



# DELL EMC NETWORKING Z9264F-ON SERIES SWITCH

High-performance, high-density open networking 100 GbE multi rate aggregation switch

The Z9264F-ON 40/100GbE fixed switch comprises Dell EMC's latest disaggregated hardware and software data center networking solutions, providing state-of-the-art, high-density 40/100GbE ports and a broad range of functionality to meet the growing demands of today's data center environment. These innovative, next-generation open networking high-density aggregation switches offer optimum flexibility and cost-effectiveness for the web 2.0, enterprise, mid-market and cloud service provider with demanding compute and storage traffic environments.

The compact Z9264F-ON provides industry-leading density of either 64 ports of 40/100GbE in QSFP28 form factor or 128 ports of 1/10/25/40/50GbE (via breakout), in a 2RU design.

Using industry-leading hardware and a choice of Dell EMC's OS10 or select 3rd party network operating systems and tools, the Z9264F-ON switch incorporates multiple architectural features that optimize data center network flexibility, efficiency and availability, including IO panel to PSU airflow or PSU to IO panel airflow for hot/cold aisle environments, redundant, hot-swappable power supplies and fans and delivers non-blocking performance for workloads sensitive to packet loss. The compact Z9264F-ON model provides multi-rate speed, enabling denser footprints and simplifying migration to 100Gbps.

Priority-based flow control (PFC), data center bridge exchange (DCBX) and enhanced transmission selection (ETS) make the Z9264F-ON ideally suited for DCB environments.

Dell EMC Networking Z9264F-ON switches support the open source Open Network Install Environment (ONIE) for zero touch installation of Dell EMC's OS10 networking operating system, as well as of alternative network operating systems.

## Key applications

- Organizations looking to enter the software-defined data center era with a choice of networking technologies designed to maximize flexibility
- High-density multi-rate 40/100GbE ToR server aggregation in high-performance data center environments at the desired fabric speed
- Small-scale Fabric implementation via the Z9264F-ON switch in leaf and spine along with S-Series 1/10/25/40GbE ToR switches enabling cost-effective aggregation of 10/25/40/50/100 uplinks
- High-density 1/10/25/50GbE ToR server access in high-performance data center environments

- Multi-functional 10/25/40/50/100GbE switching in High Performance Computing Clusters or other business-sensitive deployments requiring the highest bandwidth.
- iSCSI and FCOE deployment, including DCB converged lossless transactions
- L2/L3 VXLAN Gateway support (hardware only)

## Key features

- 2RU high-density 40/100GbE aggregation switch with up to 64 ports of 40/100GbE (QSFP28) or up to 128 ports of 10/25/40/50GbE ports (using breakout cable)
- Multi-rate 100GbE ports support 10/25/40/50/100GbE. 40GbE ports support 10/40GbE
- 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
- 6.4Tbps non-blocking, switching fabric delivers line-rate performance under full load on Z9264F-ON
- L2 multipath support via Virtual Link Trunking (VLT) and Routed VLT support
- VXLAN gateway functionality support for bridging and routing the non-virtualized and the virtualized overlay networks with line rate performance (hardware only)
- Support for OS10 Enterprise Edition
- Converged network support for DCB, with priority flow control (802.1Qbb), ETS (802.1Qaz), DCBx and iSCSI TLV support
- Z9264F-ON supports Routable RoCE to enable convergence of compute and storage on Active Fabric
- IO panel to PSU airflow or PSU to IO panel airflow Redundant, hot-swappable power supplies and fans
- Supports the open source Open Network Install Environment (ONIE) for zero touch installation of alternate network operating systems
- L2, L3, RIOT VXLAN Gateway support (hardware only)
- 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

## Key features with Dell EMC Networking OS10

- Consistent DevOps framework across compute, storage and networking elements
- Standard networking features, interfaces and scripting functions for legacy network operations integration
- Standards-based switching hardware abstraction via Switch Abstraction Interface (SAI)
- Pervasive, unrestricted developer environment via Control Plane Services (CPS)
- OS10 Enterprise Edition software enables Dell EMC layer 2 and 3 switching and routing protocols with integrated IP services, quality of service, manageability and automation features
- Leverage common open source tools and best practices (data models, commit rollbacks\*)
- Increase VM Mobility region by stretching L2 VLAN within or across two DCs with unique VLT capabilities
- Scalable L2 and L3 Ethernet Switching with QoS, ACL and a full complement of standards based IPv4 and IPv6 features including OSPF, BGP and PBR
- Enhanced mirroring capabilities including local mirroring, Remote Port Mirroring (RPM), and Encapsulated Remote Port Mirroring (ERPM).
- Converged network support for Data Center Bridging, with priority flow control (802.1Qbb), ETS (802.1Qaz), DCBx and iSCSI TLV

\* Roadmap

Product	Description
<b>Z9264F-ON</b>	Z9264F, 64x 100GbE QSFP28, 2x AC PSU, Fan module, I/O Panel to PSU Airflow, OS10 Enterprise Edition Z9264F, 64x 100GbE QSFP28, 2x AC PSU, Fan module, PSU to I/O Panel Airflow, OS10 Enterprise Edition Z9264F, 64x 100GbE QSFP28, 2x AC PSU, Fan module, I/O Panel to PSU Airflow, NO-OS. Z9264F, 64x 100GbE QSFP28, 2x AC PSU, Fan module, PSU to I/O Panel Airflow, NO-OS. Z9264F, 64x 100GbE QSFP28, 2x AC PSU, Fan module, I/O Panel to PSU Airflow, OS10 Enterprise Edition. TAA Certified Z9264F, 64x 100GbE QSFP28, 2x AC PSU, Fan module, PSU to I/O Panel Airflow, OS10 Enterprise Edition. TAA Certified.
<b>Redundant power supplies</b>	AC Power Supply, IO Panel to PSU Airflow AC Power Supply, PSU to IO Panel Airflow DC Power Supply, IO Panel to PSU Airflow (available as custom kit) DC Power Supply, PSU to IO Panel Airflow (available as custom kit)
<b>Fans</b>	Fan module, IO Panel to PSU Airflow Fan module, PSU to IO Panel Airflow
<b>Optics</b>	Transceiver, 100GbE, SR4 QSFP28 Transceiver, 100GbE, eSR4 QSFP28 Transceiver, 100GbE, SWDM4 QSFP28 (Duplex) Transceiver, 100GbE, PSM4 (500m) QSFP28 Transceiver, 100GbE, CWDM4 (2Km) QSFP28 Transceiver, 100GbE, LR4 QSFP28 Transceiver, 100GbE, ER4 Lite (30Km) QSFP28 Transceiver, 100GbE, DWDM4 (80Km) QSFP28 Transceiver, 40GbE, SR4 optic QSFP+ Transceiver, 40GbE, eSR4 optic QSFP+ Transceiver, 40GbE, BIDI optic QSFP+ (Duplex) Transceiver, 40GbE, SM4 optic QSFP+ (Duplex) Transceiver, 40GbE, LM4 optic QSFP+ (Duplex) Transceiver, 40GbE, PSM4 10Km, QSFP+ Transceiver, 40GbE, LR4 optic QSFP+ Transceiver, 40GbE, ER4 optics QSFP+
<b>Cables</b>	100GbE, 4x25GbE, QSFP28 to 4xSFP28, passive DAC 100GbE, QSFP28 to QSFP28, active optical 100GbE, QSFP28 to QSFP28, passive DAC 100GbE, 2x50GbE, 2xQSFP 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
<b>Cable management</b>	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)

# Technical specifications

## Physical

1 RJ45 console/management port with RS232 signaling

64x100GE QSFP28 ports + 2xSFP+ 10GE

## Chassis

Size: 2 RU, 337" (h) x 17.04" (w) x 20.08" (d)  
(8.56h x 44.2w x 51.0 cm d)

Weight: 44lbs (20kg)

## Environmental

Power supply: 100–240 VAC 50/60 Hz

Max Power consumption: 1104 Watts

Typ. Power consumption: 900 Watts

Max Operating specifications:

AC Max. Operating specifications:

Operating temperature: 32° to 113°F (0° to 45°C)

Operating humidity: 10 to 90% (RH), non-condensing

Max. Non-operating specifications:

Storage temperature: –40° to 158°F (–40° to 70°C)

Storage humidity: 5 to 95% (RH), non-condensing  
Fresh air Compliant to 45°C

## Redundancy

Hot swappable redundant power

Hot swappable redundant fans

## Performance

Switch fabric capacity: 12.8Tbps (full-duplex)

Forwarding capacity: 2900Mpps for 64<packet size<250 bytes, 4200Mpps when average packet size >250 bytes

Latency: 300ns L2/400nsL= L3

Packet buffer memory: 42MB

CPU memory: 16GB

MAC addresses: 160K

ARP table: 128K

IPv4 routes: 128K

IPv6 routes: 64K

Multicast hosts: 32K

Link aggregation: 16 links per group, 128 groups

Layer 2 VLANs: 4K

MSTP: 64 instances

LAG load balancing: Based on layer 2, IPv4 or IPv6 headers

## IEEE Compliance

802.1AB LLDP

TIA-1057 LLDP-MED

802.3ad Link Aggregation

802.1D Bridging, STP

802.1p L2 Prioritization

802.1Q VLAN Tagging

802.1Qbb PFC

802.1Qaz ETS

802.1X Network Access Control

802.3ac Frame Extensions for VLAN Tagging

802.3x Flow Control

## Layer2 Protocols

802.1D Compatible

802.1p L2 Prioritization

802.1Q VLAN Tagging

802.1s MSTP

802.1w RSTP

802.1t RPVST+

VLT (Virtual Link Trunking)

VRRP Active/Active

RSTP & RPVST+

Port Mirroring on VLT ports

DCB, iSCSI, FSB on VLT

RPM/ERPM over VLT

VLT Minloss upgrade

## RFC Compliance

768 UDP

793 TCP

854 Telnet

959 FTP

1321 MD5

1350 TFTP

2474 Differentiated Services

2698 Two Rate Three Color Marker

3164 Syslog

4254 SSHv2

## General IPv4 Protocols

791 IPv4

792 ICMP

826 ARP

1027 Proxy ARP

1035 DNS (client)

1042 Ethernet Transmission

1191 Path MTU Discovery

1305 NTPv4

1519 CIDR

1812 Routers, Static Routes

1858 IP Fragment Filtering

2131 DHCPv4 (server and relay)

5798 VRRPv3

3021 31-bit Prefixes

1812 Requirements for IPv4 Routers

1918 Address Allocation for Private Internets

2474 Diffserv Field in IPv4 and Ipv6 Headers

2597 Assured Forwarding PHB Group

3195 Reliable Delivery for Syslog

3246 Expedited Forwarding PHB Group

VRF (BGPv4/v6)

## General IPv6 Protocols

1981 Path MTU for IPv6

2372 IPv6 Addressing

2460 IPv6 Protocol Specification

2461 Neighbor Discovery

2462 Stateless Address AutoConfig

2711 IPv6 Router alert

2463 ICMPv6

2464 Ethernet Transmission

2675 IPv6 Jumbograms

3484 Default Address Selection

3493 Basic Socket Interface

4291 Addressing Architecture

3542 Advanced Sockets API

3587 Global Unicast Address Format

4291 IPv6 Addressing

2464 Transmission of IPv6 Packets over Ethernet Networks

2711 IPv6 Router Alert Option

4007 IPv6 Scoped Address Architecture

4213 Transition Mechanisms for IPv6 Hosts and Routers

3633 DHCPv6 Relay

IPv6 Static Routes

## OSPF

1745 OSPF/BGP interaction

1765 OSPF Database overflow

2154 OSPF with DigitalSignatures

2328 OSPFv2

5340 OSPF for IPv6 (OSPFv3)

2370 Opaque LSA

3101 OSPF NSSA

4552 OSPFv3 Authentication

## Multicast

2236 IGMPv2 Snooping

3810 MLDv2 Snooping

## Security

2865 RADIUS

3162 Radius and IPv6

3579 Radius support for EAP

3580 802.1X with RADIUS

3826 AES Cipher in SNMP

1492 TACACS (Authentication, Accounting)

Control Plane, VTY & SNMP ACLs

IP Access Control Lists

## BGP

1997 Communities

2385 MD5

2439 Route Flap Damping

2796 Route Reflection

2918 Route Refresh

3065 Confederations

4271 BGP-4

2545 BGP-4 Multiprotocol Extensions for IPv6 Inter-Domain Routing

2858 Multiprotocol Extensions

4360 Extended Communities

4893 4-byte ASN

5396 4-byte ASN Representation

5492 Capabilities Advertisement

draft-ietf-idr-add-paths-04.txt ADD PATH

## Linux Distribution

Debian Linux version 8

Linux Kernel 3.16

## Network Management and Monitoring

SNMPv1/2c

IPv4/IPv6 Management support (Telnet, FTP, TACACS, RADIUS, SSH, NTP)

Syslog

Port Mirroring

RPM/ERPM

3176 SFlow

Support Assist (Phone Home)

RestConf APIs (Layer 2 features)

XML Schema

CLI Commit (Scratchpad)

Uplink Failure Detection

Object Tracking

Bidirectional Forwarding Detection (BFD)

## Automation

Control Plane Services APIs

Linux Utilities and Scripting Tools

CLI Automation (Multiline Alias)

Zero Touch Deployment (ZTD)

Ansible, Puppet, Chef, SaltStack

## Quality of Service

Prefix List

Route-Map

Rate Shaping (Egress)

Rate Policing (Ingress)

Scheduling Algorithms

Round Robin

Weighted Round Robin

Deficit Round Robin

Strict Priority

Weighted Random Early Detect

## Data center bridging

802.1Qbb Priority-Based Flow Control

802.1Qaz Enhanced Transmission Selection (ETS)

Explicit Congestion Notification

Data Center Bridging eXchange (DCBx)

DCBx Application TLV (iSCSI, FCoE)

RoCEv2

## Software Defined Networking

OpenFlow 1.3 (Native)

### MIBS

IP MIB  
IP Forward MIB  
Host Resources MIB  
IF MIB  
LLDP EXT1/3 MIB  
Entity MIB  
LAG MIB  
Dell-Vendor MIB  
TCP MIB  
UDP MIB  
SNMPv2 MIB  
ETHERLIKE-MIB  
SFLOW-MIB  
PFC-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.

Learn more at  
[Dell.com/LifecycleServices](https://Dell.com/LifecycleServices)

Learn more at [Dell.com/Networking](https://Dell.com/Networking)