Dell PowerSwitch S5048F-ON Installation Guide

June 2023

D&LL Technologies

Notes, cautions, and warnings

(i) **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.**

Contents

About this guide

This guide provides site preparation recommendations, step-by-step procedures for rack mounting and desk mounting your switch, 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 on 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 emit from the aperture of the optical transceiver ports. Avoid exposure to laser radiation. Do not stare into open apertures.

> ⓘ **NOTE:** Read this guide before unpacking the switch. For unpacking instructions, see Unpack.

Regulatory

Marketing model S5048F-ON is represented by the regulatory model E21W and the regulatory type E21W004.

Topics:

- Related documents
- Information symbols

Related documents

For more information about the S5048F-ON switch, see the following documents:
- *S5048F-ON Set-up Guide*
- *Open Networking Hardware Diagnostic Guide*
- *S5048F-ON Release Notes*
- *Dell Configuration Guide for the S5048F-ON System*
- *Dell SmartFabric OS10 User Guide*
- *Dell SmartFabric OS10 Release Notes*
- *Dell Command Line Reference Guide for the S5048F-ON System*
- *Dell Networking OS9 Release Notes for the S5048F-ON System*

> ⓘ **NOTE:** For the most recent documentation, see https://www.dell.com/support.

Information symbols

This book uses the following information symbols:

(i) **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.**

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

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

S5048F-ON switch

The following sections describe the Dell S5048F-ON switch:

Topics:

Introduction

The S5048F-ON switch is a one rack unit, full-featured, fixed form-factor top-of-rack (ToR) compact 10/25/40/50/100GbE switch. Also, the S5048F-ON switch has 10/25GbE links for server connections and 40/50/100GbE links for clustering. The switch includes two hot-swappable AC or DC power supply units (PSUs) and four hot-swappable fan units.

The S5048F-ON switch includes forty-eight 1/10/25GbE SFP28 ports and six 40/100GbE QSFP28 ports.

(i) **NOTE:** Stacking is not supported on the S5048F-ON switch.
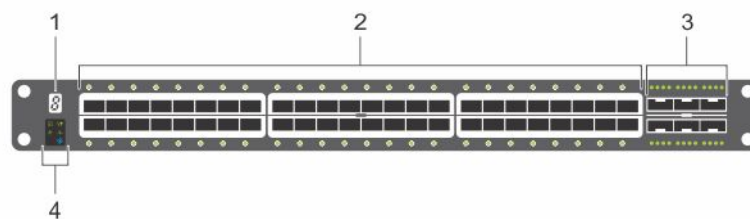
Figure 2. S5048F-ON switch I/O-side view

1. Seven-segment LED (stacking not supported)
2. Forty-eight SFP28 Ports
3. Six QSFP28 100 GbE Ports
4. LED Status Icons

The S5048F-ON switch has one RJ-45 serial console port, one Micro-USB type-B console port, one 10/100/1000 Base-T Ethernet management port, and one USB type-A port for the external storage. Management ports are on the PSU-side of the switch.
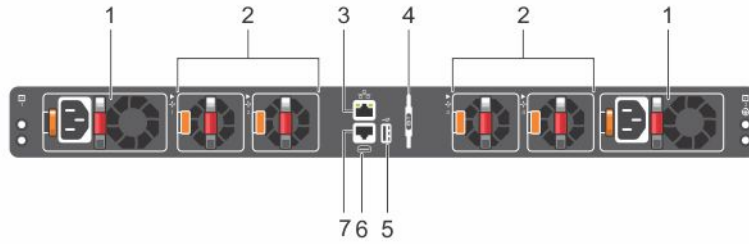
Figure 3. S5048F-ON switch PSU-side view

1. PSUs
2. Fans
3. RJ-45 management port
4. Luggage tag
5. USB Type A
6. MicroUSB-B Port
7. RS-232 console port

Features

The S5048F-ON switch offers the following features:

- Forty-eight 1/10/25GbE SFP28 ports
- Six 40GbE and 100GbE QSFP28 ports
- One MicroUSB-B console port
- One RJ-45 serial console port
- One USB Type-A port for more file storage
- On-board Rangeley central processing unit (CPU) system with 8GB DDR III RAM, 16GB iSLC mSATA SSD
- One 10/100/1000BaseT Ethernet management port
- Two hot-swappable redundant power supplies
- Four hot-swappable fan modules
- Standard 1U switch

Physical dimensions

The S5048F-ON switch have the following physical dimensions:

- 434 x 462 x 44 mm (W x D x H)
- 17.1 x 18.2 x 1.72 inches (W x D x H)
- PSU/fan tray handle: 1.57 inches (40 mm)

LED display

The S5048F-ON switch includes LED displays on the I/O side of the switch.

(i) **NOTE:** If you are installing third-party software, for LED information, see your third-party operating software (OS) documentation.

LED behavior

The following S5048F-ON switch LED behavior is seen during open networking installation environment (ONIE) operations:
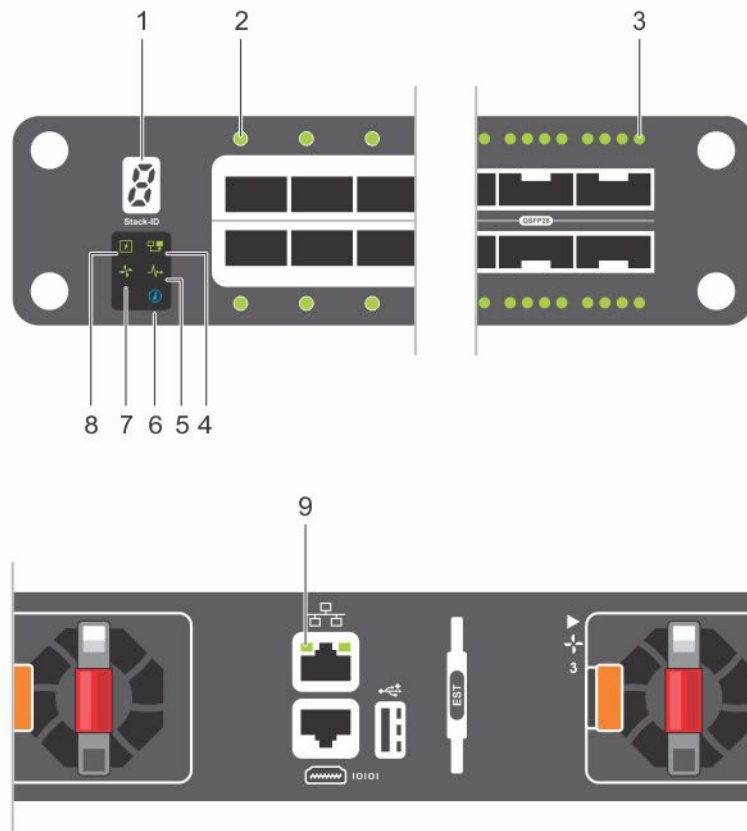
Figure 4. S5048F-ON LEDs

1. Seven-segment LED (stacking not supported)
2. SFP28 Port Link/Activity LED
3. QSFP28 Port Link/Activity LED
4. Master LED (stacking not supported)
5. System LED
6. Locator LED
7. Fan LED
8. Power LED
9. RJ-45 Ethernet Port LED: Left is activity; right is link.

Table 1. S5048F-ON switch LED behavior

LED	Description
System Status/Health LED	- Solid green—Normal operation - Blinking green—Booting - Solid yellow (amber)—Critical system error - Blinking yellow—Noncritical system error, fan failure, or power supply failure
Power LED	- Off—No power - Solid Green—Normal operation - Solid yellow—POST is in process - Blinking yellow—Power supply failed
Master LED	Stacking not suported.

Table 1. S5048F-ON switch LED behavior (continued)

LED	Description
FAN LED	- Off—No power - Solid green—Normal operation; fan powered and running at the expected RPM - Solid yellow—Fan failed—including incompatible airflow direction when you insert the PSU or fan trays with differing airflows
PSU LED	- Off—No power - Solid green—Normal operation - Solid yellow—Power supply critical event causing a shutdown - Blinking yellow—PSU warning event; power continues to operate - Blinking green, 1.0Hz—Standby mode - Blinking green, 0.5Hz—AC power cord unplugged
LOCATOR LED/System Beacon	- Off—Locator function disabled - Blinking blue—Locator function enabled
Seven-segment LED	Stacking not supported.
RJ-45 Ethernet LED	- Off—no link and no activity detected - On—Activity on the port - Solid yellow—10MHz activity - Solid green—100MHz activiity - Blinking green—1GHz activity

Table 2. System management Ethernet port LEDs

LED	Description
Link LED	- Off—No link - Solid green—Link operating at a maximum speed, autonegotiated/forced or 1G - Solid yellow—Link operating at a lower speed, autonegotiated/forced or 10/100M
Activity LED	- Off—No link - Flashing green—Port activity

(i) **NOTE:** There are four LEDs for each QSFP28 port and a single LED for each native SFP28 port. For each port, 100GbE or 40GbE uses only one LED, 2x50GbE uses two LEDs, and 4x25GbE or 4x10GbE uses all four LEDs.

Table 3. SFP28 port LEDs

LED	Description
Link LED	- Off—No link - Solid green—Link operating at maximum speed, 25G - Solid yellow—Link operating at a lower speed, 10G/1G - Flashing yellow, 1 second on/off—port beacon
Activity LED	- Off—No link - Flashing green—port activity for 25G - Flashing yellow—Port activity for 10G/1G

Table 4. QSFP28 port LEDs

LED	Description
Link/Activity LED—100G, 40G, or 10G	Off—No link

Table 4. QSFP28 port LEDs (continued)

LED	Description
	• Solid green—Link operating at maximum speed, 100G for QSFP28 port • Flashing green—Port activity operating at maximum speed, 100G for QSFP28 ports • Solid yellow—Port activity operating at a lower speed, 40G or 10G port • Flashing yellow, 1 second on/off—Port beacon
Link/Activity LED—4x25G mode or 4x10G mode	• Off—No link • Solid green—Link operating at maximum speed, 4x25G port • Flashing green—Link activity operating at maximum speed, 4x25G port • Solid yellow—Link operating at a lower speed, 4x10G port • Flashing yellow, 1 second on/off—Port beacon
Link/Activity LED—2x50G mode	• Off—No link • Solid yellow—Link operating at a lower speed, 2x50G port • Flashing yellow—Port activity at a lower speed, 2x50G port • Flashing yellow, 1 second on/off—Port beacon

Prerequisites

The following is a list of components that are required for successful installation of the switch:

(i) **NOTE:** Detailed installation instructions are provided in Site preparations and S5048F-ON switch installation.

- S5048F-ON switch
- AC or DC country- and regional-specific cables to connect the AC or DC power source to each of the switches' AC or DC power supplies
- ReadyRail mounting brackets for rack installation, included
- Screws for rack installation
- #1 and #2 Phillips screw drivers, not included
- Torx screwdriver, not included
- Ground cable screws for L-bracket, included
- Copper/fiber cables

Other optional components are:

- M3 or M4 ground cable screw, depending on your switch
- Extra mounting brackets
- Extra power supply unit
- Extra fan module

S5048F-ON switch configurations

You can order the S5048F-ON switch in several different configurations.

- S5048F-ON AC or DC Normal Airflow: 54 Ethernet ports—48 SFP28 1/10/25GbE ports and 6 QSFP28 4x10/4x25/40/100GbE ports—two AC or DC power supplies, and four fan subsystems with airflow from the I/O side to the power supply side
- S5048F-ON AC or DC Reverse Airflow: 54 Ethernet ports—48 SFP28 1/10/25GbE ports and 6 QSFP28 4x10/4x25/40/100GbE ports—two AC or DC power supplies, and four fan subsystems with airflow from the power supply side to the I/O side
- Fan with airflow from the I/O side to the PSU side—normal airflow

- Fan with airflow from the PSU side to the I/O side—reverse airflow
- AC or DC power supply with airflow from the I/O side to the PSU side—normal airflow
- AC or DC power supply with airflow from the PSU side to the I/O side—reverse airflow

Luggage tag

The switch has a pull-out tag, known as a luggage tag, on the PSU-side of the switch. The front of the luggage tag includes switch ID information. The back of the luggage tag includes a QRL that takes you to a How-To site where you can watch videos about racking the switch, replacing components, configuring port channels, and so on.
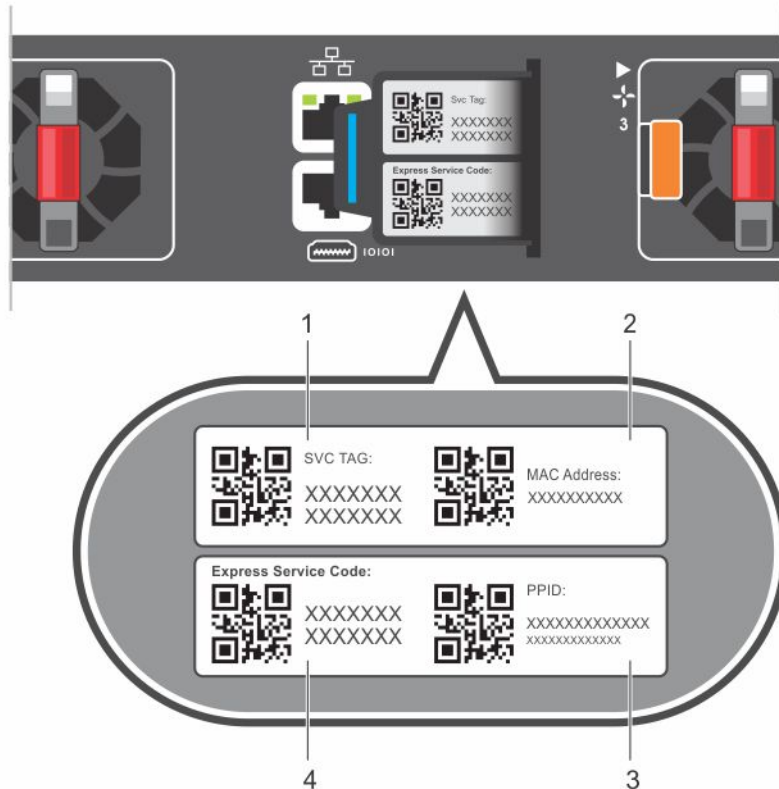

Figure 5. S5048F-ON switch luggage tag

1. Service tag
2. MAC address
3. PPID
4. Express service code

Site preparations

The S5048F-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 switch specifications, see Specifications.

(i) **NOTE:** Install the S5048F-ON switch in a rack or cabinet before installing the components.

Topics:

- Site selection
- Cabinet placement
- Rack mounting
- Switch ground
- Fans and airflow
- Power
- Storing components

Site selection

Install the switch equipment in restricted access areas.

A restricted access area is one in which 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:

- Near an adequate power source. Connect the switch to the appropriate branch circuit protection according to your local electrical codes.
- Switch environmental temperature range is from 0°C to 45°C (32°F to 113°F).
- Relative humidity is from 5 to 85 percent noncondensing.
- In a dry, clean, well-ventilated, and temperature-controlled room, away from heat sources such as hot air vents or direct sunlight.
- Away from sources of severe electromagnetic noise.
- Inside the restricted access area, positioned 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.

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

Cabinet placement

Install the S5048F-ON switch only in indoor cabinets 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 5 inches (12.7 cm) 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 you ground your switch. Use the S5048F-ON switch in a common bond network (CBN).

Connect the grounding cables as described in S5048F-ON switch installation.

ⓘ **NOTE:** For an AC-powered switch, 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 a DC-powered switch, the only way to safely ground your switch is to attach a dedicated ground wire. The ground lug kit ships in a plastic bag placed with the other accessories inside the shipping box. The ground lug bracket screws ship attached to the switch. Before you install the DC switch in the dual-tray, attach the ground lug and bracket to the switch using the included screws and then attach the DC ground wire to the ground lug.

Fans and airflow

The S5048F-ON switch fans support two airflow options: normal and reverse.

Fan combinations

Fan installation is done as part of the factory install based on stock keeping unit (SKU) type. The S5048F-ON switch has SKUs that support the following configurations:

● AC or DC PSU with fan airflow from the I/O to the PSU—the red indicator is the normal airflow direction
● AC or DC PSU with fan airflow from the PSU to the I/O—the blue indicator is the reverse airflow direction

Order the fans suitable to support your site's ventilation. Use a single type of airflow fan in your switch. Do not mix reverse and normal airflows in a single S5048F-ON switch.

For proper ventilation, position the switch in an equipment rack or cabinet with a minimum of 5 inches (12.7 cm) of clearance around the exhaust vents. When you install two S5048F-ON switches near each other, to permit proper airflow, position the two switches at least 5 inches (12.7 cm) apart. The fan speed varies based on internal temperature monitoring. The S5048F-ON switch never intentionally turns off the fans.

For more information, see Fans.

Power

To connect the switch to the applicable power source, use the appropriate power cord. An AC power cord is included with the switch.

When installing AC or DC switches, follow the requirements of the National Electrical Code, ANSI/NFPA 70, where applicable.

The switch is powered-up when you connect the power cord between the switch and the power source. For more information, see Power supplies.

⚠ **CAUTION: Always disconnect the power cable before you service the power supply slots. The switch has multiple power cords. Before servicing, ensure all power cords are disconnected.**

⚠ **CAUTION: On an AC switch, use the power supply cord as the main disconnect device. Ensure that the socket-outlet is located and installed near the equipment and is easily accessible.**

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

Storing components

If you do not install your S5048F-ON switch and components immediately, properly store the switch and all optional components using these guidelines:

- Storage location temperature must remain constant. The storage range is from -40°C to 70°C (-40°F 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 S5048F-ON switch and accessories. After you remove the original packaging, place the S5048F-ON switch and components on an anti-static surface.

S5048F-ON switch installation

To install the S5048F-ON switch, complete the installation procedures in the order presented in this chapter.

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

(i) **NOTE:** ESD damage can occur if components are mishandled. Always wear an ESD-preventive wrist or heel ground strap when handling the S5048F-ON switch and components. As with all electrical devices of this type, take all the necessary safety precautions to prevent injury when installing this switch.

Topics:

- Unpack
- Ground cable
- Rack or cabinet hardware installation
- ReadyRails installation
- Switch installation
- Optics installation
- Switch power-up
- After switch placement
- Switch replacement

Unpack

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

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

- One S5048F-ON switch
- One RJ45 to DB-9 female cable
- Two sets of rail kits; no tools required
- Two PSUs
- Four fan units
- Two AC power cables; country or region specific
- *S5048F-ON Set-up Guide*
- *Safety and Regulatory Information*
- *Warranty and Support Information*

Unpacking Steps

Unpack the switch carefully.

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

ⓘ **NOTE:** For AC-powered switches, although the third conductor of the AC power cord 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.

Depending on the type of switch, to attach a ground cable to the switch, you need one of the included M3 or M4 screws. The switch ships with one of the following two configurations:

- One threaded hole using an included M3 screw
- Two threaded holes using one of the two included M4 screws.

In both configurations, the ground cable is not included. To properly ground the switch, Dell Technologies recommends a one- or two-hole lug, M3 or M4 hole size. The ground 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 rack installation ears are not suitable for grounding.

To connect the ground cable to the switch, follow these steps.

1. Cut the ground cable, not included, to the desired length.

   The cable length must facilitate proper operation of the fault interrupt circuits. Use the shortest cable route allowable.

2. To attach the ground cable, use one of the following:
   - Using one threaded M3 hole, attached the ground cable to the lug using an M3 screw with a captive internal tooth lock washer, as shown. Torque the screw to ±4–5 in-lbs.
   - 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, as shown. 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 hardware 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. Rack mounting includes four-post, two-post, or threaded mounts. The ReadyRails system is provided for 1U front-rack and two-post installations.

The ReadyRails system includes separately packaged rail assemblies.

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

ⓘ **NOTE:** The illustrations in this document are not intended to represent a specific switch.

ⓘ **NOTE:** Do not the use the mounted ReadyRails 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, then work to the top. Do not exceed your rack's 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 installed in a closed rack assembly, the operating temperature of the rack environment may be greater than the room ambient temperature. Use care not to exceed the 45°C maximum ambient temperature of the switch.
- Reduced air flow—Install the equipment in the rack so that the amount of airflow required for safe operation of the equipment is not compromised.
- 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 back panel facing downward.

ReadyRails installation

To easily configure your rack for installation of your S5048F-ON switch, use the ReadyRails rack mounting system provided.

You can install the ReadyRails system using the 1U tool-less method or one of three possible 1U tooled methods—two-post flush mount, two-post center mount, or four-post threaded mount.

To begin installation, separate each rail assembly by sliding the inside rail out of the outside rail.

(i) **NOTE:** For more installation instructions, see the installation labels attached to the rail assembly.
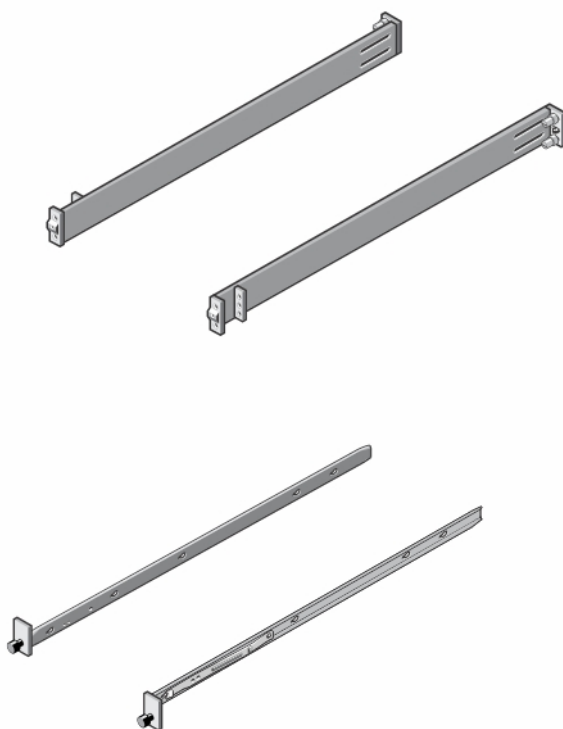
Figure 6. Separate rails

Tool-less square-hole installation

(i) **NOTE:** For more installation instructions, see the installation labels attached to the rail assembly.

1. With the ReadyRails flange ears facing outward, place one rail between the left and right vertical posts. Align and seat the back flange rail pegs in the back vertical post flange. The following shows how the pegs appear in both the square and nonthreaded round holes:
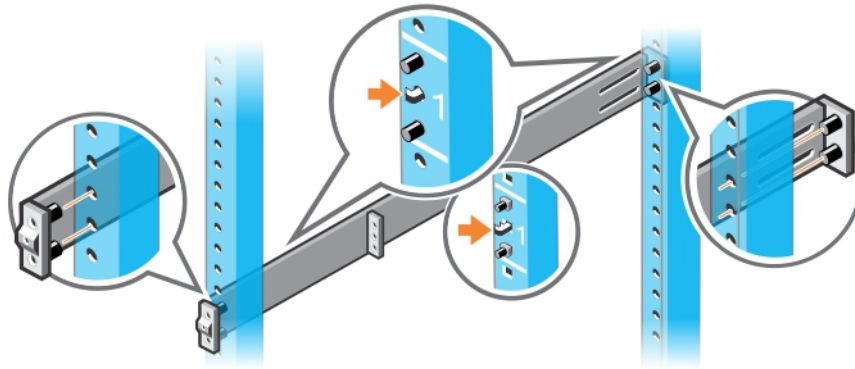
Figure 7. 1U tool-less nonthreaded square hole installation

2. Align and seat the front flange pegs in the holes on the front side of the vertical post.

   (i) **NOTE:** Be sure that the rails click into place and are secure.

3. Repeat this procedure for the second rail.

To remove each rail, pull on the latch release on each flange ear and unseat each rail.

Two-post flush-mount installation

(i) **NOTE:** For more installation instructions, see the installation labels attached to the rail assembly.

1. For this configuration, remove the castings from the front side of each ReadyRails assembly, see item 1. Use a Torx screwdriver to remove the two screws from each front latch on the switch side of the rail. Remove the tool-less latch casting. Retain the castings for future rack requirements. Do not remove the back latch castings.
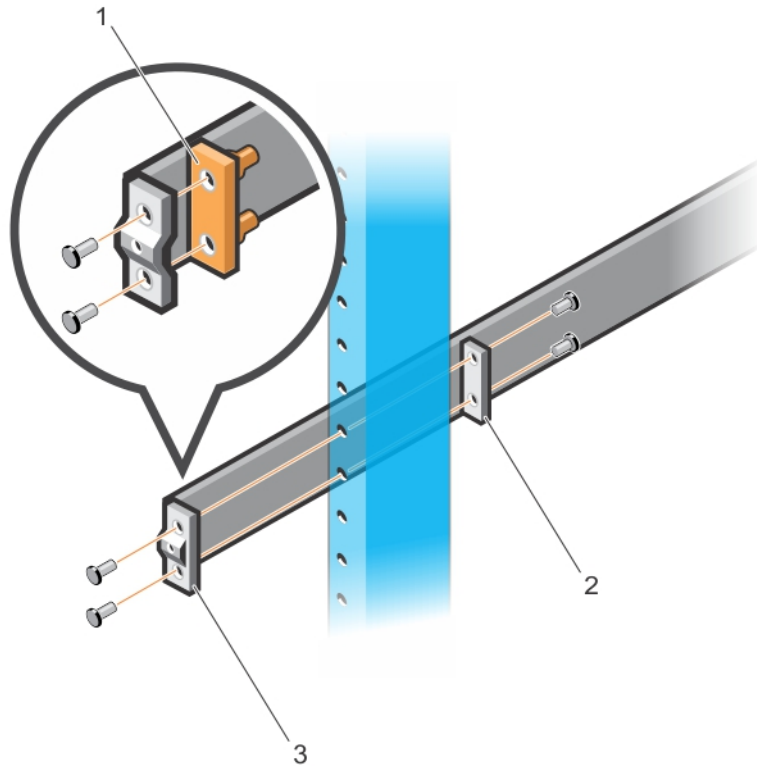
Figure 8. Two-post flush-mount configuration

2. Attach one rail to the front post flange with two user-supplied screws. See item 2.
3. Slide the plunger bracket forward against the vertical post and secure the plunger bracket to the post flange with two user-supplied screws. See item 3.
4. Repeat this procedure for the second rail.

Two-post center-mount installation

ⓘ **NOTE:** For more installation instructions, see the installation labels attached to the rail assembly.

1. Slide the plunger bracket rearward until it clicks into place and secure the bracket to the front post flange with two user-supplied screws. See item 1.
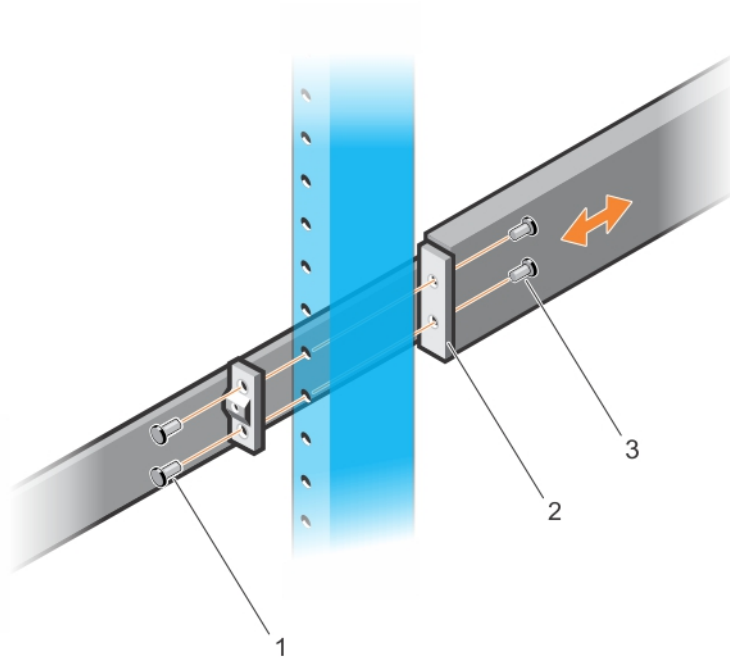
Figure 9. Two-post center-mount threaded round-hole installation

2. Slide the back bracket towards the post. Secure it to the post flange with two user-supplied screws. See item 2 and 3.
3. Repeat this procedure for the second rail.

Four-post threaded installation

ⓘ **NOTE:** For more installation instructions, see the installation labels attached to the rail assembly.

1. For this installation, remove the tool-less latch castings from the front side of each ReadyRails assembly. See item 1. Use a Torx screwdriver to remove the two screws from each front latch on the switch side of the rail. Remove the tool-less latch casting. Retain the castings for future rack requirements.
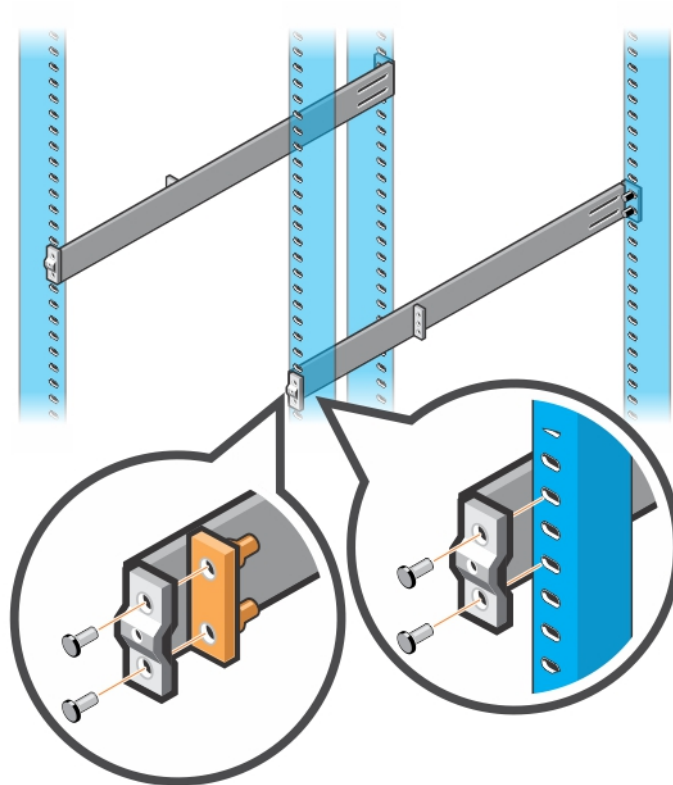
Figure 10. Four-post threaded round-hole installation

2. For each rail, attach the front and back flanges to the post flanges with two user-supplied screws at each end.

Switch installation

You can mount the switch in the 1U front-rack or 1U two-post, flush or center configuration. The following is an example of a front-rack configuration:

For the 1U two-post configurations, slide the switch into the rails in the same manner as the four-post configurations.

1U front-rack installation

Configure the rails that are attached to the switch.

(i) **NOTE:** For more instructions, see the installation instruction labels on the rail.

1. Attach the inner switch rails to the S5048F-ON switch.

   Line up the rail with the mounting heads and attach the rail to the switch.

   Slide the rail back until it locks into place. The following shows the detail of the front standoff with the locking tab:
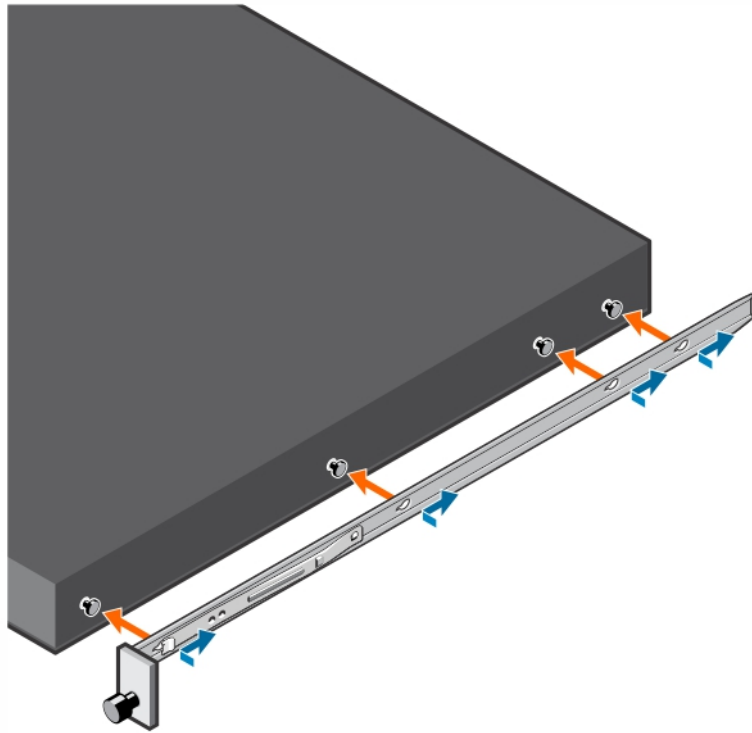
Figure 11. Attach switch rail

2. After installing both switch rails, line them up on the previously mounted ReadyRails and slide the switch in until it is flush with front of rack. To keep the switch from inadvertently sliding out of the rack and falling, about 3 inches before you fully insert your switch, the rail locking feature engages.

Figure 12. Front rack installation

> (i) **NOTE:** Do not the use the mounted ReadyRails as a shelf or a workplace.

3. Tighten the two thumb screws and rack screws.

To remove the switch from the rack or cabinet, press in the two side-release bars on the switch at the same time and slide the switch forward.

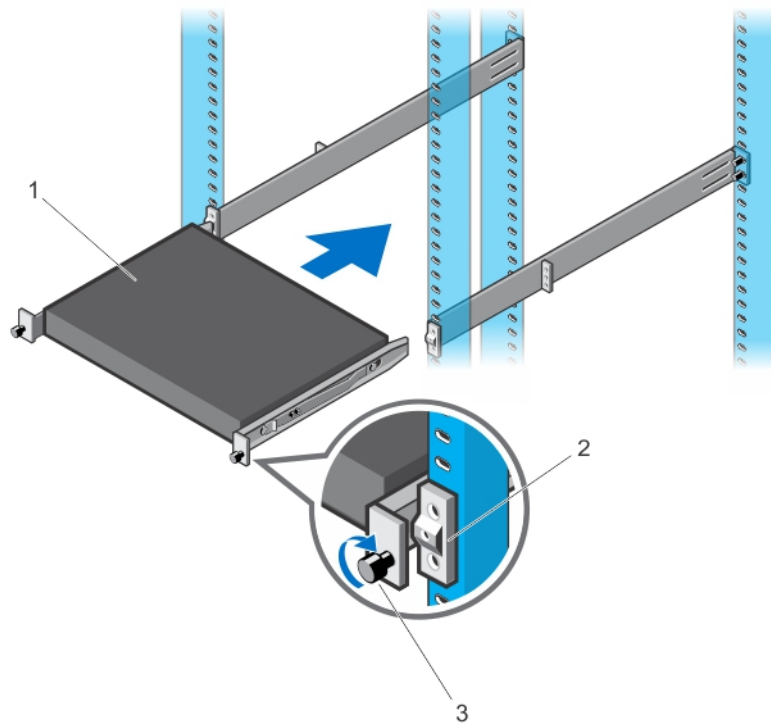# Optics installation

The S5048F-ON switch has SFP28 and QSFP28 optical ports.

For a list of supported optics, see the specification sheets at https://www.dell.com/support or contact your Dell Sales representative.

> ⚠ **CAUTION: ESD damage can occur if components are mishandled. Always wear an ESD-preventive wrist or heel ground strap when handling the S5048F-ON switch and components.**

> ⚠ **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 to enter the port correctly.

   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.

   > (i) **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 removing 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-up

Supply power to the S5048F-ON switch after it is mounted in a rack or cabinet.

Dell Technologies recommends reinspecting your switch before powering it up. Verify the following:
- Optional: The equipment is properly secured to the rack and properly grounded.
- Optional: The equipment rack is properly mounted and grounded.
- The ambient temperature around the unit, which may be higher than the room temperature, is within the limits that are specified for the S5048F-ON switch. For more information, 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.

> ⚠ **CAUTION: Do not power on the switch if you did not install a fan module.**

> (i) **NOTE:** A US AC or DC power cable is included for powering up an AC or DC power supply. You must order all other power cables separately.

> (i) **NOTE:** ESD damage can occur if components are mishandled. Always wear an ESD-preventive wrist or heel ground strap when handling the S5048F-ON switch and components.

Power up sequence

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

After switch placement

After you have securely installed and powered on the S5048F-ON switch:

- For switch documentation and resources, see https://www.dell.com/support.
- For OS10 Networking operating system documentation and resources, see the Dell Networking OS10 Info Hub.
- For ONIE documentation and resources, see https://opencomputeproject.github.io/onie/.

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

Switch replacement

The following steps describe removing and replacing a switch with an identical replacement switch. For further assistance when replacing a switch, contact your Dell support representative.

ⓘ **NOTE:** Some steps do not apply if you are replacing a different switch or non-Dell switch.

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

1. Back up the switch configuration to your back-up computer or laptop TFTP server.

   ```
   copy running-config tftp://hostip/filepath
   ```

   To establish a console connection to the switch CLI, assign an IP address on the switch network.

2. Disconnect the power source.
3. Label and remove all cables.
4. Remove the switch from the rack.

   At the same time, press in the two side-release bars on the switch and slide the switch forward.

   If you are using the fan trays or PSUs in the replacement switch, remove them from the switch.

5. Unpack the new switch.

   For more information, see Unpack.

6. Confirm that the software version of the replacement switch is the same as the previously installed switch.

   ```
   show os-version
   ```

   If the software versions do not match, upgrade the replacement switch software using the procedure included with the firmware download.

7. Copy the backed-up switch configuration to the new switch.

   ```
   copy tftp://hostip/filepath running-config
   ```

8. Install the new switch in your rack or cabinet.

   For detailed installation instructions, see S5048F-ON system installation.

   If you are using the fan trays or PSUs from the removed switch, reinsert them in the replacement switch.

9. Connect all the cables.
10. Power on the switch.

   For more information, see Switch power-up.

Power supplies

The S5048F-ON switch ships with two AC or DC power supplies. The two power supplies have two air-flow directions—from the I/O to the PSU and from the PSU to the I/O.

Two PSUs are required for full redundancy, but the switch can operate with a single PSU.

The PSUs are field replaceable. When running with full redundancy—two power supplies installed and running—you can remove and replace one PSU without disrupting traffic.

⚠ CAUTION: **To prevent electrical shock, ensure that the S5048F-ON switch is grounded properly. If you do not ground your equipment correctly, excessive emissions may result. Use a qualified electrician to ensure that the power cables meet your local electrical requirements.**

ⓘ NOTE: NOTE: Connect the power supply to the appropriate branch circuit protection as defined by your local electrical codes. Verify that the remote power source complies with the switch input power specifications.

ⓘ NOTE: If you use a single PSU, install a blank plate in the other PSU slot. Use power supply 2 (PSU2) as the blank plate slot. To install the blank plate, use a #1 Philips screw driver.

ⓘ NOTE: ESD damage can occur if components are mishandled. Always wear an ESD-preventive wrist or heel ground strap when handling the S5048F-ON switch and components.

Topics:

- Components
- AC or DC power supply installation
- DC power supply to power source connection

Components

The following power supply options are available for the S5048F-ON switch:

- AC or DC power supply with integrated fan
- AC or DC power supply with integrated reverse flow fan

Power supply 1 (PSU1) is on the left side of the switch; power supply 2 (PSU2) is on the right side of the switch.

Figure 13. S5048F-ON PSUs

- 1—PSU modules

The PSUs have an integrated fan, which you cannot replace individually; if the fan integrated in a PSU fails, you must replace the entire PSU. You can replace the fan trays individually. For fan tray replacement procedures, see Fans.

⚠ WARNING: **Prevent exposure and contact with hazardous voltages. Do not attempt to operate this switch with the safety cover removed.**

⚠️ **CAUTION: Remove the power cable from the PSU before removing the PSU. Also, do not connect the power cable before you insert the PSU in the switch.**

ⓘ **NOTE:** To comply with the GR-1089 Lightning Criteria for Equipment Interfacing with AC or DC Power Ports, use an external surge protection device (SDP) at the AC or DC input of the router.

PSU LEDs

- Solid green—Input is OK.
- Flashing yellow (amber)—There is a fault with the PSU.
- Flashing green blink at 1 Hz—Switch is in a standby or CR state.
- Off—PSU is off.

AC or DC power supply installation

ⓘ **NOTE:** The PSU slides into the slot smoothly. Do not force a PSU into a slot as this action may damage the PSU or the switch.

ⓘ **NOTE:** Ensure that you correctly install the PSU. When you install the PSU correctly, the power connector is on the right side of the PSU.

ⓘ **NOTE:** If you use a single PSU, install a blank plate in the other PSU slot. If you are only using one power supply, install the power supply in the first slot, PSU1. Install a blank plate in the second slot, PSU2.

1. Remove the PSU slot cover from the S5048F-ON switch using a small #1 Phillips screwdriver.
2. Remove the PSU from the electro-static bag.
3. Insert the PSU into the switch PSU slot—insert the exposed PSU connector first).

   The PSU slot is keyed so that you can only fully insert the PSU in one orientation. When you install the PSU correctly, it snaps into place and is flushed with the back of the switch.

Figure 14. PSU installation
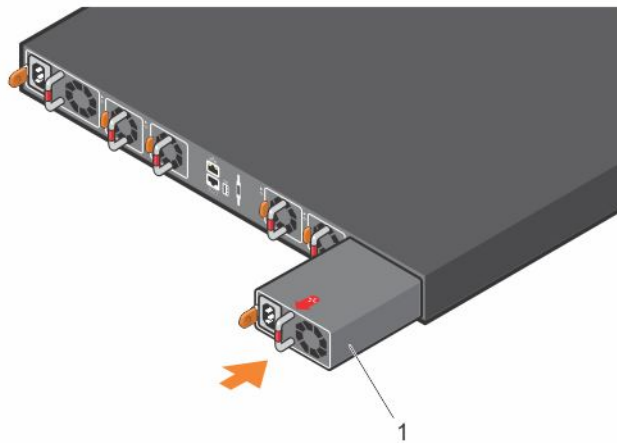
- 1—PSU installation

4. Plug in the appropriate AC 3-prongs cord from the switch PSU to the external power source.
5. Repeat steps 1 through 4 if you have a redundant PSU using the second PSU slot on the S5048F-ON switch.

   ⓘ **NOTE:** The S5048F-ON switch powers up when you connect the cables between the power supply and the power source.

AC or DC power supply replacement

⚠️ **CAUTION: Disconnect the power cord before removing the power supplies. Also, disconnect all power cords before servicing.**

ⓘ **NOTE:** The PSU slides into the slot smoothly. Do not force a PSU into a slot as this action may damage the PSU or the S5048F-ON switch.

ⓘ **NOTE:** If a PSU fails, you must replace the entire unit. There are no field serviceable components in the PSU. To request a hardware replacement, see www.dell.com/support.

ⓘ **NOTE:** If you use a single PSU, install a blank plate in the other PSU slot. If you are only using one power supply, install the power supply in the first slot, PSU1. Install a blank plate in the second slot, PSU2.

1. Disconnect the power cable from the PSU.
2. Use the grab handle to slide the PSU out of the power supply bay.
3. Use the grab handle on the replacement PSU to slide it into the power supply bay.
4. Attach the power cord to the replacement PSU.

   ⓘ **NOTE:** The switch powers up when the cables are connected between the power supply and the power source.

DC power supply to power source connection

Each DC powered switch comes with a set containing a prewired, 3-inch 8 AWG, power supply connector and a four-screw wiring block. One set is provided for each DC PSU.
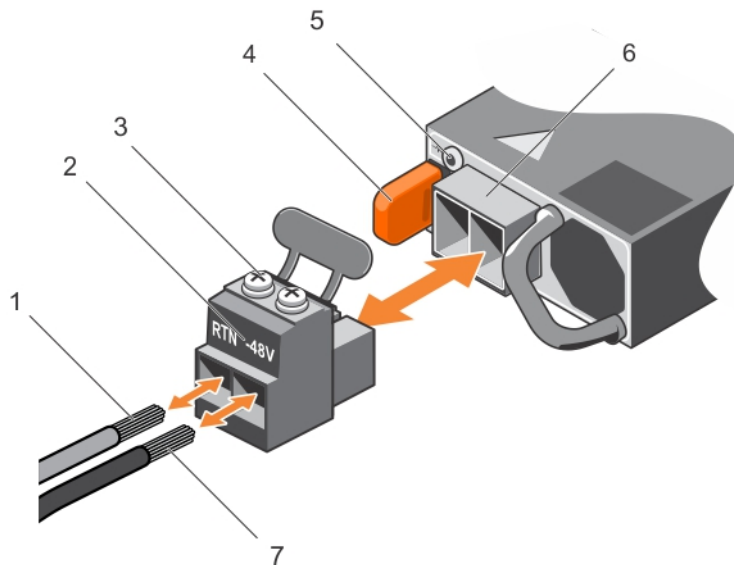
Figure 15. DC power connector and wiring block

1. DC wire RTN
2. DC power connector
3. Captive screws (2)
4. Orange tab
5. PSU status LED
6. DC power socket
7. DC wire −48V

1. Strip 0.5 inches of insulation from each of the power connector's wires, RTN and −48V, as shown.
2. Insert each of the power connector's bare wire lengths into the wiring block. Insert RTN into one hole and −48V into the other hole, as shown.
3. Use a flat-blade screwdriver to tighten the screws that secures the bare wires into the wiring block.
4. Secure the site's DC power source wires to the other side of the wiring block, see steps 1 and 3.

⚠ **WARNING: Do not cross the wires. In the wiring block, RTN aligns with RTN and −48V aligns with −48V.**

5. Insert the DC power connector into the power socket of the DC PSU. Ensure that the connector pins firmly seat and you hear the click of the power connector's left and right levered clamps lock into place.

⚠ **WARNING: Never try to force the power connector into or out of the DC PSU power socket.**

ⓘ **NOTE:** To remove the power connector from a DC PSU, use the orange tab on the side of the connector. Doing so disengages the power connector's clamps. After engaging the orange tab, pull the power connector from the DC PSU socket.

Fans

The S5048F-ON switch comes from the factory with two PSUs and four fan modules that are installed in the switch. The fan modules and the power supplies, which have integrated fans, are hot-swappable.

You can order and install fan modules separately.

The S5048F-ON switch supports two airflow direction options. Do not mix airflow types in a switch; you can use only a single airflow direction in a switch. If the airflow directions are mismatched, *you must correct the mismatched airflow direction*.

- Airflow is from the I/O panel to the PSU—the red indicator is the normal airflow direction.
- Airflow is from the PSU to the I/O panel—the blue indicator is the reverse airflow direction.

All fans and PSUs in a configuration must be in the same airflow direction.

Environmental factors can decrease the amount of time required between fan replacements. Check the environmental factors regularly. An increase in temperature and particulate matter in the air might affect performance—for example, new equipment installation).

Topics:

- Components
- Fan module installation

Components

The following are the S5048F-ON switch fan components:

- S5048F-ON switch fan module
- S5048F-ON switch fan module—reverse flow

Figure 16. S5048F-ON switch fan modules

- 1—Fan modules

Fan LEDs

- Solid green—Fan function is normal.
- Flashing yellow (amber)—There is a fan fault.
- Off—Fan is off.

Fan module installation

The fan modules in the S5048F-ON switch are field replaceable. Module slot 1 is on the left side of the switch; module slot 4 is on the right side of the switch.

⚠️ **CAUTION: DO NOT mix airflow directions. All fans must use the same airflow direction—reverse or normal. If you mix the airflow direction, to avoid damage to the switch, *you must correct the mixed airflow*.**

1. Take the fan module out of the shipping box.
2. Slide the module into the bay.
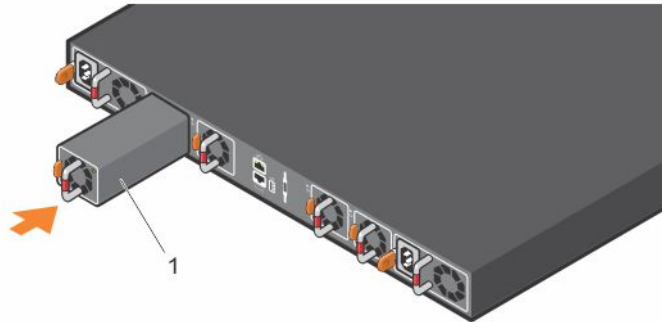
Figure 17. Fan module installation

- 1—Fan module

Fan module replacement

To request a hardware replacement, see www.dell.com/support.

⚠️ **CAUTION: Complete the following steps within one minute or the switch temperature could rise above safe thresholds and the switch could shut down:**

1. Slide the fan module out of the bay.
2. Slide the replacement module into the bay.

Management ports

Besides the 10/100/1000Base-T RJ-45 ports, the S5048F-ON switch provides several ports for management and storage.

(i) **NOTE:** The output examples in this section are for reference only. Your output may vary.

Topics:

- RJ45 console port access
- MicroUSB-B console port access
- USB storage mount
- Before you install an operating system
- Check your switch
- ONIE service discovery

RJ45 console port access

The management ports are on the I/O-side of the S5048F-ON switch.
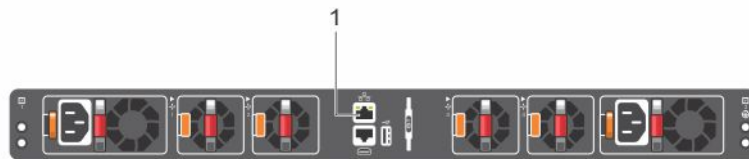
Figure 18. S5048F-ON switch RJ45 console and management ports

1. Top: RJ45 management port; Bottom: RS-232 serial console port.

⚠ **CAUTION: Ensure that any equipment that is attached to the serial port can support the required 115200 baud rate.**

(i) **NOTE:** When connecting the RJ45 console to the patch panel or terminal server using Cat5e or Cat6 Ethernet cables, the maximum cable length is 100 m. However, if the Ethernet cable is disconnected from the patch panel or terminal server but connected to the RJ45 console, the maximum cable length is 6 m. If the cable is longer than 6 m when disconnected from the panel or server, your switch may not boot.

(i) **NOTE:** Before starting this procedure, ensure that your personal computer has a 9-pin serial port and that you have installed a terminal emulation program on the personal computer.

(i) **NOTE:** Ensure that any equipment that is attached to the serial port can support the required 115200 baud rate.

(i) **NOTE:** If the serial port on your computer cannot accept a female DB-9 connector, use a DB-9 male-to-male adapter.

1. Install the provided RJ45 connector-side of the provided cable into the switch console port.
2. Install the DB-9 female-side of the provided copper cable into the serial port on your computer. Or install the DB-9 cable into other data terminal equipment (DTE) server hardware.
3. Use the following settings to make the serial port connection:
   - 115200 baud rate

- No parity
- 8 data bits
- 1 stop bit
- No flow control

MicroUSB-B console port access

The MicroUSB-B console port is on the PSU side of the switch.

ⓘ **NOTE:** The S5048F-ON switch uses the Silicon Labs CP2109 USB-B chip. To find the correct USB-B universal asynchronous receiver-transmitter (UART) driver, see https://www.silabs.com/products/development-tools/software/usb-to-uart-bridge-vcp-drivers.

When you connect the microUSB-B port, it becomes the primary connection and, while connected, all messages are sent to the microUSB-B port.

1. Power on the personal computer.
2. Connect the USB-A end of cable into an available USB port on the personal computer.
3. Connect the microUSB-B end of cable into the microUSB-B console port on the switch.
4. Power on the switch.
5. Install the necessary USB device drivers.
6. Open your terminal software emulation program to access the switch.
7. Confirm that the terminal settings on your terminal software emulation program are as follows:
   - 115200 baud rate
   - No parity
   - 8 data bits
   - 1 stop bit
   - No flow control

USB storage mount

USB storage does not automatically mount. USB storage supports the FAT file system. To use USB storage, first mount the device using the following steps:

1. Create a mount directory for the USB storage.
   ```
   ONIE:/ # mkdir /mnt/usb
   ```
2. View the fixed disks using the `fdisk` command.
   ```
   ONIE:/mnt # fdisk -l
   ```
   For internal storage:

   ```
   Disk /dev/sda: 15.8 GB, 15829303296 bytes
   255 heads, 63 sectors/track, 1924 cylinders
   Units = cylinders of 16065 * 512 = 8225280 bytes

      Device Boot       Start         End       Blocks   Id System
   /dev/sda1                 1        1925    15458303+  ee EFI GPT
   ```

   For USB storage:

   ```
   Disk /dev/sdb: 30.9 GB, 30942946304 bytes
   64 heads, 32 sectors/track, 29509 cylinders
   Units = cylinders of 2048 * 512 = 1048576 bytes

      Device Boot       Start         End       Blocks   Id System
   ```

3. Mount the device `/dev/sdb` to the `/mnt/usb` directory.
   ```
   ONIE:/ # mount -t vfat /dev/sdb /mnt/usb
   ```

> (i) **NOTE:** The following message displays if the `/mnt/usb` directory is missing: `mount: mounting /dev/sdb` `on /mnt/usb failed: No such file or directory.`

> (i) **NOTE:** The following message displays if the USB device is not seen: `mount: mounting /dev/sdb on /mnt/usb` `failed: No such device or address.`

4. Optional: Add a device to the file systems table using the `fstab` command. Mount the file systems.

```
ONIE:/ # vi /etc/fstab
```

```
# FSTAB entry for the ONIE-BOOT partition mounted on /boot
LABEL=ONIE-BOOT /mnt/onie-boot ext4     defaults,rw,errors=remount-ro 0       1
/dev/sdb        /mnt/usb       vfat     defaults                      0       1

ONIE:/ # mount -a
```

The `mount -a` command mounts all the file systems as indicated in the `/etc/fstab` file.

Before you install an operating system

After powering on the S5048F-ON switch, it goes through a power-on self-test (POST).

> (i) **NOTE:** Before you install an operating system, ensure that the switch has the most current ONIE and firmware version. To upgrade your switch, go to the *Drivers and Downloads* page for your switch at https://www.dell.com/support.

POST runs every time that the switch is initialized and checks the hardware components to determine if the switch is fully operational before booting. After POST, the switch uses the Grub bootloader.

To select an entry, use the up and down arrow keys. Press **Enter** to select an OS or enter `e` to edit the commands before booting. Enter `c` for a command line. The selected entry runs automatically in the operating system.

Grub bootloader example

```
GNU GRUB   version 2.02~beta2+e4a1fe391

  +--------------------------------------------------+
  |*ONIE: Install OS                                 |
  | ONIE: Rescue                                     |
  | ONIE: Uninstall OS                               |
  | ONIE: Update ONIE                                |
  | ONIE: Embed ONIE                                 |
  | EDA-DIAG                                         |
  |                                                  |
  +--------------------------------------------------+
```

Your switch comes with ONIE installed.

> (i) **NOTE:** To access ONIE, use the RJ45 console port.

ONIE example

```
ONIE: Install OS
    For downloading and installing an OS from a URL
    Starts ONIE with ONIE Discovery Service
    (factory default boot)
ONIE: Rescue
    Starts ONIE without ONIE Discovery Service
    Useful for running Diagnostics manually
ONIE: Uninstall OS
    Restore to factory defaults erases any installed OS
ONIE: Update ONIE
    For downloading and updating ONIE from a URL
```

```
ONIE: Embed ONIE
    For downloading and updating ONIE from a URL and erases any installed OS
```

During the initial setup, the switch boots to ONIE Install. ONIE Install boots with ONIE Discovery to the console, `ONIE:`.

ⓘ **NOTE:** For more information, see the *Open Networking Hardware Diagnostic Guide*.

ⓘ **NOTE:** After you have securely installed and powered on the S5048F-ON switch, to configure your switch, see your third-party ONIE-compatible OS or the Dell OS documentation.

Check your switch

To confirm that ONIE is working properly, use the `onie-sysinfo` command. Run the `onie-sysinfo` command at the ONIE prompt.

```
ONIE:/ # onie-sysinfo x86_64-dell_<platform>_c25

ONIE:/ # onie-sysinfo -c (Machine arch)
x86_64
ONIE:/ # onie-sysinfo -v (ONIE Version programmed)
x.xx.x.x
ONIE:/ #
ONIE:/ # uname -a
Linux onie 3.2.35-onie+ #1 SMP Tue Dec 9 17:08:16 PST 2014 x86_64 GNU/Linux ONIE:/ #
ONIE:/ # lspci
00:00.0 Class 0600: 8086:1f0c
00:01.0 Class 0604: 8086:1f10
00:02.0 Class 0604: 8086:1f11
00:03.0 Class 0604: 8086:1f12
00:0e.0 Class 0600: 8086:1f14
00:0f.0 Class 0806: 8086:1f16
00:13.0 Class 0880: 8086:1f15
00:14.0 Class 0200: 8086:1f41
00:14.1 Class 0200: 8086:1f41
00:14.2 Class 0200: 8086:1f41
00:16.0 Class 0c03: 8086:1f2c
6:1f22 lass 0106: 8086:1f32
00:1f.0 Class 0601: 8086:1f38
00:1f.3 Class 0c05: 8086:1f3c
01:00.0 Class 0200: 14e4:b960 (NPU PCI detection)
01:00.1
ONIE:/ #
```

ONIE service discovery

ONIE attempts to locate the installer through several discovery methods, as shown. To download and run an installer, the ONIE Service Discovery feature uses the first successful method found.

1. Search locally attached storage devices for one of the ONIE default installer filenames—for example, `onie self update` from the USB.
2. Discover TFTP-based image from the DHCP server.
3. Queue to the IPv6 link-local neighbors using HTTP for an installer.

If none of the ONIE Service Discovery methods are successful, you can disable this using the `onie-discovery-stop` command.

You can install an operating system manually from HTTP, FTP, or TFTP using the `onie-nos-install <URL>` command.

ⓘ **NOTE:** If you have a recovery USB plugged into your switch, you must remove it before installing the DIAG-OS using the `onie-nos-install` command.

The ONIE Install environment uses DHCP to assign an IP address to the management interface—eth0. If that fails, it uses the default IP address 192.168.3.10/255.255.255.0.

To display the IP address, use the `ifconfig eth0` command, as shown.

```
ONIE:/ # ifconfig eth0
eth0 Link encap:Ethernet HWaddr 90:B1:1C:F4:9C:76
 inet addr:10.11.53.33 Bcast:10.255.255.255 Mask:255.0.0.0
 inet6 addr: fe80::92b1:1cff:fef4:9c76/64 Scope:Link
 UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
 RX packets:18 errors:0 dropped:0 overruns:0 frame:0
 TX packets:24 errors:0 dropped:0 overruns:0 carrier:0 collisions:0 txqueuelen:1000
 RX bytes:1152 (1.1 KiB) TX bytes:6864 (6.7 KiB)
 Interrupt:21 Memory:ff300000-ff320000
```

To assign an IP address to the management interface, eth0, and verify network connectivity, use the `ifconfig eth0 <ip address>` command, as shown.

```
ONIE:/ # ifconfig eth0 xx.xx.xx.xx/xx UP

Verify the network connection with ping.
ONIE:/ # ping xx.xx.x.xx
PING xx.xx.x.xx (xx.xx.x.xx): 56 data bytes
64 bytes from xx.xx.x.xx: seq=0 ttl=62 time=1.357 ms
64 bytes from xx.xx.x.xx: seq=1 ttl=62 time=0.577 ms
^C
```

Specifications

This section lists the S5048F-ON switch specifications.

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

ⓘ **NOTE:** For RoHS information, see Restricted Material Compliance.

Topics:

- Chassis physical design
- IEEE standards
- Agency compliance
- USA Federal Communications Commission statement
- European Union directive conformance statement
- Japan VCCI compliance for class A equipment
- Korean certification of compliance
- Safety standards and compliance agency certifications
- Electromagnetic compatibility
- Product recycling and disposal

Chassis physical design

Table 5. Chassis physical design

Parameter	Specifications
Height	1.72 inches (44 mm)
Width	17.1 inches (434 mm)
Depth	Chassis: 18.1 inches (460 mm)
	PSU/fan tray handle: 1.57 inches (40 mm)
Chassis weight with factory-installed components	19 lbs (2* PSUs)
	8.62 kg (2*PSUs)
Rack clearance required	Front: 5 inches (12.7 cm)
	Back: 5 inches (12.7 cm)

Table 6. Environmental parameters

Parameter	Specifications
Operating temperature	0°C to 45°C (32°F to 113°F)
	-5°C to 45°C (23°F to 113°F) short-term
	Short term is </= 1% of operational hours per year.
	ⓘ **NOTE:** Reduce maximum temperature by 1°C/125 meters (1°F/228 feet) above 950 meters (3,117 feet).
Operating humidity	5% to 85% (RH), non-condensing, continuously
	5% to 90% (RH), non-condensing, short term

Table 6. Environmental parameters (continued)

Parameter	Specifications
	Short term is </= 1% of operational hours per year.
Storage temperature	−40°F to 70°C (−40°F to 158°F)
Storage humidity	5% to 90%, non-condensing
Maximum thermal output	500 W = 1706 BTU/Hr
Maximum operational altitude	10,000 feet (3,048 meters)
Maximum non-operational altitude	39,370 feet (12,000 meters)
Shock	Dell Spec SV0115

Table 7. AC power requirements

Parameter	Specifications
Power supply	100−240 VAC 50/60 Hz
Maximum current draw per switch	5A/4.16A at 100/120V, 2.5A/2.08A at 200/240V
Maximum power capability	500 Watts
Typical power consumption	200 Watts

Table 8. DC power requirements

Parameter	Specifications
Minimum/maximum input voltage range	−40.5V, -48V, −60V
DC power supply	-40.5V DC to -60V DC
Input power at full load	-40.5/500W, -48V/500W, -60V/500W
Input current at full load	-40.5V/12.35A, -48V/10.42A, -60V/8.33A

IEEE standards

The S5048F-ON switch complies with the following IEEE standards.

- 802.1ab (LLDP)
- 802.1ax (Layer 2)
- 802.1d, 802.1w, 802.1s, 802.1x (Mgmt/Security), 802.3x (Layer 2)
- 802.3 (1000BASE-KX)
- 802.3ba (40GbE and 100GbE ports)
- 25G Etherenet Consortium 25
- IEEE 802.3by 25 Gigabit Ethernet

Agency compliance

The S5048F-ON switch is designed to comply with the following safety and agency requirements:

USA Federal Communications Commission statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designated to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy. If it is not installed and used in accordance to the instructions, it may cause harmful interference to radio communications. Operation of this equipment

in a residential area is likely to cause harmful interference, in which case users will be required to take whatever measures necessary to correct the interference at their own expense.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. Dell is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications in the equipment. Unauthorized changes or modification could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Industry Canada Class A emission compliance statement

This Class A digital apparatus complies with Canadian ICES-003.

Avis de conformité à la réglementation d'Industrie Canada

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

Figure 19. Canadian Department of Communication Statement

European Union directive conformance statement

This product is in conformity with the protection requirements of EU Council Directive 2004/108/EC on the approximation of the laws of the Member States relating to electromagnetic compatibility. Dell cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of this product, including the fitting of non-Dell option cards.

This product has been tested and found to comply with the limits for Class A Information Technology Equipment according to CISPR 32/CISPR34 and EN55032/EN55034. The limits for Class A equipment were derived for commercial and industrial environments to provide reasonable protection against interference with licensed communication equipment.

ⓘ **NOTE:** This is a Class A product. In a domestic environment, this device may cause radio interference, in which case, you may be required to take adequate measures.

European Community Contact

Dell, EMEA - Central

Dahlienweg 19

66265 Heusweiler

Germany

Tel: +49 172 6802630

Email: EMEA Central Sales

Japan VCCI compliance for class A equipment

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＡ情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

Figure 20. Japan: VCCI compliance for class A equipment

This is Class A product based on the standard of the Voluntary Control Council For Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.

(i) **NOTE:** Use the AC power cords with Dell equipment only. Do not use Dell AC power cords with any unauthorized hardware.

> 本製品に同梱いたしております電源コードセットは、本製品専用です。本電源コードセットは、本製品以外の製品ならびに他の用途でご使用いただくことは出来ません。製品本体には同梱された電源コードセットを使用し、他製品の電源コードセットを使用しないで下さい。

Figure 21. Japan: warning label

Korean certification of compliance

> A급 기기
> (업무용 방송통신기자재)
>
> 이 기기는 업무용(A급) 전자파적합기기로서 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정외의 지역에서 사용하는 것을 목적으로 합니다.

Figure 22. Korean certification of compliance

	[equipment type]
품명(Product Name)	Ethernet Switch
모델명(Model)	[model number]
신청인(Applicant)	Dell Technologies
제조자(Manufacturer)	[Manufacturer]
제조년월(Manufacturing Date)	[date]
제조국(Country of Origin)	China

Figure 23. Korean package label

Safety standards and compliance agency certifications

- CUS UL 60950-1, 2nd Edition
- CSA 60950-1-03, 2nd Edition
- EN 60950-1, 2nd Edition
- EN 60825-1, 1st Edition
- EN 60825-1 Safety of Laser Products—Part 1: Equipment Classification Requirements and User's Guide
- EN 60825-2 Safety of Laser Products—Part 2: Safety of Optical Fibre Communication Systems
- FDA Regulation 21CFR 1040.10 and 1040.11
- IEC 60950-1, 2nd Ed, including all National Deviations and Group Differences
- IEC 62368-1

Electromagnetic compatibility

Emissions

- International: CISPR32: Class A
- Australia/New Zealand: AS/NZS CISPR 32: Class A
- Canada: ICES-003, Issue-4, Class A
- Europe: EN55032 2006 CISPR 32: Class A
- International: CISPR 32: Class A
- EN55032
- Japan: VCCI V-3/2011.04, Class A
- Korea: KN32, Class A
- Taiwan: CNS13438, Class A
- USA: FCC CFR47 Part 15, Subpart B, Class A

Immunity

- EN 300 386 v2.1.1 (2016-07) for Network Equipment
- EN 55024 + A1 + A2
- EN 61000-3-2 Harmonic Current Emissions
- EN 61000-3-3 Voltage Fluctuations and Flicker
- EN 61000-4-2 ESD
- EN 61000-4-3 Radiated Immunity
- EN 61000-4-4 EFT
- EN 61000-4-5 Surge
- EN 61000-4-6 Low Frequency Conducted Immunity
- EN 61000-6-1

Product recycling and disposal

You must recycle or discard this switch according to applicable local and national regulations. Dell encourages owners of information technology (IT) equipment to responsibly recycle their equipment when it is no longer needed. Dell offers various product return programs and services in several countries to assist equipment owners in recycling their IT products.

Waste electrical and electronic equipment (WEEE) directive for recovery, recycle, and reuse of IT and telecommunications products

Dell switches are labeled in accordance with European Directive 2002/96/EC concerning waste electrical and electronic equipment (WEEE). The Directive determines the framework for the return and recycling of used appliances as applicable throughout the European Union. This label is applied to various products to indicate that the product is not to be thrown away, but rather reclaimed upon end of life per this Directive.

Figure 24. The European WEEE symbol

In accordance with the European WEEE Directive, electrical and electronic equipment (EEE) is to be collected separately and to be reused, recycled, or recovered at end of life. Users of EEE with the WEEE marking per Annex IV of the WEEE Directive, as

shown above, must not dispose of end of life EEE as unsorted municipal waste, but use the collection framework available to customers for the return, recycling and recovery of WEEE. Customer participation is important to minimize any potential effects of EEE on the environment and human health due to the potential presence of hazardous substances in EEE.

Dell products, which fall within the scope of the WEEE, are labeled with the crossed-out wheelie-bin symbol, as shown above, as required by WEEE.

For information about Dell product recycling offerings, see the WEEE Recycling instructions on Support. For more information, contact the Dell Technical Assistance Center.

Dell support

The Dell support site provides documents and tools to help you effectively use Dell 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 Dell support site provides integrated, secure access to these services.

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

● To obtain product-specific information, enter the 7-character service tag, found on the luggage tag, or the 11-digit express service code of your switch and click **Submit**.

   To view the switch service tag or express service code, pull out the tag or enter the `show chassis` command from the CLI. The luggage tag is on the PSU-side of the switch.

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

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

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

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