

Dell Networking N20xx and N30xx Series Switch

Getting Started Guide



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.

About this Guide

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

You can use a Dell N20xx or N30xx either as a switch or a port extender for a C9010 switch. You can use the N20xx or N30xx series devices as a switch if you use the Dell Networking OS version 6.3(0.16) or later. If you use a N20xx or N30xx series device as a port extender for the C9010, install the Dell Networking OS version 9.11(0.0) or later. For converting the switch, purchase a rapid access node conversion license from Dell. For more information about installing the Dell Networking OS version 9.11(0.0) or version 6.3(0.16) on an N20xx or N30xx system, see the *Dell Networking OS Conversion Guide for the N20xx/N30xx Series*.

For complete installation, configuration, and update information, see the following documents at www.dell.com/support.

Table 1. N20xx/N30xx Documentation

Information	Documentation
Software configuration	• <i>Dell Networking Configuration Guide for the C9000 Series</i>—for Dell Networking OS 9.11(0.0) or later • <i>Dell Networking N-Series User Guide</i>—for Dell Networking OS 6.3(0.16)
Command-line interface	• <i>Dell Networking Command-Line Reference Guide for the C9000 Series</i>—for Dell Networking OS 9.11(0.0) or later • <i>Dell Networking CLI Reference Guide</i>—for Dell Networking OS 6.3(0.16)
Installing Dell Networking OS version 9.11(0.0) or version 6.3(0.16) on an N20xx or N30xx system	<i>Dell Networking OS Conversion Guide for the N20xx/N30xx Series</i>
Latest updates	<i>Dell Networking C9010, C1048P, and N20xx/N30xx Series Release Notes</i>

N20xx Series Overview

The Dell N20xx switches are stackable Layer 2-Gigabit Ethernet switches and include the following models:

- Dell N2024
- Dell N2024P
- Dell N2048
- Dell N2048P

Topics:

- [N20xx Series Hardware Overview](#)

N20xx Series Hardware Overview

This section contains information about device characteristics and modular hardware configurations for the N20xx series switches.

All N20xx nonpower over Ethernet (PoE) models are 1U, rack-mountable switches with the following physical dimensions:

- 440.0 x 257.0 x 43.5 mm—W x D x H
- 17.3 x 10.1 x 1.7 inches—W x D x H

All N20xx PoE models are 1U, rack-mountable switches with the following physical dimensions:

- 440.0 x 387.0 x 43.5 mm—W x D x H
- 17.3 x 15.2 x 1.7 inches—W x D x H

Other characteristics:

PSU handle length—1.25 inches

Stacking cable length—2.5 inches

N20xx Series I/O-Side

The following images show the I/O-side of the switch models in the N20xx Series:



Figure 1. N2048 Series with 48 10/100/1000BASE-T Ports

1. Console Port
2. USB Port
3. SFP+ Ports
4. 48 10/100/1000BASE-T Ports

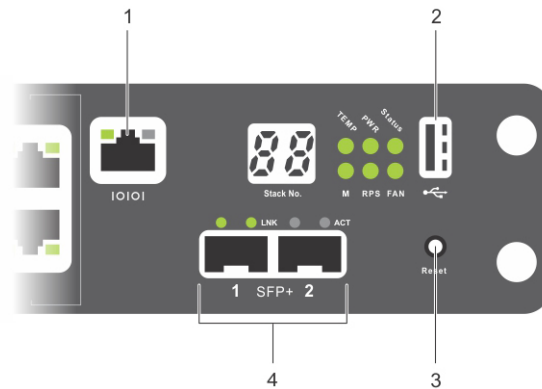


Figure 2. N2024 Close-up

1. Console Port
2. USB Port
3. Reset Button
4. SFP+ Ports

The N20xx I/O-side has status light emitting diodes (LEDs) for overtemperature alarm, internal power, and status on the top row. The status LEDs at the bottom row display the stack master, redundant power supply (RPS) status, and fan alarm status.

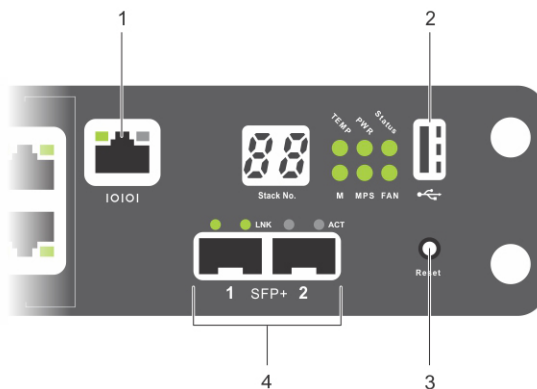


Figure 3. N2024P Close-up

1. Console Port
2. USB Port
3. Reset Button
4. SFP+ Ports

The N20xxP I/O-side has status LEDs for the overtemperature alarm, internal power, and status on the top row. The status LEDs at the bottom row display the stack master, modular power supply units (MPS) status, and fan alarm status.

Switch Ports

The N2024/N2024P I/O-side provides 24 Gigabit Ethernet RJ-45 ports of 10/100/1000BASE-T that support autonegotiation for speed, flow control, and duplex. The N2024/N2024P models support two SFP+ 10G ports. Dell-qualified SFP+ transceivers are sold separately.

The N2048/N2048P I/O-side provides 48 Gigabit Ethernet RJ-45 ports of 10BASE-T, 100BASE-TX, 1000BASE-T that support autonegotiation for speed, flow control, and duplex. The N2048/N2048P support two SFP+ 10G ports. Dell-qualified SFP+ transceivers are sold separately.

The I/O-side switch ports have the following characteristics:

- The switch automatically detects the difference between crossed and straight-through cables on RJ-45 ports and automatically chooses the right configuration to match the other end.
- SFP ports support Dell-qualified transceivers.
- RJ-45 ports support full-duplex mode 10/100/1000 Mbps speeds on standard Category 5 UTP cable.
- SFP+ ports support SFP+ transceivers and SFP+ copper twin-ax technology plus SFP transceivers operating at 1G.
- The N2024P/N2048P I/O-side ports support PoE with power up to 15.4 W and PoE+ with power up to 30W.

Console Port

The console port provides serial communication capabilities, which allows communication using the RS-232 protocol. The serial port provides a direct connection to the switch and allows access to the command line interface (CLI) from a console terminal connected to the port through the provided serial cable.

The console port is separately configurable and can run as an asynchronous link from 1,200 bauds to 115,200 bauds.

The Dell CLI only supports changing the speed. The defaults are 9600 baud rate, 8 data bits, No Parity, 1 Stop Bit, No Flow Control.

USB Port

The Type-A, female USB port supports a universal serial bus (USB) 2.0-compliant flash memory drive. The Dell Networking switch can read or write to a flash drive formatted as FAT-32. You can use a USB flash drive to copy switch configuration files and images between the USB flash drive and the switch. You can also use the USB flash drive to move and copy configuration files and images from one switch to other switches in the network.

The USB port does not support any other type of USB device.

Reset Button

The reset button is accessed through the pinhole and allows you to perform a hard reset on the switch. To use the reset button, insert an unbent paper clip or similar tool into the pinhole. When the switch completes the boot process after the reset, it resumes operation with the most recently saved configuration. Any changes made to the running configuration that were not saved to the startup configuration before the reset are lost.

Port and System LEDs

The I/O-side contains LED that indicate the status of port links, power supplies, fans, stacking, and the overall system status.

Stack Master LED and Stack Number Display

When a switch within a stack is the master unit, the stack master LED, which is labeled M, is solid green. If the M LED is off, the stack member is not the master unit. The **Stack No.** panel displays the unit number for the stack member. If a switch is not part of a stack (in other words, it is a stack of one switch), the M LED is lit, and the unit number displays.

N20xx Series PSU-Side

The following illustration shows the PSU-side of the N20xx switches:

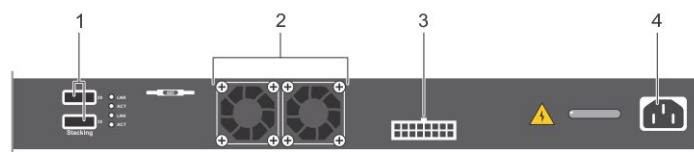


Figure 4. N20xx PSU-Side

1. Mini-SAS stacking ports
2. Fan Vents
3. To DC Power Source—optional
4. AC Power Receptacle

The term mini-SAS refers to the stacking port cable connections. For information about using the mini-SAS ports to connect switches, see the *Stacking Multiple N20xx Switches* section.

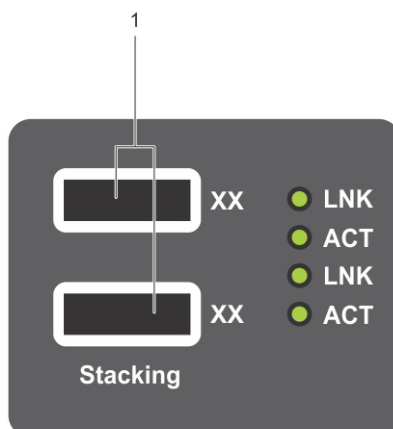


Figure 5. N2048 Mini-SAS Stacking Ports Close-up

1. Mini-SAS stacking ports

Power Supplies - N2024 and N2048

N2024 and N2048 switches have an internal 100-watt power supply. The additional redundant power supply provides 180 watts of power and gives full redundancy for the switch. You can use the Dell Networking RPS720 PSUs for redundancy.

Power Supplies - N2024P and N2048P

Dell Networking N2024P and N2048P switches have an internal 1000-watt power supply feeding up to 24 PoE devices at full PoE+ power of 850 W. An extra external power supply provides 1000 watts and gives full power coverage of 1800 W for all 48 PoE devices. You can use the MPS1000 PSUs to power all 48 PoE devices.

 **NOTE:** PoE power is dynamically allocated. Not all ports require the full PoE+ power.

 **CAUTION:** Remove the power cable from the power supplies before removing the power supply module itself. Do not connect power before insertion in the chassis.

Ventilation System

Two fans cool the N20xx switches.

N20xx Model Summary

Table 2. N20xx Model Summary

Marketing Model Name	Description	Power Supply Unit	Regulatory Model Number	Regulatory Type Number
N2024	24x1G/2x10G SFP+/2x Stacking	100 W	E04W	E04W001
N2024P	24x1G/2x10G SFP+/2x Stacking/24x PoE+ Ports	1000 W	E05W	E05W001
N2048	48x1G/2x10G SFP+/2x Stacking	100 W	E04W	E04W002
N2048P	48x1G/2x10G SFP+/2x Stacking/48x PoE+ Ports	1000 W	E05W	E05W002

N20xx Series Installation

You can mount the N20xx Series switches in a standard 48.26 cm (19 inches) rack or placed on a flat surface.

Make sure that the installation location meets the following site requirements:

- **Power**—The switch is installed near an easily accessible 100–240 VAC, 50–60 Hz outlet.
- **Clearance**—There is adequate front and rear clearance for operator access. Allow clearance for cabling, power connections, and ventilation.
- **Cabling**—The cabling is routed to avoid sources of electrical noise such as radio transmitters, broadcast amplifiers, power lines, and fluorescent lighting fixtures.
- **Ambient Temperature**—The ambient switch operating temperature range is 0° C to 45° C (32° F to 113° F) at a relative humidity of up to 95 percent, noncondensing.
 **NOTE:** Decrease the maximum temperature by 1° C (1.8° F) per 300 m (985 ft.) above 900 m (2955 ft.).
- **Relative Humidity**—The operating relative humidity is 8% to 85%, noncondensing, with a maximum humidity gradation of 10% per hour.

Topics:

- [Unpacking the N20xx Switch](#)
- [Rack Mounting an N20xx Switch](#)
- [Stacking on N20xx Series Switches](#)

Unpacking the N20xx Switch

Package Contents

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

- One Dell Networking switch
- One RJ-45 to DB-9 female cable
- One rack-mount kit (N20xx) for rack installation, two mounting brackets, bolts, and cage nuts
- One set of self-adhesive rubber pads for the free-standing switch (four pads are included)

Unpacking Steps

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

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 Mounting an N20xx Switch

 **WARNING:** Read the safety information in the *Safety and Regulatory Information* and the safety information for other switches that connect to or support the switch.

The AC power connector is on the PSU-side of the switch.

Installing in a Rack

⚠ WARNING: Do not use rack mounting kits to suspend the switch from under a table or desk, or attach it to a wall.

⚠ CAUTION: Disconnect all cables from the switch before continuing. Remove all self-adhesive pads from the underside of the switch, if they have been attached.

⚠ CAUTION: When mounting multiple switches into a rack, mount the switches from the bottom up.

1. Align the holes on the right rack-mount bracket with the holes on the right side of the switch.
2. Secure the bracket as in item 3 in Figure 6 to the chassis by tightening the screws as in item 2 in Figure 6 provided with the mount bracket.

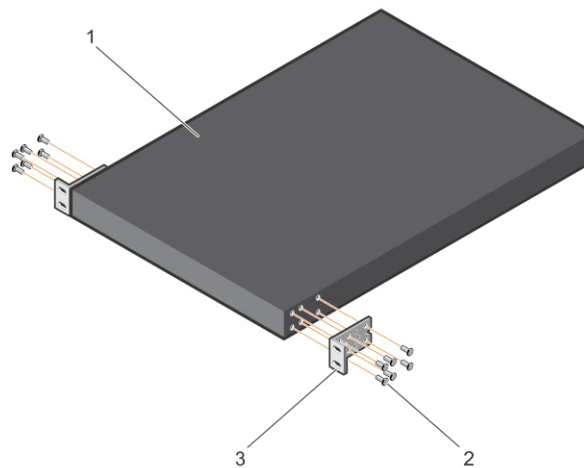


Figure 6. Attaching Mount Brackets to N20xx

3. Repeat Steps 1 and 2 to attach the left rack-mount bracket on the device.
4. Mount the switch into a 48.26 cm (19 inch) rack. Align the holes on each bracket flange with the holes on a rack post.
5. Secure the switch to the rack using the rack bolts, or cage nuts and cage-nut bolts with washers. Tighten the bolts on the bottom of each bracket flange first; then tighten the bolts on top as in item 1 in Figure 7. The rack bolts are provided with the mount brackets and the cage nuts and cage-nut bolts are provided with the rack.

⚠ CAUTION: Make sure that the supplied rack bolts fit the prethreaded holes in the rack.

ⓘ NOTE: Do not obstruct the ventilation holes.

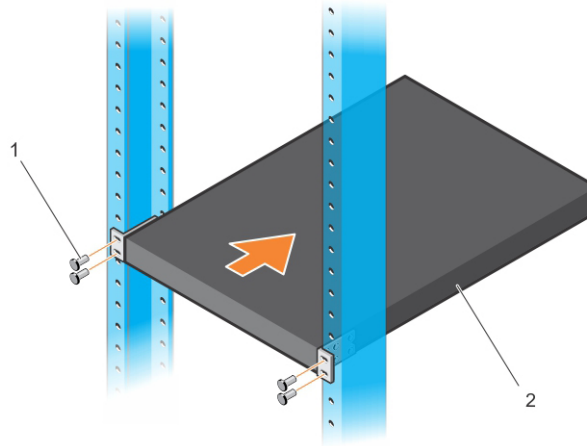


Figure 7. Mounting N20xx in 2-Post Rack

Installing as a Free-standing Switch

NOTE: Dell strongly recommends mounting the switch in a rack.

Install the switch on a flat surface if you are not installing it in a rack. The surface must support the weight of the switch and the switch cables. The switch includes four self-adhesive rubber pads.

1. Attach the self-adhesive rubber pads on each location marked on the bottom of the switch.
2. Set the switch on a flat surface. Make sure that it has proper ventilation by leaving 5 cm (2 inches) on each side and 13 cm (5 inches) at the back.

Stacking on N20xx Series Switches

This section explains how to stack multiple N20xx series switches.

Stacking Multiple N20xx Switches on Dell Networking OS 6.3(0.16)

If you are using Dell Networking OS version 6.3(0.16), you can stack up to 12 switches using the mini-SAS ports located on the rear of the switch. N20xx switches support stacking only with other N20xx series switches. When you connect multiple switches together through the stack ports, they operate as a single unit with up to 576 I/O-side ports. The stack operates and is managed as a single entity.

NOTE: If you are installing a stack of switches, you must assemble and cable the stack before powering up and configuring it. When you power up a stack for the first time, the switches elect a Master Switch, which may occupy any location in the stack. The Master LED on the I/O-side lights on the master unit.

Stacking Multiple Switches on Dell Networking OS 9.11(0.0)

The system supports PE stacking, which allows multiple units to act as a single port extender. You can stack up to eight units using the stack ports on the PSU-side.

The stack ports support the serial attached SCSI (SAS) protocol and operate as mini-SAS ports. The system supports stacking only with port extenders of the same series. The stack operates and is managed as a single entity.

NOTE: If you are installing a stack, assemble and cable the stack before powering it up. When you power up a stack for the first time, the units receive the provisioned configuration from the parent C9010. A Stack Master unit is elected based on

the highest MAC address or highest provisioned priority. The master unit may occupy any location in the stack. The Stack Master LED on the I/O-side lights on the master unit.

NOTE: Although individual stack members do not require a separate uplink to a parent C9010, Dell Networking recommends connecting more than one stack unit to the C9010 for redundancy. A stack unit uses the stacking connection to the master PE for its C9010 uplink. For more information, see the *Connecting to a C9010 Switch* section.

Creating a Switch Stack

Create a stack by connecting adjacent units using the mini-SAS stacking ports on the PSU-side of the switch. Figure 8 shows the switches connected in a ring topology. A ring topology is the recommended topology for a stack..

1. Connect one of the mini-SAS cables into either of the stacking ports of the top switch and the switch directly below it. If necessary, use a separately purchased, longer (1-meter or 3-meter) mini-SAS cable to connect the switches.
2. Repeat this process until you connect all the devices.
3. Use the remaining stacking cable to connect the two remaining stacking ports together to create the ring topology.

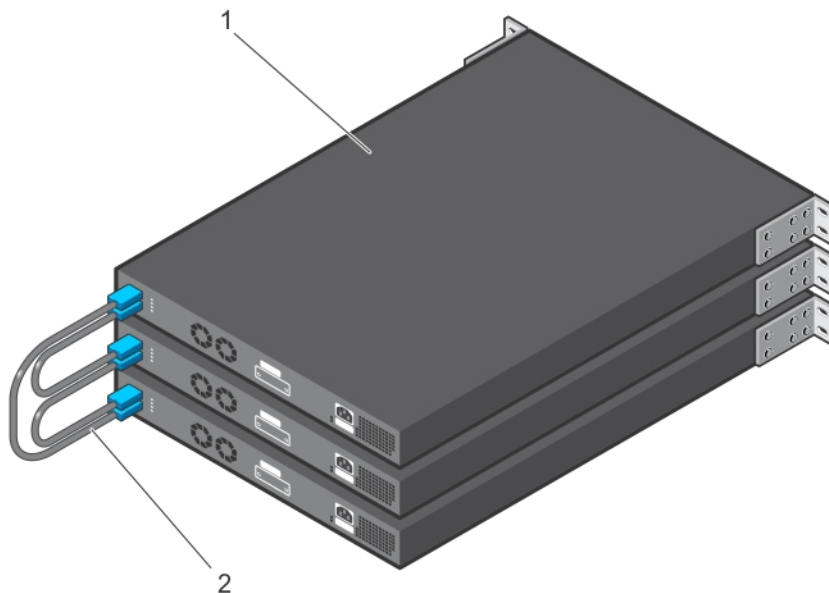


Figure 8. Connecting a Stack of Switches

1. Stack units
2. Stacking cables

The ring topology stack has the following physical connections between the switches:

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

Stacking Standby on Dell Networking OS 6.3(0.16)

The stacking feature on Dell Networking OS version 6.3(0.16) supports a Standby or backup unit that assumes the Master unit role if the Master unit in the stack fails. As soon as a Master failure is detected in the stack, the Standby unit initializes the control plane and enables all other stack units with the current configuration. The Standby unit maintains a synchronized copy of the running configuration for the stack. The Standby unit is automatically selected in the stack; however, you can use the CLI

to select a different stack member as Standby. For more information, see the User's Configuration Guide or the CLI Reference Guide.

Stacking Standby on Dell Networking OS 9.11(0.0)

If the system runs Dell Networking OS version 9.11(0.0), the system supports a Standby or backup unit that assumes the Stack Master role if the Master unit in the stack fails. The parent C9010 maintains a synchronized copy of the running configuration for the stack. When the system detects a Stack Master failure, the C9010 initializes the Standby unit and enables all other stack units with the current configuration.

Although the Standby unit is automatically selected in the stack, you can use the CLI on the C9010 or the N20xx/N30xx series system console to manually configure a different stack member as Standby. For more information, see the *Dell Networking Configuration Guide for C9000 Series Switches*

N30xx Series Overview

The Dell N30xx switches are stackable Layer 2 and Layer 3 Gigabit Ethernet switches and include the following models:

- Dell N3024
- Dell N3024P
- Dell N3048
- Dell N3048P
- Dell N3024F

Topics:

- [N30xx Series Hardware Overview](#)

N30xx Series Hardware Overview

This section contains information about device characteristics and modular hardware configurations for the N30xx Series switches.

All N30xx models are 1U, rack-mountable switches with the following physical dimensions:

- 434.0 x 407.0 x 43.5 mm—W x D x H
- 17.1 x 16.0 x 1.7 inches—W x D x H

Other characteristics:

PSU handle length—1.25 inches

Stacking cable length—2.5 inches

N30xx Series I/O-Side

The following images show the I/O-sides of the switch models in the N30xx Series:

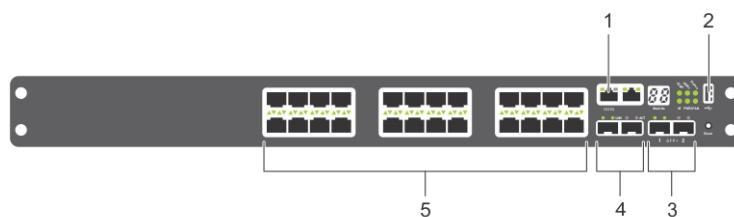


Figure 9. N3024F with 24 10/100/1000BASE-T Ports—I/O-Side



Figure 10. N3048 with 48 10/100/1000BASE-T Ports—I/O-Side

The I/O-side of each model in the N30xx series includes the following ports:

1. Console port
2. USB port
3. SFP+ Ports
4. Combo Ports
5. 10/100/1000BASE-T Autosensing Full Duplex RJ-45 Ports

The combo ports are SFP on the N30xx series and 1000BaseT on the N3024F switch.

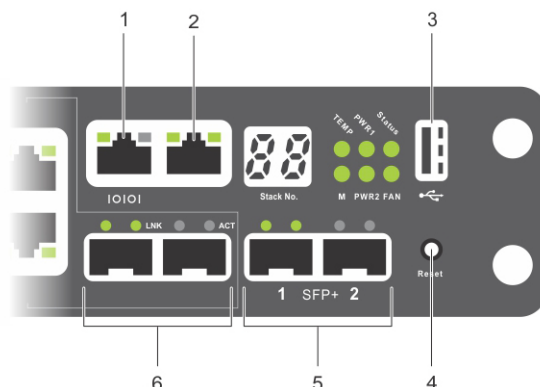


Figure 11. N30xx Close-up

1. Console port
2. Out-of-Band Management Port
3. USB port
4. Reset Button
5. SFP+ Ports
6. Combo Ports

The N30xx I/O-side also contains a pinhole reset button and several status LEDs.

The N30xx/N3024F/N30xxP I/O-side displays status LEDs for overtemperature alarm, internal power supply 1, and switch status on the top row. The bottom row of status LEDs displays stack master, internal power supply 2, and fan alarm.

Switch Ports

The N3024/N3024P I/O-side provides 24 Gigabit Ethernet RJ-45 ports of 10/100/1000BASE-T that support auto-negotiation for speed, flow control, and duplex. The N3024/N3024P models support two SFP+ 10G ports. Dell-qualified SFP+ transceivers are sold separately.

The N3024F I/O-side provides 24 Gigabit Ethernet 100BASEFX/1000BASE-X SFP ports plus 2 1000BASE-T combo ports. Dell-qualified SFP transceivers are sold separately.

The N3048/N3048P I/O-side provides 48 Gigabit Ethernet RJ-45 ports of 10BASE-T, 100BASE-TX, 1000BASE-T that support auto-negotiation for speed, flow control, and duplex. The N3048/N3048P support two SFP+ 10G ports. Dell-qualified SFP+ transceivers are sold separately.

The I/O-side switch ports have the following characteristics:

- The switch automatically detects the difference between crossed and straight-through cables on RJ-45 ports and automatically chooses the MDI or MDIX configuration to match the other end.
- SFP ports support Dell-qualified transceivers.
- RJ-45 ports support full-duplex mode 10/100/1000 Mbps speeds on standard Category 5 UTP cable.
- SFP+ ports support SFP+ transceivers and SFP+ copper twin-ax technology plus SFP transceivers operating at 1G.
- The N3024P/N3048P I/O-side ports support PoE of 15.4 W and PoE+ of 30 W.

Console Port

The console port provides serial communication capabilities, which allows communication using RS-232 protocol. The serial port provides a direct connection to the switch and allows access to the CLI from a console terminal connected to the port through the provided serial cable (with RJ45 YOST to female DB-9 connectors).

The console port is separately configurable and runs as an asynchronous link from 1,200 to 115,200 baud.

The Dell CLI only supports changing the speed.

The defaults are 9600 baud rate, 8 data bits, No Parity, 1 Stop Bit, No Flow Control.

Out-of-Band Management Port

The out-of-band (OOB) management port is a 10/100/1000BASE-T Ethernet port dedicated to remote switch management. Traffic on this port is segregated from operational network traffic on the switch ports and cannot be switched or routed to or from the operational network.

USB Port

The Type-A, female USB port supports a USB 2.0-compliant flash memory drive. The Dell Networking switch reads or writes to a flash drive formatted as FAT-32. You can use a USB flash drive to copy switch configuration files and images between the USB flash drive and the switch. You can also use the USB flash drive to move and copy configuration files and images from one switch to other switches in the network.

The USB port does not support any other type of USB device.

Reset Button

The reset button is accessed through the pinhole and allows you to perform a hard reset on the switch. To use the reset button, insert an unbent paper clip or similar tool into the pinhole. When the switch completes the boot process after the reset, it resumes operation with the most recently saved configuration. Any changes made to the running configuration that were not saved to the startup configuration before the reset are lost.

Port and System LEDs

The I/O-side contains LEDs that indicate the status of port links, power supplies, fans, stacking, and the overall system status.

For information about the status that the LEDs indicate, see the User's Configuration Guide.

Stack Master LED and Stack Number Display

When a switch within a stack is the master unit, the stack master LED, which is labeled M, is solid green. If the M LED is off, the stack member is not the master unit. **The Stack No.** panel displays the unit number for the stack member. If a switch is not part of a stack (in other words, it is a stack of one switch), the M LED is lit, and the unit number displays.

N30xx Series PSU-Side

The following images show the PSU-side of the N30xx switches.

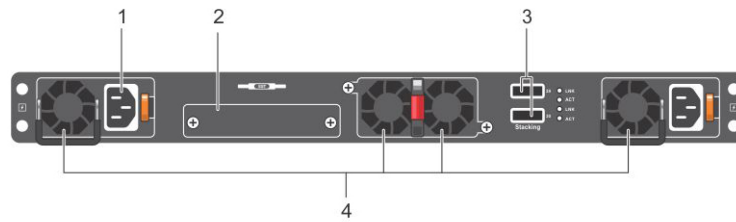


Figure 12. N30xx PSU-Side

1. AC Power Receptacle
2. Dual 10G Slots for SFP+, 10GBASE-T, or Stacking/10GbE Modules
3. Mini-SAS stacking ports
4. Fan Vents

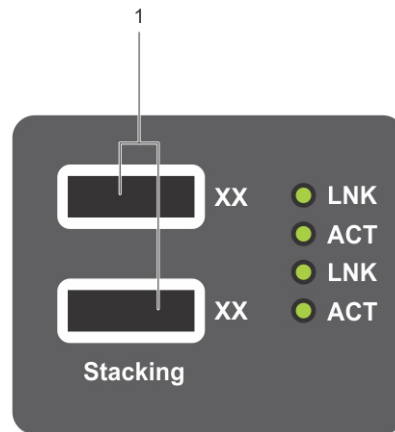


Figure 13. N3048 Mini-SAS Stacking Ports Close-up

1. Mini-SAS stacking ports

The term mini-SAS refers to the stacking port cable connections. For information about using the mini-SAS ports to connect switches, see the Stacking Multiple N30xx Switches section.

Expansion Slots for Plug-in Modules

One expansion slot is on the PSU-side of the N30xx models and supports the following modules:

- 10GBASE-T module
- SFP+ module

Each plug-in module has two ports. The plug-in modules include hot-swap support, so you need not reboot the switch after you install a new module.

Power Supplies - N3024, N3024F, and N3048

N3024, N3024F, and N3048 switches support two 200-watt field replaceable unit (FRU) power supplies which give full power redundancy for the switch. The N3024, N3024F, and N3048 switches offer the V-lock feature for users desiring the need to eliminate accidental power disconnection. The V-lock receptacle on the PSU allows you to use a power cord that has the V-lock feature to create an integral secure locking connection.

Power Supplies - N3024P and N3048P

Dell Networking N3024P and N3048P switches support one or two 1100-watt FRU power supplies. The N3024P switch comes with a single 715-watt power supply, and supports either one or two 1100-watt supplies. For the N3048P switch, a 1100-watt power supply is the default configuration.

A single 1100-watt power supply can feed up to 24 PoE devices at full PoE+ power of 950 W. Dual-equipped switches feed up to 48 PoE devices at full PoE+ power of 1800 W, and provide power supply redundancy.

 **NOTE:** PoE power is dynamically allocated. Not all ports require the full PoE+ power.

 **CAUTION:** Remove the power cable from the power supplies before removing the power supply module itself. Do not connect power before insertion in the chassis.

Ventilation System

Two fans cool the N30xx switches. The N30xx switches additionally have a fan in each internal power supply. The N30xx fan is an FRU.

N30xx Model Summary

Table 3. N30xx Model Summary

Marketing Model Name	Description	Power Supply Unit	Regulatory Model Number	Regulatory Type Number
N3024	24x1G/2x1G combo/ 2x10G SFP+/2x stacking/ 1x modular bay/N+1 redundant pluggable power supply units (PSUs)/1x removable fan module	200 W	E07W	E07W001
N3024F	24x1G SFP/2x1G combo/2x10G SFP+/2x Stacking/ 1x modular bay/N+1 redundant pluggable PSUs/1x removable fan module	200 W	E07W	E07W003
N3024P	24x1G/2x1G combo/ 2x10G SFP+/2x stacking/ 1x modular bay/N+1 redundant pluggable PSUs/24x PoE+ ports/12 PoE 60 W capable ports/1x removable fan module	1100 W/715 W	E06W	E06W001
N3048	48x1G/2x1G combo/ 2x10G SFP+/2x stacking/ 1x modular bay/N+1 redundant	200 W	E07W	E07W002

Table 3. N30xx Model Summary (continued)

Marketing Model Name	Description	Power Supply Unit	Regulatory Model Number	Regulatory Type Number
	pluggable PSUs/1x removable fan module			
N3048P	48x1G/2x1G combo/ 2x10G SFP+/2x stacking/ 1x modular bay/N+1 redundant pluggable PSUs/48x PoE+ ports/12 PoE 60 W capable ports/1x removable fan module	1100 W/715 W	E06W	E06C002

N30xx Series Installation

You can mount the N30xx Series switches in a standard 48.26 cm (19-inch) rack or placed on a flat surface.

Make sure that the chosen installation location meets the following site requirements:

- **Power**—The switch is installed near an easily accessible 100–240 VAC, 50–60 Hz outlet.
- **Clearance**—There is adequate front and rear clearance for operator access. Allow clearance for cabling, power connections, and ventilation.
- **Cabling**—The cabling is routed to avoid sources of electrical noise such as radio transmitters, broadcast amplifiers, power lines, and fluorescent lighting fixtures.
- **Ambient Temperature**—The ambient switch operating temperature range is 0°C to 45°C (32°F to 113°F) at a relative humidity of up to 95 percent, noncondensing.
 **NOTE:** Decrease the maximum temperature by 1°C (1.8°F) per 300 m (985 ft.) above 900 m (2955 ft.).
- **Relative Humidity**—The operating relative humidity is 8% to 85%, noncondensing, with a maximum humidity gradation of 10% per hour.

Topics:

- [Unpacking the N30xx Switch](#)
- [Rack Mounting an N30xx Switch](#)
- [Stacking on N30xx Series Switches](#)

Unpacking the N30xx Switch

Package Contents

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

- One Dell Networking switch
- One RJ-45 to DB-9 female cable
- One ReadyRail kit for rack installation, two mounting brackets, bolts, and cage nuts
- One set of self-adhesive rubber pads for the free-standing switch (four pads are included)
- One PSU

Unpacking Steps

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

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 Mounting an N30xx Switch

You may either place the switch on the rack shelf or mount the switch directly into a 19" wide, EIA-310-E compliant rack (four-post, two-post, or threaded methods). The Dell ReadyRail system is provided for 1U front-rack, and two post installations. The ReadyRail system includes two separately packaged rail assemblies.

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

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

- Rack loading—Overloading or uneven loading of racks may result in shelf or rack failure, and cause damage to equipment and possible personal injury. Stabilize racks in a permanent location before loading begins. Mount components beginning at the bottom of the rack, then work to the top. Do not exceed your rack load rating.
- Power considerations—Connect only to the power source specified on the unit. When multiple electrical components are installed in a rack, ensure that the total component power ratings do not exceed circuit capabilities. Overloaded power sources and extension cords present fire and shock hazards.
- Elevated ambient temperature—If installed in a closed rack assembly, the operating temperature of the rack environment may be greater than room ambient. Use care not to exceed the 45-degrees C maximum ambient temperature of the switch.
- Reduced air flow—Install the equipment in the rack so that the amount of airflow required for safe operation of the equipment is not compromised.
- Reliable earthing—Maintain reliable earthing of rack-mounted equipment.
- Do not mount the product with the PSU-side facing in the downward position.

Installing Dell ReadyRails System

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

Install the ReadyRails system using the 1U tool-less method or one of three possible 1U tooled methods—two-post flush mount, 2-post center mount, or four-post threaded.

1U Tool-less Configuration

To install the Dell ReadyRails system using the 1U tool-less configuration with four-post square holes or unthreaded round holes, follow these steps.

1. With the ReadyRails flange ears facing outward, place one rail between the left and right vertical posts. Align and seat the back flange rail pegs in the back vertical post flange. To see how the pegs appear in both the square and unthreaded round holes, see Figure 14.
2. Align and seat the front flange pegs in the holes on the front side of the vertical post.
3. Repeat this procedure for the second rail.
4. To remove each rail, pull on the latch release button on each flange ear and unseat each rail.

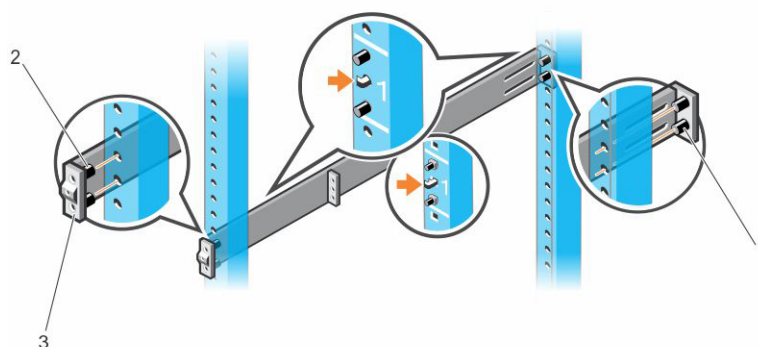


Figure 14. 1U Tool-less Configuration

2-Post Flush-Mount Configuration

To install the Dell ReadyRails system using the 2-post flush-mount configuration, follow these steps.

1. For this configuration, remove the castings from the front side of each ReadyRails assembly. See item 1 in Figure 15. Use a Torx driver to remove the two screws from each front flange ear (on the switch side of the rail) and remove each casting. Retain the castings for future rack requirements. You need not remove the rear flange castings.
2. Attach one rail to the front post flange with two user-supplied screws. See item 2.

3. Slide the plunger bracket forward against the vertical post and secure the plunger bracket to the post flange with two user-supplied screws. See item 3.
4. Repeat this procedure for the second rail.

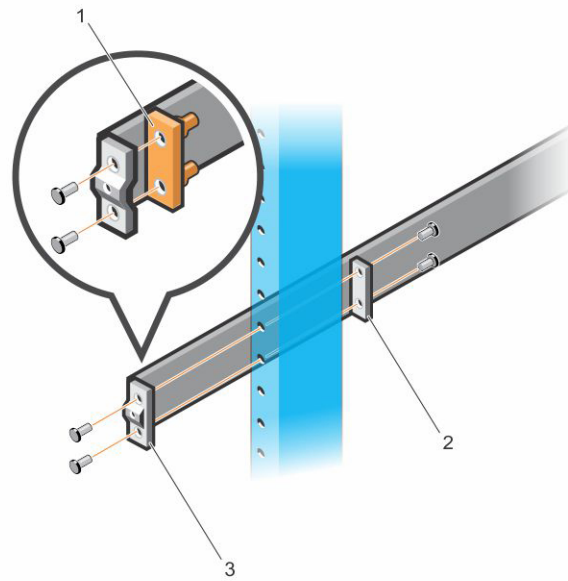


Figure 15. 2-Post Flush-Mount Configuration

Two-Post Center-Mount Configuration

To install the Dell ReadyRails system using the two-post center-mount configuration, follow these steps.

1. Slide the plunger bracket rearward until it clicks into place and secure the bracket to the front post flange with two user-supplied screws. See item 1 in Figure 16.
2. Slide the back bracket towards the post and secure it to the post flange with two user-supplied screws. See items 2 and 3.
3. Repeat this procedure for the second rail.

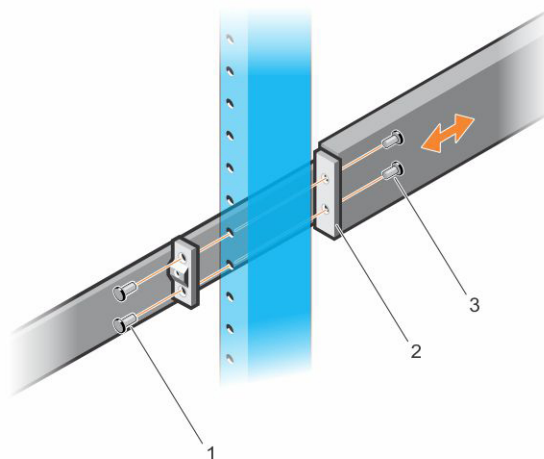


Figure 16. Two-Post Center-Mount Configuration

Four-Post Threaded Configuration

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

1. For this configuration, remove the flange ear castings from each end of the ReadyRails assemblies. Use a Torx driver to remove the two screws from each flange ear and remove each casting. See item 1 in Figure 17. Retain the castings for future rack requirements.
2. For each rail, attach the front and back flanges to the post flanges with two user-supplied screws at each end. See item 2.

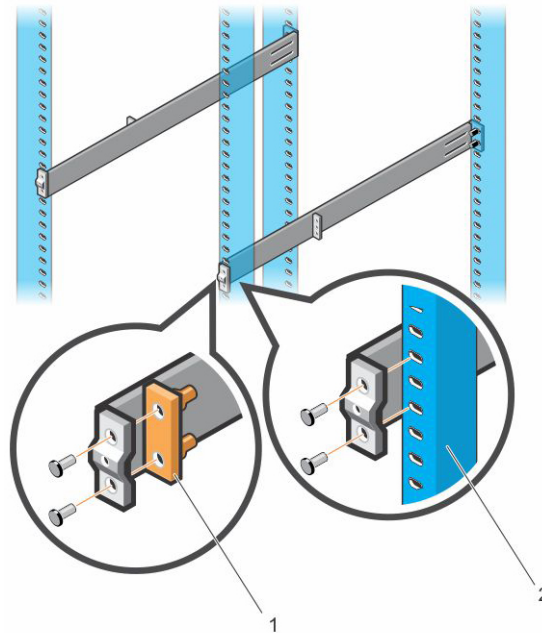


Figure 17. Four-Post Threaded Configuration

Install the N30xx System

You can mount the system in the 1U front-rack or 1U two-post (flush and center) configurations. The following is an example of a front-rack configuration.

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

Installing a 1U Front-Rack

You must configure the rails that are attached to the system.

1. Attach the switch rails (inner chassis members) to the N30xx system. Item 3 in Figure 18 shows the detail for the front standoff with the locking tab.

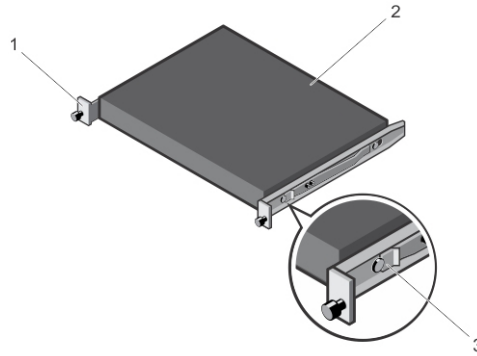


Figure 18. Attaching the Switch Rails

- a. Front standoff locking tab
 - b. Switch
 - c. Locking tab
2. After you have installed both switch rails, line them up on the previously mounted ReadyRails and slide the switch in until it is flush with front of rack. About 3 inches before you fully insert your system, the rail locking feature engages to keep the switch from inadvertently sliding out of the rack and falling.

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

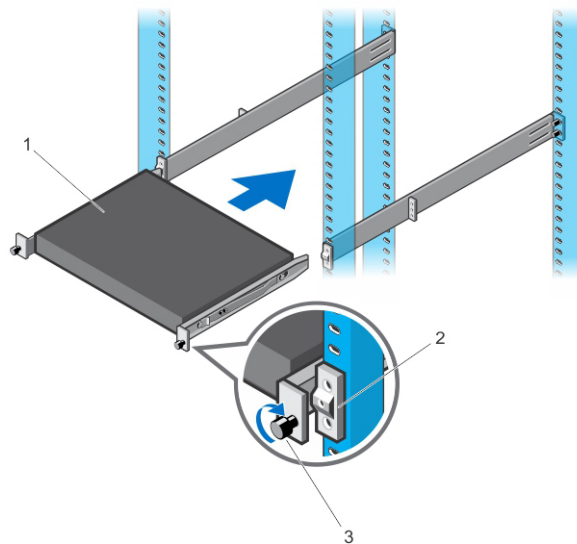


Figure 19. Installing the N30xx in a Front-Rack Configuration

- a. Switch
- b. Rail bracket
- c. Mounting screw

Installing as Free-standing Switch

NOTE: Dell Networking strongly recommends mounting the switch in a rack.

Install the switch on a flat surface if you are not installing it in a rack. The surface must be able to support the weight of the switch and the switch cables. The switch is supplied with four self-adhesive rubber pads.

1. Attach the self-adhesive rubber pads on each location marked on the bottom of the switch.
2. Set the switch on a flat surface. Make sure that it has proper ventilation by leaving 5 cm (2 inches) on each side and 13 cm (5 inches) at the back.

Stacking on N30xx Series Switches

This section explains how to stack multiple N30xx series switches.

Stacking Multiple N30xx Switches on Dell Networking OS 6.3(0.16)

If you are using Dell Networking OS 6.3(0.16), you can stack up to 12 switches using the mini-SAS ports located on the rear of the switch. N30xx switches only support stacking with other N30xx switches. When you connect multiple switches together through the stack ports, they operate as a single unit with up to 576 I/O-side ports. The stack operates and is managed as a single entity.

NOTE: If you are installing a stack of switches, assemble and cable the stack before powering up and configuring it. When you power-up a stack for the first time, the switches elect a Master switch, which may occupy any location in the stack. The Master LED on the I/O-side lights on the master unit.

Stacking Multiple Switches on Dell Networking OS 9.11(0.0)

The system supports PE stacking, which allows multiple units to act as a single port extender. You can stack up to eight units using the stack ports on the PSU-side.

The stack ports support the serial attached SCSI (SAS) protocol and operate as mini-SAS ports. The system supports stacking only with port extenders of the same series. The stack operates and is managed as a single entity.

NOTE: If you are installing a stack, assemble and cable the stack before powering it up. When you power up a stack for the first time, the units receive the provisioned configuration from the parent C9010. A Stack Master unit is elected based on the highest MAC address or highest provisioned priority. The master unit may occupy any location in the stack. The Stack Master LED on the I/O-side lights on the master unit.

NOTE: Although individual stack members do not require a separate uplink to a parent C9010, Dell Networking recommends connecting more than one stack unit to the C9010 for redundancy. A stack unit uses the stacking connection to the master PE for its C9010 uplink. For more information, see the *Connecting to a C9010 Switch* section.

Creating a Switch Stack

Create a stack by connecting adjacent units using the mini-SAS stacking ports on the PSU-side of the switch. Figure 20 shows the switches connected in a ring topology. A ring topology is the recommended topology for a stack..

1. Connect one of the mini-SAS cables into either of the stacking ports of the top switch and the switch directly below it. If necessary, use a separately purchased, longer (1-meter or 3-meter) mini-SAS cable to connect the switches.
2. Repeat this process until all the devices are connected.
3. Use the remaining stacking cable to connect the two remaining stacking ports together to create a ring topology.

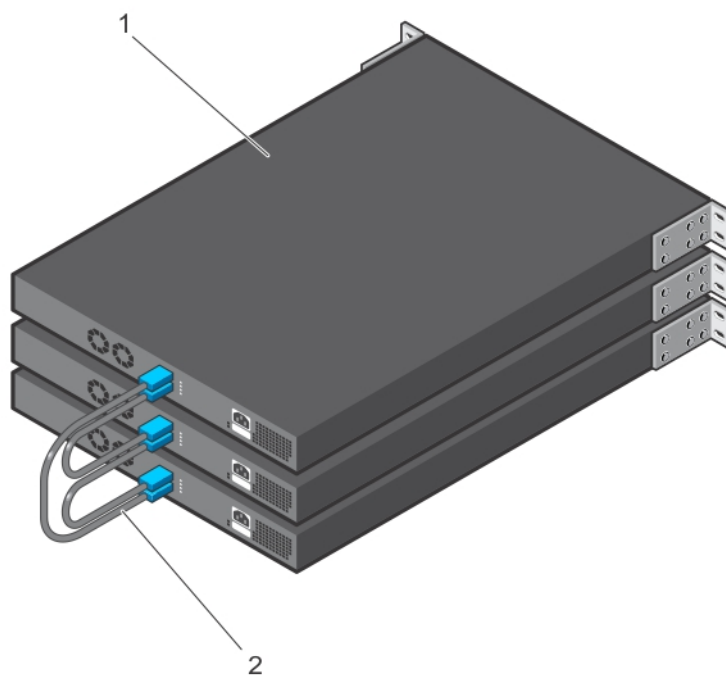


Figure 20. N30xx Stack in a Ring Topology

1. N30xx stack
2. Mini-SAS cables attached in a ring topology

The ring topology stack has the following physical connections between the switches:

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

Stacking Standby on Dell Networking OS 6.3(0.16)

The stacking feature on Dell Networking OS version 6.3(0.16) supports a Standby or backup unit that assumes the Master unit role if the Master unit in the stack fails. As soon as a Master failure is detected in the stack, the Standby unit initializes the control plane and enables all other stack units with the current configuration. The Standby unit maintains a synchronized copy of the running configuration for the stack. The Standby unit is automatically selected in the stack; however, you can use the CLI to select a different stack member as Standby. For more information, see the User's Configuration Guide or the CLI Reference Guide.

Stacking Standby on Dell Networking OS 9.11(0.0)

If the system runs Dell Networking OS version 9.11(0.0), the system supports a Standby or backup unit that assumes the Stack Master role if the Master unit in the stack fails. The parent C9010 maintains a synchronized copy of the running configuration for the stack. When the system detects a Stack Master failure, the C9010 initializes the Standby unit and enables all other stack units with the current configuration.

Although the Standby unit is automatically selected in the stack, you can use the CLI on the C9010 or the N20xx/N30xx series system console to manually configure a different stack member as Standby. For more information, see the *Dell Networking Configuration Guide for C9000 Series Switches*