



DELL EMC NETWORKING N3000 SERIES SWITCHES

Energy-efficient, cost-effective 10GbE switches for modernizing and scaling network infrastructure

The N3000 switch series offers a power-efficient and resilient Gigabit Ethernet (GbE) switching solution with integrated 10GbE uplinks for advanced Layer 3 distribution for offices and campus networks. The N3000 switch 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-certified power supplies for high availability and power efficiency. The switches offer simple management and scalability via an 84Gbps (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 1/10GbE switching solution with dense Power over Ethernet Plus (PoE+) and PoE 60W. Select N3000 models offer 24 or 48 ports of PoE+, or up to 32 ports of PoE 60W 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, N3000 series switches offer the latest open-standard protocols and include technology to interface with Cisco protocol RPVST+ and devices using CDP.

Achieve high availability and full bandwidth utilization with Multi-chassis Link Aggregation (MLAG). N3000 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. N3000 supports VRF-lite, allowing it to be partitioned into multiple virtual routers with isolated control and data planes on the same physical switch. The N3000 series is also fully tested and validated to work with Dell EqualLogic™ PS-Series storage arrays.*

Leverage familiar tools and practices

All N-Series switches include Dell Networking OS 6, 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. Select N3000 switches now support the Open Network Install Environment (ONIE), enabling installation of alternate network operating systems.

*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.

Deploy with confidence at any scale

N3000 series switches help create performance assurance with a data rate up to 328Gbps (full duplex) and a forwarding rate up to 428Mpps. Scale easily with built-in rear stacking ports. Switch stacks of up to 624 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. Details at Dell.com/LifetimeWarranty**

Hardware, performance and efficiency

- Up to 48 line-rate GbE ports of copper or fiber, two combo ports for fiber/copper flexibility, and two integrated 10GbE SFP+ ports.
- Up to 48 ports of PoE+ or 32 ports of PoE 60W in 1RU without an external power supply.
- Up to eight 2.5/5GbE ports delivering additional bandwidth for Wave 2 wireless access points.
- Hot swappable expansion module supporting dual-port SFP+ or dual-port 10GBaseT.
- Available with dual 80PLUS-certified hot swappable power supplies. 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 Fresh Air compliance for operation in environments up to 113°F (45°C) helps reduce cooling costs in temperature

Deploying, configuring and managing

- USB auto-configuration rapidly deploys the switch without complex TFTP configurations or sending technical staff to remote offices.
- Plug-and-Play configuration with Dell EqualLogic iSCSI storage arrays* and one-command iSCSI setup alleviates multiple step configuration and potential configuration errors.
- 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.

Product	Description
N3000 series	<p>N3024: 24x RJ45 10/100/1000Mb auto-sensing ports, 2x SFP+ ports, 2x GbE combo media ports, 1x hot swap expansion module bay, 1x 200W PSU included</p> <p>N3024F: 24x 1000-SX (up to 500m distance) or 1000-LX (up to 10km distance) SFP GbE ports, 2x SFP+ ports, 2x GbE combo media ports, 1x hot swap expansion module bay, 1x 200W PSU included</p> <p>N3024P: 12x RJ45 10/100/1000Mb PoE+ (up to 30.8W) auto-sensing ports, 12x RJ45 10/100/1000Mb PoE 60W auto-sensing ports, 2x SFP+ ports, 2x GbE combo media ports, 1x hot swap expansion module bay, 1x 715W PSU included (requires C15 plug)</p> <p>N3048: 48x RJ45 10/100/1000Mb auto-sensing ports, 2x SFP+ ports, 2x GbE combo media ports, 1x hot swap expansion module bay, 1x 200W PSU included</p> <p>N3048P: 32x RJ45 10/100/1000Mb PoE+ (up to 30.8W) auto-sensing ports, 12x RJ45 10/100/1000Mb PoE 60W auto-sensing ports, 2x SFP+ ports, 2x GbE combo media ports, 1x hot swap expansion module bay, 1x 1100W PSU included (requires C15 plug)</p> <p>N3132PX-ON: 24x RJ45 10/100/1000Mb PoE 60W auto-sensing ports, 8x RJ45 10/100/1000/2500/5000Mb PoE 60W auto-sensing ports, 4x SFP+ ports, 1x hot swap expansion module bay, 1x 1100W PSU included (requires C15 plug)</p>
Power cords	<p>C13 to NEMA 5-15, 3M</p> <p>C13 to C14, 2M</p> <p>C15 to NEMA 5-15, 2M (C15 for POE N-Series only)</p>
Modules (optional)	<p>2-port 10 Gigabit BASE-T RJ-45 hot swappable uplink module</p> <p>2-port 10 Gigabit SFP+ hot swappable uplink module</p> <p>2-port 40 Gigabit QSFP+ hot swappable module (N3132PX-ON only)</p> <p>Stacking module (N3132PX-ON only)</p>
Power supplies (optional)	<p>200W AC hot swappable with V-Lock, adds redundancy to non-PoE switches (N3024, N3024F and N3048 only)</p> <p>715W AC hot swappable, adds redundancy to N3024P (N3024P only)</p> <p>1100W AC hot swappable, adds redundancy to N3048P or upgrade N3024P for additional PoE+ power (N3024P, N3048P, N3132PX-ON only)</p>
Optics (optional)	<p>Transceiver, SFP, 100BASE-FX, 1310nm wavelength, up to 2km reach</p> <p>Transceiver, SFP, 1000BASE-T</p> <p>Transceiver, SFP, 1000BASE-SX, 850nm wavelength, up to 550m reach</p> <p>Transceiver, SFP, 1000BASE-LX, 1310nm wavelength, up to 10km reach</p> <p>Transceiver, SFP, 1000BASE-ZX, 1550nm wavelength, up to 80km reach</p> <p>Transceiver, SFP+, 10GbE, LRM, 1310nm wavelength, up to 220m reach</p> <p>Transceiver, SFP+, 10GbE, SR, 850nm wavelength, up to 300m reach</p> <p>Transceiver, SFP+, 10GbE, LR, 1310nm wavelength, up to 10km reach</p> <p>Transceiver, SFP+, 10GbE, ER, 1550nm wavelength, up to 40km reach</p>
Cables (optional)	<p>Stacking cable 0.25m, 1m and 3m</p> <p>Dell Networking cable, SFP+ to SFP+, 10GbE, copper twinax direct attach cable, 0.5m, 1m, 3m, 5m and 7m</p>

Technical specifications

Physical

2 rear stacking ports (21Gbps) supporting up to 84Gbps (full-duplex) (N3132PX-ON requires optional stacking module)

2 integrated front 10GbE SFP+ dedicated ports (N3132PX-ON includes 4 integrated SFP+ ports)

Out-of-band management port (10/100/1000BASE-T)

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

RJ45 console/management port with RS232 signaling (RJ-45 to female DB-9 connector cable included)

Dual firmware images on-board

Switching engine model: Store and forward

Chassis

Size (1RU, H x W x D):

1.7126 in x 17.0866 in x 6.0236 in
(43.5 mm x 434.0 mm x 407.0 mm)
(Power supply handle adds 1.38 in or 35 mm)

Approximate weight:

13.2277lbs/6kg (N3024 and N3024F),
14.5505lbs/6.6kg (N3024P), 13.8891lbs/6.3kg
(N3048), 15.2119lbs/6.9kg (N3048P),
15.7lbs/7.12kg (N3132PX-ON)

ReadyRails rack mounting system, no tools required

Environmental

Power supply:

200W (N3024, N3024F and N3048),
715W or 1,100W (N3024P),
1,100W (N3048P, N3132PX-ON)

Power supply efficiency: 80% or better in all operating modes

Max. thermal output (BTU/hr):

151.4 (N3024), 204.6 (N3024F), 4,467.1
(N3024P), 220.97 (N3048), 3,113.33 (N3048P),
7216.68 (N3132PX-ON)

Power consumption max (watts):

52.8 (N3024), 67.1 (N3024F), 1,287 (N3024P),
74.8 (N3048), 2,145 (N3048P), 2,115 (N3132PX-ON)

Operating temperature: 32° to 113°F (0° to 45°C)

Operating relative humidity: 95%

Storage temperature: -40° to 149°F
(-40° to 65°C)

Storage relative humidity: 85%

Performance

MAC addresses: 32K

Static routes: 1,024 (IPv4)/1,024 (IPv6)

Dynamic routes: 8,160 (IPv4)/4,096 (IPv6)

Switch fabric capacity: 212Gbps (N3024, N3024F and N3024P) (full duplex)
 260Gbps (N3048 and N3048P) 328Gbps (N3132PX-ON)
 Forwarding rate: 158Mpps (N3024, N3024F and N3024P)
 193Mpps (N3048 and N3048P)
 428Mpps (N3132PX-ON)
 Link aggregation: 128 LAG groups, 144 dynamic ports per stack, 8 member ports per LAG
 Priority queues per port: 8
 Line-rate Layer 2 switching: All (non-blocking)
 Line-rate Layer 3 routing: All (non-blocking)
 Flash memory: 256MB (512MB for N3132PX-ON)
 Packet buffer memory: 4MB (5MB for N3132PX-ON)
 CPU memory: 1GB (2GB for N3132PX-ON)
 OSPF routing interfaces: 8,160
 RIP routing interfaces: 512
 ECMP next hops per route: 4
 ECMP groups: 64
 VLAN routing interfaces: 128
 VLANs supported: 4,094
 Protocol-based VLANs: Supported
 Multicast forwarding entries: 1,536 (IPv4), 512 (IPv6)
 ARP entries: 6,144
 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: 4,096
 Max rules per ACL: 1,023
 Max ACL rules per interface (IPv4): 3,072 (ingress), 1,024 (egress)
 Max ACL rules per interface (IPv6): 1,021 (ingress), 512 (egress)
 Max VLAN interfaces with ACLs applied: 24

IEEE compliance

802.1AB LLDP
 Dell Voice VLAN
 Dell ISDP (inter-operates with devices running CDP)
 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
 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+ (N3024P and N3048P)

802.3AX LAG Load Balancing
 Dell Multi-Chassis LAG (MLAG)
 Dell Policy Based Forwarding
 802.3az Energy Efficient Ethernet (EEE)
 802.3u Fast Ethernet (100BASE-TX) on management ports
 802.3x Flow Control
 802.3z Gigabit Ethernet (1000BASE-X)
 ANSI LLDP-MED (TIA-1057)
 Dell EqualLogic iSCSI Auto-configuration
 MTU 9,216 bytes

RFC compliance and additional features

General Internet protocols

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

General IPv4 protocols

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

General IPv6 protocols

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

Layer 3 functionality

1058 RIPv1	2453 RIPv2
1724 RIPv2 MIB Extension	2740 OSPFv3
1765 OSPF DB overflow	2787 VRRP MIB
1850 OSPF MIB	3101 NSSA
2082 RIP-2 MD5 Auth	3137 OSPF Stub

Router
 Advert
 2328 OSPFv2 3623 Graceful Restart
 2338 VRRP 3768 VRRP
 2370 Opaque LSA Option 4271 BGP
 Dell Policy Based Routing 5187 OSPFv3 Graceful Restart

Multicast

1112 IGMPv1	3810 MLDv2
2236 IGMPv2	3973 PIM-DM
2365 Admin scoped IP	4541 IGMP v1/v2/v3

Mcast
 2710 MLDv1 Snooping and Querier
 2932 IPv4 MIB 4601 PIM-SM
 2933 IGMP MIB 5060 PIM MIB
 3376 IGMPv3 Dell Static IP Multicast
 Draft-ietf-pim-sm-bsr-05
 Draft-ietf-idmr-dvmrp-v3-10 DVMRP
 Draft-ietf-magma-igmp-proxy-06.txt IGMP/MLD Proxying
 Draft-ietf-magma-igmpv3-and-routing-05.txt
 draft-ietf-idmr-dvmrp-mib-11
 draft-ietf-magma-mgmd-mib-05
 draft-ietf-pim-bsr-mib-06
 IEEE 802.1ag draft 8.1 – Connectivity Fault Management (CFM)
 IEEE 802.1p GMRP Dynamic L2 Multicast Registration

Quality of service

2474 DiffServ Field	2697 srTCM
2475 DiffServ Architecture	4115 trTCM
2597 Assured Fwd PHB	Dell L4 Trusted Mode

Dell Port Based QoS Services (TCP/UDP) Mode
 Dell Red/WRED
 Dell Flow Based QoS Services
 Dell Audio Video Bridging Mode (IPv4/IPv6)
 Dell UDLD

Network management and security

1155 SMIv1	MIB
1157 SNMPv1	2737 ENTITY MIB
1212 Concise MIB Definitions	2818 HTTP over TLS
1213 MIB-II	2819 RMON MIB (groups 1, 2, 3, 9)
1215 SNMP Traps	2856 Text Conv. For High Capacity Data Types
1286 Bridge MIB	2863 Interfaces MIB
1442 SMIv2	2865 RADIUS
1451 Manager-to-Manager MIB	2866 RADIUS Accounting
1492 TACACS+	2868 RADIUS Attributes for Tunnel Prot.
1493 Managed objects for Bridges MIB	2869 RADIUS Extensions
1573 Evolution of Interfaces	3410 Internet Standard Mgmt. Framework
1612 DNS Resolver MIB Extensions	3411 SNMP Management Framework
1643 Ethernet-like MIB	3412 Message Processing and Dispatching
1757 RMON MIB	3413 SNMP Applications
1867 HTML/2.0 Forms with file upload extensions	3414 User-based security model
1901 Community-based SNMPv2	3415 View-based control model
1907 SNMPv2 MIB	3416 SNMPv2
1908 Coexistence between SNMPv1/v2	3417 Transport Mappings
2011 IP MIB	3418 SNMP MIB
2012 TCP MIB	3577 RMON MIB
2013 UDP MIB	3580 802.1X with RADIUS
2068 HTTP/1.1	3737 Registry of RMON MIB
2096 IP Forwarding Table MIB	4086 Randomness Requirements
2233 Interfaces Group using SMIv2	4113 UDP MIB
2246 TLS v1	4251 SSHv2 Protocol
2271 SNMP Framework MIB	4252 SSHv2 Authentication
2295 Transport Content Negotiation	4253 SSHv2 Transport
2296 Remote Variant Selection	4254 SSHv2 Connection Protocol
2346 AES Ciphersuites for TLS	4419 SSHv2 Transport Layer Protocol
2576 Coexistence between SNMPv1/v2/v3	4521 LDAP Extensions
2578 SMIv2	4716 SECSH Public Key File Format
2579 Textual Conventions for SMIv2	6101 SSL
2580 Conformance Statements for SMIv2	6398 IP Router Alert
2613 RMON MIB	Dell Enterprise MIB supporting routing features draft-ietf-hubmib-etherif-mib-v3-00.txt (Obsoletes RFC 2665)
2618 RADIUS Authentication MIB	Dell LAG MIB Support for 802.3ad functionality
2620 RADIUS Accounting MIB	Dell sflow version 1.3 draft 5
2665 Ethernet-like Interfaces MIB	
2666 Identification of Ethernet chipsets	
2674 Extended Bridge	

Dell 802.1x Monitor Mode	Dell Tiered Authentication
Dell Custom Login Banners	Dell RSPAN
Dell Dynamic ARP Inspection	Dell Change of Authorization
Dell IP Address Filtering	Dell Python Scripting
	Dell Support Assist
	HiveManager NG

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 EMC 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 EMC 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.

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 Dell.com/lifecycle services

Learn more at Dell.com/Networking

