The Dell EMC PowerSwitch S4048T-ON switch is the industry’s latest data center networking solution, empowering organizations to deploy modern workloads and applications designed for the open networking era.

Businesses who have made the transition away from monolithic proprietary mainframe systems to industry standard server platforms can now enjoy even greater benefits from Dell Technologies’ open networking platforms. By using industry-leading hardware and a choice of leading network operating systems to simplify data center fabric orchestration and automation, organizations can tailor their network to their unique requirements and accelerate innovation. These new offerings provide the needed flexibility to transform data centers. High-capacity network fabrics are cost-effective and easy to deploy, providing a clear path to the software-defined data center center of the future with no vendor lock-in. The S4048T-ON supports the open source Open Network Install Environment (ONIE) for zero-touch installation of alternate network operating systems, including feature rich Dell EMC Networking OS9 and Dell EMC SmartFabric OS10.

High density 1/10G BASE-T switch

The Dell EMC PowerSwitch S-Series S4048T-ON is a high-density 100M/1G/10G/40Gbe top-of-rack (ToR) switch purpose-built for applications in high-performance data center and computing environments. Leveraging a non-blocking switching architecture, the S4048T-ON delivers line-rate L2 and L3 forwarding capacity within a conservative power budget. The compact S4048T-ON design provides industry-leading density of 48 dual-speed 1/10G BASE-T (RJ45) ports, as well as six 40Gbe QSFP+ up-links to conserve valuable rack space and simplify the migration to 40Gbps in the data center core. Each 40Gbe QSFP+ up-link can also support four 10Gbe (SFP+) ports with a breakout cable. In addition, the S4048T-ON incorporates multiple architectural features that optimize data center network flexibility, efficiency and availability, including I/O panel to PSU airflow or PSU to I/O panel airflow for hot/cold aisle environments, and redundant, hot-swappable power supplies and fans. S4048T-ON supports feature-rich Dell EMC Networking OS9 and Dell EMC SmartFabric OS10, VLT, network virtualization features such as VRF-lite, VXLAN Gateway and support for Dell Embedded Open Automation Framework.

Key features - general

- 48 dual-speed 1/10GbE (SFP+) ports and six 40GbE (QSFP+) uplinks (totaling 72 10GbE ports with breakout cables) with OS support
- 1.44Tbps (full-duplex) non-blocking switching fabric delivers line-rate performance under full load with sub 600ns latency I/O panel to PSU airflow or PSU to I/O panel airflow
- Supports the open source ONIE for zero-touch installation of alternate network operating systems
- Redundant, hot-swappable power supplies and fans
- Low power consumption
- Support for multi-tenancy like VXLAN and NVGRE in hardware

DELL EMC POWERSWITCH S4048T-ON SWITCH
Energy-efficient 10GBASE-T top-of-rack switch optimized for data center efficiency

The S4048T-ON also supports Dell Technologies’ Embedded Open Automation Framework, which provides enhanced network automation and virtualization capabilities for virtual data center environments.

The Open Automation Framework comprises a suite of interrelated network management tools that can be used together or independently to provide a network that is flexible, available and manageable while helping to reduce operational expenses.

Key applications

Dynamic data centers ready to make the transition to software-defined environments

- High-density 10Gbase-T ToR server access in high-performance data center environments
- Lossless iSCSI storage deployments that can benefit from innovative iSCSI & DCB optimizations that are unique only to Dell Networking switches
- When running the Dell EMC Networking OS9, Active Fabric™ implementation for large deployments in conjunction with the Dell EMC Z-Series, creating a flat, two-tier, nonblocking 10/40GbE data center network design:
  - High-performance SDN/OpenFlow 1.3 enabled with ability to inter-operate with industry standard OpenFlow controllers
  - As a high speed VXLAN Layer 2 Gateway that connects the hypervisor based overlay networks with nonvirtualized infrastructure
Key features with Dell EMC Networking OS9

- Scalable L2 and L3 Ethernet switching with QoS and a full complement of standards-based IPv4 and IPv6 features, including OSPF, BGP and PBR (Policy Based Routing) support
- VRF-lite enables sharing of networking infrastructure and provides L3 traffic isolation across tenants
- Increase VM Mobility region by stretching L2 VLAN within or across two DCs with unique VLT capabilities like Routed VLT, VLT Proxy Gateway
- VXLAN gateway functionality support for bridging the nonvirtualized and the virtualized overlay networks with line rate performance
- Embedded Open Automation Framework adding automated configuration and provisioning capabilities to simplify the management of network environments
- Supports Puppet agent for DevOps
- Modular Dell EMC Networking OS software delivers inherent stability as well as enhanced monitoring and serviceability functions
- Enhanced mirroring capabilities including 1:4 local mirroring, Remote Port Mirroring (RPM), and Encapsulated Remote Port Mirroring (ERPM).
- Rate shaping combined with flow based mirroring enables the user to analyze fine grained flows
- Jumbo frame support for large data transfers
- 128 link aggregation groups with up to 16 members per group, using enhanced hashing
- Converged network support for DCB, with priority flow control (802.1Qbb), ETS (802.1Qaz), DCBx and iSCSI TLV
- S4048T-ON supports RoCE and Routable RoCE to enable convergence of compute and storage on Active Fabric
- User port stacking support for up to six units and unique mixed mode stacking that allows stacking of S4048-ON with S4048T-ON to provide combination of 10G SFP+ and RJ45 ports in a stack

<table>
<thead>
<tr>
<th>Product</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>S4048T</td>
<td>S4048T, 48x 10GBASE-T, 6x QSFP+, 2x AC PSU, 2x fans, I/O Panel to PSU Airflow S4048T, 48x 10GBASE-T, 6x QSFP+, 2x AC PSU, 2x fans, PSU to I/O Panel Airflow</td>
</tr>
<tr>
<td>Optics</td>
<td>Transceiver, 40GE QSFP+ Short Reach Optic, 850nm wavelength, 100-150m reach on OM3/OM4 Transceiver, 40GbE QSFP+ ESR, 300m reach on OM3 / 400m on OM4 Transceiver, 40GbE QSFP+ PSM4 with 1m pigtail to male MPO SMF, 2km reach Transceiver, 40GbE QSFP+ PSM4 with 5m pigtail to male MPO SMF, 2km reach Transceiver, 40GbE QSFP+ PSM4 with 15m pigtail to male MPO SMF, 2km reach Transceiver, 40GbE QSFP+ LR4, 10km reach on SMF Transceiver, 40GbE QSFP+ to 1G Cu SFP adapter, QSA 1 meter QSFP+ to QSFP+ OM3 MTP Fiber Cable, Requires QSFP+ Optics 3 meter QSFP+ to QSFP+ OM3 MTP Fiber Cable, Requires QSFP+ Optics 5 meter QSFP+ to QSFP+ OM3 MTP Fiber Cable, Requires QSFP+ Optics 7 meter QSFP+ to QSFP+ OM3 MTP Fiber Cable, Requires QSFP+ Optics 10 meter QSFP+ to QSFP+ OM3 MTP Fiber Cable, Requires QSFP+ Optics 25 meter QSFP+ to QSFP+ OM3 MTP Fiber Cable, Requires QSFP+ Optics 50 meter QSFP+ to QSFP+ OM3 MTP Fiber Cable, Requires QSFP+ Optics 75 meter QSFP+ to QSFP+ OM3 MTP Fiber Cable, Requires QSFP+ Optics 100 meter QSFP+ to QSFP+ OM3 MTP Fiber Cable, Requires QSFP+ Optics</td>
</tr>
</tbody>
</table>

1/10G BASE-T cabling distances

<table>
<thead>
<tr>
<th>Cable Type</th>
<th>BASE-T 10G</th>
<th>BASE-T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cat 6 UTP</td>
<td>100m (330 ft)</td>
<td>55m (180 ft)</td>
</tr>
<tr>
<td>Cat 6 STP</td>
<td>100m (330 ft)</td>
<td>100m (330 ft)</td>
</tr>
<tr>
<td>Cat 6A UTP</td>
<td>100m (330 ft)</td>
<td>100m (330 ft)</td>
</tr>
<tr>
<td>Cat 7</td>
<td>100m (330 ft)</td>
<td>100m (330 ft)</td>
</tr>
</tbody>
</table>
## Product Description

### Cables
- Cable, QSFP+ to QSFP+, 40GbE Passive Copper Direct Attach Cable, 0.5 Meter
- Cable, QSFP+ to QSFP+, 40GbE Passive Copper Direct Attach Cable, 1 Meter
- Cable, QSFP+ to QSFP+, 40GbE Passive Copper Direct Attach Cable, 3 Meter
- Cable, QSFP+ to QSFP+, 40GbE Passive Copper Direct Attach Cable, 5 Meter
- Cable, QSFP+ to QSFP+, 40GbE Passive Copper Direct Attach Cable, 7 Meter
- Cable, QSFP+, 40GbE, Active Fiber Optical Cable, 10 Meters (No optics required)
- Cable, QSFP+, 40GbE, Active Fiber Optical Cable, 50 Meters (No optics required)
- Cable, 40GbE QSFP+ to 4 x 10GbE SFP+, Active Optical Breakout Cable
- Cable, 40GbE (QSFP+) to 4 x 10GbE SFP+ Passive Copper Breakout Cable, 0.5 Meters
- Cable, 40GbE (QSFP+) to 4 x 10GbE SFP+ Passive Copper Breakout Cable, 1 Meter
- Cable, 40GbE (QSFP+) to 4 x 10GbE SFP+ Passive Copper Breakout Cable, 5 Meters
- Cable, 40GbE (QSFP+) to 4 x 10GbE SFP+ Passive Copper Breakout Cable, 7 Meters
- Cable, 40GbE MTP (QSFP+) to 4xLC Optical Connectors, 1M (QSFP+, SFP+ Optics REQ, not incl)
- Cable, 40GbE MTP (QSFP+) to 4xLC Optical Connectors, 3M (QSFP+, SFP+ Optics REQ, not incl)
- Cable, 40GbE MTP (QSFP+) to 4xLC Optical Connectors, 5M (QSFP+, SFP+ Optics REQ, not incl)
- Cable, 40GbE MTP (QSFP+) to 4xLC Optical Connectors, 7M (QSFP+, SFP+ Optics REQ, not incl)

### Software
- L3 Dell EMC Networking OS
- S4048T: Dell EMC Networking software license operating system software license for advanced L3 features, latest version
- S4048T: Dell EMC Networking software license
- Dell EMC Networking OS9 and Dell EMC SmartFabric OS10

### Supported operating systems
- Big Switch Networks Switch Light OS
- Dell EMC Networking OS9 and Dell EMC SmartFabric OS10
- Pluribus OS

### Technical specifications
#### Physical
- 48 fixed 10GBase-T ports supporting 100M/1G/10G speeds
- 6 fixed 40 Gigabit Ethernet QSFP+ ports
- 1 RJ45 console/management port with RS232 signaling
- 1 USB 2.0 type A to support mass storage device
- 1 Micro-USB 2.0 type B Serial Console Port
- 18 GB SSD Module
- Size: 1RU, 17.1 x 17.09 x 18.11" (43.4 x 43.4 x 46 cm) (H x W x D)
- Weight: 23 lbs (10.43kg)
- ISO 7779 A-weighted sound pressure level: 65 dB at 77°F (25°C)
- Power supply: 100–240V AC 50/60Hz
- Max. thermal output: 1568 BTU/h
- Max. current draw per system: 4.6 A at 460W/100VAC, 2.3 A at 460W/200VAC
- Max. power consumption: 460 Watts
- Typical power consumption: 338 Watts
- Max. current draw per system: 4.6 A at 460W/100VAC, 2.3 A at 460W/200VAC
- Max. power consumption: 460 Watts
- Typical power consumption: 338 Watts
- Operating temperature: 32°F to 113°F (0°C to 45°C)
- Operating humidity: 5 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

#### Redundancy
- Hot swappable redundant power
- Hot swappable redundant fans

#### Performance General
- Switch fabric capacity: 1.44Tbps (full-duplex)
- 720Gbps (half-duplex)
- Forwarding Capacity: 1080 Mpps
- Latency: 2.8 us
- Packet buffer memory: 16MB
- CPU memory: 4GB

#### OS9 Performance:
- MAC addresses: 160K
- ARP table 128K
- IPv4 hosts: 64K
- IPv6 routes: 64K
- Multicast routes: 8K
- Link aggregation: 16 links per group, 128 groups
- Layer 2 VLANs: 4K
- MSTP: 64 instances
- VRF-Lite: 512 instances
- Lag load balancing: Based on layer 2, IPv4 or IPv6 headers
- Latency: Sub 3us
- QoS data queues: 8
- QoS control queues: 12
- Ingress ACL: 16K
- Egress ACL: 1K
- QoS: Default 3K entries scalable to 12K

#### IEEE compliance with Dell EMC Networking OS9
- 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)
- 802.3ac  Frame Extensions for VLAN Tagging
- 802.3ad  Link Aggregation with LACP
- 802.3ae  10 Gigabit Ethernet (10GBase-X) with QSA
- 802.3ax 40 Gigabit Ethernet (40GBase-SR4, 40GBase-CR4, 40GBase-LR4) on optical ports
- 802.3u  Fast Ethernet (100Base-TX)
- 802.3x  Flow Control
- 802.3z  Gigabit Ethernet (1000Base-X) with QSA
- 802.3az  Energy Efficient Ethernet
- ANSI/TIA-1057 LLDP-MED
- Force10 PVST+
- Max MTU: 9216 bytes
DELL-NETWORKING-VIRTUAL-LINK-TRUNK-MIB
DELL-NETWORKING-DCB-MIB
DELL-NETWORKING-OPENFLOW-MIB
DELL-NETWORKING-BMP-MIB
DELL-NETWORKING-BPSTATS-MIB

Regulatory compliance

Safety
CUS UL 60950-1, Second Edition
CSA 60950-1-03, Second Edition
EN 60950-1, Second Edition
IEC 60950-1, Second Edition Including All National Deviations and Group Differences
EN 60825-1, 1st Edition
EN 60825-1 Safety of Laser Products Part 1: Equipment Classification Requirements and User’s Guide

FDA Regulation 21 CFR 1040.10 and 1040.11

Emissions
International: CISPR 22, Class A
Australia/New Zealand: AS/NZS CISPR 22:2009, Class A
Canada: ICES-003:2016 Issue 6, Class A
USA: FCC CFR 47 Part 15, Subpart B:2009, Class A

RoHS
All S-Series components are EU RoHS compliant.

Certifications
Japan: VCCI V3/2009 Class A
USA: FCC CFR 47 Part 15, Subpart B:2009, Class A
Available with US Trade Agreements Act (TAA) compliance

IPv6 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

Immunity
EN 300 386 V1.8.1 (2012-09) EMC for Network Equipment
EN 55022, Class A
EN 55024: 2010 / CISPR 24: 2010
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

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