



DELL EMC POWERSWITCH N2200-ON SERIES SWITCHES

Cost-effective open networking Multigigabit Ethernet switches for modernizing and scaling infrastructure

The N2200-ON switch series offers a power-efficient Multigigabit Ethernet network-access switching solution with integrated 25GbE 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 160Gbps (full duplex) high availability stacking architecture that allows management of up to twelve switches from a single IP address. An integrated 80PLUS Platinum certified power supply provides energy efficiency to help decrease power and cooling costs.

Modernize campus network architectures

Modernize campus network architectures with a power-efficient and resilient 1/2.5/25GbE switching solution with 802.3bt Type-3 (60W) Power over Ethernet. PoE ports can deliver clean power to network devices such as wireless access points (APs), Voice-over-IP (VoIP) handsets, video conferencing systems, security cameras, LED luminaires and many more. For greater interoperability in multivendor networks, N2200 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. 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. N2200-ON switches also support the Open Network Install Environment (ONIE), enabling installation of alternate network operating systems.

Deploy with confidence at any scale

N2200-ON series switches help create performance assurance with a data rate up to 600Gbps (full duplex) and a forwarding rate up to 833Mpps. Scale easily with built-in rear stacking ports. Switch stacks of up to 624 1/2.5/25GbE 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.¹

Hardware, performance and efficiency

- 1RU switches with up to 48 line-rate 1/2.5GbE RJ-45 ports and four integrated 25GbE SFP28 ports.
- Up to 48 ports of 30W PoE including 24 ports which can scale up to 60W PoE.
- Up to 624 1/2.5/25GbE 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.
- 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.
- Layer 3 Standard IPv4 and IPv6 functionality including static routing, RIP, and OSPF support.
- VXLAN-Lite support in hardware only (can be used if enabled by Open Networking (ON) partner network operating system).

¹Select 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. Details at <https://www.dell.com/en-us/work/shop/networkingwarranty/cp/networkingwarranty>

Product	Description
N2200 Series	<p>OS6 Options (with pre-installed OS6 NOS)</p> <ul style="list-style-type: none"> N2224X-ON IO/PS airflow with OS6: 24x RJ45 10M/100M/1G/2.5G auto-sensing ports, 4x SFP28 ports, 2x 40G QSFP+ ports, 1x 550W PSU included N2224X-ON PS/IO airflow with OS6: 24x RJ45 10M/100M/1G/2.5G auto-sensing ports, 4x SFP28 ports, 2x 40G QSFP+ ports, 1x 550W PSU included N2224PX-ON IO/PS airflow with OS6: 12x RJ45 10M/100M/1G/2.5G 802.3at (up to 30W) PoE auto-sensing ports, 12x RJ45 10M/100M/1G/2.5G 802.3bt Type-3 (up to 60W) PoE auto-sensing ports, 4x SFP28 ports, 2x 40G QSFP+ ports, 1x 1050W PSU included N2248X-ON IO/PS airflow with OS6: 48x RJ45 10M/100M/1G/2.5G auto-sensing ports, 4x SFP28 ports, 2x 40G QSFP+ ports, 1x 550W PSU included N2248X-ON PS/IO airflow with OS6: 48x RJ45 10M/100M/1G/2.5G auto-sensing ports, 4x SFP28 ports, 2x 40G QSFP+ ports, 1x 550W PSU included N2248PX-ON IO/PS airflow with OS6: 24x RJ45 10M/100M/1G/2.5G 802.3at (up to 30W) PoE auto-sensing ports, 24x RJ45 10M/100M/1G/2.5G 802.3bt Type-3 (up to 60W) PoE auto-sensing ports, 4x SFP28 ports, 2x 40G QSFP+ ports, 1x 1600W PSU included
Power cords	C13 to NEMA 5-15, 3M C13 to C14, 2M
Power shelves (optional)	C13 to NEMA 5-15, 3M C13 to C14, 2M
Power supplies (optional)	<p>550W AC hot swappable with IO/PS airflow, adds redundancy to N2224X-ON, N2248X-ON 550W AC hot swappable with PS/IO airflow, adds redundancy to N2224X-ON, N2248X-ON 1050W AC hot swappable with IO/PS airflow, adds redundancy and/or extends PoE budget for N2224X-ON. Also used with MPS-1S shelf, MPS-3S Shelf 1600W AC hot swappable with IO/PS airflow, adds redundancy and/or extends PoE budget for N2248PX-ON. Also used with MPS-1S shelf, MPS-3S Shelf 2000W-AC hot swappable with IO/PS airflow, extends PoE budget, used with MPS1S Shelf, MPS-3S Shelf ² 550W DC hot swappable with IO/PS airflow, adds redundancy to N2224X-ON, N2248X-ON ² 1300W DC hot swappable with IO/PS airflow, adds redundancy and/or extends PoE budget for N2224PX-ON, N2248PX-ON ²</p>
Optics	<p>Transceiver, SFP, 1000BASE-T ³ Transceiver, SFP, 1000BASE-SX ³ Transceiver, SFP, 1000BASE-LX ³ Transceiver, SFP, 1000BASE-ZX ³ Transceiver, SFP+ 10GbE, USR (MMF upto 100m) ⁴ Transceiver, SFP+ 10GbE, SR (MMF upto 400m) ⁴ Transceiver, SFP+ 10GbE, LR (SMF 10 km) ⁴ Transceiver, SFP+ 10GbE, ZR (SMF 80 km) ⁴ Transceiver, SFP+ 10GbE, BASE-T GEN2 ⁴ Transceiver, SFP28 25GbE, LR Transceiver, SFP28 25GbE, SR-NOF Transceiver, SFP28 25GbE, ESR Transceiver, QSFP+ 40GbE, QSFP-40G-SR4 Transceiver, QSFP+ 40GbE, QSFP-40G-LR4</p>
Cables	<p>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) 40GbE, QSFP+ to QSFP+, Passive DAC (0.5M, 1M, 2M, 3M, 5M, 7M) 40GbE, QSFP+ to QSFP+, Active optical (3M, 10M)</p>
Fans (spare)	<p>Fan module, IO to PSU Airflow Fan module, PSU to IO Airflow (for N2224X-ON, N2248X-ON only)</p>

² Planned in Roadmap

³ 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.

⁴ 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 40GbE QSFP+ stacking ports
 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
 Broadcast storm control
 Redundant variable speed fans (field replaceable)
 Air flow: I/O to power supply; Power supply to I/O options available with non-PoE models
 Integrated power supply: 550W AC (N2224X-ON, N2248X-ON), 1050W AC (N2224PX-ON), 1600W AC (N2248PX-ON)
 Dual firmware images on-board
 Switching engine model: Store and forward

Chassis

Size (1RU, H x W x D): 1.71 in x 17.09 in x 15.75 in (power supply/fan tray handle adds additional 1.18 in)
 Approximate weight (Switch with 1 PSU installed): 14.3lbs/6.5kg (N2224X-ON), 14.7lbs/6.7kg (N2224PX-ON), 15.1lbs/6.9kg (N2248X-ON), 15.8lbs/7.2kg (N2248PX-ON)
 2-Post rack mounting kit

Environmental

Power supply efficiency: 80% or better in all operating modes
 Max. thermal output (BTU/hr): 812 (N2224X-ON), 4495 (N2224PX-ON), 1112 (N2248X-ON), 8478 (N2248PX-ON)
 Power consumption max (watts): 238W (N2224X-ON), 1318W (N2224PX-ON), 326W (N2248X-ON), 2486W (N2248PX-ON)
 Operating temperature: 32° to 113°F (0° to 45°C)
 Operating humidity: 95%
 Storage temperature: -40° to 149°F (-40° to 65°C)
 Storage relative humidity: 85%

Performance

CPU memory: 4GB
 SSD: 8GB
 Packet buffer memory: 4MB
 Switch fabric capacity (full duplex): 480Gbps (N2224X-ON and N2224PX-ON); 600Gbps (N2248X-ON and N2248PX-ON)
 Forwarding rate: 667Mpps (N2224X-ON and N2224PX-ON); 833Mpps (N2248X-ON and N2248PX-ON)
 Line-rate Layer 2 switching: All (non-blocking)
 Line-rate Layer 3 routing: All (non-blocking)

Network Operating System specifications

Software specifications listed below are applicable for OS6. For detailed specifications of the NOS, please contact your Dell Technologies representative

Scaling performance

MAC addresses: 32K
 Static routes: 256 (IPv4)/128 (IPv6) Dynamic routes: 256 (IPv4)
 Link aggregation: 128 LAG groups, 144 dynamic ports per stack, 8 member ports per LAG

Priority queues per port: 8
 RIP routing interfaces: 256
 VLAN routing interfaces: 128
 VLANs supported: 4,094
 Protocol-based VLANs: Supported
 ARP entries: 4,096
 NDP entries: 512
 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: 3,914
 Max rules per ACL: 1,023
 Max ACL rules per interface (IPv4): 1,023 (ingress), 1023 (egress)
 Max ACL rules per interface (IPv6): 1023 (ingress), 509 (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 10BASE-T
 802.3ab Gigabit Ethernet (1000BASE-T)
 802.3ac Frame Extensions for VLAN Tagging
 802.3ad Link Aggregation with LACP
 802.3ae 10 Gigabit Ethernet (10GBASE-X)
 802.3at PoE+ (N2024P and N2048P)
 802.3AX LAG Load Balancing
 Dell Multi-Chassis LAG (MLAG)
 Dell Policy Based Forwarding
 802.3u Fast Ethernet (100BASE-TX) on Management Ports
 802.3x Flow Control
 802.3z Gigabit Ethernet (1000BASE-X)

MTU 9,216 bytes

General Internet protocols

General Internet protocols are supported. For a detailed list, please contact your Dell Technologies representative.

General IPv4 protocols

General IPv4 protocols are supported. For a detailed list, please contact your Dell Technologies representative.

General IPv6 protocols

General IPv6 protocols are supported. For a detailed list, please contact your Dell Technologies representative.

Layer 3 functionality

1058 RIPv1
 1724 RIPv2 MIB Extension
 2082 RIP-2 MD5 Auth

2453 RIPv2
 1765 OSPF DB overflow
 1850 OSPF MIB
 2328 OSPFv2
 2740 OSPFv3 (from OS6.6.2)
 3137 OSPF Stub Router Advert
 5187 OSPFv3 Graceful Routing Restart (from OS6.6.2)

Multicast

2365 Admin scoped IP Mcast
 2932 IPv4 MIB
 4541 IGMP v1/v2/v3 Snooping and Querier
 IEEE 802.1ag draft 8.1 – Connectivity Fault Management

Quality of service

2474 DiffServ Field
 2475 DiffServ Architecture
 2597 Assured Fwd PHB
 Dell Port Based QoS (TCP/UDP) Services Mode
 Dell Flow Based QoS Services Mode (IPv4/IPv6)
 2697 srTCM
 4115 trTCM
 Dell L4 Trusted Mode
 Dell UDL

Network Management and Security

1155 SMIv1
 1157 SNMPv1
 1212 Concise MIB Definitions
 1213 MIB-II
 1215 SNMP Traps
 1286 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
 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
 2295 Transport Content Negotiation
 2296 Remote Variant Selection
 2576 Coexistence Between SNMPv1/v2/v3
 2578 SMIv2
 2579 Textual Conventions for SMIv2
 2580 Conformance Statements for SMIv2
 2613 RMON MIB
 2618 RADIUS Authentication MIB
 2620 RADIUS Accounting MIB
 2665 Ethernet-like Interfaces MIB
 2666 Identification of Ethernet Chipsets
 2674 Extended Bridge MIB
 2737 ENTITY MIB
 2818 HTTP over TLS
 2819 RMON MIB (groups 1, 2, 3, 9)
 2856 Text Conv. For High Capacity Data Types
 2863 Interfaces MIB

- 2865 RADIUS
- 2866 RADIUS Accounting
- 2868 RADIUS Attributes for Tunnel Prot.
- 2869 RADIUS Extensions
- 3410 Internet Standard Mgmt. Framework
- 3411 SNMP Management Framework
- 3412 Message Processing and Dispatching
- 3413 SNMP Applications
- 3414 User-based security model 3415 View-based control model
- 3416 SNMPv2
- 3417 Transport Mappings
- 3418 SNMP MIB
- 3577 RMOM MIB
- 3580 802.1X with RADIUS
- 3737 Registry of RMOM MIB
- 4086 Randomness Requirements
- 4113 UDP MIB
- 4251 SSHv2 Protocol
- 4252 SSHv2 Authentication
- 4253 SSHv2 Transport
- 4254 SSHv2 Connection Protocol
- 4419 SSHv2 Transport Layer Protocol
- 4521 LDAP Extensions
- 4716 SECSH Public Key File Format
- 5246 TLS v1.2
- 6101 SSL
- 6398 IP Router Alert
- Dell Enterprise MIB supporting routing features draft-ietf-hubmib-etherif-mib-v3-00.txt (Obsoletes RFC 2665)
- Dell LAG MIB Support for 802.3ad Functionality
- Dell sflow version 1.3 draft 5
- Dell 802.1x Monitor Mode
- 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

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 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 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



Dell Technologies Services

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Dell Technologies Consulting Services provides industry professionals with a wide range of tools and the experience your need to design and execute plans to transform your business.

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