Notes, cautions, and warnings

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

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

**WARNING:** A **WARNING** indicates a potential for property damage, personal injury, or death.
1 About this guide ................................................................................................................................................. 5
   Related documents ........................................................................................................................................ 5
   Information symbols ................................................................................................................................. 6

2 N3200-ON Series switch.................................................................................................................................. 7
   Introduction ................................................................................................................................................ 7
   Features .................................................................................................................................................... 8
   Physical dimensions ............................................................................................................................... 9
   LED display ............................................................................................................................................ 9
   LED behavior ........................................................................................................................................ 9
   Prerequisites ......................................................................................................................................... 11
   N3200-ON Series switch configurations ............................................................................................ 12
   Luggage tag ........................................................................................................................................... 12

3 Site preparations ........................................................................................................................................... 14
   Site selection .......................................................................................................................................... 14
   Cabinet placement ............................................................................................................................... 14
   Rack mounting .................................................................................................................................... 14
   Switch ground ....................................................................................................................................... 15
   Fans and airflow .................................................................................................................................. 15
   Power .................................................................................................................................................... 15
   Storing components ............................................................................................................................ 15

4 N3200-ON Series switch installation .......................................................................................................... 16
   Unpack .................................................................................................................................................. 16
   Unpacking Steps .................................................................................................................................... 17
   Rack or cabinet hardware installation .................................................................................................. 17
   Ground cable ........................................................................................................................................ 17
   Desktop ............................................................................................................................................... 18
   Two-post five-inch-offset full-width switch installation ..................................................................... 18
   Two-post flush-mount full-width switch installation ........................................................................... 19
   Wall-mount full-width switch installation ........................................................................................... 20
   One U ReadyRails installation ............................................................................................................... 22
   1U Tool-less mount ReadyRails installation ............................................................................................ 23
   Flush-mount ReadyRail installation ...................................................................................................... 23
   Center-mount ReadyRail installation .................................................................................................... 24
   Four-post threaded ReadyRails installation .......................................................................................... 25
   Optics installation ............................................................................................................................... 26
   Optics removal .................................................................................................................................... 26
   Switch start-up .................................................................................................................................... 27
   After switch placement ......................................................................................................................... 27
   Switch replacement ............................................................................................................................. 27

5 Power supply .................................................................................................................................................. 29
Components.......................................................................................................................... 29
AC or DC power supply installation...................................................................................... 30
AC or DC power supply replacement................................................................................... 30
DC power connections......................................................................................................... 31
Connect the EPS shelf ......................................................................................................... 32

6 Fans....................................................................................................................................... 35
Components.......................................................................................................................... 35
Fan module installation......................................................................................................... 35
Fan module replacement....................................................................................................... 36

7 Management ports............................................................................................................ 37
RJ45 console port access...................................................................................................... 37
MicroUSB Type-B console port access................................................................................ 38
USB storage mount............................................................................................................... 38

8 Installation using ONIE..................................................................................................... 40
Before you install an operating system................................................................................. 40
Check your switch................................................................................................................ 41
Uninstall an existing OS........................................................................................................ 41
Install a NOS.......................................................................................................................... 42
    Automatic NOS installation.............................................................................................. 42
    Manual NOS installation................................................................................................. 43

9 Specifications................................................................................................................... 45
Chassis physical design........................................................................................................ 45
IEEE standards..................................................................................................................... 46
Agency compliance............................................................................................................... 47
USA Federal Communications Commission statement...................................................... 47
European Union EMC directive conformance statement.................................................... 47
Japan VCCI compliance for class A equipment.................................................................... 48
Korean certification of compliance....................................................................................... 48
Safety standards and compliance agency certifications....................................................... 49
Electromagnetic compatibility ............................................................................................. 49
Product recycling and disposal.............................................................................................. 50

10 Dell EMC support............................................................................................................ 51
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 up this equipment. This equipment contains two power cords. Disconnect both power cords before servicing.

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

![Class 1 Laser Product Tag](image)

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

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

### Regulatory

- Marketing model N3248PXE-ON is represented by the regulatory model E32W and the regulatory type E32W004.
- Marketing model N3248P-ON is represented by the regulatory model E32W and the regulatory type E32W003.

### 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 Set-Up 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](http://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.
The following sections describe the Dell EMC N3200-ON Series (N3248P-ON and N3248PXE-ON) switch:

Topics:
- Introduction
- Features
- Physical dimensions
- LED display
- Prerequisites
- N3200-ON Series switch configurations
- Luggage tag

Introduction

The N3200-ON Series (N3248P-ON and N3248PXE-ON) switches are one rack unit (1U), full-featured fixed form-factor compact 1/10/25GbE switches.

Table 1. N3200-ON Series switch summary

<table>
<thead>
<tr>
<th>Marketing model name (MMN)</th>
<th>Description</th>
<th>Power supply unit (PSU) and fans</th>
</tr>
</thead>
<tbody>
<tr>
<td>N3248PXE-ON</td>
<td>48 ports 10G BASE-T with 802.3bt Type-4 (90 W) PoE, 4 ports 25G SFP28, 2 ports 100G QSFP28 stacking</td>
<td>2 pluggable AC PSUs—1 default and second optional, or DC PSUs (optional), 1 external power supply (optional and connected from MPS-1S or MPS-3S power shelves), 3 pluggable fan modules</td>
</tr>
<tr>
<td>N3248P-ON</td>
<td>48 ports 1G BASE-T RJ45 with 802.3at (30 W) PoE, 4 ports 10G SFP+, 2 ports 100G QSFP28 stacking</td>
<td>2 pluggable AC PSUs—1 default and second optional, or DC PSUs (optional), 1 external power supply (optional and connected from MPS-1S or MPS-3S power shelves), 3 pluggable fan modules</td>
</tr>
</tbody>
</table>

N3248PXE-ON I/O-side view

1. Luggage tag
2. 10BASE-T RJ45 with 802.3bt Type-4 (90 W) 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
N3248P-ON I/O-side view

1. Luggage tag
2. RJ45 serial management port
3. USB Type-A port
4. MicroUSB Type-B port
5. Status LEDs
6. 10G SFP+
7. 25G SFP28

The N3200-ON Series switches have one RJ45 serial console port, one Micro-USB type-B console port, one 10/100/1000 Base-T Ethernet management port, and one USB type-A port for the external storage. Stacking ports are on the PSU-side of the switch.

N3248P-ON and N3248PX-ON PSU-side view

1. 100G QSFP28 stacking ports
2. Fans
3. Input for external power shelf (MPS-1S shelf or MPS-3S shelf)
4. AC or DC PSUs

Features

The N3200-ON Series switch offers the following features:

- Ports:
  - N3248PX-ON—1 U, 48 ports multigigabit 10GBase-T RJ45 with 802.3bt Type-4 90W PoE, four ports 25G SFP28, two ports 100G QSFP28 for stacking, one pluggable AC or DC PSU, and three pluggable fan modules
  - N3248P-ON—1 U, 48 ports 1000GBase-T RJ45 with 802.3at Type-2 30W PoE, four ports 10G SFP+, two ports 100G QSFP28 for stacking, one pluggable AC or DC PSU, and three pluggable fan modules
- One MicroUSB Type B console port
- One RJ45 serial port
- One USB Type-A port for more file storage
- 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
- One pluggable AC or DC PSU
- External power supply connectors to connect the MPS-1S or MPS-3S shelf
- Three pluggable fan modules
- LEDs:
  - Temperature monitoring
  - Software-readable thermal monitor
  - Power management monitoring
  - System ground connector

**Physical dimensions**

The N3200-ON Series switches have the following physical dimensions:
- 1.71 in x 17.09 in x 15.75 in (H x W x D)
- 43.5 mm x 434 mm x 400 mm (H x W x D)

**LED display**

The N3200-ON Series switch includes LED displays on the PSU side of the switch. This section describes open networking installation environment (ONIE) LED behaviors. Some LED behaviors may change after you install your software.

**LED behavior**

The following N3200-ON Series switch LED behavior is seen during ONIE operations:

**N3248P-ON and N3248PXE-ON LEDs**

1. Port activity LEDs
2. Management port activity LEDs
3. Stacking port activity LEDs
4. Stack ID LED
5. Stack Master LED
6. System LED
7. Power LED
8. Fan LED
9. Locator LED/System Beacon
10. Stacking port activity LEDs

Table 2. N3200-ON Series switch LED behavior

<table>
<thead>
<tr>
<th>LED</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Status/Health LED</td>
<td>• Solid green—Normal operation&lt;br&gt;• Flashing green—Booting&lt;br&gt;• Solid yellow—Critical system error&lt;br&gt;• Flashing yellow—Noncritical system error, fan failure, or power supply failure</td>
</tr>
<tr>
<td>Power LED</td>
<td>• Off—No power&lt;br&gt;• Solid Green—Normal operation&lt;br&gt;• Solid yellow—POST is in process&lt;br&gt;• Flashing yellow—Power supply failed</td>
</tr>
<tr>
<td>Stack Master LED</td>
<td>• Off—Switch is in Stacking Slave mode&lt;br&gt;• Solid green—Switch is in Stacking Master or Standalone mode</td>
</tr>
<tr>
<td>FAN LED</td>
<td>• Off—No power&lt;br&gt;• Solid green—Normal operation; fan powered and running at the expected RPM&lt;br&gt;• Flashing yellow—Fan fault—including incompatible airflow direction when you insert the PSU or fan trays with differing airflows</td>
</tr>
<tr>
<td>PSU LED</td>
<td>• Off—No power&lt;br&gt;• Solid green—Normal operation&lt;br&gt;• Flashing yellow—PSU warning event; power continues to operate&lt;br&gt;• Flashing green—4Hz with five times on and off: Mismatch&lt;br&gt;• Flashing green—Firmware update</td>
</tr>
<tr>
<td>Locator LED/System Beacon</td>
<td>• Off—Locator function disabled&lt;br&gt;• Flashing blue—Locator function enabled</td>
</tr>
<tr>
<td>7-Segment LED for stacking</td>
<td>• Off—No power&lt;br&gt;• Solid green—Hex digit representing the stack unit ID</td>
</tr>
</tbody>
</table>

Table 3. 1000MBase-T or 10GBase-T System management Ethernet port LEDs

<table>
<thead>
<tr>
<th>LED</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Link LED</td>
<td>• Off—No link&lt;br&gt;• Solid green—Link operating at a maximum speed, autonegotiated/forced to 1000MBase-T mode&lt;br&gt;• Solid yellow—Link operating at a lower speed, autonegotiated/forced or 10/100MBase-T mode</td>
</tr>
<tr>
<td>Activity LED</td>
<td>• Off—No activity&lt;br&gt;• Flashing green—Port activity</td>
</tr>
</tbody>
</table>

Table 4. SFP+ port LEDs

<table>
<thead>
<tr>
<th>LED</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Link LED</td>
<td>All four LEDs:</td>
</tr>
</tbody>
</table>
### LED Description

#### Link LED
- Off—No link
- Solid green—Link operating at maximum speed, 10G
- Solid yellow—Link operating at a lower speed, 1G
- Flashing green, ~30ms—Port activity operating at maximum speed, 10G port
- Flashing yellow, ~30ms—Port activity operating at lower speed, 1G port
- Flashing yellow, 1 second on/off—port beacon

#### Activity LED
- Off—No activity
- Flashing green—port activity at maximum speed
- Flashing yellow—port activity at lower speed

### Table 5. SFP28 port LEDs

<table>
<thead>
<tr>
<th>LED</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Link LED</td>
<td>All four LEDs:</td>
</tr>
<tr>
<td></td>
<td>- Off—No link</td>
</tr>
<tr>
<td></td>
<td>- Solid green—Link operating at maximum speed, 25G</td>
</tr>
<tr>
<td></td>
<td>- Solid yellow—Link operating at a lower speed, 10G or 1G</td>
</tr>
<tr>
<td></td>
<td>- Flashing green, ~30ms—Port activity operating at maximum speed, 25G port</td>
</tr>
<tr>
<td></td>
<td>- Flashing yellow, ~30ms—Port activity operating at lower speed, 10G or 1G</td>
</tr>
<tr>
<td></td>
<td>- Flashing yellow, 1 second on/off—port beacon</td>
</tr>
</tbody>
</table>

#### Activity LED
- Off—No activity
- Flashing green—port activity at maximum speed
- Flashing yellow—port activity at lower speed

### Table 6. QSFP28 port LEDs

<table>
<thead>
<tr>
<th>LED</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Link LED</td>
<td>All four LEDs:</td>
</tr>
<tr>
<td></td>
<td>- Off—No link</td>
</tr>
<tr>
<td></td>
<td>- Solid green—Link operating at maximum speed, 25G</td>
</tr>
<tr>
<td></td>
<td>- Solid yellow—Link operating at a lower speed, 10G or 1G</td>
</tr>
<tr>
<td></td>
<td>- Flashing green, ~30ms—Port activity operating at maximum speed, 25G port</td>
</tr>
<tr>
<td></td>
<td>- Flashing yellow, ~30ms—Port activity operating at lower speed, 10G or 1G</td>
</tr>
<tr>
<td></td>
<td>- Flashing yellow, 1 second on/off—port beacon</td>
</tr>
</tbody>
</table>

#### Activity LED
- Off—No activity
- Flashing green—port activity at maximum speed
- Flashing yellow—port activity at lower speed

### Prerequisites

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

**NOTE:** For detailed installation instructions, see Site preparation and N3200-ON Series switch installation.
- Hot-swappable fan modules
- #1 and #2 Phillips screwdrivers, not included
- Torx screwdriver, not included
- Copper/fiber cables
- N3248PXE-ON DC only: Ground lug and screws
- N3248PXE-ON AC only No-OS SKU: Ground lug and screws
- N3248P-ON DC only: Ground lug and screws
- L-bracket and screws for two-post rack mount
- Rubber feet

Other optional components are:
- Extra mounting brackets and screws
- Second AC or DC PSU
- MPS-1S shelf
- MPS-3S shelf

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)
  - Ports:
    - N3248PXE—1 U, 48 ports 10G BASE-T RJ45 with 802.3bt Type-4 90W PoE, four ports 25G SFP28, two ports 100G QSFP28 for stacking, two pluggable AC or (optional) DC PSU, three pluggable fan modules, and (optional) one EPS
    - N3248P-ON—1 U, 48 ports 1G BASE-T RJ45 with 802.3at Type-2 30W PoE, four ports 10G SFP+, two ports 100G QSFP28 for stacking, two pluggable AC or (optional) DC PSU, three pluggable fan modules, and (optional) one EPS
  - Normal airflow:
    - Fans have airflow from the I/O side to the PSU side.
    - AC or optional DC power supplies have airflow from the I/O side to the PSU side.
    - If you require DC power, you can order one or two DC power supply units. The N3248PXE-ON requires two DC power cables; the N3248P-ON requires one DC power cable.

Luggage tag

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

N3248P-ON and N3248PXE-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 range is from 0° to 45°C (32° to 113°F).
- 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, 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 outside cabinets. For cabinet placement requirements, see Site selection.

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

Rack mounting

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

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

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

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

**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.

Fans and airflow

The N3200-ON Series includes three hot-swappable fan units with airflow from the I/O to the PSU.

Fan combinations

For proper ventilation, position the switch in an equipment rack or cabinet with a minimum of 5 inches (12.7 cm) of clearance around the exhaust vents. When you install two N3200-ON switches near each other, to permit proper airflow, position the two switches at least 5 inches (12.7 cm) apart. The fan speed varies based on internal temperature monitoring. The 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 the DC cables.

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°F to 158°F).
- Store on a dry surface or floor, away from direct sunlight, heat, and air conditioning ducts.
- Store in a dust-free environment.

**NOTE:** ESD damage can occur when components are mishandled. Always wear an ESD-preventive wrist or heel ground strap when handling the 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).

**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
- Two-post five-inch-offset full-width switch installation
- Two-post flush-mount full-width switch installation
- Wall-mount full-width switch installation
- One U ReadyRails installation
- 1U Tool-less mount ReadyRails installation
- Flush-mount ReadyRail installation
- Center-mount ReadyRail installation
- Four-post threaded Ready Rails installation
- Optics installation
- Switch start-up
- After switch placement
- Switch replacement

**Unpack**

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

When unpacking the switch, ensure that the following items are included:
- One N3248P-ON or N3248PXE-ON Series switch
- One RJ45 to DB-9 female cable
- One MicroUSB console cable
- Two sets of rack mounting brackets and screws
- DC only: ground lug and screws
- Four rubber feet
- N3248PXE-ON only: DC ground lug kit
- One pluggable AC PSU
- Three pluggable fan units
- One AC power cable, country or region specific
- DC only: DC power cables
- N3200-ON Series Quick Setup Guide
- N3200-ON Series Warnings 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. Rack mounting includes four-post, two-post, or threaded mounts.

**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 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 DC version of the N3248P-ON or N3248PXE-ON switch. The special-order AC-no-OS version of the N3248PXE switch also ships with a 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 full-width N3200-ON Series switch on a desktop.

The mounting supplies for this installation ship with the switch. To use the full-width N3200-ON Series switch on a desktop, first attach the four small rubber feet to the underside of 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.

Two-post five-inch-offset full-width switch installation

You must order the mounting supplies for this installation separately.

1. Locate the mounting brackets and screws that ship with the switch.
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 remove the switch from the rack, unscrew the four #12-24 rack-mount screws.

Two-post flush-mount full-width switch installation

You must order the mounting supplies for this installation separately.

1. Locate the mounting brackets and screws that ship with the switch.
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 remove the switch from the rack, unscrew the four #12-24 rack-mount screws.

## Wall-mount full-width switch installation

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-mount brackets, wall anchors, and screws from the shipping box.

2. Screw two brackets to the left side of the full-width switch using two screws for each bracket, as shown.

   Torque the screws to 10 in-lbs.

3. Repeat to attach two brackets to the right side of the full-width switch, as shown.
4. Hold the full-width wall-mount template to the wall and mark the screw-hole locations on the wall with the pencil.

5. Drill eight 0.3 in (8 mm) holes in the wall at the pencil marks.

6. Install the eight wall-mount anchors into the holes.

7. Screw eight M5 screws into the wall-mount anchors leaving approximately 0.20 in (5 mm) gap between the anchor and the screw.

8. Slide the full-width switch onto the screws and tighten the screws to secure the switch in place. Torque the screws to 24 in-lbs.
One U ReadyRails installation

Install the N3200-ON Series 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.

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

**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 nontreaded round holes.

2. Align and seat the front flange pegs in the holes on the front side of the vertical post.
   **NOTE:** Be sure that the rails click into place and are secure.

3. Repeat this procedure for the second rail.
   To remove each rail, pull on the latch release on each flange ear and unseat each rail.

Flush-mount ReadyRail installation

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

1. Remove the latch castings from the front side of each ReadyRails assembly, item 1.
   To remove the two screws from each front flange ear on the switch side of the rail and remove each latch casting, use a Torx screwdriver. Retain the latch castings for future rack requirements. It is not necessary to remove the back flange castings.
2. Attach one rail to the front post flange with two user-supplied screws, item 2.

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

4. Repeat this procedure for the second rail.

**Center-mount ReadyRail installation**

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

1. Slide the plunger bracket rearward until it clicks into place and secure the bracket to the front post flange with two user-supplied screws, item 1.
2. Slide the back bracket towards the post. Secure it to the post flange with two user-supplied screws, items 2 and 3.

3. Repeat this procedure for the second rail.

**Four-post threaded ReadyRails installation**

**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.
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 the 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 the 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 removing and replacing a switch with an identical replacement switch:

For further assistance when replacing a switch, contact your Dell EMC support representative.

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

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

1. Back up the switch configuration to your back-up computer 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 using ReadyRails, at the same time, press in the two side-release bars on the switch and slide the switch forward.
   - If you are using the fan trays or PSUs in the replacement switch, remove them from the switch.
5. Unpack the new switch.
   - For more information, see Unpack.
6. Install the new switch in your rack or cabinet.
   - For detailed installation instructions, see N3200-ON Series switch installation.
   - If you are using the fan trays or PSUs from the removed switch, reinsert them in the replacement switch.
7. Connect all the cables.
8. Power on the switch.
   - For more information, see Switch 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 procedure included with the firmware download.

11. Copy the backed-up switch configuration to the new switch.
   
   ```
   copy tftp://hostip/filepath running-config
   ```

   **NOTE:** For firmware update procedures, see the most current switch-specific release notes at [www.dell.com/support], Drivers and Downloads section.
The N3200-ON Series switch ships with one pluggable AC power supply with airflow from the I/O-side to the PSU-side of the switch. You can order a second AC PSU separately. If you require DC power, you can order one or two DC power supply units. The N3248PXE-ON requires two DC power cables; the N3248P-ON requires one DC power cable.

N3248PXE-ON and N3248P-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.

**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.

**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
- DC power connections
- Connect the EPS shelf

**Components**

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

**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 removed.

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

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

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.

PSU LEDs

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

AC or DC power supply installation

1. **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.

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

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 3-prongs cable from the switch PSU to the external power source.

1. Optional second PSU.

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

AC or DC power supply replacement

**CAUTION:** Disconnect the power cable before removing the power supplies. Also, disconnect all power cables before servicing.

1. **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.

1. **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.

**DC power connections**

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

![DC power connector and wiring block](image)

**Figure 4. DC power connector and wiring block**

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

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

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

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

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

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

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

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

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

   ![DC power cover](image1)

   **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.

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

   ![Remove A-slot cover](image2)

   **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.

   ![Remove this cover](image3)
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**

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 a EPS power cable, unscrew the cable and disconnect the cable from the switch.
The N3200-ON Series switch comes from the factory with two pluggable AC or DC PSUs and three pluggable fan modules. The airflow is from the I/O panel to the PSU.

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
- Fan module replacement

Components

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 function is normal.
- Flashing yellow—There is a fan fault.
- Off—Fan is off.

Fan module installation

The fan module in the N3200-ON Series switch 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.
Fan installation

Fan module replacement

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

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

1. Take the replacement fan module out of the shipping box.
2. Slide the installed fan module out of the bay.
3. Slide the replacement module into the bay.
Management ports

The N3200-ON Series switch provides three ports for management and one USB flash drive mount for file transfers.

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

Topics:
- RJ45 console port access
- MicroUSB 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.

**N3248P-ON and N3248PXE-ON management ports**

![Image of switch with management ports](image)

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 adaptor.

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

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 Type-B chip. To find the correct USB Type-B universal asynchronous receiver-transmitter (UART) driver, see [https://www.silabs.com/products/development-tools/software/usb-to-uart-bridge-vcp-drivers](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.

**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
   ```
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`.

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.

**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.

**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 at [www.dell.com/support](http://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-dellmc_platform>_c3338-r0
ONIE/# onie-sysinfo -c
x86_64
ONIE/# onie-sysinfo -v
x.xx.x-x
ONIE:/ #
ONIE/# onie-sysinfo
Linux onie x.x.xx-onie+ #1 SMP Mon Jun 24 21:50:18 PDT 2019 x86_64
ONIE:/ #
ONIE:/ # uname -a
Linux onie x.x.xx-onie+ #1 SMP Mon Jun 24 21:50:18 PDT 2019 x86_64
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](https://opennetworking.org). 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` 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.
   ONIE: Using DHCPv4 addr: eth0: xx.xx.xx.xx / xxx.xxx.x.x
   Info: eth1: Checking link... down.
   ONIE: eth1: link down. Skipping configuration.
   ONIE: Starting ONIE Service Discovery
   Info: Executing installer: tftp://xx.xx.xx.xx/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.
This section lists the N3200-ON Series switch specifications.

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

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

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

### Chassis physical design

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specifications</th>
</tr>
</thead>
</table>
| Height x Width x Depth | 1.71 in x 17.09 in x 15.75 in (H x W x D)  
| Chassis weight with factory-installed components | 43.5 mm x 434 mm x 400 mm (H x W x D)  
| N3248P-ON: 16.7 lbs (7.57 kg) + 1 PSU 2.0 lbs (0.9 kg)—1050W  
| N3248PXE-ON: 17.6 lbs (7.98 kg) + 1 PSU 2.0 lbs (0.90 kg)—1600W  
| Rack clearance required | Front: 5 inches (12.7 cm)  
| Back: 5 inches (12.7 cm) |

### Environmental parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specifications</th>
</tr>
</thead>
</table>
| Operating temperature | 0°C to 45°C (32°F to 113°F) continuously  
| Operating humidity | 5% to 95% (RH), noncondensing  
| Storage temperature | −40°C to 70°C (−40°F to 158°F)  
| Storage humidity | 5% to 95%, noncondensing  
| Maximum thermal output | N3248PXE-ON: 325.72 W = 1111.40 BTU/Hr  
| N3248P-ON: 112.26 W = 383.05 BTU/Hr  
| NOTE: Reduce maximum temperature by 1°C/125 meters (1°F/228 feet) above 950 meters (3,117 ft). |
### Table 9. Power consumption parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum operational altitude</td>
<td>10,000 feet (3,048 m)</td>
</tr>
<tr>
<td>Maximum non-operational altitude</td>
<td>39,370 feet (12,000 meters)</td>
</tr>
<tr>
<td>Shock</td>
<td>Dell EMC Spec SV0115</td>
</tr>
</tbody>
</table>

### Table 10. AC power requirements

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input voltage</td>
<td>AC: 100–240 VAC 50/60 Hz</td>
</tr>
<tr>
<td></td>
<td>DC: −40 VDC to −60 VDC</td>
</tr>
<tr>
<td>Input current without PoE</td>
<td>• N3248P-ON: 2.4 Amps @ 110 VAC and 1.2 Amps @ 220 VAC</td>
</tr>
<tr>
<td></td>
<td>• N3248PXE-ON: 5.44 Amps @ 110 VAC and 1.72 Amps @ 220 VAC</td>
</tr>
<tr>
<td>PSU configuration</td>
<td>Main PSU</td>
</tr>
<tr>
<td>Maximum steady current consumption</td>
<td>7 A@110 VAC</td>
</tr>
<tr>
<td></td>
<td>3.5 A@220 VAC</td>
</tr>
<tr>
<td>Total PoE budget</td>
<td>• N3248P-ON: 1440 W</td>
</tr>
<tr>
<td></td>
<td>• N3248PXE-ON: 4320 W</td>
</tr>
</tbody>
</table>

**NOTE:** To support a full-load PoE power budget, you must have external PSUs for the N3248PXE-ON switch. For the N3248P-ON, use the EPS for full-load PoE redundancy.

| PoE output per port             | • N3248P-ON: 48x1000Base-T Ports with 802.3at (30W) PoE                      |
|                                 | • N3248PXE-ON: 48x10GBase-T with 802.3bt Type-4 (90W) PoE                    |

### Table 11. DC power requirements

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum and maximum input voltage range</td>
<td>−40VDC minimum</td>
</tr>
<tr>
<td>Maximum current at full load with fan without PoE</td>
<td>• N3248P-ON: 13.6A</td>
</tr>
<tr>
<td></td>
<td>• N3248P-ON: 6A</td>
</tr>
</tbody>
</table>

### 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
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.

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.
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

Figure 6. 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.

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

Figure 7. Japan: warning label

Korean certification of compliance

Figure 8. Korean certification of compliance
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
- 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 v2.11 (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
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 10. 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.
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/](http://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

<table>
<thead>
<tr>
<th>TLV Name</th>
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<th>Len</th>
<th>Value</th>
</tr>
</thead>
<tbody>
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</tr>
<tr>
<td>Part Number</td>
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<tr>
<td>Serial Number</td>
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<td>20</td>
<td>xxxxxxxxxxxxxxx</td>
</tr>
<tr>
<td>Base MAC Address</td>
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<td>6</td>
<td>D8:9E:F3:AC:A5:A0</td>
</tr>
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<tr>
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<tr>
<td>Label Revision</td>
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<td>A00</td>
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<tr>
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<td>CN</td>
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<tr>
<td>Vendor Name</td>
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<tr>
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</tr>
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<td>ONIE Version</td>
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</tr>
<tr>
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<td>10</td>
<td>x.xx.x.xx-x</td>
</tr>
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<td>0x17E6ED32</td>
</tr>
</tbody>
</table>

Checksum is valid.
```

To access switch documentation, go to [www.dell.com/support](http://www.dell.com/support).

To search for drivers and downloads, go to [www.dell.com/drivers/](http://www.dell.com/drivers/).

To participate in Dell EMC community blogs and forums, go to [www.dell.com/community](http://www.dell.com/community).