Dell EMC PowerSwitch
N3200-ON Series Switches

High performance Open networking 1GbE and 10GbE Multigigabit switches for modern campus networks

The N3200 switch series offers power-efficient and resilient 1GbE and 1/2.5/5/10GbE Multigigabit range of switching solution for advanced Layer 3 distribution for offices and campus networks. The series has high-performance capabilities and wire-speed performance utilizing a non-blocking architecture to easily handle unexpected traffic loads. Use dual internal hot-swappable 80PLUS Platinum certified power supplies for high availability and power efficiency. The switches offer simple management and scalability via an 400Gbps (full duplex) high-availability stacking architecture that allows management of up to 12 switches from a single IP address.

Modernize campus network architectures

Modernize campus network architectures with a power-efficient and resilient 1/2.5/5/10GbE switching solution with dense options of 802.3at (30W) or 802.3bt (60W/90W) PoE solutions to deliver clean power to wide range network devices such as wireless access points (APs), Voice-over-IP (VoIP) handsets, video conferencing systems, security cameras, LED luminaires and many more.

Achieve high availability and full bandwidth utilization with Multichassis Link Aggregation (MLAG). N3200 series switches support MLAG to create active/active loop-free redundancy without spanning tree. Server rooms can deliver reliable server and storage connectivity with features to help save time and avoid configuration errors. N3200 supports VRF-lite, allowing it to be partitioned into multiple virtual routers with isolated control and data planes on the same physical switch. For greater interoperability in multivendor networks, N3200 switches offer the latest open-standard protocols.

Leverage familiar tools and practices

All N-Series switches include Dell EMC Networking OS6, designed for easier deployment, greater interoperability and a lower learning curve for network administrators. OS6 common command line interface (CLI) and graphic user interface (GUI) are intuitive, so skilled network administrators can get productive quickly. N3200 switches also support the Open Network Install Environment (ONIE), enabling installation of alternate network operating systems.

Deploy with confidence at any scale

N3200 series switches help create performance assurance with a data rate up to 1560Gbps (full duplex) and a forwarding rate up to 2167Mpps. Scale easily with built-in rear stacking ports. Switch stacks of up to 624 1/2.5/5/10GbE/25GbE ports can be managed from a single screen using the highly available stacking architecture for high-density aggregation with seamless redundant availability. The N-series switches' lifetime warranty covers software upgrades, hardware repair or replacement, and optics and cables purchased with the switch.¹

¹ Select Networking products carry a Lifetime Limited Warranty with Basic Hardware Service (repair or replacement) for life. Repair or replacement does not include troubleshooting, configuration, or other advanced service provided by Dell EMC ProSupport. See details at https://www.dell.com/en-us/work/shop/networkingwarranty/cp/networkingwarranty
Hardware, performance and efficiency

- 1GbE Switches: 1RU switches with up to 48 line-rate 1GbE ports of copper or fiber, and four integrated 10GbE SFP+ ports. PoE variants with up to 48 ports of 802.3at (30W) PoE.
- Multigig Switches: 1RU switches with up to 48 line-rate 1G/2.5G/5G/10GbE copper ports with four integrated 25GbE SFP28 ports. PoE variants with up to 48 ports of 802.3bt (90W) PoE.
- 400Gbps stacking bandwidth using two 100GbE QSFP28 integrated rear stacking ports.
- Available with dual 80PLUS Platinum certified hot swappable internal power supplies. Optional external power supply to extend PoE budgets on specific models.
- Variable speed fan operation helps decrease cooling and power costs.
- Energy-Efficient Ethernet and lower power PHYs reduce power to inactive ports and idle links, providing energy savings from the power cord to the port.
- Dell EMC Fresh Air compliance for operation in environments up to 113°F (45°C) reduces cooling costs.

Deploying, configuring and managing

- USB auto-configuration rapidly deploys the switch without complex TFTP configurations or sending technical staff to remote offices.
- Management via an intuitive and familiar CLI, embedded web server (GUI), SNMP-based management console application (including Dell EMC OpenManage Network Manager), Telnet or serial connection.
- Private VLAN extensions and Private VLAN Edge support.
- AAA authorization, TACACS+ accounting and RADIUS support for comprehensive secure access support.
- Authentication tiering allows network administrators to tier port authentication methods such as 802.1x, MAC Authentication Bypass and Captive Portal in priority order so that a single port can provide flexible access and security.
- Achieve high availability and full bandwidth utilization with MLAG and support firmware upgrades without taking the network offline.
- Layer 3 Advanced IPv4 and IPv6 functionality including BGP, VRF, BFD, PIM-SM/DM/SSM, IGMP/MLD, RIPv1/v2, OSPFv2/v3
- VXLAN support in hardware only
- MACsec support in N3248PXE-ON hardware only

2 Can be used if enabled by ON partner network operating system.
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<th>Product</th>
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<td><strong>OS6 Options (with pre-installed OS6 NOS)</strong></td>
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<tr>
<td>N3208PX-ON IO/PS Airflow, with OS6: 4x RJ45 10M/100M/1G/2.5G/5G 802.3bt (up to 90W) PoE auto-sensing ports, 4x 10M/100M/1000Mb 802.3bt (up to 90W) PoE autosensing ports, 2x 10G SFP+ ports, 1x 320W AC PSU included</td>
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<tr>
<td>N3224T-ON IO/PS Airflow, with OS6: 24x RJ45 10/100/1000Mb auto-sensing ports, 4x 10G SFP+ ports, 2X 100G QSFP28 ports, 1x 550W AC PSU included</td>
<td></td>
</tr>
<tr>
<td>N3224F-ON IO/PS Airflow, with OS6: 24x 1G SFP, 4x 10G SFP+ ports, 2X 100G QSFP28 ports, 1x 550W AC PSU included</td>
<td></td>
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<tr>
<td>N3224P-ON IO/PS Airflow, with OS6: 24x RJ45 10/100/1000Mb 802.3at (up to 30W) PoE auto-sensing ports, 4x 10G SFP+ ports, 1x 1050W AC PSU included</td>
<td></td>
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<tr>
<td>N3224PX-ON IO/PS Airflow, with OS6: 24x RJ45 10M/100M/1G/2.5G/5G/10G 802.3bt (up to 90W) PoE auto-sensing ports, 4x 25G SFP28 ports, 2X 100G QSFP28 ports, 1x 1600W AC PSU included</td>
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<tr>
<td><strong>NO-OS Options (no pre-installed NOS, recommended for use with Enterprise SONIC Distribution by Dell Technologies)</strong></td>
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<td>N3248TE-ON IO/PS Airflow, NO-OS: 48x RJ45 10/100/1000Mb auto-sensing ports, 4x 10G SFP+ ports, 2X 100G QSFP28 ports, 1x 550W AC PSU included</td>
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<tr>
<td>N3248TE-ON PS/IO Airflow, NO-OS: 48x RJ45 10/100/1000Mb auto-sensing ports, 4x 10G SFP+ ports, 1x 550W AC PSU included</td>
<td></td>
</tr>
<tr>
<td><strong>OS10 Options (with pre-installed OS10 NOS)</strong></td>
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<tr>
<td>N3248TE-ON IO/PS Airflow, with OS10: 48x RJ45 10/100/1000Mb auto-sensing ports, 4x 10G SFP+ ports, 1x 550W AC PSU included</td>
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<tr>
<td>N3248TE-ON PS/IO Airflow, with OS10: 48x RJ45 10/100/1000Mb auto-sensing ports, 4x 10G SFP+ ports, 1x 550W AC PSU included</td>
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</table>

**Power cords**
- C15 to NEMA 5-15, 1.8M (N3208PX-ON only)
- C13 to NEMA 5-15, 3M (all other N3200 platforms)
- C13 to C14, 2M (all other N3200 platforms)

**Power shelves (optional)**
- MPS-1S Shelf, External power shelf to hold 1 PSU (any of 1050W AC, 1600W AC, 2000W AC, 1300W DC), Extends PoE budget for N3224PX-ON, N3248P-ON, N3248PXE-ON
- MPS-3S Shelf, External power shelf to hold up to 3 PSUs (any combination of 1050W AC or 1600W AC or 2000W AC PSUs, or up to three 1300W DC PSUs), Extends PoE budget for N3224PX-ON, N3248P-ON, N3248PXE-ON
## Power supplies (optional)

- **320W AC external power adapter**, adds redundancy and/or extends PoE budget for N3208PX-ON
- **550W AC hot swappable with IO/PS airflow**, adds redundancy to N3224T-ON, N3224F-ON, N3248TE-ON, N3248X-ON
- **550W AC hot swappable with PS/IO airflow**, adds redundancy to N3224T-ON, N3248TE-ON, N3248X-ON
- **1050W AC hot swappable**, adds redundancy and/or expands PoE budget for N3224P-ON, N3248P-ON. Also used with MPS-1S shelf, MPS-3S Shelf
- **1600W AC hot swappable**, adds redundancy and/or expands PoE budget for N3224PX-ON, N3248PXE-ON. Also used with MPS-1S shelf, MPS-3S Shelf
- **2000W AC hot swappable**, extends PoE budget, used with MPS-1S shelf, MPS-3S Shelf
- **550W DC hot swappable with IO/PS airflow**, adds redundancy to N3224T-ON, N3248TE-ON, N3248X-ON
- **1300W DC hot swappable**, adds redundancy and/or expands PoE budget for N3224P-ON, N3248P-ON, N3248PX-ON, N3248PXE-ON

## Optics

- Transceiver, SFP, 1000BASE-T
- Transceiver, SFP, 1000BASE-SX
- Transceiver, SFP, 1000BASE-LX
- Transceiver, SFP, 1000BASE-ZX
- Transceiver, SFP+ 10GbE, USR (MMF up to 100m)
- Transceiver, SFP+ 10GbE, SR (MMF up to 400m)
- Transceiver, SFP+ 10GbE, LRM (MMF 220m), for SFP+ ports only
- Transceiver, SFP+ 10GbE, LR (SMF 10 km)
- Transceiver, SFP+ 10GbE, ER SMF 40 km
- Transceiver, SFP+ 10GbE, ZR (SMF 80 km)
- Transceiver, SFP+ 10GbE, BASE-T GEN2
- Transceiver, SFP28 25GbE, LR
- Transceiver, SFP28 25GbE, SR-NOF
- Transceiver, SFP28 25GbE, ESR
- Transceiver, QSFP28 100GbE, Q28-100G-SR4-HG
- Transceiver, QSFP28 100GbE, Q28-100G-LR4-G3

## Cables

- 10GbE, SFP+ to SFP+, Passive DAC (0.5M, 1M, 2M, 3M, 5M, 7M)
- 10GbE, SFP+ to SFP+, Active optical (2M, 3M, 5M, 7M, 10M, 15M, 20M)
- 25GbE, SFP28 to SFP28, Passive DAC (1M, 2M, 3M, 5M)
- 25GbE, SFP28 to SFP28, Active optical (7M, 10M, 15M, 20M)
- 100GbE, QSFP28 to QSFP28, Passive DAC (0.5M, 1M, 2M, 3M, 5M)

## Fans (spare)

- Fan module, IO to PSU Airflow
- Fan module, PSU to IO Airflow (for N3224T-ON, N3248TE-ON, N3248X-ON only)

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3 Planned in Roadmap
4 Auto-negotiation not supported, using 1G optics require manual configuration and all 4x10G SFP+ or 4x25G SFP28 ports to be set to same speed. 100M speed not supported.
5 Auto-negotiation not supported, using 10G cables or optics require manual configuration and all 4x25G SFP28 ports to be set to same speed. 100M/1G speed not supported.
## Hardware specifications

### Physical
- 2 integrated rear 100GbE QSFP28 stacking ports (except N3208PX-ON)
- Out-of-band management port (10/100/1000BASE-T)
- USB (Type A) port for configuration via USB flash drive
- MicroUSB (Type B) console port (MicroUSB to USB connector cable included)
- RJ45 console port with RS232 signaling (RJ-45 to female DB-9 connector cable included)

### Auto-negotiation for speed and flow control
- Auto-MDI/MDIX, port mirroring
- Flow-based port mirroring

### Energy-Efficient Ethernet per port settings
- Redundant variable speed fans
- Airflow: I/O to power supply

### Power supply:
- Integrated 320W (N3208PX-ON), 550W (N3224T-ON, N3224F-ON, N3248TE-ON, N3248X-ON), 1050W (N3224P-ON, N3248P-ON), 1600W (N3224PX-ON, N3248PX-ON)
- Dual firmware images on-board

### Switching engine model:
- Store and forward

### Storage
- SSD: 8GB (32GB for N3248X-ON)
- Packet buffer memory: 8MB (4MB for N3208PX-ON and 32MB for N3248X-ON and N3248PX-ON)

### Performance
- CPU memory: 4GB

### Environment
- Power supply efficiency: 87% or better in all operating modes
- Max. thermal output (BTU/hr):
  - 585 (N3208PX-ON), 1235 (N3224T-ON), 5,760 (N3224F-ON, N3248TE-ON, N3248X-ON), 10,800 (N3224PX-ON), 15,600 (N3248X-ON, N3248PX-ON)
- Forwarding rate:
  - 122Mpps (N3208PX-ON), 733Mpps (N3224T-ON, N3224F-ON, N3248P-ON), 800Mpps (N3248TE-ON, N3248P-ON), 1500Mpps (N3248PX-ON), 2167Mpps (N3248X-ON, N3248PX-ON)

### Network Operating System specifications
- Software specifications listed below are applicable for OS6. For detailed specifications of NOS, please contact your Dell Technologies representative.

### Scaling performance
- MAC addresses: 32K
- Link aggregation: 128 LAG groups, 144 dynamic ports per stack, 8 member ports per LAG
- Priority queues per port: 8

### Forwarding rate
- Static routes: 1,024 (IPv4)/1,024 (IPv6)
- Dynamic routes: 8,158 (IPv4)/4,096 (IPv6)
- OSPF routing interfaces: 8,158
- RIP routing interfaces: 512
- ECMP next hops per route: 16

### VLANs
- VLANs supported: 4,094
- VLAN routing interfaces: 128
- ECMP groups: 1024

### ECMP next hops per route
- 1Gbps (IPv4), 512 (IPv6)

### ARP entries
- 6,144

### NDP entries
- 2,560

### Access control lists (ACLs)
- Maximum number of ACLs: 100
- Maximum ACL rules system-wide: 3,914
- Maximum ACL rules per interface (IPv4): 1,023 ( ingress), 511 (egress)

### Max VLAN interfaces with ACLs applied
- 24

### IEEE compliance
- 802.1AB LLDP
- Dell Voice VLAN
- Dell ISDP
- 802.1D Bridging, Spanning Tree
- 802.1p Ethernet Priority (User Provisioning and Mapping)
- Dell Adjustable WRR and Strict Queue Scheduling
- 802.1Q VLAN Tagging, Double VLAN Tagging, GVRP
- 802.1S Multiple Spanning Tree (MSTP)
- 802.1v Protocol-based VLANs
- 802.1W Rapid Spanning Tree (RSTP)
- Dell RSTP-Per VLAN
- Dell Spanning tree optional features: STP root guard, BPDU guard, BPDU filtering
- 802.1X Network Access Control, Auto VLAN
- 802.2 Logical Link Control
- 802.3 Frame Extensions for VLAN Tagging
- 802.3ab Gigabit Ethernet (1000BASE-T)
- 802.3ac Gigabit Ethernet (10GBASE-X)
- 802.3ad Link Aggregation with LACP
- 802.3af 802.3at PoE (N3224P-ON, N3248P-ON, N3224PX-ON, N3248PX-ON)
- 802.3bt PoE (N3208PX-ON, N3224PX-ON, N3248PX-ON)
- 802.3AX Load Balancing
- Dell Multi-Chassis LAG (MLAG)
- Dell Policy Based Forwarding
- Dell EqualLogic iSCSI Auto-configuration

### General Internet protocols
- General IPv4 protocols
- General IPv6 protocols

### Layer 3 functionality
- Layer 3 traffic: 9,216 bytes

### Multicast
- IGMPv1
- IGMPv2
- IGMPv3
- DVMRP
- PIM-DM
- PIM-SM
### Quality of service

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### Network Management and Security

| Dell | L4 Trusted Mode |
| 1155 | SNMPv1 |
| 1157 | SNMPv2 |
| 1212 | Concise MIB Definitions |
| 1213 | MIB-II |
| 1215 | SNMP Traps |
| 1286 | Bridge MIB |
| 1442 | SMIv2 |
| 1451 | Manager-to-Manager MIB |
| 1493 | Managed objects for Bridges MIB |
| 1573 | Evolution of Interfaces |
| 1612 | DNS Resolver MIB Extensions |
| 1643 | Ethernet-like MIB |
| 1757 | RMON MIB |
| 1867 | HTML/2.0 Forms with file upload extensions |
| 1901 | Community-based SNMPv2 |
| 1907 | SNMPv2 MIB |
| 1908 | Coexistence between SNMPv1/v2 |
| 2011 | IP MIB |
| 2012 | TCP MIB |
| 2013 | UDP MIB |
| 2068 | HTTP/1.1 |
| 2096 | IP Forwarding Table MIB |
| 2233 | Interfaces Group using SMiv2 |
| 2246 | TLS v1 |
| 2271 | SNMP Framework MIB |

### Technical specifications

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### Other certifications

N-Series products have the necessary features to support a PCI compliant network topology.

### Regulatory, environment and other compliance

#### Safety and emissions
- Australia/New Zealand: ACMA RCA Class A
- Canada: ICES Class A; cUL
- China: CCC Class A; NAL
- Europe: CE Class A
- Japan: VCCI Class A
- USA: FCC Class A; NRTL UL; FDA 21 CFR 1040.10 and 1040.11
- Eurasia Customs Union: EAC
- Germany: GS mark

Product meets EMC and safety standards in many countries inclusive of USA, Canada, EU, Japan, China. For more country-specific regulatory information, and approvals, please see your Dell Technologies representative.

#### RoHS

Product meets RoHS compliance standards in many countries inclusive of USA, EU, China, and India. For more country-specific RoHS compliance information, please see your Dell Technologies representative.

#### EU WEEE

EU Battery Directive

#### REACH

Energy

Japan: JEL
IT Lifecycle Services for Networking

Experts, insights and ease
Our highly trained experts, with innovative tools and proven processes, help you transform your IT investments into strategic advantages.

Plan & Design
Let us analyze your multivendor environment and deliver a comprehensive report and action plan to build upon the existing network and improve performance.

Deploy & Integrate
Get new wired or wireless network technology installed and configured with ProDeploy. Reduce costs, save time, and get up and running fast.

Educate
Ensure your staff builds the right skills for long-term success. Get certified on Dell EMC Networking technology and learn how to increase performance and optimize infrastructure.

Manage & Support
Gain access to technical experts and quickly resolve multivendor networking challenges with ProSupport. Spend less time resolving network issues and more time innovating.

Optimize
Maximize performance for dynamic IT environments with Dell EMC Optimize. Benefit from in-depth predictive analysis, remote monitoring and a dedicated systems analyst for your network.

Retire
We can help you resell or retire excess hardware while meeting local regulatory guidelines and acting in an environmentally responsible way.

Learn more at DellTechnologies.com/Services