



DELL EMC POWERSWITCH Z9264F-ON SERIES SWITCHES

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

The Z9264F-ON 40/100GbE fixed switch comprises Dell Technologies' 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 PowerSwitch Z9264F-ON switches support the open source Open Network Install Environment (ONIE) for zero touch installation of Dell EMC SmartFabric 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 VXLAN support

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
- 12.8Tbps 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 Dell EMC SmartFabric OS10
- 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 VXLAN support
- 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 SmartFabric 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)
- Dell EMC SmartFabric OS10 software enables Dell Technologies Layer 2 and 3 switching and routing protocols with integrated IP services, quality of service, manageability and automation features
- OS10 supports Precision Time Protocol (PTP, IEEE 1588v2) to synchronize clocks on network devices*)
- Increase VM Mobility region by stretching L2 VLAN within or across two DCs with unique VLT capabilities
- Scalable L2 and L3 Ethernet Switching with GoS, 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

Product	Description
Z9264F-ON	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.
Redundant power supplies	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 customer kit) DC Power Supply, PSU to IO Panel Airflow (available as customer kit)
Fans	Fan module, IO Panel to PSU Airflow Fan module, PSU to IO Panel Airflow
Optics	Transceiver, 100GbE, SR4 QSFP28 Transceiver, 100GbE, eSR4 QSFP28 Transceiver, 100GbE, SWDM4 QSFP28 (Duplex) Transceiver, 100GbE, BiDi QSFP28 (Duplex) Transceiver, 100GbE, PSM4 (500m) QSFP28 Transceiver, 100tGbE, CWDM4 (2Km) QSFP28 Transceiver, 100GbE, LR4 QSFP28 Transceiver, 100GbE, ER4 Lite (30Km) QSFP28 Transceiver, 100GbE, DWDM2 (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+
Cables	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
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)

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: 750 Watts
Typ. Power consumption: 340 Watts
Max Operating specifications:
AC Max. Operating specifications:
Operating temperature: 32° to 113°F
(0° to 45°C)
Operating humidity: 10 to 90% (RH),
noncondensing
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: sub 500ns
Packet buffer memory: 42MB
CPU memory: 16GB
MAC addresses: 160K
ARP table: 128K
IPv4 routes: 128K
IPv6 routes: 64K
Multicast hosts: 32K
Link aggregation: 64 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
1588v2 PTP support
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



**Dell
Technologies
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Dell Technologies Consulting Services provides industry professionals with a wide range of tools and the experience you need to design and execute plans to transform your business.

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