

# Installing the S4810 System

## April 2014



# 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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# Contents

<b>1 About this Guide.....</b>	<b>5</b>
Information Symbols.....	5
Related Documents.....	6
<b>2 The S4810–ON System.....</b>	<b>7</b>
Introduction.....	7
Orderable S4810–ON Components.....	8
Prerequisite.....	8
Features.....	9
Ports.....	9
System Status.....	9
LED Displays.....	9
<b>3 Site Preparations.....</b>	<b>11</b>
Site Selection.....	11
Cabinet Placement.....	11
Rack Mounting.....	12
Grounding (Optional).....	12
Fans and Airflow.....	12
Power.....	12
Storing Components.....	13
<b>4 Install the S4810–ON.....</b>	<b>15</b>
Installing the S4810–ON Chassis in a Rack or Cabinet.....	15
Attaching the Mounting Brackets into a Two-Post Rack or Cabinet.....	15
Installing the System into a Two-Post Rack or Cabinet.....	16
Attaching the Mounting Brackets into a Four-Post Rack or Cabinet.....	17
Installing the System into a Four-Post Rack or Cabinet.....	18
Attaching the Ground Cable.....	19
Installing the SFP+ and QSFP+ Optics.....	20
Remove the SFP+ and QSFP+ Optics.....	21
Splitting QSFP+ Ports to SFP+ Ports.....	21
Connect the Stacking Ports (Optional).....	21
Important Points to Know.....	21
Connecting Two S4810–ON Systems.....	22
Connecting Three S4810–ON Systems.....	22
Supply Power and Power Up the System.....	22
Power Up Sequence.....	23


AC Power.....	23
DC Power.....	24
Hot-Swap Units in a Stack.....	24
<b>5 Power Supplies.....</b>	<b>25</b>
Components.....	25
Installing an AC or DC Power Supply.....	26
Replacing an AC or DC Power Supply.....	26
<b>6 Fans.....</b>	<b>27</b>
Components.....	27
Installing a Fan Module.....	28
Replacing a Fan Module.....	29
<b>7 Console Ports.....</b>	<b>31</b>
Accessing the RJ-45 Console Port (RS-232).....	31
Access the RJ-45 Console Port with a DB-9 Adapter.....	32
<b>8 Specifications.....</b>	<b>33</b>
Chassis Physical Design.....	33
IEEE Standards.....	34
Agency Compliance.....	34
USA Federal Communications Commission (FCC) Statement.....	34
European Union EMC Directive Conformance Statement.....	34
Japan: VCCI Compliance for Class A Equipment.....	35
Korean Certification of Compliance.....	36
Safety Standards and Compliance Agency Certifications.....	36
Electromagnetic Compatibility (EMC).....	37
Product Recycling and Disposal.....	37
Removing the SD Card.....	38
Replacing the Battery.....	39
<b>9 Technical Support.....</b>	<b>41</b>
The iSupport Website.....	41
Accessing iSupport Services.....	41
Contacting the Technical Assistance Center.....	41
Requesting a Hardware Replacement.....	42

## 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. 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.



-  **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.

## 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.

## Related Documents

For more information about the S4810-ON system, refer to the *Dell Networking S4810-Open Networking (ON) Getting Started Guide*.



**NOTE:** For the most recent documentation, visit iSupport: <http://www.dell.com/support/my-support>.

# The S4810–ON System

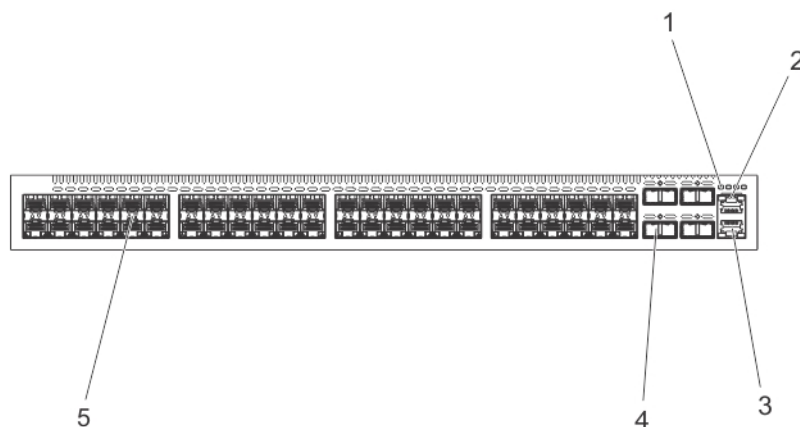
The following sections describe the Dell Networking S4810–ON system.

## Introduction

The Dell Networking S4810–ON platform is a next-generation switch/router designed to meet the requirements for distributed data center cores.

It is a one-rack unit (RU) chassis that supports 48 ports of 10GbE small form-factor pluggable plus (SFP+) and four quad small form-factor pluggable plus (QSFP+) ports. For system access, the S4810–ON includes an RS-232/RJ-45 console port and a management port for system access.

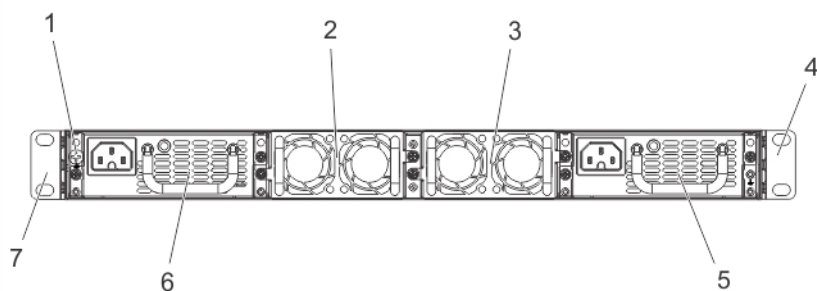
The S4810–ON input/output (I/O) side (shown in the following illustration) contains the 48 ports of 10GbE and four uplink ports of 40GbE QSFP+ autosensing ports and management ports.



**Figure 1. S4810–ON I/O-Side View**

1. System LEDs
2. RS-232/RJ-45 Console Port
3. Management (Ethernet) Port
4. 40GE QSFP+ Ports
5. 10GE SFP+ Ports

The S4810–ON power supply unit (PSU) side (shown in the following illustration) contains the PSU and fan modules.



**Figure 2. S4810-ON PSU-Side View**

1. Mounting Bracket
2. Fan Module 1
3. Fan Module 2
4. Mounting Bracket
5. Power Supply (PSU2)
6. Power Supply (PSU1)
7. Grounding Screw

## Orderable S4810-ON Components

You can order the S4810-ON system in several different configurations. You can also order optional modules and optics separately.

You can order the following supported hardware components.

- 48-port 10G SFP+ with four QSFP+, 40G ports, one AC power supply and two fan subsystems (airflow from I/O side to power supply side)
- 48-port 10G SFP+ with four QSFP+, 40G ports, one AC power supply and two fan subsystems (airflow from power supply side to I/O side)
- S4810-ON Series – Fan with airflow from the I/O side to the PSU side
- S4810-ON Series – Fan with airflow from the PSU side to the I/O side
- S4810-ON Series – AC Power supply with airflow from the I/O side to the PSU side
- S4810-ON Series – AC Power supply with airflow from the PSU side to the I/O side

For a list of supported optics, refer to the S4810-ON data sheet at <http://www.dell.com/> or contact your Dell Networking representative.

## Prerequisite

To successfully install the S4810-ON, ensure that you have the following components.

- S4810-ON chassis
- At least one grounded AC power source per chassis
- Cable to connect the AC power source to the chassis (US power cables included)
- Mounting brackets for rack installation (included)
- Screws for rack installation and #1 and #2 Phillips screwdrivers (not included)



- Ground cable (not included, optional)
- Ground cable screws (included)
- Copper/fiber cables

Other optional components are:

- Additional power supply unit
- Additional fan module
- Additional mounting brackets (if installing in a four-post rack or cabinet)

## Features

The S4810-ON offers the following features.

- S4810-ON CPU and switch processor
- Hot-swappable redundant power supply
- 19 inch rack-mountable
- Standard 1U chassis height

## Ports

The Z9000 offers the following ports.

- External Serial RS-232 port (RJ45 type)
- Remote management port
- 32-port 40G QSFP+ ports
- Universal serial bus (USB)-A port
- USB-B port
- Solid state drive (SSD)

## System Status

You can view S4810-ON status information using the light emitting diodes (LEDs).

### LED Displays

The S4810-ON includes LED displays on the I/O side of the chassis (shown in the following illustration).

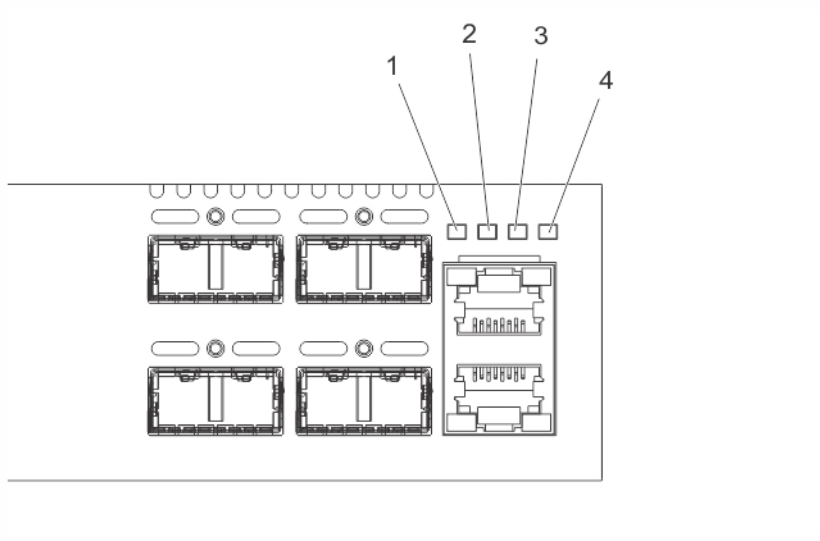
When the S4810-ON powers up or reloads, the PSU LED is solid green. For additional LED information, refer to your third-party operating software documentation.

The S4810-ON system LEDs are:

- System status (SYS)
- Stack Master indicator (MASTER)
- Fan status (FAN)
- Power status (PSU)

Additionally, the PSUs and fans have LEDs that indicate their individual status:

- PSU status
- Fan tray status
- System



**Figure 3. S4810-ON LEDs**

1. SYS
2. MASTER
3. FAN
4. PSU


## Site Preparations

The S4810–ON is suitable for installation as part of a common bond network (CBN).

You can install the system in:

- network telecommunication facilities
- data centers
- other locations where the National Electric Code (NEC) applies

For more information about S4810–ON specifications, refer to [Specifications](#).

 **NOTE:** Install the S4810–ON system into a rack or cabinet before installing any optional components.

## Site Selection

Install Dell Networking 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 and access is controlled by the authority responsible for the location.

Ensure that the area where you install your S4810–ON 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 104°F (from 0° to 40°C).
- Relative humidity that does not exceed 85 percent noncondensing.
- In a dry, clean, well-ventilated and temperature-controlled room, away from heat sources such as hot air vents or direct sunlight.
- Away from sources of severe electromagnetic noise.
- Positioned in a rack or cabinet, or on a desktop with adequate space in the front, rear, and sides of the S4810–ON for proper ventilation and access.

## Cabinet Placement

Install the S4810–ON only in indoor cabinets designed for use in a controlled environment.

Do not install the S4810–ON in outside plant cabinets. For cabinet placement requirements, refer to [Site Selection](#).

The cabinet must be a minimum cabinet size. Airflow must be according to 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 earth ground.

Ground the equipment rack to the same ground point the power service in your area uses. The ground path must be permanent.

## Grounding (Optional)

Use the S4810-ON in a common bond network (CBN).

Connect the grounding cables as described in [Attaching the Ground Cable](#).

## Fans and Airflow


The S4810-ON fans support two airflow options.

Be sure to order the fans suitable to support your site's ventilation. Use a single type of airflow fan in your system. Do not mix reverse and normal airflows in a single S4810-ON chassis.

- Normal — airflow is from the I/O panel to the power supply. The grab-handle is labeled Exhaust.
- Reversed — airflow is from the power supply to the I/O panel. The grab-handle is labeled Intake.

For proper ventilation, position the S4810-ON 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 S4810-ON systems near each other, position the two chassis at least 5 inches (12.7 cm) apart to permit proper airflow. The acceptable ambient temperature ranges are listed in [Specifications](#).

The fan speed increases and decreases automatically based on the system's state and temperature. The switch never intentionally turns off the fans.

 **NOTE:** Power Supplies and Fan Modules are field replaceable units. Dell Networking does not support a mix of power supply types (such as, AC and DC) in the same switch. If a power supply is added or replaced, it **MUST** match the existing type of power supply (such as, AC and AC or DC and DC).


## Power

To connect the chassis to the applicable power source, use the appropriate power cord with the S4810-ON. An AC power cord is included with the system.

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

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.

 **CAUTION:** Use the power supply cord as the main disconnect device on the AC system. Ensure that the socket-outlet is located/installed near the equipment and is easily accessible.

## Storing Components

If you do not install your S4810–ON and components immediately, Dell Networking recommends properly storing the system and all optional components until you are ready to install them.



**WARNING: ESD damage can occur when components are mishandled. Always wear an ESD-preventive wrist or heel ground strap when handling the S4810–ON and its accessories. After you remove the original packaging, place the S4810–ON and its components on an antistatic surface.**

Follow these storage guidelines:

- Storage temperature must remain constant ranging from -40° to 158°F (from -40°C 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.




# Install the S4810–ON

To install the S4810–ON system, Dell Networking recommends completing the installation procedures in the order presented in this chapter.

Always handle the S4810–ON and its components with care. Avoid dropping the system or its field replaceable units (FRUs).

This chapter describes the installation procedures as follows:

1. [Installing the S4810–ON Chassis in a Rack or Cabinet](#)
  - a. [Attaching the Mounting Brackets into a Two-Post Rack or Cabinet](#)
  - b. [Installing the System into a Two-Post Rack or Cabinet](#)
  - c. [Attaching the Mounting Brackets into a Four-Post Rack or Cabinet](#)
  - d. [Installing the System into a Four-Post Rack or Cabinet](#)
2. [Attaching the Ground Cable](#)
3. [Installing the SFP+ and QSFP+ Optics](#)
4. [Splitting QSFP+ Ports to SFP+ Ports](#)
5. [Supply Power and Power Up the System](#)
6. [After Installing the S4810–ON](#)


 **WARNING:** ESD damage can occur if components are mishandled. Always wear an ESD-preventive wrist or heel ground strap when handling the S4810–ON and its components. As with all electrical devices of this type, take all the necessary safety precautions to prevent injury when installing this system.

## Installing the S4810–ON Chassis in a Rack or Cabinet

The following sections describe how to install the S4810–ON in a rack or cabinet.

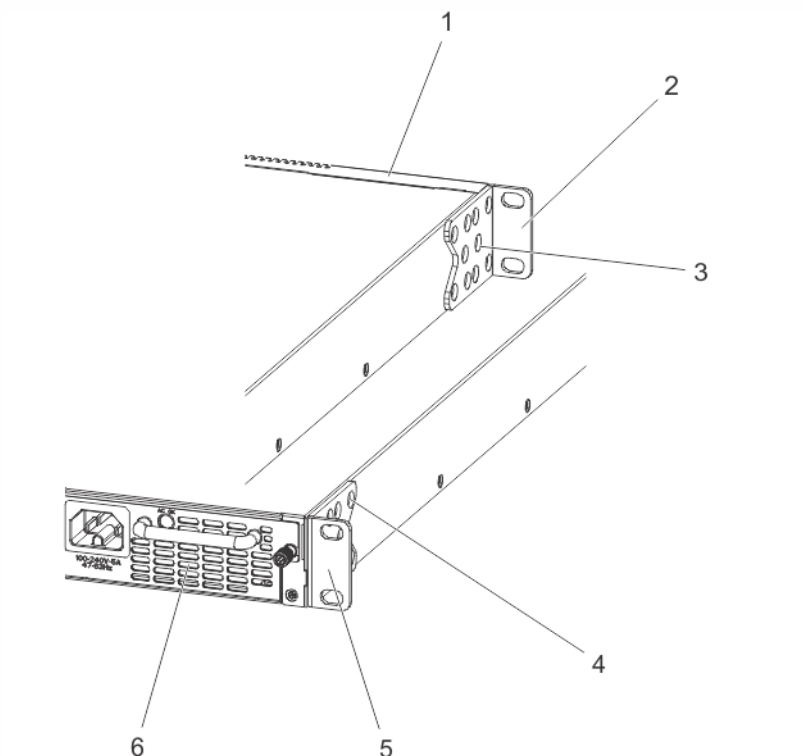
### Attaching the Mounting Brackets into a Two-Post Rack or Cabinet

The S4810–ON ships with mounting brackets (rack ears) and the required screws for a two-post rack or cabinet installation. The brackets are sent in a package with the system.

 **NOTE:** Dell Networking recommends attaching the brackets at the power supply unit (PSU) side. This set up provides the greatest weight support for the chassis in the rack or cabinet.

To attach the brackets to the system, follow these steps.

1. Take the brackets and screws out of their packaging.
2. Attach the brackets to the PSU sides of the system using four screws for each bracket. Attach the bracket so that the "ear" is parallel to the PSU and the outside of the system.



**Figure 4. Attaching Mounting Brackets into a Two-Post Rack or Cabinet**

- |  |  |
|--|--|
| 1. View from the chassis I/O side        | 2. Connect to the Rack or Cabinet (ears) |
| 3. Screws                                | 4. Screws                                |
| 5. Connect to the Rack or Cabinet (ears) | 6. Power Supply                          |

## Installing the System into a Two-Post Rack or Cabinet

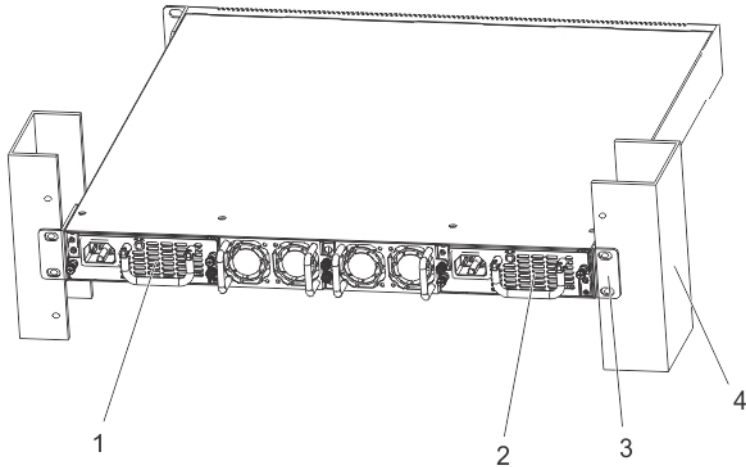
Ensure that there is adequate clearance surrounding the rack or within the cabinet to permit access and airflow.

To install a system into a two-post 19-inch equipment rack using the already attached mounting brackets, follow these steps.



**NOTE:** Dell Networking recommends using one person to hold the S4810-ON chassis in place while another person attaches the brackets to the posts.

Attach the bracket "ears" to the rack or cabinet posts using the two screws for each bracket. Ensure the screws are tightened firmly.



**Figure 5. Installing the System into a Two-Post Rack or Cabinet**

- |                       |                         |
|-----------------------|-------------------------|
| 1. PSU1               | 2. PSU2                 |
| 3. Rack Mounting Ears | 4. Rack or Cabinet Post |

### Attaching the Mounting Brackets into a Four-Post Rack or Cabinet

The S4810-ON ships with mounting brackets (rack ears) and the required screws for a two-post rack or cabinet installation.

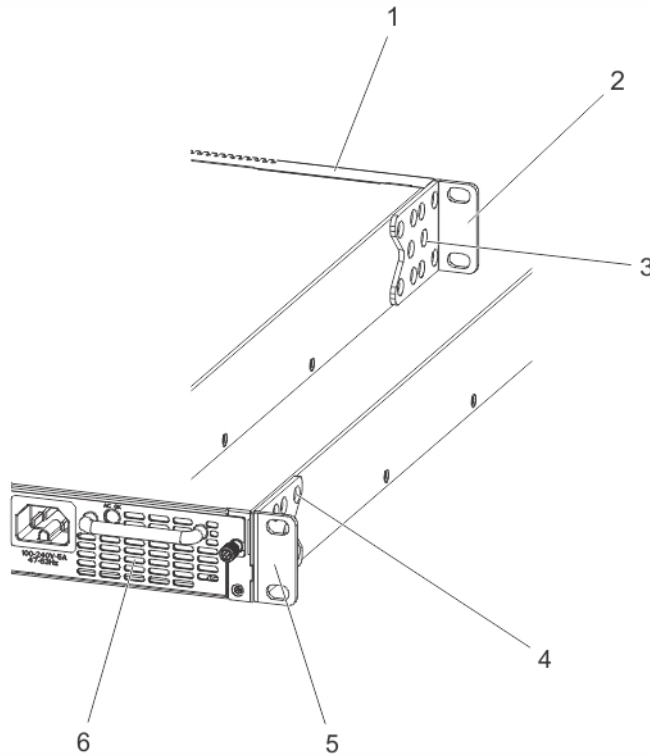
To install the S4810-ON in a four-post rack or cabinet, you must order additional brackets separately. Use the brackets included with the S4810-ON on the I/O side of system and use the brackets you ordered separately on the PSU side of the system.

Unlike the two-post installation, the four-post installation requires attaching brackets to the rack prior to installing the system.

To attach the brackets to the rack or cabinet, follow these steps.

1. Ensure that there is adequate clearance surrounding the rack or within the cabinet to permit access and airflow.
2. Take the brackets and screws out of their packaging.

3. Attach the brackets to the PSU sides of the chassis using four screws for each bracket. Attach the bracket so that the "ear" is parallel to the PSU and the outside of the chassis.



**Figure 6. Attaching the Mounting Brackets into a Four-Post Rack or Cabinet**

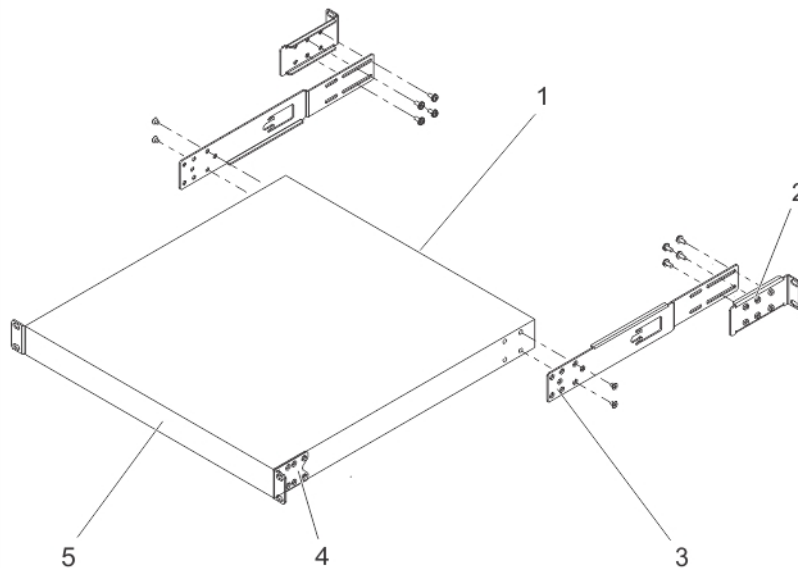
- |  |                                   |
|--|-----------------------------------|
| 1. View from the chassis I/O side        | 2. Connect to the rack or cabinet |
| 3. Screws                                | 4. Screws                         |
| 5. Connect to the rack or cabinet (ears) | 6. Power Supply                   |
4. Attach the long bracket to each side of the chassis using the provided countersink screws. Use two screws on each side of the chassis.
  5. Install the rack mount ears into the I/O-facing posts using rack mount screws (not included with the system).
- NOTE:** Mount the rack mount ears so that the system is level when fully installed.
6. Using the provided pan head screws, attach the rack ears on the I/O facing posts to the long bracket (attached to the system). To secure, tighten the pan head screws.

## Installing the System into a Four-Post Rack or Cabinet

To install a system into a four-post equipment rack using the already attached mounting brackets, follow these steps.

1. Ensure that there is adequate clearance surrounding the rack or within the cabinet to permit access and airflow.
2. Install the system into the rack. Ensure the long brackets dock into the previously installed rack ears.

3. Fasten the system to the PSU-facing posts using rack mount screws (not included with the system).



**Figure 7. Installing the System into a Four-Post Rack or Cabinet**

- |                  |              |
|------------------|--------------|
| 1. I/O Side      | 2. Rack Ears |
| 3. Long Brackets | 4. Rack Ears |
| 5. PSU Side      |              |
4. Use the provided pan head screws to attach the rack ears on the I/O-facing posts to the long bracket previously attached to the system. Tighten the pan head screws to secure the system.

## Attaching the Ground Cable

To attach the ground cable to the chassis, use a single M4x0.7 screw. The cable itself is not included with the S4810-ON. To properly ground the chassis, Dell Networking recommends using a 6AWG one-hole lug, #10 hole size, 63" spacing (not included in shipping). The one-hole lug must be a UL recognized, crimp-type lug.

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

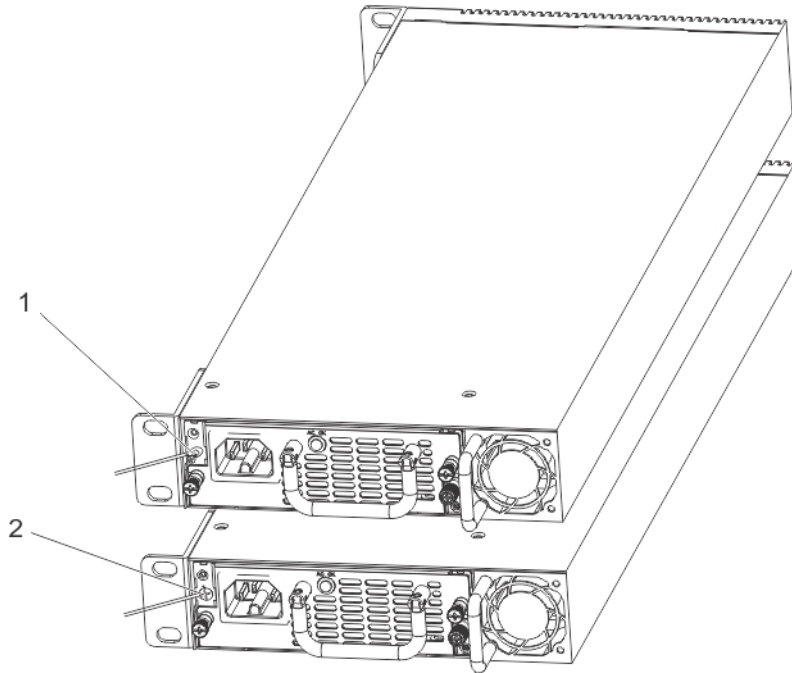
**CAUTION:** Grounding conductors *must* be made of copper. Do not use aluminum conductors.

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

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

1. Take the one M4x0.7 screw from the package.
2. Cut the cable to the desired length. The cable length must facilitate proper operation of the fault interrupt circuits. Dell Networking recommends using the shortest cable route allowable.

3. Attach the one-hole lug to the chassis using the supplied 10-32 screw with the captive internal tooth lock washer. Torque the screw to 20 in-lbs.





**Figure 8. Attaching the Ground Cable**

- a. Lug hole
- b. Ground Screw
4. Attach the other end of the ground cable to a suitable ground point. The rack installation ears are not a suitable grounding point.

## Installing the SFP+ and QSFP+ Optics

The S4810-ON has 48 SFP+ optical ports and four QSFP+ optical ports.

-  **WARNING:** ESD damage can occur if components are mishandled. Always wear an ESD-preventive wrist or heel ground strap when handling the S4810-ON 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.

To install SFP+ or QSFP+ optics into an open port, follow these steps:

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:** Both rows of QSFP+ ports require that the 40G optics be inserted with the tabs facing up.

## Remove the SFP+ and QSFP+ Optics

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. Prior to pulling the release tab, you may need to gently push the optic into the port to ensure it is seated properly. Do not jerk or tug repeatedly on the tab.

## Splitting QSFP+ Ports to SFP+ Ports

The S4810-ON supports splitting a single 40G QSFP+ port into four 10G ports using one of the supported breakout cables.

## Connect the Stacking Ports (Optional)

Before you make your stacking port connections, rack-mount the systems or insert them into a cabinet.

To connect the stacking ports, insert one end of the optical cable into a configured port and insert the other end of the optical cable into a similarly configured port of the adjacent system.

There are no unique stacking ports; you can configure the small form-factor pluggable (SFP) and quad form-factor pluggable plus (QSFP+) ports to act as stacking ports. The SFP ports are labeled from 0 to 47. The QSFP+ ports are labeled 48 and 56 for the lower ports and 52 and 60 for the upper ports.



**NOTE:** The S4810-ON system does not stack with other S-Series systems.

## Important Points to Know

When stacking the S4810-ON, keep the following in mind:

- Configure data ports as stacking ports in predefined stacking groups of 40G (four 10G ports or one 40G port).
- When you assign a stack-group number, the ports associated with that group are configured as stacking ports (refer to the following illustration):
  - stack-group 0 = ports 0-3, stack-group 1 = ports 4-7, stack-group 2 = ports 8-11, and so on through stack-group 11 = ports 44-47.
  - stack-group 12 = port 48, stack-group 13 = port 52, stack-group 14 = port 56, stack-group 15 = port 60.
- All the ports in a stack-group are placed in Stacking mode. You cannot use the unused ports in that group as data ports.


You can connect the systems while they are powered down or up. Stacking ports are bi-directional. The S4810-ON supports stacking in either a ring or a cascade topology (as shown in the following

illustration). To provide redundant connectivity, Dell Networking recommends using the ring topology when stacking S4810-ON systems.

## Connecting Two S4810-ON Systems

To provide backup connectivity and increased data transfer between the systems, Dell Networking recommends inserting an additional cable between the two units, in a second stacking port, as shown in the following illustration.

You can use any of the SFP+ or QSFP+ ports for stacking, provided it is configured as a stacking port.

 **CAUTION: To connect S4810-ON systems, use only Dell Networking supported stacking cables.**

To connect two S4810-ON systems in a ring (as shown in the following illustration), starting with the S4810-ON at the bottom of the stack, follow these steps.

 **NOTE:** The port numbers in the following procedure are examples only.

1. Insert one end of the first cable into stack port 60 in chassis 1 (bottom).
2. Insert the other end of the same cable into stack port 52 on chassis 2 (top).
3. Insert a second cable into stack port 56 on chassis 2 (top).
4. Insert the other end of the second cable into stack port 56 on chassis 1 (bottom).

## Connecting Three S4810-ON Systems

To provide backup connectivity and increased data transfer between the systems, Dell Networking recommends inserting an additional cable between the two units, in a second stacking port, as shown in the following illustration.

 **CAUTION: To connect S4810-ON systems, use only Dell Networking supported stacking cables.**

To connect three S4810-ON systems in a ring (as shown in the following illustration), starting with the S4810-ON at the bottom of the stack, follow these steps.

 **NOTE:** The port numbers in the following procedure are used as examples only.

1. Insert one end of the first cable into stack port 60 of chassis 1 (bottom).
2. Insert the other end of the cable into stack port 52 of chassis 2 (center).
3. Insert the second cable into stack port 60 of chassis 2 (center) and port 52 the chassis 3 (top).
4. Use the third cable to connect the top and bottom units by inserting one end of the cable into stack port 56 on chassis 1 (bottom) and the other end of the cable into stack port 60 on chassis 3 (top).

## Supply Power and Power Up the System

Supply power to the S4810-ON after it is mounted in a rack or cabinet.

Dell Networking recommends re-inspecting your system prior to powering up. Verify that:

- the equipment is properly secured to the rack and properly grounded.
- 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 specified for the S4810-ON.
- there is sufficient airflow around the unit.
- the input circuits are correctly sized for the loads and that you use sufficient over-current protection devices.

- all protective covers are in place.
- blank panels are installed if you do not install optional modules.

**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 S4810-ON system and its components.

## Power Up Sequence

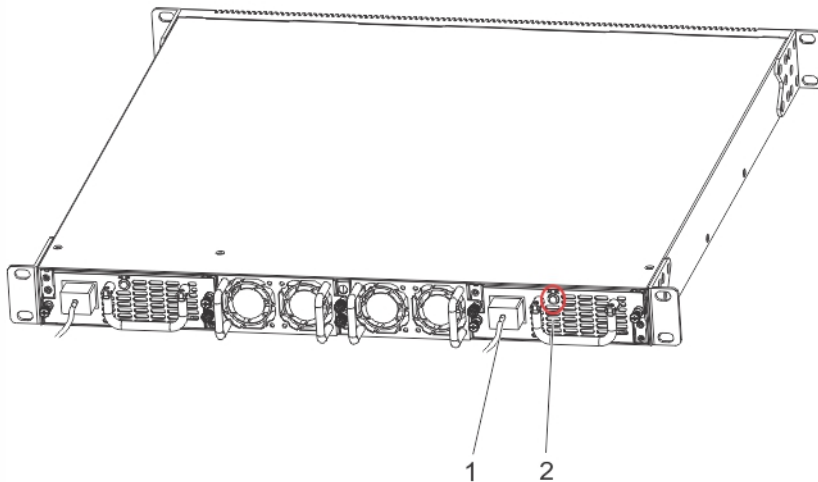
When the system powers up, the fans immediately come on at high speed. The fan speed slows as the system boots up.

## AC Power

To add AC power, connect the power cord plug to each AC power connector. Make sure that the power cord is secure (as shown in the following illustration).

**CAUTION:** Ensure that you correctly install the PSU. When correctly installed, the AC power connector is on the left side of the PSU and the status LED is at the top of the PSU (as shown in the following illustration).

As soon as the cable is connected between the S4810-ON and the power source, the system is powered-up; there is no on/off switch.



**Figure 9. AC Power Connection**

1. Power Connection
2. LED

## DC Power

To add DC power, connect the power cord plug to each DC power connector. Make sure that the power cord is secure (shown in the following illustration).

As soon as the cable is connected between the S4810-ON and the power source, the system is powered-up; there is no on/off switch.

## Hot-Swap Units in a Stack

You can add, remove, or swap S4810-ON units in an existing stack. The units in the stack and the new units can be already powered up or powered down.

All units in a stack must run the same version of the operating system. If you attempt to attach a unit with a different version of the operating system to an existing stack, the CLI displays an error and the unit is not added until you install compatible software.

The order in which the units come online or are added to or removed from the stack affects how the stack identifies them and how the units identify themselves. This influences unit numbers, management addresses, and other elements of the configuration file.

Unit identification within the stack is determined by the identification algorithm you select. The default algorithm has the units self-identify as Unit 0 through Unit *last* based on the order in which they come online. So, when setting up a new set of switches in a stack, you can force the identification of the management unit and unit IDs by methodically supplying power to the units in your preferred sequence.

Similarly, when you add a unit to the stack, the unit is gracefully added as Unit *last* (the lowest unused number) with the current configuration. Attaching a new unit may cause each unit in the stack to reload. The subsequent configuration file in each unit includes the awareness of the new unit.


If you have a pre-configured unit that you want to add to the stack, but you want to make sure that the configuration does not override the configuration of the stack, add the unit while it is powered down to avoid stack management conflicts.



## Power Supplies

The S4810–ON supports two hot-swappable power supply units (PSUs) with integrated fans that provide cooling for the system.


The S4810–ON supports AC power supplies with two air-flow directions (normal and reversed). Two PSUs are required for full redundancy, but the system can operate with a single PSU.


 **NOTE:** If you use a single PSU, install a blank plate in the other PSU slot. Dell Networking recommends using power supply 2 (PSU2) as the blank plate slot.

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.

The power supply LED indicates the power supply status:

- Off — no power
- Solid Green — Power supply is present and working

 **WARNING:** ESD damage can occur if components are mishandled. Always wear an ESD-preventive wrist or heel ground strap when handling the S4810–ON and its components.

 **WARNING:** To prevent electrical shock, ensure that the S4810–ON is grounded properly. If you ground your equipment incorrectly, excessive emissions may result. To ensure that the power cables meet your local electrical requirements, use a qualified electrician.

## Components


The following power supply options are available for the S4810–ON.


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


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

The PSUs in the S4810–ON are field replaceable. When both power supplies are installed and running, you can remove one power supply without interrupting traffic.

The PSUs are in a single piece with the PSU fans. You can replace the fan trays individually, but you cannot replace the fans that are attached to the PSUs — if the fans attached to the PSU fail, you must replace the entire PSU. For fan tray replacement procedures, refer to [Fans](#).




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

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


-  **NOTE:** To comply with the GR-1089 Lightning Criteria for Equipment Interfacing with AC Power Ports, use an external SPD at the AC input of the router.

## Installing an AC or DC Power Supply

To install an AC or DC power supply, follow these steps.




-  **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 S4810-ON chassis.
-  **NOTE:** Ensure that the PSU is correctly installed. When the PSU is correctly installed, the power connector is on the left side of the PSU and the status LED is at the top of the PSU (refer to the following illustrations).
-  **NOTE:** If you use a single PSU, you must install a blank plate in the other PSU slot. Dell Networking recommends using power supply 1 (PSU1) as the blank plate slot.

1. Take the PSU out of the shipping box.
2. Use the grab handle to slide the PSU into the power supply bay.
3. Tighten the securing screw on the side of the PSU. Ensure that the PSU is secure.
4. Attach the power cables.

-  **NOTE:** The system powers up as soon as the cables are connected between the power supply and the power source.

## Replacing an AC or DC Power Supply

To replace an AC or DC power supply, follow these steps:

-  **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 S4810-ON chassis.
-  **NOTE:** If a PSU fails, you must completely replace it. There are no field serviceable components in the PSU. To request a hardware replacement, refer to [Technical Support](#).
-  **NOTE:** If you use a single PSU, you must install a blank plate in the other PSU slot. Dell Networking recommends using power supply 1 (PSU1) as the blank plate slot.


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. Tighten the securing screws on the replacement PSU with a screwdriver. Ensure that the PSU is secure.
5. Attach the power cord to the replacement PSU.

The system powers up as soon as the cables are connected between the power supply and the power source.

## Fans

The S4810–ON comes from the factory with one power supply unit (PSU) and two fan modules installed in the system.

If two or more fans are installed and running, the fan modules are hot-swappable.

 **NOTE:** To run the system, both slots must have operating fan units. If a module is not installed in each slot (either as part of the PSU or as an independent fan module), the system shuts down in one minute.

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

The S4810–ON supports two airflow direction options. Do not mix airflow types in a chassis; you can use only a single airflow direction in a chassis.

- Normal — airflow is from the I/O panel to the PSU
- Reversed — airflow is from the PSU to the I/O panel

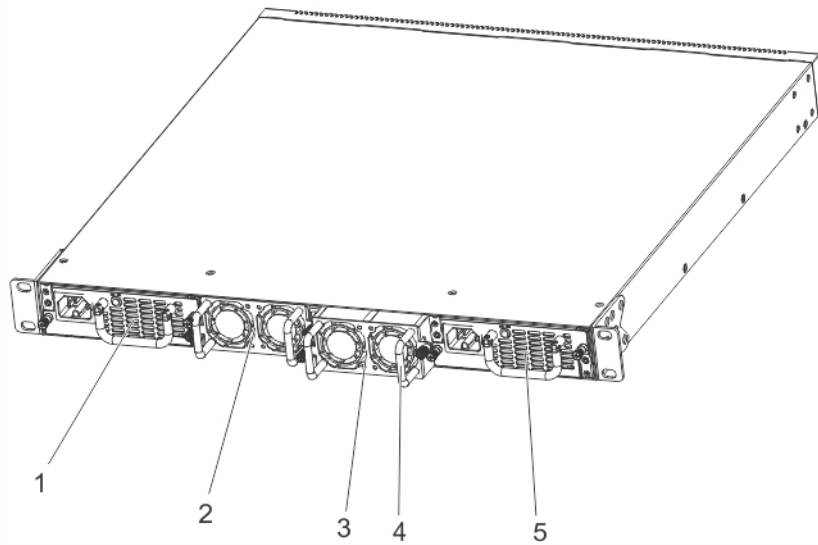
Environmental factors can decrease the amount of time required between fan replacements. Check the environmental factors regularly. An increase in temperature and/or particulate matter in the air might affect performance (for example, new equipment installation).

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

## Components

The following are the S4810–ON fan components.

- S4810–ON Fan module
- S4810–ON Fan module - Reverse flow



**Figure 10. S4810–ON Fan Module**

1. PSU1
2. Fan Module 1
3. Fan Module 2
4. Grab Handle
5. PSU2

## Installing a Fan Module

The fan modules in the Z9000 are field replaceable.

Module slot 0 is on the left side of the chassis; module slot 1 is on the right side of the chassis.

**⚠ CAUTION: DO NOT mix airflow directions. Both fans must use the same airflow direction (reverse or normal). If the airflows are mismatched, an error message appears and the system shuts down.**

To install a fan module, follow these steps.

1. Twist the latching screws so that the fan screen detaches from the system, as shown in the following

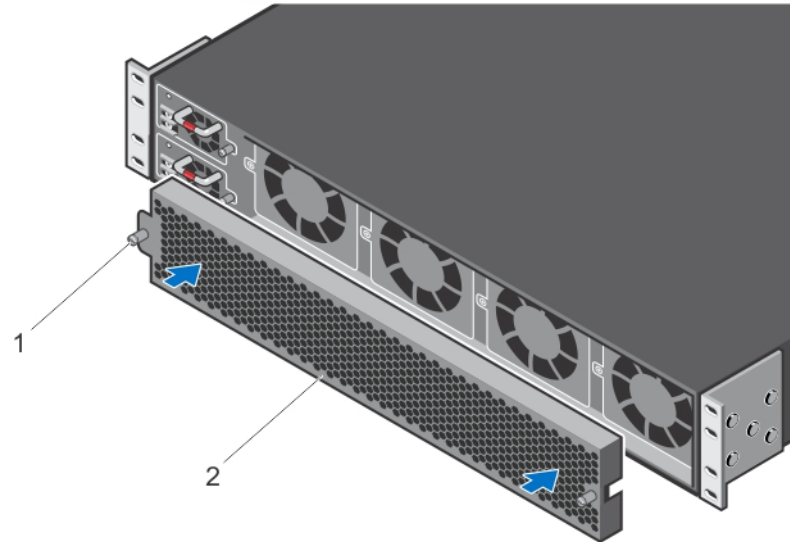


illustration.

2. Remove the screen and set it aside.
3. Take the fan module out of the shipping box.
4. Use the grab handle to slide the module into the bay.
5. Tighten the securing screw on the side of the module.
6. Replace the fan screen.
7. Twist the latching screws to the fan screen until it is securely attached to the system.

## Replacing a Fan Module

To replace a fan module, follow these steps.

1. Loosen the securing screws on the sides of the fan module.

**⚠ CAUTION: You must complete steps 2 and 3 within one minute or the system powers down.**

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




## Console Ports

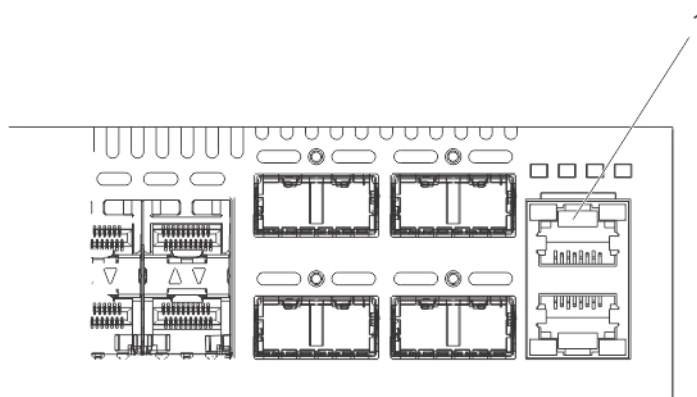
The Z9000 has two management ports available for system access—a console port and a Universal serial bus (USB)-B port.

The USB-B ports act exactly the same as the console port. The terminal settings are the same for both access ports.

### Accessing the RJ-45 Console Port (RS-232)

The RS-232/RJ-45 console port is labeled on the upper-right-hand side of the S4810-ON chassis (the I/O side) (as shown in the following illustration).

 **NOTE:** Before starting this procedure, be sure that you have a terminal emulation program already installed on your PC.



**Figure 11. S4810-ON Serial Console Port Connector**

1. RJ-45 Console Port

The following table lists the console port pinout assignments.

To access the console port, follow these steps.

1. Install an RJ-45 copper cable into the console port. Use a rollover cable to connect the S4810-ON console port to a terminal server.
2. Connect the other end of the cable to the dumb terminal emulator (DTE) server.

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

## Access the RJ-45 Console Port with a DB-9 Adapter

If the DTE has a DB-9 interface, you can connect to the console using an RJ-45 to DB-9 adapter along with the RJ-45 rollover cable.

The following table lists the pin assignments.

**Table 1. Pin Assignments Between the Console and a DTE Terminal Server**

Console Port	RJ-45 to RJ-45 Rollover Cable	RJ-45 to RJ-45 Rollover Cable	RJ-45 to DB-9 Adapter	Terminal Server Device
Signal	RJ-45 Pinout	RJ-45 Pinout	DB-9 Pin	Signal
RTS	1	8	8	CTS
NC	2	7	6	DSR
TxD	3	6	2	RxD
GND	4	5	5	GND
GND	5	4	5	GND
RxD	6	3	3	TxD
NC	7	2	4	DTR
CTS	8	1	7	RTS



# Specifications

This chapter lists the S4810–ON specifications.

## Chassis Physical Design

**Table 2. Chassis Physical Design**

Parameter	Specifications
Height	1.73 inches (4.4 cm)
Width	17.32 inches (44.0 cm)
Depth	18.11 inches (46 cm)
Chassis weight with factory-installed components	14.39 pounds (approx.) (6.54 kg)
Rack clearance required	Front: 5-inches (12.7 cm) Rear: 5-inches (12.7 cm)
Thermal dissipation	1194 BTH/h
Power consumption	250 Watts (nominal) 350 Watts (maximum)

**Table 3. Environmental Parameters**

Parameter	Specifications
Temperature	32° to 104°F (0° to 40°C)
Storage Temperature	-40° to 158°F (-40° to 70°C)
Maximum altitude	No performance degradation to 10,000 feet (3,048 meters)
Relative humidity	10 to 85% non-condensing
Shock	MIL-STD-810

**Table 4. AC Power Requirements**

Parameter	Specifications
Nominal input voltage	100 to 240 VAC, 47-63 Hz
Maximum AC power supply input current	4A @ 100/120VAC

Parameter	Specifications
	2A @ 200/240 VAC
Maximum system power input	350 W

## IEEE Standards

The S4810–ON complies with the following IEEE standards.

- 802.3ab Gigabit Ethernet (1000BASE-T)
- 802.3ae 10 Gigabit Ethernet (10GBASE-X)
- 802.3ba 40 Gigabit Ethernet (40GBase-SR4, 40GBase-CR4) on optical ports
- 802.3u Fast Ethernet (100BASE-TX)
- 802.3z Gigabit Ethernet (1000BASE-X)

## Agency Compliance

The S4810–ON is designed to comply with the following safety and agency requirements.

### 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.

#### 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 12. 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 can not 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 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.**

European Community Contact

Dell Networking, EMEA - Central

Dahlienweg 19

66265 Heusweiler

Germany

<http://www.force10networks.com/german/>

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  
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  
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  
るよう要求されることがあります。

Figure 13. 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 Networking equipment only. Do not use Dell Force10 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 14. Japan: Warning Label

**Korean Certification of Compliance**

<p>A급 기기 (업무용 방송통신기자재)</p>	<p>이 기기는 업무용(A급) 전자파적합기기로서 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정외의 지역에서 사용하는 것을 목적으로 합니다.</p>
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Figure 15. Korean Certification of Compliance


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

Figure 16. Korean Package Label

**Safety Standards and Compliance Agency Certifications**

- CUS UL 60950-1, 2nd Edition
- CSA 60950-1-03, 2nd Edition
- EN 60950-1, 2nd Edition

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

## **Electromagnetic Compatibility (EMC)**

### **Emissions**

- International: CISPR 22: 2006, Class A
- Australia/New Zealand: AS/NZS CISPR 22:2009, Class A
- Canada: ICES-003, Issue-4, Class A
- Europe: EN55022 2006 (CISPR 22: 2006), Class A
- Japan: VCCI V-3/2011.04 Class A
- USA: FCC CFR47 Part 15, Subpart B, Class A

### **Immunity**

- EN 300 386 v1.5.1:2010 EMC for Network Equipment
- EN55022 2006, Class A
- 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

## **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 17. 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 wheeled-bin symbol, as shown above, as required by WEEE.

For information on Dell Networking product recycling offerings, see the WEEE Recycling instructions on iSupport at: <http://i.dell.com/sites/content/corporate/corp-comm/en/Documents/weee-eol-instructions.pdf>. For more information, contact the Dell Networking Technical Assistance Center (TAC) (refer to [Contacting the Technical Assistance Center](#)).

## Removing the SD Card

To support high security environments, you can remove and re-install the SD card. Dell Networking recommends removing the SD card only when necessary. Only authorized personnel should remove the SD card.

**⚠ CAUTION: Only remove the SD card to support high security operations and after discussions with Dell Networking Technical Support or your Dell Networking representative.**

To open the case and remove the SD card, follow these steps.

1. Remove the small phillips screws that connect the top of the SD card to the body. The screws are located on the top and the sides of the chassis.
2. Slide the top backwards until its front flange slides free of the faceplate then lift it off.
3. Gently push the SD card to release it from the slot.

4. Remove the card.

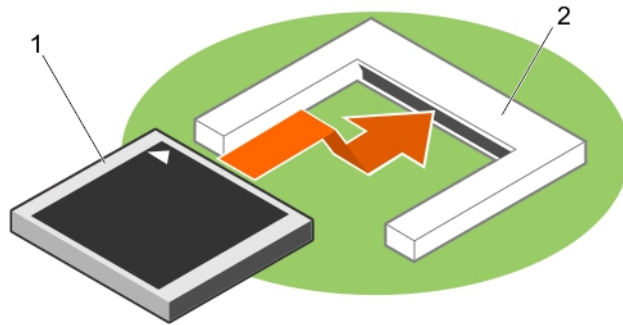


Figure 18. Illustration of removing the SD Card

## Replacing the Battery

The lithium battery is *not field replaceable*.





# Technical Support

This chapter contains the following sections:

- [The iSupport Website](#)
- [Contacting the Technical Assistance Center](#)
- [Requesting a Hardware Replacement](#)

## The iSupport Website

iSupport provides a range of documents and tools to assist you with effectively using Dell Networking equipment and mitigating the impact of network outages.

Through iSupport you can obtain technical information regarding Dell Networking products, access to software upgrades and patches, and open and manage your Technical Assistance Center (TAC) cases. Dell Networking iSupport provides integrated, secure access to these services.

### Accessing iSupport Services

The URL for iSupport is <http://www.dell.com/support>. You must have a userid and password to access iSupport services. If you do not have a userid and password, you can request these at the website.

To request a userid, password, and iSupport services, follow these steps.

1. On the Dell Networking Support page, click the **Account Request** link.
2. Fill out the User Account Request form and click **Send**. You will receive your userid and password by email.
3. To access iSupport services, click the **LOGIN** link and enter your userid and password.

## Contacting the Technical Assistance Center

How to  
Contact Dell  
Networking  
TAC

Log in to iSupport at <http://www.dell.com/support>.

Information to  
Submit When  
Opening a  
Support Case

- Your name, company name, phone number, and E-mail address
- Preferred method of contact
- Model number
- Software version number
- Symptom description

<b>Managing Your Case</b>	Log in to iSupport and select the <b>Service Request</b> tab to view all open cases and Return Materials Authorizations (RMAs).
<b>Technical Documentation</b>	Log in to iSupport and select the <b>Documents</b> tab. You can access this page without logging in using the <b>Documentation</b> link on the iSupport page.
<b>Contact Information</b>	E-mail: Dell-Force10_Technical_Support@Dell.com Web: <a href="http://www.dell.com/support">http://www.dell.com/support</a> Telephone: <ul style="list-style-type: none"><li>• US and Canada: 1.866.965.5800</li><li>• International: +1.408.965.5800</li></ul>

## Requesting a Hardware Replacement

To request replacement hardware, follow these steps.

1. Determine the part number and serial number of the component.
2. Request an RMA number from TAC by opening a support case. Open a support case by:
  - Using the Create Service Request form on the iSupport page (refer to [Contacting the Technical Assistance Center](#)).
  - Contacting Dell Networking directly by email or by phone (refer to [Contacting the Technical Assistance Center](#)). Provide the following information when using email or phone:
    - Part number, description, and serial number of the component.
    - Your name, organization name, telephone number, fax number, and email address.
    - Shipping address for the replacement component, including a contact name, phone number, and email address.
    - A description of the failure, including log messages.