DELL EMC NETWORKING N1500 SERIES SWITCHES

Extending enterprise features to small and mid-sized businesses

The N1500 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 40Gbps (full-duplex) high availability stacking architecture that allows management of up to four 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 N1500 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.

Leverage familiar tools and practices

All N-Series switches include Dell EMC 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. 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

N1500 series switches help create performance assurance with a data rate up to 176Gbps (full duplex) and a forwarding rate up to 164Mpps. Scale easily by stacking with 10GbE ports. Switch stacks of up to 200 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 RJ-45 ports and four integrated 10GbE SFP+ ports.
- Up to 48 ports of PoE+ with an optional external power supply.
- Up to 200 1GbE ports in a 4-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.
- Fresh Air compliance for operation in environments up to 113ºF (45ºC) helps reduce cooling costs in temperature-constrained deployments.

Deploying, configuring and managing

- USB auto-configuration rapidly deploys the switch without setting up 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.
- Layer 3 Lite IPv4 and IPv6 functionality including static routing and Routing Information Protocol support.
- Remote Switch Port Analyzer (RSPAN) monitors ports across a Layer 2 domain without costly dedicated network taps.

Product	Description
N1500 series	N1524: 24x RJ45 10/100/1000Mb auto-sensing ports, 4x SFP+ ports, 1 integrated 40W PSU N1524P: 24x RJ45 10/100/1000Mb PoE+ (up to 30.8w) auto-sensing ports, 4x SFP+ ports, 1 integrated 600W PSU (requires C15 plug) N1548: 48x RJ45 10/100/1000Mb auto-sensing ports, 4x SFP+ ports, 1 integrated 100W PSU N1548P: 48x RJ45 10/100/1000Mb PoE+ (up to 30.8w) auto- sensing ports, 4x SFP+ ports, 1 integrated 600W PSU (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)
Power supplies (optional)	RPS720 external power supply for N1500 non-POE (720 watts): N1524 and N1548 (sold separately) MPS1000 external power supply for N1500 PoE+ switches (1000 watts): N1524P and N1548P (sold separately)
Optics (optional)	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+, 10GbE, SR, 850nm wavelength, up to 300m reach Transceiver, SFP+, 10GbE, LR, 1310nm wavelength, up to 10km reach Transceiver, SFP+, 10GbE, ER, 1550nm wavelength, up to 40km reach
Cables (optional)	Dell Networking cable, SFP+ to SFP+, 10GbE, copper twinax direct

Technical specifications

Physical
4 integrated front 10GbE SFP+ dedicated ports, 2 10GbE can be used as stacking 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: 40W AC (N1524), 100W AC (N1548), 600W AC (N1524P, N1548P)
RJ45 console 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):
N1524 and N1548: 1.7 in x 17.3 in x 10.1 in (43.2 mm x 440.0 mm x 257.0 mm)
N1524P and N1548P: 1.7 in x 17.3 in x 15.2 in (43.2 mm x 440.0 mm x 387.0 mm)
Approximate weight: 6.6lbs/3kg (N1524), 12.8lbs/5.8kg (N1524P), 8.8lbs/4kg (N1548), 15.4lbs/7kg (N1548P)
Rack mounting kit with 2 mounting brackets, bolts and cage nuts

Environmental
Power supply efficiency: 80% or better in all operating modes
Max. thermal output (BTU/hr): 103.1 (N1524), 2972 (N1524P), 152.2 (N1548), 5824.3 (N1548P)

Power consumption max (watts): 30.2 (N1524), 871 (N1524P), 44.6 (N1548), 1704 (N1548P)
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
MAC addresses: 16K
Static routes: 256 (IPv4)/128 (IPv6)
Dynamic routes: 256 (IPv4)
Switch fabric capacity: 128Gbps (N1524 and N1524P) (full duplex); 176Gbps (N1548 and N1548P)
Forwarding rate: 128Mpps (N1524 and N1524P); 164Mpps (N1548 and N1548P)
Link aggregation: 64 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
Packet buffer memory: 1.5MB
CPU memory: 1GB
RIP routing interfaces: 128
VLAN routing interfaces: 128
VLANs supported: 512
Protocol-based VLANs: Supported
ARP entries: 2,048 (IPv4)/512 (IPv6)
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: 1,023

Max ACL rules per interface (IPv4): 1,023 (ingress), 1,023 (egress)
Max ACL rules per interface (IPv6): 512 (ingress), 509 (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+ (N1524P and N1548P)
802.3AX   LAG Load Balancing
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)
MTU   9,216 bytes

DELLEMC

RFC compliance and additional features

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

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

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

Layer 3 functionality
1058	RIPv1	2082	RIP-2 MD5 Auth
1724	RIPv2 MIB Extension	2453	RIPv2

Multicast
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	Dell	Flow Based QoS Services Mode (IPv4/IPv6)
2475	DiffServ Architecture		
2597	Assured Fwd PHB		
Dell	L4 Trusted Mode (TCP/UDP)	Dell	Port Based QoS Services Mode
Dell	UDLD		

Network management and security
1155	SMIv1	2295	Transport Content Negotiation
1157	SNMPv1		
1212	Concise MIB Definitions	2296	Remote Variant Selection
1213	MIB-II	2346	AES Ciphersuites for TLS
1215	SNMP Traps		
1286	Bridge MIB	2576	Coexistence Between SNMPv1/v2/v3
1442	SMIv2		
1451	Manager-to-Manager MIB	2578	SMIv2
1492	TACACS+	2579	Textual Conventions for SMIv2
1493	Managed Objects for Bridges MIB		
1573	Evolution of Interfaces	2580	Conformance Statements for SMIv2
1612	DNS Resolver MIB Extensions		
1643	Ethernet-like MIB	2613	RMON MIB
1757	RMON MIB	2618	RADIUS Authentication MIB
1867	HTML/2.0 Forms with File Upload Extensions		
		2620	RADIUS Accounting MIB
1901	Community-based SNMPv2		
		2665	Ethernet-like Interfaces MIB
1907	SNMPv2 MIB		
1908	Coexistence Between SNMPv1/v2	2674	Extended Bridge MIB
2011	IP MIB	2737	ENTITY MIB
2012	TCP MIB	2818	HTTP over TLS
2013	UDP MIB	2819	RMON MIB (groups 1, 2, 3, 9)
2068	HTTP/1.1		
2096	IP Forwarding Table MIB	2863	Interfaces MIB
		2865	RADIUS
2233	Interfaces Group using SMIv2	2866	RADIUS Accounting
2246	TLS v1	2868	RADIUS Attributes for Tunnel Prot.
2271	SNMP Framework MIB		
		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
3418	SNMP MIB
3577	RMON 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
6101	SSL
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	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 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 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
DellEMC.com/Services

Learn more at DellEMC.com/Networking

DELLEMC