The Dell EMC Networking S4048-ON switch empowers organizations to deploy 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 open networking platforms. Using industry-leading hardware and a choice of leading network operating systems to simplify data center fabric orchestration and automation, organizations can accelerate innovation by tailoring their network to their unique requirements.

These new offerings provide the needed flexibility to transform data centers. High-capacity network fabrics that are cost-effective and easy to deploy provide a clear path to a software-defined data center of the future, as well as from vendor lock-in.

The Dell EMC S4048-ON supports the open source Open Network Install Environment (ONIE) for zero-touch installation of alternate network operating systems including feature-rich Dell Networking OS.

Ultra-low-latency, data center optimized

The Dell EMC Networking S-Series S4048-ON is an ultra-low-latency 10/40GbE top-of-rack (ToR) switch built for applications in high-performance data center and computing environments. Leveraging a non-blocking switching architecture, the S4048-ON delivers line-rate L2 and L3 forwarding capacity with ultra-low-latency to maximize network performance. The compact S4048-ON design provides industry-leading density of 48 dual-speed 1/10GbE (SFP+) ports as well as six 40GbE QSFP+ uplinks to conserve valuable rack space and simplify the migration to 40Gbps in the data center core (each 40GbE QSFP+ uplink can also support four 10GbE ports with a breakout cable). In addition, the S4048-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.

S4048-ON supports feature-rich Dell Networking OS, VLT, network virtualization features such as VRF-lite, VXLAN Gateway and support for Dell Embedded Open Automation Framework.

- The S4048-ON is the only switch in the industry that provides customers an unbiased approach to Network Virtualization by supporting both network-centric virtualization method (VRF-lite) and Hypervisor centric virtualization method (VXLAN).
- The S4048-ON also supports Dell Networking’s 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

- Ultra-low-latency 10GbE switching in HPC, high-speed trading or other business-sensitive deployments that require the highest bandwidth and lowest latency
- High-density 10GbE ToR server access in high-performance data center environments

When running the Dell 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
- Small-scale Active Fabric implementation via the S4048-ON switch in leaf and spine along with S-Series 1/10GbE ToR switches enabling cost-effective aggregation of 10/40GbE uplinks
- iSCSI storage deployment including DCB converged lossless transactions

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 650ns 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
Key features with Dell EMC Networking OS9
Scalable L2 and L3 Ethernet switching with GoS 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 Networking OS software delivers inherent stability as well as enhanced monitoring and serviceability functions.

<table>
<thead>
<tr>
<th>Product</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>S4048-ON</strong></td>
<td>S4048, 48x 10GbE SFP+, 6x QSFP+, 1x AC PSU, 2x Fans, I/O Panel to PSU Airflow</td>
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<tr>
<td></td>
<td>S4048, 48x 10GbE SFP+, 6x QSFP+, 1x AC PSU, 2x Fans, PSU to I/O Panel Airflow</td>
</tr>
<tr>
<td></td>
<td>S4048, 48x 10GbE SFP+, 6x QSFP+, 2xDC PSU, 3x Fans, PSU to I/O Panel Airflow - NEBS Certified</td>
</tr>
</tbody>
</table>

Redundant power supplies

- S4048, AC Power Supply, I/O Panel to PSU Airflow
- S4048, AC Power Supply, PSU to I/O Panel Airflow
- S4048, DC Power Supply, I/O Panel to PSU Airflow
- S4048, DC Power Supply, PSU to I/O Panel Airflow

Fans

- S4048 Fan Module, I/O Panel to PSU Airflow
- S4048 Fan Module, PSU to I/O Panel Airflow

Optics

- Transceiver, 40GbE, SR QSFP+, short reach
- Transceiver, 40GbE, ESR QSFP+, extended short reach
- Transceiver, 40GbE, LM4 QSFP+, universal duplex short reach
- Transceiver, 40GbE, SM4 QSFP+, duplex short reach
- Transceiver, 40GbE PSM4 QSFP+, parallel single mode long reach 1m, 5m, 15m tail
- Transceiver, 40GbE, PSM4-LR QSFP+, MPO to 4x SFP+ long reach
- Transceiver, 40GbE LR4 QSFP+, long reach
- Transceiver, 40GbE QSFP+ to SFP+/SFP Adapter (QSA)
- Transceiver, 10GbE, SR SFP+, short reach
- Transceiver, 10GbE, LR SFP+, long reach
- Transceiver, 10GbE, ER SFP+, extended reach
- Transceiver, 10GbE, ZR SFP+ extra extended reach
- Transceiver, 1GbE, SX SFP, short reach
- Transceiver, 1GbE, LX SFP, long reach
- Transceiver, 1GbE, ZR SFP, extended reach
- Transceiver, 1GbE, 1000Base-T F, copper

Cables

- Optical Cable 40/100GbE, MTP Fiber Cables in 3, 5, 7, 10, 25, 50, 75, 100 meter
- Optical Cable 40GbE, QSFP+, AOC 10, 50 meter
- Optical Cable 40GbE, Breakout QSFP+ to 4xSFP+, Fiber Cables in 10 and 30 meter
- Cable 10GbE, SFP+, AOC 2, 3, 5, 7, 10, 15, 20 meter*
- 40GbE, QSFP+ to QSFP+, passive DAC 0.5, 1, 3, 5, 7, meters
- 40GbE, QSFP+, Breakout QSFP+ to 4x10GbE, passive DAC 0.5, 1, 3, 5, 7 meters
- 40GbE, QSFP+, Breakout QSFP+ to 4x100GbEbase-T, passive DAC 1 meter
- 10GbE, SFP+ to SFP+, passive DAC 0.5, 1, 3, 5, 7 meters

Supported operating systems

- Cumulus Linux OS
- Big Switch Networks Switch Light OS
- Dell Networking Operating System v9
- Pluribus OS
Technical specifications

**Physical**

- 48 10 Gigabit Ethernet SFP+ ports
- 6 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
- Size: 17.1 x 17.5 x 12.5 (435 x 435 x 435 cm) (H x W x D)
- Weight: 18.52 lbs (8.4 kg)
- ISO 7779 A-weighted sound pressure level: 59.6 dB at 73.4°F (23°C)
- Power supply: 100–240V AC 50/60Hz
- DC Power supply: -40.5 V to -60 V
- Max. thermal output: 799.64 BTU/h
- Max. current draw per system: 2.344 A/1953 A at 100/120 V AC,
  1.145 A/0.954 A at 200/240 V AC
- Max. DC current: -40.5 V/23.8 A, -48 V/19 A, -60 V/15.6 A
- Max. power consumption: 234.35 Watts (AC), 800 Watts (DC)
- Typical power consumption: 153 Watts
- Max. operating specifications:
  - Operating temperature: 32°F to 113°F (0°C to 45°C)
  - Operating humidity: 10 to 95% (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:
    - 1.44 Tbps (full-duplex)
    - 720 Gbps (half-duplex)
  - Forwarding Capacity: 1080 Mpps
  - Latency: Sub 650 ns
  - Packet buffer memory: 12 MB
  - CPU memory: 4 GB
  - OS9 Performance:
    - MAC addresses: 160 K
    - ARP table: 128 K
    - IPv4 routes: 128 K
    - IPv6 hosts: 64 K
    - IPv6 routes: 64 K
    - Multicast hosts: 8 K
    - Link aggregation: 16 links per group, 128 groups
    - Layer 2 VLANs: 4 K
    - MSTP: 64 instances
    - VRF-Lite: 511 instances
    - LAG load balancing: Based on layer 2, IPv4 or IPv6 headers
    - QOS data queues: 8
    - QOS control queues: 12
    - QOS: Default 768 entries scalable to 2.5 K
    - Ingress ACL: 2.5 K
    - Egress ACL: 1 K

**IEEE compliance with Dell Networking OS9**

- 802.1AB LLDP
- 802.1D Bridging, STP
- 802.1p L2 Prioritization
- 802.1Q VLAN Tagging, Double VLAN Tagging, GVRP
- 802.1obb PFC
- 802.1az ETX
- 802.1s MSTP
- 802.1X Network Access Control
- 802.1ab Gigabit Ethernet (1000BASE-T) with QSA or breakout
- 803.3ac Frame Extensions for VLAN Tagging
- 803.3ad Link Aggregation with LACP
- 803.3ae Gigabit Ethernet (10GBase-X) with QSA
- 803.3ba Gigabit Ethernet (40GBase-SR4, 40GBase-CR4,40GBase-LR4) on optical ports
- 803.3u Fast Ethernet (100Base-TX)
- 803.3x Flow Control
- 803.3z Gigabit Ethernet (100Base-X) with QSA ANS/TIA-1057 LLDP-MED
- Force10 PVST+
- MTU 12,000 bytes

**RFC and I-D compliance with Dell Networking OS9**

**General Internet protocols**

- 768 UDP
- 793 TCP
- 854 Telnet
- 959 FTP

**General IPv4 protocols**

- 791 IPv4
- 792 ICMP
- 826 ARP
- 1027 Proxy ARP
- 1035 DNS (client)
- 1042 Ethernet Transmission
- 1305 NTPv3
- 1519 CIDR
- 1542 BOOTP (relay)
- 1812 Requirements for IPv4 Routers
- 1918 Address Allocation for Private Internets
- 2474 Diffserv Field in IPv4 and IPv6 Headers
- 2506 Assured Forwarding PHB Group
- 3164 Bsd Syslog
- 3195 Reliable Delivery for Syslog
- 3246 Expedited Assured Forwarding
- 4964 VRF-lite (IPv4 VRF with OSPF, BGP, IS-IS and V4 multicast)
- 5798 VRRP

**General IPv6 protocols**

- 1981 Path MTU Discovery Features
- 2460 Internet Protocol, Version 6 (IPv6)
- Specification
- 2484 Transmission of IPv6 Packets over Ethernet

**Networks**

- 2711 IPv6 Router Alert Option
- 4007 IPv6 Scoped Address Architecture
- 4215 Basic Translation Mechanisms for IPv6 Hosts and Routers
- 4291 IPv6 Addressing Architecture
- 4443 ICMP for IPv6
- 4861 Neighbor Discovery for IPv6
- 4862 IPv6 Stateless Address Autoconfiguration
- 5095 Deprecation of Type 0 Routing Headers in IPv6
- IPv6 Management support (telnet, FTP, TACACS, RADIUS, SSH, NTP)
- VRF-Lite (IPv6 VRF with OSPFv3, BGPv6, IS-IS)

**RIP**

- 1058 RIPv2 2453 RIPv2

**OSPF**

- (v2/v3)
- 1587 NSSA 4552 Authentication/
- 2154 OSPF Digital Signatures Confidentiality for
- 2328 OSPFv2 OSPFv3
- 2370 Opaque LSA 5340 OSPF for IPv6

**IS-IS**

- 5301 Dynamic hostname exchange mechanism for IS-IS
- 5302 Domain-wide prefix distribution with two-level IS-IS
- 5303 Three way handshake for IS-IS point-to-point adjacencies
- 5308 IS-IS for IPv6
- 5317 BGP
- 1997 Communities
- 2385 MDS
- 2546 BGP-4 Multiprotocol Extensions for IPv6 Inter-Domain Routing
- 2439 Route Flap Damping
- 2796 Route Reflection
- 2842 Capabilities
- 2858 Multiprotocol Extensions
- 2918 Route Refresh
- 3065 Confederations
- 4360 Extended Communities
- 4893 4-byte ASN
- 5396 4-byte ASN representations
- draft-ietf-oid-rgb4-20 BGPv4
- draft-michaelson-4byte-as-representation-05
- 4-byte ASN Representation (partial)
- draft-ietf-oid-add-paths-04.txt ADD PATH Multicast
- 1112 IGMPv1
- 2236 IGMPv2
- 3376 IGMPv3
- MSDP

**Security**

- 2404 The Use of HMACSHA-1-96 within ESP and AH
- 2865 RADIUS
- 3162 Radius and IPv6
- 3579 Radius support for EAP
- 3580 802.1X with RADIUS
- 3768 EAP
- 3826 AES Cipher Algorithm in the SNMP User Base
- 4250, 4251, 4252, 4253, 4254 SSHv2
IEEE 802.1AB LLDP DOT1 MIB
IEEE 802.1AB LLDP DOT3 MIB
sFlow.org sFlowv5
sFlow.org sFlowv5 MIB (version 1.3)
FORCE10-BGP4-V2-MIB Force10 BGP MIB
draft-ietf-idr-bgp4-mibv2-05)
FORCE10-IF-EXTENSION-MIB
FORCE10-LINKAGG-MIB
FORCE10-COPY-CONFIG-MIB
FORCE10-PRODUCTS-MIB
FORCE10-SS-CHASSIS-MIB
FORCE10-SMI
FORCE10-TC-MIB
FORCE10-TRAP-ALARM-MIB
FORCE10-FORWARDINGPLANE-STATS-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: 2009,
Class A
Canada: ICES-003, Issue-4, Class A
Class A
Japan: VCCI V3/2009 Class A
USA: FCC CFR 47 Part 15, Subpart B:2009, Class A

Immunuty
EN 300 386 V14:201208 EMC for Network
Equipment
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
Japan: VCCI V3/2009 Class A
USA: FCC CFR 47 Part 15, Subpart B:2009, Class A
Tested to meet or exceed Hi Pot and Ground
Continuity testing per UL 60950-1

Warranty
1 Year Return to Depot

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multivendor environment
and deliver a comprehensive
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improve performance.

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and configured with ProDeploy.
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and get up and running fast.

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infrastructure.

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and quickly resolve multivendor
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analyst for your network.

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We can help you resell or retire
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