

CAMPUS NETWORKING

QUICK REFERENCE GUIDE

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CAMPUS CORE

Series	N4000 Series			
Overview	High density, power efficient and flexible 1/10/40GbE switches for large enterprise campus distribution and small network cores.			
Models (all sized 1RU)	N4032	N4032F	N4064	N4064F
Performance				
Switch capacity (Gbps)	640		1280	
Forwarding capacity (Mpps)	476		952	
Buffer size	9MB			
Ports				
10/100/1000 Base-T	-	-	-	-
1GbE (SFP)	-	-	-	-
10GbE	24 (up to 32 using 2 QSFP ports and cables)		48 (up to 64 using 4 QSFP ports and cables)	
40GbE (QSFP+)	2 using module		2 built-in (up to 4 using module)	
Expansion module slots	1 slot with 3 optional modules: 2 port QSFP+, 4 port SFP+, 4 port 10GBase-T			
Power-over-Ethernet ports	-			
Power and cooling				
Max. power consumption (watts)	240	176	395	220
AC power supplies	2 hot-swappable power supply bays, 2 PSUs included			
Redundant power	Yes, built-in			
Airflow	I/O panel to PSU			
Features				
Stacking	Stacks up to 12 using 10Gb or 40Gb user ports			
VLANs	4094			
VLAN support	Voice VLAN, Private Edge, Protocol and MAC-based, GVRP			
Layer 2 and 3	Layer 3 Advanced			
IPv4/IPv6 routing	IPv4/IPv6, RIP, OSPFv3, VRRP, static routing			
Multicast support	IGMP v1/v2/v3, IGMP Proxy, IGMP Snooping and Querier, DVMRP, PIM-DM, PIM-SM			
Rapid deployment	Ready rails, deploy switch configuration files, stacking commands and firmware updates by simply inserting a USB device into the port.			
iSCSI optimization	iSCSI aware (detect and prioritize iSCSI traffic into pre-defined QoS); iSCSI auto-configuration (switch configuration routine automatically sets up and optimizes performance with Dell EqualLogic storage arrays)			
Management and security				
Switch security	Strong passwords, password masking, management access control - privilege levels. RADIUS and TACACS+ support, 802.1x port-based authentication.			
SNMP support	SNMPv1/2/3			
sFlow	Yes			
Management	GUI access via http/https. CLI via console, Telnet, SSH			

The Dell EMC Campus Vision: One Network

The Dell EMC Networking portfolio of enterprise-class wired and wireless, next-generation management and industry-leading support combines into "One Network" designed to meet the needs of your business. Our cost-effective, future-ready solutions reduce complexity and integrate seamlessly into existing networks for flexible growth and investment protection.

C9000 Series				C1048P
Next-generation, multi-rate capable modular switching platform for medium to large campus and mid-market data center networks.				Rapid access node for the C9000 switching platform
2.56T Route Processor Module (RPM)	6-port 10/40GbE QSFP+ line card	24-port 1/10GbE SFP+ line card	24-port 1/10GBASE-T line card	48-port 10/1000BASE-T PoE+ rapid access node
<p>C9010 network director 8RU platform with modular slots for up to 10 line card modules, two route processor modules (RPM), three fan modules and four power supply modules. Integrated backplane is 100GbE multi-rate capable (up to 600Gbps to each line card slot).</p>				

Lifetime Warranty

All the switches in this guide are backed by an industry-leading, Lifetime Warranty which guarantees Basic Hardware Service (hardware repair or replacement) for as long as you own the product*.

*Repair or replacement does not include configuration or other advanced service and support provided by Dell ProSupport Services.

Dell.com/LifetimeWarranty

Network Management

As your infrastructure gets larger and more complex, it can be a real headache to keep track of every device in your network.

OpenManage Network Manager allows you to view complete physical and logical inventories of your network, get detailed connectivity information of each device, and automate network functions. **Try it free.**

Dell.com/networkmanager

Lifecycle Services

Most organizations benefit from additional levels of support to protect their IT investment and maximize productivity. Choose:

- Consulting Services
- Deployment Services
- Managed Services
- Support Services

Get a free business consultation at

Dell.com/networkconsulting

1/10GbE (LAYER 2/3 SWITCHING)

Series	N3000 Series					N2000 Series			
Overview	Power efficient and resilient 1/10GbE switches with advanced Layer 3 distribution and dense PoE+ for small to medium-sized businesses and office wiring closets.					Powerful 1/10GbE switches providing efficient Layer 2+ access for personal computers, entry-level servers and other network devices.			
Models (all sized 1RU)	N3024	N3048	N3024F	N3024P	N3048P	N2024	N2048	N2024P	N2048P
Performance									
Switch capacity (Gbps)	212	260	212	212	260	172	220	172	220
Forwarding capacity (Mpps)	158	193	158	158	193	128	164	128	164
Buffer size	4MB					4MB			
Ports									
10/100/1000 Base-T	24	48	-	24	48	24	48	24	48
1GbE (SFP)	2 combo	2 combo	24	2 combo	2 combo	-			
10GbE	2 fixed SFP+ and 2 modular (auto-negotiate 1/10Gb)					2 SFP+ (auto-negotiate 1/10Gb)			
Expansion module slots	1 slot with 2 optional modules: 2 port SFP+, 2 port 10GBase-T					-			
Power-over-Ethernet ports	-			24 PoE+	48 PoE+	-	-	24 PoE+	48 PoE+
Power and cooling									
Max. power consumption (watts)	52.8	74.8	67.1	1287*	2145*	42.9	53.9	913*	1738*
AC power supplies	2 hot swappable power supply bays, 1 PSU included					One			
Redundant power	Optional (internal)			Yes, dependent upon configuration		External RPS-720		External MPS-1000	
Airflow	I/O panel to PSU								
Features									
Stacking	Stacks up to 12 using dedicated ports								
VLANs	4094								
VLAN support	Voice VLAN, Private Edge, Protocol and MAC-based, GVRP					Voice VLAN, Private Edge VLAN, Protocol-based VLANs, Guest VLANs, GVRP, 802.1x Auto VLAN			
Layer 2 and 3	Layer 3 Advanced					Layer 3 Standard			
IPv4/IPv6 routing	IPv4/IPv6, RIP, OSPFv3, VRRP, static routing					IPv4/IPv6, static routing, RIP, OSPFv2			
Multicast support	IGMP v1/v2/v3, IGMP Proxy, IGMP Snooping and Querier, DVMRP, PIM-DM, PIM-SM					IGMP v1/2/3 snooping and querier			
Rapid Deployment	Ready rails, deploy switch configuration files, stacking commands and firmware updates by simply inserting a USB device into the port.					Deploy switch configuration files, stacking commands, and firmware updates by simply inserting a USB device.			
iSCSI optimization	iSCSI aware (detect and prioritize iSCSI traffic into pre-defined QoS); iSCSI auto-configuration (switch configuration routine automatically sets up and optimizes performance with Dell EqualLogic storage arrays)					N/A			
Management and security									
Switch security	Strong passwords, password masking, management access control - privilege levels. RADIUS and TACACS+ support, 802.1x port-based authentication.								
SNMP support	SNMPv1/2/3								
sFlow	Yes								
Management	GUI access via http/https. CLI via console, Telnet, SSH, HiveManager NG								

* with external power supply

1/10GbE (LAYER 2/3 SWITCHING)

SMART WEB MANAGED

Series	N1500 Series				X Series								
Overview	Gigabit Ethernet switches providing a cost-effective upgrade path from aging 10/100MbE access switches.				Smart managed 1GbE and 10GbE switches designed for small and medium businesses who crave enterprise-class network control fused with consumer-like ease.								
Models (all sized 1RU)	N1524	N1548	N1524P	N1548P	X1008	X1008P	X1018	X1018P	X1026	X1026P	X1052	X1052P	X4012
Performance													
Switch capacity (Gbps)	128	176	128	176	16	16	36	36	52	52	176	176	240
Forwarding capacity (Mpps)	128	164	128	164	11.9	11.9	26.8	26.8	38.7	38.7	131	131	178.6
Buffer size	1.5MB				1MB								2MB
Ports													
10/100/1000 Base-T	24	48	24	48	8	8	16	16	24	24	48	48	-
1GbE (SFP)	-				-	-	2	2	2	2	-	-	-
10GbE	4 SFP+ (auto-negotiate 1/10Gb)				-	-	-	-	-	-	4 SFP+	4 SFP+	12 SFP+
Power-over-Ethernet ports	-	-	24 PoE+	48 PoE+	-	8 PoE, up to 123W total	-	16 PoE, up to 246W total	-	24 PoE/PoE+, up to 369W total	-	24 PoE/PoE+, up to 369W total	-
Power and cooling													
Max. power consumption (watts)	30.2	44.6	871*	1704*	9.9	141.8	14.7	289.9	17.5	452.8	60.1	475	41.7
AC power supplies	One				One (external)			One					
Redundant power	External RPS-720		External MPS-1000		-								
Airflow	I/O panel to PSU				Fanless	Fanless	Fanless	I/O panel to PSU	Fanless	I/O panel to PSU	I/O panel to PSU	I/O panel to PSU	I/O panel to PSU
Features													
Stacking	Up to 4 using SFP ports				-								
VLANs	512				4094								
VLAN support	Voice VLAN, Private Edge, Protocol-based, Auto VLAN				Protocol based, GVRP, Voice VLAN, Guest VLAN, Private VLAN								
Layer 2 and 3	Layer 3 Lite with static routing and RIP				Layer 2+								
IPv4/IPv6 routing	IPv4/IPv6, static routing, RIP				IPv4/IPv6, static routes								
Multicast support	IPv4 MIB, IGMP v1/v2/v3 snooping and querier				IPv4 MIB, IGMP v1/v2/v3 snooping and querier								
Rapid Deployment	Yes				-								
Management and security													
Switch security	Strong passwords, password masking, management access control - privilege levels. RADIUS and TACACS+ support, 802.1x port-based authentication.				Switch access password protection. Restricted IP address. RADIUS support, 802.1x port-based auth.								
SNMP support	SNMPv1/2/3				SNMPv1/2/3								
sFlow	v1.3 draft 5				v1.5 [on X1052, X1052P and X4012 only]								
Management	GUI access via http/https. CLI via console, Telnet, SSH, HiveManager NG				Web managed switch with limited CLI								

* with external power supply

AEROHIVE WIRELESS SOLUTIONS

Aerohive wireless solutions are designed for the next-generation campus network. Aerohive access points integrate a wealth of robust BYOD and security features, and can be managed remote or on-premise via the cloud-based HiveManager NG network management utility.

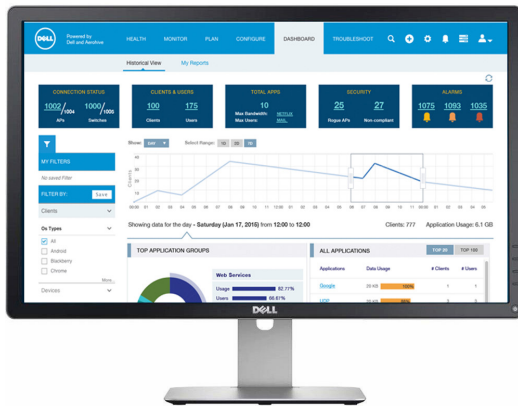


Aerohive Wireless Access Points

Models	Overview
AP130	2x2 two stream MIMO, 802.11ac, designed for high density environments
AP230	3x3, dual radio, three stream MIMO, 802.11n/ac, engineered for high capacity
AP245X	3x3:3, dual radio, 802.11ac Wave 2 with external antenna connectors and extended temp range for challenging indoor environments
AP250	3x3:3, dual radio, 802.11ac Wave 2 with a software selectable radio, designed for extended coverage and capacity
AP550	4x4:4 dual radio, 802.11ac Wave 2 with a software selectable radio, designed for high capacity and high density environments
AP1130	2x2:2 MIMO, 802.11a/n/ac, durable design for outdoor high-bandwidth wireless deployment in harsh environments

HiveManager NG Cloud-Based Network Management

HiveManager NG integrates the end user network by providing intuitive, powerful management for Dell N-Series switches and Aerohive wireless access points. This next-generation management solution sets a new standard for simplicity and flexibility with cloud-based, real-time monitoring, deployment and control. Learn more and register for a free 30-day trial via Dell.com/HiveManager.



W-SERIES CONTROLLER-BASED WIRELESS NETWORKS

Dell W-Series wireless solutions are ideal for enterprise-level organizations that seek maximum security, functionality and centralized management features.

W-Series Wireless Access Points

Models	Overview
W-AP334/ W-AP335	802.11ac with Wave 2 MU-MIMO, 1.73Gbps at 5GHz and 800Mbps at 2.4GHz for large high-density environments
W-AP324/ W-AP325	802.11ac with Wave 2 MU-MIMO, 1.76Gbps at 5GHz and 800Mbps at 2.4GHz for high-density environments
W-AP314/ W-AP315	802.11ac with Wave 2 MU-MIMO, 1.73Gbps at 5GHz and 400Mbps at 2.4GHz for high-density environments
W-AP277/ W-AP275/ W-AP274	802.11ac, 1.3Gbps at 5GHz and 600Mbps at 2.4GHz for outdoor and harsh environments
W-AP228	802.11ac, 1.3Gbps at 5GHz and 600Mbps at 2.4GHz for harsh, weather-protected environments
W-AP225/ W-AP224	802.11ac, 1.3Gbps at 5GHz and 600Mbps at 2.4GHz for the highest number of mobile devices
W-AP215/ W-AP214	802.11ac, 1.3Gbps at 5GHz and 600Mbps at 2.4GHz for medium-density, high-performance Wi-Fi environments
W-AP205H	802.11ac, 867Mbps at 5GHz and 400Mbps at 2.4GHz for hospitality and branch environments
W-AP205/ W-AP204	802.11ac, 867Mbps at 5GHz and 450Mbps at 2.4GHz for medium-density enterprise environments

Note: Instant access point models also available (except W-AP205H)

W-Series Controllers

Deployment	Model	Max users	Max APs	Firewall throughput
Campus and branch	W-7030	4,096	64	8Gbps
	W-7024	2,048	32	4Gbps
	W-7010	2,048	32	4Gbps
	W-7008	1,024	16	2Gbps
	W-7005	1,024	16	2Gbps
High density headquarters or large campus	W-7240	32,768	2,048	40Gbps
	W-7220	24,576	1,024	40Gbps
	W-7210	16,384	512	20Gbps
	W-7205	8,192	256	12Gbps

Learn More at Dell.com/Networking