Dell EMC PowerSwitch N3200-ON Series

Installation Guide

D&LLEMC

Notes, cautions, and warnings

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

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

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

Contents

About this guide

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

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

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

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

Figure 1. Class 1 laser product tag

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

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

Visual display workplaces

This device is not intended for use in the direct field of view at visual display workplaces. To avoid incommoding reflexions at visual display workplaces this device must not be placed in the direct field of view.

Bemerkung: Dieses Gerät ist nicht für den Einsatz im direkten Sichtfeld am Bildschirmarbeitsplatz vorgesehen. Um störende Reflexionen am Bildschirmarbeitsplatz zu vermeiden, darf dieses Gerät nicht im direkten Sichtfeld platziert werden.

Regulatory

- Marketing model N3208PX-ON is represented by the regulatory model E30W and the regulatory type E30W001.
- Marketing model N3224T-ON is represented by the regulatory model E31W and the regulatory type E31W002.
- Marketing model N3224F-ON is represented by the regulatory model E31W and the regulatory type E31W003.
- Marketing model N3224P-ON is represented by the regulatory model E32W and the regulatory type E32W002.
- Marketing model N3224PX-ON is represented by the regulatory model E32W and the regulatory type E32W001.
- Marketing model N3248TE-ON is represented by the regulatory model E31W and the regulatory type E31W005.
- Marketing model N3248P-ON is represented by the regulatory model E32W and the regulatory type E32W003.
- Marketing model N3248X-ON is represented by the regulatory model E31W and the regulatory type E31W004.
- Marketing model N3248PXE-ON is represented by the regulatory model E32W and the regulatory type E32W004.

Topics:

- Related documents
- Information symbols

Related documents

For more information about the N3200-ON Series, see the following documents:

- *Dell EMC PowerSwitch N3200-ON Series Warnings Guide*
- *Dell EMC PowerSwitch N3200-ON Series Setup Placemat*
- *Dell EMC PowerSwitch N3200-ON Series Release Notes*
- *Open Networking Hardware Diagnostic Guide N2200-ON and N3200-ON Series Switches*
- *External Power Supply (EPS) Installation for the Dell EMC PowerSwitch N2200-ON and N3200-ON Series Switches*

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

Information symbols

This book uses the following information symbols:

ⓘ **NOTE:** The **Note** icon signals important operational information.

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

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

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

N3200-ON Series switch

The following sections describe the Dell EMC N3200-ON Series (N3208PX-ON, N3224T-ON, N322F-ON, N3224P-ON, N3224PX-ON, N3248TE-ON, N3248P-ON, N3248X-ON, and N3248PXE-ON) switches:

Topics:

Introduction

The N3200-ON Series switches are compact and full width, one rack unit (RU), full-featured fixed form-factor switches.

Table 1. N3200-ON Series switch summary

Marketing model name (MMN)	Description	Power supply unit (PSU) and fans
N3208PX-ON	4 ports 1G BASE-T RJ45 with 802.3bt Type-4 (90W) PoE 4 ports 5G BASE-T RJ45 multigigabit ports with 802.3bt Type-4 (90W) PoE 2 ports 10G SFP+	1 fixed AC PSU (optional) Up to 2 external power adapters 1 fixed fan
N3224T-ON	24 ports 1G BASE-T RJ45 4 ports 10G SFP+ 2 ports 100G QSFP28 stacking	2 pluggable AC PSUs—1 default and 1 optional or 2 optional DC PSUs 3 pluggable fan modules - Normal and reverse airflow options
N3224F-ON	24 ports 1G SFP 4 ports 10G SFP+ 2 ports 100G QSFP28 stacking	2 pluggable AC PSUs—1 default and 1 optional or 2 optional DC PSUs 3 pluggable fan modules - Normal airflow only
N3224P-ON	24 ports 1G BASE-T RJ45 ports with 802.3at (30W) PoE 4 ports 10G SFP+ 2 ports 100G QSFP28 stacking	2 pluggable AC PSUs—1 default and 1 optional or 2 optional DC PSUs 3 pluggable fan modules - Normal airflow only
N3224PX-ON	24 ports 10M/100M/1G/2.5G/5G/10G BASE-T RJ45 multigigabit ports with 802.3bt Type-4 (90W) PoE 4 ports 25G SFP28 2 ports 100G QSFP28 stacking	2 pluggable AC PSUs—1 default and 1 optional or 2 optional DC PSUs 1 EPS (optional and conected from MPS-1S or MPS-3S power shelf) 3 pluggable fan modules - Normal airflow only
N3248TE-ON	48 ports 1G BASE-T RJ45 4 ports 10G SFP28	2 pluggable AC PSUs—1 default and 1 optional or 2 optional DC PSUs

Table 1. N3200-ON Series switch summary (continued)

Marketing model name (MMN)	Description	Power supply unit (PSU) and fans
	• 2 ports 100G QSFP28 stacking	• 3 pluggable fan modules • Normal and reverse airflow options
N3248P-ON	• 48 ports 1G BASE-T RJ45 multigigabit ports with 802.3at (30W) PoE • 4 ports 10G SFP+ • 2 ports 100G QSFP28 stacking	• 2 pluggable AC PSUs—1 default and 1 optional or 2 optional DC PSUs • 1 EPS (optional and conected from MPS-1S or MPS-3S power shelf) • 3 pluggable fan modules • Normal airflow only
N3248X-ON	• 48 ports 10M/100M/1G/2.5G/5G/10G BASE-T RJ45 • 4 ports 25G SFP28 • 2 ports 100G QSFP28 stacking	• 2 pluggable AC PSUs—1 default and 1 optional or 2 optional DC PSUs • 3 pluggable fan modules • Normal and reverse airflow options
N3248PXE-ON	• 48 ports 10M/100M/1G/2.5G/5G/10G BASE-T RJ45 with 802.3bt Type-4 (90W) PoE • 4 ports 25G SFP28 • 2 ports 100G QSFP28 stacking	• 2 pluggable AC PSUs—1 default and 1 optional or 2 optional DC PSUs • 1 EPS (optional and conected from MPS-1S or MPS-3S power shelf) • 3 pluggable fan modules • Normal airflow only

N3208PX I/O-side view
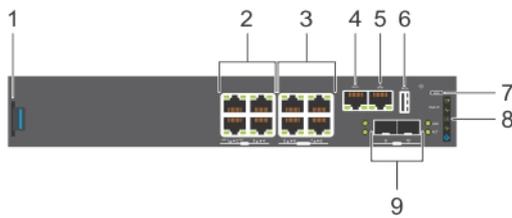
1. Luggage tag
2. 1GBASE-T RJ45 wtih 802.3bt Type-4 (90W) PoE
3. 5GBASE-T RJ45 with 802.3bt Type-4 (90W) PoE
4. RJ45 serial management port
5. RJ45 Ethernet console port
6. USB Type-A port
7. MicroUSB Type-B port
8. Status LEDs
9. 10G SFP+ ports

N3224T-ON I/O-side view

1. Luggage tag
2. 1GBASE-T RJ45
3. RJ45 serial management port
4. RJ45 Ethernet console port
5. USB Type-A port
6. Stack ID
7. MicroUSB Type-B port
8. Status LEDs
9. 10G SFP+ ports

N3224F-ON I/O-side view
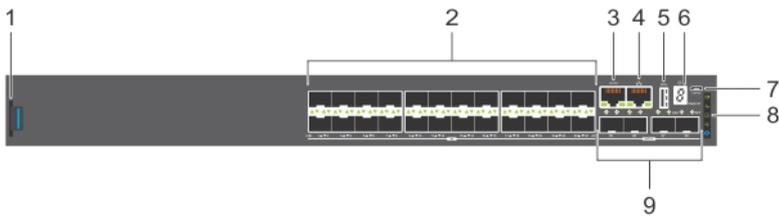
1. Luggage tag
2. 1G SFP
3. RJ45 serial management port
4. RJ45 Ethernet console port
5. USB Type-A port
6. Stack ID
7. MicroUSB Type-B port
8. Status LEDs
9. 10G SFP+ ports

N3224P-ON I/O-side view
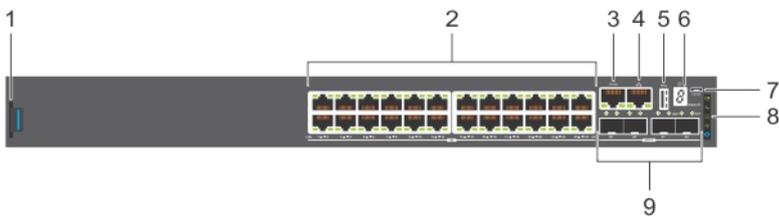
1. Luggage tag
2. 1GBASE-T RJ45 with 802.3at Type-2 (30W) PoE
3. RJ45 serial management port
4. RJ45 Ethernet console port
5. USB Type-A port
6. Stack ID
7. MicroUSB Type-B port
8. Status LEDs
9. 10G SFP+ ports

N3224PX-ON I/O-side view
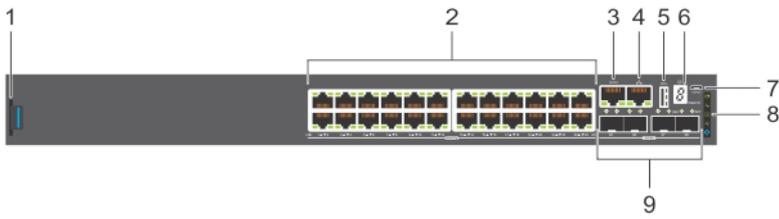
1. Luggage tag
2. 10GBASE-T RJ45 with 802.3bt Type-4 (90W) PoE
3. RJ45 serial management port
4. RJ45 Ethernet console port
5. USB Type-A port
6. Stack ID
7. MicroUSB Type-B port
8. Status LEDs
9. 10G SFP28 ports

N3248TE-ON I/O-side view

1. Luggage tag
2. 1GBASE-T RJ45
3. RJ45 serial management port
4. RJ45 Ethernet console port
5. USB Type-A port
6. Stack ID
7. MicroUSB Type-B port
8. Status LEDs
9. 10G SFP28 ports

N3248P-ON I/O-side view

1. Luggage tag
2. 1GBASE-T RJ45 with 802.3at Type-2 (30W) PoE
3. RJ45 serial management port
4. RJ45 Ethernet console port
5. USB Type-A port
6. Stack ID
7. MicroUSB Type-B port
8. Status LEDs
9. 10G SFP+ ports

N3248X-ON I/O-side view

1. Luggage tag
3. RJ45 serial management port
5. USB Type-A port
7. MicroUSB Type-B port
9. 10G SFP28 ports

2. 10GBASE-T RJ45
4. RJ45 Ethernet console port
6. Stack ID
8. Status LEDs

N3248PXE-ON I/O-side view

1. Luggage tag
3. RJ45 serial management port
5. USB Type-A port
7. MicroUSB Type-B port
9. 10G SFP28 ports

2. 10GBASE-T RJ45 with 802.3bt Type-4 (90W) PoE
4. RJ45 Ethernet console port
6. Stack ID
8. Status LEDs

N3200-ON Series PSU-side views:

N3208PX-ON PSU-side view
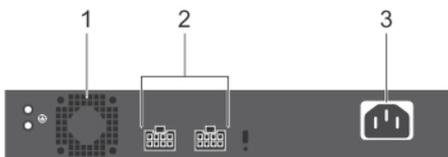
1. Fan
2. External power adapter connection
3. AC power connection

N3224F-ON, N3224P-ON, N3224T-ON, N3248TE-ON, and N3248X-ON PSU-side view
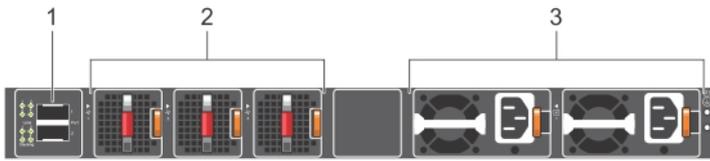
1. 100G QSFP28 stacking ports
2. Fans
3. AC or DC PSUs

N3224PX-ON, N3248P-ON, N3248PXE-ON PSU-side view

1. 100G QSFP28 stacking ports
2. Fans
3. EPS connections
4. AC or DC PSUs

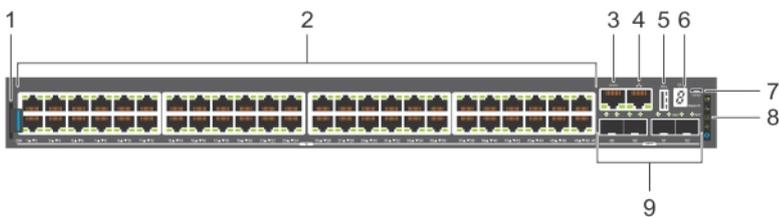# Features

The N3200-ON Series switch offers the following features:

- Ports:
  - N3208PX-ON—Compact, four ports 1GBASE-T RJ45 with 802.3bt Type-4 90W PoE, four ports 5GBASE-T RJ45 with 802.3bt Type-4 90W PoE, and two ports 10G SFP+
  - N3224T-ON—1U, 24 ports 1GBASE-T RJ45, four ports 10G SFP+, and two ports 100G QSFP28 for stacking
  - N3224F-ON—1U, 24 ports 1GBASE-T RJ45, four ports 10G SFP+, and two ports 100G QSFP28 for stacking
  - N3224P-ON—1U, 24 ports 1GBASE-T RJ45 with 802.3at Type-2 30W PoE, four ports 10G SFP+, and two ports 100G QSFP28 for stacking
  - N3224PX-ON—1U, 24 ports multigigabit 10GBASE-T RJ45 with 802.3bt Type-4 90W PoE, four ports 25G SFP28, and two ports 100G QSFP28 for stacking
  - N3248TE-ON—1U, 48 ports 1GBASE-T RJ45, four ports 10G SFP+, and two ports 100G QSFP28 for stacking
  - N3248P-ON—1U, 48 ports 1GBASE-T RJ45 with 802.3at Type-2 30W PoE, four ports 10G SFP+, and two ports 100G QSFP28 for stacking
  - N3248X-ON—1U, 48 ports 10GBASE-T RJ45, four ports 25G SFP28, and two ports 100G QSFP28 for stacking
  - N3248PXE—1U, 48 ports multigigabit 10GBASE-T RJ45 with 802.3bt Type-4 90W PoE, four ports 25G SFP28, and two ports 100G QSFP28 for stacking
- One MicroUSB Type-B console port
- One USB Type-A port for more file storage
- One RJ45 serial console port
- Two-core Denverton-NS CPU, 4 GB DDR4 SO-DIMM, 8 GB mSATA 2.0/M.2 SSD
- One 10/100/1000BaseT Ethernet management port
- Two pluggable AC or DC PSUs, except N3208PX-ON
- Three pluggable fan modules, except N3208PX-ON
- N3208PX-ON—One fixed AC PSU
- N3208PX-ON—One fan

- N3208PX-ON—Up to two external power adapters
- N3224PX-ON, N3248P-ON, and N3248PXE-ON—External power supply connectors to connect the MPS-1S or MPS-3S shelf
- N3224T-ON, N3248X-ON, and N3248TE-ON—Normal and reverse airflow options
- System ground connector
- Switch-monitoring LEDs

Physical dimensions

The N3200-ON Series switch has the following physical dimensions, excluding the PSU and fan tray handle:

- N3208PX-ON:
    - 43.5 mm x 279.4 mm x 312 mm (H x W x D)
    - 1.71 in x 11 in x 12.28 in (H x W x D)
- All N3200-ON Series switches except the N3208PX-ON:
    - 43.5 mm x 434 mm x 400 mm (H x W x D)
    - 1.71 in x 17.09 in x 15.75 in (H x W x D)

(PSU and fan tray handle adds 30 mm or 1.18 in)

LED display

The N3200-ON Series switch includes LED displays on the I/O and PSU sides 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 following N3200-ON Series switch LED behavior is seen during ONIE operations:

N3208PX-ON LEDs

1. Link status LEDs
2. Console port LEDs on the left side—management port on the right side
3. SFP+ port activity LEDs
4. Stack Master ID LED
5. System Status/Health LED
6. Power LED
7. Fan LED
8. Locator LED/System Beacon

N3224F-ON, N3224P-ON, N3224PX-ON, N3224T-ON, N3248P-ON, N3248PXE-ON, and N3248TE-ON LEDs

1. Link status LEDs
3. SFP+ port activity LEDs
5. Stack Master LED
7. Power LED
9. Locator LED/System Beacon

2. Console port LEDs on the left side—management port on the right side
4. Stack ID LED
6. System Status/health LED
8. Fan LED
10. Stacking port activity LEDs

Table 2. N3200-ON Series switch LED behavior

LED	Description
7-Segment LED for stacking	• Off—No power • Solid green—Hex digit representing the stack unit ID
Stack Master LED	• Off—Switch is in Stacking Slave mode • Solid green—Switch is in Stacking Master or Standalone mode
System Status/Health LED	• Solid green—Normal operation • Flashing green—Booting • Solid yellow—Critical system error; major fault • Flashing yellow—Noncritical system error, minor fault, fan failure, or power supply failure

Table 2. N3200-ON Series switch LED behavior (continued)

LED	Description
Power LED	- Off—No power - Solid Green—Normal operation - Solid yellow—POST is in process - Flashing yellow—Power supply failed
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, fan trays with differing airflows, missing a fan, or fan tray not functioning properly
Locator LED/System Beacon	- Off—Locator function disabled - Flashing blue—Locator function enabled

Table 3. 1000MBase-T and 10/100MBase-T PoE 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 - Solid Yellow—No port activity and PoE power on - Flashing green—Port activity and PoE power off - Flashing yellow—Port activity and PoE power on

Table 4. 1000MBase-T and 10/100MBase-T non-PoE 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 5. 1G, 5G, 10G Base-T PoE port LEDs

LED	Description
Link LED	All four LEDs: - Off—No link - Solid green—Link operating at maximum speed, autonegotiated/forced to 2.5GBase-T mode - Solid yellow—Link operating at a lower speed, autonegotiated/forced to 10/100/1000MBase-T - Flashing green, ~30ms—Port activity
Activity LED	- Off—No activity and PoE power off - Solid yellow—No port activity and PoE power on

Table 5. 1G, 5G, 10G Base-T PoE port LEDs (continued)

LED	Description
	• Flashing green—port activity and PoE power off • Flashing yellow—port activity and PoE power on

Table 6. 1G or 10G Base-T non-PoE port LEDs

LED	Description
Link LED	All four LEDs: • Off—No link • Solid green—Link operating at maximum speed, autonegotiated/forced to 2.5GBase-T mode • Solid yellow—Link operating at a lower speed, autonegotiated/forced to 10/100/1000MBase-T
Activity LED	• Off—No activity • Flashing green, ~30ms—Port activity

Table 7. SFP+ port LEDs

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

Table 8. SFP28 port LEDs

LED	Description
Link LED	All four LEDs: • Off—No link • Solid green—Link operating at maximum speed, 25G • Solid yellow—Link operating at a speed less than 25G • Flashing green, ~30ms—Port activity
Activity LED	• Off—No activity • Flashing green—port activity at maximum speed • Flashing yellow—port activity at lower speed

Table 9. QSFP28 port LEDs

LED	Description
Link LED	All four LEDs: • Off—No link • Solid green—Link operating at maximum speed, 100G • Solid yellow—Link operating at a speed less than 100G • Flashing green, ~30ms—Port activity
Activity LED	• Off—No activity

Table 9. QSFP28 port LEDs (continued)

LED	Description
	• Flashing green, ~30ms—port activity at maximum speed, 100G • Flashing yellow, ~30ms—port activity at speed less than 100G • Flashing yellow, 1 second on/off—port beacon

Prerequisites

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

(i) **NOTE:** For detailed installation instructions, see Site preparations and N3200-ON Series switch installation.

- N3200-ON Series switch or multiple switches, if stacking
- AC or DC country- and regional-specific cables to connect the AC or DC power source to the AC or DC PSU
- Hot-swappable AC or DC power supply units; minimum one AC or DC PSU—excluding N3208PX-ON
- Hot-swappable fan modules—excluding N3208PX-ON
- All N3200-ON DC versions—excluding N3208PX-ON; order DC PSUs separately
- All N3200-ON AC platforms—no ground lug ships with the accessories
- L-bracket and screws for two-post rack mount, or rubber feet for table or shelf placement, or bracket and screws for wall or ceiling mount—excluding N3208PX-ON
- N3208PX-ON only—Wire clip for PSU cable
- Copper and fiber cables
- N3248PXE-ON DC only—Ground lug and screws ship with the accessories
- N3248PXE-ON AC only—No-OS SKU: Ground lug and screws ship with the accessories.
- N3248P-ON DC only—Ground lug and screws ship with the accessories
- #1 and #2 Phillips screwdrivers, not included
- Torx screwdriver, not included

Other optional components are:

- Extra mounting brackets and screws
- Second AC PSU or DC PSUs—except N3208PX-ON
- MPS-1S shelf with AC or DC PSU
- MPS-3S shelf with AC or DC PSUs
- N3208PX-ON only—External power adapter

N3200-ON Series switch configurations

You can order the N3200-ON Series switch in several different configurations.

- N3200-ON Series AC switch (optional DC PSU available)
  - N3208PX-ON—Compact, four ports 1G BASE-T RJ45 with 802.3bt Type-4 90W PoE, four ports 5G BASE-T RJ45 with 802.3bt Type-4 90W PoE, two ports 10G SFP+, one fixed AC PSU, two external power adapters, and one fan
  - N3224T-ON—1U, 24 ports 1G BASE-T RJ45, four ports 10G SFP+, two 100G QSFP28 ports for stacking, two pluggable AC or (optional) DC PSUs, three pluggable fan modules, and normal and reverse airflow options
  - N3224F-ON—1U, 24 ports 1G SFP ports, four ports 10G SFP+, two 100G QSFP28 ports for stacking, two pluggable AC or (optional) DC PSUs, and three pluggable fan modules
  - N3224P-ON—1U, 24 ports 1G BASE-T RJ45 with 802.3at Type-2 30W PoE, four ports 10G SFP+, two 100G QSFP28 ports for stacking, two pluggable AC or (optional) DC PSUs, and three pluggable fan modules
  - N3224PX-ON—1U, 24 ports 10G BASE-T RJ45 with 802.3bt Type-4 90W PoE, four ports 25G SFP28, two 100G QSFP28 ports for stacking, two pluggable AC or (optional) DC PSUs, three pluggable fan modules, and (optional) EPS
  - N3248TE-ON—1U, 48 ports 1G BASE-T RJ45, four ports 10G SFP28, two 100G QSFP28 ports for stacking, two pluggable AC or (optional) DC PSUs, three pluggable fan modules, and normal and reverse airflow options
  - N3248P-ON—1U, 48 ports 1G BASE-T RJ45 with 802.3at Type-2 30W PoE, four ports 10G SFP+, two 100G QSFP28 ports for stacking, two pluggable AC or (optional) DC PSUs, three pluggable fan modules, and (optional) EPS

- N3248X-ON—1U, 48 ports 10G BASE-T RJ45, four ports 25G SFP28, two 100G QSFP28 ports for stacking, two pluggable AC or (optional) DC PSUs, three pluggable fan modules, and normal and reverse airflow options
- N3248PXE—1U, 48 ports 10G BASE-T RJ45 with 802.3bt Type-4 90W PoE, four ports 25G SFP28, two 100G QSFP28 ports for stacking, two pluggable AC or (optional) DC PSUs, three pluggable fan modules, and (optional) EPS
- Normal airflow:
  - All N3200-ON Series switches—Fan with airflow from the I/O side to the PSU side—normal airflow
- Reverse airflow:
  - N3224T-ON, N3248TE-ON, N3248X-ON only—Fan with airflow from the PSU side to the I/O side—reverse airflow

Luggage tag

The switch has a pull-out tag, which is known as a luggage tag, on the I/O-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.

N3208PX-ON, N3224F-ON, N3224P-ON, N3224PX-ON, and N3224T-ON luggage tag
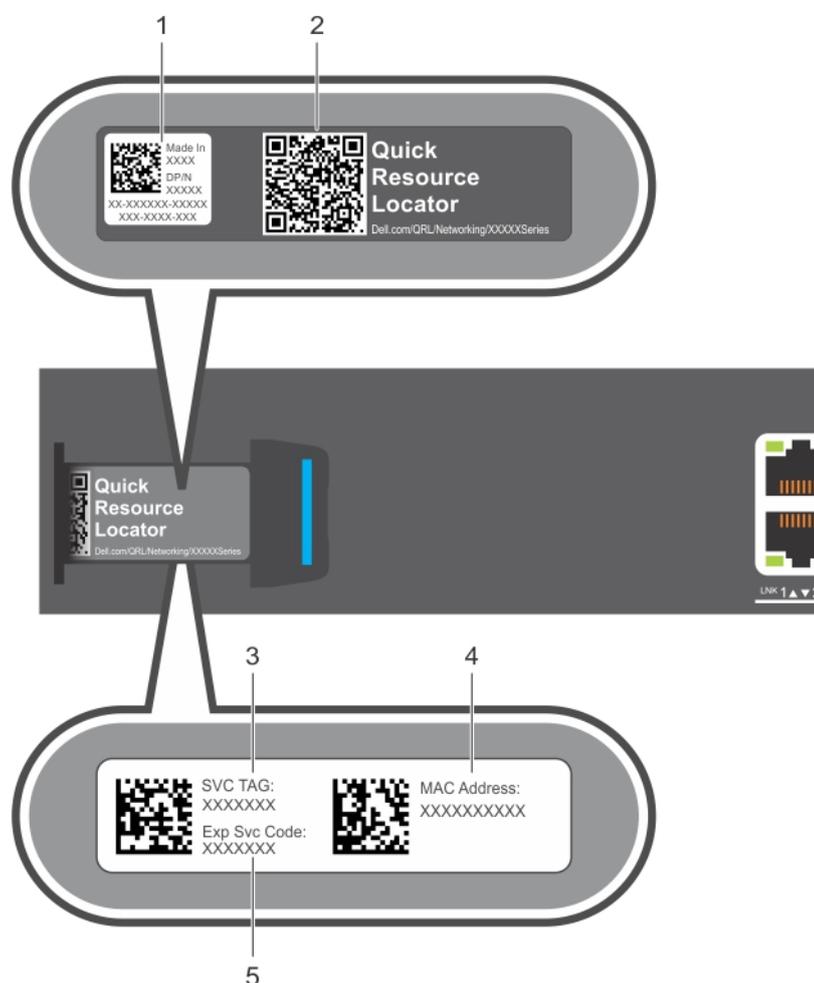
1. Product ID QRL
2. Product information QRL
3. SVC tag
4. MAC address
5. Exp Svc code

N3248P-ON, N3248PXE-ON, N3248TE-ON, N3248X-ON luggage tag
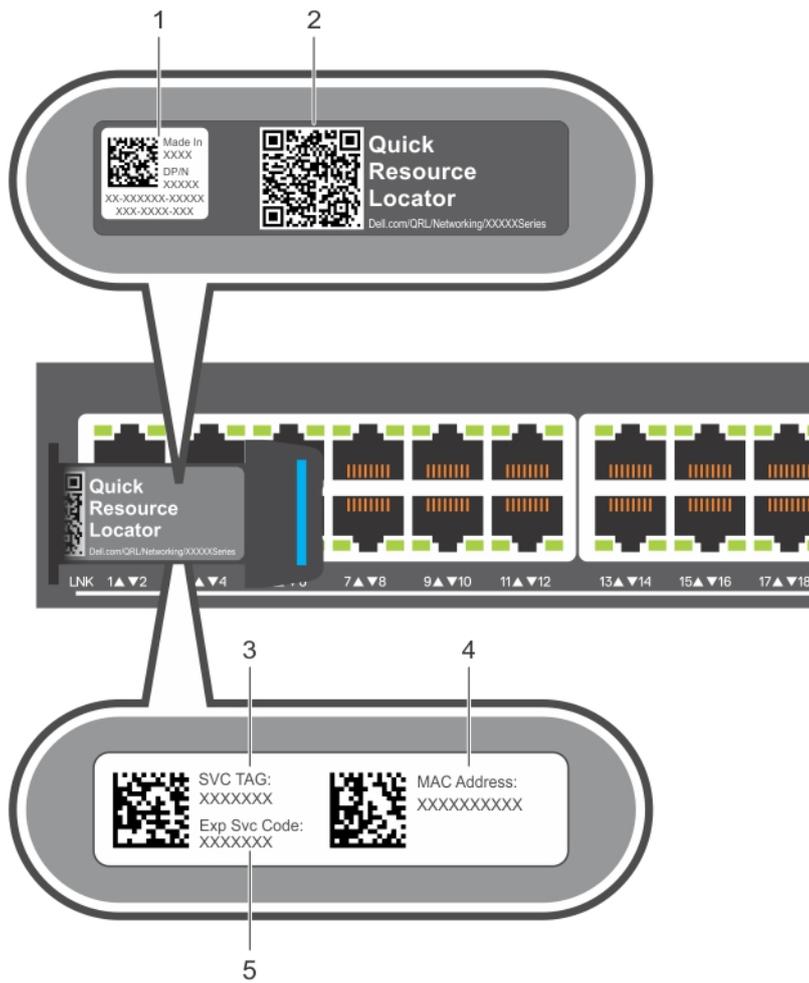
1. Product ID QRL
2. Product information QRL
3. SVC tag
4. MAC address
5. Exp Svc code

Site preparations

The N3200-ON Series 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 is from 32° to 113°F (0° to 45°C).
- Relative humidity is from 5 to 95 percent (RH), 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, which is 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 N3200-ON Series switch only in indoor cabinets that are designed for use in a controlled environment.

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

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

Rack mounting

When you prepare your equipment rack, ensure that the rack is grounded.

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

Switch ground

Dell EMC recommends you ground your switch. Use the N3200-ON Series switch in a common bond network (CBN).

Connect the grounding cables as described in N3200-ON Series switch installation.

(i) **NOTE:** For an AC-powered switch, although the third conductor of the AC power cable provides a ground path, Dell EMC recommends grounding your switch with a dedicated ground wire.

(i) **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 that is placed with the other accessories inside the shipping box. To ground your switch, first attach the ground lug to the switch using the screws. Then attach the DC ground wire to the ground lug.

Fans and airflow

The N3200-ON Series include three hot-swappable fan units, except the N3208PX-ON, which has one fan.

Fan combinations

Fan installation is completed as part of the factory install based on stock keeping unit (SKU) type. The N3200-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.

(i) **NOTE:** All N3200-ON Series switches except N3208PX-ON support normal airflow.

(i) **NOTE:** Only N3224T-ON, N3248TE-ON, and N3248X-ON AC switches support reverse airflow.

Order the fans suitable to support the ventilation at your site. Use a single type of airflow fan in your switch. Do not mix reverse and normal airflows in a single N3200-ON Series switch.

For proper ventilation, position the switch in an equipment rack or cabinet with a minimum of 12.7 cm (5 inches) of clearance around the exhaust vents. When you install two N3200-ON switches near each other, to permit proper airflow, position the two switches at least 12.7 cm (5 inches) apart. The fan speed varies based on internal temperature monitoring. The N3200-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 cable. An AC power cable is included with each PSU. If you optionally order DC PSUs, they ship with a DC power cable.

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 cable between the switch and the power source. For more information, see Power supplies.

⚠ **WARNING: This equipment must be earthed. Connect the power plug to a properly wired earth ground socket outlet.**

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

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

ⓘ **NOTE:** Software controls the module power. You do not see module LEDs when the switch powers up in ONIE.

Storing components

If you do not install your N3200-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 N3200-ON Series switch and accessories. After you remove the original packaging, place the N3200-ON Series switch and components on an antistatic surface.

N3200-ON Series switch installation

To install the N3200-ON Series switch, complete the installation procedures in the order that is presented in this chapter.

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

(i) **NOTE:** ESD damage can occur if components are mishandled. Always wear an ESD-preventive wrist or heel ground strap when handling the N3200-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
- Rack or cabinet hardware installation
- Ground cable
- Desktop
- N3208PX-ON ceiling-mount switch installation
- N3208PX-ON wall-mount switch installation
- Standard bracket two-post installation
- Two-post five-inch-offset switch installation
- Two-post flush-mount switch installation
- Wall- or ceiling-mount switch installation
- One RU ReadyRails installation
- Optics installation
- Switch start-up
- After switch placement
- Switch replacement

Unpack

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

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

- One N3200-ON Series switch
- One RJ45 to DB-9 female cable
- One MicroUSB console cable
- Two sets of rack mounting brackets and screws—except N3208PX-ON
- Four rubber feet
- N3208PX-ON only—ceiling or wall mount tray and screws
- N3208PX-ON only—one wire clip for the power connector
- One pluggable AC PSU (second AC PSU if ordered)—except N3208PX-ON
- One or two pluggable DC PSUs, if ordered
- DC only: Ground lug and screws—except N3208PX-ON.
- Three pluggable fan units, except N3208PX-ON
- (Optional) N3208PX-ON only—two external power adapters
- One AC power cable; country or region specific
- DC only: DC power cable
- *N3200-ON Series Quick Setup Guide*
- *N3200-ON Series Warning 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.

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.

For 1U switches:

● By default, the switch ships with a two-post rack mount system
● You can order separately the ReadyRail system and/or the four-post L-bracket rail system for two-post or four-post rack mounting

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 figures 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.

Rackmount safety considerations

● Rack loading—Overloading or uneven loading of racks may result in shelf or rack failure, possibly damaging the equipment and causing personal injury. Stabilize racks in a permanent location before loading begins. Mount the components starting at the bottom of the rack, and then work to the top. Do not exceed 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 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 airflow—Install the equipment in the rack so that the amount of airflow that is 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 backpanel facing downward.

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 cable 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 that is placed with the other accessories inside the shipping box. To ground your switch, first attach the ground lug to the switch using the screws. Then attach the DC ground wire to the ground lug.

The ground cable is not included.

The ground lug ships with the optionally ordered DC version PSUs. The AC-no-OS version of the N3248PXE-ON switch, which you must special order, also ships with the ground lug.

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

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

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

To connect the ground cable to the switch:

1. Cut your user-supplied ground cable to the wanted 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 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.
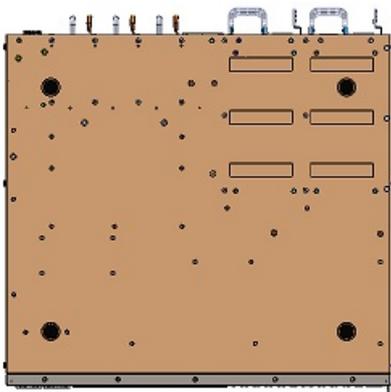
Desktop

One mounting option is to place the N3200-ON Series switch on a desktop.

The mounting supplies for this installation ship with the switch.

1. Locate the four rubber feet shipped with the switch.

2. Remove the paper backing on the bottom of one of the rubber feet.
3. Adhere the rubber foot to one of the four round position marks on the underside of the switch.
4. Repeat the process for the remaining three rubber feet.

5. Turn the switch over and place on a desktop.
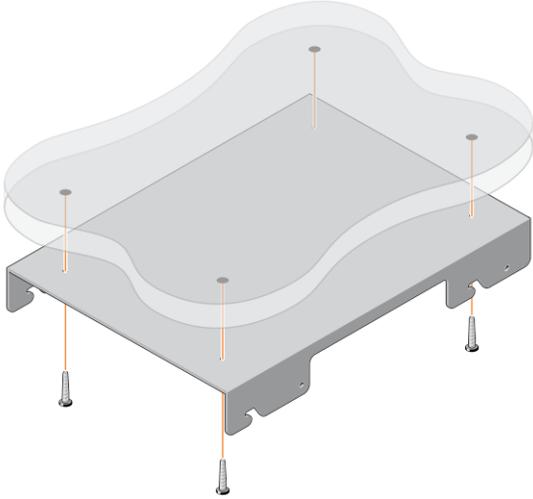
N3208PX-ON ceiling-mount switch installation

This switch installation procedure applies to the compact N3208PX-ON switch only.

ⓘ **NOTE:** Do not use this installation procedure for the full-width N3200-ON Series switches.

The mounting supplies for this installation ship with the switch. To complete this installation, you need a pencil, drill, and Phillips-head drill bit.

1. Locate the ceiling mount tray, ceiling anchors, and 32 mm (1.26 in) M4 screws that are included with your switch.
2. Using the ceiling mount tray as a template, hold the tray on the ceiling where you want to mount the switch. Mark the four mounting hole locations with the pencil.
3. Drill four holes into the ceiling at the pencil marks.
4. Install the four ceiling-anchors into the ceiling.
5. Attach the ceiling mount tray to the ceiling by drilling the 32 mm (1.26 in) M4 screws into the ceiling anchors.

6. Slide the switch into the ceiling mount tray.

7. Line up the two mushroom-heads on the switch to the ceiling mount tray hook cutouts until the switch locks into place.

8. Fix the switch to the ceiling mount tray using two screws on each side.

To uninstall the switch, unscrew the four ceiling mount tray screws and slide the switch from the mushroom head hooks.

N3208PX-ON wall-mount switch installation

This switch installation procedure is for the compact N3208PX-ON switch only.
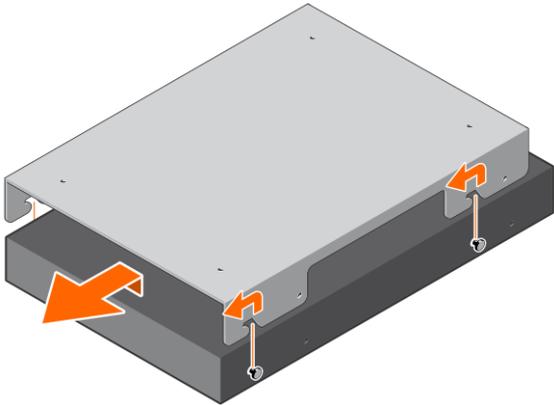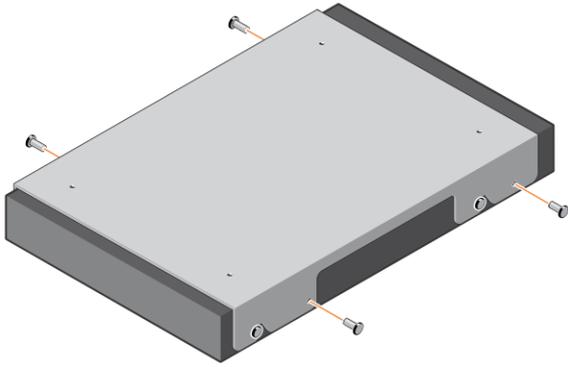
ⓘ **NOTE:** Do not use this installation procedure for the full-width N3200-ON Series switches.

The mounting supplies for this installation ship with the switch. To complete this installation, you need a pencil, drill, and Phillips-head drill bit.

1. Locate the wall mount tray, wall anchors, and 4.95 mm (0.19 in) M3 screws that are included with your switch.
2. Using the wall mount tray as a template, hold the tray on the wall where you want to mount the switch. Mark the four mounting hole locations with the pencil.
3. Drill four holes into the wall at the pencil marks.
4. Install the four wall-anchors into the wall.
5. Attach the wall mount tray to the wall by drilling the 4.95 mm (0.19 in) M3 screws into the wall anchors.

6. Slide the switch into the wall mount tray.
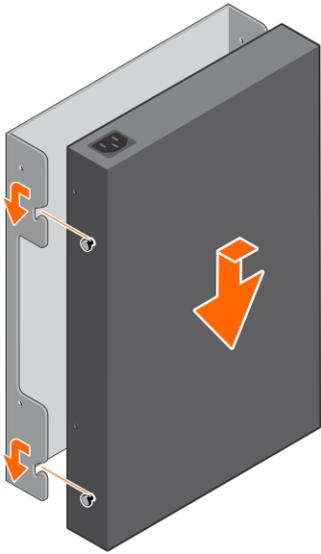
7. Line up the two mushroom-heads on the switch to the wall mount tray hook cutouts until the switch locks into place.

8. Fix the switch to the wall mount tray using two screws on each side.
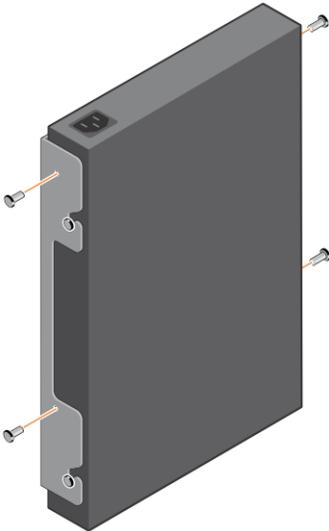
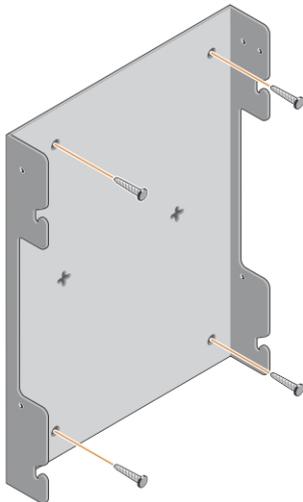To uninstall the switch, unscrew the four wall mount tray screws and slide the switch from the mushroom head hooks.

DIN buckle rail installation

Use the DIN buckle with wall- or ceiling-mount installations. This switch installation procedure applies to the compact N3208PX-ON switch only.

ⓘ **NOTE:** Do not use this installation procedure for the full-width N3200-ON Series switches.

This installation requires both the DIN rail mount kit and the wall- or ceiling-mount tray and screws. The wall- and ceiling- mount tray and screws ship with the switch. You must order the DIN rail mount kit separately.

1. Remove the two DIN buckles, wall- or ceiling-mount tray, and screws from the shipping box.

   DIN buckles

wall- or ceiling-mount tray
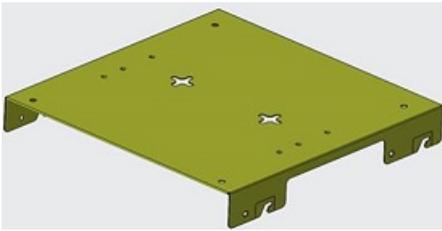
2. Screw the DIN buckles to the bottom of the wall- or ceiling-mount tray using three screws for each DIN buckle.

3. Slide the switch into the wall-mount tray.
4. Line up the two mushroom-head hooks on the switch to the tray hook cutouts until the switch locks into place.
5. Fix the switch to the tray using two screws on each side.
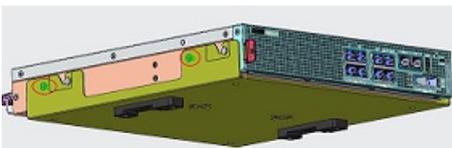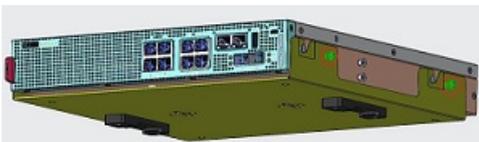
6. Snap the two DIN buckles into the DIN rails.

Push the DIN buckle

To uninstall the switch, unscrew the four mounting tray screws and slide the switch from the mushroom head hooks.

Standard bracket two-post installation
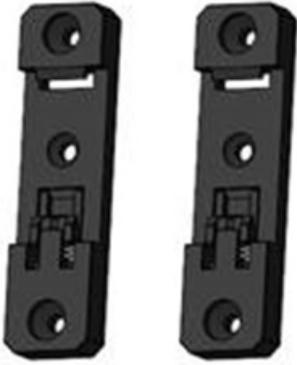
This switch installation procedure is for the compact N3208PX-ON switch only. Use these brackets for front- or center-mount installation.

ⓘ **NOTE:** Do not use this installation procedure for the full-width N3200-ON Series switches.

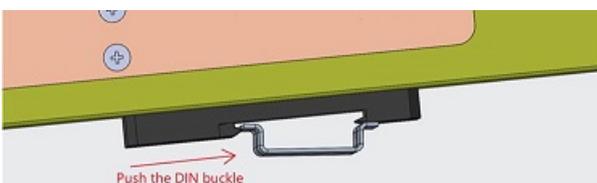You must order the mounting supplies for this installation separately.

For a front-mount installation, align the standard bracket rackmount ends with the I/O-side of the switch. For a center-mount installation, align the standard bracket rackmount ends away from the I/O-side of the switch.

1. Remove the two standard brackets and screws from the shipping box.
2. Insert the standard bracket onto the mushroom head on each side of the switch and slide the bracket back to lock it into place.
   - For a front-mount installation, the standard bracket ears face the I/O-side of the switch.

   - For a center-mount installation, the standard bracket ears face the PSU-side of the switch.

3. Attach the standard brackets to the switch using four screws for each bracket.
4. Slide the switch into the two-post rack until the standard bracket ears line up with the rack.
5. Attach the switch to the two-post rack using two #12-24 screws on each side.

To uninstall the switch from the rack, unscrew the four #12-24 rackmount screws and slide the switch out of the rack.

Two-post five-inch-offset switch installation

This switch installation procedure is for the full-width N3200-ON Series switches only.

ⓘ **NOTE:** Do not use this installation procedure for the compact N3208PX-ON switch.

ⓘ **NOTE:** For the N3224PX-ON, N3248P-ON, and N3248PXE-ON switches, to install an external power supply, see the *External Power Supply (EPS) Installation for the Dell EMC PowerSwitch N2200-ON and N3200-ON Series Switches* at www.dell.com/support.

The mounting supplies for this installation ship with the switch.

1. Locate the mounting brackets and screws.

2. Insert the mounting brackets onto the mushroom head on each side of the switch and slide the mounting bracket back to lock it into place.

   The mounting bracket ears face the PSU-side of the switch.

3. Attach the mounting brackets to the switch using four screws for each bracket.

4. Slide the switch into the two-post rack until the mounting bracket ears line up with the rack.
5. Attach the switch to the two-post rack using two #12-24 screws on each side.

To uninstall the switch from the rack, unscrew the four #12-24 rackmount screws and slide the switch from the rack.

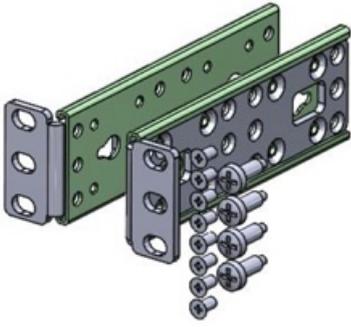# Two-post flush-mount switch installation

This switch installation procedure is for the full-width N3200-ON Series switches only.

(i) NOTE: Do not use this installation procedure for the compact N3208PX-ON switch.

(i) NOTE: For the N3224PX-ON, N3248P-ON, and N3248PXE-ON switches, to install an external power supply, see the *External Power Supply (EPS) Installation for the Dell EMC PowerSwitch N2200-ON and N3200-ON Series Switches* at www.dell.com/support.
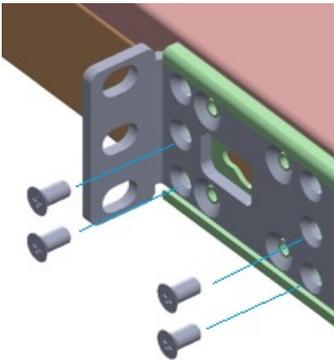
The mounting supplies for this installation ship with the switch.

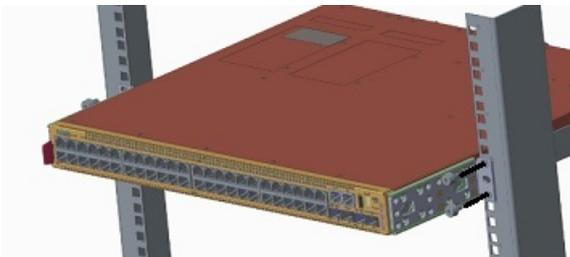1. Locate the mounting brackets and screws.

2. Insert the mounting brackets onto the mushroom head on each side of the switch and slide the mounting bracket back to lock it into place.

   The mounting bracket ears face the I/O-side of the switch.

3. Attach the mounting brackets to the switch using four screws for each bracket.

4. Slide the switch into the two-post rack until the mounting bracket ears line up with the rack.

5. Attach the switch to the two-post rack using two #12-24 screws on each side.

To uninstall the switch from the rack, unscrew the four #12-24 rackmount screws and slide the switch from the rack.
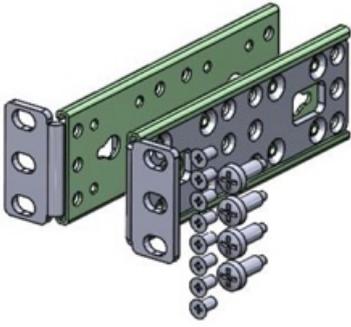
Wall- or ceiling-mount switch installation

This installation procedure is for the full-width N3200-ON Series switches only.

ⓘ **NOTE:** Do not use this installation procedure to wall- or ceiling-mount the compact N3208PX-ON switch.

ⓘ **NOTE:** For the N3224PX-ON, N3248P-ON, and N3248PXE-ON switches, to install an external power supply, see the *External Power Supply (EPS) Installation for the Dell EMC PowerSwitch N2200-ON and N3200-ON Series Switches* at www.dell.com/support.

You must order the mounting supplies for this installation separately. You need a drill and a pencil to complete this procedure.

1. Remove the four wall- or ceiling-mount brackets, wall anchors, and screws.
2. Screw two brackets to the left side of the switch using two screws for each bracket.
   Torque the screws to 10 in-lbs.
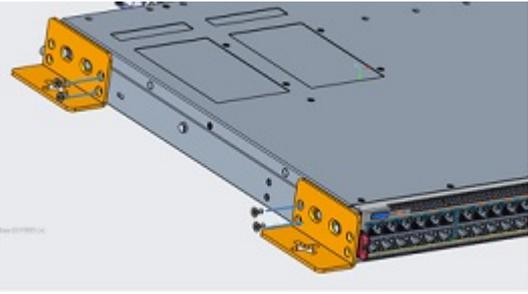
3. Repeat to attach two brackets to the right side of the switch.
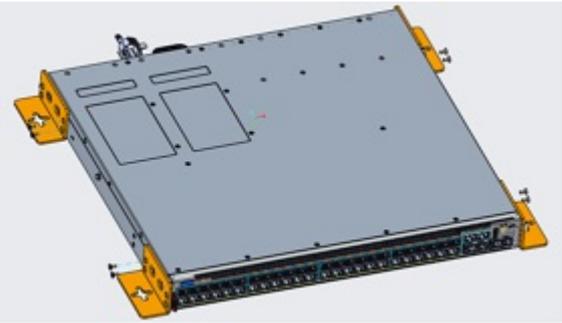
4. Hold the wall- or ceiling-mount template to the wall or ceiling. Mark the screw-hole locations on the wall with the pencil.

   Wall- or ceiling-mount dimensions
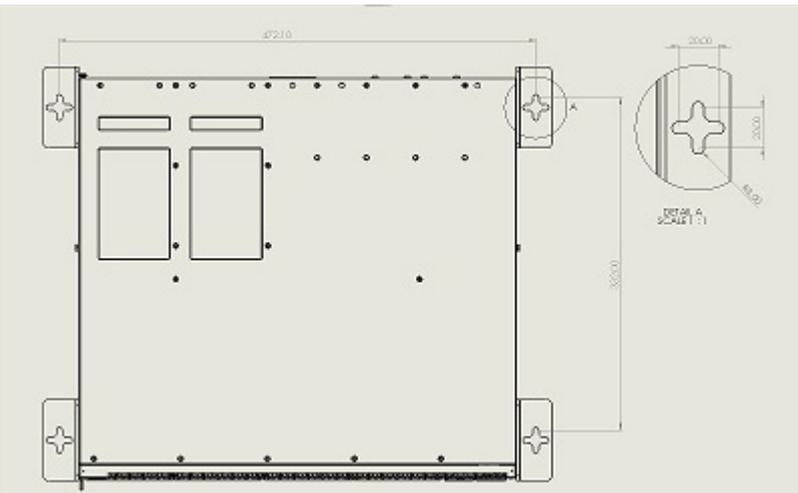
5. Drill eight 8 mm (0.3 in) holes in the wall or ceiling at the pencil marks.
6. Install the eight anchors into the holes.

7. Screw one M5 screw on each corner, four screws total, into the anchors, leaving approximately 5 mm (0.20 in) gap between the anchor and the screw.

8. Slide the switch onto the screws and tighten the screws to secure the switch in place.

   Torque the screws to 24 in-lbs.
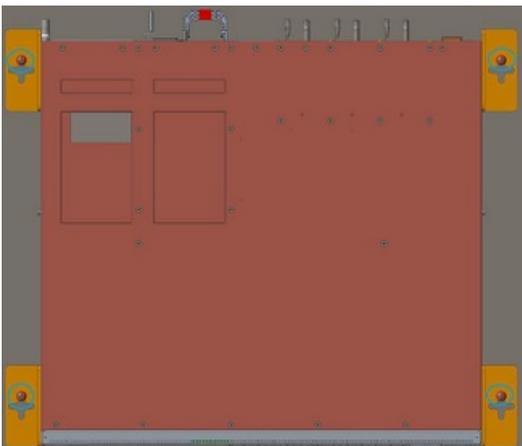
   Wall mount

9. Screw the remaining four M5 screws into the anchors and tighten the screws.

   Torque the screws to 24 in-lbs.

   Wall mount
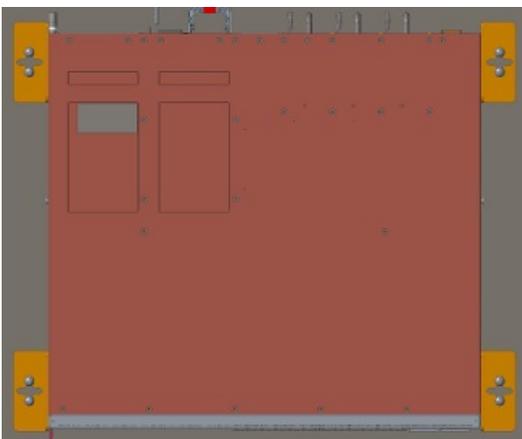
ceiling mount
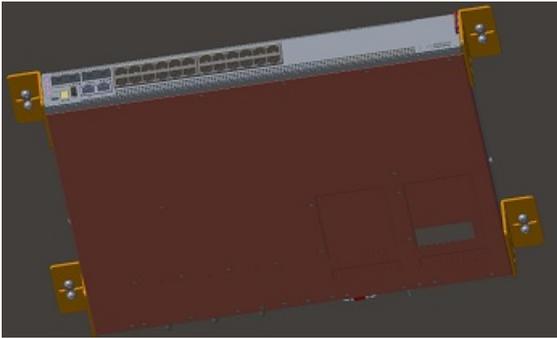
One RU ReadyRails installation

Install the N3200-ON Series switch, excluding the N3208PX-ON switch, using one of the following installation instructions.

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:** You must order the ReadyRails mounting supplies for this installation separately.

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.
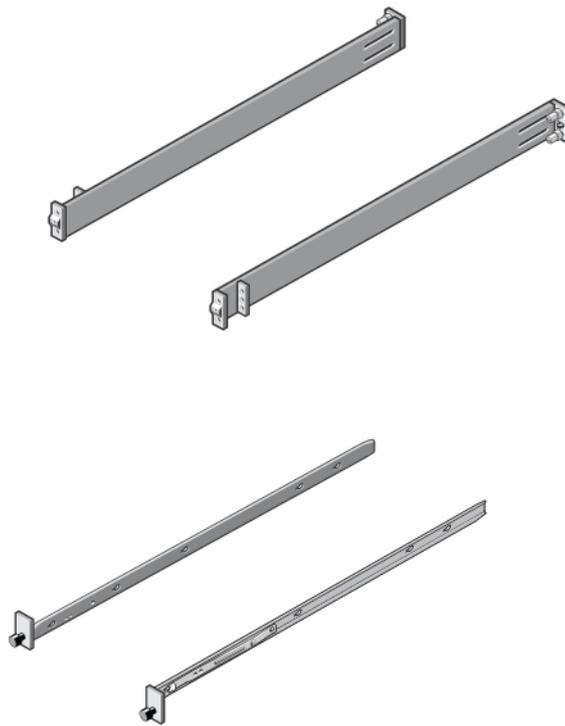
Figure 2. Separate rails

1U Tool-less mount ReadyRails installation

This switch installation procedure is for the full-width N3200-ON Series switches only.

ⓘ **NOTE:** Do not use this installation procedure for the compact N3208PX-ON switch.

(i) **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.

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

3. Repeat this procedure for the second rail.

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

Flush-mount ReadyRail installation

This switch installation procedure is for the full-width N3200-ON Series switches only.

(i) **NOTE:** Do not use this installation procedure for the compact N3208PX-ON switch.

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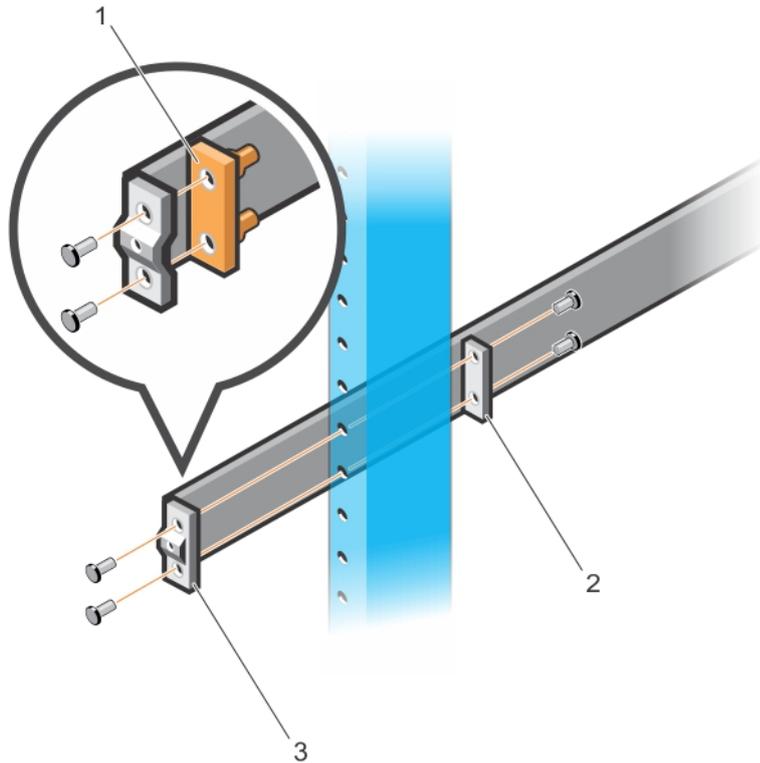
2. Attach one rail to the front post flange with two user-supplied screws, item 2.
3. Slide the plunger bracket forward against the vertical post and secure the plunger bracket to the post flange with two user-supplied screws, item 3.
4. Repeat this procedure for the second rail.

Center-mount ReadyRail installation

This switch installation procedure is for the full-width N3200-ON Series switches only.

ⓘ **NOTE:** Do not use this installation procedure for the compact N3208PX-ON switch.

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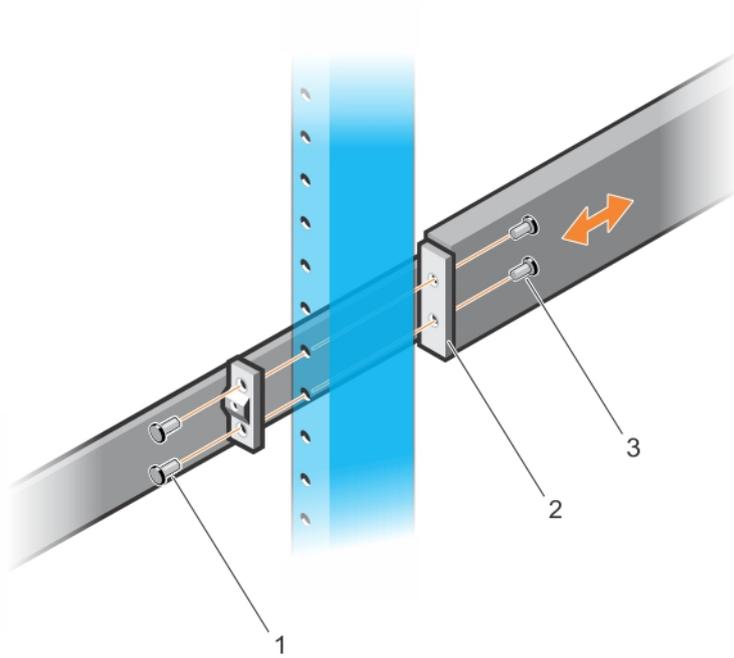
2. Slide the back bracket towards the post. Secure it to the post flange with two user-supplied screws, items 2 and 3.

3. Repeat this procedure for the second rail.

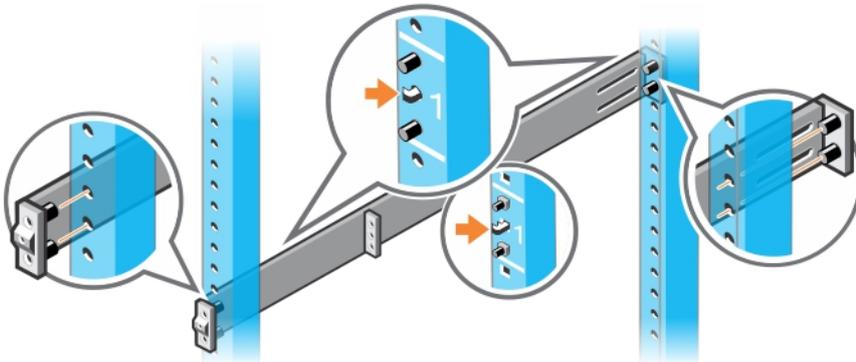## Threaded ReadyRails installation

This switch installation procedure is for the full-width N3200-ON Series switches only.

(i) **NOTE:** Do not use this installation procedure for the compact N3208PX-ON switch.

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

1. Remove the tool-less latch castings from the front side of each ReadyRails assembly, as shown in the following figure:

   Use a torx screwdriver to remove the two screws from each front latch on the switch side of the rail. Remove the tool-less latch casting. Retain the castings for future rack requirements.
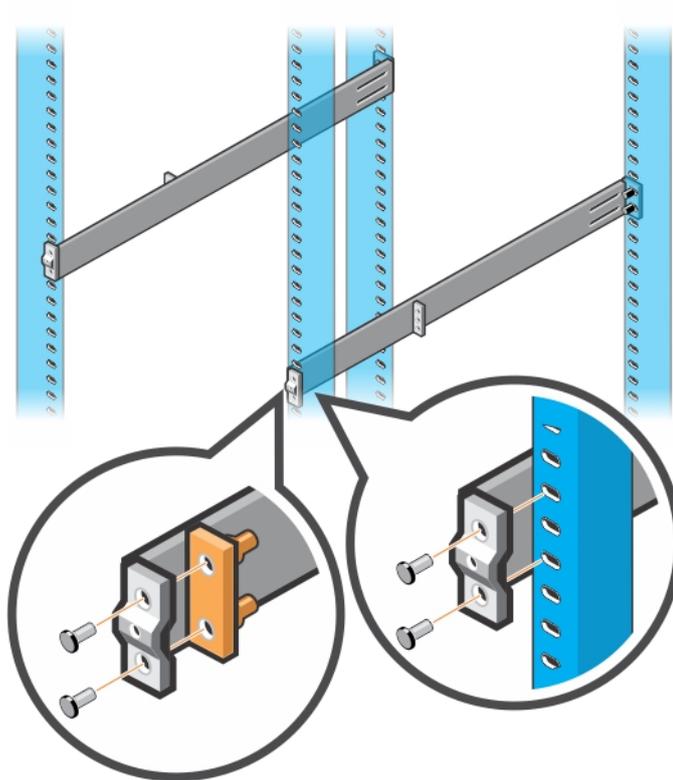
Figure 3. Four-post threaded round-hole installation

2. Attach the front and back flanges for each rail to the post flanges with two user-supplied screws at each end.

Optics installation

The N3200-ON Series has SFP+, SFP28, 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 N3200-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 must 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 N3200-ON Series switch after you install your switch.

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 N3200-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 N3200-ON Series switch and components.

After switch placement

After you have securely installed and powered on the N3200-ON Series switch:

● For switch documentation and resources, see www.dell.com/support.
● For ONIE documentation and resources, see www.onie.org.

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

Switch replacement

The following steps describe uninstalling 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 antistatic surface.

1. Back up the switch configuration to your back-up system or laptop TFTP server using a `copy` command.
2. Disconnect the power source.
3. Label and remove all cables.
4. Remove the switch from your installation.

    If you are using ReadyRails, simultaneously 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, uninstall them from the switch.

5. Unpack the new switch.

    For more information, see UnpackUnpack.

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

    For detailed installation instructions, see N3200-ON Series switch installation.

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

7. Connect all the cables.
8. Power on the switch.

For more information, see Switch start-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 firmware download procedure.

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

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

(i) **NOTE:** For firmware update procedures, see the most current switch-specific release notes at www.dell.con/support, *Drivers and Downloads* section.

External power adapter

This section describes how to install the external power adapter (EPA) inside the power adapter holder. It also describes how to attach the power adapter holder assembly to the switch. This EPA installation instruction procedure applies to the N3208PX-ON switch only.

ⓘ **NOTE:** Do not use this installation procedure for the full-width N3200-ON Series switches.

You can use one or two EPAs with your adapter holder in a two-post or four-post rack. You can side-mount a single EPA to the switch. You can center-mount or front-mount the dual-EPA assembly.

You must order the mounting supplies for the EPA-related installation separately.

ⓘ **NOTE:** If you are using two external power adapters (EPAs) in a two-post front- or center-mount rack, you must have two-rack units space available in your rack. Install the switch in the bottom portion of the two-rack units and the EPA in the top portion above the switch.

Topics:

Power adapter holder assembly

To install your EPA into the power adapter holder:

1. Set the EPA inside the power adapter holder.
2. Secure the EPA in place using the two metal straps and four screws that ship with the holder.
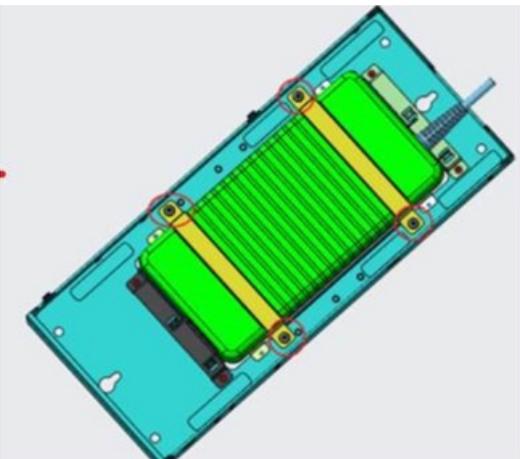
3. Attach the wire cable clips to the front and back of the power adapter holder.
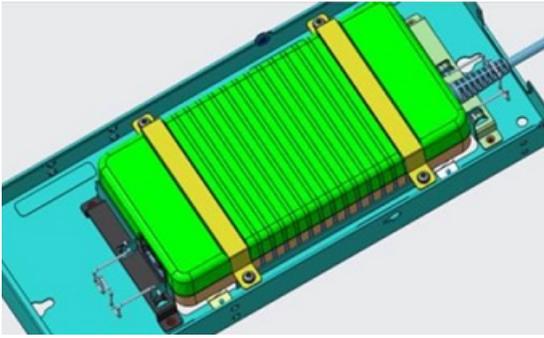
4. Install the AC power cable to the EPA and secure with the wire clip.
5. Bend the AC power cable 180 degrees along the holder wall and through the cable cutout.
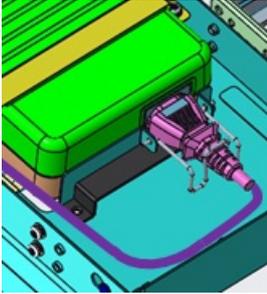
6. Secure the wire clip over the EPA cable.
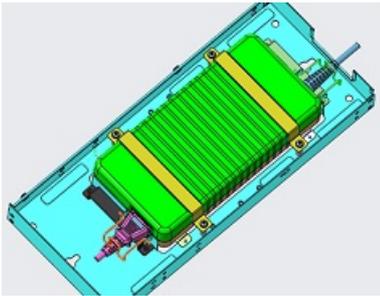
Wall or ceiling installation

To install a single EPA power adapter holder on a wall or ceiling:

ⓘ **NOTE:** This installation instruction procedure applies to the external power adapter.

You must order the mounting supplies for this installation separately. You need a drill and a pencil to complete this procedure.

1. Install the EPA in the power adapter holder using Steps 1 through 3 in the Power adapter holder assembly section.
2. Hold the EPA power adapter assembly to the wall or ceiling. Mark the screw-hole locations on the wall or ceiling with the pencil.
3. Drill four holes in the wall or ceiling at the pencil marks.
4. Screw the power adapter holder assembly to the wall or ceiling using four screws.

   Ceiling mount
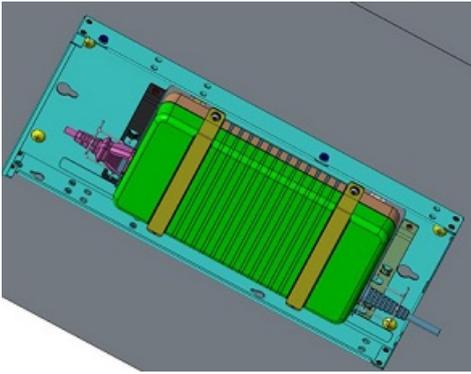
Wall mount
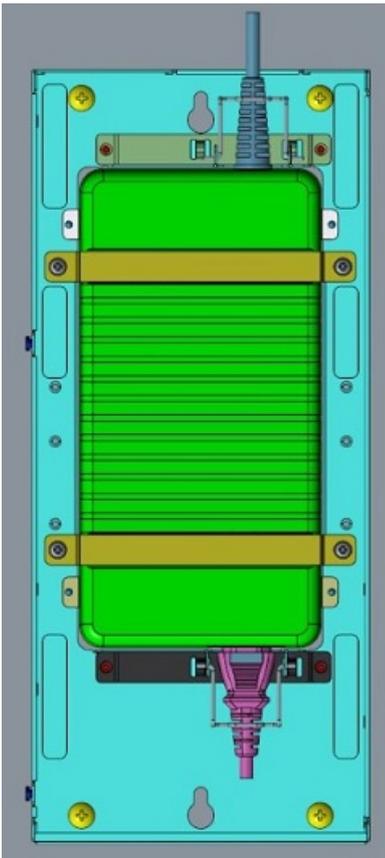
5. Install the AC power cable to the EPA and secure with the wire clip.
6. Bend the AC power cable 180 degrees along the holder wall and through the cable cutout.
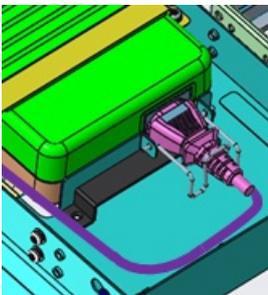
DIN rail installation

To install an external power adapter to DIN rails:

ⓘ **NOTE:** This installation instruction procedure applies to the external power adapter only.

You must order the mounting supplies for this installation separately.

1. Remove the two DIN buckles and screws from the shipping box.

2. Install the EPA in the power adapter holder using Steps 1 through 3 in the Power adapter holder assembly section.
3. Fix the two DIN buckles to the bottom side of the EPA power adapter assembly using three screws for each DIN rail.
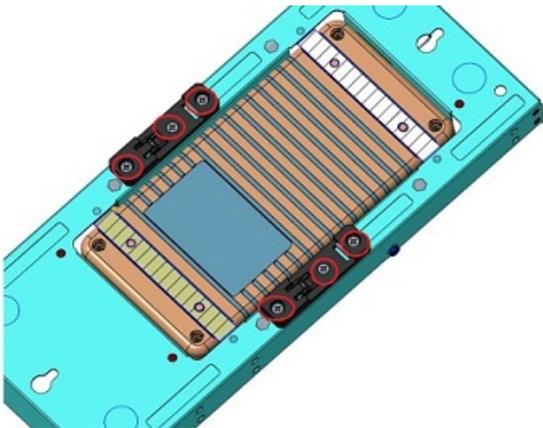
4. Snap the two DIN buckles into the DIN rails.
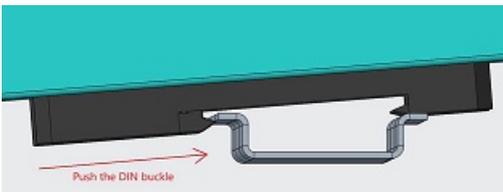
Push the DIN buckle

5. Install the AC power cable to the EPA and secure with the wire clip.
6. Bend the AC power cable 180 degrees along the holder wall and through the cable cutout.
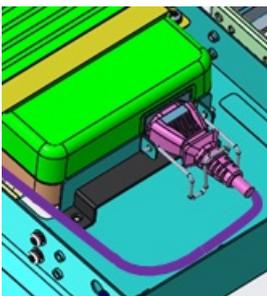
Single-EPA and switch four-post installation

To install a single EPA power adapter holder on the side of your switch in a four-post rack:

ⓘ **NOTE:** This installation instruction procedure applies to the N3208PX-ON switch only.

1. Install the single EPA in the power adapter holder using the instructions in Power adapter holder assembly.
2. Align the two mushroom heads on the switch with the two holes on the power adapter holder. Slide the power adapter holder forward to lock it in place.
3. Use two screws to secure the power adapter holder to the side of the switch.

4. Install the AC power cable to the EPA and secure with the wire clip.
5. Bend the AC power cable 180 degrees along the holder wall and through the cable cutout.
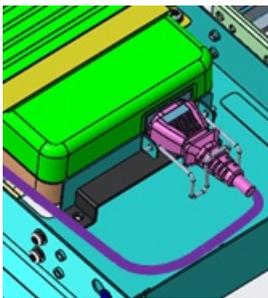
6. Install the four-post rail-brackets to the switch and the power adapter holder.
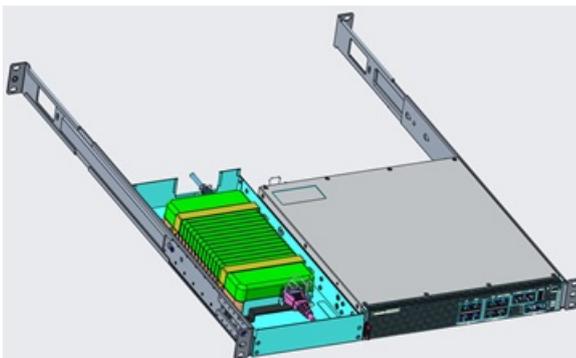
7. Install the rail bracket to the four-post rack and secure it with the rack-mounting screws.

Single-EPA and switch two-post center-mount installation

To install a single EPA power adapter holder on the side of your switch in a center-mount two-post rack:

ⓘ **NOTE:** This installation instruction procedure applies to the N3208PX-ON switch only.

1. Install the single EPA in the power adapter holder using the instructions in Power adapter holder assembly.

2. Align the two mushroom heads on the switch with the two holes on the power adapter holder. Slide the power adapter holder forward to lock it in place.
3. Use two screws to secure the power adapter holder to the side of the switch.


4. Install the AC power cable to the EPA and secure with the wire clip.
5. Bend the AC power cable 180 degrees along the holder wall and through the cable cutout.

6. Align the L-bracket with mushroom head on the switch and the power adapter holder.

   Face the L-bracket flange towards the rear of the assembly.
7. Secure the L-brackets to the switch and the power adapter holder using four screws on each side.

8. Install the L-bracket to the two-post rack, and secure it with the rack-mounting screws.

Single-EPA and switch two-post front-mount installation

To install a single EPA power adapter holder on the side of your switch in a front-mount two-post rack:

ⓘ **NOTE:** This installation instruction procedure applies to the N3208PX-ON switch only.

1. Install the single EPA in the power adapter holder using the instructions in Power adapter holder assembly.
2. Align the two mushroom heads on the switch with the two holes on the power adapter holder. Slide the power adapter holder forward to lock it in place.
3. Use two screws to secure the power adapter holder to the side of the switch.

4. Install the AC power cable to the EPA and secure with the wire clip.
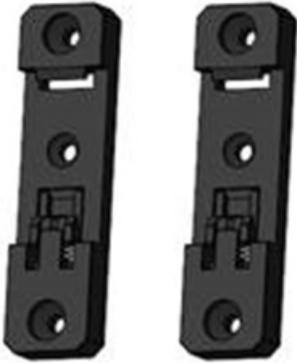5. Bend the AC power cable 180 degrees along the holder wall and through the cable cutout.

6. Align the L-bracket with mushroom head on the switch and the power adapter holder.
   Face the L-bracket flange towards the rear of the assembly.
7. Secure the L-brackets to the switch and the power adapter holder using four screws on each side.

8. Install the L-bracket to the two-post rack, and secure it with the rack-mounting screws.

Dual-EPAs two-post front-mount installation

To install two EPA power adapter holders in a front-mount two-post rack:

ⓘ **NOTE:** This installation instruction procedure applies to the N3208PX-ON switch only.

ⓘ **NOTE:** For this installation, you need two-rack units of space in your mounting rack. Install the switch in the bottom portion of the two-rack units and keep the top portion open.

1. Align the mushroom heads on one power adapter holder with the two cutouts on the second power adapter holder and slide together.
2. Secure the two power adapter holders together with four screws—two at the front and two at the back of the assembly.

3. Install the two EPAs in your power adapter assembly and secure with metal straps and screws.
   For EPA installation instructions, see Power adapter holder assembly.

4. Align the right L-bracket with the mushroom heads on the right side of the assembly.
   Face the L-bracket flange towards the front of the assembly.
5. Secure the left L-bracket with four screws.
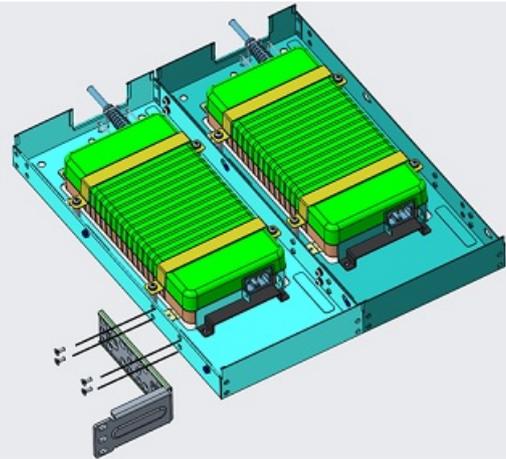
6. Repeat with the right L-bracket.
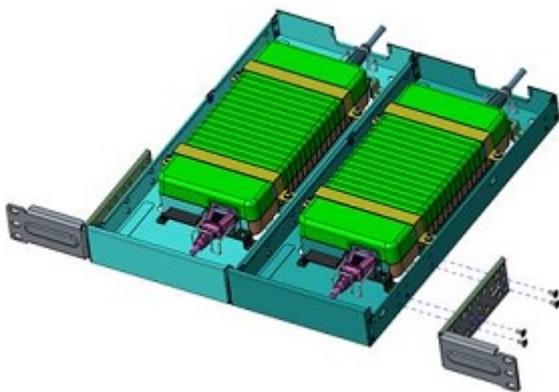
7. Install the AC power cable to the EPA and secure with the wire clip.
8. Bend the AC power cable 180 degrees along the holder wall and through the cable cutout.
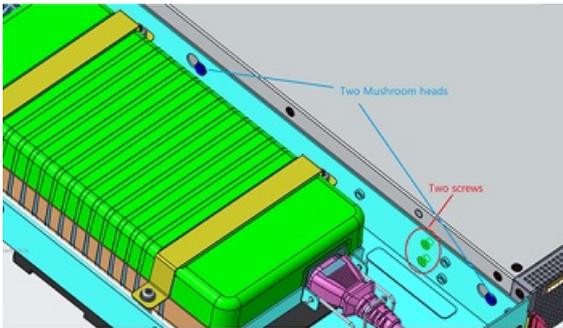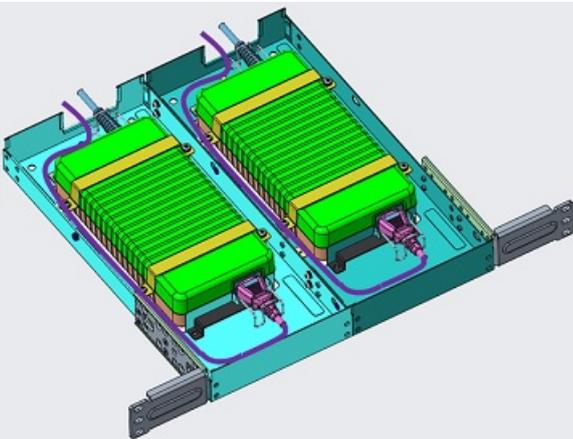

9. Install the dual-EPA assembly above the switch in the two-post rack.
   For rack installation instructions, see N3200-ON Series switch installation.
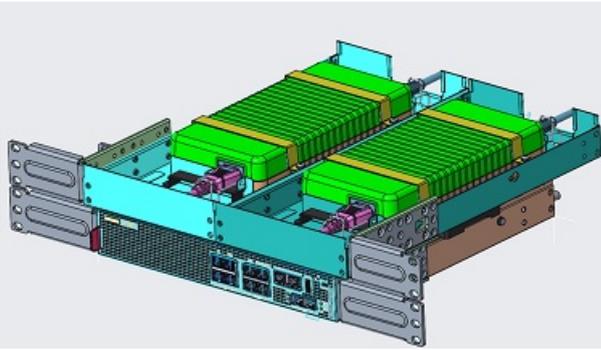
Dual-EPAs two-post center-mount installation

To install two EPA power adapter holders in a center-mount two-post rack:

(i) **NOTE:** This installation instruction procedure applies to the N3208PX-ON switch only.

(i) **NOTE:** For this installation, you need two-rack units of space in your mounting rack. Install the switch in the bottom portion of the two-rack units and keep the top portion open.

1. Align the mushroom heads on one power adapter holder with the two cutouts on the second power adapter holder and slide together.
2. Secure the two power adapter holders together with four screws—two at the front and two at the back of the assembly.

3. Install the two EPAs in your power adapter assembly and secure with metal straps and screws.

   For EPA installation instructions, see Power adapter holder assembly.

4. Align the right L-bracket with the mushroom heads on the right side of the assembly.

   Face the L-bracket flange towards the rear of the assembly.
5. Secure the left L-bracket with four screws.
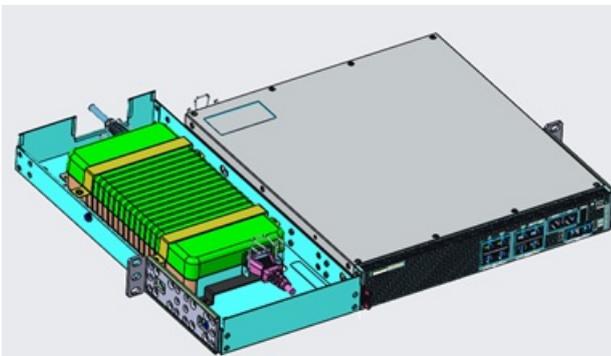
6. Repeat with the right L-bracket.

7. Install the AC power cable to the EPA and secure with the wire clip.
8. Bend the AC power cable 180 degrees along the holder wall and through the cable cutout.

9. Install the dual-EPA assembly above the switch in the two-post rack.
   For rack installation instructions, see N3200-ON Series switch installation.

Power supply

The N3200-ON Series switch ships with one pluggable AC power supply. You can order a second AC PSU separately. If you require DC power, you can order one or two DC PSUs.

The N3224PX-ON, N3248P-ON, and N3248PXE-ON switches also support an optional external power supply that connects to the switch using an MPS-1S or MPS-3S shelf. Use the EPS to add redundancy, or extend the PoE budget based on your requirement. To install an external power supply, see the *External Power Supply (EPS) Installation for the Dell EMC PowerSwitch N2200-ON and N3200-ON Series Switches* at www.dell.com/support.

Table 10. AC PSU input voltage
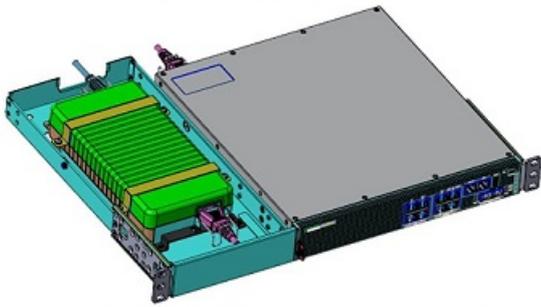
AC PSU	Input voltage	Output
DPS-320AP (For N3208PX-ON only)	• Low line = 110 V • High line = 220 V	• 300 W • 300 W
DPS-550	• Low line = 110 V • High line = 220 V	• 550 W • 550 W
DPS-1050	• Low line = 110 V • High line = 220 V	• 950 W • 1050 W
DPS-1600	• Low line = 110 V • High line = 220 V	• 950 W • 1600 W

Table 11. DC PSU input voltage

DC PSU	Input voltage	Output
DPS-550	• -40 V to -60 V	• 550 W
DPS-1300	• -40 V to -60 V	• 1300 W

⚠ **CAUTION: To prevent electrical shock, ensure that the N3200-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.**

⚠ **WARNING: Equipment that provides DC input to the DC port must be certified for CCC and meet the relevant standards.**

ⓘ **NOTE:** Reserve airflow, from the PSU-side to the I/O-side of the switch, is only supported on the N3224T-ON, N3248X-ON, and N3248TE-ON switches.

ⓘ **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:** ESD damage can occur if components are mishandled. Always wear an ESD-preventive wrist or heel ground strap when handling the N3200-ON Series switch and components.

Topics:

- Components
- AC or DC power supply installation
- AC or DC power supply replacement
- 550W DC power connections
- 1300W DC power connections

- Connect the EPS shelf

Components

The following power supply options are available for the N3200-ON Series switch:

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

(i) **NOTE:** Reserve airflow is only supported on the N3224T-ON, N3248TE-ON, and N3248X-ON switches.

For the N3200-ON Series switches, power supply 1 (PSU1) and power supply 2 (PSU2) are on the right side of the switch. PSU1 is near the center of the switch; PSU2 is on the right edge of the switch.

N3224F-ON, N3224P-ON, N3224T-ON, N3248TE-ON, and N3248X-ON PSUs

1. Default PSU and ordered-separately PSU. PSU1 is near the center of the switch; PSU2 is on the right edge of the switch.

N3224PX-ON, N3248P-ON, and N3248PXE-ON PSUs

1. Default PSU and ordered-separately PSU. PSU1 is near the center of the switch; PSU2 is on the right edge of the switch.

The PSU has an integrated fan, which you cannot replace individually; if the fan integrated in a PSU fails, you must replace the entire PSU.

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

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

(i) **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.

AC power cable clips

(i) **NOTE:** These AC power cable clips apply to the compact N3208PX-ON switch only.

After you connect the AC power cable to the N3208PX-ON switch, attach the metal wire clip to the switch over each AC power cable.
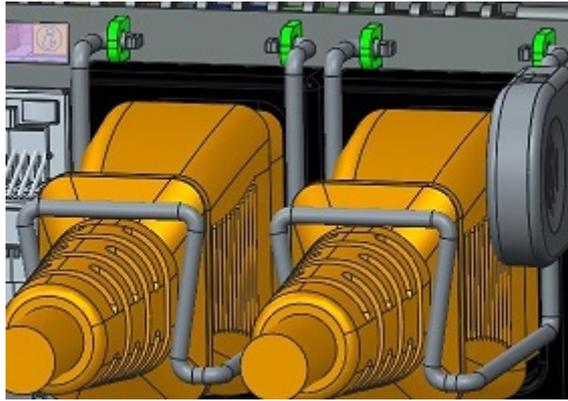
Figure 4. AC power cable clips

PSU LEDs

- Solid green—Input is OK.
- Flashing green blink at 1 Hz—PSU is in a faulty state.
- Off—PSU is off.

AC or DC power supply installation

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

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

1. Remove the PSU slot cover from the N3200-ON Series switch using a small #1 Phillips screwdriver. The PSU slot cover has two screws on the top and two screws on the bottom of the platform.
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 three-prongs cable from the switch PSU to the external power source.

N3224T-ON, N3224F-ON, N3224P-ON, N3248TE-ON, and N3248X-ON PSU installation
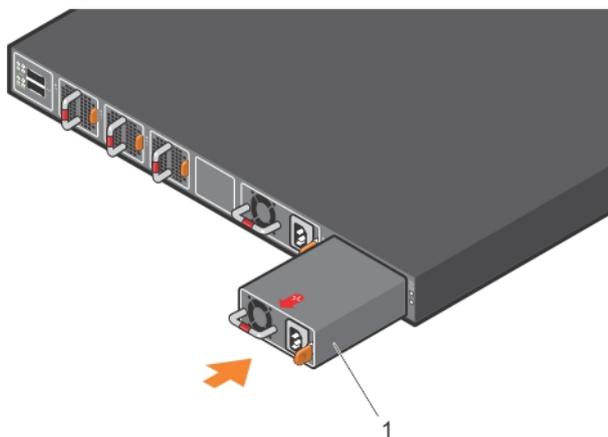
1. PSU. Optional PSU also shown.

N3224PX-ON, N3248P-ON, and N3248PXE-ON PSU installation
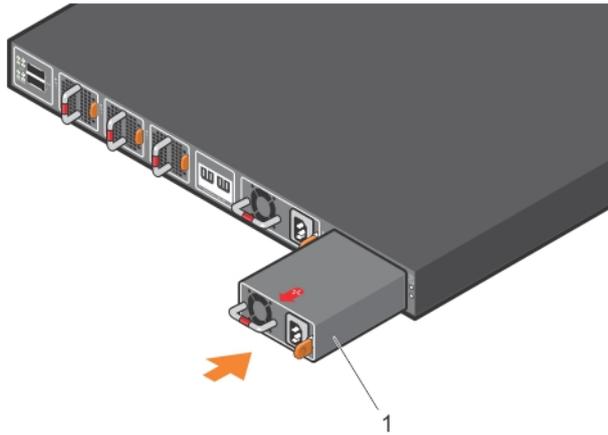
1. PSU. Optional PSU also shown.

ⓘ **NOTE:** The N3200-ON Series switch powers up when you connect the cables between the power supply and the power source.

ⓘ **NOTE:** For hot-swappable PSUs, after you have connected the power cable to the switch, use the included black power-cable tie to secure the cable in place.

AC or DC power supply replacement

⚠ **CAUTION: Disconnect the power cable before uninstalling 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 N3200-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 www.dell.com/support/.

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 cable to the replacement PSU.

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

550W DC power connections

Each 550W DC PSU comes with a connector cable. One cable is provided for each 550W DC PSU.

- 48V
SAFETY GROUND
+ RETURN
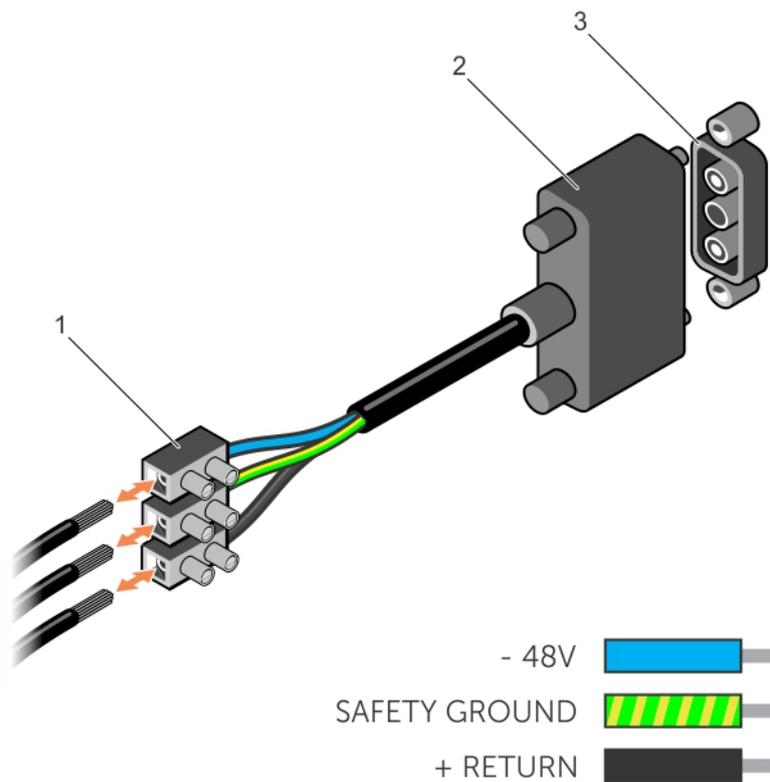
Figure 5. DC power connector and wiring block

1. Wiring block
2. Power connector
3. PSU connector

1. Strip a one-half inch section of insulation from each of the power connector wires, as shown.
2. Insert each of the bare wire power connector lengths into the wiring block. The blue wire is -48 V, the black wire is the positive return, and the yellow/green wire is the ground wire, as shown.
3. Use a flat-head screwdriver to tighten the screws that secures the bare wires into the wiring block.
4. Secure the 550W DC power source wires to the other side of the wiring block, see steps 1 and 3.

   ⓘ **NOTE:** Do not cross the wires.

5. Insert the 550W DC power connector into the power socket of the 550W DC PSU. Ensure that the connector pins firmly seat and you hear the click of the left and right levered power connector clamps lock into place.

   ⓘ **NOTE:** Never try to force the power connector into or out of the 550W DC PSU power socket.

6. Secure the 550W DC power cable to the 550W DC power connector using the attached thumbscrews.

To uninstall the power connector from a 550W DC PSU, unscrew the thumbscrews, unplug the 550W DC power cable, and pull the 550W DC power connector from the 550W DC PSU socket.

1300W DC power connections

Each 1300W DC PSU comes with one 1300W DC cable. The cable ships in a separate plastic bag.

⚠ **CAUTION: This product must be supplied by a 1300W DC power source rated -48 Vdc to -60 Vdc, 40 A minimum, and Tma = 45-degree C minimum. The altitude of operation is 5000 m. The product must be supplied by a UL-Listed DC power source that is separated from AC mains by double or reinforced insulation when the switch is connected to 1300W DC power. For more information, contact your Dell sales representative.**

(i) **NOTE:** The conductor screw can not be smaller than the conductors supplying power. Secure all screws and ground-wire connections.

(i) **NOTE:** Dell Technologies recommends using a 40 A circuit breaker. Before you supply 1300W DC current to the switch, review the current rating of your protective device.

(i) **NOTE:** You need a user-supplied flat-head screwdriver to complete this installation.
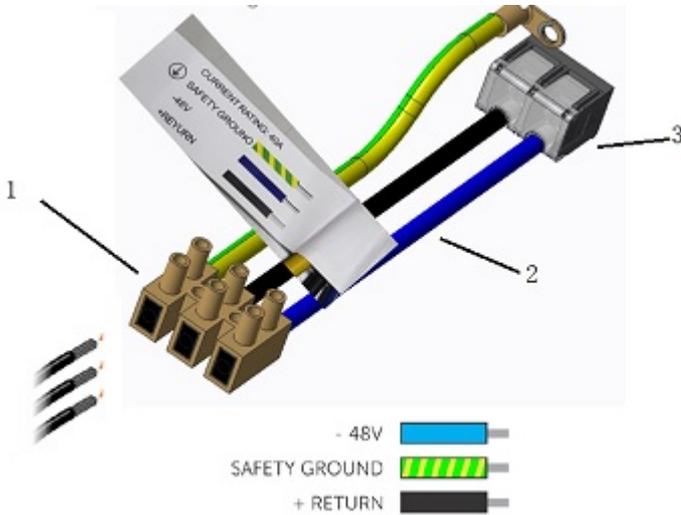
1. Wiring block
2. 1300W DC cable
3. PSU socket

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

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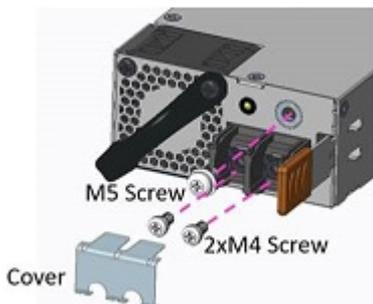
5. Attach the blue wire and black wire to the PSU socket. Secure the wires with the two M4 screws.

   (i) **NOTE:** Attach the blue wire to the V- terminal. Attach the black wire to the V+ terminal.
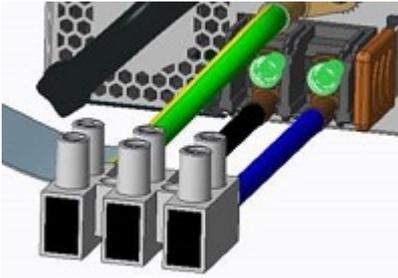
6. Return the plastic cover back to the PSU socket.
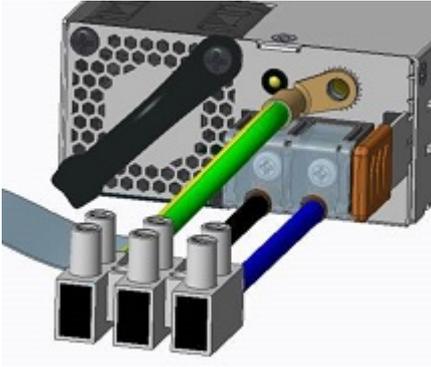
7. Attach the yellow and green wire to the PSU GND. Secure the wire with the M5 screw.

> (i) **NOTE:** To uninstall the cable from the 1300W DC PSU, remove the plastic cover and unscrew the M4 and M5 screws. Pull the 1300W DC cable out from the 1300W DC PSU socket.

Connect the EPS shelf

This section applies to the N3224PX-ON, N3248P-ON, and N3248PXE-ON switches only.

> (i) **NOTE:** For more information about the external power supply, see *External Power Supply (EPS) Installation for the Dell EMC PowerSwitch N2200-ON and N3200-ON Series Switches* at www.dell.com/support.

> (i) **NOTE:** The EPS power cable supports a maximum of 2400 W. If you require more power than 2400 W, you must connect two EPS power cables.

To connect the EPS shelf to the switch, use the EPS power cable.

1. Unscrew the DC power cover from the rear of the switch.

DC power cover

Primary A-slot
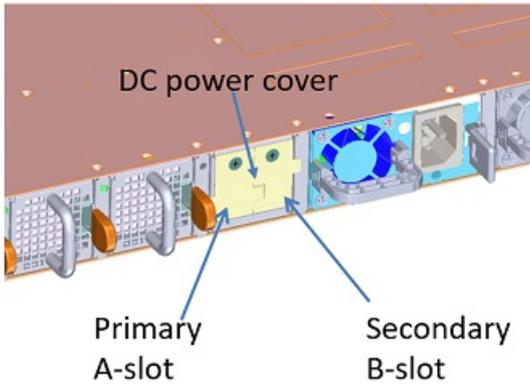
Secondary B-slot

(i) **NOTE:** If you are connecting a single EPS power cable to your switch, always use primary A-slot. Leave the secondary B-slot DC power cover in place, as shown:

Remove A-slot cover
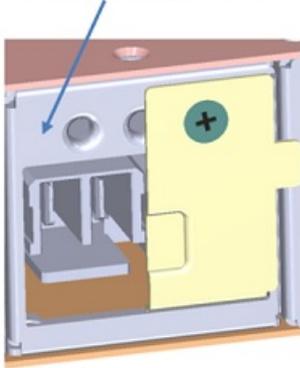
2. Unscrew the DC-power-OUT cover from the rear of the EPS shelf.

(i) **NOTE:** If you are connecting a single EPS power cable to your MPS-3S shelf, always use primary A-slot. Leave the secondary B-slot DC power cover in place.

MPS-1S shelf

MPS-3S shelf

Primary A-Slot   **Secondary B-Slot**
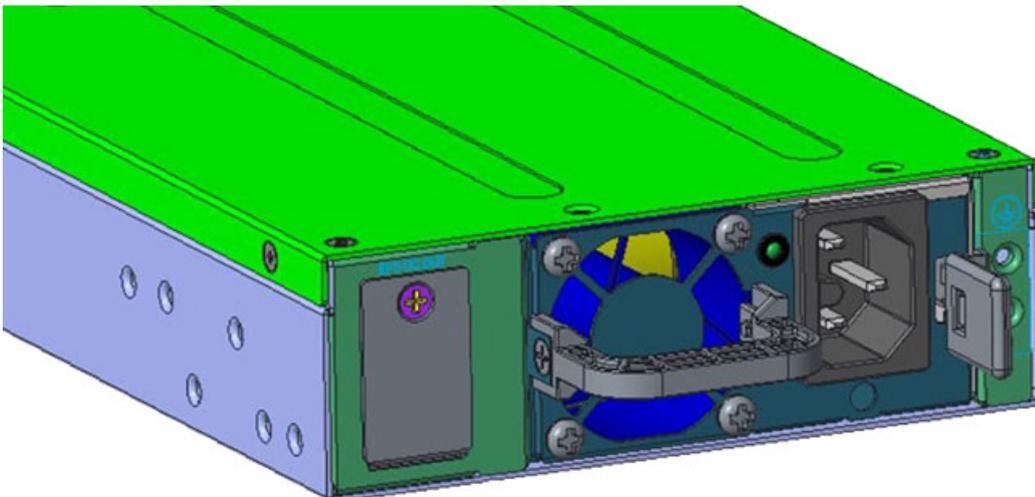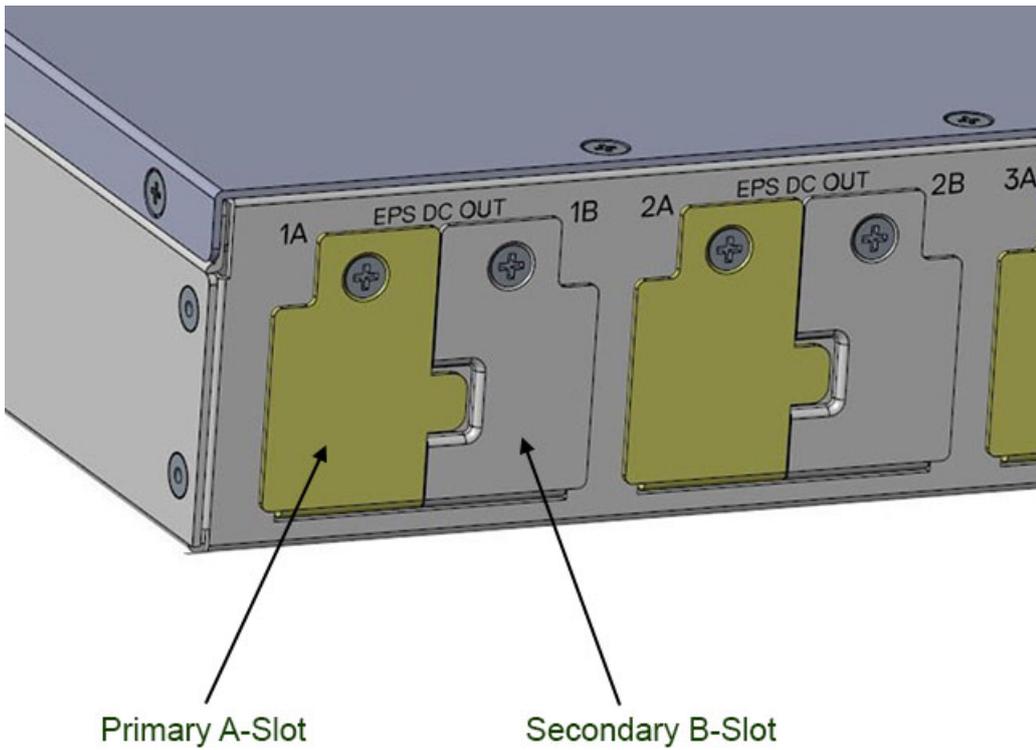
3. Connect the EPS power cable to the EPS-DC-In on the switch.

   Torque the screw to 10 in-lbs.

   One EPS power cable connected
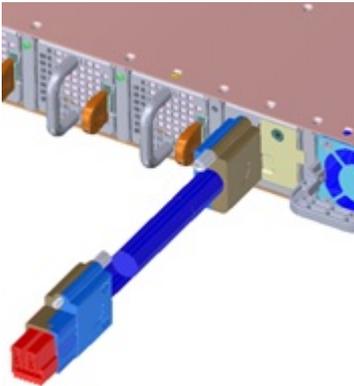
   Two EPS power cables connected
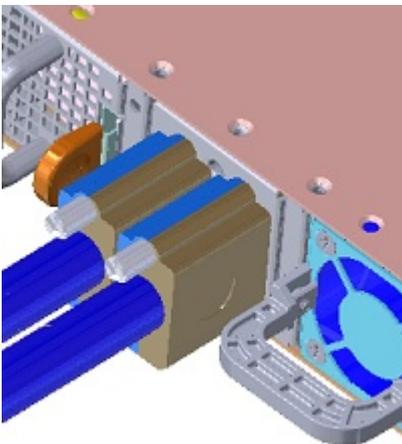
4. Connect the other end of the DC cable to either a MPS-1S shelf or MPS-3S shelf.

Torque the screw to 10 in-lbs.

One EPS power cable connected to a MPS-1S shelf.
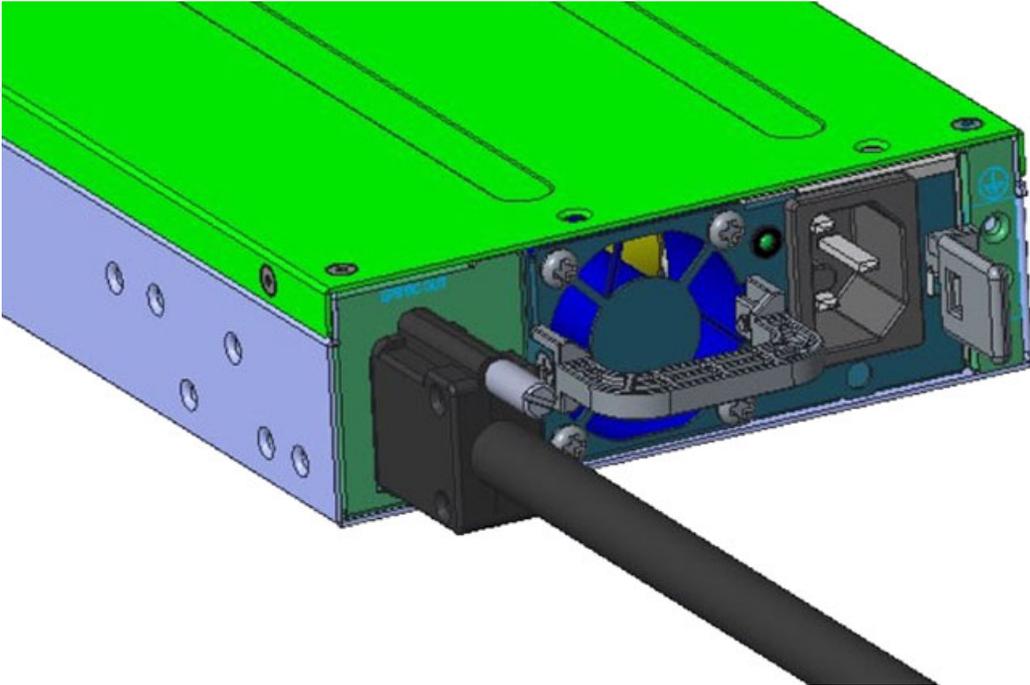
One EPS power cable connected to a MPS-3S shelf
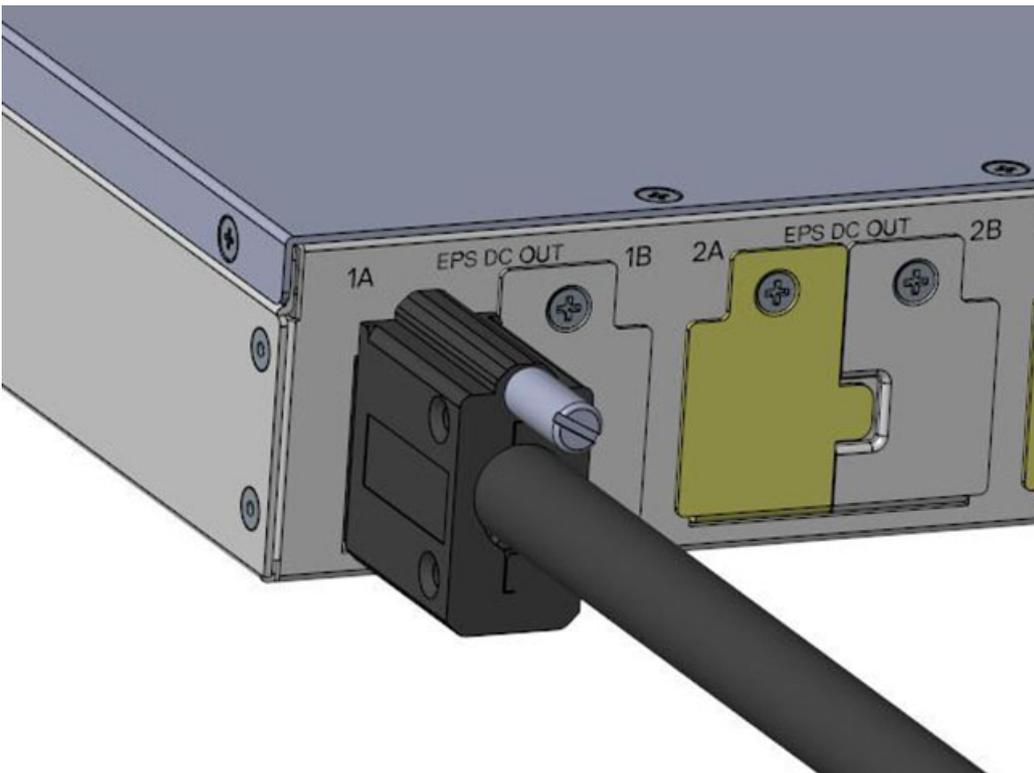
Two EPS power cables connected to a MPS-3S shelf
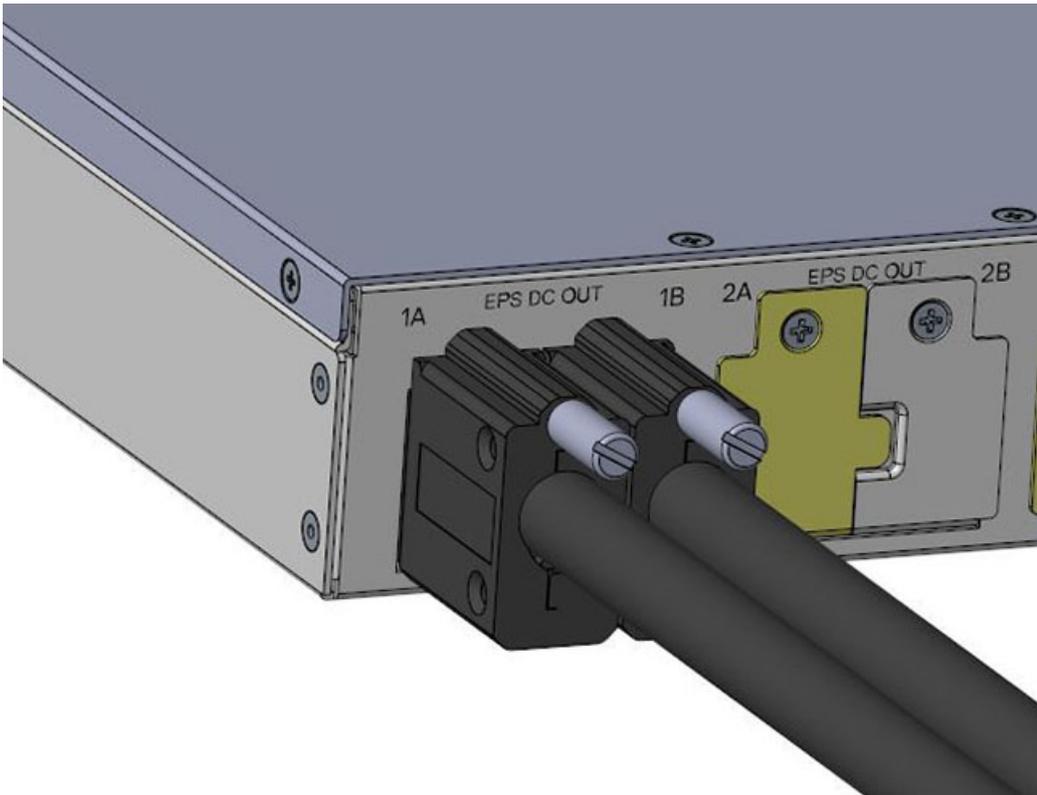
5. Repeat until all EPS power cables are connected.

To disconnect an EPS power cable, unscrew the cable and disconnect the cable from the switch.

Fans

The N3200-ON Series switch, except the N3208PX-ON switch, comes from the factory with three pluggable fan modules.

- N3208X-ON—one fan
- N3224T-ON, N3224F-ON, N3224P-ON, N3224PX-ON, N3248TE-ON, N3248P-ON, N3248X-ON, and N3248PXE-ON—three pluggable fans

The N3200-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.

ⓘ **NOTE:** Reverse airflow is only supported on the N3224T-ON, N3248TE-ON, and N3248X-ON switches.

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

Environmental factors can decrease the amount of time that is 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.

Topics:

- Components
- Fan module installation

Components

The following are the N3200-ON Series switch fan components:

N3208PX-ON fan

1. Fan

N3224F-ON, N3224P-ON, N3224T-ON, N3248TE-ON, and N3248X-ON fans
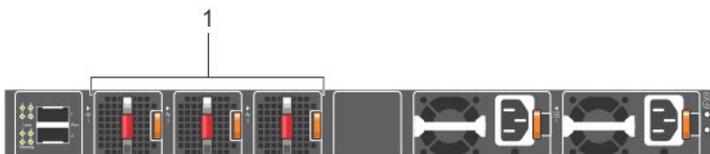
1. Fans—Fan1 is near the left edge of the switch; Fan3 is near the center of the switch.

N3224PX-ON, N3248P-ON, and N3248PXE-ON fans

1. Fans—Fan1 is near the left edge of the switch; Fan3 is near the center of the switch.

Fan LEDs

- Solid green—Fan input is normal
- Flashing green blink at 1 Hz—Fan is in a faulty state
- Off—Fan is off

Fan module installation

The fan module in the N3200-ON Series switch, excluding N3208X-ON, is field replaceable.

1. Remove the fan slot cover from the N3200-ON Series switch using a small #1 Phillips screwdriver. The fan slot cover has one screw on the top and one screw on the bottom of the platform.
2. Take the fan module out of the shipping box.
3. Slide the module into the bay.

   N3224F-ON, N3224P-ON, N3224T-ON, N3248TE-ON, and N3248X-ON fan installation
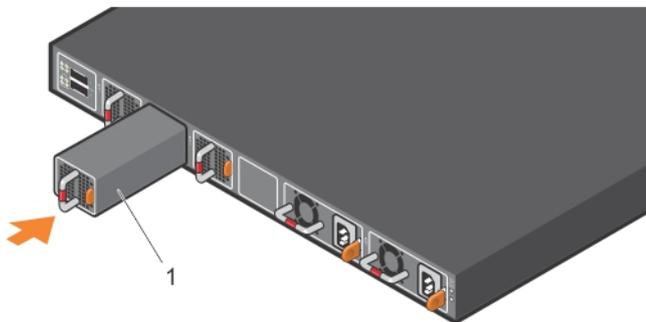
- Fan installation

N3224PX-ON, N3248P-ON, and N3248PXE-ON fan installation
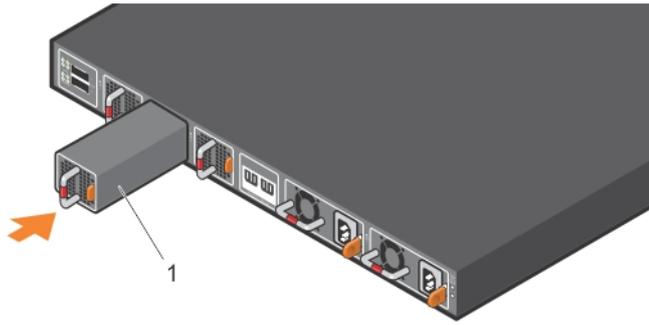
● Fan installation

Fan module replacement

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

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.

Management ports

The N3200-ON Series switch provides two 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 Type-B console port access
- USB storage mount

RJ45 console port access

For the N3200-ON Series switch, the management ports are on the I/O-side of the switch.

N3208PX-ON management ports

1. Out-of-band management port (right), RJ45 console port (left)

N3224F-ON management ports

1. Out-of-band management port (right), RJ45 console port (left)

N3224P-ON, N3224T-ON and N3224PX-ON management ports

1. Out-of-band management port (right), RJ45 console port (left)

N3248P-ON, N3248PXE-ON N3248TE-ON, and N3248X-ON management ports

1. Out-of-band management port (right), RJ45 console port (left)

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

ⓘ **NOTE:** If the serial port of your computer cannot accept a female DB-9 connector, use a DB-9 to USB adapter.

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

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 of your computer.
   Alternately, 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 Type-B console port access

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

ⓘ **NOTE:** The N3200-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 Type-B port, it becomes the primary connection and, while connected, all messages are sent to the microUSB Type-B port.

(i) **NOTE:** Before starting this procedure, be sure that you have a terminal emulation program that is already installed on your computer. If your computer requires non-Dell EMC drivers, and you have issues with your USB console port, contact Dell EMC technical support for assistance.

1. Start up the computer.
2. Connect the USB Type-A end of cable into an available USB port on the computer.
3. Connect the microUSB Type-B end of cable into the microUSB Type-B console port on the switch.
4. Start up the switch.
5. Install the necessary USB device drivers.
6. Open your terminal software emulation program to access the switch.
7. Confirm that the terminal settings on your terminal software emulation program are as follows:
   - 115200 baud rate
   - No parity
   - Eight data bits
   - One 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<number>: 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<number>` to the `/mnt/usb` directory.
   ```
   ONIE:/ # mount -t vfat /dev/sdb<number> /mnt/usb
   ```
   (i) **NOTE:** If the `/mnt/usb` directory is missing, the following message displays: `mount: mounting /dev/sdb<number> on /mnt/usb failed: No such file or directory.`

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

Installation using ONIE

This section describes uninstalling an operating system and installing ONIE on your switch. For more information, see switch-specific information at www.dell.com/support.

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

Topics:

- Before you install an operating system
- Check your switch
- Uninstall an existing OS
- Install a NOS

Before you install an operating system

After powering on the N3200-ON Series switch, it goes through a power-on self-test (POST).

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

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

Grub bootloader example

```
GNU GRUB  version 2.02~beta2+e4a1fe391

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

Your switch comes with ONIE installed.

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

ONIE options

```
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 starts the discovery process. For more information, see Installation using ONIE.

ⓘ **NOTE:** For more information, see the *Open Networking Hardware Diagnostic Guide for N2200-ON and N3200-ON Switches* at www.dell.com/support.

ⓘ **NOTE:** After you have securely installed and powered on the N3200-ON Series switch, to configure your switch, see your third-party ONIE-compatible operating system or the Dell EMC operating system documentation.

Check your switch

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

```
ONIE:/ # onie-sysinfo
x86_64-dellemc_<platform>_c3338-r0
ONIE:/ # onie-sysinfo -c
x86_64
ONIE:/ # onie-sysinfo -v
x.xx.x.x-x
ONIE:/ #
ONIE:/ # uname -a
Linux onie x.x.xx-onie+ #1 SMP Mon Jun 24 21:50:18 PDT 2019 x86_64
ONIE:/ # lspci
00:1f.5 Class 0c80: 8086:19e0
00:00.0 Class 0600: 8086:1980
00:12.0 Class 0880: 8086:19ac
00:15.0 Class 0c03: 8086:19d0
00:0b.0 Class 0604: 8086:19a6
00:18.0 Class 0780: 8086:19d3
00:09.0 Class 0604: 8086:19a4
00:14.0 Class 0106: 8086:19c2
00:1f.4 Class 0c05: 8086:19df
00:05.0 Class 0807: 8086:19a2
00:1f.2 Class 0580: 8086:19de
00:1c.0 Class 0805: 8086:19db
00:1f.0 Class 0601: 8086:19dc
02:00.0 Class 0200: 8086:1533
00:04.0 Class 0600: 8086:19a1
01:00.0 Class 0200: 14e4:b771        (NPU PCI detection)
ONIE:/ #
```

Uninstall an existing OS

⚠ **CAUTION: To install a networking operating system (NOS) on a switch that has a previously installed OS, you must first uninstall the existing OS. The `ONIE: Uninstall OS` option deletes the switch configuration and all disk partitions.**

To uninstall an existing NOS, boot up the switch. When the ONIE boot menu displays, use the arrow keys to scroll the asterisk to select the `ONIE: Uninstall OS` option. This selection stops the switch from booting to the default setting of `ONIE: Install OS`.

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

After the ONIE uninstall process completes, the switch boots to `ONIE: Install OS` mode.

Install a NOS

⚠ **CAUTION: Installing a NOS using ONIE erases all software configurations on the switch. The configuration settings are not recoverable. Back up all software configurations and installed licenses on the switch before performing OS updates or changes. Store a regular backup of the switch configuration off the switch.**

- **Automatic installation**—ONIE discovers network information including the Dynamic Host Configuration Protocol (DHCP) server, connects to an image server, and downloads and installs an image automatically.
- **Manual installation**—Manually configure your network information if a DHCP server is not available or if you install the NOS software image using USB media.

System setup

Before installation, verify that the system is connected correctly:

- Connect a serial cable and terminal emulator to the console serial port. The serial port settings are 115200 baud rate, 8 data bits, and no parity.
- Connect the Management port to the network to download an image over a network. To locate the Console port and the Management port, see the platform-specific *Installation Guide* at www.dell.com/support.

Install the NOS

For an ONIE-enabled switch, go to the ONIE boot menu. An ONIE-enabled switch boots with preloaded diagnostics (DIAGs) and ONIE software.

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

- Install OS—Boots to the ONIE prompt and installs an NOS image using the Automatic Discovery process. When ONIE installs a new OS image, the previously installed image and configuration are deleted.
- Rescue—Boots to the ONIE prompt and enables manual installation of an NOS image or ONIE update.
- Uninstall OS—Deletes the contents of all disk partitions, including the NOS configuration, except ONIE and diagnostics.
- Update ONIE—Installs a new ONIE version.
- Embed ONIE—Formats the disk and installs ONIE.
- EDA DIAG—Runs the system diagnostics.

After the ONIE process installs an NOS image and you later reboot the switch in `ONIE: Install OS` mode (default), ONIE takes ownership of the system and remains in Install mode (ONIE Install mode is sticky) until an NOS image successfully installs again. To boot the switch from ONIE for any reason other than installation, select the `ONIE: Rescue` or `ONIE: Update ONIE` option from the ONIE boot menu.

⚠ **CAUTION: During an automatic or manual NOS installation, if an error condition occurs that results in an unsuccessful installation and if there is an existing OS on the device, select `Uninstall OS` to clear the partitions. If the problem persists, contact Dell EMC Technical Support.**

Automatic NOS installation

You can automatically install an NOS image on a Dell EMC ONIE-enabled device. This process is known as zero-touch install. After the device boots to `ONIE: Install OS`, ONIE autodiscovery follows these steps to locate the installer file and uses the first successful method:

1. Use a statically configured path that is passed from the boot loader.
2. Search file systems on locally attached devices, such as USB.
3. Search the exact URLs from a DHCPv4 server.
4. Search the inexact URLs based on the DHCP responses.

5. Search IPv6 neighbors.
6. Start a TFTP waterfall.

The ONIE automatic discovery process locates the stored software image, downloads, and installs it, and reboots the device with the new image. Autodiscovery repeats until a successful software image installation occurs and reboots the switch.

ONIE discovery — Usage information

- All ONIE autodiscovery methods download and run only supported default file names, such as `onie-installer`. The required file names and search order are described on the Open Network Install Environment website at Image Discovery and Execution. For more information, see the *Open Networking Hardware Diagnostic Guide* on the Dell EMC Support site.
- If you use a DHCPv4 server, ONIE autodiscovery obtains the hostname, domain name, Management interface IP address, and the IP address of the domain name server (DNS) from the DHCP server and DHCP options. It also searches SCP, FTP, or TFTP servers with the default DNS of the ONIE server. DHCP options are not used to provide the server IP.
- If you use a USB storage device, ONIE searches only FAT or EXT2 file systems for an NOS image.

Example: NOS automatic installation

1. On the TFTP server, rename the NOS image to a supported installer file name, such as `onie-installer`, using the `mv image-name default-filename` command.

   ```
   mv <NOS-image-name>.bin onie-installer
   ```

2. Boot up the switch in `ONIE: Install` mode to install an NOS image.

   ```
   Starting: discover... done.
   ONIE:/ # Info: eth0:  Checking link... up.
   Info: Trying DHCPv4 on interface: eth0
   ONIE: Using DHCPv4 addr: eth0: xx.xx.xx.xx / xxx.x.x.x
   Info: eth1:  Checking link... down.
   ONIE: eth1: link down.  Skipping configuration.
   ONIE: Failed to configure eth1 interface
   ONIE: Starting ONIE Service Discovery
   Info: Fetching tftp://xx.xx.xx.x/onie-installer-x86_64-dellemc_<platform>_c2338 ...
   Info: Fetching tftp://xx.xx.xx.x/onie-installer-dellemc_<platform>_c2338 ...
   Info: Fetching tftp://xx.xx.xx.x/onie-installer-x86_64-bcm ...
   Info: Fetching tftp://xx.xx.xx.x/onie-installer-x86_64 ...
   Info: Fetching tftp://xx.xx.xx.x/onie-installer ...
   ONIE: Executing installer: tftp://xx.xx.xx.x/onie-installer
   ...
   ...
   ...
   Press <DEL> or <F2> to enter setup.
    Welcome to GRUB!
   ```

Manual NOS installation

If you do not use the ONIE-based automatic installation of a NOS image and if a DHCP server is not available, you can manually install the image. Configure the Management port and provide the software image file to start the installation.

1. Save the NOS software image on an SCP/TFTP/FTP server.
2. Power up the switch and select `ONIE Rescue` for manual installation.
3. (optional) Stop DHCP discovery if you were not able to select `ONIE Rescue` mode.

   ```
   $ onie-discovery-stop
   ```

4. Configure the IP addresses on the Management port, where *x.x.x.x* represents your internal IP address. After you configure the Management port, the response is `up`.

   ```
   $ ifconfig eth0 x.x.x.x netmask xxx.xxx.x.x up
   ```

5. Install the software on the device. The installation command accesses the NOS from the specified SCP, TFTP, or FTP URL, creates partitions, verifies installation, and reboots itself.

   ```
   $ onie-nos-install image_url
   ```

For example, enter

> **ONIE:/ # onie-nos-install ftp://a.b.c.d/*<NOS-image_name>*.bin**

Where *a.b.c.d* represents the location to download the image file from, and *x.x.xx* represents the version number of the software to install.

The NOS installer image may create multiple partitions during the installation process. After the installation process completes, the switch automatically reboots into the new OS.

Install manually using a USB drive You can manually install the NOS software image using a USB device. Verify that the USB device supports a FAT or EXT2 file system. For instructions to format a USB device in FAT or EXT2 format, see the accompanying Windows documentation for FAT formatting or Linux documentation for FAT or EXT2 formatting.

1. Plug the USB storage device into the USB storage port on the switch.
2. Power up the switch to automatically boot using the `ONIE: Rescue` option.
3. (Optional) Stop ONIE discovery if the device boots to `ONIE: Install`.

   ```
   $ onie-discovery-stop
   ```

4. Create a USB mount location on the system.

   ```
   $ mkdir /mnt/media
   ```

5. Identify the path to the USB drive.

   ```
   $ fdisk -l
   ```

6. Mount the USB media plugged in the USB port on the device.

   ```
   $ mount -t vfat usb-drive-path /mnt/media
   ```

7. Install the software from the USB, where `/mnt/media` specifies the path where the USB partition is mounted.

   ```
   $ onie-nos-install /mnt/media/image_file
   ```

The ONIE autodiscovery process discovers the image file at the specified USB path, loads the software image, and reboots the switch. For more information, see the ONIE User Guide.

Specifications

This section lists the N3200-ON Series switch specifications.

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

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

Topics:

- Chassis physical design
- IEEE standards
- Agency compliance
- Safety standards and compliance agency certifications
- Electromagnetic compatibility
- Product recycling and disposal

Chassis physical design

Table 12. Chassis physical design

Parameter	Specifications

Height x Width x Depth, excluding the PSU and fan tray handles	• N3208PX-ON:
	   ○ 43.5 mm x 279.4 mm x 312 mm
	   ○ 1.71 in x 11 in x 12.28 in (H x W x D)
	 ⓘ **NOTE:** The N3208PX-ON can use one or two EPAs. To install two EPAs, you must have 2RU rack space. Install the two EPAs above the switch in the rack.
	 • All other N3200-ON Series switches:
	   ○ 43.5 mm x 434 mm x 400 mm (H x W x D)
	   ○ 1.71 in x 17.09 in x 15.75 in (H x W x D)
	 (PSU and fan tray handle adds 30 mm or 1.18 in)

Chassis weight with factory-installed components	• N3208PX-ON: 8.44 lbs (3.83 kg)—240 W • N3224T-ON: 13.75 lbs (6.24 kg); PSU 1.75 lbs (0.79 kg)—550 W • N3224F-ON: 14.25 lbs (6.46 kg); PSU 1.75 lbs (0.79 kg)—240 W • N3224P-ON: 15.6 lbs (7.08 kg); PSU 2.0 lbs (0.90 kg)—1050 W • N3224PX-ON: 16.0 lbs (7.26 kg); PSU 2.0 lbs (0.90 kg)—1600 W • N3248TE-ON: 15.4 lbs (6.99 kg); PSU 1.75 lbs (0.79 kg)—550 W • N3248P-ON: 16.7 lbs (7.57 kg); PSU 2.0 lbs (0.90 kg)—1050 W • N3248X-ON: 16.1 lbs (7.30 kg); PSU 1.75 lbs (0.79 kg)—550 W • N3248PXE-ON: 17.6 lbs (7.98. kg); PSU 2.0 lbs (0.90 kg)—1600 W

Table 12. Chassis physical design (continued)

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

Table 13. Environmental parameters

Parameter	Specifications
Operating temperature	32°F to 113°F (0°C to 45°C) continuously ⓘ **NOTE:** Reduce maximum temperature by 1°C/125 meters (1°F/228 feet) above 950 meters (3,117 ft).
Operating humidity	5% to 95% (RH), noncondensing
Storage temperature	−40°F to 158°F (−40°C to 70°C)
Storage humidity	5% to 95%, noncondensing
Maximum thermal output	- N3208PX-ON: 49.48 W = 168.83 BTU/Hr - N3224T-ON: 95.58 W = 326.13 BTU/Hr - N3224F-ON: 122.08 W = 416.55 BTU/Hr - N3224P-ON: 100.74 W = 343.74 BTU/Hr - N3224PX-ON: 173.01 W = 590.33 BTU/Hr - N3248TE-ON: 102.3 W = 349.06 BTU/Hr - N3248X-ON: 300.06 W = 1023.85 BTU/Hr - N3248P-ON: 112.26 W = 383.05 BTU/Hr - N3248PXE-ON: 325.72 W = 1111.40 BTU/Hr
Maximum operational altitude	10,000 feet (3,048 m)
Maximum non-operational altitude	39,370 feet (12,000 meters)
Shock	Dell EMC Spec SV0115

Table 14. Power consumption parameters

Parameter	Specifications
Minimum and maximum Input voltage ⓘ **NOTE:** For more information, see Power supplies.	- AC: 100–240 VAC 50/60 Hz - DC: −40 VDC to −60 VDC
Input current without PoE	- N3208PX-ON: 1.12 Amps @ 110 VAC and 0.56 Amps @ 220 VAC - N3224T-ON: 2.08 Amps @ 110 VAC and 1.04 Amps @ 220 VAC - N3224F-ON: 2.32 Amps @ 110 VAC and 1.16 Amps @ 220 VAC - N3224P-ON: 2.26 Amps @ 110 VAC and 1.13 Amps @ 220 VAC - N3224PX-ON: 3.44 Amps @ 110 VAC and 1.72 Amps @ 220 VAC - N3248TE-ON: 2.22 AMps @ 110 VAC and 1.11 Amps @ 220 VAC - N3248P-ON: 2.4 Amps @ 110 VAC and 1.2 Amps @ 220 VAC - N3248X-ON: 4.9 Amps @ 110 VAC and 2.5 Amps @ 220 VAC - N3248PXE-ON: 5.44 Amps @ 110 VAC and 1.72 Amps @ 220 VAC
PSU configuration	Main PSU

Table 14. Power consumption parameters (continued)

Parameter	Specifications
Maximum steady current consumption	7 A@110 VAC 3.5 A@220 VAC
Total PoE budget ⓘ **NOTE:** To support a full-load PoE power budget, you must have external power adapters for the N3208PX-ON switch. For the N3224PX-ON, N3248P-ON, and N3248PXE-ON switches, use the EPS for full-load PoE redundancy.	- N3208PX-ON: 720 W - N3224P-ON: 720 W - N3224PX-ON: 2160 W - N3248P-ON: 1440 W - N3248PXE-ON: 4320 W
PoE output per port	- N3208PX-ON: 4x1G Base-T Ports with 4 ports of 802.3bt Type-4 (90W) PoE, + 4x5GBase-T Ports with 4 ports of 802.3bt Type-4 (90W) PoE - N3224P-ON: 24x1G Base-T Ports with 802.3at Type-2 (30W) PoE - N3224PX-ON: 24x10GBase-T Ports with 802.3bt Type-4 (90W) PoE - N3248P-ON: 48x1G Base-T Ports with 802.3at Type-2 (30W) PoE - N3248PXE-ON: 48x10GBase-T Ports with 802.3bt Type-4 (90W) PoE
PoE load condition—high-line AC input	N3208PX-ON: - Max PoE power 193 - 793 W (170-264 Vac)—No EPS N3224PX-ON: - Max PoE power 1050, 1600, 2000 W (180-264 Vac)—Single EPS - Max PoE power up to 2400 W (180-264 Vac)—Three-slot EPS N3224P-ON: - Max PoE power 1050, 1600, 1750 W (180-264 Vac)—No EPS N3248P-ON: - Max PoE power 1050, 1600, 1750 W (180-264 Vac)—Single EPS - Max PoE power up to 1440 W (180-264 Vac)—Three-slot EPS N3248PXE-ON: - Max PoE power 1050, 1600, 2000 W (180-264 Vac)—Single EPS - Max PoE power up to 4800 W (180-264 Vac)—Three-slot EPS
PoE load condition—low-line AC input	N3208PX-ON: - Max PoE power 193 - 793 W (90-132 Vac)—No EPS N3224PX-ON: - Max PoE power 1050, 1600, 2000 W (90-140 Vac)—Single EPS - Max PoE power up to 2400 W (90-140 Vac)—Three-slot EPS N3224P-ON:

Table 14. Power consumption parameters (continued)

Parameter	Specifications
	- Max PoE power 1050, 1600, 2000 W (90-140 Vac)—No EPS - Max PoE power up to 1440 W (90-140 Vac)—Three-slot EPS **N3248P-ON:** - Max PoE power 1050, 1600, 2000 W (90-140 Vac)—Single EPS - Max PoE power up to 1440 W (90-140 Vac)—Three-slot EPS **N3248PXE-ON:** - Max PoE power 1050, 1600, 2000 W (90-140 Vac)—Single EPS - Max PoE power up to 4800 W (90-140 Vac)—Three-slot EPS

Table 15. AC power requirements

Parameter	Specifications
Power supply	- N3208PX-ON: 100–240 VAC 50/60 Hz - N3224T-ON: 100–240 VAC 50/60 Hz - N3224F-ON: 100–240 VAC 50/60 Hz - N3224P-ON: 100–240 VAC 50/60 Hz - N3224PX-ON: 100–240 VAC 50/60 Hz - N3248TE-ON: 100–240 VAC 50/60 Hz - N3248P-ON: 100–240 VAC 50/60 Hz - N3248X-ON: 100–240 VAC 50/60 Hz - N3248PXE-ON: 100–240 VAC 50/60 Hz
Maximum current draw per system	- N3208PX-ON: 7A@110VAC and 3.5A@220VAC - N3224T-ON: 7A@110VAC and 3.5A@220VAC - N3224F-ON: 7A@110VAC and 3.5A@220VAC - N3224P-ON: 7A@110VAC and 3.5A@220VAC - N3224PX-ON: 17A@110VAC and 3.5A@220VAC - N3248TE-ON: 7A@110VAC and 3.5A@220VAC - N3248P-ON: 7A@110VAC and 3.5A@220VAC - N3248X-ON: 7A@110VAC and 3.5A@220VAC - N3248PXE-ON: 7A@110VAC and 3.5A@220VAC
Maximum power consumption without PoE	- N3208PX-ON: 107 W @ 54 VDC - N3224T-ON: 201 W @ 54 VDC - N3224F-ON: 224 W @ 54 VDC - N3224P-ON: 224 W @ 54 VDC - N3224PX-ON: 340 W @ 54 VDC - N3248TE-ON: 212 W @ 54 VDC - N3248P-ON: 237 W @ 54 VDC - N3248X-ON: 480 W @ 54 VDC - N3248PXE-ON: 554 W @ 54 VDC

Table 16. DC power requirements

Parameter	Specifications
Minimum and maximum input voltage	–40 VDC to -60 VDC

Table 16. DC power requirements (continued)

Parameter	Specifications
ⓘ **NOTE:** For more information, see Power supplies.	
Maximum current at full load with fan without PoE	550W DC PSU: ● N3224T-ON: 11.5 A @ 48 V ● N3224F-ON: 11.5 A @ 48 V ● N3248TE-ON: 11.5 A @ 48 V ● N3248X-ON: 11.5 A @ 48 V 1300W DC PSU: ● N3224P-ON: 28 A @ 48 V ● N3248P-ON: 28 A @ 48 V ● N3224PX-ON: 28 A @ 48 V ● N3248PXE-ON: 28 A @ 48 V

IEEE standards

The N3200-ON Series switch complies with the following IEEE standards.

● 802.3ab
● 802.1ax (Layer 2)
● 802.1d, 802.1w, 802.1s, 802.1x (Mgmt/Security), 802.3x (Layer 2)
● 802.3
● 802.3ba (40 GbE and 100 GbE)
● 802.3bt
● 802.3at
● 802.3az
● 802.1v
● 1613
● 802.1p, 1q
● 802.1s
● 802.3u, 802.3bz

Agency compliance

The N3200-ON Series switch is designed to comply with the following safety and agency requirements:

India

This product conforms to the relevant *Essential Requirements of the 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 6. 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.

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

European Community Contact

Dell EMC, EMEA - Central

Dahlienweg 19

66265 Heusweiler

Germany

Tel: +49 172 6802630

Email: EMEA Central Sales

Japan VCCI compliance for class A equipment

Class A information statement for VCCI 32 -1:2016

この装置は、クラスA機器です。この装置を住宅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。　VCCI－A

Figure 7. Japan: VCCI compliance for class A equipment

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

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

Figure 8. Japan: warning label

Korean certification of compliance

Figure 9. Korean certification of compliance

Figure 10. 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 11. 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.

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 or 11-digit express service code of your switch, which is found on the pull-out tag, also known as a luggage tag, and click **Submit**.
- To receive more technical support, click **Contact Us**. On the **Contact Information** web page, click **Technical Support**. To find the service tag number, from the ONIE prompt, use the `onie-syseeprom` command.

```
ONIE:/ # onie-syseeprom
TlvInfo Header:
    Id String:    TlvInfo
    Version:      1
    Total Length: 184
TLV Name            Code Len Value
------------------- ---- --- -----
Product Name        0x21  11 <platform>
Part Number         0x22   6 xxxxxx
Serial Number       0x23  20 xxxxxxxxxxxxxxxx
Base MAC Address    0x24   6 D8:9E:F3:AC:A5:A0
Manufacture Date    0x25  19 02/21/2018 08:05:01
Device Version      0x26   1 1
Label Revision      0x27   3 A00
MAC Addresses       0x2A   2 256
Manufacturer        0x2B   5 CES00
Country Code        0x2C   2 CN
Vendor Name         0x2D   8 Dell EMC
Service Tag         0x2F   7 xxxxxxx
Vendor Extension    0xFD   4  0x00 0x00 0x02 0xA2
Platform Name       0x28  32 x86_64-dellemc_<platform>_c2538-r0
ONIE Version        0x29  10 x.xx.x.x-x
Diag Version        0x2E  10 x.xx.x.x-x
CRC-32              0xFE   4 0x17E6ED32
Checksum is valid.
ONIE:/ #
```

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

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

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