Dell EMC PowerSwitch S4100–ON Series Installation Guide

June 2019

DELL EMC

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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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.

WARNING: 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 cords. Disconnect both power cords before servicing.

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

Figure 1. Class 1 laser product tag

WARNING: 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. Do not stare into open apertures.

Topics:

- Related documents
- Information symbols

Related documents

For more information about the S4100-ON Series, see the following documents:

- *OS10 Enterprise Edition Release Notes*
- *OS10 Enterprise Edition User Guide*
- *Dell S4100-ON Series Setup Guide*
- *Dell Open Networking Hardware Diagnostic Guide*
- *S4100-ON Series Release Notes*

NOTE: To access product documentation and resources that might be helpful to install, configure, and troubleshoot the specific Dell EMC PowerSwitch, see the Dell EMC Networking Hardware Platforms and OS9 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.

⚠ | **WARNING:** The Warning icon signals information about hardware handling that could result in injury.

⚠ | **WARNING:** The ESD Warning icon requires that you take electrostatic precautions when handling the device.

2

S4100–ON Series switch

The following sections describe the Dell EMC PowerSwitch S4100–ON Series (S4128F-ON, S4148F-ON, S4148FE-ON, S4128T-ON, S4148T-ON, and S4148U-ON) switch:

Topics:

- Introduction
- Features
- Physical dimensions
- LED display
- Prerequisites
- S4100-ON Series configurations
- Luggage tag

Introduction

The S4128F-ON, S4148F-ON, and S4148FE-ON switches are a one rack unit (RU), full-featured fixed form-factor top-of-rack (ToR) 10/25/40/50/100GbE switch for 10G servers with small form-factor pluggable plus (SFP+), quad small form-factor pluggable plus (QSFP +), and quad small form-factor pluggable (QSFP28) ports. The S4148FE-ON also includes unified (Fibre channel and Ethernet) 10GbE SFP + and QSFP28 ports.

The S4128T-ON and S4148T switches are a one rack unit (RU), full-featured fixed form-factor top-of-rack (ToR) 10/25/40/50/100GbE switch for 10GBaseT servers with copper BaseT RJ-45, small form-factor pluggable plus (SFP+), quad small form-factor pluggable plus (QSFP+), and quad small form-factor pluggable 28 (QSFP28) ports.

The S4148U-ON switch is a one rack unit (RU), full-featured fixed form-factor top-of-rack (ToR) 10/25/40/50/100GbE switch for 10G servers with unified (Fibre channel and Ethernet) small form-factor pluggable plus (USFP+), Ethernet-only small form-factor pluggable plus (SFP+), Ethernet-only quad small form-factor pluggable plus (QSFP+), and unified (Fibre channel and Ethernet) quad small form-factor pluggable 28 (QSFP28) ports.

NOTE: For the S4148U-ON, for best optics performance, upgrade the Dell EMC software to 10.4(0.0) or higher.

NOTE: For specific port profile details, see the *OS10 Enterprise Edition User Guide*.

The S4100F-ON Series supports the following configurations:

Table 1. S4128F-ON, S4148F-ON, and S4148FE-ON supported configurations

S4128F-ON	S4148F-ON	S4148FE-ON
28 x 10G + 2 x 100G	48 x 10G + 4 x 100G	48 x 10G + 4 x 100G
28 x 10G + 2 x 40G	48 x 10G + 6 x 40G	48 x 10G + 6 x 40G
28 x 10G + 4 x 50G	48 x 10G + 8 x 50G	48 x 10G + 8 x 50G
28 x 10G + 8 x 25G	48 x 10G + 16 x 25G	48 x 10G + 16 x 25G
36 x 10G	72 x 10G	72 x 10G

Table 2. S4128T-ON and S4148T-ON supported configurations

S4128T-ON	S4148T-ON
28 x 10GT + 2 x 100G	48 x 10GT + 4 x 100G
28 x 10GT + 2 x 40G	48 x 10GT + 6 x 40G
28 x 10GT + 4 x 50G	48 x 10GT + 8 x 50G
28 x 10GT + 8 x 25G	48 x 10GT + 16 x 25G
28 x 10GT + 8 x 10G SFP+	48 x 10GT + 24 x 10G SFP+

Table 3. S4148U-ON supported configurations

S4148U-ON	Notes
24 x 10G + 24 x FC8 + 4 x 100G	
24 x 10G + 24 x FC16 + 4 x 100G	All FC16 are oversubscribed
24 x 10G + 12 x FC16 + 4 x 100G	All FC16 linerate
24 x 10G + 40 x FC8 + 2 x 40G	
24 x 10G + 40 x FC16	24 out of 40 FC16 are oversubscribed
24 x 10G + 28 x FC16	All FC16 linerate
24 x 10G + 12 x FC16 + 16 x FC32	All FC32 are oversubscribed
48 x 10G + 4 X 100G	
48 x 10G + 6 x 40G	
48 x 10G + 8 x 50G	
48 x 10G + 16 x 25G	
72 x 10G	

The following table lists the S4100-ON Series I/O-side details:

Table 4. S4100-ON Series I/O-side details

Platform	Description
S4128F-ON	• 28 fixed 10GbE SFP+ ports • 2 fixed 100GbE QSFP28 ports • seven-segment stacking indicator • 1 micro-USB-B console port • 1 USB type-A port
S4148F-ON	• 48 fixed 10GbE SFP+ ports • 2 fixed 40GbE QSFP+ ports • 4 fixed 100GbE QSFP28 ports • seven-segment stacking indicator • 1 micro-USB-B console port • 1 USB type-A port
S4148FE-ON	• 48 fixed 10GbE SFP+ ports • 2 fixed 40GbE QSFP+ ports

Platform	Description
	• 4 fixed 100GbE QSFP28 ports • seven-segment stacking indicator • 1 micro-USB-B console port • 1 USB type-A port • Support for LRM optics
S4128T-ON	• 28 fixed 10M/100M/1G/10GbE copper BaseT RJ-45 ports • 2 fixed 100GbE QSFP28 ports • seven-segment stacking indicator • 1 micro-USB-B console port • 1 USB type-A port
S4148T-ON	• 48 fixed 10M/100M/1G/10GbE copper BaseT RJ-45 ports • 2 fixed 40GbE QSFP+ ports • 4 fixed 100GbE QSFP28 ports • seven-segment stacking indicator • 1 micro-USB-B console port • 1 USB type-A port
S4148U-ON	• 24 Ethernet SFP+ ports or Ethernet-only SFP+ ports • 24 fixed Ethernet SFP+ optical ports • 2 fixed 40GbE QSFP+ ports • 4 fixed 100GbE QSFP28 ports • seven-segment stacking indicator • 1 micro-USB-B console port • 1 USB type-A port

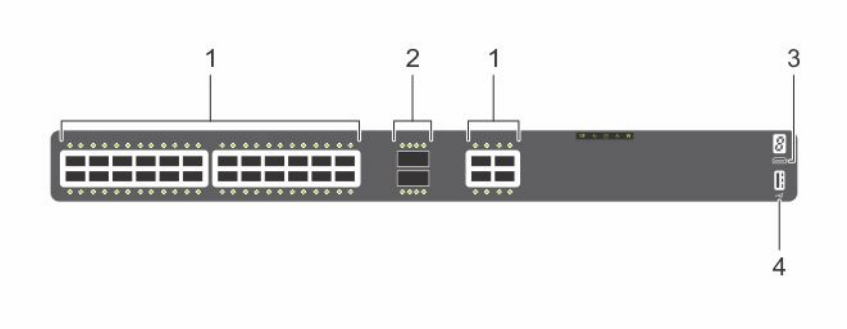

Figure 2. S4128F-ON I/O-side view

1	Twenty-eight SFP+ optical ports	2	Two QSFP28 optical ports
3	Micro USB-B console port	4	USB Type-A

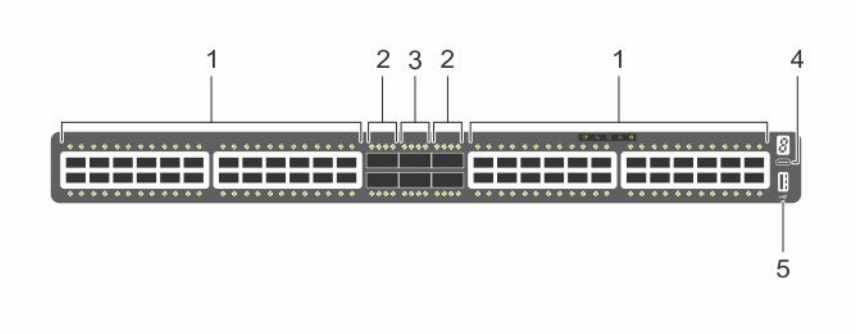

Figure 3. S4148F-ON I/O-side view

1	Forty-eight SFP+ optical ports	2	Four QSFP28 ports
3	Two QSFP+ optical ports	4	Micro USB-B console port
5	USB Type-A		

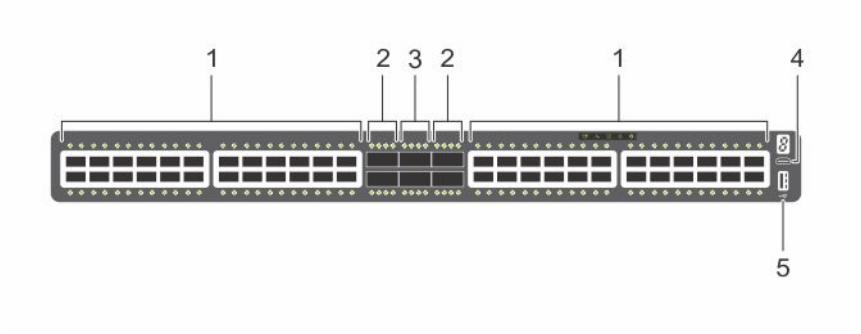

Figure 4. S4148FE-ON I/O-side view

1	Twenty four each unified SFP+ and SFP+ optical ports	2	Four unified QSFP28 ports
3	Two QSFP+ optical ports	4	Micro USB-B console port
5	USB Type-A		

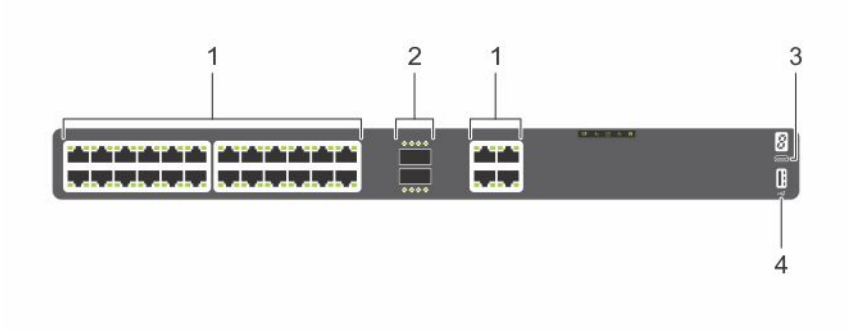

Figure 5. S4128T-ON I/O-side view

1	Twenty-eight copper BaseT RJ-45 optical ports	2	Two QSFP28 optical ports
3	Micro USB-B console port	4	USB Type-A

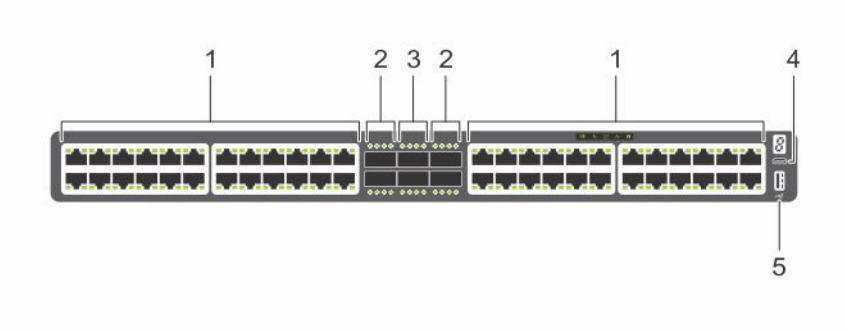

Figure 6. S4148T-ON I/O-side view

1	Forty-eight copper BaseT RJ-45 optical ports	2	Four QSFP28 optical ports
3	Two QSFP+ optical ports	4	Micro USB-B console port
5	USB Type-A		

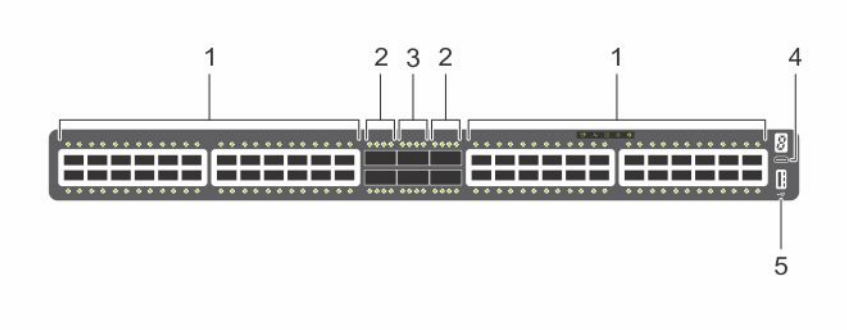

Figure 7. S4148U-ON switch I/O-side view

1	Unified Fibre channel and Ethernet SFP+ ports and Ethernet-only SFP+ optical ports	2	Unified Fibre Channel and Ethernet QSFP28 ports
3	Ethernet QSFP+ optical ports	4	Micro USB-B console port
5	USB Type-A		

The S4100-ON Series PSU-side of the switch has two hot-swappable power supplies (PSUs) with integrated fans and four hot-swappable fan trays. The platforms include one RJ-45 10/100/1000 Base-T Ethernet management port, one RJ-45 console port, and one RS-232 serial console port on the PSU side of the switch.

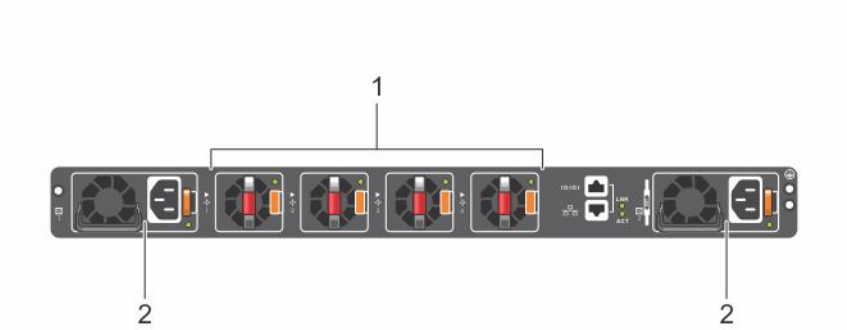

Figure 8. S4100-ON Series PSU-side view

1	Four hot-swappable fan units	2	Two hot-swappable PSUs with integrated fans

Features

The S4100–ON Series (S4128F-ON, S4148F-ON, S4148FE-ON, S4128T-ON, S4148T-ON, and S4148U-ON) offers the following features:

- S4128F-ON: 28 fixed 10GbE SFP+ ports, 2 fixed 100GbE QSFP28 ports
- S4148F-ON: 48 fixed 10GbE SFP+ ports, 2 fixed 40GbE QSFP+ ports, 4 fixed 100GbE QSFP28 ports
- S4148FE-ON: 48 fixed 10GbE SFP+ ports, 2 fixed 40GbE QSFP+ ports, 4 fixed 100GbE QSFP28 ports with support for LRM optics
- S4128T-ON: 28 fixed copper 10GBase-T RJ-45 ports SFP+ ports, two fixed 40GbE QSFP+ ports
- S4148T-ON: 48 fixed copper 10GBase-T RJ-45 ports SFP+ ports, two fixed 40GbE QSFP+ ports, four 100GbE QSFP28 ports
- S4148U-ON: 24 10G unified Fibre channel and Ethernet SFP+ ports, 24 10G Ethernet SFP+ ports, two 40G Ethernet QSFP+ ports, four 100G unified Fibre channel and Ethernet QSFP28 ports
- One MicroUSB-B serial console management port
- One RJ-45 serial console management port
- One RS-232 serial console port
- One universal serial bus (USB) Type-A port for more file storage
- One 2 Core Rangeley C2338 central processing unit (CPU), with 4GB DDR3 SDRAM and one 16 GB mSATA/M.2 SSD module
- Seven-segment stacking indicator
- Temperature monitoring
- Real time clock (RTC) support
- Hot-plug redundant power supplies
- Removable fans
- Standard 1U chassis

Physical dimensions

The S4100–ON Series (S4128F-ON, S4148F-ON, S4148FE-ON, S4128T-ON, S4148T-ON, and S4148U-ON), has the following physical dimensions:

- 434 x 460 x 43.5 mm (W x D x H)
- 17.1 x 18.1 x 1.71 inches (W x D x H)
- Power supply unit (PSU) and fan module handle: 1.57 inches (40 mm)

LED display

The S4100–ON Series (S4128F-ON, S4148F-ON, S4148FE-ON, S4128T-ON, S4148T-ON, and S4148U-ON) contains LED displays on the I/O side and PSU side of the switch.

NOTE: If you are using third-party software, for more LED information, see their operating software documentation.

LED behavior

The following S4100–ON Series switch LED behavior displays during open networking installation environment (ONIE) operations:

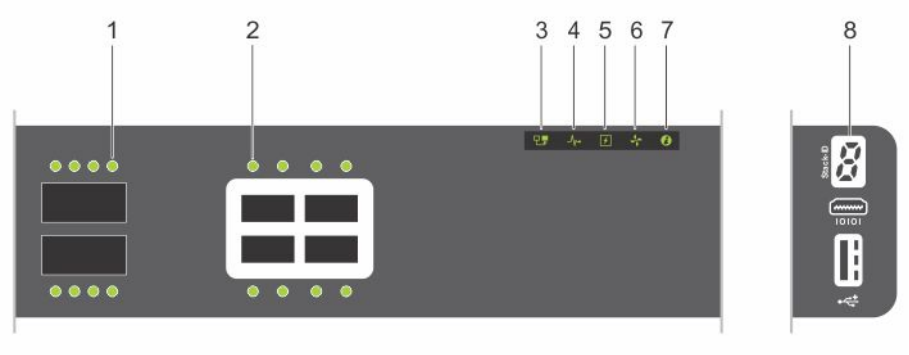

Figure 9. S4128F-ON I/O-side LEDs

1	QSFP28 port activity LEDs	2	Link (left), activity (right) port LEDs
3	Master LED	4	System LED
5	Power LED	6	Fan LED
7	Locator LED/System beacon	8	Stack ID

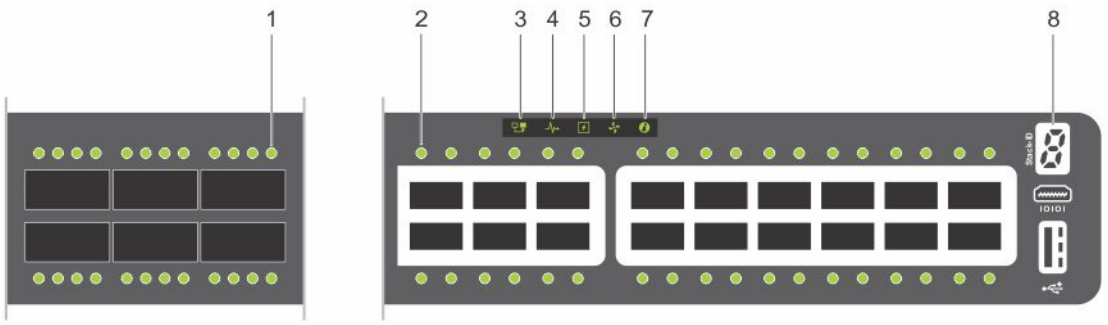

Figure 10. S4148F-ON and S4148FE-ON I/O-side LEDs

1	QSFP28 port activity LEDs	2	Link/activity port LEDs
3	Master LED	4	System LED
5	Power LED	6	Fan LED
7	Locator LED/System beacon	8	Stack ID

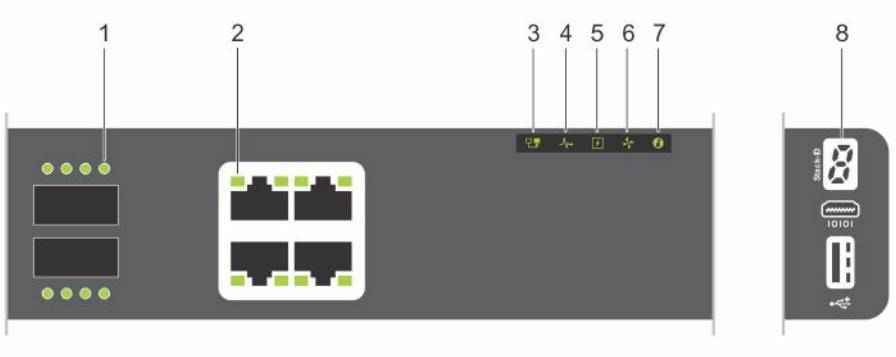

Figure 11. S4128T-ON I/O-side LEDs

1	QSFP28 port activity LEDs	2	Link (left), activity (right) port LEDs
3	Master LED	4	System LED
5	Power LED	6	Fan LED
7	Locator LED/System beacon	8	Stack ID

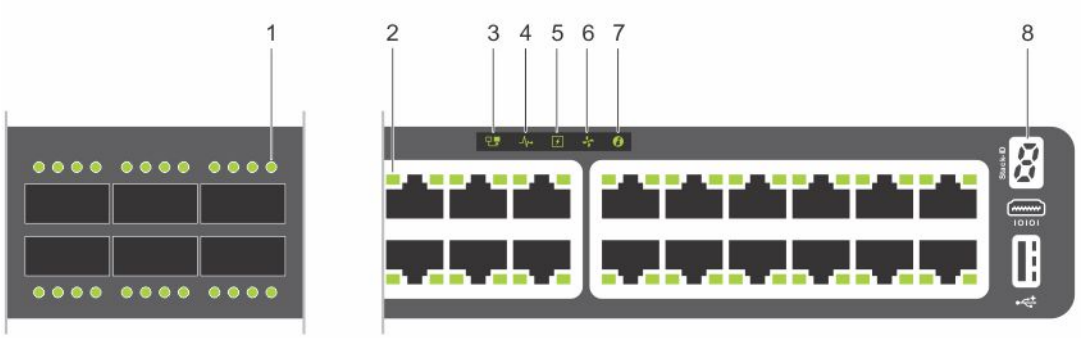

Figure 12. S4148T-ON I/O-side LEDs

1	QSFP28, QSFP+ port activity LEDs	2	Link (left), activity (right) port LEDs
3	Master LED	4	System LED
5	Power LED	6	Fan LED
7	Locator LED/System beacon	8	Stack ID

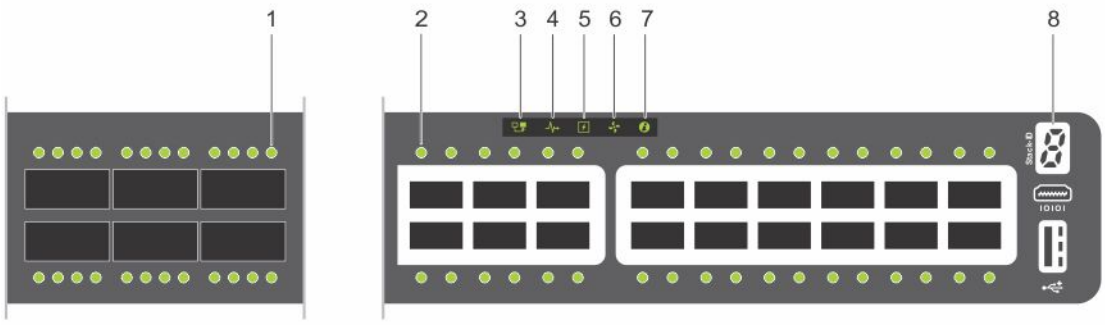

Figure 13. S4148U-ON switch I/O-side LEDs

1	Unified QSFP28 and QSFP+ port LEDs—Link (right), activity (left)	2	Unified SFP+ and SFP+ port LEDs—Link (right), activity (left)

3	Master LED	4	System LED
5	Power LED	6	Fan LED
7	Locator LED/System beacon	8	Stack ID

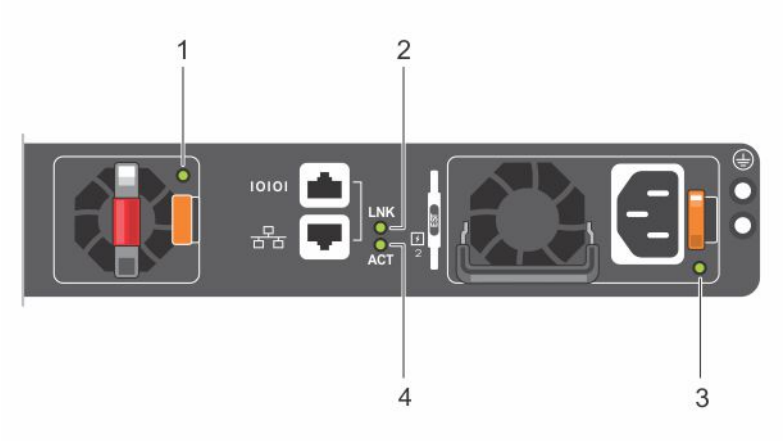

Figure 14. S4100-ON Series PSU-side LEDs

1	Fan LED	2	Link LED
3	PSU LED	4	Activity LED

Table 5. S4100–ON Series 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 failure
Master LED	• Off—Switch is in Stacking Slave mode • Solid green—Switch is in Stacking Master or Standalone mode
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

LED	Description
	• Blinking green, 1.0Hz—Standby mode • Blinking green, 0.5Hz—Ac power cord unplugged
Locator LED/System Beacon	• Off—Locator function is disabled • Blinking blue—Locator function is enabled
7-Segment LED for stacking	• Off—No power • Solid green—Hex digit representing the stack unit ID
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 6. System management Ethernet port LEDs

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

Table 7. SFP+ and unified SFP+ port LEDs

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

NOTE: There are four LEDs for each QSFP+, QSFP28, and unified QSFP28 port. For each port, 100GbE or 40GbE uses only one LED, 2x50GbE uses two LEDs, and 4x25GbE or 4x10GbE uses all four LEDs.

Table 8. QSFP28 and unified QSFP28 port LEDs

LED	Description
Link/Activity LED	• Off—No link • Solid green—Link operating at maximum speed—100G for QSFP28 port

LED	Description
	• Flashing green—Link activity operating at maximum speed—100G port • Solid yellow—Link operating at a lower speed—40G or 10G port • Flashing yellow—Port activity at a lower speed—40G or 10G port • Flashing yellow, 1 second on/off—Port beacon

Table 9. QSFP28 and unified QSFP28 port LEDs: 4x25G or 4x10G mode

LED	Description
Link/Activity LED	• 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—Port activity at a lower speed—4x10G port • Flashing yellow, 1 second on/off—Port beacon

Table 10. QSFP28 and unified QSFP28 port LEDs: 2x50G mode

LED	Description
Link/Activity LED	• Off—No link • Solid yellow—Link operating at a lower speed—2x50G port • Flashing yellow—Link activity at a lower speed—2x50G port • Flashing yellow, 1 second on/off—Port beacon

Table 11. QSFP+ port LEDs

LED	Description
Link/Activity LED	• Off—No link • Solid green—Link operating at maximum speed—40G port • Flashing green—Link activity operating at maximum speed—40G port • Flashing yellow, 1 second on/off—Port beacon

Table 12. QSFP+ port LEDs: 4x1G or 4x10G mode

LED	Description
Link/Activity LED	• Off—No link • Solid green—Link operating at maximum speed—10G port • Flashing green—Link activity operating at maximum speed—10G port • Solid yellow—Link operating at a lower speed—1G port • Flashing yellow—Port activity at a lower speed—1G port

LED	Description
	• Flashing yellow, 1 second on/off—Port beacon

Table 13. 10GBase-T RJ-45 port LEDs

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

Prerequisites

The following is a list of required and optional components for the S4100–ON Series (S4128F-ON, S4148F-ON, S4148FE-ON, S4128T-ON, S4148T-ON, and S4148U-ON) switch:

NOTE: Detailed installation instructions are provided in the Site preparations and S4100-ON Series installation sections.

- S4100–ON Series (S4128F-ON, S4148F-ON, S4148FE-ON, S4128T-ON, S4148T-ON, or S4148U-ON) switch, or multiple switches, if stacking
- AC country- and regional-specific cables to connect the AC power source to each of the switches' AC power supplies
- Mounting brackets for rack installation, included
- Screws for rack installation
- #1 and #2 Phillips screwdrivers, not included
- Torx screwdriver, not included
- Ground cable screws, included
- Copper or fiber cables

Other optional components are:

- Ground cable and lug for the frame-end of the ground cable
- Extra power supply unit
- Extra fan module
- Extra mounting brackets if installing in a four-post rack or cabinet

S4100-ON Series configurations

The S4100-ON Series (S4128F-ON, S4148F-ON, S4148FE-ON, S4128T-ON, S4148T-ON, and S4148U-ON) switches are available in several different configurations.

All S4100-ON Series switches include the following configurations:

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

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

The following table lists each S4100-ON Series switch configuration:

Table 14. S4100-ON Series configurations

S4100–ON Series Switch	Configuration
S4128F-ON AC or DC Normal airflow	28 fixed SFP+ ports, 2 fixed QSFP28 ports, 7-segment stacking indicator, 1 micro-USB-B console port, 1 USB type-A port, 1 RJ-45 10/100/1000 Base-T Ethernet management port, 2 AC or DC PSUs, and 4 fan trays.
S4128F-ON AC or DC Reverse airflow	28 fixed SFP+ ports, 2 fixed QSFP28 ports, 7-segment stacking indicator, 1 micro-USB-B console port, 1 USB type-A port, 1 RJ-45 10/100/1000 Base-T Ethernet management port, 2 AC or DC PSUs, and 4 fan trays.
S4148F-ON AC or DC Normal airflow	48 fixed SFP+ ports, 2 fixed QSFP+ ports, 4 fixed QSFP28 ports, 7-segment stacking indicator, 1 micro-USB-B console port, 1 USB type-A port, 1 RJ-45 10/100/1000 Base-T Ethernet management port, 2 AC or DC PSUs, and 4 fan trays.
S4148F-ON AC or DC Reverse airflow	48 fixed SFP+ ports, 2 fixed QSFP+ ports, 4 fixed QSFP28 ports, 7-segment stacking indicator, 1 micro-USB-B console port, 1 USB type-A port, 1 RJ-45 10/100/1000 Base-T Ethernet management port, 2 AC or DC PSUs, and 4 fan trays.
S4148FE-ON AC or DC Normal airflow	48 fixed SFP+ ports, 2 fixed QSFP+ ports, 4 fixed QSFP28 ports, support for LRM optics, 7-segment stacking indicator, 1 micro-USB-B console port, 1 USB type-A port, 1 RJ-45 10/100/1000 Base-T Ethernet management port, 2 AC or DC PSUs, and 4 fan trays.
S4148FE-ON AC or DC Reverse airflow	48 fixed SFP+ ports, 2 fixed QSFP+ ports, 4 fixed QSFP28 ports, support for LRM optics, 7-segment stacking indicator, 1 micro-USB-B console port, 1 USB type-A port, 1 RJ-45 10/100/1000 Base-T Ethernet management port, 2 AC or DC PSUs, and 4 fan trays.
S4128T-ON AC or DC Normal airflow	28 fixed 1-GBase-T JR-45 ports, 2 fixed QSFP28 ports, 7-segment stacking indicator, 1 micro-USB-B console port, 1 USB type-A port, 1 RJ-45 10/100/1000 Base-T Ethernet management port, 2 AC or DC PSUs, and 4 fan trays.
S4128T-ON AC or DC Reverse airflow	28 fixed 1-GBase-T JR-45 ports, 2 fixed QSFP28 ports, 7-segment stacking indicator, 1 micro-USB-B console port, 1 USB type-A port, 1 RJ-45 10/100/1000 Base-T Ethernet management port, 2 AC or DC PSUs, and 4 fan trays.
S4148T-ON AC or DC Normal airflow	48 fixed 10GBase-T RJ-45 ports, 2 fixed QSFP+ ports, 4 fixed QSFP28 ports, 7-segment stacking indicator, 1 micro-USB-B console port, 1 USB type-A port, 1 RJ-45 10/100/1000 Base-T Ethernet management port, 2 AC or DC PSUs, and 4 fan trays.
S4148T-ON AC or DC Reverse airflow	48 fixed 10GBase-T RJ-45 ports, 2 fixed QSFP+ ports, 4 fixed QSFP28 ports, 7-segment stacking indicator, 1 micro-USB-B console port, 1 USB type-A port, 1 RJ-45 10/100/1000 Base-T Ethernet management port, 2 AC or DC PSUs, and 4 fan trays.
S4148U-ON AC or DC Normal airflow	24 unified fixed SFP+ ports, 24 fixed SFP+ ports, 2 fixed QSFP+ ports, 4 unified fixed QSFP28 ports, 7-segment stacking indicator, 1 micro-USB-B console port, 1 USB type-A port, 1 RJ-45 10/100/1000 Base-T Ethernet management port, 2 AC or DC PSUs, and 4 fan trays.
S4148U-ON AC or DC Reverse airflow	24 unified fixed SFP+ ports, 24 fixed SFP+ ports, 2 fixed QSFP+ ports, 4 unified fixed QSFP28 ports, 7-segment stacking indicator, 1 micro-USB-B console port, 1 USB type-A port, 1 RJ-45 10/100/1000 Base-T Ethernet management port, 2 AC or DC PSUs, and 4 fan trays.

Luggage tag

The S4100–ON Series (S4128F-ON, S4148F-ON, S4148FE-ON, S4128T-ON, S4148T-ON, and S4148U-ON) 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 watch videos about racking the switch, replacing components, configuring port channels, and so on.

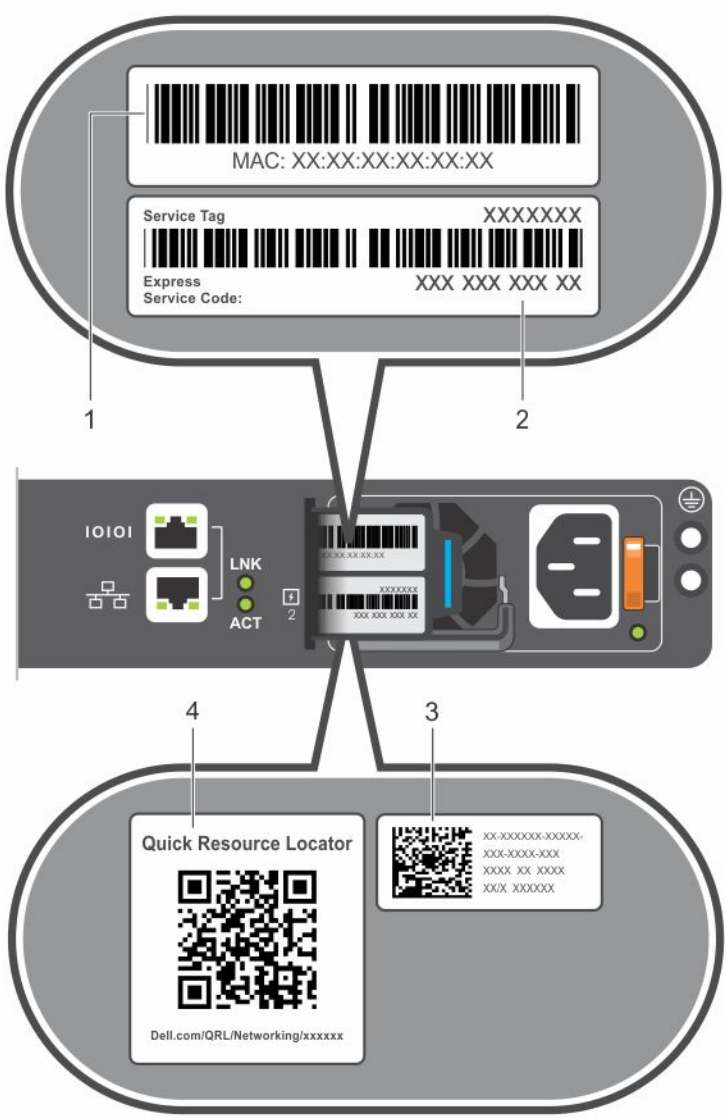

Figure 15. S4100–ON Series luggage tag

1	Front: MAC address	2	Front: Service tag and Express service code
3	Back: Quick resource locator (QRL)	4	Back: QRL

3

Site preparations

The S4100–ON Series (S4128F-ON, S4148F-ON, S4148FE-ON, S4128T-ON, S4148T-ON, and S4148U-ON) 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 S4100–ON Series specifications, see Specifications.

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

Topics:

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

Site selection

Install Dell EMC 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 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.
- S4128F-ON, S4148F-ON, S4148FE-ON, S4128T-ON, S4148T-ON: Environmental—switch location—continuous temperature range is from 5º to 40ºC (50º to 104ºF).
- S4148U-ON: Environmental—switch location—continuous temperature range is from 5º to 45ºC (50º to 113ºF).
- Operating humidity is from 5 to 85 percent noncondensing, continuous.
- In a dry, clean, well-ventilated, and temperature-controlled room, away from heat sources such as hot cooling vents or direct sunlight.
- Away from sources of severe electromagnetic noise.
- Inside the restricted access area, 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.

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

Cabinet placement

Install the S4100–ON Series (S4128F-ON, S4148F-ON, S4148FE-ON, S4128T-ON, S4148T-ON, and S4148U-ON) 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 EMC recommends grounding your switch. Use the S4100–ON Series switch in a CBN.

NOTE: For AC-powered switches, although the third conductor of the AC power cord provides a ground path, Dell EMC 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.

Fans and airflow

The fans on the S4100–ON Series (S4128F-ON, S4148F-ON, S4148FE-ON, S4128T-ON, S4148T-ON, and S4148U-ON) support two airflow options: normal and reverse.

Fan combinations

Fan installation is done as part of the factory install based on SKU type. The S4100–ON Series has stock keeping units (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 airflow from the PSU to the I/O—reverse

Be sure to 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 switch.

For proper ventilation, position the S4100–ON Series switch in an equipment rack or cabinet with a minimum of 5 inches (12.7 cm) of clearance around the exhaust vents. The fan speed varies based on internal temperature monitoring. The switch never intentionally turns off the fans.

For more information, see Fans.

Power

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

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 the power cable is connected 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 the AC switch, use the power supply cable as the main disconnect device. Ensure that the socket-outlet is located/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 S4100–ON Series (S4128F-ON, S4148F-ON, S4148FE-ON, S4128T-ON, S4148T-ON, and S4148U-ON) switch and components immediately, properly store the switch and all optional components following these guidelines:

- S4128F-ON, S4148F-ON, S4148FE-ON, S4128T-ON, S4148T-ON: Storage location temperature must remain constant. The storage range is from -40° to 65°C (-40° to 149°F).
- S4148U-ON: 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 S4100–ON Series switch and its accessories. After you remove the original packaging, place the switch and its components on an anti-static surface.

4

S4100–ON Series installation

To install the S4100–ON Series (S4128F-ON, S4148F-ON, S4148FE-ON, S4128T-ON, S4148T-ON, and S4148U-ON), complete the installation procedures in the order presented in this section.

Always handle the S4100–ON Series 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 S4100–ON Series 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.

NOTE: For more information, see the *Open Networking Hardware Diagnostic Guide* found at the following sites:

- S4148F-ON, S4148T-ON, S4148FE-ON: www.dell.com/support/S4148F-ON/S4148T-ON/S4148FE-ON
- S4128T-ON, S4148T-ON: www.dell.com/support/S4128T-ON/S4148T-ON
- S4148U-ON: www.dell.com/support/S4148U

Topics:

- Unpack the switch
- Rack or cabinet installation
- ReadyRails installation
- S4100-ON Series installation
- Optics installation
- Switch power-up
- After switch installation
- Switch replacement

Unpack the switch

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

When unpacking the S4100–ON Series switch, make sure that the following items are included:

- One S4100–ON Series (S4128F-ON, S4148F-ON, S4148FE-ON, S4128T-ON, S4148T-ON, or S4148U-ON) switch
- One RJ-45 to DB-9 female cable
- Two sets of rail kits, no tools required
- Two PSUs
- Four fan units
- Two country- and region-specific AC power cords
- *Dell S4100–ON Series Setup Guide*
- *Safety and Regulatory Information*
- *Warranty and Support Information*

Unpack

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.

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. Rack mounting includes four-post, two-post, round threaded holes, or square holes. The ReadyRails system is provided for 1U front-rack and two-post installations.

The ReadyRails 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 illustrations in this section 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 you install the switch 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—Do not compromise the amount of airflow 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 downward.

ReadyRails installation

To easily configure your rack for installation of your S4100–ON Series (S4128F-ON, S4148F-ON, S4148FE-ON, S4128T-ON, S4148T-ON, and S4148U-ON) switch, use the ReadyRails rack mounting system provided.

You can install the ReadyRails system using the 1U tool-less square-hole method or one of three possible 1U threaded round-hole methods. The tooled installation methods include 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.

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

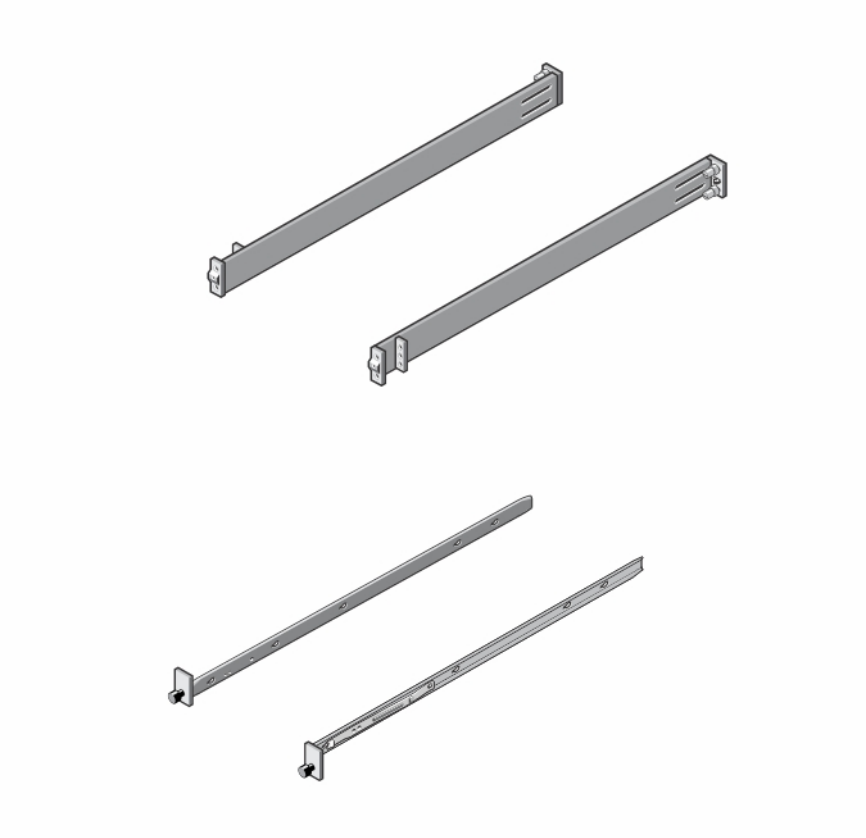

Figure 16. Separate rails

1U Tool-less mount installation

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

1 Face 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 center extractions show how the pegs appear in both the square and nonthreaded round holes.

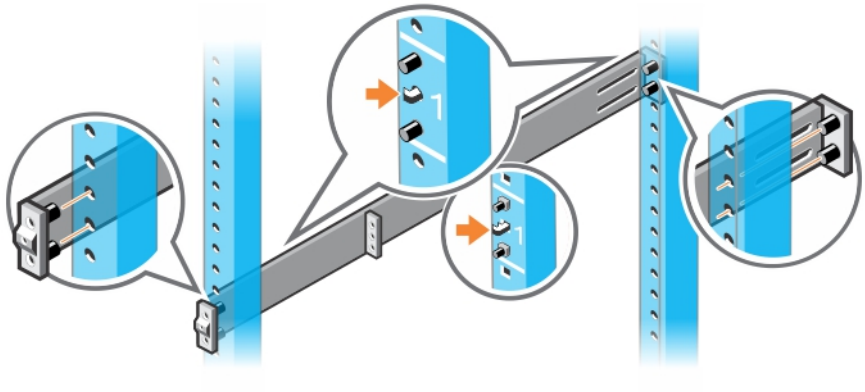

Figure 17. 1U tool-less installation

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

NOTE: Be sure that the rails click into place and are secure.

3 Repeat this procedure for the second rail.

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

Two-post flush-mount installation

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

1 For this configuration, remove the latch castings from the front side of each ReadyRails assembly, item 1.

To remove the two screws from each front flange ear on the switch side of the rail and remove each latch casting, use a Torx screwdriver. Retain the latch castings for future rack requirements. It is not necessary to remove the back flange castings.

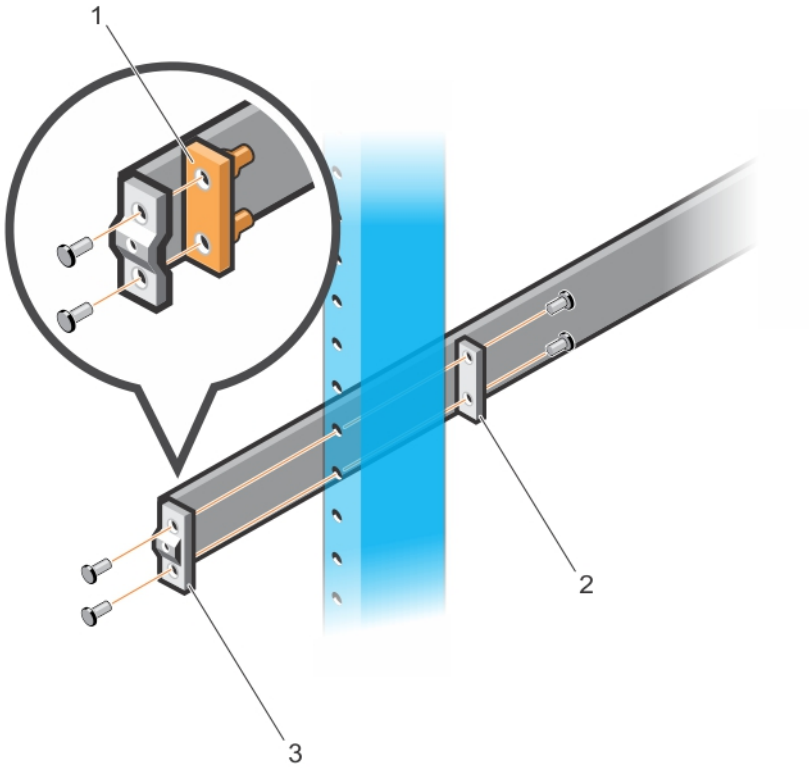

Figure 18. Two-post flush-mount installation

2 Attach one rail to the front post flange with two user-supplied screws, 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, item 1.

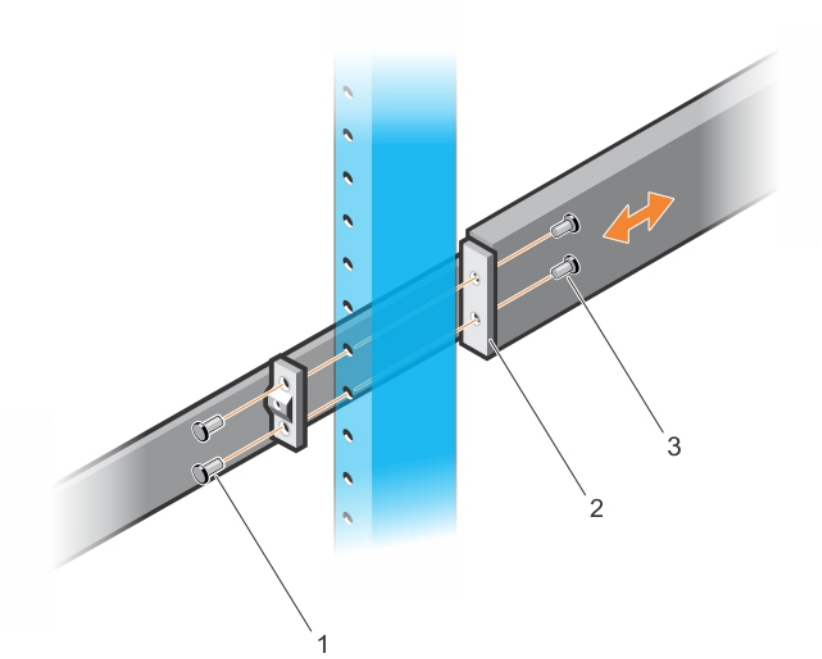

Figure 19. Two-post center-mount installation

2 Slide the back bracket towards the post. Secure it to the post flange with two user-supplied screws, items 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 Remove the latch castings from each end of the ReadyRails assemblies. To remove the two screws each latch casting, use a Torx driver.

Retain the latch castings for future rack requirements.

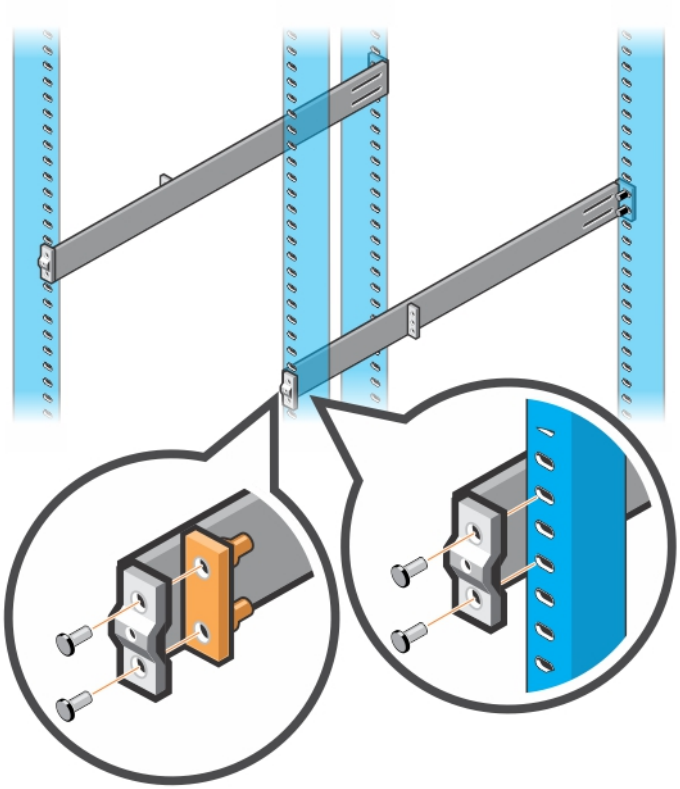

Figure 20. Four-post threaded installation

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

S4100-ON Series installation

You can mount the switch in the 1U front-rack two-post, flush or center configuration, or a four-post 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.

1 **NOTE: For more information, see the installation instruction labels on the rail.**

Attach the inner switch rails to the S4100F–ON Series (S4128F-ON, S4148F-ON, S4148FE-ON, S4128T-ON, S4148T-ON, or S4148U-ON) switch.

Line up the rail with the mounting heads and attach the rail to the chassis. Slide the rail back until it locks into place. The following shows the detail of the front standoff with the locking tab:

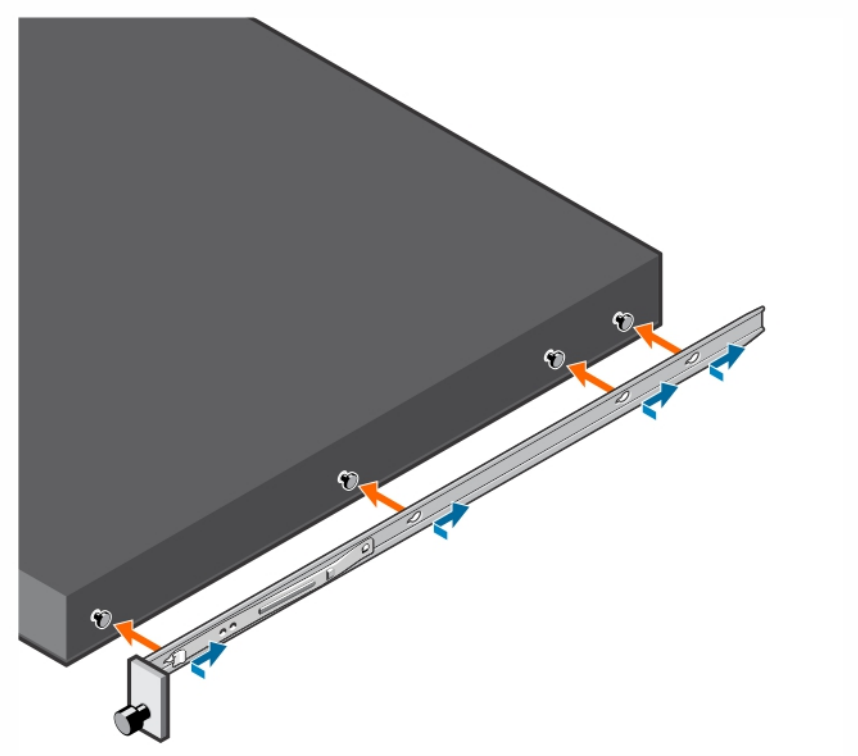

Figure 21. Switch rail attachment

2 After you install both rails, line them up on the ReadyRails. Slide the switch in until it is flush with the front of rack.

About three inches before you fully insert your switch, the rail locking feature engages to keep the switch from inadvertently sliding out and falling.

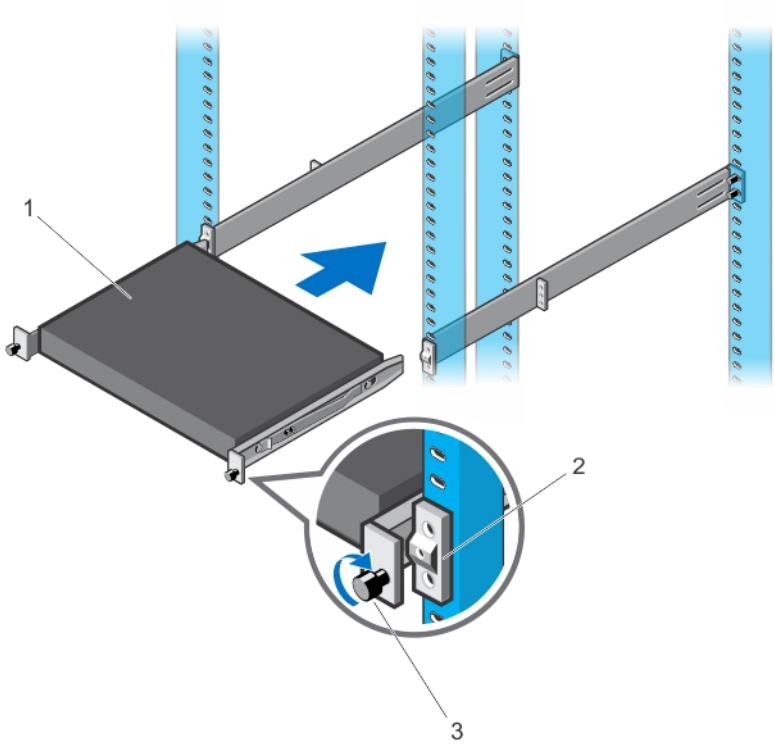

Figure 22. Front rack installation

NOTE: Do not the use the mounted Ready-Rails as a shelf or a workplace.

3 Tighten the two thumb screws and rack screws.

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

Optics installation

The S4100-ON Series (S4128F-ON, S4148F-ON, S4148FE-ON, S4128T-ON, S4148T-ON, and S4148U-ON) switch has the following optic configurations:

NOTE: For the S4148U-ON, for the best optics performance, upgrade the Dell EMC software to 10.4(0.0) or higher.

Table 15. S4100-ON Series optic configurations

Platform	Description
S4128F-ON	• 28 fixed SFP+ optical ports • 2 fixed QSFP28 optical ports
S4148F-ON	• 48 fixed SFP+ optical ports • 2 fixed QSFP+ optical ports • 4 fixed QSFP28 optical ports
S4148FE-ON	• 24 LRM-capable fixed unified SFP+ optical ports • 24 LRM-capable fixed SFP+ optical ports

Platform	Description
	• 2 fixed QSFP+ optical ports • 2 fixed unified QSFP28 optical ports • 2 fixed QSFP28 optical ports
S4128T-ON	• 28 fixed 10GBase-T RJ-45 optical ports • 2 fixed QSFP28 optical ports
S4148T-ON	• 48 fixed 10GBase-T RJ-45 optical ports • 2 fixed QSFP+ optical ports • 4 fixed QSFP28 optical ports
S4148U-ON	• 24 fixed unified Fibre channel or Ethernet SFP+ optical ports • 24 fixed Ethernet SFP+ optical ports • 2 fixed Ethernet QSFP+ optical ports • 4 fixed unified Fibre channel or Ethernet QSFP28 optical ports

For a list of supported optics, see the S4100-ON Series data sheet at www.dell.com/support or contact your Dell EMC representative.

CAUTION: ESD damage can occur if components are mishandled. Always wear an ESD-preventive wrist or heel ground strap when handling the S4100-ON Series and its 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 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 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 S4100–ON Series (S4128F-ON, S4148F-ON, S4148FE-ON, S4128T-ON, S4148T-ON, and S4148U-ON) switch after you mount it in a rack or cabinet.

Dell EMC recommends reinspecting your switch before powering up. Verify the following:

- The equipment is properly secured to the rack. Dell EMC recommends properly grounding the switch.
- The ambient temperature around the unit, which may be higher than the room temperature, is within the limits specified for the S4100–ON Series, 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.
- Blank panels are installed if you do not install optional modules.

CAUTION: Do not power up 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: ESD damage can occur if components are mishandled. Always wear an ESD-preventive wrist or heel ground strap when handling the S4100–ON Series switch and its 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 up.

After switch installation

To configure your switch, after you have securely installed and powered on the S4100–ON Series switch, see your open network installation environment (ONIE)-compatible operating system documentation at www.onie.org. For more information about working with the ONIE environment, see your switch documentation at www.dell.com/support.

Switch replacement

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

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.
   ```
   OS10# copy config://startup.xml config://<backup file name>
   ```
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. Install the new switch in your rack or cabinet.
   For detailed installation instructions, see S4100F-ON series installation.
   If you are using the fan trays or PSUs from the removed switch, reinsert them in the replacement switch.
7. Connect all the cables.
8. Power on the switch.
   For more information, see Switch power up.
9. Establish a connection to the switch CLI.
10. Confirm that the software version of the replacement switch is the same as the previously installed switch.
    ```
    show version
    ```
    If the software versions do not match, upgrade the replacement switch software using the procedure included with the firmware download.
11. Copy the backed-up switch configuration to the new switch.
    ```
    copy tftp://hostip/filepath running-config
    ```

5

Power supplies

The S4100–ON Series (S4128F-ON, S4148F-ON, S4148FE-ON, S4128T-ON, S4148T-ON, and S4148U-ON) switch ships with two AC or DC power supplies.

The power supplies have two air-flow directions, normal and reverse. Normal is from the I/O-side to the PSU-side. Reverse is from the PSU-side to the I/O-side.

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 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: Connect the power supply to the appropriate branch circuit protection as defined by your local electrical codes and 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 S4100–ON Series switch and its components.

Topics:

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

Components

The following power supply options are available for the S4100-ON Series 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 23. S4100-ON Series PSUs

1 PSUs

The PSUs have an integrated fan that you cannot replace individually; if the fans integrated in a PSU fail, 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 Power Ports, use an external surge protection device (SPD) at the AC 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 1Hz—Switch is in standby/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 S4100–ON Series 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, Dell EMC recommends installing the power supply in the first slot, PSU1. Install a blank plate in the second slot, PSU2.

1 Remove the PSU slot cover 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 PCB edge connector first. The PSU slot is keyed so that the PSU can only be fully inserted in one orientation. When you install the PSU correctly, it snaps into place and is flushed with the back of the switch.

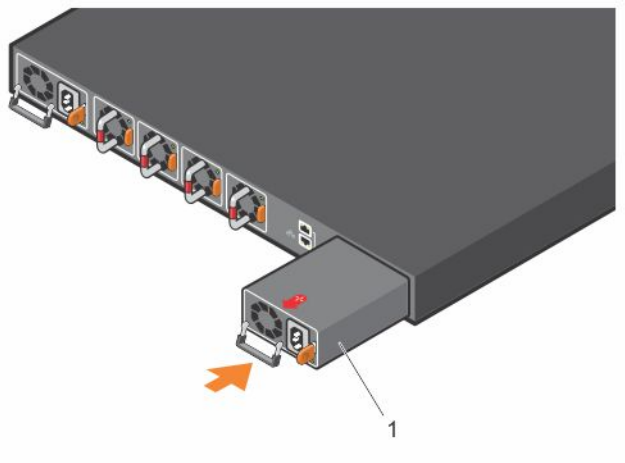

Figure 24. PSU installation

1 Left PSU is PSU1 and right PSU is PSU2.

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 slot.

NOTE: The 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 S4100–ON Series 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 Dell EMC 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, Dell EMC recommends installing 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 connection

Each DC PSU kit, sold separately, comes with a connector cable.

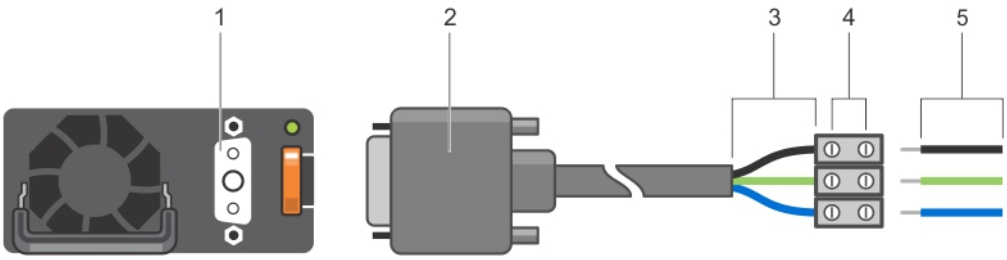

Figure 25. DC power supply and connector cable

1	DC PSU power socket	2	Cable connector with thumb screws
3	Cable connector wires—black, green, and blue	4	Wiring block
5	DC power source wires—black, green, blue		

1 Strip 1/2 inches of insulation from each of the site's DC power source wires, item 5.

2 Insert each of the site's DC power source's bare wire lengths into the wiring block, matching the wire colors, items 3 and 4.

> **WARNING: Do not cross the wires—in the wiring block, blue aligns with blue, green aligns with green, and black aligns with black.**

3 Use a flat-blade screwdriver to tighten the screws that secure the bare wires into the wiring block.

4 Insert the DC power connector cable end into the power socket of the DC PSU and tighten the thumb screws, items 1 and 2.

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

> **NOTE: To remove the power connector from a DC PSU, unscrew the thumb screws and pull the power connector from the DC PSU socket.**

6

Fans

The S4100–ON Series (S4128F-ON, S4148F-ON, S4148FE-ON, S4128T-ON, S4148T-ON, and S4148U-ON) switch comes from the factory with two PSUs and four fan modules installed in the chassis. The fan modules and the power supplies are hot-swappable.

In addition to the power supply modules, you can order and install fan modules separately.

NOTE: The S4100–ON Series switch supports two airflow direction options—normal and reverse. All fans and PSUs *MUST* have the same airflow direction. If you mix the airflow direction, to avoid heat damage to the switch components, *you must correct the mixed airflow direction*.

- Airflow is from the I/O panel to the PSU—normal.
- Airflow is from the PSU to the I/O panel—reverse.

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.

CAUTION: Check the fans at six-month intervals, and replace them as necessary. Regularly monitor the speeds of the fans to accurately determine replacement intervals.

Topics:

- Components
- Fan module installation

Components

The following are the S4100–ON Series (S4128F-ON, S4148F-ON, S4148FE-ON, S4128T-ON, S4148T-ON, and S4148U-ON) fan components.

- S4100–ON Series Fan module
- S4100–ON Series Fan module—reverse

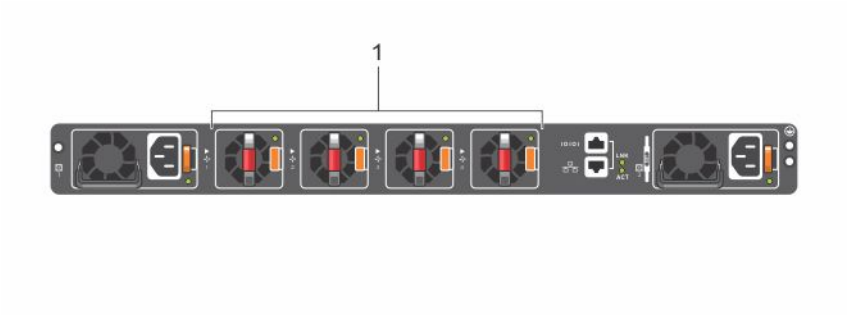

Figure 26. S4100-ON Series fan modules

1 Fan units

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 S4100–ON Series switch are field replaceable.
When looking at your switch, Slot 1 is on the left side of the switch and 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 overheating the switch, correct the mixed airflow.

1 Take the fan module out of the shipping box.
2 Slide the module into the bay.

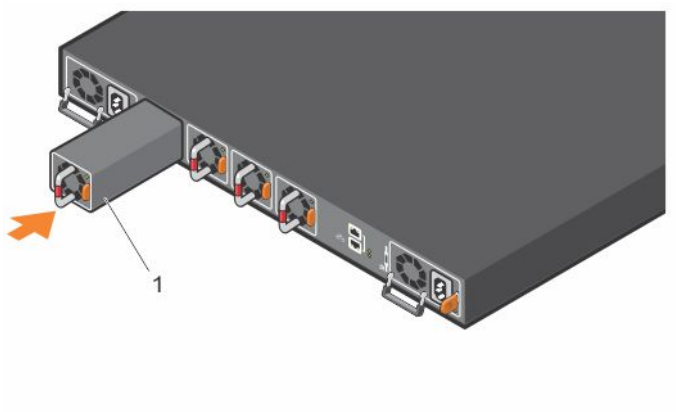

Figure 27. S4100–ON Series fan modules installation

1 Fan unit

Fan module replacement

To request a hardware replacement, see Dell EMC 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.

7

Management ports

Besides the 10/100/1000Base-T RJ-45 ports, the S4100–ON Series (S4128F-ON, S4148F-ON, S4148FE-ON, S4128T-ON, S4148T-ON, and S4148U-ON) switch provides several ports for management and storage.

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

Topics:

- RS-232 console port access
- USB-B console port access
- USB storage
- Before you install an OS
- ONIE service discovery

RS-232 console port access

The RS-232 console port is on the PSU-side of the switch, as shown.

Figure 28. RS-232 console port

1 RJ-232 console port

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

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

NOTE: Before starting this procedure, ensure your PC has a 9-pin serial port. You must have a terminal emulation program already installed and running on your PC.

NOTE: If your PC's serial port cannot accept a female DB-9 connector, use a DB-9 male-to-male adaptor.

1 Install the provided RJ-45 connector side of the provided cable into the S4100-ON Series console port.

2 Install the DB-9 female side of the provided copper cable into your PC's serial port. Or install the DB-9 cable into other data terminal equipment (DTE) server hardware that you intend to use.

3 Keep the default terminal settings on the console as follows:

- 115200 baud rate

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

USB-B console port access

The USB-B console port is on the I/O side of the switch.

NOTE: The S4100-ON Series switches use 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.

The terminal settings are the same for the serial console port and the RS-232/RJ-45 console port:

- 115200 baud rate
- No parity
- 8 data bits
- 1 stop bit
- No flow control

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

NOTE: Before starting this procedure, be sure that you have a terminal emulation program already installed on your PC. Install the appropriate drivers to support the USB-B port. To download Dell EMC drivers, see www.dell.com/support. If your computer requires non-Dell EMC drivers, contact Dell EMC Technical Support for assistance.

To access the USB-B console port, follow these steps.

1. Power on the PC.
2. Connect the USB-A end of cable into an available USB port on the PC.
3. Connect the USB-B end of cable into the USB-B console port on the S4100-ON Series switch.
4. Power on the S4100-ON Series switch.
5. Install the necessary USB device drivers.

   To download Dell EMC drivers, see www.dell.com/support. If your computer requires non-Dell EMC drivers, contact Dell EMC Technical Support for assistance.
6. Open your terminal software emulation program to access the S4100-ON Series 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

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

1. Create a mount directory for the USB.

   ```
   ONIE:/ # mkdir /mnt/usb
   ```
2. View the fixed disks using fdisk.

   ```
   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
```

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.`

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.`

Before you install an OS

After powering on the S4100–ON Series switch, it goes through a power-on self-test (POST).

POST runs every time 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 operating software (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.

NOTE: To access ONIE, use the RJ-45 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* found at the following sites:

- S4148F-ON, S4148T-ON, S4148FE-ON: www.dell.com/support/S4148F-ON/S4148T-ON/S4148FE-ON
- S4128T-ON, S4148T-ON: www.dell.com/support/S4128T-ON/S4148T-ON
- S4148U-ON: www.dell.com/support/S4148U

After you have securely installed and powered on the switch, to configure your switch, see your third-party ONIE-compatible OS or the Dell EMC OS documentation.

ONIE service discovery

ONIE attempts to locate the installer through several discovery methods.
To download and run an installer, the ONIE Service Discovery feature follows these steps in order and 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 Query to the IPv6 link-local neighbors using HTTP for an installer.
3 Discover TFTP-based image from the DHCP server.

Examples of ONIE `ifconfig eth0` commands

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, remove it before 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 10.11.53.33/16

Verify the network connection with ping.
ONIE:/ # ping 10.11.8.12
PING 10.11.8.12 (10.11.8.12): 56 data bytes
64 bytes from 10.11.8.12: seq=0 ttl=62 time=1.357 ms
64 bytes from 10.11.8.12: seq=1 ttl=62 time=0.577 ms
^C
```

8

Specifications

This section lists the S4100–ON Series (S4128F-ON, S4148F-ON, S4148FE-ON, S4128T-ON, S4148T-ON, and S4148U-ON) switch specifications.

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

CAUTION: Lithium Battery Caution: There is a danger of explosion if the battery is incorrectly replaced. Replace only with same or equivalent type of battery. Dispose of the batteries according to the manufacturer's instructions.

NOTE: For RoHS information, see Restricted Material Compliance.

Topics:

- Chassis physical design
- IEEE standards
- Agency compliance
- USA Federal Communications Commission statement
- European Union EMC 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 16. Chassis physical design

Parameter	Specifications
Height	1.71 inches (43.5 mm)
Width	17.1 inches (434 mm)
Depth	18.1 inches (460 mm)
	PSU/fan tray handle: 1.57 inch (40 mm)
Chassis weight with factory-installed components	S4128F-ON: 19.66 lbs/8.92 kg (2* PSUs)
	S4148F-ON: 20.15 lbs/9.14 kg (2* PSUs)
	S4148FE-ON: 20.15 lbs/9.14 kg (2* PSUs)
	S4128T-ON: 19.66 lbs/8.92 kg (2* PSUs)
	S4148T-ON: 20.15 lbs/9.14 kg (2* PSUs)
	S4148U-ON: 21.63 lbs/9.81 kg (2* PSUs)

Parameter	Specifications
Rack clearance required	Front: 5 inches (12.7 cm) Back: 5 inches (12.7 cm)

Table 17. Environmental parameters

Parameter	Specifications
Operating temperature	S4128F-ON, S4148F-ON, S4148FE-ON, S4128T-ON, S4148T-ON: 5° to 40°C (50°F to 104°F), continuously S4148U-ON: 5°C to 45°C (50°F to 113°F), continuously -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 Short term is </= 1% of operational hours per year.
Storage temperature	S4128F-ON, S4148F-ON, S4148FE-ON, S4128T-ON, S4148T-ON: –40° to 65°C (–40°F to 149°F) S4148U-ON: –40° to 70°C (–40°F to 158°F)
Storage humidity	5% to 95%, non-condensing
Maximum thermal output	470 W = 1260 BTU/Hr
Maximum operational altitude	10,000 feet (3,048 meters)
Maximum non-operational altitude	39,370 feet (12,000 meters)
Shock	Dell EMC Spec SV0115

Table 18. AC power requirements

Parameter	Specifications
Power supply	100–240 VAC 50/60 Hz
Maximum current draw per switch	4.7A/3.9A at 100/120V AC 2.35A/1.95A at 200/240V AC
Maximum power consumption	370 Watts
Typical power consumption	200 Watts

Table 19. DC power requirements

Parameter	Specifications
Minimum and maximum input voltage range	–40.5V, –48V, -60V
Input power at full load	–40.5V/970W –48V/930W –60V/ 950W, without fan

Parameter	Specifications
	–40.5V/980W –48V/940W –60V/ 960W, with fan
Input current at full load	–40.5V/23.8A –48V/19.0A –60V/ 15.6A, without fan –40.5V/24.0A –48V/19.2A –60V/ 16.0A, with fan

IEEE standards

The S4100–ON Series (S4128F-ON, S4148F-ON, S4148FE-ON, S4128T-ON, S4148T-ON, and S4148U-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)

Agency compliance

The S4100–ON Series (S4128F-ON, S4148F-ON, S4148FE-ON, S4128T-ON, S4148T-ON, and S4148U-ON) switch complies 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 EMC 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.

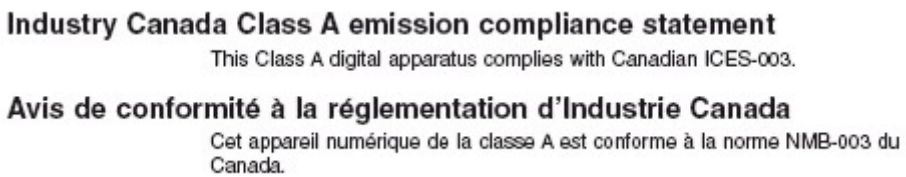

Figure 29. Canadian department of communication statement

European Union EMC directive conformance statement

This product is in conformity with the protection requirements of EU Council Directive 2004/30/EC on the approximation of the laws of the Member States relating to electromagnetic compatibility. Dell EMC 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 EMC 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.

⚠ **WARNING: 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 EMC, 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 30. 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.

⚠ **WARNING: Use the AC power cords with Dell EMC equipment only. Do not use Dell EMC 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 31. 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 32. Korean certification of compliance

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

Figure 33. Korean package label

Safety standards and compliance agency certifications

- IEC 62368-1, 2nd Edition
- CUS UL 60950-1, 2nd Edition
  - Meets or exceeds Hi Pot and Ground Continuity testing per UL 60950-1.
- AS/NZS 60950
- 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

Electromagnetic compatibility

Emissions

- International: CISPR 32: Class A
- Australia/New Zealand: AS/NZS CISPR 32, Class A
- Canada: ICES-003, Issue-4, Class A
- Europe: EN55032:2015 (CISPR 32), Class A
- EN55032
- Japan: VCCI Class A
- Korea: KN32, Class A
- Taiwan: CNS13438, Class A
- USA: FCC CFR47 Part 15, Subpart B, Class A

Immunity

- EN 300 386 EMC for Network Equipment
- EN 55024
- 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

Product recycling and disposal

You must recycle or discard this system according to applicable local and national regulations. Dell EMC encourages owners of information technology (IT) equipment to responsibly recycle their equipment when it is no longer needed. Dell EMC offers a variety of 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 EMC 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 34. 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 EMC 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 on Dell EMC product recycling offerings, see the WEEE Recycling instructions on the Support page. For more information, contact the Dell EMC Technical Assistance Center.

9

Dell EMC support

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

To access the Dell EMC 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, 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 product documentation and resources to install, configure, and troubleshoot the Dell EMC PowerSwitch, see the Dell EMC Networking Hardware Platforms and OS9 Info Hub.

To search for drivers and downloads, go to www.dell.com/drivers/.

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

Dell Networking S3100 Series Installation Guide

June 2016

Notes, cautions, and warnings

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

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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1

About this Guide

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

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

WARNING: Only trained and qualified personnel can install this equipment. Read this guide before you install and power up this equipment. Disconnect power cords before servicing.

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

Figure 1. Class 1, Laser Product Label

WARNING: 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.

Related Publications

For more details about S3100 series software configuration, see the following publications:

- The *Dell Configuration Guide for the S3100 Series* describes software configuration.
- The *Dell Command Line Reference Guide for the S3100 Series* provides command line interface (CLI) information.
- The *Dell Networking S3100 Series Release Notes* provide information about upgrading the S3100 series.

NOTE: Information is available on the Dell Networking Support website (http://www.dell.com/support).

2

S3100 Series Systems

The following information describes the features, capabilities, and physical configurations that the S3100 series supports.

Topics:

- Introduction
- Features
- Power Over Ethernet Plus (PoE+)
- S3124 Platform I/O Side
- S3124 Platform PSU Side
- S3124F Platform I/O Side
- S3124F Platform PSU Side
- S3148 Platform I/O Side
- S3148 Platform PSU Side
- S3124P Platform I/O Side
- S3124P Platform PSU Side
- S3148P Platform I/O Side
- S3148P Platform PSU Side
- Reset Button
- Power Supplies
- Fans
- Plug-in Modules
- LED Status Information
- Orderable S3100 Series Components

Introduction

The S3100 series is a low-cost wireless closet switch/router product for copper connections to 1G endpoints with Power over Ethernet plus (PoE+) capability on 1G access ports. The series includes capabilities for 1/10GE switching with 1G copper links for campus network endpoints and 10G ports for uplinks to core/aggregation switches. The series has five platforms.

The S3124 platform includes the following:

- Twenty-four Gigabit Ethernet 10/100/1000BASE-T RJ-45 ports for copper that support auto-negotiation for speed, flow control, and duplex.
- Two 1G combo SFP ports.
- Two SFP+ 10G ports.

The S3124F platform includes the following:

- Twenty-four Gigabit Ethernet 100BASEFX/1000BASE-X SFP ports.
- Two 1G copper combo ports.
- Two SFP+ 10G ports.

The S3148 platform includes the following:

- Forty-eight Gigabit Ethernet 10/100/1000BASE-T RJ-45 ports for copper that support auto-negotiation for speed, flow control, and duplex.
- Two 1G combo SFP ports.
- Two SFP+ 10G ports.

The S3124P platform includes the following:

- Twenty-four Gigabit Ethernet 10/100/1000BASE-T RJ-45 ports for copper that support auto-negotiation for speed, flow control, and duplex.
- Two 1G combo SFP ports.
- Two SFP+ 10G ports.
- Supports PoE+.

The S3148P platform includes the following:

- Forty-eight Gigabit Ethernet 10BASE-T, 100BASE-TX, 1000BASE-T RJ-45 ports that support auto-negotiation for speed, flow control, and duplex.
- Two 1G combo SFP ports.
- Two SFP+ 10G ports.
- Supports PoE+.

NOTE: Dell-qualified SFP+ transceivers are sold separately.

Features

All S3100 series platforms have the following features.

- Two fixed mini-SAS stacking ports HG[21] to connect up to 12 switches. You can combine different platforms within the S3100 series into one stack.
- One 20G expansion slot for modules (SFP+ [fiber] or 10GBase-T [copper RJ–45]).
- Front panel out-of-band (OOB) management port.
- External serial RS232 port (RJ–45 type).
- One universal serial bus (USB-A) port.
- Hot-swappable redundant power supply unit (PSU).
- Hot-swappable fan tray.
- Standard 1U chassis high.

Power Over Ethernet Plus (PoE+)

The S3124P and S3148P platforms support PoE+ configuration for power threshold, power priority, SNMP traps, and PoE legacy device support.

The PoE+ features do not apply to the other platforms in the S3100 series.

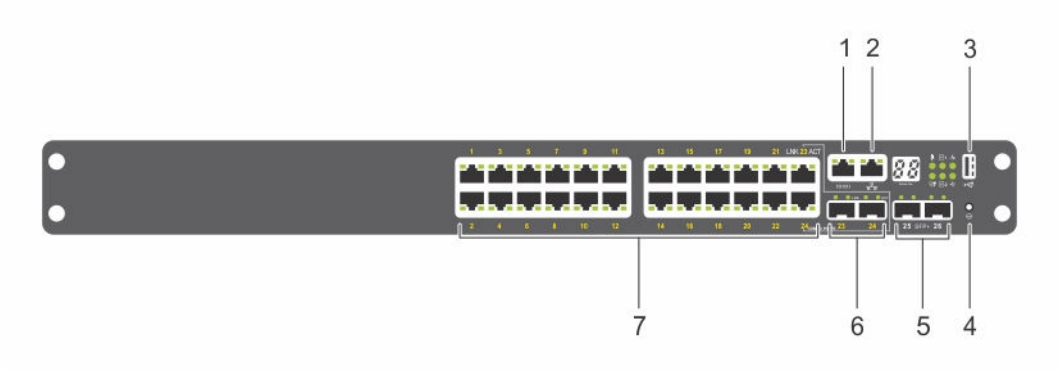
For details about PoE power consumption and budget, see S3100 Series Technical Specifications.

For more information about all supported features and their implementation options, see the *Dell Command Line Reference Guide for the S3100 Series* and the *Dell Configuration Guide for the S3100 Series*.

S3124 Platform I/O Side

The S3124 platform input/output (I/O) side (shown in the following illustration) contains twenty-four 1G copper switch ports. The I/O side also contains a console port, management port, serial bus port, reset button, two 10G SFP+ ports, and two 1G SFP combo ports.

Figure 2. S3124 I/O Side View

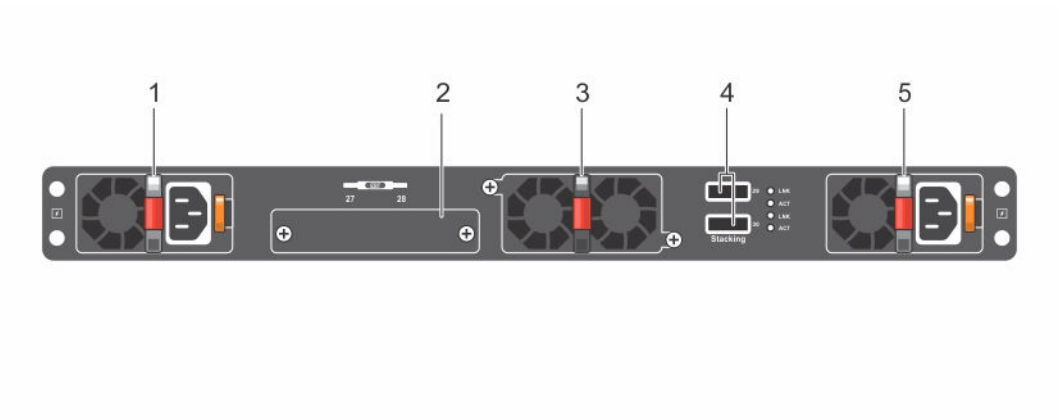


1. Console port.
2. Management port (RJ-45 type).
3. One universal serial bus port (USB Type-A) for storage.
4. Reset button.
5. Two 10G SFP+ ports.
6. Two 1G SFP combo ports.
7. Twenty-four 1G copper switch ports.

S3124 Platform PSU Side

The S3124 PSU side (shown in the following illustration) includes the power supplies, fan tray, and stacking ports.

Figure 3. S3124 PSU Side View



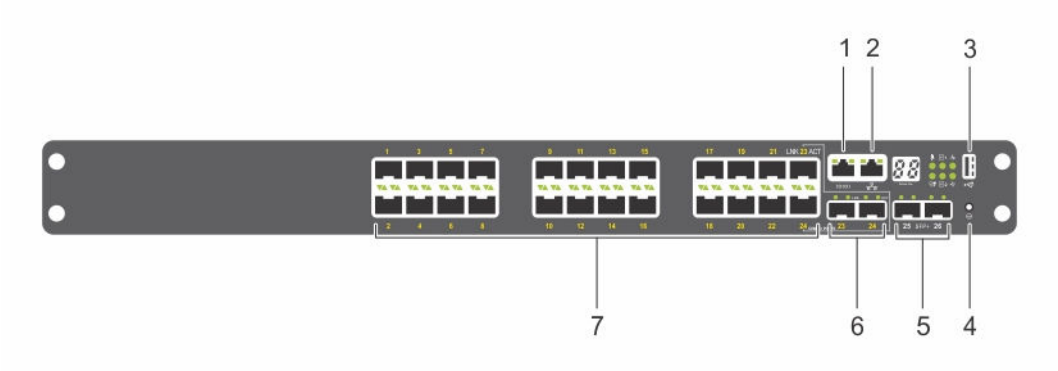
1. PSU 1.
2. Module slot.
3. Fan tray.
4. Mini-SAS stacking ports.
5. PSU 2.

NOTE: The S3124 platform does not support stacking with Dell Networking OS 9.8(2.0).

S3124F Platform I/O Side

The S3124F platform I/O side (shown in the following illustration) contains twenty-four 1G fiber switch ports. The I/O side also contains a console port, management port, serial bus port, reset button, two 10G SFP+ ports, and two 1G copper combo ports.

Figure 4. S3124F I/O Side View

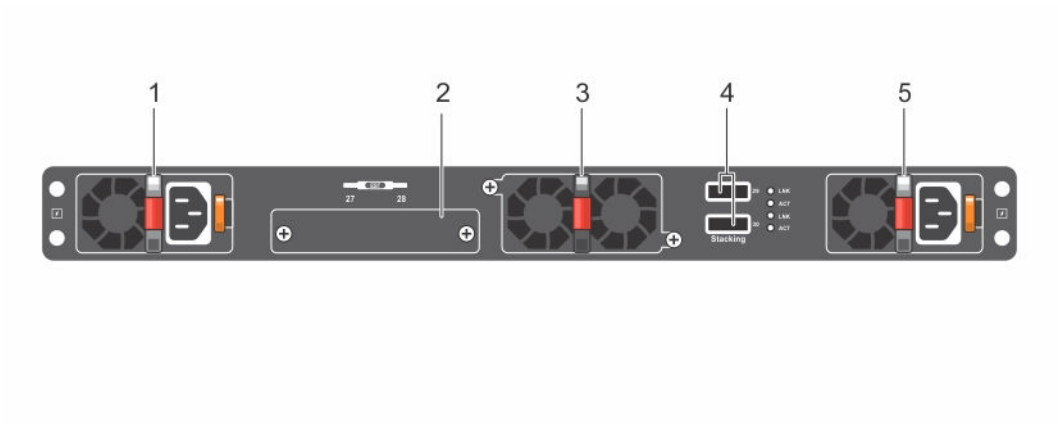


1. Console port.
2. Management port (RJ-45 type).
3. One universal serial bus port (USB Type-A) for storage.
4. Reset button.
5. Two 10G SFP+ ports.
6. Two 1G copper combo ports.
7. Twenty-four 1G fiber switch ports.

S3124F Platform PSU Side

The S3124F PSU side (shown in the following illustration) includes the power supplies, fan tray, and stacking ports.

Figure 5. S3124F PSU Side View



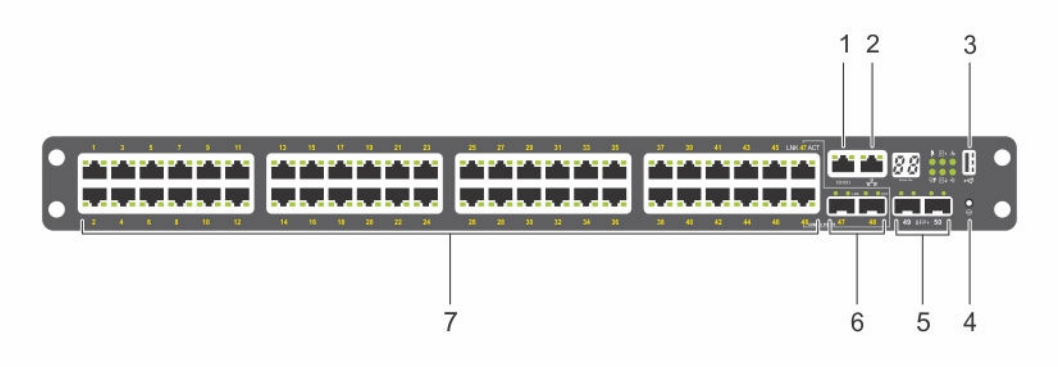
1. PSU 1.
2. Module slot.
3. Fan tray.
4. Mini-SAS stacking ports.
5. PSU 2.

NOTE: The S3124 platform does not support stacking with Dell Networking OS 9.8(2.0).

S3148 Platform I/O Side

The S3148 platform I/O side (shown in the following illustration) contains forty-eight 1G copper switch ports. The I/O side also contains a console port, management port, serial bus port, reset button, two 10G SFP+ ports, and two 1G SFP combo ports.

Figure 6. S3148 I/O Side View

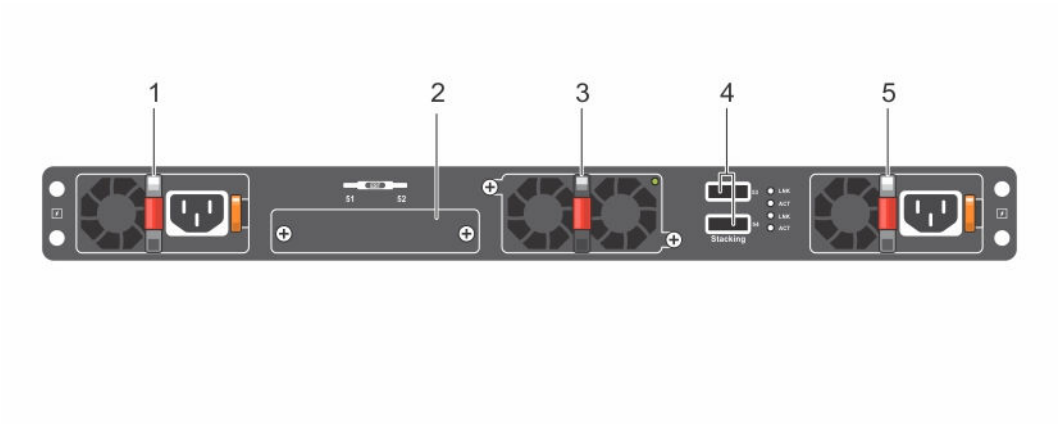


1. Console port.
2. Management port (RJ-45 type).
3. One universal serial bus port (USB Type-A) for storage.
4. Reset button.
5. Two 10G SFP+ ports.
6. Two 1G SFP combo ports.
7. Forty-eight 1G copper switch ports.

S3148 Platform PSU Side

The S3148 PSU side (shown in the following illustration) includes the power supplies, fan tray, and stacking ports.

Figure 7. S3148 PSU Side View

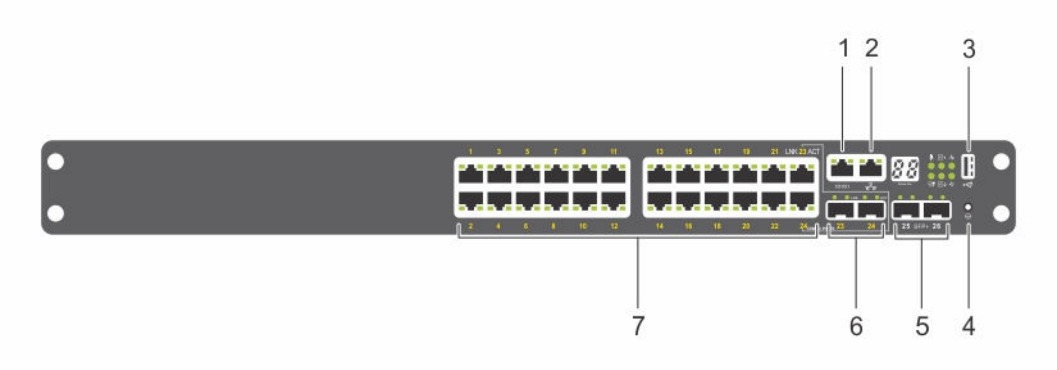


1. PSU 1.
2. Module slot.
3. Fan tray.
4. Mini-SAS stacking ports.
5. PSU 2.

S3124P Platform I/O Side

The S3124P platform I/O side (shown in the following illustration) contains twenty-four 1G copper switch ports that include PoE+ function. The I/O side also contains a console port, management port, serial bus port, reset button, two 10G SFP+ ports, and two 1G SFP combo ports.

Figure 8. S3124P I/O Side View

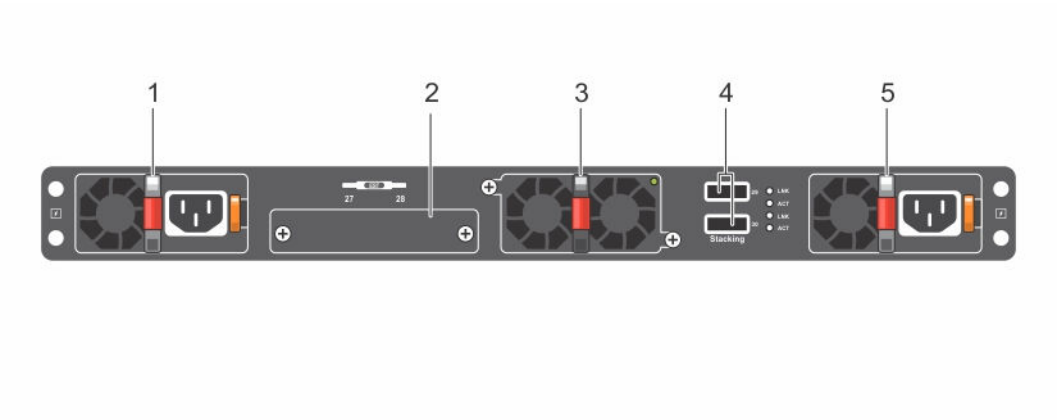


1. Console port.
2. Management port (RJ-45 type).
3. One universal serial bus port (USB Type-A) for storage.
4. Reset button.
5. Two 10G SFP+ ports.
6. Two 1G SFP combo ports.
7. Twenty-four 1G copper switch ports including UPoE/PoE+ function.

S3124P Platform PSU Side

The S3124P PSU side (shown in the following illustration) includes the power supplies, fan tray, and stacking ports.

Figure 9. S3124P PSU Side View

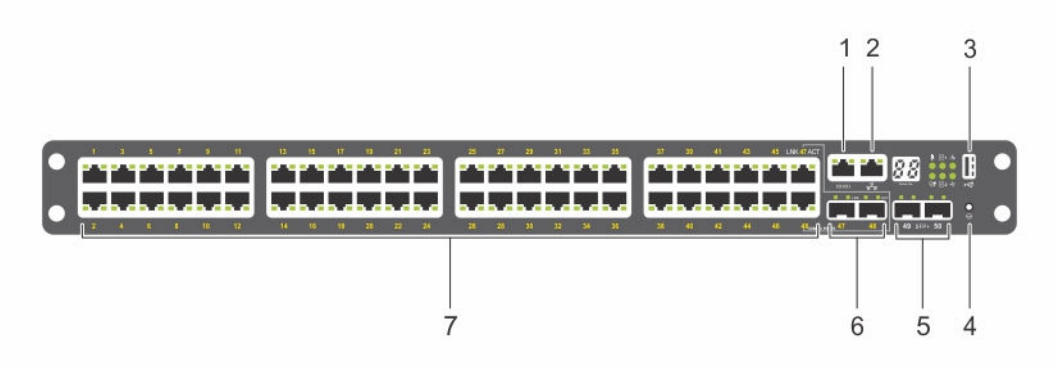


1. PSU 1.
2. Module slot.
3. Fan tray.
4. Mini-SAS stacking ports.
5. PSU 2.

S3148P Platform I/O Side

The S3124P platform I/O side (shown in the following illustration) contains forty-eight 1G copper switch ports that include PoE + function. The I/O side also contains a console port, management port, serial bus port, reset button, two 10G SFP+ ports, and two 1G SFP combo ports.

Figure 10. S3148P I/O Side View

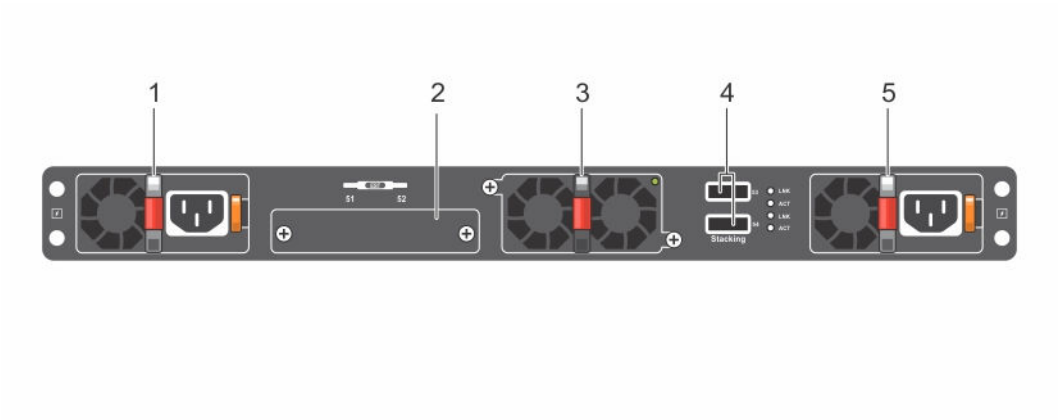


1. Console port.
2. Management port (RJ-45 type).
3. One universal serial bus port (USB Type-A) for storage.
4. Reset button.
5. Two 10G SFP+ ports.
6. Two 1G SFP combo ports.
7. Forty-eight 1G copper switch ports including UPoE/PoE+ function.

S3148P Platform PSU Side

The S3148P PSU side (shown in the following illustration) includes the power supplies, fan tray, and stacking ports.

Figure 11. S3148P PSU Side View



1. PSU 1.
2. Module slot.
3. Fan tray.
4. Mini-SAS stacking ports.
5. PSU 2.

Reset Button

The reset button allows you to perform a hard reset on the switch. The reset button is accessed through the pinhole on the I/O side of the chassis.

To perform a hard reset of the switch, insert the tip of a paper clip or similar tool into the pinhole. When the switch completes the boot process after the reset, it resumes operation with the most recently saved configuration. Any changes made to the running configuration that were not saved to the startup configuration prior to the reset are lost.

Power Supplies

S3100 systems support two hot-swappable power supply units (PSUs) with integrated fans that provide cooling for the system. The type of PSU differs by platform.

NOTE: Two PSUs are required for full redundancy, but the systems can operate with a single PSU. The S3100 systems ship with one PSU. You can purchase a second PSU as a separate purchased part.

CAUTION: **To prevent electrical shock, ensure that the system is grounded properly. If you do not ground your equipment correctly, excessive emissions may result. To ensure that the power cables meet your local electrical requirements, use a qualified electrician.**

The S3124, S3124F, and S3148 platforms include the following PSU options:

- One PSU — 200 Watt.
- Two PSUs — total of 400 Watt.
- V-lock receptacle for a power cord with the V-lock feature.

The S3124P platform includes the following PSU options:

- One PSU — 715 Watt (default configuration) or 1100 Watt.
- Two PSUs — total of 1430 Watt or 2200 Watt.

The S3148P platform includes the following PSU options:

- One PSU — 1100 Watt.
- Two PSUs — total of 2200 Watt.

Fans

The S3100 systems come from the factory with a two-fan unit tray that is field replaceable. Additionally, each PSU has an internal fan.

Plug-in Modules

One expansion slot is on the PSU side of the S3100 series chassis and can support either an SFP+ or 10GBase-T module.

Each plug-in module has two ports. The modules are sold separately.

Figure 12. SFP+ Module

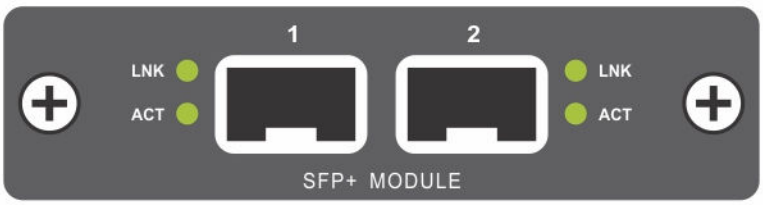


Figure 13. 10GBase-T Module

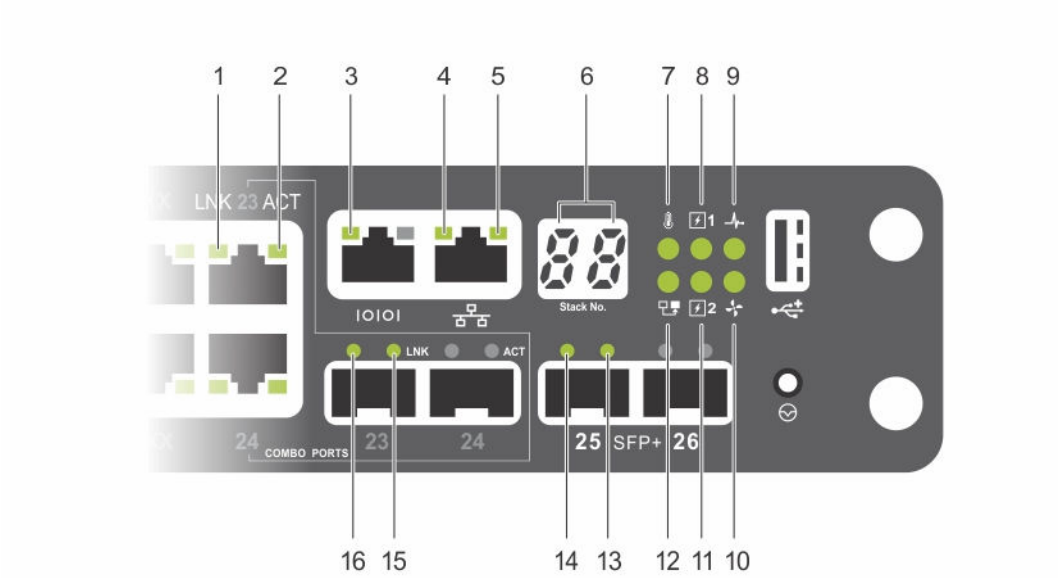
LED Status Information

The S3100 systems include LED displays on both the I/O and PSU side of the chassis.

You can also view status information through the command line interface (CLI) `show` commands and with the simple network management protocol (SNMP). For more information about these options, see the *Dell Command Line Reference Guide for the S3100 Series* and the *Dell Configuration Guide for the S3100 Series*.

The S3124 I/O side (shown in the following illustration) includes LED displays for port, system, and stack status.

Figure 14. S3124 I/O Side LEDs



1. Gigabit Ethernet (10/100/1000BASE-T) RJ-45 port LNK.
2. Gigabit Ethernet (10/100/1000BASE-T) RJ-45 port ACT.
3. Console port LNK.
4. Management port LNK.
5. Management port ACT.
6. Stack number.
7. Temperature.
8. PSU 1.
9. System Status.
10. Fan.
11. PSU 2.
12. M (Master).
13. SFP+ (10G) port ACT.
14. SFP+ (10G) port LNK.
15. Combo SFP (1G) port ACT.
16. Combo SFP (1G) port LNK.

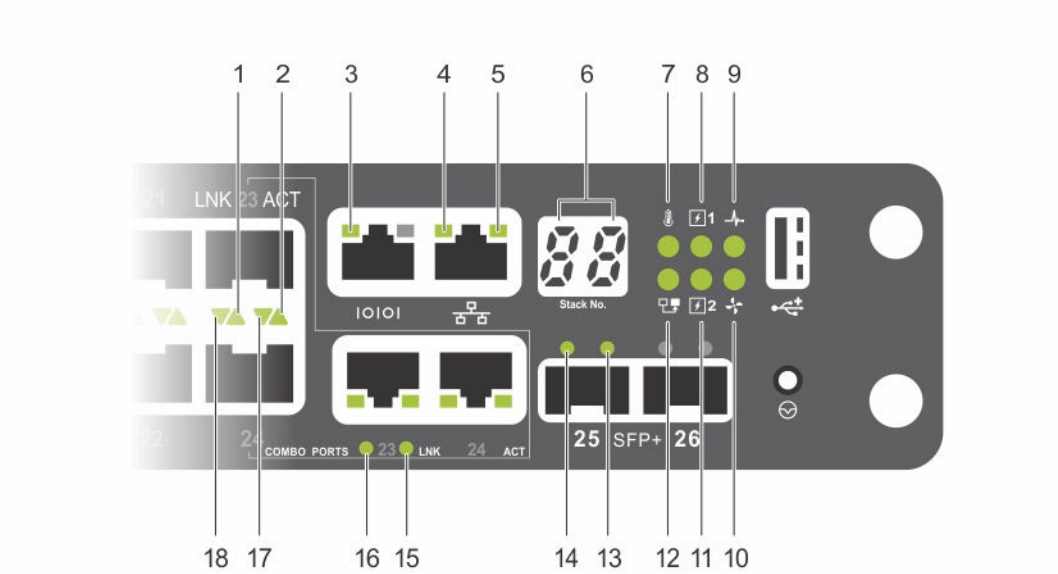
Table 1. S3124 I/O Side LED Descriptions

Feature	Detailed Description
Gigabit Ethernet (10/100/1000BASE-T) RJ-45 port	LNK (Link speed): • Green — link up at 1000 Mbps speed. • Yellow — link up at 10/100 Mbps speed. • Off — no link. ACT (Data transmission): • Blinking green — activity. • Off — no activity.
Console port	LNK (Link speed): • Off — no link. • Solid green — link.
Management port	LNK (Link speed): • Off — no link.

Feature	Detailed Description
	• Solid green — link on 1 G speed. • Solid amber — link on 100 M or 10 M speeds. ACT (Data transmission): • Blinking green — activity. • Off — no activity.
Stack number	• Displays the stack unit number of the switch. • Displays 1 if switch is not part of a stack.
Temperature	• Solid green — system temperature is below threshold limit. • Solid red — system temperature has exceeded the threshold limit of 75°C.
PSU 1 and 2	• Off — power failure or no power. • Solid green — normal operation. • Blinking green — locator function is enabled.
System status	• Solid green — normal operation. The CLI prompt is available. • Blinking green — boot-up in progress. • Solid red — critical system error. • Blinking red — noncritical system error (fan fail, power supply fail).
Fan	• Solid green — fan is powered and running at the expected rpm. • Solid red — fan failed.
M (Master)	• Solid green — system is in Stacking Master mode. • Off — switch is in Slave mode.
SFP+ (10G) port	LNK (Link speed): • Off — no link. • Solid green — link on 10 G speed. • Solid amber — link on 1 G speed. ACT (Data transmission): • Off — no link. • Blinking green — activity.
Combo SFP (1G) port	LNK (Link speed): • Off — no link. • Solid green — link on 1000 Mbps speed. • Solid amber — link on 100 Mbps speed. ACT (Data transmission): • Off — no link. • Blinking green — activity.

The S3124F I/O side (shown in the following illustration) includes LED displays for port, system, and stack status.

Figure 15. S3124F I/O Side LEDs



1. Gigabit Ethernet (100BASEFX/1000BASE-X) SFP port 23 LNK.
2. Gigabit Ethernet (100BASEFX/1000BASE-X) SFP port 23 ACT.
3. Console port LNK.
4. Management port LNK.
5. Management port ACT.
6. Stack number.
7. Temperature.
8. PSU 1.
9. System Status.
10. Fan.
11. PSU 2.
12. M (Master).
13. SFP+ (10G) port ACT.
14. SFP+ (10G) port LNK.
15. Combo SFP (1G) port ACT.
16. Combo SFP (1G) port LNK.
17. Gigabit Ethernet (100BASEFX/1000BASE-X) SFP port 24 ACT.
18. Gigabit Ethernet (100BASEFX/1000BASE-X) SFP port 24 LNK.

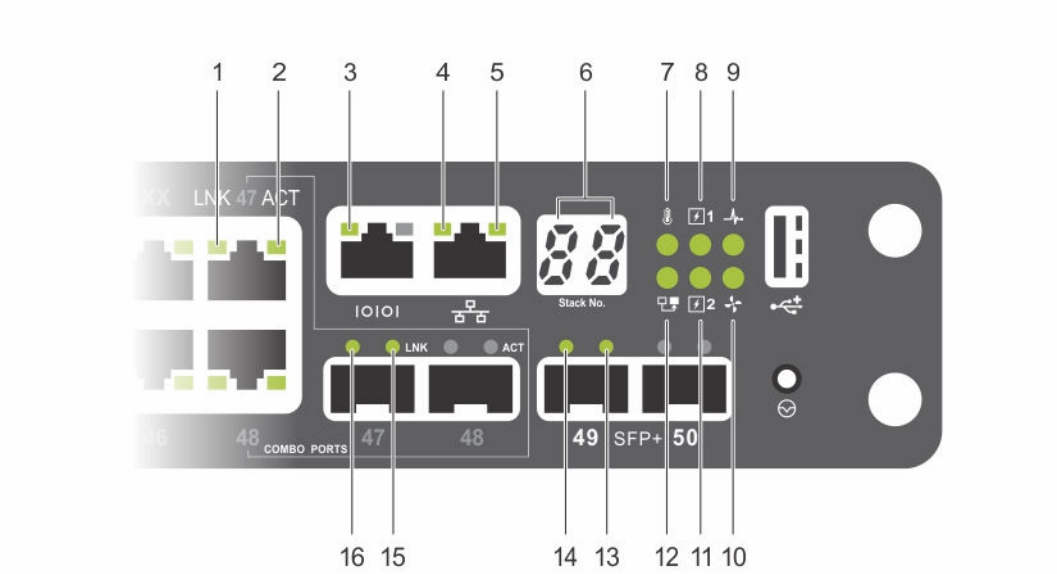
Table 2. S3124F I/O Side LED Descriptions

Feature	Detailed Description
Gigabit Ethernet (100BASEFX/1000BASE-X) SFP port	LNK (Link speed): • Off — no link. • Solid green — link on 1 Gbps speed. • Solid yellow — link on 100 Mbps speed. ACT (Data transmission): • Blinking green — activity. • Off — no activity.
Console port	LNK (Link speed): • Off — no link. • Solid green — link.

Feature	Detailed Description
Management port	LNK (Link speed): • Off — no link. • Solid green — link on 1 G speed. • Solid amber — link on 100 M or 10 M speeds. ACT (Data transmission): • Blinking green — activity. • Off — no activity.
Stack number	• Displays the stack unit number of the switch. • Displays 1 if switch is not part of a stack.
Temperature	• Solid green — system temperature is below threshold limit. • Solid red — system temperature has exceeded the threshold limit of 75°C.
PSU 1 and 2	• Off — power failure or no power. • Solid green — normal operation. • Blinking green — locator function is enabled.
System status	• Solid green — normal operation. The CLI prompt is available. • Blinking green — boot-up in progress. • Solid red — critical system error. • Blinking red — noncritical system error (fan fail, power supply fail).
Fan	• Solid green — fan is powered and running at the expected rpm. • Solid red — fan failed.
M (Master)	• Solid green — system is in Stacking Master mode. • Off — switch is in Slave mode.
SFP+ (10G) port	LNK (Link speed): • Off — no link. • Solid green — link on 10 G speed. • Solid amber — link on 1 G speed. ACT (Data transmission): • Off — no link. • Blinking green — activity.
Combo SFP (1G) port	LNK (Link speed): • Off — no link. • Solid green — link on 1000 Mbps speed. • Solid amber — link on 100 Mbps speed. ACT (Data transmission): • Off — no link. • Blinking green — activity.

The S3148 I/O side (shown in the following illustration) includes LED displays for port, system, and stack status.

Figure 16. S3148 I/O Side LEDs



1. Gigabit Ethernet (10/100/1000BASE-T) RJ-45 port LNK.
2. Gigabit Ethernet (10/100/1000BASE-T) RJ-45 port ACT.
3. Console port LNK.
4. Management port LNK.
5. Management port ACT.
6. Stack number.
7. Temperature.
8. PSU 1.
9. System Status.
10. Fan.
11. PSU 2.
12. M (Master).
13. SFP+ (10G) port ACT.
14. SFP+ (10G) port LNK.
15. Combo SFP (1G) port ACT.
16. Combo SFP (1G) port LNK.

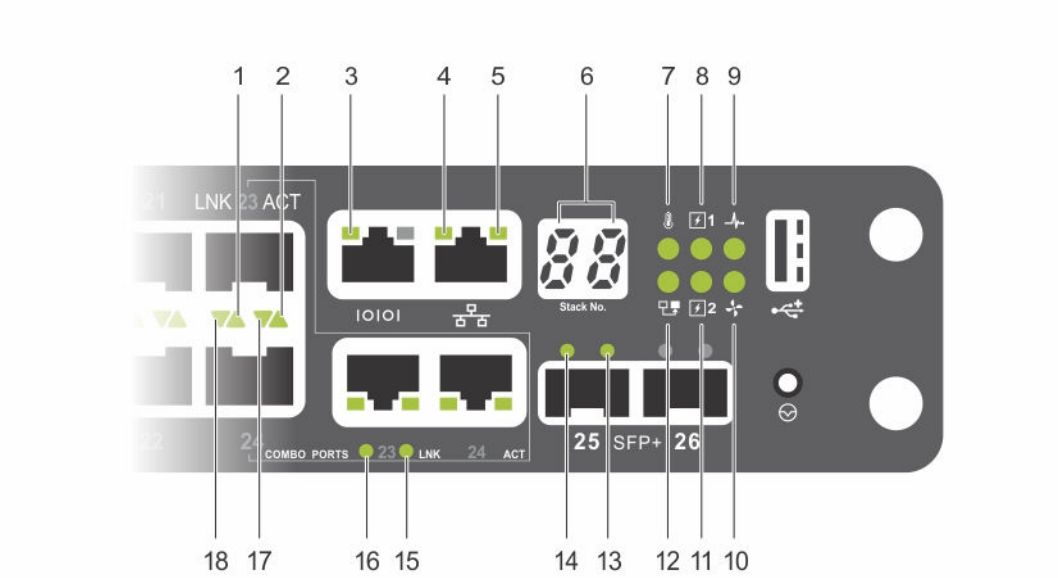
Table 3. S3148 I/O Side LED Descriptions

Feature	Detailed Description
Gigabit Ethernet (10/100/1000BASE-T) RJ-45 port	LNK (Link speed): • Green — link up at 1000 Mbps speed. • Yellow — link up at 10/100 Mbps speed. • Off — no link. ACT (Data transmission): • Blinking green — activity. • Off — no activity.
Console port	LNK (Link speed): • Off — no link. • Solid green — link.
Management port	LNK (Link speed): • Off — no link.

Feature	Detailed Description
	• Solid green — link on 1 G speed. • Solid amber — link on 100 M or 10 M speeds. ACT (Data transmission): • Blinking green — activity. • Off — no activity.
Stack number	• Displays the stack unit number of the switch. • Displays 1 if switch is not part of a stack.
Temperature	• Solid green — system temperature is below threshold limit. • Solid red — system temperature has exceeded the threshold limit of 75°C.
PSU 1 and 2	• Off — power failure or no power. • Solid green — normal operation. • Blinking green — locator function is enabled.
System status	• Solid green — normal operation. The CLI prompt is available. • Blinking green — boot-up in progress. • Solid red — critical system error. • Blinking red — noncritical system error (fan fail, power supply fail).
Fan	• Solid green — fan is powered and running at the expected rpm. • Solid red — fan failed.
M (Master)	• Solid green — system is in Stacking Master mode. • Off — switch is in Slave mode.
SFP+ (10G) port	LNK (Link speed): • Off — no link. • Solid green — link on 10 G speed. • Solid amber — link on 1 G speed. ACT (Data transmission): • Off — no link. • Blinking green — activity.
Combo SFP (1G) port	LNK (Link speed): • Off — no link. • Solid green — link on 1000 Mbps speed. • Solid amber — link on 100 Mbps speed. ACT (Data transmission): • Off — no link. • Blinking green — activity.

The S3124P I/O side (shown in the following illustration) includes LED displays for port, system, and stack status.

Figure 17. S3124P I/O Side LEDs



1. Gigabit Ethernet (10/100/1000BASE-T) RJ-45 port LNK.
2. Gigabit Ethernet (10/100/1000BASE-T) RJ-45 port ACT.
3. Console port LNK.
4. Management port LNK.
5. Management port ACT.
6. Stack number.
7. Temperature.
8. PSU 1.
9. System Status.
10. Fan.
11. PSU 2.
12. M (Master).
13. SFP+ (10G) port ACT.
14. SFP+ (10G) port LNK.
15. Combo SFP (1G) port ACT.
16. Combo SFP (1G) port LNK.

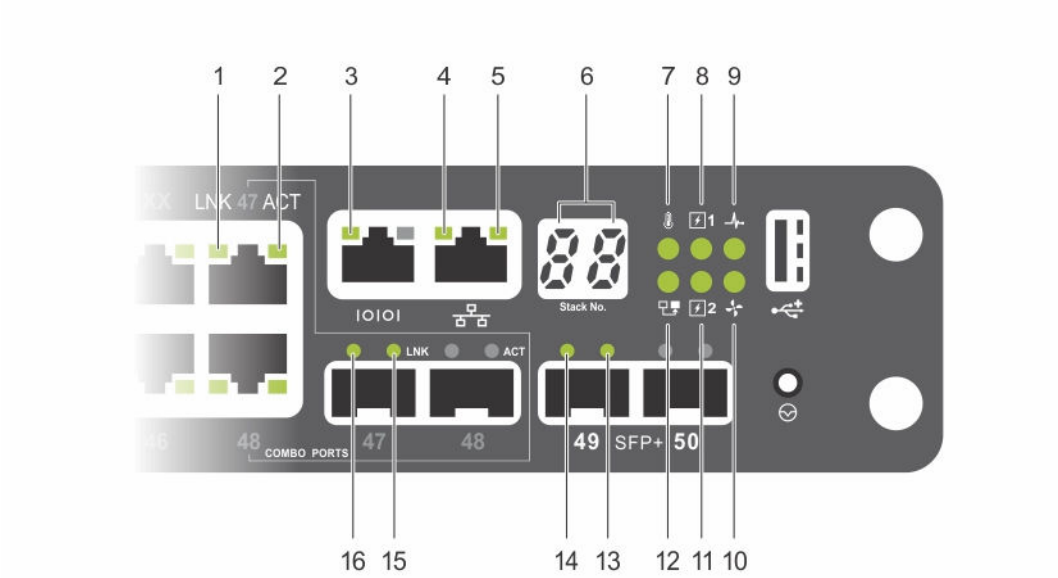
Table 4. S3124P I/O Side LED Descriptions

Feature	Detailed Description
Gigabit Ethernet (10/100/1000BASE-T) RJ-45 port	LNK (Link speed): • Green — link up at 1000 Mbps speed. • Yellow — link up at 10/100 Mbps speed. • Off — no link. ACT (Data transmission): • Blinking green — activity. • Off — no activity.
Console port	LNK (Link speed): • Off — no link. • Solid green — link.
Management port	LNK (Link speed): • Off — no link.

Feature	Detailed Description
	• Solid green — link on 1 G speed. • Solid amber — link on 100 M or 10 M speeds. ACT (Data transmission): • Blinking green — activity. • Off — no activity.
Stack number	• Displays the stack unit number of the switch. • Displays 1 if switch is not part of a stack.
Temperature	• Solid green — system temperature is below threshold limit. • Solid red — system temperature has exceeded the threshold limit of 75°C.
PSU 1 and 2	• Off — power failure or no power. • Solid green — normal operation. • Blinking green — locator function is enabled.
System status	• Solid green — normal operation. The CLI prompt is available. • Blinking green — boot-up in progress. • Solid red — critical system error. • Blinking red — noncritical system error (fan fail, power supply fail).
Fan	• Solid green — fan is powered and running at the expected rpm. • Solid red — fan failed.
M (Master)	• Solid green — system is in Stacking Master mode. • Off — switch is in Slave mode.
SFP+ (10G) port	LNK (Link speed): • Off — no link. • Solid green — link on 10 G speed. • Solid amber — link on 1 G speed. ACT (Data transmission): • Off — no link. • Blinking green — activity.
Combo SFP (1G) port	LNK (Link speed): • Off — no link. • Solid green — link on 1000 Mbps speed. • Solid amber — link on 100 Mbps speed. ACT (Data transmission): • Off — no link. • Blinking green — activity.

The S3148P I/O side (shown in the following illustration) includes LED displays for port, system, and stack status.

Figure 18. S3148P I/O Side LEDs



1. Gigabit Ethernet (10/100/1000BASE-T) RJ-45 port LNK.
2. Gigabit Ethernet (10/100/1000BASE-T) RJ-45 port ACT.
3. Console port LNK.
4. Management port LNK.
5. Management port ACT.
6. Stack number.
7. Temperature.
8. PSU 1.
9. System Status.
10. Fan.
11. PSU 2.
12. M (Master).
13. SFP+ (10G) port ACT.
14. SFP+ (10G) port LNK.
15. Combo SFP (1G) port ACT.
16. Combo SFP (1G) port LNK.

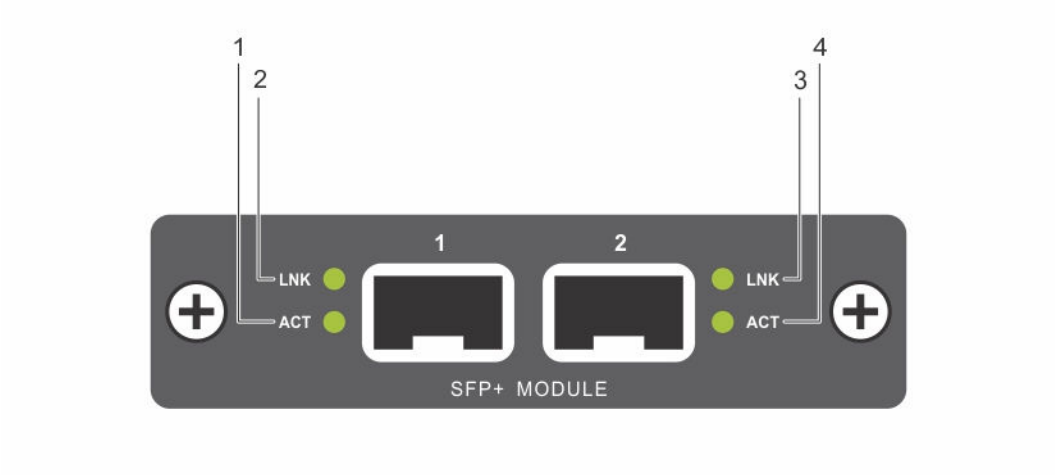
Table 5. S3124P I/O Side LED Descriptions

Feature	Detailed Description
Gigabit Ethernet (10/100/1000BASE-T) RJ-45 port	LNK (Link speed): • Green — link up at 1000 Mbps speed. • Yellow — link up at 10/100 Mbps speed. • Off — no link. ACT (Data transmission): • Blinking green — activity. • Off — no activity.
Console port	LNK (Link speed): • Off — no link. • Solid green — link.
Management port	LNK (Link speed): • Off — no link.

Feature	Detailed Description
	• Solid green — link on 1 G speed. • Solid amber — link on 100 M or 10 M speeds. ACT (Data transmission): • Blinking green — activity. • Off — no activity.
Stack number	• Displays the stack unit number of the switch. • Displays 1 if switch is not part of a stack.
Temperature	• Solid green — system temperature is below threshold limit. • Solid red — system temperature has exceeded the threshold limit of 75°C.
PSU 1 and 2	• Off — power failure or no power. • Solid green — normal operation. • Blinking green — locator function is enabled.
System status	• Solid green — normal operation. The CLI prompt is available. • Blinking green — boot-up in progress. • Solid red — critical system error. • Blinking red — noncritical system error (fan fail, power supply fail).
Fan	• Solid green — fan is powered and running at the expected rpm. • Solid red — fan failed.
M (Master)	• Solid green — system is in Stacking Master mode. • Off — switch is in Slave mode.
SFP+ (10G) port	LNK (Link speed): • Off — no link. • Solid green — link on 10 G speed. • Solid amber — link on 1 G speed. ACT (Data transmission): • Off — no link. • Blinking green — activity.
Combo SFP (1G) port	LNK (Link speed): • Off — no link. • Solid green — link on 1000 Mbps speed. • Solid amber — link on 100 Mbps speed. ACT (Data transmission): • Off — no link. • Blinking green — activity.

The SFP+ module (shown in the following illustration) includes LED displays for port status.

Figure 19. SFP+ Module — PSU Side



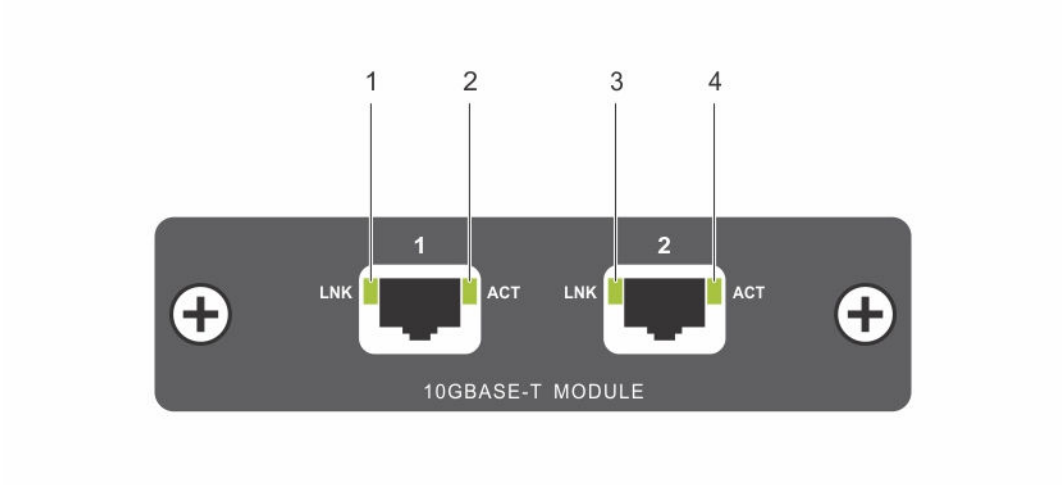
1. SFP+ module port 1: LNK.
2. SFP+ module port 1: ACT.
3. SFP+ module port 2: LNK.
4. SFP+ module port 2: ACT.

Table 6. SFP+ Module LEDs — PSU Side

Feature	Detailed Description
SFP+ (module) port 1	LNK (Link speed): • Off — no link. • Solid green — link on 10 G speed. • Solid amber — link on 1 G speed. ACT (Data transmission): • Off — no link. • Blinking green — activity.
SFP+ (module) port 2	LNK (Link speed): • Off — no link. • Solid green — link on 10 G speed. • Solid amber — link on 1 G speed. ACT (Data transmission): • Off — no link. • Blinking green — activity.

The 10GBase-T module (shown in the following illustration) includes LED displays for port status.

Figure 20. 10GBase-T Module



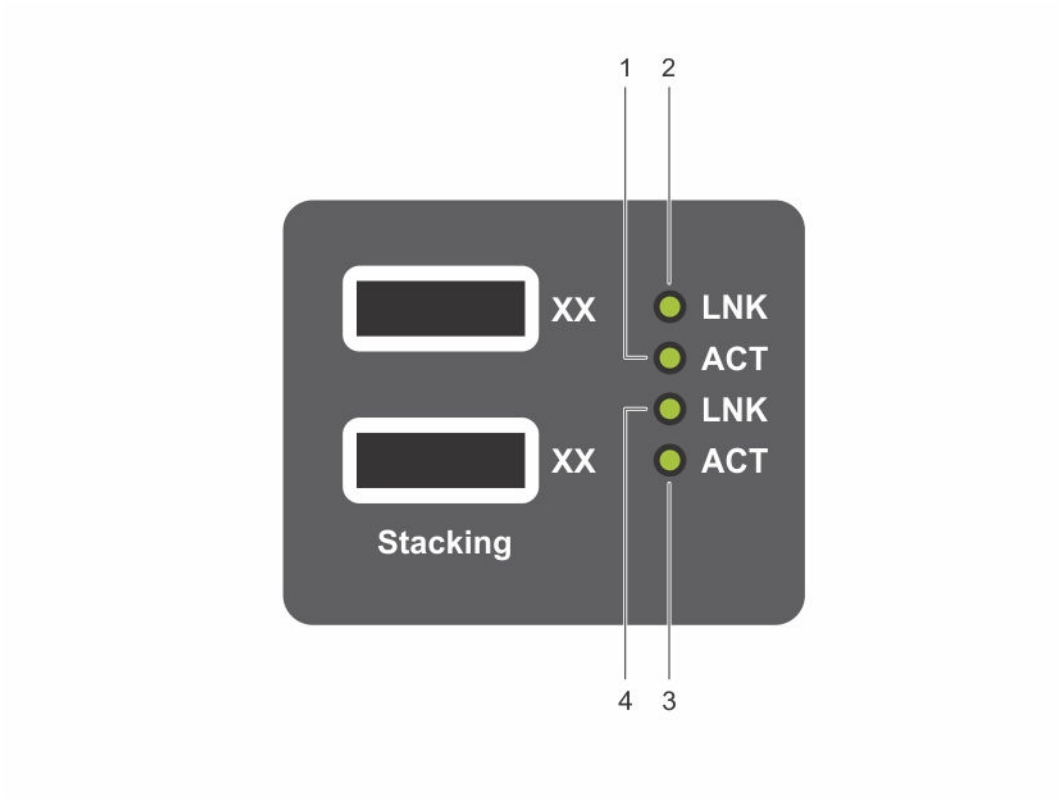
1. 10GBase-T module port 1: LNK.
2. 10GBase-T module port 1: ACT.
3. 10GBase-T module port 2: LNK.
4. 10GBase-T module port 2: ACT.

Table 7. 10GBase-T Module LEDs

Feature	Detailed Description
Link/SPD LED (left bi-color LED)	• Off — no link. • Solid green — link on 10 G speed. • Solid amber — link on 100 M or 1 G speeds.
Activity LED (right single color LED)	• Off — no link. • Blinking green — activity.

The stacking ports (shown in the following illustration) include LED displays for port status.

Figure 21. Stacking Port LEDs



1. Stack port 1: ACT.
2. Stack port 1: LNK.
3. Stack port 2: ACT.
4. Stack port 2: LNK.

Table 8. Stacking Port LEDs

Feature	Detailed Description
Link LED (single color LED)	• Off — no link. • Solid green — link.
Activity LED (single color LED)	• Off — no link. • Blinking green — activity.

The power supply LED handle (item 1 in the following illustration) displays power supply status.

Figure 22. Power Supply LED

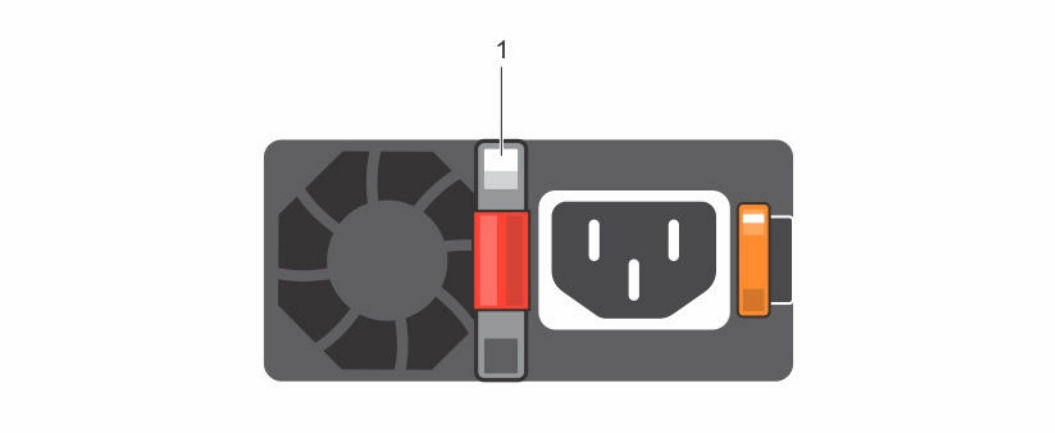


Table 9. Power Supply LED

Feature	Detailed Description
Handle LED	• Off — no power. • Solid green — normal operation. • Solid red — power failure.

Orderable S3100 Series Components

The S3100 series has the following orderable components:

- Second power supply (two is the maximum per switch).
  - S3124, , S3124F, and S3148 platforms support a 200W PSU.
  - S3124P and S3148P platforms support a 715W PSU or 1100W PSU.
- Power cord.
- 10GBase-T module.
- SFP+ module.
- Various optics and cables.

3

Site Location and Preparation

You can mount S3100 series switches in a standard 48.26 cm (19-inch) rack or placed on a flat surface.
You can install the system in:

- Network telecommunication facilities
- Data centers
- Other locations where the national electric code (NEC) applies

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

Topics:

- Site Selection
- Cabinet Placement
- Rack Mount

Site Selection

Dell Network's equipment is intended for installation in restricted access areas.

A restricted access area is one in which access can only be gained by service personnel by using a special tool, lock, key, or other means of security and access is controlled by the authority responsible for the location.

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

- Near an adequate power source. Connect the system to the appropriate branch circuit protection as defined by your local electrical codes.
- Environmental temperature between 32° to 113°F (0° to 45°C).
- Relative humidity that does not exceed 85% noncondensing.
- In a dry, clean, well-ventilated and temperature-controlled room, away from heat sources or direct sunlight.
- Away from sources of severe electromagnetic noise.
- Positioned in a rack or cabinet, or on a desktop with adequate space around and behind the system for proper ventilation and access.

Cabinet Placement

Install the system only in indoor cabinets designed for use in a controlled environment. Do not install the switch in outside plant cabinets.

The cabinet must meet the minimum cabinet size and airflow are according to the Electronic Industries Alliance (EIA) standard.

Rack Mount

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

4

Install a S3100 Series System

To install a S3100 series system, Dell Networking recommends completing the installation procedures in the order presented. Always handle the system and its components with care. Avoid dropping the system or its field replaceable units (FRUs).

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

Topics:

- Unpacking a S3100 Series Switch
- Storing Components
- Installing a Power Supply
- Replacing a Power Supply
- Installing a Fan Tray
- Replacing a Fan Tray
- Installing a Plug-In Module (Optional)
- Install Rack or Cabinet Hardware
- Installing the Dell ReadyRails System
- Configuring a Two-Post Flush-Mount
- Configuring a Two-Post Center-Mount
- Configuring a Four-Post Thread
- Installing a 1U Two-Post
- Installing a 1U Front-Rack
- Connecting the Stacking Ports (Optional)
- Powering Up
- Accessing the Console

Unpacking a S3100 Series Switch

To unpack your switch, follow these steps.

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

When unpacking each S3100 series switch, make sure that the following items are included:

- One S3100 series switch.
- One RJ-45 to DB-9 female cable.
- One Dell ReadyRails™ kit for rack installation, two mounting brackets, bolts, and cage nuts.
- One set of self-adhesive rubber pads for free-standing installation (four pads are included).
- One PSU.
- *Getting Started Guide*.
- *Safety and Regulatory Information*.
- *Warranty and Support Information*.

- *Software License Agreement*.

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.

Storing Components

If you do not install your system and components immediately, Dell Networking recommends properly storing the system and all optional components until you are ready to install them.

Follow these storage guidelines:

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

WARNING: ESD damage can occur when components are mishandled. Always wear an ESD-preventive wrist or heel ground strap when handling the system and its accessories. After you remove the original packaging, place the system and its components on an antistatic surface.

NOTE: If you do not install all components, verify that protective covers on the chassis are in place.

Installing a Power Supply

To install a power supply, follow these steps.

CAUTION: Remove the power cable from the power supplies prior to removing the power supply module itself. Power must not be connected prior to insertion in the chassis.

CAUTION: To prevent electrical shock, ensure that the system is grounded properly. If you do not ground your equipment correctly, excessive emissions may result. To ensure that the power cables meet your local electrical requirements, use a qualified electrician.

WARNING: ESD damage can occur if components are mishandled. Always wear an ESD-preventive wrist or heel ground strap when handling the system and its components.

NOTE: The PSU slides into the slot smoothly. Do not force the PSU into a slot as this may damage the PSU or the chassis. Ensure that you install the PSU correctly. When you install the PSU correctly, the power connector is on the right side of the PSU.

NOTE: The PSUs are field replaceable. When running with full redundancy (two power supplies installed and running), you can remove and replace one PSU while the other PSU is running, without disrupting traffic.

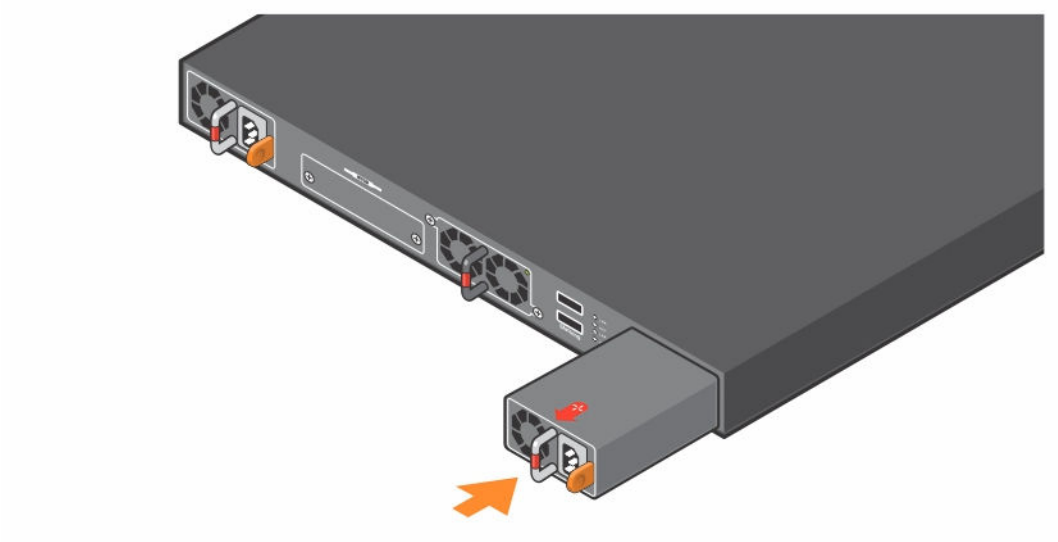
1 Remove the PSU slot cover from the PSU side of switch. You can select either of the two PSU slots, however, if you are using a single PSU, Dell Networking recommends using power supply 1 (PSU1) as the blank plate slot.
2 Remove the PSU from the electrostatic bag.
3 Insert the PSU into the switch PSU slot (insert the PSU-exposed PCB edge connector first). The PSU slot is keyed such that the PSU can only be fully inserted in one orientation.
4 Plug in the AC cord from the switch PSU to the external power source, such as an AC wall outlet.

   NOTE: The system powers up as soon as the cables are connected between the power supply and the power source. If you have not yet installed the switch in a rack, defer this step until you are ready to power up the system.

5 If you have a redundant PSU (a second PSU), repeat steps 1 through 4 using the second PSU slot on the S3100 series system.

6 If you use a single PSU, install a blank plate in the other PSU slot.

Figure 23. Installing a Power Supply



Replacing a Power Supply

To replace a power supply, follow these steps:

NOTE: If a PSU fails, you must completely replace it. There are no field serviceable components in the PSU. To request a replacement, see Dell Networking Support.

NOTE: If you use a single PSU, install a blank plate in the other PSU slot. Dell Networking recommends using power supply 1 (PSU1) as the blank plate slot.

NOTE: The PSU slides into the slot smoothly. Do not force the PSU into a slot as this may damage the PSU or the chassis. Ensure that you install the PSU correctly. When you install the PSU correctly, the power connector is on the right side of the PSU.

NOTE: The PSUs are field replaceable. When running with full redundancy (two power supplies installed and running), you can remove and replace one PSU while the other PSU is running, without disrupting traffic.

1 Disconnect the power cable from the failed PSU.
2 Push the orange lever to unlock the failed PSU and then use the grab handle to slide it out of the power supply bay.
3 Remove the replacement PSU from the electrostatic bag.
4 Insert the replacement PSU into the switch PSU slot (insert the PSU-exposed PCB edge connector first). The PSU slot is keyed such that the PSU can only be fully inserted in one orientation.
5 Plug in the AC cord from the switch PSU to the external power source, such as an AC wall outlet.

NOTE: The system powers up as soon as the cables are connected between the power supply and the power source. If you have not yet installed the switch in a rack, you can defer this step until after the switch is installed in a rack and you are ready to power up the system.

Installing a Fan Tray

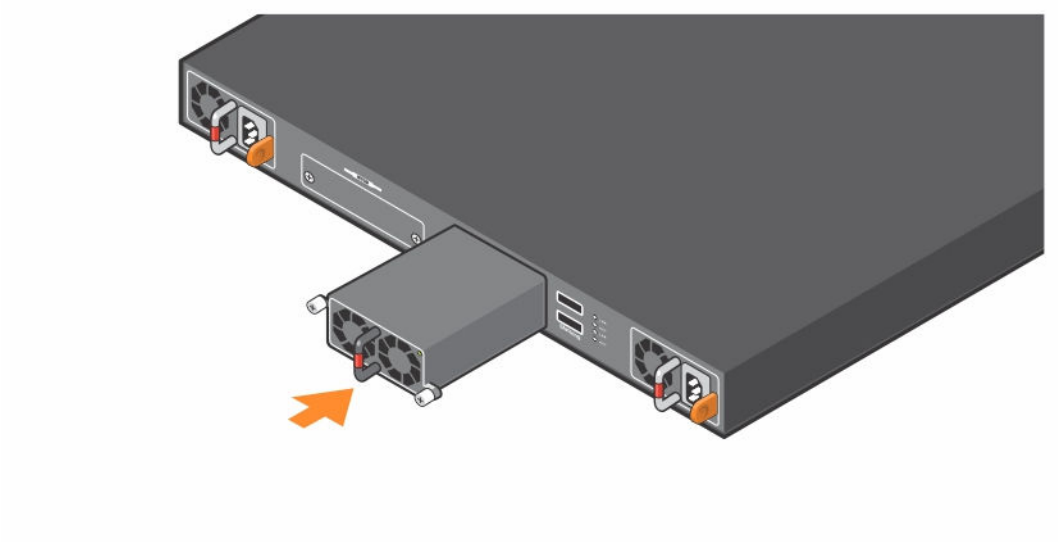
To install a fan tray, follow these steps:

NOTE: The fan tray is hot-swappable.

1 Take the fan tray out of the shipping box.
2 Use the grab handle on the fan tray to slide it into the bay.

3 Tighten the captive screws on the fan tray with a screwdriver. Ensure that the fan tray is secure.

Figure 24. Installing a Fan Tray



Replacing a Fan Tray

To replace a fan tray, follow these steps:

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

CAUTION: **Check the fans at six-month intervals and replace them as necessary. To accurately determine replacement intervals, monitor the speeds of the cooling fans regularly.**

NOTE: If a fan tray fails, you must completely replace it. There are no field serviceable components in the fan tray unit. To request a replacement, see Dell Networking Support.

1 Loosen the securing screws on the sides of the failed fan tray.
2 Use the grab handle to slide the fan tray out of the bay.
3 Use the grab handle on the replacement fan tray to slide it into the bay.
4 Tighten the captive screws on the replacement fan tray with a screwdriver. Ensure that the fan tray is secure.

Installing a Plug-In Module (Optional)

The S3100 series switches support SFP+ and 10GBase-T plug-in modules in the expansion slots on the PSU side of the switch.

CAUTION: **The plug-in modules are not hot-swappable.**

To install a plug-in module, follow these steps:

1 Insert the module into an expansion slot.
2 Reboot the switch.
The switch recognizes the new module.

After a module is recognized, its configuration is stored locally on the switch as the switch default. The module configuration appears in the running configuration for informational purposes. For more information, see the *Dell Configuration Guide for the S3100 Series*.

Install Rack or Cabinet Hardware

You may either place the switch on the rack shelf or mount the switch directly into a 19" wide, EIA-310-E-compliant rack (four-post, two-post, or threaded methods).

The ReadyRails system is provided for one 1U front-rack and two-post installations. The ReadyRails system includes two separately packaged rail assemblies.

⚠ **WARNING: This 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, this can cause damage to the equipment and possible 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 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 system 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 40°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 PSU side facing in the downward position.

Installing the Dell ReadyRails System

The ReadyRails rack mounting system is provided to easily configure your rack for system installation.

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).

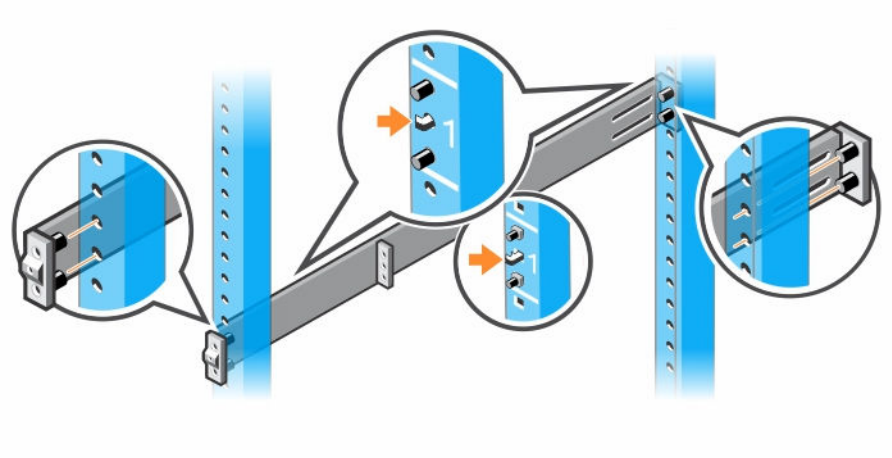
1 With the ReadyRails flange ears facing outward, place one rail between the left and right vertical posts. Align and seat the rear flange rail pegs in the rear vertical post flange. Item 1 of the following illustration and its extractions show how the pegs appear in both the square and non-threaded round holes.

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

3 Repeat this procedure for the second rail.

4 To remove each rail, pull on the latch release button on each flange ear and unseat each rail. See item 3 in the following illustration.

Figure 25. 1U Tool-Less Configuration



Configuring a Two-Post Flush-Mount

To install your switch using a two-post flush-mount configuration, follow these steps.

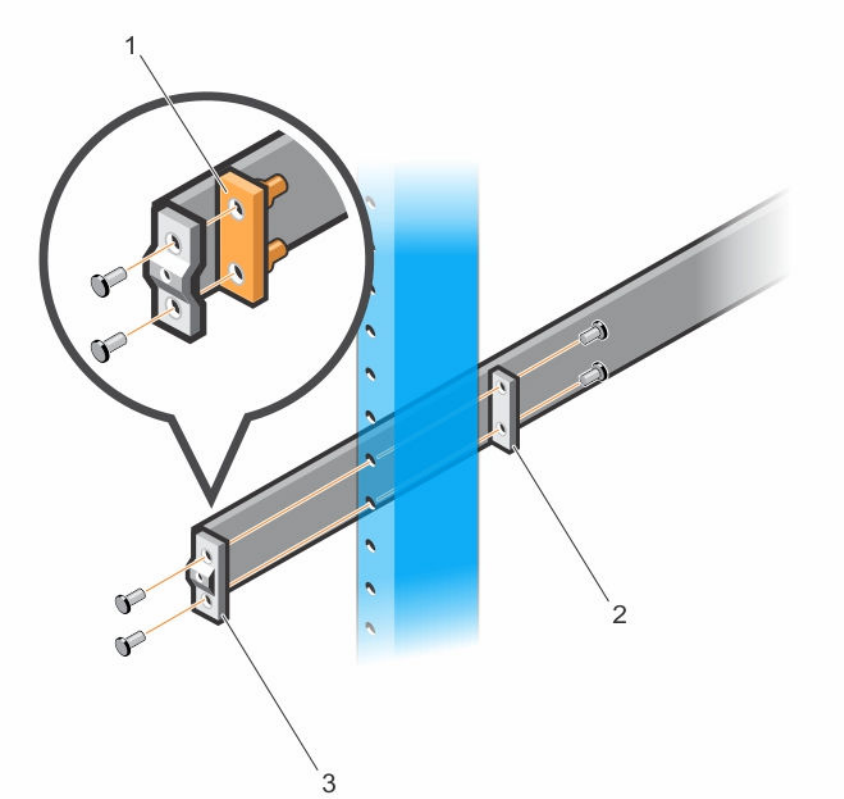
1 For this configuration, remove the castings from the front side of each ReadyRails assembly. See item 1 in the following illustration. To remove the two screws from each front flange ear (on the switch side of the rail) and remove each casting, use a Torx driver. Retain the castings for future rack requirements. It is not necessary to remove the rear flange castings.

2 Attach one rail to the front post flange with two user-supplied screws. See item 2 in the following illustration.

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 in the following illustration.

4 Repeat this procedure for the second rail.

Figure 26. Installing the Switch using a Two-Post Flush-Mount Configuration



Configuring a Two-Post Center-Mount

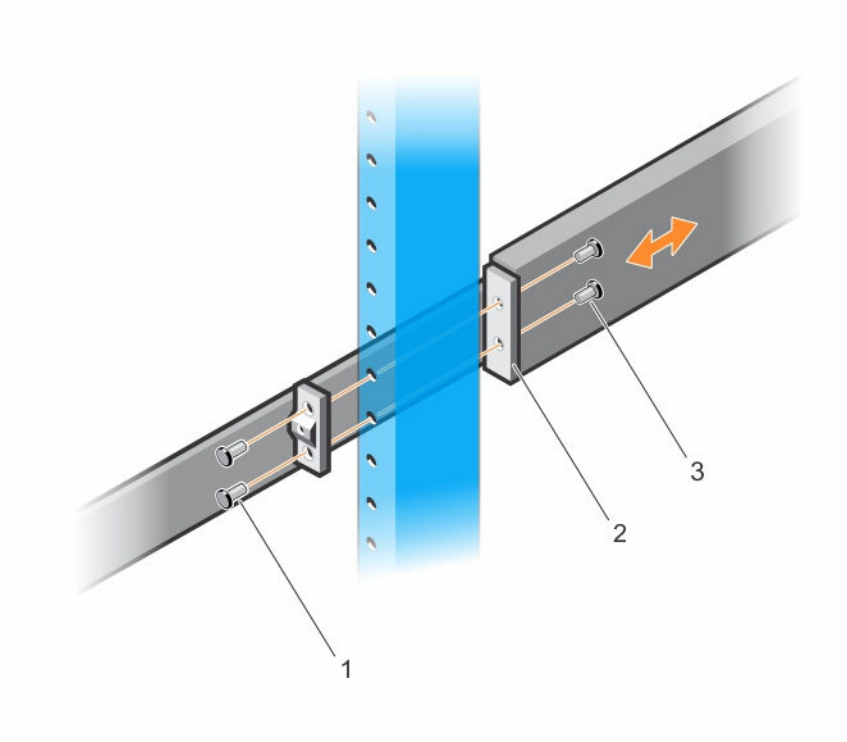
To install your switch in a two-post center-mount configuration, follow these steps.

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 in the following illustration.

2 Slide the back bracket towards the post and secure it to the post flange with two user-supplied screws. See item 2 in the following illustration.

3 Repeat this procedure for the second rail.

Figure 27. Installing the Switch in a Two-Post Center-Mount Configuration



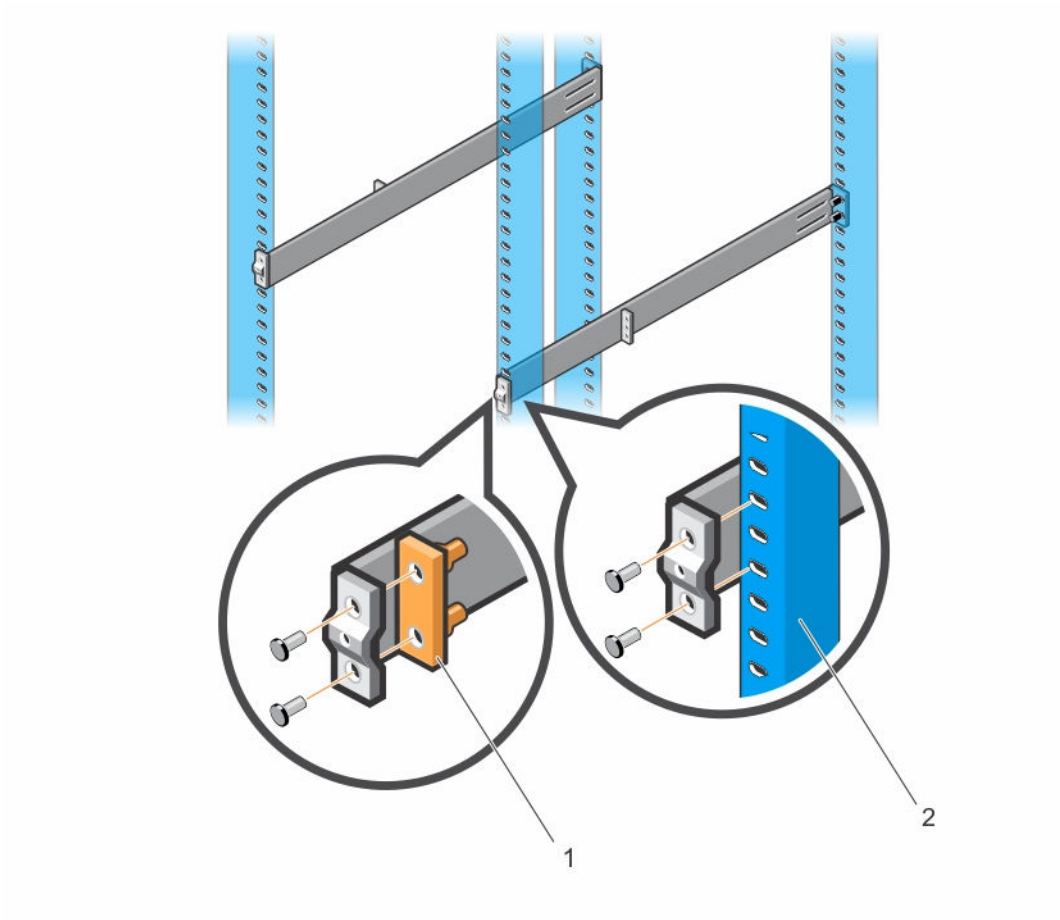
Configuring a Four-Post Thread

To install your switch in a four-post thread configuration, follow these steps.

1 For this configuration, remove the flange ear castings from each end of the ReadyRails assemblies. To remove the two screws from each flange ear and remove each casting, use a Torx driver. See item 1 in the following illustration. Retain the castings for future rack requirements.

2 For each rail, attach the front and rear flanges to the post flanges with two user-supplied screws at each end. See item 2 in the following illustration.

Figure 28. Four-Post Threaded Configuration



Installing a 1U Two-Post

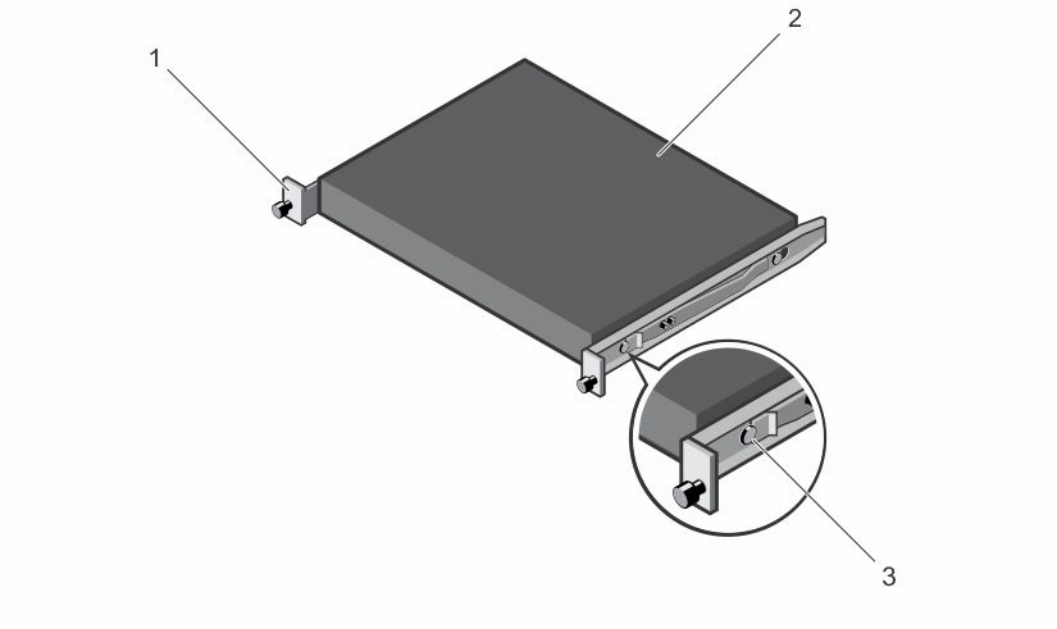
You can install the switch in 1U two-post (flush and center) configurations. Slide the system into the rails in the same manner as the four-post configurations.

Installing a 1U Front-Rack

To install the switch in a 1U front-rack configuration, configure the rails that are attached to the system.

1 Attach the switch rails (inner chassis members) to the switch. Item 3 in the following illustration shows the detail for the front standoff with the locking tab.

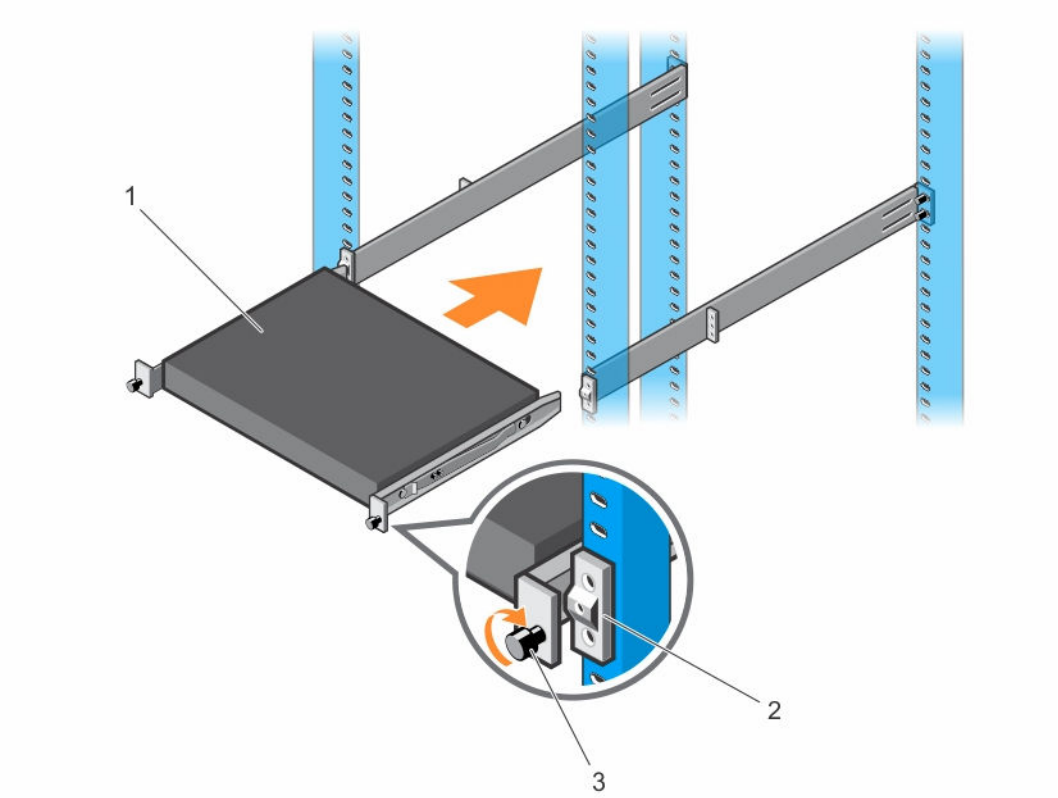
Figure 29. Attaching the Switch Rails



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

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

Figure 30. Installing the Switch in a Front-Rack Configuration



Connecting the Stacking Ports (Optional)

You can connect up to 12 switches to operate as a single unit, using two fixed Mini Serial Attached SCSI (miniSAS) stacking connectors on the PSU side. When you connect multiple switches together through the stack ports, the stack operates and is managed as a single entity. You can combine different platforms within the S3100 series into one stack.

Dell recommends installing the switches connected in a ring topology. Assemble and cable the stack of switches before powering up and configuring it.

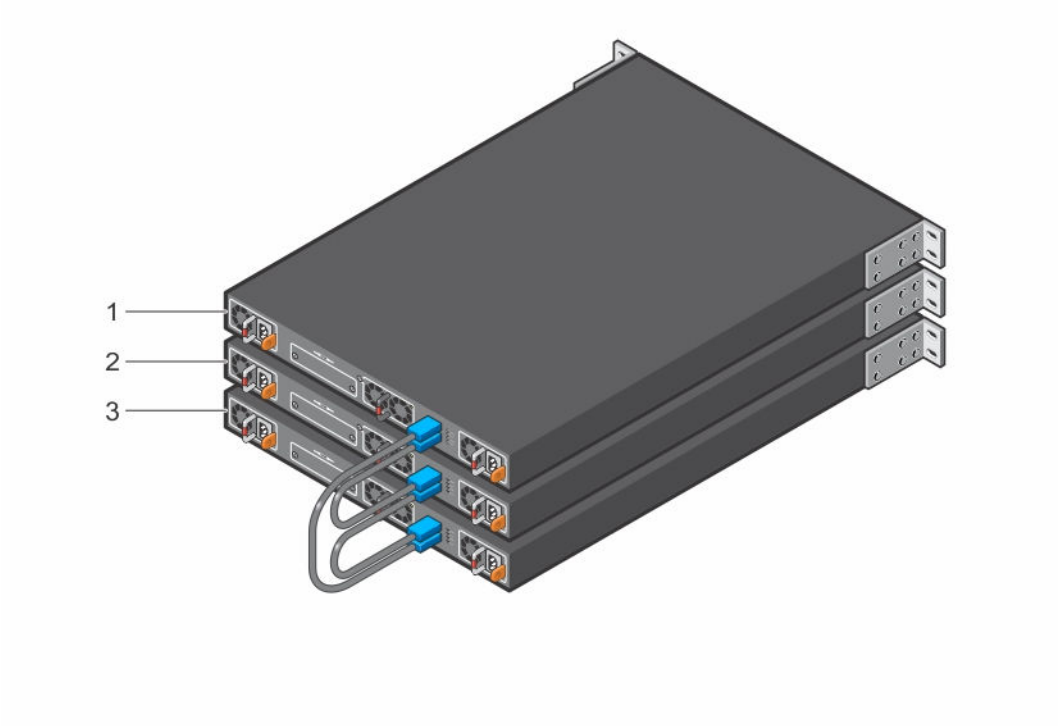
To install your switches in a ring topology, follow these steps.

1 Connect one of the mini-SAS cables into either of the stacking ports of the top switch and the switch directly below it. As necessary, use a separately purchased, longer (1 meter or 3 meter) mini-SAS cable to connect the switches.

2 Repeat this process until all the devices are connected.

3 Use the remaining stacking cable to connect the two remaining stacking ports together so that a ring topology is assembled.

Figure 31. Connecting a Stack of Switches



A stack of three switches connected in a ring topology has these physical connections between the switches:

1. The bottom mini-SAS port on Unit 1 is connected to the top mini-SAS port on Unit 2.
2. The bottom mini-SAS port on Unit 2 is connected to the top mini-SAS port on Unit 3.
3. The bottom mini-SAS port on Unit 3 is connected to the top mini-SAS port on Unit 1.

After you power up a stack for the first time, the switches elect a master switch, which may occupy any location in the stack. The Master LED on the front panel is illuminated on the master unit.

If a master failure is detected in the stack, the stacking feature supports a standby unit that assumes the master unit role. The standby unit is automatically selected in the stack. When a master failure is detected, the standby unit initializes the control plane and enables all other stack units with the current configuration. The standby unit maintains a synchronized copy of the running configuration for the stack.

NOTE: You can (optionally) use the CLI to assign the master unit role, or select a different stack member as the standby unit, based on priority or MAC address. For more information, see the *Dell Configuration Guide for the S3100 Series* or the *Dell Command Line Reference Guide for the S3100 Series*.

Powering Up

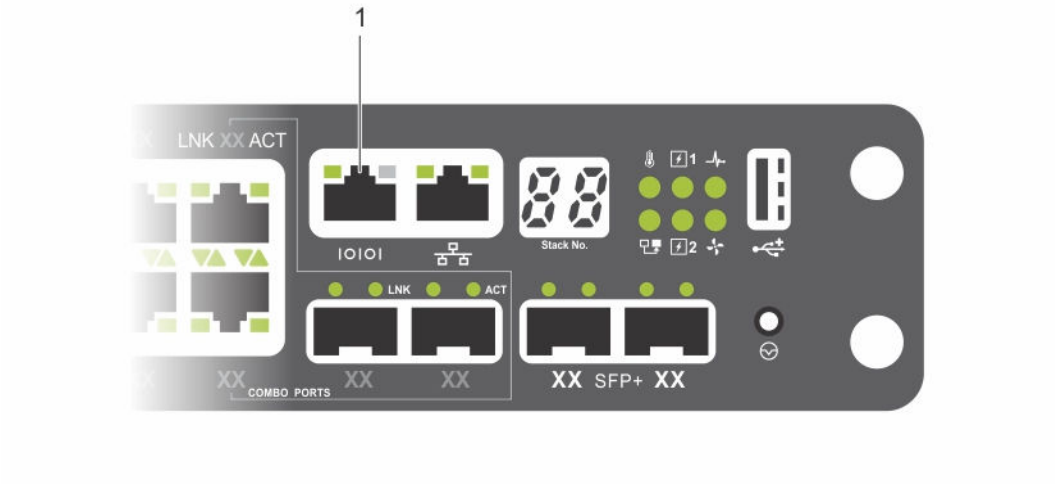
To connect the chassis to the applicable power source, use the appropriate power cord. The system is powered up as soon as the power cord is connected between the system and the power source.

CAUTION: **Always disconnect the power cable before you service the power supply slots.**

Accessing the Console

The console port is on the I/O side of the chassis (item 1 in the following illustration).

Figure 32. Console Port Location



NOTE: You must have a password configured on a virtual terminal line before you can Telnet into the system. Therefore, use a console connection when connecting to the system for the first time. Before starting this procedure, be sure that you have a terminal emulation program already installed on your PC.

NOTE: If you are configuring a stack of switches, serial console access to the stack manager is available from any serial port using the local CLI. Only one serial console session at a time is supported.

To access the console port, follow these steps.

1 Install an RJ-45 copper cable into the console port. To connect the console port to a terminal server, use a rollover cable.
2 Connect the other end of the cable to the DTE terminal server.
3 Set the default terminal settings as follows.
   - 9600 baud rate.
   - No parity.
   - Eight data bits.
   - One stop bit.
   - No flow control.

S3100 Series Technical Specifications

CAUTION: Operate the product at an ambient temperature not higher than 40°C.

CAUTION: Lithium Battery Caution: There is a danger of explosion if the battery is incorrectly replaced. Replace only with same or equivalent type. Dispose of the batteries according to the manufacturer's instructions.

Table 10. S3100 Series Chassis Physical Design

Parameter	Specifications
Height	1.71 inches (43.5 mm).
Width	17.09 inches (434 mm).
Depth	16.02 inches (407 mm).
Weight	S3124 — 13.45 lbs (6.1 kg).
	S3148 — 13.89 lbs (6.3 kg).
	S3124F — 13.45 lbs (6.1 kg).
	S3124P — 14.77 lbs (6.7 kg).
	S3148P — 15.65 lbs (7.1 kg).

Table 11. S3100 Series Environmental Parameters

Parameter	Specifications
Operating temperature	32° to 113°F (0° to 45°C).
Operating humidity	8% to 85% (RH), non-condensing.
Storage temperature	–40° to 158°F (–40° to 70°C).
Storage humidity	5% to 90% (RH), non-condensing.
Maximum thermal output	24 port — 137.88 BTU/hr.
	48 port — 213.98 BTU/hr.
Maximum operational altitude	10,000 feet (3,048 meters)
Maximum non-operational altitude	39,370 feet (12,000 meters)

Table 12. S3100 Series Power Requirements

Parameter	Specifications
Power supply	100–240 VAC 50/60 Hz.
Maximum current draw per system (excluding PoE power)	24 port — 0.40 watts @40.41 watts/100vac, 0.20 watts @40.41 watts/200vac.

Parameter	Specifications
	48 port — 0.63 watts @62.71 watts/100vac, 0.32 watts @62.71 watts/200vac.
Maximum power consumption (excluding PoE power)	63 Watts.

Table 13. PoE Power Consumption (S3124P and S3148P Platforms)

Platform	Input Voltage	Power Supply Configuration	Max Steady Current Consumption (A)	Max Steady Power (W)
S3124P	100V	PSU1+PSU2	13.1	1310.0
	110V	PSU1+PSU2	11.7	1287.0
	120V	PSU1+PSU2	10.6	1272.0
	220V	PSU1+PSU2	5.6	1232.0
	240V	PSU1+PSU2	5.2	1240.8
S3148P	100V	PSU1+PSU2	21.8	2180.0
	110V	PSU1+PSU2	19.5	2145.0
	120V	PSU1+PSU2	17.8	2136.0
	220V	PSU1+PSU2	9.31	2048.2
	240V	PSU1+PSU2	8.6	2064.0

Table 14. PoE Power Budget Limit — One PSU Support (S3124P and S3148P Platforms)

Platform	System Power Max. Dissipation	Max. PSU Output Ability	PoE+ Power Turn-on Limitation
S3124P	110V	715W	Power budget is 550W: The total PoE supplied power must not exceed 550W.
S3148P	140V	1100W	Power budget is 950W: The total PoE supplied power must not exceed 950W.

Table 15. PoE Power Budget Limit — Two PSUs Support (S3124P and S3148P Platforms)

Platform	System Power Max. Dissipation	Max. PSU Output Ability	PoE+ Power Turn-on Limitation
S3124P	110V	715W	Power budget is 1100W: All PoE+ ports can supply maximum power.
S3148P	140V	2200W	Power budget is 1900W: All PoE+ ports can supply maximum power.

NOTE: The switch firmware controls the PoE power budget for each interface. The administrator can limit the power supplied on a port or prioritize power to some ports over others. For more information, see the *Dell Command Line Reference Guide for the S3100 Series* and the *Dell Configuration Guide for the S3100 Series*.

Topics:

- IEEE Standards
- Agency Compliance
- USA Federal Communications Commission (FCC) Statement
- European Union EMC Directive Conformance Statement
- Japan: VCCI Compliance for Class A Equipment
- Korean Certification of Compliance
- Safety Standards and Compliance Agency Certifications
- Electromagnetic Compatibility (EMC)
- Product Recycling and Disposal

IEEE Standards

The system complies with the following IEEE standards.

- 802.1AB LLDP
- 802.1ag Connectivity fault Management
- 802.1D Bridging, STP
- 802.1p L2 Prioritization
- 802.1Q VLAN Tagging, Double VLAN Tagging, GVRP
- 802.1s MSTP
- 802.1w RSTP
- 802.3ab Gigabit Ethernet (1000BASE-T)
- 802.3ac Frame Extensions for VLAN Tagging
- 802.3ad Link Aggregation with LACP
- 802.3ae 10 Gigabit Ethernet (10GBASE-X)
- 802.3az Energy Efficient Ethernet
- 802.3ba 40 Gigabit Ethernet (40GBase-SR4, 40GBase-CR4) on optical ports
- 802.3u Fast Ethernet (100BASE-TX)
- 802.3x Flow Control
- 802.3z Gigabit Ethernet (1000BASE-X)
- ANSI/TIA-1057 (LLDP-MED)
- Dell Networking (PVST+)
- MTU (12,000 bytes)

Agency Compliance

⚠ **WARNING: ESD damage can occur if components are mishandled. Always wear an ESD-preventive wrist or heel ground strap when handling the system and its components.**

USA Federal Communications Commission (FCC) 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 Networking 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.

Figure 33. Canadian Department of Communication Statement

European Union EMC 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 Networking cannot accept responsibility for any failure to satisfy the protection requirements resulting from a nonrecommended modification of this product, including the fitting of non-Dell Networking option cards.

This product has been tested and found to comply with the limits for Class A Information Technology Equipment according to CISPR 22/European Standard EN 55022. The limits for Class A equipment were derived for commercial and industrial environments to provide reasonable protection against interference with licensed communication equipment.

⚠ **WARNING: 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.**

Additional information can be found at http://www.dell.com/regulatory_compliance

Japan: VCCI Compliance for Class A Equipment

Figure 34. 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。

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.

⚠ **WARNING:** **Use the AC power cords with Dell Networking equipment only. Do not use Dell Networking AC power cords with any unauthorized hardware.**

Figure 35. Japan: Warning Label

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。

Korean Certification of Compliance

Figure 36. 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 37. Korean Package Label

	[*equipment type*]
품명(Product Name)	Ethernet Switch
모델명(Model)	[*model number*]
신청인(Applicant)	Force10 Networks, Inc.
제조자(Manufacturer)	Delta Networks, (Dongguan) Ltd.
제조년월(Manufacturing Date)	[*date*]
제조국(Country of Origin)	China

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

Electromagnetic Compatibility (EMC)

Emissions

- International: CISPR 22: 2008, Class A
- Australia/New Zealand: AS/NZS CISPR 22:2009, Class A
- Canada: ICES-003, Issue-4, Class A
- Europe: EN55022: 2010 (CISPR 22: 2008), Class A
- Europe: EN 55032: 2012, Class A
- Japan: VCCI V-3/2011.04 Class A
- USA: FCC CFR47 Part 15, Subpart B, Class A

Immunity

- EN 300 386 v1.6.1(2012–09) EMC for Network Equipment
- EN55022 2006, Class A
- EN 55024: 2010
- 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

Product Recycling and Disposal

You must recycle or discard this system according to applicable local and national regulations. Dell Networking encourages owners of information technology (IT) equipment to responsibly recycle their equipment when it is no longer needed. Dell Networking offers a variety of 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 Networking 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 38. 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 Networking 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.

To access information on Dell Networking product recycling offerings, go to https://www.dell.com/support/.

6

Dell Networking Support

The Dell Networking Support site provides a range of documents and tools to assist you with using Dell Networking equipment and mitigating the impact of network outages. Through the support site you can obtain technical information regarding Dell Networking products, access software upgrades and patches, download available management software, and manage your open cases. The Dell Networking support site provides integrated, secure access to these services.

To access the Dell Networking 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 from the drop-down menu.

- To obtain product-specific information, enter the 7-character service tag or 11-digit express service code of your S3100 series system and click **Submit**.
- To receive additional kinds of technical support, click **Contact Us**. On the Contact Information web page, click **Technical Support**.

To access S3100 series documentation, go to https://www.dell.com/manuals/.

To search for drivers and downloads, go to https://www.dell.com/drivers/.

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

Luggage Tag

The S3100 series systems have a pull-out tag (known as a luggage tag) on the PSU side of the system.

1. Service Tag
2. PPID
3. Express Service Code
4. MAC Address

Specification Sheet

Dell EMC Networking Transceivers and Cables

Features and benefits

- Hot-swappable for simplified maintenance (no power- down required for installation or replacement)
- Some of the smallest and lowest-power 10GbE, 25GbE, 40GbE and 100GbE optical form factors in the industry
- Optical interoperability with SFP, SFP+ and selected QSFP modules
- Offers “pay-as-you-use” model for lower total cost of ownership (TCO) and ease of technology migration
- Reliability ensured by rigorous optics validation, qualification and certification
- Dell EMC product specification encoding feature allows Dell EMC Networking platforms to recognize certified and supported transceivers
- Guaranteed to work with Dell EMC Networking platforms under temperature and process variations with optimal performance

Dell EMC provides optical and cabling options for each Ethernet speed. Long- and short-range optical connectivity options are suited to a wide range of data center and campus applications. For the shortest connections, passive copper direct attach cable (DAC) is a simple and cost-effective solution.

1GbE solutions

1GbE SFP optical transceivers include short-reach (SX), long-reach (LX) and extended long-reach (ZX). A 1000BASE-T transceiver facilitates twisted-pair copper connections.

10GbE solutions

10GbE SFP+ optical transceivers include short-reach-lite (USR), short-reach (SR), long-reach (LR) and extended long-reach (ER and ZR). The 10GbE SFP+ receptacle will also recognize 1GbE SFP transceivers. An LRM transceiver supports links up to 220m over older OM1 and OM2 grade multimode fiber. A 10GBASE-T transceiver facilitates twisted-pair copper connections.

25GbE solutions

25GbE SFP28 optical transceivers include short-reach (SR) and long-reach (LR) variations. In 25GbE networking environments, the 100GbE ports on our Z9100-ON, S6100-ON, S4124-ON and S4148-ON switches can be broken out into four 25GbE lanes by use of either active optical (AOC) or passive copper (DAC) breakout cables.

40GbE solutions

40GbE (4×10GbE) QSFP+ optical transceivers include short-reach (SR4), long-reach (LR4) and extended long-reach (ER4). In many cases, 1GbE SFP and 10GbE SFP+ optics can be readily inserted, recognized, and utilized in the 40GbE QSFP+ receptacle through the use of a (QSA28) pluggable adapter. The adapter supports standard SFP and SFP+ optics in a QSFP+ socket providing backwards compatibility, while the 40GbE port for future bandwidth expansion. 40GbE QSFP+ ports support both optical and passive copper (DAC) breakout cables where the four 10GbE lanes are broken out into four individual 10GbE SFP+ interfaces. This solution can be deployed with a single active optical cable (AOC) with integrated QSFP+ and SFP+ transceivers or through the use of a passive fiber breakout cable.

SFP+ DAC

QSFP+ DAC

QSFP+ AOC

QSFP+ DAC breakout

SFP SFP+

QSFP+

QSFP+ MPO pigtail

SFP RJ45

Dell EMC enables cost-savings through the reuse of a legacy 10GbE fiber plant to support new 40GbE connections with our 40GbE duplex (multimode) fiber solutions. These solutions use wavelength multiplexing (SM4) and/or directional multiplexing (BIDI) to transport 40GbE over a single (multimode) fiber pair.

50GbE solutions

The 50GbE (consortium) specification utilizing half-populated QSFP28 modules. In 50GbE networking environments, the 100GbE ports on our Z9100-ON, S6100-ON, S4124-ON and S4148-ON switches can be broken out into two pairs of 2×25GbE through a QSFP28 to 2×QSFP28† passive copper direct attach breakout cable (breakout DAC). (The QSFP28† is a half-populated QSFP28 with 2×25GbE lanes.)

100GbE solutions

100GbE (4×25GbE) QSFP28 optical transceivers include short-reach (SR4), intermediate-reach (CWDM4), long-reach (LR4) and extended long-reach (ER4-lite). Standard 10GbE SFP+ and 25GbE SFP28 optics can be readily inserted, recognized, and utilized in the 100GbE QSFP28 receptacle through the use of a (QSA28) pluggable adapter. Although this reduces the effective throughput of the 100GbE port to 25GbE, it provides an immediate low-cost transceiver solution while preserving the option for later bandwidth expansion. 100GbE QSFP28 ports support both optical and passive copper breakout cables. Each of the four 25 GbE lanes can be broken out into four individual SFP28 interfaces. This solution can be deployed with a single active optical cable (AOC) with integrated QSFP28 and SFP28 transceivers or through the use of a passive fiber breakout cable/multiplexer.Dual 100GbE solutions

To maximize front panel density, some Dell EMC switches support QSFP28-DD (double density) modules which transport two 100GbE data streams while consuming the same face plate area as a single 100GbE QSFP28 module. For multimode fiber distances of 100 meters or less a pluggable transceiver module can be used. Point-to-point DACs and AOCs will facilitate shorter links as well as breakout applications.

Testing and warranties

Dell EMC Networking applies a rigorous process in qualifying and maintaining all optics to guarantee a strict adherence to IEEE standards, as well as stringent reliability testing to guarantee a consistent and trustworthy solution. All optics and cables released by Dell EMC Networking have passed a comprehensive optical analytics check as well as an extensive dynamic test suite. Dell-labeled optics are warrantied alongside the Dell EMC switches in which they are deployed.

DELL EMC TRANSCEIVERS

Model	Connector type	Wavelength (s) (nm)	Transmission medium	Distance (max.)	Transmitter power (dBm)	Receiver power (dBm)	Power dissipation (max.; W)	Notes
Fast Ethernet (100 Mb/s) SFP transceivers								
SFP-100M-FX	duplex LC	1310	MMF FDDI MMF OM1 MMF OM2 MMF OM3 MMF OM4	2 km	-15.0 to -20.0	-31.0 to -14.0	1.1	operates up to 85°C
Gigabit Ethernet SFP transceivers								
SFP-1G-SX	duplex LC	850	MMF OM1 MMF OM2 MMF OM3 MMF OM4	300 m 550 m 550 m 550 m	-9.0 to -2.5	-18.0 to 0.0	0.5	operates up to 85°Ct
SFP-1G-LX	duplex LC	1310	SMF	10 km	-9.5 to -3.0	-19.0 to -3.0	1.1	operates up to 85°C
SFP-1G-ZX	duplex LC	1310	SMF	80 km	0.0 to +5.0	-22.0 to 0.0	1.1	
SFP-1G-BX10-U	simplex LC	1310	SMF	10 km	-9.0 to -3.0	-20.0 to -3.0	1.0	
SFP-1G-BX10-D	simplex LC	1490	SMF	10 km	-9.0 to -3.0	-20.0 to -3.0	1.0	
SFP-1G-T	RJ-45	N/A	CAT5	100 m	N/A	N/A	1.5	operates up to 85°C
8G Fibre Channel SFP+ transceivers								
SFP-8GFC-SW	duplex LC	850	MMF OM1 MMF OM2 MMF OM3 MMF OM4	21 m 50 m 120 m 150 m	-8.2 to -2.0	-14.2 to 0.0	0.8	may operate at lower optical power in 4GFC and 2GFC modes
SFP-8GFC-LW	duplex LC	1310	SMF	10 km	-8.4 to +0.5	-16.8 to +0.5	1.2	may operate at lower optical power in 4GFC and 2GFC modes
10-Gigabit Ethernet SFP+ transceivers								
SFP-10G-USR	duplex LC	850	MMF OM1 MMF OM2 MMF OM3 MMF OM4	10 m 25 m 100 m 150 m	-5.0 to -1.0	-11.1 to +0.5	1.0	
SFP-10G-SR	duplex LC	850	MMF FDDI MMF OM1 MMF OM2 MMF OM3 MMF OM4	26 m 33 m 82 m 300 m 400 m	-7.3 to -1.0	-9.9 to -1.0	1.0	
SFP-10G-LRM	duplex LC	1310	MMF FDDI MMF OM1 MMF OM2 MMF OM3 MMF OM4	220 m	-6.5 to -0.5	-10.5 to +0.5	1.0	

All transceivers operate at 0 to 70°C unless otherwise indicated.

Transceivers comply with appropriate standards and MSAs including IEEE 802.3ab, 802.3z, 802.3ae, 802.3ba, 802.3bm, 802.3by and 802.3cc.

DELL EMC TRANSCEIVERS

Model	Connector type	Wavelength (s) (nm)	Transmission medium	Distance (max.)	Transmitter power (dBm)	Receiver power (dBm)	Power dissipation (max.; W)	Notes
10-Gigabit Ethernet SFP+ transceivers								
SFP-10G-LR	duplex LC	1310	SMF	10 km	-8.2 to +0.5	-14.4 to +0.5	1.5	
SFP-10G-ER	duplex LC	1550	SMF	40 km	-4.7 to +4.0	-15.8 to -1.0	1.5	
SFP-10G-ZR	duplex LC	1550	SMF	80 km	0.0 to +4.0	-22.0 to -7.0	1.5	
SFP-10G-T-DWDM	duplex LC	1528.7 to 1568.7	SMF	80 km	-1.0 to +3.0	-18.0 to -7.0	1.7	tunable; assumes receiver OSNR > 26 dB
SFP-10G-BX10-U	simplex LC	1330	SMF	10 km	-8.0 to +0.5	-14.8 to +0.5	1.0	
SFP-10G-BX10-D	simplex LC	1270	SMF	10 km	-8.0 to +0.5	-14.8 to +0.5	1.0	
SFP-10G-T	RJ-45	N/A	CAT6A (10G) CAT5A (1G)	30 m 100 m	N/A	N/A	2.5	
16G Fibre Channel SFP+ transceivers								
SFP-16GFC-SW	duplex LC	850	MMF OM3 MMF OM4	100 m 125 m	-7.8 to 0.0	-13.5 to 0.0	1.0	
SFP-16GFC-LW	duplex LC	1310	SMF	10 km	-5.0 to +2.0	-15.0 to +2.0	1.2	operates up to 85°C
Quad 16G Fibre Channel QSFP+ transceivers								
QSFP-64GFC-SW4	MPO-12	850	MMF OM3 MMF OM4	100 m 125 m	-6 to +1.0 /lane	-13.0 to +2.4 /lane	2.5	compatible with 4 × 16GFC, 4 × 8GFC or 4 × 4GFC
25-Gigabit Ethernet SFP28 transceivers								
SFP28-25G-SR	duplex LC	850	MMF OM3 MMF OM4	70 m 100 m	-8.4 to +2.4	-10.3 to +2.4	1.2	capable of 10^{12} BER over 30 m of OM3 or 40 m of OM4 when FEC is disabled
SFP28-25G-ESR	duplex LC	850	MMF OM3 MMF OM4	200 m 300 m	-8.4 to +2.4	-11.9 to +3.0	1.2	
SFP28-25G-LR	duplex LC	1310	SMF	10 km	-7.0 to +2.0	-11.3 to +2.0	1.5	
Quad 32G Fibre Channel QSFP28 transceivers								
Q28-128GFC-SW4	MPO-12	850	MMF OM3 MMF OM4	70 m 100 m	-8.5 to +2.4 /lane	-10.4 to +2.4 /lane	3.5	compatible with 4 × 32GFC or 4 × 16GFC breakout

All transceivers operate at 0 to 70°C unless otherwise indicated.

DELL EMC TRANSCEIVERS

Model	Connector type	Wavelength (s) (nm)	Transmission medium	Distance (max.)	Transmitter power (dBm)	Receiver power (dBm)	Power dissipation (max.; W)	Notes
40-Gigabit Ethernet QSFP+ transceivers								
QSFP-40G-SR4	MPO-12	850	MMF OM3 MMF OM4	100 m 125 m	-7.6 to +2.4 /lane	-9.0 to +2.4 /lane	1.5	can operate in 1 × 4 breakout mode
QSFP-40G-ESR4	MPO-12	850	MMF OM3 MMF OM4	300 m 400 m	-6.3 to -1.0 /lane	-13.3 to -1.0 /lane	1.5	can operate in 1 × 4 breakout mode
QSFP-40G-LM4	duplex LC	1271 1291 1311 1331	MMF OM3 MMF OM4 SMF	140 m 160 m 1 km	-7.0 to +4.3 /lane (MMF) -10.0 to +2.3 /lane (SMF)	-10.0 to +4.3 /lane (MMF) -13.7 to +2.3 /lane (SMF)	3.5	
QSFP-40G-SM4	duplex LC	850 880 910 940	MMF OM3 MMF OM4 MMF OM5	200 m 250 m 350 m	-7.6 to +3.0 /lane	-9.0 to +3.0 /lane	2.0	not compliant with SWDM4 40GbE MSA
QSFP-40G-BIDI	duplex LC	850 900	MMF OM3 MMF OM4 MMF OM5	100 m 150 m 200 m	-4.0 to +5.0 /lane	-7.5 to +5.0 /lane	3.5	+10°C minimum operating temperature
QSFP-40GPSM4-LR	MPO-12	1310	SMF	10 km	-5.5 to +1.5 /lane	-12.6 to +1.5 /lane	3.5	can operate in 1 × 4 breakout mode
QSFP-40G-LR4	duplex LC	1271 1291 1311 1331	SMF	10 km	-7.0 to +2.3 /lane	-13.7 to +2.3 /lane	3.5	
QSFP-40G-ER4	duplex LC	1271 1291 1311 1331	SMF	40 km	-2.7 to +4.5 /lane	-21.2 to -4.5 /lane	3.5	links longer than 30 km are considered engineered links
100-Gigabit Ethernet QSFP28 transceivers								
Q28-100G-SR4	MPO-12	850	MMF OM3 MMF OM4	70 m 100 m	-8.4 to +2.4 /lane	-10.3 to +2.4 /lane	3.5	can operate in 1 ×4 breakout mode;10^{12} BER over 30 m of OM3 or 40 m of OM4 when FEC disabled
Q28-100G-ESR4	MPO-12	850	MMF OM3 MMF OM4	170 m 300 m	-8.3 to +2.4 /lane	-10.3 to +2.4 /lane	3.5	can operate in 1 × 4 breakout mode

All transceivers operate at 0 to 70°C unless otherwise indicated.

DELL EMC TRANSCEIVERS

Model	Connector type	Wavelength (s) (nm)	Transmission medium	Distance (max.)	Transmitter power (dBm)	Receiver power (dBm)	Power dissipation (max.; W)	Notes
100-Gigabit Ethernet QSFP28 transceivers								
Q28-100G-BIDI	duplex LC	850 910	MMF OM3 MMF OM4 MMF OM5	70 m 100 m 150 m	-6.0 to +4.0 /lane	-7.9 to +4.0 /lane	3.5	
Q28-100G-SWDM4	duplex LC	850 880 910 940	MMF OM3 MMF OM4 MMF OM5	75 m 100 m 150 m	-7.5 to +3.4 /lane	-9.4 to +3.4 /lane	3.5	
Q28-100G-CWDM4	duplex LC	1271 1291 1311 1331	SMF	2 km	-6.5 to +2.5 /lane	-11.5 to +2.5 /lane	3.5	
Q28-100G-LR4	duplex LC	1296 1300 1305 1309	SMF	10 km	-4.3 to +4.5 /lane	-10.6 to +4.5 /lane	3.5	
Q28-100G-ER4-lite	duplex LC	1296 1300 1305 1309	SMF	40 km (with FEC)	-2.9 to +4.5 /lane	-20.9 to -4.9 /lane	4.5	specifications for use with FEC,max. distance is 30 km (Rx min. -16.9 dBm) without FEC
Q28-100G-DWDM2-xx	duplex LC	1530.33 to 1561.42	SMF	80 km	-11.0 to -8.0 /lane	-2.0 to +6.0 /lane	5.0	Use only with EDFA + dispersion compensator; OSNR ≥ 31 dB; center avelength is on 100 GHz ITU grid
QSA-Q28-S28	“SFP+ or SFP28”	N/A	N/A	N/A	N/A	N/A	N/A	adaptor to use SFP+ or SFP28 modules in QSFP+ SFP28 receptacles
Dual 100-Gigabit Ethernet QSFP28-DD transceivers								
Q28DD-200G-2SR4	MPO-12DD	850	MMF OM3 MMF OM4	70 m 100 m	-8.4 to +2.4 /lane	10.3 to +2.4 /lane	5.0	MPO-12DD is a two-row double density MPO-12; capable of 10^{12} BER over 30 m of OM3 or 40 m of OM4 when FEC is disabled

DELL EMC ACTIVE OPTICAL CABLES (AOC) AND DIRECT ATTACH CABLES (DAC)

Model	Available lengths (m)	Connection	Transmission medium	Power dissipation per end (max.; W)	Notes
10-Gigabit Ethernet Active Optical and Direct Attach Cable					
DAC-SFP-10G-xM	0.5, 1, 2, 3, 5, 7	SFP+ to SFP+	copper		
AOC-SFP-10G-xM	2, 3, 5, 10, 15, 20	SFP+ to SFP+	optical	1.5	
25-Gigabit Ethernet Active Optical and Direct Attach Cable					
DAC-SFP-25G-xM*	1, 2, 3, 5	SFP28 to SFP28	copper		1, 2, 3 m can operate without FEC
AOC-SFP-25G-xM*	7, 10, 15, 20	SFP28 to SFP28	optical	1.5	operates with FEC
40-Gigabit Ethernet Active Optical and Direct Attach Cable					
DAC-QSFP-40G-xM	0.5, 1, 2, 3, 5, 7	QSFP+ to QSFP+	copper		
AOC-QSFP-40G-xM	3, 10, 50	QSFP+ to QSFP+	optical	1.5	
DAC-QSFP-4SFP-10G-xM	0.5, 1 , 2, 3, 5, 7	QSFP+ to 4 × SFP+	copper		
AOC-QSFP-4SFP-10G-xM	10, 30	QSFP+ to 4 × SFP+	optical	1.5, 1.0	supports 4×10G or 4×1G
DAC-QSFP-4RJ45-1G-1M	1	QSFP+ to 4 × RJ-45	copper	1.5	active copper
Dual 40-Gigabit Ethernet Active Optical Cable					
AOC-Q28DD-2Q-40G-xM	7	QSFP28-DD to 2 × QSFP+	optical		
AOC-Q28DD-8SFP-10G-xM	7, 10	QSFP28-DD to 8 × SFP+	optical		
100-Gigabit Ethernet Active Optical and Direct Attach Cable					
DAC-QSFP-100G-xM	0.5, 1 , 2, 3, 5	QSFP28 to QSFP28	copper		
AOC-QSFP-100G-xM	3, 7, 10, 30	QSFP28 to QSFP28	optical	3.5	
DAC-QSFP-2QSFP28-50G-xM	1, 2, 3	QSFP28 to 2 × QSFP28†	copper		QSFP28† modules are half populated
DAC-QSFP-4SFP28-25G-xM	1, 2, 3	QSFP28 to 4 × SFP28	copper		
AOC-QSFP-4SFP28-25G-xM	10, 15, 30	QSFP28 to 4 × SFP28	optical	3.5, 1.5	
Dual 100-Gigabit Ethernet Active Optical and Direct Attach Cable					
DAC-Q28DD-200G-xM	1, 2, 3	QSFP28-DD to QSFP28-DD	copper		
AOC-Q28DD-200G-xM	5, 10, 20	QSFP28-DD to QSFP28-DD	optical	5	
DAC-Q28DD-2Q28-100G-xM	1, 2, 3	QSFP28-DD to 2 × QSFP28	copper		
AOC-Q28DD-2Q28-100G-xM	5, 7, 15, 30	QSFP28-DD to 2 × QSFP28	optical	5.0, 3.5	

DELL EMC ACTIVE OPTICAL CABLES (AOC) AND DIRECT ATTACH CABLES (DAC)

Model	Available lengths (m)	Connection	Transmission medium	Power dissipation per end (max.; W)	Notes
Dual 100-Gigabit Ethernet Active Optical and Direct Attach Cable					
DAC-Q28DD-8S28-25G-xM	1, 2, 3	QSFP28-DD to 8 × SFP28	copper		
AOC-Q28DD-8S28-25G-xM	7, 10	QSFP28-DD to 8 × SFP28	optical	5.0, 1.2	

DELL EMC PASSIVE FIBER CABLES

Model	Available lengths (m)	Connection	Transmission medium	Notes
Passive optical cables				
CBL-MTP12-OM4-xM	1, 3, 5, 7, 10, 25	MPO-12 to MPO-12	MMF OM4	
CBL-LC-OM4-xM	1, 2, 3, 5, 10, 30	LC to LC	MMF OM4	
CBL-MTP12-4LC-OM4-xM	1, 3, 5, 7	MPO-12 to 4 × LC	MMF OM4	
CBL-MPO12-4LC-SMF-5M	5	MPO-12 to 4 × LC	SMF	
CBL-MPO12DD-2MPO12-OM4-xM	1, 3, 5, 7	MPO-12DD to 2 × MPO-12	MMF OM4	
CBL-MPO12DD-OM4-xM	1, 3, 5, 7	MPO-12DD to MPO-12DD	MMF OM4	
Breakout boxes				
64× breakout box OM4	1.5	16 × MPO-12 to 64 × LC	MMF OM4	
64× breakout box SMF	1.5	16 × MPO-12 to 64 × LC	SMF	

PRODUCT SUPPORT

10-GbE transceiv-ers	SFP-10G-USR	SFP-10G-SR	SFP-10G-LRM	SFP-10G-LR	SFP-10G-ER	SFP-10G-ZR	SFP-10G-T-DWDM	SFP-10G-BX10	SFP-10G-T
Z9100		√		√	√	√	√	√	√
Z9264	√	√		√	√	√	√	√	√
Z9500		√		√	√	√	√	√	√
S6100		√		√	√	√	√	√	√
S6010	√	√		√	√	√	√	√	√
S6000		√		√	√	√	√	√	√
S41x8	√	√	√	√	√	√	√	√	√**
S4248	√	√		√	√	√	√	√	√**

**population of SFP-10G-T transceivers in switch may be limited due to power constraints.
*** only supported on S4148FE

PRODUCT SUPPORT

10-GbE transceivers	SFP-10G-USR	SFP-10G-SR	SFP-10G-LRM	SFP-10G-LR	SFP-10G-ER	SFP-10G-ZR	SFP-10G-T-DWDM	SFP-10G-BX10	SFP-10G-T
S4112	√	√		√	√			√	√**
S5000		√	√	√	√	√	√		√***
S4048		√		√	√	√	√	√	√**
8132/64; N4032/64	√	√	√	√	√	√			
S5048	√	√		√	√	√	√		√
S5148	√	√		√	√	√	√		√
S5232	√	√		√	√	√	√		
S3048	√	√	√	√	√	√	√		
S3100	√	√	√	√	√	√	√	√	
N3132/2128	√	√		√	√	√			
N20xx/30xx	√	√	√	√	√	√		√	
N1500	√	√		√	√	√			
N1100	√	√		√	√	√			
X4012	√	√		√	√	√			
X1052	√	√		√	√				
VRTX R1-2210		√		√					
FN IOM		√	√	√			√	√	
MXL IO Agg.		√	√	√	√		√	√	
M8024K		√	√	√					
M6220		√	√	√					
M6348		√	√	√					
10Gb passthru-K		√		√					
C7000 comb. line card		√		√	√				
C7000 SFP+ line card		√	√	√	√				
C9010	√	√	√	√	√	√	√		
C7000 QSFP+ ports	√	√	√	√	√	√			

**population of SFP-10G-T transceivers in switch may be limited due to power constraints.
*** only supported on S4148FE

PRODUCT SUPPORT

40-GbE transceivers	QSFP-40G-SR4	QSFP-40G-ESR4	QSFP-40G-LM4	QSFP-40G-SM4	QSFP-40G-BIDI	QSFP-40G-PSM4-LR	QSFP-40G-LR4	QSFP-40G-ER4
S5000	√	√	√	√	√		√	√
S4048	√	√	√	√	√	√	√	√
8132/64; N4032/64	√						√	
S5048	√	√	√	√	√	√	√	√
S5148	√	√	√	√	√	√	√	√
S5232	√	√	√	√	√	√	√	√
N3132/2128	√	√					√	
MXL IO Agg.	√	√	√	√	√	√	√	
MX9116n	√		√	√	√		√	
MX5108n	√		√	√	√		√	
C9010	√	√	√	√	√	√	√	√
C7000 QSFP+ ports	√	√						
MX5108n	√		√	√	√		√	

100GbE transceivers	Q28-100G-SR4	Q28-100G-ESR4	Q28-100G-BIDI	Q28-100G-SWDM4	Q28-100G-CWDM4	Q28-100G-LR4	Q28-100G-ER4- lite	Q28-100G-DWDM2
Z9100	√	√	√	√	√	√	√	√
Z9264	√	√	√	√	√	√	√	
Z9500								
S6100	√	√	√	√	√	√	√	√
S6010								
S6000								
S41x8	√	√	√	√	√	√	√	
S4248	√	√	√	√		√	√	
S4112	√		√	√		√		√
S5048	√	√	√	√	√	√	√	√
S5148	√	√	√	√	√	√	√	
S5232	√	√	√	√	√	√	√	
MX9116n	√			√	√	√		
MX5108n	√				√	√		

25GbE transceivers	SFP28-25G-SR	SFP28-25G-ESR	SFP28-25G-LR
Z9100	√	√	√
S6100	√	√	√
S5048	√	√	√
S5148	√	√	√
S5232	√	√	√
MX 25G PTM	√		

Dual 100GbE transceivers	Q28DD-200G-2SR4
MX9116n	√

ORDERING INFORMATION

Model	Product description
Fast Ethernet (100 Mb/s) SFP transceivers	
SFP-100M-FX	100MbE SFP optical module, up to 2 km over 2 parallel MMFs
Gigabit Ethernet SFP transceivers	
SFP-1G-SX	1GbE SFP optical module, short-reach, up to 500 m over 2 parallel MMFs
SFP-1G-LX	1GbE SFP optical module, long-reach, up to 10 km over 2 parallel SMFs
SFP-1G-ZX	1GbE SFP optical module, extended-reach, up to 80 km over 2 parallel SMFs
SFP-1G-BX10-U	1GbE SFP optical module, bi-directional, long-reach, up to 10 km over single SMF - U version
SFP-1G-BX10-D	1GbE SFP optical module, bi-directional, long-reach, up to 10 km over single SMF - D version
SFP-1G-T	1GbE SFP electrical 1000BASE-T module, up to 100 m over single CAT5 cable.
8G Fibre Channel SFP+ transceivers	
SFP-8GFC-SW	8GFC SFP+ optical module, short-reach, up to 150 m over 2 parallel MMFs
SFP-8GFC-LW	8GFC SFP+ optical module, long-reach, up to 10 km over 2 parallel SMFs
10-Gigabit Ethernet SFP+ transceivers	
SFP-10G-USR	10GbE SFP+ optical module, ultra-short-reach, up to 150 m over 2 parallel MMFs
SFP-10G-SR	10GbE SFP+ optical module, short-reach, up to 400 m over 2 parallel MMFs
SFP-10G-SR-12	10GbE SFP+ optical module, short-reach, up to 400 m over 2 parallel MMFs, package of 12
SFP-10G-LRM	10GbE SFP+ optical module, long-reach multi-mode, up to 220 m over 2 parallel FDDI, OM1 or OM2 MMFs
SFP-10G-LR	10GbE SFP+ optical module, long-reach, up to 10 km over 2 parallel SMFs
SFP-10G-ER	10GbE SFP+ optical module, extended-reach, up to 40 km over 2 parallel SMFs
SFP-10G-ZR	10GbE SFP+ optical module, extended-reach, up to 80 km over 2 parallel SMFs
SFP-10G-T-DWDM	10GbE SFP+ optical module, tunable DWDM, extended-reach, up to 80 km over 2 parallel SMFs
SFP-10G-BX10-U	10GbE SFP+ optical module, bi-directional, long-reach, up to 10 km over single SMF - U version
SFP-10G-BX10-D	10GbE SFP+ optical module, bi-directional, long-reach, up to 10 km over single SMF - D version
SFP-10G-T	10GbE SFP+ electrical 10GBASE-T module, up to 30 m over single CAT6A cable
16G Fibre Channel SFP+ transceivers	
SFP-16GFC-SW	16GFC SFP+ optical module, short-reach, up to 125 m over 2 parallel MMFs
SFP-16GFC-LW	16GFC SFP+ optical module, long-reach, up to 10 km over 2 parallel SMFs
Quad 16G Fibre Channel QSFP+ transceivers	
QSFP-64GFC-SW4	Quad 16GFC QSFP+ optical module, short-reach, up to 100 m over 8 parallel MMFs

ORDERING INFORMATION

Model	Product description
25-Gigabit Ethernet SFP28 transceivers	
SFP28-25G-SR	25GbE SFP28 optical module, short-reach, up to 100 m over 2 parallel MMFs
SFP28-25G-ESR	25GbE SFP28 optical module, extended- short-reach, up to xxx m over 2 parallel MMFs
SFP28-25G-LR	25GbE SFP28 optical module, long-reach, up to 10 km over 2 parallel SMFs
40-Gigabit Ethernet QSFP+ transceivers	
SFP-40G-SR4	40GbE QSFP+ optical module, short-reach, up to 150 m over 8 parallel MMFs
QSFP-40G-ESR4	40GbE QSFP+ optical module, extended short-reach, up to 400 m over 8 parallel MMFs
QSFP-40G-LM4	40GbE QSFP+ optical module, WDM, short-reach, up to 160 m over 2 parallel MMFs
QSFP-40G-SM4	40GbE QSFP+ optical module, SWDM, short-reach, up to 300 m over 2 parallel MMFs
QSFP-40G-BIDI	40GbE QSFP+ optical module, bi-directional, short-reach, up to 160 m over 2 parallel MMFs
QSFP-40G-PSM4-LR	40GbE QSFP+ optical module, long-reach, up to 10 km over 8 parallel SMFs
QSFP-40G-LR4	40GbE QSFP+ optical module, long-reach, up to 10 km over 2 parallel SMFs
QSFP-40G-ER4	40GbE QSFP+ optical module, extended-reach, up to 40 km over 2 parallel SMFs
100-Gigabit Ethernet QSFP28 transceivers	
Q28-100G-SR4	100GbE QSFP28 optical module, short-reach, up to 100 m over 8 parallel MMFs
Q28-100G-ESR4	100GbE QSFP28 optical module, extended short-reach, up to 300 m over 8 parallel MMFs
Q28-100G-SWDM4	100GbE QSFP28 optical module, SWDM, short-reach, up to 150 m over 2 parallel MMFs
Q28-100G-BIDI	100GbE QSFP28 optical module, bi-directional, short-reach, up to 150 m over 2 parallel MMFs
Q28-100G-CWDM4	100GbE QSFP28 optical module, intermediate-reach, up to 2 km over 2 parallel SMFs
Q28-100G-LR4	100GbE QSFP28 optical module, long-reach, up to 10 km over 2 parallel SMFs
Q28-100G-ER4-lite	100GbE QSFP28 optical module, extended-reach, up to 35 km over 2 parallel SMFs
Q28-100G-DWDM2-xx	100GbE QSFP28 optical module, DWDM, up to 80 km over 2 parallel SMFs
QSA-Q28-S28	100GbE QSFP28 to 25GbE SFP28 adapter
Dual 100-Gigabit Ethernet QSFP28-DD transceivers	
Q28DD-200G-2SR4	Dual 100GbE QSFP28-DD optical module, short-reach, up to 100 m over 16 parallel MMFs

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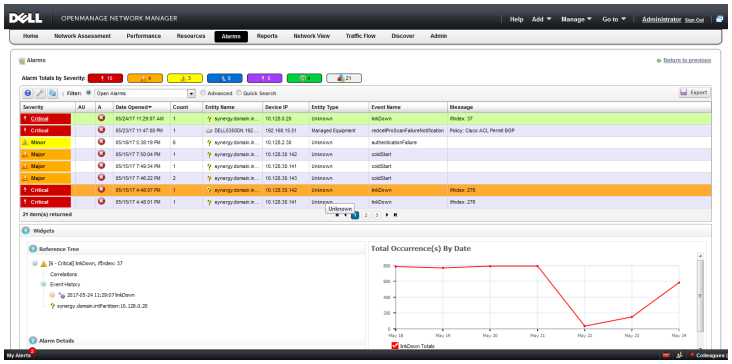
Simplify and centralize network management

Managing your growing network doesn't have to be a full-time job. OpenManage Network Manager lets you easily discover, configure, monitor and manage your network infrastructure. OMNM Converged Network Management makes management of physical and virtual networking easy. Networking from multiple vendors are supported, including Dell EMC, Cisco, HP, Juniper, Brocade, Arista, Aruba, SonicWALL, F5, Ruckus, Aerohive, Extreme and more.



Single pane of glass for all your converged networking management requirements

Unify your network management and simplify deployment of Dell EMC and multi-vendor networking environments with a rich suite of tools available in OMNM's integrated management console. OMNM's centralized management solution provides automated discovery, configuration management, network compliance, performance monitoring, reporting, automation and scripting — right out of the box. OMNM provides the following advantages:

- **Automates the discovery** of network devices, and provides detailed information on the devices and their connectivity, including the ability to draw physical and logical topology maps.
- Provides the ability to **easily configure and manage** groups of network devices; configuration changes and firmware deployments can be made to multiple devices in one operation, and many network operations can be scheduled for pre-determined times.
- Enables network administrators to **monitor the health and performance** of their network, allowing the creation of dashboards to capture important events and trends, and display them over time.
- Helps **reduce TCO** by proactively monitoring for network problems, automating common configuration actions and enabling easy firmware deployment, allowing network administrators to focus on more critical activities.

Key features

- Resource Discovery Wizard simplifies discovery of IPv4 and IPv6 network elements and other devices
- Active Performance Monitors allow for proactive customization of performance monitoring
- Proactive scanning policies for network configuration compliance and auditing helps you track down and correct configuration issues
- Easy to install and get running quickly
- Flexible dashboards for visualizing data
- Robust performance monitoring and reporting helps you identify network bottlenecks
- Event Management correlation forwards filtered events and traps
- Automate responses to system or network events, send e-mail and SMS notifications and invoke customizable actions
- Resource group management for one-to-many device configuration
- Inventory reporting shows what you have and where it is located
- Warranty reporting and alerting helps you keep critical infrastructure under warranty
- Integration with OpenManage
- Traffic flow (sFlow) analysis and reporting
- Advanced scheduling schedules key tasks such as backup, restore and deploy configuration changes
- Customizable web-based user interface
- Deploy on Windows, Linux, or as a Virtual appliance
- RADIUS, LDAP/AP and CAS authentication integration
- Supports single server as well as high availability deployment options with Mysql and Oracle databases
- Scale from 25 nodes to thousands

Supported devices

- Dell EMC Networking C-Series, N-Series, S-Series, Z-Series and X-Series switches
- Dell EMC Networking M-Series, FN-Series, and VRTX Modular Networking I/O Modules
- Dell EMC Networking , 8100, 8000, 7000, 6000, 5000 and 3000 series devices
- Dell EMC Networking W-Series wireless controllers, access points and instant access points
- Select Cisco, HP, Juniper, Brocade, Ruckus, Aerohive, Arista, Aruba, Extreme, Cumulus, Enterasys, 3COM, SonicWALL, Vyatta, F5, VMware and other devices
- SonicWALL SuperMassive, E-Class NSA, TZ and NSA Series
- Dell EMC Unity Storage Array
- Additional Dell EMC Networking and third-party device support included via regular service pack updates

Supported operating systems (64-bit)

- Microsoft Windows Server 2008, 2012 and 2016
- Linux for Redhat and CentOS v6.5/v6.6/v7.2
- Virtual Appliance

Supported web browsers

- Chrome
- Safari
- Firefox
- Internet Explorer

Pricing and upgrades

For a free 30-day trial, visit marketing.dell.com/omnmfreetrial.

Purchase directly from Dell EMC at dell.com/omnm, or contact your Dell EMC Sales Representative for affordable subscription-based options.

Learn more at Dell.com/OMNM

IT Lifecycle Services for Networking

Experts, insights and ease

Our highly trained experts, with innovative tools and proven processes, help you transform your IT investments into strategic advantages.

Plan & Design

Let us analyze your multivendor environment and deliver a comprehensive report and action plan to build upon the existing network and improve performance.

Deploy & Integrate

Get new wired or wireless network technology installed and configured with ProDeploy. Reduce costs, save time, and get up and running fast.

Educate

Ensure your staff builds the right skills for long-term success. Get certified on Dell EMC Networking technology and learn how to increase performance and optimize infrastructure.

Manage & Support

Gain access to technical experts and quickly resolve multivendor networking challenges with ProSupport. Spend less time resolving network issues and more time innovating.

Optimize

Maximize performance for dynamic IT environments with Dell EMC Optimize. Benefit from in-depth predictive analysis, remote monitoring and a dedicated systems analyst for your network.

Retire

We can help you resell or retire excess hardware while meeting local regulatory guidelines and acting in an environmentally responsible way.

Learn more at Dell.com/LifecycleServices

May 2018 | v1.2
Dell EMC Networking OMNM 6.5.2 Spec Sheet

Dell Networking S3100 series

High-performance managed Ethernet switches designed for non-blocking access

The S3100 switch series offers a power-efficient and resilient Gigabit Ethernet (GbE) switching solution with integrated 10GbE uplinks for advanced Layer 3 distribution for offices and campus networks. The S3100 switch series has high-performance capabilities and wire-speed performance utilizing a non-blocking architecture to easily handle unexpected traffic loads. Use dual internal hot-swappable 80PLUS-certified power supplies for high availability and power efficiency. The switches offer simple management and scalability via an 84Gbps (full-duplex) high-availability stacking architecture that allows management of up to 12 switches from a single IP address.

Modernize campus network architectures

Modernize campus network architectures with a power-efficient and resilient 1/10GbE switching solution with dense Power over Ethernet Plus (PoE+). Select S3100 models offer 24 or 48 ports of PoE+ to deliver clean power to network devices such as wireless access points (APs), Voice-over-IP (VoIP) handsets, video conferencing systems and security cameras. For greater interoperability in multivendor networks, S3100 series switches offer the latest open-standard protocols and include technology to interface with Cisco protocol PVST+. The S3100 series supports Dell Networking OS9, VLT and network virtualization features such as VRF-lite and support for Dell Embedded Open Automation Framework.

Leverage familiar tools and practices

All S3100 switches include Dell Networking OS9 for easier deployment and greater interoperability. One common command line interface (CLI) using a well-known command language means a faster learning curve for network administrators.

Deploy with confidence at any scale

S3100 series switches help create performance assurance with a data rate up to 260Gbps (full duplex) and a forwarding rate up to 193Mpps. Scale easily with built-in rear stacking ports. Switch stacks of up to 624 ports can be managed from a single screen using the highly-available stacking architecture for high-density aggregation with seamless redundant availability.

Hardware, performance and efficiency

- Up to 48 line-rate GbE ports of copper or 24 line-rate ports of fiber, two combo ports for fiber/copper flexibility, and two integrated 10GbE SFP+ ports
- Up to 48 ports of PoE+ in 1RU without an external power supply
- Hot swappable expansion module supporting dual-port SFP+ or dual-port 10GBaseT
- Integrated stacking ports with support up to 84Gbps
- Up to 624 ports in a 12-unit stack for high-density, high-availability aggregation and distribution in wiring closets/MDFs. Non-stop forwarding and fast failover in stack configurations
- Available with dual 80PLUS-certified hot swappable power supplies. Variable speed fan operation helps decrease cooling and power costs
- Energy-Efficient Ethernet and lower-power PHYs reduce power to inactive ports and idle links, providing energy savings from the power cord to the port
- Dell Fresh Air compliance for operation in environments up to 113°F (45°C) helps reduce cooling costs in temperature constrained deployments

Deploying, configuring and managing

- Tool-less ReadyRails™ significantly reduces rack installation time
- Management via an intuitive and familiar CLI, SNMP-based management console application (including Dell OpenManage Network Manager), Telnet or serial connection
- Private VLAN support
- AAA authorization, TACACS+ accounting and RADIUS support for comprehensive secure access
- Authentication tiering allows network administrators to tier port authentication methods such as 802.1x, MAC Authentication Bypass in priority order so that a single port can provide flexible access and security
- Achieve high availability and full bandwidth utilization with VLT and support firmware upgrades without taking the network offline
- Interfaces with PVST+ protocol for greater flexibility and interoperability in Cisco networks
- Advanced Layer 3 IPv4 and IPv6 functionality
- Flexible routing options with policy-based routing to route packets based on assigned criteria beyond destination address
- Routed Port Monitoring (RPM) covers a Layer 3 domain without costly dedicated network taps
- OpenFlow 1.3 provides the ability to separate the control plane from the forwarding plane for deployment in SDN environments

Get more starting on day one

Trust Dell experts to lead deployments from planning and basic hardware installations to configuration and complex integrations. The Dell ProDeploy Enterprise Suite saves you time, reduces the cost of implementing new technology, and offers you confidence that your new systems will be easy to maintain.

Learn more at Dell.com/ProDeploy.

1GbE switches utilizing a comprehensive enterprise-class Layer 2 and 3 advanced feature set in Dell Networking OS9

*Contact your Dell representative for a full list of validated storage arrays.

Specifications: Dell Networking S3100 series

Ordering information

S3124: 24x RJ45 10/100/1000Mb auto-sensing ports, 2x SFP+ ports, 2x GbE combo media ports, 1x hot swap expansion module bay, 1x 200W PSU included

S3124F: 24x 1000-SX (up to 500m distance) or 1000-LX (up to 10km distance) SFP GbE ports, 2x SFP+ ports, 2x GbE combo media ports, 1x hot swap expansion module bay, 1x 200W PSU included

S3124P: 24x RJ45 10/100/1000Mb PoE+ (up to 30.8W) auto-sensing ports, 2x SFP+ ports, 2x GbE combo media ports, 1x hot swap expansion module bay, 1x 715W PSU included

S3148: 48x RJ45 10/100/1000Mb auto-sensing ports, 2x SFP+ ports, 2x GbE combo media ports, 1x hot swap expansion module bay, 1x 200W PSU included

S3148P: 48x RJ45 10/100/1000Mb PoE+ (up to 30.8W) auto-sensing ports, 2x SFP+ ports, 2x GbE combo media ports, 1x hot swap expansion module bay, 1x 1100W PSU included*

Power cords

C13 to NEMA 5-15, 3M; C13 to C14, 2M; C15 to NEMA 5-15, 2M (C15 for PoE S-Series only)

Modules (optional)

2-port 10GBASE-T RJ-45 hot swappable uplink module

2-port 10GbE SFP+ hot swappable uplink module

Power supplies (optional)

200W AC hot swappable with V-Lock, adds redundancy to non-PoE switches (S3124, S3124F and S3148 only)

715W AC hot swappable, adds redundancy to S3124P (S3124P only)

1100W AC hot swappable, adds redundancy to S3148P or upgrade S3124P for additional PoE+ power (S3124P and S3148P only)

Optics (optional)

Transceiver, SFP, 100BASE-FX, 1310nm wavelength, up to 2km reach

Transceiver, SFP, 1000BASE-T

Transceiver, SFP, 1000BASE-SX, 850nm wavelength, up to 550m reach

Transceiver, SFP, 1000BASE-LX, 1310nm wavelength, up to 10km reach

Transceiver, SFP, 1000BASE-ZX, 1550nm wavelength, up to 80km reach

Transceiver, SFP+, 10GbE, LRM, 1310nm wavelength, up to 220m reach

Transceiver, SFP+, 10GbE, SR, 850nm wavelength, up to 300m reach

Transceiver, SFP+, 10GbE, LR, 1310nm wavelength, up to 10km reach

Transceiver, SFP+, 10GbE, ER, 1550nm wavelength, up to 40km reach

Cables (optional)

Stacking cable 0.25m, 1m and 3m

Dell Networking cable, SFP+ to SFP+, 10GbE, copper twinax direct attach cable, 0.5m, 1m, 3m, 5m and 7m

*Requires C15 plug

Physical

2 rear stacking ports (21Gbps) supporting up to 84Gbps (full-duplex)

2 integrated front 10GbE SFP+ dedicated ports

Out-of-band management port (10/100/1000BASE-T)

USB (Type A) port for configuration via USB flash drive

Auto-negotiation for speed and flow control

Auto-MDI/MDIX, port mirroring

Energy-Efficient Ethernet per port settings

Redundant variable speed fans

Air flow: I/O to power supply

RJ45 console/management port with RS232 signaling (RJ-45 to female DB-9 connector cable included)

Dual firmware images on-board

Switching engine model: Store and forward

Chassis

Size (1RU): 1.7126in x 17.0866in x 16.0236in (43.5mm x 434.0mm x 407.0mm) (H x W x D)

Approximate weight: 13.2277lbs/6kg (S3124 and S3124F), 14.5505lbs/6.6kg (S3124P), 15.2119lbs/6.9kg (S3148P)

ReadyRails rack mounting system, no tools required

Environmental

Power supply: 200W (S3124, S3124F and S3148), 715W or 1,100W (S3124P), 1,100W (S3148P)

Power supply efficiency: 80% or better in all operating modes

Max. thermal output (BTU/hr): 182.55 (S3124), 228.96 (S3124F), 4391.42 (S3124P), 221.11 (S3148), 7319.04 (S3148P)

Power consumption max (watts): 52.8 (S3124), 67.1 (S3124F), 1,287 (S3124P), 74.8 (S3148), 2,145 (S3148P)

Operating temperature: 32° to 113°F (0° to 45°C)

Operating relative humidity: 95%

Storage temperature: –40° to 149°F (–40° to 65°C)

Storage relative humidity: 85%

Performance

MAC addresses:	56K (80K in L2 scaled mode)
Static routes:	16K (IPv4)/8K (IPv6)
Dynamic routes:	16K (IPv4)/8K (IPv6)
Switch fabric capacity: S3124P) (full duplex)	212Gbps (S3124, S3124F and 260Gbps (S3148 and S3148P)
Forwarding rate:	158Mpps (S3124, S3124F and S3124P)
	193Mpps (S3148 and S3148P)
Link aggregation:	16 links per group, 128 groups
Priority queues per port:	8
Line-rate Layer 2 switching:	All (non-blocking)
Line-rate Layer 3 routing:	All (non-blocking)
Flash memory:	1G
Packet buffer memory:	4MB
CPU memory:	2GB DDR3
Layer 2 VLANs:	4K
MSTP:	64 instances
VRF-lite:	511 instances
Line-rate Layer 2 switching:	All protocols, including IPv4 and IPv6
Line-rate Layer 3 routing:	IPv4 and IPv6
IPv4 host table size:	22K (42K in L3 scaled hosts mode)
IPv6 host table size:	16K (both global + Link Local) (32K in L3 scaled hosts mode)
IPv4 Multicast table size:	8K
LAG load balancing:	Based on Layer 2, IPv4 or IPv6 headers

IEEE compliance

802.1AB	LLDP
802.1D	Bridging, STP
802.1p	L2 Prioritization
802.1Q	VLAN Tagging, Double VLAN Tagging, GVRP
802.1Qbb	PFC
802.1Qaz	ETS
802.1s	MSTP
802.1w	RSTP
802.1x	Network Access Control
802.1x-2010	Port Based Network Access Control
802.3ab	Gigabit Ethernet (1000BASE-T)
802.3ac	Frame Extensions for VLAN Tagging
802.3ad	Link Aggregation with LACP
802.1ax	Link Aggregation Revision - 2008 and 2011
802.3ae	10 Gigabit Ethernet (10GBase-X)
802.3af	PoE (for S3124P and S3148P)
802.3at	PoE+ (for S3124P and S3148P)
802.3az	Energy Efficient Ethernet (EEE)
802.3u	Fast Ethernet (100Base-TX) on mgmt ports
802.3x	Flow Control
802.3z	Gigabit Ethernet (1000Base-X)
ANSI/TIA-1057	LLDP-MED
Force10	PVST+
MTU	12,000 bytes

RFC and I-D compliance

General Internet protocols

768	UDP
793	TCP
854	Telnet
959	FTP

General IPv4 protocols

791	IPv4
792	ICMP
826	ARP
1027	Proxy ARP
1035	DNS (client)
1042	Ethernet Transmission
1305	NTPv3
1519	CIDR
1542	BOOTP (relay)
1812	Requirements for IPv4 Routers
1918	Address Allocation for Private Internets
2474	Diffserv Field in IPv4 and Ipv6 Headers
2596	Assured Forwarding PHB Group
3164	BSD Syslog
3195	Reliable Delivery for Syslog
3246	Expedited Assured Forwarding
4364	VRF-lite (IPv4 VRF with OSPF and BGP)
5798	VRRP

General IPv6 protocols

1981	Path MTU Discovery Features
2460	Internet Protocol, Version 6 (IPv6) Specification
2464	Transmission of IPv6 Packets over Ethernet Networks
2711	IPv6 Router Alert Option
4007	IPv6 Scoped Address Architecture
4213	Basic Transition Mechanisms for IPv6 Hosts and Routers
4291	IPv6 Addressing Architecture
4443	ICMP for IPv6
4861	Neighbor Discovery for IPv6
4862	IPv6 Stateless Address Autoconfiguration
5095	Deprecation of Type 0 Routing Headers in IPv6

IPv6 Management support (telnet, FTP, TACACS, RADIUS, SSH, NTP)

RIP

1058 RIPv1 2453 RIPv2

OSPF (v2/v3)

1587	NSSA 4552 Authentication/
2154	OSPF with Digital Signatures
2328	OSPFv2 OSPFv3
2370	Opaque LSA 5340 OSPF for IPv6

IS-IS

5301	Dynamic hostname exchange mechanism for IS-IS
5302	Domain-wide prefix distribution with two-level IS-IS
5303	Three way handshake for IS-IS point-to-point adjacencies
5308	IS-IS for IPv6

BGP

1997	Communities	2858	Multiprotocol Extensions
2385	MD5	2918	Route Refresh
2545	BGP-4 Multiprotocol Extensions for IPv6 Inter-Domain Routing	3065	Confederations
		4360	Extended Communities
2439	Route Flap Damping	4893	4-byte ASN
2796	Route Reflection	5396	4-byte ASN representations
2842	Capabilities		

draft-ietf-idr-bgp4-20 BGPv4

draft-michaelson-4byte-as-representation-05 4-byte ASN Representation (partial)

draft-ietf-idr-add-paths-04.txt ADD PATH

Multicast

1112	IGMPv1	3376	IGMPv3
2236	IGMPv2		MSDP

draft-ietf-pim-sm-v2-new-05 PIM-SMw

Security

2404	The Use of HMACSHA-1-96 within ESP and AH
2865	RADIUS
3162	Radius and IPv6
3579	Radius support for EAP
3580	802.1X with RADIUS
3768	EAP
3826	AES Cipher Algorithm in the SNMP User Base Security Model
4250, 4251, 4252, 4253, 4254	SSHv2
4301	Security Architecture for IPSec
4302	IPSec Authentication Header
4303	ESP Protocol
4807	IPsec Security Policy DB MIB PIM-SMw

Network management

1155	SMIv1	3411	SNMPv3 Management Framework
1157	SNMPv1	3412	Message Processing and Dispatching for the Simple Network Management Protocol (SNMP)
1212	Concise MIB Definitions	3413	SNMP Applications
1215	SNMP Traps	3414	User-based Security Model (USM) for NMPv3
1493	Bridges MIB	3415	VACM for SNMP
1850	OSPFv2 MIB	3416	SNMPv2
1901	Community-Based SNMPv2	3417	Transport mappings for SNMP
2011	IP MIB	3418	SNMP MIB
2096	IP Forwarding Table MIB	3434	RMON High Capacity Alarm MIB
2578	SMIv2	3584	Coexistence between SNMP v1, v2 and v3
2579	Textual Conventions for SMIv2	4022	IP MIB
2580	Conformance Statements for SMIv2	4087	IP Tunnel MIB
2618	RADIUS Authentication MIB	4113	UDP MIB
2665	Ethernet-Like Interfaces MIB	4133	Entity MIB
2674	Extended Bridge MIB	4292	MIB for IP
2787	VRRP MIB	4293	MIB for IPv6 Textual Conventions
2819	RMON MIB (groups 1, 2, 3, 9)	4502	RMONv2 (groups 1,2,3,9)
2863	Interfaces MIB	5060	PIM MIB
3273	RMON High Capacity MIB		
3410	SNMPv3		

ANSI/TIA-1057 LLDP-MED MIB

Dell_ITA.Rev_1_1 MIB

draft-grant-tacacs-02 TACACS+

draft-ietf-idr-bgp4-mib-06 BGP MIBv1

IEEE 802.1AB LLDP MIB

IEEE 802.1AB LLDP DOT1 MIB

IEEE 802.1AB LLDP DOT3 MIB

sFlow.org sFlowv5

sFlow.org sFlowv5 MIB (version 1.3)

FORCE10-BGP4-V2-MIB Force10 BGP MIB (draft-ietf-idr-bgp4-mibv2-05)

FORCE10-IF-EXTENSION-MIB

FORCE10-LINKAGG-MIB

FORCE10-COPY-CONFIG-MIB

FORCE10-PRODUCTS-MIB

FORCE10-SS-CHASSIS-MIB

FORCE10-SMI

FORCE10-TC-MIB

FORCE10-TRAP-ALARM-MIB

FORCE10-FORWARDINGPLANE-STATS-MIB

Regulatory, environment and other compliance

Safety

UL/CSA 60950-1, Second Edition

EN 60950-1, Second Edition

IEC 60950-1, Second Edition Including All National Deviations and Group Differences

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 21 CFR 1040.10 and 1040.11

Emissions

USA: FCC CFR 47 Part 15, Subpart B:2011, Class A

Immunity

EN 300 386 V1.4.1:2008 EMC for Network Equipment

EN 55024: 1998 + A1: 2001 + A2: 2003

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

RoHS

All S Series components are EU RoHS compliant.

Certifications

Available with US Trade Agreements Act (TAA) compliance

USGv6 Host and Router Certified on Dell Networking OS 9.7 and greater

IPv6 Ready for both Host and Router

DoD UC-APL approved switch

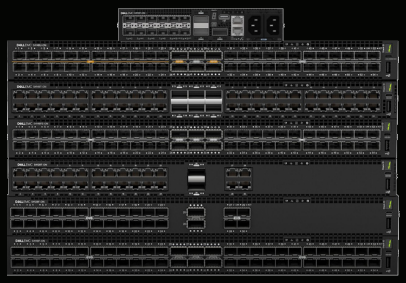
FIPS 140-2 Approved Cryptography

Warranty

Lifetime Limited Hardware Warranty

Learn More at Dell.com/Networking

July 2016 | Version 1.6
Dell_Networking_S3100_Series_spec_sheet



DELL EMC NETWORKING S4100-ON

High-performance open networking top-of-rack switches with multirate Gigabit Ethernet and unified ports

The S4100-ON 10GbE switches comprise Dell EMC's latest disaggregated hardware and software data center networking solutions, providing state-of-the-art 100GbE uplinks, fibre channel connectivity and a broad range of functionality to meet the growing demands of today's data center environment. These innovative, next-generation top-of-rack open networking switches offer optimum flexibility and cost-effectiveness for the enterprise, mid-market and Tier2 cloud service provider with demanding compute and storage traffic environments.

The compact S4100-ON models provide industry-leading density with up to 48 ports of 10GbE or up to 48 ports of 10GBaseT ports, 2 ports of 40GbE and 4 ports of 100GbE in a 1RU form factor. The S4148U-ON model can support up to 28 8/16G fibre channel ports, or 16 ports of 32G* fibre channel ports. The S4112-ON is a half-rack width model that supports up to 12 ports of 10GbE or 12 ports 10GBaseT, and 3 ports of 100GbE.

Using industry-leading hardware and a choice of Dell EMC's OS10 or select 3rd party network operating systems and tools, the S4100-ON Series offers flexibility by provision of configuration profiles and delivers non-blocking performance for workloads sensitive to packet loss. The compact S4100-ON models provide multirate speed, enabling denser footprints and simplifying migration to 100Gbps.

Also unique to the S4100-ON series is the ability to meet the demands of converged and virtualized data centers by offering unified ports (S4148U) and hardware support for L2 and L3 VXLAN Gateway. Priority-based flow control (PFC), data center bridge exchange (DCBX) and enhanced transmission selection (ETS) make the S4100-ON ideally suited for DCB environments.

Dell Networking S4100-ON switches support the open source Open Network Install Environment (ONIE) for zero touch installation of Dell EMC's OS10 networking operating system, as well as of alternative network operating systems.

Maximum performance and functionality

The S4100-ON series are high-performance, multi-function, 1/10/25/40/50/100 GbE and 8/16/32G FC Top-of-Rack (ToR) switches purpose-built for applications in high-performance data center, cloud and computing environments.

Architectural features to optimize data center network flexibility, efficiency and availability include IO panel to PSU airflow or PSU to IO panel airflow for hot/cold aisle environments and redundant, hot-swappable power supplies and fans.

Key applications

- Organizations looking to enter the software-defined data center era with a choice of networking technologies designed to maximize flexibility
- Multi-functional 1/10/25/40/50/100 GbE switching in High Performance Computing Clusters or other business-sensitive deployments requiring the highest bandwidth. High-density 1/10 GbE ToR server access in high-performance data center environments
- iSCSI and FC storage deployment, including DCB converged lossless transactions
- Small-scale data center fabric implementation via the S4100-ON switch in leaf and spine along with S-Series 1/10GbE ToR switches
- VXLAN layer 2/layer 3 gateway support (available in hardware only)

Key features

- 1RU high-density 10/40/100 GbE ToR switches with up to 48 ports of 10 GbE (SFP+) or up to 48 ports of 10GBaseT ports, or up to 28 ports of 8/16 fibre channel, two ports of 40 GbE (QSFP+), and up to four ports of 100GbE (QSFP28) or four ports of 8/16/32G fibre channel
- The S4112 is a 1RU, half-rack width 10/100GbE ToR switch with up to 12 ports of 10GbE (SFP+) or up to 12 ports of 10GBaseT ports, and up to three ports of 100GbE (QSFP28).
- Multi-rate 100GbE ports support 10/25/40/50 GbE. 40GbE ports support 10GbE. 10GbE ports support 1GbE. Up to four different simultaneous speeds are possible in a given profile.
- Supports dynamic reconfiguration of unified ports on S4148U product as 10GbE or 8/16G FC on SFP+ ports, and 25GbE or 16/32Gb FC on QSFP28 ports

* Not line rate

- 1.76Tbps (full-duplex) non-blocking, cut-through switching fabric delivers line-rate performance under full load on S4148F-ON, S4148FE-ON, S4148T-ON and S4148U-ON.
- 960Gbps (full-duplex) non-blocking, cut-through switching fabric delivers line-rate performance under full load on S4128F-ON and S4128T-ON.
- 840Gbps (full-duplex) non-blocking, cut-through switching fabric delivers line-rate performance under full load on S4112F-ON and S4112T-ON.
- VXLAN gateway functionality support for bridging and routing the non-virtualized and the virtualized overlay networks with line rate performance
- Converged Network support with DCB
- IO panel to PSU airflow or PSU to IO panel airflow
- Redundant, hot-swappable power supplies and fans (S4112-ON has redundant, fixed power supplies and fans)
- Support for 10GBASE-LRM optics over OM1/OM2 fiber on S4148FE-ON product (not supported on other products in S4100 product family)
- IEEE 1588v2 supported (hardware only) on 48 port models

Key Features with Dell EMC Networking OS10

- Consistent DevOps framework across compute, storage and networking elements
- Standard networking features, interfaces and scripting functions for legacy network operations integration
- Standards-based switching hardware abstraction via Switch Abstraction Interface (SAI)
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- OS10 Enterprise Edition software enables Dell EMC layer 2 and 3 switching and routing protocols with integrated IP services, quality of service, manageability and automation features
- Leverage common open source tools and best practices (data models, commit rollbacks)
- Increase VM Mobility region by stretching L2 VLAN within or across two DCs with unique VLT capabilities
- Scalable L2 and L3 Ethernet Switching with QoS, ACL and a full complement of standards based IPv4 and IPv6 features including OSPF, BGP and PBR
- Enhanced mirroring capabilities including local mirroring, Remote Port Mirroring (RPM), and Encapsulated Remote Port Mirroring (ERPM).
- Converged network support for Data Center Bridging, with priority flow control (802.1Qbb), ETS (802.1Qaz), DCBx and iSCSI TLV

	S4112F-ON	S4112T-ON	S4128F-ON	S4128T-ON	S4148F-ON	S4148FE-ON	S4148T-ON	S4148U-ON
Ports	12xSFP+ 3xQSFP28	12x10GbT 3xQSFP28	28xSFP+ 2xQSFP28	28x10GbT 2x QSFP28	48xSFP+ 2xQSFP+ 4xQSFP28	48xSFP+ 2xQSFP+ 4xQSFP28	48x10GbT 2xQSFP+ 4xQSFP28	48xSFP+ 2xQSFP+ 4xQSFP28
Unified port								●
Max 10GbE density	24	24 (12 10GbT and 12 SFP+)	36	36 (28 10GbT and 8 SFP+)	72	72	72 (48 10GbT and 24 SFP+)	72
Max 25GbE density	12	12	8	8	16	16	16	16
Max 40GbE density	3	3	2	2	6	6	6	6
Max 50GbE density	6	6	4	4	8	8	8	8
Max 100GbE density	3	3	2	2	4	4	4	4
Max FC 8G/16G ports (over-subscribed)	0	0	0	0	0	0	0	40
Max FC 16G line rate	0	0	0	0	0	0	0	28
Max FC 32G ports (over-subscribed)	0	0	0	0	0	0	0	16
Max FC 32G line rate	0	0	0	0	0	0	0	8
Switching capacity	840Gbps	840Gbps	960Gbps	960Gbps	1.76Tbps	1.76Tbps	1.76Tbps	1.76Tbps
Throughput	630Mpps	630Mpps	720Mpps	720Mpps	1320Mpps	1320Mpps	1320Mpps	1320Mpps
Latency (nano sec)	800	2500	800	2500	800	850	2500	800
LRM optics support						●		
1588v2 PTP timing					●	●	●	●
Maximum power consumption	180W	200W	260W	300W	370W	400W	440W	460W
Typical operating power	90W	120W	160W	250W	200W	240W	320W	300W
Number of fan trays	Fixed	Fixed	4	4	4	4	4	4
Fans per fan tray	3	3	1	1	1	1	2	2
Weight	8.30lbs	8.45lbs	19.66 lbs (8.92 kg)	20.67 lbs (9.38 kg)	20.15 lbs (9.14 kg)	20.85 lbs (9.46 kg)	22.37 lbs (10.15 kg)	20.52 lbs (9.31 kg)
Max thermal output	614 BTU/ hour	682 BTU/ hour	886 BTU/h	1,023 BTU/h	1261 BTU/h	1,364 BTU/h	1,500 BTU/h	1,568 BTU/h

● Supported

Product	Description
S4100-ON	S4112F, 12x 10GbE SFP+, 3x 100GbE QSFP28, 2x AC Fixed PSU, 3x Fixed Fan, I/O Panel to PSU Airflow S4112F, 12x 10GbE SFP+, 3x 100GbE QSFP28, 2x AC Fixed PSU, 3x Fixed Fan, I/O PSU to I/O Panel Airflow S4112T, 12x 10GBASE-T, 3x 100GbE QSFP28, 2x AC Fixed PSU, 3x Fixed Fan, I/O Panel to PSU Airflow S4112T, 12x 10GBASE-T, 3x 100GbE QSFP28, 2x AC Fixed PSU, 3x Fixed Fan, I/O PSU to I/O Panel Airflow S4112F, 12x 10GbE SFP+, 3x 100GbE QSFP28, 2x DC Fixed PSU, 3x Fixed Fan, I/O Panel to PSU Airflow S4112F, 12x 10GbE SFP+, 3x 100GbE QSFP28, 2x DC Fixed PSU, 3x Fixed Fan, I/O PSU to I/O Panel Airflow S4112T, 12x 10GBASE-T, 3x 100GbE QSFP28, 2x DC Fixed PSU, 3x Fixed Fan, I/O Panel to PSU Airflow S4112T, 12x 10GBASE-T, 3x 100GbE QSFP28, 2x DC Fixed PSU, 3x Fixed Fan, I/O PSU to I/O Panel Airflow S4128F, 28x 10GbE SFP+, 2x 100GbE QSFP28, 2x AC PSU, 4x Fan module, I/O Panel to PSU Airflow S4128F, 28x 10GbE SFP+, 2x 100GbE QSFP28, 2x AC PSU, 4x Fan module, PSU to I/O Panel Airflow S4128T, 28x 10GBASE-T, 2x 100GbE QSFP28, 2x AC PSU, 4x Fan module, I/O Panel to PSU Airflow S4128T, 28x 10GBASE-T, 2x 100GbE QSFP28, 2x AC PSU, 4x Fan module , PSU to I/O Panel Airflow S4148F, 48x 10GbE SFP+, 2x QSFP+, 4x 100GbE QSFP28, 2x AC PSU, 4x Fan module, I/O Panel to PSU Airflow S4148F, 48x 10GbE SFP+, 2x QSFP+, 4x 100GbE QSFP28, 2x AC PSU, 4x Fan module, PSU to I/O Panel Airflow S4148FE, 48x 10GbE SFP+, 2x QSFP+, 4x 100GbE QSFP28, 2x AC PSU, 4x Fans, I/O Panel to PSU Airflow S4148FE, 48x 10GbE SFP+, 2x QSFP+, 4x 100GbE QSFP28, 2x AC PSU, 4x Fan module, PSU to I/O Panel Airflow S4148T, 48x 10GBASE-T, 2x QSFP+, 4x 100GbE QSFP28, 2x AC PSU, 4x Fan module, I/O Panel to PSU Airflow S4148T, 48x 10GBASE-T, 2x QSFP+, 4x 100GbE QSFP28, 2x AC PSU, 4x Fan module, PSU to I/O Panel Airflow S4148U, 24x Unified port SFP+, 24x 10GbE SFP+, 2x QSFP+, 4x Unified port QSFP28, 2x AC PSU, 4x Fan module, I/O Panel to PSU Airflow S4148U, 24x Unified port SFP+, 24x 10GbE SFP+, 2x QSFP+, 4x Unified port QSFP28, 2x AC PSU, 4x Fan module, PSU to I/O Panel Airflow
Redundant power supplies (not applicable to S4112)	S4100, AC Power Supply, IO Panel to PSU Airflow S4100, AC Power Supply, PSU to IO Panel Airflow S4100, DC Power Supply, IO Panel to PSU Airflow (available as custom kit) S4100, DC Power Supply, PSU to IO Panel Airflow (available as custom kit) S4100, HV DC Power Supply, IO Panel to PSU Airflow S4100, HV DC Power Supply, PSU to IO Panel Airflow
Fans (not applicable to S4112)	S4100 fan module, IO Panel to PSU Airflow S4100 fan module, PSU to IO Panel Airflow
Optics	Transceiver, 10GbE, SR SFP+, short reach Transceiver, 10GbE, LR SFP+, long reach Transceiver, 10GbE, ER SFP+, extended reach Transceiver, 10GbE, ZR SFP+ extra extended reach 10G, Transceiver, 10GbE, USR, SFP+ Transceiver, 10GbE, LRM, SFP+ (for S4148FE only) Transceiver, 10GBASE-T use with QSA in QSFP+ port, 30m reach on CAT6a/7 Transceiver, 40GbE, SR4 optic QSFP+ Transceiver, 40GbE, eSR4 optic QSFP+ Transceiver, 40GbE, LR4 optic QSFP+ Transceiver, 40GbE, ER4 optics QSFP+ Transceiver, 40GbE, PSM4-LR MPO 10Km QSFP+ to LC Transceiver, 40GbE, LM4 / SM4 Duplex QSFP+ Transceiver, 100GbE, SR4 QSFP28 Transceiver, 100GbE, LR4 QSFP28 Transceiver, 100GbE, LR4Lite QSFP28 Transceiver, 100GbE, CWDM4 2Km QSFP28 Transceiver, 100GbE, PSM4 500m QSFP28 Transceiver, 100GbE, PSM4-IR, QSFP28 Transceiver, SFP+, 16Gbps Fibre Channel, SWL, 850nm, LC Duplex (S4148U model only) Transceiver, SFP+, 16Gbps Fibre Channel, LWL, 1310nm, LC SMF (S4148U model only) Transceiver, QSFP+, 4x16Gbps Fibre Channel, SW4, 850nm, MPO MMF (S4148U model only) Transceiver, QSFP28, 4x32Gbps Fibre Channel, SW4, 850nm, MPO MMF (S4148U model only)
Cables	40GbE, QSFP+ to QSFP+, active optical 40GbE, QSFP+ to QSFP+, passive DAC 40GbE, MTP to 4xLC optical breakout 40GbE, 4x10GbE, QSFP+ to 4xSFP+, passive DAC 100GbE, 4x25GbE, QSFP28 to 4xSFP28, passive DAC 100GbE, QSFP28 to QSFP28, active optical 100GbE, QSFP28 to QSFP28, passive DAC 100GbE, 2x50GbE, QSFP28 to 2xQSFP28, passive DAC, breakout (*)

Physical

1 RJ45 console/management port with RS232 signaling
1 RJ45 micro-USB-B console port
1 RJ45 10/100/1000Base-T management Ethernet port
Size: 1 RU, 1.75"(h) x 17"(w) x 18"(d) (4.4cm (h) x 43.1cm (w) x 45.7cm (d))
S4112: 1.7"(h) x 8.28"(w) x 18"(d) (4.125cm (h) x 20.9cm (w) x 45cm (d)
Power supply: 100–240 VAC 50/60 Hz
Power supply (DC), applicable to S4412: rated -40 to -72 VDC
Max. current draw per system: 6A/5A at 100/120V AC; 3A/2.5A at 200/240V AC
S4112: 2A/1.7A at 100/120V AC; 1A/0.8A at 200/240V AC
S4112 (DC): -40V/5A, -48V/4.2A, -72V/2.8A
Max. operating specifications:
Operating temperature: 41° to 104° F (5° to 40° C)
Operating humidity: 5 to 85% (RH), non-condensing
Max. non-operating specifications:
Storage temperature: -40° to 149°F (-40° C to 65° C)
Storage humidity: 5 to 95% (RH), non-condensing

Redundancy

Hot swappable redundant power (not applicable to S4112)
Hot swappable redundant fans (not applicable to S4112)
Fixed, redundant power supply and fan for S4112

Performance

Packet buffer memory	12MB
CPU memory:	4GB
MAC addresses:	272K (in Scaled L2 mode)
PVST:	128 instances
ARP table	200K (in Scaled L3 host mode)
IPv4 routes:	200K (in Scaled L3 routes mode)
IPv6 hosts:	64K
IPv6 routes:	130K (in Scaled L3 routes mode)
Multicast hosts:	8K
Link aggregation:	32 links per group, 128 groups
Layer 2 VLANs:	4K
Layer3 VLANs:	500
MSTP:	32 instances
LAG load balancing: or IPv6 headers	Based on layer 2, IPv4
L2 Ingress ACL:	6K
L2 Egress ACL:	1K
IPv4 Ingress ACL:	6K
IPv4 Egress ACL:	1K
IPv6 Ingress ACL:	3K
IPv6 Egress ACL:	500

Storage performance parameters

iSCSI Sessions:	255
iSCSI Target:	16

F-Port: Max F-Port Sessions: 526
F-Port: Max members in a zone: 526

Dell EMC Networking OS10.3 Enterprise Edition Software Specifications

IEEE Compliance

802.1AB	LLDP
TIA-1057	LLDP-MED
802.1s	MSTP
802.1w	RSTP
802.3ab	Gigabit Ethernet (1000Base-T)
802.3ad	Link Aggregation with LACP
802.3ae	10 Gigabit Ethernet (10GBase-X)
802.3ba	40 Gigabit Ethernet (40GBase-X)
802.3i	Ethernet (10Base-T)
802.3u	Fast Ethernet (100Base-TX)
802.3z	Gigabit Ethernet (1000BaseX)
802.1D	Bridging, STP
802.1p	L2 Prioritization
802.1Q	VLAN Tagging, GVRP
802.1Qbb	PFC
802.1Qaz	ETS
802.1s	MSTP
802.1w	RSTP
PVST+	
802.1X	Network Access Control
802.3ab	Gigabit Ethernet (1000BASE-T) or breakout
802.3ac	Frame Extensions for VLAN Tagging
802.3ad	Link Aggregation with LACP
802.3ae	10 Gigabit Ethernet (10GBase-X)
802.3ba	40 Gigabit Ethernet (40GBase-SR4, 40GBase-CR4, 40GBase-LR4, 100GBase-SR10, 100GBase-LR4, 100GBase-ER4) on optical ports
802.3bj	100 Gigabit Ethernet
802.3u	Fast Ethernet (100Base-TX) on mgmt ports
802.3x	Flow Control
802.3z	Gigabit Ethernet (1000Base-X) with QSA
ANSI/TIA-1057	LLDP-MED

Jumbo MTU support 9,416 bytes

Layer2 Protocols

802.1D	Compatible
802.1p	L2 Prioritization
802.1Q	VLAN Tagging
802.1s	MSTP
802.1w	RSTP
802.1t	RPVST+
802.3ad	Link Aggregation with LACP

VLT (Virtual Link Trunking)
VLT Enhancements
Minloss Upgrades
VLT Proxy Gateway
RVPST over VLT
DCB, FSB, iSCSI over VLT
RSPAN over VLT

RFC Compliance

768	UDP
793	TCP
854	Telnet
959	FTP
1321	MD5
1350	TFTP
2474	Differentiated Services
2698	Two Rate Three Color Marker
3164	Syslog
4254	SSHv2

General IPv4 Protocols

791	IPv4
792	ICMP
826	ARP
1027	Proxy ARP
1035	DNS (client)
1042	Ethernet Transmission
1191	Path MTU Discovery
1305	NTPv4
1519	CIDR
1812	Routers
1858	IP Fragment Filtering
2131	DHCP (server and relay)
5798	VRRP
3021	31-bit Prefixes
3046	DHCP Option 82 (Relay)
1812	Requirements for IPv4 Routers
1918	Address Allocation for Private Internets
2474	Diffserv Field in IPv4 and Ipv6 Headers
2597	Assured Forwarding PHB Group
3195	Reliable Delivery for Syslog
3246	Expedited Forwarding PHB
4364	VRF-lite (IPv4 VRF with OSPF and BGP)*

COPP: Control Plane Policing
Policy Based Routing

General IPv6 Protocols

1981	Path MTU Discovery*
2460	IPv6
2461	Neighbor Discovery*
2462	Stateless Address AutoConfig
2463	ICMPv6
2464	Ethernet Transmission
2675	Jumbo grams
3587	Global Unicast Address Format
4291	IPv6 Addressing
2464	Transmission of IPv6 Packets over Ethernet Networks
2711	IPv6 Router Alert Option
4007	IPv6 Scoped Address Architecture
4213	Basic Transition Mechanisms for IPv6 Hosts and Routers
4291	IPv6 Addressing Architecture
5095	Deprecation of Type 0 Routing Headers in IPv6
IPv6	Management support (telnet, FTP, TACACS, RADIUS, SSH, NTP)

OSPF

1587	NSSA
1745	OSPF/BGP interaction
1765	OSPF Database overflow
2154	MD5
2328	OSPFv2
2370	Opaque LSA
3101	OSPF NSSA
3623	OSPF Graceful Restart (Helper mode)*

Security

2865	RADIUS
3162	Radius and IPv6
4250, 4251, 4252, 4253, 4254	SSHv2
4301	Security Architecture for IPSec*
4302	IPSec Authentication Header*
4303	ESP Protocol*

BGP

1997	Communities
2385	MD5
2439	Route Flap Damping
2796	Route Reflection
2842	Capabilities
2918	Route Refresh
3065	Confederations
4271	BGP-4
4360	Extended Communities
4893	4-byte ASN
5396	4-byte ASN Representation
5492	Capabilities Advertisement

Linux Distribution

Debian Linux version 8.4
Linux Kernel 3.16

MIBS

IP MIB– Net SNMP
IP Forward MIB– Net SNMP
Host Resources MIB– Net SNMP
IF MIB – Net SNMP
LLDP MIB
Entity MIB
LAG MIB
Dell-Vendor MIB

TCP MIB – Net SNMP
UDP MIB – Net SNMP
SNMPv2 MIB – Net SNMP
Network Management
SNMPv1/2
SSHv2
FTP, TFTP, SCP
Syslog
Port Mirroring
RADIUS
802.1X
Support Assist (Phone Home)
Netconf APIs
XML Schema
CLI Commit (Scratchpad)
sFlow
Automation
Control Plane Services APIs
Linux Utilities and Scripting Tools
Quality of Service
Access Control Lists
Prefix List
Route-Map
Rate Shaping (Egress)
Rate Policing (Ingress)
Scheduling Algorithms
- Round Robin
- Weighted Round Robin
- Deficit Round Robin
- Strict Priority

Weighted Random Early Detect
Data center bridging
802.1Qbb Priority-Based Flow Control
802.1Qaz Enhanced Transmission Selection (ETS)*
Data Center Bridging eXchange (DCBx)
DCBx Application TLV (iSCSI, FCoE*)
Fibre Channel (applicable only to S4148U-ON)
FCF F-Port
FC Zoning

Regulatory compliance

Safety
UL/CSA 60950-1, Second Edition
EN 60950-1, Second Edition
IEC 60950-1, Second Edition Including All National Deviations and Group Differences
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 21 CFR 1040.10 and 1040.11
Emissions
Australia/New Zealand: AS/NZS CISPR 32: Class A
Canada: ICES-003, Issue-4, Class A
Europe: EN 55032: 2015+A1:2007 (CISPR 32), Class A
Japan: VCCI V3/2009 Class A
USA: FCC CFR 47 Part 15, Subpart B:2009, Class A
Immunity
EN 300 386 V1.4.1:2008 EMC for Network Equipment
EN 55024: 1998 + A1: 2001 + A2: 2003
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
RoHS
All S-Series components are EU RoHS compliant.
Certifications
Japan: VCCI V3/2009 Class A
USA: FCC CFR 47 Part 15, Subpart B:2009, Class A
Warranty
1 Year Return to Depot

* Roadmap

Learn more at Dell.com/Networking

IT Lifecycle Services for Networking

Experts, insights and ease

Our highly trained experts, with innovative tools and proven processes, help you transform your IT investments into strategic advantages.

Plan & Design

Let us analyze your multivendor environment and deliver a comprehensive report and action plan to build upon the existing network and improve performance.

Deploy & Integrate

Get new wired or wireless network technology installed and configured with ProDeploy. Reduce costs, save time, and get up and running fast.

Educate

Ensure your staff builds the right skills for long-term success. Get certified on Dell EMC Networking technology and learn how to increase performance and optimize infrastructure.

Manage & Support

Gain access to technical experts and quickly resolve multivendor networking challenges with ProSupport. Spend less time resolving network issues and more time innovating.

Optimize

Maximize performance for dynamic IT environments with Dell EMC Optimize. Benefit from in-depth predictive analysis, remote monitoring and a dedicated systems analyst for your network.

Retire

We can help you resell or retire excess hardware while meeting local regulatory guidelines and acting in an environmentally responsible way.

Learn more at Dell.com/LifecycleServices

May 2018 | v1.4
Dell EMC Networking S4100 Spec Sheet

DELL EMC

Specification Sheet

Dell EMC PowerSwitch S5200-ON Series Switches

High-performance, open networking 25GbE top-of-rack and 100GbE spine/leaf switches

The PowerSwitch S5200-ON 25/100GbE fixed switches comprise Dell EMC's latest disaggregated hardware and software data center networking solutions, providing state-of-the-art, high-density 25/100GbE ports and a broad range of functionality to meet the growing demands of today's data center environment. These innovative, next-generation open networking switches offer optimum flexibility and cost-effectiveness for web 2.0, enterprise, mid- market and cloud service provider with demanding compute and storage traffic environments.

The S5200-ON is a complete family of switches: 12-port, 24-port, and 48-port 25GbE/100GbE ToR switches, 96-port 25GbE/100GbE Middle of Row (MoR)/End of Row (EoR) switch, and a 32-port 100GbE Multi-Rate Spine/Leaf switch. From the compact half-rack width S5212F-ON providing an ideal form factor for hyper-converged deployments, to the high density S5296F-ON for Middle of Row deployments, the S5200-ON series offers performance and flexibility for a variety of network designs.

In addition to 100GbE Spine/Leaf deployments, the S5232F-ON can also be used in high density deployments using breakout cables to achieve up to 128 10GbE or 128 25GbE ports.

Using industry-leading hardware and a choice of Dell EMC's OS10 or select 3rd party network operating systems and tools, the S5200-ON switches incorporate multiple architectural features that optimize data center network flexibility, efficiency and availability, including IO panel to PSU or PSU to IO panel airflow for hot/cold aisle environments, redundant, hot-swappable power supplies and fans and deliver non-blocking performance for workloads sensitive to packet loss.

Priority-based flow control (PFC), data center bridge exchange (DCBX) and enhanced transmission selection (ETS) make the S5200-ON family ideally suited for DCB environments.

Dell EMC PowerSwitch S5200-ON switches support the open source Open Network Install Environment (ONIE) for zero touch installation of Dell EMC's OS10 networking operating system, as well as alternative network operating systems.

Key applications

- Organizations looking to enter the software-defined data center era with a choice of networking technologies designed to maximize flexibility
- High-density 10/25GbE ToR server aggregation in high-performance data center environments at the desired fabric speed with the S5248F-ON or S5296F-ON
- Low-density 10/25GbE server and storage aggregation with the S5212F-ON and S5224F-ON
- Small-scale Fabric implementation via the S5232F-ON switch in leaf and spine along with S5248F-ON 1/10/25GbE ToR switches enabling cost-effective aggregation of 10/25/40/50/100 uplinks
- Multi-functional 10/25/40/50/100GbE switching in High Performance Computing Clusters or other business-sensitive deployments requiring the highest bandwidth.
- iSCSI deployments, including DCB converged lossless transactions
- Single-pass VXLAN routing (future software release)

Key features

- 1 or 2RU high-density ToR switches with up to 48 or 96 ports of 25GbE or 32 ports of 100GbE
- Multi-rate 100GbE ports support 10/25/40/50/100GbE
- Scalable L2 and L3 Ethernet switching with QoS and a full complement of standards-based IPv4 and IPv6 features, including OSPF and BGP routing support
- Line-rate performance via non-blocking switch fabrics: 3.2Tbps (6.4Tbps full-duplex) on S5296F-ON and S5232F-ON, 2.0Tbps (4.0Tbps full-duplex) on S5248F-ON, and 1.08Tbps (2.16Tbps full-duplex) on S5224F-ON and S5212F-ON
- L2 multipath support via Virtual Link Trunking (VLT) and Routed VLT support
- VXLAN gateway functionality support for bridging and routing the non-virtualized and the virtualized overlay networks with line rate performance (hardware only)
- Support for OS10 Enterprise Edition
- Converged network support for DCB, with priority flow control (802.1Qbb), ETS (802.1Qaz), DCBx and iSCSI TLV support
- Routable RoCE to enable convergence of compute and storage on Leaf/Spine Fabric
- IO panel to PSU airflow or PSU to IO panel airflow Redundant, hot-swappable power supplies and fans on most models
- Supports the open source Open Network Install Environment (ONIE) for zero touch installation of alternate network operating systems
- L2 VXLAN (Static VXLAN with VLT, BGP EVPN)
- Tool-less enterprise ReadyRails™ mounting kits for most models reducing time and resources for switch rack installation (S5212F-ON will utilize a tandem tray for mounting)
- Power-efficient operation and Dell Fresh Air 2.0 compliant up to 45ºC helps reduce cooling costs in temperature constrained deployments

Key features with Dell EMC Networking OS10

- Consistent DevOps framework across compute, storage and networking elements
- Standard networking features, interfaces and scripting functions for legacy network operations integration
- Standards-based switching hardware abstraction via Switch Abstraction Interface (SAI)
- Pervasive, unrestricted developer environment via Control Plane Services (CPS)
- OS10 Enterprise Edition software enables Dell EMC layer 2 and 3 switching and routing protocols with integrated IP services, quality of service, manageability and automation features
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Features	S5212F-ON	S5224F-ON	S5248F-ON	S5296F-ON	S5232F-ON
Ports	12xSFP28 3xQSFP28	24xSFP28 4xQSFP28	48xSFP28 2xQSFP28-DD 4xQSFP28	96xSFP28 8xQSFP28	32xQSFP28 2xSFP+
Max 10GbE density	24	40	80	128	128
Max 25GbE density	24	40	80	128	128
Max 40GbE density	3	4	8	8	32
Max 50GbE density	6	8	16	16	64
Max 100GbE density	3	4	8	8	32
Switching capacity	1.08Tbps (2.16Tbps full-duplex)	1.08Tbps (2.16Tbps full-duplex)	2.0Tbps (4.0Tbps full-duplex)	3.2Tbps (6.4Tbps full-duplex)	3.2Tbps (6.4Tbps full-duplex)
Throughput	892Mpps	1488Mpps	1.5Bpps	2.4Bpps	2.4Bpps

*Roadmap

Features	S5212F-ON	S5224F-ON	S5248F-ON	S5296F-ON	S5232F-ON
Latency (nano sec)	906	881	847	850	877
1588v2 PTP timing (hardware)		●	●	●	●
CPU Memory	8GB	16GB	16GB	16GB	16GB
SSD	16GB	32GB	64GB	64GB	64GB
Packet Buffer	32MB	32MB	32MB	32MB	32MB
Maximum power	304W	455W	647W	893W	635W
Typical power	140W	200W	310W	457W	360W
Maximum current	2.8A@110VAC / 1.4A@220VAC	4.2A@110VAC / 2.1A@220VAC	5.8A@110VAC / 2.9A@220VAC	8.2A@110VAC / 4.1A@220VAC	5.8A@110VAC / 2.9A@220VAC
Fan modules	Fixed	4	4	4	4
Form Factor	1RU (half-width)	1RU	1RU	2RU	1RU
Dimensions	17.1”Wx18.1”D x1.7”H 43.4Wx46.0D x4.4H (cm)	17.1”Wx18.1”D x1.7”H 43.4Wx46.0D x4.4H (cm)	17.1”Wx18.1”D x1.7”H 43.4Wx46.0D x4.4H (cm)	17.4”Wx20.1”D x3.4”H 44.2Wx51.1D x8.7H (cm)	17.1”Wx18.1”D x1.7”H 43.4Wx46.0D x4.4H (cm)
Weight	4.5kg (10.05lbs)	9.7kg (21.4lbs)	9.7kg (21.4lbs)	15.1kg (33.2lbs)	9.8kg (21.6lbs)
Max thermal output	1037 BTU/h	1552 BTU/h	2208 BTU/h	3047 BTU/h	2167 BTU/h

Product	Description
S5200-ON	S5212F, 12x 25GbE SFP28 + 3x 100GbE QSFP28, 2x AC PSU,I/O Panel to PSU Airflow, OS10 Enterprise Edition S5212F, 12x 25GbE SFP28 + 3x 100GbE QSFP28, 2x AC PSU, PSU to I/O Panel Airflow, OS10 Enterprise Edition S5212F, 12x 25GbE SFP28 + 3x 100GbE QSFP28, 2x DC PSU, I/O Panel to PSU Airflow, OS10 Enterprise Edition S5212F, 12x 25GbE SFP28 + 3x 100GbE QSFP28, 2x DC PSU, PSU to I/O Panel Airflow, OS10 Enterprise Edition S5212F, 12x 25GbE SFP28 + 3x 100GbE QSFP28, 2x AC PSU, I/O Panel to PSU Airflow, NO-OS S5212F, 12x 25GbE SFP28 + 3x 100GbE QSFP28, 2x AC PSU, PSU to I/O Panel Airflow, NO-OS S5212F, 12x 25GbE SFP28 + 3x 100GbE QSFP28, 2x AC PSU, I/O Panel to PSU Airflow, OS10 Enterprise Edition, TAA S5212F, 12x 25GbE SFP28 + 3x 100GbE QSFP28, 2x AC PSU, PSU to I/O Panel Airflow, OS10 Enterprise Edition, TAA S5224F, 24x 25GbE SFP28 + 4x 100GbE QSFP28, 2x AC PSU, Fan modules, I/O Panel to PSU Airflow, OS10 Enterprise Edition S5224F, 24x 25GbE SFP28 + 4x 100GbE QSFP28, 2x AC PSU, Fan modules, PSU to I/O Panel Airflow, OS10 Enterprise Edition S5224F, 24x 25GbE SFP28 + 4x 100GbE QSFP28, 2x AC PSU, Fan modules, I/O Panel to PSU Airflow, NO-OS S5224F, 24x 25GbE SFP28 + 4x 100GbE QSFP28, 2x AC PSU, Fan modules, PSU to I/O Panel Airflow, NO-OS S5224F, 24x 25GbE SFP28 + 4x 100GbE QSFP28, 2x AC PSU, Fan modules, I/O Panel to PSU Airflow, OS10 Enterprise Edition, TAA S5224F, 24x 25GbE SFP28 + 4x 100GbE QSFP28, 2x AC PSU, Fan modules, PSU to I/O Panel Airflow, OS10 Enterprise Edition, TAA

Product	Description
S5200-ON	S5212F, 12x 25GbE SFP28 + 3x 100GbE QSFP28, 2x AC PSU,I/O Panel to PSU Airflow, OS10 Enterprise Edition S5212F, 12x 25GbE SFP28 + 3x 100GbE QSFP28, 2x AC PSU, PSU to I/O Panel Airflow, OS10 Enterprise Edition S5212F, 12x 25GbE SFP28 + 3x 100GbE QSFP28, 2x DC PSU, I/O Panel to PSU Airflow, OS10 Enterprise Edition S5212F, 12x 25GbE SFP28 + 3x 100GbE QSFP28, 2x DC PSU, PSU to I/O Panel Airflow, OS10 Enterprise Edition S5212F, 12x 25GbE SFP28 + 3x 100GbE QSFP28, 2x AC PSU, I/O Panel to PSU Airflow, NO-OS S5212F, 12x 25GbE SFP28 + 3x 100GbE QSFP28, 2x AC PSU, PSU to I/O Panel Airflow, NO-OS S5212F, 12x 25GbE SFP28 + 3x 100GbE QSFP28, 2x AC PSU, I/O Panel to PSU Airflow, OS10 Enterprise Edition, TAA S5212F, 12x 25GbE SFP28 + 3x 100GbE QSFP28, 2x AC PSU, PSU to I/O Panel Airflow, OS10 Enterprise Edition, TAA S5224F, 24x 25GbE SFP28 + 4x 100GbE QSFP28, 2x AC PSU, Fan modules, I/O Panel to PSU Airflow, OS10 Enterprise Edition S5224F, 24x 25GbE SFP28 + 4x 100GbE QSFP28, 2x AC PSU, Fan modules, PSU to I/O Panel Airflow, OS10 Enterprise Edition S5224F, 24x 25GbE SFP28 + 4x 100GbE QSFP28, 2x AC PSU, Fan modules, I/O Panel to PSU Airflow, NO-OS S5224F, 24x 25GbE SFP28 + 4x 100GbE QSFP28, 2x AC PSU, Fan modules, PSU to I/O Panel Airflow, NO-OS S5224F, 24x 25GbE SFP28 + 4x 100GbE QSFP28, 2x AC PSU, Fan modules, I/O Panel to PSU Airflow, OS10 Enterprise Edition, TAA S5224F, 24x 25GbE SFP28 + 4x 100GbE QSFP28, 2x AC PSU, Fan modules, PSU to I/O Panel Airflow, OS10 Enterprise Edition, TAA S5232F, 32x QSFP28 + 2x 10GbE SFP+, 2x AC PSU, Fan modules, I/O Panel to PSU Airflow, OS10 Enterprise Edition S5232F, 32x QSFP28 + 2x 10GbE SFP+, 2x AC PSU, Fan modules, PSU to I/O Panel Airflow, OS10 Enterprise Edition S5232F, 32x QSFP28 + 2x 10GbE SFP+, 2x AC PSU, Fan modules, I/O Panel to PSU Airflow, NO-OS S5232F, 32x QSFP28 + 2x 10GbE SFP+, 2x AC PSU, Fan modules, PSU to I/O Panel Airflow, NO-OS S5232F, 32x QSFP28 + 2x 10GbE SFP+, 2x AC PSU, Fan modules, I/O Panel to PSU Airflow, OS10 Enterprise Edition, TAA S5232F, 32x QSFP28 + 2x 10GbE SFP+, 2x AC PSU, Fan modules, PSU to I/O Panel Airflow, OS10 Enterprise Edition, TAA
Redundant power supplies	AC Power Supply, IO Panel to PSU Airflow AC Power Supply, PSU to IO Panel Airflow DC Power Supply, IO Panel to PSU Airflow (available as custom kit) DC Power Supply, PSU to IO Panel Airflow (available as custom kit)
Fans	Fan module, IO Panel to PSU Airflow Fan module, PSU to IO Panel Airflow
Optics	Transceiver, 2x100GbE, 2xSR4, QSFP28-DD Transceiver, 2x100GbE, 2xPSM4-IR, QSFP28-DD Transceiver, 2x100GbE, 2xCWDM4, QSFP28-DD Transceiver, 100GbE, SR4 QSFP28 Transceiver, 100GbE, PSM4 (500m) QSFP28 Transceiver, 100GbE, CWDM4 (2Km) QSFP28 Transceiver, 100GbE, LR4 QSFP28 Transceiver, 40GbE, SR4 optic QSFP+ Transceiver, 40GbE, BIDI optic QSFP+ (Duplex) Transceiver, 40GbE, SM4 optic QSFP+ (Duplex) Transceiver, 40GbE, LM4 optic QSFP+ (Duplex) Transceiver, 40GbE, PSM4 10Km, QSFP+ Transceiver, 40GbE, LR4 optic QSFP+ Transceiver, 40GbE, ER4 optics QSFP+ Transceiver, 25GbE, SR, NOF SFP28 Transceiver, 25GbE, LR, SFP28 Transceiver, 10GbE, SR SFP+, short reach Transceiver, 10GbE, LR SFP+, long reach Transceiver, 10GbE, ER SFP+, extended reach Transceiver, 10GbE, ZR SFP+ extra extended reach 10G, Transceiver, 10GBASE-T use with QSA in QSFP+ port, 30m reach on CAT6a/7 Transceiver, 1GbE, SX SFP Transceiver, 1GbE, LX SFP Transceiver, 1GbE, ZX SFP Transceiver, 1GbE, 10km, BiDi SFP Transceiver, 1GbE, 40km, BiDi SFP Transceiver, 1GbE, 80km, BiDi SFP Transceiver, 1GbE, 1000BASE-T, Gen2, SFP

Product	Description
Cables	100GbE, 4x25GbE, QSFP28 to 4xSFP28, passive DAC 100GbE, QSFP28 to QSFP28, active optical 100GbE, QSFP28 to QSFP28, passive DAC 100GbE, 2x50GbE, 2xQSFP to 2xQSFP28, passive DAC, breakout 40GbE, QSFP+ to QSFP+, active optical 40GbE, QSFP+ to QSFP+, passive DAC 40GbE, MTP to 4xLC optical breakout 40GbE, 4x10GbE, QSFP+ to 4xSFP+, passive DAC
Cable management	Z9100 Cable Breakout Kit, MTP to LC (1RU 64-port LC over MMF) Z9100 Cable Breakout Kit, MTP to LC (1RU 64-port LC over SMF)

Technical specifications

Physical

1 RJ45 console/management port with RS232 signaling
S5212F-ON: 12x25GbE SFP28 + 3x 100GbE QSFP28
S5224F-ON: 24x25GbE SFP28 + 4x 100GbE QSFP28
S5248F-ON: 48x25GbE SFP28 + 4x 100GbE QSFP28 + 2x 2x100GbE QSFP28-DD
S5296F-ON: 96x25GbE SFP28 + 8x 100GbE QSFP28
S5232F-ON: 32x100GbE QSFP28 ports + 2xSFP+ 10GbE

Environmental

Power supply: 100–240 VAC 50/60 Hz
Max Operating specifications:
AC Max. Operating specifications:
Operating temperature: 32° to 113°F (0° to 45°C)
Operating humidity: 5 to 90% (RH), non-condensing
Max. Non-operating specifications:
Storage temperature: –40° to 158°F (–40° to 70°C)
Storage humidity: 5 to 90% (RH), non-condensing
Fresh air Compliant to 45°C

Redundancy

Hot swappable redundant power
Hot swappable redundant fans (fixed power supply and fans on S5212F-ON)

Performance

Packet buffer memory: 32MB
CPU memory: 16GB
MAC addresses: 160K
ARP table: 128K
IPv4 routes: 128K
IPv6 routes: 64K
Multicast hosts: 32K
Link aggregation: 16 links per group, 128 groups
Layer 2 VLANs: 4K
MSTP: 64 instances
LAG load balancing: Based on layer 2, IPv4 or IPv6 headers

IEEE Compliance

802.1AB LLDP
TIA-1057 LLDP-MED
802.3ad Link Aggregation
802.1D Bridging, STP
802.1p L2 Prioritization
802.1Q VLAN Tagging
802.1Qbb PFC
802.1Qaz ETS
802.1X Network Access Control
802.3ac Frame Extensions for VLAN Tagging
802.3x Flow Control
Layer2 Protocols
802.1D Compatible
802.1p L2 Prioritization
802.1Q VLAN Tagging
802.1s MSTP
802.1w RSTP
802.1t RPVST+
VLT (Virtual Link Trunking)
VRRP Active/Active
RSTP & RPVST+
Port Mirroring on VLT ports
DCB, iSCSI, FSB on VLT
RPM/ERPM over VLT
VLT Minloss upgrade

RFC Compliance

768 UDP
793 TCP
854 Telnet
959 FTP
1321 MD5
1350 TFTP
2474 Differentiated Services
2698 Two Rate Three Color Marker
3164 Syslog
4254 SSHv2

General IPv4 Protocols

791 IPv4
792 ICMP
826 ARP
1027 Proxy ARP
1035 DNS (client)
1042 Ethernet Transmission
1191 Path MTU Discovery
1305 NTPv4
1519 CIDR
1812 Routers, Static Routes
1858 IP Fragment Filtering
2131 DHCPv4 (server and relay)
5798 VRRPv3
3021 31-bit Prefixes
1812 Requirements for IPv4 Routers
1918 Address Allocation for Private Internets
2474 Diffserv Field in IPv4 and Ipv6 Headers
2597 Assured Forwarding PHB Group
3195 Reliable Delivery for Syslog
3246 Expedited Forwarding PHB Group
VRF (BGPv4/v6)

General IPv6 Protocols

1981 Path MTU for IPv6
2372 IPv6 Addressing
2460 IPv6 Protocol Specification
2461 Neighbor Discovery
2462 Stateless Address AutoConfig
2711 IPv6 Router alert
2463 ICMPv6
2464 Ethernet Transmission
2675 IPv6 Jumbograms
3484 Default Address Selection
3493 Basic Socket Interface
4291 Addressing Architecture
3542 Advanced Sockets API
3587 Global Unicast Address Format
4291 IPv6 Addressing
2464 Transmission of IPv6 Packets over Ethernet Networks
2711 IPv6 Router Alert Option
4007 IPv6 Scoped Address Architecture
4213 Transition Mechanisms for IPv6 Hosts and Routers
3315 DHCPv6 Server & Relay
IPv6 Static Routes

OSPF

1745 OSPF/BGP interaction
1765 OSPF Database overflow
2154 OSPF with DigitalSignatures
2328 OSPFv2
5340 OSPF for IPv6 (OSPFv3)
2370 Opaque LSA
3101 OSPF NSSA
4552 OSPFv3 Authentication

Multicast

4541 IGMPv1/v2/v3 and MLDv1/v2 Snooping

Security

2865 RADIUS
3162 Radius and IPv6
3579 Radius support for EAP
3580 802.1X with RADIUS
3826 AES Cipher in SNMP
1492 TACACS (Authentication, Accounting)
Control Plane, VTY & SNMP ACLs
IP Access Control Lists

BGP

1997 Communities
2385 MD5
2439 Route Flap Damping
2796 Route Reflection
2918 Route Refresh

3065 Confederations
4271 BGP-4
2545 BGP-4 Multiprotocol Extensions for IPv6 Inter-Domain Routing
2858 Multiprotocol Extensions
4360 Extended Communities
4893 4-byte ASN
5396 4-byte ASN Representation
5492 Capabilities Advertisement
draft-ietf-idr-add-paths-04.txt ADD PATH

Linux Distribution
Debian Linux version 9
Linux Kernel 4.9

Network Management and Monitoring
SNMPv1/2c
IPv4/IPv6 Management support (Telnet, FTP, TACACS, RADIUS, SSH, NTP)
Syslog
Port Mirroring
RPM/ERPM
3176 SFlow
Support Assist (Phone Home)
RestConf APIs (Layer 2 features)
XML Schema
CLI Commit (Scratchpad)
Uplink Failure Detection
Object Tracking
Bidirectional Forwarding Detection (BFD)
Automation
Control Plane Services APIs
Linux Utilities and Scripting Tools
CLI Automation (Multiline Alias)
Zero Touch Deployment (ZTD)
Ansible, Puppet, Chef, SaltStack
8040 RESTCONF APIs (L3)

Quality of Service
Prefix List
Route-Map
Rate Shaping (Egress)
Rate Policing (Ingress)
Scheduling Algorithms
Round Robin
Weighted Round Robin
Deficit Round Robin
Strict Priority
Weighted Random Early Detect

Data center bridging
802.1Qbb Priority-Based Flow Control
802.1Qaz Enhanced Transmission Selection (ETS)
Explicit Congestion Notification
Data Center Bridging eXchange (DCBx)
DCBx Application TLV (iSCSI, FCoE)
RoCEv2
Software Defined Networking
OpenFlow 1.3 (Native)

MIBS
IP MIB
IP Forward MIB
Host Resources MIB
IF MIB
LLDP EXT1/3 MIB
Entity MIB
LAG MIB
Dell-Vendor MIB
TCP MIB
UDP MIB
SNMPv2 MIB
ETHERLIKE-MIB
SFLOW-MIB
PFC-MIB

Regulatory compliance

Safety
UL/CSA 60950-1, Second Edition
EN 60950-1, Second Edition
IEC 60950-1, Second Edition Including All National Deviations and Group Differences
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 21 CFR 1040.10 and 1040.11

Emissions
Australia/New Zealand: AS/NZS CISPR 22: 2006, Class A
Canada: ICES-003, Issue-4, Class A
Europe: EN 55022: 2006+A1:2007 (CISPR 22: 2006), Class A
Japan: VCCI V3/2009 Class A
USA: FCC CFR 47 Part 15, Subpart B:2011, Class A

Immunity
EN 300 386 V1.4.1:2008 EMC for Network Equipment
EN 55024: 1998 + A1: 2001 + A2: 2003
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

RoHS
All S Series components are EU RoHS compliant.

Certifications
Available with US Trade Agreements Act (TAA) compliance
USGv6 Host and Router Certified on Dell Networking OS 9.5 and greater
IPv6 Ready for both Host and Router
UCR DoD APL (core and distribution
ALSAN switch

Warranty
1 year return to depot

IT Lifecycle Services for Networking

Experts, insights and ease
Our highly trained experts, with innovative tools and proven processes, help you transform your IT investments into strategic advantages.

Plan & Design
Let us analyze your multivendor environment and deliver a comprehensive report and action plan to build upon the existing network and improve performance.

Deploy & Integrate
Get new wired or wireless network technology installed and configured with ProDeploy. Reduce costs, save time, and get up and running fast.

Educate
Ensure your staff builds the right skills for long-term success. Get certified on Dell EMC Networking technology and learn how to increase performance and optimize infrastructure.

Manage & Support
Gain access to technical experts and quickly resolve multivendor networking challenges with ProSupport. Spend less time resolving network issues and more time innovating.

Optimize

Maximize performance for dynamic IT environments with Dell EMC Optimize. Benefit from in-depth predictive analysis, remote monitoring and a dedicated systems analyst for your network.

Retire

We can help you resell or retire excess hardware while meeting local regulatory guidelines and acting in an environmentally responsible way.

Learn more at DellEMC.com/Services

Learn more at DellEMC.com/Networking

FY20Q1_1249_dell_emc_networking_s5200_series_spec_sheet_040519

República Federativa do Brasil
Agência Nacional de Telecomunicações

Certificado de Homologação

(Intransferível)

Nº **04032-13-02723**

Validade: **Indeterminada**

Emissão: **07/04/2016**

Requerente:
DELL COMPUTADORES DO BRASIL LTDA
AV. DA EMANCIPAÇÃO Nº5000
PARQUE DOS PINHEIROS
13184654 HORTOLÂNDIA SP

Fabricante:
DELTA NETWORKS, INC.
252, SHANG YING ROAD, KUEI SAN DISTRICT,
TAOYUAN CITY 33341,
TAIWAN

Este documento homologa, nos termos da regulamentação de telecomunicações vigente, o Certificado de Conformidade nº 3563, emitido pelo **FUNDACAO CENTRO DE PESQUISA E DESENVOLVIMENTO DE TELECOMUNICACOES- CPQD**. Esta homologação é expedida em nome do solicitante aqui identificado e é válida somente para o produto a seguir discriminado, cuja utilização deve observar as condições estabelecidas na regulamentação de telecomunicações.

Tipo - Categoria:
Equipamento de Rede de Dados - III

Modelo - Nome Comercial (s):
E06W002 (N3048P e S3148P) - (E06W002 (N3048P e S3148P)) /E07W002 (N3048 e S3148) - (E07W002 (N3048 e S3148)) /E06W001 (N3024P e S3124P) - (E06W001 (N3024P e S3124P)) /E07W001 (N3024 e S3124) - (E07W001 (N3024 e S3124)) /E07W003 (N3024F e S3124F) - (E07W003 (N3024F e S3124F))

Características técnicas básicas:

Equipamento utilizado em redes Ethernet.

Observações

Este certificado substitui o de mesmo número emitido em 21/02/2014.

Módulos de interface e protocolos de sinalização, especificados em documentos técnicos do produto, não estão cobertos por este certificado, sendo obrigatória sua certificação e homologação, caso venham a ser fornecidos ou utilizados.

Constitui obrigação do fabricante do produto no Brasil providenciar a identificação do produto homologado, nos termos da regulamentação de telecomunicações, em todas as unidades comercializadas, antes de sua efetiva distribuição ao mercado, assim como observar e manter as características técnicas que fundamentaram a certificação original.

As informações constantes deste certificado de homologação podem ser confirmadas no SCH - Sistema de Gestão de Certificação e Homologação, disponível no portal da Anatel. (www.anatel.gov.br).

Marcos de Souza Oliveira
Gerente de Certificação e Numeração

REPÚBLICA FEDERATIVA DO BRASIL
AGÊNCIA NACIONAL DE TELECOMUNICAÇÕES.

Certificado de Homologação

(Intransferível)

Nº **4032-13-2723**

Validade: **Indeterminada**

Emissão: **07/04/2016**

Solicitante:
DELL COMPUTADORES DO BRASIL LTDA.
AVENIDA DA EMANCIPAÇÃO 5000 PARQUE DOS PINHEIROS
13184-654 - HORTOLANDIA - SP

Fabricante:
DELTA NETWORKS, INC.
252, SHANG YING ROAD, KUEI SAN
TAOYUAN HSIEN 333 - TAIWAN

Este documento homologa, nos termos do Regulamento para Certificação e Homologação de Produtos para Telecomunicações, aprovado pela Resolução Anatel nº 242, de 30 de novembro de 2000, o Certificado de Conformidade nº 3563 , emitido pelo **OCD - Fundação CPqD**. Esta homologação é expedida em nome do solicitante aqui identificado e é válida somente para o produto a seguir discriminado, cuja utilização deve observar as condições estabelecidas na regulamentação do serviço ou aplicação a que se destina.

Tipo:
Equipamento de Rede de Dados - Categoria **III**

Modelo(s):

E06W002 (N3048P e S3148P)
E07W002 (N3048 e S3148)
E06W001 (N3024P e S3124P)
E07W001 (N3024 e S3124)
E07W003 (N3024F e S3124F)

Serviço/Aplicação:
Redes de Dados

Características técnicas básicas:

Equipamento utilizado em redes Ethernet.

Observações:

Este certificado substitui o de mesmo número emitido em 21/02/2014.

Módulos de interface e protocolos de sinalização, especificados em documentos técnicos do produto, não estão cobertos por este certificado, sendo obrigatória sua certificação e homologação, caso venham a ser fornecidos ou utilizados.

Constitui obrigação do fornecedor do produto no Brasil providenciar a identificação do produto homologado, nos termos do art. 39 do Regulamento anexo à Resolução Anatel nº 242, em todas as unidades comercializadas, antes de sua efetiva distribuição ao mercado, assim como observar e manter as características técnicas que fundamentaram a certificação original.

As informações constantes deste certificado de homologação podem ser confirmadas no SGCH - Sistema de Gestão de Certificação e Homologação, disponível no portal da Anatel. (www.anatel.gov.br).

Marcos de Souza Oliveira
Gerente de Certificação e Numeração

S5200F-ON Series Installation Guide

April 2019

DELL EMC

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.

2019 - 04

Rev. A01

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1

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.

WARNING: 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 cords. Disconnect both power cords before servicing.

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

Figure 1. Class 1 laser product tag

WARNING: 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 S5232F-ON is represented by the regulatory model E21W and the regulatory type E21W005.
- Marketing model S5248F-ON is represented by the regulatory model E21W and the regulatory type E21W002.
- Marketing model S5224F-ON is represented by the regulatory model E21W and the regulatory type E21W003.
- Marketing model S5296F-ON is represented by the regulatory model E26W and the regulatory type E26W001.
- Marketing model S5212F-ON is represented by the regulatory model E29W and the regulatory type E29W001.

Topics:

- Related documents
- Information symbols

Related documents

For more information about the S5200F-ON Series (S5232F-ON, S5248F-ON, S5296F-ON, S5224F-ON, and S5212F-ON) see the following documents:

- *OS10 Enterprise Edition User Guide*
- *OS10 Enterprise Edition Release Notes*
- *S5200F-ON Series Set-up Guide*
- *S5200F-ON Series Release Notes*

- *S5200-ON Series BMC User Guide*
- *Open Networking Hardware Diagnostic Guide*

NOTE: To access product documentation and resources that might be helpful to install, configure, and troubleshoot the specific Dell EMC Networking switch, see Dell EMC Networking Hardware Platforms and OS9 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.

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

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

2

S5200F-ON Series switch

The following sections describe the Dell EMC S5200F-ON Series (S5232F-ON, S5248F-ON, S5296F-ON, S5224F-ON, and S5212F-ON) switch:

Topics:

- Introduction
- Features
- Physical dimensions
- LED display
- Prerequisites
- S5200F-ON Series switch configurations
- Luggage tag

Introduction

The S5200F-ON Series (S5232F-ON, S5248F-ON, S5296F-ON, S5224F-ON, and S5212F-ON) switch is a full-featured fixed form-factor top-of-rack (ToR) compact 10/25/40/50/100/200GbE switch for data center networks with small form-factor pluggable plus (SFP+), small form-factor pluggable 28 (SFP28), quad small form-factor pluggable 28 (QSFP28), and quad small form-factor pluggable double density (QSFP-DD) ports. In addition, the S5200F-ON Series switch is a 10/25/40/50/100/200GbE switch with 10/25GbE links for server connections and 40/50/100GbE links for clustering—virtual link trunking (VLT) and stacking—and uplinks to aggregation and core switches. Except for the S5212F-ON, the switch includes two hot-swappable AC or DC power supply units (PSUs) and four hot-swappable fan units. The S5212F-ON includes two fixed AC or DC PSUs and four fixed fan units.

- S5212F-ON—one-half rack unit
- S5224F-ON—one rack unit
- S5232F-ON—one rack unit
- S5248F-ON—one rack unit
- S5296F-ON—two rack units

The S5200F-ON Series switch includes:

- S5212F-ON: twelve 25GbE SFP28 ports and three 100GbE QSFP28 ports
- S5224F-ON: twenty-four 25GbE SFP28 ports and four 100GbE QSFP28 ports
- S5232F-ON: thirty-two 100GbE QSFP28 ports and two 10GbE SFP+ ports
- S5248F-ON: forty-eight 25GbE SFP28 ports, four 100GbE QSFP28 ports, and two 200GbE QSFP-DD ports
- S5296F-ON: ninety-six 25GbE SFP28 ports and eight 100GbE QSFP28 ports

The S5232F-ON, S5248F-ON, and S5296F-ON support the following configurations:

- 96 x 10GbE + 8 x 100GbE
- 96 x 25GbE + 8 x 100GbE
- 128 x 10GbE
- 128 x 25GbE
- 64 x 50GbE
- 32 x 40GbE
- 32 x 100GbE

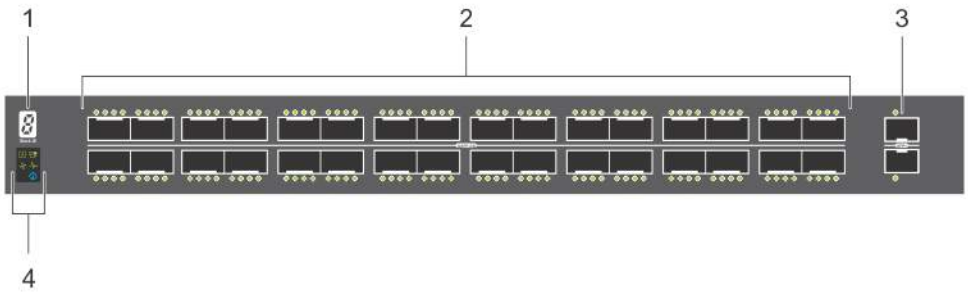
The S5224F-ON supports the following configurations:

- 24 x 25GbE
- 24 x 10GbE

The S5212F-ON supports the following configurations:

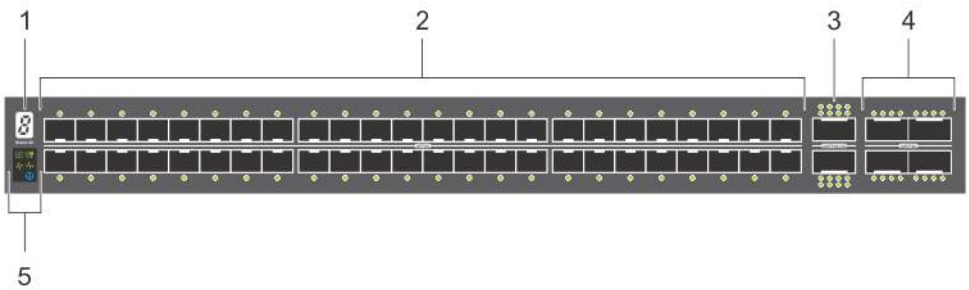
- 12 x 25GbE + 3 x 100GbE
- 24 X 25GbE
- 12 x 10GbE + 3 x 100GbE
- 12 x 10GbE + 12 x 25 GbE
- 12 x 25GbE + 3 x 40GbE
- 24 x 10GbE
- 12 x 25GbE + 6 x 50GbE

The S5232F-ON switch I/O-side view:



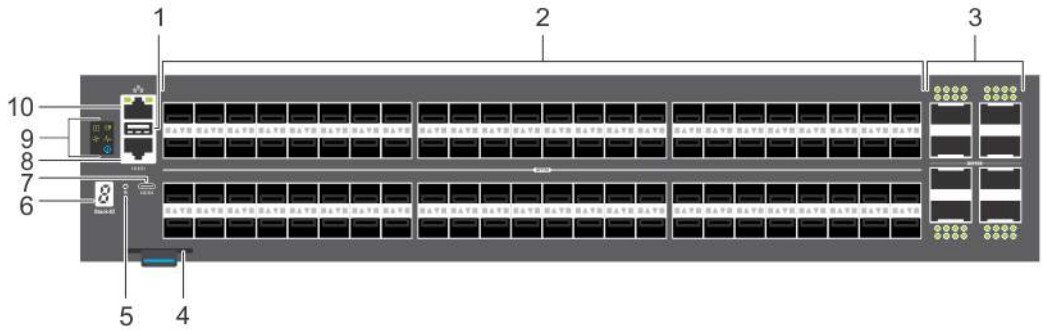
1	Stack ID	2	Thirty-two 100GbE QSFP28 ports
3	Two 10GbE SFP+ ports	4	LED Status Icons

The S5248F-ON switch I/O-side view:



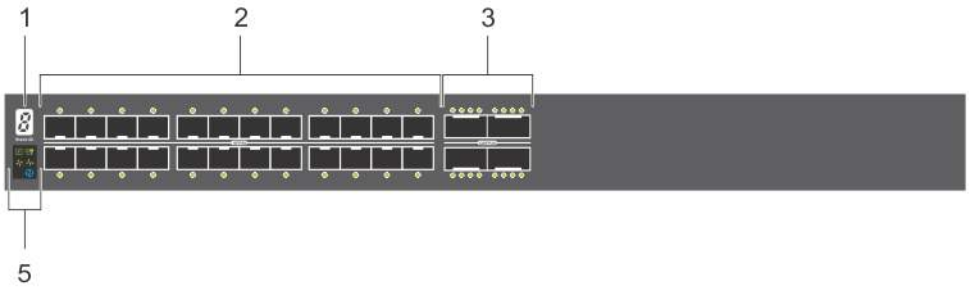
1	Stack ID	2	Forty-eight 25GbE SFP28 ports
3	Two 200GbE QSFP-DD ports	4	Four 100GbE QSFP28 ports
5	LED status icons		

The S5296F-ON switch I/O-side view:



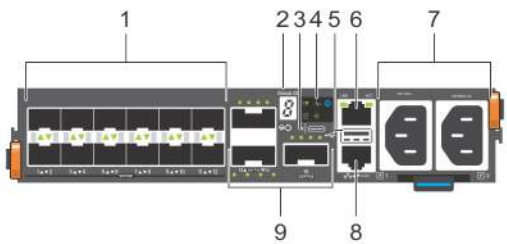
1	USB Type A	2	Ninety-six 25GbE SFP28 ports
3	Eight 100GbE QSFP28 ports	4	Luggage tag
5	Reset button	6	Stack ID
7	MicroUSB-B console port	8	RJ45 console port
9	LED status icons	10	RJ45 Ethernet port

The S5224F-ON switch I/O-side view:



1	Stack ID	2	Twenty-four SFP28 ports
3	Four 100GbE QSFP28 ports	4	LED status icons

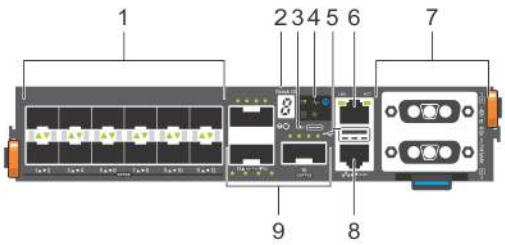
The S5212F-ON AC switch I/O-side view:



1	Twelve 25GbE SFP28 ports	2	Stack ID
3	MicroUSB-B console port	4	LED status icons
5	USB Type A	6	RJ45 Ethernet port

7	AC PSUs	8	RJ45 console port
9	Three 100GbE QSFP28 ports		

The S5212F-ON DC switch I/O-side view:

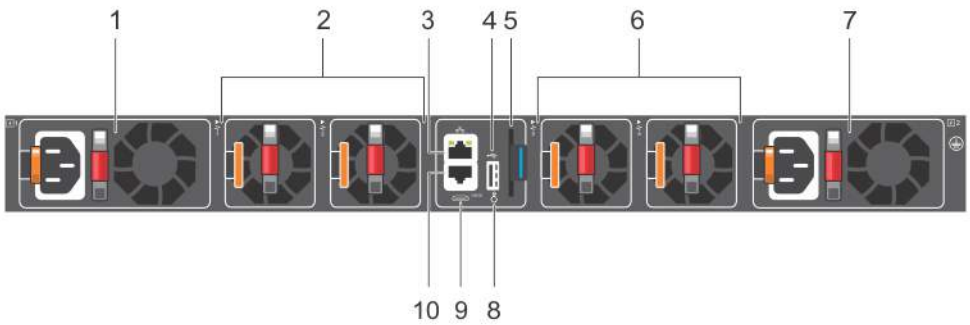


1	Twelve 25GbE SFP28 ports	2	Stack ID
3	MicroUSB-B console port	4	LED status icons
5	USB Type A	6	RJ45 Ethernet port
7	DC PSUs	8	RJ45 console port
9	Three 100GbE QSFP28 ports		

The S5212F-ON AC and DC switches have a reset button on the I/O-side below the Stack ID LED.

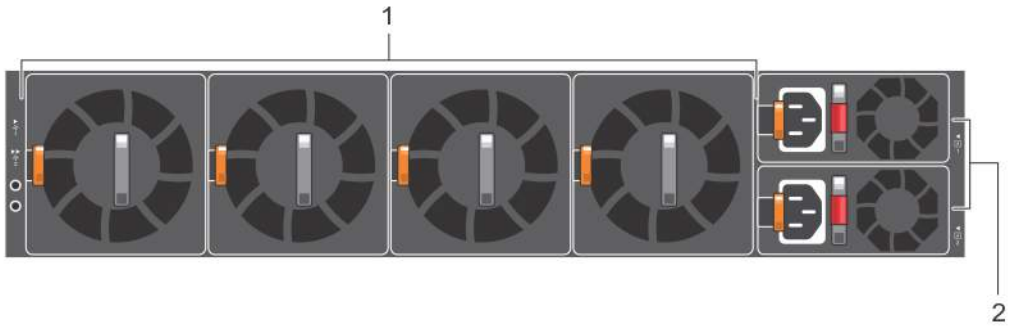
The S5200F-ON Series switch has one RJ45 serial console port, one Micro-USB type-B console port, one 10/100/1000 Base-T Ethernet management port, one USB type-A port for the external storage, and for the S5212F-ON and S5296F-ON switches only, one USB extension cable, which is packaged separately. Management ports are located on the PSU-side of the switch except for the S5212F-ON switch that has the management ports on the I/O-side of the switch.

The S5232F-ON or S5248F-ON switch PSU-side view:



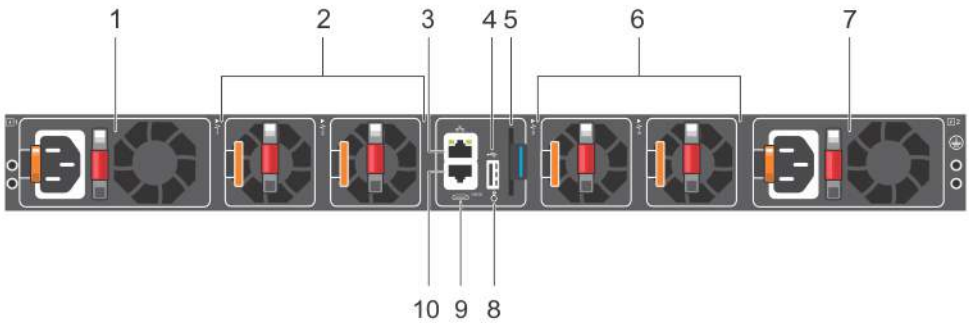
1	AC PSU1	2	Fan modules
3	RJ45 Ethernet port	4	USB Type A
5	Luggage tag	6	Fan modules
7	AC PSU2	8	Reset button
9	MicroUSB-B console port	10	RJ45 console port

The S5296F-ON switch PSU-side view:



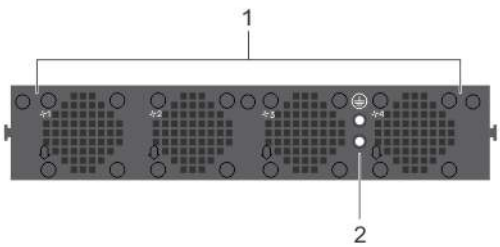
1	Fan units	2	AC PSU units

The S5224F-ON switch PSU-side view:



1	AC PSU	2	Fans
3	RJ45 Ethernet port	4	USB Type A
5	Luggage tag	6	Fans
7	AC PSU	8	Reset button
9	MicroUSB-B console port	10	RJ45 console port

The S5212F-ON switch PSU-side view:



1	Fans	2	Holes for ground lug installation

Features

The S5200F-ON Series switch offers the following features:

- Ports:
  - S5212F-ON—twelve 25GbE SFP28 ports and three 100GbE QSFP28 ports

  - S5224F-ON—twenty-four 25GbE SFP28 ports and four 100GbE QSFP28 ports
  - S5232F-ON—thirty-two 100GbE QSFP28 ports and two 10GbE SFP+ ports
  - S5248F-ON—forty-eight 25GbE SFP28 ports, four 100GbE QSFP28 ports, and two 200GbE QSFP-DD ports
  - S5296F-ON—ninety-six 25GbE SFP28 ports and eight 100GbE QSFP28 ports
- One MicroUSB-B console port
- One RJ45 console port
- One USB Type A port for more file storage
- Four-core Intel Denverton central processing unit (CPU) system with 16GB SDRAM and 64GB SSD
- One 10/100/1000BaseT Ethernet management port
- Temperature monitoring
- Software-readable thermal monitor
- Real time clock (RTC) support
- All switches except S5212F-ON: two hot-pluggable redundant PSUs
- All switches except S5212F-ON: four hot-pluggable replaceable fan modules
- S5212F-ON: two fixed PSUs
- S5212F-ON: four fixed fans modules
- Power management monitoring
- Two-hole ground lug
- S5212F-ON and S5296F-ON—USB male-female extension cable
- Switch:
  - S5212F-ON—Standard one-half rack unit
  - S5224F-ON—Standard one rack unit
  - S5232F-ON—Standard one rack unit
  - S5248F-ON—Standard one rack unit
  - S5296F-ON—Standard two rack units

Physical dimensions

The S5200F-ON Series switch have the following physical dimensions:

- S5212F-ON—one-half rack unit:
  - 7.87 x 16 x 1.72 inches (W x D x H)
  - 199.8 x 406.4 x 43.6 mm (W x D x H)
- S5224F-ON, S5232F-ON, S5248F-ON—one rack unit:
  - 17.1 x 18.1 x 1.72 inches (W x D x H)
  - 434 x 460 x 43.6 mm (W x D x H)
- S5296F-ON—two rack units:
  - 16.6 x 20.1 x 3.42 inches (W x D x H)
  - 422 x 511 x 87 mm (W x D x H)

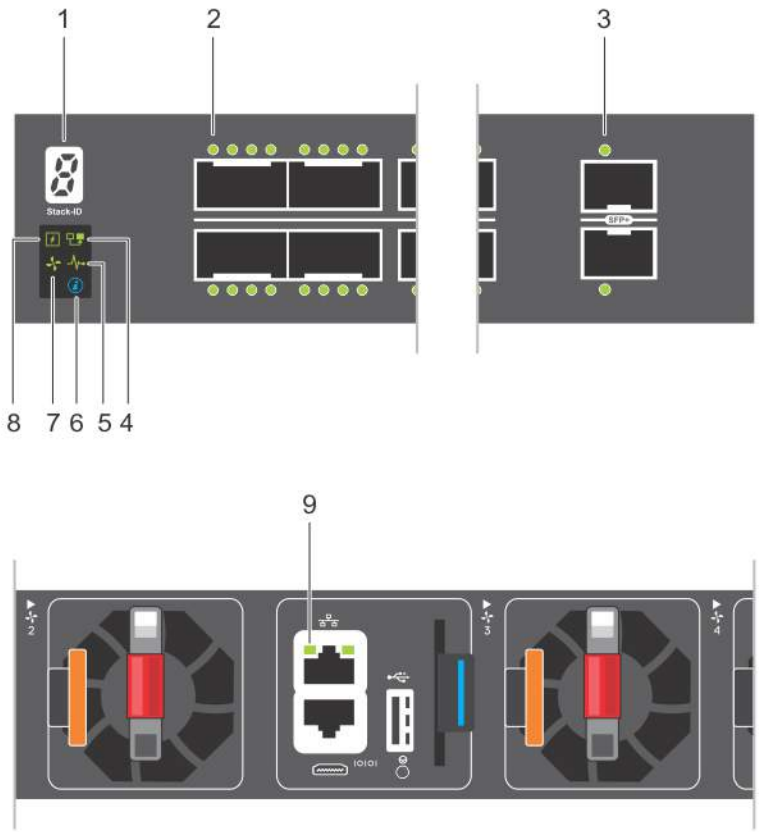
LED display

The S5200F-ON Series switch includes LED displays on the I/O side of the switch. This section describes open networking installation environment (ONIE) LED behaviors. Some LED behaviors may change after you install your software.

LED behavior

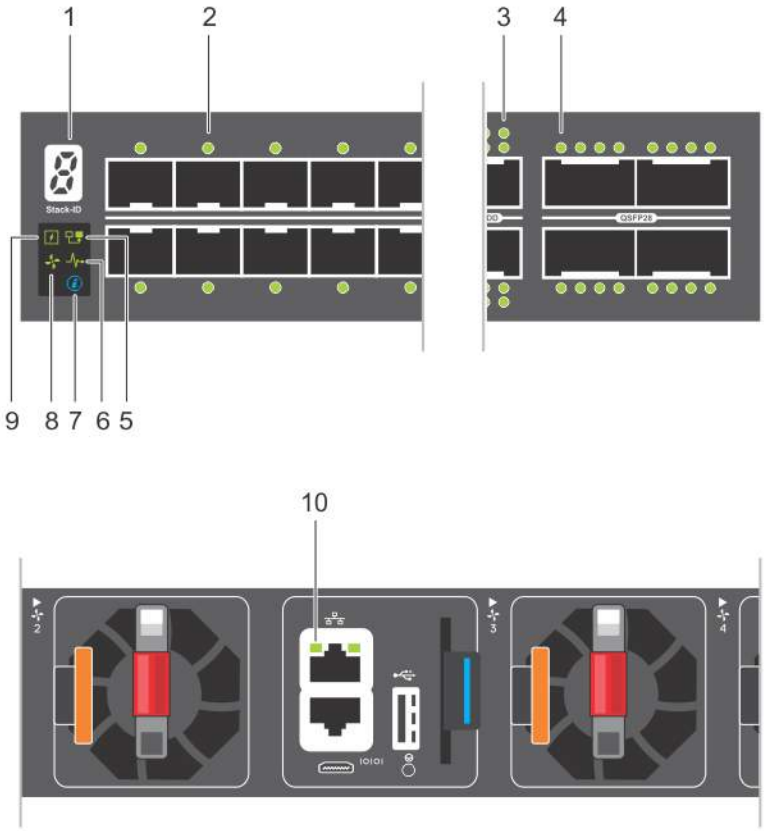
The S5200F-ON Series switch LED behavior is seen during ONIE operations.

The S5232F-ON switch LEDs:



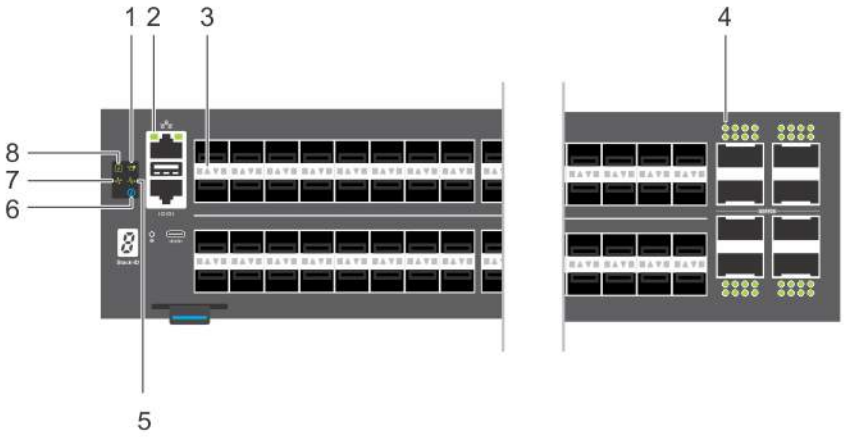
1	Stack ID LED	2	Port Activity LEDs
3	Port Activity LED	4	Master LED
5	System LED	6	Locator LED
7	Fan LED	8	Power LED
9	RJ45 Ethernet Port LED		

The S5248F-ON switch LEDs:



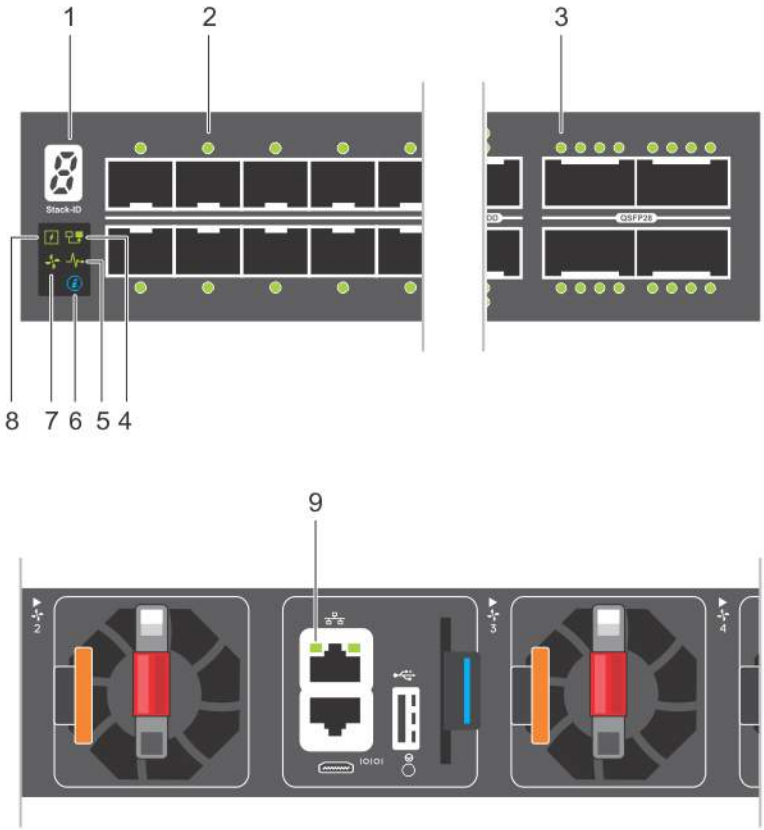
1	Stack ID LED	2	Port Activity LED
3	Port Activity LEDs	4	Port Activity LEDs
5	Master LED	6	System LED
7	Locator LED	8	Fan LED
9	Power LED	10	RJ45 Ethernet Port LED

The S5296F-ON switch LEDs:



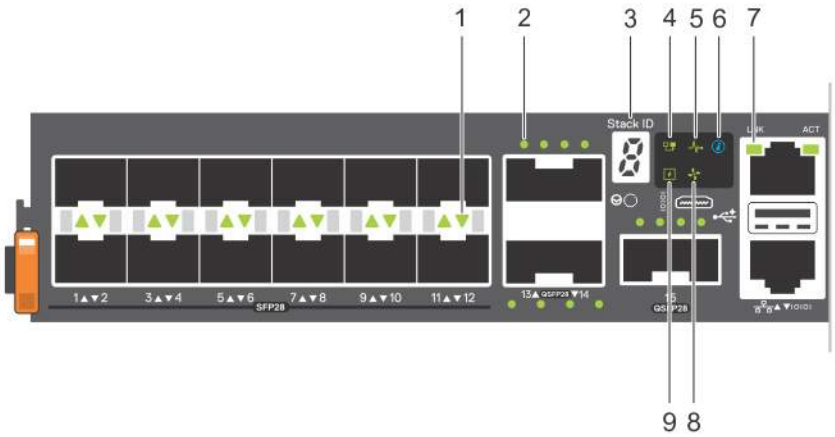
1	Stack ID LED	2	Port Activity LEDs
3	Port Activity LEDs	4	Port Activity LEDs
5	System LED	6	Locator LED
7	Fan LED	8	Power LED

The S5224F-ON switch LEDs:



1	Stack ID LED	2	Port Activity LED
3	Port Activity LED	4	Master LED
5	System LED	6	Locator LED
7	Fan LED	8	Power LED
9	RJ45 Port LED		

The S5212F-ON switch LEDs:



1	Port Activity LED	2	Port Activity LED
3	Stack ID LED	4	Master LED
5	System LED	6	Locator LED
7	Link Activity LED	8	Fan LED
9	Power LED		

Table 1. S5200F-ON Series switch LED behavior

LED	Description
System Status/Health LED	• Solid green—Normal operation • Flashing green—Booting • Solid yellow—Critical system error • Flashing 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 • Flashing yellow—Power supply failed
Master LED	• Off—Switch is in Stacking Slave mode • Solid green—Switch is in Stacking Master or Standalone mode
FAN LED	• Off—No power • Solid green—Normal operation; fan powered and running at the expected RPM • Flashing yellow—Fan fault—including incompatible airflow direction when you insert the PSU or fan trays with differing airflows
PSU LED	• Off—No power • Solid green—Normal operation • Flashing yellow—PSU warning event; power continues to operate • Flashing green—4Hz with five times on and off: Mismatch

LED	Description
	• Flashing green—Firmware update
LOCATOR LED/System Beacon	• Off—Locator function disabled • Flashing blue—Locator function enabled
7-Segment LED for stacking	• Off—No power • Solid green—Hex digit representing the stack unit ID

Table 2. System management Ethernet port LEDs

LED	Description
Link LED	• Off—No link • Solid green—Link operating at a maximum speed, autonegotiated/forced to 1000MBase-T mode • Solid yellow—Link operating at a lower speed, autonegotiated/forced or 10/100MBase-T mode
Activity LED	• Off—No activity • Flashing green—Port activity

Table 3. SFP28 port LEDs—S5232F-ON, S5248F-ON, and S5296F-ON

LED	Description
Link LED	All four LEDs: • Off—No link • Solid green—Link operating at maximum speed, 25G • Solid yellow—Link operating at a lower speed, 10G or 1G • Flashing green, ~30ms—Port activity operating at maximum speed, 25G port • Flashing yellow, ~30ms—Port activity operating at lower speed, 10G or 1G port • Flashing yellow, 1 second on/off—port beacon
Activity LED	• Off—No activity • Flashing green—port activity at maximum speed • Flashing yellow—port activity at lower speed

Table 4. SFP+ port LEDs—S5232F-ON

LED	Description
Link LED	All four LEDs: • Off—No link • Solid green—Link operating at maximum speed, 10G • Solid yellow—Link operating at a lower speed, 1G • Flashing green, ~30ms—Port activity operating at maximum speed, 10G port

LED	Description
	• Flashing yellow, ~30ms—Port activity operating at lower speed, 1G port • Flashing yellow, 1 second on/off—port beacon
Activity LED	• Off—No activity • Flashing green—port activity at maximum speed • Flashing yellow—port activity at lower speed

NOTE: The first QSFP-DD port LED shows 200GbE, 100GbE, 40GbE, and 10GbE mode. All eight QSFP-DD port LEDs show 8x25GbE or 8x10GbE mode. The first and fifth QSFP-DD port LEDs show 2x100GbE mode. The first, second, fifth, and sixth QSFP-DD port LEDs show 2x50GbE mode. The first and second LEDs for the first 2x50GbE port and the fifth and sixth LEDs for the second 2x50GbE port.

Table 5. QSFP-DD port LEDs—S5248F-ON

LED	Description
Link/Activity LED—200GbE, 100GbE, 40GbE, or 10GbE mode	First LED: • Off—No link/activity • Solid green—Port link operating at maximum speed, 200G • Flashing green—Port activity operating at maximum speed, 200G • Solid yellow—Port link operating at a lower speed, 100G, 40G or 10G port • Flashing yellow, ~30ms—Port activity operating at lower speed, 100G, 40G or 10G port • Flashing yellow, ~1 second on/off—Port beacon
Link/Activity LED—8x25GbE or 8x10GbE mode	All eight LEDs: • Off—No link/activity • Solid green—Link operating at maximum speed, 8x25G port • Flashing green—Link activity operating at maximum speed, 8x25G port • Solid yellow—Link operating at a lower speed, 8x10G port • Flashing yellow, ~30ms—Port activity operating at lower speed, 8x10G port • Flashing yellow, 1 second on/off—Port beacon
Link/Activity LED—2x100G mode	First and fifth LEDs: • Off—No link/activity • Solid green—Port link operating 2x100G • Flashing yellow—Port activity at 2x100G port • Flashing yellow, 1 second on/off—Port beacon
Link/Activity LED—4x50GbE mode	First, second, fifth, and sixth LEDs" • Off—No link/activity • Solid green—Port link operating 2x50G • Flashing yellow—Port activity at 2x50G port • Flashing yellow, 1 second on/off—Port beacon

NOTE: The first QSFP28 LED shows 100GbE, 40GbE, or 10GbE mode. All four QSFP28 port LEDs show 4x25GbE or 4x10GbE mode. The first and third QSFP28 port LEDs show 2x50GbE mode.

Table 6. QSFP28 port LEDs—S5232F-ON, S5248F-ON, and S5296F-ON

LED	Description
Link/Activity LED—100GbE, 40GbE, or 10GbE mode	First LED: • Off—No link/activity • Solid green—Port link operating at maximum speed, 100G • Flashing green—Port activity operating at maximum speed, 100G • Solid yellow—Port link operating at a lower speed, 40G or 10G port • Flashing yellow, ~30ms—Port activity operating at lower speed, 40G or 10G port • Flashing yellow, ~1 second on/off—Port beacon
Link/Activity LED—4x25GbE or 4x10GbE mode	All four LEDs: • Off—No link/activity • 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, ~30ms—Port activity operating at lower speed, 4x10G port • Flashing yellow, 1 second on/off—Port beacon
Link/Activity LED—2x50G mode	First and third LEDs: • Off—No link/activity • Solid green—Port link operating 2x50G • Flashing yellow—Port activity at 2x50G port • Flashing yellow, 1 second on/off—Port beacon
Link/Activity LED—2x50GbE mode	First, second, fifth, and sixth LEDs" • Off—No link/activity • Solid green—Port link operating 2x50G • Flashing yellow—Port activity at 2x50G port • Flashing yellow, 1 second on/off—Port beacon

Prerequisites

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

NOTE: For detailed installation instructions, see Site preparations and S5200F-ON Series switch installation.

- S5200F-ON Series (S5232F-ON, S5248F-ON, S5296F-ON, S5224F-ON, and S5212F-ON) switch or multiple switches, if stacking
- AC or DC country- and regional-specific cables to connect the AC or DC power source to each switch AC or DC power supplies
- ReadyRail mounting brackets for rack installation, included
- Screws for rack installation, not included
- #1 and #2 Phillips screw drivers, not included
- Torx screwdriver, not included

- Ground cable screws for L-bracket, included
- Copper/fiber cables
- S5212F-ON and S5296F-ON: USB male-female extension cable

Other optional components are:

- Ground cable and lug for the frame-end of the ground cable
- Extra mounting brackets
- Extra power supply unit
- Extra fan module

NOTE: The DC ground lug kit ships with the other accessories inside the shipping box.

S5200F-ON Series switch configurations

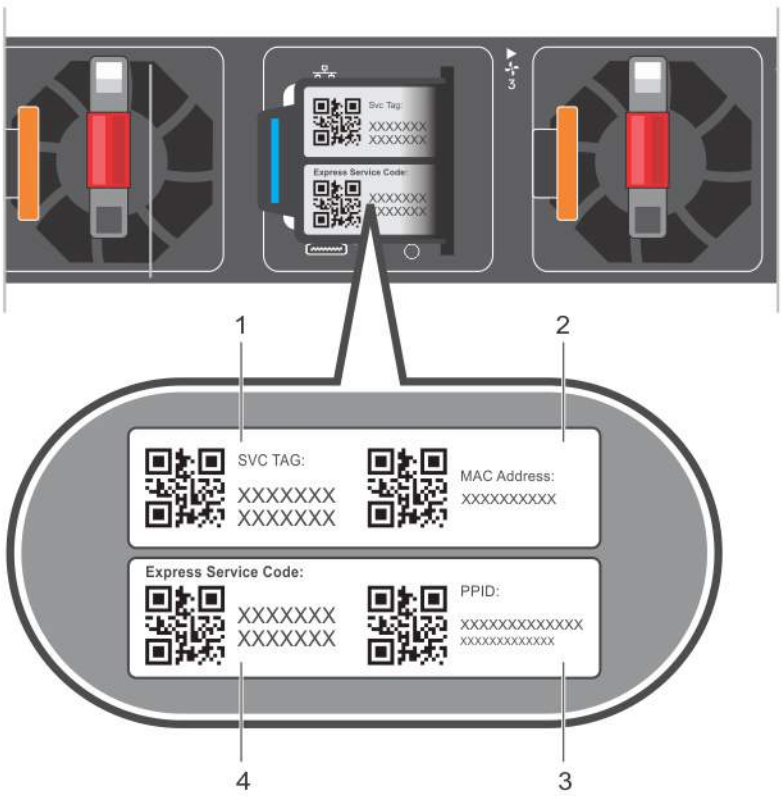
You can order the S5200F-ON Series switch in several different configurations.

- S5200F-ON Series AC or DC Normal Airflow switch:
  - S5212F-ON—one-half U, 12 x 25G SFP28 ports, 3 x 100G QSFP28 ports, two AC or DC power supplies, four fan subsystems with airflow from the I/O side to the power supply side, and one USB male-female extension cable.
  - S5224F-ON—one U, 24 x 25G SFP28 ports, 4 x 100G QSFP28 ports, two AC or DC power supplies, and four fan subsystems with airflow from the I/O side to the power supply side
  - S5232F-ON—one U, 32 x 100GbE ports, two AC or DC power supplies, and four fan subsystems with airflow from the I/O side to the power supply side
  - S5248F-ON— one U, 48 x 25GbE ports, 4 x 200GbE ports, 2 x 200GbE QSFP-DD ports, two AC or DC power supplies, and four fan subsystems with airflow from the I/O side to the power supply side
  - S5296F-ON— two U, 96 x 25GbE ports and 8 x 100GbE ports, two AC or DC power supplies, four fan subsystems with airflow from the I/O side to the power supply side, and one USB male–female extension cable
- S5200F-ON Series AC or DC Reverse Airflow switch:
  - S5212F-ON—one-half U, 12 x 25G SFP28 ports, 3 x 100G QSFP28 ports, two AC or DC power supplies, four fan subsystems with airflow from the power supply side to the I/O, and one USB male-female extension cable
  - S5224F-ON—one U, 24 x 25G SFP28 ports, 4 x 100G QSFP28 ports, two AC or DC power supplies, and four fan subsystems with airflow from the power supply side to the I/O
  - S5232F-ON—one U, 32 x 100GbE ports, two AC or DC power supplies, and four fan subsystems with airflow from the power supply side to the I/O
  - S5248F-ON— one U, 48 x 25GbE ports, 4 x 200GbE ports, 2 x 200GbE QSFP-DD ports, two AC or DC power supplies, and four fan subsystems with airflow from the power supply side to the I/O
  - S5296F-ON— two U, 96 x 25GbE ports and 8 x 100GbE ports, two AC or DC power supplies, four fan subsystems with airflow from the power supply side to the I/O, and one USB male–female extension cable
- 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

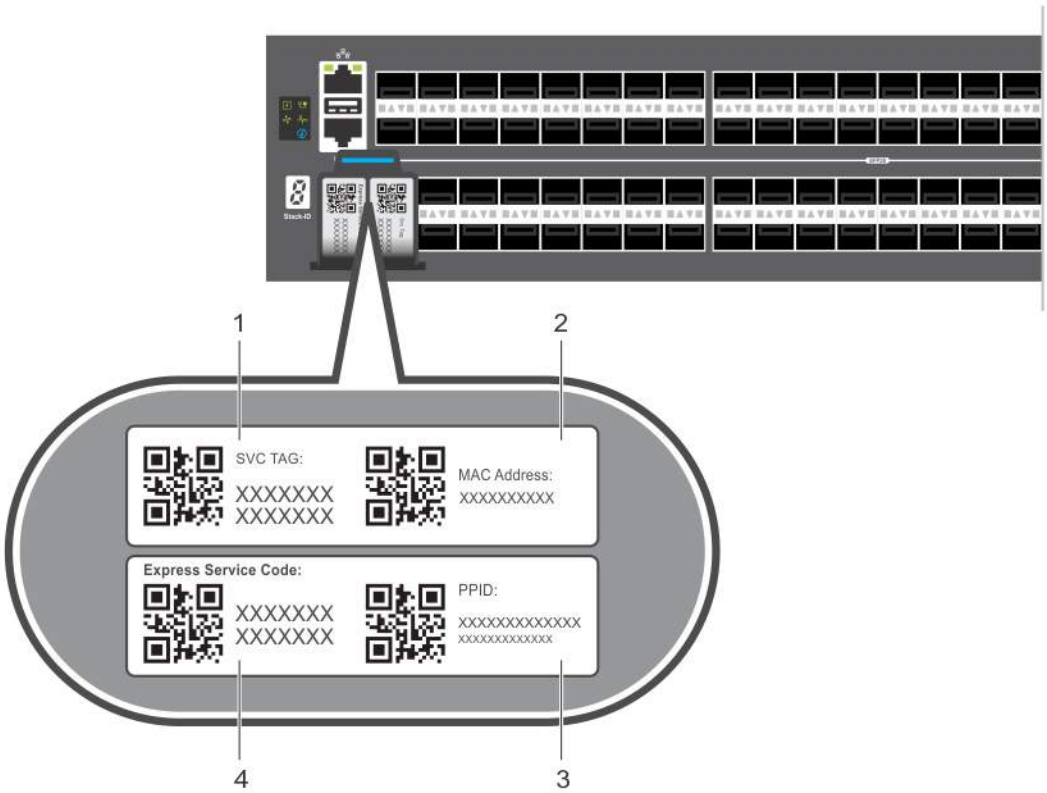
The switch has a pull-out tag, known as a luggage tag, on the PSU-side of the switch. The front of the luggage tag includes switch ID information. The back of the luggage tag includes a QRL that takes you to a How-To site where you can watch videos about racking the switch, replacing components, configuring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

The S5224F-ON, S5232F-ON, or S5248F-ON luggage tag:



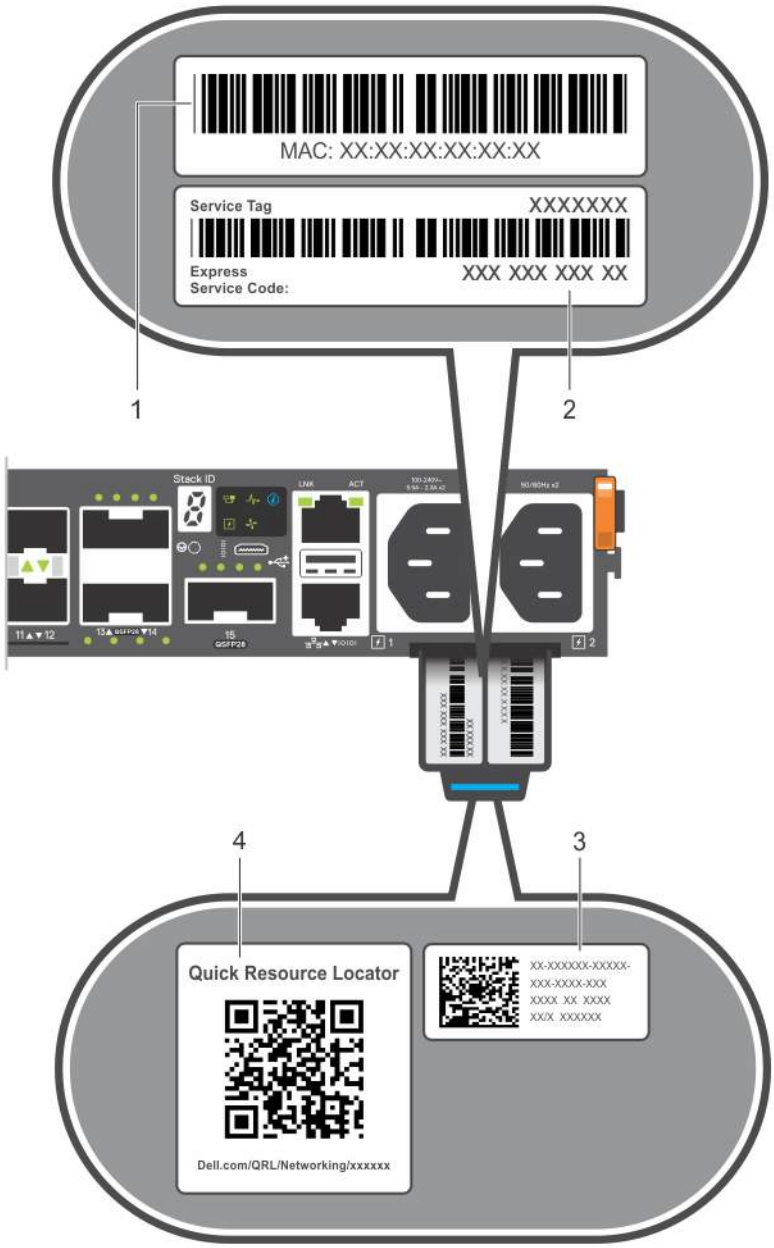
1	Service tag	2	MAC address
3	PPID	4	Express service code

The S5296F-ON luggage tag:



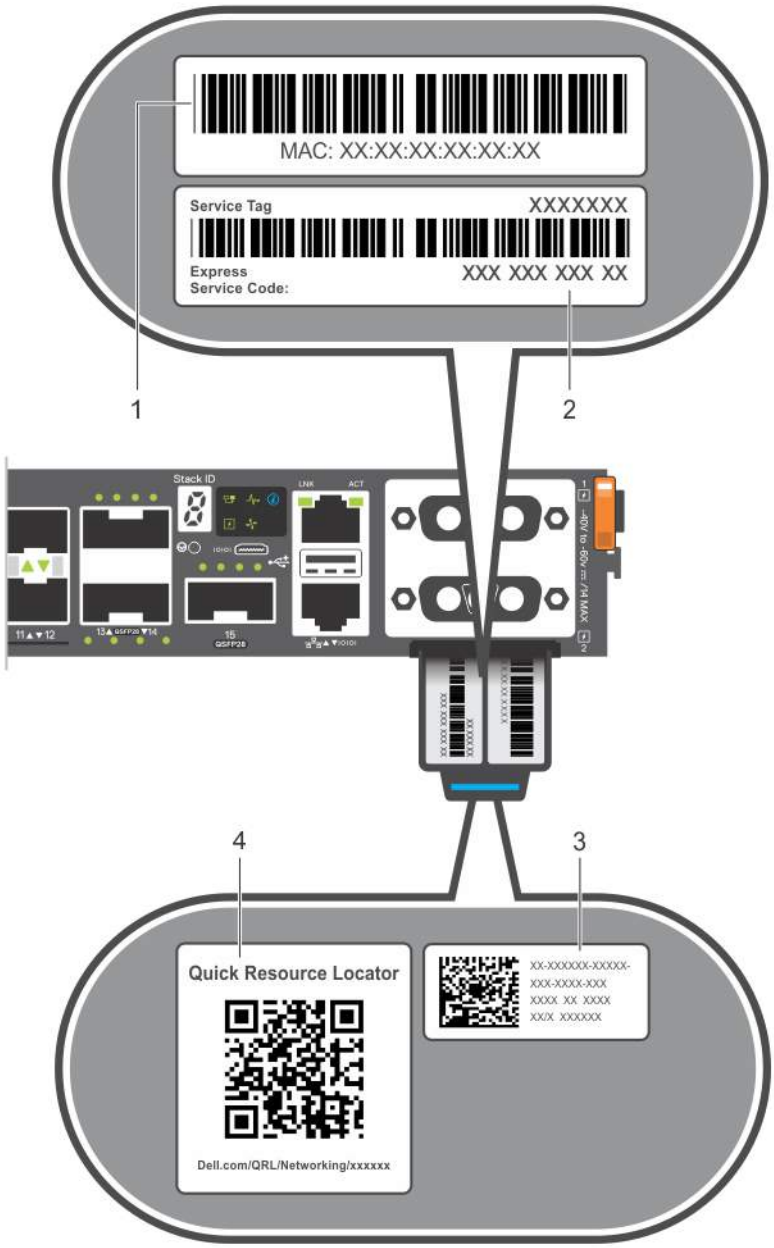
1	Service tag	2	MAC address
3	PPID	4	Express service code

The S5212F-ON AC luggage tag:



1	MAC address	2	Express service code
3	Service tag	4	QRL

The S5212F-ON DC luggage tag:



1	MAC address	2	Express service code
3	Service tag	4	QRL

3

Site preparations

The S5200F-ON Series (S5232F-ON, S5248F-ON, S5296F-ON, S5224F-ON, and S5212F-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

NOTE: Install the switch into a rack or cabinet before installing any additional components such as cables or optics.

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° to 45°C (32° to 113°F).
- Relative humidity is from 5 to 90 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 S5200F-ON Series 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 EMC recommends you ground your switch. Use the S5200F-ON Series switch in a common bond network (CBN).

Connect the grounding cables as described in S5200F-ON Series switch installation.

NOTE: For an AC-powered switch, although the third conductor of the AC power cord provides a ground path, Dell EMC 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. The DC-powered switch ships with the DC ground lug, bracket, and screws.

Fans and airflow

The S5200F-ON Series 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 S5200F-ON Series 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 S5200F-ON Series 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 S5200F-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 S5200F-ON Series 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 each PSU.

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 S5200F-ON Series switch and components immediately, properly store the switch and all components using these guidelines:

- Storage location temperature must remain constant. The storage range is from -40°C 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 S5200F-ON Series switch and accessories. After you remove the original packaging, place the S5200F-ON Series switch and components on an anti-static surface.

4

S5200F-ON Series switch installation

To install the S5200F-ON Series (S5232F-ON, S5248F-ON, S5296F-ON, S5224F-ON, and S5212F-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).

For the S5212F-ON switch installation instructions, see One-half U front-rack installation. For the S5224F-ON, S5248F-ON, and S5232F-ON switches, you can install the ReadyRails system. Due to the chassis weight, the S5296F-ON switch does not support a two-post rack installation; you must install the S5296F-ON in a four-post rack. For the S5296F-ON switch installation instructions, see S5296F-ON four-post rack assembly.

NOTE: ESD damage can occur if components are mishandled. Always wear an ESD-preventive wrist or heel ground strap when handling the S5200F-ON Series 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
- One-half U front-rack installation
- One U ReadyRails installation
- Two U four-post rack assembly
- DC power connections
- S5212F-ON only DC power connections
- Optics installation
- Switch start up
- After switch placement
- Switch replacement

Unpack

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

NOTE: For the S5212F-ON and S5296F-ON switches only: the USB extension cable is packaged separately. Do not throw it away.

When unpacking the switch, make sure that the following items are included:

- One S5200F-ON Series switch
- Two sets of rail kits, no tools needed
- One RJ45 to DB-9 female cable
- S5232F-ON, S5248F-ON, S5296F-ON, and S5224F-ON: Ground lug kit
- S5232F-ON, S5248F-ON, S5296F-ON, and S5224F-ON: Two hot-swappable PSUs
- S5232F-ON, S5248F-ON, S5296F-ON, and S5224F-ON: Four hot-swappable fan units
- S5212F-ON: Two fixed PSUs

- S5212F-ON: one USB extension cable; male to female
- S5212F-ON: Two fixed fan units
- S5296F-ON: one USB extension cable; male to female
- Two country- and region-specific AC power cables and wire clips
- *S5200F-ON Series Set-up Guide*
- *Safety and Regulatory Information*
- *Warranty and Support Information*

Unpacking Steps

Unpack the system 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

To attach a ground cable to the switch, use the included M4 screws.

NOTE: For an AC-powered switch, although the third conductor of the AC power cord provides a ground path, Dell EMC 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.

The ground cable is not included. 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 anti-oxidant compound before crimping. Also, bring any unplated mating surfaces to a shiny finish and coat with an anti-oxidant 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:

1 Cut your user-supplied ground cable to the desired length.
The cable length must facilitate proper operation of the fault interrupt circuits. Use the shortest cable route allowable.
2 Crimp the ground cable inside the pre-installed ground lug.
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 for the S5232F-ON, S5248F-ON, and S5224F-ON switches includes four-post, two-post, round threaded holes, or square holes. The ReadyRails system is provided for 1U front-rack and two-post installations.

Do not use the ReadyRails system for the S5296F-ON or S5212F-ON switches. For the S5212F-ON switch, see One-half U front-rack installation. For the S5296F-ON switch, see Two U four-post rack assembly.

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 (113°F) 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.

One-half U front-rack installation

Install the S5212F-ON switch using the following installation instructions.

NOTE: To install the S5232F-ON, S5248F-ON, and S5224F-ON switches, see One U ReadyRails installation. To install the S5296F-ON switch, see Two U four-post rack assembly.

The dual-tray mounting rails ship with the dual tray, not with the switch. You must supply eight rackmount screws for this installation.

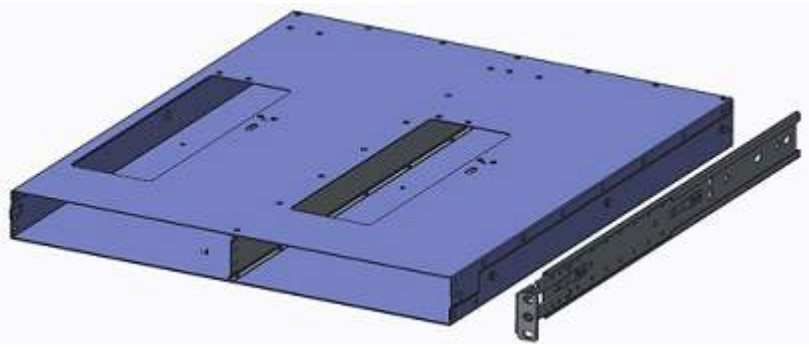
To install the one-half U switch:

- Attach the rails to the dual tray.
- Install the dual tray in the four-post rack.
- (Recommended) Attach the ground cable to the switch.
- Install the switch in the dual tray.

NOTE: Do not install the dual tray in a two-post rack.

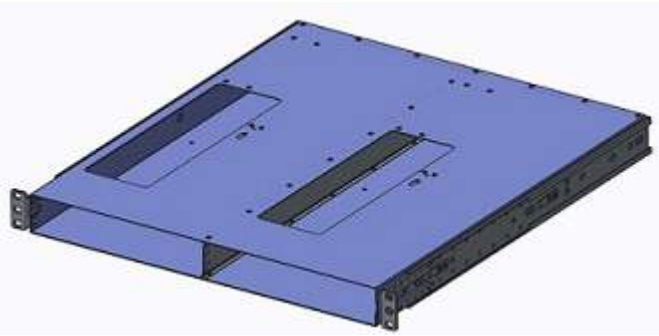
1 Remove the dual tray and the rails from the shipping packaging and place them on a clean antistatic surface.

2 Line up the three holes on the inner switch rail with the dual-tray mounting heads.



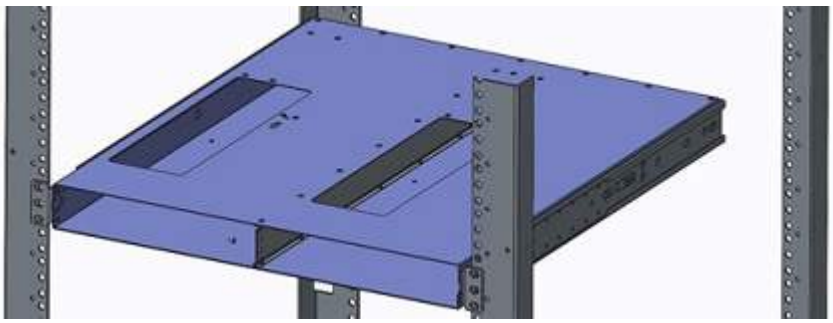
3 Attach the rail to the dual tray. Slide the rail back until it locks into place.

4 Repeat with the other side.

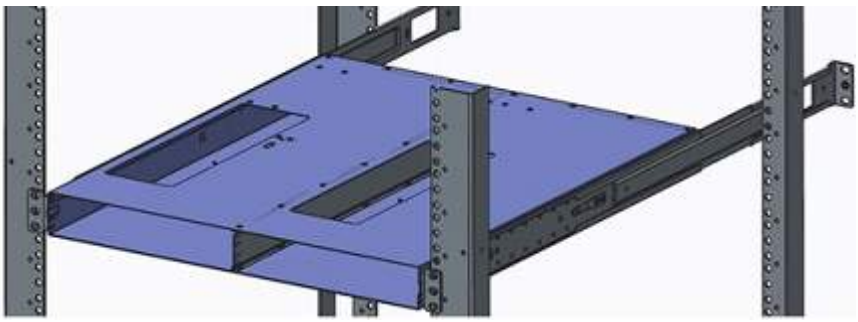


5 Install the dual tray inside the four-post rack. Rackmount screws are not included.

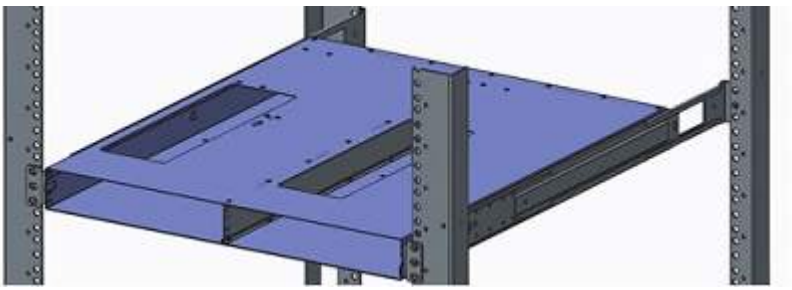
6 Attach the front dual-tray switch rails to the four-post rack from the front. Secure the dual tray to the rack using two user-supplied screws for each rack post.



7 Attach the rear dual-tray switch rails to the four-post rack from the rear. Secure the dual tray to the rack using two user-supplied screws for each rack post.



8 Tighten all mounting screws to securely mount the dual tray into the four-post rack.



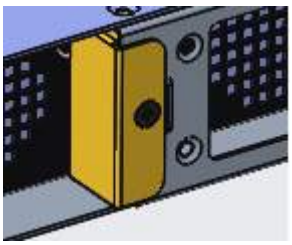
One-half U switch installation

Install one or two half-U switches in the four-post rack-mounted dual tray.

1 Install one switch into either dual-tray slot from the front.

2 Insert the second switch in the open dual-tray slot if you are installing two switches.
The switch is fully inserted when it presses the stop features on the dual tray. The front switch latch snaps the switch into place.

Close-up view of the stop at the back of the switch.

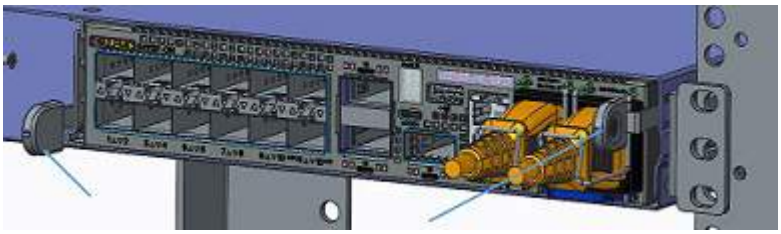


One-half U switch removal

Remove the S5212F-ON switch using the following instructions:

NOTE: To remove the S5232F-ON, S5248F-ON, S5296F-ON, or S5224F-ON switch, see One U ReadyRails installation. To remove the S5296F-ON switch, see Two U four-post rack assembly.

Push in the front switch latches according to the latch arrows and pull out the switch.



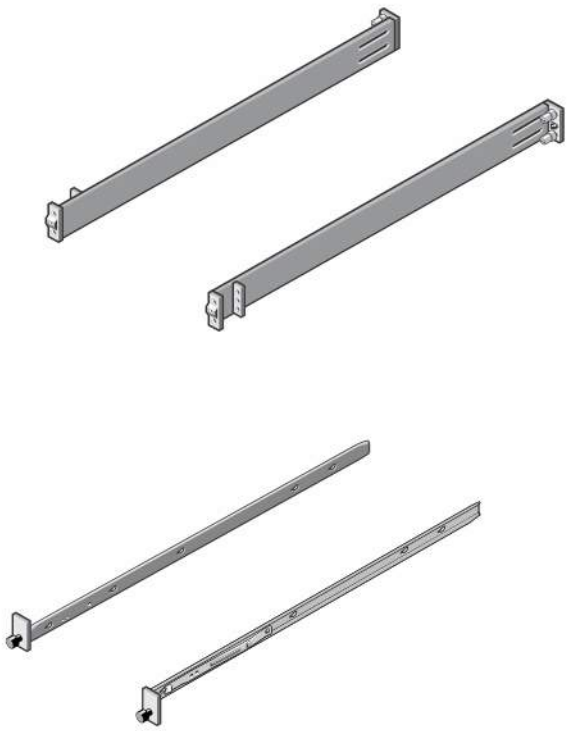
One U ReadyRails installation

S5224F-ON, S5248F-ON, and S5232F-ON switches, you can install the ReadyRails system using the 1U tool-less square-hole method or one of three possible 1U threaded round-hole methods. The tooled installation methods include two-post flush mount, two-post center mount, or four-post threaded mount.

NOTE: Do not use the ReadyRails system for the S5212F-ON and S5296F-ON switches. For the S5212F-ON switch installation instructions, see One-half U front-rack installation. For the S5296F-ON switch installation instructions, see Two U four-post rack assembly.

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

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

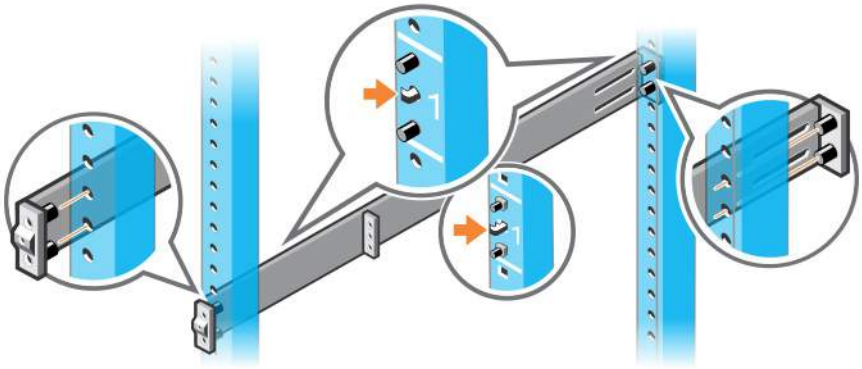


1U Tool-less mount installation

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

1 Face 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 center extractions show how the pegs appear in both the square and nonthreaded round holes.



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

NOTE: Be sure that the rails click into place and are secure.

3 Repeat this procedure for the second rail.

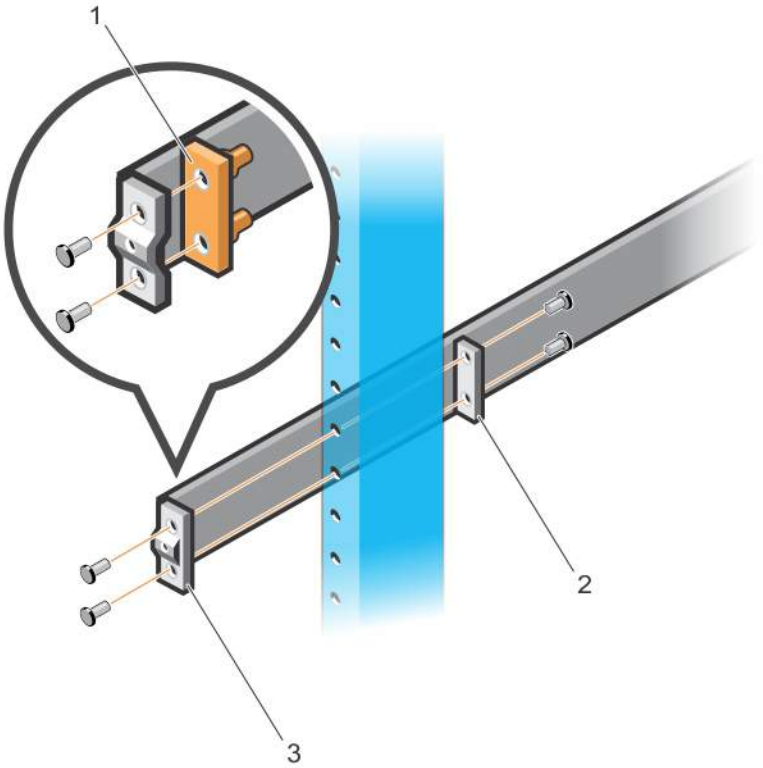
To remove each rail, pull on the latch release on each flange ear and unseat each rail.

Two-post flush-mount installation

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

1 Remove the latch castings from the front side of each ReadyRails assembly, item 1.

To remove the two screws from each front flange ear on the switch side of the rail and remove each latch casting, use a Torx screwdriver. Retain the latch castings for future rack requirements. It is not necessary to remove the back flange castings.



2 Attach one rail to the front post flange with two user-supplied screws, item 2.

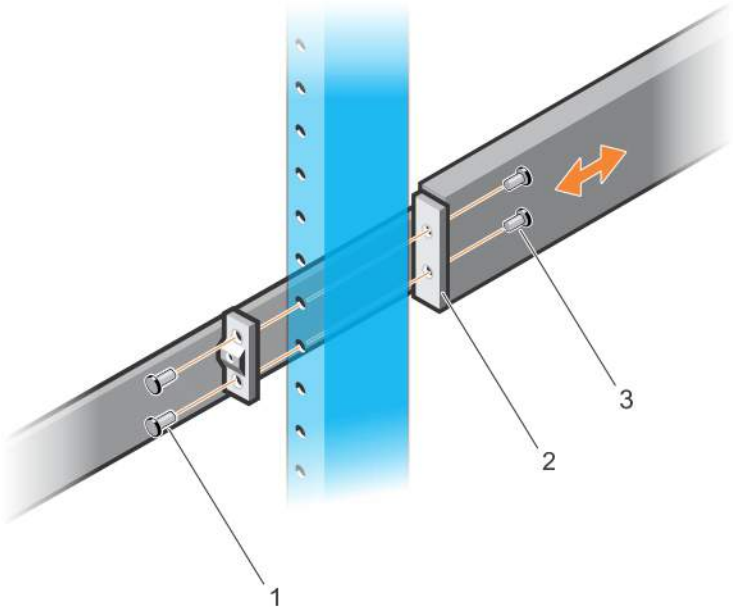
3 Slide the plunger bracket forward against the vertical post and secure the plunger bracket to the post flange with two user-supplied screws, item 3.

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, item 1.



2 Slide the back bracket towards the post. Secure it to the post flange with two user-supplied screws, items 2 and 3.

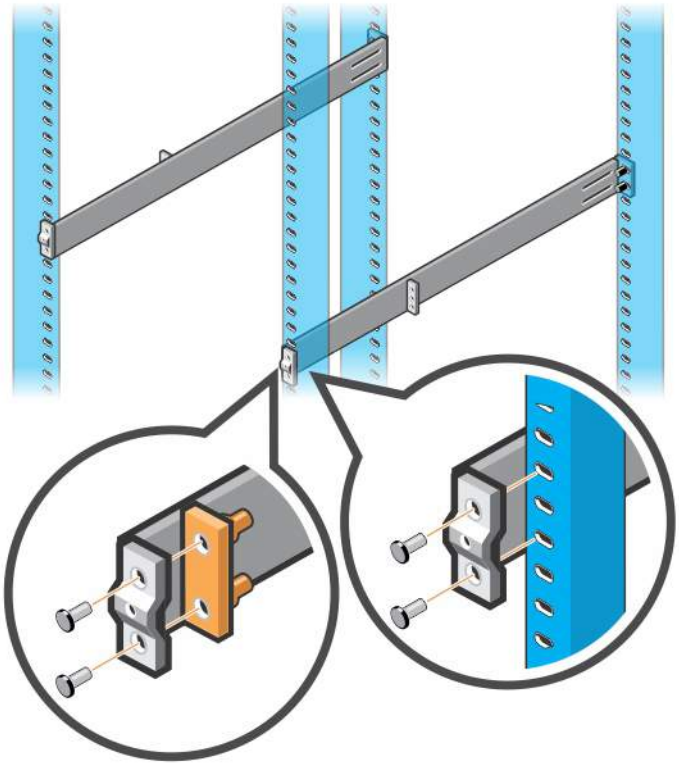
3 Repeat this procedure for the second rail.

Four-post threaded installation

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

1 Remove the latch castings from each end of the ReadyRails assemblies. To remove the two screws each latch casting, use a Torx driver.

Retain the latch castings for future rack requirements.



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

Switch installation

For the 1U two-post configurations for the S5224F-ON, S5248F-ON, and S5232F-ON switches, slide the switch into the rails in the same manner as the four-post configurations.

For the S5212F-ON switch installation, see One-half U front-rack installation. For the S5296F-ON switch installation, see Two U four-post rack assembly.

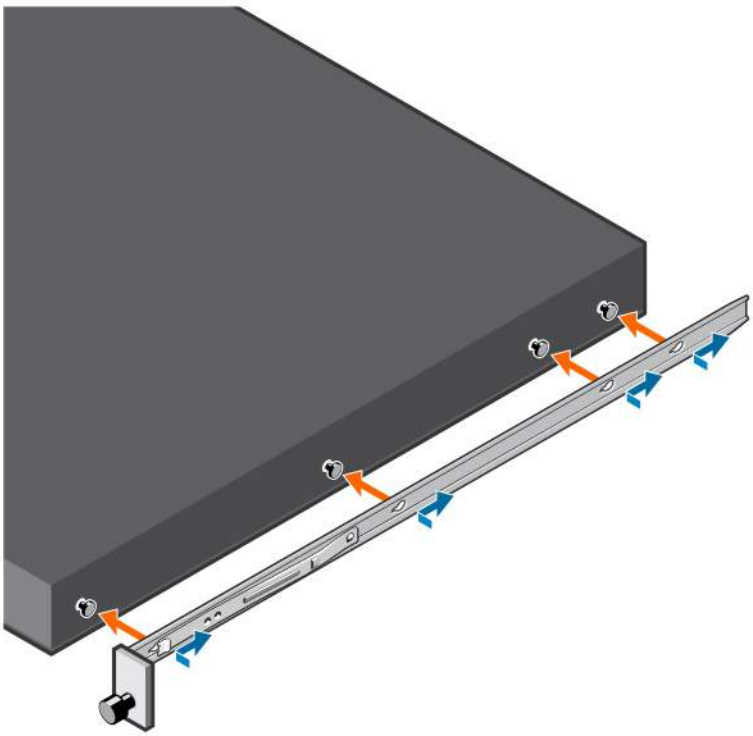
1U front-rack installation

Configure the rails that are attached to the switch.

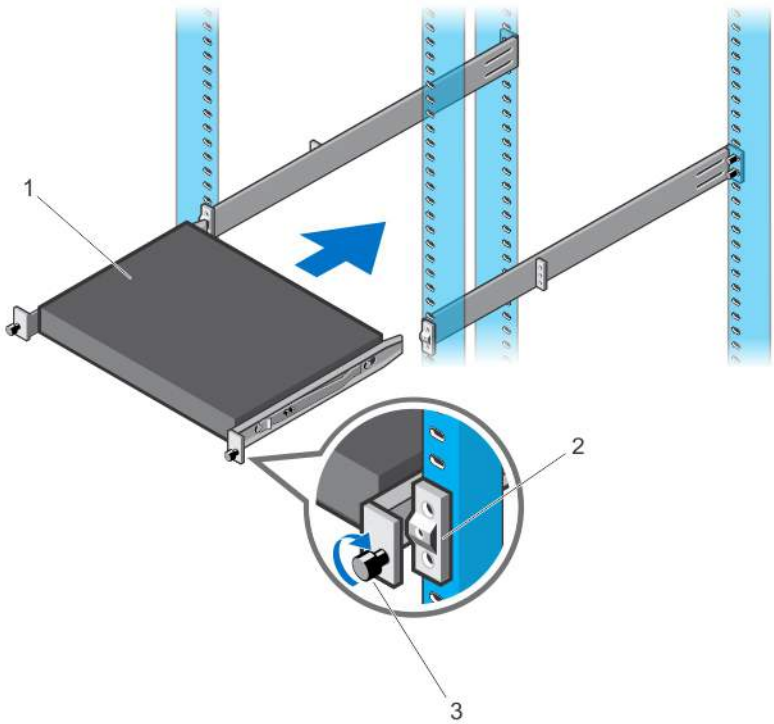
NOTE: For more instructions, see the installation instruction labels on the rail.

1 Attach the inner switch rails to the S5200F-ON Series 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:



2 Line up both switch rails with the previously mounted rack 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.



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

3 Tighten the two thumbscrews and rack screws.

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

Two U four-post rack assembly

Due to the chassis weight, the S5296F-ON switch does not support a two-post rack installation; you must install the S5296F-ON in a four-post rack.

NOTE: To install the S5212F-ON switch, see One-half U front-rack installation. To install the S5224F-ON, S5232F-ON, or S5248F-ON, switch see, One U ReadyRail installation.

To install in a four-post rack, follow the instructions in your rack frame kit. In a four-post rack, the maximum distance between the front and back vertical posts is 36 inches (91.44 cm); the minimum distance is 24 inches (60.96).

CAUTION: Use two people, an equipment lift, or pallet jack when lifting or moving the chassis. Install the chassis into the rack before inserting the chassis components. Lift the chassis only from the bottom. Lifting by the chassis shelves or power supply openings might damage the chassis.

Four-post rack mount

Rack mounting safety considerations

WARNING: To prevent bodily injury when mounting or servicing this unit in a rack, take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:

- If your chassis is the only unit in the rack, mount it at the bottom of the rack.
- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
- If the rack comes with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.
- If the chassis ships with blanks, remove the blanks from each slot before lifting the chassis.

WARNING: These instructions are 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.

Rack mount safety considerations

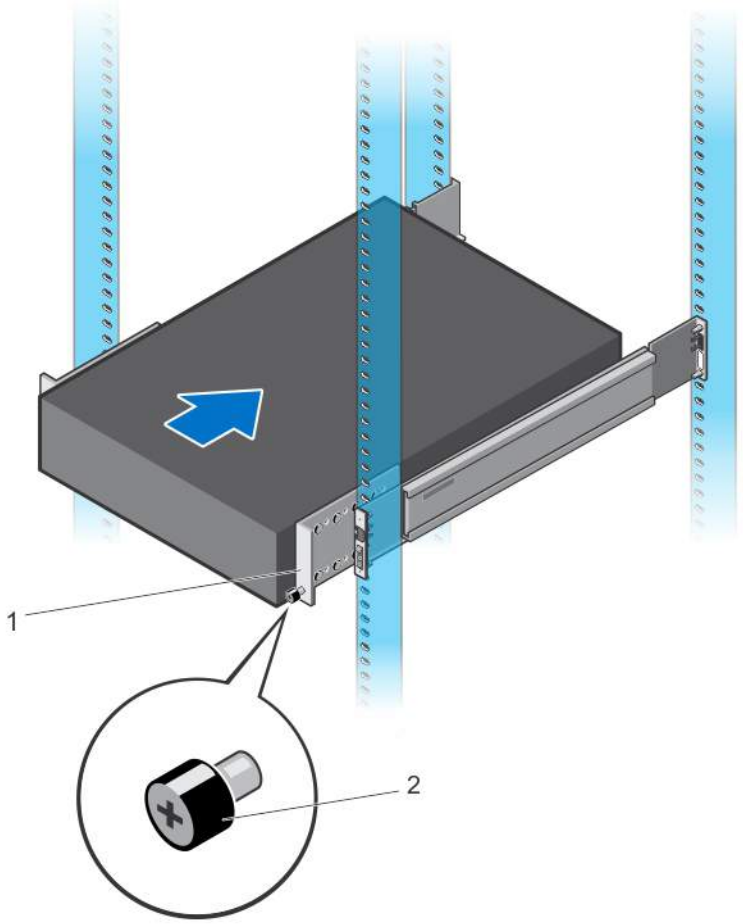
- Rack loading—Overloading or uneven loading of racks may result in shelf or rack failure, possibly damaging the equipment and causing personal injury. Stabilize racks in a permanent location before loading begins. Mount the components starting at the bottom of the rack, then work to the top. Do not exceed the load rating of your rack.
- 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 cables present fire and shock hazards.
- Elevated ambient temperature—If you install the switch 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 (113°F) maximum ambient temperature of the switch.
- Reduced airflow—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.

Switch Installation and removal

1 Align the system with the rails, and slide the system into the rack.

2 Tighten the screws on each side of the switch front panel. See items 1 and 2 in the following illustration:

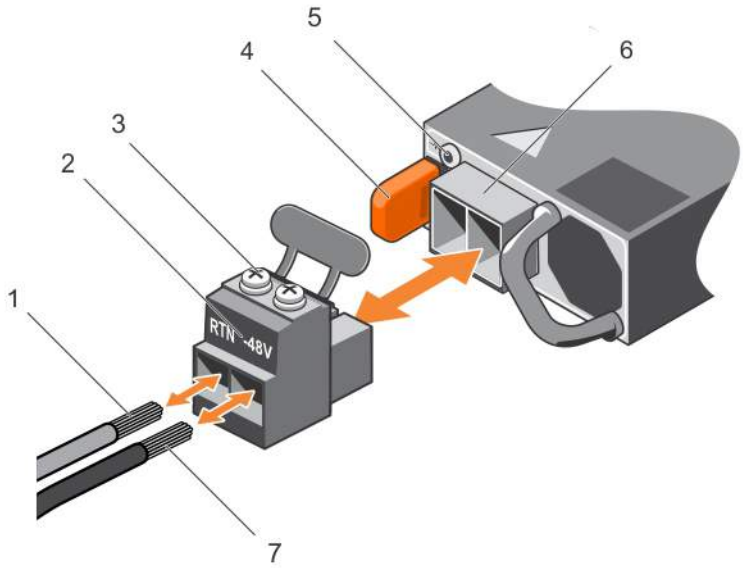
To remove the system from the rack, loosen the screws and slide the system out of the rack.



DC power connections

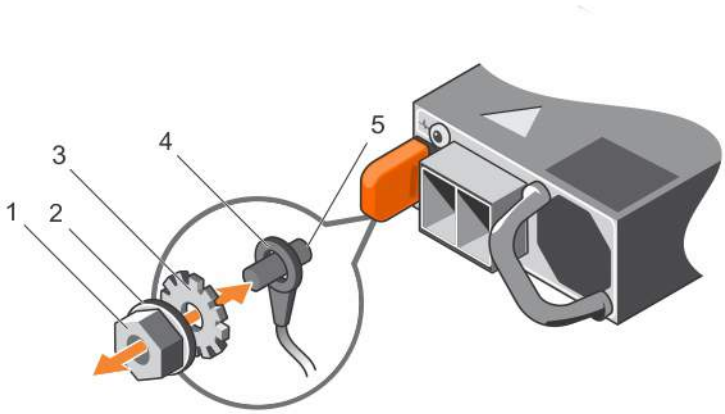
NOTE: Use the following instructions for all S5200F-ON Series switches except for the S5212F-ON switch. To connect DC power to the S5212F-ON switch, see S5212F-ON only DC power connections.

Each DC powered system comes with a set containing a prewired (3-inch 8AWG) power supply connector and a four-screw wiring block, as shown. One set is provided for each DC PSU.



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		

The DC power connector ground:



1	Ground nut	2	Washer
3	Lock washer	4	Ground cable
5	Device grounding rod		

To connect a DC PSU to the site's DC power source:

1 Strip 1/2 inches of insulation from each of the power connector's wires, as shown.
2 Insert each of the power connector's bare wire lengths into the wiring block, 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).

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.

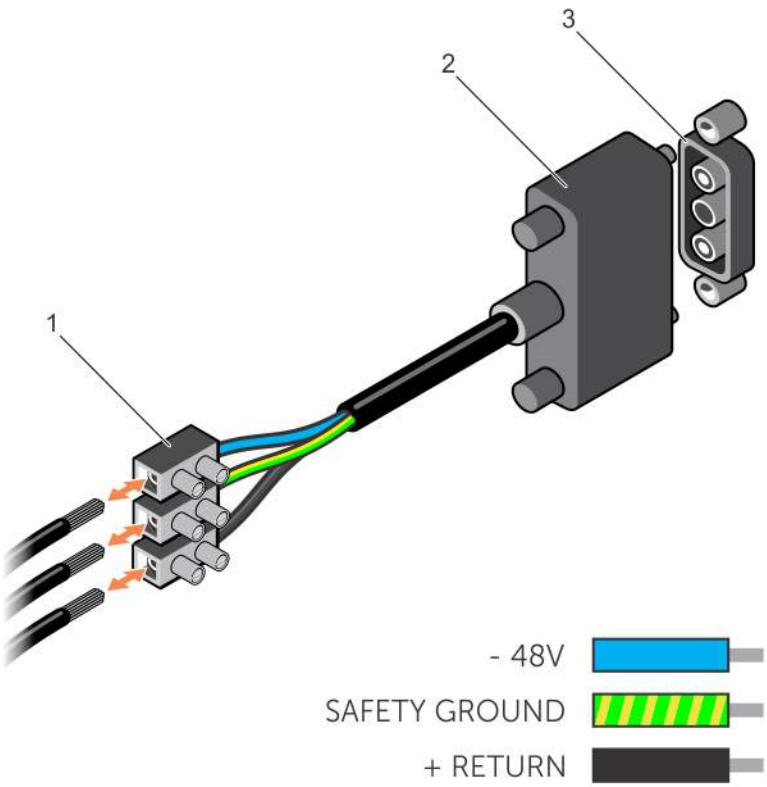
WARNING: Never try to force the power connector into or out of the DC PSU power socket.

NOTE: To remove the power connector from a DC PSU, squeeze the levers on both sides of the connector. Doing so disengages the power connector's clamps. While continuing to squeeze, pull the power connector from the DC PSU socket.

S5212F-ON only DC power connections

NOTE: Use the following instructions for the S5212F-ON switch only. For all other S5200F-ON Series switches, see DC power connections.

Each DC PSU comes with a connector cable. One cable is provided for each DC PSU.



1 Wiring block
2 Power connector
3 PSU connector

1 Strip a 1/2 inch section of insulation from each of the power connector's wires, as shown.
2 Insert each of the power connector's bare wire lengths into the wiring block. The blue wire is -48V, the black wire is the positive return, and the yellow/green wire is the ground wire, 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.

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, unscrew the thumb screws and pull the power connector from the DC PSU socket.

Optics installation

The S5200F-ON Series (S5232F-ON, S5248F-ON, S5296F-ON, S5224F-ON, and S5212F-ON) switches have SFP+, SFP28, QSFP-DD, and QSFP28 optical ports.

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

CAUTION: ESD damage can occur if components are mishandled. Always wear an ESD-preventive wrist or heel ground strap when handling the S5200F-ON Series 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.

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 start up

Supply power to the S5200F-ON Series switch after it is mounted in a rack or cabinet.

Dell EMC 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 S5200F-ON Series switch.
- There is sufficient airflow around the unit.
- The input circuits are correctly sized for the loads and that you use sufficient overcurrent protection devices.

CAUTION: Do not start up the switch if a fan module is not installed.

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.

NOTE: ESD damage can occur if components are mishandled. Always wear an ESD-preventive wrist or heel ground strap when handling the S5200F-ON Series switch and components.

Start 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 up.

After switch placement

After you have securely installed and powered on the S5200F-ON Series switch:

- For switch documentation and resources, see the Dell EMC Networking Hardware Platforms and OS9 Info Hub.
- For OS10 Networking operating system documentation and resources, see the Dell EMC Networking OS10 Info Hub.
- For ONIE documentation and resources, see ONIE information at www.onie.org.

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 EMC support representative.

NOTE: Some steps do not apply if you are replacing a different switch or non-Dell EMC 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
```

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 Install the new switch in your rack or cabinet.

For detailed installation instructions, see S5200F-ON Series switch installation.

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

7 Power on the switch.

For more information, see Switch power up.

8 Establish a connection to the switch CLI.

9 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.

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

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

11 Connect all the cables.

5

Power supplies

The S5200F-ON Series (S5232F-ON, S5248F-ON, S5296F-ON, S5224F-ON, or S5212F-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.

For all switches except the S5212F-ON switch, 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. For the S5212F-ON switch, the PSUs are fixed.

CAUTION: To prevent electrical shock, ensure that the S5200F-ON Series 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 S5200F-ON Series switch and components.

Topics:

- Components
- AC or DC power supply installation
- Power cable clip installation

Components

The following power supply options are available for the S5200F-ON Series switch:

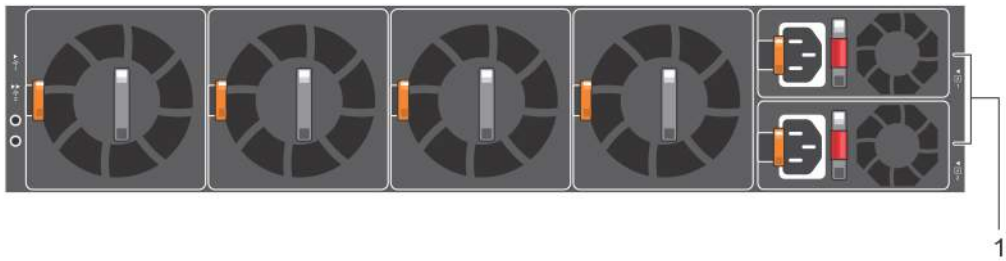
- AC or DC power supply with integrated fan
- AC or DC power supply with integrated reverse flow fan, except S5212F-ON
- S5212F-ON only: AC or DC open-frame power supply without integrated fans

For the S5224F-ON, S5232F-ON, and S5248F-ON switches, power supply 1 (PSU1) is on the left side of the switch; power supply 2 (PSU2) is on the right side of the switch. For the S5212F-ON and S5296F-ON switches, both power supply 1 (PSU1) and power supply 2 (PSU2) are on the right side of the switch.

The S5224F-ON, S5232F-ON, or S5248F-ON PSUs:

1 PSUs

The S5296F-ON PSUs:



1 PSUs

The S5212F-ON AC PSUs:

1 AC PSUs

The S5212F-ON DC PSUs:

1 DC PSUs

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 (SPD) at the AC or DC input of the router.

PSU LEDs

- Solid green—Input is OK.
- Flashing yellow—There is a fault with the PSU.
- Flashing green blink at 1Hz—Switch is in a standby/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 left 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 S5200F-ON Series switch using a small #1 Phillips screwdriver.

2 Remove the PSU from the electro-static bag.

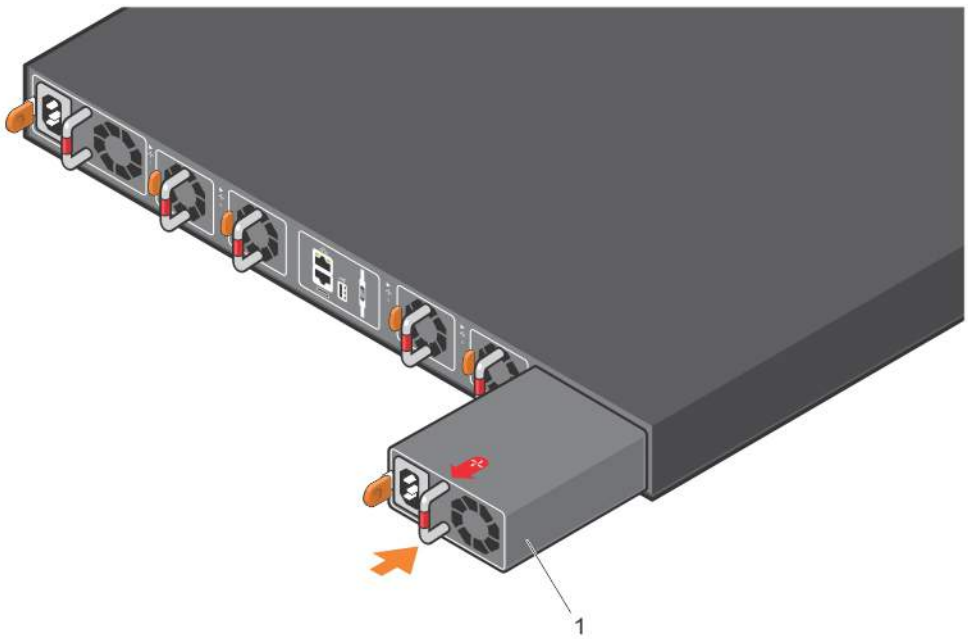
3 Insert the PSU into the switch PSU slot—insert the exposed PSU connector first.

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.

4 Plug in the appropriate AC 3-prongs cable from the switch PSU to the external power source.

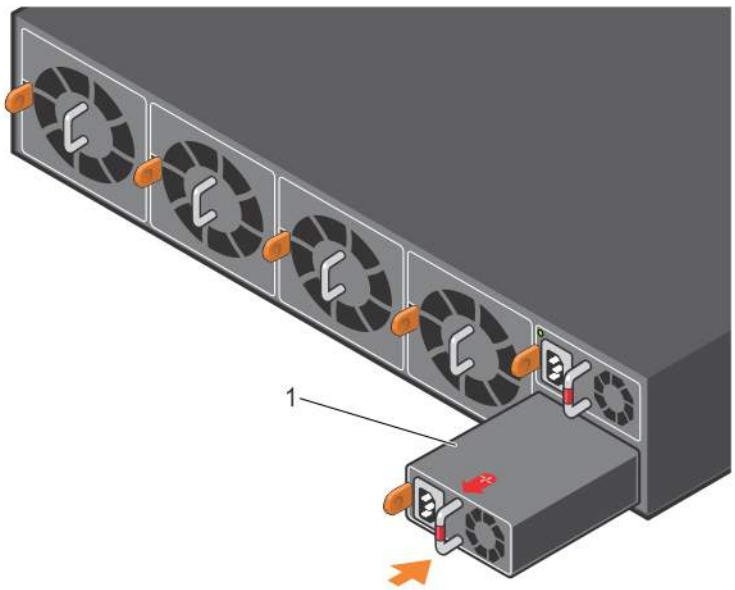
5 Repeat steps 1 through 4 if you have a redundant PSU using the second PSU slot on the S5200F-ON Series switch.

S5224F-ON, S5232F-ON, or S5248F-ON switch PSU:



- 1--PSU1 is on the right side of the switch. PSU2 is on the left side of the switch.

S5296F-ON switch PSU:



- 1--PSU

NOTE: The S5200F-ON Series switch starts up when you connect the cables between the power supply and the power source.

AC or DC power supply replacement

CAUTION: Disconnect the power cable before removing the power supplies. Also, disconnect all power cables 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 S5200F-ON Series 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 Dell EMC 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 cables to the replacement PSU.

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

Power cable clip installation

Your switch ships with two wire power cable clips. The following describes how to install the power cable clips that secure the power cables in place.
There are two loop holes above each power outlet on the switch. Connect the power cable clip above the right-most power outlet first.

1 Insert the right side of one of the power cable clips into the right hole above the right-most power outlet.
2 Twist the power cable clip to insert the left side of the power cable clip into the left hole above of the same power outlet.
You may need to twist the power cable clip slightly to get the power cable clip fully inserted into the holes above the power outlet.

3 Repeat the installation procedure with the second power cable clip on the second power outlet.

4 Insert the power cords into the power outlets.

5 Push the power cable clips over the power cables to secure them into place.

6

Fans

The S5200F-ON Series (S5232F-ON, S5248F-ON, S5296F-ON, S5224F-ON, and S5212F-ON) switch comes from the factory with two PSUs and four fan modules installed in the switch. For all switches except the S5212F-ON, the fan modules and the power supplies, which have integrated fans, are hot-swappable. For the S5212F-ON, the fans are fixed.

In addition to the power supply modules, you can order and install fan modules separately.

The S5200F-ON Series 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/or particulate matter in the air might affect performance—for example, new equipment installation).

CAUTION: Check the fans at six-month intervals and replace them as necessary. Regularly monitor the speeds of the fans to accurately determine replacement intervals.

Topics:

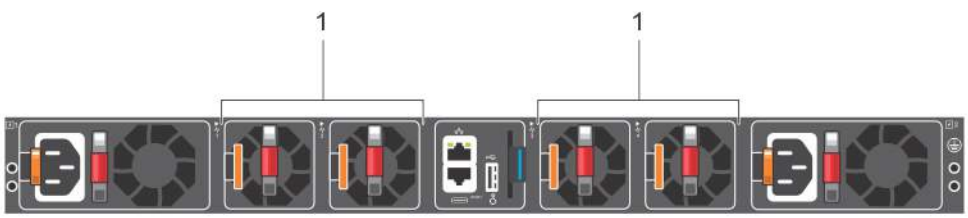
- Components
- Fan module installation

Components

The following are the S5200F-ON Series switch fan components:

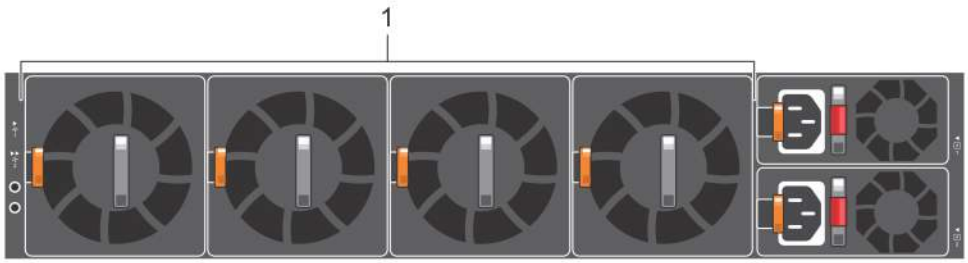
- S5200F-ON Series switch fan module
- S5200F-ON Series switch fan module—reverse flow

The S5224F-ON, S5232F-ON, or S5248F-ON switch fan modules:



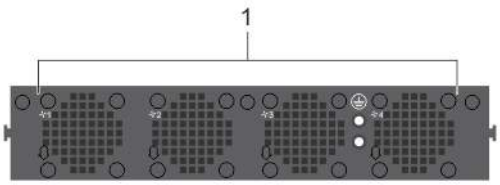
1 Fans

The S5296F-ON switch fan modules:



1 Fans

The S5212F-ON switch fan modules:



1 Fans

Fan LEDs

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

Fan module installation

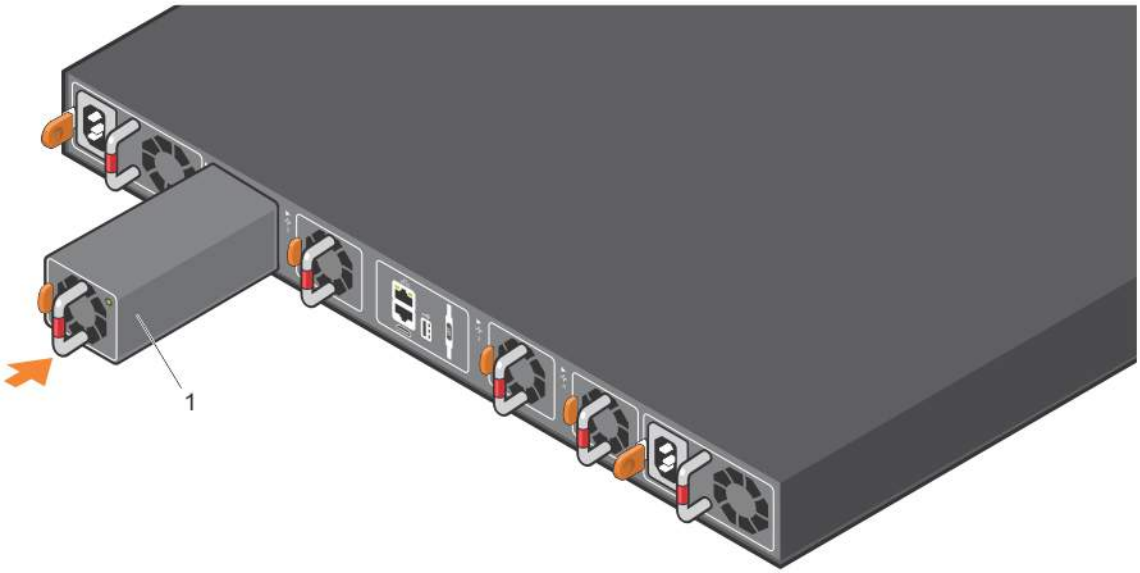
For all switches except the S5212F-ON, the fan modules in the S5200F-ON Series switch are field replaceable. For the S5212F-ON switch, the fans are fixed. For the S5224F-ON, S5232F-ON, and S5248F-ON switches, fan module slots 1 and 2 are on the left side of the switch and fan module slots 3 and 4 are on the right side of the switch. For the S5296F-ON switch, fan module slots 1 through 4 are on the left side of the switch. For the S5212F-ON switch, the fans are across the entire 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.

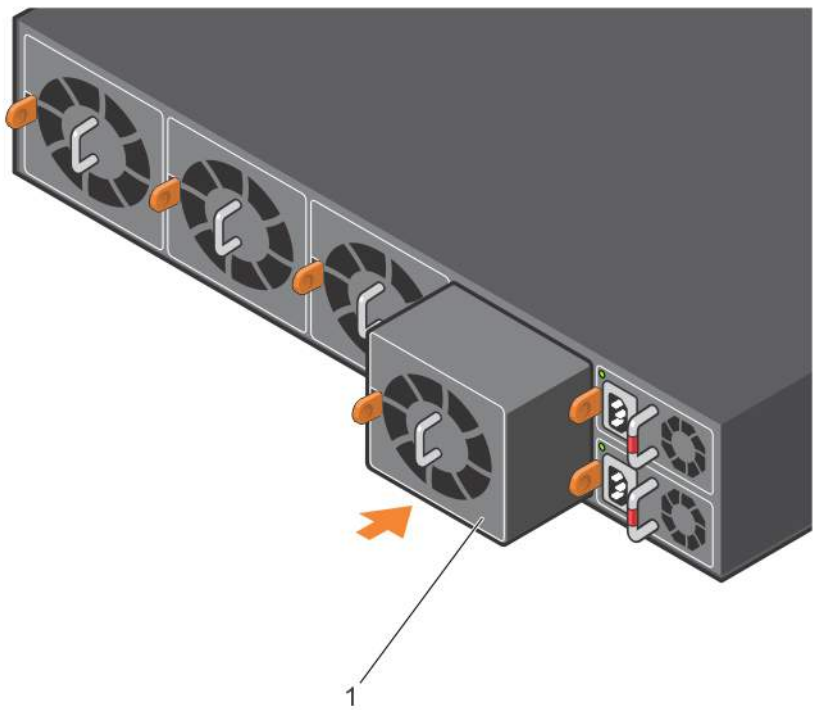
2 Slide the module into the bay.

The S5224F-ON, S5232F-ON, or S5248F-ON switch fan module installation:



- 1—fan module

The S5296F-ON switch fan module installation:



- 1--fan module

Fan module replacement

To request a hardware replacement, see Dell EMC 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 Take the replacement fan module out of the shipping box.
2 Slide the installed fan module out of the bay.
3 Slide the replacement module into the bay.

7

Management ports

The S5200F-ON Series (S5232F-ON, S5248F-ON, S5296F-ON, S5224F-ON, and S5212F-ON) switch provides three ports for management and one USB flash drive mount for file transfers.

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

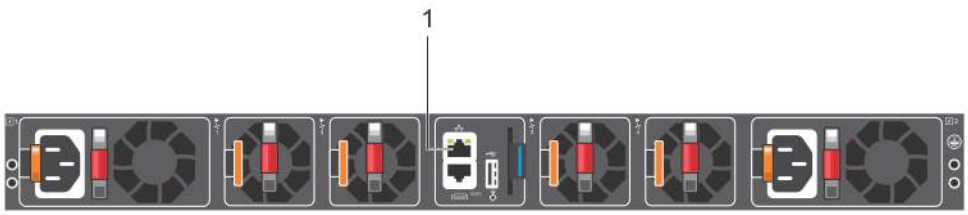
Topics:

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

RJ45 console port access

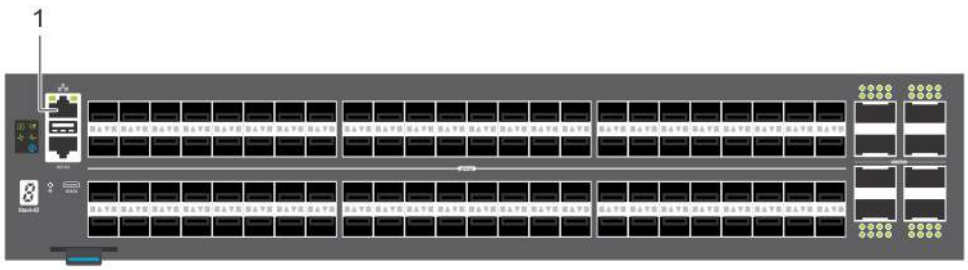
For the S5224F-ON, S5232F-ON, and S5248F-ON switches, the management ports are on the PSU-side of the switch. For the S5212F-ON and S5296F-ON switches, the management ports are on the I/O-side of the switch.

The S5224F-ON, S5232F-ON, or S5248F-ON switch management ports:



1 Out-of-band management port (top); RJ45 console port (bottom)

The S5296F-ON switch management ports:



1 Out-of-band management port (top); RJ45 console port (bottom)

The S5212F-ON AC switch management ports:

1 Out-of-band management port (top); RS-232 console port (bottom)

The S5212F-ON DC switch management ports:

1 Out-of-band management port (top); RJ45 console port (bottom)

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

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

NOTE: If the serial port on your computer cannot accept a female DB-9 connector, use a DB-9 to USB adaptor.

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
- Eight data bits
- One stop bit
- No flow control

MicroUSB-B console port access

The MicroUSB-B console port is on the I/O side of the switch.

NOTE: The S5200-ON Series switches use the Silicon Labs CP2102 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.

NOTE: Before starting this procedure, be sure that you have a terminal emulation program already installed on your PC. Install the appropriate drivers to support the microUSB-B port. To download Dell EMC drivers, see www.dell.com/support. If your computer requires non-Dell EMC drivers, contact Dell EMC Technical Support for assistance.

1 Power on the PC.
2 Connect the USB-A end of cable into an available USB port on the PC.
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.

To download Dell EMC drivers, see www.dell.com/support. If your computer requires non-Dell EMC drivers, contact Dell EMC Technical Support for assistance.

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 Start up the switch.
2 Press **Enter** on the **ONIE rescue mode** menu option from the ONIE Grub boot loader.
3 Create a mount directory for the USB storage.

```
ONIE:/ # mkdir /mnt/usb
```

4 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
```

5 Mount the device `/dev/sdb` to the `/mnt/usb` directory.

```
ONIE:/ # mount -t vfat /dev/sdb /mnt/usb
```

NOTE: If the `/mnt/usb` directory is missing, the following message displays: `mount: mounting /dev/sdb on /mnt/usb failed: No such file or directory.`

NOTE: If the USB device is not seen, the following message displays: `mount: mounting /dev/sdb on /mnt/usb failed: No such device or address.`

Before you install an OS

After powering on the S5200F-ON Series switch, it goes through a power-on self-test (POST).

POST runs every time 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.

NOTE: To access ONIE, use the RJ45 or MicroUSB 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* at www.dell.com/support.

NOTE: After you have securely installed and powered on the S5200F-ON Series switch, to configure your switch, see your third-party ONIE-compatible OS or the Dell EMC 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)
3.23.1.0
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.
To download and run an installer, the ONIE Service Discovery feature follows these steps in order and 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 Query to the IPv6 link-local neighbors using HTTP for an installer.

ONIE `ifconfig eth0` command examples

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 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 10.11.53.33/16 UP

Verify the network connection with ping.
ONIE:/ # ping 10.11.8.12
PING 10.11.8.12 (10.11.8.12): 56 data bytes
64 bytes from 10.11.8.12: seq=0 ttl=62 time=1.357 ms
64 bytes from 10.11.8.12: seq=1 ttl=62 time=0.577 ms
^C
```

8

Specifications

This section lists the S5200F-ON Series (S5232F-ON, S5248F-ON, S5296F-ON, S5224F-ON, and S5212F-ON) switch specifications.

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

CAUTION: Lithium battery Caution: There is a danger of explosion if the battery is incorrectly replaced. Replace only with same or equivalent type of battery. Dispose of the batteries according to the manufacturer's instructions.

NOTE: For RoHS information, see Restricted Material Compliance.

Topics:

- Chassis physical design
- IEEE standards
- Agency compliance
- USA Federal Communications Commission statement
- European Union EMC 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 7. Chassis physical design

Parameter	Specifications
Height	S5232F-ON: 1.72 inches (43.6 mm)
	S5248F-ON: 1.72 inches (43.6 mm)
	S5296F-ON: 3.42 inches (87 mm)
	S5224F-ON: 1.72 inches (43.6 mm)
	S5212F-ON: 1.72 inches (43.6 mm)
Width	S5232F-ON: 17.1 inches (434 mm)
	S5248F-ON: 17.1 inches (434 mm)
	S5296F-ON: 16.6 inches (422 mm)
	S5224F-ON: 17.1 inches (434 mm)
	S5212F-ON: 7.87 inches (199.8 mm)

Parameter	Specifications
Depth	S5232F-ON: 18.1 inches (460 mm) S5248F-ON: 18.1 inches (460 mm) S5296F-ON: 20.1 inches (511 mm) S5224F-ON: 18.1 inches (460 mm) S5212F-ON: 16 inches (406.4 mm)
Chassis weight with factory-installed components	S5232F-ON: 21.6 lbs (9.8 kg)—PSUs and fans S5248F-ON: 21.4 lbs (9.7 kg)—PSUs and fans S5296F-ON: 33.3 lbs (15.1 kg)—PSUs and fans S5224F-ON: 21.4 lbs (9.7 kg)—PSUs and fans S5212F-ON: 10.05 lbs (4.5 kg)—PSUs and fans
Rack clearance required	Front: 5 inches (12.7 cm) Back: 5 inches (12.7 cm)

Table 8. Environmental parameters

Parameter	Specifications
Operating temperature	0° to 45°C (32°F to 113°F) continuously **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
Storage temperature	–40° to 70°C (–40° to 158°F)
Storage humidity	5% to 90%, non-condensing
Maximum thermal output	S5232F-ON: 635W = 2167 BTU/Hr S5248F-ON: 647W = 2208 BTU/Hr S5296F-ON: 893W = 3047 BTU/Hr S5224F-ON: 455W = 1552 BTU/Hr S5212F-ON: 304W = 1037 BTU/Hr
Maximum operational altitude	10,000 feet (3,048 meters)
Maximum non-operational altitude	39,370 feet (12,000 meters)
Shock	Dell EMC Spec SV0115

Table 9. AC power requirements

Parameter	Specifications
Power supply	S5232F-ON: 100–240 VAC 50/60 Hz

Parameter	Specifications
	S5248F-ON: 100–240 VAC 50/60 Hz
	S5296F-ON: 100–240 VAC 50/60 Hz
	S5224F-ON: 100-240 VAC 50/60 Hz
	S5212F-ON: 100-240 VAC 50/60 Hz
Maximum current draw per system	S5232F-ON: 5.8A@110VAC and 2.4A@220VAC
	S5248F-ON: 5.8A@110VAC and 2.4A@220VAC
	S5296F-ON: 8.2A@110VAC and 4.1A@220VAC
	S5224F-ON: 4.2A@110VAC and 2.1A@220VAC
	S5212F-ON: 2.8A@110VAC and 1.4A@220VAC
Maximum power consumption	S5232F-ON: 635W maximum
	S5248F-ON: 647W maximum
	S5296F-ON: 893W maximum
	S5224F-ON: 455W maximum
	S5212F-ON: 304W maximum
Typical power consumption	S5232F-ON: 490W typical
	S5248F-ON: 420W typical
	S5296F-ON: 607W typical
	S5224F-ON: 280W typical
	S5212F-ON: 208W typical

Table 10. DC power requirements

Parameter	Specifications
Minimum and maximum input voltage range	–40VDC minimum
Maximum current at full load with fan	S5232F-ON: 15.9A @40VDC
	S5248F-ON: 16.2A @40VDC
	S5296F-ON: 22.3A @40VDC
	S5224F-ON: 11.4A@40VDC
	S5212F-ON: 7.6A@40VDC

IEEE standards

The S5200F-ON Series 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)

Agency compliance

The S5200F-ON Series switch is designed to comply with the following safety and agency requirements:

India

This product conforms to the relevant *Essential Requirements of Telecommunication Engineering Centre (TEC)* regulations.

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 EMC 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 2. Canadian Department of Communication Statement

European Union EMC 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 EMC 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 EMC 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.

⚠ **WARNING: 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 EMC, EMEA - Central

Dahlienweg 19

66265 Heusweiler

Germany

Tel: +49 172 6802630

Email: EMEA Central Sales

Japan VCCI compliance for class A equipment

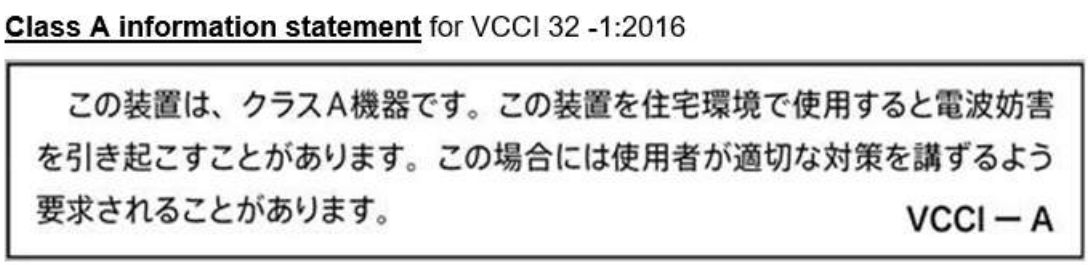


Figure 3. Japan: VCCI compliance for class A equipment

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.

⚠ **WARNING: Use the AC power cords with Dell EMC equipment only. Do not use Dell EMC AC power cords with any unauthorized hardware.**

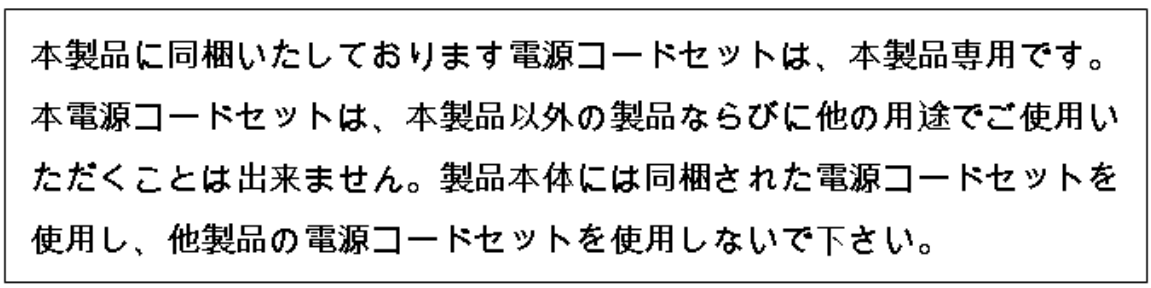


Figure 4. Japan: warning label

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 5. Korean certification of compliance

	[equipment type]
품명(Product Name)	Ethernet Switch
모델명(Model)	[model number]
신청인(Applicant)	Force10 Networks, Inc.
제조자(Manufacturer)	Delta Networks, (Dongguan) Ltd.
제조년월(Manufacturing Date)	[date]
제조국(Country of Origin)	China

Figure 6. Korean package label

Safety standards and compliance agency certifications

- CUS UL 60950-1, 2nd Edition
  - Meets or exceeds Hi Pot and Ground Continuity testing per UL 60950-1.
- 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: 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) EMC 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
- EN 61000-4-11 Voltage Dips/Interruptions

Product recycling and disposal

You must recycle or discard this switch according to applicable local and national regulations. Dell EMC encourages owners of information technology (IT) equipment to responsibly recycle their equipment when it is no longer needed. Dell EMC offers a variety of 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 EMC 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 7. 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 EMC 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 on Dell EMC product recycling offerings, see the WEEE Recycling instructions on Support. For more information, contact the Dell EMC Technical Assistance Center.

9

Dell EMC support

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

To access the Dell EMC 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, 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 additional kinds of technical support, click **Contact Us**, then click **Technical Support**.

To access product documentation and resources that might be helpful to install, configure, and troubleshoot the specific Dell EMC Networking switch, see the Dell EMC Networking Hardware Platforms and OS9 Info Hub.

To search for drivers and downloads, go to www.dell.com/drivers/.

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