DCF™ Optimized Rack System

Installer/User Guide

Technical Support Site

If you encounter any installation or operational issues with your product, check the pertinent section of this manual to see if the issue can be resolved by following outlined procedures. For additional assistance, visit https://www.VertivCo.com/en-us/support/

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1 IMPORTANT SAFETY INSTRUCTIONS

Save These Instructions

This manual contains important instructions that must be closely followed during installation of this unit to maintain compliance with agency listings. Read all safety and operating instructions. Adhere to all warnings on the unit and in this manual. Follow all operating and user instructions.

WARNING: Risk of handling heavy unit. Can cause equipment damage, injury or death. Read all instruction before beginning.

WARNING: Risk of top-heavy unit falling over. Improper handling can cause equipment damage, injury or death. Only properly trained and qualified personnel wearing appropriate safety headgear, gloves, shoes and glasses should attempt to move, lift, remove packaging from or prepare unit for installation. Read all instructions before attempting to move, lift, remove packaging from or preparing unit for installation.

This product is designed for commercial / industrial use only. This product is not intended for use with life support or other U.S. FDA designated “critical” devices. Maximum loads must not exceed those specified in this manual. The maximum load rating for the DCF is found in the DCF quide specficiation SL-11392. Do not exceed the static load rating.

Install and operate in a clean environment, free from moisture, flammable liquids, gases and corrosive substances. The DCF must be installed on a flat, level surface for proper assembly and operation.

Ensure that the DCF has proper ventilation. Never block or insert objects into the ventilation holes or other openings. Maintain minimum clearances as specified in this manual.

Provide the minimum spacing between the accessories/components and the housing that shall be maintained for safe operation of the equipment when installed in accordance with the National Electric Code, ANSI/NFPA 70.As appropriate, all wiring and equipment should be installed in accordance with NFPA 70, “National Electrical Code,” and the applicable sections of ANSI C2, “National Electrical Safety Code."

We recommend that casters only be used to move empty cabinets.

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2 INTRODUCTION

The highly versatile DCF Optimized Rack System provides an organized, secure, controlled environment in a single system for sensitive electronic equipment.

The DCF Optimized Rack System is available in two heights—42U and 48U (78.1 in. and 88.6 in; 1985 mm and 2251 mm). These cabinet heights are available in the following widths and depths:

Table 2.1 Rack dimensions

RACK SIZE	DIMENSIONS, IN (MM)					
	HEIGHT			WIDTH	DEPTH	
	FRAME ONLY	WITH LEVELING FEET	WITH CASTERS	WITH AND WITHOUT SIDE PANELS	WITHOUT DOORS	WITH DOORS
42U	76.2 (1936.6)	77 (1956.2)	78.1 (1984.7)	23.6 (600)	41.8 (1062.5)	43.3 (1100)
48U	86.7 (2203.3)	87.5 (2222.9)	88.6 (2251.4)	31.5 (800)	45.8 (1162.5)	47.2 (1200)

Height, width, and depth dimensions are independent.

Depth with door is measured from the front door frame to the rear door frame.

Assembly instructions in this manual cover the various configurations of the DCF Optimized Rack System, either a single rack for simple equipment organization or a suite of DCF Optimized Rack System racks.

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3 MAJOR COMPONENTS

DCF Optimized Rack System will have all of the components addressed in this section. All components are finished with a textured powder coat, color is RAL 7021.

3.1 Frame

The DCF Optimized Rack System is constructed of hot and cold rolled steel. Frame is light weight and strong with a 3000 lb static load rating.

3.1.1 Adjustable Rails

The DCF Optimized Rack System ships with 2 sets of 19-in. (EIA310-E) compliant rails. The 19-in. rails have U marking labels on both sides of the rails. Front and rear mount rails are installed in the DCF at 29.13 in. (740 mm).

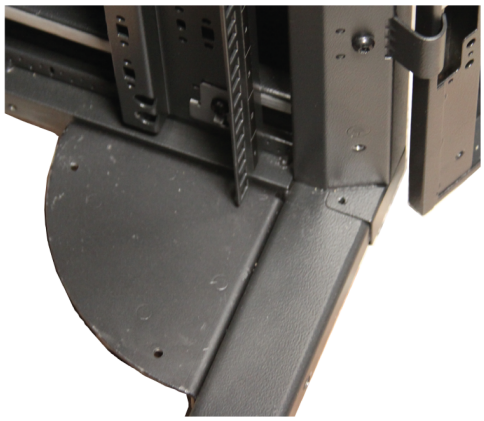
3.1.2 Full-height Rack PDU/Cable-management Bracket

Each DCF rack leaves the factory with 2 full-height rack pdu/cable-management brackets installed. The brackets are installed in the rear of the rack, flush against the frame, one bracket installed on each side of rack.

3.1.3 Casters

DCF Optimized Rack System ships standard with 4 swivel, non-locking casters installed.

Figure 3.1 Caster plate



3.2 Enclosure

Exterior components of the DCF Optimized Rack System are finished in textured powder coat, color RAL 7021.

3.2.1 Doors

All doors for the DCF are framed from sheet metal and have hexagonal perforations leaving 75% open for airflow and efficient cooling. All doors have a single-point latch system and come standard with lock. The DCF rack ships with a single, contoured, perforated front door and split-perforated rear doors designed for easy access. All doors can easily be removed and the single, contoured front door is designed for reversibility (left/right) hinging in the field. (See "Removing and Reversing Doors" on page 17.)

Each door opens to 135 degrees.

Table 3.1 Door dimensions, single door

FRAME SIZE		DOOR DIMENSIONS, IN (MM)		PART NUMBER
		HEIGHT	WIDTH	
42U	78.1 x 23.6 (2000 x 600)	76 (1931.5)	23 (586)	Part # 546053G1L
	78.1 x 31.5 (2000 x 800)		31 (768)	Part # 546053G2L
48U	83.4 x 23.6 (2100 x 600)	87 (2198.2)	23 (586)	Part # 546053G3L
	83.4 x 31.5 (2100 x 800)		31 (768)	Part # 546053G4L

Table 3.2 Door dimensions, split doors

FRAME SIZE		DOOR DIMENSIONS, IN (MM)		PART NUMBER
		HEIGHT	WIDTH EACH DOOR	
42U	78.1 x 23.6 (2000 x 600)	76 (1931.5)	11.5 (293)	Part # 546054G1L
	78.1 x 31.5 (2000 x 800)		15.5 (384)	Part # 546054G2L
48U	83.4 x 23.6 (2100 x 600)	87 (2198.2)	11.5 (293)	Part # 546054G3L
	83.4 x 31.5 (2100 x 800)		15.5 (384)	Part # 546054G4L

3.2.2 Side Panels

Side panels for the DCF Optimized Rack System are a split side panel design constructed of sheet metal. Each side panel section comes with a lock for security which is installed in the center top of each panel. Two keys ship with the side panels; the side panel keys are the same keys that are used for the doors.

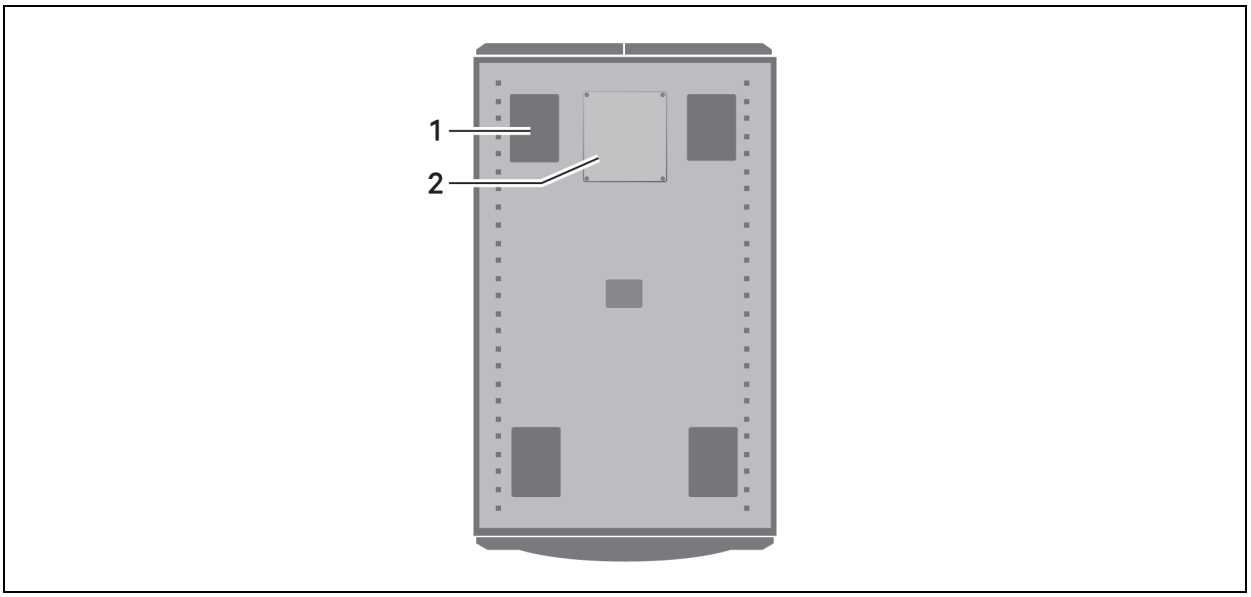
Table 3.3 Side-panel sizes and part numbers

RACK HEIGHT, IN (MM)	RACK DEPTH, IN (MM)	SIDE PANEL PART NUMBERS
78.1 (2000)	43.3 (1100)	546055G1L
	47.2 (1200)	546055G2L
88.6 (2250)	43.3 (1100)	546055G3L
	47.3 (1200)	546055G4L

3.2.3 Top Cover

All DCF racks ship with a top cover constructed of sheet metal. The top cover has cut-outs for fan mounting, cabling, and cage-nut installation for mounting DCF accessories.

Figure 3.2 Top cover for 1100-mm and 1200-mm deep rack



ITEM	DESCRIPTION
1	Cable-entry holes, 4 holes include edge guards and removable grommets.
2	Fan/Cable-access hole, standard

3.3 Mounting Hardware and Tools

Hardware to install accessories ships with the DCF rack.

- 1 bag of 50 M6 cage nuts
- 50 M6x12 pan-head screws
- 50 nylon washers
- 1 cage-nut insertion tool
- 1 #13/14 wrench
- 1 L Key with a T30 Torx head and Phillips head
- 9 ft of black edge guard
- 1 baying kit

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4 INSTALLATION

4.1 Inspection

Upon receiving a DCF Optimized Rack System, examine the packaging for any signs of mishandling or damage. If any damage is noted, notify your local Vertiv™ representative and your carrier immediately.

4.2 Required Setup equipment

The DCF ships with the tools necessary to adjust supplied components:

- cage-nut tool
- 13/14-mm wrench
- combination T30 Torx L-key with Phillips head

The following tools are also required to set up a DCF:

- pallet jack or forklift
- utility knife or scissors
- 14-mm socket and ratchet or 14-mm wrench

4.3 Unloading the DCF Rack

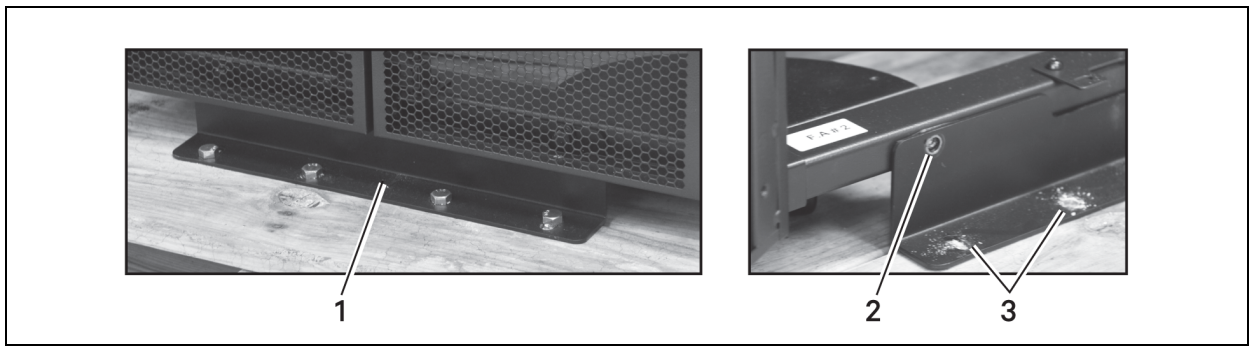
Before unloading, note the weight of the model (see Specifications.

CAUTION: Use at least two people when moving the unit.

1. Using a pallet jack or forklift, move the DCF on its pallet to the installation location.
2. Cut the shrink wrap and remove all packaging.
3. Use a 14-mm socket or a 14-mm wrench to remove the 4 lag bolts that secure the 2 anchor brackets to the shipping pallet, one in the front and one at the rear of the rack. Each bracket is secured by four bolts.
    - If the brackets will be used to anchor the rack to the floor, leave them attached to the rack. If not, removed them.
4. Use a pallet jack or forklift to raise the DCF off the shipping pallet.
5. Slide the shipping pallet out from under the rack.

6. Position the DCF in the installation location using the forklift, with 2 or more people carrying it, or by rolling the rack on its casters.
    - If using the casters to move the rack, raise the leveling feet before moving.
7. Position the rack and do one of the following:
    - Lower the leveling feet
    - Bolt the rack to the floor with the shipping/anchoring brackets.

Figure 4.1 Removing rack from shipping pallet



ITEM	DESCRIPTION
1	Anchor bracket
2	Bolt-hole for securing anchor bracket to rack (2 typical)
3	Lag-bolt holes for securing anchor bracket to pallet and/or floor

4.4 Equipment Layout, Repositioning, Removal and Installation

To keep the unit's center of gravity as low as possible, install equipment from the bottom up, starting with the heavier units. Leave any unused space at the top of the rack.

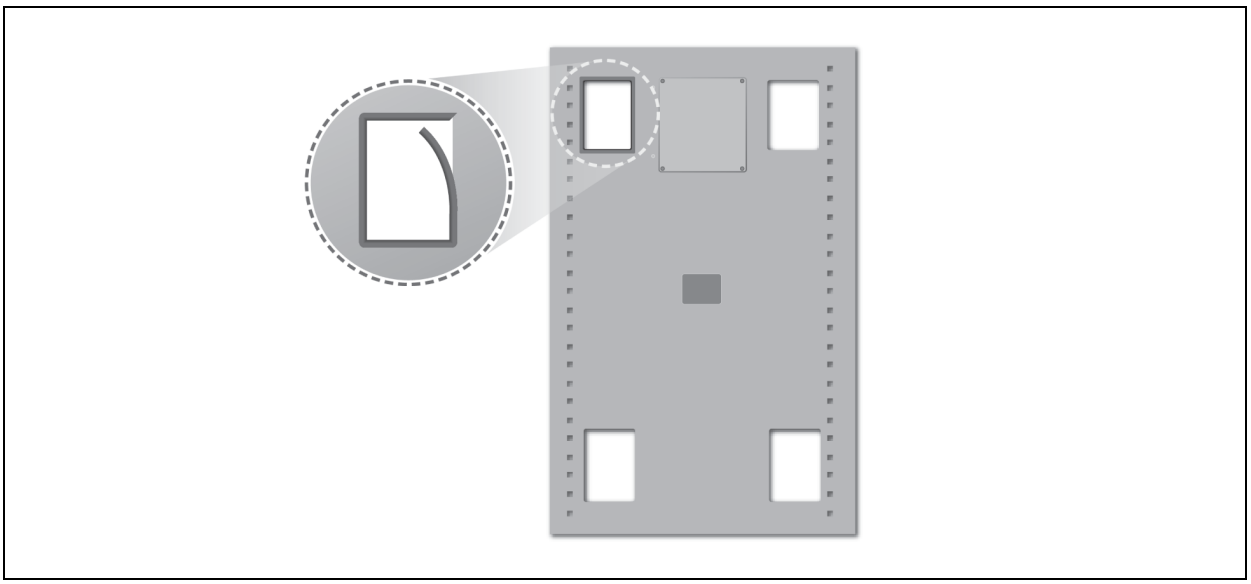
CAUTION: After equipment is installed, the DCF Optimized Rack System may have a high center of gravity. Avoid tipping the unit when it is being moved.

4.4.1 Installing the Edge Guard

1. Press edge guard to the top-cover cut outs by pressing along the edge of the cut out opening as shown in the following figure.

2. Trim excess edge guard with a pair of scissors after the edge guard after completely applied around the opening.
3. Repeat steps 1 and 2 for remaining cut outs.

Figure 4.2 Applying the edge guard



4.4.2 Positioning and Attaching Front- and Rear-Mount 19-in. EIA Rails

Front- and rear-mount, 19-in., EIA rails are installed in 600-mm wide racks at the factory at 29.13 in. (740 mm). They attach to the cabinet frame at the top and bottom, in the center to the support member using M6x12 Torx-head screw into a rail-adjustment bracket.

In 800-mm wide racks, 19-in. EIA rails are attached using node brackets. The node brackets attach to the top and bottom of the DCF frame and in the center to the support member. The EIA rails move as a unit if they need to be repositioned.

To position the EIA rails on 600-mm cabinets:

1. Determine the installation location of the EIA rails.
2. Loosen the M6x12 screws in the rail-adjustment brackets, securing the 19" EIA rails to the frame member as shown in the following figure.

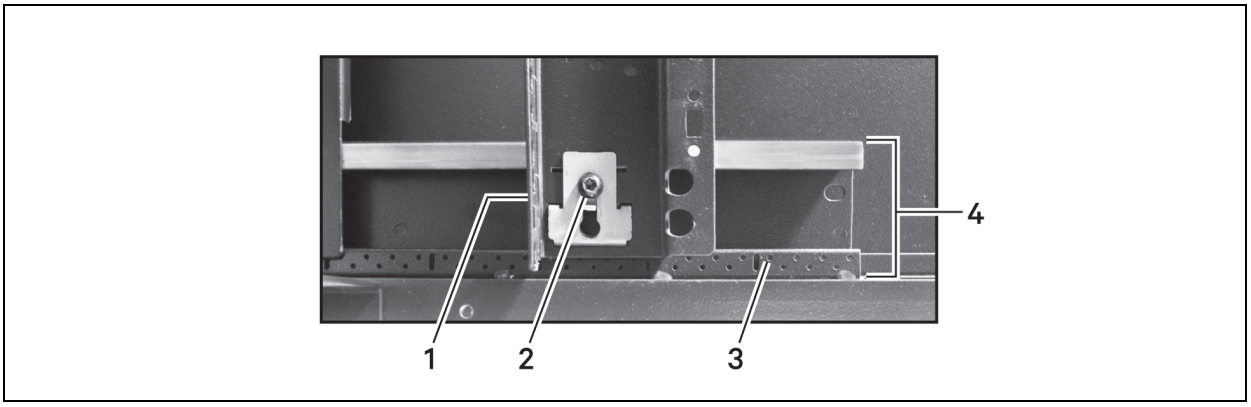
NOTE: Rails in both the 600- and 800-mm wide racks are attached at the top, center and bottom.

3. Slide the rail-adjustment brackets up or down, depending on their orientation in the rack.
4. Slide the EIA rail to the desired position, making sure to keep it square. The frame member and support have small holes spaced on 6.35-mm centers to help properly position the rails.

NOTE: The front and rear 19-in. EIA rails must be kept at a 90-degree angle to the upper and lower frame members. The left- and right-front vertical rails must be the same distance from the front of the rack. The left- and right-rear vertical rails must be the same distance from the rear of the rack. If these conditions are not met, equipment and optional features will be difficult to install.

5. Hold the rail in position, then and the M6x12 screws into the rail-adjustment brackets.
6. Repeat steps 2 to 5 for the corresponding rail.

Figure 4.3 19-in. EIA rail positioning in 600-mm racks



ITEM	DESCRIPTION
1	Face of EIA rail
2	Rail-adjustment screw
3	Frame-member holes
4	Frame member

To position EIA rails on 800-mm cabinets:

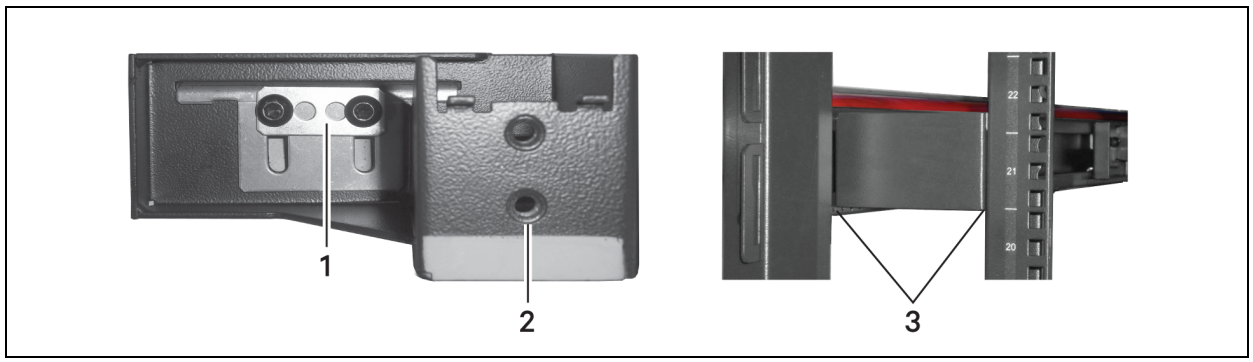
1. Determine the installation location of the EIA rails.
2. At the top, bottom, and center-support member, loosen the 2 screws that secure the node-adjustment brackets to the bottom frame member, then slide the bracket down.

3. Slide the rails to their new location.

NOTE: The rails will bind if they are not kept at a right angle to the frame.

4. Tighten all hardware.

Figure 4.4 19" EIA rail repositioning—800-mm cabinets



ITEM	DESCRIPTION
1	Node-adjustment bracket
2	Attachment point for EIA rail
3	Node bracket attached at the center depth support

4.4.3 Removing and Reversing Doors

DCF doors are removable for convenience when installing or maintaining equipment. The front door is also reversible, so the single door may be opened in a more convenient direction if the rack is near a wall or other equipment.

To remove a door:

Doors are supported by two hinges and held in place by gravity. They can be lifted off and reinstalled without tools.

NOTE: Doors are easier to remove if they are open at a 90° angle to the DCF cabinet.

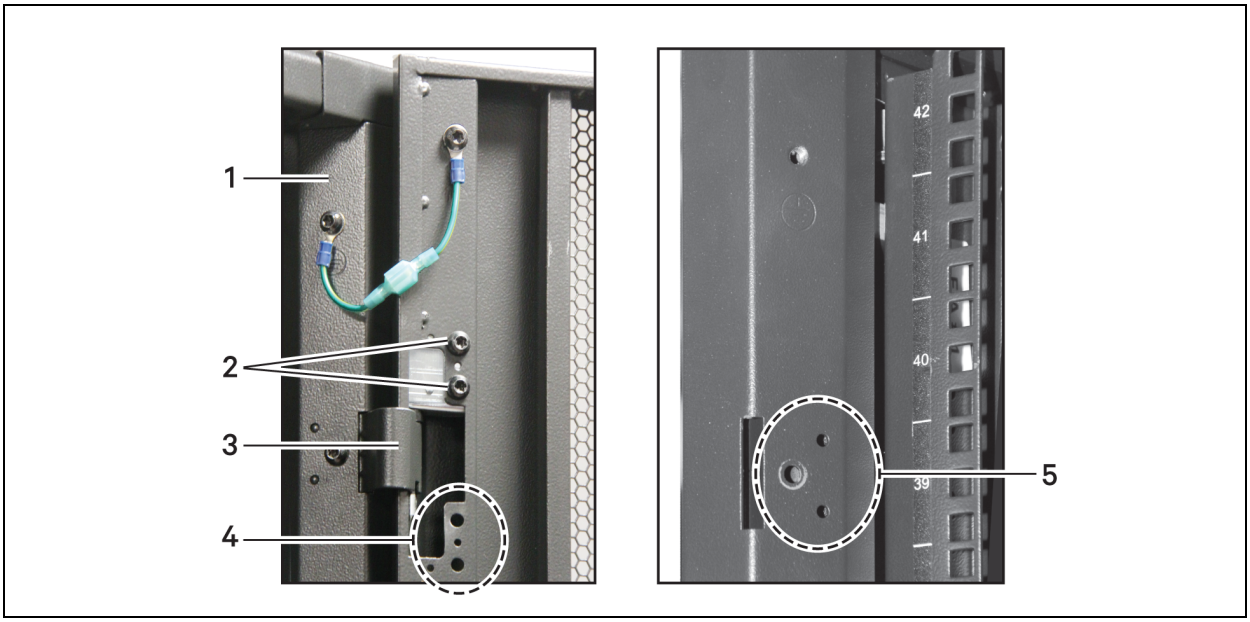
To reverse the front door:

NOTE: The door handle cannot be reversed.

1. Lift the door off the DCF, the loosen and remove screws from both the top and bottom hinges, shown in the following figure.
2. Remove the hinges and place them on the opposite side of the frame in the slots provided.
3. Reinsert and tighten the screws.
4. Remove the hardware from the door catch and install the catch on the opposite side of the frame.
5. Flip the door.
   The hinge pin assemblies are now at the bottom of the hinge-pin attachment point.
6. Remove the hardware, flip the hinge pin and reinsert it in the hinge-pin attachment point.

7. Reattach the hinge pin with hardware.
8. Hang the door on the newly positioned hinges.

Figure 4.5 Removing hinges and reversing the door



ITEM	DESCRIPTION
1	Frame
2	Torx screws holding hinge to frame
3	Door hinge
4	Screw holes for Torx screws when changing direction door opens.
5	Hinge location for reversed door

4.4.4 Removing and Replacing Side Panels

The DCF uses dual split-side panels fashioned from sheet metal. The lower panel hangs on a frame member and the upper panel hangs on the rack frame. Each panel is secured with a lock making the panels simple to remove and replace when installing equipment and performing maintenance .

To remove a side panel:

1. To remove a panel, insert the key in the side-panel lock and turn clockwise to unlock it.
2. Lift the panel up and away from the rack, and set it aside.
3. Repeat steps or other panels being removed.

To replace a side panel:

1. Insert the bottom of the panel into the cut-outs.
2. Move the top of the panel toward the rack.
3. Turn the key counterclockwise to lock the panel in place.
4. Repeat steps for other panels being replaced.

4.5 Mounting Power Distribution Units

Power distribution units may be mounted on the rails or attached to mounting brackets in the DCF. The following are the PDU options:

- 42U full-height PDU/cable-management mounting brackets (4-in. W) (Part # 546076G1L)
- 48U full=height PDU/cable-management mounting brackets (4-in. W) (Part # 546077G1L)

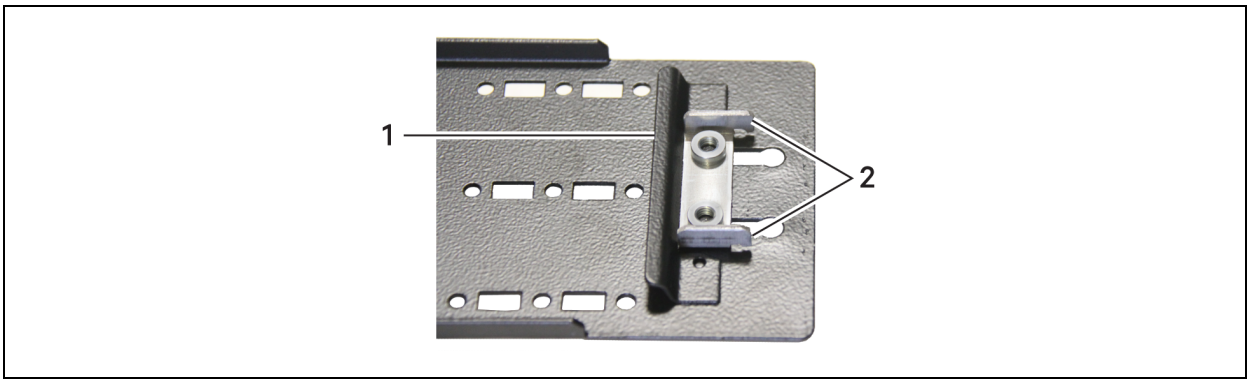
4.5.1 Installing a Full-height PDU/Cable-Management Bracket

The top and bottom of the 4-in. wide brackets are identical for use on either side of the cabinet.

To install a full-height bracket:

1. Position the full-height bracket for installation with the inside bottom flange of the PDU resting on the flange of the frame member at the top and bottom. See the flange in the following figure.
2. Hold the PDU bracket in place, then insert and tighten the screws.

Figure 4.6 Full-height bracket end



ITEM	DESCRIPTION
1	Bracket flange
2	Bracket clips

To reposition a full-height bracket:

1. Loosen the screws in the top and bottom PDU hanging bracket.
2. Slide the bracket along the frame member to the desired location and tighten the screws.

To remove a full-height bracket:

1. Loosen the screws in the top and bottom PDU hanging bracket.
2. Lift the bracket up until the hanging bracket clears the frame member and remove the bracket from the cabinet.

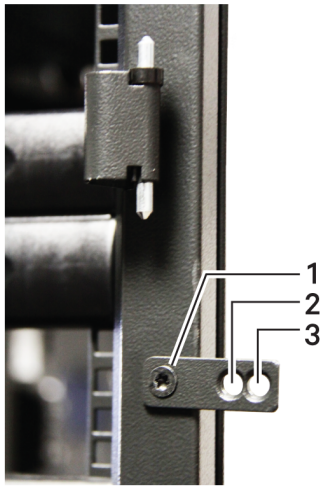
4.6 Baying the DCF Cabinets

Two or more DCF cabinets of the same height can be bayed with the supplied baying brackets. The brackets have three holes:

- The single hole connects to the cabinet
- The outer hole centers the cabinets at 24 in. (609.6 mm)
- The center hole puts the cabinets on metric centers.

Connecting the racks is easier if the are in their final installation position before baying.

Figure 4.7 Baying brackets



ITEM	DESCRIPTION
1	Cabinet-connection hole
2	Hole for metric centers
3	Hole for 24-in. centers

5 PERIODIC MAINTENANCE

The DCF Optimized Rack System cabinet requires no special maintenance. It should be cleaned periodically, more frequently if the air in the vicinity is not filtered for particulates.

Dust should be cleaned from installed equipment according to the manufacturer's recommendations. Clean the interior of the cabinet with a dry cloth.

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