CAMPUS CORE

Series	PowerSwitch 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				
10GbE Base-T	24	-	48	-
10GbE SFP+	-	24	-	48
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: Open Networking

The Dell EMC Open Networking portfolio of enterprise-class wired and wireless, next-generation management and industry-leading support is 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

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).

Lifetime Warranty

All the switches in this guide (except X-series**) 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

DellEMC.com/Services

Series	PowerSwitch S4100 Series					
Overview						
	Next generation open networking switches for enterprise, mid-market and Tier2 cloud service providers with demanding compute and storage traffic environments					
Models (all sized 1RU)	**S4128F-ON**	**S4128T-ON**	**S4148F-ON**	**S4148T-ON**	**S4148FE-ON**	**S4148U-ON**
Performance						
Switching capacity (full duplex)	960 Gbps	960 Gbps	1.76 Tbps	1.76 Tbps	1.76 Tbps	1.76 Tbps
Forwarding Capacity (Mpps)	720	720	1320	1320	1320	1320
Buffer size	12MB	12MB	12MB	12MB	12MB	12MB
Latency (microseconds)	<800 n sec	<2.3 u sec	<800 n sec	<2.3 u sec	<850 n sec	<800 n sec
Ports						
FC8/FC16	N/A	N/A	N/A	N/A	N/A	unified SFP+/SFP28
FC8/FC16/FC32	N/A	N/A	N/A	N/A	N/A	unified QSFP28
1/10GBase-T	N/A	28	N/A	48	N/A	N/A
10GbE	36	36	72	72	72	72
25GbE (QSFP+)	8	8	16	16	16	16
40GbE	2	2	6	6	6	6
50GbE	4	4	8	8	8	8
100GbE	2	2	4	4	4	4
Expansion module slots (Modules support speed indicated)	N/A	N/A	N/A	N/A	N/A	N/A
Power and cooling						
Max. power consumption (W)	260 (max)/160 (normal)	300 (max)/250 (normal)	370 (max)/200 (normal)	440 (max)/320 (normal)	400(max)/240 (normal)	460 (max)/300 (normal)
Power options	AC or DC	AC or DC	AC or DC	AC or DC	AC or DC	AC or DC
Redundant power supplies	2	2	2	2	2	2
Airflow	Normal or Reverse					
Features						
Stacking	Not currently available					
Operating system	Dell EMC Networking OS10 and select 3rd party OS					
Industry-standard CLI	Dell EMC Networking OS10 and several 3rd party OS					
iSCSI optimization storage features	iSCSI optimization and FSB					iSCSI optimization, FSB, NPIV Proxy gateway, F_Port, FCoE/ FC hosts, FC zoning
Max L2 VLANs and L3 VLANs	500 L3 VLANs					
Max MAC entries	272K					
Link aggregation (groups/Members)	32 links per group, 128 groups					
Max routes (IPv4/IPv6)	200K/130K					
Jumbo frames (Bytes)	9,416					
IPv4 routing	RIP, OSPF, BGP					
IPv6 routing	OSPFv3					
Multicast routing	In process					

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1/10GBE (LAYER 2/3 SWITCHING)

Series	PowerSwitch N3000 Series						PowerSwitch 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)	N3024ET-ON	N3048ET-ON	N3024EF-ON	N3024EP-ON	N3048EP-ON	N3132PX-ON	N2024	N2048	N2024P	N2048P	N2128PX-ON
Performance											
Switch capacity (Gbps)	212	260	212	212	260	328	172	220	172	220	192
Forwarding capacity (Mpps)	158	193	158	158	193	428	128	164	128	164	256
Buffer size	4MB					5MB	4MB				2MB
Ports											
10/100/1000 Base-T	24	48	-	24	48	32	24	48	24	48	24
1GbE (SFP)	2 combo	2 combo	24	2 combo	2 combo	4	-				2
10GbE	2 fixed SFP+ and 2 modular (auto-negotiate 1/10Gb)					4	2 SFP+ (auto-negotiate 1/10Gb)				4 PoE 60W
Expansion module slots	1 slot with 2 optional modules: 2 port SFP+, 2 port 10GBase-T					1	-	-	-	-	-
Power-over-Ethernet ports	-			24 PoE+	48 PoE+	32x 60w PoE	-	-	24 PoE+	48 PoE+	24x PoE+
Power and cooling											
Max. power consumption (watts)	52.8	74.8	67.1	1287*	2145*	2145	42.9	53.9	913*	1738*	1039.8
AC power supplies	2 hot swappable power supply bays, 1 PSU included					1	1				
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 (N132PX-ON requires optional stacking module)										
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

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1/10GBE (LAYER 2/3 SWITCHING)

Series	PowerSwitch N1100 Series						PowerSwitch N1500 Series			
Overview	Fully managed 1/10GbE Layer 2 switching with Open Networking capabilities									
Models (all sized 1RU)	N1108T-ON	N1108P-ON	N1124T-ON	N1124P-ON	N1148T-ON	N1148P-ON	N1524	N1548	N1524P	N1548P
Performance										
Switch capacity (Gbps)	24	24	128	128	176	176	128	176	128	176
Forwarding capacity (Mpps)	18	18	96	96	132	132	128	164	128	164
Buffer size	1.5MB	1.5MB	2MB	2MB	2MB	2MB	1.5MB			
Ports										
10/100/1000 Base-T	10	10	24	24	48	48	24	48	24	48
1GbE (SFP)	2	2	2	N	N	N	-			
10GbE	N	N	4 SFP+ (auto-negotiate 1/10G)				4 SFP+ (auto-negotiate 1/10Gb)			
Power-over-Ethernet ports	N	4	N	12	N	24	-	-	24 PoE+	48 PoE+
Power and cooling										
Max. power consumption (watts)	11.5	14.1	21.2	29.6	33.2	43.6	30.2	44.6	871*	1704*
AC power supplies	104W	104W	104W	250W	250W	500W	One			
Redundant power	-						External RPS-720		External MPS-1000	
PoE power budget	-	75W	-	190W	-	375W	-			
Airflow	IO to PSU (normal)						I/O panel to PSU			
Features										
Stacking	N/A		4				Up to 4 using SFP ports			
VLANs	512						512			
VLAN support	Voice VLAN, Private Edge, Protocol-based, Auto VLAN						Voice VLAN, Private Edge, Protocol-based, Auto VLAN			
Layer 2 and 3	Layer 2 only						Layer 2 with static routing and RIP			
IPv4/IPv6 routing	-						IPv4/IPv6			
Multicast support	IGMP v1/v2 snooping and querier support						IPv4 MIB, IGMP v1/v2/v3 snooping and querier			
Rapid Deployment	Yes						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	SNMP v1/2/3						SNMPv1/2/3			
sFlow	v1.3 draft 5						v1.3 draft 5			
Management	GUI access vi ahttp/https, CLI via console, Telnet, SSH, (HiveManager NG soon)						GUI access via http/https. CLI via console, Telnet, SSH, HiveManager NG			

* with external power supply

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SMART WEB MANAGED

Series	X Series								
Overview	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)	**X1008**	**X1008P**	**X1018**	**X1018P**	**X1026**	**X1026P**	**X1052**	**X1052P**	**X4012**
Performance									
Switch capacity (Gbps)	16	16	36	36	52	52	176	176	240
Forwarding capacity (Mpps)	11.9	11.9	26.8	26.8	38.7	38.7	131	131	178.6
Buffer size	1MB								2MB
Ports									
10/100/1000 Base-T	8	8	16	16	24	24	48	48	-
1GbE (SFP)	-	-	2	2	2	2	-	-	-
10GbE	-	-	-	-	-	-	4 SFP+	4 SFP+	12 SFP+
Power-over-Ethernet ports	-	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)	9.9	141.8	14.7	289.9	17.5	452.8	60.1	475	41.7
AC power supplies	One (external)		One						
Redundant power	-								
Airflow	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	-								
VLANs	4094								
VLAN support	Protocol based, GVRP, Voice VLAN, Guest VLAN, Private VLAN								
Layer 2 and 3	Layer 2+								
IPv4/IPv6 routing	IPv4/IPv6, static routes								
Multicast support	IPv4 MIB, IGMP v1/v2/v3 snooping and querier								
Rapid Deployment	-								
Management and security									
Switch security	Switch access password protection. Restricted IP address. RADIUS support, 802.1x port-based auth.								
SNMP support	SNMPv1/2/3								
sFlow	v1.5 [on X1052, X1052P and X4012 only]								
Management	Web managed switch with limited CLI								

* with external power supply

** Extended Life Limited Hardware Warranty (ELW): Dell EMC X-Series products carry an Extended Life Limited Hardware Warranty (ELW) with Basic Hardware Service, which extends until 5 years after Dell EMC stops selling the product model (End-of-Life or EOL), subject to the specific clarifications and limitations listed above. The Extended Life Limited Hardware Warranty is not transferable.

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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. Find the Quick Reference Guide and more at DellEMC.com/ Networking.
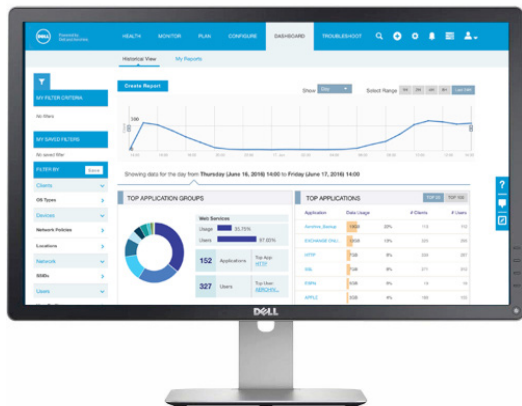
Aerohive Wireless Access Points

Models	Overview
AP122	2x2 two stream MIMO, 802.11ac, designed for low to medium density
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.

RUCKUS WIRELESS SOLUTIONS

Ruckus wireless solutions, including access points, controllers and analytics for Smart Cities and Smart Enterprises, innovate across wireless and wired technology to meet industry-specific needs and the most demanding use cases. Find the Quick Reference Guide and more at DellEMC.com/Networking.

Ruckus Wireless Access Points

Models	Overview
R730	WiFi 6, 802.11ax 8x8:8 streams, MU-MIMO, BeamFlex+ and 5Gbps uplinkl
R720	High-end 802.11ac Wave 2 dual-concurrent AP with MU-MIMO, BeamFlex+ and 2.5Gbps backhaul
R710	High-end 802.11ac Wave 2 dual-concurrent AP with MU-MIMO and BeamFlex+
R610	Mid-range 802.11ac Wave 2 dual-concurrent AP with MU-MIMO and BeamFlex+
R510	Mid-range 802.11ac Wave 2 dual-concurrent AP with MU-MIMO and BeamFlex+
R320	Wi-Fi 5 802.11ac Wave 2 dual-concurrent AP with BeamFlex
H510	802.11ac Wave 2 dual-concurrent wall switch with five GbE ports and BeamFlex+
H320	802.11ac Wave 2 dual-concurrent wall switch with two 10/100MbE ports and BeamFlex+
T710	High-end 802.11ac Wave 2 dual concurrent AP with BeamFlex+
T610	Mid-range 802.11ac Wave 2 dual concurrent AP with BeamFlex+
T310	Enterprise class 802.11ac AP with 120° or 30° directional integrated antennas
E510	Embedded 802.11ac Wave2 outdoor AP with external cabled antenna module
M510	Mobile 802.11ac Wave2 indoor AP with LTE Backhaul option
P300	Point-to-Point / Multi-point bridge

Ruckus Controllers

Models
ZoneDirector 1200
SmartZone 100
SmartZone 300
Virtual SmartZone
Virtual SmartZone Data Plane
Virtual SmartZone – H

Ruckus Software

Models
SmartCell Insight
Zone Planner

Learn More at DellEMC.com/Networking

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