



# DELL EMC Z9100-ON SERIES SWITCHES

High-performance 1/10/25/40/50/100GbE multi-rate open networking fixed switch featuring Dell EMC Networking OS9

## Data center optimized

The Dell EMC Z9100-ON is a 10/25/40/50/100GbE fixed switch purpose-built for applications in high-performance data center and computing environments.

Leveraging a non-blocking switching architecture, the Z9100-ON delivers line-rate L2 and L3 forwarding capacity to maximize network performance. The compact Z9100-ON design provides industry-leading density of either 32 ports of 100GbE, 64 ports of 50GbE, 32 ports of 40GbE, 128 ports of 25GbE or 128 ports 10GbE and two SFP+ ports of 10GbE/1GbE/100MbE to conserve rack space while enabling denser footprints and simplifying migration to 100Gbps in the data center core. Priority-based flow control (PFC), data center bridge exchange (DCBX) and enhanced transmission selection (ETS) make the Z9100-ON ideally suited for DCB environments. In addition, the Z9100-ON incorporates multiple architectural features that optimize data center network flexibility, efficiency and availability, including redundant, hot-swappable power supplies and fans.

These new offerings provide the flexibility to transform data centers and offer high-capacity network fabrics that are easy to deploy, cost-effective and provide a clear path to a software-defined data center. The Dell EMC Z9100-ON supports the industry standard Open Network Install Environment (ONIE) for zero touch installation of alternate network operating systems. This document refers to this ON switch preloaded with the Dell EMC Networking OS. Characteristic of any ONIE device, other ONIE load images may be loaded by the operator.

## Key applications

- Active Fabric™ implementation using high-density multi rate 10/25/40/50/100GbE ToR server aggregation in high-performance data center environments at the desired fabric speed
- Small-scale Active Fabric implementation via the Z9100-ON switch in leaf and spine along with S-Series 1/10/40GbE ToR switches enabling cost-effective aggregation of 10/40/50/100GbE uplinks
- High-performance SDN/OpenFlow 1.3.1 enabled with ability to inter-operate with industry standard OpenFlow controllers
- Use as a high-speed VXLAN Layer 2 Gateway that connects the hypervisor based overlay networks with non-virtualized infrastructure

## Key features

- 1RU high-density 10/25/40/50/100GbE fixed switch with choice of up to 32 ports of 100GbE (QSFP28), 64 ports of 50GbE (QSFP+), 32 ports of 40GbE (QSFP+), 128 ports of 25GbE (SFP28) or 128+2 ports of 10GbE (using breakout cable)
- Up to 6.4Tbps of switching I/O bandwidth (full duplex) available and non-blocking switching fabric delivering line-rate performance under full load with sub usec latency
- Scalable L2 and L3 Ethernet switching with QoS and a full complement of standards-based IPv4 and IPv6 features, including OSPF and BGP routing support
- L2 multipath support via Virtual Link Trunking (VLT) and multiple VLT (mVLT) multi-chassis link aggregation technology
- VRF-lite enables sharing of networking infrastructure and provides L3 traffic isolation across tenants
- Open Automation Framework adding automated configuration and provisioning capabilities to simplify the management of network environments
- Jumbo frame support for large data transfers
- 128 link aggregation groups with up to sixteen members per group, using enhanced hashing
- Redundant, hot-swappable power supplies and fans
- I/O panel to power supply airflow or power supply to I/O panel airflow
- Tool-less enterprise ReadyRails™ mounting kits reducing time and resources for switch rack installation
- Power-efficient operation up to 45°C helping reduce cooling costs in temperature-constrained deployments
- Converged network support for DCB, with priority flow control (802.1Qbb), ETS (802.1Qaz), DCBx and iSCSI TLV support
- Z9100-ON supports Routable RoCE to enable convergence of compute and storage on Active Fabric

Product	Description
<b>Z9100-ON</b>	AC base normal airflow 32-port 100G QSFP28, 2 AC PS, 5 fan subsys w/ airflow from I/O PNL to PS AC base reverse airflow 32-port 100G QSFP28, 2 AC PS, 5 fan subsys w/ airflow from PS to I/O PNL (TAA versions also available)
<b>Fans</b>	Fan spare normal airflow Fan with airflow from I/O PNL to PS Fan spare reverse airflow Fan with airflow from PS to I/O PNL
<b>Power supplies</b>	AC PS spare normal airflow AC power supply with airflow from I/O PNL to PS AC PS spare reverse airflow AC power supply with airflow from PS to I/O PNL DC PSU spare normal airflow DC PSU with airflow from I/O PNL to PSU DC PSU spare reverse airflow DC PSU with airflow from PSU to I/O PNL
<b>Optics (optional)</b>	Transceiver, 100GbE, SR4 QSFP28 Transceiver, 100GbE, LR4 QSFP28 Transceiver, 100GbE, LR4Lite QSFP28 Transceiver, 100GbE, PSM4 10Km QSFP28 Transceiver, 100GbE, CWDM4 2Km QSFP28 Transceiver, 100GbE, PSM4 500m QSFP28 Transceiver, 40GbE, SR4 optic QSFP+ Transceiver, 40GbE, eSR4 optic QSFP+ Transceiver, 40GbE, LR4 optic QSFP+ Transceiver, 40GbE, ER4 optics QSFP+ Transceiver, 40GbE, PSM4 10Km, QSFP+ Transceiver, 40GbE, PSM4-LR MPO 10Km QSFP+ to LC Transceiver, 40GbE, LM4 / SM4 Duplex QSFP+
<b>Cables (optional)</b>	100GbE, 4x25GbE, QSFP28 to 4xSFP28, passive DAC 100GbE, QSFP28 to QSFP28, active optical 100GbE, QSFP28 to QSFP28, passive DAC 100GbE, 2x50GbE, QSFP28 to 2xQSFP28, passive DAC, breakout 40GbE, QSFP+ to QSFP+, active optical 40GbE, QSFP+ to QSFP+, passive DAC 40GbE, MTP to 4xLC optical breakout 40GbE, 4x10GbE, QSFP+ to 4xSFP+, passive DAC Cable management Z9100 Cable Breakout Kit, MTP to LC (1RU 64-port LC over MMF) Z9100 Cable Breakout Kit, MTP to LC (1RU 64-port LC over SMF) Z9100 Cable Breakout Kit, MTP to LC (1RU 48-port LC over MMF)
<b>Software</b>	L3 Dell EMC Networking OS Z9100 series: Dell EMC Networking Software License operating system software license for advanced I3 features, latest version Dell EMC Networking OS Z9100 series: Dell EMC Networking Software License operating system software license, latest version Select third-party operating system offerings Note: in-field change of airflow direction only supported when unit is powered down and all fan and power supply units are replaced with airflow moving in a uniform direction.

**Physical**

Compact full featured fixed 10/25/40/100GE switch  
 1 RJ45 console/management port with RS232 signaling  
 1 10/100/1000bT Ethernet for management  
 1 USB 2.0 type A storage port  
 1 micro USB type B port for console/management port access  
 2 SFP+ 10GbE/1GbE ports for data access  
 Size: 1 RU, 1.72" h x 17.1" w x 18" d  
 Weight: 22 lbs (9.98 kg)  
 Power supply: 100–240 VAC 50/60 Hz  
 Max. power consumption: 605 Watts  
 Typ. power consumption: 195 Watts

**Max. operating specifications:**

Operating temperature: 32°F to 113°F (0°C to 45°C)  
 Operating humidity: 10 to 90% (RH), non-condensing

**Max. non-operating specifications:**

Storage temperature: –40°F to 158°F (–40°C to 70°C)  
 Storage humidity: 5 to 95% (RH), non-condensing

Fresh Air Compliant to 45°C

ReadyRails rack mounting system, no tools required

**Redundancy**

Two hot swappable power supplies with integrated fans  
 Hot swappable redundant fans

**Performance**

Switching I/O bandwidth: 6.4Tbps (Full Duplex)  
 Forwarding capacity: Up to 3300 Mpps  
 MAC addresses: 136K  
 IPv4 Unicast routes: 136K  
 IPv6 Unicast routes: 68K  
 IPv4 Multicast routes: 68K  
 IPv6 Multicast routes: Not supported  
 Multicast Hosts: 8K  
 ARP entries: 128K  
 Layer 2 VLANs: 4K per port  
 Layer 3 VLANs: Standalone 1K/VLT 4K  
 MST: 64 instances  
 PVST+: 128 instances  
 LAG: 128 groups, 16 members per LAG group  
 LAG load balancing:  
 Based on layer 2, IPv4 or IPv6 headers  
 Latency: Sub 500ns  
 Packet buffer memory: 16MB  
 CPU memory: 8GB  
 QOS data queues: 8  
 QOS control queues: 12  
 QOS: Default 1024 entries scalable to 2.5K  
 ACL Support: 3K

**IEEE compliance**

802.1AB LLDP  
 802.1D Bridging, STP  
 802.1p L2 Prioritization  
 802.1Q VLAN Tagging, Double VLAN Tagging, GVRP  
 802.1Qbb PFC  
 802.1Qaz ETS  
 802.1s MSTP

802.1w RSTP  
 802.1X Network Access Control  
 802.3ab Gigabit Ethernet (1000BASE-T) or breakout  
 802.3ac Frame Extensions for VLAN Tagging  
 802.3ad Link Aggregation with LACP  
 802.3ae 10 Gigabit Ethernet (10GBase-X)  
 802.3ba 40 Gigabit Ethernet (40GBase-SR4, 40GBase-CR4, 40GBase-LR4, 100GBase-SR10, 100GBase-LR4, 100GBase-ER4) on optical ports  
 802.3bj 100 Gigabit Ethernet  
 802.3u Fast Ethernet (100Base-TX) on mgmt ports  
 802.3x Flow Control  
 802.3z Gigabit Ethernet (1000Base-X) with QSA  
 ANSI/TIA-1057 LLDP-MED  
 Force10 PVST+  
 Jumbo MTU support 9,416 bytes

**RFC and I-D compliance**

**General Internet protocols**

768 UDP  
 793 TCP  
 854 Telnet  
 959 FTP

**General IPv4 protocols**

791 IPv4  
 792 ICMP  
 826 ARP  
 1027 Proxy ARP  
 1035 DNS (client)  
 1042 Ethernet Transmission  
 1305 NTPv3  
 1519 CIDR  
 1542 BOOTP (relay)  
 1812 Requirements for IPv4 Routers  
 1918 Address Allocation for Private Internets  
 2474 Diffserv Field in IPv4 and Ipv6 Headers  
 2596 Assured Forwarding PHB Group  
 3164 BSD Syslog  
 3195 Reliable Delivery for Syslog  
 3246 Expedited Assured Forwarding  
 4364 VRF-lite (IPv4 VRF with OSPF and BGP)  
 5798 VRRP

**General IPv6 protocols**

1981 Path MTU Discovery Features  
 2460 Internet Protocol, Version 6 (IPv6) Specification  
 2464 Transmission of IPv6 Packets over Ethernet Networks  
 2711 IPv6 Router Alert Option  
 4007 IPv6 Scoped Address Architecture  
 4213 Basic Transition Mechanisms for IPv6 Hosts and Routers  
 4291 IPv6 Addressing Architecture  
 4443 ICMP for IPv6  
 4861 Neighbor Discovery for IPv6  
 4862 IPv6 Stateless Address Autoconfiguration  
 5095 Deprecation of Type 0 Routing Headers in IPv6

IPv6 Management support (telnet, FTP, TACACS, RADIUS, SSH, NTP)

**Security**

2404 The Use of HMACSHA-1-96 within ESP and AH  
 2865 RADIUS  
 3162 Radius and IPv6

3579 Radius support for EAP  
 3580 802.1X with RADIUS  
 3768 EAP  
 3826 AES Cipher Algorithm in the SNMP User Base Security Model  
 4250, 4251, 4252, 4253, 4254 SSHv2  
 4301 Security Architecture for IPSec  
 4302 IPSec Authentication Header  
 4303 ESP Protocol  
 4807 IPsec Security Policy DB MIB

**RIP**

1058 RIPv1

2453 RIPv2

**OSPF (v2/v3)**

1587 NSSA 4552 Authentication/  
 2154 OSPF Digital Signatures Confidentiality for  
 2328 OSPFv2 OSPFv3  
 2370 Opaque LSA 5340 OSPF for IPv6

**ISIS**

5301 Dynamic hostname exchange mechanism for IS-IS  
 5302 Domain-wide prefix distribution with two-level IS-IS

5303 Three way handshake for IS-IS point-to-point adjacencies

5308 IS-IS for IPv6

**BGP**

1997 Communities  
 2385 MD5  
 2545 BGP-4 Multiprotocol Extensions for IPv6 Inter-Domain Routing  
 2439 Route Flap Damping  
 2796 Route Reflection  
 2842 Capabilities  
 2858 Multiprotocol Extensions  
 2918 Route Refresh  
 3065 Confederations  
 4360 Extended Communities  
 4893 4-byte ASN  
 5396 4-byte ASN representations  
 draft-ietf-idr-bgp4-20 BGPv4  
 draft-michaelson-4byte-as-representation-05 4-byte ASN Representation (partial)  
 draft-ietf-idr-add-paths-04.txt ADD PATH

**Multicast**

1112 IGMPv1

2236 IGMPv2

3376 IGMPv3

MSDP

PIM-SM

PIM-SSM

**Data center bridging**

802.1Qbb Priority-Based Flow Control  
 802.1Qaz Enhanced Transmission Selection (ETS)  
 Data Center Bridging eXchange (DCBx)  
 DCBx Application TLV (iSCSI, FCoE)

**Network management**

1155 SMIv1  
 1157 SNMPv1  
 1212 Concise MIB Definitions  
 1215 SNMP Traps  
 1493 Bridges MIB  
 1850 OSPFv2 MIB  
 1901 Community-Based SNMPv2  
 2011 IP MIB  
 2096 IP Forwarding Table MIB  
 2578 SMIv2  
 2579 Textual Conventions for SMIv2

2580 Conformance Statements for SMIv2  
 2618 RADIUS Authentication MIB  
 2665 Ethernet-Like Interfaces MIB  
 2674 Extended Bridge MIB  
 2787 VRRP MIB  
 2819 RMON MIB (groups 1, 2, 3, 9)  
 2863 Interfaces MIB  
 3273 RMON High Capacity MIB  
 3410 SNMPv3  
 3411 SNMPv3 Management Framework  
 3412 Message Processing and Dispatching for the Simple Network Management Protocol (SNMP)  
 3413 SNMP Applications  
 3414 User-based Security Model (USM) for SNMPv3  
 3415 VACM for SNMP  
 3416 SNMPv2  
 3417 Transport mappings for SNMP  
 3418 SNMP MIB  
 3434 RMON High Capacity Alarm MIB  
 3584 Coexistence between SNMP v1, v2 and v3  
 4022 IP MIB  
 4087 IP Tunnel MIB  
 4113 UDP MIB  
 4133 Entity MIB  
 4292 MIB for IP  
 4293 MIB for IPv6 Textual Conventions  
 4502 RMONv2 (groups 1,2,3,9)  
 5060 PIM MIB  
 ANSI/TIA-1057 LLDP-MED MIB  
 Dell\_ITA.Rev\_1\_1 MIB  
 draft-grant-tacacs-02 TACACS+  
 draft-ietf-idr-bgp4-mib-06 BGP MIBv1  
 IEEE 802.1AB LLDP MIB  
 IEEE 802.1AB LLDP DOT1 MIB  
 IEEE 802.1AB LLDP DOT3 MIB  
 sFlow.org sFlowv5  
 sFlow.org sFlowv5 MIB (version 1.3)  
 FORCE10-BGP4-V2-MIB Force10 BGP MIB (draft-ietf-idr-bgp4-mibv2-05)  
 FORCE10-IF-EXTENSION-MIB  
 FORCE10-LINKAGG-MIB  
 FORCE10-COPY-CONFIG-MIB  
 FORCE10-PRODUCTS-MIB  
 FORCE10-SS-CHASSIS-MIB  
 FORCE10-SMI  
 FORCE10-TC-MIB  
 FORCE10-TRAP-ALARM-MIB  
 FORCE10-FORWARDINGPLANE-STATS-MIB

## Regulatory compliance

### Safety

UL/CSA 60950-1, Second Edition  
 EN 60950-1, Second Edition  
 IEC 60950-1, Second Edition Including All National Deviations and Group Differences  
 EN 60825-1 Safety of Laser Products Part 1: Equipment Classification Requirements and User's Guide  
 EN 60825-2 Safety of Laser Products Part 2: Safety of Optical Fibre Communication Systems  
 FDA Regulation 21 CFR 1040.10 and 1040.11

### Emissions

Australia/New Zealand: AS/NZS CISPR 22: 2006, Class A  
 Canada: ICES-003, Issue-4, Class A  
 Europe: EN 55022: 2006+A1:2007 (CISPR 22: 2006), Class A  
 Japan: VCCI V3/2009 Class A  
 USA: FCC CFR 47 Part 15, Subpart B:2011, Class A

### Immunity

EN 300 386 V1.4.1:2008 EMC for Network Equipment  
 EN 55024: 1998 + A1: 2001 + A2: 2003  
 EN 61000-3-2: Harmonic Current Emissions  
 EN 61000-3-3: Voltage Fluctuations and Flicker  
 EN 61000-4-2: ESD  
 EN 61000-4-3: Radiated Immunity  
 EN 61000-4-4: EFT  
 EN 61000-4-5: Surge  
 EN 61000-4-6: Low Frequency Conducted Immunity

### RoHS

All S Series components are EU RoHS compliant.

### Certifications

Available with US Trade Agreements Act (TAA) compliance  
 USGv6 Host and Router Certified on Dell Networking OS 9.5 and greater  
 IPv6 Ready for both Host and Router  
 UCR DoD APL (core and distribution ALSAN switch)

### Warranty

1 year return to depot

## 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.

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