DELL POWERSWITCH Z9664F-ON

High-performance, high-density open networking 400GbE multi-rate aggregation switch

Dell PowerSwitch Z9664F-ON 100/400GbE fixed switch comprises Dell Technologies' latest disaggregated hardware and software data center networking solutions, providing state-of-the-art, high-density 100/400GbE 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 the web 2.0, edge, large enterprises, mid-market and cloud service providers with demanding compute and storage traffic environments.

The compact PowerSwitch Z9664F-ON provides high-density of either 64 ports of 400GbE in QSFP56-DD form factor or 256 ports of 100GbE in a 2RU design, and can be used as a 10/25/40/50/100/200 switch via breakout cables for a maximum of 256 ports.

Using industry-leading hardware and a choice of Dell SmartFabric OS10 or select 3rd party network operating systems and tools, the Z9664F-ON switch incorporates multiple architectural features that optimize data center 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 compact Z9664F-ON model provides multi-rate speed, enabling denser footprints and simplifying migration to 400Gbps.

Priority-based flow control (PFC), data center bridge exchange (DCBX) and enhanced transmission selection (ETS) make the Z9664F-ON ideally suited for DCB environments.

The Dell PowerSwitch Z9664F-ON switch supports the open source Open Network Install Environment (ONIE) for zero touch installation of Dell SmartFabric OS10 networking operating system, Enterprise SONiC Distribution by Dell Technologies[*] 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 100/400GbE 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 100/400 uplinks
- Multi-functional 10/25/40/50/100/200/400GbE switching in High Performance Computing clusters or other business-sensitive deployments requiring the highest bandwidth
- iSCSI and FCOE deployment, including DCB converged lossless transactions
- NVMe/TCP and Dell SmartFabric Storage Software (SFSS) 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 (SFS), automating and simplifying networking

Key features

- 2RU high-density 100/400GbE aggregation switch with up to 64 ports of 400GbE (QSFP56-DD) or up to 256 ports of 100GbE or 10/25/40/50/100/200GbE ports (with breakout cables)
- Multi-rate 400GbE ports support 10/25/40/50/100/200/400GbE
- 51.2Tbps non-blocking (full duplex), switching fabric delivers line rate performance under full load on Z9664F-ON
- IO panel to PSU airflow or PSU to IO panel airflow[**]
- Redundant, hot-swappable power supplies and fans
- Supports the open-source ONIE for zero touch installation of alternate network operating systems
- Accelerated 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

* Available post launch

** Note that units configured in the PSU to IO airflow direction are subject to tighter restrictions for power consumptions on cables and optics used for 400GbE port

Product	Description
Z9664F-ON	Z9664F-ON, 64x 400GbE QSFP56-DD, 2x AC PSU, Fan module, I/O Panel to PSU Airflow Z9664F-ON, 64x 400GbE QSFP56-DD, 2x AC PSU, Fan module, I/O Panel to PSU Airflow, TAA Certified Z9664F-ON, 64x 400GbE QSFP56-DD, 2x AC PSU, Fan module, PSU to I/O Panel Airflow Z9664F-ON, 64x 400GbE QSFP56-DD, 2x AC PSU, Fan module, PSU to I/O Panel Airflow, TAA Certified
Dell SW Configurations	Dell SmartFabric OS10 Enterprise SONiC Distribution by Dell Technologies*
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 DC Power Supply, PSU to IO Panel Airflow
Fans	Fan module, IO Panel to PSU Airflow Fan module, PSU to IO Panel Airflow
Optics, Cables and Cable Management	Please refer to Dell Networking Transceivers and Cables spec sheet for complete list of optics and cables. for a complete list of optics and cables.

Technical specifications

Physical
1 RJ45 console/management port with RS232 signaling and USB type C port
1 10/100/1000BASE-T Ethernet for management
1 USB 3.0 type A storage port
64x400GbE QSFP56-DD ports + 2xSFP+ 10GbE

Chassis
Size: 2 RU, 438.5 x 630 x 87.5 mm (W x D x H), 17.26 x 24.80 x 3.45 inches (W x D x H)
Switch without PSU and Fan tray: 40.68 lbs (18.46 kg)
Switch with PSU and Fan trays: 50.71 lbs (23 kg)

Environmental
Power supply: 100-240 VAC 50/60 Hz***
Max. power consumption: 2125 Watts
Typ. power consumption: 500 Watts****
Max. operating specifications:
    AC max. operating specifications:
Operating temperature: 32° to 113°F (0° to 45°C)
Operating humidity: 5 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
Support AC both lowline and highline power modes

Redundancy
Hot swappable redundant power (2 per switch, 1 + 1 redundancy except with low-line power)***
Hot swappable redundant fans (4 per switch, 3+1 redundancy)

Performance
Switch fabric capacity: 51.2Tbps (full duplex)
Forwarding capacity: 10.2Bpps
Latency: sub 850ns
Packet buffer memory: 113.66MB: 56.83MB per Ingress Traffic Manager (ITM)
NPU Pipeline is programmable capable using NPL
CPU: Intel Ice Lake-D LCC 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 PTP/1588 and Sync-E
Trusted Platform Module
Supports up to 4 ports of 20W optics when in IO/PSU airflow direction
Supports up to 15W optics in all QSFP56-DD ports in I/P mode, some restrictions in P/I mode

For Network Operating System (NOS) specific features, refer to Dell SmartFabric OS10 and Enterprise SONiC Distribution by Dell Technologies spec sheets.

Regulatory compliance
Safety
UL/CUL 62368-1
IEC/EN 60950-1 Including All National Deviations and Group Differences
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, Class A
VCCI-CISPR 32, Class A
FCC CFR 47 Part 15, Subpart B

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
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)
GB 40050-2021 Critical network devices security common requirements

Warranty
1 year return to depot constrained

*** 100-127 low-line power solution is non-redundant
**** Typical power consumption measured at 25C ambient with 50% load on all ports

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