Dell PowerSwitch Z9864F-ON

High-performance, high-density open networking 800GbE multi-rate AI fabric switch

Dell PowerSwitch Z9864F-ON 800GbE fixed switch comprises Dell Technologies' latest disaggregated hardware and software data center networking solutions, providing state-of-the-art, high-density 100/200/400/800 GbE ports and a broad range of functionality to meet the growing demands of today's data center environment. This innovative, next-generation open networking high-density aggregation switch offers optimum flexibility and cost-effectiveness for artificial intelligence (AI) and machine learning (ML) fabric solutions, Web 2.0, enterprise, and Tier1/Tier2 cloud service provider data center networks with intensive compute and storage traffic, cloud, IoT, AI and streaming video requirements.

The PowerSwitch Z9864F-ON provides high-density of 64 ports of 800GbE in a OSFP112 form factor and 2U design. It can also be used as a 100/200/400 switch via breakout cables for a maximum of 320 ports.

Using industry-leading hardware and featuring Enterprise SONiC by Dell Technologies, the Z9864F-ON switch incorporates multiple architectural features that optimize data center fabric network flexibility, efficiency and availability, including IO panel to PSU and 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 Z9864F-ON provides multi-rate speeds, enables denser footprints and simplifies migration to 800Gbps.

Priority-based flow control (PFC), data center bridge exchange (DCBX), RoCEv2 and enhanced transmission selection (ETS) make the Z9864F-ON ideally suited for DCB environments.

The Z9864F-ON hardware adds AI/ML fabric support enhancements such as versatile hashing*, adaptive routing*, cognitive routing*, enhanced priority-based flow control queue configuration support*, increased AI observability* and Dell SmartFabric Manager* support.

The Dell PowerSwitch Z9864F-ON switch supports the open-source Open Network Install Environment (ONIE) for zero touch installation of Enterprise SONiC by Dell Technologies, as well as of alternative network operating systems (when applicable).

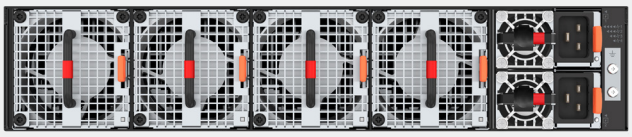
*Future software release for full feature functionality

Key applications

- Organizations looking to enter the software-defined data center era with a choice of networking technologies designed to maximize flexibility
- High-capacity Ethernet fabrics for AI/ML training and inferencing clusters, with up-to 8K GPU nodes in a single two-tier 400G fabric
- High density multi-rate 100/200/400/800GbE ToR/MoR server aggregation in high-performance data center environments at the desired fabric speed
- Fabric implementation in leaf and spine along with S-series ToR switches enabling cost-effective aggregation of 100/200/400/800 uplinks
- Multi-functional 100/200/400/800GbE switching in High Performance Computing clusters or other business-sensitive deployments requiring the highest bandwidth
- DCB* and RoCEv2 converged lossless transactions
- NVMe/TCP and Dell SmartFabric Storage Software support for automation of storage services on a wide range of existing IP fabrics
- Autonomous data center network fabric deployment, expansion and lifecycle management with SmartFabric Services, automating and simplifying networking

Key features

- 2U high-density 100/200/400/800GbE aggregation switch with up to 64 ports of 800GbE (OSFP112 PAM4), 128 ports of 400GbE (100GbE PAM4, breakout mode), 256 ports of 200GbE (breakout mode)**, 320 ports of 100GbE (breakout mode), or 256x100G and either 32x800G or 64x400G**
- OSFP112 ports support 100/200/400/800GbE
- 102.4Tbps switching capacity (full duplex), 51.2Tbps non-blocking (half duplex)
- IO panel to PSU airflow or PSU to IO panel airflow
- AC or DC* PSU support
- Redundant, hot-swappable power supplies and fans
- Supports the open-source ONIE for zero-touch installation of alternate network operating systems
- Power-efficient design, implemented in a monolithic 5nm die package
- Power-efficient operation up to 45°C, helping reduce cooling costs in temperature-constrained deployments



**Provisional breakout support at RTS

Product	Description
Z9864F-ON	Z9864F-ON, 64x 800GbE OSFP112, 2x SFP+, TAA Certified, with ONIE bootloader
Network Operating System	Enterprise SONiC Distribution by Dell Technologies
Airflow Kits	AC – IO Panel to PSU Airflow, 2 AC PSUs and 4 fans AC – PSU to IO Panel Airflow, 2 AC PSUs and 4 fans DC – IO Panel to PSU Airflow, 2 DC PSUs and 4 fans DC – PSU to IO Panel Airflow, 2 DC PSUs and 4 fans
Optics, Cables and Cable Management	Please refer to Dell Networking Transceivers and Cables spec sheet for complete list of optics and cables.

Technical specifications

Hardware specifications

Physical

64x800GbE OSFP112, 2x10GbE SFP+ ports

1 RJ45 console/management via RS232

1 USB-C for serial access console/ management

1 RJ45 10/100/1000BaseT Ethernet for management

1 USB 3.0 Type A storage port

Chassis

Size: 2U, 438.5 x 630 x 87.3 mm (W x D x H),

17.26 x 24.80 x 3.43 inches (W x D x H)

Switch without PSU and Fan tray: 44.1 lbs (20 kg)

Switch with PSU and Fan trays: 55.8 lbs (25.3 kg)

Environmental

Power supply: 100-240 VAC 50/60 Hz

AC/DC inlet IEC60320 C20

Max. power available:

- AC High Line: 3000W
- AC Low Line: 1500W
- DC: 3200W

Max. utilized: 2848W

Typ. power consumption: 1500W***

Max. operating specifications:

Operating temperature: 32° to 113°F (0°to45°C)

Operating humidity: 8 to 90% (RH), non-condensing

Max. non-operating specifications:

Storage temperature: -40° to 149°F

(–40° to 65°C)

Storage humidity: 5 to 95% (RH), non-condensing

Support lowline and highline AC power modes

Redundancy

Hot swappable redundant power (1+1 redundancy)****
Hot swappable redundant fans (3+1 redundant fan module). Each fan module with one dual-stacked fan.

Performance

Switch fabric capacity: 51.2Tbps (half duplex)

Forwarding capacity: 20.3Bpps

Latency: sub-700ns

Packet buffer memory: 165.2MB: 82.6MB per Ingress Traffic Manager (ITM) (there are 2 per NPU)

NPU Pipeline is programmable capable using NPL

CPU: Intel® Xeon® D-1714 4 core @

2.3GHz (up to 3.4GHz in Turbo mode) CPU memory: 32GB DDR4 ECC

MAC addresses: 156K

ARP table: 16K standalone, 8K shared

IPv4 routes: up to 400K (ALPM)

IPv6 routes: 300K Multicast hosts: 1K Multicast IPv6 routes: 4K

Layer 2 VLANs: 4K MSTP: 64 instances

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

Timing Card supporting SyncE with Stratum 3E class OCXO

Timing card supporting PTP/1588 providing Class C Phase performance or better

Security

Hardware Root of Trust features

Secure Boot

Trusted Platform Module TPM 2.0

Optics Performance

Supports up to 64 ports of 18W optics when in IO/PSU airflow direction

Supports up to 32 ports of 17W optics when in PSU/IO airflow direction operating at 35°C

Supports up to 64 ports of DAC cable when in PSU/IO airflow direction operating at 45°C and no optics support when operating at 45°C

For Network Operating System (NOS) specific features, refer to Enterprise SONiC Distribution by Dell Technologies spec sheet.

Each switch unit comes with Console cables and an Accelerated Rack Mount rail kit.

Regulatory compliance

Safety

UL/CUL 62368-1

IEC/EN 62368-1 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

AS/NZS CISPR: 32, Class A

ICES-003, Class A

EN55032/55035, Class A

VCCI-CISPR 32, Class A

FCC CFR 47 Part 15, Subpart B, Class A

Immunity

EN 300 386 EMC for Network Equipment EN 55035

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 Z-series components are EU RoHS compliant

Certifications

Available with US Trade Agreements Act (TAA) compliance

IPv6 Ready for both Host and Router

Warranty

1 year return to depot constrained

*** Typical power consumption measured at 25°C ambient with 100% load on all ports with DAC
**** Power redundancy is supported only in high power mode

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 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 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 DellTechnologies.com/Services

Learn more
Dell Networking solutions

Contact a Dell Technologies Expert

View more resources

Join the conversation with #DellTechnologies

DELL Technologies