack-mounting template

If you do not have a rack-mounting template, go to [Marking the location without a rack-mounting template](#).

Note:

1. Read the [Rack Safety Notices](#).
2. The rack-mounting template has printed illustrations located on the front and back of the template. Each illustration is designed to aid you in identifying the EIA (Electronics Industries Association) location holes used when planning to populate your rack. *Do not* use the rack-mounting template without reading and understanding the following steps.
3. Each step must be completed in its entirety. Skipping steps or not following steps in sequence may cause rail failure, resulting in system-drawer damage or bodily injury.
4. Use the front side of the rack-mounting template when installing the hardware on the front of the rack, and the back side of the rack mounting template when installing the hardware on the back of the rack. You can distinguish the front of the template from the back by the step numbers. The steps on the front of the rack-mounting template begin with the number 1.

To install the nut clips into the rack, using the rack-mounting template, complete the following steps:

1. Locate the rack-mounting template, nut clips B, self adhesive dots A, and rails.
2. Using the rack-mounting template: Each black or white unit on the template is equal to one EIA unit. Each EIA unit consists of three holes. The EIA units illustrated on the template must be aligned with an EIA unit located on the rack. It is not necessary to align like-colored EIA units. For example, a black EIA unit illustrated on the rack-mounting template does not have to be aligned with a black EIA unit located on the rack. A black EIA unit on the rack-mounting template can be aligned with a white EIA unit located on the rack.

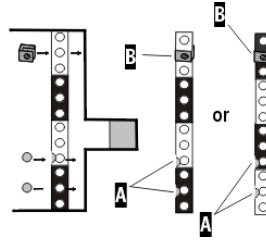
To use the rack-mounting template, do the following:

- a. Determine where in the rack to place the drawer. Make note of the EIA location number. Align the black and white strip located on each side of the rack-mounting template with an EIA location on each side of the rack.
- b. Remove the protective coating from each adhesive strip located on the back tabs of the rack-mounting template. Lightly press the template into position onto the rack. Ensure that the rack-mounting template is level.

Note: Make note of the rack EIA location where you mounted the template. You will use the same EIA locations on the back of the rack.

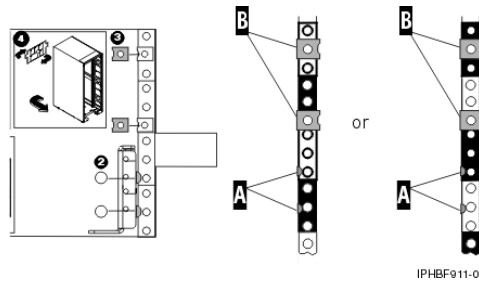
- c. Note the four dots printed on the front side of the template. Attach a self-adhesive dot A directly across from the template's printed dots onto the rack's EIA strip. These dots determine the placement of the rail-alignment pins.

Note: When attaching the self-adhesive dots, fold the dots around the EIA rail as shown on the template and in the following illustration.



- A Folded self-adhesive dot
- B Nut clip

Figure 1. Attaching the dots and nut clips for the standard rails.



- A Folded self-adhesive dot
- B Nut clip

Figure 2. Attaching the dots and nut clips for the expandable rails.

- d. Attach the nut clips B directly across from the template's printed nut clips onto the rack's EIA strip.
- e. Remove the rack-mounting template from the front of the rack. The four self-adhesive dots and two nut clips have been placed on the front of the rack.
- f. Go to the back of the rack.
- g. Facing the back of the rack, remove the protective coating from each adhesive strip, and attach the backside of the rack-mounting template to the back of the rack. Place the template on the corresponding EIA locations that were noted from the front of the rack.

Note: The steps on the back of the rack-mounting template begin with number 7.

- h. Note the four dots A printed on the backside of the template. Attach a self-adhesive dot directly across from the template's printed dots onto the rack's EIA strip.

Note: These dots indicate where the rail retaining screws will be attached.

- i. Attach the nut clips B directly across from the templates printed nut clips onto the rack's EIA strip.

Next topic: [Installing the standard rails](#) or [Installing the expandable rails and extension bracket into the rack](#).

Parent topic: [Installing the 57/90 or 11D/11 expansion unit in a rack](#)

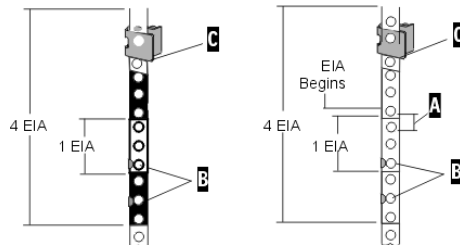
Marking the location without a rack-mounting template

To mark the installation location and install the nut clips into a rack without using the rack-mounting template, complete the following steps:

1. This drawer requires four EIA units. Determine where in the rack to place the drawer and make note of the EIA location numbers.

Note: An EIA section on the rack consists of a grouping of three holes.

The following illustration shows a 1-EIA unit and a 4-EIA unit. Depending on the rack manufacturer, the EIA units may be separated either by color or by a line. The holes along the EIA strip are not evenly spaced. If your rack has no color or line separation between EIAs, assume that each EIA section begins where the hole spacing is closest together.



- A EIA hole spacing
- B Self-adhesive dot placement
- C Nut clip

Figure 1. EIA units with the standard rails.

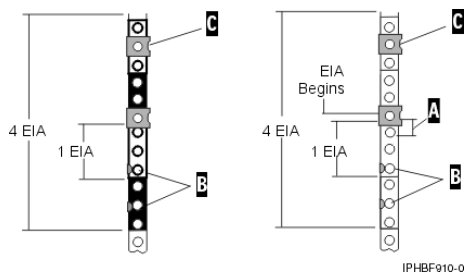


Figure 2. EIA units with the expandable rails.

2. Facing the front of the rack and working from the right side, locate the bottom EIA unit that your drawer will be using and make a note of the EIA location. Place a self-adhesive dot B next to the middle hole of this EIA unit and wrap the dot around the rail, or mark the rack where it can be seen from the rear of the rack.

Note: The self-adhesive dots B are used to identify the EIA unit holes located on the rack. Alignment pins located on the rail alignment brackets are placed through the identified holes when mounting the rails. If you no longer have any of the dots, use some other form of marking tool to aid you in identifying the hole locations. (for example, marker or pencil).

3. Begin with the hole identified by the dot, or mark, placed in substep 2; count up two holes and place the second dot, or mark the rack where it can be seen from the rear, next to the hole.
4. Begin with the hole identified in substep 3, count up seven holes and place a nut clip. The nut clip C aids in securing your drawer to the rack.
5. Repeat substeps 2 through 4 on the left side of the rack.
6. Facing the back of the rack and working from the right side, locate the bottom EIA unit that your drawer will be using. Place a supplied self-adhesive dot B, or make a mark next to the middle hole of this EIA unit.
7. Begin with the hole identified by the dot, or mark, placed in substep 6, count up two holes and place the second dot, or mark, next to the hole.
8. Begin with the top dot, count up three holes and place a nut clip in that location.
9. Count up two more holes and place a second nut clip in that location.

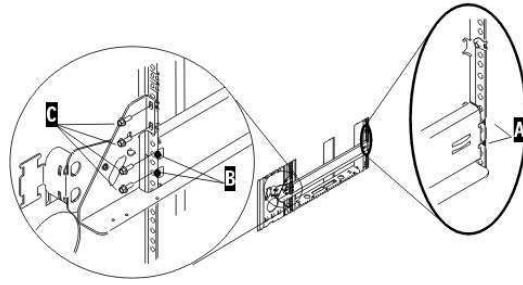
Next topic: [Installing the standard rails](#) or [Installing the expandable rails and extension bracket into the rack.](#)

Parent topic: [Installing the 57/90 or 11D/11 expansion unit in a rack](#)

Installing the standard rails

To install the standard (fixed length) rails, complete the steps in this section. If you have the expandable rail set, refer to [Installing the expandable rails and extension bracket into the rack.](#)

1. From the back of the rack, note the position of the two placement dots B, or marks, previously installed on the front EIA strips. Install the rack-alignment pins for the left rail into the corresponding EIA holes located in the left front EIA strip A.
2. From the back of the rack, align the rails with the two placement dots B or marks, previously installed on the front EIA strips. Loosely thread two retaining screws C into each rail, at the corresponding EIA strip holes.



- A two front placement dots per rail
- B two back placement dots per rail
- C four retaining screws per rail

Figure 1. Installing the rails.

3. Loosely thread two retaining screws into the back EIA strips where the nut clips were previously installed.
4. Repeat steps 1 through 3 for the right rail.
5. Tighten all screws.

Next topic: [Installing the shell.](#)

Parent topic: [Installing the 57/90 or 11D/11 expansion unit in a rack](#)

Installing the expandable rails and extension bracket into the rack

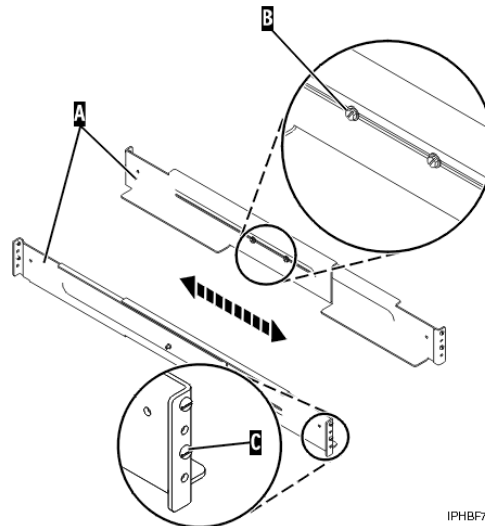
CAUTION: Installing the rails in the rack is a complex procedure. To install the rails correctly, you must perform each task in the following order. Failure to do so might cause rail failure and potential danger to yourself and the system unit.

Note: If the system was shipped with the standard rails, refer to [Installing the standard rails.](#)

To install the expandable rails and extension bracket into the rack, complete the following steps:

1. Loosen the two screws B in the middle of both rails A to allow each rail to extend.

Figure 1. Extending the system rails.



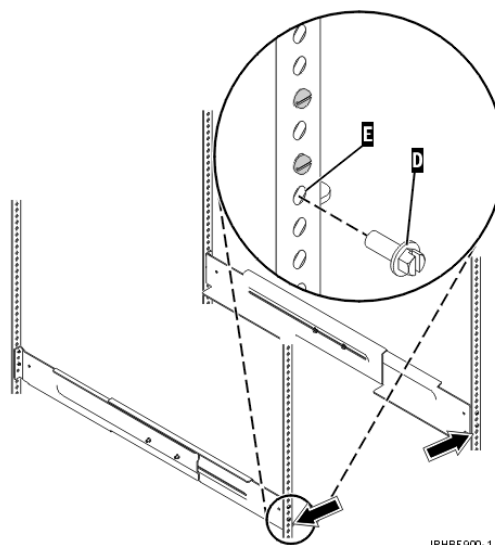
2. Starting at the back of the rack, extend the left rail and insert the rail pins C into the marked locations the rack so that it is facing upward (L shape).

Note: Although the rail installation can be completed by one person, for ease of installation, one person can be positioned at the front of the rack and one person at the back of the rack.

3. From the back of the rack, extend the right rail and insert the rail pins C into the marked locations.
4. Move to the front of the rack, extend the left rail and insert the rail pins C into the marked locations.
5. Extend the right rail and insert the rail pins C into the marked locations.
6. Using one M5 screw D, secure the left rail to the front of rack into the lower location E.

Important: Do not install a screw in the top location at this time. It will secure the shell to the assembly.

Figure 2. Attaching the system rails to the front of the rack.

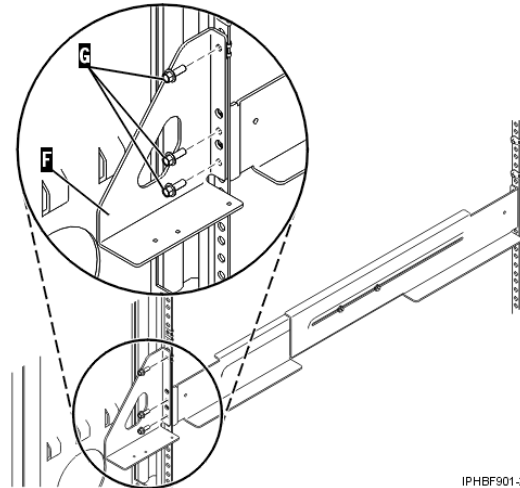


7. Using one M5 screw D, secure the right rail to the front of the rack into the lower location E.
8. Insert two nut clips at the marked location on the front-left rail of the rack.
9. Insert two nut clips at the marked locations on the front-right rail of the rack.

10. Move to the back of the rack and insert two nut clips at the marked locations on the back-left rail of the rack.
11. Insert two nut clips at the marked location on the back-right rail of the rack.
12. Using three M5 screws G, secure the extension bracket F through the rack and into the left rail.

Note: Each bracket will face inward.

Figure 3. Attaching the extension brackets and rails to the back of the rack.



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13. Using three M5 screws G, secure the extension bracket F through the rack and into the right rail.
14. Tighten the two screws in the middle of the left rail and the two screws in the middle of the right rail. Refer to [Figure 2](#).

Next topic: [Installing the shell](#) expansion unit.

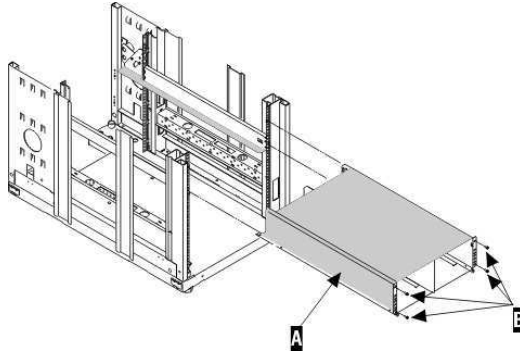
Parent topic: [Installing the 57/90 or 11D/11 expansion unit in a rack](#)

Installing the shell

Note: Before installing the shell, ensure that the rails are level from side to side and from front to back.

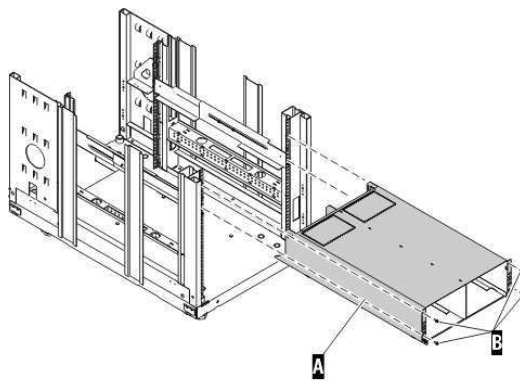
To install the shell, complete the following steps:

1. From the front of the rack, place the shell A on the rails and slide it into the rack.



- A Shell
- B Retaining screws (four)

Figure 1. Installing the shell into the rack on the standard rails.

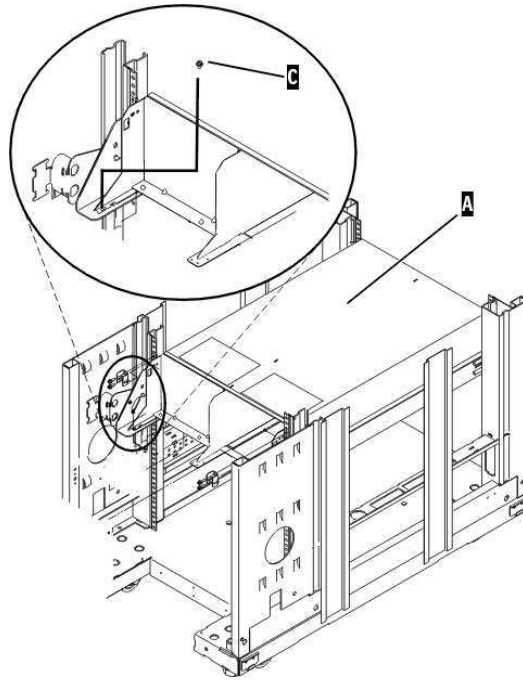


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- A Shell
- B Retaining screws (four)

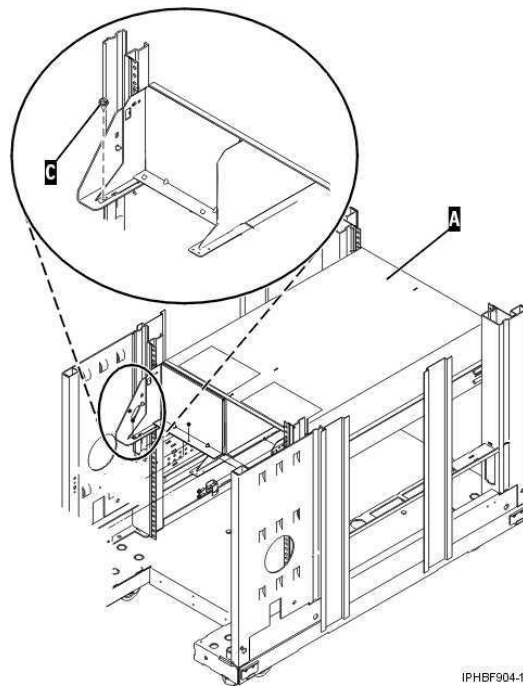
Figure 2. Installing the shell into the rack on the expandable rails.

2. Install and tighten the four retaining screws B into the front of the shell, securing the shell A to the rack.
3. If you are only installing one drawer, move to the back of the rack and secure the shell A with the retaining screw C.



- A Shell
- C Retaining screw

Figure 3. Securing the shell to the rack with the standard rails.



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- A Shell
- C Retaining screw

Figure 4. Securing the shell to the rack with the expandable rails.

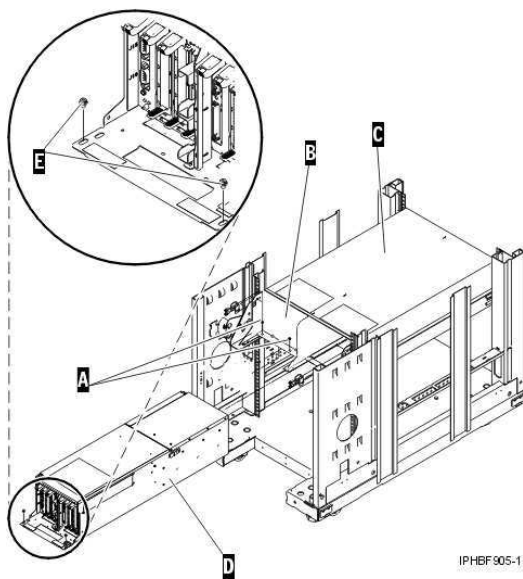
Next topic: [Installing the system unit.](#)

Parent topic: [Installing the 57/90 or 11D/11 expansion unit in a rack](#)

Installing the system unit

To install the system unit into a rack, complete the following steps:

1. Move to the back of the rack.
2. If you are installing a drawer D into an existing shell C, remove the two filler plate screws A and the filler plate B.



- A Filler plate screws
- B Filler plate
- C Shell
- D Drawer
- E Drawer screws

Figure 1. Removing the filler plate.

3. Carefully move any existing cables that are blocking the drawer location.
4. Slide the drawer D into the shell.
5. Install and tighten the two drawer screws E, securing the drawer to the shell.
6. If you are installing two drawers, repeat substeps 1 through 5. If there is only one drawer installed in the shell, ensure that the filler plate B is installed in the blank slot.

Next topic: [Attaching the RIO, power controller \(SPCN\), and power cables](#)

Parent topic: [Installing the 57/90 or 11D/11 expansion unit in a rack](#)

Attaching the RIO, power controller (SPCN), and power cables

For information about attaching the cables to your system, refer to the documentation provided with your system.

Note: For information about connecting power cables to the power distribution units (PDUs) in the rack, refer to [Install the rack](#).

To attach the RIO, power controller (SPCN), and power cables, route the cables over the cable management bracket and secure them with the hook-and-loop fastener.

Next topic: [Powering on the system unit](#)

Parent topic: [Installing the 57/90 or 11D/11 expansion unit in a rack](#)

Powering on the system unit

For information about powering on the system, refer to system's installation guide.

This concludes the procedures for installing the 57/90 or 11D/11 expansion unit into a rack.

Parent topic: [Installing the 57/90 or 11D/11 expansion unit in a rack](#)

Related information

The following procedures are related to rack installation.

- [Connecting the power cables to the system](#)
 - [Reconnecting cables to the system](#)
 - [Connecting drawer and device cables](#)
-

Connecting the power cables to the system

If this is a new system unit, return to the [initial server setup](#) checklist.

If this is an existing system unit, follow these steps:

1. Plug in the power cord for the system unit.

Note: The system might be equipped with two power supplies, each with its own power cord.

2. Plug in the power cords for any printers or displays.
3. Power on the system unit and any devices connected to the system unit.

Note: If you are converting a stand-alone model ESCALA PL 250T/R for rack installation, return to the procedures for this model for additional cabling instructions.

Parent topic: [Related information](#)

Reconnecting cables to the system

After you have installed the system unit into the rack and attached the cable management arm, you will need to reconnect the power cords and cables.

1. Plug in the power cord for the system unit.

Note: The system might be equipped with two power supplies, each with its own power cord.

2. Route the other cables that you disconnected through the cable-management arm and reconnect them to your server. See [Cabling your server](#).
3. Reconnect the HMC, if you have one for this system. See [Adding an HMC console](#).
4. Power on the system unit and any devices connected to the system unit.

Parent topic: [Related information](#)

Connecting drawer and device cables

Most racks are preconfigured at the factory with all drawer and device cables installed.

If any head protectors are installed in the diskette drives, remove them.

If you need to install drawer and device cables, follow the installation instructions that were provided with the drawer or device being installed.

- For ac devices, plug the device power distribution bus cables into the rack power distribution bus.
- For dc devices, plug the device cables into the rack power distribution panel.

Related topic: [Attaching the rack doors](#)

Parent topic: [Related information](#)

Technical publication remarks form

Title :	ESCALA POWER5 Hardware Information Installing racks, rack features, and systems or expansion units
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Reference N° :	86 A1 32EW 00
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