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 Technologies’ 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 freedom 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 EMC Networking OS9 and Dell EMC SmartFabric OS10.

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 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.

- 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 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

When running the Dell EMC Networking OS9, Active Fabric™ implementation for large deployments in conjunction with the Dell Z Series, creating a flat, two-tier, nonblocking 10/40GbE data center network design

- 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
- 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 non-virtualized infrastructure

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 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

<table>
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<tr>
<th>Product</th>
<th>Description</th>
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| **S4048-ON** | S4048, 48x 10GbE SFP+, 6x QSFP+, 1x AC PSU, 2x Fans, I/O Panel to PSU Airflow  
S4048, 48x 10GbE SFP+, 6x QSFP+, 1x AC PSU, 2x Fans, PSU to I/O Panel Airflow  
S4048, 48x 10GbE SFP+, 6x QSFP+, 2xDC PSU, 3x Fans, PSU to I/O Panel Airflow - NEBS Certified |
| **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, ZF SFP, extended reach |
| **Cables** | Optical Cable 40/100GbE, MTP Fiber Cables in 3, 5, 7, 10, 25, 50, 75, 100 meter  
Optical Cable 40GbE, QSFP+, ACC 10, 50 meter  
Optical Cable 40GbE, Breakout QSFP+ to 4xSFP+, Fiber Cables in 10 and 30 meter  
Cable 10GbE, SFP+, ACC 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 4x100base-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 EMC Networking OS9 and Dell EMC SmartFabric OS10  
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

**Max. operating specifications**

- Typical power consumption: 153 Watts
- 800 Watts (DC)
- Max. power consumption: 234.35 Watts (AC), -60V/15.6A.
- Max. DC current: -40.5V/23.8A , -48V/19A , -73.4°F (23°C)
- Weight: 18.52 lbs (8.4kg)
- ISO 7779 A-weighted sound pressure level: 59.6 dBA at 73.4°F (23°C)
- DC Power supply: -40.5V ~ -60V
- Power supply: 100–240V AC 50/60Hz

**Max. thermal output:** 799.64 BTU/h

**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: Sub 650ns
- Packet buffer memory: 12MB
- CPU memory: 4GB
- OS9 Performance:
  - MAC addresses: 160K
  - ARP table 128K
  - IPv4 routes: 128K
  - IPv6 hosts: 64K
  - IPv6 routes: 64K
  - Multicast hosts: 8K
  - Link aggregation: 16 links per group, 128 groups
  - Layer 2 VLANs: 4K
  - 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 2.5K

**IEEE compliance with Dell EMC Networking OS9**

- 4821AB 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
- 802.1x RSTP
- 802.1X Network Access Control
- 802.3ab Gigabit Ethernet (1000BASE-T) with QSA or breakout
- 802.3ac Frame Extensions for VLAN Tagging
- 802.3ad Link Aggregation with LACP
- 802.3ae 10 Gigabit Ethernet (10GBase-X) with QSA
- 802.3ba 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-TX) with QSA
- ANS/TIA-1057 LLDP-MED
- Force10 PVST+
- MTU 12,000 bytes

**RFC and I-D compliance with Dell EMC 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
- 2596 Assured Forwarding PHB Group
- 3164 BSSID Syslog
- 3195 Reliable Delivery for Syslog
- 3246 Expedited Assured Forwarding
- 4064/4065 VRF-lite (IPv4/IPv6 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
- 2494 Transmission of IPv6 Packets over Ethernet Networks
- 2711 IPv6 Router Alert Option
- 4007 IPv6 Scoped Address Architecture
- 4215 Basic Transition Mechanisms for IPv6 Hosts and Routers
- 4291 IPv6 Addressing Architecture
- 4443 ICMPv6 for IPv6
- 4861 Neighbor Discovery for IPv6
- 4862 IPv6 Stateless Address Autoconfiguration
- 5095 Deprecation of Type O Routing Headers in IPv6
- IPv6 Management support (telnet, FTP, TACACS, RADIUS, SSH, NTP)
- VRF-Lite (IPv6 VRF with OSPFv3, BGPv6, IS-IS)
- RIP
- 1058 RIPv1 2453 RIPv2
- OSPF (V2/V3)
- 1587 NSSA 4552 Authentication/
- 2154 OSPF Digital Signatures Confidentiality for
- 2328 OSPF-V2/OSPF-V3
- 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
- BGP
- 1997 Communities
- 2385 MDS
- 2565 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-idr-bgp4-20 BGPv4
draft-michaelson-4byte-as-representation-05
- 4-byte ASN Representation (partial)
draft-ietf-idr-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 Security Model
Network management
1155 SMIV1
1157 SNMPv1
1212 Concise MIB Definitions
1215 SNMP Traps
1493 Bridges MIB
1850 CSFPV2 MIB
1901 Community-Based SNMPv2
2011 IP MIB
2096 IP Forwarding Table MIB
2578 SMIV2
2579 Textual Conventions for SMIV2
2580 Conformance Statements for SMIV2
2618 RADIUS Authentication MIB
2665 Ethernet-Like Interfaces MIB
2674 Extended Bridge MIB
2787 VRRP MIB
3412 Message Processing and Dispatching for the Simple Network Management Protocol (SNMP)
3413 SNMP Applications
3414 User-based Security Model (USM) for SNMPv3
3415 VACM for SNMP
3416 SNMPv2c
3417 Transport mappings for SNMP
3418 SNMP MIB
3434 RMON High Capacity Alarm MIB
3584 Coexistence between SNMP v1, v2 and v3
4022 IP MIB
4087 IP Tunnel MIB
4113 UDP MIB
4133 Entity MIB
4292 MB for IP
4293 MB for IPv6 Textual Conventions
4502 RMONv2 (groups 1, 2, 3, 9)
5060 PIM MIB
ANSI/TIA-1057 LLDP-MED MIB
DellLITA/Rev_1_1 MIB
draft-ietf-tacacs-02 TACACS+
draft-ietf-idr-bgp4-mib-06 BGP MIBv1
IEEE 802.1AB LLDP MIB
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-IP-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
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
Japan: VCCI V3/2009 Class A
USA: FCC CFR 47 Part 15, Subpart B, 2009, Class A

Immunity
EN 300 386 V1:4:2008 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