



Dell Networking Product Portfolio Guide

Data center, campus LAN and wireless solutions

October 2015

Learn more at Dell.com/Networking



Data center fabric and top-of-rack switches

The Dell Networking Z-Series of high-density core and aggregation switches is designed for high-end, future ready applications, and features Active Fabric implementation to connect server, storage and software elements in cloud and virtualized data centers. Active Fabric solutions comprise low-power, high-throughput 10GbE and 40GbE switching platforms equipped with fully-featured Layer 2/3 multipath fabric technology, DCB options for SAN/LAN convergence and software defined networking programmability.

Our S-Series product line offers a range of modular and fixed configuration 1/10/40GbE systems designed principally for data center top-of-rack and aggregation applications. This includes the S6000 high-density 40GbE virtualization switch, the S5000 modular converged SAN/LAN switch, and the S4810 or S4820T top-of-rack switches supporting 1, 10 and 40GbE capabilities.



Z9500



S6100-ON

Speed	Model	Overview	Capacity and ports		Features										
					Data Center Core	Aggregation / Layer 3	Top-of-Rack	PoE / PoE+	Stacking (maximum stack)	Open Automation ¹	iSCSI optimization ¹	Hot-swap power ²	Redundant power	Airflow option ^{3, 4, 5 or 6}	Warranty ⁷
40 and 100GbE	Z9500	Massively scalable, 10/40GbE switch delivers high-density and high performance in a 3RU footprint.	10.4 Tbps	132 ports of 40GbE or 528 ports of 10GbE (w/breakout). Licensing available for 36, 84 or 132 port SKUs.	●	●			-	✓	✓	✓	*5	1 yr	
	Z9100-ON ⊕	10/25/40/50/100GbE fixed open networking switch for high performance environments.	3.2 Tbps	32 ports 100GbE (QSFP28), 32 ports 40GbE, 64 ports 50GbE, 128 ports 10GbE (w/breakout) or 128 ports 25GbE. Two additional 10GbE SFP+ ports.		●	●			-	✓	✓	✓	*3	1 yr
	S6100-ON ⊕	10/25/40/50/100GbE fully modular open networking top-of-rack switch.	3.2 Tbps	Choice of up to 32 ports of 100GbE (QSFP28), 64 ports of 50GbE (QSFP28), 64 ports of 40GbE (QSFP+), 128 ports of 25GbE (SFP28) or 128 ports of 10GbE (w/breakout) and two fixed SFP+ ports of 10GbE/1GbE/100MbE		●	●			-	✓	✓	✓	✓	1 yr
	S6000-ON ⊕	High-density open networking switch with advanced virtualization and automation features.	2.5 Tbps	32 ports 40GbE QSFP+ or 96 ports 10GbE (w/breakout). Eight additional 40GbE QSFP+ ports.		●	●			-	✓	✓	✓	✓	*3
10GbE and 8Gb FC	S5000	Modular LAN/SAN fabric switch for Ethernet, FC and FCoE at ToR for true flexibility.	1.28 Tbps	Up to 48 ports inserted as 12 port modules and four fixed 40GbE ports.		●	●			6	✓	✓	✓	*3	1 yr
10GbE	S4820T ⊕	High-performance ToR switches designed to deliver non-blocking throughput for dense traffic environments.	1.28 Tbps	48 ports 10GBase-T or 48 ports SFP+. Four 40GbE QSFP+ ports that expand to 64 10G ports (w/breakout).		●	●			6	✓	✓	✓	*3	1 yr
	S4048-ON ⊕	High-density 10GbE open networking switch.	1.44 Tbps	72 ports 10GbE (w/breakout) and 6 ports of 40GbE (QSFP+)			●			6	✓	✓	✓	*3	1 yr
1GbE	S3048-ON ⊕	High-density 1GbE open networking switch.	260 Gbps	48 ports of 1GbE and 4 ports of 10GbE (w/SFP+ module)			●			6	✓	✓	✓	*3	1 yr

⊕ Open Networking versions available ● Recommended deployment

* (1) Open Automation is an integrated software suite of advanced network management tools to automate data center processes and hypervisor switch communications. See page 5 for details. Z9000 has partial Open Automation capabilities: Bare Metal Provisioning and Smart Scripting only. (2) iSCSI optimization automatically configures QoS policies for Dell storage arrays. (3) Air flow direction (front to rear or rear to front) must be selected upon ordering. (4) Side-to-side airflow. (5) Air flow moves from front ports and side towards back. (6) Fan less models available. Power-over-Ethernet (PoE/PoE+) available on select models. (7) Details pertaining to other Limited Hardware Warranties, visit Dell.com/Warranty. Life = Lifetime Warranty (hardware repair or replacement) for as long as you own the product. Info at Dell.com/LifetimeWarranty.



Campus LAN aggregation and access switches

N-Series

Modernize and scale your network infrastructure with the N-Series family of energy-efficient, cost-effective 1GbE and 10GbE switches.

- The N4000 series allows you to apply 10GbE wire-speed flexibility to your existing campus network with high-performance, non-blocking switches. The switches offer simple management and scalability via flexible user port stacking at 10Gbps or 40Gbps for management of up to 12 switches from a single IP address.
- N2000 switches offer enhanced, high-availability Layer 2 Ethernet switches with basic Layer 3 routing functionality (Layer 2+). The switches offer an 84Gbps (full-duplex) high-availability stacking architecture that allows management of up to 12 switches from a single IP address.
- N1500 switches are designed to extend enterprise features to small and mid-sized businesses by utilizing a comprehensive Layer 2+ feature set and offering high-availability for smaller managed networks. N1500 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.

X-Series

The Dell Networking X-Series includes a broad range of switches and port configurations allowing small and medium businesses to network their offices on their terms. Based on extensive usability testing and inspired by the way IT professionals think and work, the graphical user interface (GUI) design makes setup and management easy and intuitive.



Speed	Model	Overview	Capacity and ports		Aggregation / Layer 3	Edge / Layer 2	Branch office	Small office	Features	PoE / PoE+	Stacking (maximum stack)	Open Automation ¹	iSCSI optimization ²	Hot-swap power ²	Redundant power	Airflow option ^{3, 4, 5 or 6}	Warranty ⁷
10GbE	N4000	Scalable 10GbE Layer 3 Advanced switch with 40GbE port capabilities.	1.2 Tbps	Up to 64 line-rate 10GbE ports per switch and up to 672 10GbE ports in a 12-unit stack with user port stacking at up to 320 Gbps. Hot swap expansion module supporting dual QSFP+ (8 x 10GbE), Quad 10GBaseT and Quad SFP+.	●	●				12		✓	✓	✓	*5	Life	
1GbE	N3000	Scalable GbE Layer 3 Advanced switch with energy-efficient design and PoE+ capabilities.	260 Gbps	Up to 48 line-rate 1GbE ports per switch and up to 624 1GbE ports in a 12-unit stack. Hot swap expansion module supporting dual SFP+ and dual 10GBaseT. Up to 48 ports of PoE+.	●	●	●			P+	12	✓	✓	✓	*5	Life	
	N2000	Scalable GbE Layer 3 Standard switch with energy-efficient design and PoE+ capabilities.	220 Gbps	Up to 48 line-rate 1GbE ports per switch and up to 600 1GbE ports in a twelve-unit stack. Two integrated 10GbE SFP+ ports. Up to 48 ports of PoE+.		●	●	●		P+	12				E	*5	Life
	N1500	Energy-efficient Layer 3 Lite switch with PoE+ capabilities for smaller fully managed networks	176 Gbps	Up to 48 line-rate 1GbE ports per switch and up to 200 1GbE ports in a 4-unit stack. Four integrated 10GbE SFP+ ports. Up to 48 ports of PoE+.		●	●	●		P+	4				E	*5	Life
1/10GbE	X-Series +	Smart managed Layer 2+ switches designed for small and medium businesses.	240 Gbps	Compact 1GbE 8-port model w/ PoE option. Half RU width 1GbE models with 26- and 18-port options. 52-port switches with 4x 10GbE SFP+ uplinks. 10GbE 12-port model.			●	●		P/ P+						*5 or *6	Life

+ Smart web managed
 ● Recommended deployment

* (1) Open Automation is an integrated software suite of advanced network management tools to automate data center processes and hypervisor switch communications. See page 5 for details. Z9000 has partial Open Automation capabilities. Bare Metal Provisioning and Smart Scripting only. (2) iSCSI optimization automatically configures QoS policies for Dell storage arrays. (3) Air flow direction (front to rear or rear to front) must be selected upon ordering. (4) Side-to-side airflow. (5) Air flow moves from front ports and side towards back. (6) Fan less models available. Power-over-Ethernet (PoE/PoE+) available on select models. (7) Details pertaining to other Limited Hardware Warranties, visit Dell.com/Warranty. Life = Lifetime Warranty (hardware repair or replacement) for as long as you own the product. Info at Dell.com/LifetimeWarranty.





Controller-Based Wireless Networks

The Dell W-Series controller-based network is ideal for organizations that seek maximum security, functionality and centralized management features. This architecture can enforce policies and security from one console and meets stringent government and military encryption certifications. Controller-based platforms can also serve as a termination point for your Virtual Private Network.

Access Points

Models	Overview
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-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, 867Gbps 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
W-AP115/ W-AP114*	802.11n, 450Mbps at 5GHz and 2.4GHz for high-performance capacity and density
W-AP103	802.11n, 300Mbps at 5GHz and 2.4GHz for cost-effective low to medium density
W-AP103H	802.11n, 300Mbps at 5GHz and 2.4GHz with wired and wireless ports for hospitality environments

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-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
Medium to large enterprise	W-3600	4,096	128	4Gbps
	W-3400	4,096	64	4Gbps
	W-3200	2,048	32	3Gbps

Optional controller functionality

License and activate these modules or try them free for 90 days

Wireless Intrusion Protection (WIP) - Safeguard against wireless security threats, provide visibility into sources of RF interference, and eliminate the need for separate RF sensors and security appliances.

Policy Enforcement Firewall (PEF) - Provide identity-based controls to enforce application-layer security, prioritization, traffic forwarding, and network performance policies for wired and wireless networks.

Policy Enforcement Firewall with VPN (PEF-V) - Create a secure tunnel and allow your VPN (Virtual Private Network) traffic to enter the controller.

Advanced Cryptography (ACR) - Deliver military-grade cryptography and enable secure access to networks that handle controlled unclassified, confidential and classified information.

Instant Wireless Networks

Dell W-Series Instant Access Points (IAPs) combine enterprise capabilities with entry-level simplicity. These intelligent 802.11ac and 802.11n devices have a built-in virtual controller and firewall, so they require no additional hardware or software. IAPs can be setup in about five minutes. Simply configure the first device and the other IAPs automatically form a unified cluster. You can add more capacity by simply plugging in more IAPs. The devices can even migrate to a controller-based platform to expand to a centralized wireless network.

Instant Models	Overview
W-IAP324/ W-IAP325	802.11ac with Wave 2 MU-MIMO, 1.76Gbps at 5GHz and 800Mbps at 2.4GHz for high-density environments
W-IAP277/ W-IAP275/ W-IAP274	802.11ac, 1.3Gbps at 5GHz and 600Mbps at 2.4GHz for outdoor and harsh environments
W-IAP228	802.11ac, 1.3Gbps at 5GHz and 600Mbps at 2.4GHz for harsh, weather-protected environments
W-IAP225/ W-IAP224*	802.11ac, 1.3Gbps at 5GHz and 600Mbps at 2.4GHz for the highest number of mobile devices
W-IAP214/ W-IAP215	802.11ac, 1.3Gbps at 5GHz and 600Mbps at 2.4GHz for medium-density, high-performance Wi-Fi environments
W-IAP204/ W-IAP205	802.11ac, 867Mbps at 5GHz and 450Mbps at 2.4GHz for medium-density enterprise environments
W-IAP155/ W-IAP155P	802.11n, 450Mbps at 5GHz and 300Mbps at 2.4GHz with wired and wireless ports for small branch and personal hotspots
W-IAP114*/ W-IAP115	802.11n, 450Mbps at 5GHz and 2.4GHz for high-performance capacity and density
W-IAP108/ W-IAP109	802.11n, 300Mbps at 5GHz and 2.4GHz with wired and wireless ports for small branch and home offices
W-IAP103	802.11n, 300Mbps at 5GHz and 2.4GHz for cost-effective low to medium density
W-IAP3WN/ W-IAP3WNP	802.11n, 300Mbps at 2.4GHz with wired and wireless ports for small branch and home offices

Guest Access and BYOD - ClearPass

The Dell ClearPass device is a highly integrated Access Management solution to manage all things BYOD. ClearPass connects to your existing network and can securely onboard devices, admit guest users, display device usage, perform health assessments and manage policies. ClearPass allows you to run one network for both guests and employees while maintaining appropriate security and service levels. The self-registration portal provided by ClearPass frees your IT staff from the manual setup process. Users simply connect to the WiFi network and ClearPass pushes appropriate security certificates to their devices.

Model ¹	Details
ClearPass 25,000	Up to 25,000 daily authenticating devices
ClearPass 5,000	Up to 5,000 daily authenticating devices
ClearPass 500	Up to 500 daily authenticating devices
ClearPass Modules	Licensing options: Guest, OnBoard, OnGuard for Advanced Policy Management

¹ ClearPass is available pre-loaded to a Dell server or as software only (Virtual machine for VMware™).

AirWave Network Management



Dell W-Series AirWave management software is an intuitive interface that delivers a consolidated view of the RF environment, controllers, APs and the infrastructure. AirWave can manage all Dell W-Series products and provide visibility and troubleshooting for your entire network, including support for many third-party devices.

Flexible mounting kits, external antennas and AC adapters purchased separately.
* External antenna model designed for unique deployment scenarios.

For complete product details, visit Dell.com/Wireless



Active Fabric

Cost-effective fabrics for cloud and virtualized data centers of any size

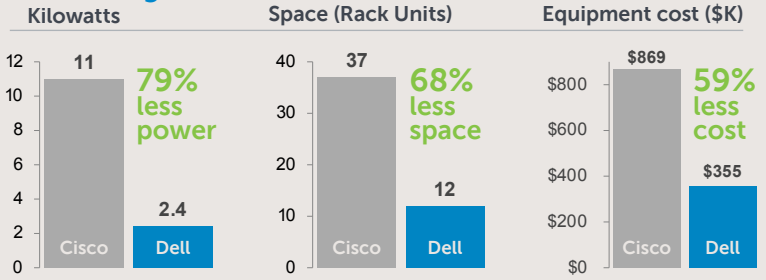
Active Fabric is family of high-performance, cost-effective networking solutions to interconnect server, storage and software elements in cloud and virtualized data centers. Active Fabric solutions comprise low-power, high-throughput 10GbE and 40GbE switching platforms equipped with fully-featured Layer 2/3 multi-path fabric technology, DCB options for SAN/LAN convergence, and software-defined networking programmability.

Active Fabric Solutions

(Two or four node configurations combined with top-of-rack and blade I/O elements, and unified via Active Fabric Manager)

- **10G Active Fabric (converged):** DCB and FC using the S5000
- **40G Active Fabric:** Configurations using Z9000 or S6000 systems
- **Active Fabric Manager:** Easy-to-use all-in-one software for fabric configuration, deployment, management, and monitoring.

Redefining fabric economics



Recent internal analysis demonstrated that Dell Active Fabric architectures are more cost-effective and space-saving compared to the traditional modular Cisco Nexus chassis. The Active Fabric design delivers the same throughput density, saving up to 79% less power, up to 68% less space, and up to 59% less costs overall. (Chart shows one Cisco Nexus 7010 chassis with five F248XP line cards combined with eight Nexus 5596 switches for a total of 384 ports of 10GbE compared to eight Dell S4810 switches and two Dell Z9000 switches providing the same exact throughput capacity.)

Data Center and Campus Chassis Switches

Providing next-generation scalability from edge to core

Deployment	Capacity and ports	Model
Medium to large enterprise campus and mid-market data center networks	Choice of 24-port SFP+ line card, 24-port 10GBASE-T line card or 6-port QSFP+ line card	C9010
	48 10/100/1000BASE-T PoE+ ports for user/server access, and two SFP+ uplinks for connectivity back to the C9010	C1048

The Dell Networking C9010 network director is a next-generation, multi-rate capable modular switching platform designed for medium to large campus and mid-market data center networks. Based on an innovative architecture that merges core, aggregation and access layers into a single network infrastructure. The C9010 acts as a single point of control for the C1048P rapid access resulting in a streamlined, centrally managed foundation for mission-critical applications.

C1048
Rapid Access Node



C9000
Modular Chassis

Blade Interconnects

Transforming your Dell M1000e blade server enclosure



Capacity and ports	Model
1/10/40 GbE with four FlexIO modules (Layer 2/3)	MXL
1/10/40 GbE with four FlexIO modules (Layer 2)	PowerEdge M I/O aggregator
1/10 GbE with two FlexIO modules	M8024-k
10/100/1000Base-T Gbps ports plus 10 Gbps SFP+ (2 ports)	M6348
10/100/1000Base-T (4 fixed ports) and two FlexIO modules	M6220
8/16 Gbps FC (8 ports)	M6505

Fibre Channel

Leading connectivity options for your SAN



Capacity and ports*	Model
8/16 Gbps, (48, 72 or 96 ports)	Brocade 6520
8/16 Gbps, (24, 36 or 48 ports)	Brocade 6510
8/16 Gbps, (12 or 24 ports)	Brocade 6505
4/8 Gbps, (8, 16, or 24 ports)	Brocade 300

*All switches support multi-speeds. For example, 16Gb also supports slower 2, 4 or 8Gbps.

FN IO Modules

For the Dell PowerEdge FX2 converged-infrastructure platform



Capacity and ports	Model
1/10GbE SFP+ (4 ports)	410s
1/10GbE 1/10GBase-T (4 ports)	410t
10GbE SFP+ (4 ports), or default 10GbE SFP+ (2 ports) and 2/4/8 Gbps Fiber Channel NPG mode and F_port (2 ports)	2210s



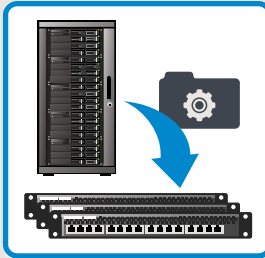
Data center network automation



Open Automation
Embedded tools in the Dell Networking Operating System add intelligence and programmability

Dell Networking Open Automation framework provides an open standards-based automation solution for data center operations. The Open Automation Framework is an integrated software suite of network management tools that can be used together or independently. These tools provide data center managers with a complete set of capabilities required in today's dynamic, virtual data center environments. (Functionality of Software OS v9.x)

Bare Metal Provisioning

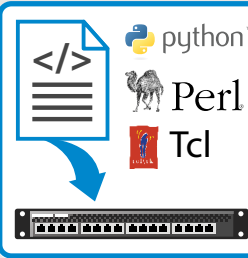


Automatically configure network switches

Switches automatically configure themselves by loading the configuration file & operating system

- Reduce installation time
- Enforce standard configurations
- Eliminate manual errors
- Simplify OS upgrades

Smart Scripting

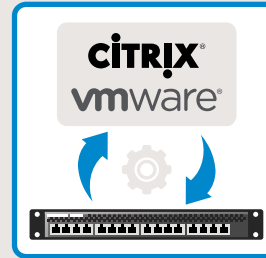


Customize switches with familiar languages

Perl, Python or Tcl scripting environments for custom monitoring and management

- Increased network uptime
- Reduce time for problem resolution
- Improve configuration management & auditing

Virtual Server Networking

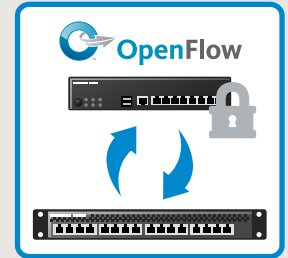


Automate VM and VLAN migration and provisioning

Hypervisor switch communications to ease Virtual Machine & Virtual LAN management

- Increase data center flexibility
- Maintain network connectivity & security with VM migration

Programmatic Management



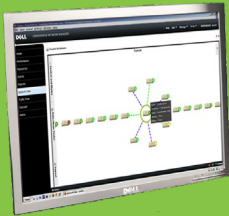
Gain the ability to manage switches with third-party tools

Seamless integration with programmatic interfaces & system management tools

- Simplify network management
- Minimize number of management tools
- Reduce OpEx



Dell OpenManage Network Manager



Simplify the complex

As your infrastructure gets larger and more complex, it can be a real headache to keep track of every device in your network. You need to know the status of those devices, how they are performing, and have the ability to manage their configuration for optimal performance. With Dell you are able to regain control of the network with **OpenManage Network Manager**. View complete physical and logical inventories of your network, get detailed connectivity information of each device, and automate network functions. Learn more about OMNM, and download a free 30-day trial version at Dell.com/OMNM.

Dell ProDeployment Enterprise Suite



Get more out of technology starting on day one

Dell's ProDeploy Enterprise Suite, a complete suite of deployment services and professional certifications, helps you achieve business outcomes today and tomorrow. Trust Dell experts and partners to lead deployments from basic hardware installations through planning, configuration and complex integrations. Learn more at Dell.com/Services.

Dell ProSupport Plus



Whether you are seeking product support or complete IT outsourcing, Dell can deliver services based on your need. Get a free business consultation at Dell.com/NetworkConsulting.

Dell ProSupport Plus is enterprise-class support designed to proactively improve the performance and stability of your critical systems. We provide access to a dedicated technical account manager and our elite Dell ProSupport Plus engineers to ensure your critical systems receive the support they deserve. Learn more at Dell.com/Services.

Consulting services
Achieve improved business outcomes with professional guidance pertaining to your network. Improve network performance, add functionality, and leverage existing infrastructure to maximize your investment.

Deployment services
Let us install and correctly optimize your network with a comprehensive set of remote and onsite deployment services.

Managed services
Free yourself to focus on your business and allow Dell to fully manage and monitor your multi-vendor network with triage, resolution, and tier 2 and 3 engineering support.

