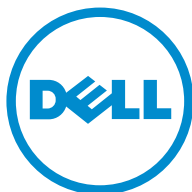# Dell Networking S3100 Series Getting Started Guide

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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About this Guide

This document is intended as a Getting Started Guide to get new systems up and running and ready for configuration.

For more details about S3100 series installation and software configuration, see the following information, available on the Dell Networking Support website (http://www.dell.com/support).

- The *Dell Networking S3100 Series Installation Guide* describes installation and replacement procedures.
- 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.

2

Installation

This information describes installation of a S3100 series system. Dell Networking recommends completing the installation procedures in the order presented here.

Operation and Safety Considerations

Before installing the switch, review these operation and safety guidelines.

Review these guidelines for switch installation:

- You have enough clearance to the front of the switch so you can read the light emitting diodes (LEDs).
- The AC power cord reaches from the power outlet to the power supply unit (PSU) side connector.
- The switch is rack-mounted before you power it up.
- Cabling is away from sources of electrical noise, such as radios, power lines, and fluorescent lighting. Ensure that the cabling is safely away from other devices that might damage the cables. If needed, allow one rack unit (RU) space between devices to provide room for cabling.
- Airflow around the switch and through the vents is unrestricted.
- Temperature around the unit does not exceed 113°F (45°C). If the switch is in a closed or multi-rack assembly, the temperature might be higher than normal room temperature.
- Humidity around the switch does not exceed 95 percent.
- Altitude at the installation site is below 10,000 feet.
- The switch is installed in an environment as free as possible from dust and foreign conductive material (such as metal flakes from construction activities). Cooling mechanisms, such as fans and blowers in the switch, can draw dust and other particles causing contaminant buildup inside the chassis, which can result in system malfunction.

Review these guidelines for rack mounting:

- Rack mounting — 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 loading — Overloading or uneven loading of racks may result in shelf or rack failure, causing 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 equipment in a closed rack assembly, the operating temperature of the rack environment may be greater than the room ambient temperature. The acceptable ambient temperature ranges are listed in the **S3100 Series Technical Specifications** section under Environmental Parameters.
- Reduced air flow — Install the equipment in the rack so that you do not compromise the amount of airflow required for safe operation of the switch. For proper ventilation, position the chassis in an equipment rack (or cabinet) with a minimum of 5 inches (12.7 cm) of clearance around exhaust vents.
- Reverse air flow — To ensure cool air intake and to avoid hot air blow out from the I/O side, ensure that you have the necessary clearance.
- 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 a downward position.

NOTE: Always handle the system and its components with care. Avoid dropping the chassis or their field replaceable units.

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

CAUTION: Only trained and qualified personnel should install this equipment. Read this guide before installing and powering up the system.

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

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.

Installing the Dell ReadyRails System

The ReadyRails rack mounting system is provided to easily configure your rack so that you can install your switch.

The Dell ReadyRails™ system is provided for 1U front-rack and two-post installations. The ReadyRails system includes two separately packaged rail assemblies and two rails that are shipped attached to the sides of the switch. 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).

⚠ **CAUTION: Do not use the mounted ReadyRails as a shelf or a workplace.**

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

1U Tool-less Configuration

To install the Dell ReadyRails system using the 1U tool-less configuration, follow these steps.

1. With the ReadyRails flange ears facing outward, place one rail between the left and right vertical posts. Align and seat the back flange rail pegs in the back vertical post flange. To see how the pegs appear in both the square and unthreaded round holes, see item 1 in the following figure.
2. Align and seat the front flange pegs in the holes on the front side of the vertical post.
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.
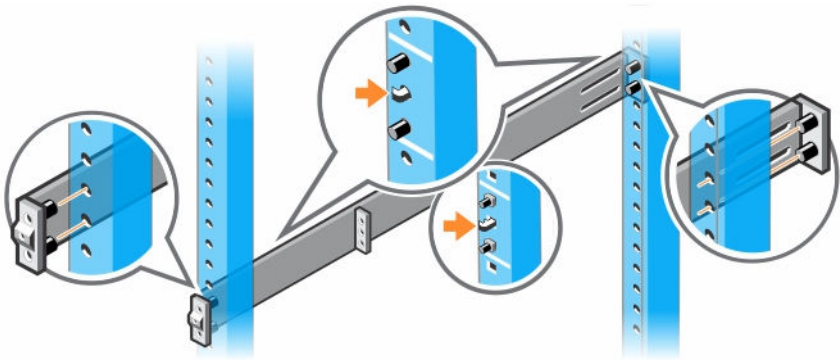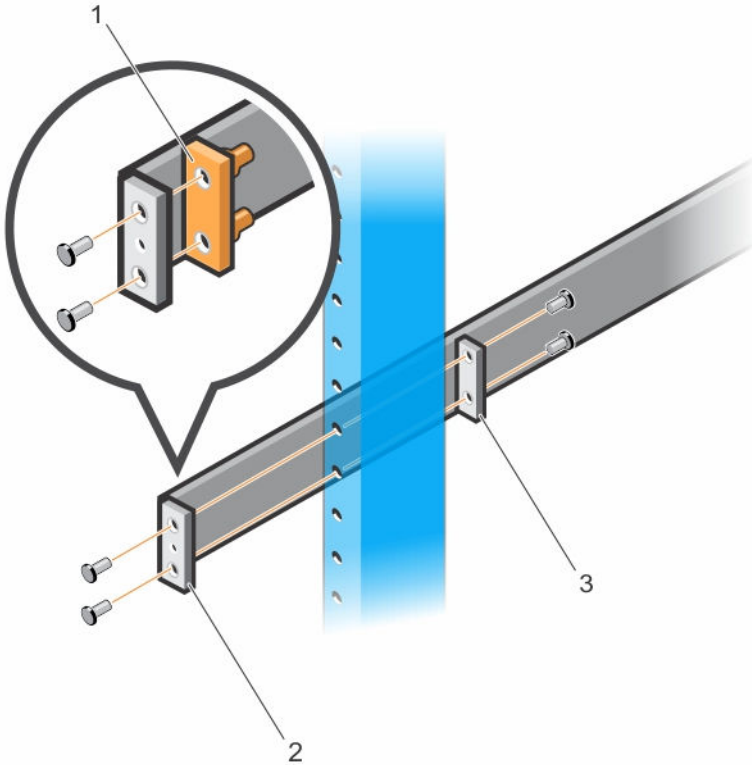

Figure 1. 1U Tool-less Configuration

Two-Post Flush-Mount Configuration

To install the Dell ReadyRails system using the 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 figure. Use a Torx driver to remove the two screws from each front flange ear (on the switch side

of the rail) and remove each casting. 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 figure.

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 figure.

4. Repeat this procedure for the second rail.

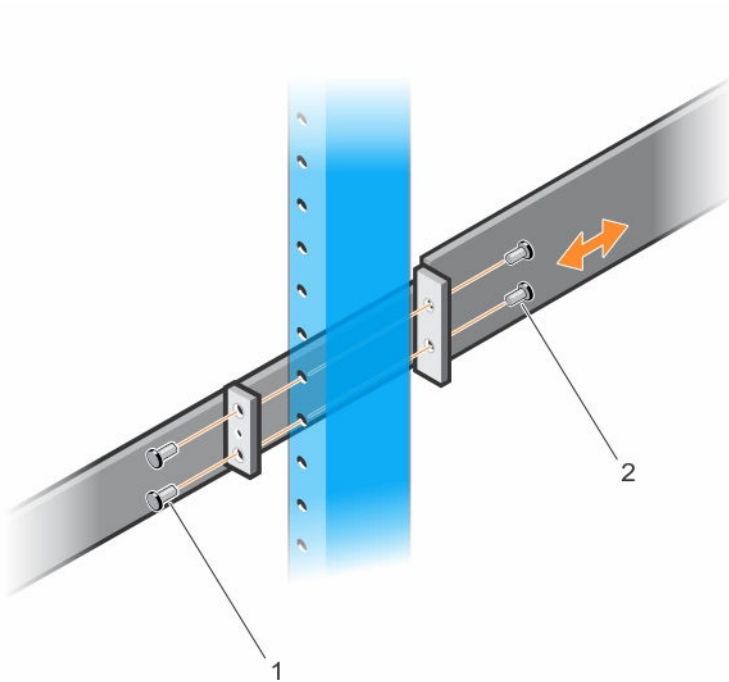**Figure 2. Two-Post Flush-Mount Configuration**

1. Removing the castings.
2. Attaching rail to the front post flange.
3. Securing the plunger bracket to the post flange.

Two-Post Center-Mount Configuration

To install the Dell ReadyRails system using the 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 figure.
2. Slide the back bracket towards the post and secure it to the post flange with two user-supplied screws. See items 2 and 3 of the following figure.
3. Repeat this procedure for the second rail.

Figure 3. Two-Post Center-Mount Configuration

1. Securing the bracket to the front post flange.
2. Securing the back bracket.

Four-Post Threaded Configuration

To install the Dell ReadyRails system using the four-post threaded configuration, follow these steps.

1. Remove the flange ear castings from each end of the ReadyRails assemblies. Use a Torx driver to remove the two screws from each flange ear and remove each casting. See item 1 of the following figure. 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 of the following figure.
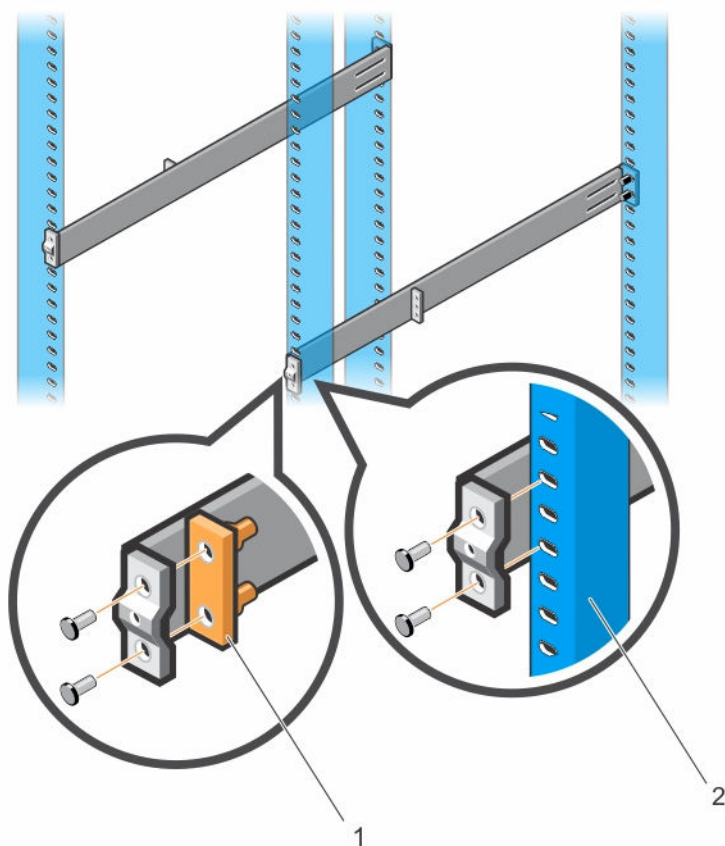

Figure 4. Four-Post Threaded Configuration

1. Removing the flange ear castings.
2. Attaching the rail flanges to the posts.

Installing the System

You can mount the system in the 1U front-rack or 1U two-post (flush and center) configurations. For the 1U two-post (flush and center) configurations, slide the system into the rails in the same manner as the four-post configurations.

The following is an example of a 1U front-rack configuration.

Installing a 1U Front-Rack

Configure the rails that are attached to the system.

1. Attach the switch rails (inner chassis members) to the system (items 1 and 2 in the following figure). Item 3 shows the detail for the front standoff with the locking tab.
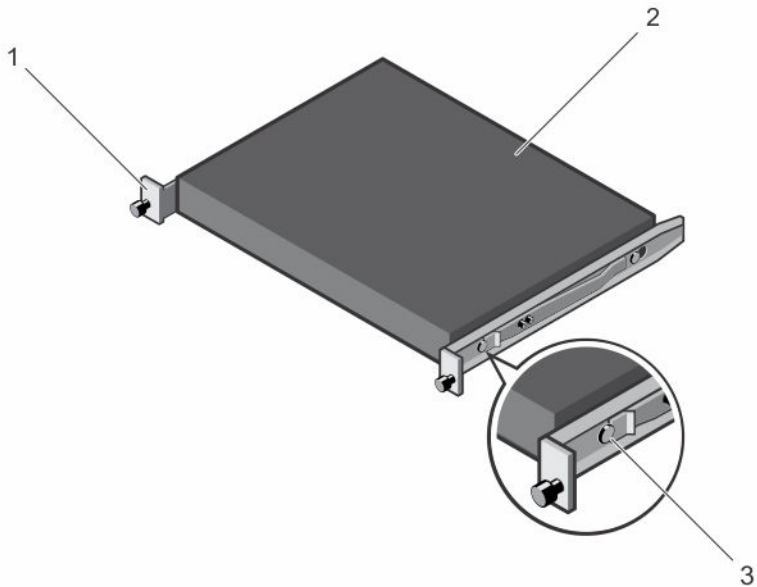
Figure 5. Attaching the Switch Rails

1.	Locking feature.	2.	Chassis.

3. Front standoff with locking tab.

2. After you have installed both switch rails, line them up on the previously mounted Ready-Rails and slide the switch in (item 1 in the following figure) until it is flush with front of rack. About 3 inches before you fully insert your system, the rail locking feature (items 2 and 3) engages to keep the switch from inadvertently sliding out of the rack and falling.
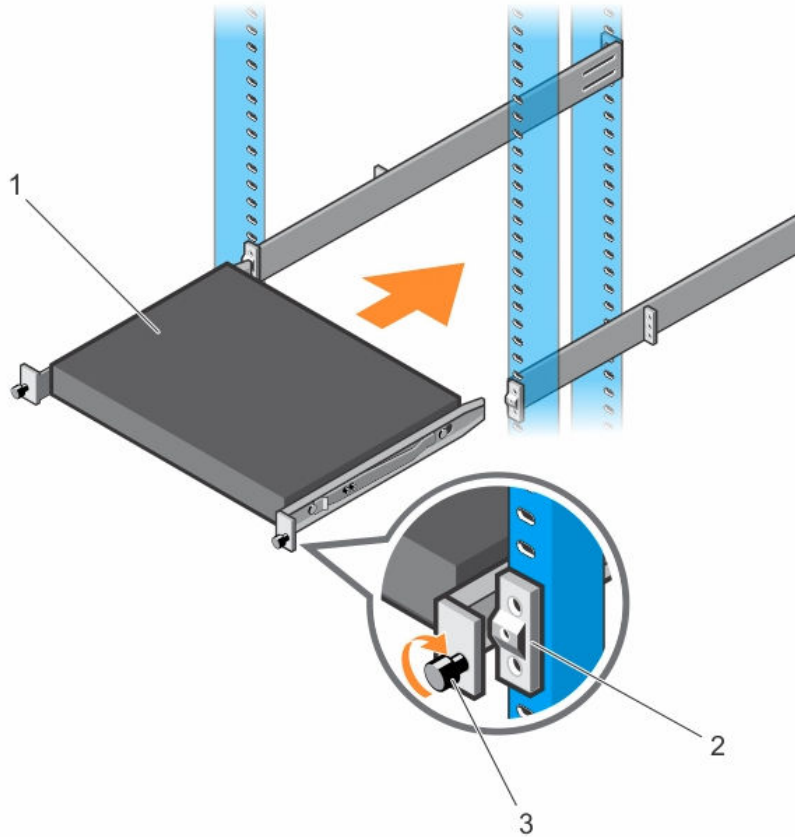
**Figure 6. Installing the Switch in a Front-Rack Configuration**

1. Chassis.
2. Rail end.
3. Rail locking feature.

Installing a Power Supply

The S3100 systems are designed to support two hot-swappable power supplies (PSUs) with integrated fans that provide cooling for the chassis.

1. Remove the PSU from the electrostatic bag.
2. Remove the PSU slot cover from the switch.
3. Use the grab handle to slide the PSU into the switch PSU slot. The PSU slot is keyed such that the PSU can only be fully inserted in one orientation.

   The PSU slides into the slot smoothly. Do not force the PSU into a slot as this action may damage the PSU or the chassis.
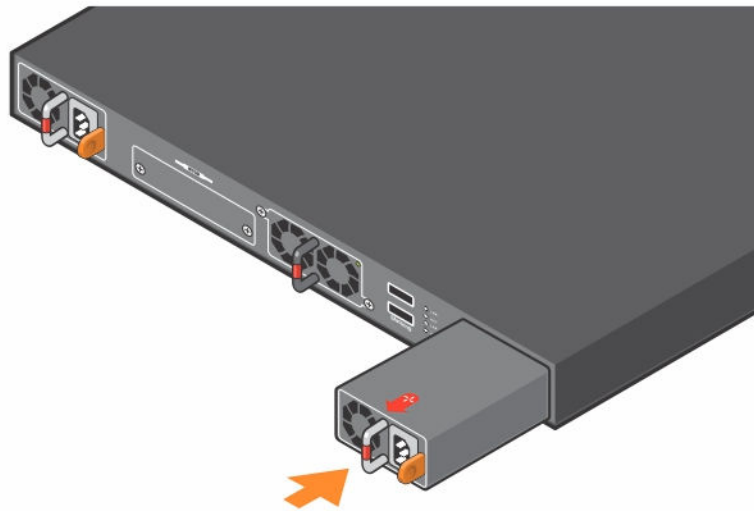
Figure 7. Installing a Power Supply

4. Repeat steps 1 through 3 for the second PSU.

   ⚠ **WARNING: Electrostatic discharge (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.**

⚠ **WARNING: The PSU side includes two slots, PSU1 and PSU2. Although the switch can run on one PSU, Dell Networking highly recommends using two PSUs for full redundancy and additional cooling. To avoid overheating when the switch is running with only a single PSU, Dell Networking recommends using PSU1 (on the left when facing the PSU side) and covering the second PSU slot opening (PSU2) with a blank plate.**

⚠ **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.**

⚠ **CAUTION: Remove the power cable from the PSU prior to removing the PSU itself. Do not connect power prior to inserting the PSU in the switch.**

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

✎ **NOTE:** Dell Networking recommends supplying power from the switch PSU to the external power source only after the chassis is mounted in a rack or cabinet.

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.
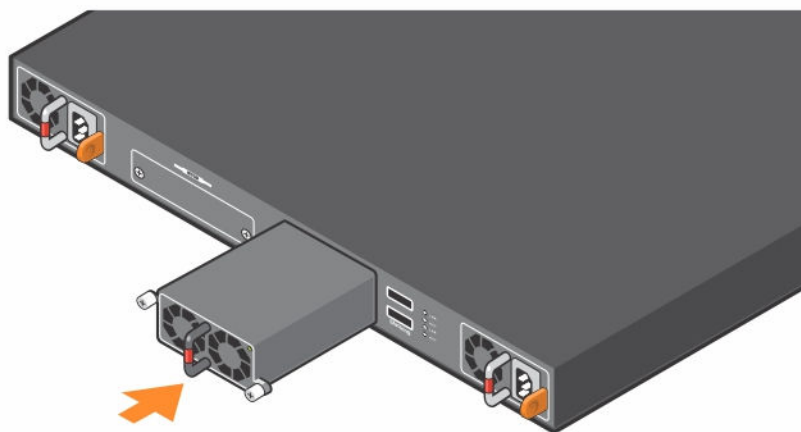
Figure 8. Installing a Fan Tray

Installing a Plug-In Module (Optional)

The S3100 series switches support optional small form-factor pluggable plus (SFP+) or 10GBase-T modules.
When hot swapping optional modules, the following module behaviors should be noted:

- The configuration of the port is retained when an existing module is replaced with one that is the same.
- Replacement of an optional module with one that is different results in the new module being moved into an error state.
- Modify the configuration of the optional module interfaces only when the module is installed.

⚠ **CAUTION: Do not insert the replacement module immediately after removing the original module. When removing the optional module, the syslogs must first be removed prior to installing the replacement module.**

After a module is recognized, its configuration is stored locally on the switch as the switch default. Users can modify the configuration of these interfaces only if the optional module is present. The module configuration appears in the running configuration for informational purposes. For more information, see the *Dell Configuration Guide for the S3100 Series*.

Supply Power and Power Up the System

Supply power after the switch is mounted in a rack or cabinet.

Dell Networking recommends reinspecting your system prior to powering up. Verify that:

- The equipment is properly secured to the rack.
- 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 system.
- There is sufficient airflow around the unit.
- The input circuits are correctly sized for the loads and that you use sufficient overcurrent protection devices.
- All protective covers are in place.

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

Supply power to the system:

- Plug in the AC cord from the switch PSU to the external power source, such as an AC wall outlet. Make sure that the power cord is secure.
- When the cable is connected between the system and the power source, the switch is powered up; there is no on/off switch.

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Installing the Software

This information describes the initial software configuration, including connecting, booting, configuration, and examples.

Navigating CLI Modes

The Dell Networking OS prompt changes to indicate the CLI mode.

You can move linearly through the command modes, except for the `end` command that takes you directly to EXEC Privilege mode, and the `exit` command that moves you up one command mode level.

Accessing the Console

The console port is on the I/O side of the chassis (item 1 in the following figure).
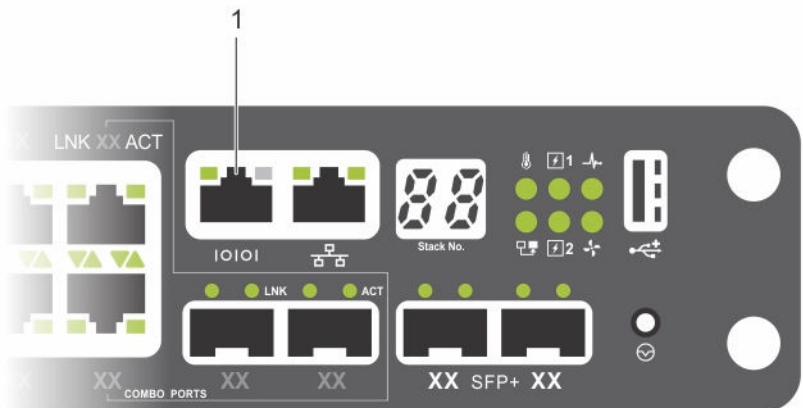
Figure 9. Console Port Location

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.

1. Install an RJ-45 copper cable into the console port. Use a rollover cable to connect the console port to a terminal server.
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.

Accessing 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.

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

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
RxD	6	3	3	TxD
NC	7	2	4	DTR
CTS	8	1	7	RTS

Default Configuration

A version of Dell Networking OS is pre-loaded on the system; however, the system is not configured when you power up for the first time (except for the default host name, which is `Dell`).

You must configure the system using the CLI.

Configuring Layer 2 (Data Link) Mode

To enable Layer 2 data transmissions through an individual interface, use the `switchport` command in INTERFACE mode.

You cannot configure switching or Layer 2 protocols such as spanning tree protocol (STP) on an interface unless the interface has been set to Layer 2 mode.

1. Enable the interface.
   INTERFACE mode

   ```
   no shutdown
   ```
2. Place the interface in Layer 2 (switching) mode.
   INTERFACE mode

   ```
   switchport
   ```

To view the interfaces in Layer 2 mode, use the `show interfaces switchport` command in EXEC mode.

Configuring a Host Name

The host name appears in the prompt. The default host name is `Dell`.

Host names must start with a letter, end with a letter or digit, and must have characters, letters, digits, and hyphens in the string.

- Create a new host name.
  CONFIGURATION mode

  ```
  hostname name
  ```

Accessing the System Remotely

You can configure the system to be accessed remotely by Telnet.

The system has a dedicated management port and a management routing table that is separate from the IP routing table.

1. Configure an IP address for the management port (Configuring the Management Port IP Address).
2. Configure a management route with a default gateway (Configuring the Management Route).
3. Configure a username and password (Configuring the Username and Password).

Configuring the Management Port IP Address

In order to access the system remotely, assign IP addresses to the management ports.

1. Enter INTERFACE mode for the management port.
   CONFIGURATION mode

   ```
   interface ManagementEthernet slot/port
   ```
2. Assign an IP address to the interface.
   INTERFACE mode

   ```
   ip address ip-address/mask
   ```
3. Enable the interface.

INTERFACE mode

```
no shutdown
```

Configuring the Management Route

Define a path from the switch to the network from which you will remotely access the system.
Management routes are separate from IP routes; they manage the system through the management port.

- Configure a management route to the network from which you will access the system.

  CONFIGURATION mode

```
management route ip-address/mask gateway
```

Configuring the Username and Password

To access the system remotely, configure a system username and password.

- Configure a username and password to access the system remotely.

  CONFIGURATION mode

```
username username password [encryption-type]
```

Configuring the Enable Password

Access EXEC Privilege mode using the `enable` command. EXEC Privilege mode is unrestricted by default.

As a basic security measure, configure a password. There are two types of enable passwords:

- enable password — stores the password in the running/startup configuration using a data encryption standard (DES)-encryption method.
- enable secret — stores the password in the running/startup configuration using a stronger, MD5-encryption method.

Dell Networking recommends using the enable secret password.

- Create a password to access EXEC Privilege mode.

  CONFIGURATION mode

```
enable [password | secret] [level level] [encryption-
type] password
```

Creating a Port-based VLAN

The default local area network (VLAN), VLAN 1, is part of the system startup configuration and does not require configuration.

To configure a port-based VLAN, create the VLAN and then add physical interfaces or port channel (LAG) interfaces to the VLAN.

- Configure a port-based VLAN (if the vlan-id is different from the default VLAN ID) and enter INTERFACE VLAN mode.

    CONFIGURATION mode

    ```
    interface vlan vlan-id
    ```

    After you create a VLAN, assign interfaces in Layer 2 mode to the VLAN to activate the VLAN.

To view the configured VLANs, use the show vlan command in EXEC Privilege mode.

Assigning Interfaces to a VLAN

You can only assign interfaces in Layer 2 mode to a VLAN using the tagged and untagged commands.
To place an interface in Layer 2 mode, use the switchport command.

You can designate Layer 2 interfaces as tagged or untagged. When you place an interface in Layer 2 mode using the switchport command, the interface automatically designates untagged and is in the default VLAN.

To tag frames leaving an interface in Layer 2 mode, assign that interface as tagged to a port-based VLAN to tag it with that VLAN ID.

To move untagged interfaces from the default VLAN to another VLAN, use the untagged command.

1. **Tag interfaces.** Access INTERFACE VLAN mode of the VLAN to which you want to assign the interface.
    CONFIGURATION mode

```
interface vlan vlan-id
```
2. Enable an interface to include the IEEE 802.1Q tag header.
   INTERFACE mode

   ```
   tagged interface
   ```

   This command is available only in VLAN interfaces.
3. **Move untagged interfaces.** Access INTERFACE VLAN mode of the VLAN to which you want to assign the interface.
   CONFIGURATION mode

   ```
   interface vlan vlan-id
   ```
4. Configure an interface as untagged.
   INTERFACE mode

   ```
   untagged interface
   ```

   This command is available only in VLAN interfaces.

To view which interfaces are tagged or untagged and to view which VLAN the interfaces belong, use the `show vlan` command. To view just the interfaces that are in Layer 2 mode, use the `show interfaces switchport` command in EXEC Privilege mode or EXEC mode.

Assigning an IP Address to a VLAN

VLANs are a Layer 2 feature. For two physical interfaces on different VLANs to communicate, assign an IP address to the VLANs to route traffic between the two interfaces.
The `shutdown` command in INTERFACE mode does not affect Layer 2 traffic on the interface.

📝 NOTE: You cannot assign an IP address to the default VLAN, which, by default, is VLAN 1. To assign another VLAN ID to the default VLAN, use the `default vlan-id vlan-id` command from the configuration mode.

• Access INTERFACE VLAN mode of the VLAN to which you want to assign the IP address.
  INTERFACE mode

  ```
  ip address ip-address mask [secondary]
  ```

Configure an IP address and mask on the interface.

Connect the System to the Network

After you have completed the hardware installation and software configuration for the system, connect to your company network by following your company's cabling requirements.

4

S3100 Series Technical Specifications

The following tables describe the technical specifications for the S3100 systems.

⚠ **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 2. 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).
Chassis 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 3. Environmental Parameters

Parameter	Specifications
Operating temperature	32° to 113°F (0° to 45°C).
Operating humidity	8 % to 85 % (RH), noncondensing.
Storage temperature	−40° to 158°F (−40° to 70°C).

Parameter	Specifications
Storage humidity	5 % to 90 % (RH), noncondensing.
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 4. 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.
	48 port — 0.63 watts @62.71 watts/100vac, 0.32 watts @62.71 watts/200vac.
Maximum power consumption (excluding PoE power)	63 Watts.