DELL EMC POWERSWITCH
N3000E SERIES SWITCHES

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

The N3000E 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 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. Note: With OS 6.5.1.x and higher, max stack for N3000 series is 8; however, N3000E series and N3132PX-ON support max stack of 12 members. N3000 series can be stacked with N3000E series; however, stack size is limited to 8 and active VLANs to 1024.

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 N3000E 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, N3000E 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). N3000E 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. N3000E supports VRF-lite, allowing it to be partitioned into multiple virtual routers with isolated control and data planes on the same physical switch.

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. OS6 common command line interface (CLI) and graphic user interface (GUI) are intuitive, so skilled network administrators can get productive quickly. Select N3000E switches now support the Open Network Install Environment (ONIE), enabling installation of alternate network operating systems.

Deploy with confidence at any scale

N3000E 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. The N-Series switches’ lifetime warranty 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 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 EMC Fresh Air compliance for operation in environments up to 113°F (45°C) reduces cooling costs.

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 EMC OpenManage Network Manager), Telnet or serial connection.
- Private VLAN extensions and Private VLAN Edge 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>
</tr>
</thead>
</table>
| **N3000E series** | N3024ET-ON: 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, 2Gb memory and 1Gb of flash  
N3024EF-ON: 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, 2Gb memory and 1Gb of flash  
N3024EP-ON: 12x RJ45 10/100/1000Mb PoE+ (up to 30.8W) auto-sensing ports, 2x RJ45 1/100/1000Mb 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), 2Gb memory and 1Gb of flash  
N3048ET-ON: 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, 2Gb memory and 1Gb of flash  
N3048EF-ON: 48x RJ45 10/100/1000Mb auto-sensing ports, first twelve RJ45 10/100/1000Mb can provide 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); 2GB memory and 4GB flash (on product shipping from July 1st, 2019).  
N3132PX-ON: 24x RJ45 10/100/1000Mb PoE 60W auto-sensing ports, 4x SFP+ ports, 1x hot swap expansion module bay, 1x 1100W PSU included (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)  |
| **Modules (optional)** | 2-port 10 Gigabit BASE-T RJ-45 hot swappable uplink module  
2-port 10 Gigabit SFP+ hot swappable uplink module  
2-port 40 Gigabit QSFP+ hot swappable module (N3132PX-ON only)  
Stacking module (N3132PX-ON only)  |
| **Power supplies (optional)** | 200W AC hot swappable with V-Lock, adds redundancy to non-PoE switches (N3024ET-ON, N3024EF-ON and N3048ET-ON only)  
715W AC hot swappable, adds redundancy to N3024EP-ON  
1100W AC hot swappable, adds redundancy to N3048EP-ON  
N3024EP-ON for additional PoE+ power (N3024EP-ON, N3048EP-ON, N3132PX-ON only)  |
| **Optics (optional)** | Transceiver, SFP, 100BASE-FX, 1310nm wavelength, up to 2km reach  
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+, 10G, LRM, 1310nm wavelength, up to 220m reach  
Transceiver, SFP+, 10G, SR, 850nm wavelength, up to 300m reach  
Transceiver, SFP+, 10G, E, LR, 1310nm wavelength, up to 10km reach  
Transceiver, SFP+, 10G, ER, 1550nm wavelength, up to 40km reach  |
| **Cables (optional)** | Stacking cable 0.25m, 1m and 3m  
Dell Technologies Networking cable, SFP+ to SFP+, 10GbE, copper twinax direct attach cable, 0.5m, 1m, 3m, 5m and 7m |
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
Energy-Efficient Ethernet per port settings
Broadcast storm control
Flow-based port mirroring
Auto-MDI/MDIX, port mirroring
Auto-negotiation for speed and flow control
USB (Type A) port for configuration via USB flash drive
Out-of-band management port

Switching engine model: Store and forward
Dual firmware images on-board
RJ45 console/management port with RS232 cable included
ReadyRails rack mounting system, no tools required

Chassis
Size (1RU, H x W x D):
1.7126 in x 17.0866 in x 16.0236 in
(43.5 mm x 434.0 mm x 407.0 mm)
(Power supply handle adds 1.38 in or 35 mm)
Approximate weight:
13.2277 lbs/6kg (N3024ET-ON and N3024EP-ON)
13.8891 lbs/6.3kg (N3048ET-ON),
15.7lbs/7.12kg (N3132PX-ON)
15.2119 lbs/6.9kg (N3048EP-ON),
Approximate weight:
13.8891 lbs/6.3kg (N3048ET-ON),
15.2119 lbs/6.9kg (N3048EP-ON),
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), 220.397 (N3048), 3,133.33 (N3048P),
721.668 (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 (N3024ET-ON, N3024EF-ON and N3048ET-ON) (full duplex)
260Gbps (N3048ET-ON, N3048EP-ON)
328Gbps (N3132PX-ON)
Forwading rate:
158Mpps (106 Gbps) (N3024ET-ON, N3024EF-ON, N3048EP-ON)
193Mpps (130 Gbps) (N3048ET-ON, N3048EP-ON)
428Mpps (288 Gbps) (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
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 (ACLs): 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, 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 Dot1Q
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)

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
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 2463 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
2570 Opaque LSA Option 4271 BGP
2651 Admin scoped IP 5187 OSPFv3 Graceful Restart
Mcast
2710 MLDv1 4541 IGMP v1/v2/v3
2932 IPv4 MIB 3973 PIM-DM
2933 IPv6 MIB 4601 PIM-SM
3376 IPv6 Dell Static IP Multicast
Draft-ietf-pim-sm-bsr-05
Draft-ietf-idmr-dvmrp-v3-10 DVMPR
Draft-ietf-magma-igm-proxy-06.txt IGMP/MLD Proxying
Draft-ietf-magma-igm-proxy-06.txt IGMP/MLD Proxying
Draft-ietf-magma-igm-proxy-06.txt IGMP/MLD Proxying
Dell Policy Based Routing
3376 IPv6 Dell Static IP Multicast
Dell Policy Based Routing
3376 IPv6 Dell Static IP Multicast
Draft-ietf-pim-sm-bsr-05
Draft-ietf-idmr-dvmrp-v3-10 DVMPR
Draft-ietf-magma-igm-proxy-06.txt IGMP/MLD Proxying
Draft-ietf-magma-igm-proxy-06.txt IGMP/MLD Proxying
Draft-ietf-magma-igm-proxy-06.txt IGMP/MLD Proxying
Dell Policy Based Routing

Quality of service
2474 DiffServ Field 2697 trTCM
2475 DiffServ Architecture 4115 trTCM
2597 Assured Fwd PHB 2453 RIPv2
Dell Multi-Chassis LAG (MLAG)
Dell Policy Based Forwarding
2453 RIPv2
Dell Multi-Chassis LAG (MLAG)
Dell Policy Based Forwarding
2453 RIPv2
Dell Multi-Chassis LAG (MLAG)
Dell Policy Based Forwarding
Dell Red/WARED
Dell Flow Based QoS Services
Dell Audio Video Bridging Mode (IPv4/IPv6)
Dell ULDLD
Network management and security

- SMIv1
- SNMPv1
- Concise MIB Definitions
- MIB-II
- SNMP Traps
- Bridge MIB
- SMIV2
- Manager-to-Manager MIB
- TACACS+
- Managed objects for Bridges MIB
- Evolution of Interfaces
- DNS Resolver MIB Extensions
- Ethernet-like MIB
- RMON MIB
- HTML/2.0 Forms with file upload
- Community-based SNMPv2 Extensions
- SNMPv2 MIB
- Coexistence between SNMPv1/2
- IP MIB
- TCP MIB
- UDP MIB
- HTTP/1.1
- IP Forwarding Table MIB
- Interfaces Group using SMIV2
- VLAN MIB
- Transport Content Negotiation
- Remote Variant Selection
- AES Ciphersuites for TLS
- Coexistence between SNMPv1/2v3
- SMIV2
- Textual Conventions for SMIV2
- Conformance Statements for SMIV2
- RMON MIB
- RADIUS Authentication MIB
- RADIUS Accounting MIB
- Ethernet-like Interfaces MIB
- Identification of Ethernet chipsets
- Extended Bridge MIB
- ENTITY MIB
- HTTP over TLS
- RMON MIB (groups 1, 2, 3, 9)
- Text Conv. For High Capacity Data Types
- Interfaces MIB
- RADIUS
- RADIUS Accounting
- RADIUS Attributes for Tunnel Prot.
- 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
- RADIUS
- RADIUS Attributes for Tunnel Prot.
- RADIUS MIB
- 802.1X
- HTTP/1.1
- UDP MIB
- SSVh2 Protocol
- Authentication
- SSVh2 Transport
- Connection Protocol
- SSVh2 Layer Protocol
- LDAP Extensions
- SECISH Public Key File Format
- SSL
- IP Router Alert
- Dell
- Support Assist
- HiveManager NG
- Dell
- Enterprise MIB
- supporting routing features draft-ietf-ether-mib-ethernet-mib-v3-00.txt
- Obsoletes RFC 2665
- Dell
- LAG MIB Support for 802.3ad

Dell sflow version 1.3
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 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 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.

E U 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