Dell EMC PowerSwitch Z9432F-ON

Setup Guide

September 2020

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Notes, cautions, and warnings

NOTE: A NOTE indicates important information that helps you make better use of your product.

CAUTION: A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

WARNING: A WARNING indicates a potential for property damage, personal injury, or death.

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Contents

1

About this guide

This guide provides site preparation recommendations, step-by-step procedures for rack mounting and desk mounting, inserting modules, and connecting to a power source.

CAUTION: To avoid electrostatic discharge (ESD) damage, wear grounding wrist straps when handling this equipment.

NOTE: Only trained and qualified personnel can install this equipment. Read this guide before you install and power up this equipment. This equipment contains two power cables. Disconnect both power cables before servicing.

NOTE: This equipment contains optical transceivers, which comply with the limits of Class 1 laser radiation.

Figure 1. Class 1 laser product tag

NOTE: When no cable is connected, visible and invisible laser radiation may be emitted from the aperture of the optical transceiver ports. Avoid exposure to laser radiation, and do not stare into open apertures.

Regulatory

Marketing model Z9432F-ON is represented by the regulatory model E46W and the regulatory type E46W001.

Topics:

- Related documents
- Information Symbols

Related documents

For more information about the Z9432F-ON switch, see the following documents:

- *Dell EMC SmartFabric OS10 Release Notes*
- *Dell EMC SmartFabric OS10 User Guide*
- *Dell EMC PowerSwitch Z9432F-ON Installation Guide*
- *Dell EMC PowerSwitch Z9432F-ON Release Notes*
- *Dell EMC PowerSwitch Z9432F-ON BMC User Guide*
- *Open Networking Hardware Diagnostic Guide*

NOTE: To access product documentation for a specific Dell EMC PowerSwitch, see the Dell EMC Networking OS10 Info Hub. For all other resources, see Dell EMC support: www.dell.com/support.

Information Symbols

This book uses the following information symbols:

NOTE: The Note icon signals important operational information.

CAUTION: The Caution icon signals information about situations that could result in equipment damage or loss of data.

NOTE: The Warning icon signals information about hardware handling that could result in injury.

NOTE: The ESD Warning icon requires that you take electrostatic precautions when handling the device.

2

Site preparations

The Z9432F-ON switch is suitable for installation as part of a common bond network (CBN).

You can install the switch in:

- Network telecommunication facilities
- Data centers
- Other locations where the National Electric Code (NEC) applies

For more information about the Z9432F-ON switch specifications, see Specifications.

NOTE: Install the switch into a rack or cabinet before installing any optional components.

Topics:

Site selection

Install your equipment in restricted access areas. A restricted access area is one where service personnel can only gain access using a special tool, lock, key, or other means of security. The authority responsible for the location controls access to the restricted area.

Ensure that the area where you install your switch meets the following safety requirements:

- The switch is near to an adequate power source. Connect the switch to the appropriate branch circuit protection according to your local electrical codes.
- The environmental—switch location—continuous temperature range is from 0°C to 45°C (32°F to 113°F).
- The operating humidity is from 5 to 90 percent noncondensing, continuous.
- Install in a dry, clean, well-ventilated, and temperature-controlled room, away from heat sources such as hot cooling vents or direct sunlight.
- Position away from sources of severe electromagnetic noise.
- Position in a rack or cabinet, or on a desktop with adequate space in the front, back, and sides for proper ventilation and access
- Install the switch in Information Technology Rooms in accordance with Article 645 of the National Electrical Code and NFPA 75.
- Install the switch in an environment that meets all region- or country-specific occupational safety and health requirements.

For more information about switch storage and environmental temperatures, see Specifications.

Cabinet placement

Install the Z9432F-ON switch only in indoor cabinets that are designed for use in a controlled environment.

Do not install the switch in outside cabinets. For cabinet placement requirements, see Site selection.

The cabinet must meet minimum size requirements. Airflow must be in accordance with the Electronic Industries Alliance (EIA) standard. Ensure that there is a minimum of 12.7 cm (5 inches) between the intake and exhaust vents and the cabinet wall.

Rack mounting

When you prepare your equipment rack, ensure that the rack is grounded. Ground the equipment rack to the same ground point the power service in your area uses. The ground path must be permanent.

Switch ground

Dell Technologies recommends grounding your switch. Use the Z9432F-ON switch in a CBN.

For more information, see Ground cable.

Fans and airflow

Fan installation is done as part of the factory install based on stock keeping unit (SKU) type. The Z9432F-ON switch has SKUs that support the following configurations:

- AC PSU with fan airflow from the I/O to the PSU—normal
- AC PSU with fan airflow from the PSU to the I/O—reverse
- DC fan unit with airflow from the I/O to the PSU—normal
- DC fan unit with fan airflow from the PSU to the I/O—reverse

Be sure to order the fans suitable to support your site ventilation. Use a single type of fan airflow in your switch.

NOTE: Fan and PSU airflow directions must match. Do not mix normal and reverse airflows in a single switch.

For proper ventilation, position the switch in an equipment rack or cabinet with a minimum of 12.7 cm (5 inches) of clearance around the exhaust vents. The fan speed varies based on internal temperature monitoring. The switch never intentionally turns off the fans.

Power

Connect the switch to the applicable power source using the appropriate power cable. An AC power cable is included with the switch.

When installing AC or DC switches, follow the code requirements appropriate for your country/region. For example, in the U.S., follow *National Electrical Code ANSI/NFPA 70* and in Europe follow *IEC60364*.

The switch powers-up when the power cable connects the switch to the power source.

CAUTION: Always disconnect the power cables before you service the power supply slots. The switch has multiple power cables. Before servicing, disconnect all power cables.

CAUTION: On the AC switch, use the power supply cable as the main disconnect device. Ensure that the socket outlet is located or installed near the equipment and is accessible.

NOTE: Module power software controlled. You do not see module LEDs when the switch powers up in ONIE.

Storing components

If you do not install your Z9432F-ON switch and components immediately, properly store the switch and all optional components following these guidelines:

- Storage location temperature must remain constant. The storage range is from -40° to 70°C (-40° to 158°F).
- Store on a dry surface or floor, away from direct sunlight, heat, and air conditioning ducts.
- Store in a dust-free environment.

NOTE: ESD damage can occur when components are mishandled. Always wear an ESD-preventive wrist or heel ground strap when handling the switch and its accessories. After you remove the original packaging, place the Z9432F-ON switch and its components on an anti-static surface.

3

Z9432F-ON switch installation

To install the Z9432F-ON switch, complete the installation procedures in the order given.

Always handle the switch and its components with care. Avoid dropping the switch or any field replaceable units (FRUs).

NOTE: ESD damage can occur if components are mishandled. Always wear an ESD-preventive wrist or heel ground strap when handling the switch and its components. As with all electrical devices of this type, take all the necessary safety precautions to prevent injury when installing this switch.

Topics:

Unpack

NOTE: Before unpacking the switch, inspect the container and immediately report any evidence of damage.

When unpacking the Z9432F-ON switch, ensure that the following items are included:

- One Z9432F-ON switch
- One RJ45 to DB-9 female cable
- Two sets of rail kits, no tools required
- Two PSUs
- Seven fan units
- Two country- and region-specific AC power cables
- *Dell EMC PowerSwitch Z9432F-ON Set-up Guide*
- *Safety and Regulatory Information*
- *Warranty and Support Information*

1. Place the container on a clean, flat surface and cut all straps securing the container.
2. Open the container or remove the container top.
3. Carefully remove the switch from the container and place it on a secure and clean surface.
4. Remove all packing material.
5. Inspect the product and accessories for damage.

Ground cable

To attach a ground cable to the switch, you need one of the included M4 screws.

NOTE: For AC-powered switches, although the third conductor of the AC power cable provides a ground path, Dell Technologies recommends grounding your switch with a dedicated ground wire.

NOTE: For DC-powered switches, the only way to safely ground your switch is to attach a dedicated ground wire.

The switch configuration is two threaded holes using one of the two included M4 screws.

The ground cable is not included. To properly ground the switch, Dell Technologies recommends a one- or two-hole lug, M4 hole size. The grounding lugs must be a UL-recognized, crimp-type lug.

CAUTION: Grounding conductors *must* be made of copper. Do not use aluminum conductors.

NOTE: Coat the one-hole lug with an antioxidant compound before crimping. Also, bring any unplated mating surfaces to a shiny finish and coat with an antioxidant before mating. Plated mating surfaces must be clean and free from contamination.

NOTE: The conductor screw cannot be smaller than the conductors supplying power. Secure all screws and ground-wire connections.

NOTE: The rack installation ears are not suitable for grounding.

1. Cut your ground cable (not included) to the wanted length. The cable length must facilitate proper operation of the fault interrupt circuits. Use the shortest cable route allowable.

   NOTE: The ground cable must be 10 AWG minimum. The nominal thread diameter screw type is 4.0 mm (0.157 in).

2. Using one of the two M4 threaded holes, attach the ground cable to the lug. Use an M4 screw with a captive internal tooth lock washer. Torque the screw to ±5 - 6 in-lbs.
3. Attach the other end of the ground cable to a suitable ground point such as the rack or cabinet.

   The rack installation ears are not a suitable grounding point.

Rack or cabinet installation

You may either place the switch on a rack shelf or mount the switch directly into a 19" wide, EIA-310- E-compliant rack. These installation procedures are for four-post rack installation only.

The rails system includes two separately packaged rail assemblies. To begin installation, separate each rail assembly by sliding the inside rail out of the outside rail.

WARNING: This guide is a condensed reference. Read the safety instructions in your *Safety, Environmental, and Regulatory* information booklet before you begin.

NOTE: The figures are not intended to represent a specific switch.

NOTE: Do not the use the mounted rails as a shelf or a workplace.

Rack mount safety considerations

- Rack loading—Overloading or uneven loading of racks may result in shelf or rack failure, possibly damaging the equipment and causing personal injury. Stabilize racks in a permanent location before loading begins. Mount the components starting at the bottom of the rack, and then work to the top. Do not exceed your rack-load rating.
- Power considerations—Connect only to the power source specified on the unit. When you install multiple electrical components in a rack, ensure that the total component power ratings do not exceed the circuit capabilities. Overloaded power sources and extension cords present fire and shock hazards.
- Elevated ambient temperature—If you install the switch in a closed rack, the operating temperature of the rack environment may be greater than the room ambient temperature. Use care not to exceed the 45°C (113°F) maximum ambient temperature of the switch.
- Reduced air flow—Do not compromise the amount of airflow that is required for safe operation of the equipment. Install the equipment in the rack so that the equipment constantly has the correct amount of airflow surrounding it.
- Reliable earthing—Maintain reliable earthing of rack-mounted equipment. Pay particular attention to the supply connections other than the direct connections to the branch circuit, for example; use of power strips.
- Do not mount the equipment with the fan panel facing in the downward position.

Z9432F-ON installation

Install the Z9432F-ON switch in a four-post rack configuration or a four-post rack L-bracket installation.

Four-post ReadyRail installation

Use these installation instructions for racks with M5 threaded holes, 9.5 mm (.354 in) square holes, or 7.1 mm (.279) round holes.

Complete the switch installation in the following order:

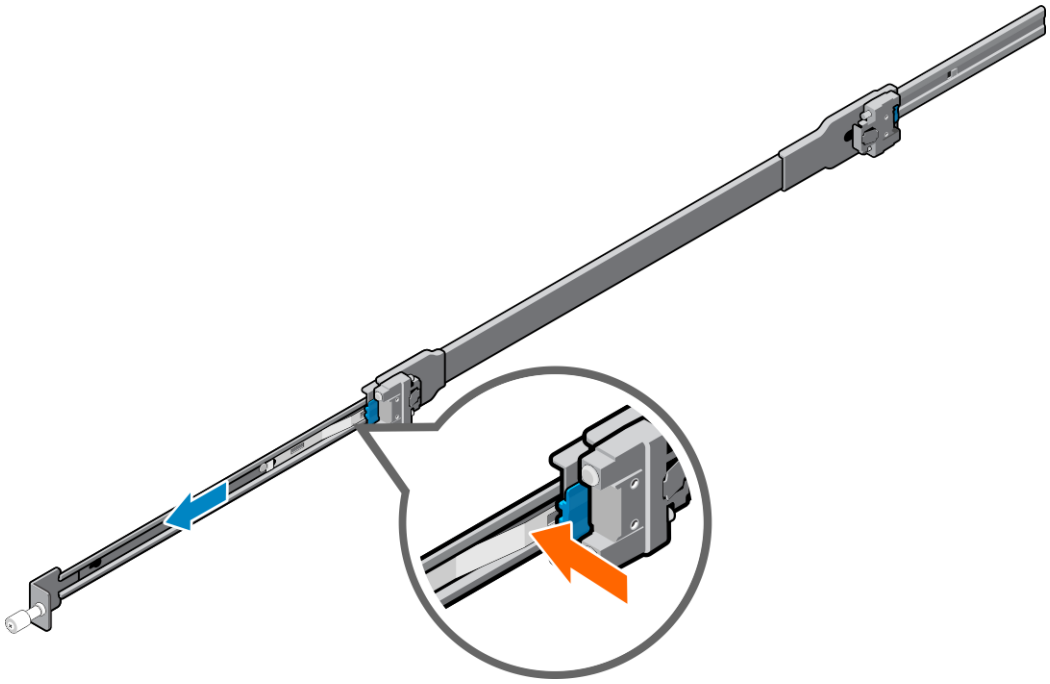
1. Attach the inner rails to the switch.
2. Attach the outer rails to the four-post rack.
3. Slide the switch into the rack.

NOTE: You need a user-supplied Phillips screwdriver to complete this installation.

To install the switch:

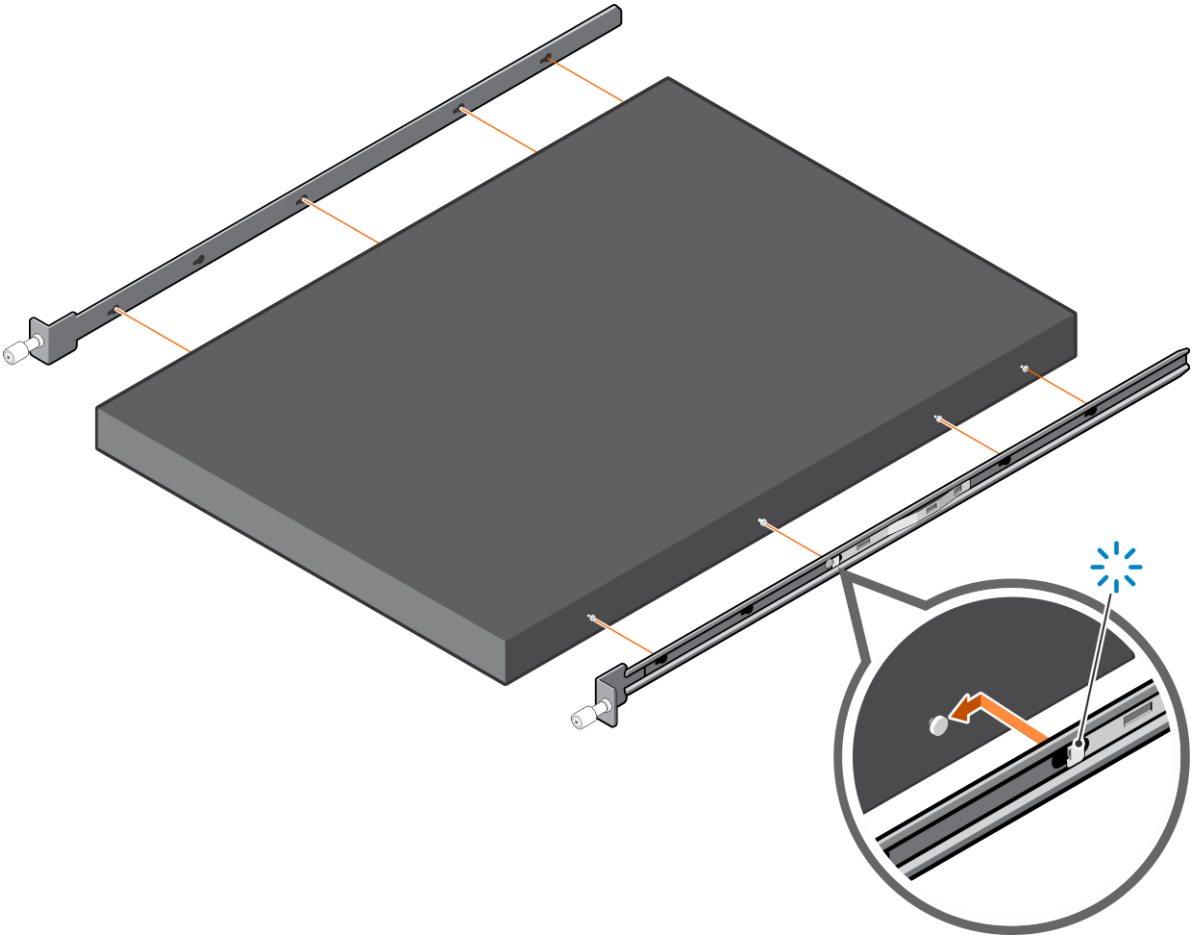
1. Remove the rails, rail plates, and screws from the shipping container.
2. Separate the inner rail and the outer rail.

   Press the rail clip and pull the inner rail out.



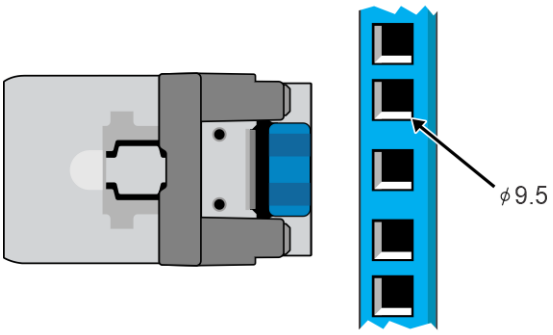
3. Attach the inner rail to the switch.

   Line up the inner rail slot with the T-stud on the switch. Push the inner rail back until it clicks into place.

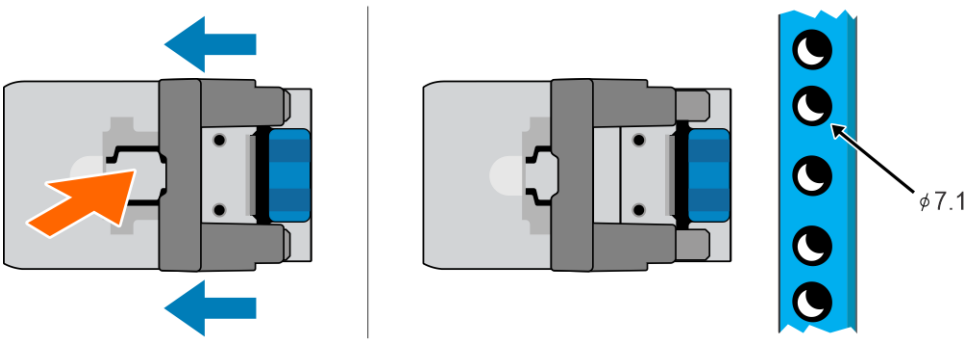


4. Confirm the rack mounting hole type and choose the correct components--EIA 9.5 mm (.354 in) square hole, EIA 7.1 mm (.279 in) round hole, or M5-threaded.

   For EIA 9.5 mm (.354 in) square hole racks (default setting for the outer rail):



   For EIA 7.1 mm (.279 in) round hold racks, press the latch to change from square pegs to round pegs.

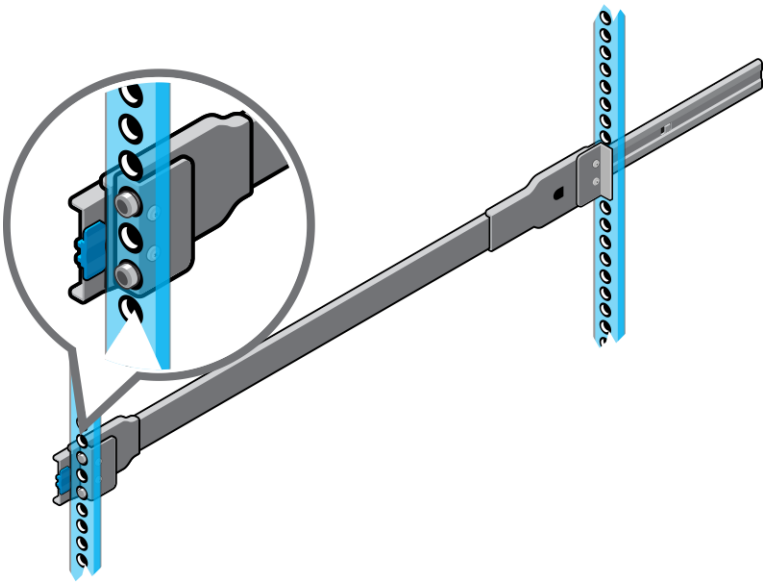


For an M5-threaded mounting hole, change the die-cast parts on the outer rail to the fitting plates shipped with the rails. You must change the die-cast parts on both the front and rear side of the outer rail.

5. Attach the outer rail to the back of the four-post rack.

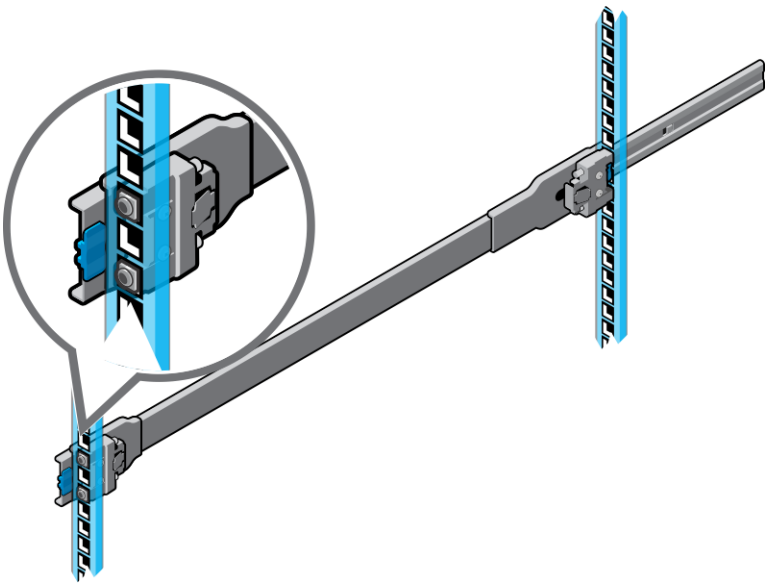
   Align the outer rail pegs to the back of the four-post rack and push towards the back to lock the outer rail to the rear post. The rail clicks into place.

   M5-threaded mounting rack



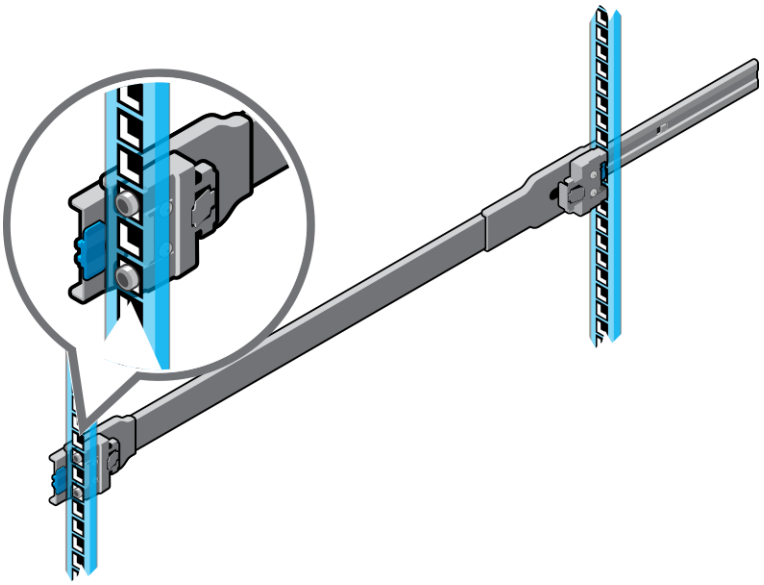
   OR

   9.5 mm square hole rack

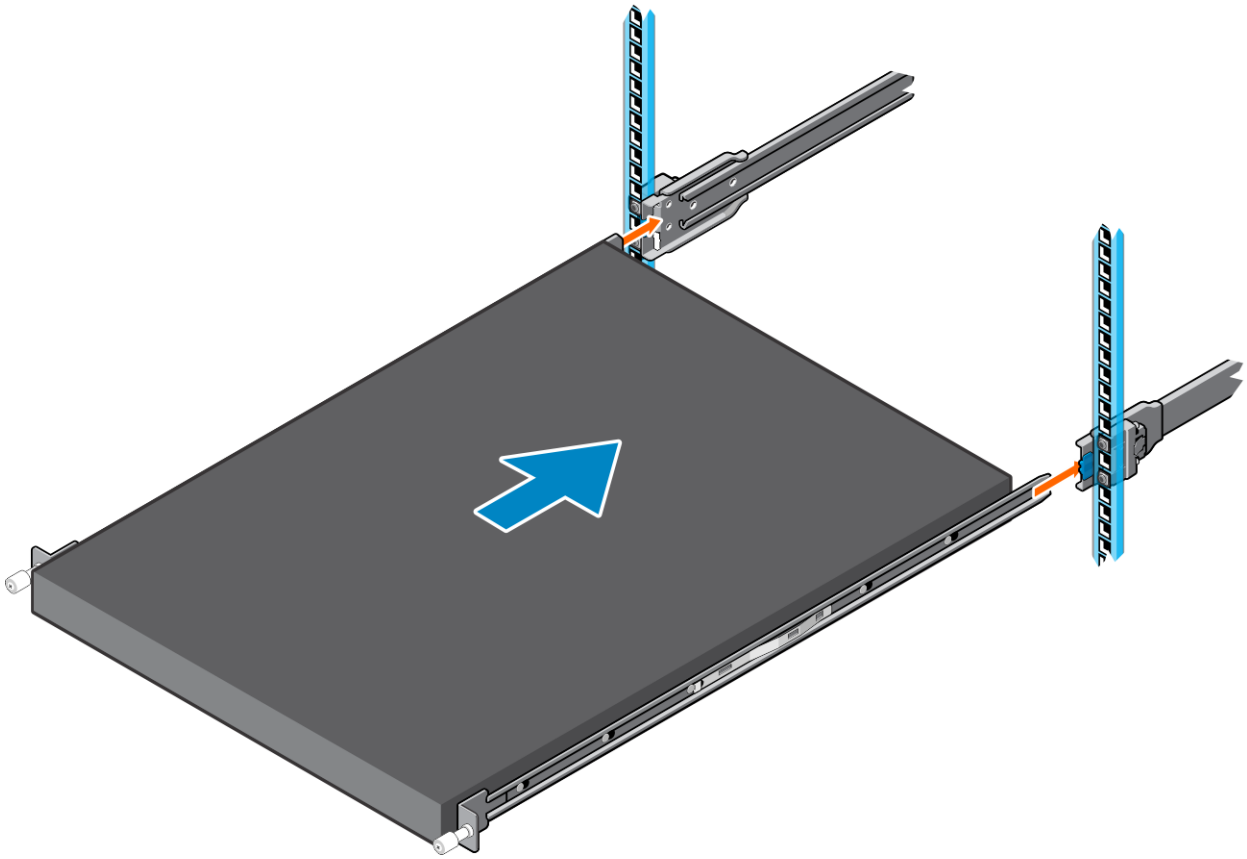


OR

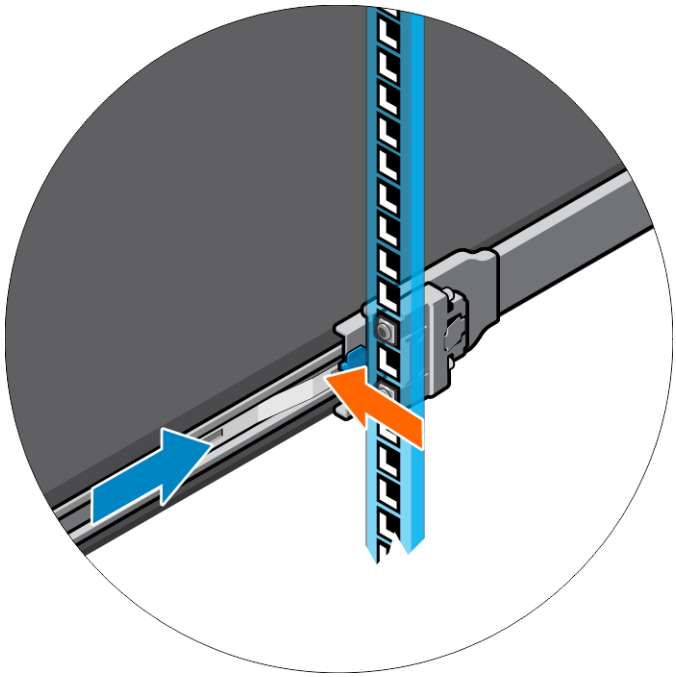
EIA 7.1 mm (.279 in) round hole rack



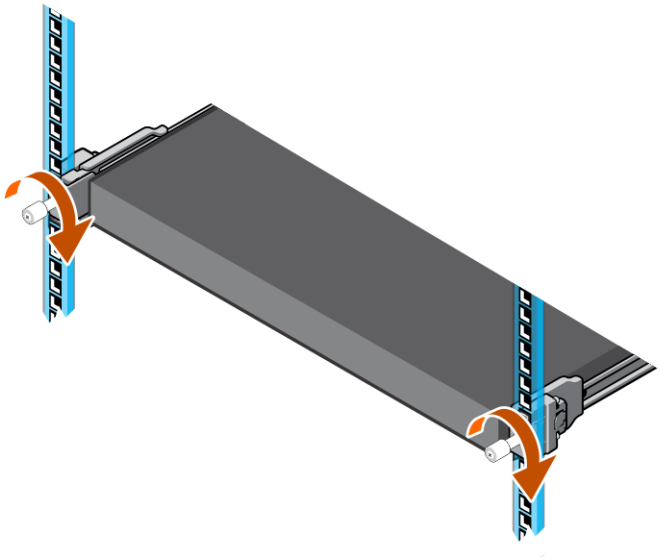
6. Attach the outer rail to the front of the four-post rack. The rail clicks into place.
7. Repeat these steps for the second rail.
8. Slide the inner rails attached to the switch into the outer rails that are attached to the rails.



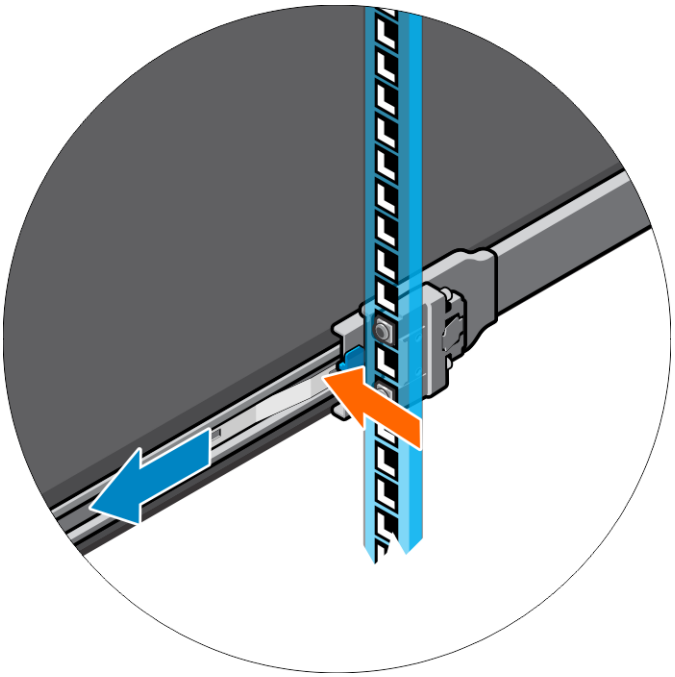
NOTE: Press the spring clip on each outer rail to allow the switch to slide into the outer rail.



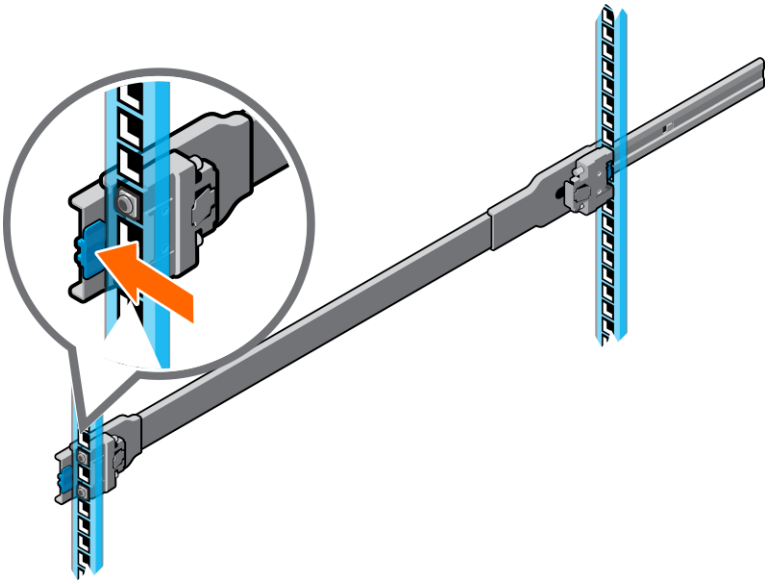
9. Tighten the thumbscrews to secure the switch to the rack.



To remove the switch, press the rail spring clip and pull the inner rail and switch out of the outer rail and rack.



To remove the outer rails from the rack, press the blue plastic button on each outer rail.



Four-post L-bracket rail installation

Use these installation instructions for racks with M5 threaded holes, 9.5 mm (.354 in) square holes, or 7.1 mm (.279) round holes.

Complete the switch installation in the following order:

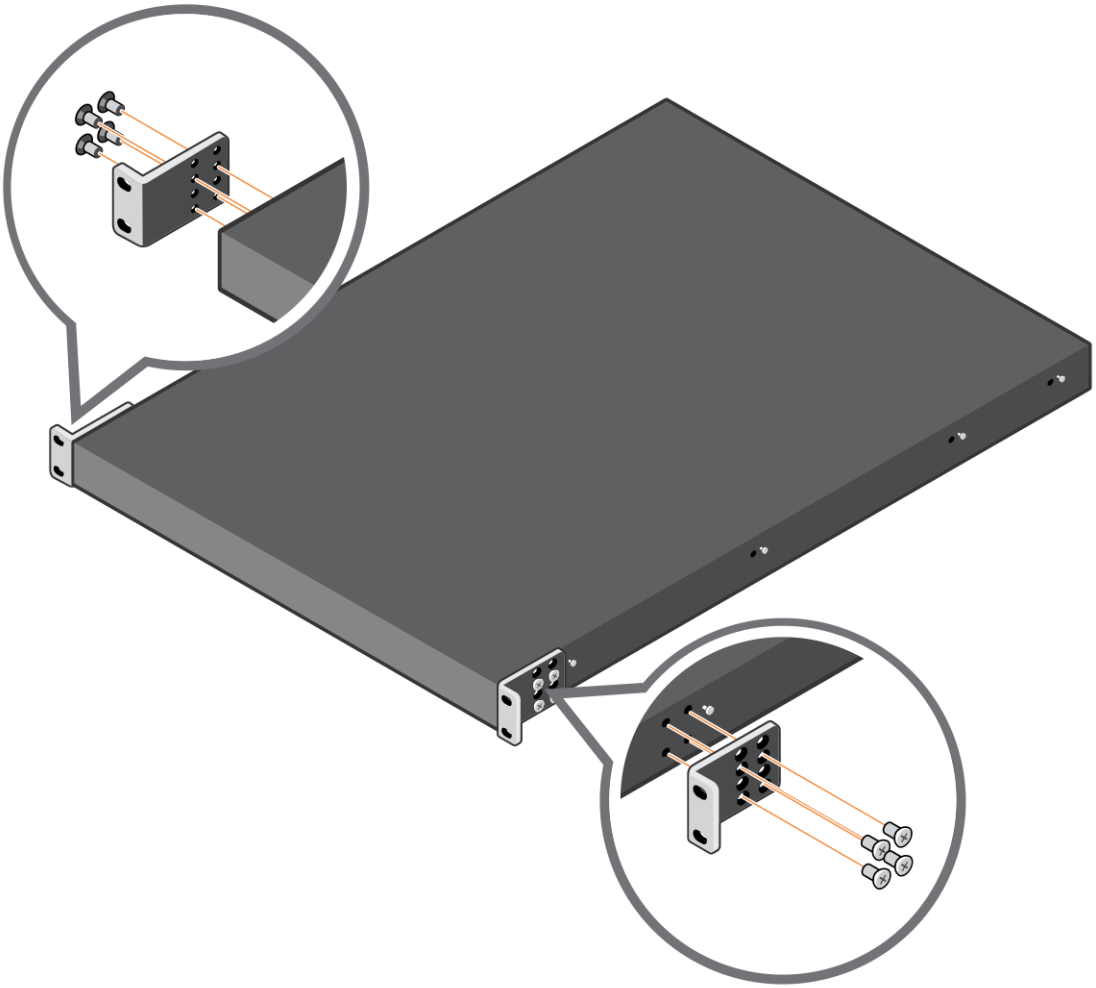
1. Attach the L-brackets to the front of the switch.
2. Attach the inner rails to the switch.
3. Attach the outer rails to the rear of the four-post rack.
4. Slide the switch into the rack.
5. Secure the L-brackets to the front of the four-post rack.

NOTE: You need a user-supplied Phillips screwdriver to complete this installation.

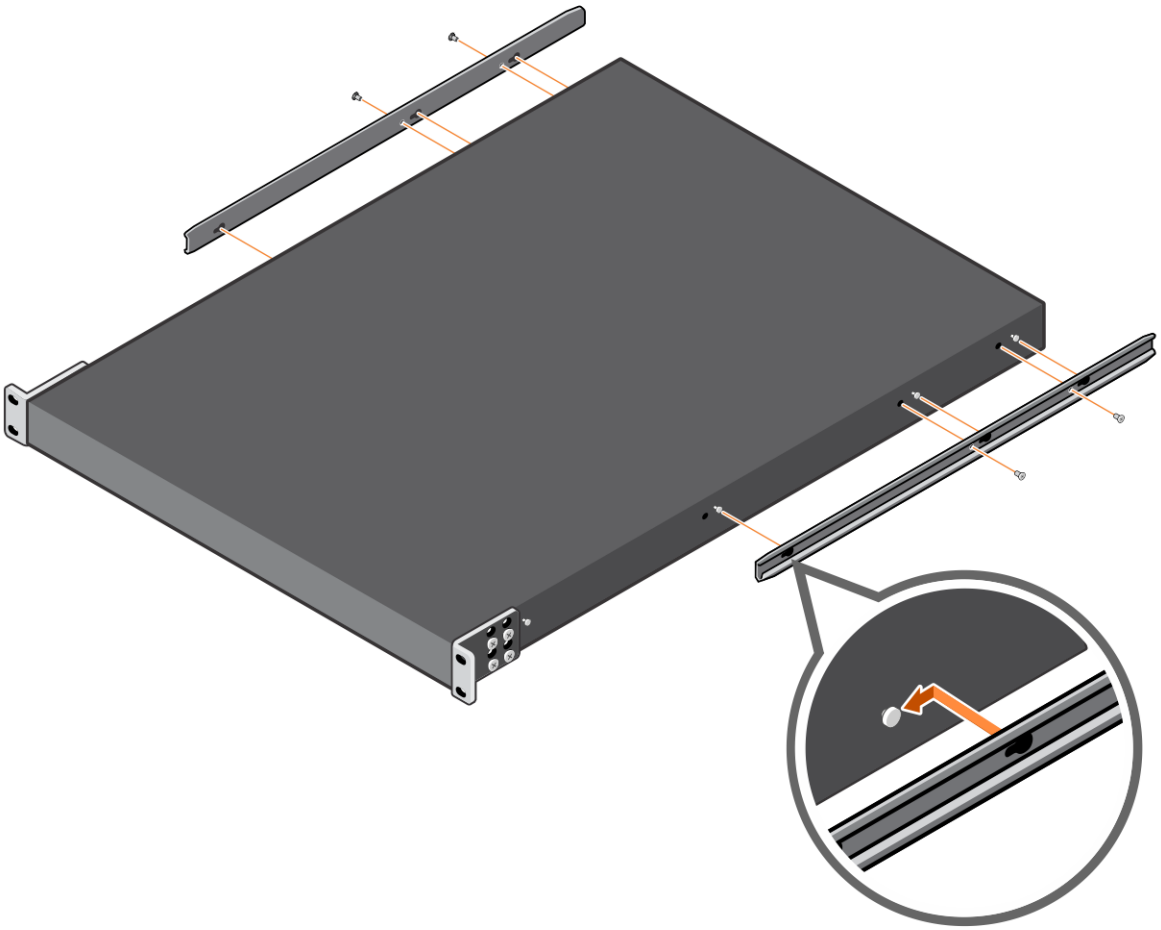
NOTE: For the EIA 9.5 mm (.354 in) square-hole rack, insert the cage nuts into the rack holes before you secure the L-brackets to the rack. The cage nuts ship with the brackets and rails.

To install the switch:

1. Remove the rails, L-brackets, and screws from the shipping container.
2. Attach an L-bracket to each side of the switch front using four M4 screws.



3. Separate the inner rail and the outer rail.
4. Attach the inner rail to the switch.
   Line up the slot on the inner rail with the T-stud on the switch. Push back to lock the rail into place.
   Secure the inner rail to the switch using two M4 screws.

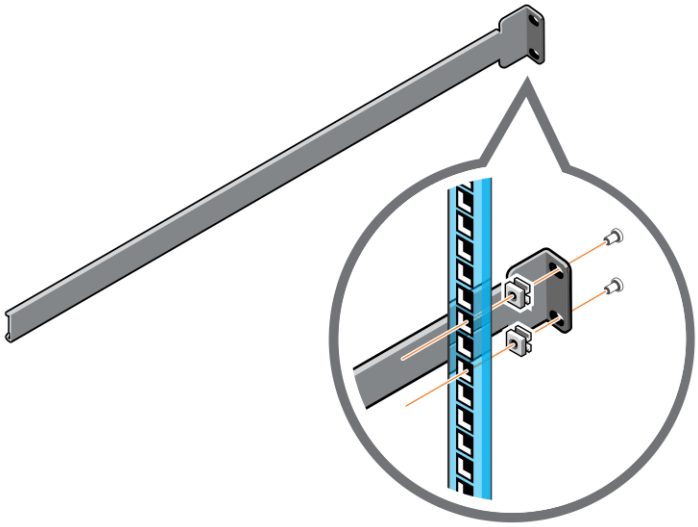


Repeat this step to attach the second inner rail to the other side of the switch.

5. Attach the outer rail to the back of the four-post rack.

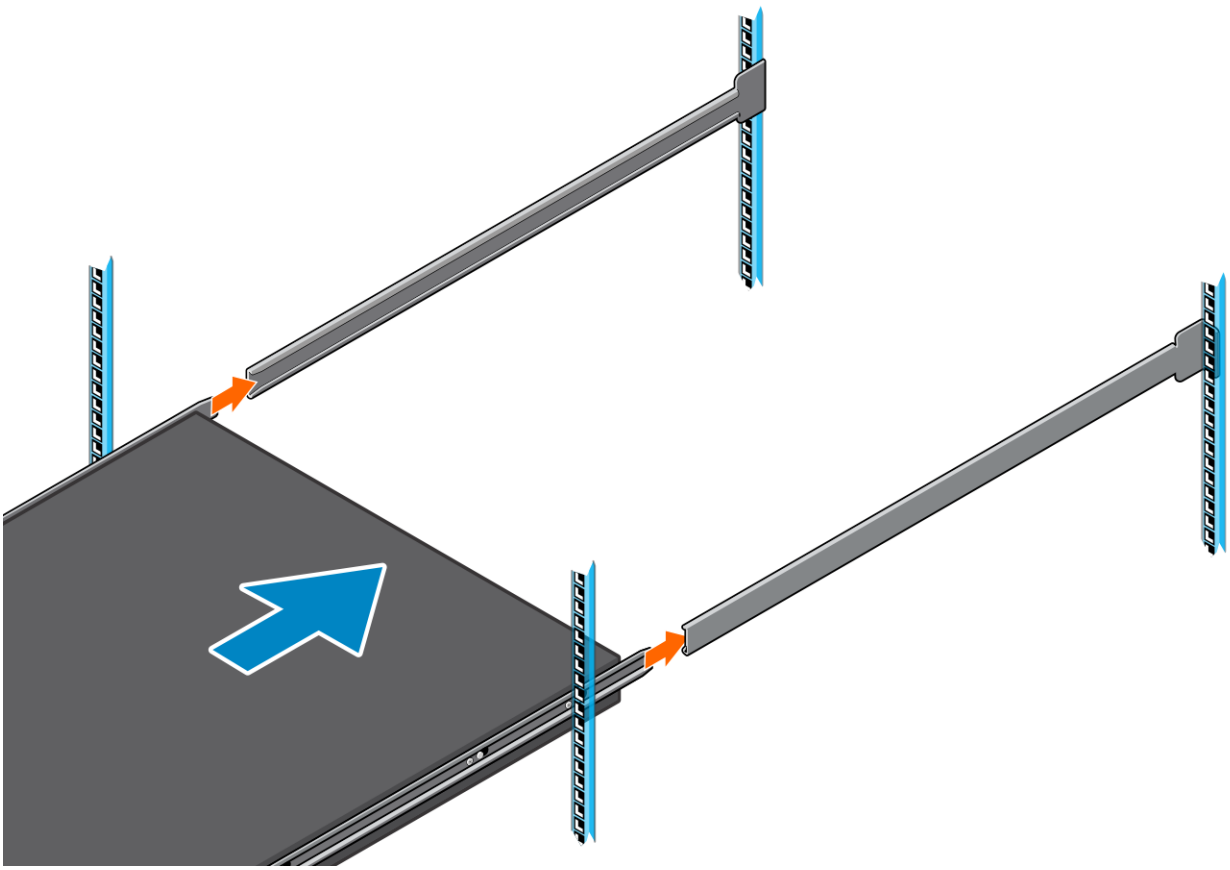
   Align the outer rail peg to the back of the four-post rack.

   Secure the outer rail to the back of the rack using two M4 screws for each rail.

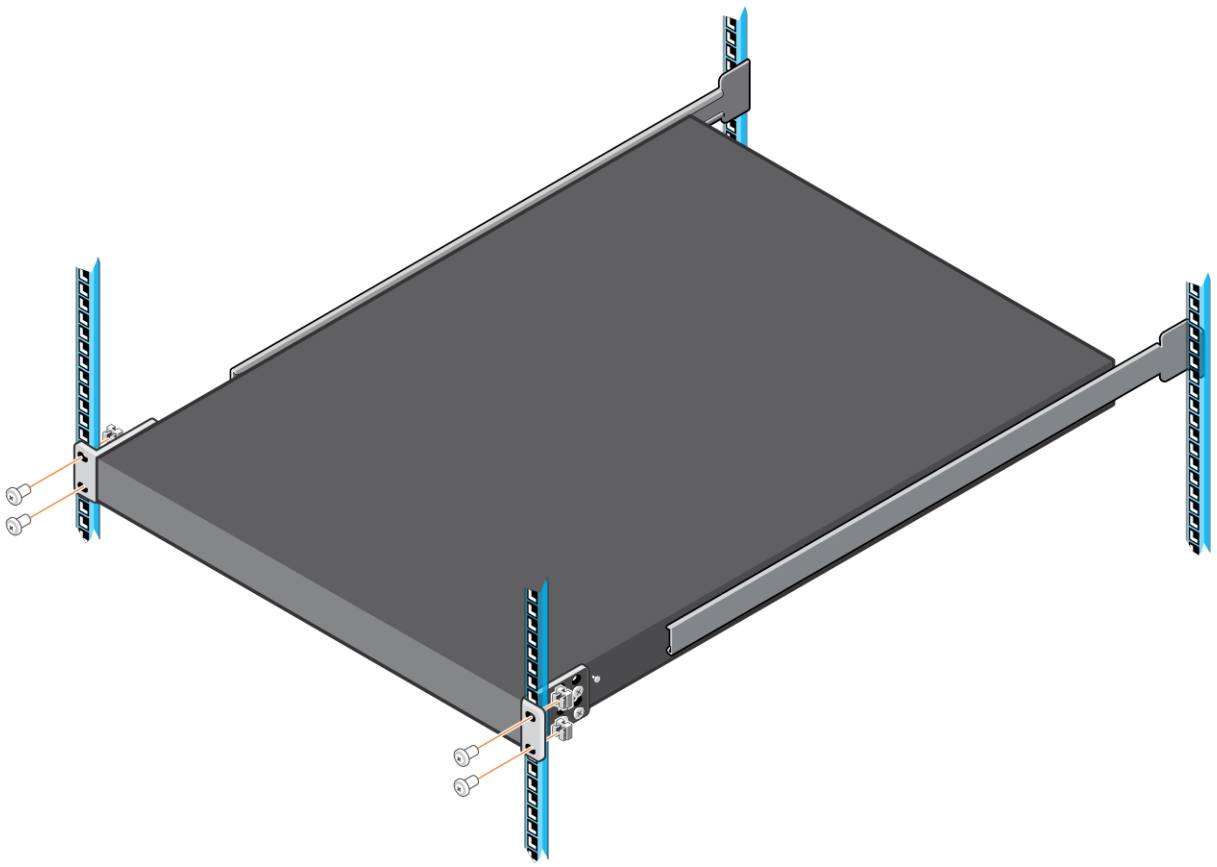


Repeat this step to attach the second outer rail to the other side of the rack.

6. Slide the inner rails into the outer rails.



7. Attach the L-brackets to the front of the four-post rack.
   Align the L-bracket holes to the holes at the front of the four-post rack.
   Secure the L-brackets to the front of the rack using two M4 screws for each side.



To remove the switch, remove the four screws from the L-brackets at the front of the rack and slide the switch forward.

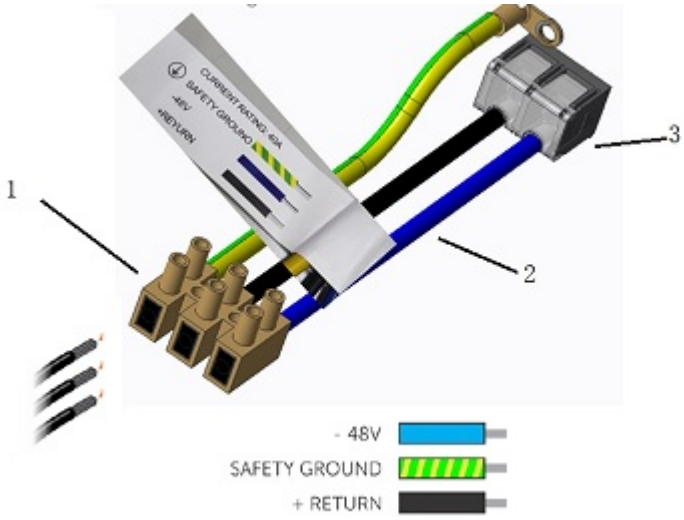
To remove the rack rails from the rack, first remove the switch from the rack. Then remove the four outer rails screws at the back of the rack.

DC power connections

Each DC PSU comes with one DC cable. The cable ships in a separate plastic bag.

CAUTION: This product must be supplied by a DC power source rated -48 Vdc to -60 Vdc, 40 A minimum, and Tma = 45-degree C minimum. The altitude of operation is 5000 m. The product must be supplied by a UL-Listed DC power source that is separated from AC mains by double or reinforced insulation when the switch is connected to DC power. For more information, contact your Dell sales representative.

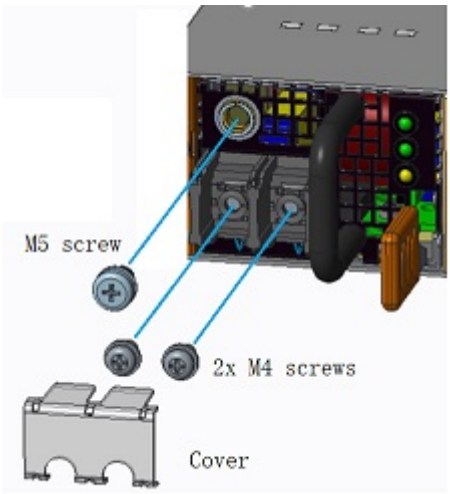
NOTE: You need a user-supplied Philips screwdriver to complete this installation.



1. Wiring block
2. DC cable
3. PSU socket

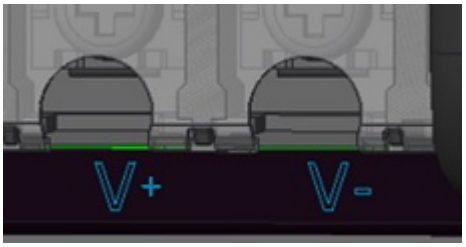
1. Strip a one-half inch section of insulation from each of the power connector wires.
2. Insert each of the bare wire power connector lengths into the wiring block.

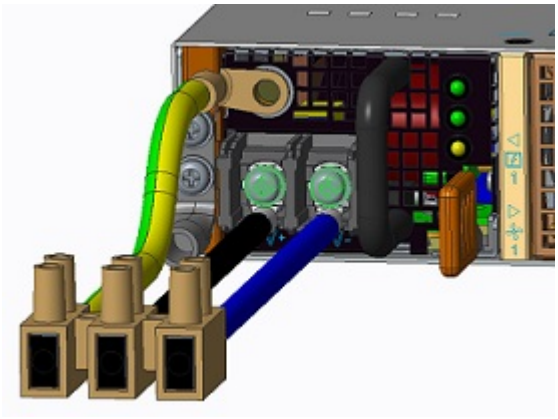
   The blue wire is -48 V, the black wire is the positive return, and the yellow and green wire is the ground wire, 10 AWG minimum.
3. Use a user-supplied flat-head screwdriver to tighten the screws that secures the bare wires into the wiring block.
4. Remove the plastic cover, the two M4 screws and one M5 screw from the PSU socket. Keep all the removed parts.



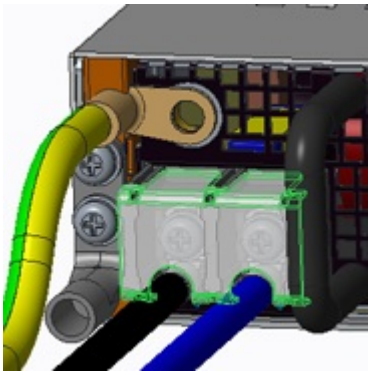
5. Attach the blue wire and black wire to the PSU socket. Secure the wires with the two M4 screws.

   NOTE: Attach the blue wire to the V- terminal. Attach the black wire to the V+ terminal.

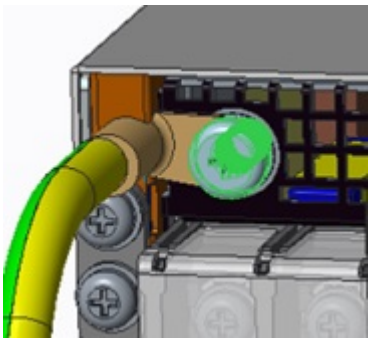




6. Return the plastic cover back to the PSU socket.



7. Attach the yellow and green wire to the PSU GND. Secure the wire with the M5 screw.



To uninstall the cable from the DC PSU, remove the plastic cover and unscrew the M4 and M5 screws. Pull the DC cable out from the DC PSU socket.

Optics installation

WARNING: When working with optical fibers, follow all warning labels and always wear eye protection. Never look directly into the end of a terminated or unterminated fiber or connector as it may cause eye damage.

1. Position the optic so it is in the correct position.
   The optic has a key that prevents it from being inserted incorrectly.
2. Insert the optic into the port until it gently snaps into place.

NOTE: When you cable the ports, be sure not to interfere with the airflow from the small vent holes above and below the ports.

Optics removal

Remove an optic by pushing the tab on the optic and sliding the optic from the port.

When uninstalling optics with direct attach cables (DACs) from the port, pull the release tab firmly and steadily. Before pulling the release tab, you may need to gently push the optic into the port to ensure that it is seated properly. Do not jerk or tug repeatedly on the tab.

Switch power-on

Supply power to the Z9432F-ON switch after you mount it in a rack or cabinet.

Reinspect your switch before power-up. Verify the following:

- The equipment is properly secured to the rack. Dell Technologies recommends properly grounding the switch.
- The ambient temperature around the unit, which may be higher than the room temperature, is within the limits that are specified for the Z9432F-ON switch, see Specifications.
- There is sufficient airflow around the unit.
- The input circuits are correctly sized for the loads and that you use sufficient overcurrent protection devices.
- All protective covers are in place.
- If you do not install optional modules, blank panels are installed.

CAUTION: Do not turn on the switch if you did not install a fan module.

NOTE: A US AC power cable is included for powering up an AC power supply. You must order all other power cables separately.

NOTE: If components are mishandled, ESD damage can occur. Always wear an ESD-preventive wrist or heel ground strap when handling the switch and its components.

Power on sequence

When the switch turns on, the fans immediately come on at high speed. The fan speed slows as the switch continues to boot.

After switch installation

After you have securely installed and turned on the Z9432F-ON switch:

- If you are using Dell EMC software, see switch documentation at www.dell.com/support.
- If you need ONIE information, see ONIE documentation at www.onie.org.
- If you are using third-party software, see your third-party documentation.

NOTE: If necessary, to upgrade your software or firmware images, go to the *Drivers and Downloads* page for your switch at www.dell.com/support.

4

Specifications

This section lists the Z9432F-ON switch specifications.

CAUTION: Operate the product at an ambient temperature not higher than 45°C (113°F).

NOTE: For RoHS information, see Restricted Material Compliance.

Topics:

Chassis physical design

Table 1. Chassis physical design

Parameter	Specifications
Height	43 mm (1.693 inches)
Width	438.5 mm (17.26 inches)
Depth	550 mm (21.65 inches) • PSU handle 29.3 mm (1.15 in) • PSU latch 34.6 mm (1.37 in) • Fan tray handle 25 mm (0.99 in)
Chassis weight with factory-installed components	• 11.78 kg (2 PSUs and 7 fans) • 25.97 lbs (2 PSUs and 7 fans)
Rack clearance required	• Front: 12.7 cm (5 inches) • Back: 12.7 cm (5 inches)

Table 2. Environmental parameters

Parameter	Specifications
Operating temperature	0°C–45°C (32°F–113°F) continuously **NOTE:** Reduce maximum temperature by 1°C/125 meters (1°F/228 ft) above 950 meters (3,117 ft).
Operating humidity	5% – 90% (RH), noncondensing
Storage temperature	-40°C–70°C (-40°F – 158°F)
Storage humidity	5% to 90%, noncondensing
Maximum thermal output	1362 W = 4647.3 BTU/Hr
Maximum operational altitude	3,048 meters (10,000 ft)
Maximum nonoperational altitude	10,668 meters (35,000 ft)
Shock	Dell EMC Spec SV0115 (108000336_REV_25)
Acoustics	Front-to-back fan direction: • 25C idle @ 30% duty cycle, 7.1 bels

Table 2. Environmental parameters (continued)

Parameter	Specifications
NOTE: Acoustic numbers indicate a potential high-to-low range. Volume may increase as power demands and environmental temperature rise.	• 25C operating @ 60% duty cycle, 8.2 bels • 35C operating @ 70% duty cycle, 8.5 bels • 45C operating @ 100% duty cycle, 9.3 bels Back-to-front fan direction: • 25C idle @ 30% duty cycle, 7.1 bels • 25C operating @ 70% duty cycle, 8.4 bels • 35C operating @ 80% duty cycle, 8.7 bels • 45C operating @ 100% duty cycle, 9.1 bels

Table 3. AC power requirements

Parameter	Specifications
Power supply	• 90–130 VAC (110 VAC nominal) • 180–264 VAC (240 VAC nominal)
Maximum current draw per system	• 12.0/10.0 A at 100/120 VAC (one PSU operating) • 6.8/5.7 A at 200/240 VAC (two PSUs operating)
Maximum power consumption (28x15W and 4x20W QSFP56-DD optics)	• Low Line VAC: 1200 W (one PSU operating) • Low Line VAC: 1362 W (two PSUs operating) • High Line VAC: 1362 W
Typical power consumption	900 W

Table 4. DC power requirements

Parameter	Specifications
Minimum and maximum input voltage range	–40, –48V, –60V DC
Input current at full load with fan	-40 V/34 A, -48 V/28.4 A, -60 V/22.7 A

5

Support

The support site provides documents and tools to help you use your equipment and mitigate network outages. Through the support site you can obtain technical information, access software upgrades and patches, download available management software, and manage your open cases. The support site provides integrated, secure access to these services.

To access the support site, go to www.dell.com/support/. To display information in your language, scroll down to the bottom of the web page and select your country from the drop-down menu.

- To obtain product-specific information, enter the 7-character service tag, which is known as a luggage tag, or 11-digit express service code of your switch and click **Submit**.

  To view the chassis service tag or express service code, pull out the tag or enter the `show chassis` command from the CLI.

- To receive more technical support, click **Contact Us**. On the Contact Information web page, click **Technical Support**.

To access switch documentation, go to www.dell.com/manuals/ and enter your switch type.

To search for drivers and downloads, go to the **Drivers & Downloads** tab for your switch.

To participate in Dell EMC community blogs and forums, go to www.dell.com/community.