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 twelve 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 600 1GbE 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 a 12-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/cp/networkingwarranty.
<table>
<thead>
<tr>
<th>Product</th>
<th>Description</th>
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<tbody>
<tr>
<td><strong>N2000 Series</strong></td>
<td></td>
</tr>
<tr>
<td>N2024:</td>
<td>24x RJ45 10/100/1000Mb auto-sensing ports, 2x SFP+ ports, 2x stacking ports, 1 integrated 100W PSU</td>
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<tr>
<td>N2024P:</td>
<td>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)</td>
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<tr>
<td>N2048:</td>
<td>48x RJ45 10/100/1000Mb auto-sensing ports, 2x SFP+ ports, 2x stacking ports, 1 integrated 100W PSU</td>
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<tr>
<td>N2048P:</td>
<td>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)</td>
</tr>
<tr>
<td>N2128PX-ON:</td>
<td>24x RJ45 10/100/1000/2500Mb PoE 60W auto-sensing ports, 2x SFP+ ports, 2x stacking ports, 1 integrated 1000W PSU (requires C15 plug)</td>
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<tr>
<td><strong>Power cords</strong></td>
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<tr>
<td></td>
<td>C13 to NEMA 5-15, 3M</td>
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<tr>
<td></td>
<td>C13 to C14, 2M</td>
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<tr>
<td></td>
<td>C15 to NEMA 5-15, 2M (C15 for POE N-Series only)</td>
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<tr>
<td><strong>Power supplies (optional)</strong></td>
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<tr>
<td></td>
<td>RPS720 external power supply for N2000 non-POE (720 watts); N2024 and N2048 (sold separately)</td>
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<tr>
<td></td>
<td>MPS1000 external power supply for N2000 PoE+ switches (1000 watts); N2024P, N2048P, N2128PX-ON (sold separately)</td>
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<tr>
<td><strong>Optics (optional)</strong></td>
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<tr>
<td></td>
<td>Transceiver, SFP, 1000BASE-T</td>
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<tr>
<td></td>
<td>Transceiver, SFP, 1000BASE-SX, 850nm wavelength, up to 550m reach</td>
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<tr>
<td></td>
<td>Transceiver, SFP, 1000BASE-LX, 1310nm wavelength, up to 10km reach</td>
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<tr>
<td></td>
<td>Transceiver, SFP, 1000BASE-ZX, 1550nm wavelength, up to 80km reach</td>
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<td></td>
<td>Transceiver, SFP+, 10GbE, LRM, 1310nm wavelength, up to 220m reach</td>
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<td></td>
<td>Transceiver, SFP+, 10GbE, SR, 850nm wavelength, up to 300m reach</td>
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<tr>
<td></td>
<td>Transceiver, SFP+, 10GbE, LR, 1310nm wavelength, up to 10km reach</td>
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<tr>
<td></td>
<td>Transceiver, SFP+, 10GbE, ER, 1550nm wavelength, up to 40km reach</td>
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<tr>
<td><strong>Cables (optional)</strong></td>
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<tr>
<td></td>
<td>Stacking cable 0.5m, 1m and 3m</td>
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<tr>
<td></td>
<td>Dell Technologies Networking cable, SFP+ to SFP+, 10GbE, copper twinax direct attach cable, 0.5m, 1m, 3m, 5m and 7m</td>
</tr>
</tbody>
</table>
Hardware specifications

Physical
2 rear stacking ports (21Gbps) supporting up to 84Gbps (full duplex)
2 integrated front 10GBE 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),
1000W AC (N2024P, N2048P, N2128PX-ON);
N24 ports per stack, 8 member ports per LAG
128 LAG groups, 144 dynamic

CPU memory: 1GB (2GB for N2128PX-ON)
RIP routing interfaces: 256
VLAN routing interfaces: 256
VLANs supported: 4,094
Protocol-based VLANs supported
ARP entries: 4,096
NDP entries: 400
Access control lists (ACL): Supported
MAC and IP-based ACLs: Supported
Time-controlled ACLs: Supported
Max number of ACLs: 100
Max ACL rules system-wide: 2,048
Max rules per ACL: 1,024
Max ACL rules per interface (IPv4):
1,024 (ingress), 512 (egress)
Max ACL rules per interface (IPv6):
512 (ingress), 256 (egress)
Max VLAN interfaces with ACLs applied: 24

IEEE compliance
802.1AB LLDP
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 (compatible with Cisco's RPVST+)
Dell Spanning tree optional features: STP root guard, BPDU guard, BPDU filtering
Dell Voice VLAN

Layer 3 functionality
1058 RIPv1
2082 RIP-2 MDS Auth
1724 RIP-2 MIB Extension
2453 RIP-2

Multicast
2365 Admin scoped IP Mcast
4541 IGMP v1/v2/v3
2352 IPv4 MIB Snooping and Querier

Network management and security
1150 SMV1
1157 SMV5
1212 Concise MIB Definitions
1213 MIB-II
1215 SNMP Traps
1296 Bridge MIB
1442 SMIV2
1451 Manager-to-Manager MIB
1492 TACACS+
1493 Managed Objects for Bridges MIB
1573 Evolution of Interfaces
1612 DNS Resolver MIB Extensions
1643 Ethernet-like MIB
1757 RMON MIB
1967 HTML/2.0 Forms with File Upload

RFC compliance and additional features
General Internet protocols
General Internet protocols are supported. For a detailed list, please contact your Dell Technologies representative.

General IPv4 protocols
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General IPv6 protocols
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RADIUS Attributes for Tunnel Prot.
RADIUS Extensions
Internet Standard Mgmt. Framework
SNMP Management Framework
Message Processing and Dispatching
SNMP Applications
User-based security model
View-based control model
SNMPv2
Transport Mappings
SNMP MIB
RMON MIB
802.1X with RADIUS
Registry of RMON MIB
Randomness Requirements
UDP MIB
SSHv2 Protocol
SSHv2 Authentication
SSHv2 Transport
SSHv2 Connection Protocol
SSHv2 Transport Layer Protocol
LDAP Extensions
SECSH Public Key File Format
SSL
IP Router Alert
Dell Enterprise MIB supporting routing features
draft-ietf-thubmb-etherifmib-v3-00.txt
(Drafts RFC 2665)
Dell LAG MIB Support for 802.3ad Functionality
dell-sflow version 1.3 draft 5
Dell Custom Login Banners
Dell Dynamic ARP Inspection
Dell IP Address Filtering
Dell Tiered Authentication
Dell RSPAN
Dell Change of Authorization
Dell OpenFlow 1.3
Dell Python Scripting
Dell Support Assist
HiveManager NG
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 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