



# 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 luminaries and many more. For greater interoperability in multivendor networks, N2200-ON 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.\*

## 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.

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

## 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).

Product	Description
N2200-ON Series	<p><b>OS6 Options (with pre-installed OS6 NOS)</b></p> <ul style="list-style-type: none"> <li>• 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</li> <li>• 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</li> <li>• 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</li> <li>• 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</li> <li>• 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</li> <li>• 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 110M/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</li> </ul>
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 **</p> <p>550W DC hot swappable with IO/PS airflow, adds redundancy to N2224X-ON, N2248X-ON ** 1300W DC hot swappable with IO/PS airflow, adds redundancy and/or extends PoE budget for N2224PX-ON, N2248PX-ON **</p>
Optics	<p>Transceiver, SFP, 1000BASE-T *** Transceiver, SFP, 1000BASE-SX *** Transceiver, SFP, 1000BASE-LX *** Transceiver, SFP, 1000BASE-ZX *** Transceiver, SFP+ 10GbE, USR (MMF upto 100m) **** Transceiver, SFP+ 10GbE, SR (MMF upto 400m) **** 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, QSFP+ 40GbE, QSFP-40G-SR4 Transceiver, QSFP+ 40GbE, QSFP-40G-LR4</p>

\*\* Planned in Roadmap

\*\*\* 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.

\*\*\*\* 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.

Product	Description
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) 40GbE, QSFP+ to QSFP+, Passive DAC (0.5M, 1M, 2M, 3M, 5M, 7M) 40GbE, QSFP+ to QSFP+, Active optical (3M, 10M)
Fans (spare)	Fan module, IO to PSU Airflow Fan module, PSU to IO Airflow (for N2224X-ON, N2248X-ON only)

## Technical specifications

### 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)  
ANSI LLDP-MED (TIA-1057)  
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 UDLD

## Technical specifications

<b>Network Management and Security</b>					
1155	SMLv1	2819	RMON MIB (groups 1, 2, 3, 9)	Dell	IP Address Filtering
1157	SNMPv1	2856	Text Conv. For High Capacity Data Types	Dell	Tiered Authentication
1212	Concise MIB Definitions	2863	Interfaces MIB	Dell	RSPAN
1213	MIB-II	2865	RADIUS	Dell	Change of Authorization
1215	SNMP Traps	2866	RADIUS Accounting	Dell	OpenFlow 1.3
1286	Bridge MIB	2868	RADIUS Attributes for Tunnel Prot.	Dell	Python Scripting
1442	SMLv2	2869	RADIUS Extensions	Dell	Support Assist
1451	Manager-to-Manager MIB	3410	Internet Standard Mgmt. Framework		
1492	TACACS+	3411	SNMP Management Framework		
1493	Managed Objects for Bridges MIB	3412	Message Processing and Dispatching		
1573	Evolution of Interfaces	3413	SNMP Applications		
1612	DNS Resolver MIB Extensions	3414	User-based security model 3415		
1643	Ethernet-like MIB		View-based control model		
1757	RMON MIB	3416	SNMPv2		
1867	HTML/2.0 Forms with File Upload Extensions	3417	Transport Mappings		
		3418	SNMP MIB		
1901	Community-based SNMPv2	3577	RMON MIB		
1907	SNMPv2 MIB	3580	802.1X with RADIUS		
1908	Coexistence Between SNMPv1/v2	3737	Registry of RMON MIB		
2011	IP MIB	4086	Randomness Requirements		
2012	TCP MIB	4113	UDP MIB		
2013	UDP MIB	4251	SSHv2 Protocol		
2068	HTTP/1.1	4252	SSHv2 Authentication		
2096	IP Forwarding Table MIB	4253	SSHv2 Transport		
2233	Interfaces Group using SMLv2	4254	SSHv2 Connection Protocol		
2246	TLS v1	4419	SSHv2 Transport Layer Protocol		
2271	SNMP Framework MIB	4521	LDAP Extensions		
2295	Transport Content Negotiation	4716	SECSH Public Key File Format		
2296	Remote Variant Selection	5246	TLS v1.2		
2576	Coexistence Between SNMPv1/v2/v3	6101	SSL		
2578	SMLv2	6398	IP Router Alert		
2579	Textual Conventions for SMLv2	Dell	Enterprise MIB supporting routing features draft-ietf-hubmib-etherif-mib-v3-00.txt (Obsoletes RFC 2665)		
2580	Conformance Statements for SMLv2		LAG MIB Support for 802.3ad		
2613	RMON MIB		Functionality		
2618	RADIUS Authentication MIB		sflow version 1.3 draft 5		
2620	RADIUS Accounting MIB	Dell	802.1x Monitor Mode		
2665	Ethernet-like Interfaces MIB		Custom Login Banners		
2666	Identification of Ethernet Chipsets	Dell	Dynamic ARP Inspection		
2674	Extended Bridge MIB	Dell			
2737	ENTITY MIB	Dell			
2818	HTTP over TLS	Dell			

### 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

## IT Lifecycle Services for Networking

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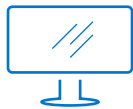
Maximize performance for dynamic IT environments with Dell EMC Optimize. Benefit from in-depth predictive analysis, remote monitoring and a dedicated systems analyst for your network.



#### Retire

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

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