DELL EMC POWERSWITCH
N2000 SERIES SWITCHES

Energy-efficient, cost-effective 1GbE switches for modernizing and scaling network infrastructure

The N2000 switch series offers a power-efficient Gigabit Ethernet (GbE) network-access switching solution with integrated 10GbE uplinks. With high-performance capabilities and wire-speed performance, utilizing a non-blocking architecture to easily handle unexpected traffic loads, the switches offer simple management and scalability via an 84Gbps (full-duplex) high availability stacking architecture that allows management of up to eight* switches from a single IP address. An integrated 80PLUS-certified power supply and features such as Energy-Efficient Ethernet and short cable detection provide energy efficiency to help decrease power and cooling costs.

Modernize campus network architectures

Modernize campus network architectures with a power-efficient and resilient 1/10GbE switching solution with Power over Ethernet Plus (PoE+). Select N2000 models offer 24 or 48 ports of PoE+ to deliver clean power to network devices such as wireless access points (APs), Voice-over-IP (VoIP) handsets, video conferencing systems and security cameras. For greater interoperability in multivendor networks, N2000 switches offer the latest open-standard protocols and include technology to interface with Cisco protocol RPVST+ and devices using CDP.

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. One common command line interface (CLI) and graphic user interface (GUI) using a well-known command language gets skilled network administrators productive quickly. With USB auto-configuration, network administrators can rapidly deploy mirrored configurations to numerous devices by simply inserting a USB key.

Deploy with confidence at any scale

N2200-ON series switches help create performance assurance with a data rate up to 220Gbps (full duplex) and a forwarding rate up to 256Mpps. Scale easily with built-in rear stacking ports. Switch stacks of up to 400* ports can be managed from a single screen using the highly available stacking architecture for high-density aggregation with seamless redundant availability.

N-Series switches help provide certainty with a lifetime warranty that covers software upgrades, hardware repair or replacement, and optics and cables purchased with the switch.**

Hardware, performance and efficiency

- Up to 48 line-rate GbE RJ-45 ports and two integrated 10GbE SFP+ ports.
- Support for 24 ports of PoE+ in 1RU or up to 48 ports of PoE+ with an optional external power supply.
- N2128PX-ON supports PoE 60W over its 4 2.5GbE ports, delivering up to 60W per port and bandwidth for Wave 2 wireless.
- Up to 600 1GbE ports in an 8-unit* stack for high-density, high-availability in IDFs, MDFs and wiring closets.
- Non-stop forwarding and fast failover in stack configurations.
- 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 Fresh Air compliance for operation in environments up to 113°F (45°C) helps reduce cooling costs in temperature constrained deployments.

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 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
- Interfaces with RPVST+ protocol for greater flexibility and interoperability in Cisco networks.
- Layer 3 Standard IPv4 and IPv6 functionality including static routing, RIP, and OSPFv2 support.

**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. For details, visit https://www.dell.com/en-us/work/shop/networkingwarranty/tps/networkingwarranty.

* Up to 12 units running firmware pre-6.6.x.x. 6.6.x.x firmware reduces the maximum stack size of N2000 and N2128PX Series to 8 units.
<table>
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<th>Product</th>
<th>Description</th>
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| **N2000 Series**| **N2024**: 24x RJ45 10/100/1000Mb auto-sensing ports, 2x SFP+ ports, 2x stacking ports, 1 integrated 100W PSU  
**N2024P**: 24x RJ45 10/100/1000Mb PoE+ (up to 30.8W) autosensing ports, 2x SFP+ ports, 2x stacking ports, 1 integrated 100W PSU (requires C15 plug)  
**N2048**: 48x RJ45 10/100/1000Mb auto-sensing ports, 2x SFP+ ports, 2x stacking ports, 1 integrated 100W PSU  
**N2048P**: 48x RJ45 10/100/1000Mb PoE+ (up to 30.8W) autosensing ports, 2x SFP+ ports, 2x stacking ports, 1 integrated 1000W PSU (requires C15 plug)  
**N2128PX-ON**: 24x RJ45 10/100/1000Mb PoE+ (up to 30.8W) auto-sensing ports, 4x RJ45 10/100/1000/2500Mb PoE 60W auto-sensing ports, 2x SFP+ ports, 2x stacking ports, 1 integrated 1000W PSU (requires C15 plug) |
| **Power cords** | C13 to NEMA 5-15, 3M  
C13 to C14, 2M  
C15 to NEMA 5-15, 2M (C15 for POE N-Series only) |
| **Power supplies (optional)** | RPS720 external power supply for N2000 non-POE (720 watts); N2024 and N2048 (sold separately)  
MPS1000 external power supply for N2000 PoE+ switches (1000 watts); N2024P, N2048P, N2128PX-ON (sold separately) |
| **Optics (optional)** | Transceiver, SFP, 1000BASE-T  
Transceiver, SFP, 1000BASE-SX, 850nm wavelength, up to 550m reach  
Transceiver, SFP, 1000BASE-LX, 1310nm wavelength, up to 10km reach  
Transceiver, SFP, 1000BASE-ZX, 1550nm wavelength, up to 80km reach  
Transceiver, SFP+, 10GbE, LRM, 1310nm wavelength, up to 220m reach  
Transceiver, SFP+, 10GbE, SR, 850nm wavelength, up to 300m reach  
Transceiver, SFP+, 10GbE, LR, 1310nm wavelength, up to 10km reach  
Transceiver, SFP+, 10GbE, ER, 1550nm wavelength, up to 40km reach |
| **Cables (optional)** | Stacking cable 0.5m, 1m and 3m  
Dell Technologies Networking cable, SFP+ to SFP+, 10GbE, copper twinax direct attach cable, 0.5m, 1m, 3m, 5m and 7m |
Technical specifications

**Hardware specifications**

**Physical**
- 2 rear stacking ports (21Gbps) supporting up to 84Gbps (full duplex)
- 2 integrated front 1GBe SFP+ dedicated ports
- USB (Type A) port for configuration via USB flash drive
- Auto-negotiation for speed and flow control
- Auto MDI/MDIX, port mirroring
- Flow-based port mirroring
- Broadcast storm control
- Energy-Efficient Ethernet per port settings
- Redundant variable speed fans
- Air flow: I/O to power supply
- Integrated power supply:
  - 100W AC (N2024, N2048), 1,000W AC (N2024P, N2048P, N2128PX-ON)
  - 9,216 bytes MTU
- RJ45 console port with RS232 signaling (RJ-45 to female DB-9 connector included)
- Dual firmware images on-board
- Switching engine model: Store and forward
- Switching engine model: Store and forward
- Dual firmware images on-board
- Switching engine model: Store and forward
- Dual firmware images on-board

**Flash memory:** 256MB (512MB for N2128PX-ON)

**Packet buffer memory:** 4MB (52MB for N2128PX-ON)

**CPU memory:** 1GB (2GB for N2128PX-ON)

**Layer 3 functionality**
- RIPv1
- RIP-2 MDS Auth
- RIPv2 Multicast
- DiffServ Field
- rTCM
- DiffServ Architecture
- tRCM
- Assured Fwd PHB

**Layer 3 forwarding rate**
- 1724 Mpps (110 Gbps) - N2024
- 2453 Mpps (172 Gbps) - N2048

**Layer 4 trusted mode**
- Dell Port Based QoS (TCP/UDP) Services Mode

**Layer 4 trusted mode**
- Dell UlDLD

**Layer 4 trusted mode**
- Dell Flow Based QoS Services Mode (IPv4/IPv6)

**Layer 4 trusted mode**
- SMV1
- SMV2
- SMV4

**Layer 4 trusted mode**
- 120 Concise MIB Definitions

**Layer 4 trusted mode**
- 1213 MIB-II

**Layer 4 trusted mode**
- 1215 SNMP Traps

**Layer 4 trusted mode**
- 1286 Bridge MIB

**Layer 4 trusted mode**
- SMV2

**Layer 4 trusted mode**
- 1451 Manager-to-Manager MIB

**Layer 4 trusted mode**
- 1492 TACACS+ managed objects

**Layer 4 trusted mode**
- 1493 Managed Objects for Bridges MIB

**Layer 4 trusted mode**
- 1573 Evolution of Interfaces

**Layer 4 trusted mode**
- 1612 DNS Resolver MIB Extensions

**Layer 4 trusted mode**
- 1643 Ethernet-Like MIB

**Layer 4 trusted mode**
- 1757 RMON MIB

**Layer 4 trusted mode**
- 1897 HTML/2.0 Forms with File Upload Extensions

**Layer 4 trusted mode**
- 1901 Community-based SMVv2

**Layer 4 trusted mode**
- 1907 SNMIPv2 MIB

**Layer 4 trusted mode**
- 1908 Coexistence Between SMVv1/v2

**Layer 4 trusted mode**
- 2011 IP MIB

**Layer 4 trusted mode**
- 2012 TCP MIB

**Layer 4 trusted mode**
- 2013 UDP MIB

**Layer 4 trusted mode**
- 2068 HTTP/1.1

**Layer 4 trusted mode**
- 2096 IP Forwarding Table MIB

**Layer 4 trusted mode**
- 2223 Interfaces Group using SMV2

**Layer 4 trusted mode**
- 2246 TLS v1

**Layer 4 trusted mode**
- 2271 SNMP Framework MIB

**Layer 4 trusted mode**
- 2295 Transport Context Negotiation

**Layer 4 trusted mode**
- 2296 Remote Variant Selection

**Layer 4 trusted mode**
- 2576 Coexistence Between SMVv1/v2/v3

**Layer 4 trusted mode**
- 2578 SMV2

**Layer 4 trusted mode**
- 2579 Textual Conventions for SMV2

**Layer 4 trusted mode**
- 2580 Conformance Statements for SMV2

**Layer 4 trusted mode**
- 2613 RMON MIB

**Layer 4 trusted mode**
- 2618 RADIUS Authentication MIB

**Layer 4 trusted mode**
- 2620 RADIUS Accounting MIB

**Layer 4 trusted mode**
- 2655 Ethernet-Like Interfaces MIB

**Layer 4 trusted mode**
- 2666 Identification of Ethernet Chipsets

**Layer 4 trusted mode**
- 2674 Extended Bridge MIB

**Layer 4 trusted mode**
- 2737 ENTITY MIB

**Layer 4 trusted mode**
- 2818 HTTP over TLS

**Layer 4 trusted mode**
- 2819 RMON MIB (groups 1, 2, 3, 9)

**Layer 4 trusted mode**
- 2856 Text Conv. For High Capacity

**Layer 4 trusted mode**
- 2865 Interfaces MIB

**Layer 4 trusted mode**
- 2866 RADIUS Accounting MIB

**Layer 4 trusted mode**
- 2868 RADIUS Attributes for Tunnel Prot.
Regulatory, environment and other compliance

Safety and emissions
Australia/New Zealand: ACMA RCM 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 Dell Technologies 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

Certifications (available or coming soon)
Available with US Trade Agreements Act (TAA) compliance.
N-Series products have the necessary features to support a PCI compliant network topology.

Learn more at DellTechnologies.com/Networking